MBS Phidgets Plugin Documentation

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0.1 Introduction

This is the PDF version of the documentation for the Xojo Plug-in from Monkeybread Software Germany. Plugin part: MBS Phidgets Plugin

0.2 Content

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List of Topics

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Phidgets

4.1 class OldPhidgetAccelerometerMBS

4.1.1 class OldPhidgetAccelerometerMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetAccelerometerMBS instead. **Function:** The class for the phidget accelerometer.
Notes: The PhidgetAccelerometer is a component that provides a high-level programmer interface to control a PhidgetAccelerometer device connected through a USB port. The product is available as a dual axis or a 3-axis
module. With this component, the programmer can:

- Measure up to 5 Gravity (9.8 m/s2) change per axis, depending on unit purchased.

- Measures both dynamic acceleration (e.g., vibration) and static acceleration (e.g., gravity or tilt) on 2 or 3 axis.

Subclass of the OldPhidgetMBS class.

4.1.2 Methods

4.1.3 Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

Notes: On success the handle value is not zero.

4.1.4   getAcceleration(index as Integer) as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the last acceleration value received from the PhidgetAccelerometer for a particular axis.
Notes: Lasterror is set.

4.1.5   getAccelerationChangeTrigger(index as Integer) as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the amount of change that should exist between the last reported value and the current value before an OnAccelerationChange event is fired.
Notes: Lasterror is set.

4.1.6   getAccelerationMax(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum accleration supported by an axis.
Notes: The Lasterror property is set.

4.1.7   getAccelerationMin(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum acceleraiton supported by an axis.
Notes: The Lasterror property is set.

4.1.8   getAxisCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of acceleration axes supported by this accelerometer.
Notes: The Lasterror property is set.

4.1.9 setAccelerationChangeTrigger(index as Integer, value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Specifies the amount of change that should exist between the last reported value and the current value before an AccelerationChange event is fired.
Notes: If the AccelerationChangeTrigger is set to 0, an event will be triggered for every measurement of acceleration taken.

Lasterror is set.

4.1.10 Events

4.1.11 AccelerationChanged(index as Integer, value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called for each change on the Acceleration.
Notes: Index: Index of the Accelerometer posting event
Value: Value of the Accelerometer

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.2   class OldPhidgetAdvancedServoMBS

4.2.1   class OldPhidgetAdvancedServoMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetRCServoMBS instead. **Function:** A class for a phidget advanced servo device.
Notes: On the time the plugin was written the phidget documentation did not include this class so the documentation here is limited.
Subclass of the OldPhidgetMBS class.

4.2.2   Methods

4.2.3   Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: On success the handle value is not zero.

4.2.4   getAcceleration(index as Integer) as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the acceleration for the given index.
Notes: The Lasterror property is set.

4.2.5   getAccelerationMax(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum acceleration supported by a motor.
Notes: The Lasterror property is set.

4.2.6   getAccelerationMin(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum acceleration supported by a motor.
Notes: The Lasterror property is set.

4.2.7   getCurrent(index as Integer) as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the current value.
Notes: The Lasterror property is set.

4.2.8   getEngaged(index as Integer) as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the engaged state of a motor.
Notes: This is whether the motor is powered or not.
The Lasterror property is set.

4.2.9   getMotorCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of motors supported by this controller.
Notes: The Lasterror property is set.

4.2.10   getPosition(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current position of an encoder.
Notes: The Lasterror property is set.

4.2.11   getPositionMax(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum position that a motor can go to.
Notes: The Lasterror property is set.

4.2.12   getPositionMin(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum position that a motor can go to.
Notes: The Lasterror property is set.

4.2.13   getServoType(index as Integer) as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the servo type of a motor.
Notes: The Lasterror property is set.
For the value, check the PHIDGET_SERVO_* constants.

4.2.14   getSpeedRampingOn(index as Integer) as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the speed ramping state for a motor.
Notes: This is whether or not velocity and acceleration are used.
The Lasterror property is set.

4.2.15   getStopped(index as Integer) as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the stopped state of a motor.
Notes: This is true when the motor is not moving and there are no outstanding commands.
The Lasterror property is set.

4.2.16   getVelocity(index as Integer) as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the current velocity.
Notes: The Lasterror property is set.

4.2.17 getVelocityLimit(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the last set velocity limit for a motor.
Notes: The Lasterror property is set.

4.2.18 getVelocityMax(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum velocity that can be set for a motor.
Notes: The Lasterror property is set.

4.2.19 getVelocityMin(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum velocity that can be set for a motor.
Notes: The Lasterror property is set.

4.2.20 setAcceleration(index as Integer, value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the acceleration.
Notes: The Lasterror property is set.

4.2.21 setEngaged(index as Integer, value as boolean)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the engaged state of a motor. This is whether the motor is powered or not.
Notes: The Lasterror property is set.

4.2.22 setPosition(index as Integer, value as Double)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the current position of a motor.
Notes: The Lasterror property is set.

4.2.23 setPositionMax(index as Integer, value as Double)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the maximum position that a motor can go to.
Notes: The Lasterror property is set.

4.2.24 setPositionMin(index as Integer, value as Double)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the minimum position that a motor can go to.
Notes: The Lasterror property is set.

4.2.25 setServoParameters(index as Integer, min_us as Double, max_us as Double, degrees as Double, velocity_max as Double)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the servo parameters of a motor.
Notes: The Lasterror property is set.

index	The motor index.
min_us	The minimum supported PCM in microseconds.
max_us	The maximum supported PCM in microseconds.
degrees	The degrees of rotation defined by the given PCM range.
velocity_max	The maximum velocity in degrees/second.

4.2.26 setServoType(index as Integer, value as Integer)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the servo type of a motor.
Notes: The Lasterror property is set.
For the value, check the PHIDGET_SERVO_* constants.

4.2.27 setSpeedRampingOn(index as Integer, value as boolean)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the speed ramping state for a motor.
Notes: This is whether or not velocity and acceleration are used.
The Lasterror property is set.

4.2.28 setVelocityLimit(index as Integer, value as Double)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the velocity limit for a motor.
Notes: The Lasterror property is set.

4.2.29 Events

4.2.30 CurrentChanged(index as Integer, value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The current value changed.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.2.31 PositionChanged(index as Integer, value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The position changed.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.2.32 VelocityChanged(index as Integer, value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The velocity changed.

Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.

Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.2.33   Constants

Constants

Constant	Value	Description
PHIDGET_SERVO_DEFAULT	1	One of the servo type constants.
PHIDGET_SERVO_FIRGELLI_L12_100_100_06_R	17	One of the servo type constants.
PHIDGET_SERVO_FIRGELLI_L12_100_50_06_R	16	One of the servo type constants.
PHIDGET_SERVO_FIRGELLI_L12_30_50_06_R	13	One of the servo type constants.
PHIDGET_SERVO_FIRGELLI_L12_50_100_06_R	14	One of the servo type constants.
PHIDGET_SERVO_FIRGELLI_L12_50_210_06_R	15	One of the servo type constants.
PHIDGET_SERVO_HITEC_805BB	5	One of the servo type constants.
PHIDGET_SERVO_HITEC_815BB	12	One of the servo type constants.
PHIDGET_SERVO_HITEC_HS322HD	3	One of the servo type constants.
PHIDGET_SERVO_HITEC_HS422	6	One of the servo type constants.
PHIDGET_SERVO_HITEC_HS485HB	10	One of the servo type constants.
PHIDGET_SERVO_HITEC_HS5245MG	4	One of the servo type constants.
PHIDGET_SERVO_HITEC_HS645MG	11	One of the servo type constants.
PHIDGET_SERVO_HITEC_HS785HB	9	One of the servo type constants.
PHIDGET_SERVO_HITEC_HSR1425CR	8	One of the servo type constants.
PHIDGET_SERVO_RAW_us_MODE	2	One of the servo type constants.
PHIDGET_SERVO_SPRINGRC_SM_S2313M	18	One of the servo type constants.
PHIDGET_SERVO_SPRINGRC_SM_S3317M	19	One of the servo type constants.
PHIDGET_SERVO_SPRINGRC_SM_S3317SR	20	One of the servo type constants.
PHIDGET_SERVO_SPRINGRC_SM_S4303R	21	One of the servo type constants.
PHIDGET_SERVO_SPRINGRC_SM_S4315M	22	One of the servo type constants.
PHIDGET_SERVO_SPRINGRC_SM_S4315R	23	One of the servo type constants.
PHIDGET_SERVO_SPRINGRC_SM_S4505B	24	One of the servo type constants.
PHIDGET_SERVO_TOWERPRO_MG90	7	One of the servo type constants.
PHIDGET_SERVO_USER_DEFINED	25	One of the servo type constants.

4.3 class OldPhidgetAnalogMBS

4.3.1 class OldPhidgetAnalogMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetVoltageInputMBS instead. **Function:** Class specific to the Phidget Analog.
Notes: See the product manual for more specific API details, supported functionality, units, etc.
Subclass of the OldPhidgetMBS class.

4.3.2 Methods

4.3.3 Constructor

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new analog device instance.
Notes: Lasterror is set.

4.3.4 getEnabled(index as Integer) as boolean

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the enabled state for an output.
Notes: Lasterror is set.

4.3.5 getOutputCount as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of outputs supported by this phidget analog.
Notes: Lasterror is set.

4.3.6 getVoltage(index as Integer) as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the currently set voltage for an output, in V.
Notes: Lasterror is set.

4.3.7   getVoltageMax(index as Integer) as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum settable output voltage, in V.
Notes: Lasterror is set.

4.3.8   getVoltageMin(index as Integer) as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum settable output voltage, in V.
Notes: Lasterror is set.

4.3.9   setEnabled(index as Integer, value as boolean)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the enabled state for an output.
Notes: Lasterror is set.

4.3.10   setVoltage(index as Integer, value as Double)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the voltage of an output, in V.
Notes: Lasterror is set.

4.4 class OldPhidgetBridgeMBS

4.4.1 class OldPhidgetBridgeMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetMBS instead.
Function: The class specific to the Phidget Bridge.
Notes: See the product manual for more specific API details, supported functionality, units, etc.
Subclass of the OldPhidgetMBS class.

4.4.2 Methods

4.4.3 Constructor

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new instance.
Notes: Lasterror is set.

4.4.4 getBridgeMax(index as Integer) as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum value supported by a bridge input, in mV/V. This is affected by Gain.
Notes: Lasterror is set.

4.4.5 getBridgeMin(index as Integer) as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum value supported by a bridge input, in mV/V. This is affected by Gain.
Notes: Lasterror is set.

4.4.6 getBridgeValue(index as Integer) as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current value of a bridge input, in mV/V.
Notes: Lasterror is set.

4.4.7   getDataRate as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the the data rate for the Phidget Bridge, in milliseconds.
Notes: Lasterror is set.

4.4.8   getDataRateMax as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the the maximum data rate for the Phidget Bridge, in milliseconds.
Notes: Lasterror is set.

4.4.9   getDataRateMin as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the the minimum data rate for the Phidget Bridge, in milliseconds.
Notes: Lasterror is set.

4.4.10   getEnabled(index as Integer) as Boolean

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the enabled state for an input.
Notes: Lasterror is set.

4.4.11   getGain(index as Integer) as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the the Gain for an input.
Notes: Lasterror is set.

4.4.12   getInputCount as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of inputs supported by this phidget bridge.
Notes: Lasterror is set.

4.4.13   setDataRate(milliseconds as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the the data rate for the Phidget Bridge, in milliseconds.
Notes: Lasterror is set.

4.4.14   setEnabled(index as Integer, value as Boolean)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the enabled state for an input.
Notes: Lasterror is set.

4.4.15   setGain(index as Integer, value as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the the Gain for an input.
Notes: Lasterror is set.

4.4.16   Events

4.4.17   BridgeDataReceived(index as Integer, value as Double)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The bridge data event handler.
Notes: This is called at a set rate as defined by data rate.

4.4.18   Constants

Gain Constants.

Constant	Value	Description
PHIDGET_BRIDGE_GAIN_1	1	Gain of 1.
PHIDGET_BRIDGE_GAIN_128	6	Gain of 128.
PHIDGET_BRIDGE_GAIN_16	3	Gain of 16.
PHIDGET_BRIDGE_GAIN_32	4	Gain of 32.
PHIDGET_BRIDGE_GAIN_64	5	Gain of 64.
PHIDGET_BRIDGE_GAIN_8	2	Gain of 8.
PHIDGET_BRIDGE_GAIN_UNKNOWN	7	Unknown Gain.

4.5 class OldPhidgetDictionaryMBS

4.5.1 class OldPhidgetDictionaryMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetDictionaryMBS instead. **Function:** The Phidget Dictionary is a service provided by the Phidget Webservice.
Notes: The Webservice maintains a centralized dictionary of key-value pairs that can be accessed and changed from any number of clients through the CPhidgetDictionary interface available in phidget21.

Note that the Webservice uses this dictionary to control access to Phidgets through the openRemote and openRemoteIP interfaces, and as such, you should never add or modify a key that starts with /PSK/ or /PCK/, unless you want to explicitly modify Phidget specific data –and this is highly discouraged, as it's very easy to break things. Listening to these keys is fine if so desired.

The intended use for the dictionary is as a central repository for communication and persistent storage of data between several client applications. As an example - a higher level interface exposed by one application –which controls the Phidgets, for others to access –rather then every client talking directly to the Phidgets themselves.

The dictionary makes use of extended regular expressions for key matching. See the end of this document for the rules of regular expressions.

See the Phidget manuals for help on regular expressions.

4.5.2 Methods

4.5.3 addKey(key as string, value as string, persistent as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Adds a new key to the Dictionary, or modifies the value of an existing key.
Notes: The key can only contain numbers, letters, ‚Äò/', ‚Äò.', ‚Äò-‚Äò, ‚Äò_', and must begin with a letter, ‚Äò_' or ‚Äò/'.
The value can contain any value.
The persistent value controls whether a key will stay in the dictionary after the client that created it disconnects. If persistent == 0, the key is removed when the connection closes. Otherwise the key remains in the dictionary until it is explicitly removed.

Lasterror is set.

4.5.4   Close

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Closes the file handles for this device.
Notes: You should always call this when finished with a Dictionary.
Lasterror is set.

4.5.5   Constructor

Plugin Version: 8.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: A dummy constructor doing nothing.
See also:

- 4.5.6 Constructor(pattern as string)   56

4.5.6   Constructor(pattern as string)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: The Lasterror property is set.
Pattern is a regular expression that matches the keys you want to listen for in the keychange event.
See also:

- 4.5.5 Constructor   56

4.5.7   GetDeviceStatus as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns an integer indicating the status of the device.
Notes: Returns:
PHIDGET_ATTACHED 0x1
PHIDGET_NOTATTACHED 0x0

Lasterror is set.

4.5.8   getServerAddress(byref port as Integer) as string

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the address and port.
Notes: The Lasterror property is set.

4.5.9 getServerID as string

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the server ID.
Notes: The Lasterror property is set.

4.5.10 GetServerStatus as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns an integer indicating the connection status of a Webservice.
Notes: Returns one of the following values:
1 CONNECTED
0 NOTCONNECTED

Lasterror is set.

4.5.11 openRemote(serverID as string, password as string)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: This method is not yet implemented and will return EPHIDGET_UNSUPPORTED.
Notes: The Lasterror property is set.

4.5.12 openRemoteIP(addr as string, port as Integer, password as string)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Opens a connection to a remote Phidget Dictionary.
Notes: OpenRemoteIP will block until it connects to the server, which means that when it returns with EPHIDGET_OK, this means that the connection is active. If the server is unavailable, this will return an error code.

If the connection to a webservice is disrupted while in use, an error event will be thrown, and it is recommended that an error event listener be registered for this reason.

Lasterror is set.

4.5.13   removeKey(pattern as string)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Removes a key, or set of keys, from the Dictionary.
Notes: The key name is a regular expressions pattern, and so care must be taken to only have it match the specific keys you want to remove.
Lasterror is set.

4.5.14   Properties

4.5.15   Handle as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The internal used CPhidgetDictionaryHandle.
Notes: (Read and Write property)

4.5.16   Lasterror as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The last error code.
Notes: (Read and Write property)

4.5.17   Events

4.5.18   Error(errorCode as Integer, errorDescription as string)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: This error event is used for reporting asynchronous errors –mostly related to opening remote Phidgets.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.5.19 KeyChanged(key as string, value as string, reason as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: These event will be called on key add, remove, and change.
Notes: The Lasterror property is set.
It will also fire once to give an initial key value as soon as it is registered, if the key already exists.

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

Reason values:

PHIDGET_DICTIONARY_VALUE_CHANGED	1
PHIDGET_DICTIONARY_ENTRY_ADDED	2
PHIDGET_DICTIONARY_ENTRY_REMOVING	3
PHIDGET_DICTIONARY_CURRENT_VALUE	4

4.5.20 ServerConnect

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called when a connection to the sever has been made.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.5.21 ServerDisconnect

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called when a connection to the server has been lost.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.6   class OldPhidgetEncoderMBS

4.6.1   class OldPhidgetEncoderMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetEncoderMBS instead. **Function:** The class for the phidget encoder device.
Notes: The PhidgetEncoder is a component that provides a high-level programmer interface to control a PhidgetEncoder device connected through a USB port.
With this component, the programmer can:

- Detect changes in position of incremental and absolute encoders.

- Easily track the changes with respect to time.

Subclass of the OldPhidgetMBS class.

4.6.2   Methods

4.6.3   Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: On success the handle value is not zero.
The Lasterror property is set.

4.6.4   getEnabled(index as Integer) as boolean

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the enabled state of an encoder. This is whether the encoder is powered or not.
Notes: The Lasterror property is set.

4.6.5   getEncoderCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of encoder inputs supported by this board.
Notes: The Lasterror property is set.

4.6.6 getIndexPosition(index as Integer) as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Queries index position.
Notes: Gets the position of the last index pulse, as referenced to getPosition.
This will return EPHIDGET_UNKNOWN if there hasn't been an index event, or if the encoder doesn't support index.

The Lasterror property is set.

4.6.7 getInputCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of digital inputs supported by this board.
Notes: The Lasterror property is set.

4.6.8 getInputState(index as Integer) as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the state of a digital input.
Notes: The Lasterror property is set.

4.6.9 getPosition(index as Integer) as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current position of an encoder.
Notes: The Lasterror property is set.

4.6.10 setEnabled(index as Integer, value as boolean)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the enabled state of an encoder. This is whether the encoder is powered or not.
Notes: The Lasterror property is set.

4.6.11   setPosition(index as Integer, value as Integer)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the current position of an encoder.
Notes: The Lasterror property is set.

4.6.12   Events

4.6.13   InputChanged(index as Integer, value as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The event for a change in the input.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.6.14   PositionChanged(index as Integer, position as Integer, time as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called for every position change.
Notes: Index: Index of the Encoder firing the Event
Position: Position of the Encoder
Time: Time of change

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.7 class OldPhidgetFrequencyCounterMBS

4.7.1 class OldPhidgetFrequencyCounterMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetFrequencyCounterMBS instead. **Function:** Class specific to the Phidget Frequency Counter.
Notes: See the product manual for more specific API details, supported functionality, units, etc.
Subclass of the OldPhidgetMBS class.

4.7.2 Methods

4.7.3 Constructor

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new instance.
Notes: Lasterror is set.

4.7.4 getEnabled(index as Integer) as Boolean

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the enabled state for an input.
Notes: Lasterror is set.

4.7.5 getFilter(index as Integer) as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the filter type for an input.
Notes: Lasterror is set.

4.7.6 getFrequency(index as Integer) as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the measured frequency of an input, in Hz.
Notes: Lasterror is set.

4.7.7   getFrequencyInputCount as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of inputs supported by this phidget frequency counter.
Notes: Lasterror is set.

4.7.8   getTimeout(index as Integer) as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the timeout value for an input, in microseconds. This controls the lowest measurable frequency.
Notes: Lasterror is set.

4.7.9   getTotalCount(index as Integer) as Int64

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the total number of ticks that have happened since the last reset on this input.
Notes: Lasterror is set.

4.7.10   getTotalTime(index as Integer) as Int64

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the total time that has passed since the last reset on this input, in microseconds.
Notes: Lasterror is set.

4.7.11   reset(index as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Resets total count and total time for an input.
Notes: Lasterror is set.

4.7.12   setEnabled(index as Integer, value as Boolean)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the enabled state for an input.
Notes: Lasterror is set.

4.7.13   setFilter(index as Integer, filter as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the filter type for an input.
Notes: Lasterror is set.

4.7.14   setTimeout(index as Integer, filter as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the timeout value for an input, in microseconds.
Notes: Lasterror is set.

4.7.15   Events

4.7.16   Counted(index as Integer, time as Integer, counts as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called when ticks have been counted on an input, or when the timeout has passed.

4.7.17   Constants

Filter Type Constants

Constant	Value	Description
PHIDGET_FREQUENCYCOUNTER_FILTERTYPE_LOGIC_LEVEL	2	Logic level signal filter.
PHIDGET_FREQUENCYCOUNTER_FILTERTYPE_UNKNOWN	3	Filter type unknown.
PHIDGET_FREQUENCYCOUNTER_FILTERTYPE_ZERO_CROSSING	1	Zero crossing signal filter.

4.8   class OldPhidgetGPGGAMBS

4.8.1   class OldPhidgetGPGGAMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetGPGGAMBS instead. **Function:** The class for a NMEA GGA Sentence.

4.8.2   Properties

4.8.3   altitude as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The altitude value.
Notes: (Read only property)

4.8.4   fixQuality as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The fix Quality.
Notes: (Read and Write property)

4.8.5   heightOfGeoid as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The height of GEO ID.
Notes: (Read only property)

4.8.6   horizontalDilution as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The horizontal dilution.
Notes: (Read only property)

4.8.7   latitude as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The latitude value.
Notes: (Read only property)

4.8.8   longitude as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The longitude value.
Notes: (Read only property)

4.8.9   numSatellites as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The number of satellites.
Notes: (Read and Write property)

4.8.10   time as OldPhidgetGPSTimeMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The time value.
Notes: (Read and Write property)

4.9   class OldPhidgetGPGSAMBS

4.9.1   class OldPhidgetGPGSAMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetGPGSAMBS instead. **Function:** The NMEA GSA Sentence class.

4.9.2   Methods

4.9.3   satUsed(index as Integer) as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: IDs of used sats in no real order, 0 means nothing.

4.9.4   Properties

4.9.5   fixType as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The fix type.
Notes: (Read and Write property)

4.9.6   horizDilution as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Horizontal dilution.
Notes: (Read only property)

4.9.7   mode as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The mode.
Notes: (Read and Write property)

4.9.8 posnDilution as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Position dilution.
Notes: (Read only property)

4.9.9 vertDilution as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Vertical dilution.
Notes: (Read only property)

4.9.10 Constants

Fix Type values

Constant	Value	Description
kFixType2D	2	2D
kFixType3D	3	3D
kFixTypeNo	1	no fix.

Mode values

Constant	Value	Description
kModeAuto	65	Auto
kModeForced	77	Forced

4.10   class OldPhidgetGPGSVMBS

4.10.1   class OldPhidgetGPGSVMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetGPVTGMBS instead. **Function:** The NMEA GSV Sentence class.

4.10.2   Methods

4.10.3   satInfo(index as Integer) as OldPhidgetGPSSatInfoMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Query the satellite information with the given index.
Notes: Index from 0 to 11.

4.10.4   Properties

4.10.5   satsInView as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Number of satellites in view.
Notes: (Read and Write property)

4.11 class OldPhidgetGPRMCMBS

4.11.1 class OldPhidgetGPRMCMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetGPRMCMBS instead. **Function:** The class for NMEA RMC Sentence

4.11.2 Properties

4.11.3 date as OldPhidgetGPSDateMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The date value.
Notes: (Read and Write property)

4.11.4 heading as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The heading value.
Notes: (Read only property)

4.11.5 latitude as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The latitude value.
Notes: (Read only property)

4.11.6 longitude as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The longitude value.
Notes: (Read only property)

4.11.7   magneticVariation as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The magnetic variation.
Notes: (Read only property)

4.11.8   mode as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The mode value.
Notes: (Read and Write property)

4.11.9   speedKnots as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The speed in knots.
Notes: (Read only property)

4.11.10   status as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The status value.
Notes: (Read and Write property)

4.11.11   time as OldPhidgetGPSTimeMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The time value.
Notes: (Read and Write property)

4.12   class OldPhidgetGPSDateMBS

4.12.1   class OldPhidgetGPSDateMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. **Function:** GPS Date in UTC.

4.12.2   Properties

4.12.3   Day as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Day of the month (1-31).
Notes: (Read and Write property)

4.12.4   Month as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Month (1-12).
Notes: (Read and Write property)

4.12.5   Year as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Year.
Notes: (Read and Write property)

4.13   class OldPhidgetGPSMBS

4.13.1   class OldPhidgetGPSMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetGPSMBS instead.
Function: Class specific to the Phidget GPS.
Notes: See the product manual for more specific API details, supported functionality, units, etc.
Subclass of the OldPhidgetMBS class.

4.13.2   Methods

4.13.3   Constructor

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates an GPS instance.
Notes: Lasterror is set.

4.13.4   getAltitude as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current altitude, in meters.
Notes: Lasterror is set.

4.13.5   getDate as OldPhidgetGPSDateMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current GPS date, in UTC
Notes: Lasterror is set.

4.13.6   getHeading as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current heading, in degrees.
Notes: Lasterror is set.

4.13.7 getLatitude as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current latitude.
Notes: Lasterror is set.

4.13.8 getLongitude as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current longitude.
Notes: Lasterror is set.

4.13.9 getNMEAData as OldPhidgetNMEADataMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets Raw NMEA Data.
Notes: Lasterror is set.

4.13.10 getPositionFixStatus as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the position fix status.
Notes: Lasterror is set.

4.13.11 getTime as OldPhidgetGPSTimeMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current GPS time, in UTC.
Notes: Lasterror is set.

4.13.12 getVelocity as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current velocity, in km/h.
Notes: Lasterror is set.

4.13.13   Events

4.13.14   PositionChanged(latitude as Double, longitude as Double, altitude as Double)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The position change event.
Notes: Called when any of latitude, longitude, or altitude change.

4.13.15   PositionFixStatusChanged(status as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The position fix status change event.
Notes: Called when a position fix is aquired or lost.

4.14 class OldPhidgetGPSSatInfoMBS

4.14.1 class OldPhidgetGPSSatInfoMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. **Function:** A class for Satellite info - used in GSV sentence.

4.14.2 Properties

4.14.3 Azimuth as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The azimuth value.
Notes: (Read and Write property)

4.14.4 Elevation as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The elevation value.
Notes: (Read and Write property)

4.14.5 ID as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The ID.
Notes: (Read and Write property)

4.14.6 SNR as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The serial number.
Notes: (Read and Write property)

4.15 class OldPhidgetGPSTimeMBS

4.15.1 class OldPhidgetGPSTimeMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. **Function:** GPS Time in UTC.

4.15.2 Properties

4.15.3 Hour as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The hour value.
Notes: (Read and Write property)

4.15.4 Millisecond as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Milliseconds value.
Notes: (Read and Write property)

4.15.5 Minute as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minutes value.
Notes: (Read and Write property)

4.15.6 Second as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The seconds value.
Notes: (Read and Write property)

4.16 class OldPhidgetGPVTGMBS

4.16.1 class OldPhidgetGPVTGMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetGPVTGMBS instead. **Function:** A class for a NMEA VTG Sentence.

4.16.2 Properties

4.16.3 magneticHeading as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The magnetic heading.
Notes: (Read only property)

4.16.4 mode as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The mode.
Notes: (Read and Write property)

4.16.5 speed as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The speed in km/hour.
Notes: (Read only property)

4.16.6 speedKnots as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The speed in knots.
Notes: (Read only property)

4.16.7   trueHeading as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The true heading.
Notes: (Read only property)

4.17 class OldPhidgetInterfaceKitMBS

4.17.1 class OldPhidgetInterfaceKitMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetHubMBS instead.
Function: The class for a phidget interface kit.
Notes: The PhidgetInterfaceKit is a component that provides a high-level programmer interface to control a PhidgetInterfaceKit device connected through a USB port.
With this component, the programmer can:

- Turn particular outputs on and off.

- Get notified of changes of state of the inputs as events.

- Configure events to fire when the analog inputs change.

The PhidgetInterfaceKit devices provide a combination of:

- Digital outputs.

- Digital inputs.

- Analog inputs.

Subclass of the OldPhidgetMBS class.

4.17.2 Methods

4.17.3 Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: On success the handle value is not zero.
The Lasterror property is set.

4.17.4 getDataRate(index as Integer) as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the Data Rate for an analog input in milliseconds.
Notes: The Lasterror property is set.

This is the event rate. Since we're not going to run an extra thread, the accuracy of the data rate is limited by the interrupt endpoint data rate (>=8ms).

4.17.5 getDataRateMax(index as Integer) as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum supported data rate for an analog input in milliseconds.
Notes: The Lasterror property is set.

4.17.6 getDataRateMin(index as Integer) as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum supported data rate for an analog input in milliseconds.
Notes: The Lasterror property is set.

4.17.7 getInputCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of digital inputs supported by this board.
Notes: The Lasterror property is set.

4.17.8 getInputState(index as Integer) as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the state of a digital input.
Notes: The Lasterror property is set.

4.17.9 getOutputCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of digital outputs supported by this board.
Notes: The Lasterror property is set.

4.17.10   getOutputState(index as Integer) as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the state of a digital output.
Notes: The Lasterror property is set.

4.17.11   getRatiometric as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the ratiometric state for this board.
Notes: The Lasterror property is set.

4.17.12   getSensorChangeTrigger(index as Integer) as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the amount of change that should exist between the last reported value and the current value before an OnSensorChange event is fired.
Notes: To receive all events, set the SensorChangeTrigger to zero.
The Lasterror property is set.

4.17.13   getSensorCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of sensor (analog) inputs supported by this board.
Notes: The Lasterror property is set.

4.17.14   getSensorRawValue(index as Integer) as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the reported actual value of the sensor between 0 - 4095.
Notes: This is directly proportional to the analog input, ranging from 0-5V (or 0-Vcc if Ratiometric is set to True).

Note that this value defaults to 65535 for an unitialised state. Applications that do not wish to encounter this value should use ChangeTrigger event handlers as opposed to polling the device for new data. The Lasterror property is set.

4.17.15   getSensorValue(index as Integer) as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the last reported sensor value for the given index as a value from 0-1000
Notes: Note that this value defaults to 65535 for an unitialised state. Applications that do not wish to encounter this value should use ChangeTrigger event handlers as opposed to polling the device for new data. The Lasterror property is set.

4.17.16   setDataRate(index as Integer, milliseconds as Integer)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the Data Rate for an analog input in milliseconds.
Notes: The Lasterror property is set.

4.17.17   setOutputState(index as Integer, value as boolean)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the state of a digital output.
Notes: The Lasterror property is set.

4.17.18   setRatiometric(value as boolean)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the ratiometric state for this board.
Notes: The Lasterror property is set.

4.17.19   setSensorChangeTrigger(index as Integer, value as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Specifies the amount of change that should exist between the last reported value and the current value before an OnSensorChange event is fired.

Notes: Lasterror is set.

4.17.20   Events

4.17.21   InputChanged(index as Integer, value as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: Called on any input change.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.17.22   OutputChanged(index as Integer, value as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: Returns the number of digital outputs on this particular Phidget device.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.17.23   SensorChanged(index as Integer, value as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: Called on any sensor change.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.18   class OldPhidgetIRCodeInfoMBS

4.18.1   class OldPhidgetIRCodeInfoMBS

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetIRCodeInfoMBS instead. **Function:** The class for a code info for the IR receiver/sender.
Notes: The PhidgetIR CodeInfo structure contains all information needed to transmit a code, apart from the actual code data.
Some values can be set to null to select defaults. See the product manual for more information.

4.18.2   Properties

4.18.3   bitCount as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Number of bits in the code.
Notes: (Read and Write property)

4.18.4   carrierFrequency as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Carrier frequency in Hz - defaults to 38kHz.
Notes: (Read and Write property)

4.18.5   dutyCycle as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Duty Cycle in percent (10-50).
Notes: Defaults to 33.
(Read and Write property)

4.18.6   encoding as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Encoding used to encode the data.
Notes: See the PHIDGET_IR_ENCODING_* constants.
(Read and Write property)

4.18.7 gap as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gap time in us.
Notes: (Read and Write property)

4.18.8 length as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The length of the code.
Notes: Constant or Variable length encoding.
See PHIDGET_IR_LENGTH_* constants.
(Read and Write property)

4.18.9 minRepeat as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Minium number of times to repeat a code on transmit.
Notes: (Read and Write property)

4.18.10 trail as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Trail time in us - can be 0 for none.
Notes: (Read and Write property)

4.18.11 header(index as Integer) as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The header value.
Notes: Header pulse and space - can be 0 for none

Index from 0 to 1.
(Read and Write computed property)

4.18.12   one(index as Integer) as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The one array.
Notes: Pulse and Space times to represent a '1' bit, in us
Index from 0 to 1.
(Read and Write computed property)

4.18.13   repeat(index as Integer) as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: A series or pulse and space times to represent the repeat code.
Notes: Start and end with pulses and null terminate. Set to 0 for none.
Index from 0 to 25.
(Read and Write computed property)

4.18.14   toggleMask(index as Integer) as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Bit toggles, which are applied to the code after each transmit.
Notes: (Read and Write computed property)

4.18.15   zero(index as Integer) as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: One of the arrays.
Notes: Index from 0 to 1.
Pulse and Space times to represent a '0' bit, in us.
(Read and Write computed property)

4.18.16   Constants

Constants

Constant	Value	Description
PHIDGET_IR_ENCODING_BIPHASE	4	One of the encoding constants. Bi-Phase, or Manchester encoding.
PHIDGET_IR_ENCODING_PULSE	3	One of the encoding constants. Pulse encoding, or Pulse Width Modulation.
PHIDGET_IR_ENCODING_RC5	5	One of the encoding constants. RC5 - a type of Bi-Phase encoding.
PHIDGET_IR_ENCODING_RC6	6	One of the encoding constants. RC6 - a type of Bi-Phase encoding.
PHIDGET_IR_ENCODING_SPACE	2	One of the encoding constants. Space encoding, or Pulse Distance Modulation.
PHIDGET_IR_ENCODING_UNKNOWN	1	One of the encoding constants. Unknown - the default value.
PHIDGET_IR_LENGTH_CONSTANT	2	One of the length constants. Constant - the bitstream + gap length is constant.
PHIDGET_IR_LENGTH_UNKNOWN	1	One of the length constants. Unknown - the default value.
PHIDGET_IR_LENGTH_VARIABLE	3	One of the length constants. Variable - the bitstream has a variable length with a constant gap.

4.19   class OldPhidgetIRMBS

4.19.1   class OldPhidgetIRMBS

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetIRMBS instead.
Function: The class for an IR receiver/sender.
Notes: Calls specific to the Phidget IR. See the product manual for more specific API details, supported functionality, units, etc.
Subclass of the OldPhidgetMBS class.

4.19.2   Methods

4.19.3   Constructor

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: The Lasterror property is set.
On success the handle value is not zero.

4.19.4   getLastCode(byref bitCount as Integer) as MemoryBlock

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the last code that was received.
Notes: The Lasterror property is set.

bitCount: set to the bit count of the code.

4.19.5   getLastLearnedCode(byref codeInfo as OldPhidgetIRCodeInfoMBS) as MemoryBlock

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the last code that was learned.
Notes: The Lasterror property is set.

4.19.6 getRawData as MemoryBlock

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Read any available raw data.
Notes: This should be polled continuously (every 20ms) to avoid missing data. Read data always starts with a space and ends with a pulse.
The Lasterror property is set.

4.19.7 Transmit(data as MemoryBlock, codeInfo as OldPhidgetIRCodeInfoMBS)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Transmits a code according to the settings in a CodeInto object.
Notes: The Lasterror property is set.

data: The code to send. Data is transmitted MSBit first. MSByte is in array index 0. LSBit is right justified, so MSBit may be in bit positions 0-7 in array index 0 depending on the bit count.
codeInfo: The CodeInfo structure specifying to to send the code. Anything left as null to select default is filled in for the user.

4.19.8 TransmitRaw(data as MemoryBlock, length as Integer, carrierFrequency as Integer, dutyCycle as Integer, gap as Integer)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Transmits RAW data as a series of pulses and spaces.
Notes: The Lasterror property is set.

data: The data to send. The array (Int32) must start and end with a pulse and each element is a positive time in us.
length: The length of the data array. Maximum length is 1024, but streams should be kept much shorter, ie. <100ms between gaps.
carrierFrequency: The Carrier Frequency in Hz. leave as 0 for default.
dutyCycle: The Duty Cycle (10-50). Leave as 0 for default.
gap: The gap time in us. This guarantees a gap time (no transmitting) after the data is sent, but can be set to 0.

4.19.9 TransmitRepeat

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Transmits a repeat of the last transmited code.
Notes: The Lasterror property is set.
Depending of the CodeInfo structure, this may be a retransmission of the code itself, or there may be a special repeat code.

4.19.10   Events

4.19.11   Code(data as memoryblock, bitcount as Integer, repeat as Integer)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: .

Function: A code was received.
Notes: This is called when a code has been received that could be automatically decoded.
Data is return as an array with MSB in index 0. Bit count and a repeat flag are also returned. (Int32 values)
Repeats are detected as either the same code repeated in <100ms or as a special repeat code.

4.19.12   Learn(data as memoryblock, code as OldPhidgetIRCodeInfoMBS)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The learn event.
Notes: This is called when a code has been received for long enough to be learned.
The returned CodeInfo object can be used to retransmit the same code.

4.19.13   RawData(tag as memoryblock)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This is called when raw data has been read from the device.
Notes: Raw data always starts with a space and ends with a pulse.
tag contains 4 byte integer values.

4.20   class OldPhidgetLEDMBS

4.20.1   class OldPhidgetLEDMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetLCDMBS instead.
Function: The class for a phidget LED device.
Notes: The PhidgetLED is a component that provides a high-level programmer interface to control a PhidgetLED device connected through a USB port.

With this component, the programmer can:

- Control each led individually, On/Off and Brightness.

Subclass of the OldPhidgetMBS class.

4.20.2   Methods

4.20.3   Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: The Lasterror property is set.
On success the handle value is not zero.

4.20.4   getCurrentLimit as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current limit.
Notes: This is for all outputs.
Lasterror is set.
See the PHIDGET_LED_CURRENT_LIMIT_* constants.

4.20.5   getDiscreteLED(index as Integer) as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the brightness of an individual LED.
Notes: The Lasterror property is set.
Range of brightness is 0-100.

4.20.6   getLEDCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the number of LED positions available in this Phidget.
Notes: The Lasterror property is set.
This property does not return the number of LEDs actually attached.

4.20.7   getVoltage as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Queries the voltage.
Notes: Lasterror is set.
See the PHIDGET_LED_VOLTAGE_* constants.

4.20.8   setCurrentLimit(currentLimit as Integer)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the current limit.
Notes: Lasterror is set.
See the PHIDGET_LED_CURRENT_LIMIT_* constants.

4.20.9   setDiscreteLED(index as Integer, Brightness as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the brightness of an individual LED.
Notes: The Lasterror property is set.
Range of brightness is 0-100.

4.20.10   setVoltage(Voltage as Integer)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the current voltage.
Notes: Lasterror is set.
See the PHIDGET_LED_VOLTAGE_* constants.

4.20.11 Constants

Constants

Constant	Value	Description
PHIDGET_LED_CURRENT_LIMIT_20mA	1	One of the limit constants. 20mA
PHIDGET_LED_CURRENT_LIMIT_40mA	2	One of the limit constants. 40mA
PHIDGET_LED_CURRENT_LIMIT_60mA	3	One of the limit constants. 60mA
PHIDGET_LED_CURRENT_LIMIT_80mA	4	One of the limit constants. 80mA
PHIDGET_LED_VOLTAGE_1_7V	1	One of the voltage constants. 1.7V
PHIDGET_LED_VOLTAGE_2_75V	2	One of the voltage constants. 2.75V
PHIDGET_LED_VOLTAGE_3_9V	3	One of the voltage constants. 3.9V
PHIDGET_LED_VOLTAGE_5_0V	4	One of the voltage constants. 5.0V

4.21   class OldPhidgetManagerMBS

4.21.1   class OldPhidgetManagerMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetManagerMBS instead. **Function:** The Phidget manager is an interface that allows for monitoring of all phidgets connected to a system, without opening them.

4.21.2   Methods

4.21.3   Close

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Closes the file handles for this device. You should always call this when finished with a Manager. **Notes:** Lasterror is set.

4.21.4   Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: The Lasterror property is set.
On success the handle value is not zero.

4.21.5   Device(index as Integer) as OldPhidgetMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The array of the attached devices.
Notes: The Lasterror property is set.
You need to call getAttachedDevices before this property is valid.

4.21.6   getAttachedDevices

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Copies the list of attached devices into the Device and Count properties.
Notes: Lasterror is set.

4.21.7 GetDeviceStatus as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns an integer indicating the status of the device.
Notes: Returns:
PHIDGET_ATTACHED 0x1
PHIDGET_NOTATTACHED 0x0

Lasterror is set.

4.21.8 getServerAddress(byref port as Integer) as string

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the address and port.
Notes: The Lasterror property is set.

4.21.9 getServerID as string

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the server ID.
Notes: The Lasterror property is set.

4.21.10 GetServerStatus as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns an integer indicating the connection status of a Webservice.
Notes: Returns one of the following values:
1 CONNECTED
0 NOTCONNECTED

Lasterror is set.

4.21.11   Open

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Opens a connection to the local Phidget Manager.
Notes: Lasterror is set.

4.21.12   openRemote(serverID as string, password as string)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: This method is not yet implemented and will return EPHIDGET_UNSUPPORTED.
Notes: Lasterror is set.

4.21.13   openRemoteIP(addr as string, port as Integer, password as string)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Opens a connection to a remote Phidget Manager.
Notes: OpenRemoteIP will block until it connects to the server, which means that when it returns with
EPHIDGET_OK, this means that the connection is active.

If the server is unavailable, this will return an error code. If the connection to a webservice is disrupted
while in use, an error event will be thrown.

Lasterror is set.

Address is the address of the computer running the Phidget Webservice.
This can be either an IP address or a hostname.
Port specifies the port of the Webservice on the remote computer.
Password specifies the password, which is required if authentication is active on the Webservice.
If authentication is not active, this can be set to "".

4.21.14   Properties

4.21.15   Count as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Number of devices.
Notes: The Lasterror property is set.

You need to call getAttachedDevices before this property is valid.
(Read and Write property)

4.21.16   Handle as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The internal used CPhidgetManagerHandle.
Notes: (Read and Write property)

4.21.17   Lasterror as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The last error code reported.
Notes: (Read and Write property)

4.21.18   Events

4.21.19   Attach(devicehandle as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when a device is attached.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.21.20   Detach(devicehandle as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when a device is detached.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.21.21   Error(errorCode as Integer, errorDescription as string)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is used for reporting asynchronous errors –mostly related to opening remote Phidgets.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.21.22   ServerConnect

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called when a connection to the sever has been made.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.21.23   ServerDisconnect

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called when a connection to the server has been lost.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.22 class OldPhidgetMBS

4.22.1 class OldPhidgetMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetMBS instead.
Function: The base class of all Phidget device classes.
Notes: Check phidgets.com for information on this devices.
http://www.phidgets.com/
Blog Entries

- The Top 10 from the MBS Xojo Plugins in 2022

- News from the MBS Xojo Plugins Version 22.1

- Rewritten Phidgets Plugin

4.22.2 Methods

4.22.3 Close

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Closes the file handles for this device.
Notes: You can call this while reads and writes are still outstanding; they will fail quickly. Lasterror is set.
The destructor does a close if you forget it.

4.22.4 disableLogging

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Disables logging on the library.
Notes: The Lasterror property is set.

4.22.5 enableLogging(level as Integer, outputFile as string)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables logging on the library.
Notes: The Lasterror property is set.
Data is written to the file specified with the output file path.

Not sure how the path must be specified. This is depending on the library used.

The levels:

PHIDGET_LOG_CRITICAL	1
PHIDGET_LOG_ERROR	2
PHIDGET_LOG_WARNING	3
PHIDGET_LOG_DEBUG	4
PHIDGET_LOG_INFO	5
PHIDGET_LOG_VERBOSE	6

4.22.6   GetDeviceClass as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the class of a Phidget.
Notes: See the PHIDCLASS_* constants.

4.22.7   GetDeviceID as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the device ID of a Phidget.
Notes: See the PHIDID_* constants.

4.22.8   GetDeviceLabel as string

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the Label for the Phidget.
Notes: The Label is a user programmable serial number stored on the Phidget - it can be used to implement a serial numbering scheme, or describe the functionality of the Phidget in a specific application.

Lasterror is set.

4.22.9   GetDeviceName as string

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns string describing the name of the Phidget.
Notes: For example, "Phidget InterfaceKit 8/8/8", "Phidget InterfaceKit 0/0/4", etc.
The Lasterror property is set.

4.22.10   GetDeviceStatus as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns an integer indicating the status of the device.
Notes: Returns:
PHIDGET_ATTACHED 0x1
PHIDGET_NOTATTACHED 0x0

Lasterror is set.

4.22.11   GetDeviceType as string

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns a string describing the type of the Phidget.
Notes: All PhidgetInterfaceKits will return "PhidgetInterfaceKit", PhidgetRFID returns "PhidgetRFID" and so on.

Lasterror is set.

4.22.12   GetDeviceVersion as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns a string describing the Device Version of the Phidget.
Notes: Lasterror is set.

4.22.13   GetErrorDescription(errorcode as Integer) as string

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns a string describing the ErrorCode passed.
Notes: Lasterror is set.

The list of the error codes:

0 EPHIDGET_OK
1 EPHIDGET_NOTFOUND
2 EPHIDGET_NOMEMORY
3 EPHIDGET_UNEXPECTED
4 EPHIDGET_INVALIDARG
5 EPHIDGET_NOTATTACHED
6 EPHIDGET_INTERRUPTED
7 EPHIDGET_INVALID
8 EPHIDGET_NETWORK
9 EPHIDGET_UNKNOWNVAL
10 EPHIDGET_BADPASSWORD
11 EPHIDGET_UNSUPPORTED
12 EPHIDGET_DUPLICATE
13 EPHIDGET_TIMEOUT
14 EPHIDGET_OUTOFBOUNDS
15 EPHIDGET_EVENT
16 EPHIDGET_NETWORK_NOTCONNECTED
17 EPHIDGET_WRONGDEVICE

4.22.14   GetLibraryVersion as string

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: returns a string providing the version number of the API library.
Notes: Lasterror is set.

4.22.15   GetSerialNumber as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the unique serial number of this Phidget.
Notes: Lasterror is set.
This number is set during manufacturing, and is unique across all Phidgets.

4.22.16   GetServerAddress(byref port as Integer) as string

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the IP Address and Port of a remote Phidget device.
Notes: This should only be called on Phidgets that were opened with openRemote or openRemoteIP.

Lasterror is set.

4.22.17 GetServerID as string

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the Server ID for a remote Phidget device.
Notes: This method is not yet implemented and will return EPHIDGET_UNSUPPORTED.

This should only be called on Phidgets that were opened with openRemote or openRemoteIP.
The Lasterror property is set.

4.22.18 GetServerStatus as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns an integer indicating the connection status of a Webservice.
Notes: Returns one of the following values:
1 CONNECTED
0 NOTCONNECTED

Lasterror is set.

4.22.19 Open(serialNumber as Integer = -1)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a connection between an PhidgetMBS object and a physical Phidget.
Example:

dim p as new PhidgetInterfaceKitMBS

p.open -1
p.waitForAttachment 0
// use the phidget

Notes: Open is pervasive. What this means is that you can call open on a device before it is plugged in, and keep the device opened across device dis- and re-connections.
Open is Asynchronous. What this means is that open will return immediately - before the device being opened is actually available.
What this means is that you need to either poll getDeviceStatus for an attached status, or handle the attach

event, in order to wait for the device to become available before trying to use it.

SerialNumber specifies the desired serial number, allowing the call to open a specific Phidget. Specifying -1 for the serial number will cause it to open the first available device.
Lasterror is set.

4.22.20   OpenLabel(label as string = "")

Plugin Version: 12.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Opens a Phidget by label.
Notes: Available with phidget library from December 2011.
Labels can be up to 10 characters (UTF-8 encoding). Specify "" to open any.
Lasterror is set.

4.22.21   openLabelRemote(label as string, serverID as string, password as string = "")

Plugin Version: 12.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Opens a Phidget remotely by ServerID. Note that this requires Bonjour (mDNS) to be running on both the host and the server.
Notes: Available with phidget library from December 2011.
label: The label string. Labels can be up to 10 characters (UTF-8 encoding). Specify "" to open any.
serverID: Server ID. Specify "" to open any.
password: The Password. Can be "" if the server is running unsecured.
Lasterror is set.

4.22.22   openLabelRemoteIP(label as string, addr as string, port as Integer, password as string = "")

Plugin Version: 12.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Opens a Phidget remotely by address and port, with optional label.
Notes: Available with phidget library from December 2011.
Lasterror is set.

label: Label string. Labels can be up to 10 characters (UTF-8 encoding). Specify "" to open any.
address: The Address. This can be a hostname or IP address.
port: The Port number. Default is 5001.
password: The Password. Can be NULL if the server is running unsecured.

4.22.23 openRemote(serial as Integer, serverID as string, password as string = "")

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: This method is not yet implemented and will return EPHIDGET_UNSUPPORTED.
Notes: Lasterror is set.

4.22.24 openRemoteIP(serial as Integer, addr as string, port as Integer, password as string = "")

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Attempts to open a connection to a Phidget Webservice, and waits for a phidget on that connection.
Notes: OpenRemoteIP will block until it connects to the server, which means that when it returns with EPHIDGET_OK, this means that the connection is active. If the server is unavailable, this will return an error code. If the connection to a webservice is disrupted while in use, an error event will be thrown, and it is recommended that an error event listener be registered for this reason.
As with the regular open, openRemoteIP is pervasive and asynchronous –so long as the connection to the Webservice remains active.
SerialNumber specifies the desired serial number, allowing the call to open a specific Phidget. Specifying -1 for the serial number will cause it to open the first available device.
Address is the address of the computer running the Phidget Webservice. This can be either an IP address or a hostname.
Port specifies the port of the Webservice on the remote computer.
Password specifies the password, which is required if authentication is active on the Webservice. If authentication is not active, this can be set to "".
Lasterror is set.

4.22.25 PUNK_DBL as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The value used for unknown values (Double).

4.22.26 PUNK_FLT as single

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The value used for unknown values (Float).

4.22.27   SetDeviceLabel(label as string)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Writes a Label –a string up to 10 characters long –to the Phidget associated with this handle.
Notes: SetDeviceLabel may not be available on all operating systems.
Currently it is available on MacOS X, Linux, and Windows CE.
Calling this on Windows will return EPHIDGET_UNSUPPORTED
Lasterror is set.

4.22.28   waitForAttachment(milliseconds as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Waits the given time till a device has been attached.
Example:

dim p as new PhidgetInterfaceKitMBS

p.open -1
p.waitForAttachment 0
// use the phidget

Notes: Lasterror is set to EPHIDGET_OK when the device is available, or to EPHIDGET_TIMEOUT if the device is not attached before the timeout expires.
Timeouts below about 300ms cannot be trusted because of initialization time, and sometimes an even larger timeout is required –ie. the first time a device is plugged into a windows machine.
A timeout of 0 is infinite.
This function can be used in conjunction with (or instead of) an attach event handler.
The Lasterror property is set.

4.22.29   Properties

4.22.30   Handle as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The internal used CPhidgetHandle.
Notes: (Read and Write property)

4.22.31   Lasterror as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The last error code.
Notes:

EPHIDGET_NOTFOUND	1	"A Phidget matching the type and or serial number could not be found." This indicates that a Phidget being searched for (ie. via Open) could not be located.
EPHIDGET_NOMEMORY	2	"Memory could not be allocated." This indicates that there is not enough memory for the Phidgets library to create the object requested.
EPHIDGET_UNEXPECTED	3	"Unexpected Error. Contact Phidgets Inc. for support." Indicates that a serious error has occurred, or a severe bug exists within the library.
EPHIDGET_INVALIDARG	4	"Invalid argument passed to function." An argument is not valid to the requirements of the function. In many cases this refers to an invalid Phidget Handle.
EPHIDGET_NOTATTACHED	5	"Phidget not physically attached." Indicates the function requires an attached Phidget to operate.
EPHIDGET_INTERRUPTED	6	"Read/Write operation was interrupted" An error occurred while attempting to communicate with the Phidget over USB.
EPHIDGET_INVALID	7	"The Error Code is not defined." Indicates that a serious error has occurred, or a severe bug exists within the library.
EPHIDGET_NETWORK	8	"Network Error." Attempting to communicate with the Phidget via the Network has failed.
EPHIDGET_UNKNOWNVAL	9	"Value is Unknown (State not yet received from device)." A query to a value on the Phidget device has failed as the Phidget has not returned data yet.
EPHIDGET_BADPASSWORD	10	"Authorization Failed." The remote access method has failed it's authorization.
EPHIDGET_UNSUPPORTED	11	"Not Supported" This is a bad or unsupported function call.
EPHIDGET_DUPLICATE	12	"Duplicated request" A previous request to the device has already performed this function, and it is not valid to perform twice.
EPHIDGET_TIMEOUT	13	"Given timeout has been exceeded" A synchronous request has failed it's time limits. Usually this is returned when attempting WaitForConnect.
EPHIDGET_OUTOFBOUNDS	14	"Index out of Bounds" An index into the function is above or below the recognized bounds of the device. ie. when accessing a single sensor on a multisensor device.
EPHIDGET_EVENT	15	"A non-null error code was returned from an event handler" An error code was passed to a function handler. Note that correct decoding of the actual error would have to be done within the event handler itself.
EPHIDGET_NETWORK_NOTCONNECTED	16	"A connection to the server does not ex-ist." An attempt to connect to a remotely connected device or service failed due to network connectivity problems.
EPHIDGET_WRONGDEVICE	17	"Function is not applicable for this device." The wrong type of device handle was passed as an argument to a function. (ie. calling CPhidgetWeightSensor_getWeight with an Accelerometer handle)

(Read and Write property)

4.22.32   Events

4.22.33   Attach

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when a device is attached.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to

avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems
described in the ThreadMBS class documentation.

4.22.34   Detach

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when a device is detached.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to
avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems
described in the ThreadMBS class documentation.

4.22.35   Error(errorCode as Integer, errorDescription as string)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function:

This event is used for reporting asynchronous errors - mostly related to opening
remote Phidgets.
Notes:

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid
crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems
described in the ThreadMBS class documentation.

4.22.36   ServerConnect

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is used for opening Phidgets remotely, and is called when a connection to the sever
has been made.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to
avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems
described in the ThreadMBS class documentation.

4.22.37 ServerDisconnect

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is used for opening Phidgets remotely, and is called when a connection to the server has been lost.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.22.38 Wakeup

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called when the device wakes up.

4.22.39 WillSleep

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called when the device will go to sleep.

4.22.40 Constants

Constants

Constant	Value	Description
EPHIDGET_BADPASSWORD	10	One of the error constants. Authorization exception. "No lo PASSWORD"
EPHIDGET_BADVERSION	19	One of the error constants. Version Mismatch. "No longer u SION"
EPHIDGET_CLOSED	18	One of the error constants. Phidget Closed. "Phidget handle
EPHIDGET_DUPLICATE	12	One of the error constants. Duplicate request. "Duplicated r
EPHIDGET_EVENT	15	One of the error constants. Event. "A non-null error code w is not currently used.
EPHIDGET_INTERRUPTED	6	One of the error constants. Interrupted. "Read/Write opera rently used.
EPHIDGET_INVALID	7	One of the error constants. Invalid error code. "The Error C
EPHIDGET_INVALIDARG	4	One of the error constants. Invalid argument. "Invalid argum
EPHIDGET_NETWORK	8	One of the error constants. Network. "Network Error."
EPHIDGET_NETWORK_NOTCONNECTED	16	One of the error constants. Network not connected. "A conn
EPHIDGET_NOMEMORY	2	One of the error constants. No memory. "Memory could not
EPHIDGET_NOTATTACHED	5	One of the error constants. Phidget not attached. "Phidget
EPHIDGET_NOTFOUND	1	One of the error constants. Phidget not found. "A Phidget not be found."
EPHIDGET_OK	0	One of the error constants. Function completed successfully.
EPHIDGET_OUTOFBOUNDS	14	One of the error constants. Out of bounds. "Index out of Bo
EPHIDGET_TIMEOUT	13	One of the error constants. Timeout. "Given timeout has be
EPHIDGET_UNEXPECTED	3	One of the error constants. Unexpected. "Unexpected Error
EPHIDGET_UNKNOWNVAL	9	One of the error constants. Value unknown. "Value is Unk not yet set by user)."
EPHIDGET_UNSUPPORTED	11	One of the error constants. Unsupported. "Not Supported."
EPHIDGET_WRONGDEVICE	17	One of the error constants. Wrong device. "Function is not
PHIDCLASS_ACCELEROMETER	2	One of the HID class constants.
PHIDCLASS_ADVANCEDSERVO	3	One of the HID class constants.
PHIDCLASS_ANALOG	22	One of the HID class constants.
PHIDCLASS_BRIDGE	23	One of the HID class constants.
PHIDCLASS_ENCODER	4	One of the HID class constants.
PHIDCLASS_FREQUENCYCOUNTER	21	One of the HID class constants.
PHIDCLASS_GPS	5	One of the HID class constants.
PHIDCLASS_INTERFACEKIT	7	One of the HID class constants.
PHIDCLASS_IR	19	One of the HID class constants.
PHIDCLASS_LED	8	One of the HID class constants.
PHIDCLASS_MOTORCONTROL	9	One of the HID class constants.
PHIDCLASS_PHSENSOR	10	One of the HID class constants.

4.23   class OldPhidgetMissingFunctionExceptionMBS

4.23.1   class OldPhidgetMissingFunctionExceptionMBS

Plugin Version: 9.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetMissingFunctionExceptionMBS instead. **Function:** The class used to report that a given phidget function was not loaded from the library.
Notes: Check the message property.
Subclass of the RuntimeException class.

4.24   class OldPhidgetMotorControlMBS

4.24.1   class OldPhidgetMotorControlMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetDCMotorMBS instead. **Function:** The class for the phidget motor control device.
Notes: The PhidgetMotorControl is a component that provides a high-level programmer interface to control a PhidgetMotorControl device connected through a USB port.

With this component, the programmer can:

- Control direction, and start and stop DC motors.
- Control the velocity and acceleration of each DC motor.
- Read the limit switch.

Subclass of the OldPhidgetMBS class.

4.24.2   Methods

4.24.3   Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: On success the handle value is not zero.
Lasterror is set.

4.24.4   getAcceleration(index as Integer) as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current acceleration.
Notes: Note that this value defaults to 10 upon initialisation.
The Lasterror property is set.

4.24.5   getAccelerationMax(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum acceleration supported by a motor.
Notes: The Lasterror property is set.

4.24.6 getAccelerationMin(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum acceleration supported by a motor.
Notes: The Lasterror property is set.

4.24.7 getBackEMF(index as Integer) as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the Back EMF voltage for a motor.
Notes: Lasterror is set.

4.24.8 getBackEMFSensingState(index as Integer) as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the Back EMF sensing state for a motor.
Notes: Lasterror is set.

4.24.9 getBraking(index as Integer) as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the Braking value for a motor.
Notes: Lasterror is set.
Returns the braking value, in percent.

4.24.10 getCurrent(index as Integer) as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: get the current motor current consumption.
Notes: The Lasterror property is set.

4.24.11   getEncoderCount as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of encoder inputs supported by this board.
Notes: Lasterror is set.

4.24.12   getEncoderPosition(index as Integer) as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the position of an encoder. This position starts at 0 every time the phidget is opened.
Notes: Lasterror is set.

4.24.13   getInputCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of digital inputs supported by this board.
Notes: The Lasterror property is set.

4.24.14   getInputState(index as Integer) as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the state of a digital input.
Notes: The Lasterror property is set.

4.24.15   getMotorCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of motors supported by this controller.
Notes: The Lasterror property is set.

4.24.16   getRatiometric as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the ratiometric state.
Notes: Lasterror is set.

4.24.17 getSensorCount as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of sensor inputs supported by this board.
Notes: Lasterror is set.

4.24.18 getSensorRawValue(index as Integer) as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the raw value of a sensor (12-bit).
Notes: Lasterror is set.

4.24.19 getSensorValue(index as Integer) as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the value of a sensor.
Notes: Lasterror is set.

4.24.20 getSupplyVoltage as Double

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the Supply voltage for the motors.
Notes: This could be higher then the actual supply voltage.
Returns the supply voltage, in volts.
Lasterror is set.

4.24.21 getVelocity(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current velocity of a motor.
Notes: The Lasterror property is set.

4.24.22   setAcceleration(index as Integer, value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the Motor's Maximum accesleration.
Notes: Valid values are 0-100.
The Lasterror property is set.

4.24.23   setBackEMFSensingState(index as Integer, EMFState as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the Back EMF sensing state for a motor.
Notes: Lasterror is set.

4.24.24   setBraking(index as Integer, value as Double)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the Braking value for a motor.
Notes: This is applied when velocity is 0. Default is 0%.
value: The braking value, in percent.
Lasterror is set.

4.24.25   setEncoderPosition(index as Integer, position as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the encoder position.
Notes: This can be used to set the position to a known value, and should only be called when the encoder is not moving.
Lasterror is set.

4.24.26   setRatiometric(value as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the ratiometric state.
Notes: This control the voltage reference used for sampling the analog sensors.
Lasterror is set.

4.24.27 setVelocity(index as Integer, value as Double)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the velocity of a motor.
Notes: The Lasterror property is set.

4.24.28 Events

4.24.29 BackEMFUpdated(index as Integer, voltage as Double)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called at a constant rate; every 16ms, when back EMF sensing is enabled for that motor.

4.24.30 CurrentChanged(index as Integer, value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The current motor current consumption changed.
Notes: Index: Index of the Motor firing the Event
Value: Value of the Motor Current

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.24.31 CurrentUpdated(index as Integer, current as Double)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The current update event.
Notes: This is called at a constant rate; every 8ms.

4.24.32 EncoderPositionChanged(index as Integer, time as Integer, position-Change as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The encoder position change event.
Notes: This is called when the encoder position changes.

4.24.33   EncoderPositionUpdated(index as Integer, positionChange as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The encoder position update event.
Notes: This is called at a constant rate; every 8ms, whether the encoder position has changed or not.

4.24.34   InputChanged(index as Integer, value as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The input value changed.
Notes: Index: Index of the Input firing the Event
State: State of the Input

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.24.35   SensorUpdated(index as Integer, sensorValue as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The sensor update event.
Notes: This is called at a constant rate; every 8ms.

4.24.36   VelocityChanged(index as Integer, value as Double)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called when the velocity changes.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.25 class OldPhidgetNMEADataMBS

4.25.1 class OldPhidgetNMEADataMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. **Function:** NMEA Data Structure. Contains a set of supported NMEA sentences.

4.25.2 Properties

4.25.3 GGA as OldPhidgetGPGGAMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: GPS Fix and position data.
Notes: (Read and Write property)

4.25.4 GSA as OldPhidgetGPGSAMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: GPS DOP and active satellites.
Notes: (Read and Write property)

4.25.5 GSV as OldPhidgetGPGSVMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Detailed satellite information.
Notes: (Read and Write property)

4.25.6 RMC as OldPhidgetGPRMCMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Recommended minimum data.
Notes: (Read and Write property)

4.25.7   VTG as OldPhidgetGPVTGMBS

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Heading and Speed over the Ground.
Notes: (Read and Write property)

4.26 class OldPhidgetNotInitialzedExceptionMBS

4.26.1 class OldPhidgetNotInitialzedExceptionMBS

Plugin Version: 9.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetNotInitialzedExceptionMBS instead. **Function:** The class used to report that a given phidget object was not initialized properly.
Notes: Check the message property.
Subclass of the RuntimeException class.

4.27   class OldPhidgetPHSensorMBS

4.27.1   class OldPhidgetPHSensorMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetPHSensorMBS instead. **Function:** The class for a phidget PH sensor device.
Notes: The PhidgetPHSensor is a component that provides a high-level programmer interface to control a PhidgetPHSensor device connected through a USB port.

With this component, the programmer can:

- Read the pH of a liquid with a pH sensor.

Subclass of the OldPhidgetMBS class.

4.27.2   Methods

4.27.3   Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: On success the handle value is not zero.
The Lasterror property is set.

4.27.4   getPH as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the current pH.
Notes: The Lasterror property is set.
Valid range is -10 to 10.
Note that this value defaults to -20. Applications not wishing to encounter this value should use Change Handlers instead of polling the device for data.

4.27.5   getPHChangeTrigger as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the amount of change that should exist between the last reported value and the current value before an PHChange event is fired.
Notes: The Lasterror property is set.

4.27.6   getPHMax as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum PH that the sensor could report.
Notes: The Lasterror property is set.

4.27.7   getPHMin as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum PH that the sensor could report.
Notes: The Lasterror property is set.

4.27.8   getPotential as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the current potential in volts.
Notes: The Lasterror property is set.
Range is 0-5v.
2.5v corresponds to a pH of 7.0.

4.27.9   getPotentialMax as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum potential that can be sensed.
Notes: The Lasterror property is set.

4.27.10   getPotentialMin as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum potential that can be sensed.
Notes: The Lasterror property is set.

4.27.11   setPHChangeTrigger(value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Specifies the amount of change that should exist between the last reported value and the current value before an OnPHChange event is fired.
Notes: The Lasterror property is set.

4.27.12   setTemperature(value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the ambient temperature of the PH sensor for increased accuracy.
Notes: This value defaults to 20 degrees celcius which is applicable for most applications.
The Lasterror property is set.

4.27.13   Events

4.27.14   PHChanged(value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called if the pH changes by more than the PH trigger.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.28 class OldPhidgetRFIDMBS

4.28.1 class OldPhidgetRFIDMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetRFIDMBS instead.
Function: The class for a phidget RFID device.
Notes: The PhidgetRFID is a component that provides a high-level programmer interface to control a PhidgetRFID device connected through a USB port.
With this component, the programmer can:

- Read Radio Frequency Identification tags.

Radio Frequency Identification or RFID, is a non-contact identification technology which uses a reader to read data stored on low cost tags.

The particular instance of the technology we use stores a 40-bit number on the tag. Every tag that is purchased from Phidgets Inc. is guaranteed unique.

When a RFID tag is read, the component returns the unique number contained in the RFID tag.
Subclass of the OldPhidgetMBS class.

4.28.2 Methods

4.28.3 Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: On success the handle value is not zero.
The Lasterror property is set.

4.28.4 getAntennaOn as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the state of the antenna.
Notes: The Lasterror property is set.

4.28.5   getLastTag(m as memoryblock) as memoryblock

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Stores the last tag in a memoryblock.
Notes: You need to pass in a memoryblock of the correct size for your tags.
For convenience the memoryblock is returned.

The Lasterror property is set.

4.28.6   getLEDOn as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the state of the onboard LED.
Notes: The Lasterror property is set.

4.28.7   getOutputCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of outputs supported by this board.
Notes: The Lasterror property is set.

4.28.8   getOutputState(index as Integer) as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the state of an output.
Notes: The Lasterror property is set.

4.28.9   getTagStatus as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the tag present status.
Notes: This is whether or not a tag is being read by the reader.
The Lasterror property is set.

4.28.10 setAntennaOn(value as boolean)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the state of the antenna.
Notes: Note that the antenna must be enabled before tags will be read.
The Lasterror property is set.

4.28.11 setLEDOn(value as boolean)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the state of the onboard LED.
Notes: The Lasterror property is set.

4.28.12 setOutputState(index as Integer, value as boolean)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the state of an output.
Notes: The Lasterror property is set.

4.28.13 Events

4.28.14 OutputChanged(index as Integer, value as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called if an output changes.
Notes: Index: Index of the Output firing the Event
Value: State of the Output.

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.28.15 Tag(tag as memoryblock)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: An RFID Tag is read.
Notes: Current plugins expect a maximum tag size of 20 bytes. Not all 20 bytes may be used for the given tag.

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.28.16   TagLost(tag as memoryblock)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: A RFID Tag is removed from the field.
Notes: Current plugins expect a maximum tag size of 20 bytes. Not all 20 bytes may be used for the given tag.

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.29 Globals

4.29.1 LoadPhidgetFrameworkMBS(framework as folderitem) as boolean

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Loads the phidget framework.
Notes: Returns true on success and false on failure.
Path a folderitem for the phidget.framework in /library/frameworks.
Deprecated in plugin version 10.4.

4.29.2 LoadPhidgetLibraryMBS(file as folderitem) as boolean

Plugin Version: 10.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Loads the Phidgets shared library.
Notes: Returns true on success and false on failure.

Loads a Windows DLL, a Linux shared library, a Mac OS X shared library or a Mac OS X framework from the given path.
See also:

- 4.29.3 LoadPhidgetLibraryMBS(path as string) as boolean 131

4.29.3 LoadPhidgetLibraryMBS(path as string) as boolean

Plugin Version: 10.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Loads the Phidgets shared library.
Notes: Returns true on success and false on failure.
Path can be an absolute, a relative or just a file name.

Loads a Windows DLL, a Linux shared library, a Mac OS X shared library or a Mac OS X framework from the given path.
Blog Entries

- MBS REALbasic Plugins Version 10.4 release notes

- MBS REALbasic Plugins, version 10.4pr3

See also:

- 4.29.2 LoadPhidgetLibraryMBS(file as folderitem) as boolean 131

4.29.4 LoadPhidgetLinuxLibraryMBS(path as string) as boolean

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Loads the phidget library.
Notes: Returns true on success and false on failure.
Pass in the path to a .so file.
Deprecated in plugin version 10.4.

4.29.5 LoadPhidgetWindowsDLLMBS(dllpath as string) as boolean

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Loads the windows dll.
Notes: Returns true on success and false on failure.
Path can be an absolute, a relative or just a file name.
Deprecated in plugin version 10.4.

4.30 class OldPhidgetServoMBS

4.30.1 class OldPhidgetServoMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetRCServoMBS instead. **Function:** The class for a phidget servo device.
Notes: The PhidgetServo is a component that provides a high-level programmer interface to control a PhidgetServo device connected through a USB port.

With this component, the programmer can:

- Set the desired position for a servo motor, ranging from 0 to 180 degrees.

Subclass of the OldPhidgetMBS class.

4.30.2 Methods

4.30.3 Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: On success the handle value is not zero.
The Lasterror property is set.

4.30.4 getEngaged(index as Integer) as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the engaged state of a motor. This is whether the motor is powered or not.
Notes: The Lasterror property is set.

index: The motor index.

4.30.5 getMotorCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of motors supported by this controller
Notes: The Lasterror property is set.

4.30.6 getPosition(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current position of a motor.
Notes: index: The motor index.

The Lasterror property is set.

4.30.7 getPositionMax(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum position that a motor can be set to.
Notes: index: The motor index.

The Lasterror property is set.

4.30.8   getPositionMin(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum position that a motor can be set to.
Notes: index: The motor index.

The Lasterror property is set.

4.30.9   getServoType(index as Integer) as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the servo type of a motor.
Notes: The Lasterror property is set.
For the value, check the PHIDGET_SERVO_* constants.

4.30.10   setEngaged(index as Integer, value as boolean)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the engaged state of a motor. This is whether the motor is powered or not.
Notes: index: The motor index.

The Lasterror property is set.

4.30.11   setPosition(index as Integer, value as Double)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the current position of a motor.
Notes: The Lasterror property is set.

index: The motor index.
position: The motor position.

4.30.12 setServoParameters(index as Integer, min_us as Double, max_us as Double, degrees as Double)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the servo parameters of a motor.
Notes: The Lasterror property is set.

index	The motor index.
min_us	The minimum supported PCM in microseconds.
max_us	The maximum supported PCM in microseconds.
degrees	The degrees of rotation defined by the given PCM range.

4.30.13 setServoType(index as Integer, value as Integer)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the servo type of a motor.
Notes: The Lasterror property is set.
For the value, check the PHIDGET_SERVO_* constants.

4.30.14 Events

4.30.15 MotorPositionChanged(index as Integer, value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called if the motor position is changed.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.31   class OldPhidgetSpatialEventDataMBS

4.31.1   class OldPhidgetSpatialEventDataMBS

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetSpatialMBS instead. **Function:** The class for event data on a spatial device.
Notes: Timestamped position data returned by the PhidgetSpatialMBS.SpatialData event.

4.31.2   Properties

4.31.3   TimestampMicroseconds as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The microseconds part of the Hardware timestamp.
Notes: (Read and Write property)

4.31.4   TimestampSeconds as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The seconds part of the Hardware timestamp.
Notes: (Read and Write property)

4.31.5   acceleration(index as Integer) as Double

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Acceleration data for up to 3 axes.
Notes: Index from 0 to 2.
(Read and Write computed property)

4.31.6   angularRate(index as Integer) as Double

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Angular rate data (Gyroscope) for up to 3 axes.
Notes: Index from 0 to 2.

(Read and Write computed property)

4.31.7 magneticField(index as Integer) as Double

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Magnetic field data (Compass) for up to 3 axes.
Notes: Index from 0 to 2.
(Read and Write computed property)

4.32   class OldPhidgetSpatialMBS

4.32.1   class OldPhidgetSpatialMBS

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetSpatialMBS instead. **Function:** The class to control the spatial phidget device.
Notes: Calls specific to the Phidget Spatial. See the product manual for more specific API details, supported functionality, units, etc.
Subclass of the OldPhidgetMBS class.

4.32.2   Methods

4.32.3   Constructor

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: On success the handle value is not zero.
Lasterror is set.

4.32.4   getAcceleration(index as Integer) as Double

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current acceleration of an axis.
Notes: index: The acceleration index.
Returns the acceleration in gs.
Lasterror is set.

4.32.5   getAccelerationAxisCount as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of acceleration axes supplied by this board.

4.32.6   getAccelerationMax(index as Integer) as Double

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum accleration supported by an axis.
Notes: index: The acceleration index.
Lasterror is set.

4.32.7 getAccelerationMin(index as Integer) as Double

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum acceleration supported by an axis.
Notes: index: The acceleration index.

4.32.8 getAngularRate(index as Integer) as Double

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current angular rate of an axis.
Notes: Returns the angular rate in degrees/second.
index: The angular rate index.
Lasterror is set.

4.32.9 getAngularRateMax(index as Integer) as Double

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum angular rate supported by an axis.
Notes: index: The angular rate index.
Lasterror is set.

4.32.10 getAngularRateMin(index as Integer) as Double

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum angular rate supported by an axis.
Notes: index: The angular rate index.
Lasterror is set.

4.32.11 getCompassAxisCount as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of compass axes supplied by this board.
Notes: Lasterror is set.

4.32.12   getDataRate as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Queries the data rate in milliseconds.
Notes: Lasterror is set.

4.32.13   getDataRateMax as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum supported data rate in milliseconds.
Notes: Lasterror is set.

4.32.14   getDataRateMin as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum supported data rate in milliseconds.
Notes: Lasterror is set.

4.32.15   getGyroAxisCount as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of gyroscope axes supplied by this board.
Notes: Lasterror is set.

4.32.16   getMagneticField(index as Integer) as Double

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current magnetic field stregth of an axis.
Notes: index: The magnetic field index.
Returns the magnetic field strength in Gauss.
Lasterror is set.

4.32.17 getMagneticFieldMax(index as Integer) as Double

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum magnetic field stregth supported by an axis.
Notes: index: The magnetic field index.
Lasterror is set.

4.32.18 getMagneticFieldMin(index as Integer) as Double

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum magnetic field stregth supported by an axis.
Notes: index: The magnetic field index.
Lasterror is set.

4.32.19 resetCompassCorrectionParameters

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Resets the compass correction factors.
Notes: Magnetic field data will be presented directly as reported by the sensor.
Lasterror is set.

4.32.20 setCompassCorrectionParameters(magField as Double, offset0 as Double, offset1 as Double, offset2 as Double, gain0 as Double, gain1 as Double, gain2 as Double, T0 as Double, T1 as Double, T2 as Double, T3 as Double, T4 as Double, T5 as Double)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the compass correction factors. This can be used to correcting any sensor errors, including hard and soft iron offsets and sensor error factors.
Notes: Lasterror is set.

magField: Local magnetic field strength.
offset0: Axis 0 offset correction.
offset1: Axis 1 offset correction.
offset2: Axis 2 offset correction.
gain0: Axis 0 gain correction.
gain1: Axis 1 gain correction.
gain2: Axis 2 gain correction.

T0: Non-orthogonality correction factor 0.
T1: Non-orthogonality correction factor 1.
T2: Non-orthogonality correction factor 2.
T3: Non-orthogonality correction factor 3.
T4: Non-orthogonality correction factor 4.
T5: Non-orthogonality correction factor 5.

4.32.21   setDataRate(milliseconds as Integer)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the data rate in milliseconds.
Notes: Lasterror is set.
Note that data at rates faster then 8ms will be delivered to events as an array of data.

4.32.22   zeroGyro

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Zeroes the gyroscope.
Notes: This takes about two seconds and the gyro zxes will report 0 during the process.
This should only be called when the board is not moving.

Lasterror is set.

4.32.23   Events

4.32.24   SpatialData(data() as OldPhidgetSpatialEventDataMBS, dataCount as Integer)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called when new data has been received.
Notes: This is called at getDataRate, up to 8ms, for faster then 8ms data, multiple sets of data are supplied in a single event.
Lasterror is set.

4.33 class OldPhidgetStepperMBS

4.33.1 class OldPhidgetStepperMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetStepperMBS instead. **Function:** A class for a phidget stepper device.
Notes: On the time the plugin was written the phidget documentation did not include this class so the documentation here is limited.
Subclass of the OldPhidgetMBS class.

4.33.2 Methods

4.33.3 Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: On success the handle value is not zero.

4.33.4 getAcceleration(index as Integer) as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the acceleration value.
Notes: The Lasterror property is set.

4.33.5 getAccelerationMax(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum acceleration supported by a motor.
Notes: index: The motor index.

The Lasterror property is set.

4.33.6 getAccelerationMin(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum acceleration supported by a motor.
Notes: index: The motor index.

The Lasterror property is set.

4.33.7   getCurrent(index as Integer) as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the current value.
Notes: The Lasterror property is set.

4.33.8   getCurrentLimit(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum position that a motor can go to.
Notes: index: The motor index.

The Lasterror property is set.

4.33.9   getCurrentMax(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum current limit.
Notes: index: The motor index.

The Lasterror property is set.

4.33.10   getCurrentMin(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum current limit.
Notes: index: The motor index.

The Lasterror property is set.

4.33.11   getCurrentPosition(index as Integer) as int64

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current position of a motor.
Notes: The Lasterror property is set.

4.33.12   getEngaged(index as Integer) as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the engaged state of a motor. This is whether the motor is powered or not.
Notes: index: The motor index.

The Lasterror property is set.

4.33.13   getInputCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of digital inputs supported by this board.
Notes: The Lasterror property is set.

4.33.14   getInputState(index as Integer) as boolean

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the state of a digital input.
Notes: The Lasterror property is set.

4.33.15   getMotorCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of motors supported by this controller.
Notes: The Lasterror property is set.

4.33.16   getPositionMax(index as Integer) as int64

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum velocity that can be set for a motor.
Notes: The Lasterror property is set.

4.33.17   getPositionMin(index as Integer) as int64

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum position that a motor can go to.
Notes: The Lasterror property is set.

4.33.18   getStopped(index as Integer) as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the stopped state of a motor. This is true when the motor is not moving and there are no outstanding commands.
Notes: index: The motor index.

The Lasterror property is set.

4.33.19   getTargetPosition(index as Integer) as int64

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the last set target position of a motor.
Notes: index: The motor index.

The Lasterror property is set.

4.33.20   getVelocity(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current velocity of a motor.
Notes: index: The motor index.

The Lasterror property is set.

4.33.21 getVelocityLimit(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the last set velocity limit for a motor.
Notes: index: The motor index.

The Lasterror property is set.

4.33.22 getVelocityMax(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum velocity that can be set for a motor.
Notes: index: The motor index.

The Lasterror property is set.

4.33.23 getVelocityMin(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum velocity that can be set for a motor.
Notes: The Lasterror property is set.

4.33.24 setAcceleration(index as Integer, value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the acceleration.
Notes: The Lasterror property is set.

4.33.25 setCurrentLimit(index as Integer, value as Double)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current limit for a motor.
Notes: index: The motor index.

The Lasterror property is set.

4.33.26   setCurrentPosition(index as Integer, value as int64)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the current position of a motor.
Notes: This will not move the motor, just update the position value.

index: The motor index.
value: The position.

The Lasterror property is set.

4.33.27   setEngaged(index as Integer, value as boolean)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the engaged state of a motor. This is whether the motor is powered or not.
Notes: index: The motor index.
value: The engaged state. Possible values are true and false.

The Lasterror property is set.

4.33.28   setTargetPosition(index as Integer, value as int64)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the target position of a motor.
Notes: index: The motor index.

The Lasterror property is set.

4.33.29 setVelocityLimit(index as Integer, value as Double)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the velocity limit for a motor.
Notes: index: The motor index.

The Lasterror property is set.

4.33.30 Events

4.33.31 CurrentChanged(index as Integer, value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The current value changed.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.33.32 InputChanged(index as Integer, value as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The input value changed.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.33.33 ServoChanged(index as Integer, value as int64)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The servo value changed.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.33.34   VelocityChanged(index as Integer, value as Double)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called when the velocity changes.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.34 class OldPhidgetTemperatureSensorMBS

4.34.1 class OldPhidgetTemperatureSensorMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetTemperatureSensorMBS instead. **Function:** The class for a phidget temperature sensor.
Notes: The PhidgetTemperatureSensor is a component that provides a high-level programmer interface to control a PhidgetTemperatureSensor device connected through a USB port.

With this component, the programmer can:

- Read the temperature of Thermocouple device.

- Read cold junction temperature.

- Get notification of temperature change.

Subclass of the OldPhidgetMBS class.

4.34.2 Methods

4.34.3 Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: On success the handle value is not zero.

4.34.4 getAmbientTemperature as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the ambient (board) temperature.
Notes: The Lasterror property is set.

4.34.5 getAmbientTemperatureMax as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum temperature that the ambient onboard temperature sensor can measure.
Notes: The Lasterror property is set.

4.34.6   getAmbientTemperatureMin as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum temperature that the ambient onboard temperature sensor can measure.
Notes: The Lasterror property is set.

4.34.7   getPotential(index as Integer) as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the potential value for the temperature sender with the given index.
Notes: The Lasterror property is set.

4.34.8   getPotentialMax(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum potential that a thermocouple input can measure.
Notes: The Lasterror property is set.

4.34.9   getPotentialMin(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum potential that a thermocouple input can measure.
Notes: The Lasterror property is set.

4.34.10   getTemperature(index as Integer) as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the current temperature in Celsius or Fahrenheit (depending on UseImperial property).
Notes: Index = 0 returns the temperature of the cold junction.
Index = 1 returns the temperatrue of the thermocouple.

Note that this value defaults to -500. Applications that do not wish to see this value should use Change Handlers instead of polling the device for data.

The Lasterror property is set.

4.34.11 getTemperatureChangeTrigger(index as Integer) as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the amount of change that should exist between the last reported value and the current value before an TemperatureChange event is fired.
Notes: The Lasterror property is set.

4.34.12 getTemperatureInputCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of thermocouple inputs supported by this board.
Notes: The Lasterror property is set.

4.34.13 getTemperatureMax(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum temperature that can be measured by a thermocouple input. This depends on the type of thermocouple attached.
Notes: The Lasterror property is set.

4.34.14 getTemperatureMin(index as Integer) as Double

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum temperature that can be measured by a thermocouple input.
Notes: This depends on the type of thermocouple attached.
The Lasterror property is set.

4.34.15 getThermocoupleType(index as Integer) as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the type of thermocouple set to be at a thermocouple input. By default this is K-Type.
Notes: The Lasterror property is set.
type: The thermocouple type.

4.34.16   setTemperatureChangeTrigger(index as Integer, value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Specifies the amount of change that should exist between the last reported value and the current value before an TemperatureChange event is fired.
Notes: The Lasterror property is set.

4.34.17   setThermocoupleType(index as Integer, value as Integer)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the type of thermocouple plugged into a thermocouple input. By default this is K-Type.
Example:

dim t as OldPhidgetTemperatureSensorMBS

const PHIDGET_TEMPERATURE_SENSOR_K_TYPE = 1 // K-Type thermocouple
const PHIDGET_TEMPERATURE_SENSOR_J_TYPE = 2 // J-Type thermocouple
const PHIDGET_TEMPERATURE_SENSOR_E_TYPE = 3 // E-Type thermocouple
const PHIDGET_TEMPERATURE_SENSOR_T_TYPE = 4 // T-Type thermocouple

t.setThermocoupleType 0, PHIDGET_TEMPERATURE_SENSOR_T_TYPE

Notes: The Lasterror property is set.

4.34.18   Events

4.34.19   TemperatureChanged(index as Integer, value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The temperatur changed.
Notes: Index: Index of the Temperature Sensor firing the Event
Value: Value of the Temperature Sensor

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid

crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.34.20 Constants

Constants

Constant	Value	Description
PHIDGET_TEMPERATURE_SENSOR_E_TYPE	3	One of the sensor type constants. E-Type thermocouple
PHIDGET_TEMPERATURE_SENSOR_J_TYPE	2	One of the sensor type constants. J-Type thermocouple
PHIDGET_TEMPERATURE_SENSOR_K_TYPE	1	One of the sensor type constants. K-Type thermocouple
PHIDGET_TEMPERATURE_SENSOR_T_TYPE	4	One of the sensor type constants. T-Type thermocouple

4.35   class OldPhidgetTextLCDMBS

4.35.1   class OldPhidgetTextLCDMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetLCDMBS instead.
Function: The class for the phidget text LCD.
Notes: The PhidgetTextLCD is a component that provides a high-level programmer interface to control a PhidgetTextLCD device connected through a USB port.

With this component, the programmer can:

- Display text on a PhidgetTextLCD module.

Subclass of the OldPhidgetMBS class.

4.35.2   Methods

4.35.3   Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: On success the handle value is not zero.
Lasterror is set.

4.35.4   getBacklight as boolean

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the state of the backlight.
Notes: The Lasterror property is set.

4.35.5   getBrightness as Integer

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the brightness of the backlight. Not supported on all TextLCDs
Notes: The backlight brightness has a range of 0 to 255.

The Lasterror property is set.

4.35.6   getColumnCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of columns per supported by this display.
Notes: The Lasterror property is set.

4.35.7   getContrast as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the contrast value from 0-255.
Notes: Note that this defaults to 0.
The Lasterror property is set.

4.35.8   getCursorBlink as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Determines if the cursor's blinking is on or off.
Notes: Note that this defaults to False.
The Lasterror property is set.

4.35.9   getCursorOn as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Determines if the cursor is on or off.
Notes: Note that this defaults to False.
The Lasterror property is set.

4.35.10   getRowCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of rows supported by this display.
Notes: The Lasterror property is set.

4.35.11   getScreen as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the active screen.
Notes: Lasterror is set.

4.35.12   getScreenCount as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of Display supported by this TextLCD.
Notes: Lasterror is set.

4.35.13   getScreenSize as Integer

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the screen size.
Notes: See PHIDGET_TEXTLCD_SCREEN_* constants.
Lasterror is set.

4.35.14   initialize

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Initializes the active screen.
Notes: Only supported on the TextLCD adapter.
This should be called if a screen is attached after power up, or to clear the screen after setting the size.
Lasterror is set.

4.35.15   setBacklight(backlightState as boolean)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the state of the backlight.
Notes: The Lasterror property is set.

4.35.16 setBrightness(Brightness as Integer)

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the brightness of the backlight. Not supported on all TextLCDs
Notes: The backlight brightness has a range of 0 to 255.
The Lasterror property is set.

4.35.17 setContrast(Contrast as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the contrast from 0-255.
Notes: The Lasterror property is set.

4.35.18 setCursorBlink(CursorBlink as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the cursor's blinking on or off.
Notes: The Lasterror property is set.

4.35.19 setCursorOn(CursorOn as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the cursor on or off.
Notes: This cursor is displayed at the last location that was changed.

The Lasterror property is set.

4.35.20 setCustomCharacter(index as Integer, val1 as Integer, val2 as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets a custom character.
Notes: With existing hardware, there is space for 8 custom characters : Index can range from 8 to 15.
Each character is described by a set of integers.
For more information, have a look at the TextLCD example in the examples.zip for Phidget21.

The Lasterror property is set.

4.35.21   setDisplayCharacter(index as Integer, column as Integer, character as Integer)

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets a single character on the display.
Notes: index: The row index.
column: The column index.
character: The character to display.

The Lasterror property is set.

4.35.22   setDisplayString(row as Integer, displayString as string)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the text to display on a particular row of the display.
Notes: Row: Row to set on display
DisplayString: String to set on display. The text will be clipped at the right edge of the display.
The Lasterror property is set.

4.35.23   setScreen(screenIndex as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the active screen.
Notes: This is the screen that all subsequent API calls will apply to.
Lasterror is set.

4.35.24   setScreenSize(screenSize as Integer)

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the active screen size. Only supported on the TextLCD Adapter.
Notes: Lasterror is set.

4.35.25 Constants

Screen size constants.

Constant	Value	Description
PHIDGET_TEXTLCD_SCREEN_1x16	4	1 row, 16 column screen
PHIDGET_TEXTLCD_SCREEN_1x40	10	1 row, 40 column screen
PHIDGET_TEXTLCD_SCREEN_1x8	2	1 row, 8 column screen
PHIDGET_TEXTLCD_SCREEN_2x16	5	2 row, 16 column screen
PHIDGET_TEXTLCD_SCREEN_2x20	7	2 row, 20 column screen
PHIDGET_TEXTLCD_SCREEN_2x24	9	2 row, 24 column screen
PHIDGET_TEXTLCD_SCREEN_2x40	11	2 row, 40 column screen
PHIDGET_TEXTLCD_SCREEN_2x8	3	2 row, 8 column screen
PHIDGET_TEXTLCD_SCREEN_4x16	6	4 row, 16 column screen
PHIDGET_TEXTLCD_SCREEN_4x20	8	4 row, 20 column screen
PHIDGET_TEXTLCD_SCREEN_4x40	12	4 row, 40 column screen (special case, requires both screen co
PHIDGET_TEXTLCD_SCREEN_NONE	1	no screen attached
PHIDGET_TEXTLCD_SCREEN_UNKNOWN	13	Unknown

4.36   class OldPhidgetTextLEDMBS

4.36.1   class OldPhidgetTextLEDMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use PhidgetLCDMBS instead.
Function: The class for a phidget text LED.
Notes: On the time the plugin was written the phidget documentation did not include this class so the documentation here is limited.
Subclass of the OldPhidgetMBS class.

4.36.2   Methods

4.36.3   Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: On success the handle value is not zero.

4.36.4   getBrightness as Integer

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the current brightness.
Notes: The Lasterror property is set.

4.36.5   getColumnCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of columns per supported by this display.
Notes: The Lasterror property is set.

4.36.6   getRowCount as Integer

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of rows supported by this display.
Notes: The Lasterror property is set.

4.36.7 setBrightness(Brightness as Integer)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the brightness.
Notes: The Lasterror property is set.

4.36.8 setDisplayString(row as Integer, displayString as string)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the display string for the given row.
Notes: The Lasterror property is set.

4.37   class OldPhidgetWeightSensorMBS

4.37.1   class OldPhidgetWeightSensorMBS

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. **Function:** The class for a phidget weight sensor.
Notes: On the time the plugin was written the phidget documentation did not include this class so the documentation here is limited.
Subclass of the OldPhidgetMBS class.

4.37.2   Methods

4.37.3   Constructor

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: On success the handle value is not zero.
The Lasterror property is set.

4.37.4   getWeight as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the current weight.
Notes: The Lasterror property is set.

4.37.5   getWeightChangeTrigger as Double

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the amount of change that should exist between the last reported value and the current value before an WeightChange event is fired.
Notes: The Lasterror property is set.

4.37.6   setWeightChangeTrigger(value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the amount of change that should exist between the last reported value and the current value before an WeightChange event is fired.
Notes: The Lasterror property is set.

4.37.7 Events

4.37.8 WeightChanged(value as Double)

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: .

Function: The weight changed.
Notes: With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with Xojo. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

4.38   class PhidgetAccelerometerMBS

4.38.1   class PhidgetAccelerometerMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Accelerometer class is used to gather acceleration data from Phidget accelerometer boards.
Notes: Phidget accelerometers usually have multiple sensors, each oriented in a different axis, so multiple dimensions of acceleration can be recorded.

If the Phidget you're using also has a gyroscope and a magnetometer, you may want to use the Spatial class in order to get all of the data at the same time, in a single event.
Subclass of the PhidgetMBS class.
Blog Entries

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4.38.2   Methods

4.38.3   Acceleration as Double()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent acceleration value that the channel has reported.

4.38.4   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.38.5   MaxAcceleration as Double()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the AccelerationChange event will report.

4.38.6   MinAcceleration as Double()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value the AccelerationChange event will report.

4.38.7 Properties

4.38.8 AccelerationChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a AccelerationChange event until the acceleration value has changed by the amount specified by the AccelerationChangeTrigger.
Notes: Setting the AccelerationChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering
(Read and Write property)

4.38.9 AxisCount as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The number of axes the channel can measure acceleration on.
Notes: (Read only property)

4.38.10 DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another AccelerationChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between AccelerationChange events can also affected by the AccelerationChangeTrigger.

Unit: milliseconds (ms)
(Read and Write property)

4.38.11 HeatingEnabled as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Whether self-heating temperature stabilization is enabled.
Notes: Set to true to enable the temperature stabilization feature of this device. This enables onboard heating elements to bring the board up to a known temperature to minimize ambient temerature effects on

the sensor's reading. You can leave this setting false to conserve power consumption.This property is shared by any and all spatial-related objects on this device (Accelerometer, Gyroscope, Magnetometer, Spatial) (Read and Write property)

4.38.12   MaxAccelerationChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that AccelerationChangeTrigger can be set to.
Notes: (Read only property)

4.38.13   MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.38.14   MinAccelerationChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that AccelerationChangeTrigger can be set to.
Notes: (Read only property)

4.38.15   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.38.16   Timestamp as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent timestamp value that the channel has reported.
Notes: This is an extremely accurate time measurement streamed from the device.

If your application requires a time measurement, you should use this value over a local software timestamp. (Read only property)

4.38.17   Events

4.38.18   AccelerationChanged(acceleration() as double, timestamp as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent acceleration values the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a AccelerationChangeTrigger has been set to a non-zero value, the AccelerationChange event will not occur until the acceleration has changed by at least the AccelerationChangeTrigger value.

acceleration: The acceleration values.
timestamp: The timestamp value.

4.39   class PhidgetBLDCMotorMBS

4.39.1   class PhidgetBLDCMotorMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The BLDC Motor class controls the power applied to attached brushless DC motors to affect its speed and direction.
Notes: It can also contain various other control and monitoring functions that aid in the control of brushless DC motors.
Subclass of the PhidgetMBS class.
Blog Entries

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4.39.2   Methods

4.39.3   addPositionOffset(positionOffset as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Adds an offset (positive or negative) to the current position.
Notes: This can be especially useful for zeroing position.

4.39.4   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.39.5   enableFailsafe(failsafeTime as UInt32)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables the failsafe feature for the channel, with a given failsafe time.
Notes: The failsafe feature is intended for use in applications where it is important for the channel to enter a known safe state if the program controlling it locks up or crashes. If you do not enable the failsafe feature, the channel will carry out whatever instructions it was last given until it is explicitly told to stop.

Enabling the failsafe feature starts a recurring failsafe timer for the channel. Once the failsafe timer is enabled, it must be reset within the specified time or the channel will enter a failsafe state. The failsafe timer may be reset either by calling this function again, or using the ResetFailsafe function. Resetting the failsafe timer will reload the timer with the specified failsafe time, starting when the message to reset the

timer is received by the Phidget.

For example: if the failsafe is enabled with a failsafe time of 1000ms, you will have 1000ms to reset the failsafe timer. Every time the failsafe timer is reset, you will have 1000ms from that time to reset the failsafe again.

If the failsafe timer is not reset before it runs out, the channel will enter a failsafe state. For BLDC Motor channels, this will set the Target Velocity to 0. Once the channel enters the failsafe state, it will reject any further input until the channel is reopened.

To prevent the channel from falsely entering the failsafe state, we recommend resetting the failsafe timer as frequently as is practical for your applicaiton. A good rule of thumb is to not let more than a third of the failsafe time pass before resetting the timer.

Once the failsafe timer has been set, it cannot be disabled by any means other than closing and reopening the channel.

4.39.6   resetFailsafe

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Resets the failsafe timer, if one has been set. See EnableFailsafe for details.
Notes: This function will fail if no failsafe timer has been set for the channel.

4.39.7   setTargetVelocityAsync(targetVelocity as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets target velocity asynchronously.
Notes: The average voltage across the motor is based on the TargetVelocity value.
At a constant load, increasing the target velocity will increase the speed of the motor.
TargetVelocity is bounded by -1√óMaxVelocity and MaxVelocity, where a sign change ($\neg\pm$) is indicitave of a direction change.
Setting TargetVelocity to MinVelocity will stop the motor. See TargetBrakingStrength for more information on stopping the motor.
The units of TargetVelocity and Acceleration refer to 'duty cycle'. This is because the controller must rapidly switch the power on/off (i.e. change the duty cycle) in order to manipulate the voltage across the motor.

Calls setTargetVelocityAsyncCompleted event later.

4.39.8   Properties

4.39.9   Acceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The rate at which the controller can change the motor's Velocity.
Notes: The acceleration is bounded by MinAccleration and MaxAcceleration.
Unit: duty cycle per second (duty cycle/s)
(Read and Write property)

4.39.10   BrakingStrength as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent braking strength value that the controller has reported.
Notes: (Read only property)

4.39.11   DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the controller will fire another update event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
Unit: milliseconds (ms)
(Read and Write property)

4.39.12   MaxAcceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that Acceleration can be set to.
Notes: Unit: duty cycle per second (duty cycle/s)
(Read only property)

4.39.13   MaxBrakingStrength as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that TargetBrakingStrength can be set to.
Notes: (Read only property)

4.39.14 MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.39.15 MaxFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: (Read only property)

4.39.16 MaxPosition as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The upper bound of Position.
Notes: (Read only property)

4.39.17 MaxStallVelocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The upper bound of StallVelocity.
Notes: (Read only property)

4.39.18 MaxVelocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that TargetVelocity can be set to.
Notes: TargetVelocity is bounded by -1√óMaxVelocity and MaxVelocity, where a sign change (¬±) is in-dicitave of a direction change.
(Read only property)

4.39.19 MinAcceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that Acceleration can be set to.
Notes: Unit: duty cycle per second (duty cycle/s)
(Read only property)

4.39.20 MinBrakingStrength as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that TargetBrakingStrength can be set to.
Notes: (Read only property)

4.39.21 MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.39.22 MinFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: (Read only property)

4.39.23 MinPosition as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The lower bound of Position.
Notes: (Read only property)

4.39.24 MinStallVelocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The lower bound of StallVelocity.
Notes: (Read only property)

4.39.25 MinVelocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that TargetVelocity can be set to.
Notes: Set the TargetVelocity to MinVelocity to stop the motor. See TargetBrakingStrength for more information on stopping the motor.
TargetVelocity is bounded by -1√óMaxVelocity and MaxVelocity, where a sign change (¬±) is indicitave of a direction change.
(Read only property)

4.39.26 Position as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent position value that the controller has reported.
Notes: Position values are calculated using Hall Effect sensors mounted on the motor, therefore, the resolution of position depends on the motor you are using.
Units for Position can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees. For more information on how to apply the RescaleFactor to your application, see your controller's User Guide.

(Read only property)

4.39.27 RescaleFactor as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Change the units of your parameters so that your application is more intuitive.
Notes: Units for Position can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees. For more information on how to apply the RescaleFactor to your application, see your controller's User Guide.
(Read and Write property)

4.39.28 StallVelocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The stall velocity.
Notes: Before reading this description, it is important to note the difference between the units of StallVelocity and Velocity.

- Velocity is a number between -1 and 1 with units of 'duty cycle'. It simply represents the average voltage across the motor.

- StallVelocity represents a real velocity (e.g. m/s, RPM, etc.) and the units are determined by the RescaleFactor. With a RescaleFactor of 1, the default units would be in commutations per second.

If the load on your motor is large, your motor may begin rotating more slowly, or even fully stall. Depending on the voltage across your motor, this may result in a large amount of current through both the controller and the motor. In order to prevent damage in these situations, you can use the StallVelocity property.

The StallVelocity should be set to the lowest velocity you would expect from your motor. The controller will then monitor the motor's velocity, as well as the Velocity, and prevent a 'dangerous stall' from occuring. If the controller detects a dangerous stall, it will immediately reduce the Velocity (i.e. average voltage) to 0 and an error will be reported to your program.

- A 'dangerous stall' will occur faster when the Velocity is higher (i.e. when the average voltage across the motor is higher)

- A 'dangerous stall' will occur faster as (StallVelocity - motor velocity) becomes larger .

Setting StallVelocity to 0 will turn off stall protection functionality.
(Read and Write property)

4.39.29   TargetBrakingStrength as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The braking value.
Notes: When a motor is not being actively driven forward or reverse, you can choose if the motor will be allowed to freely turn, or will resist being turned.
A low TargetBrakingStrength value corresponds to free wheeling, this will have the following effects:
The motor will continue to rotate after the controller is no longer driving the motor (i.e. Velocity is 0), due to inertia.
The motor shaft will provide little resistance to being turned when it is stopped.
A higher TargetBrakingStrength value will resist being turned, this will have the following effects:
The motor will more stop more quickly if it is in motion and braking has been requested. It will fight against the rotation of the shaft.
Braking mode is enabled by setting the Velocity to MinVelocity

(Read and Write property)

4.39.30   TargetVelocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The average voltage across the motor is based on the TargetVelocity value.
Notes: At a constant load, increasing the target velocity will increase the speed of the motor.
TargetVelocity is bounded by -1√óMaxVelocity and MaxVelocity, where a sign change (¬±) is indicitave of a direction change.
Setting TargetVelocity to MinVelocity will stop the motor. See TargetBrakingStrength for more information on stopping the motor.
The units of TargetVelocity and Acceleration refer to 'duty cycle'. This is because the controller must rapidly switch the power on/off (i.e. change the duty cycle) in order to manipulate the voltage across the motor.
(Read and Write property)

4.39.31   Velocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent velocity value that the controller has reported.
Notes: (Read only property)

4.39.32   Events

4.39.33   BrakingStrengthChanged(brakingStrength as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent braking strength value will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: Regardless of the DataInterval, this event will occur only when the braking strength value has changed from the previous value reported.
Braking mode is enabled by setting the Velocity to MinVelocity.

4.39.34   PositionChanged(position as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Regardless of the DataInterval, this event will occur only when the position value has changed from the previous value reported.

Notes: Position values are calculated using Hall Effect sensors mounted on the motor, therefore, the resolution of position depends on the motor you are using.

Units for Position can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees. For more information on how to apply the RescaleFactor to your application, see your controller's User Guide.

4.39.35   setTargetVelocityAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Event called when setTargetVelocityAsync finished.

4.39.36   VelocityUpdated(velocity as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent velocity value will be reported in this event, which occurs when the DataInterval has elapsed.

Notes: This event will always occur when the DataInterval elapses. You can depend on this event for constant timing when implementing control loops in code. This is the last event to fire, giving you up-to-date access to all properties.

4.40 class PhidgetCapacitiveTouchMBS

4.40.1 class PhidgetCapacitiveTouchMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Capacitive Touch class gathers input data from capacitive buttons and sliders on Phidget boards.
Notes: Subclass of the PhidgetMBS class.
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4.40.2 Methods

4.40.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.40.4 Properties

4.40.5 DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another Touch event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between Touch events can also affected by the TouchValueChangeTrigger.

Unit: milliseconds (ms)
(Read and Write property)

4.40.6 IsTouched as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent touch state that the channel has reported.
Notes: This will be false or true.
false is not touched
true is touched

(Read only property)

4.40.7   MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.40.8   MaxSensitivity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that Sensitivity can be set to.
Notes: (Read only property)

4.40.9   MaxTouchValue as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the Touch event will report.
Notes: (Read only property)

4.40.10   MaxTouchValueChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that TouchValueChangeTrigger can be set to.
Notes: (Read only property)

4.40.11   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.40.12   MinSensitivity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that Sensitivity can be set to.
Notes: (Read only property)

4.40.13   MinTouchValue as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value the Touch event will report.
Notes: (Read only property)

4.40.14   MinTouchValueChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that TouchValueChangeTrigger can be set to.
Notes: (Read only property)

4.40.15   Sensitivity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Determines the sensitivity of all capacitive regions on the device.
Notes: Higher values result in greater touch sensitivity.
The sensitivity value is bounded by MinSensitivity and MaxSensitivity.
(Read and Write property)

4.40.16   TouchValue as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent touch value that the channel has reported.
Notes: This will be 0 or 1 for button-type inputs, or a ratio between 0-1 for axis-type inputs.
This value is bounded by MinTouchValue and MaxTouchValue.
The value is not reset when the touch ends.
(Read only property)

4.40.17   TouchValueChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a Touch event until the touch value has changed by the amount specified by the TouchValueChangeTrigger.
Notes: Setting the TouchValueChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering
(Read and Write property)

4.40.18   Events

4.40.19   Touched(touchValue as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent touch value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a TouchValueChangeTrigger has been set to a non-zero value, the Touch event will not occur until the touch value has changed by at least the TouchValueChangeTrigger value.

touchValue:Value of the touch input axis.

4.40.20   TouchEnded

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The channel will report a TouchEnd event to signify that it is no longer detecting a touch.

4.41 class PhidgetCurrentInputMBS

4.41.1 class PhidgetCurrentInputMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Current Input class is used to measure current flowing through the Phidget from outside sources..
Notes: This class may be used on a simple current sensor, or sometimes on a more complex Phidget that measures the amount of current flowing through an attached device, such as a motor controller, for diagnostic or control purposes.
Subclass of the PhidgetMBS class.
Blog Entries

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4.41.2 Methods

4.41.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.41.4 Properties

4.41.5 Current as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent current value that the channel has reported.
Notes: This value will always be between MinCurrent and MaxCurrent.
In amperes.
(Read only property)

4.41.6 CurrentChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a CurrentChange event until the current value has changed by the amount specified by the CurrentChangeTrigger.
Notes: Setting the CurrentChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering.

in amperes.
(Read and Write property)

4.41.7 DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another CurrentChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between CurrentChange events can also affected by the CurrentChangeTrigger.

Unit: milliseconds (ms)
(Read and Write property)

4.41.8 MaxCurrent as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the CurrentChange event will report.
Notes: (Read only property)

4.41.9 MaxCurrentChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that CurrentChangeTrigger can be set to.
Notes: (Read only property)

4.41.10 MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.41.11 MinCurrent as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value the CurrentChange event will report.
Notes: (Read only property)

4.41.12 MinCurrentChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that CurrentChangeTrigger can be set to.
Notes: (Read only property)

4.41.13 MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.41.14 PowerSupply as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Choose the power supply voltage.
Notes: Set this to the voltage specified in the attached sensor's data sheet to power it.
Set to kPowerSupplyOff to turn off the supply to save power.
(Read and Write property)

4.41.15 Events

4.41.16 CurrentChanged(current as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent current value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a CurrentChangeTrigger has been set to a non-zero value, the CurrentChange event will not occur

until the current value has changed by at least the CurrentChangeTrigger value.

4.42 class PhidgetDCMotorMBS

4.42.1 class PhidgetDCMotorMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DC Motor class controls the power applied to attached DC motors to affect its speed and direction.
Notes: It can also contain various other control and monitoring functions that aid in the control of DC motors.
Subclass of the PhidgetMBS class.
Blog Entries

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4.42.2 Methods

4.42.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.42.4 enableFailsafe(failsafeTime as UInt32)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables the failsafe feature for the channel, with a given failsafe time.
Notes: The failsafe feature is intended for use in applications where it is important for the channel to enter a known safe state if the program controlling it locks up or crashes. If you do not enable the failsafe feature, the channel will carry out whatever instructions it was last given until it is explicitly told to stop.

Enabling the failsafe feature starts a recurring failsafe timer for the channel. Once the failsafe timer is enabled, it must be reset within the specified time or the channel will enter a failsafe state. The failsafe timer may be reset either by calling this function again, or using the ResetFailsafe function. Resetting the failsafe timer will reload the timer with the specified failsafe time, starting when the message to reset the timer is received by the Phidget.

For example: if the failsafe is enabled with a failsafe time of 1000ms, you will have 1000ms to reset the failsafe timer. Every time the failsafe timer is reset, you will have 1000ms from that time to reset the failsafe again.

If the failsafe timer is not reset before it runs out, the channel will enter a failsafe state. For DC Motor

channels, this will set the Target Velocity to 0. Once the channel enters the failsafe state, it will reject any further input until the channel is reopened.

To prevent the channel from falsely entering the failsafe state, we recommend resetting the failsafe timer as frequently as is practical for your applicaiton. A good rule of thumb is to not let more than a third of the failsafe time pass before resetting the timer.

Once the failsafe timer has been set, it cannot be disabled by any means other than closing and reopening the channel.

4.42.5   resetFailsafe

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Resets the failsafe timer, if one has been set. See EnableFailsafe for details.
Notes: This function will fail if no failsafe timer has been set for the channel.

4.42.6   setTargetVelocityAsync(targetVelocity as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets target velocity asynchronously.
Notes: The average voltage across the motor is based on the TargetVelocity value.
At a constant load, increasing the target velocity will increase the speed of the motor.
TargetVelocity is bounded by -1√óMaxVelocity and MaxVelocity, where a sign change (¬±) is indicitave of a direction change.
Setting TargetVelocity to MinVelocity will stop the motor. See TargetBrakingStrength for more information on stopping the motor.
The units of TargetVelocity and Acceleration refer to 'duty cycle'. This is because the controller controls velocity by rapidly switching the power on/off (i.e. changing the duty cycle) in order to manipulate the voltage across the motor.

Calls setTargetVelocityAsyncCompleted event later when done.

4.42.7   Properties

4.42.8   Acceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The rate at which the controller can change the motor's Velocity.

Notes: The acceleration is bounded by MinAccleration and MaxAcceleration.

Unit: duty cycle per second (duty cycle/s)
(Read and Write property)

4.42.9   BackEMF as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent BackEMF value that the controller has reported.
Notes: (Read only property)

4.42.10   BackEMFSensingState as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: When BackEMFSensingState is enabled, the controller will measure and report the BackEMF.
Notes: The motor will coast (freewheel) 5% of the time while the back EMF is being measured (800Œⁿs every 16ms). Therefore, at a DutyCycle of 100%, the motor will only be driven for 95% of the time.
(Read and Write property)

4.42.11   BrakingStrength as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent braking strength value that the controller has reported.
Notes: See TargetBrakingStrength for details.
(Read only property)

4.42.12   CurrentLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The controller will limit the current through the motor to the CurrentLimit value.
Notes: Unit: amperes (A)
(Read and Write property)

4.42.13   CurrentRegulatorGain as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The current regulator gain.
Notes: Depending on power supply voltage and motor coil inductance, current through the motor can change relatively slowly or extremely rapidly. A physically larger DC Motor will typically have a lower inductance, requiring a higher current regulator gain. A higher power supply voltage will result in motor current changing more rapidly, requiring a higher current regulator gain. If the current regulator gain is too small, spikes in current will occur, causing large variations in torque, and possibly damaging the motor controller. If the current regulator gain is too high, the current will jitter, causing the motor to sound 'rough', especially when changing directions.

As a rule of thumb, we recommend setting this value as follows:
(Read and Write property)

4.42.14   DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the controller will fire another VelocityUpdate/BrakingStrengthChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
Note: BrakingStrengthChange events will only fire if a change in braking has occurred.

Unit: milliseconds (ms)
(Read and Write property)

4.42.15   MaxAcceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that Acceleration can be set to.
Notes: Unit: duty cycle per second (duty cycle/s)
(Read only property)

4.42.16   MaxBrakingStrength as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that TargetBrakingStrength can be set to.
Notes: See TargetBrakingStrength for details.

(Read only property)

4.42.17   MaxCurrentLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that CurrentLimit can be set to.
Notes: Unit: amperes (A)
(Read only property)

4.42.18   MaxCurrentRegulatorGain as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that CurrentRegulatorGain can be set to.
Notes: (Read only property)

4.42.19   MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.42.20   MaxFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: in milliseconds.
(Read only property)

4.42.21   MaxVelocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that TargetVelocity can be set to.
Notes: TargetVelocity is bounded by -1√óMaxVelocity and MaxVelocity, where a sign change (¬±) is in-

dicitave of a direction change.

Unit: duty cycle (duty cycle)
(Read only property)

4.42.22   MinAcceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that Acceleration can be set to.
Notes: Unit: duty cycle per second (duty cycle/s)
(Read only property)

4.42.23   MinBrakingStrength as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that TargetBrakingStrength can be set to.
Notes: See TargetBrakingStrength for details.
(Read only property)

4.42.24   MinCurrentLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that CurrentLimit can be set to.
Notes: Unit: amperes (A)
(Read only property)

4.42.25   MinCurrentRegulatorGain as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that CurrentRegulatorGain can be set to.
Notes: (Read only property)

4.42.26   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.42.27 MinFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: in milliseconds.
(Read only property)

4.42.28 MinVelocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that TargetVelocity can be set to
Notes: Set the TargetVelocity to MinVelocity to stop the motor. See TargetBrakingStrength for more information on stopping the motor.
TargetVelocity is bounded by -1√óMaxVelocity and MaxVelocity, where a sign change (¬±) is indicitave of a direction change.

Unit: duty cycle (duty cycle)
(Read only property)

4.42.29 TargetBrakingStrength as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: This setting allows you to choose how hard the motor will resist being turned when it is not being driven forward or reverse (Velocity = 0).
Notes: The TargetBrakingStrength sets the relative amount of electrical braking to be applied to the DC motor, with MinBrakingStrength corresponding to no braking (free-wheeling), and MaxBrakingStrength indicating full braking.

A low TargetBrakingStrength value corresponds to free-wheeling. This means:
The motor will continue to rotate after the controller is no longer driving the motor (Velocity = 0), due to its momentum.
The motor shaft will provide little resistance to being turned when it is stopped.
As TargetBrakingStrength increases, this will engage electrical braking of the DC motor. This means:
The motor will stop more quickly if it is in motion when braking is requested.
The motor shaft will resist rotation by oustide forces.

Braking will be added gradually, according to the Acceleration setting, once the motor controller's Velocity reaches 0.0

Braking will be immediately stopped when a new (non-zero) TargetVelocity is set, and the motor will accelerate to the requested velocity.

Braking mode is enabled by setting the Velocity to 0.0

(Read and Write property)

4.42.30   TargetVelocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The target velocity.

Notes: The average voltage across the motor is based on the TargetVelocity value.

At a constant load, increasing the target velocity will increase the speed of the motor.

TargetVelocity is bounded by -1√óMaxVelocity and MaxVelocity, where a sign change (¬±) is indicitave of a direction change.

Setting TargetVelocity to MinVelocity will stop the motor. See TargetBrakingStrength for more information on stopping the motor.

The units of TargetVelocity and Acceleration refer to 'duty cycle'. This is because the controller controls velocity by rapidly switching the power on/off (i.e. changing the duty cycle) in order to manipulate the voltage across the motor.

(Read and Write property)

4.42.31   Velocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent velocity value that the controller has reported.

Notes: Unit: duty cycle (duty cycle)

(Read only property)

4.42.32   Events

4.42.33   BackEMFChanged(backEMF as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent back emf value will be reported in this event.

Notes: backEMF: The back EMF voltage from the motor

4.42.34 BrakingStrengthChanged(brakingStrength as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when the motor braking strength changes.
Notes: brakingStrength:The most recent braking strength value will be reported in this event.
This event will occur only when the value of braking strength has changed
See TargetBrakingStrength for details about what this number represents.

4.42.35 setTargetVelocityAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when setTargetVelocityAsync completed.

4.42.36 VelocityUpdated(velocity as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs at a rate defined by the DataInterval.
Notes: velocity:The most recent velocity value will be reported in this event.

4.43   class PhidgetDictionaryMBS

4.43.1   class PhidgetDictionaryMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Dictionaries are useful for passing information between multiple programs using Phidgets. #
Notes: A common example would be to have one program controlling your application that receives commands sent via a Phidget dictionary from a web interface, as outlined in many of our articles.

Keys can be thought of as being similar to variable names, with their values as their associated value. Phidget dictionaries contain groups of related key-value pairs, and are stored on a central Phigdet Network Server. Dictionaries, and the key-value pairs within may be accessed from programs that have access to the Phigdet Network Server.

The Dictionary API supports connecting to a dictionary on the server, managing key-value pairs, and monitoring changes made to the dictionary.

More information on Phidget Dictionaries can be found on the Phidget Dictionary support page.
Subclass of the PhidgetMBS class.
Blog Entries

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4.43.2   Methods

4.43.3   add(key as String, value as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Adds a new key value pair to the dictionary.
Notes: It is an error if the key already exits.

4.43.4   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: creates an instance of a Phidget channel.

4.43.5 Keys as String()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Queries all keys in a dictionary.
Notes: The list might not contain all of the keys in the dictionary if it is modified while you query keys. Keys added during the scan may be missed, and keys deleted during the scan may be included.

4.43.6 remove(key as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Removes the key from the dictionary.

4.43.7 removeAll

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Removes every key from the dictionary.

4.43.8 update(key as String, value as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates a key value pair in the dictionary.
Notes: It is an error if the key does not exist.

4.43.9 validDictionaryKey(key as String) as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Checks whether this is a valid key to use.
Notes: Returns true on success or false on failure.

4.43.10 Properties

4.43.11 Value(key as String) as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Set or get the value associated with the given key from the dictionary.
Notes: (Read and Write computed property)

4.43.12   Events

4.43.13   Added(Key as String, Value as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when a new key value pair is added to the dictionary.
Notes: key: The key that was added
value: The value of the new key

4.43.14   Removed(Key as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when a key is removed from the dictionary.

4.43.15   Updated(Key as String, Value as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when a change is made to a key value pair in the dictionary.

4.44 class PhidgetDigitalInputMBS

4.44.1 class PhidgetDigitalInputMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Digital Input class is used to monitor the state of Phidget digital inputs.
Notes: Use digital inputs to monitor the state of buttons, switches, or switch-to-ground sensors.
Subclass of the PhidgetMBS class.
Blog Entries

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4.44.2 Methods

4.44.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.44.4 Properties

4.44.5 InputMode as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The input polarity mode for your channel.
Notes: See your device's User Guide for more information about what value to chooose for the InputMode.
(Read and Write property)

4.44.6 PowerSupply as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Choose the power supply voltage.
Notes: Set this to the voltage specified in the attached sensor's data sheet to power it.
Set to kPowerSupplyOff to turn off the supply to save power.
(Read and Write property)

4.44.7   State as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent state value that the channel has reported.
Notes: (Read only property)

4.44.8   Events

4.44.9   StateChanged(state as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: This event will occur when the state of the digital input has changed.
Notes: The value will either be 0 or 1 (true or false).

4.44.10   Constants

Input Modes

Constant	Value	Description
kInputModeNPN	1	For interfacing NPN digital sensors.
kInputModePNP	2	For interfacing PNP digital sensors.

Power Supply

Constant	Value	Description
kPowerSupply12V	2	The sensor is provided with 12 volts.
kPowerSupply24V	3	The sensor is provided with 24 volts.
kPowerSupplyOff	1	Switch the sensor power supply off.

4.45 class PhidgetDigitalOutputMBS

4.45.1 class PhidgetDigitalOutputMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Digital Output class is used to control digital logic outputs and LED outputs on Phidgets boards.
Notes: Subclass of the PhidgetMBS class.
Blog Entries

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4.45.2 Methods

4.45.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.45.4 enableFailsafe(failsafeTime as UInt32)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables the failsafe feature for the channel, with a given failsafe time.
Notes: The failsafe feature is intended for use in applications where it is important for the channel to enter a known safe state if the program controlling it locks up or crashes. If you do not enable the failsafe feature, the channel will carry out whatever instructions it was last given until it is explicitly told to stop.

Enabling the failsafe feature starts a recurring failsafe timer for the channel. Once the failsafe timer is enabled, it must be reset within the specified time or the channel will enter a failsafe state. The failsafe timer may be reset either by calling this function again, or using the ResetFailsafe function. Resetting the failsafe timer will reload the timer with the specified failsafe time, starting when the message to reset the timer is received by the Phidget.

For example: if the failsafe is enabled with a failsafe time of 1000ms, you will have 1000ms to reset the failsafe timer. Every time the failsafe timer is reset, you will have 1000ms from that time to reset the failsafe again.

If the failsafe timer is not reset before it runs out, the channel will enter a failsafe state. For Digital Output channels, this will set the output state to FALSE. Once the channel enters the failsafe state, it will reject

any further input until the channel is reopened.

To prevent the channel from falsely entering the failsafe state, we recommend resetting the failsafe timer as frequently as is practical for your applicaiton. A good rule of thumb is to not let more than a third of the failsafe time pass before resetting the timer.

Once the failsafe timer has been set, it cannot be disabled by any means other than closing and reopening the channel.

4.45.5   resetFailsafe

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Resets the failsafe timer, if one has been set. See EnableFailsafe for details.
Notes: This function will fail if no failsafe timer has been set for the channel.

4.45.6   setDutyCycleAsync(dutyCycle as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the duty cycle asynchronously.
Notes: The DutyCycle represents the fraction of time the output is on (high).
This will override the State setting on the channel.
A DutyCycle of 1.0 translates to a high output, a DutyCycle of 0 translates to a low output.
This is equivalent to setting a State of TRUE and FALSE respectively.
A DutyCycle of 0.5 translates to an output that is high half the time, which results in an average output voltage of (output voltage x 0.5)
You can use the DutyCycle to create a dimming effect on LEDs.
If the DigitalOutput channel you are using does not support PWM, then this value may only be set to 1.0 or 0.0
You can check if your device supports PWM by checking the ChannelSubclass property, viewable by selecting Phidget API above. Your DigitalOutput channel supports PWM if it is any subclass other than NONE.

calls setDutyCycleAsyncCompleted later.

4.45.7   setLEDCurrentLimitAsync(LEDCurrentLimit as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The LEDCurrentLimit is the maximum amount of current that the controller will provide to the output.

Notes: Reference the data sheet of the LED you are using before setting this value.

Calls setLEDCurrentLimitAsyncCompleted event later.

4.45.8 setStateAsync(state as Boolean)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the state asynchronously.
Notes: The State will dictate whether the output is constantly high (true) or low (false).
This will override any DutyCycle that may have been set on the channel.
Setting the State to true is the same as setting DutyCycle to 1.0, and setting the State to false is the same as setting a DutyCycle of 0.0.

Calls setStateAsyncCompleted event later.

4.45.9 Properties

4.45.10 DutyCycle as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DutyCycle represents the fraction of time the output is on (high).
Notes: A DutyCycle of 1.0 translates to a high output, a DutyCycle of 0 translates to a low output.
A DutyCycle of 0.5 translates to an output that is high half the time, which results in an average output voltage of (output voltage x 0.5)
You can use the DutyCycle to create a dimming effect on LEDs.

Unit: duty cycle (duty cycle)
(Read and Write property)

4.45.11 Frequency as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Frequency parameter sets the PWM frequency for all frequency-settable PWM outputs on the board.
Notes: in hertz (Hz)
(Read and Write property)

4.45.12   LEDCurrentLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The LEDCurrentLimit is the maximum amount of current that the controller will provide to the output.
Notes: Reference the data sheet of the LED you are using before setting this value.
n amperes.
(Read and Write property)

4.45.13   LEDForwardVoltage as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The LEDCurrentLimit is the maximum amount of current that the controller will provide to the output.
Notes: Reference the data sheet of the LED you are using before setting this value.
(Read and Write property)

4.45.14   MaxDutyCycle as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DutyCycle can be set to.
Notes: Unit: duty cycle (duty cycle)
(Read only property)

4.45.15   MaxFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: in milliseconds.
(Read only property)

4.45.16   MaxFrequency as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DutyCycle can be set to.
Notes: in hertz (Hz)

(Read only property)

4.45.17   MaxLEDCurrentLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that LEDCurrentLimit can be set to.
Notes: in amperes.
(Read only property)

4.45.18   MinDutyCycle as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DutyCycle can be set to.
Notes: Unit: duty cycle (duty cycle)
(Read only property)

4.45.19   MinFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: in milliseconds.
(Read only property)

4.45.20   MinFrequency as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DutyCycle can be set to.
Notes: in hertz (Hz)
(Read only property)

4.45.21   MinLEDCurrentLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that LEDCurrentLimit can be set to.
Notes: in amperes.

(Read only property)

4.45.22   State as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The State will indicate whether the output is high (true) or low (false).
Notes: If a DutyCycle has been set, the state will return as true if the DutyCycle is above 0.5, or false otherwise.
(Read and Write property)

4.45.23   Events

4.45.24   setDutyCycleAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when setDutyCycleAsync is done.

4.45.25   setLEDCurrentLimitAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when setLEDCurrentLimitAsync completed.

4.45.26   setStateAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when setStateAsync completed.

4.45.27   Constants

LED Forward Voltage Setting

Constant	Value	Description
kLEDForwardVoltage_1_7V	1	1.7V
kLEDForwardVoltage_2_75V	2	2.75V
kLEDForwardVoltage_3_2V	3	3.2V
kLEDForwardVoltage_3_9V	4	3.9V
kLEDForwardVoltage_4_0V	5	4.0V
kLEDForwardVoltage_4_8V	6	4.8V
kLEDForwardVoltage_5_0V	7	5.0V
kLEDForwardVoltage_5_6V	8	5.6V

4.46   class PhidgetDistanceSensorMBS

4.46.1   class PhidgetDistanceSensorMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Distance Sensor class gathers data from the distance sensor on a Phidget board.
Notes: If you're using a simple 0-5V sensor that does not have its own firmware, use the VoltageInput or VoltageRatioInput class instead, as specified for your device.
Subclass of the PhidgetMBS class.
Blog Entries

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4.46.2   Methods

4.46.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.46.4   SonarReflectionsAmplitudes as UInt32()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent reflection values that the channel has reported.
Notes: The amplitude values are relative amplitudes of the reflections that are normalized to an arbitrary scale.

4.46.5   SonarReflectionsDistances as UInt32()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent reflection values that the channel has reported.
Notes: The distance values will always be between MinDistance and MaxDistance.
The closest reflection will be placed at index 0 of the distances array, and the furthest reflection at index 7

4.46.6 Properties

4.46.7 DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between events can also affected by the change trigger.

Unit: milliseconds (ms)
(Read and Write property)

4.46.8 Distance as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent distance value that the channel has reported.
Notes: This value will always be between MinDistance and MaxDistance.
in milliseconds.
(Read only property)

4.46.9 DistanceChangeTrigger as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue an event until the distance value has changed by the amount specified by the DistanceChangeTrigger.
Notes: Setting the DistanceChangeTrigger to 0 will result in the channel firing events every DataInterval.
This is useful for applications that implement their own data filtering.

in milliseconds.
(Read and Write property)

4.46.10 MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.46.11   MaxDistance as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum distance that a event will report.
Notes: in milliseconds.
(Read only property)

4.46.12   MaxDistanceChangeTrigger as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DistanceChangeTrigger can be set to.
Notes: in milliseconds.
(Read only property)

4.46.13   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.46.14   MinDistance as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum distance that a event will report.
Notes: in milliseconds.
(Read only property)

4.46.15   MinDistanceChangeTrigger as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DistanceChangeTrigger can be set to.
Notes: in milliseconds.
(Read only property)

4.46.16 SonarQuietMode as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: When set to true, the device will operate more quietly.
Notes: The measurable range is reduced when operating in quiet mode.
(Read and Write property)

4.46.17 Events

4.46.18 DistanceChanged(distance as UInt32)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent distance value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a DistanceChangeTrigger has been set to a non-zero value, the DistanceChange event will not occur until the distance has changed by at least the DistanceChangeTrigger value.

4.46.19 SonarReflectionsUpdated(distances() as UInt32, amplitudes() as UInt32)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent reflections the channel has detected will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a DistanceChangeTrigger has been set to a non-zero value, the SonarReflectionsUpdate event will not occur until the distance has changed by at least the DistanceChangeTrigger value.
The closest reflection will be placed at index 0 of the distances array, and the furthest reflection at index 7. If you are only interested in the closest reflection, you can simply use the DistanceChange event.
The values reported as amplitudes are relative amplitudes of the reflections that are normalized to an arbitrary scale.

distances: The reflection values
amplitudes: The amplitude values
count: The number of reflections detected

4.47   class PhidgetEncoderMBS

4.47.1   class PhidgetEncoderMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Encoder class is used to read position data from quadrature encoders in order to track linear or rotary movement.
Notes: If the device supports an index pin as a reference point, you can also access it through this class.
Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

4.47.2   Methods

4.47.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.47.4   Properties

4.47.5   DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another PositionChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between PositionChange events can also affected by the PositionChangeTrigger.

Unit: milliseconds (ms)
(Read and Write property)

4.47.6   Enabled as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The enabled state of the encoder.
Notes: (Read and Write property)

4.47.7 IndexPosition as Int64

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent position of the index channel calculated by the Phidgets library.
Notes: The index channel will usually pulse once per rotation.
Setting the encoder position will move the index position the same amount so their relative position stays the same.
Index position is tracked locally as the last position at which the index was triggered. Setting position will only affect the local copy of the index position value. This means that index positions seen by multiple network applications may not agree.
(Read only property)

4.47.8 IOMode as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The encoder interface mode. Match the mode to the type of encoder you have attached.
Notes: It is recommended to only change this when the encoder disabled in order to avoid unexpected results.
(Read and Write property)

4.47.9 MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.47.10 MaxPositionChangeTrigger as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that PositionChangeTrigger can be set to.
Notes: (Read only property)

4.47.11 MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.47.12   MinPositionChangeTrigger as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that PositionChangeTrigger can be set to.
Notes: (Read only property)

4.47.13   Position as Int64

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent position value calculated by the Phidgets library.
Notes: Position counts quadrature edges within a quadrature cycle. This means there are four counts per full quadrature cycle.
Position is tracked locally as the total position change from the time the channel is opened. Setting position will only affect the local copy of the position value. This means that positions seen by multiple network applications may not agree.
(Read and Write property)

4.47.14   PositionChangeTrigger as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a PositionChange event until the position value has changed by the amount specified by the PositionChangeTrigger.
Notes: Setting the PositionChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering
(Read and Write property)

4.47.15   Events

4.47.16   PositionChanged(positionChange as Integer, timeChange as double, indexTriggered as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent values the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.

Notes: If a PositionChangeTrigger has been set to a non-zero value, the PositionChange event will not occur until the position has changed by at least the PositionChangeTrigger value.

positionChange: The amount the position changed since the last change event

timeChange: The time elapsed since the last change event in milliseconds

indexTriggered: True if the index was passed since the last change event

4.47.17 Constants

Encoder Interface Modes

Constant	Value	Description
kEncoderIOModeCollector10K	5	Line Driver 10K, 10kŒ© pull-down resistors will be applied to the input lines.
kEncoderIOModeCollector2K2	4	Open Collector 2.2K, 2.2kŒ© pull-up resistors will be applied to the input lines.
kEncoderIOModeLineDriver10K	3	Open Collector 10K, 10kŒ© pull-up resistors will be applied to the input lines.
kEncoderIOModeLineDriver2K2	2	Line Driver 2.2K, 2.2kŒ© pull-down resistors will be applied to the input lines.
kEncoderIOModePushPull	1	Push-Pull, No additional pull-up or pull-down resistors will be applied to the input lines.

4.48   class PhidgetErrorExceptionMBS

4.48.1   class PhidgetErrorExceptionMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The error exception.
Notes: Whenever a Phidget function returns an error, we raise an exception and put the error number into the exceptions.
Subclass of the RuntimeException class.
Blog Entries

- Rewritten Phidgets Plugin

4.49 class PhidgetFrequencyCounterMBS

4.49.1 class PhidgetFrequencyCounterMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Frequency Counter class is used to measure the frequency of pulses in an electronic signal, or to count the pulses in the signal.
Notes: Such signals can come from other electronics, or certain sensors that have a pulse output.
Subclass of the PhidgetMBS class.
Blog Entries

- MBS Xojo Plugins, version 23.4pr1

- Rewritten Phidgets Plugin

- MBS Plugins 11.1 Release notes

- MBS Real Studio Plugins, version 11.1pr8

- New Phidgets supported

4.49.2 Methods

4.49.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.49.4 reset

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Resets the Count and TimeElapsed.
Notes: For best results, reset should be called when the channel is disabled.

4.49.5 Properties

4.49.6 Count as UInt64

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent count value the channel has reported.
Notes: The count represents the total number of pulses since the the channel was opened, or last reset.

(Read only property)

4.49.7   DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another CountChange/FrequencyChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.

Unit: milliseconds (ms)
(Read and Write property)

4.49.8   Enabled as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables or disables the channel.
Notes: When a channel is disabled, it will not longer register counts, therefore the TimeElapsed and Count will not be updated until the channel is re-enabled.
(Read and Write property)

4.49.9   FilterType as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Determines the signal type that the channel responds to.
Notes: The filter type is chosen based on the type of input signal. See the PhidgetFrequencyCounter_FilterType entry under Enumerations for more information.
(Read and Write property)

4.49.10   Frequency as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent frequency value that the channel has reported.
Notes: This value will always be between 0 Hz and MaxFrequency.
in Hertz.
(Read only property)

4.49.11 FrequencyCutoff as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The frequency at which zero hertz is assumed.
Notes: This means any frequency at or below the FrequencyCutoff value will be reported as 0 Hz.
This property is stored locally, so other users who have this Phidget open over a network connection won't see the effects of your selected cutoff.
(Read and Write property)

4.49.12 InputMode as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The input polarity mode for your channel.
Notes: See your device's User Guide for more information about what value to chooose for the InputMode
(Read and Write property)

4.49.13 MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.49.14 MaxFrequency as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the FrequencyChange event will report.
Notes: (Read only property)

4.49.15 MaxFrequencyCutoff as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that FrequencyCutoff can be set to.
Notes: (Read only property)

4.49.16   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.49.17   MinFrequencyCutoff as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that FrequencyCutoff can be set to.
Notes: (Read only property)

4.49.18   PowerSupply as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Choose the power supply voltage.
Notes: Set this to the voltage specified in the attached sensor's data sheet to power it.
Set to POWER_SUPPLY_OFF to turn off the supply to save power.
(Read and Write property)

4.49.19   TimeElapsed as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The amount of time the frequency counter has been enabled for.
Notes: This property complements Count, the total number of pulses detected since the channel was opened, or last reset.
(Read only property)

4.49.20   Events

4.49.21   CountChanged(counts as UInt64, timeChange as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent values the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.

Notes: counts: The pulse count of the signal
timeChange: The change in elapsed time since the last change

4.49.22   FrequencyChanged(frequency as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent frequency value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: frequency: The calculated frequency of the signal.

4.49.23   Constants

Filter Types

Constant	Value	Description
kFilterTypeLogicLevel	2	Logic level
kFilterTypeZeroCrossing	1	Zero crossing

Input Modes

Constant	Value	Description
kInputModeNPN	1	For interfacing NPN digital sensors.
kInputModePNP	2	For interfacing PNP digital sensors.

Power Supply

Constant	Value	Description
kPowerSupply12V	2	The sensor is provided with 12 volts
kPowerSupply24V	3	The sensor is provided with 24 volts
kPowerSupplyOff	1	Switch the sensor power supply off.

4.50 class PhidgetGPGGAMBS

4.50.1 class PhidgetGPGGAMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: NMEA GGA Sentence.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Plugins 11.1 Release notes

- MBS Real Studio Plugins, version 11.1pr8

- New Phidgets supported

4.50.2 Methods

4.50.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.50.4 Properties

4.50.5 altitude as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Mean sea level altitude.
Notes: (Read and Write property)

4.50.6 fixQuality as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: GPS quality indicator.
Notes: (Read and Write property)

4.50.7   heightOfGeoid as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Geoidal separation.
Notes: (Read and Write property)

4.50.8   horizontalDilution as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Horizontal dilution of precision.
Notes: (Read and Write property)

4.50.9   latitude as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Latitude.
Notes: (Read and Write property)

4.50.10   longitude as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Longitude.
Notes: (Read and Write property)

4.50.11   numSatellites as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Number of satellites in use.
Notes: (Read and Write property)

4.51   class PhidgetGPGSAMBS

4.51.1   class PhidgetGPGSAMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: NMEA GSA sentence
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Plugins 11.1 Release notes

- MBS Real Studio Plugins, version 11.1pr8

- New Phidgets supported

4.51.2   Methods

4.51.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.51.4   Properties

4.51.5   fixType as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Fix type.
Notes: 1 = no fix, 2 = 2D, 3 = 3D.
(Read and Write property)

4.51.6   horizDilution as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Horizontal dilution of precision.
Notes: (Read and Write property)

4.51.7 mode as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Manual/Automatic mode.
Notes: A = auto, M = manual.
(Read and Write property)

4.51.8 posnDilution as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Position dilution of precision.
Notes: (Read and Write property)

4.51.9 vertDilution as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Vertical dilution of precision.
Notes: (Read and Write property)

4.51.10 satUsed(index as Integer) as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Satellite IDs.
Notes: Index in range of 0 to 11.
(Read and Write computed property)

4.52 class PhidgetGPRMCMBS

4.52.1 class PhidgetGPRMCMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: NMEA RMC sentence.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Plugins 11.1 Release notes

- MBS Real Studio Plugins, version 11.1pr8

- New Phidgets supported

4.52.2 Methods

4.52.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.52.4 Properties

4.52.5 heading as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Heading over ground in degrees.
Notes: (Read and Write property)

4.52.6 latitude as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Latitude.
Notes: (Read and Write property)

4.52.7 longitude as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Longitude.
Notes: (Read and Write property)

4.52.8 magneticVariation as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Magnetic variation.
Notes: (Read and Write property)

4.52.9 mode as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Mode indicator.
Notes: (Read and Write property)

4.52.10 speedKnots as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Speed over ground in knots.
Notes: (Read and Write property)

4.52.11 status as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Status of the data
Notes: (Read and Write property)

4.53   class PhidgetGPSMBS

4.53.1   class PhidgetGPSMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The GPS class is used to configure and gather data from Phidgets GPS sensors, and gives you access to variables from GPS data packets.
Notes: Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

- MBS Real Studio Plugins, version 12.0pr6

- MBS Plugins 11.1 Release notes

- MBS Real Studio Plugins, version 11.1pr8

- New Phidgets supported

4.53.2   Methods

4.53.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.53.4   NMEAData as PhidgetGPSNMEAMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Queries the NMEA data structure.

4.53.5   Properties

4.53.6   Altitude as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The altitude above mean sea level in meters.
Notes: (Read only property)

4.53.7 Date as Date

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The UTC date of the last received position.
Notes: Returns time and date as date object.
(Read only property)

4.53.8 DateTime as DateTime

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The UTC date of the last received position.
Notes: Returns time and date as datetime object.
(Read only property)

4.53.9 Heading as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The current true course over ground of the GPS.
Notes: Heading over ground in degrees.
(Read only property)

4.53.10 Latitude as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The latitude of the GPS in degrees.
Notes: (Read only property)

4.53.11 Longitude as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The longitude of the GPS.
Notes: (Read only property)

4.53.12   PositionFixState as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The status of the position fix.
Notes: True if a fix is available and latitude, longitude, and altitude can be read. False if the fix is not available.
(Read only property)

4.53.13   Velocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The current speed over ground of the GPS.
Notes: (Read only property)

4.53.14   Events

4.53.15   HeadingChanged(heading as double, velocity as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when a heading change occurs.
Notes: heading: The current heading.
velocity: The current velocity.

4.53.16   PositionChanged(latitude as double, longitude as double, altitude as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent values the channel has measured will be reported in this event, which occurs when the GPS position changes.
Notes: latitude: The current latitude.
longitude: The current longitude.
altitude: The current altitude.

4.53.17   PositionFixStateChanged(positionFixState as Boolean)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when a position fix is obtained or lost.
Notes: positionFixState:The state of the position fix.
True indicates a fix is obtained. False indicates no fix found.

4.54   class PhidgetGPSNMEAMBS

4.54.1   class PhidgetGPSNMEAMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The NMEA Data structure.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

4.54.2   Methods

4.54.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.54.4   Destructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.54.5   Properties

4.54.6   GGA as PhidgetGPGGAMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: NMEA GGA Sentence.
Notes: (Read and Write property)

4.54.7   GSA as PhidgetGPGGAMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: NMEA GSA Sentence.
Notes: (Read and Write property)

4.54.8   RMC as PhidgetGPRMCMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: NMEA RMC Sentence.
Notes: (Read and Write property)

4.54.9   VTG as PhidgetGPVTGMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: NMEA VTG Sentence.
Notes: (Read and Write property)

4.55   class PhidgetGPVTGMBS

4.55.1   class PhidgetGPVTGMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: NMEA VTG sentence.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Plugins 11.1 Release notes

- MBS Real Studio Plugins, version 11.1pr8

- New Phidgets supported

4.55.2   Methods

4.55.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.55.4   Properties

4.55.5   magneticHeading as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Magnetic heading.
Notes: (Read and Write property)

4.55.6   mode as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Mode indicator.
Notes: (Read and Write property)

4.55.7 speed as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Speed over ground in km/h.
Notes: (Read and Write property)

4.55.8 speedKnots as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Speed over ground in knots.
Notes: (Read and Write property)

4.55.9 trueHeading as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: True heading over ground.
Notes: (Read and Write property)

4.56   class PhidgetGyroscopeMBS

4.56.1   class PhidgetGyroscopeMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Gyroscope class reports rotational data from the Phidget containing a gyroscope chip for use in your code.
Notes: Phidget gyroscopes usually have multiple sensors, each oriented in a different axis, so multiple dimensions of heading can be recorded.

If the Phidget you're using also has an accelerometer and a magnetometer, you may want to use the Spatial classin order to get all of the data at the same time, in a single event.
Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

4.56.2   Methods

4.56.3   AngularRate as Double()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent angular rate value that the channel has reported.
Notes: This value will always be between MinAngularRate and MaxAngularRate.

4.56.4   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.56.5   MaxAngularRate as Double()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the AngularRateUpdate event will report.

4.56.6 MinAngularRate as Double()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value the AngularRateUpdate event will report.

4.56.7 zero

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Re-zeros the gyroscope in 1-2 seconds.
Notes: The device must be stationary when zeroing.
The angular rate will be reported as $0.0\neg\infty$/s while zeroing.
Zeroing the gyroscope is a method of compensating for the drift that is inherent to all gyroscopes. See your device's User Guide for more information on dealing with drift.

4.56.8 Properties

4.56.9 AxisCount as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The number of axes the channel can measure angular rate on.
Notes: See your device's User Guide for more information about the number of axes and their orientation.
(Read only property)

4.56.10 DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another AngularRate-Update event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
Unit: milliseconds (ms)
(Read and Write property)

4.56.11 HeatingEnabled as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Set to true to enable the temperature stabilization feature of this device.

Notes: This enables onboard heating elements to bring the board up to a known temperature to minimize ambient temerature effects on the sensor's reading. You can leave this setting false to conserve power consumption.This property is shared by any and all spatial-related objects on this device (Accelerometer, Gyroscope, Magnetometer, Spatial)

HeatingEnabled: Whether self-heating temperature stabilization is enabled
(Read and Write property)

4.56.12   MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.56.13   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.56.14   Timestamp as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent timestamp value that the channel has reported.
Notes: This is an extremely accurate time measurement streamed from the device.
If your application requires a time measurement, you should use this value over a local software timestamp.
(Read only property)

4.56.15   Events

4.56.16   AngularRateUpdated(angularRate() as double, timestamp as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent angular rate and timestamp values the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.

Notes: angularRate: The angular rate values
timestamp: The timestamp value

4.57   class PhidgetHubMBS

4.57.1   class PhidgetHubMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The hub class allows you to control power to VINT hub ports.
Notes: Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

4.57.2   Methods

4.57.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.57.4   setPortPower(Port as Integer, State as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Controls power to the VINT Hub Ports.
Notes: port: The Hub port
state: The power state

4.58 class PhidgetHumiditySensorMBS

4.58.1 class PhidgetHumiditySensorMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Humidity Sensor class gathers relative humidity data from the Phidget and makes it available to your code.
Notes: If you're using a simple 0-5V sensor that does not have its own firmware, use the VoltageInput or VoltageRatioInput class instead, as specified for your device.
Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

4.58.2 Methods

4.58.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.58.4 Properties

4.58.5 DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another Humidity-Change event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between HumidityChange events can also affected by the HumidityChangeTrigger.
Unit: milliseconds (ms)
(Read and Write property)

4.58.6 Humidity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent humidity value that the channel has reported.
Notes: This value will always be between MinHumidity and MaxHumidity.

(Read only property)

4.58.7 HumidityChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a HumidityChange event until the humidity value has changed by the amount specified by the HumidityChangeTrigger.
Notes: Setting the HumidityChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering.
(Read and Write property)

4.58.8 MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.58.9 MaxHumidity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that the HumidityChange event will report.
Notes: (Read only property)

4.58.10 MaxHumidityChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that HumidityChangeTrigger can be set to.
Notes: (Read only property)

4.58.11 MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)

(Read only property)

4.58.12 MinHumidity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that the HumidityChange event will report.
Notes: (Read only property)

4.58.13 MinHumidityChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that HumidityChangeTrigger can be set to.
Notes: (Read only property)

4.58.14 Events

4.58.15 HumidityChanged(humidity as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent humidity value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a HumidityChangeTrigger has been set to a non-zero value, the HumidityChange event will not occur until the humidity has changed by at least the HumidityChangeTrigger value.

humidity: The ambient relative humidity

4.59 class PhidgetIRCodeInfoMBS

4.59.1 class PhidgetIRCodeInfoMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The PhidgetIR CodeInfo structure contains all information needed to transmit a code, apart from the actual code data.
Notes: Some values can be set to null to select defaults.
Blog Entries

- MBS REALbasic Plugins, version 10.6pr7

4.59.2 Properties

4.59.3 bitCount as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Number of bits in the code.
Notes: (Read only property)

4.59.4 carrierFrequency as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Carrier frequency in Hz - defaults to 38kHz
Notes: (Read only property)

4.59.5 dutyCycle as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Duty Cycle in percent (0.1-0.5).
Notes: Defaults to 0.33

Unit: duty cycle (duty cycle)
(Read and Write property)

4.59.6 encoding as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Encoding technique used to encode the data.
Notes: (Read only property)

4.59.7 gap as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gap time in microseconds.
Notes: (Read only property)

4.59.8 length as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Constant or Variable length encoding.
Notes: (Read only property)

4.59.9 minRepeat as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Minium number of times to repeat a code on transmit.
Notes: (Read only property)

4.59.10 trail as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Trail time in microseconds.
Notes: Can be zero for no trail.
(Read only property)

4.59.11 header(index as Integer) as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Header pulse and space.
Notes: Can be zero for no header.
Index in range of 0 to 1.
(Read and Write computed property)

4.59.12   one(index as Integer) as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Pulse and Space times to represent a '1' bit, in microseconds
Notes: Index in range of 0 to 1.
(Read and Write computed property)

4.59.13   repeat(index as Integer) as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: A series or pulse and space times to represent the repeat code.
Notes: Start and end with pulses and null terminate. Set to 0 for none.
Index in range of 0 to 25.
(Read and Write computed property)

4.59.14   toggleMask(index as Integer) as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Bit toggles, which are applied to the code after each transmit.
Notes: index from 0 to 32.
(Read and Write computed property)

4.59.15   zero(index as Integer) as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Pulse and Space times to represent a '0' bit, in microseconds
Notes: Index in range of 0 to 1.
(Read and Write computed property)

4.59.16 Constants

Encoding

Constant	Value	Description
kEncodingBiPhase	4	Bi-Phase, or Manchester encoding
kEncodingPulse	3	Pulse encoding, or Pulse Width Modulation
kEncodingRC5	5	RC5 - a type of Bi-Phase encoding
kEncodingRC6	6	RC6 - a type of Bi-Phase encoding
kEncodingSpace	2	Space encoding, or Pulse Distance Modulation
kEncodingUnknown	1	Unknown - the default value

Length Types

Constant	Value	Description
kLengthConstant	2	Constant - the bitstream and gap length is constant
kLengthUnknown	1	Unknown - the default value
kLengthVariable	3	Variable - the bitstream has a variable length with a constant gap

4.60   class PhidgetIRMBS

4.60.1   class PhidgetIRMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Infrared Remote class lets you read and transmit command codes from infrared remotes that the majority of household appliances use.
Notes: You can use this class to construct and transmit commands from scratch, or learn and retransmit codes from the remote controller of your appliance.
Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

- MBS REALbasic Plugins, version 10.6pr7

4.60.2   Methods

4.60.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.60.4   getLastCode(byref bitCount as UInt32) as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The last code the channel has received.
Notes: The code is represented by a hexadecimal string (array of bytes).

4.60.5   getLastLearnedCode(byref codeInfo as PhidgetIRCodeInfoMBS) as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The last code the channel has learned.
Notes: The code is represented by a hexadecimal string (array of bytes).
The codeInfo structure holds data that describes the learned code.

4.60.6 transmit(code as String, codeInfo as PhidgetIRCodeInfoMBS)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Transmits a code
Notes: code data is transmitted MSBit first.
MSByte is in array index 0 of code
LSBit is right justified, therefore, MSBit may be in bit position 0-7 (of array index 0) depending on the bit count.

code:code data
codeInfo:contains the data for characterizing the code.

4.60.7 transmitRaw(data as MemoryBlock, carrierFrequency as UInt32, duty-Cycle as double, gap as UInt32)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Transmits raw data as a series of pulses and spaces.
Notes: data: data to send.
dataLen: length of the data array
carrierFrequency: carrier frequency in Hz
dutyCycle: the duty cycle
gap: the gap time.

data must start and end with a pulse.
Each element is a positive time in Œºs
dataLength has a maximum length of 200, however, streams should be kept must shorter than this (less than 100ms between gaps).
dataLength must be an odd number
Leave carrierFrequency as 0 for default.
carrierFrequency has a range of 10kHz - 1MHz
Leave dutyCycle as 0 for default
dutyCycle can have a value between 0.1 and 0.5
Specifying a gap will guarantee a gap time (no transmitting) after data is sent.
gap time is in Œºs
gap time can be set to 0

4.60.8 transmitRepeat

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Transmits a repeat of the last transmited code.
Notes: Depending on the CodeInfo structure, this may be a retransmission of the code itself, or there may

be a special repeat code.

4.60.9   Events

4.60.10   CodeReceived(code as string, bitCount as Integer, isRepeat as Boolean)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is fired every time a code is received and correctly decoded.
Notes: code: The code string
bitCount: The length of the received code in bits
isRepeat: true if a repeat is detected

The code is represented by a hexadecimal string (array of bytes) with a length of 1/4 of bitCount.
The MSBit is considered to be the first bit received and will be in array index 0 of code
Repeat will be true if a repeat is detected (either timing wise or via a repeat code)
False repeasts can happen if two separate button presses happen close together

4.60.11   Learned(code as string, codeInfo as PhidgetIRCodeInfoMBS)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: This event fires when a button has been held down long enough for the channel to have learned
the CodeInfo values.
Notes: A code is usually learned after 1 second, or after 4 repeats.

4.60.12   RawDataReceived(data as MemoryBlock)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: This event will fire every time the channel gets more data.
Notes: This will happen at most once every 8ms.

4.61   class PhidgetLCDMBS

4.61.1   class PhidgetLCDMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The LCD class allows you to control various liquid crystal displays.
Notes: It offers control of displayed text as well as screen settings and custom character creation.
Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

4.61.2   Methods

4.61.3   Clear

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Clears all pixels in the current frame buffer.
Notes: Changes made to the frame buffer must be flushed to the LCD screen using flush.

4.61.4   ClearAsync

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Clears all pixels in the current frame buffer.
Notes: Changes made to the frame buffer must be flushed to the LCD screen using flush.

Calls ClearAsyncCompleted event later.

4.61.5   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.61.6   copy(sourceFramebuffer as Integer, destFramebuffer as Integer, sourceX1 as Integer, sourceY1 as Integer, sourceX2 as Integer, sourceY2 as Integer, destX as Integer, destY as Integer, inverted as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Copies all pixels from a specified rectangular region to another.
Notes: sourceFramebuffer: Index number of the frame buffer containing the source rectangle
destFramebuffer: Index number of the frame buffer containing the destination rectangle
sourceX1: X coordinate of upper left corner of source rectangle
sourceY1: Y coordinate of upper left corner of source rectangle
sourceX2: X coordinate of bottom right corner of source rectangle
sourceY2: Y coordinate of bottom right corner of source rectangle
destX: X coordinate of upper left corner of destination rectangle
destY: Y coordinate of upper left corner of destination rectangle
inverted: If true, copied pixels are inverted

4.61.7   copyAsync(sourceFramebuffer as Integer, destFramebuffer as Integer, sourceX1 as Integer, sourceY1 as Integer, sourceX2 as Integer, sourceY2 as Integer, destX as Integer, destY as Integer, inverted as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Copies all pixels from a specified rectangular region to another.
Notes: sourceFramebuffer: Index number of the frame buffer containing the source rectangle
destFramebuffer: Index number of the frame buffer containing the destination rectangle
sourceX1: X coordinate of upper left corner of source rectangle
sourceY1: Y coordinate of upper left corner of source rectangle
sourceX2: X coordinate of bottom right corner of source rectangle
sourceY2: Y coordinate of bottom right corner of source rectangle
destX: X coordinate of upper left corner of destination rectangle
destY: Y coordinate of upper left corner of destination rectangle
inverted: If true, copied pixels are inverted

Calls copyAsyncCompleted event later.

4.61.8   drawLine(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Draws a straight line in the current frame buffer between two specified points.
Notes: Changes made to the frame buffer must be flushed to the LCD screen using flush.

x1: X coordinate of the first point
y1: Y coordinate of the first point
x2: X coordinate of the second point
y2: Y coordinate of the second point

4.61.9   drawLineAsync(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Draws a straight line in the current frame buffer between two specified points.
Notes: Changes made to the frame buffer must be flushed to the LCD screen using flush.

x1: X coordinate of the first point
y1: Y coordinate of the first point
x2: X coordinate of the second point
y2: Y coordinate of the second point

CallsdrawLineAsyncCompleted event later.

4.61.10   drawPixel(x as Integer, y as Integer, pixelState as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Draws, erases, or inverts a single specified pixel.
Notes: Changes made to the frame buffer must be flushed to the LCD screen using flush.

x: The X coordinate of the pixel
y: The Y coordinate of the pixel
pixelState: The new state of the pixel.

4.61.11   drawPixelAsync(x as Integer, y as Integer, pixelState as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Draws, erases, or inverts a single specified pixel.
Notes: Changes made to the frame buffer must be flushed to the LCD screen using flush.

x: The X coordinate of the pixel
y: The Y coordinate of the pixel
pixelState: The new state of the pixel.

Calls drawPixelAsyncCompleted event later.

4.61.12   drawRect(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer, filled as Integer, inverted as Integer = 0)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Draws a rectangle in the current frame buffer using the specified points.
Notes: Changes made to the frame buffer must be flushed to the LCD screen using flush.

x1: The X coordinate of the top-left corner of the rectangle
y1: The Y coordinate of the top-left corner of the rectangle
x2: The X coordinate of the bottom-right corner of the rectangle
y2: The Y coordinate of the bottom-right corner of the rectangle
filled: If true, the rectangle will be solid. If false, just a single pixel outline.
inverted: If true, clears the region instead of drawing

4.61.13   drawRectAsync(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer, filled as Integer, inverted as Integer = 0)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Draws a rectangle in the current frame buffer using the specified points.
Notes: Changes made to the frame buffer must be flushed to the LCD screen using flush.

x1: The X coordinate of the top-left corner of the rectangle
y1: The Y coordinate of the top-left corner of the rectangle
x2: The X coordinate of the bottom-right corner of the rectangle
y2: The Y coordinate of the bottom-right corner of the rectangle
filled: If true, the rectangle will be solid. If false, just a single pixel outline.
inverted: If true, clears the region instead of drawing

Calls drawRectAsyncCompleted event later.

4.61.14   Flush

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Flushes the buffered LCD contents to the LCD screen.

4.61.15 FlushAsync

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Flushes the buffered LCD contents to the LCD screen.
Notes: Calls FlushAsyncCompleted event later.

4.61.16 getFontSize(Font as Integer, byref Width as Integer, byref Height as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the size of the specified font.
Notes: font: The specified font
width: The width of the font
height: The height of the font

4.61.17 Initialize

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Initializes the Text LCD display.

4.61.18 MaxCharacters(font as Integer) as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum number of characters that can fit on the frame buffer for the specified font.
Notes: font: The specified font
maxCharacters: The maximum number of characters for the font

4.61.19 saveFrameBuffer(frameBuffer as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Writes the specified frame buffer to flash memory
Notes: Use sparingly. The flash memory is only designed to be written to 10,000 times before it may become unusable. This method can only be called one time each time the channel is opened.

4.61.20   saveFrameBufferAsync(frameBuffer as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Writes the specified frame buffer to flash memory
Notes: Use sparingly. The flash memory is only designed to be written to 10,000 times before it may become unusable. This method can only be called one time each time the channel is opened.

Calls saveFrameBufferAsyncCompleted event later.

4.61.21   setCharacterBitmap(Font as Integer, Character as String, Bitmap as MemoryBlock)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Create a bitmap and select a character to represent it.
Notes: Now, when you use the specific character, the bitmap will show in it's place.

font: The font the character belongs to
character: The character to be changed, in a null-terminated string.
bitmap: Bitmap array as Memoryblock.

4.61.22   setCharacterBitmapAsync(Font as Integer, Character as String, Bitmap as MemoryBlock)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Create a bitmap and select a character to represent it.
Notes: Now, when you use the specific character, the bitmap will show in it's place.

font: The font the character belongs to
character: The character to be changed, in a null-terminated string.
bitmap: Bitmap array as Memoryblock.

Calls setCharacterBitmapAsyncCompleted event later.

4.61.23   setFontSize(Font as Integer, Width as Integer, Height as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the size of the specified font.
Notes: font: The specified font
width: The width of the font
height: The height of the font

4.61.24 writeBitmap(xPosition as Integer, yPosition as Integer, xSize as Integer, ySize as Integer, Bitmap as MemoryBlock)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Draws a bitmap to the current frame buffer at the given location.
Notes: Each byte in the array represents one pixel in row-major order.
Changes made to the frame buffer must be flushed to the LCD screen using flush.

xPosition: The X coordinate of the bitmap
yPosition: The Y coordinate of the bitmap
xSize: The length of each row in the bitmap
ySize: The number of rows in the bitmap
bitmap: The bitmap to be drawn

4.61.25 writeBitmapAsync(xPosition as Integer, yPosition as Integer, xSize as Integer, ySize as Integer, Bitmap as MemoryBlock)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Draws a bitmap to the current frame buffer at the given location.
Notes: Each byte in the array represents one pixel in row-major order.
Changes made to the frame buffer must be flushed to the LCD screen using flush.

xPosition: The X coordinate of the bitmap
yPosition: The Y coordinate of the bitmap
xSize: The length of each row in the bitmap
ySize: The number of rows in the bitmap
bitmap: The bitmap to be drawn

Calls writeTextAsyncCompleted event later.

4.61.26   writeText(Font as Integer, xPosition as Integer, yPosition as Integer, Text as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Writes text to the current frame buffer at the specified location.
Notes: Changes made to the frame buffer must be flushed to the LCD screen using flush.

font: The font of the text
xPosition: The X position of the start of the text string
yPosition: The Y position of the start of the text string
text: The text to be written

4.61.27   writeTextAsync(Font as Integer, xPosition as Integer, yPosition as Integer, Text as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Write text asynchronously.
Notes: Writes text to the current frame buffer at the specified location.
Changes made to the frame buffer must be flushed to the LCD screen using flush.

font: The font of the text
xPosition: The X position of the start of the text string
yPosition: The Y position of the start of the text string
text: The text to be written

Calls writeTextAsyncCompleted event later.

4.61.28   Properties

4.61.29   Backlight as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Backlight affects the brightness of the LCD screen.
Notes: Backlight is bounded by MinBackLight and MaxBacklight.
(Read and Write property)

4.61.30 Contrast as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Contrast level of the text or graphic pixels.
Notes: A higher contrast will make the image darker.
Contrast is bounded by MinContrast and MaxContrast.
(Read and Write property)

4.61.31 CursorBlink as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: When CursorBlink is true, the device will cause the cursor to periodically blink.
Notes: (Read and Write property)

4.61.32 CursorOn as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: When CursorOn is true, the device will underline to the cursor position.
Notes: (Read and Write property)

4.61.33 FrameBuffer as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The frame buffer that is currently being used.
Notes: Commands sent to the device are performed on this buffer.
(Read and Write property)

4.61.34 Height as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The height of the LCD screen attached to the channel.
Notes: (Read only property)

4.61.35   MaxBacklight as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that Backlight can be set to.
Notes: (Read only property)

4.61.36   MaxContrast as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that Contrast can be set to.
Notes: (Read only property)

4.61.37   MinBacklight as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that Backlight can be set to.
Notes: (Read only property)

4.61.38   MinContrast as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that Contrast can be set to.
Notes: (Read only property)

4.61.39   ScreenSize as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The size of the LCD screen attached to the channel.
Notes: (Read and Write property)

4.61.40   Sleeping as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The on/off state of Sleeping.
Notes: Putting the device to sleep turns off the display and backlight in order to save power.
The device will still take commands while asleep, and will wake up if the screen is flushed, or if the contrast or backlight are changed.
When the device wakes up, it will return to its last known state, taking into account any changes that happened while asleep.
(Read and Write property)

4.61.41 Width as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The width of the LCD screen attached to the channel.
Notes: (Read only property)

4.61.42 Events

4.61.43 clearAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when clearAsync completes.

4.61.44 copyAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when copyAsync completes.

4.61.45 drawLineAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when drawLineAsync completes.

4.61.46 drawPixelAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when drawPixelAsync completes.

4.61.47 drawRectAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when drawRectAsync completes.

4.61.48 flushAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when flushAsync completes.

4.61.49 saveFrameBufferAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when saveFrameBufferAsync completes.

4.61.50 setCharacterBitmapAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when setCharacterBitmapAsync completes.

4.61.51 writeBitmapAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when writeBitmapAsync completes.

4.61.52 writeTextAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when writeTextAsync completes.

4.61.53   Constants

Fonts

Constant	Value	Description
kFont5x8	4	5px by 8px font
kFont6x10	3	6px by 10px font
kFont6x12	5	6px by 12px font
kFontUser1	1	User-defined font #1
kFontUser2	2	User-defined font #2

Pixel States

Constant	Value	Description
kPixelStateInvert	2	Invert the pixel state
kPixelStateOff	0	Pixel off state
kPixelStateOn	1	Pixel on state

Screen Sizes

Constant	Value	Description
kScreenSize1x16	4	1x16, One row, 16 column text screen
kScreenSize1x40	&ha	1x40, One row, 40 column text screen
kScreenSize1x8	2	1x8, One row, eight column text screen
kScreenSize2x16	5	2x16, Two row, 16 column text screen
kScreenSize2x20	7	2x20, Two row, 20 column text screen
kScreenSize2x24	9	2x24, Two row, 24 column text screen
kScreenSize2x40	&hb	2x40, Two row, 40 column text screen
kScreenSize2x8	3	2x8, Two row, eight column text screen
kScreenSize4x16	6	4x16, Four row, 16 column text screen
kScreenSize4x20	8	4x20, Four row, 20 column text screen.
kScreenSize4x40	&hc	4x40, Four row, 40 column text screen
kScreenSize64x128	&hd	64x128, 64px by 128px graphic screen
kScreenSizeNone	1	No Screen, Screen size unknown.

4.62   class PhidgetLightSensorMBS

4.62.1   class PhidgetLightSensorMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Light Sensor class gathers data from the light sensor on a Phidget board.
Notes: If you're using a simple 0-5V sensor that does not have its own firmware, use the VoltageInput or VoltageRatioInput class instead, as specified for your device.
Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

4.62.2   Methods

4.62.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.62.4   Properties

4.62.5   DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another IlluminanceChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between IlluminanceChange events can also affected by the IlluminanceChangeTrigger.

Unit: milliseconds (ms)
(Read and Write property)

4.62.6   Illuminance as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent illuminance value that the channel has reported.
Notes: This value will always be between MinIlluminance and MaxIlluminance.

(Read only property)

4.62.7   IlluminanceChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a IlluminanceChange event until the illuminance value has changed by the amount specified by the IlluminanceChangeTrigger.
Notes: Setting the IlluminanceChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering.
(Read and Write property)

4.62.8   MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.62.9   MaxIlluminance as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the IlluminanceChange event will report.
Notes: (Read only property)

4.62.10   MaxIlluminanceChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that IlluminanceChangeTrigger can be set to.
Notes: In lux.
(Read only property)

4.62.11   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.62.12   MinIlluminance as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value the IlluminanceChange event will report.
Notes: (Read only property)

4.62.13   MinIlluminanceChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that IlluminanceChangeTrigger can be set to.
Notes: (Read only property)

4.62.14   Events

4.62.15   IlluminanceChanged(illuminance as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent illuminance value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a IlluminanceChangeTrigger has been set to a non-zero value, the IlluminanceChange event will not occur until the illuminance has changed by at least the IlluminanceChangeTrigger value.

illuminance: The current illuminance

4.63 class PhidgetLogMBS

4.63.1 class PhidgetLogMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The class hosting the log facilities.

4.63.2 Methods

4.63.3 addSource(source as String, LogLevel as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Adds a source to the Phidget logging system.
Notes: This is useful for declaring a source and setting its log level before sending any messages.

source: The source name
level: The log level of the source

4.63.4 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.63.5 Destructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.63.6 disable

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Disables logging within the Phidget library.

4.63.7   disableNetwork

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Disable networking.

4.63.8   disableRotating

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Disables automatic rotation of the log file.

4.63.9   enable(LogLevel as Integer, destination as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables logging within the Phidget library.
Notes: LogLevel: The logging level
destination: The log file path, or ”” for STDOUT

4.63.10   enableNetwork(address as string, port as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enable networking.

4.63.11   enableRotating

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables automatic rotation of the log file (the default).

4.63.12   getRotating(byref size as UInt64, byref keepCount as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the current log rotation parameters.
Notes: size: The file size above which the log file should be rotated.
keepCount: The number of log files that will be kept after rotation.

4.63.13 Log(LogLevel as Integer, Message as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Writes a message to the Phidget library log.
See also:

- 4.63.14 Log(LogLevel as Integer, Source as String, Message as String) 269

4.63.14 Log(LogLevel as Integer, Source as String, Message as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Writes a message to the Phidget library log.
See also:

- 4.63.13 Log(LogLevel as Integer, Message as String) 269

4.63.15 rotate

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Manually rotate the log file.
Notes: This will only have an effect if automatic rotation is disabled and the log file is larger than the specified maximum file size.

4.63.16 setRotating(size as UInt64, keepCount as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets log rotation parameters.
Notes: size: The file size above which the file should be rotated in bytes. Min: 32768 (32 KiB) Def: 10485760 (10 MiB)
keepCount: The number of log files that should be kept after rotation. Min: 0 Def: 1 Max: 64

4.63.17 Sources as String()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Queries current list of log sources.

4.63.18   Properties

4.63.19   isRotating as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Determines if the library is automatically rotating the log file.
Notes: (Read only property)

4.63.20   Level as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets or sets the log level for the phidget22 source..
Notes: (Read and Write property)

4.63.21   SourceLevel(source as String) as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets or sets the log level of the specified log source.
Notes: (Read and Write computed property)

4.63.22   Constants

Log Levels

Constant	Value	Description
LogLevelCritical	1	Critical
LogLevelDebug	5	Debug
LogLevelError	2	Errors
LogLevelInfo	4	Information
LogLevelVerbose	6	Verbose
LogLevelWarning	3	Warnings

4.64 class PhidgetMagnetometerMBS

4.64.1 class PhidgetMagnetometerMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Magnetometer class gathers magnetic compass data from Phidget boards.
Notes: Phidget magnetometers usually have multiple sensors, each oriented in a different axis, so multiple dimensions of compass bearing can be recorded.

If the Phidget you're using also has a gyroscope and an accelerometer, you may want to use the Spatial class in order to get all of the data at the same time, in a single event.
Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

4.64.2 Methods

4.64.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.64.4 MagneticField as Double()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent field strength value that the channel has reported.
Notes: This value will always be between MinMagneticField and MaxMagneticField.

4.64.5 MaxMagneticField as Double()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the MagneticFieldChange event will report.Any readings outside this range will result in a Saturation event.
Notes: This check is done after calibration values have been applied, which will affect your magnetometer's range accordingly.

4.64.6   MinMagneticField as Double()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value the MagneticFieldChange event will report.Any readings outside this range will result in a Saturation event.
Notes: This check is done after calibration values have been applied, which will affect your magnetometer's range accordingly.

4.64.7   resetCorrectionParameters

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Resets the CompassCorrectionParameters to their default values.
Notes: Due to physical location, hard and soft iron offsets, and even bias errors, your device should be calibrated. We have created a calibration program that will provide you with the CompassCorrectionParameters for your specific situation. See your device's User Guide for more information.

4.64.8   saveCorrectionParameters

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Saves the CalibrationParameters.
Notes: Due to physical location, hard and soft iron offsets, and even bias errors, your device should be calibrated. We have created a calibration program that will provide you with the CompassCorrectionParameters for your specific situation. See your device's User Guide for more information.

4.64.9   setCorrectionParameters(magneticField as double, offset0 as double, offset1 as double, offset2 as double, gain0 as double, gain1 as double, gain2 as double, T0 as double, T1 as double, T2 as double, T3 as double, T4 as double, T5 as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calibrate your device for the environment it will be used in.
Notes: Due to physical location, hard and soft iron offsets, and even bias errors, your device should be calibrated. We have created a calibration program that will provide you with the CompassCorrectionParameters for your specific situation. See your device's User Guide for more information.

magneticField: Ambient magnetic field value.
offset0: Provided by calibration program.
offset1: Provided by calibration program.

offset2: Provided by calibration program.
gain0: Provided by calibration program.
gain1: Provided by calibration program.
gain2: Provided by calibration program.
T0: Provided by calibration program.
T1: Provided by calibration program.
T2: Provided by calibration program.
T3: Provided by calibration program.
T4: Provided by calibration program.
T5: Provided by calibration program.

4.64.10   Properties

4.64.11   AxisCount as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The number of axes the channel can measure field strength on.
Notes: See your device's User Guide for more information about the number of axes and their orientation.
(Read only property)

4.64.12   DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another Magnetic-FieldChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between MagneticFieldChange events can also affected by the MagneticFieldChangeTrigger.

Unit: milliseconds (ms)
(Read and Write property)

4.64.13   HeatingEnabled as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Whether self-heating temperature stabilization is enabled.
Notes: Set to true to enable the temperature stabilization feature of this device. This enables onboard heating elements to bring the board up to a known temperature to minimize ambient temerature effects on the sensor's reading. You can leave this setting false to conserve power consumption.This property is shared by any and all spatial-related objects on this device (Accelerometer, Gyroscope, Magnetometer, Spatial)

(Read and Write property)

4.64.14   MagneticFieldChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a MagneticFieldChange event until the field strength value has changed by the amount specified by the MagneticFieldChangeTrigger.
Notes: Setting the MagneticFieldChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering
(Read and Write property)

4.64.15   MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.64.16   MaxMagneticFieldChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that MagneticFieldChangeTrigger can be set to.
Notes: (Read only property)

4.64.17   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.64.18   MinMagneticFieldChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that MagneticFieldChangeTrigger can be set to.
Notes: (Read only property)

4.64.19   Timestamp as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent timestamp value that the channel has reported. This is an extremely accurate time measurement streamed from the device.
Notes: If your application requires a time measurement, you should use this value over a local software timestamp.
(Read only property)

4.64.20   Events

4.64.21   MagneticFieldChanged(magneticField() as double, timestamp as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent magnetic field values the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a MagneticFieldChangeTrigger has been set to a non-zero value, the MagneticFieldChange event will not occur until the field strength has changed by at least the MagneticFieldChangeTrigger value.

magneticField: The magnetic field values. Index from 0 to 2.
timestamp: The timestamp value

4.65   class PhidgetManagerMBS

4.65.1   class PhidgetManagerMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Phidget Manager allows tracking of which Phidgets are available to be controlled from the current program.
Notes: This is useful for listing all available Phidgets so you can select which ones to use at runtime.

You do not need to use a Phidget Manager if you know what Phidgets will be required for your application in advance.

Phidget channels that become available will each send an Attach event, and Phidgets that are removed from the system will send corresponding Detach events. If you are using a Phidget Manager, your program is responsible for keeping track of available Phidgets using these events.

Please use LoadLibrary shared method in PhidgetManagerMBS class to load Phidgets library before using the classes.
Blog Entries

- MBS Xojo Plugins, version 22.1pr4

- MBS Plugins 11.1 Release notes

- MBS REALbasic Plugins, version 11.1pr4

4.65.2   Methods

4.65.3   Close

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Closes a Phidget Manager that has been opened.

4.65.4   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.65.5 Destructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.65.6 LoadLibrary(file as FolderItem) as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Loads the Phidgets library from given location.
Notes: Returns true on success or false on failure.
See LibraryLoadError property for error message.
See also:

- 4.65.7 LoadLibrary(path as String) as Boolean 277

4.65.7 LoadLibrary(path as String) as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Loads the Phidgets library from given file path.
Example:

// where is the library?

#If TargetWindows
Const path = "Phidget22.dll"
#Else TargetMacOS Then
Const path = "/Library/Frameworks/Phidget22.framework"
#EndIf

If PhidgetManagerMBS.LoadLibrary(path) Then

MessageBox "OK"

Else

MessageBox PhidgetManagerMBS.LibraryLoadError
Return

End If

Notes: Returns true on success or false on failure.
See LibraryLoadError property for error message.
See also:

4.65.8   Open

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Opens the Phidget Manager.
Notes: Be sure to register Attach and Detach event handlers for the Manager before opening it, to ensure you program doesn't miss the events reported for devices already connected to your system.

4.65.9   Properties

4.65.10   Handle as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.65.11   LibraryLoaded as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Whether the phidgets library was loaded.
Notes: (Read only property)

4.65.12   LibraryLoadError as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The last error message from LoadLibrary call.
Notes: (Read only property)

4.65.13   Events

4.65.14   Attached(phid as PhidgetMBS)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when a channel is attached.
Notes: Phidget channels you get from the manager are informational only, you can read information about them such as serial number, class, name, etc. but they are not opened. In order to interact with one, you must create and open a Phidget object of the correct type.

4.65.15 Detached(phid as PhidgetMBS)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when a channel is detached.
Notes: Phidget channels you get from the manager are informational only, you can read information about them such as serial number, class, name, etc. but they are not opened. In order to interact with one, you must create and open a Phidget object of the correct type.

4.65.16 Error(errorCode as Integer, errorString as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: An error occurred.

4.66   class PhidgetMBS

4.66.1   class PhidgetMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The core Phidget class deals with functionality common to all Phidgets, such as opening and closing them, or setting Attach, Detach and Event handlers.
Notes: This class is also used to specify the associations between the Phidget software objects and their corresponding physical devices, and makes it possible to determine which Phidget is which in cases where it might otherwise be ambiguous.

This class contains various functions such as Release, Retain, and getParent designed to be used with the Phidget Manager. These specialized functions may be safely ignored if your application does not require a Manager. You can check the Manager API for more information.

All errors are reported as exceptions.
And MBS Plugin schedules all events to raise on main thread, so you can easily update GUI.

Please use LoadLibrary shared method in PhidgetManagerMBS class to load Phidgets library before using the classes
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

4.66.2   Methods

4.66.3   ChildDevices as PhidgetMBS()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Queries child devices for hub.

4.66.4   close

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Closes a Phidget channel that has been opened.
Notes: Close will release the channel on the Phidget device, and should be called prior to delete.

4.66.5 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.
Notes: Overwritten by subclasses.
This constructor is private to make sure you don't create an object from this class by error. Please use designated functions to create objects.

4.66.6 Destructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.66.7 DeviceChannelCount(ChannelClass as Integer) as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of channels of the specified channel class on the device.
Notes: Pass kChannelClassNothing to get the total number of channels.

4.66.8 open

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Opens the Phidget channel.
Notes: The specific channel to be opened can be specified by setting any of the following properties:

DeviceSerialNumber
DeviceLabel
Channel
HubPort
IsHubPortDevice
ServerName
IsLocal
IsRemote

Open will return immediately, with the attachment process proceeding asynchronously. Use the Attach event or Attached property to determine when the channel is ready to use.

4.66.9   openWaitForAttachment(timeoutMs as UInt32 = 1000)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Opens the Phidget channel and waits a defined amount of time for the device to attach.
Notes: The specific channel to be opened can be specified by setting any of the following properties:

DeviceSerialNumber
DeviceLabel
Channel
HubPort
IsHubPortDevice
ServerName
IsLocal
IsRemote

OpenWaitForAttachment() will block until the channel is attached or a timeout occurs. A timeout value of 0 will wait forever.

4.66.10   Poll

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Checks for pending events to dispatch.
Notes: Our plugin dispatches events in two ways. If the event is raised on main thread, it will be raised directly. But if it arrives on other threads, it's queued and then dispatched via a timer on the main thread when there is idle time.
This poll method allows you to dispatch queued events now.

4.66.11   resetLibrary

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Closes all channels, and stops all threads.
Notes: The library is reset to a newly loaded state. All channel handles have been freed.
This function is intended for use in special cases where the library cannot be unloaded between program runs, such as LabVIEW and Unity Editor.

4.66.12   writeDeviceLabel(deviceLabel as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Writes a label to the device in the form of a string in the device flash memory.
Notes: This label can then be used to identify the device, and will persist across power cycles.

The label can be at most 10 UTF-16 code units. Most unicode characters take up a single code unit, but some, such as emoji, can take several.

Some older devices can not have their labels set from Windows. For these devices the label should be set from Linux or macOS.

Note: You should be careful when writing labels in your code, because the label is stored in flash which can only be re-written around 10,000 times before it will no longer write. If your program is complex, be sure to test it thoroughly before using WriteLabel to avoid accidentally burning out the flash.

4.66.13 Properties

4.66.14 Attached as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the attached status of channel.
Notes: A Phidget is attached after it has been opened and the Phidget library finds and connects to the corresponding hardware device.
Most API calls are only valid on attached Phidgets.
(Read only property)
See also:

- 4.66.50 Attached 291

4.66.15 Channel as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel index of the channel on the device.
Notes: Specifies the channel index to be opened. The default channel is 0. Set to kChannelAny to open any channel on the specified device.

If setting this property, it must be set before the channel is opened. The behaviour of setting this property while the channel is open is undefined.
(Read and Write property)

4.66.16 ChannelClass as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the channel class of the channel.
Notes: (Read only property)

4.66.17 ChannelClassName as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the name of the channel class the channel belongs to.
Notes: (Read only property)

4.66.18 ChannelName as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the channel's name.
Notes: This name serves as a description of the specific nature of the channel.
(Read only property)

4.66.19 ChannelSubclass as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the subclass for this channel.
Notes: Allows for identifying channels with specific characteristics without needing to know the exact device and channel index.
(Read only property)

4.66.20 ClientVersionMajor as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The major version of the client.
Notes: (Read only property)

4.66.21 ClientVersionMinor as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minor version of the client.
Notes: (Read only property)

4.66.22 DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another change event.
Notes: Unit: milliseconds (ms)
(Read and Write property)

4.66.23 DeviceClass as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the device class for the Phidget which this channel is a part of.
Notes: (Read only property)

4.66.24 DeviceClassName as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the name of the device class for the Phidget which this channel is a part of.
Notes: (Read only property)

4.66.25 DeviceID as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the DeviceID for the Phidget which this channel is a part of.
Notes: (Read only property)

4.66.26 DeviceLabel as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The device channel.
Notes: Gets the label of the Phidget which this channel is a part of. A device label is a custom string used to more easily identify a Phidget. Labels are written to a Phidget using writeDeviceLabel(), or by right-clicking the device and setting a label in the Phidget Control Panel for Windows.

Specifies the label of the Phidget to be opened. Leave un-set to open any label. A device label is a custom string used to more easily identify a Phidget. Labels are written to a Phidget using Phidget_writeDeviceLabel(), or by right-clicking the device and setting a label in the Phidget Control Panel for Windows.

If setting this property, it must be set before the channel is opened. The behaviour of setting this property while the channel is open is undefined.
(Read and Write property)

4.66.27   DeviceName as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the name of the Phidget which this channel is a part of.
Notes: (Read only property)

4.66.28   DeviceSerialNumber as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The serial number of the Phidget which this channel is a part of.
Notes: If the channel is part of a VINT device, this will be the serial number of the VINT Hub the device is attached to.

Specifies the serial number of the Phidget to be opened. Leave un-set, or set to kSerialNumberAny to open any serial number.
If the channel is part of a VINT device, this will be the serial number of the VINT Hub the device is attached to.

If setting this property, it must be set before the channel is opened. The behaviour of setting this property while the channel is open is undefined.
(Read and Write property)

4.66.29   DeviceSKU as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the SKU (part number) of the Phidget which this channel is a part of.
Notes: (Read only property)

4.66.30   DeviceVersion as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the firmware version of the Phidget which this channel is a part of.
Notes: (Read only property)

4.66.31   Handle as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.66.32   Hub as PhidgetMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the hub that this channel is attached to.
Notes: (Read only property)

4.66.33   HubPort as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the hub port index of the VINT Hub port that the channel is attached to.
Notes: Specifies the hub port index of the VINT Hub port to open this channel on. Leave un-set, or set to kHubPortAny to open the channel on any VINT Hub port

If setting this property, it must be set before the channel is opened. The behaviour of setting this property while the channel is open is undefined.
(Read and Write property)

4.66.34   HubPortCount as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the number of VINT ports present on the VINT Hub that the channel is attached to.
Notes: (Read only property)

4.66.35   IsChannel as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: True if the handle is for a channel.
Notes: Returns true if the PhidgetHandle is for a channel. Mostly for use alongside Phidget_getParent()
to distinguish channel handles from device handles.
(Read only property)

4.66.36   IsHubPortDevice as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Whether this channel is a VINT Hub port channel, or part of a VINT device attached to a hub
port.
Notes: Specifies whether this channel should be opened on a VINT Hub port directly, or on a VINT device
attached to a hub port.

If setting this property, it must be set before the channel is opened. The behaviour of setting this property
while the channel is open is undefined.
(Read and Write property)

4.66.37   IsLocal as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: True when this channel is attached directly on the local machine, or false otherwise.
Notes: Set to True if the channel is to be opened locally, and not over a network. If both this and IsRemote
are set to False (the default), the channel will be opened either locally or remotely, on whichever matching
channel is found first.

If setting this property, it must be set before the channel is opened. The behaviour of setting this property
while the channel is open is undefined.
(Read and Write property)

4.66.38 IsRemote as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: True when this channel is attached via a Phidget network server, or false otherwise.
Notes: Set to True if the channel is to be opened remotely, rather than locally. If both this and IsLocal are set to False (the default), the channel will be opened either locally or remotely, on whichever matching channel is found first.

In order for your program to have access to remote Phidgets, you must use the Networking API to Enable-ServerDiscovery or AddServer.

If setting this property, it must be set before the channel is opened. The behaviour of setting this property while the channel is open is undefined.
(Read and Write property)

4.66.39 LibraryVersion as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the version of the Phidget library being used by the program in human readable form.
Notes: (Read only property)

4.66.40 LibraryVersionNumber as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the version of the Phidget library being used by the program as a version number string.
Notes: (Read only property)

4.66.41 MeshMode as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The mesh mode.
Notes: (Read and Write property)

4.66.42 Parent as PhidgetMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the handle of the parent device of the given Phidget handle.
Notes: For example, this would refer to the device the channel is a part of, or the Hub that a device is plugged into.

This is useful when used alongside a Phidget Manager to create device trees like the one in the Phidget Control Panel.

Phidget_release() must be called on the handle returned by this function to release the reference created by this call.

This can be used to travel up the device tree and get device information at each step.
The root device will return a null handle
Parent handles always refer to devices. See IsChannel()
(Read only property)

4.66.43   ServerHostname as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the hostname of the Phidget network server for network attached Phidgets.
Notes: Fails if the channel is not connected to a Phidget network server.
(Read only property)

4.66.44   ServerName as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the name of the Phidget network server the channel is attached to, if any.
Notes: Fails if the channel is not connected to a Phidget network server.
(Read and Write property)

4.66.45   ServerPeerName as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the peer name of the channel's server.
Notes: Gets the peer name (address and port) of the Phidget server for network attached Phidgets, formatted as: address:port
Fails if the channel is not connected to a Phidget network server.
(Read only property)

4.66.46   ServerUniqueName as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the unique name for the server the channel is attached to, if any.
Notes: This is either a unique mDNS name, or the name specified in addServer
Fails if the channel is not connected to a Phidget network server.
(Read only property)

4.66.47   ServerVersionMajor as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The major version of the server.
Notes: (Read only property)

4.66.48   ServerVersionMinor as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minor version of the server.
Notes: (Read only property)

4.66.49   Events

4.66.50   Attached

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when the channel is attached to a physical channel on a Phidget.
Notes: This event is the recommended place to configuration properties of the channel such as the data interval or change trigger.
See also:

- 4.66.14 Attached as Boolean 283

4.66.51   Detached

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when the channel is detached from a Phidget device channel.
Notes: This typically occurs when the Phidget device is removed from the system.

4.66.52   Error(errorCode as Integer, errorString as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called when an error condition has been detected.
Notes: See the documentation for your specific channel class to see what error events it might throw.

4.66.53   PropertyChanged(propertyName as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when a property is changed externally from the user channel, usually from a network client attached to the same channel.

4.66.54   Constants

Constants

Constant	Value	Description
kChannelAny	-1	The constant for any channel.
		Pass to Channel to open any channel.
kHubPortAny	-1	The constant for any port.
		Pass to HubPort to open any hub port.
kIRMaxCodeBitCount	&h80	One of the constants for IR sender/receiver.
kIRMaxCodeStrLength	&h21	One of the constants for IR sender/receiver.
kIRRawDataLongSpace	&hffffffff	One of the constants for IR sender/receiver.
kLabelAny	””	The constant to pick any label.
		Pass to DeviceLabel to open any label.
kSerialNumberAny	-1	The constant for any serial number.
		Pass to DeviceSerialNumber to open any serial number.
kServerAuthRequired	1	A flag constant for server.

Channel Class

Constant	Value	Description
kChannelClassAccelerometer	1	Accelerometer channel
kChannelClassBLDCMotor	&H23	BLDC motor channel
kChannelClassCapacitiveTouch	&He	Capacitive Touch channel
kChannelClassCurrentinput	2	Current input channel
kChannelClassCurrentoutput	&H26	Current output channel
kChannelClassDataAdapter	3	Data Adapter
kChannelClassDcmotor	4	DC motor channel
kChannelClassDictionary	&H24	Dictionary
kChannelClassDigitalInput	5	Digital input channel
kChannelClassDigitalOutput	6	Digital output channel
kChannelClassDistanceSensor	7	Distance sensor channel
kChannelClassEncoder	8	Encoder channel
kChannelClassFirmwareUpgrade	&H20	Firmware Upgrade
kChannelClassFrequencyCounter	9	Frequency counter channel
kChannelClassGeneric	&H21	Generic channel
kChannelClassGps	&Ha	GPS channel
kChannelClassGyroscope	&Hc	Gyroscope channel
kChannelClassHub	&Hd	VINT Hub channel
kChannelClassHumiditySensor	&Hf	Humidity sensor channel
kChannelClassIR	&H10	IR channel
kChannelClassLcd	&Hb	LCD channel
kChannelClassLightSensor	&H11	Light sensor channel
kChannelClassMagnetometer	&H12	Magnetometer channel
kChannelClassMeshdongle	&H13	Mesh Dongle
kChannelClassMotorPositionController	&H22	Motor position control channel.
kChannelClassNothing	0	Unknown
kChannelClassPhSensor	&H25	pH sensor channel
kChannelClassPowerguard	&H14	Power guard channel
kChannelClassPressureSensor	&H15	Pressure sensor channel
kChannelClassRCServo	&H16	RC Servo channel
kChannelClassResistanceInput	&H17	Resistance input channel
kChannelClassRFID	&H18	RFID channel
kChannelClassSoundSensor	&H19	Sound sensor channel
kChannelClassSpatial	&H1A	Spatial channel
kChannelClassStepper	&H1B	Stepper channel
kChannelClassTemperatureSensor	&H1C	Temperature sensor channel
kChannelClassVoltageInput	&H1D	Voltage input channel
kChannelClassVoltageOutput	&H1E	Voltage output channel
kChannelClassVoltageRatioInput	&H1F	Voltage ratio input channel

Channel Sub Class

Constant	Value	Description
kChannelSubClassDigitaloutputDutyCycle	&H10	Digital output duty cycle
kChannelSubClassDigitaloutputFrequency	&H12	Digital output frequency
kChannelSubClassDigitaloutputLedDriver	&H11	Digital output LED driver
kChannelSubClassEncoderModeSettable	&H60	Encoder IO mode settable
kChannelSubClassLCDGraphic	&H50	Graphic LCD
kChannelSubClassLCDText	&H51	Text LCD
kChannelSubClassNone	1	No subclass
kChannelSubClassSpatialAhrs	&H70	Spatial AHRS/IMU
kChannelSubClassTemperaturesensorRtd	&H20	Temperature sensor RTD
kChannelSubClassTemperaturesensorThermocouple	&H21	Temperature sensor thermocouple
kChannelSubClassVoltageInputSensorPort	&H30	Voltage sensor port
kChannelSubClassVoltageRatioInputBridge	&H41	Voltage ratio bridge input
kChannelSubClassVoltageRatioInputSensorPort	&H40	Voltage ratio sensor port

Device Class

Constant	Value	Description
kDeviceClassAccelerometer	1	PhidgetAccelerometer device
kDeviceClassAdvancedServo	2	PhidgetAdvancedServo device
kDeviceClassAnalog	3	PhidgetAnalog device
kDeviceClassBridge	4	PhidgetBridge device
kDeviceClassDataAdapter	&H19	PhidgetDataAdapter device
kDeviceClassDictionary	&H18	Dictionary device
kDeviceClassEncoder	5	PhidgetEncoder device
kDeviceClassFirmwareUpgrade	&H17	Firmware Upgrade
kDeviceClassFrequencyCounter	6	PhidgetFrequencyCounter device
kDeviceClassGeneric	&H16	Generic class.
kDeviceClassGPS	7	PhidgetGPS device
kDeviceClassHub	8	Phidget VINT Hub device
kDeviceClassInterfaceKit	9	PhidgetInterfaceKit device
kDeviceClassIR	&Ha	PhidgetIR device
kDeviceClassLed	&Hb	PhidgetLED device
kDeviceClassMeshDongle	&Hc	Mesh Dongle
kDeviceClassMotorControl	&Hd	PhidgetMotorControl device
kDeviceClassNothing	0	Unknown device.
kDeviceClassPhsensor	&He	PhidgetPHSensor device
kDeviceClassRFID	&Hf	PhidgetRFID device
kDeviceClassServo	&H10	PhidgetServo device
kDeviceClassSpatial	&H11	PhidgetSpatial device
kDeviceClassStepper	&H12	PhidgetStepper device
kDeviceClassTemperatureSensor	&H13	PhidgetTemperatureSensor device
kDeviceClassTextLCD	&H14	PhidgetTextLCD device
kDeviceClassVint	&H15	Phidget VINT Hub device

Error Codes

Constant	Value	Description
kError2Big	&H36	
kErrorAccess	7	Access (Permission) Issue: Access to the resource (file) is denied. This can happen when enabling logging.
kErrorAgain	&H16	
kErrorBadPassword	&H25	
kErrorBadVersion	&H37	
kErrorBusy	9	Resource Busy: Specified resource is in use. This error code is not normally used.
kErrorClosed	&H38	Closed: Channel was closed. This can happen if a channel is closed while openWaitForAttachment is waiting.
kErrorConnRef	&H23	
kErrorConnReset	&H2E	
kErrorDuplicate	&H1B	Duplicate: Duplicated request. Can happen with some Net API calls, such as trying to add the same server twice.
kErrorEof	&H1F	
kErrorEventBadConnection	&H1011	
kErrorEventBadPower	&H1008	
kErrorEventBadVersion	1	
kErrorEventBusy	2	
kErrorEventDispatch	4	
kErrorEventEnergyDump	&H100E	
kErrorEventFailSafe	&H100C	
kErrorEventFailure	5	
kErrorEventInvalidState	&H1010	
kErrorEventMotorStall	&H100F	
kErrorEventNetwork	3	
kErrorEventOk	&H1000	
kErrorEventOutOfRange	&H1007	
kErrorEventOverCurrent	&H1006	
kErrorEventOverrun	&H1002	
kErrorEventOverTemp	&H1005	
kErrorEventOverVoltage	&H100B	
kErrorEventPacketLost	&H1003	
kErrorEventSaturation	&H1009	
kErrorEventVoltageError	&H100D	
kErrorEventWrap	&H1004	
kErrorExist	&Ha	
kErrorFailSafe	&H3B	
kErrorFault	8	
kErrorFBig	&H11	
kErrorHostUnreach	&H30	
kErrorInterrupted	4	Op Interrupted: The operation was interrupted; either from an error, or because the device was closed.
kErrorInvalid	&Hd	Invalid: Invalid or malformed command. This can be caused by sending a command to a device which is not supported in it's current configuration.
kErrorInvalidArg	&H15	Invalid Argument: One or more of the parameters passed to the function is not accepted by the channel in its current configuration. This may also be an indication that a NULL pointer was passed where a valid pointer is required.
kErrorInvalidPacket	&H35	
kErrorIO	5	
kErrorIsdir	&Hc	
kErrorKeepAlive	&H3A	
kErrorMFile	&Hf	
kErrorNetUnavail	&H2D	
kErrorNFile	&He	
kErrorNoDev	&H28	
kErrorNoEnt	2	No Such Entity: The specified entity does not exist. This is usually a result of Net or Log API calls.

Device IDs

Constant	Value	Description
kID1000	2	PhidgetServo 1-Motor (1000)
kID1001	3	PhidgetServo 4-Motor (1001)
kID1002	4	PhidgetAnalog 4-Output (1002)
kID1008	5	PhidgetAccelerometer 2-Axis (1008)
kID1010_1013_1018_1019	6	PhidgetInterfaceKit 8/8/8 (1010, 1013, 1018, 1019)
kID1011	7	PhidgetInterfaceKit 2/2/2 (1011)
kID1012	8	PhidgetInterfaceKit 0/16/16 (1012)
kID1014	9	PhidgetInterfaceKit 0/0/4 (1014)
kID1015	&ha	PhidgetLinearTouch (1015)
kID1016	&hb	PhidgetCircularTouch (1016)
kID1017	&hc	PhidgetInterfaceKit 0/0/8 (1017)
kID1023	&hd	PhidgetRFID (1023)
kID1024	&he	PhidgetRFID Read-Write (1024)
kID1030	&hf	PhidgetLED-64 (1030)
kID1031	&h10	PhidgetLED-64 Advanced (1031)
kID1032	&h11	PhidgetLED-64 Advanced (1032)
kID1040	&h12	PhidgetGPS (1040)
kID1041	&h13	PhidgetSpatial 0/0/3 Basic (1041)
kID1042	&h14	PhidgetSpatial 3/3/3 Basic (1042)
kID1043	&h15	PhidgetSpatial Precision 0/0/3 High Resolution (1043)
kID1044	&h16	PhidgetSpatial Precision 3/3/3 High Resolution (1044)
kID1045	&h17	PhidgetTemperatureSensor IR (1045)
kID1046	&h18	PhidgetBridge 4-Input (1046)
kID1047	&h19	PhidgetEncoder HighSpeed 4-Input (1047)
kID1048	&h1a	PhidgetTemperatureSensor 4-input (1048)
kID1049	&h1b	PhidgetSpatial 0/0/3 (1049)
kID1051	&h1c	PhidgetTemperatureSensor 1-Input (1051)
kID1052	&h1d	PhidgetEncoder Mechanical (1052)
kID1053	&h1e	PhidgetAccelerometer 2-Axis (1053)
kID1054	&h1f	PhidgetFrequencyCounter (1054)
kID1055	&h20	PhidgetIR (1055)
kID1056	&h21	PhidgetSpatial 3/3/3 (1056)
kID1057	&h22	PhidgetEncoder HighSpeed (1057)
kID1058	&h23	PhidgetPHSensor (1058)
kID1059	&h24	PhidgetAccelerometer 3-Axis (1059)
kID1060	&h25	PhidgetMotorControl LV (1060)
kID1061	&h26	PhidgetAdvancedServo 8-Motor (1061)
kID1062	&h27	PhidgetStepper Unipolar 4-Motor (1062)
kID1063	&h28	PhidgetStepper Bipolar 1-Motor (1063)
kID1064	&h29	PhidgetMotorControl HC (1064)
kID1065	&h2a	PhidgetMotorControl 1-Motor (1065)
kID1066	&h2b	PhidgetAdvancedServo 1-Motor (1066)
kID1067	&h2c	PhidgetStepper Bipolar HC (1067)
kID1202_1203	&h2d	PhidgetTextLCD 20x2 with PhidgetInterfaceKit 8/8/8 (1201, 1202, 1203)
kID1204	&h2e	PhidgetTextLCD Adapter (1204)
kID1215_1218	&h2f	PhidgetTextLCD 20x2 (1215/1216/1217/1218)
kID1219_1222	&h30	PhidgetTextLCD 20x2 with PhidgetInterfaceKit 0/8/8 (1219, 1220, 1221, 1222)
kIDADP1000	&h31	pH Adapter
kIDADP1001	&h84	RS232 Adapter
kIDADPRS485_422	&h85	RS485/422 Prototype
kIDADPSerial	&h86	Serial Prototype
kIDCURLOOP	&h7a	4-20mA Output
kIDDAQ1000	&h33	Analog Input Module x8
kIDDAQ1200	&h34	Digital Input 4
kIDDAQ1300	&h35	Digital Input 4 Isolated
kIDDAQ1301	&h36	Digital Input 16
kIDDAQ1400	&h37	Versatile Input
kIDDAQ1500	&h38	Bridge

Mesh Modes

Constant	Value	Description
kMeshModeRouter	1	Router mode
kMeshModeSleepyEndDevice	2	Sleepy end device mode

Timeouts

Constant	Value	Description
kTimeoutDefault	300000000	Pass to OpenWaitForAttachment() for the default timeout.
kTimeoutInfinite	0	Pass to OpenWaitForAttachment() for an infinite timeout.

4.67 class PhidgetMissingFunctionExceptionMBS

4.67.1 class PhidgetMissingFunctionExceptionMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The exception to report a missing function.
Notes: This exception type is raised when a library function should be called, but is not available.
Subclass of the RuntimeException class.
Blog Entries

- MonkeyBread Software Releases the MBS REALbasic plug-ins 9.2

4.68   class PhidgetMotorPositionControllerMBS

4.68.1   class PhidgetMotorPositionControllerMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Motor Position Controller class controls the position, velocity and acceleration of the attached motor.
Notes: It also contains various other control and monitoring functions that aid in the control of the motor.

For specifics on how to use this class, we recommend watching our video on the Phidget Motor Position Controller class.
Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

4.68.2   Methods

4.68.3   addPositionOffset(positionOffset as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Adds an offset (positive or negative) to the current position.
Notes: Useful for zeroing position.

4.68.4   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.68.5   enableFailsafe(failsafeTime as UInt32)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables the failsafe feature for the channel, with a given failsafe time.
Notes: The failsafe feature is intended for use in applications where it is important for the channel to enter a known safe state if the program controlling it locks up or crashes. If you do not enable the failsafe feature, the channel will carry out whatever instructions it was last given until it is explicitly told to stop.

Enabling the failsafe feature starts a recurring failsafe timer for the channel. Once the failsafe timer is enabled, it must be reset within the specified time or the channel will enter a failsafe state. The failsafe timer may be reset either by calling this function again, or using the ResetFailsafe function. Resetting the failsafe timer will reload the timer with the specified failsafe time, starting when the message to reset the timer is received by the Phidget.

For example: if the failsafe is enabled with a failsafe time of 1000ms, you will have 1000ms to reset the failsafe timer. Every time the failsafe timer is reset, you will have 1000ms from that time to reset the failsafe again.

If the failsafe timer is not reset before it runs out, the channel will enter a failsafe state. For Motor Position Controller channels, this will disengage the controller. Once the channel enters the failsafe state, it will reject any further input until the channel is reopened.

To prevent the channel from falsely entering the failsafe state, we recommend resetting the failsafe timer as frequently as is practical for your applicaiton. A good rule of thumb is to not let more than a third of the failsafe time pass before resetting the timer.

Once the failsafe timer has been set, it cannot be disabled by any means other than closing and reopening the channel.

4.68.6   resetFailsafe

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Resets the failsafe timer, if one has been set. See EnableFailsafe for details.
Notes: This function will fail if no failsafe timer has been set for the channel.

4.68.7   setTargetVelocityAsync(targetVelocity as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets target velocity asynchronously.
Notes: Calls setTargetVelocityAsyncCompleted later.

4.68.8   Properties

4.68.9   Acceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The rate at which the controller can change the motor's velocity.
Notes: Units for Position, VelocityLimit, Acceleration, and DeadBand can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
(Read and Write property)

4.68.10   CurrentLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Motor current limit
Notes: The controller will limit the current through the motor to this value.

Unit: amperes (A)
(Read and Write property)

4.68.11   CurrentRegulatorGain as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Current Regulator Gain.
Notes: Depending on power supply voltage and motor coil inductance, current through the motor can change relatively slowly or extremely rapidly. A physically larger DC Motor will typically have a lower inductance, requiring a higher current regulator gain. A higher power supply voltage will result in motor current changing more rapidly, requiring a higher current regulator gain. If the current regulator gain is too small, spikes in current will occur, causing large variations in torque, and possibly damaging the motor controller. If the current regulator gain is too high, the current will jitter, causing the motor to sound 'rough', especially when changing directions. Each DC Motor we sell specifies a suitable current regulator gain.
(Read and Write property)

4.68.12   DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the controller will fire another CurrentChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between CurrentChange events can also affected by the CurrentChangeTrigger.

Unit: milliseconds (ms)
(Read and Write property)

4.68.13 DeadBand as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Depending on your system, it may not be possible to bring the position error (TargetPosition - Position) to zero.
Notes: A small error can lead to the motor continually 'hunting' for a target position, which can cause unwanted effects. By setting a non-zero DeadBand, the position controller will relax control of the motor within the deadband, preventing the 'hunting' behavior.
Units for Position, VelocityLimit, Acceleration, and DeadBand can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
(Read and Write property)

4.68.14 DutyCycle as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent duty cycle value that the controller has reported.
Notes: This value will be between -1 and 1 where a sign change ($\neg\pm$) is indicitave of a direction change.
Note that DutyCycle is merely an indication of the average voltage across the motor. At a constant load, an increase in DutyCycle indicates an increase in motor speed.
The units of DutyCycle refer to 'duty cycle'. This is because the controller must rapidly switch the power on/off (i.e. change the duty cycle) in order to manipulate the voltage across the motor.

Unit: duty cycle (duty cycle)
(Read only property)

4.68.15 Engaged as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: When engaged, a motor has the ability to be positioned. When disengaged, no commands are sent to the motor.
Notes: This function is useful for completely relaxing a motor once it has reached the target position.
(Read and Write property)

4.68.16 FanMode as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The FanMode dictates the operating condition of the fan.
Notes: Choose between on, off, or automatic (based on temperature).
If the FanMode is set to automatic, the fan will turn on when the temperature reaches 70$\neg\infty$C and it will

remain on until the temperature falls below 55¬∞C.
If the FanMode is off, the controller will still turn on the fan if the temperature reaches 85¬∞C and it will remain on until it falls below 70¬∞C.
(Read and Write property)

4.68.17   IOMode as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The encoder interface mode. Match the mode to the type of encoder you have attached.
Notes: It is recommended to only change this when the encoder disabled in order to avoid unexpected results.
(Read and Write property)

4.68.18   Kd as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Derivative gain constant.
Notes: A higher Kd will help reduce oscillations.
(Read and Write property)

4.68.19   Ki as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Integral gain constant.
Notes: The integral term will help eliminate steady-state error.
(Read and Write property)

4.68.20   Kp as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Proportional gain constant.
Notes: A small Kp value will result in a less responsive controller, however, if Kp is too high, the system can become unstable.
(Read and Write property)

4.68.21 MaxAcceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that Acceleration can be set to.
Notes: Units for Position, VelocityLimit, Acceleration, and DeadBand can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
(Read only property)

4.68.22 MaxCurrentLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum current limit that can be set for the device.
Notes: Unit: amperes (A)
(Read only property)

4.68.23 MaxCurrentRegulatorGain as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum current regulator gain for the device.
Notes: (Read only property)

4.68.24 MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.68.25 MaxFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: (Read only property)

4.68.26   MaxPosition as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that TargetPosition can be set to.
Notes: Units for Position, VelocityLimit, Acceleration, and DeadBand can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
(Read only property)

4.68.27   MaxStallVelocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The upper bound of StallVelocity.
Notes: (Read only property)

4.68.28   MaxVelocityLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that VelocityLimit can be set to.
Notes: Units for Position, VelocityLimit, Acceleration, and DeadBand can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
(Read only property)

4.68.29   MinAcceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that Acceleration can be set to.
Notes: Units for Position, VelocityLimit, Acceleration, and DeadBand can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
(Read only property)

4.68.30   MinCurrentLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum current limit that can be set for the device.
Notes: Unit: amperes (A)
(Read only property)

4.68.31 MinCurrentRegulatorGain as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum current regulator gain for the device.
Notes: (Read only property)

4.68.32 MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.68.33 MinFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: (Read only property)

4.68.34 MinPosition as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that TargetPosition can be set to.
Notes: Units for Position, VelocityLimit, Acceleration, and DeadBand can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
(Read only property)

4.68.35 MinStallVelocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The lower bound of StallVelocity.
Notes: (Read only property)

4.68.36   MinVelocityLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that VelocityLimit can be set to.
Notes: Units for Position, VelocityLimit, Acceleration, and DeadBand can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
(Read only property)

4.68.37   Position as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent position value that the controller has reported.
Notes: This value will always be between MinPosition and MaxPosition.
Units for Position, VelocityLimit, Acceleration, and DeadBand can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
(Read only property)

4.68.38   RescaleFactor as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Change the units of your parameters so that your application is more intuitive.
Notes: Units for Position, VelocityLimit, Acceleration, and DeadBand can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
(Read and Write property)

4.68.39   StallVelocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Before reading this description, it is important to note the difference between the units of StallVelocity and Velocity.
Notes: Velocity is a number between -1 and 1 with units of 'duty cycle'. It simply represents the average voltage across the motor.
StallVelocity represents a real velocity (e.g. m/s, RPM, etc.) and the units are determined by the RescaleFactor. With a RescaleFactor of 1, the default units would be in commutations per second.

If the load on your motor is large, your motor may begin rotating more slowly, or even fully stall. Depending on the voltage across your motor, this may result in a large amount of current through both the controller and the motor. In order to prevent damage in these situations, you can use the StallVelocity property.

The StallVelocity should be set to the lowest velocity you would expect from your motor. The controller will then monitor the motor's velocity, as well as the Velocity, and prevent a 'dangerous stall' from occuring. If the controller detects a dangerous stall, it will immediately disengage the motor (i.e. Engaged will be set to false) and an error will be reported to your program.

A 'dangerous stall' will occur faster when the Velocity is higher (i.e. when the average voltage across the motor is higher)
A 'dangerous stall' will occur faster as (StallVelocity - motor velocity) becomes larger.

Setting StallVelocity to 0 will turn off stall protection functionality.
(Read and Write property)

4.68.40 TargetPosition as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: If the controller is configured and the TargetPosition is set, the motor will try to reach the TargetPostiion.
Notes: If the DeadBand is non-zero, the final position of the motor may not match the TargetPosition
Units for Position, VelocityLimit, Acceleration, and DeadBand can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
(Read and Write property)

4.68.41 VelocityLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: When moving, the motor velocity will be limited by this value.
Notes: VelocityLimit is bounded by MinVelocityLimit and MaxVelocityLimit.
Units for Position, VelocityLimit, Acceleration, and DeadBand can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
(Read and Write property)

4.68.42 Events

4.68.43 DutyCycleUpdated(dutyCycle as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent duty cycle value will be reported in this event, which occurs when the DataInterval has elapsed.

Notes: This event will always occur when the DataInterval elapses. You can depend on this event for constant timing when implementing control loops in code. This is the last event to fire, giving you up-to-date access to all properties.

4.68.44   PositionChanged(position as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent position value will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: Regardless of the DataInterval, this event will occur only when the position value has changed from the previous value reported.
Units for Position can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.

position: The position value

4.68.45   setTargetVelocityAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Called by setTargetVelocityAsync when completed.

4.68.46   Constants

Encoder interface mode

Constant	Value	Description
kEncoderIOModeCollector10K	5	Open Collector 10K, 10kŒ© pull-up resistors will be applied to the input lines.
kEncoderIOModeCollector2K2	4	Open Collector 2.2K, 2.2kŒ© pull-up resistors will be applied to the input lines.
kEncoderIOModeLineDriver10K	3	Line Driver 10K, 10kŒ© pull-down resistors will be applied to the input lines.
kEncoderIOModeLineDriver2K2	2	Line Driver 2.2K, 2.2kŒ© pull-down resistors will be applied to the input lines.
kEncoderIOModePushPull	1	Push-Pull, No additional pull-up or pull-down resistors will be applied to the input lines.

Fan Modes

Constant	Value	Description
kFanModeAuto	3	The fan will be automatically controlled based on temperature.
kFanModeOff	1	Turns the fan off.
kFanModeOn	2	Turns the fan on.

4.69 class PhidgetNetMBS

4.69.1 class PhidgetNetMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The class for managing servers.
Notes: The Phidget NET class controls all network functionality of a Phidget program, and allows for the use of remote Phidgets in your program. It can be used to enable automated Phidget server discovery over the local network, and to connect to or reject specific servers.

For basic use of the Net class, the only functions you need to worry about are EnableServerDiscovery and AddServer. In most cases, you can use EnableServerDiscovery with server type kServerTypeDeviceRemote to automatically connect to Phidget servers on your local network. You can use AddServer to connect to servers that aren't discoverable on your local network.

To connect to a password-protected discoverable server on your local network, you can use SetServerPassword to specify the password to connect to that server.

If for some reason you need to prevent your program from discovering a non-password-protected server on your local network, you can call DisableServer directly after calling EnableServerDiscovery.

You must enable server discovery or add at least one server before setting other properties of this class, such as disabling servers, or setting server passwords. Similarly, server discovery must remain enabled, or at least one server must remain added, to maintain memory of those preferences.

4.69.2 Methods

4.69.3 addServer(serverName as String, address as String, port as Integer, password as String, Flags as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Registers a server that the client (your program) will try to connect to.
Notes: The client will continually try to connect to the server, increasing the time between each attempt to a maximum interval of 16 seconds.

This call is intended for use when server discovery is not enabled, or to connect to a server that is not discoverable.

The server name used by this function does not have to match the name of the server running on the host machine. Only the address, port, and password need to match.

This call will fail if a server with the same name has already been discovered.

This call will fail if SetServerPassword() has already been called with the same server name, as SetServer-Password() registers the server entry anticipating the discovery of the server.

4.69.4   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.69.5   Destructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.69.6   disableServer(serverName as String, flags as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Prevents attempts to automatically connect to a server.
Notes: By default the client (your program) will continually attempt to connect to added or discovered servers.This call will disable those attempts, but will not close an already established connection.

4.69.7   disableServerDiscovery(serverType as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Disables the dynamic discovery of servers that publish their identity.
Notes: DisableServerDiscovery() does not disconnect already established connections.

4.69.8   enableServer(serverName as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables attempts to connect to a discovered server, if attempts were previously disabled by DisableServer().

Notes: All servers are enabled by default.

This call will fail if the server was not previously added, disabled or discovered.

4.69.9   enableServerDiscovery(serverType as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables the dynamic discovery of servers that publish their identity to the network.
Notes: Currently Multicast DNS is used to discover and publish Phidget servers.
To connect to remote Phidgets, call this function with server type kServerTypeDeviceRemote.

EnableServerDiscovery must be called once for each server type your program requires. Multiple calls for the same server type are ignored

This call will fail with the error code EPHIDGET_UNSUPPORTED if your computer does not have the required mDNS support. We recommend using Bonjour Print Services on Windows and Mac, or Avahi on Linux.

4.69.10   removeAllServers

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Removes all servers.

4.69.11   removeServer(serverName as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Removes a registration for a server that the client (your program) is trying to connect to.
Notes: If the client is currently connected to the server, the connection will be closed.

If the server was discovered (not added by AddServer()), the connection may be reestablished if and when the server is rediscovered. DisableServer() should be used to prevent the reconnection of a discovered server

4.69.12   setServerPassword(serverName as String, password as String)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the password that will be used to attempt to connect to the server.
Notes: If the server has not already been added or discovered, a placeholder server entry will be registered to use this password on the server once it is discovered.

serverName: The name of the server
password: The password to use for the server (empty string if no password)

4.69.13   Events

4.69.14   ServerAdded(server as PhidgetServerMBS)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Subscribe to this event if you would like to know when a server has been added.

4.69.15   ServerRemoved(server as PhidgetServerMBS)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Subscribe to this event if you would like to know when a server has been removed.

4.70 class PhidgetNotInitialzedExceptionMBS

4.70.1 class PhidgetNotInitialzedExceptionMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The exception to report an access of a not initialized object.
Notes: We raise this exception if handle is zero, so the object was not properly initialized.
Subclass of the RuntimeException class.
Blog Entries

- MonkeyBread Software Releases the MBS REALbasic plug-ins 9.2

4.71   class PhidgetPHSensorMBS

4.71.1   class PhidgetPHSensorMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The PH Sensor class gathers data from a pH sensor type Phidget board.
Notes: If you're using a simple 0-5V sensor that does not have its own firmware, use the VoltageInput or VoltageRatioInput class instead, as specified for your device.
Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

4.71.2   Methods

4.71.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.71.4   Properties

4.71.5   CorrectionTemperature as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Set this property to the measured temperature of the solution to correct the slope of the pH conversion for temperature.
Notes: Unit: degrees celsius (¬∞C)
(Read and Write property)

4.71.6   DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another PHChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between PHChange events can also affected by the PHChangeTrigger.

Unit: milliseconds (ms)
(Read and Write property)

4.71.7 MaxCorrectionTemperature as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that CorrectionTemperature can be set to.
Notes: Unit: degrees celsius ($\neg\infty$C)
(Read only property)

4.71.8 MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.71.9 MaxPH as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the PHChange event will report.
Notes: (Read only property)

4.71.10 MaxPHChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that PHChangeTrigger can be set to.
Notes: Unit: pH (pH)
(Read only property)

4.71.11 MinCorrectionTemperature as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that CorrectionTemperature can be set to.
Notes: Unit: degrees celsius ($\neg\infty$C)

(Read only property)

4.71.12   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.71.13   MinPH as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value the PHChange event will report.
Notes: (Read only property)

4.71.14   MinPHChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that PHChangeTrigger can be set to.
Notes: Unit: pH (pH)
(Read only property)

4.71.15   PH as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent pH value that the channel has reported.
Notes: This value will always be between MinPH and MaxPH.
(Read only property)

4.71.16   PHChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a PHChange event until the pH value has changed by the amount specified by the PHChangeTrigger.
Notes: Setting the PHChangeTrigger to 0 will result in the channel firing events every DataInterval. This

is useful for applications that implement their own data filtering
Unit: pH (pH)
(Read and Write property)

4.71.17   Events

4.71.18   PHChanged(PH as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent pH value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a PHChangeTrigger has been set to a non-zero value, the PHChange event will not occur until the pH has changed by at least the PHChangeTrigger value.

PH: The current pH.

4.72   class PhidgetPowerGuardMBS

4.72.1   class PhidgetPowerGuardMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Power Guard class controls the safety features and thresholds of a programmable power guard Phidget board.
Notes: Subclass of the PhidgetMBS class.
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4.72.2   Methods

4.72.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.72.4   enableFailsafe(failsafeTime as UInt32)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables the failsafe feature for the channel, with a given failsafe time.
Notes: The failsafe feature is intended for use in applications where it is important for the channel to enter a known safe state if the program controlling it locks up or crashes. If you do not enable the failsafe feature, the channel will carry out whatever instructions it was last given until it is explicitly told to stop.

Enabling the failsafe feature starts a recurring failsafe timer for the channel. Once the failsafe timer is enabled, it must be reset within the specified time or the channel will enter a failsafe state. The failsafe timer may be reset either by calling this function again, or using the ResetFailsafe function. Resetting the failsafe timer will reload the timer with the specified failsafe time, starting when the message to reset the timer is received by the Phidget.

For example: if the failsafe is enabled with a failsafe time of 1000ms, you will have 1000ms to reset the failsafe timer. Every time the failsafe timer is reset, you will have 1000ms from that time to reset the failsafe again.

If the failsafe timer is not reset before it runs out, the channel will enter a failsafe state. For PowerGuard channels, this will disable the output. Once the channel enters the failsafe state, it will reject any further

input until the channel is reopened.

To prevent the channel from falsely entering the failsafe state, we recommend resetting the failsafe timer as frequently as is practical for your applicaiton. A good rule of thumb is to not let more than a third of the failsafe time pass before resetting the timer.

Once the failsafe timer has been set, it cannot be disabled by any means other than closing and reopening the channel.

4.72.5 resetFailsafe

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Resets the failsafe timer, if one has been set. See EnableFailsafe for details.
Notes: This function will fail if no failsafe timer has been set for the channel.

4.72.6 Properties

4.72.7 FanMode as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The FanMode dictates the operating condition of the fan.
Notes: Choose between on, off, or automatic (based on temperature).
If the FanMode is set to automatic, the fan will turn on when the temperature reaches 70¬∞C and it will remain on until the temperature falls below 55¬∞C.
If the FanMode is off, the device will still turn on the fan if the temperature reaches 85¬∞C and it will remain on until it falls below 70¬∞C.
(Read and Write property)

4.72.8 MaxFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: (Read only property)

4.72.9 MaxOverVoltage as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that OverVoltage can be set to.
Notes: Unit: volts (V)
(Read only property)

4.72.10   MinFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: (Read only property)

4.72.11   MinOverVoltage as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that OverVoltage can be set to.
Notes: Unit: volts (V)
(Read only property)

4.72.12   OverVoltage as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The device constantly monitors the output voltage, and if it exceeds the OverVoltage value, it will disconnect the input from the output.
Notes: This functionality is critical for protecting power supplies from regenerated voltage coming from motors. Many power supplies assume that a higher than output expected voltage is related to an internal failure to the power supply, and will permanently disable themselves to protect the system. A typical safe value is to set OverVoltage to 1-2 volts higher than the output voltage of the supply. For instance, a 12V supply would be protected by setting OverVoltage to 13V.
The device will connect the input to the output again when the voltage drops to (OverVoltage - 1V)
Unit: volts (V)
(Read and Write property)

4.72.13   PowerEnabled as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: When PowerEnabled is true, the device will connect the input to the output and begin monitoring.
Notes: The output voltage is constantly monitored and will be automatically disconnected from the input

when the output exceeds the OverVoltage value.

PowerEnabled allows the device to operate as a Solid State Relay, powering on or off all devices connected to the output.

(Read and Write property)

4.72.14 Constants

Fan Modes

Constant	Value	Description
kFanModeAuto	3	The fan will be automatically controlled based on temperature.
kFanModeOff	1	Turns the fan off.
kFanModeOn	2	Turns the fan on.

4.73   class PhidgetPressureSensorMBS

4.73.1   class PhidgetPressureSensorMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Pressure Sensor class gathers data from the pressure sensor on a Phidget board.
Notes: If you're using a simple 0-5V sensor that does not have its own firmware, use the VoltageInput or VoltageRatioInput class instead, as specified for your device.
Subclass of the PhidgetMBS class.
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4.73.2   Methods

4.73.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.73.4   Properties

4.73.5   DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another PressureChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between PressureChange events can also affected by the PressureChangeTrigger.

Unit: milliseconds (ms)
(Read and Write property)

4.73.6   MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)

(Read only property)

4.73.7   MaxPressure as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the PressureChange event will report.
Notes: Unit: kilopascals (kPa)
(Read only property)

4.73.8   MaxPressureChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that PressureChangeTrigger can be set to.
Notes: Unit: kilopascals (kPa)
(Read only property)

4.73.9   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.73.10   MinPressure as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value the PressureChange event will report.
Notes: Unit: kilopascals (kPa)
(Read only property)

4.73.11   MinPressureChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that PressureChangeTrigger can be set to.
Notes: Unit: kilopascals (kPa)

(Read only property)

4.73.12   Pressure as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent pressure value that the channel has reported.
Notes: This value will always be between MinPressure and MaxPressure.
Unit: kilopascals (kPa)
(Read only property)

4.73.13   PressureChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a PressureChange event until the pressure value has changed by the amount specified by the PressureChangeTrigger.
Notes: Setting the PressureChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering.
Unit: kilopascals (kPa)
(Read and Write property)

4.73.14   Events

4.73.15   PressureChanged(pressure as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent pressure value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a PressureChangeTrigger has been set to a non-zero value, the PressureChange event will not occur until the pressure has changed by at least the PressureChangeTrigger value.

4.74 class PhidgetRCServoMBS

4.74.1 class PhidgetRCServoMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The RC Servo class controls the signal being sent to the servo motors from the Phidget controller in order to control their position.
Notes: This class provides control of the position, velocity, acceleration, and supply voltage of the attached servo.
Subclass of the PhidgetMBS class.
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4.74.2 Methods

4.74.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.74.4 enableFailsafe(failsafeTime as UInt32)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables the failsafe feature for the channel, with a given failsafe time.
Notes: The failsafe feature is intended for use in applications where it is important for the channel to enter a known safe state if the program controlling it locks up or crashes. If you do not enable the failsafe feature, the channel will carry out whatever instructions it was last given until it is explicitly told to stop.

Enabling the failsafe feature starts a recurring failsafe timer for the channel. Once the failsafe timer is enabled, it must be reset within the specified time or the channel will enter a failsafe state. The failsafe timer may be reset either by calling this function again, or using the ResetFailsafe function. Resetting the failsafe timer will reload the timer with the specified failsafe time, starting when the message to reset the timer is received by the Phidget.

For example: if the failsafe is enabled with a failsafe time of 1000ms, you will have 1000ms to reset the failsafe timer. Every time the failsafe timer is reset, you will have 1000ms from that time to reset the failsafe again.

If the failsafe timer is not reset before it runs out, the channel will enter a failsafe state. For RC Servo

channels, this will disengage the controller. Once the channel enters the failsafe state, it will reject any further input until the channel is reopened.

To prevent the channel from falsely entering the failsafe state, we recommend resetting the failsafe timer as frequently as is practical for your applicaiton. A good rule of thumb is to not let more than a third of the failsafe time pass before resetting the timer.

Once the failsafe timer has been set, it cannot be disabled by any means other than closing and reopening the channel.

4.74.5 resetFailsafe

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Resets the failsafe timer, if one has been set. See EnableFailsafe for details.
Notes: This function will fail if no failsafe timer has been set for the channel.

4.74.6 setTargetPositionAsync(targetPosition as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the target position asynchronously.
Notes: Calls the setTargetPositionAsyncCompleted event later.

4.74.7 Properties

4.74.8 Acceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function:

When changing velocity, the RC servo motor will accelerate/decelerate at this rate.
The acceleration is bounded by MaxAcceleration and MinAcceleration.
Notes:

Using the default settings this acceleration will correspond acceleration of servo arm in degrees/s2, for many standard RC servos.
SpeedRampingState controls whether or not the acceleration value is actually applied when trying to reach a target position.
There is a practical limit on how fast your RC servo motor can accelerate. This is based on the load and physical design of the motor.

The units for Position,Velocity, and Acceleration are configured by scaling the internal timing (set with MinPulseWidth and MaxPulseWidth) to a user specified range with MinPosition and MaxPosition.

See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read and Write property)

4.74.9   DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the controller will fire another Position-Change event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.

Unit: milliseconds (ms)
(Read and Write property)

4.74.10   Engaged as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Phidget return code.
Notes: When engaged, a RC servo motor has the ability to be positioned. When disengaged, no commands are sent to the RC servo motor.

There is no position feedback to the controller, so the RC servo motor will immediately snap to the Target-Position after being engaged from a disengaged state.
This property is useful for relaxing a servo once it has reached a given position.
If you are concerned about tracking position accurately, you should not disengage the motor while IsMoving is true.
(Read and Write property)

4.74.11   IsMoving as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: IsMoving returns true if the RC servo motor is currently in motion.
Notes: The controller cannot know if the RC servo motor is physically moving. When <code >IsMoving is false, it simply means there are no commands in the pipeline to the RC servo motor.

(Read only property)

4.74.12   MaxAcceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum acceleration that Acceleration can be set to.
Notes: This value depends on MinPosition/MaxPosition and MinPulseWidth/MaxPulseWidth.

See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read only property)

4.74.13   MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.74.14   MaxFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: (Read only property)

4.74.15   MaxPosition as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum position TargetPosition can be set to.
Notes: The units for Position,Velocity, and Acceleration are configured by scaling the internal timing (set with MinPulseWidth and MaxPulseWidth) to a user specified range with MinPosition and MaxPosition.

See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read and Write property)

4.74.16 MaxPulseWidth as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The MaxPulseWidth represents the maximum pulse width that your RC servo motor specifies.
Notes: This value can be found in the data sheet of most RC servo motors.
The units for Position,Velocity, and Acceleration are configured by scaling the internal timing (set with MinPulseWidth and MaxPulseWidth) to a user specified range with MinPosition and MaxPosition.

See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read and Write property)

4.74.17 MaxPulseWidthLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum pulse width that MaxPulseWidth can be set to.
Notes: See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read only property)

4.74.18 MaxTorque as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that Torque can be set to.
Notes: Torque is a ratio of the maximum available torque, therefore the minimum torque is a unitless constant.
(Read only property)

4.74.19 MaxVelocityLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum velocity VelocityLimit can be set to.
Notes: This value depends on MinPosition/MaxPosition and MinPulseWidth/MaxPulseWidth.
See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read only property)

4.74.20   MinAcceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that Acceleration can be set to.
Notes: This value depends on MinPosition/MaxPosition and MinPulseWidth/MaxPulseWidth.

See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read only property)

4.74.21   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.74.22   MinFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: (Read only property)

4.74.23   MinPosition as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum position that TargetPosition can be set to.
Notes: The units for Position,Velocity, and Acceleration are configured by scaling the internal timing (set with MinPulseWidth and MaxPulseWidth) to a user specified range with MinPosition and MaxPosition.

See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read and Write property)

4.74.24 MinPulseWidth as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The MinPulseWidth represents the minimum pulse width that your RC servo motor specifies.
Notes: This value can be found in the data sheet of most RC servo motors.
The units for Position,Velocity, and Acceleration are configured by scaling the internal timing (set with MinPulseWidth and MaxPulseWidth) to a user specified range with MinPosition and MaxPosition.

See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read and Write property)

4.74.25 MinPulseWidthLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum pulse width that MinPulseWidth can be set to.
Notes: See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read only property)

4.74.26 MinTorque as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that Torque can be set to.
Notes: Torque is a ratio of the maximum available torque, therefore the minimum torque is a unitless constant.
(Read only property)

4.74.27 MinVelocityLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum velocity VelocityLimit can be set to.
Notes: See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read only property)

4.74.28   Position as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent position of the RC servo motor that the controller has reported.
Notes: This value will always be between MinPosition and MaxPosition.
Using the default settings this position will correspond to the rotation of the servo arm in degrees, for many standard RC servos.

See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read only property)

4.74.29   SpeedRampingState as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The speed ramping state value
Notes: When speed ramping state is enabled, the controller will take the Acceleration and Velocity properties into account when moving the RC servo motor, usually resulting in smooth motion. If speed ramping state is not enabled, the controller will simply set the RC servo motor to the requested position.
(Read and Write property)

4.74.30   TargetPosition as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The target position.
Notes: If the RC servo motor is configured and TargetPosition is set, the controller will continuously try to reach targeted position.

The target position is bounded by MinPosition and MaxPosition.
Using the default settings this position will correspond to the rotation of the servo arm in degrees, for many standard RC servos.
If the RC servo motor is not engaged, then the position cannot be read.
The position can still be set while the RC servo motor is not engaged. Once engaged, the RC servo motor will snap to position, assuming it is not there already.
The units for Position,Velocity, and Acceleration are configured by scaling the internal timing (set with MinPulseWidth and MaxPulseWidth) to a user specified range with MinPosition and MaxPosition.

Position and Pulse Width

An RC servo motor's position is controlled using a type of Pulse Width Modulation, sending voltage pulses of a given time span, or Pulse Width to the servo.

The servo translates the Pulse Width of the control signal to a corresponding position of the servo arm.

Knowing this, a servo's range of motion can be thought of in terms of a MinPulseWidth and a MaxPulseWidth corresponding to range of pulse widths that produce the servo arm's full range of movement.

In Phidget22, you can adjust the MinPulseWidth and MaxPulseWidth stored by the library to match the desired range of movement you expect from your servo.

Since directly setting the timing of RC servo pulse widths is not very intuitive for most purpses, we map these pulse widths to a user-defied Minimum and Maximum Position.This allows you to define the servo's position in terms best suited to your application, such as degrees, fractions of a rotation, or even some measure of speed for a continuous-rotation servo.

By setting the servo's Target Position to MaxPosition, the controller will send pulses of MaxPulseWidth to the servo.

Similarly, MinPosition will send pulses of MinPulseWidth to the servo

MaxPosition can be set smaller than MinPosition to invert movement of the servo, if it helps your application.

Setting a TargetPosition will transate the position between MinPosition and MaxPosition to a corresponding Pulse Width between MinPulseWidth and MaxPulseWidth, in turn sending the servo arm to the desired position.

Setting VelocityLimit and Acceleration for your servo will limit the rate of change of the servo's position in terms of one UserUnit per second (or /s2). Here, a UserUnit is whatever distance is maked by the change of the TargetPosition by 1.0

Adjusting the Servo's Limits

To tune your program to a specific servo:

First adjust the servo's range of motion by setting the MaxPulseWidth and MinPulseWidth. You can use the default values for these (or the ones on your servo's datasheet) as a starting point.

Send the servo to MaxPosition and MinPosition to check the results. Repeat steps 1 and 2 as nessesarry.

Set the MaxPosition and MinPosition to match whatever numbers you find best suited to your application. (Read and Write property)

4.74.31   Torque as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Torque is a ratio of the maximum available torque.
Notes: The torque is bounded by MinTorque and MaxTorque
Increasing the torque will increase the speed and power consumption of the RC servo motor.
(Read and Write property)

4.74.32 Velocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The velocity that the RC servo motor is being driven at.
Notes: A negative value means the RC servo motor is moving towards a lower position.
The velocity range of the RC servo motor will be from -VelocityLimit to VelocityLimit, depending on direction.
This is not the actual physical velocity of the RC servo motor.

See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read only property)

4.74.33 VelocityLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: When moving, the RC servo motor velocity will be limited by this value.
Notes: The velocity limit is bounded by MinVelocityLimit and MaxVelocityLimit.
Using the default settings this velocity will correspond to the maximum speed of rotation of servo arm in degrees/s, for many standard RC servos.
SpeedRampingState controls whether or not the velocity limit value is actually applied when trying to reach a target position.
The velocity range of the RC servo motor will be from -VelocityLimit to VelocityLimit, depending on direction.
Note that when this value is set to 0, the RC servo motor will not move.
There is a practical limit on how fast your servo can rotate, based on the physical design of the motor.
The units for Position,Velocity, and Acceleration are configured by scaling the internal timing (set with MinPulseWidth and MaxPulseWidth) to a user specified range with MinPosition and MaxPosition.

See TargetPosition for a deeper explanation of how the settings of your RC Servo controller interact to move your servo.
(Read and Write property)

4.74.34 Voltage as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The supply voltage for the RC servo motor.
Notes: If your controller supports multiple RC servo motors, every motor will have the same supply voltage. It is not possible to set individual supply voltages.
(Read and Write property)

4.74.35 Events

4.74.36 PositionChanged(position as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: An event that occurs when the position changes on a RC servo motor.
Notes: position: The position value

4.74.37 setTargetPositionAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when setTargetPositionAsync completes.

4.74.38 TargetPositionReached(position as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when the RC servo motor has reached the TargetPosition.
Notes: The controller cannot know if the RC servo motor has physically reached the target position. When TargetPosition is reached, it simply means the controller pulse width output is matching its target.

4.74.39 VelocityChanged(velocity as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: An event that occurs when the velocity changes on a RC servo motor.
Notes: velocity: The velocity value

4.74.40 Constants

Voltages

Constant	Value	Description
kVoltage5V	1	Run all servos on 5V DC
kVoltage6V	2	Run all servos on 6V DC
kVoltage7_4V	3	Run all servos on 7.4V DC

4.75   class PhidgetResistanceInputMBS

4.75.1   class PhidgetResistanceInputMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Resistance Input class measures the resistance of a circuit connected to the Phidget, which is used to read resistance-based sensors such as platinum RTDs.
Notes: Subclass of the PhidgetMBS class.
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4.75.2   Methods

4.75.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.75.4   Properties

4.75.5   DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another ResistanceChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between ResistanceChange events can also affected by the ResistanceChangeTrigger.

Unit: milliseconds (ms)
(Read and Write property)

4.75.6   MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.75.7 MaxResistance as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the ResistanceChange event will report.
Notes: Unit: ohms (Œ©)
(Read only property)

4.75.8 MaxResistanceChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that ResistanceChangeTrigger can be set to.
Notes: Unit: ohms (Œ©)
(Read only property)

4.75.9 MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.75.10 MinResistance as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value the ResistanceChange event will report.
Notes: When the device is also being used as a TemperatureSensor the MinResistance and MaxResistance will not represent the true input range. This is a side effect of increasing accuracy on the temperature channel.
Unit: ohms (Œ©)
(Read only property)

4.75.11 MinResistanceChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that the ResistanceChangeTrigger can be set to.
Notes: Unit: ohms (Œ©)

(Read only property)

4.75.12   Resistance as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent resistance value that the channel has reported.
Notes: This value will always be between MinResistance and MaxResistance.
The Resistance value will change when the device is also being used as a temperature sensor. This is a side effect of increasing accuracy on the temperature channel.
Unit: ohms (Œ©)
(Read only property)

4.75.13   ResistanceChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a ResistanceChange event until the resistance value has changed by the amount specified by the ResistanceChangeTrigger.
Notes: Setting the ResistanceChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering

Unit: ohms (Œ©)
(Read and Write property)

4.75.14   RTDWireSetup as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Select the RTD wiring configuration.
Notes: More information about RTD wiring can be found in the user guide.
(Read and Write property)

4.75.15   Events

4.75.16   ResistanceChanged(resistance as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent resistance value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.

Notes: If a ResistanceChangeTrigger has been set to a non-zero value, the ResistanceChange event will not occur until the resistance has changed by at least the ResistanceChangeTrigger value.

resistance: The resistance value

4.75.17   Constants

RTD wiring configuration

Constant	Value	Description
RTD_WIRE_SETUP_2WIRE	1	Configures the device to make resistance calculations based on a 2-wire RTD setup.
RTD_WIRE_SETUP_3WIRE	2	Configures the device to make resistance calculations based on a 3-wire RTD setup.
RTD_WIRE_SETUP_4WIRE	3	Configures the device to make resistance calculations based on a 4-wire RTD setup.

4.76   class PhidgetRFIDMBS

4.76.1   class PhidgetRFIDMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The RFID class provides methods for Phidget RFID boards to read and write (if writing is supported) to RFID tags.
Notes: Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

4.76.2   Methods

4.76.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.76.4   LastTag(byref tagString as String, byref protocol as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the most recently read tag's data, even if that tag is no longer within read range.
Notes: Only valid after at least one tag has been read.

tagString: The data stored on the most recently read tag
protocol: Protocol of the most recently read tag

4.76.5   Write(tagString as String, protocol as Integer, lockTag as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Writes data to the tag being currently read by the reader.
Notes: You cannot write to a read-only or locked tag.

tagString: The data to write to the tag
protocol: The communication protocol to use
lockTag: If true, permanently locks the tag so that it cannot be re-written after this write.

4.76.6 Properties

4.76.7 AntennaEnabled as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The on/off state of the antenna.
Notes: You can turn the antenna off to save power.
You must turn the antenna on in order to detect and read RFID tags.
(Read and Write property)

4.76.8 TagPresent as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: This property is true if a compatibile RFID tag is being read by the reader.
Notes: TagPresent will remain true until the tag is out of range and can no longer be read.
(Read only property)

4.76.9 Events

4.76.10 TagFound(tag as String, protocol as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when an RFID tag is read.
Notes: Tag: Data from the tag
Protocol: Communication protocol of the tag

4.76.11 TagLost(tag as String, protocol as Integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when an RFID tag that was being read is removed from the read range.
Notes: Tag: Data from the lost tag
Protocol: Communication protocol of the lost tag

4.76.12 Constants

Protocols

Constant	Value	Description
kProtocolEM4100	1	EM4100
kProtocolISO11785_FDX_B	2	ISO11785 FDX B
kProtocolPhidgets	3	PhidgetTAG

4.77 class PhidgetServerMBS

4.77.1 class PhidgetServerMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The class to describe a known server.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Xojo Plugins, version 22.4pr1

4.77.2 Methods

4.77.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.77.4 Destructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.77.5 Properties

4.77.6 Address as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The address of the server.
Notes: (Read only property)

4.77.7 Flags as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Flags describing the server state.
Notes: Flag is 1, if the server requires a password to authenticate.
(Read only property)

4.77.8   Handle as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.77.9   Host as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The hostname of the server.
Notes: (Read only property)

4.77.10   Name as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The name of the server.
Notes: (Read only property)

4.77.11   Port as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The port number of the server.
Notes: (Read only property)

4.77.12   ServerType as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Name of the server type.
Notes: (Read only property)

4.77.13 Type as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The server type.
Notes: (Read only property)

4.77.14 Constants

Server Types

Constant	Value	Description
kServerTypeDevice	2	Device
kServerTypeDeviceListener	1	Device Listener
kServerTypeDeviceRemote	3	Phidget22 Server
		Server discovery with this server type allows discovery of servers hosting Phidget devices. Enabling server discovery with this server type allows automated connection to these servers, and the Phidgets connected to them. Enabling server discovery with this server type will also enable ServerAdded and ServerRemoved events for this server type.
kServerTypeNone	0	
kServerTypeSBC	7	Phidget SBC
		Server discovery with this server type detects the presence of Phidget SBCs on the network. Enabling server discovery with this server type will enable ServerAdded and ServerRemoved events for this server type.
kServerTypeWww	5	WWW
kServerTypeWwwListener	4	WWW Listener
kServerTypeWwwRemote	6	Phidget22 Web server
		Server discovery with this server type detects the presence of Phidget web servers used to communicate with in-browser JavaScript. Enabling server discovery with this server type will enable ServerAdded and ServerRemoved events for this server type.

4.78   class PhidgetSoundSensorMBS

4.78.1   class PhidgetSoundSensorMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Sound Sensor class gathers data from the sound sensor on a Phidget board.
Notes: If you're using a simple 0-5V sensor that does not have its own firmware, use the VoltageInput or VoltageRatioInput class instead, as specified for your device.
Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

4.78.2   Methods

4.78.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.78.4   Octaves as Double()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The unweighted value of each frequency band.
Notes: The following frequency bands are represented:
octaves [0] = 31.5 Hz
octaves [1] = 63 Hz
octaves [2] = 125 Hz
octaves [3] = 250 Hz
octaves [4] = 500 Hz
octaves [5] = 1 kHz
octaves [6] = 2 kHz
octaves [7] = 4 kHz
octaves [8] = 8 kHz
octaves [9] = 16 kHz

4.78.5 Properties

4.78.6 DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another SPLChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between SPLChange events can also affected by the SPLChangeTrigger.

Unit: milliseconds (ms)
(Read and Write property)

4.78.7 dB as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent dB SPL value that has been calculated.
Notes: This value is bounded by MaxdB.
(Read only property)

4.78.8 dBA as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent dBA SPL value that has been calculated.
Notes: The dBA SPL value is calculated by applying a A-weighted filter to the Octaves data.
(Read only property)

4.78.9 dBC as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent dBC SPL value that has been calculated.
Notes: The dBC SPL value is calculated by applying a C-weighted filter to the Octaves data.
(Read only property)

4.78.10   MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.78.11   MaxdB as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the SPLChange event will report.
Notes: (Read only property)

4.78.12   MaxSPLChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that SPLChangeTrigger can be set to.
Notes: (Read only property)

4.78.13   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.78.14   MinSPLChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that SPLChangeTrigger can be set to.
Notes: (Read only property)

4.78.15   NoiseFloor as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum SPL value that the channel can accurately measure.
Notes: Input SPLs below this level will not produce an output from the microphone.
(Read only property)

4.78.16   SPLChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a SPLChange event until the dB value has changed by the amount specified by the SPLChangeTrigger.
Notes: Setting the SPLChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering
(Read and Write property)

4.78.17   SPLRange as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: When selecting a range, first decide how sensitive you want the microphone to be.
Notes: Select a smaller range when you want more sensitivity from the microphone.
If a Saturation event occurrs, increase the range.
(Read and Write property)

4.78.18   Events

4.78.19   SPLChanged(dB as Double, dBA as Double, dBC as Double, octaves() as Double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent SPL values the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a SPLChangeTrigger has been set to a non-zero value, the SPLChange event will not occur until the dB SPL value has changed by at least the SPLChangeTrigger value.
The dB SPL value is calculated from the Octaves data.
The dBA SPL value is calculated by applying a A-weighted filter to the Octaves data.
The dBC SPL value is calculated by applying a C-weighted filter to the Octaves data.
The following frequency bands are represented:

octaves [0] = 31.5 Hz
octaves [1] = 63 Hz
octaves [2] = 125 Hz

octaves [3] = 250 Hz
octaves [4] = 500 Hz
octaves [5] = 1 kHz
octaves [6] = 2 kHz
octaves [7] = 4 kHz
octaves [8] = 8 kHz
octaves [9] = 16 kHz

dB: The dB SPL value.
dBA: The dBA SPL value.
dBC: The dBC SPL value.
Octaves: The dB SPL value for each band.

4.78.20   Constants

The measurement range.

Constant	Value	Description
SPLRange102dB	1	Range 102dB
SPLRange82dB	2	Range 82dB

4.79 class PhidgetSpatialMBS

4.79.1 class PhidgetSpatialMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Spatial class simultaneously gathers data from the acceleromter, gyroscope and magnetometer on a Phidget board.
Notes: You can also use the individual classes for these sensors if you want to handle the data in separate events.
Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

- MBS Plugins 11.1 Release notes

- MBS REALbasic Plugins, version 11.1pr2

- MBS REALbasic Plugins, version 10.6pr7

4.79.2 Methods

4.79.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.79.4 resetMagnetometerCorrectionParameters

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Resets the MagnetometerCorrectionParameters to their default values.
Notes: Due to physical location, hard and soft iron offsets, and even bias errors, your device should be calibrated. We have created a calibration program that will provide you with the MagnetometerCorrectionParameters for your specific situation. See your device's User Guide for more information.

4.79.5 saveMagnetometerCorrectionParameters

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Saves the MagnetometerCorrectionParameters.
Notes: Due to physical location, hard and soft iron offsets, and even bias errors, your device should be

calibrated. We have created a calibration program that will provide you with the MagnetometerCorrection-Parameters for your specific situation. See your device's User Guide for more information.

4.79.6 setAHRSParameters(angularVelocityThreshold as double, AngularVelocityDeltaThreshold as double, accelerationThreshold as double, magTime as double, accelTime as double, biasTime as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calibrate your device for the environment it will be used in.
Notes: Setting these parameters will allow you to tune the AHRS algorithm on the device to your specific application.

angularVelocityThreshold: The maximum angular velocity reading where the device is assumed to be "at rest"
AngularVelocityDeltaThreshold: The acceptable amount of change in angular velocity between measurements before movement is assumed.
accelerationThreshold: The maximum acceleration applied to the device (minus gravity) where it is assumed to be "at rest". This is also the maximum acceleration allowable before the device stops correcting to the acceleration vector.
magTime: The time it will take to correct the heading 95% of the way to aligning with the compass (in seconds),up to 15 degrees of error. Beyond 15 degrees, this is the time it will take for the bearing to move 45 degrees towards the compass reading. Remember you can zero the algorithm at any time to instantly realign the spatial with acceleration and magnetic field vectors regardless of magnitude.
accelTime: The time it will take to correct the pitch and roll 95% of the way to aligning with the accelerometer (in seconds).
biasTime: The time it will take to have the gyro biases settle to within 95% of the measured steady state (in seconds).

4.79.7 setMagnetometerCorrectionParameters(magneticField as double, offset0 as double, offset1 as double, offset2 as double, gain0 as double, gain1 as double, gain2 as double, T0 as double, T1 as double, T2 as double, T3 as double, T4 as double, T5 as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calibrate your device for the environment it will be used in.
Notes: Due to physical location, hard and soft iron offsets, and even bias errors, your device should be calibrated. We have created a calibration program that will provide you with the MagnetometerCorrection-Parameters for your specific situation. See your device's User Guide for more information.

magneticField: Ambient magnetic field value.
offset0: Provided by calibration program.

offset1: Provided by calibration program.
offset2: Provided by calibration program.
gain0: Provided by calibration program.
gain1: Provided by calibration program.
gain2: Provided by calibration program.
T0: Provided by calibration program.
T1: Provided by calibration program.
T2: Provided by calibration program.
T3: Provided by calibration program.
T4: Provided by calibration program.
T5: Provided by calibration program.

4.79.8   zeroAlgorithm

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Zeros the AHRS algorithm.

4.79.9   zeroGyro

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Re-zeros the gyroscope in 1-2 seconds.
Notes: The device must be stationary when zeroing.
The angular rate will be reported as $0.0\neg\infty$/s while zeroing.
Zeroing the gyroscope is a method of compensating for the drift that is inherent to all gyroscopes. See your device's User Guide for more information on dealing with drift.

4.79.10   Properties

4.79.11   Algorithm as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Selects the IMU/AHRS algorithm.
Notes: (Read and Write property)

4.79.12   AlgorithmMagnetometerGain as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The gain for the magnetometer in the AHRS algorithm.
Notes: Lower gains reduce sensor noise while slowing response time.
(Read and Write property)

4.79.13   DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another SpatialData event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.

Unit: milliseconds (ms)
(Read and Write property)

4.79.14   HeatingEnabled as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Whether self-heating temperature stabilization is enabled.
Notes: Set to true to enable the temperature stabilization feature of this device.
This enables on-board heating elements to bring the board up to a known temperature to minimize ambient temperature effects on the sensor's reading. You can leave this setting false to conserve power consumption.This property is shared by any and all spatial-related objects on this device (Accelerometer, Gyroscope, Magnetometer, Spatial)
(Read and Write property)

4.79.15   MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.79.16   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)

(Read only property)

4.79.17   Events

4.79.18   AlgorithmData(quaternion() as double, timestamp as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent IMU/AHRS Quaternion will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: quaternion: The quaternion value - [x, y, z, w]
timestamp: The timestamp value

4.79.19   SpatialData(acceleration() as double, angularRate() as double, magnet-icField() as double, timestamp as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent values that your channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: acceleration: The acceleration vaulues
angularRate: The angular rate values
magneticField: The field strength values
timestamp: The timestamp value

4.79.20   Constants

Filter Types

Constant	Value	Description
kFilterTypeLogicLevel	2	Logic level
kFilterTypeZeroCrossing	1	Zero crossing

Input Modes

Constant	Value	Description
kInputModeNPN	1	For interfacing NPN digital sensors.
kInputModePNP	2	For interfacing PNP digital sensors.

Power Supply

Constant	Value	Description
kPowerSupply12V	2	The sensor is provided with 12 volts
kPowerSupply24V	3	The sensor is provided with 24 volts
kPowerSupplyOff	1	Switch the sensor power supply off.

Spatial Algorithm

Constant	Value	Description
kSpatialAlgorithmAHRS	1	AHRS algorithm, incorporating magnetometer data for yaw correction.
kSpatialAlgorithmIMU	2	IMU algorithm, using gyro and accelerometer, but not magnetometer.
kSpatialAlgorithmNone	0	No AHRS algorithm is used.

4.80   class PhidgetStepperMBS

4.80.1   class PhidgetStepperMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Stepper class powers and controls the stepper motor connected to the Phidget controller, allowing you to change the position, velocity, acceleration, and current limit.
Notes: Subclass of the PhidgetMBS class.
Blog Entries

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4.80.2   Methods

4.80.3   addPositionOffset(positionOffset as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Adds an offset (positive or negative) to the current position and target position.
Notes: This is especially useful for zeroing position.

4.80.4   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.80.5   enableFailsafe(failsafeTime as UInt32)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables the failsafe feature for the channel, with a given failsafe time.
Notes: The failsafe feature is intended for use in applications where it is important for the channel to enter a known safe state if the program controlling it locks up or crashes. If you do not enable the failsafe feature, the channel will carry out whatever instructions it was last given until it is explicitly told to stop.

Enabling the failsafe feature starts a recurring failsafe timer for the channel. Once the failsafe timer is enabled, it must be reset within the specified time or the channel will enter a failsafe state. The failsafe timer may be reset either by calling this function again, or using the ResetFailsafe function. Resetting the failsafe timer will reload the timer with the specified failsafe time, starting when the message to reset the timer is received by the Phidget.

For example: if the failsafe is enabled with a failsafe time of 1000ms, you will have 1000ms to reset the failsafe timer. Every time the failsafe timer is reset, you will have 1000ms from that time to reset the failsafe again.

If the failsafe timer is not reset before it runs out, the channel will enter a failsafe state. For Stepper channels, this will disengage the motor. Once the channel enters the failsafe state, it will reject any further input until the channel is reopened.

To prevent the channel from falsely entering the failsafe state, we recommend resetting the failsafe timer as frequently as is practical for your applicaiton. A good rule of thumb is to not let more than a third of the failsafe time pass before resetting the timer.

Once the failsafe timer has been set, it cannot be disabled by any means other than closing and reopening the channel.

4.80.6   resetFailsafe

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Resets the failsafe timer, if one has been set. See EnableFailsafe for details.
Notes: This function will fail if no failsafe timer has been set for the channel.

4.80.7   setTargetPositionAsync(targetPosition as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets target position asynchronously.
Notes: If the controller is configured and the TargetPosition is set, the Stepper motor will move towards the TargetPosition at the specified Acceleration and Velocity.

TargetPosition is only used when the ControlMode is set to step mode.
Units for Position, Velocity, and Acceleration can be set by the user through the RescaleFactor.The Rescale-Factor allows you to use more intuitive units such as rotations, or degrees.
The default units for this motor controller are 1/16steps per count.

Calls setTargetPositionAsyncCompleted event later when done.

4.80.8 Properties

4.80.9 Acceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The rate at which the controller can change the motor's Velocity.
Notes: Units for Position, Velocity, and Acceleration can be set by the user through the RescaleFactor.The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
The default units for this motor controller are 1/16steps per count.
Changing the acceleration value while the stepper is in motion (especially at speeds higher than 1000 1/16th steps/s) can cause unpredictable results due to the inability of the processor tocalculate a new acceleration curve quickly enough. Generally you should wait until the motor is stationary until calling this function.
(Read and Write property)

4.80.10 ControlMode as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Use step mode when you want to set a TargetPosition for the Stepper motor.
Notes: Use run mode when you simply want the Stepper motor to rotate continuously in a specific direction.Changing the control mode while the motor is running will result in the following behaviour:
Step ->Run : The motor will keep moving in the direction it's currently going, and will accelerate to max velocity.
Run ->Step : The motor will set the target position to infinity in the direction it's currently going, at the current velocity.
(Read and Write property)

4.80.11 CurrentLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The current through the motor will be limited by the CurrentLimit.
Notes: See your Stepper motor's data sheet for more information about what value the CurrentLimit should be.

Unit: amperes (A)
(Read and Write property)

4.80.12 DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the controller will fire another Position-Change/VelocityChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.

Unit: milliseconds (ms)
(Read and Write property)

4.80.13   Engaged as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: When this property is true, the controller will supply power to the motor coils.
Notes: The controller must be Engaged in order to move the Stepper motor, or have it hold position.
(Read and Write property)

4.80.14   HoldingCurrentLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The HoldingCurrentLimit will activate when the TargetPosition has been reached.
Notes: It will limit current through the motor.
When the motor is not stopped, the current through the motor is limited by the CurrentLimit.
If no HoldingCurrentLimit is specified, the CurrentLimit value will persist when the motor is stopped.
Reference your controller's User Guide for more information about how the HoldingCurrentLimit and CurrentLimit can be used in your application.
(Read and Write property)

4.80.15   IsMoving as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: IsMoving returns true while the controller is sending commands to the motor.
Notes: Note: there is no feedback to the controller, so it does not know whether the motor shaft is actually moving or not.
(Read only property)

4.80.16   MaxAcceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that Acceleration can be set to.
Notes: Units for Position, Velocity, and Acceleration can be set by the user through the RescaleFactor.The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
The default units for this motor controller are 1/16steps per count.
(Read only property)

4.80.17 MaxCurrentLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that CurrentLimit and HoldingCurrentLimit can be set to.
Notes: Reference your controller's User Guide for more information about how the HoldingCurrentLimit and CurrentLimit can be used in your application.

Unit: amperes (A)
(Read only property)

4.80.18 MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.80.19 MaxFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: in milliseconds.
(Read only property)

4.80.20 MaxPosition as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that TargetPosition can be set to.
Notes: Units for Position, Velocity, and Acceleration can be set by the user through the RescaleFactor.The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
The default units for this motor controller are 1/16steps per count.

(Read only property)

4.80.21   MaxVelocityLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that VelocityLimit can be set to.
Notes: Units for Position, Velocity, and Acceleration can be set by the user through the RescaleFactor.The
RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
The default units for this motor controller are 1/16steps per count.
(Read only property)

4.80.22   MinAcceleration as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that Acceleration can be set to.
Notes: Units for Position, Velocity, and Acceleration can be set by the user through the RescaleFactor.The
RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
The default units for this motor controller are 1/16steps per count.
(Read only property)

4.80.23   MinCurrentLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that CurrentLimit and HoldingCurrentLimit can be set to.
Notes: Reference your controller's User Guide for more information about how the HoldingCurrentLimit
and CurrentLimit can be used in your application.

Unit: amperes (A)
(Read only property)

4.80.24   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.80.25 MinFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: in milliseconds.
(Read only property)

4.80.26 MinPosition as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that TargetPosition can be set to.
Notes: Units for Position, Velocity, and Acceleration can be set by the user through the RescaleFactor.The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
The default units for this motor controller are 1/16steps per count.
(Read only property)

4.80.27 MinVelocityLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that VelocityLimit can be set to.
Notes: Units for Position, Velocity, and Acceleration can be set by the user through the RescaleFactor.The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
The default units for this motor controller are 1/16steps per count.
(Read only property)

4.80.28 Position as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent position value that the controller has reported.
Notes: This value will always be between MinPosition and MaxPosition.
Units for Position, Velocity, and Acceleration can be set by the user through the RescaleFactor.The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
The default units for this motor controller are 1/16steps per count.
(Read only property)

4.80.29   RescaleFactor as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Applies a factor to the [user units] per step to all movement parameters to make the units in your application is more intuitive.
Notes: For example, starting from position 0 and setting a new position with a rescale factor, the stepper will move Position / RescaleFactor steps.
In this way, units for Position, Velocity, and Acceleration can be set by the user through the RescaleFactor. The RescaleFactor allows you to use more intuitive units such as rotations, or degrees.
The default units for this motor controller are 1/16steps per count.
(Read and Write property)

4.80.30   TargetPosition as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: If the controller is configured and the TargetPosition is set, the Stepper motor will move towards the TargetPosition at the specified Acceleration and Velocity.
Notes: TargetPosition is only used when the ControlMode is set to step mode.
Units for Position, Velocity, and Acceleration can be set by the user through the RescaleFactor.The Rescale-Factor allows you to use more intuitive units such as rotations, or degrees.
The default units for this motor controller are 1/16steps per count.
(Read and Write property)

4.80.31   Velocity as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent velocity value that the controller has reported.
Notes: This value is bounded by MinVelocityLimit and MaxVelocityLimit.
Units for Position, Velocity, and Acceleration can be set by the user through the RescaleFactor.The Rescale-Factor allows you to use more intuitive units such as rotations, or degrees.
The default units for this motor controller are 1/16steps per count.
(Read only property)

4.80.32   VelocityLimit as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: When moving, the Stepper motor velocity will be limited by this value.
Notes: The VelocityLimit is bounded by MinVelocityLimit and MaxVelocityLimit.
When in step mode, the MinVelocityLimit has a value of 0. This is because the sign ($\neg\pm$) of the TargetPo-

sition will indicate the direction.

When in run mode, the MinVelocityLimit has a value of -MaxVelocityLimit. This is because there is no target position, so the direction is defined by the sign ($\neg\pm$) of the VelocityLimit.

Units for Position, Velocity, and Acceleration can be set by the user through the RescaleFactor.The Rescale-Factor allows you to use more intuitive units such as rotations, or degrees.

The default units for this motor controller are 1/16steps per count.

(Read and Write property)

4.80.33   Events

4.80.34   PositionChanged(position as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when the controller updates the stepper motor position.
Notes: This event will still fire even if the motor is blocked from physically moving or misses steps.

4.80.35   setTargetPositionAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called when target position is set asynchronously.

4.80.36   Stopped

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when the motor controller stops.
Notes: The motor may still be physically moving if the inertia is great enough to make it misstep.

4.80.37   VelocityChanged(velocity as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: Occurs when the stepper motor velocity changes.
Notes: velocity: Velocity of the stepper. Sign indicates direction.

4.80.38   Constants

Control Modes

Constant	Value	Description
kControlModeRun	1	Control the motor by selecting a target velocity (sign indicates direction). The motor will rotate continously in the chosen direction.
kControlModeStep	0	Control the motor by setting a target position.

4.81 class PhidgetTemperatureSensorMBS

4.81.1 class PhidgetTemperatureSensorMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Temperature Sensor class gathers data from the temperature sensor on a Phidget board. #
Notes: This includes on-board ambient temperature sensors, connected thermocouples or platinum RTDs, and IR temperature sensors. This class is also used to measure the temperature on some high-power Phidget boards such as motor controllers for safety reasons.

If you're using a simple 0-5V sensor that does not have its own firmware, use the VoltageInput or VoltageRatioInput class instead, as specified for your device.
Subclass of the PhidgetMBS class.
Blog Entries

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4.81.2 Methods

4.81.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.81.4 Properties

4.81.5 DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another TemperatureChange event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between TemperatureChange events can also affected by the TemperatureChangeTrigger.

Unit: milliseconds (ms)
(Read and Write property)

4.81.6   MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.81.7   MaxTemperature as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the TemperatureChange event will report.
Notes: In degrees celsius.
(Read only property)

4.81.8   MaxTemperatureChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that TemperatureChangeTrigger can be set to.
Notes: (Read only property)

4.81.9   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.81.10   MinTemperature as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value the TemperatureChange event will report.
Notes: In degrees celsius.
(Read only property)

4.81.11   MinTemperatureChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that TemperatureChangeTrigger can be set to.
Notes: (Read only property)

4.81.12   RTDType as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The RTDType must correspond to the RTD type you are using in your application.
Notes: If you are unsure which RTDType to use, visit your device's User Guide for more information.
(Read and Write property)

4.81.13   RTDWireSetup as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The RTDWireSetup must correspond to the wire configuration you are using in your application.
Notes: If you are unsure which RTDWireSetup to use, visit your device's User Guide for more information.
(Read and Write property)

4.81.14   Temperature as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent temperature value that the channel has reported.
Notes: This value will always be between MinTemperature and MaxTemperature.
in degrees celsius.
(Read only property)

4.81.15   TemperatureChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a TemperatureChange event until the temperature value has changed
by the amount specified by the TemperatureChangeTrigger.
Notes: Setting the TemperatureChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering.
In degrees celsius.

(Read and Write property)

4.81.16   ThermocoupleType as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The ThermocoupleType must correspond to the thermocouple type you are using in your application.
Notes: If you are unsure which ThermocoupleType to use, visit the Thermocouple Primer for more information.
(Read and Write property)

4.81.17   Events

4.81.18   TemperatureChanged(temperature as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent temperature value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a TemperatureChangeTrigger has been set to a non-zero value, the TemperatureChange event will not occur until the temperature has changed by at least the TemperatureChangeTrigger value.

4.81.19   Constants

RTD Sensor Types

Constant	Value	Description
kRTDTypePT1000_3850	2	Configures the RTD type as a PT1000 with a 3850ppm curve.
kRTDTypePT1000_3920	4	Configures the RTD type as a PT100 with a 3920ppm curve.
kRTDTypePT100_3850	1	Configures the RTD type as a PT100 with a 3850ppm curve.
kRTDTypePT100_3920	3	Configures the RTD type as a PT100 with a 3920ppm curve.

RTD wiring configuration

Constant	Value	Description
kRTDWireSetup2Wire	1	Configures the device to make resistance calculations based on a 2-wire RTD setup.
kRTDWireSetup3Wire	2	Configures the device to make resistance calculations based on a 3-wire RTD setup.
kRTDWireSetup4Wire	3	Configures the device to make resistance calculations based on a 4-wire RTD setup.

Thermocouple Types

Constant	Value	Description
kThermoCoupleTypeE	3	Configures the thermocouple input as a E-Type thermocouple.
kThermoCoupleTypeJ	1	Configures the thermocouple input as a J-Type thermocouple.
kThermoCoupleTypeK	2	Configures the thermocouple input as a K-Type thermocouple.
kThermoCoupleTypeT	4	Configures the thermocouple input as a T-Type thermocouple.

4.82   class PhidgetUnitInfoMBS

4.82.1   class PhidgetUnitInfoMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The name, symbol, and Phidgets enumeration of the units of the sensor value calculated from the analog sensor's measurements.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

4.82.2   Methods

4.82.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.82.4   Destructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.82.5   Properties

4.82.6   Name as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The name.
Notes: (Read only property)

4.82.7   Symbol as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The symbol.
Notes: (Read only property)

4.82.8   Unit as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The unit.
Notes: (Read only property)

4.82.9   Constants

Units

Constant	Value	Description
kUnitAmpere	10	Ampere
kUnitBoolean	1	Boolean
kUnitCentimeter	5	Centimeter
kUnitDecibel	3	Decibel
kUnitDegreeCelcius	13	Degree Celcius
kUnitGauss	15	Gauss
kUnitGram	7	gram
kUnitKilogram	8	Kilogram
kUnitKiloPascal	11	Kilo Pascal
kUnitLux	14	Lux
kUnitMeter	6	Meter
kUnitMilliampere	9	Milliampere
kUnitMillimeter	4	Millimeter
kUnitNone	0	Unitless
kUnitPercent	2	Percent
kUnitPH	16	pH
kUnitVolt	12	Volt
kUnitWatt	17	Watt

4.83 class PhidgetVoltageInputMBS

4.83.1 class PhidgetVoltageInputMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Voltage Input class measures the voltage across the input of a Phidget with a voltage input.
Notes: This may be a sensor designed to measure voltage directly, or it could be an input designed to interface with 0-5V sensors.

For 0-5V sensors, this class supports conversion to sensor data with units specific to the Phidget sensor being used, to make reading these sensors easy.
Subclass of the PhidgetMBS class.
Blog Entries

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4.83.2 Methods

4.83.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.83.4 Properties

4.83.5 DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between events can also affected by the change trigger values.

Unit: milliseconds (ms)
(Read and Write property)

4.83.6 MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.83.7   MaxVoltage as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the VoltageChange event will report.
Notes: In volts.
(Read only property)

4.83.8   MaxVoltageChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that VoltageChangeTrigger can be set to.
Notes: In volts.
(Read only property)

4.83.9   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.83.10   MinVoltage as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value the VoltageChange event will report.
Notes: In volts.
(Read only property)

4.83.11   MinVoltageChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that VoltageChangeTrigger can be set to.
Notes: In volts.
(Read only property)

4.83.12   PowerSupply as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Choose the power supply voltage.
Notes: Set this to the voltage specified in the attached sensor's data sheet to power it.
Set to POWER_SUPPLY_OFF to turn off the supply to save power.
(Read and Write property)

4.83.13   SensorType as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: We sell a variety of analog sensors that do not have their own API, they simply output a voltage
that can be converted to a digital value using a specific formula.
Notes: By matching the SensorType to your analog sensor, the correct formula will automatically be applied
to data when you get the SensorValue or subscribe to the SensorChange event.

- The SensorChange event has its own change trigger associated with it: SensorValueChangeTrigger.

- Any data from getting the SensorValue or subscribing to the SensorChange event will have a SensorUnit
  associated with it.

Note: Unlike other properties such as DeviceSerialNumber or Channel, SensorType is set after the device is
opened, not before.
(Read and Write property)

4.83.14   SensorUnit as PhidgetUnitInfoMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The unit of measurement that applies to the sensor values of the SensorType that has been
selected.
Notes: Helps keep track of the type of information being calculated from the voltage input.
(Read only property)

4.83.15   SensorValue as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent sensor value that the channel has reported.
Notes: Use SensorUnit to get the measurement units that are associated with the SensorValue.
(Read only property)

4.83.16   SensorValueChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a SensorChange event until the sensor value has changed by the amount specified by the SensorValueChangeTrigger.
Notes: Setting the SensorChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering
(Read and Write property)

4.83.17   Voltage as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent voltage value that the channel has reported.
Notes: This value will always be between MinVoltage and MaxVoltage.
In volts.
(Read only property)

4.83.18   VoltageChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a VoltageChange event until the voltage value has changed by the amount specified by the VoltageChangeTrigger.
Notes: Setting the VoltageChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering.
In volts.
(Read and Write property)

4.83.19   VoltageRange as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The voltage range you choose should allow you to measure the full range of your input signal.
Notes: A larger VoltageRange equates to less resolution.
If a Saturation event occurs, increase the voltage range.
(Read and Write property)

4.83.20   Events

4.83.21   SensorChanged(sensorValue as double, sensorUnit as PhidgetUnitInfoMBS)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent sensor value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a SensorValueChangeTrigger has been set to a non-zero value, the SensorChange event will not occur until the sensor value has changed by at least the SensorValueChangeTrigger value.
This event only fires when SensorType is not set to kSensorTypeVoltage.

4.83.22   VoltageChanged(voltage as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent voltage value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a VoltageChangeTrigger has been set to a non-zero value, the VoltageChange event will not occur until the voltage has changed by at least the VoltageChangeTrigger value.
If SensorType is supported and set to anything other then kSensorTypeVoltage, this event will not fire.
In volts.

4.83.23   Constants

Power Supply

Constant	Value	Description
kPowerSupply12V	2	The sensor is provided with 12 volts
kPowerSupply24V	3	The sensor is provided with 24 volts
kPowerSupplyOff	1	Switch the sensor power supply off.

Sensor Types

Constant	Value	Description
kSensorType1114	&h2b84	1114 - Temperature Sensor
kSensorType1117	&h2ba2	1117 - Voltage Sensor
kSensorType1123	&h2bde	1123 - Precision Voltage Sensor
kSensorType1127	&h2c06	1127 - Precision Light Sensor
kSensorType1130ORP	&h2c26	1130 - ORP Adapter
kSensorType1130PH	&h2c25	1130 - pH Adapter
kSensorType1132	&h2c38	1132 - 4-20mA Adapter
kSensorType1133	&h2c42	1133 - Sound Sensor
kSensorType1135	&h2c56	1135 - Precision Voltage Sensor
kSensorType1142	&h2c9c	1142 - Light Sensor 1000 lux
kSensorType1143	&h2ca6	1143 - Light Sensor 70000 lux
kSensorType3500	&h88b8	3500 - AC Current Sensor 10Amp
kSensorType3501	&h88c2	3501 - AC Current Sensor 25Amp
kSensorType3502	&h88cc	3502 - AC Current Sensor 50Amp
kSensorType3503	&h88d6	3503 - AC Current Sensor 100Amp
kSensorType3507	&h88fe	3507 - AC Voltage Sensor 0-250V (50Hz)
kSensorType3508	&h8908	3508 - AC Voltage Sensor 0-250V (60Hz)
kSensorType3509	&h8912	3509 - DC Voltage Sensor 0-200V
kSensorType3510	&h891c	3510 - DC Voltage Sensor 0-75V
kSensorType3511	&h8926	3511 - DC Current Sensor 0-10mA
kSensorType3512	&h8930	3512 - DC Current Sensor 0-100mA
kSensorType3513	&h893a	3513 - DC Current Sensor 0-1A
kSensorType3514	&h8944	3514 - AC Active Power Sensor 0-250V*0-30A (50Hz)
kSensorType3515	&h894e	3515 - AC Active Power Sensor 0-250V*0-30A (60Hz)
kSensorType3516	&h8958	3516 - AC Active Power Sensor 0-250V*0-5A (50Hz)
kSensorType3517	&h8962	3517 - AC Active Power Sensor 0-250V*0-5A (60Hz)
kSensorType3518	&h896c	3518 - AC Active Power Sensor 0-110V*0-5A (60Hz)
kSensorType3519	&h8976	3519 - AC Active Power Sensor 0-110V*0-15A (60Hz)
kSensorType3584	&h8c00	3584 - 0-50A DC Current Transducer
kSensorType3585	&h8c0a	3585 - 0-100A DC Current Transducer
kSensorType3586	&h8c14	3586 - 0-250A DC Current Transducer
kSensorType3587	&h8c1e	3587 - +-50A DC Current Transducer
kSensorType3588	&h8c28	3588 - +-100A DC Current Transducer
kSensorType3589	&h8c32	3589 - +-250A DC Current Transducer
kSensorTypeMOT2002High	&h4e36	MOT2002 - Motion Sensor High Sensitivity
kSensorTypeMOT2002Low	&h4e34	MOT2002 - Motion Sensor Low Sensitivity
kSensorTypeMOT2002Med	&h4e35	MOT2002 - Motion Sensor Medium Sensitivity
kSensorTypeVCP4114	&ha0b4	VCP4114 - +-25A DC Current Transducer
kSensorTypeVoltage	0	Generic voltage sensor, Default. Configures the channel to be a generic voltage sensor. Unit is volts.

Voltage Ranges

Constant	Value	Description
kVoltageRange1000mV	6	Range ¬±1000mV DC
kVoltageRange10mV	1	Range ¬±10mV DC
kVoltageRange15V	9	Range ¬±15V DC
kVoltageRange200mV	3	Range ¬±200mV DC
kVoltageRange2V	7	Range ¬±2V DC
kVoltageRange312_5mV	4	Range ¬±312.5mV DC
kVoltageRange400mV	5	Range ¬±400mV DC
kVoltageRange40mV	2	Range ¬±40mV DC
kVoltageRange40V	10	Range ¬±40V DC
kVoltageRange5V	8	Range ¬±5V DC
kVoltageRangeAUTO	11	Auto-range mode changes based on the present voltage measurements.

4.84   class PhidgetVoltageOutputMBS

4.84.1   class PhidgetVoltageOutputMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Voltage Output class controls the variable DC voltage output on a Phidget board.
Notes: This class provides settings for the output voltage as well as various safety controls.
Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

4.84.2   Methods

4.84.3   Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.84.4   enableFailsafe(failsafeTime as UInt32)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enables the failsafe feature for the channel, with a given failsafe time.
Notes: The failsafe feature is intended for use in applications where it is important for the channel to enter a known safe state if the program controlling it locks up or crashes. If you do not enable the failsafe feature, the channel will carry out whatever instructions it was last given until it is explicitly told to stop.

Enabling the failsafe feature starts a recurring failsafe timer for the channel. Once the failsafe timer is enabled, it must be reset within the specified time or the channel will enter a failsafe state. The failsafe timer may be reset either by calling this function again, or using the ResetFailsafe function. Resetting the failsafe timer will reload the timer with the specified failsafe time, starting when the message to reset the timer is received by the Phidget.

For example: if the failsafe is enabled with a failsafe time of 1000ms, you will have 1000ms to reset the failsafe timer. Every time the failsafe timer is reset, you will have 1000ms from that time to reset the failsafe again.

If the failsafe timer is not reset before it runs out, the channel will enter a failsafe state. For Voltage Output channels, this will set the output voltage to 0V. Once the channel enters the failsafe state, it will reject any

further input until the channel is reopened.

To prevent the channel from falsely entering the failsafe state, we recommend resetting the failsafe timer as frequently as is practical for your applicaiton. A good rule of thumb is to not let more than a third of the failsafe time pass before resetting the timer.

Once the failsafe timer has been set, it cannot be disabled by any means other than closing and reopening the channel.

4.84.5   resetFailsafe

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Resets the failsafe timer, if one has been set.
Notes: See EnableFailsafe for details.
This function will fail if no failsafe timer has been set for the channel.

4.84.6   setVoltageAsync(targetVelocity as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the voltage value that the channel will output.
Notes: The Voltage value is bounded by MinVoltage and MaxVoltage.
The voltage value will not be output until Enabled is set to true.

Run asynchronously in the background and calls setVoltageAsyncCompleted event when done.

4.84.7   Properties

4.84.8   Enabled as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enable the output voltage by setting Enabled to true.
Notes: Disable the output by seting Enabled to false to save power.
(Read and Write property)

4.84.9 MaxFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: In milliseconds.
(Read only property)

4.84.10 MaxVoltage as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that Voltage can be set to.
Notes: In volts.
(Read only property)

4.84.11 MinFailsafeTime as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that failsafeTime can be set to when calling EnableFailsafe.
Notes: In milliseconds.
(Read only property)

4.84.12 MinVoltage as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that Voltage can be set to.
Notes: In volts.
(Read only property)

4.84.13 Voltage as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The voltage value that the channel will output.
Notes: The Voltage value is bounded by MinVoltage and MaxVoltage.
The voltage value will not be output until Enabled is set to true.
(Read and Write property)

4.84.14   VoltageOutputRange as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Choose a VoltageOutputRange that best suits your application.
Notes: Changing the VoltageOutputRange will also affect the MinVoltage and MaxVoltage values.
(Read and Write property)

4.84.15   Events

4.84.16   setVoltageAsyncCompleted(ReturnCode as integer)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The event called by setVoltageAsync.

4.84.17   Constants

Output Voltage Range

Constant	Value	Description
kVoltageOutputRange10V	1	¬±10V DC
kVoltageOutputRange5V	2	0-5V DC

4.85 class PhidgetVoltageRatioInputMBS

4.85.1 class PhidgetVoltageRatioInputMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Voltage Ratio Input class is used for measuring the ratio between the voltage supplied to and the voltage returned from an attached sensor or device.
Notes: This is useful for interfacing with ratiometric sensors or wheatstone bridge based sensors.

For ratiometric sensors, this class supports conversion to sensor data with units specific to the Phidget sensor being used, to make reading these sensors easy.
Subclass of the PhidgetMBS class.
Blog Entries

- Rewritten Phidgets Plugin

4.85.2 Methods

4.85.3 Constructor

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.85.4 Properties

4.85.5 BridgeEnabled as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enable power to and data from the input by setting BridgeEnabled to true.
Notes: (Read and Write property)

4.85.6 BridgeGain as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Choose a BridgeGain that best suits your application.
Notes: For more information about the range and accuracy of each BridgeGain to decide which best suits your application, see your device's User Guide.
(Read and Write property)

4.85.7   DataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The DataInterval is the time that must elapse before the channel will fire another event.
Notes: The data interval is bounded by MinDataInterval and MaxDataInterval.
The timing between events can also affected by the change trigger.

Unit: milliseconds (ms)
(Read and Write property)

4.85.8   MaxDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.85.9   MaxVoltageRatio as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value the VoltageRatioChange event will report.
Notes: (Read only property)

4.85.10   MaxVoltageRatioChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum value that VoltageRatioChangeTrigger can be set to.
Notes: (Read only property)

4.85.11   MinDataInterval as UInt32

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that DataInterval can be set to.
Notes: Unit: milliseconds (ms)
(Read only property)

4.85.12 MinVoltageRatio as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value the VoltageRatioChange event will report.
Notes: (Read only property)

4.85.13 MinVoltageRatioChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The minimum value that VoltageRatioChangeTrigger can be set to.
Notes: (Read only property)

4.85.14 SensorType as Integer

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Queries sensor type.
Notes: We sell a variety of analog sensors that do not have their own API, they simply output a voltage that can be converted to a digital value using a specific formula. By matching the SensorType to your analog sensor, the correct formula will automatically be applied to data when you get the SensorValue or subscribe to the SensorChange event.

The SensorChange event has its own change trigger associated with it: SensorValueChangeTrigger.

Any data from getting the SensorValue or subscribing to the SensorChange event will have a SensorUnit associated with it.

Note: Unlike other properties such as DeviceSerialNumber or Channel, SensorType is set after the device is opened, not before.
(Read and Write property)

4.85.15 SensorUnit as PhidgetUnitInfoMBS

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The unit of measurement that applies to the sensor values of the SensorType that has been selected.
Notes: Helps keep track of the type of information being calculated from the voltage ratio input.
(Read only property)

4.85.16   SensorValue as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent sensor value that the channel has reported.
Notes: Use SensorUnit to get the measurement units that are associated with the SensorValue.
(Read only property)

4.85.17   SensorValueChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a SensorChange event until the sensor value has changed by the amount specified by the SensorValueChangeTrigger.
Notes: Setting the SensorChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering
(Read and Write property)

4.85.18   VoltageRatio as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The most recent voltage ratio value that the channel has reported.
Notes: This value will always be between MinVoltageRatio and MaxVoltageRatio.
(Read only property)

4.85.19   VoltageRatioChangeTrigger as Double

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The channel will not issue a VoltageRatioChange event until the voltage ratio value has changed by the amount specified by the VoltageRatioChangeTrigger.
Notes: Setting the VoltageRatioChangeTrigger to 0 will result in the channel firing events every DataInterval. This is useful for applications that implement their own data filtering
(Read and Write property)

4.85.20 Events

4.85.21 SensorChanged(sensorValue as double, sensorUnit as PhidgetUnitInfoMBS)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent sensor value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a SensorValueChangeTrigger has been set to a non-zero value, the SensorChange event will not occur until the sensor value has changed by at least the SensorValueChangeTrigger value.
This event only fires when SensorType is not set to SENSOR_TYPE_VOLTAGERATIO

sensorValue: The sensor value
sensorUnit: The sensor unit information corresponding to the SensorValue.
Helps keep track of the type of information being calculated from the voltage ratio input.

4.85.22 VoltageRatioChanged(voltageRatio as double)

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: The most recent voltage ratio value the channel has measured will be reported in this event, which occurs when the DataInterval has elapsed.
Notes: If a VoltageRatioChangeTrigger has been set to a non-zero value, the VoltageRatioChange event will not occur until the voltage has changed by at least the VoltageRatioChangeTrigger value.
If SensorType is supported and set to anything other then SENSOR_TYPE_VOLTAGERATIO, this event will not fire.

4.85.23 Constants

Bridge gain amplification

Constant	Value	Description
kBridgeGain1	1	1x Amplification
kBridgeGain128	8	128x Amplification
kBridgeGain16	5	16x Amplification
kBridgeGain2	2	2x Amplification
kBridgeGain32	6	32x Amplification
kBridgeGain4	3	4x Amplification
kBridgeGain64	7	64x Amplification
kBridgeGain8	4	8x Amplification

Sensor Types

Constant	Value	Description
kSensorType1101_Sharp_2D120X	&h2b03	1101 - IR Distance Adapter, with Sharp Distance Sensor 2D120X (4-30cm
kSensorType1101_Sharp_2Y0A02	&h2b05	1101 - IR Distance Adapter, with Sharp Distance Sensor 2Y0A02 (20-150
kSensorType1101_Sharp_2Y0A21	&h2b04	1101 - IR Distance Adapter, with Sharp Distance Sensor 2Y0A21 (10-80c
kSensorType1102	&h2b0c	1102 - IR Reflective Sensor 5mm
kSensorType1103	&h2b16	1103 - IR Reflective Sensor 10cm
kSensorType1104	&h2b20	1104 - Vibration Sensor
kSensorType1105	&h2b2a	1105 - Light Sensor
kSensorType1106	&h2b34	1106 - Force Sensor
kSensorType1107	&h2b3e	1107 - Humidity Sensor
kSensorType1108	&h2b48	1108 - Magnetic Sensor
kSensorType1109	&h2b52	1109 - Rotation Sensor
kSensorType1110	&h2b5c	1110 - Touch Sensor
kSensorType1111	&h2b66	1111 - Motion Sensor
kSensorType1112	&h2b70	1112 - Slider 60
kSensorType1113	&h2b7a	1113 - Mini Joy Stick Sensor
kSensorType1115	&h2b8e	1115 - Pressure Sensor
kSensorType1116	&h2b98	1116 - Multi-turn Rotation Sensor
kSensorType1118_AC	&h2bad	1118 - 50Amp Current Sensor AC
kSensorType1118_DC	&h2bae	1118 - 50Amp Current Sensor DC
kSensorType1119_AC	&h2bb7	1119 - 20Amp Current Sensor AC
kSensorType1119_DC	&h2bb8	1119 - 20Amp Current Sensor DC
kSensorType1120	&h2bc0	1120 - FlexiForce Adapter
kSensorType1121	&h2bca	1121 - Voltage Divider
kSensorType1122_AC	&h2bd5	1122 - 30 Amp Current Sensor AC
kSensorType1122_DC	&h2bd6	1122 - 30 Amp Current Sensor DC
kSensorType1124	&h2be8	1124 - Precision Temperature Sensor
kSensorType1125_Humidity	&h2bf3	1125 - Humidity Sensor
kSensorType1125_Temperature	&h2bf4	1125 - Temperature Sensor
kSensorType1126	&h2bfc	1126 - Differential Air Pressure Sensor +- 25kPa
kSensorType1128	&h2c10	1128 - MaxBotix EZ-1 Sonar Sensor
kSensorType1129	&h2c1a	1129 - Touch Sensor
kSensorType1131	&h2c2e	1131 - Thin Force Sensor
kSensorType1134	&h2c4c	1134 - Switchable Voltage Divider
kSensorType1136	&h2c60	1136 - Differential Air Pressure Sensor +-2 kPa
kSensorType1137	&h2c6a	1137 - Differential Air Pressure Sensor +-7 kPa
kSensorType1138	&h2c74	1138 - Differential Air Pressure Sensor 50 kPa
kSensorType1139	&h2c7e	1139 - Differential Air Pressure Sensor 100 kPa
kSensorType1140	&h2c88	1140 - Absolute Air Pressure Sensor 20-400 kPa
kSensorType1141	&h2c92	1141 - Absolute Air Pressure Sensor 15-115 kPa
kSensorType1146	&h2cc4	1146 - IR Reflective Sensor 1-4mm
kSensorType3120	&h79e0	3120 - Compression Load Cell (0-4.5 kg)
kSensorType3121	&h79ea	3121 - Compression Load Cell (0-11.3 kg)
kSensorType3122	&h79f4	3122 - Compression Load Cell (0-22.7 kg)
kSensorType3123	&h79fe	3123 - Compression Load Cell (0-45.3 kg)
kSensorType3130	&h7a44	3130 - Relative Humidity Sensor
kSensorType3520	&h8980	3520 - Sharp Distance Sensor (4-30cm)
kSensorType3521	&h898a	3521 - Sharp Distance Sensor (10-80cm)
kSensorType3522	&h8994	3522 - Sharp Distance Sensor (20-150cm)
kSensorTypeVoltageRatio	0	Generic ratiometric sensor, Default. Configures the channel to be a ge ratiometric sensor. Unit is volts/volt.

Chapter 5

List of Questions in the FAQ

Chapter 6

The FAQ

6.0.1 Can anyone help me convert seconds to time in this format hh:mm:ss?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sure, here's a routine I use (which has an advantage over the previously-posted Date-based solution in that you don't have to rely on the creation of an object – all that happens is some division and string concatenation):
Example:

```
Function SecsToTimeString(timeInSecs as Integer, padHours as boolean, padMinutes as boolean) as string
// Given an amount time (in seconds), generates a string representing that amount
// of time. The padHours and padMinutes parameters determine whether to display
// hours and minutes if their values are zero.

// Examples:
// timeInSecs = 90, padHours = true; returns "00:01:30"
// timeInSecs = 1, padHours = false, padMinutes = true; returns "00:01"
// timeInSecs = 3601, padMinutes = false; returns "01:00:01"

dim hours, minutes, seconds as Integer
dim hoursString, minutesString as string

hours = timeInSecs / 3600
minutes = (timeInSecs mod 3600) / 60
seconds = timeInSecs mod 60

if hours = 0 then
if padHours then
hoursString = "00:"
else
hoursString = ""
end if
```

else
hoursString = Format(hours, "##\:")
end if
if minutes = 0 then
if hours <>0 or padMinutes then
minutesString = "00:"
else
minutesString = ""
end if
else
minutesString = Format(minutes, "00\:")
end if

return hoursString + minutesString + Format(seconds, "00")
End Function

Notes: (from the rb mailinglist)

6.0.2   Do you have plugins for Android?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Since there is no plugin SDK for Android, we have no way to make a plugin for Android.
Notes: We support macOS, Windows, Linux and iOS.

6.0.3   How do I get the proper highlight color on Mac OS X for active/inactive selection?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use functions from NSColor to get proper highlight color in RGB:
Example:

Function ProperHighlightColor(active as Boolean) As Color
#if TargetCocoa
Dim theColor As NSColorMBS
If active Then
theColor = NSColorMBS.alternateSelectedControlColor
Else
theColor = NSColorMBS.secondarySelectedControlColor
End If

Dim rgbColor As NSColorMBS = theColor.colorUsingColorSpaceName(NSColorSpaceMBS.NSCalibrate-

dRGBColorSpace)
If rgbColor <>Nil Then
Dim red as Integer = rgbColor.redComponent * 255.0
Dim green as Integer = rgbColor.greenComponent * 255.0
Dim blue as Integer = rgbColor.blueComponent * 255.0
Return RGB(red, green, blue)
Else
Return HighlightColor
End If
#else
return HighlightColor
#endif
End Function

Notes: As you see we convert color to Calibrated RGB for best results.
See also:

6.0.4   How to catch delete key?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The following is the code in keydown event catches delete or backspace keys.
Example:

Function KeyDown(Key As String) As Boolean
if asc(key) = 8 or asc(key) = 127 then
MsgBox "Delete"
Return true
end if
End Function

See also:

6.0.5 How to convert cmyk to rgb?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

The following is the code to convert cmyk values to an RGB color datatype.
It's just a basic estimate of the color values. If you are looking for completely color accurate solution, this is not it. It should work for most people. :)
Example:

```
Function CMYKToRGB(c as Integer, m as Integer, y as Integer, k as Integer) As color
// converts c,m,y,k values (0-100) to color data type RGB
// place this in a method. Supply C,M,Y,K values-
// it returns color datatype


dim color_RGB as color
dim r, g, b as Integer

r=255-round(2.55*(c+k))
if r<0 then
r=0
end if
g=255-round(2.55*(m+k))
if g<0 then
g=0
end if
b=255-round(2.55*(y+k))
if b<0 then
b=0
end if

color_RGB=RGB(r,g,b)

return color_RGB

End Function
```

Notes:

(from the rb mailinglist)
See also:

6.0.6   How to delete a folder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The following is the code deletes a folder recursively.
Example:

```
Sub deletefolder(f as folderitem)
dim files(-1) as FolderItem

if f=nil then Return

// delete single file
if f.Directory=false then
f.Delete
Return
end if

// get a list of all items in that folder
dim i,c as Integer
c=F.Count
for i=1 to c
files.Append f.TrueItem(i)
next

// delete each item
for each fo as FolderItem in files
if fo=nil then
' ignore
elseif fo.Directory then
deletefolder fo
fo.delete
else ' file
```

fo.Delete
end if
next

f.Delete
End Sub

See also:

6.0.7 How to detect if CPU if 64bit processor?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Via CPUID you can ask CPU:
Example:

dim c as new CPUIDMBS

if c.Flags(CPUIDMBS.kFeatureLM) then
MsgBox "64-bit CPU"
else
MsgBox "32-bit CPU"
end if

Notes: Should work on all intel compatible CPUs.
See also:

6.0.8 How to query variant type string for a variant?

Plugin Version: 20.5, Platforms: macOS, Linux, Windows.

Answer: The following example function returns type string for variant.
Example:

```
Public Function VariantTypeString(v as Variant) as string
// Xojo's VarType doesn't know Unsigned integers
'Dim type As Integer = VarType(v)

// MBS VarType can detect unsigned integer
Dim type As Integer = GetVariantTypeMBS(v)

Dim IsArray As Boolean = BitwiseAnd(type, Variant.TypeArray) = Variant.TypeArray

// type without array
type = BitwiseAnd(type, Bitwise.OnesComplement(Variant.TypeArray))

// build a dictionary to map types on first call
Static TypeMap As Dictionary
If TypeMap = Nil Then
TypeMap = New Dictionary
TypeMap.Value(Variant.TypeBoolean) = "Boolean"
TypeMap.Value(Variant.TypeCFStringRef) = "CFStringRef"
TypeMap.Value(Variant.TypeColor) = "Color"
TypeMap.Value(Variant.TypeCString) = "CString"
TypeMap.Value(Variant.TypeCurrency) = "Currency"
TypeMap.Value(Variant.TypeDate) = "Date"
TypeMap.Value(Variant.TypeDateTime) = "DateTime"
TypeMap.Value(Variant.TypeDouble) = "Double"
TypeMap.Value(Variant.TypeInt32) = "Int32"
TypeMap.Value(Variant.TypeInt64) = "Int64"
TypeMap.Value(Variant.TypeInteger) = "Integer"
TypeMap.Value(Variant.TypeNil) = "Nil"
TypeMap.Value(Variant.TypeObject) = "Object"
TypeMap.Value(Variant.TypeOSType) = "OSType"
TypeMap.Value(Variant.TypePString) = "PString"
TypeMap.Value(Variant.TypePtr) = "Ptr"
TypeMap.Value(Variant.TypeSingle) = "Single"
TypeMap.Value(Variant.TypeString) = "String"
TypeMap.Value(Variant.TypeStructure) = "Structure"
TypeMap.Value(Variant.TypeText) = "Text"
TypeMap.Value(Variant.TypeWindowPtr) = "WindowPtr"
TypeMap.Value(Variant.TypeWString) = "WString"

// MBS extra types
TypeMap.Value(Variant.TypeInt32+100) = "UInt32"
TypeMap.Value(Variant.TypeInt64+100) = "UInt64"
```

```
End If

// lookup type

#if DebugBuild then
If Not TypeMap.HasKey(type) Then
Break // missing type
End If
#endif

If IsArray Then
Return "Array of " + TypeMap.Lookup(type,"?")
Else
Return TypeMap.Lookup(type,"?")
End If
End Function
```

See also:

6.0.9   How to refresh a htmlviewer on Windows?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can ask the browser to reload the website with this code line:
Example:

```
call htmlViewer1.IERunJavaScriptMBS("javascript:document.location.reload()")
```

See also:

6.0.10 Is there an example for vector graphics in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this example inside the paint event of a window:
Example:

```
dim v as Group2D
dim r as RectShape
dim s as StringShape

const pi=3.14

s=new StringShape
s.Text="Hello World!"
s.TextFont="Geneva"
s.TextSize=24
s.FillColor=rgb(0,0,255)
s.Italic=true
s.y=5
s.x=0

r=new RectShape

r.X=0
r.y=0
r.Height=100
r.Width=180
r.BorderColor=rgb(255,0,0)
r.FillColor=rgb(0,255,0)
r.BorderWidth=5
r.Border=50

v=new Group2d
v.Append r
v.Append s
v.Rotation=pi*-20.0/180.0
v.x=150
v.y=150

g.DrawObject v
```

6.0.11   Picture functions do not preserve resolution values?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, the picture functions return pictures with no/default resolution values.
Example:

dim l as Picture = LogoMBS(500)

l.HorizontalResolution = 300
l.VerticalResolution = 300

dim r as Picture = l.Rotate90MBS

MsgBox str(r.HorizontalResolution)+" x "+str(r.VerticalResolution)

r.HorizontalResolution = l.HorizontalResolution
r.VerticalResolution = l.VerticalResolution

MsgBox str(r.HorizontalResolution)+" x "+str(r.VerticalResolution)

Notes: So please fix them yourself after calling a function.

Maybe in the future this changes, but currently you can't really set this easily from plugin code.

6.0.12   A toolbox call needs a rect - how do I give it one?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Fill a memoryblock like this:
Example:

Dim MB As Memoryblock
MB = NewMemoryBlock(8)
MB.Short(0) = window1.Top
MB.Short(2) = window1.Left
MB.Short(4) = window1.Height+window1.Top // bottom
MB.Short(6) = window1.Width+window1.Left // right

6.0.13   API client not supported?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you get this exception message on SQLConnectionMBS.Connect, we may have a problem.
Notes: First case is that the given thing is not supported (e.g. MS SQL directly on Mac).
Second case is that the plugin compilation went wrong and the support for the database was not linked into the plugin. Like MySQL missing or MS SQL on Windows missing. In that case please contact us to fix the plugin.

6.0.14   Can I access Access Database with Java classes?

Plugin Version: all, Platform: Windows.

Answer: You can use ucanaccess to access databases created with Microsoft
Example:

dim options(-1) as string

// load all the jar files we have in a folder called java:

dim appFolder as FolderItem = GetFolderItem("")

Dim count as Integer = appFolder.Parent.Child("java").Count
dim libjs() as string
For i as Integer = 1 to count
Dim f As FolderItem = appFolder.Parent.Child("java").item(i)
If f <>Nil and f.Exists Then
libjs.append f.NativePath+";"
End If
Next

// now init virtual machine
dim librery as string = Join(libjs, "")
dim vm as new JavaVMMBS(librery)

if vm.Handle = 0 then
MsgBox "Failed to initialize virtual machine"
else
// now make a new database connection with ucanaccess
dim d as new JavaDatabaseMBS(vm,"net.ucanaccess.jdbc.UcanaccessDriver")
Dim DbFile as FolderItem = appFolder.Parent.Child("Database11.accdb")
dim j as JavaConnectionMBS = d.getConnection("jdbc:ucanaccess://"+DbFile.NativePath)

// select and show values
dim r as JavaResultSetMBS = j.MySelectSQL("Select * From test")
while r.NextRecord
MsgBox r.getString("FirstName") +" "+ r.getString("LastName")
wend

end if

Exception e as JavaExceptionMBS
MsgBox e.message+" errorcode: "+str(e.ErrorNumber)

Notes: see website:
http://ucanaccess.sourceforge.net/site.html

6.0.15   Can I create PDF from Xojo Report using DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, we have a graphics class integration for DynaPDF.
Notes: Since MBS Plugin in version 19.2, we can integrate reports with Xojo.

6.0.16   Can I use AppleScripts in a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, but they run on the server, not on the client.
Example:

dim a as new AppleScriptMBS

// query my application name
a.Compile "tell application ""System Events"" to return name of current application"

// run
a.Execute

// show result
label1.text = a.Result

// shows something like "My Application.fcgi.debug"

Notes: This can be useful to control the server from remote, if and only if the your sever is running Mac OS X.

6.0.17   Can I use graphics class with DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sorry, no. We can't provide a graphics subclass from plugin.
Notes: The is a feature request to allow graphics subclasses:
Feedback case 11391: feedback://showreport?report_id=11391

6.0.18   Can I use sockets on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, but they run on the server, not on the client.
Notes: You can use HTTPSocket, SMTPSocket, POP3Socket, SMTPSecureSocket, SecurePOP3Socket, EasyTCPSocket, EasyUDPSocket, AutoDiscovery, our Bonjour classes or our CURL* classes. But all of them work on the server, not on the client.

This means if you search for a printer with Bonjour, you can find the printers in the local network on your server hosting site. Using SMTPSocket may be a good idea for sending emails from the server like notifications.

6.0.19   Can I use your ChartDirector plugin on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, our ChartDirector plugin works just fine on the Xojo Web Edition.
Example:

```
// The data for the pie chart
dim data(-1) as Double=array(55.0, 18.0, 25.0, 22.0, 18.0, 30.0, 35.0)

// The labels for the pie chart, Words are choosen random to check font!
dim labels(-1) as string=array("Germany","Italy","France","Spain","UK","Poland","Russia")

// The colors to use for the sectors
dim colors(-1) as Integer

colors.Append &h66aaee
colors.Append &heebb22
colors.Append &hbbbbbb
colors.Append &h8844ff

if TargetLinux then
CDBaseChartMBS.SetFontSearchPath "/usr/share/fonts/truetype/msttcorefonts"
end if

// Create a PieChart object of size 360 x 300 pixels
dim c as new CDPieChartMBS(700, 600)
```

c.setBackground(c.linearGradientColor(0, 0, 0, c.getHeight(), &h0000cc, &h000044))
c.setRoundedFrame(&hffffff, 16)
dim tt as CDTextBoxMBS = c.addTitle("ChartDirector Demonstration", "timesbi.ttf", 18)
tt.setMargin(0, 0, 16, 0)
tt.setFontColor(&hFFFFFF)

// Set the center of the pie at (180, 140) and the radius to 100 pixels
c.setPieSize 350,300,150
// Set the sector colors
c.setColors(c.kDataColor, colors)

// Draw the pie in 3D with a pie thickness of 20 pixels
c.set3D(20)

dim t as CDTextBoxMBS = c.setLabelStyle("arialbd.ttf", 10, &h000000)
t.setBackground(CDPieChartMBS.kSameAsMainColor, CDPieChartMBS.kTransparent, CDPieChartMBS.soft-Lighting(CDPieChartMBS.kRight, 0))
t.setRoundedCorners(8)

// Use local gradient shading for the sectors, with 5 pixels wide
// semi-transparent white (bbffffff) borders
c.setSectorStyle(CDPieChartMBS.kLocalGradientShading, &hbbffffff, 0)

// Set the pie data and the pie labels
c.setData data,labels
call c.setLabelStyle "arialbd.ttf",18

dim pic as picture = c.makeChartPicture
dim wp as new WebPicture(pic, Picture.FormatJPEG) // JPEG makes it smaller and faster

ImageView1.Picture=wp

Notes: Be aware that our plugin produces pictures for you, which you assign to ImageViews. Tranferring those pictures takes time, so you can optimize that with using WebPicture class. There you can decide between different compressions to improve speed (use JPEG instead of PNG).

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with "/usr/share/fonts/truetype/msttcorefonts" as the path. No backslash on the end of a path, please.

6.0.20   Can I use your DynaPDF plugin on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, our DynaPDF plugin works just fine on the Xojo Web Edition.
Notes: PDF files are created on the server. You may want to offer a preview to the user which uses reduced resolution images to reduce the time to download the PDF.

See our Create PDF example for the Xojo Web Edition.

6.0.21   Can I use your plugin controls on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: No.

6.0.22   Can you get an unique machine ID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: There is nothing like an unique machine ID.
Notes: 1:
You can use the MAC IDs of the network interfaces.
This can be changed by the user with software tools.
And the list of network interfaces changes if user reorder the interfaces.

2:
You can use the system folder creation date/time.
This may stay equal after cloning machines or after migration to
new PC.

3:
You can use the Mac Serialnumber.
Mac only and it can happen that a Mac does not have a serial
number.

4:
You can use the x86 CPU ID.
This is x86 CPU only and does not avoid running on the same CPU in
different PCs.

6.0.23   ChartDirector: Alignment Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Alignment Specification
Notes: In many ChartDirector objects, you may specify the alignment of the object's content relative to its boundary. For example, for a TextBox object, you may specify the text's alignment relative to the box boundary by using TextBox.setAlignment.

The ChartDirector API defines several constants for the alignment options.

ConstantValueDescription

Constant	Value	Description
BottomLeft	1	The leftmost point on the bottom line.
BottomCenter	2	The center point on the bottom line.
BottomRight	3	The rightmost point on the bottom line.
Left	4	The leftmost point on the middle horizontal line.
Center	5	The center point on the middle horizontal line.
Right	6	The rightmost point on the middle horizontal line.
TopLeft	7	The leftmost point on the top line.
TopCenter	8	The center point on the top line.
TopRight	9	The rightmost point on the top line.
Bottom	2	The center point on the bottom line. Same as BottomCenter.
Top	8	The center point on the top line. Same as TopCenter.
TopLeft2	10	An alternative top-left position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, TopLeft2 refers to refers to the left of the top side, while TopLeft refers to the top of the left side. The reverse applies for a horizontal axis.
TopRight2	11	An alternative top-right position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, TopRight2 refers to refers to the right of the top side, while TopRight refers to the top of the right side. The reverse applies for a horizontal axis.
BottomLeft2	12	An alternative bottom-left position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, BottomLeft2 refers to refers to the left of the bottom side, while BottomLeft refers to the bottom of the left side. The reverse applies for a horizontal axis.
BottomRight2	13	An alternative bottom-right position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, BottomRight2 refers to refers to the right of the bottom side, while BottomRight refers to the bottom of the right side. The reverse applies for a horizontal axis.

6.0.24   ChartDirector: Color Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Color Specification
Notes: Many functions in the ChartDirector API accept colors as parameters. ChartDirector supports col-

ors specified in web and HTML compatible ARGB format, in which ARGB refers to the Alpha transparency, Red, Green and Blue components of the color.

In addition to ARGB colors, ChartDirector supports "dynamic" colors. A dynamic color is a color that changes depending on the position of the pixels. The "dynamic" colors that ChartDirector supports include "pattern colors", "metal colors", "gradient colors", "zone colors" and "dash line colors".

ChartDirector supports specifying colors indirectly using "palette colors". When a "palette color" is used, the color is specified as an index to a palette. The actual color is looked up from the palette.ARGB Color ARGB color consists of 4 components - alpha transparency, red, green and blue. The four components are encoded as a 32-bit number, with each component occupying 8 bits. In hexadecimal notation, it is AARRGGBB, where AA, RR, GG and BB are the alpha transparency, red, green and blue components.

Each component ranges from 00 - FF (0 - 255), representing its intensity. For example, pure red color is 00FF0000, pure green color is 0000FF00, and pure blue color is 000000FF. White color is 00FFFFFF, and black color is 00000000.

Most programming language requires you to put special prefix in front of hexadecimal characters. For C++, the prefix is "0x". For example, the syntax for the hexadecimal number 00FFFFFF is 0x00FFFFFF, or simply 0xFFFFFF.
For the alpha transparency component, a zero value means the color is not transparent all at. This is equivalent to traditional RGB colors. A non-zero alpha transparency means the the color is partially transparent. The larger the alpha transparency, the more transparent the color will be. If a partially transparent color is used to draw something, the underlying background can still be seen.

For example, 80FF0000 is a partially transparent red color, while 00FF0000 is a non-transparent red color.

Note that ChartDirector's ARGB color is web and HTML compatible. For example, red is FF0000, the same as in HTML. There are many resources on the web that provide tables in which you can click a color and it will show its HTML color code. These color codes can be used in ChartDirector.

If alpha transparency is FF (255), the color is totally transparent. That means the color is invisible. It does not matter what the RGB components are. So in ChartDirector, only one totally transparent color is used - FF000000. All other colors of the form FFnnnnnn are reserved to represent palette colors and dynamic colors, and should not be interpreted as the normal ARGB colors.

The totally transparent color FF000000 is often used in ChartDirector to disable drawing something. For example, if you want to disable drawing the border of a rectangle, you can set the border color to totally transparent.

For convenience, ChartDirector defines a constant called Transparent, which is equivalent to FF000000.Pattern Color

A pattern color is a dynamic color that changes according to a 2D periodic pattern. When it is used to fill an area, the area will look like being tiled with a wallpaper pattern.

Pattern colors are created using BaseChart.patternColor, BaseChart.patternColor2, DrawArea.patternColor and DrawArea.patternColor2. The patternColor method creates pattern colors using an array of colors as a bitmap. The patternColor2 method creates pattern colors by loading the patterns from image files.

These methods return a 32-bit integer acting as a handle to the pattern color. The handle can be used in any ChartDirector API that expects a color as its input.Metal Color
A metal color is a color of which the brightness varies smoothly across the chart surface as to make the surface looks shiny and metallic. ChartDirector supports using any color as the base color of the metal color. In particular, using yellow and grey as the base colors will result in metal colors that look gold and silver.

Metal colors are most often used as background colors of charts. They are created using CDBaseChartMBS.metalColor, CDBaseChartMBS.goldColor and CDBaseChartMBS.silverColor. The first method allows you to specify an arbitrary base color. The second and third methods use yellow and grey as the base colors, resulting in gold and silver metal colors.

These methods return a 32-bit integer acting as a handle to the gradient color. The handle can be used in any ChartDirector API that expects a color as its input.Gradient Color
A gradient color is a color that changes progressively across a direction.

Gradient colors are created using BaseChart.gradientColor, BaseChart.gradientColor2, DrawArea.gradientColor and DrawArea.gradientColor2. The gradientColor method creates a 2-point gradient color that changes from color A to color B. The gradientColor2 method creates a multi-point gradient colors that changes from color A to B to C ....

These methods return a 32-bit integer acting as a handle to the gradient color. The handle can be used in any ChartDirector API that expects a color as its input.

One common use of multi-point gradient colors is to define colors that have metallic look and feel. Please refer to DrawArea.gradientColor2 for details.Dash Line Colors
A dash line color is a color that switches on and off periodically. When used to draw a line, the line will appear as a dash line.

Dash line colors are created using BaseChart.dashLineColor and DrawArea.dashLineColor. They accept a line color and a dash pattern code as arguments, and return a 32-bit integer acting as a handle to the dash line color. The handle can be used in any ChartDirector API that expects a color as its input.Zone Colors
A zone color is for XY charts only. It is a color that automatically changes upon reaching a data threshold value along the x-axis or y-axis. Zone colors are created using Layer.xZoneColor, Layer.yZoneColor, XYChart.xZoneColor or XYChart.yZoneColor.Palette Colors
Palette colors are colors of the format FFFFnnnn, where the least significant 16 bits (nnnn) are the index to the palette. A palette is simply an array of colors. For a palette color, the actual color is obtained by

looking up the palette using the index. For example, the color FFFF0001 is the second color in the palette (first color is index 0).

The colors in the palette can be ARGB colors or "dynamic" colors (pattern, gradient and dash line colors).

The first eight palette colors have special significance. The first three palette colors are the background color, default line color, and default text color of the chart. The 4th to 7th palette colors are reserved for future use. The 8th color is a special dynamic color that is equal to the data color of the "current data set".

The 9th color (index = 8) onwards are used for automatic data colors. For example, in a pie chart, if the sector colors are not specified, ChartDirector will automatically use the 9th color for the first sector, the 10th color for the second sector, and so on. Similarly, for a multi-line chart, if the line colors are not specified, ChartDirector will use the 9th color for the first line, the 10th color for the second line, and so on.

The ChartDirector API defines several constants to facilitate using palette colors.

ConstantValueDescription

Constant	Value	Description
Palette	FFFF0000	The starting point of the palette. The first palette color is (Palette + 0). The nth palette color is (Palette + n - 1).
BackgroundColor	FFFF0000	The background color.
LineColor	FFFF0001	The default line color.
TextColor	FFFF0002	The default text color.
[Reserved]	FFFF0003 - FFFF0006	These palette positions are reserved. Future versions of ChartDirector may use these palette positions for colors that have special significance.
SameAsMainColor	FFFF0007	A dynamic color that is equal to the data color of the current data set. This color is useful for objects that are associated with data sets. For example, in a pie chart, if the sector label background color is SameAsMainColor, its color will be the same as the corresponding sector color.
DataColor	FFFF0008	The starting point for the automatic data color allocation.

When a chart is created, it has a default palette. You may modify the palette using BaseChart.setColor, BaseChart.setColors, or BaseChart.setColors2.

The advantages of using palette colors are that you can change the color schemes of the chart in one place. ChartDirector comes with several built-in palettes represented by the following predefined constants.

ConstantDescription

6.0.25 ChartDirector: Font Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

defaultPalette	An array of colors representing the default palette. This palette is designed for drawing charts on white backgrounds (or lightly colored backgrounds).
whiteOnBlackPalette	An array of colors useful for drawing charts on black backgrounds (or darkly colored backgrounds).
transparentPalette	An array of colors useful drawing charts on white backgrounds (or lightly colored backgrounds). The data colors in this palette are all semi-transparent.

Answer: ChartDirector: Font Specification
Notes: Font Name
In ChartDirector, the font name is simply the file name that contains the font. For example, under the Windows platform, the "Arial" font is "arial.ttf", while the "Arial Bold" font is "arialbd.ttf".

NOTE: Mac OS X Specific Information
In Mac OS X, in addition to ".ttf", ChartDirector also supports Mac OS X font file formats, such as Font Suitcase files and Datafork files (.dfont). These files often contain multiple fonts. For example, the "Gill-Sans.dfont" file contains 6 fonts.

So in addition to the file name, an index is needed to determine the font. The index is specified by appending a " | " character to the font name, followed by the index number. For example, the third font in "GillSans.dfont" is denoted as "GillSans.dfont | 2". (Note: The first font starts at 0.) If no index number is provided, the first font is assumed.

ChartDirector also supports using Mac OS X Font Manager names. For example, one may use "Gill Sans Light Italic" instead of using "GillSans.dfont | 1" as the font name. However, the Mac OS X Font Manager is active only if someone has logged into the Mac GUI console, so this method is only recommended for developing applications that run on the GUI console.

The sample programs that come with ChartDirector are designed to run on all operating systems, so they use generic font file names (eg. "arial.ttf") instead of Mac OS X specific names. To allow them to run on Mac OS X, ChartDirector on Mac OS X has a built-in table to map common font file names to Mac OS X font names:

"arial.ttf", "arialbd.ttf", "ariali.ttf" and "arialbi.ttf" are mapped to "Arial | 0" (Arial), "Arial | 1" (Arial Bold), "Arial | 2" (Arial Italic) and "Arial | 3" (Arial Bold Italic)

"times.ttf", "timesbd.ttf", "timesi.ttf" and "timesbi.ttf" are mapped to "Times New Roman | 0" (Times New Roman), "Times New Roman | 1" (Times New Roman Bold), "Times New Roman | 2" (Times New Roman Italic) and "Times New Roman | 3" (Times New Roman Bold Italic)

"cour.ttf", "courbd.ttf", "couri.ttf" and "courbi.ttf" are mapped to "Courier New | 0" (Courier New), "Courier New | 1" (Courier New Bold), "Courier New | 2" (Courier New Italic) and "Courier New | 3" (Courier New Bold Italic)

Font Location
ChartDirector on Windows does not come with any font files. It relies on the operating system's font files in the " [windows] \Fonts" directory. To see what fonts are installed in your operating system and their file names, use the File Explorer to view that directory.

ChartDirector on Windows will also search for the font files in the "fonts" subdirectory (if it exists) under the directory where the ChartDirector DLL "chartdir.dll" is installed. This is useful for private fonts. Also, for some especially secure web servers, the web anonymous user may not have access to the " [windows] \Fonts" directory. In this case, you may copy the font files to the above subdirectory.

ChartDirector on Mac OS X relies on operating system font files in "/Library/Fonts" and "/System/Library/Fonts".

ChartDirector on Linux, FreeBSD and Solaris assume the fonts files are in the "fonts" subdirectory under the directory where the ChartDirector shared object "libchartdir.so" is installed. ChartDirector on Linux, FreeBSD and Solaris come with a number of font files in the "fonts" subdirectory.

To keep the download size small, ChartDirector on Linux, FreeBSD and Solaris only come with some commonly used fonts. You may download additional fonts from the Internet. In particular, the Microsoft fonts at
http://sourceforge.net/project/showfiles.php?group_id=34153&release_id=105355
is highly recommended. Please refer to
http://www.microsoft.com/typography/faq/faq8.htm
on how you could use the fonts legally in your system.

ChartDirector supports True Type fonts (.ttf), Type 1 fonts (.pfa and .pfb) and Windows bitmap fonts (.fon). On Mac OS X, ChartDirector also supports Font Suitcase and Datafork (.dfont) files. On Linux, FreeBSD and Solaris, ChartDirector also supports Portable Compiled Fonts (.pcf fonts).

If you want ChartDirector to search other directories for the font files, you may list the directories in an environment variable called "FONTPATH".

If you specify an absolute path name for the font file, ChartDirector will use the absolute path name and will not search other directories.Artificial Boldening and Italicizing
Whereas most popular font comes with different styles for "normal", "bold", "italic" and "bold italic", some fonts only come with one style (the normal style). For example, the Monotype Corsiva font that comes with MS Office only has the normal style (mtcorsva.ttf). For these cases, you may append the "Bold" and/or "Italic" words after the font file name (separated with a space) to ask ChartDirector to artificially bolden and/or italicize the font. For example, you may specify the font name as "mtcorsva.ttf Bold".Font List
Instead of specifying a single font file as the font name, you may specify a list of font files as the font name, separated by semi-colons. This is useful when using international characters that are only available in some fonts.

For example, if you would like to use the Arial font ("arial.ttf") for western characters, and the MingLiu font "mingliu.ttc" for Chinese characters (since the Arial font does not have Chinese characters), you may specify the font name as "arial.ttf;mingliu.ttc". In this case, ChartDirector will try the Arial font first. If it cannot find a certain character there, it will try the MingLiu font.Indirect Font Names

ChartDirector supports several special keywords for specifying the font name indirectly. When these keywords are used as font names, ChartDirector will look up the actual font names from a font table. The keywords are as follows:

KeywordsDescription

"normal"	This default normal font, which is the first font in the font table. This is initially mapped to "arial.ttf" (Arial).
"bold"	The default bold font, which is the second font in the font table. This is initially mapped to "arialbd.ttf" (Arial Bold).
"italic"	The default italic font, which is the third font in the font table. This is initially mapped to "ariali.ttf" (Arial Italic).
"boldItalic"	The default bold-italic font, which is the fourth font in the font table. This is initially mapped to "arialbi.ttf" (Arial Bold Italic).
"fontN"	The $(N + 1)$th font in the font table (the first font is "font0").

The font table can be modified using BaseChart.setFontTable or DrawArea.setFontTable.

The advantage of using indirect font names is that you can change the fonts fonts in your charts in one place.Font Index

Most font files contain one font. However, it is possible a font file contains multiple fonts (that is, a font collection). For example, in True Type fonts, font files with extension ".ttc" may represent a font collection.

If a font file contains multiple font, the font index can be used to specify which font to use. By default, the font index is 0, which means the first font in the font file will be used.Font Size

The font size decides how big a font will appear in the image. The font size is expressed in a font unit called points. This is the same unit used in common word processors.

Instead of specifying font size, some ChartDirector API (eg. TextBox.setFontSize) allow you to specify font height and font width separately. You may use different point sizes for font height and font width to create special effects.Font Color

This is the color to draw the font. (See Color Specification on how colors are represented in ChartDirector.)Font Angle

This is the angle in degrees by which the font should be rotated anti-clockwise.Vertical Layout

By default, text are laid out horizontally, with characters being drawn from left to right.

ChartDirector also supports vertical layout, with characters being drawn from top to bottom. For example, you may use BaseChart.addText to add text that are laid out vertically. Vertical layout is common for

oriental languages such as Chinese, Japanese and Korean.

6.0.26 ChartDirector: Mark Up Language

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Mark Up Language
Notes: ChartDirector Mark Up Language (CDML) is a language for including formatting information in text strings by marking up the text with tags.

CDML allows a single text string to be rendered using multiple fonts, with different colors, and even embed images in the text.Font Styles
You can change the style of the text by using CDML tags. For example, the line:

<*font=timesi.ttf,size=16,color=FF0000>Hello <*font=arial.ttf,size=12,color=8000*>world!
will result in the following text rendered:

In general, all tags in CDML are enclosed by <* and *>. Attributes within the tags determine the styles of the text following the tags within the same block.

If you want to include <* in text without being interpreted as CDML tags, use «* as the escape sequence.

The following table describes the supported font style attributes in CDML. See Font Specification for details on various font attributes.

AttributeDescription

Set the following text to be in superscript style. This attribute does not need to have a value. (You may use "super" as the attribute instead of "super=1".)

Note that unlike HTML tags, no double or single quotes are used in the tags. It is because CDML tags are often embedded as string literals in source code. The double or single quotes, if used, will conflict with the string literal quotes in the source code. Therefore in CDML, no quotes are necessary and they must not be used.

Also, unlike HTML tags, CDML uses the comma character as the delimiter between attributes. It is because certain attributes may contain embed spaces (such as the font file name). So space is not used as the delimiter and the comma character is used instead.

Note the font attribute above starts a new style section, while other attributes just modify the current style

font	Starts a new style section, and sets the font name. You may use this attribute without a value (that is, use "font" instead of "font=arial.ttf") to create a new style section without modifying the font name.
size	The font size.
width	The font width. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.
height	The font height. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.
color	The text color in hex format.
bgColor	The background color of the text in hex format.
underline	The line width of the line used to underline the following characters. Set to 0 to disable underline.
sub	Set the following text to be in subscript style. This attribute does not need to have a value. (You may use "sub" as the attribute instead of "sub=1".)
super	Set the following text to be in superscript style.

xoffset	Draw the following the text by shifting the text horizontally from the original position by the specified offset in pixels.
yoffset	Draw the following the text by shifting the text vertically from the original position by the specified offset in pixels.
advance	Move the cursor forward (to the right) by the number of pixels as specified by the value this attribute.
advanceTo	Move the cursor forward (to the right) to the position as specified by the value this attribute. The position is specified as the number of pixels to the right of the left border of the block. If the cursor has already passed through the specified position, the cursor is not moved.

section. You may use <*/font*>to terminate a style section, which will restore the font styles to the state before the style section.Blocks and Lines

In CDML, a text string may contain multiple blocks. A block may contain multiple lines of text by separating them with new line characters ("\n") or with <*br*>. The latter is useful for programming languages that cannot represent new line characters easily.

For example, the line:

<*size=15*><*block*><*color=FF*>BLOCK<*br*>ONE<*/*>and <*block*><*color=FF00*>BLOCK<*br*>TWO◁
will result in the following text rendered:

The above example contains a line of text. The line contains two blocks with the characters " and " in between. Each block in turn contains two lines. The blocks are defined using <*block*>as the start tag and

<*/*>as the end tag.

When a block ends, font styles will be restored to the state before entering the block.Embedding Images
CDML supports embedding images in text using the following syntax:

<*img=my_image_file.png*>
where my_image_file.png is the path name of the image file.

For example, the line:

<*size=20*>A <*img=sun.png*>day
will result in the following text rendered:

ChartDirector will automatically detect the image file format using the file extension, which must either png,
jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to BaseChart.setSearchPath or DrawArea.setSearchPath on the directory that ChartDirector
will search for the file.

The <*img*>tag may optionally contain width and height attributes to specify its pixel width and height.
In this case, ChartDirector will stretch or compress the image if necessary to the required width and
height.Blocks Attributes
CDML supports nesting blocks, that is, a block can contain other sub-blocks. Attributes are supported
in the <*block*>tag to control the alignment and orientation of the sub-blocks. The <*img=my_im-
age_file.png*>is treated as a block for layout purposes.

For example, the line:

<*block,valign=absmiddle*><*img=molecule.png*><*block*>Hydrazino\nMolecule<*/*><*/*>
will result in the following text rendered:

The the above starts <*block,valign=absmiddle*>which specifies its content should align with each others
in the vertical direction using the absolute middle alignment. The block contains an image, followed by a
space characters, and then another block which has two lines of text.

The following table describes the supported attributes inside <*block*>tag:

AttributeDescription

The value baseline means the baseline of sub-blocks should align with the baseline of the block. The baseline

width	The width of the block in pixels. By default, the width is automatically determined to be the width necessary for the contents of the block. If the width attribute is specified, it will be used as the width of the block. If the width is insufficient for the contents, the contents will be wrapped into multiple lines.
height	The height of the block in pixels. By default, the height is automatically determined to be the height necessary for the contents of the block. If the height attribute is specified, it will be used as the height of the block.
maxwidth	The maximum width of the block in pixels. If the content is wider than maximum width, it will be wrapped into multiple lines.
truncate	The maximum number of lines of the block. If the content requires more than the maximum number of lines, it will be truncated. In particular, if truncate is 1, the content will be truncated if it exceeds the maximum width (as specified by maxwidth or width) without wrapping. The last few characters at the truncation point will be replaced with "...".
linespacing	The spacing between lines as a ratio to the default line spacing. For example, a line spacing of 2 means the line spacing is two times the default line spacing. The default line spacing is the line spacing as specified in the font used.
bgColor	The background color of the block in hex format.
valign	The vertical alignment of sub-blocks. This is for blocks that contain sub-blocks. Supported values are baseline, top, bottom, middle and absmiddle.

is the underline position of text. This is normal method of aligning text, and is the default in CDML. For images or blocks that are rotated, the baseline is the same as the bottom.

The value top means the top line of sub-blocks should align with the top line of the block.

The value bottom means the bottom line of sub-blocks should align with the bottom line of the block.

The value middle means the middle line of sub-blocks should align with the the middle line of the block. The middle line is the middle position between the top line and the baseline.

The value absmiddle means the absolute middle line of sub-blocks should align with the absolute middle line of the block. The absolute middle line is the middle position between the top line and the bottom line.

| halign | The horizontal alignment of lines. This is for blocks that contain multiple lines. Supported values are left, center and right. |

The value left means the left border of each line should align with the left border of the block. This is the default.

The value center means the horizontal center of each line should align with the horizontal center of the block.

The value right means the right border of each line should align with the right border of the block.

angle   Rotate the content of the block by an angle. The angle is specified in degrees in counter-clockwise direction.

6.0.27   ChartDirector: Parameter Substitution and Formatting

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Parameter Substitution and Formatting
Notes: ChartDirector charts often contain a lot of text strings. For example, sector labels in pie charts, axis labels for x and y axes, data labels for the data points, HTML image maps, etc, are all text strings.

ChartDirector uses parameter substitution to allow you to configure precisely the information contained in the text and their format.
Format Strings
In parameter substitution, format strings are used to specify the entities to be include into labels and how to format numbers and dates.

For example, when drawing a pie chart with side label layout, the default sector label format string is:

" { label } ({ percent } %)"

When the sector label is actually drawn, ChartDirector will replace " { label } " with the sector name, and " { percent } " with the sector percentage. So the above label format will result is a sector label similar to "ABC (34.56%)".

You may change the sector label format by changing the format string. For example, you may change it to:

" { label } : US$ { value | 2 } K ({ percent } %)"

The sector label will then become something like "ABC: US$ 123.00 (34.56%)".

In general, in ChartDirector parameter substitution, parameters enclosed by curly brackets will be substituted with their actual values when creating the texts.

For parameters that are numbers or dates/times, ChartDirector supports a special syntax in parameter substitution to allow formatting for these values. Please refer to the Number Formatting and Date/Time Formatting sections below for details.

Parameter Expressions

ChartDirector supports numeric expressions in format strings. They are denoted by enclosing the expression with curly brackets and using "=" as the first character. For example:

"USD { value } (Euro { = { value } *0.9 })"

In the above, " { value } " will be substituted with the actual value of the sector. The expression " { = { value } *0.9 } " will be substituted with the actual value of the sector multiplied by 0.9.

ChartDirector parameter expressions support operators "+", "-", "*", "/", "%" (modulo) and "^" (exponentiation). Operators "*", "/", "%", "^" is computed first, followed by "+" and "-". Operators of the same precedence are computed from left to right). Parenthesis "(" and ")" can be used to change the computation order.

Parameters for Pie Charts

The following table describes the parameters available for pie charts.

Parameter	Description
sector	The sector number. The first sector is 0, while the nth sector is (n-1).
dataSet	Same as { sector } . See above.
label	The text label of the sector.
dataSetName	Same as { label } . See above.
value	The data value of the sector.
percent	The percentage value of the sector.
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using BaseChart.addExtraField or BaseChart.addExtraField2.

Parameters for All XY Chart Layers

The followings are parameters that are apply to all XY Chart layers in general. Some layer types may have additional parameters (see below).

Note that certain parameters are inapplicable in some context. For example, when specifying the aggregate label of a stacked bar chart, the { dataSetName } parameter is inapplicable. It is because a stacked bar is composed of multiple data sets. It does not belong to any particular data set and hence does not have a data set name.

{ fieldN } means the extra field is indexed by the data point number. The Pth data point corresponds to the Pth element of the extra field.

Additional Parameters for Line Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Trend Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Box-Whisker Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for HLOC and CandleStick Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Vector Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Parameters for All Polar Layers
The followings are parameters that are apply to all Polar Chart layers in general. Some layer types may have additional parameters (see below).

{ fieldN } means the extra field is indexed by the data point number. The Pth data point corresponds to the Pth element of the extra field.

Additional Parameters for PolarVector Layers
The followings are parameters that are in additional to the parameters for all Polar Chart layers.

Parameters for Axis
The following table describes the parameters available for pie charts.

Number Formatting
For parameters that are numbers, ChartDirector supports a number of formatting options in parameter substitution.

For example, if you want a numeric field { value } to have a precision of two digits to the right of the decimal point, use ',' (comma) as the thousand separator, and use '.' (dot) as the decimal point, and you may use { value | 2,. } . The number 123456.789 will then be displayed as 123,456.79.

For numbers, the formatting options are specified using the following syntax:

{ [param] | [a] [b] [c] [d] }

where:

If this field starts with "E" or "e", followed by a number, it means formatting the value using scientific notation with the specified number of decimal places. If the "E" or "e" is not followed by a number, 3 is assumed.

For example, { value | E4 } will format the value 10.3 to 1.0300E+1, and { value | e4 } will format the same value to 1.0300e+1.

If this field starts with "G" or "g", followed by a number, it means formatting the value using the scientific notation only if the value is large and requires more than the specified number of digits, or the value is less than 0.001. If scientific notation is used, the number following "G" or "g" also specifies the number of significant digits to use. If the "G" or "g" is not followed by a number, 4 is assumed.

For example, consider the format string { value | G4 } . The value 10 will be formatted to 10. The value 100000 will be formatted to 1.000E+5. Similarly, for { value | g4 } , the value 10 will be formatted to 10, while the value 100000 will be formatted to 1.000e+5.

If you skip this argument, ChartDirector will display the exact value using at most 6 decimal places.

You may skip [b] [c] [d] . In this case, the default will be used.

Date/Time Formatting
For parameters that are dates/times, the formatting options can be specified using the following syntax:

{ [param] | [datetime_format_string] }

where [datetime_format_string] must start with an english character (A-Z or a-z) that is not "G", "g", "E" or "e", and may contain any characters except ' } '. (If it starts with "G", "g", "E" or "e", it will be considered as a number format string.)

Certain characters are substituted according to the following table. Characters that are not substituted will be copied to the output.

For example, a parameter substitution format of { value | mm-dd-yyyy } will display a date as something similar to 09-15-2002. A format of { value | dd/mm/yy hh:nn:ss a } will display a date as something similar to 15/09/02 03:04:05 pm.

If you want to include characters in the format string without substitution, you may enclose the characters in single or double quotes.

For example, the format { value | mmm '<*color=dd0000*>'yyyy } will display a date as something like Jan <*color=dd0000*>2005 (the <*color=dd0000*>is a CDML tag to specify red text color). Note that the <*color=dd0000*>tag is copied directly without substitution, even it contains "dd" which normally will be substituted with the day of month.
Escaping URL/HTML/CDML characters
Parameter substitution is often used to create HTML image maps. In HTML, some characters has special meanings and cannot be used reliably. For example, the '>' is used to represent the end of an HTML tag.

Furthermore, if the field happens to be used as an URL, characters such as '?', '&' and '+' also have special meanings.

By default, ChartDirector will escape template fields used in URL and query parameters when generating image maps. It will modify URL special characters to the URL escape format "%XX" (eg. "?" will become "%3F"). After that, it will modify HTML special characters to the HTML escape format "&amps;#nn;" (eg. ">" will become "&amps;#62;".). Similarly, it will escape other attributes in the image map using HTML escape format (but not URL escape format).

In addition to escaping HTML and URL special characters, ChartDirector will also remove CDML fields in creating image maps. It is because CDML is only interpreted in ChartDirector, should not be useful outside of ChartDirector (such as in browser tool tips).

In some cases, you may not want ChartDirector to escape the special characters. For example, if the parameters have already been escaped before passing to ChartDirector, you may want to disable ChartDirector from escaping them again.

ChartDirector supports the following special fields to control the escape methods - " { escape_url } ", " { noescape_url } ", " { escape_html } ", " { noescape_html } ", " { escape_cdml } " and { noescape_cdml } ". These fields enable/disable the escape methods used in the template fields that follow them.

6.0.28   ChartDirector: Shape Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Shape Specification
Notes: Several ChartDirector API accept shape specification as arguments. For example, BarLayer.setBarShape and BarLayer.setBarShape2 can be used to specify shapes of bars in bar charts, while DataSet.setDataSymbol, DataSet.setDataSymbol4, PolarLayer.setDataSymbol and PolarLayer.setDataSymbol4 can be used to specify shapes for data symbols.

Note that in addition to shapes, in many cases ChartDirector also accepts images or custom draw objects for data representation. For example, see DataSet.setDataSymbol2, DataSet.setDataSymbol3, PolarLayer.setDataSymbol2 and PolarLayer.setDataSymbol3.

Built-In Shapes

Built-in shapes are specified as integers. The integers can be explicit constants, or can be generated by a ChartDirector method for parameterized shapes. For example, a circle is represented by an explicit constant CircleShape (=7). On the other hand, the number representing a polygon depends on the number of sides the polygon has, so it is generated by using the PolygonShape method, passing in the number of sides as argument.

The following table illustrates the various ChartDirector shapes:

Custom Shapes

In ChartDirector, custom shapes are specified as an array of integers x0, y0, x1, y1, x2, y2 ... representing the coordinates of the vertices of the custom polygonal shape.

The polygon should be defined with a bounding square of 1000 x 1000 units, in which the x-axis is from -500 to 500 going from left to right, and the y-axis is from 0 to 1000 going from bottom to top.

ChartDirector will automatically scale the polygon so that 1000 units will become to the pixel size as requested by the various ChartDirector API.

As an example, the shape of the standard diamond shape in ChartDirector is represented as an array with 8 numbers:

0, 0, 500, 500, 0, 1000, -500, 500

6.0.29   Copy styled text?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: How to quickly copy styled text from one textarea to another?
Example:

```
#if TargetWin32 then
TextArea1.WinRTFDataMBS = TextArea2.WinRTFDataMBS
#elseif TargetMacOS then
TextArea1.NSTextViewMBS.textStorage.setAttributedString TextArea2.NSTextViewMBS.textStorage
#else
TextArea1.StyledText = TextArea2.StyledText
#endif
```

Notes: The code above uses special plugin functions on Mac and Windows and falls back to framework for Linux.

6.0.30 Do you have code to validate a credit card number?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can check the checksum to tell if a credit card number is not valid.
Example:

```
Dim strNumber As String
Dim nLength as Integer
Dim nValue as Integer
Dim nChecksum as Integer
Dim nIndex as Integer

strNumber = EditField1.Text
nLength = Len(strNumber)
nChecksum = 0

For nIndex = 0 To nLength - 2
nValue = Val(Mid(strNumber, nLength - (nIndex + 1), 1)) * (2 - (nIndex Mod 2))
If nValue <10 Then
nChecksum = nChecksum + nValue
Else
nChecksum = nChecksum + (nValue - 9)
End If
Next

If Val(Mid(strNumber, Len(strNumber), 1)) = (10 - (nChecksum Mod 10)) Mod 10 Then
MsgBox("The credit card number looks valid")
Else
MsgBox("The credit card number is invalid")
End IF
```

Notes: Here's some code that will validate the checksum for a credit card. It works for Visa, MasterCard, American Express and Discover. Not sure about others, but I imagine they use the same basic algorithm. Of course, this doesn't actually mean that the credit card is valid, it's only useful for helping the user catch typos.

The above code doesn't have any error checking and it expects that the credit card number will be entered without spaces, dashes or any other non-numeric characters. Addressing those issues will be an exercise left to the reader. :)

(From Mike Stefanik)

6.0.31   Do you have plugins for X-Rite EyeOne, eXact or i1Pro?

Plugin Version: all.

Answer: Our EyeOne plugin is available on request for licensees of the X-Rite SDKs.
Notes: Please first go to X-Rite and get a SDK license.
Than we can talk about the plugin.

6.0.32   Does SQL Plugin handle stored procedures with multiple result sets?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, the plugin can work with multiple recordsets.
Notes: You need to use SQLCommandMBS class. When you get back results, you use FetchNext to walk over all records in the first result set. Than you simply start again with FetchNext to get the second record set.
Even the RecordSet functions should work, just use them twice to get all records from both record sets.

6.0.33   Does the plugin home home?

Plugin Version: all, Platform: macOS.

Answer: Yes, we like to know who is using the plugin, so the plugin may contact our server.
Example:

none.

Notes: Please note that this does not affect your users as the plugin will only do this in the IDE and the relevant plugin part is never included in your applications.

The plugin if used for some hours, does contact our server to provide statistical data about Xojo version and OS versions. This way we know what versions are used. We can return the version number of the current plugin which may be visible in future versions somehow. And we transmit partial licenses data so we can track use of illegal license keys.

If you do not like to have this, you can block Xojo IDE from contacting our website via your Firewall. Blocking the transfer will not disable the plugin or change the features.
Or contact us for a plugin version which explicitly does not contain this feature.

6.0.34 folderitem.absolutepath is limited to 255 chars. How can I get longer ones?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Paths on a Mac are not unique, so use them only to display them to the user.
Example:

```
Function AbsolutePath(f as FolderItem) As String
Dim s as string
Dim nf as FolderItem
nf = f
s = ""
while nf<>nil
s = nf.name + ":" + s
nf = nf.parent
wend
Return s
End Function
```

6.0.35 Has anyone played round with using CoreImage to do things like add dissolve transitions say when changing from one tab to another within a window?

Platform: macOS.

Answer: This code implements animations for a tabpanel change:
Example:

```
// in a tabpanel.change event:

dim r as CGSTransitionRequestMBS
dim co as new CGSConnectionMBS
dim cw as CGSWindowMBS
dim ct as CGSTransitionMBS
static OldTab as Integer

cw=co.CGSWindow(window1)
If cw = Nil Then
return // 10.3...
End If
r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSFlip
r.HasBackGround=false
r.HasBackColor=false
r.Win=cw
```

```
// watch the value of the clicked tab versus the last tab
if tabpanel1.Value=0 or tabpanel1.Value <OldTab then
r.TransitionOption=r.CGSLeft
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
ct.Invoke(1)
ct.Wait(1)
ct.Release
else
MsgBox "Error creating the transition."
end if
else
r.TransitionOption=r.CGSRight
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
ct.Invoke(1)
ct.Wait(1)
ct.Release
else
MsgBox "Error creating the transition."
end if
end if
// Keep track of the last tab clicked
OldTab = tabpanel1.Value
```

Notes: See CGS* classes for more details.

6.0.36   How about Plugin support for older OS X?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We support in general Mac OS X 10.5 and newer.
Notes: All the 64-bit plugins on Mac require OS X 10.7.
Intel 32-bit plugins on Mac require OS X 10.5 or newer.

Currently the ChartDirector 6, GraphicsMagick and GameKit plugins requires Mac OS X 10.6.
Also for SQL Plugin the built in SQLite library requires 10.6.

6.0.37 How can I detect whether an Intel CPU is a 64bit CPU?

Plugin Version: all.

Answer: Look on the CPU family returned by sysctl:
Example:

Function is64bit() As Boolean

#if TargetLittleEndian

dim m as MemoryBlock = NewMemoryBlock(8)
dim family as Integer
dim s as string

m=SystemControlNameToMIBMBS("hw.cpufamily")
m=SystemControlMBS(m)

if m<>nil then
m.LittleEndian=True
family=m.Long(0)

const CPUFAMILY_INTEL_6_14 = &h73d67300 //* "Intel Core Solo" and "Intel Core Duo" (32-bit Pentium-M with SSE3) */
const CPUFAMILY_INTEL_6_15 = &h426f69ef //* "Intel Core 2 Duo" */
const CPUFAMILY_INTEL_6_23 = &h78ea4fbc //* Penryn */
const CPUFAMILY_INTEL_6_26 = &h6b5a4cd2 //* Nehalem */

Select case family
case CPUFAMILY_INTEL_6_14
Return false
case CPUFAMILY_INTEL_6_15
Return true
case CPUFAMILY_INTEL_6_23
Return true
case CPUFAMILY_INTEL_6_26
Return true
// newer CPUs may be missing here
end Select

end if

#endif

Return false

Exception
Return false
End Function

Notes: This code is written for Mac OS X where you only have a limited number of possible CPUs.

6.0.38   How can I disable the close box of a window on Windows?

Plugin Version: all, Platform: Windows.

Answer: The following code will remove the close item from the system menu of the window.
Example:

```
#if TargetWin32 then
Declare Function GetSystemMenu Lib "user32" (hwnd as Integer, bRevert as Integer) as Integer
Declare Function RemoveMenu Lib "user32" (hMenu as Integer, nPosition as Integer, wFlags as Integer) as
Integer
Dim hSysMenu as Integer
hSysMenu = GetSystemMenu(me.WinHWND, 0)
RemoveMenu hSysMenu, &HF060, &H0
#endif
```

Notes: The window may not be updated directly.

6.0.39   How can I get all the environment variables from Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Example:

```
#if targetWin32
declare function GetEnvironmentStrings Lib "kernel32" () as ptr
dim m as memoryBlock
dim n as Integer

m=GetEnvironmentStrings()

n=0
do
msgBox m.cstring(n)
while m.byte(n)<>0
n=n+1
wend
n=n+1
```

```
loop until m.byte(n)=0
#endif
```

Notes: The MBS Plugin has an EnvironmentMBS class for this.

6.0.40 How can i get similar behavior to Roxio Toast or iTunes where clicking a 'burn' button allows the next inserted blank CD-R to bypass the Finder and be accepted by my application?

Plugin Version: all, Platform: macOS.

Answer: You need to get a media reservation.
Example:

```
dim d as DRDeviceMBS // get a device
d.AcquireMediaReservation
```

Notes: Use the plugin function AcquireMediaReservation and later release it using ReleaseMediaReservation.
See plugin examples on how to use it and check Apples DiscRecording framework documentation for more details.

6.0.41 How can I get text from a PDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Crossplatform you can use DynaPDF Pro.
Notes: On Mac OS X you can also use PDFKit for the same job.
While DynaPDF Pro gives you each bit of text with rotation, font information and encoding details, PDFKit gives you only the text string for a PDF page.

6.0.42 How can I get text from a Word Document?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: to get the text string from a doc file, use the NSAttributedStringMBS class.
Notes: The NSAttributedStringMBS class is Mac OS X only and we have currently no solution for Windows or Linux.

Use the NSAttributedStringMBS.initWithDocFormat(data as string) as boolean method.

6.0.43 How can I get the item string for a given file creator?

Plugin Version: all.

Answer: Try this function:
Example:

```
Sub pullNativeDocs(aCREA As string)
Dim result as Integer
Dim m, k as memoryBlock
Dim f as folderItem
Dim newType as string
Dim anIcon As picture
Dim ofs as Integer

Declare Function GetFileTypesThatAppCanNativelyOpen Lib "Carbon" (appVRefNumHint as Short, appSig-
nature as OSType, nativeTypes as Ptr) as Short Inline68K("701CABFC")
Declare Function GetDocumentKindString Lib "Carbon" (docVRefNum as Short, docType as OSType, doc-
Creator as OSType, kindString as ptr) as Short Inline68K("7016ABFC")

listBox1.deleteAllRows

m = newMemoryBlock(1024)
result = GetFileTypesThatAppCanNativelyOpen(Volume(0).MacVRefNum, aCREA, m)
if result <>0 then
listBox1.addRow "<Not found.>"
return
end if

do
if m.byte(ofs*4) = 0 then
exit
else
newType = m.OSTypeMBS(ofs*4)
listBox1.addRow newType
k = newMemoryBlock(64)
result = GetDocumentKindString(Volume(0).MacVRefNum, newType, aCREA, k)
if result = 0 then
listBox1.cell(ofs,1) = k.pString(0)
ofs = ofs + 1
else
listBox1.cell(ofs,1) = "(unknown)"
end if

end if
```

loop

End Sub

Notes: Change "Translation" to "CarbonLib" for Mac OS X.

6.0.44 How can I launch an app using it's creator code?

Plugin Version: all, Platform: macOS.

Answer: Send an AppleEvent "odoc" with the creator code to the Finder ("MACS"):
Example:

Function LaunchByCreator(C As String) As Boolean
Dim A As AppleEvent
A = NewAppleEvent("aevt","odoc","MACS")
A.ObjectSpecifierParam("—-") = GetUniqueIDObjectDescriptor("appf",nil,C)
return A.Send
End Function

6.0.45 How can I learn what shared libraries are required by a plugin on Linux?

Plugin Version: all, Platform: macOS.

Answer: Please use the ldd command in the terminal.
Notes: You build an app on any platform, but for Linux.
For the resulting .so files in the libs folder, you can run the ldd command with the library path as parameter.
It shows you references lib files and you can make sure you have those installed.

This is a sample run of our graphicsmagick plugin:

cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$ ldd libMBSGraphicsMagickPlugin17744.so
linux-gate.so.1 =>(0xb76ee000)
libdl.so.2 =>/lib/i386-linux-gnu/libdl.so.2 (0xb6f0e000)
libgtk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgtk-x11-2.0.so.0 (0xb6aa6000)
libpthread.so.0 =>/lib/i386-linux-gnu/libpthread.so.0 (0xb6a8a000)
libstdc++.so.6 =>/usr/lib/i386-linux-gnu/libstdc++.so.6 (0xb69a5000)
libm.so.6 =>/lib/i386-linux-gnu/libm.so.6 (0xb6979000)
libgcc_s.so.1 =>/lib/i386-linux-gnu/libgcc_s.so.1 (0xb695b000)
libc.so.6 =>/lib/i386-linux-gnu/libc.so.6 (0xb67b1000)

/lib/ld-linux.so.2 (0xb76ef000)
libgdk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk-x11-2.0.so.0 (0xb6701000)
libpangocairo-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangocairo-1.0.so.0 (0xb66f4000)
libX11.so.6 =>/usr/lib/i386-linux-gnu/libX11.so.6 (0xb65c0000)
libXfixes.so.3 =>/usr/lib/i386-linux-gnu/libXfixes.so.3 (0xb65ba000)
libatk-1.0.so.0 =>/usr/lib/i386-linux-gnu/libatk-1.0.so.0 (0xb659a000)
libcairo.so.2 =>/usr/lib/i386-linux-gnu/libcairo.so.2 (0xb64ce000)
libgdk_pixbuf-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk_pixbuf-2.0.so.0 (0xb64ad000)
libgio-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgio-2.0.so.0 (0xb6356000)
libpangoft2-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangoft2-1.0.so.0 (0xb632a000)
libpango-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpango-1.0.so.0 (0xb62e0000)
libfontconfig.so.1 =>/usr/lib/i386-linux-gnu/libfontconfig.so.1 (0xb62ab000)
libgobject-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgobject-2.0.so.0 (0xb625c000)
libglib-2.0.so.0 =>/lib/i386-linux-gnu/libglib-2.0.so.0 (0xb6163000)
libXext.so.6 =>/usr/lib/i386-linux-gnu/libXext.so.6 (0xb6151000)
libXrender.so.1 =>/usr/lib/i386-linux-gnu/libXrender.so.1 (0xb6147000)
libXinerama.so.1 =>/usr/lib/i386-linux-gnu/libXinerama.so.1 (0xb6142000)
libXi.so.6 =>/usr/lib/i386-linux-gnu/libXi.so.6 (0xb6132000)
libXrandr.so.2 =>/usr/lib/i386-linux-gnu/libXrandr.so.2 (0xb6129000)
libXcursor.so.1 =>/usr/lib/i386-linux-gnu/libXcursor.so.1 (0xb611e000)
libXcomposite.so.1 =>/usr/lib/i386-linux-gnu/libXcomposite.so.1 (0xb611a000)
libXdamage.so.1 =>/usr/lib/i386-linux-gnu/libXdamage.so.1 (0xb6115000)
libfreetype.so.6 =>/usr/lib/i386-linux-gnu/libfreetype.so.6 (0xb607b000)
libxcb.so.1 =>/usr/lib/i386-linux-gnu/libxcb.so.1 (0xb605a000)
libpixman-1.so.0 =>/usr/lib/i386-linux-gnu/libpixman-1.so.0 (0xb5fc2000)
libpng12.so.0 =>/lib/i386-linux-gnu/libpng12.so.0 (0xb5f98000)
libxcb-shm.so.0 =>/usr/lib/i386-linux-gnu/libxcb-shm.so.0 (0xb5f93000)
libxcb-render.so.0 =>/usr/lib/i386-linux-gnu/libxcb-render.so.0 (0xb5f89000)
libz.so.1 =>/lib/i386-linux-gnu/libz.so.1 (0xb5f73000)
libgmodule-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgmodule-2.0.so.0 (0xb5f6e000)
libselinux.so.1 =>/lib/i386-linux-gnu/libselinux.so.1 (0xb5f4f000)
libresolv.so.2 =>/lib/i386-linux-gnu/libresolv.so.2 (0xb5f36000)
libexpat.so.1 =>/lib/i386-linux-gnu/libexpat.so.1 (0xb5f0c000)
libffi.so.6 =>/usr/lib/i386-linux-gnu/libffi.so.6 (0xb5f05000)
libpcre.so.3 =>/lib/i386-linux-gnu/libpcre.so.3 (0xb5ec9000)
librt.so.1 =>/lib/i386-linux-gnu/librt.so.1 (0xb5ec0000)
libXau.so.6 =>/usr/lib/i386-linux-gnu/libXau.so.6 (0xb5ebb000)
libXdmcp.so.6 =>/usr/lib/i386-linux-gnu/libXdmcp.so.6 (0xb5eb4000)
cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$

As you see all library have been found and their load address is printed behind the na,e.
If a library is missing, you usually see the address missing there or being zero.

6.0.46 How can I validate an email address?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can try this code:
Example:

```
Dim re As RegEx
re = New RegEx
Dim rm As RegExMatch

re.SearchPattern = " [ a-z0-9!#$ %&'*+/=?^_' { | }
textasciitilde - ] +(?:\. [ a-z0-9!#$ %&'*+/=?^_' { | }
textasciitilde - ] +)*@(?: [ a-z0-9 ] (?: [ a-z0-9- ] * [ a-z0-9 ] )?\.)+ [ a-z0-9 ] (?: [ a-z0-9- ] * [ a-z0-9 ] )?"
rm = re.Search(editField1.Text)

if rm = Nil Then
StaticText2.text = editField1.Text + " not valid email"
Else
StaticText2.Text = editField1.Text + " is valid"
End if
```

Notes: Adapted from:
http://www.regular-expressions.info/email.html

6.0.47 How do I decode correctly an email subject?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The following code can be used to decode an email subject including several encodings including Base 64.
Example:

```
dim src as string // input

dim theRegex as Regex
dim theRegexMatch as RegexMatch
dim result, infoCharset, encodedPart as string
dim theStart as Integer

if instr(src, "=?") >0 then
theRegex = new Regex
theRegex.Options.Greedy = false
theRegex.searchPattern = "(.*)=\?(.+)\?(Q | B)\?(.+)\?="
theRegexMatch = theRegex.search(src)
```

```
while theRegexMatch <>nil
theStart = theRegexMatch.subExpressionStartB(0) + len(theRegexMatch.subExpressionString(0))

result = result + theRegexMatch.subExpressionString(1)
infoCharset = theRegexMatch.subExpressionString(2)
encodedPart = theRegexMatch.subExpressionString(4)
if theRegexMatch.subExpressionString(3) = "B" then
encodedPart = DecodeBase64(encodedPart)
elseif theRegexMatch.subExpressionString(3) = "Q" then
encodedPart = DecodeQuotedPrintable(encodedPart)
end if
if right(result, 1) = " " then
result = mid(result, 1, len(result)-1)
end if
encodedPart = encodedPart.DefineEncoding(GetInternetTextEncoding(infoCharset))
result = result + encodedPart

theRegex.SearchStartPosition = theStart
theRegexMatch = theRegex.search()
wend

result = result + mid(src, theStart+1)

else
result = src
end if
// theRegexMatch = theRegex.search

msgbox result
```

Notes: May not look nice depending on the controls used.
This is no longer needed when using MimeEmailMBS class which decodes for you.

6.0.48 How do I enable/disable a single tab in a tabpanel?

Plugin Version: all, Platform: macOS.

Answer: Use the TabpanelEnabledMBS method.
Example:

```
TabpanelEnabledMBS(tabpanel1, 1, false)
```

Notes: Use Carbon for MachO and CarbonLib for Mac Carbon and AppearanceLib for Mac OS Classic as

library.

For Cocoa, please use enabled property of NSTabViewItemMBS class.

6.0.49 How do I find the root volume for a file?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this function:
Example:

```
Function GetRootVolume(f as FolderItem) as FolderItem
dim root, dum as folderItem
if f <>nil then
root = f // f might be the volume
do
dum = root.parent
if dum <>nil then
root = dum
end if
loop until dum = nil
return root
end if
End Function
```

6.0.50 How do I get the current languages list?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
dim p as new CFPreferencesMBS
dim a as CFArrayMBS
dim s as CFStringMBS
dim o as CFObjectMBS
dim sa(-1) as string

o=p.CopyAppValue("AppleLanguages",".GlobalPreferences")

if o<>Nil then
a=CFArrayMBS(o)

dim i,c as Integer
```

```
c=a.Count-1
for i=0 to c
o=a.Item(i)

if o isa CFStringMBS then
s=CFStringMBS(o)
sa.Append s.str
end if
next
end if

MsgBox Join(sa,EndOfLine)
```

Notes: On Mac OS X you can get the list of current languages like this list:

```
de
en
ja
fr
es
it
pt
pt-PT
nl
sv
nb
da
fi
ru
pl
zh-Hans
zh-Hant
ko
```

Which has German (de) on the top for a German user.
This code has been tested on Mac OS X 10.5 only.

6.0.51   How do I get the Mac OS Version?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
dim i as Integer
if system.gestalt("sysv", i) then
//do this in an 'If' in case you don't get any value back at all and system.gestalt returns boolean
if i = &h750 then //If OS is 7.5
//do stuff
elseif i = &h761 then //If OS is 7.6.1
//do stuff
end if
end if
```

Notes: The MBS Plugin has a function SystemInformationMBS.OSVersionString for this.

6.0.52 How do I get the printer name?

Plugin Version: all.

Answer: For Mac OS Classic see the code below and for Mac OS X use the Carbon Print Manager Classes from the MBS Plugin.
Example:

```
dim s as String
dim i as Integer

s=app.ResourceFork.GetResource("STR ",-8192)
if s<>"" then
i=ascb(leftb(s,1))
s=mid(s,2,i)

MsgBox s
end if
```

Notes: A note from Craig Hoyt:

After looking at your example I had a little deja-vu experience. Several
years ago I played around with this same code if FutureBasic. I discovered
that it did not and still doesn't provide the 'Printer Name', it does
return the print driver name. If it returns 'LaserWriter 8' as the print
driver you can look into this file and get the 'PAPA' resource #-8192 to
get the actual Printer Name. Unfortunately this does not hold true for
other printers. My Epson and HP Printers (the Epson has an Ethernet Card
and the HP is USB) do not provide this info in their drivers. As far as I
can tell it only returns the name by polling the printer itself.

6.0.53 How do I make a metal window if RB does not allow me this?

Plugin Version: all, Platform: macOS.

Answer: The following declare turns any window on Mac OS X 10.2 or newer into a metal one.
Example:

declare sub ChangeWindowAttributes lib "Carbon" (win as windowptr, a as Integer, b as Integer)

ChangeWindowAttributes window1,256,0

Notes: May not look nice depending on the controls used.

6.0.54 How do I make a smooth color transition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

I'd like to show in a report some bars, which start with color A
and end with color B.

The color change should be very smooth.

My problem: If I would start from 255,0,0 and end by 0,0,0, I would have
255 different colors. If the bars are longer than 255 pixels, would
this look nice?
Example:

```
// Window.Paint:
Sub Paint(g As Graphics)
dim w,w1,x,p as Integer
dim c1,c2,c as color
dim p1,p2 as Double

c1=rgb(255,0,0) // start color
c2=rgb(0,255,0) // end color

w=g.Width
w1=w-1

for x=0 to w1
p1=x/w1
p2=1.0-p1
```

c=rgb(c1.red*p1+c2.red*p2, c1.green*p1+c2.green*p2, c1.blue*p1+c2.blue*p2)

g.ForeColor=c
g.DrawLine x,0,x,g.Height

next
End Sub

Notes:

Try the code above in a window paint event handler.

6.0.55   How do I read the applications in the dock app?

Plugin Version: all, Platform: macOS.

Answer: Use CFPreferencesMBS class like in this example:
Example:

// Reads file names from persistent dock applications and puts them into the list

dim pref as new CFPreferencesMBS

dim persistentapps as CFStringMBS = NewCFStringMBS("persistent-apps")
dim ApplicationID as CFStringMBS = NewCFStringMBS("com.apple.dock")
dim tiledata as CFStringMBS = NewCFStringMBS("tile-data")
dim filelabel as CFStringMBS = NewCFStringMBS("file-label")

// get the array of persistent applications from dock preferences
dim o as CFObjectMBS = pref.CopyValue(persistentapps, ApplicationID, pref.kCFPreferencesCurrentUser, pref.kCFPreferencesAnyHost)

if o isa CFArrayMBS then
dim a as CFArrayMBS = CFArrayMBS(o)

// walk over all items in array
dim c as Integer = a.Count-1
for i as Integer = 0 to c

// get dictionary describing item
o = a.Item(i)

if o isa CFDictionaryMBS then
dim d as CFDictionaryMBS = CFDictionaryMBS(o)

```
// and pick tile data dictionary
o = d.Value(tiledata)
if o isa CFDictionaryMBS then
d = CFDictionaryMBS(o)

// and pick there the file label
o = d.Value(filelabel)
if o isa CFStringMBS then
// and display it
dim name as string = CFStringMBS(o).str
List.AddRow name
end if
end if
end if

next

else
MsgBox "Failed to read dock preferences."
end if
```

Notes: You can use the CFPreferencesMBS.SetValue to change a value and CFPreferencesMBS.Synchronize to write the values to disc. You may need to restart the Dock.app if you modified things.

6.0.56   How do I truncate a file?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In a binarystream you can set the length property to truncate.

6.0.57   How do update a Finder's windows after changing some files?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
dim f as folderitem // some file
dim ae as appleevent
ae=newappleevent("fndr","fupd","MACS")
ae.folderitemparam("—-")=f
if not ae.send then
//something went wrong
```

end if

Notes: The folderitem.finderupdate from the MBS Plugin does something like this.

6.0.58 How to access a USB device directly?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: First, it depends on the device.
Notes: Some devices can be talked directly from user mode code, but some require a kernel driver.

For some devices you can use plugins to access them like:

- Audio and Video sources using the QTGrabberClassMBS

- Mass storage devices using the folderitem class.

- Serial devices using the System.SerialPort function.

- HID USB devices can be used with MacHIDMBS, WinHIDMBS or LinuxHIDInterface class.

- Any USB device may be used with MacUSBMBS or WinUSBMBS classes.

In general it is always the best to take the most high level access to have others do the work for the details.

6.0.59 How to add icon to file on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use FolderItem.AddCustomIcon or NSWorkspaceMBS.setIcon functions.
Notes: Please close any open stream for the file you want to add an icon.

6.0.60 How to ask the Mac for the Name of the Machine?

Plugin Version: all, Platform: macOS.

Answer: Using Apple Events you can use this code:
Example:

Function Computername() As string

```
dim theEvent as AppleEvent
dim err as boolean

theEvent = newAppleEvent("mchn","getd","MACS")

err = theEvent.send

return theevent.ReplyString

End Function
```

Notes: Code above is for Mac OS 9!
Also the MBS Plugin has a function for this which may be faster and work also on Macs without Filesharing (which handles this event).

6.0.61   How to automatically enable retina in my apps?

Plugin Version: all, Platform: macOS.

Answer: You can run a build script on each build with this code:
Example:

```
Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSHighResolutionCapable"" YES")
```

Notes: This will set the NSHighResolutionCapable flag to YES.

6.0.62   How to avoid leaks with Cocoa functions?

Plugin Version: all, Platform: macOS.

Answer: You can try this code on Mac OS X:
Example:

```
// in a Timer Action event:
Sub Action()
static LastPool as NSAutoreleasePoolMBS = nil
static CurrentPool as NSAutoreleasePoolMBS = nil

LastPool = CurrentPool
CurrentPool = new NSAutoreleasePoolMBS
```

End Sub

Notes: With Xojo 2009r4 the code above should not be needed as Xojo runtime does automatically handle the NSAutoreleasePools for you. For older Xojo versions you need to use code with a timer with the action event above to avoid memory leaks.

Please do not use Xojo 2009r4 and newer with plugins before version 9.5. You can get crashes there which typically show a line with a objc_msgSend call.

6.0.63 How to avoid trouble connecting to oracle database with SQL Plugin?

Plugin Version: all, Platform: macOS.

Answer: For oracle the most important thing is to point the plugin to the libraries from oracle.
Notes: In environment variables, the paths like ORACLE_HOME must be defined.
On Mac OS X you also need to define DYLD_LIBRARY_PATH to point to the dylib files from oracle.

For that you need to modify /etc/launchd.conf for Mac OS X 10.8 and newer.
In older versions those variables in .MacOSX/environment.plist file in user's home.

Another way for the case you bundle things inside your app is to use the LSEnvironment key in info.plist. In info.plist it looks like this:

```
<key>LSEnvironment</key>
<dict>
<key>test</key>
<string>Hello World</string>
</dict>
```

6.0.64 How to avoid ___NSAutoreleaseNoPool console messages in threads?

Plugin Version: all, Platform: macOS.

Answer: You need to use your own NSAutoreleasePool on a thread like this:
Example:

```
sub MyThread.run
dim pool as new NSAutoreleasePoolMBS
// do work here

pool=nil
```

end sub

Notes: For more details read here:
http://developer.apple.com/mac/library/documentation/Cocoa/Reference/Foundation/Classes/NSAutorelease-Pool_Class/Reference/Reference.html

6.0.65   How to bring app to front?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac you can use this code:
Example:

```
// First way:
app.FrontMostMBS = true

// second way:
dim p as new ProcessMBS
p.GetCurrentProcess
p.FrontProcess = true

// third way:
NSApplicationMBS.sharedApplication.activateIgnoringOtherApps(true)

// for Windows:
RemoteControlMBS.WinBringWindowToTop
```

Notes: This will bring a Mac app to the front layer.

6.0.66   How to bring my application to front?

Plugin Version: all, Platform: macOS.

Answer: This makes SimpleText (Code ttxt) to the frontmost application:
Example:

```
Dim A As AppleEvent
A = NewAppleEvent("misc","actv","")
If Not A.Send then
Beep
end if
```

Notes: (Code is Mac only)

6.0.67 How to catch Control-C on Mac or Linux in a console app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use SignalHandlerMBS class for this.
Example:

```
// watch for Control-C on Mac
call SignalHandlerMBS.SetFlagHandler(2)

dim ende as boolean = false
do
if SignalHandlerMBS.IsFlagSet(2) then
Print "Flag 2 set. Existing..."
ende = true
end if

DoEvents 1
loop until ende
```

Notes: The signal is catched, a flag is set and you can ask later in your normal application flow for the result.

6.0.68 How to change name of application menu?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Use this code to change the application menu name on Mac OS X:
Example:

```
dim mb as new MenubarMBS
dim m as MenuMBS = mb.item(1) // 1 is in my tests the app menu
if m<>Nil then
m.MenuTitle = "Hello World"
end if
```

Notes: This code is for Carbon only.

6.0.69   How to change the name in the menubar of my app on Mac OS X?

Plugin Version: all, Platform: macOS.

Answer:

You mean it screws up if the file name of the bundle itself is different than the name of the executable file in the MacOS folder within the bundle? If so, you should find something like this within your Info.plist file (or the 'plst' resource that the RB IDE builds for you):

<key>CFBundleExecutable</key>
<string>Executable file name here</string>

Just make sure that file name matches.

However, if your question involves how you can change the name of the app that appears in the menu and the dock, that's different. You can make this name different from the file name by changing the CFBundleName key:

<key>CFBundleName</key>
<string>Name for menu here</string>

Note that if you use my free AppBundler program, this second part is taken care of for you – just fill in a custom name in the right field. You can find AppBundler (from Thomas Reed) at http://www.bitjuggler.com/products/appbundler/ .

6.0.70   How to check if a folder/directory has subfolders?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this to check all items in a folder:
Example:

```
Function HasSubFolder(folder as FolderItem) As Boolean
dim c as Integer = folder.Count

for i as Integer = 1 to c
dim item as FolderItem = folder.TrueItem(i)

if item<>Nil and item.Directory then
Return true
end if
```

next

End Function

Notes: We use trueitem() here to avoid resolving alias/link files.
Also we check for nil as we may not have permission to see all items.
And if one is a directory, we return without checking the rest.

6.0.71 How to check if Macbook runs on battery or AC power?

Plugin Version: all, Platform: macOS.

Answer: Please use our IOPowerSourcesMBS class like this:
Example:

```
Function PowerSourceState() as Integer
dim p as new IOPowerSourcesMBS

// check all power sources
dim u as Integer = p.Count-1
for i as Integer = 0 to u
dim d as CFDictionaryMBS = p.Item(i)
if d<>nil then
// check if they have a power source state key:
dim o as CFObjectMBS = d.Value(NewCFStringMBS("Power Source State"))
if o isa CFStringMBS then
dim s as string = CFStringMBS(o).str

'MsgBox s

if s = "AC Power" then
Return 1
elseif s = "Battery Power" then
Return 2
end if
end if
end if
next
Return 0 // unknown
End Function
```

Notes: If you want to check the CFDictionaryMBS content, simply use a line like "dim x as dictionary = d.dictionary" and check the contents in the debugger.

6.0.72   How to check if Microsoft Outlook is installed?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you need Outlook for Scripting, you should simply check registry for the required Outlook.Application class:
Example:

```
Function OutlookInstalled() As Boolean
#if TargetWin32 then

try
dim r as new RegistryItem("HKEY_CLASSES_ROOT\Outlook.Application\CLSID", false)

Return true

catch r as RegistryAccessErrorException
// not installed
Return false

end try

#else

// Windows only, so false on other platforms
Return false

#endif

End Function
```

6.0.73   How to check on Mac OS which country or language is currently selected?

Plugin Version: all, Platform: macOS.

Answer: The code below returns a country value.
Example:

```
dim result as Integer

IF TargetMacOS THEN

CONST smScriptLang = 28
```

CONST smSystemScript = -1

DECLARE FUNCTION GetScriptManagerVariable LIB "Carbon" (selector as Integer) as Integer
DECLARE FUNCTION GetScriptVariable LIB "Carbon" (script as Integer, selector as Integer) as Integer

result=GetScriptVariable(smSystemScript, smScriptLang)

END IF

Notes: Returns values like:

For more values, check "Script.h" in the frameworks.

6.0.74   How to code sign my app with plugins?

Plugin Version: all, Platform: macOS.

Answer: When you try to code sign the application with plugin dylibs on Mac OS X, you may see error message that there is actually a signature included.
Notes: Please use the -f command line parameter with codesign utility to overwrite our MBS signature.
We sign our plugins for MacOS, iOS and Windows to make sure they have not been modified.

In terminal, you do like this:

cd <Path to folder of app>

xattr -cr <Appname>.app
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app/Contents/Frameworks/*.dylib
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app/Contents/Frameworks/*.framework
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app

Please use the name of your certificate (See keychain), the name of your app and the path to the app folder.
If you have helper apps you need to sign them first.
You can use a build step to automatically sign your app on build.

6.0.75   How to collapse a window?

Plugin Version: all, Platform: macOS.

Answer: Use this function (Mac only):
Example:

Sub CollapseRBwindow(w as window, CollapseStatus as boolean)
dim state, err as Integer
dim wh as MemoryBlock

Declare Function CollapseWindow Lib "Carbon" (window as Integer,collapse as Integer) as Integer

IF CollapseStatus THEN
state = 1
ELSE
state = 0
END IF

err = CollapseWindow(w.MacWindowPtr, state)

End Sub

Notes: Also the MBS Plugin has a window.collapsedmbs property you can set.
For Windows the MBS Plugin has a window.isiconicmbs property.

6.0.76   How to compare two pictures?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can try this code:
Example:

Function ComparePictures(p as picture,q as picture) as Integer
dim r,u as RGBSurface
dim x,y,n,m,h,w as Integer
dim w1,w2,h1,h2,d1,d2 as Integer
dim c1,c2 as color

h1=p.Height
h2=q.Height
w1=p.Width
w2=q.Width
d1=p.Depth
d2=q.Depth

if d1<>d2 then
Return 1
elseif w1<>w2 then

```
return 2
elseif h1<>h2 then
Return 3
else
r=p.RGBSurface
u=q.RGBSurface

if r=nil or u=nil then
Return -1
else
h=h1-1
w=w1-1
m=min(w,h)

for n=0 to m
c1=r.Pixel(n,n)
c2=u.Pixel(n,n)
if c1<>c2 then
Return 4
end if
next

for y=0 to h
for x=0 to w
c1=r.Pixel(x,y)
c2=u.Pixel(x,y)
if c1<>c2 then
Return 5
end if
next
next

// 0 for equal
// -1 for error (no RGBsurface)
// 1 for different depth
// 2 for different width
// 3 for different height
// 4 for different pixels (fast test)
// 5 for different pixels (slow test)
end if
end if

Exception
Return -1
End Function
```

Notes: Remember that this only works on bitmap pictures, so the picture.BitmapMBS function may be useful.

6.0.77 How to compile PHP library?

Plugin Version: all, Platform: macOS.

Answer: You have to download the source code and compile a static version of the library.
Notes: This instructions were written based on PHP 5.2.6 on Mac OS X:

- Best take a new Mac with current Xcode version installed.

- Download the source code archive. e.g. "php-5.2.6.tar.bz2"

- Expand that archive on your harddisc.

- Open terminal window

- change directory to the php directory. e.g. "cd /php-5.2.6"

- execute this two lines to define the supported CPU types and the minimum Mac OS X version:

- export CFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"

- export CXXFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"

- the command "./configure help" does show the configure options.

- use configure with a line like this:

- ./configure –enable-embed –with-curl -enable-ftp –enable-zip –enable-sockets –enable-static –enable-soap –with-zlib –with-bz2 –enable-exif –enable-bcmath –enable-calendar

- start the compilation with "make all"

- other option is to use "make install" which first does the same as "make all" and than does some installation scripts.

- you may get an error about a duplicate symbole __yytext. Search the file "zend_ini_scanner.c", search a line with "char *yytext;" and change it to "extern char *yytext;".

- On the end you get a lot of error messages, but you have a working library (named libphp5.so) file in the invisible ".libs" folder inside your php source folder.

Possible problems and solutions:

- If the path to your files has spaces, you can get into trouble. e.g. "/RB Plugins/PHP" is bad as files will be searched sometimes in "/RB".

- If you have in /usr/local/lib libraries which conflict with the default libraries, you can get into trouble.

- If you installed some open source tools which compiled their own libraries, you can get into conflicts.

- if you have to reconfigure or after a problem, you may need to use "make clean" before you start "make all" again.

Feel free to install additional libraries and add more packages to the configure line.

6.0.78 How to convert a BrowserType to a String with WebSession.Browser?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:
Example:

```
Function GetBrowserName(s as WebSession.BrowserType) As string
Select case s
case WebSession.BrowserType.Android
Return "Andriod"
case WebSession.BrowserType.Blackberry
Return "Blackberry"
case WebSession.BrowserType.Chrome
Return "Chrome"
case WebSession.BrowserType.ChromeOS
Return "ChromeOS"
case WebSession.BrowserType.Firefox
Return "Firefox"
case WebSession.BrowserType.InternetExplorer
Return "InternetExplorer"
case WebSession.BrowserType.Opera
Return "Opera"
case WebSession.BrowserType.Safari
Return "Safari"
case WebSession.BrowserType.SafariMobile
Return "SafariMobile"
case WebSession.BrowserType.Unknown
Return "Unknown"
else
Return "Unkown: "+str(integer(s))
end Select

End Function
```

6.0.79   How to convert a EngineType to a String with WebSession.Engine?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:
Example:

```
Function GetRenderingEngineName(s as WebSession.EngineType) As string
Select case s
case WebSession.EngineType.Gecko
Return "Gecko"
case WebSession.EngineType.Presto
Return "Presto"
case WebSession.EngineType.Trident
Return "Trident"
case WebSession.EngineType.Unknown
Return "Unknown"
case WebSession.EngineType.WebKit
Return "WebKit"
else
Return "Unkown: "+str(integer(s))
end Select

End Function
```

6.0.80   How to convert a PlatformType to a String with WebSession.Platform?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:
Example:

```
Function GetPlatformName(s as WebSession.PlatformType) As string
Select case s
case WebSession.PlatformType.Blackberry
Return "Blackberry"
case WebSession.PlatformType.iPad
Return "iPad"
case WebSession.PlatformType.iPhone
Return "iPhone"
case WebSession.PlatformType.iPodTouch
Return "iPodTouch"
case WebSession.PlatformType.Linux
Return "Linux"
case WebSession.PlatformType.Macintosh
Return "Macintosh"
```

```
case WebSession.PlatformType.PS3
Return "PS3"
case WebSession.PlatformType.Unknown
Return "Unknown"
case WebSession.PlatformType.WebOS
Return "WebOS"
case WebSession.PlatformType.Wii
Return "Wii"
case WebSession.PlatformType.Windows
Return "Windows"
else
Return "Unkown: "+str(integer(s))
end Select

End Function
```

6.0.81 How to convert a text to iso-8859-1 using the TextEncoder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

This code can help you althrough it's not perfect.
You need to set lc to the current color you use.
Example:

```
dim outstring as string
dim theMac, thePC as textencoding
dim Mac2PC as textconverter

theMac = getTextEncoding(0) // MacRoman
thePC = getTextEncoding(&h0201) // ISOLatin1

Mac2PC = getTextConverter(theMac, thePC)
// if you wanted to do the opposite just create a converter
// PC2Mac = getTextConverter(thePC, theMac)

outstring = Mac2PC.convert("Bj√rn, this text should be converted")
Mac2PC.clear
```

Notes:

You have to call Mac2PC.clear after every conversion to reset the encoding engine.
See also newer TextConverterMBS class.

6.0.82   How to convert ChartTime back to Xojo date?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have this example code:
Example:

```
Function ChartTimeToDate(ChartTime as Double) As date
static diff as Double = 0.0

if diff = 0.0 then
dim d2 as Double = CDBaseChartMBS.chartTime(2015, 1, 1)
dim da as new date(2015, 1, 1)
dim ts as Double = da.TotalSeconds

diff = ts - d2
end if

dim d as new date
d.TotalSeconds = diff + ChartTime

Return d
End Function
```

Notes: As you see we calculate the difference in base date from Date and ChartTime and later use difference to convert.

6.0.83   How to convert line endings in text files?

Plugin Version: all, Platform: macOS.

Answer: You can simply read file with TextInputStream and write with new line endings using TextOutputStream class.
Example:

```
dim inputfile as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim outputfile as FolderItem = SpecialFolder.Desktop.Child("output.txt")
dim it as TextInputStream = TextInputStream.Open(inputfile)
dim ot as TextOutputStream = TextOutputStream.Create(outputfile)

ot.Delimiter = EndOfLine.Windows // new line ending
while not it.EOF
ot.WriteLine it.ReadLine
wend
```

Notes: TextInputStream will read any input line endings and with delimiter property in TextOutputStream you can easily define your new delimiter.

6.0.84 How to convert picture to string and back?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use this plugin functions:
Notes: JPEG:

JPEGStringToPictureMBS(buf as string) as picture
JPEGStringToPictureMBS(buf as string,allowdamaged as Boolean) as picture
PictureToJPEGStringMBS(pic as picture,quality as Integer) as string

PNG:

PictureToPNGStringMBS(pic as picture, gamma as single) as string
PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single) as string
PictureToPNGStringMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string
PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string
PNGStringToPictureMBS(data as string, gamma as single) as picture
PNGStringToPNGPictureMBS(data as string, gamma as single) as PNGpictureMBS

Tiff:

TIFFStringToPictureMBS(data as string) as picture
TIFFStringToTiffPictureMBS(data as string) as TiffPictureMBS

BMP:

BMPStringtoPictureMBS(data as string) as picture
Picture.BMPDataMBS(ResolutionValueDPI as Integer=72) as string

GIF:

GifStringToGifMBS(data as string) as GIFMBS
GifStringToPictureMBS(data as string) as Picture

6.0.85   How to copy an array?

Plugin Version: all, Platform: macOS.

Answer: You can use a function like this to copy an array:
Example:

Function CopyArray(a() as Double) as Double()
dim r() as Double
for each v as Double in a
r.Append v
next
Return r
End Function

Notes: If needed make several copies of this method with different data types, not just double.
For a deep copy of an array of objects, you need to change code to also make a copy of those objects.

6.0.86   How to copy an dictionary?

Plugin Version: all, Platform: macOS.

Answer: You can use a function like this to copy a dictionary:
Example:

Function CopyDictionary(d as Dictionary) As Dictionary
dim r as new Dictionary
for each key as Variant in d.keys
r.Value(key) = d.Value(key)
next
Return r
End Function

Notes: If needed make several copies of this method with different data types, not just double.
For a deep copy of an dictionary of objects, you need to change code to also make a copy of those objects.

6.0.87   How to copy parts of a movie to another one?

Plugin Version: all, Platforms: macOS, Windows.

Answer: The code below copies ten seconds of the snowman movie to the dummy movie starting at the 5th second.

Example:

dim f as FolderItem
dim md as EditableMovie
dim ms as EditableMovie

f=SpecialFolder.Desktop.Child("Our First Snowman.mov")
ms=f.OpenEditableMovie

ms.SelectionStartMBS=5
ms.SelectionLengthMBS=10

f=SpecialFolder.Desktop.Child("dummy.mov")
md=f.CreateMovie

msgbox str(md.AddMovieSelectionMBS(ms))

Notes: If result is not 0, the method fails.

6.0.88 How to create a birthday like calendar event?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

dim r as CalRecurrenceRuleMBS = CalRecurrenceRuleMBS.initYearlyRecurrence(1, nil) // repeat every
year without end

dim a as new CalAlarmMBS // add alarm
a.action = a.CalAlarmActionDisplay
a.relativeTrigger = -3600*24 // 24 Hours before

// create a new calendar
dim c as new CalEventMBS

dim d as new date(2011, 04, 20) // the date

dim calendars() as CalCalendarMBS = s.calendars
```

```
// set properties
c.Title="Test Birthday"
c.startDate=d
c.recurrenceRule = r
c.calendar=calendars(0) // add to first calendar
c.addAlarm(a)
c.endDate = d
c.isAllDay = true

// save event
call s.saveEvent(c,s.CalSpanAllEvents, e)
if e<>nil then
MsgBox e.localizedDescription
else
MsgBox "New event was created."
end if
```

Notes: This adds an event to iCal for the given date with alarm to remember you and repeats it every year.

6.0.89   How to create a GUID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the UUIDMBS class for this.

6.0.90   How to create a Mac picture clip file?

Plugin Version: all, Platform: Windows.

Answer: You can use code like this one.
Example:

```
dim f As FolderItem
dim p As Picture

f=SpecialFolder.Desktop.Child("Test.pictClipping")
if f=nil then Return

p=new Picture(300,200,32) 'Make a sample picture
p.Graphics.ForeColor=RGB(0,255,255)
p.Graphics.FillOval 0,0,99,99
```

```
p.Graphics.ForeColor=RGB(255,0,0)
p.Graphics.DrawOval 0,0,99,99

dim r As ResourceFork 'ResourceFork is needed for a clip file

// Please define a file type Any
r=f.CreateResourceFork("Any")

// get PICT data using plugin function
dim pictdata as string = p.PicHandleDataMBS
r.AddResource(pictdata,"PICT",256,"Picture")

dim m as new MemoryBlock(8)

m.LittleEndian = false
m.Int16Value(0) = 0
m.Int16Value(2) = 0
m.Int16Value(4) = p.Width
m.Int16Value(6) = p.Height

r.AddResource(m,"RECT",256,"")

'Values taken from a sample file and irrelevant to the problem
dim data as string = DecodeBase64("AQAAAAAAAAAAAAAAAACAFRDRVIAAAABAAAAAAAAABUQ0lQAAAA
r.AddResource(data,"drag",128,"") 'ditto
r.Close
```

Notes: In general Apple has deprecated this, but a few application still support clippings.

6.0.91 How to create a PDF file in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Check our DynaPDF plugin and the examples.
Notes: An alternative can be to use the CoreGraphics and Cocoa functions on Mac OS X.
For Windows, we can only suggest our DynaPDF plugin.

6.0.92 How to create EmailAttachment for PDF Data in memory?

Plugin Version: all, Platform: macOS.

Answer: You can use code like the one below:
Example:

Function EmailAttachmentFromPDFData(PDFData as string, filename as string) As EmailAttachment
dim a as new EmailAttachment

a.data = EncodeBase64(PDFData, 76)
a.ContentEncoding = "base64"
a.MIMEType = "application/pdf"
a.MacType = "PDF "
a.MacCreator = "prvw"
a.Name = filename

Return a
End Function

Notes: Compared to sample code from Xojo documentation, we set the mime type correct for PDF.
The MacType/MacCreator codes are deprecated, but you can still include them for older Mac email clients.
"prvw" is the creator code for Apple's preview app.

6.0.93 How to create PDF for image files?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use DynaPDF like this:
Example:

Function CreatePrintPDF(jpgFiles() as folderitem, pdfFile as FolderItem, PageWidth as Integer, PageHeight as Integer) As Boolean
// have files?
If pdfFile = Nil Then Return False
If jpgFiles = Nil Then Return False

If jpgFiles.Ubound <0 Then Return False

// new DynaPDF
Dim pdf As New MyDynapdfMBS

// page width/height in MilliMeter
Dim pdfWidth as Integer = PageWidth * 72 / 25.4
Dim pdfHeight as Integer = PageHeight * 72 / 25.4

// put your license here
Call pdf.SetLicenseKey "Starter"

// create pdf
Call pdf.CreateNewPDF pdfFile

```
// set a couple of options
Call pdf.SetPageCoords(MyDynaPDFMBS.kpcTopDown)
Call pdf.SetResolution(300)
Call pdf.SetUseTransparency(False)
Call pdf.SetSaveNewImageFormat(False)
Call pdf.SetGStateFlags(MyDynaPDFMBS.kgfUseImageColorSpace, False)
Call pdf.SetJPEGQuality(100)

// set page size
Call pdf.SetBBox(MyDynaPDFMBS.kpbMediaBox, 0, 0, pdfWidth, pdfHeight)
Call pdf.SetPageWidth(pdfWidth)
Call pdf.SetPageHeight(pdfHeight)

// append pages with one image per page
For i as Integer = 0 To jpgFiles.Ubound
Call pdf.Append
Call pdf.InsertImageEx(0, 0, pdfWidth, pdfHeight, jpgFiles(i), 1)
Call pdf.EndPage
Next

// close
Call pdf.CloseFile

Return True
End Function
```

Notes: This is to join image files in paper size to a new PDF.
e.g. scans in A4 into an A4 PDF.

6.0.94 How to CURL Options translate to Plugin Calls?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Below a few tips on how to translate command line CURL calls to plugin calls.
Notes: curl -vX PUT http://localhost:5984/appserials/78569238475/DocumentRegister.docx?rev=3-25634563456
–data-binary @DocumentRegister.docx -H "Content-Type: application/msword"

- The option -v means verbose. You can use OptionVerbose and listen for messages in the DebugMessage event.

- The option -X PUT means we want to do a HTTP PUT Request. So set OptionPut to true. Also you will want to set OptionUpload to true as you upload data.

- We have the URL which you put into OptionURL property.

- The --data-binary option tells CURL to pass the given data. With the @ before the data, it is intrepreted as a file name, so the data is read from the given file. You'll need to open this file and pass data with the Read event as needed. (See CURLS ftp file upload example project)

- The last option -H specifies an additional header for the upload. Pas this additional header with the SetOptionHTTPHeader method.

curl -X PUT http://127.0.0.1:5984/appserials/f2f4e540bf8bb60f61cfcd4328001c59 -d ' { "type":"Product","description":"Application Serial","acronym":"AppSerial","dateAdded":"2011-03-21 14:57:36" } '

- Option -X PUT like above.

- Pass the URL again in OptionURL

- This time data is passed in command line for CURL. You'd put this data in the quotes into a string and make it available in the Read event. (See CURLS ftp upload example project)

6.0.95 How to delete file with ftp and curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can set post/pre quotes to have ftp commands executed before or after the download/upload.
Example:

```
dim d as CURLMBS // your curl object

// delete file
dim ws() As String
ws.Append "DELE Temp.txt"

d.SetOptionPostQuote(ws)
```

Notes: Use SetOptionPostQuote, SetOptionPreQuote or SetOptionQuote.
The ftp commands you pass here are native ftp commands and not the commands you use with ftp applications. To delete use DELE and the file path.

6.0.96 How to detect display resolution changed?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac OS X simply listen for display changed notifications.
Notes: Use the "Distribution Notification Center.rbp" example project as a base and use it to listen to notifications with the name "O3DeviceChanged".

6.0.97   How to detect retina?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use Window.BackingScaleFactorMBS to query the factor.
Example:

msgbox str(window1.BackingScaleFactorMBS)

6.0.98   How to disable force quit?

Plugin Version: all, Platform: macOS.

Answer:

Please visit this website and get the control panel for Mac OS 9 there:
http://www3.sk.sympatico.ca/tinyjohn/DFQ.html

For Mac OS X use the MBS Plugin with the SetSystemUIModeMBS method.
Notes:

Please use presentationOptions in NSApplicationMBS for Cocoa applications.

6.0.99   How to disable the error dialogs from Internet Explorer on javascript errors?

Plugin Version: all, Platform: Windows.

Answer: You can use this code in the htmlviewer open event:
Example:

if targetwin32 then
htmlviewer1._ole.Content.value("Silent") = True
end if

Notes: This disables the error dialogs from Internet Explorer.

6.0.100   How to display a PDF file in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac OS X you can use CoreGraphics or PDFKit to display a PDF.
Notes: An alternative can be to load the PDF into a htmlviewer so the PDF plugin can display it.
On Windows you may need to use the Acrobat ActiveX control from Adobe or launch Acrobat Reader.

6.0.101   How to do a lottery in RB?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this function:
Example:

```
Sub Lotto(max as Integer,count as Integer,z() as Integer)
// Lotto count numbers of max put into the array z beginning at index 0
dim n(0) as Integer ' all the numbers
dim m as Integer ' the highest field in the current array
dim i,a,b,d as Integer ' working variables

'fill the array with the numbers
m=max-1
redim n(m)

for i=0 to m
n(i)=i+1
next

' unsort them by exchanging random ones
m=max*10
for i=1 to m
a=rnd*max
b=rnd*max

d=n(a)
n(a)=n(b)
n(b)=d
next

' get the first count to the dest array
m=count-1
redim z(m)
for i=0 to m
z(i)=n(i)
next

'sort the result
z.sort
End Sub
```

```
Sub Open()
// Test it

dim za(0) as Integer ' the array of the numbers

lotto 49,6,za ' 6 of 49 in Germany


' and display them
staticText1.text=str(za(0))+chr(13)+str(za(1))+chr(13)+str(za(2))+chr(13)+str(za(3))+chr(13)+str(za(4))+chr(13)+str(za
End Sub
```

6.0.102 How to do an asycron DNS lookup?

Plugin Version: all, Platform: Windows.

Answer: use CFHostMBS class (Mac OS X only).
Notes: Xojo internal functions and plugin DNS functions are sycronized.
You can use DNSLookupThreadMBS class for doing them asyncron.

6.0.103 How to draw a dushed pattern line?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can try this code:
Example:

```
// call like this: DrawDushedPatternLine g,0,0,width,height,10

Sub DrawDushedPatternLine(g as graphics,x1 as Integer,y1 as Integer,x2 as Integer,y2 as Integer, partlen
as Integer)
dim x,y,ox,oy as Double
dim dx,dy as Double
dim w,h,d as Double
dim b as Boolean

w=x2-x1
h=y2-y1

d=sqrt(w*w+h*h)

dx=w/d*partlen
dy=h/d*partlen
```

b=true
x=x1
while (x<x2) and (y<y2)
ox=x
oy=y

x=x+dx
y=y+dy

if b then
g.DrawLine ox,oy,x,y
end if

b=not b
wend

End Sub

Notes: It would be possible to add this to the plugin, but I think it's better if you do it in plain Xojo code, so it even works on Windows.

6.0.104   How to draw a nice antialiased line?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

This code can help you althrough it's not perfect.
You need to set lc to the current color you use.
Example:

Sub drawLine(xs as Integer, ys as Integer, xe as Integer, ye as Integer, face as RGBSurface, lineColor as color)
dim intX, intY, count, n, xDiff, yDiff as Integer
dim v, v1, floatX, floatY, xx, yy, xStep, yStep as Double
dim c as color

const st=1.0

xDiff=xe-xs
yDiff=ye-ys
count=max(abs(xDiff), abs(yDiff))
xStep=xDiff/count
yStep=yDiff/count

xx=xs
yy=ys
for n=1 to count
intX=xx
intY=yy
floatX=xx-intX
floatY=yy-intY

v=(1-floatX)*(1-floatY)*st
v1=1-v
c=face.pixel(intX, intY)
face.pixel(intX, intY)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=floatX*(1-floatY)*st
v1=1-v
c=face.pixel(intX+1, intY)
face.pixel(intX+1, intY)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=(1-floatX)*floatY*st
v1=1-v
c=face.pixel(intX, intY+1)
face.pixel(intX, intY+1)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=floatX*floatY*st
v1=1-v
c=face.pixel(intX+1, intY+1)
face.pixel(intX+1, intY+1)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)

xx=xx+xStep
yy=yy+yStep
next

End Sub

Notes:

PS: st should be 1 and face should be a RGBSurface or a Graphics object.

6.0.105 How to dump java class interface?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In terminal you can use "javap -s <classname>" to display the class with the method names and parameters.
Notes: For example show ResultSet class: javap -s java.sql.ResultSet

6.0.106   How to duplicate a picture with mask or alpha channel?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this function:
Example:

```
Function Duplicate(extends p as Picture) As Picture
#if RBVersion >= 2011.04 then
if p.HasAlphaChannel then

// create nw picture and copy content:
dim q as new Picture(p.Width, p.Height)
q.Graphics.DrawPicture p,0,0

Return q

end if
#endif

// create new picture
dim q as new Picture(p.Width, p.Height, 32)

// get mask
dim oldMask as Picture = p.mask(false)
if oldMask = nil then
// no mask, so simple copy
q.Graphics.DrawPicture p,0,0
Return q
end if

// remove mask
p.mask = nil

// copy picture and mask
q.Graphics.DrawPicture p, 0, 0
q.mask.Graphics.DrawPicture oldMask,0,0

// restore mask
p.mask = oldmask

Return q
End Function
```

Notes: Simply copy it to a module and call it like this: q = p.duplicate.
The code above works with old Xojo versions because of the #if even if your RS version does not support alpha channel pictures. This way it's future proof.

6.0.107 How to enable assistive devices?

Plugin Version: all, Platform: macOS.

Answer: You can use AppleScript code like below:
Notes: tell application "System Events"
activate

set UI elements enabled to true

return UI elements enabled
end tell

You can run this with AppleScriptMBS class.

6.0.108 How to encrypt a file with Blowfish?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:
Example:

```
dim fi as FolderItem = SpecialFolder.Desktop.Child("test.xojo_binary_project")
dim fo as FolderItem = SpecialFolder.Desktop.Child("test.encrypted")

// read input
dim bi as BinaryStream = BinaryStream.Open(fi)
dim si as string = bi.Read(bi.Length)
bi.Close

// encrypt
dim so as string = BlowfishMBS.Encrypt("MyKey",si)

// write output
dim bo as BinaryStream = BinaryStream.Create(fo)
bo.Write so
bo.Close
```

Notes: Of course you can decrypt same way, just use Decrypt function and of course swap files.

6.0.109   How to extract text from HTML?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use both RemoveHTMLTagsMBS and DecodingFromHTMLMBS like this:
Example:

```
dim html as string = "<p><B>Gr&uuml;&szlig;e</B></P>"
dim htmltext as string = RemoveHTMLTagsMBS(html)
dim text as string = DecodingFromHTMLMBS(htmltext)

MsgBox text // shows: Gr√º√üe
```

Notes: You can use it together with RemoveHTMLTagsMBS to remove html tags. What you get will be the text without tags.
DecodingFromHTMLMBS turns HTML escapes back to unicode characters. Like ä to √§.

6.0.110   How to find empty folders in a folder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this code:
Example:

```
dim folder as folderitem // your folder

dim c as Integer = folder.count
for i as Integer = 1 to c
dim item as folderitem = folder.trueitem(i)
if item = nil then
// ignore
elseif item.directory then
// folder
if item.count = 0 then
// found empty folder
end if
end if
next
```

6.0.111   How to find iTunes on a Mac OS X machine fast?

Plugin Version: all, Platform: macOS.

Answer: You can try Launch Services.
Example:

dim f as FolderItem

f=LaunchServicesFindApplicationForInfoMBS("hook","com.apple.iTunes","iTunes.app")

MsgBox f.NativePath

6.0.112   How to find network interface for a socket by it's name?

Plugin Version: all, Platform: macOS.

Answer: You can use our plugin to build a lookup table.
Example:

Function FindNetworkInterface(name as string) As NetworkInterface
name = name.trim

if name.len = 0 then Return nil

// search by IP/MAC
dim u as Integer = System.NetworkInterfaceCount-1
for i as Integer = 0 to u
dim n as NetworkInterface = System.GetNetworkInterface(i)
if n.IPAddress = name or n.MACAddress = name then
Return n
end if
next

// use MBS Plugin to build a mapping
dim interfaces() as NetworkInterfaceMBS = NetworkInterfaceMBS.AllInterfaces
dim map as new Dictionary

for each n as NetworkInterfaceMBS in interfaces
dim IPv4s() as string = n.IPv4s
dim IPv6s() as string = n.IPv6s

for each IPv4 as string in IPv4s
map.Value(IPv4) = n.Name
next
for each IPv6 as string in IPv6s
map.Value(IPv6) = n.Name
next
if n.MAC<>"" then
map.Value(n.MAC) = n.Name

```
end if
next

// now search interfaces by name, IPv4 or IPv6
for i as Integer = 0 to u
dim n as NetworkInterface = System.GetNetworkInterface(i)
if map.Lookup(n.IPAddress, "") = name then
Return n
end if

if map.Lookup(n.MACAddress, "") = name then
Return n
end if
next

End Function
```

Notes: The code above uses a lookup table build using NetworkInterfaceMBS class to find the network interface by name.

6.0.113 How to find version of Microsoft Word?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:
Example:

```
// find Word
dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS("","com.microsoft.Word","")

// open bundle
dim c as new NSBundleMBS(f)

// read info
dim d as Dictionary = c.infoDictionary

// show version
MsgBox d.Lookup("CFBundleVersion","")
```

Notes: Older versions of Word can be found with creator code "MSWD".

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6.0.114 How to fix CURL error 60/53 on connecting to server?

Plugin Version: all, Platform: macOS.

Answer: You probably connect with SSL and you have no valid certificate.
Example:

dim d as new CURLSMBS

// Disable SSL verification
d.OptionSSLVerifyHost = 0 // don't verify server
d.OptionSSLVerifyPeer = 0 // don't proofs certificate is authentic

// With SSL Verification:
dim cacert as FolderItem = Getfolderitem("cacert.pem")
d.OptionCAInfo = cacert.NativePath
d.OptionSSLVerifyHost = 2 // verify server
d.OptionSSLVerifyPeer = 1 // proofs certificate is authentic

Notes: You can either use the code above to disable the SSL verification and have no security.
Or you use the cacert file and enable the verification. Than you only get a connection if the server has a valid certificate.

see also:
http://curl.haxx.se/ca/

6.0.115 How to format double with n digits?

Plugin Version: all, Platform: macOS.

Answer: You can use the FormatMBS function for this.
Example:

dim d as Double = 123.4567890
listbox1.AddRow FormatMBS("%f", d)
listbox1.AddRow FormatMBS("%e", d)
listbox1.AddRow FormatMBS("%g", d)

listbox1.AddRow FormatMBS("%5.5f", d)
listbox1.AddRow FormatMBS("%5.5e", d)
listbox1.AddRow FormatMBS("%5.5g", d)

d = 0.000000123456
listbox1.AddRow FormatMBS("%f", d)
listbox1.AddRow FormatMBS("%e", d)

listbox1.AddRow FormatMBS("%g", d)

listbox1.AddRow FormatMBS("%5.5f", d)
listbox1.AddRow FormatMBS("%5.5e", d)
listbox1.AddRow FormatMBS("%5.5g", d)

Notes: see FormatMBS for details.
In general %f is normal style, %e is scientific and %g is whichever gives best result for given space.

6.0.116   How to get a time converted to user time zone in a web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the WebSession.GMTOffset property.
Example:

```
Sub Open()
// current date on server
dim d as new date
dim s as string = d.LongTime

// adjust to client GMT offset
d.GMTOffset = d.GMTOffset + Session.GMTOffset

dim t as string = D.LongTime

MsgBox s+EndOfLine+t
End Sub
```

6.0.117   How to get an handle to the frontmost window on Windows?

Plugin Version: all, Platform: Windows.

Answer: This function returns a handle for the frontmost window:
Example:

```
Function GetForegroundWindowHandle() as Integer
#if targetwin32 then
declare function GetForegroundWindow Lib "user32.dll" as Integer
Return GetForegroundWindow()
#endif
End Function
```

6.0.118 How to get CFAbsoluteTime from date?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Use code like this:
Example:

```
dim d as new date
dim t as CFTimeZoneMBS = SystemCFTimeZoneMBS
dim g as new CFGregorianDateMBS
g.Day = d.Day
g.Month = d.Month
g.Year = d.Year
g.Minute = d.Minute
g.Hour = d.Hour
g.Second = d.Second

dim at as CFAbsoluteTimeMBS = g.AbsoluteTime(t)
dim x as Double = at.Value

MsgBox str(x)
```

Notes: As you see we need a timezone and put the date values in a gregorian date record. Now we can query absolute time for the given timezone.

6.0.119 How to get client IP address on web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the WebSession.RemoteAddress property.
Example:

```
Sub Open()
Title = Session.RemoteAddress
End Sub
```

6.0.120 How to get fonts to load in charts on Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use the SetFontSearchPath method in the CDBaseChartMBS class to specify where your fonts are.
Example:

if TargetLinux then
CDBaseChartMBS.SetFontSearchPath ”/usr/share/fonts/truetype;/usr/share/fonts/truetype/msttcorefonts”
else
// on Mac and Windows we use system fonts.
end if

// also you can later switch default fonts:

dim Chart as CDBaseChartMBS // your chart

#If TargetARM And TargetLinux Then
// use specific fonts on Linux on Raspberry Pi
Call Chart.setDefaultFonts(”/usr/share/fonts/truetype/piboto/PibotoLt-Regular.ttf”,”/usr/share/fonts/truetype/piboto/Pi
#EndIf

Notes: On macOS, iOS and Windows, the fonts are loaded from the system's font folder.

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with
”/usr/share/fonts/truetype/msttcorefonts” as the path. No backslash on the end of a path, please.

6.0.121   How to get fonts to load in DynaPDF on Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use the AddFontSearchPath method in the DynaPDFMBS class to specify where your fonts are.
Example:

dim d as new DynaPDFMBS
if TargetLinux then
call d.AddFontSearchPath ”/usr/share/fonts/truetype”, true
else
// on Mac and Windows we use system fonts.
end if

Notes: On Mac OS X and Windows, the fonts are loaded from the system's font folder.

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with
”/usr/share/fonts/truetype/msttcorefonts” as the path. No backslash on the end of a path, please.

6.0.122   How to get GMT time and back?

Plugin Version: all, Platform: macOS.

Answer: You can use the date class and the GMTOffset property.
Example:

```
// now
dim d as new date

// now in GMT
dim e as new date
e.GMTOffset = 0

// show
MsgBox str(d.TotalSeconds,"0.0")+" "+str(e.TotalSeconds, "0.0")

dim GMTTimeStamp as Double = e.TotalSeconds

// restore
dim f as new date

// add GMT offset here
f.TotalSeconds = GMTTimeStamp + f.GMTOffset*3600
// because here it's removed
f.GMTOffset = f.GMTOffset

MsgBox d.ShortTime+" ("+str(d.GMTOffset)+") "+str(d.TotalSeconds,"0.0")+EndOfLine+_
e.ShortTime+" ("+str(e.GMTOffset)+") "+str(e.TotalSeconds,"0.0")+EndOfLine+_
f.ShortTime+" ("+str(f.GMTOffset)+") "+str(f.TotalSeconds,"0.0")
```

Notes: It's sometimes a bit tricky with the date class as setting one property often changes the others.

6.0.123   How to get good crash reports?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Check this website from the webkit website:
Notes: http://webkit.org/quality/crashlogs.html

6.0.124   How to get list of all threads?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the runtime module like in this function:
Example:

```
Function Threads() As Thread()
#pragma DisableBackgroundTasks
dim t() as Thread

Dim o as Runtime.ObjectIterator=Runtime.IterateObjects
While o.MoveNext
if o.Current isa Thread then
t.Append thread(o.current)
end if
Wend

Return t
End Function
```

Notes: This returns an array of all thread objects currently in memory.
The pragma is important here as it avoids thread switches which may cause a thread to be created or deleted.

6.0.125   How to get parameters from webpage URL in Xojo Web Edition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the Webpage.ParametersReceived event.
Example:

```
Sub ParametersReceived(Variables As Dictionary)
for each key as Variant in Variables.keys
MsgBox key+" ->"+Variables.Value(key)
next
End Sub
```

Notes: The text encodings of this strings is not defined in Xojo 2010r5. Please use DefineEncoding.

6.0.126   How to get the color for disabled textcolor?

Plugin Version: all, Platform: macOS.

Answer: Ask the appearance manager:
Example:

Function GetThemeTextColor(inColor as Integer, inDepth as Integer, inColorDev as Boolean) As Color
declare function GetThemeTextColor lib "Carbon" (inColor as Integer, inDepth as Integer, inColorDev as Boolean, outColor as Ptr) as Integer

dim i as Integer
dim col as MemoryBlock

col = newMemoryBlock(6)

i = GetThemeTextColor(inColor, inDepth, inColorDev, col)

return RGB(col.UShort(0)\256, col.UShort(2)\256, col.UShort(4)\256)
End Function

Notes: The color for this is:

const kThemeTextColorDialogInactive = 2.

c = GetThemeTextColor(kThemeTextColorDialogInactive, Screen(0).Depth, true)

For Mac OS X you should use "CarbonLib" instead of "AppearanceLib" ...

6.0.127   How to get the current free stack space?

Plugin Version: all, Platform: macOS.

Answer: You can something like the code below:
Example:

Sub ShowStackSize()
dim threadid as Integer
dim size as Integer

declare function GetCurrentThread lib "Carbon" (byref threadid as Integer) as short
declare function ThreadCurrentStackSpace lib "Carbon" (threadid as Integer, byref size as Integer) as short

if GetCurrentThread(threadid)=0 then
if 0=ThreadCurrentStackSpace(threadid,size) then
MsgBox str(size)
end if
end if

End Sub

Notes: For Mac OS 9, use "ThreadLib" instead of "CarbonLib". You can use #if if you like for that.

6.0.128 How to get the current timezone?

Plugin Version: all, Platforms: macOS, Windows.

Answer:

You can use the TimeZoneMBS class or the CFTimeZoneMBS class.
Or code like below:
Example:

```
Function GMTOffsetInMinutes() as Integer
// Returns the offset of the current time to GMT in minutes.
// supports Mac OS and Windows, but not Linux yet (let me know if
// you have code for that, please)
//
// Note that the offset is not always an even multiple of 60, but
// there are also half hour offsets, even one 5:45h offset

// This version by Thomas Tempelmann (rb@tempel.org) on 25 Nov 2005
// with a fix that should also make it work with future Intel Mac targets.
//
// Using code from various authors found on the RB NUG mailing list

dim result, bias, dayLightbias as Integer
dim info as memoryBlock
dim offset as Integer

#if targetMacOS then

Declare Sub ReadLocation lib "Carbon" (location As ptr)

info = NewMemoryBlock(12)
ReadLocation info
if false then
// bad, because it does not work on Intel Macs:
'offset = info.short(9) * 256 + info.byte(11)
else
offset = BitwiseAnd (info.long(8), &hFFFFFF)
end

offset = info.short(9) * 256 + info.byte(11)
```

```
offset = offset \60
return offset

#endif

#if targetWin32 then

Declare Function GetTimeZoneInformation Lib "Kernel32" ( tzInfoPointer as Ptr ) as Integer
// returns one of
// TIME_ZONE_ID_UNKNOWN 0
// -- Note: e.g. New Delhi (GMT+5:30) and Newfoundland (-3:30) return this value 0
// TIME_ZONE_ID_STANDARD 1
// TIME_ZONE_ID_DAYLIGHT 2

info = new MemoryBlock(172)
result = GetTimeZoneInformation(info)

bias = info.Long(0)
// note: the original code I found in the NUG archives used Long(84) and switched to Long(0)
// only for result=1 and result=2, but my tests found that Long(0) is also the right value for result=0

if result = 2 then
daylightBias = info.long(168)
end if
offset = - (bias + dayLightbias)
return offset

#endif

End Function
```

6.0.129   How to get the current window title?

Plugin Version: all, Platform: macOS.

Answer: The code below returns the current window title for the frontmost window on Mac OS X if Accessibilty services are
Example:

```
Function CurrentWindowTitle() As string
// your application needs permissions for accessibility to make this work!

dim SystemWideElement,FocusedApplicationElement,FocusedWindowElement as AXUIElementMBS
dim FocusedApplication,FocusedWindow,Title as AXValueMBS
dim s as String
dim cs as CFStringMBS
```

SystemWideElement=AccessibilityMBS.SystemWideAXUIElement
if SystemWideElement<>nil then
FocusedApplication=SystemWideElement.AttributeValue(AccessibilityMBS.kAXFocusedApplicationAttribute)
if FocusedApplication.Type=AccessibilityMBS.kAXUIElementMBSTypeID then
FocusedApplicationElement=new AXUIElementMBS
FocusedApplicationElement.Handle=FocusedApplication.Handle
FocusedApplicationElement.RetainObject

FocusedWindow=FocusedApplicationElement.AttributeValue(AccessibilityMBS.kAXFocusedWindowAttribute)

if FocusedWindow<>nil and AccessibilityMBS.kAXUIElementMBSTypeID=FocusedWindow.Type then

FocusedWindowElement=new AXUIElementMBS
FocusedWindowElement.Handle=FocusedWindow.Handle
FocusedWindowElement.RetainObject

Title=FocusedWindowElement.AttributeValue(AccessibilityMBS.kAXTitleAttribute)
if Title<>nil and Title.Type=kCFStringMBSTypeID then
cs=new CFStringMBS
cs.handle=Title.Handle
cs.RetainObject
Return cs.str
end if
end if
end if
end if
End Function

6.0.130   How to get the cursor blink interval time?

Plugin Version: all, Platform: macOS.

Answer: On Mac OS you can use GetCaretTime from the toolbox.
Example:

declare function GetCaretTime lib "Carbon" () as Integer

MsgBox str(GetCaretTime())+" ticks"

Notes: 60 ticks make one second.

6.0.131   How to get the list of the current selected files in the Finder?

Plugin Version: all, Platform: macOS.

Answer:

Use the AppleScript like this one:

tell application "finder"
return selection
end tell

Which translates into this AppleEvent:

Process("Finder").SendAE "core,getd,'—-':obj { form:prop, want:type(prop), seld:type(sele), from:'null'() }
"

and as Xojo code it looks like this:
Example:

```
dim ae as appleevent
dim o1 as appleeventObjectSpecifier
dim f as folderItem
dim aList as appleeventdescList
dim i as Integer
dim dateiname as string

// setup the AppleEvent
o1=getpropertyObjectDescriptor( nil, "sele")
ae= newappleEvent("core", "getd", "MACS")
ae.objectSpecifierParam("—-")=o1

// send it
if ae.send then
// got the list
alist=ae.replyDescList

// now show the list of filename into an editfield:

for i=1 to alist.count
f=alist.folderItemItem(i)

dateiname=f.name
// editfield1 with property "mulitline=true"!
editfield1.text=editfield1.text + dateiname + chr(13)
next
```

end if

6.0.132   How to get the Mac OS system version?

Plugin Version: all, Platform: macOS.

Answer: The following code queries the value and displays the version number:
Example:

dim first as Integer
dim second as Integer
dim third as Integer
dim l as Integer

if System.Gestalt("sysv",l) then

Third=Bitwiseand(l,15)
second=Bitwiseand(l\16,15)
first=Bitwiseand(l\256,15)+10*Bitwiseand(l\256\16,15)
end if

if First>=10 then
msgbox "Mac OS X "+str(First)+"."+str(Second)+"."+str(third)
else
msgbox "Mac OS "+str(First)+"."+str(Second)+"."+str(third)
end if

6.0.133   How to get the Mac OS Version using System.Gestalt?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

Dim s As String
Dim b As Boolean
Dim i, resp as Integer

// Systemversion
b = System.Gestalt("sysv", resp)
If b then
s = Hex(resp)

```
For i =Len(s)-1 DownTo 1
s=Left(s,i)+"."+Mid(s,i+1)
Next
MsgBox "Systemversion: Mac OS " + s
end if
```

Notes: The MBS Plugin has a SystemInformationMBS.OSVersionString function for this.

6.0.134   How to get the screensize excluding the task bar?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Notes: Use the Screen class with the available* properties.

6.0.135   How to get the size of the frontmost window on Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Notes: Make yourself a class for the WindowRect with four properties:

```
Bottom as Integer
Left as Integer
Right as Integer
Top as Integer
```

Add the following method to your class:

```
Sub GetWindowRect(windowhandle as Integer)
dim err as Integer
dim mem as memoryBlock
#if targetwin32 then
Declare Function GetWindowRect Lib "user32.dll" (hwnd as Integer, ipRect As Ptr) as Integer

mem = newmemoryBlock(16)
err = GetWindowRect(windowhandle, mem)
Left = mem.long(0)
Top = mem.Long(4)
Right = mem.Long(8)
Bottom = mem.Long(12)
```

#endif
End Sub

Good to use for the MDI Master Window!

6.0.136   How to get the source code of a HTMLViewer?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

// for Windows:

msgbox HTMLViewer1.IEHTMLTextMBS

// for MacOS with WebKit 2.x:

msgbox HTMLViewer1.WKWebViewMBS.HTMLText

6.0.137   How to get Xojo apps running Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You need to install some requuire packages.
Notes: You need CUPS as well as GTK packages. On 64 bit systems also the ia32-libs package.

Please note that you need a x86 compatible Linux. So no PPC, Power, ARM or other CPUs.

6.0.138   How to handle really huge images with GraphicsMagick or ImageMag-ick?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sometimes it may be better to use an extra application to process images.
Notes: A typical 32 bit app made with Xojo can use around 1.8 GB on Windows and 3 GB on Mac OS X. Some images may be huge, so that processing them causes several copies of the image to be in memory. With a 500 MB image in memory, doing a scale or rotation may require a temp image. So with source, temp and dest images with each 500 MB plus your normal app memory usage, you may hit the limit of Windows with 1.8 GB.

In that case it may be worth running a tool like gm in the shell class. gm is the command line version of GraphicsMagick. There you can run the 64 bit version which is not limited in memory like your own application. Also you can monitor progress and keep your app responsive.

6.0.139 How to handle tab key for editable cells in listbox?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this function:
Example:

```
Function HandleTabInList(list as listbox, row as Integer, column as Integer, key as String) As Boolean
// Handle tab character in Listbox.CellKeyDown event

Select case asc(key)
case 9
if Keyboard.AsyncShiftKey then
// back

// look for column left
for i as Integer = column-1 downto 0
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next

// not found, so look in row before
row = row - 1
if row >= 0 then
for i as Integer = list.ColumnCount-1 downto 0
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
end if
else
// forward

// look for column right
for i as Integer = column+1 to list.ColumnCount-1
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
```

```
// not found, so look in row below
row = row + 1
if row <list.ListCount then
for i as Integer = 0 to list.ColumnCount-1
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
end if
end if
end Select
End Function
```

Notes: You call it from CellKeyDown event like this:

```
EventHandler Function CellKeyDown(row as Integer, column as Integer, key as String) As Boolean
if HandleTabInList(me, row, column, key) then Return true
End EventHandler
```

As you see in the code, we handle tab and shift + tab for moving back and forward. Also we wrap to previous/next row if needed. Feel free to extend this to wrap from last to first row or create a new row for editing.

6.0.140   How to hard link MapKit framework?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Our MapKit classes weak link the framework. If you need hard linking it for the App Store, you can add this method to a class:
Example:

```
Sub ReferenceMapKit()
// just put this in window or app class

#if TargetMachO and Target64Bit then
Declare sub testing Lib "MapKit" Selector "test" (id as ptr)
testing(nil)
#endif

End Sub
```

Notes: No need to call the method.
Just having it in a window or app, will cause the compiler to hard link the framework.

6.0.141 How to have a PDF downloaded to the user in a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use a WebHTMLViewer control and load the PDF file with the PDF plugin from the browser.
Example:

```
dim CurrentFile as WebFile // a property of the WebPage

// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer
CurrentFile.ForceDownload = true

// start the download
showurl(CurrentFile.url)
```

Notes: See our Create PDF example for the Xojo Web Edition.

6.0.142 How to hide all applications except mine?

Platform: macOS.

Answer: The code below will on Mac OS hide all applications except your one:
Example:

```
dim p as new ProcessMBS

p.GetFirstProcess
do
if not p.FrontProcess then
p.Visible=false
end if
loop until not p.GetNextProcess
```

6.0.143 How to hide script errors in HTMLViewer on Windows?

Plugin Version: all, Platform: Windows.

Answer: Set Internet Explorer to silent mode with code like this:
Example:

htmlviewer1._ole.Content.value("Silent") = True

Notes: Simply put this code in the open event of your htmlviewer control (using me instead of htmlviewer1).

6.0.144 How to hide the grid/background/border in ChartDirector?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you want to hide something in a chart, simply assign the kTransparent constant as color.

6.0.145 How to hide the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:
Example:

Declare Sub HideCursor Lib "Carbon" () Inline68K("A852")

HideCursor

Notes: The MBS Plugin has this function and supports it on Windows, too.

6.0.146 How to insert image to NSTextView or TextArea?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With NSTextViewMBS you can use this code to insert file:
Example:

// insert a file to textview

Public Sub InsertFile(textview as NSTextViewMBS, f as FolderItem)
// read to file

```
dim b as BinaryStream = BinaryStream.Open(f)
dim s as string = b.Read(b.Length)

// build wrapper
dim fileWrapper as NSFileWrapperMBS = NSFileWrapperMBS.initRegularFileWithContents(s)
fileWrapper.preferredFilename = f.name

// make attachment
dim fileAttachment as new NSTextAttachmentMBS(fileWrapper)
dim attributedString as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithAttach-
ment(fileAttachment)

// add to a NSTextViewMBS
textview.insertText attributedString

End Sub
```

Notes: For TextArea you can query the underlaying NSTextViewMBS object via TextArea.NSTextViewMBS method.

6.0.147 How to jump to an anchor in a htmlviewer?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You can use javascript to change the current window's location.
Example:

```
// load website
htmlviewer1.LoadURL "http://www.monkeybreadsoftware.net/addressbook-abpersonmbs.shtml"

// later jump to anchor named "16":

if TargetWin32 then
call HTMLViewer1.IERunJavaScriptMBS "window.location = ""#16"""
end if
```

6.0.148 How to keep a movieplayer unclickable?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: To keep the user away from clicking on a playing Movie you can just drop a Canvas in front of the Movieplayer and take the clicks there.
Example:

Function Canvas1.MouseDown(X as Integer, Y as Integer) as boolean
return true // take it and do nothing
End Function

6.0.149   How to keep my web app from using 100% CPU time?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Linux and MacOS you can use renice command in the terminal. On Windows use the task manager to reduce priority.
Notes: If you launch your app with nohup on Linux or Mac OS X like this from the terminal or a script:

nohup /webapps/MyApp/MyApp &

you can simply have a second line saying this:

renice 20 $!

which tells the system to lower priority to lowest value for the latest background process.

6.0.150   How to kill a process by name?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can kill a process (or application) by name if you loop over all the processes and kill the one you need.
Example:

dim p as new ProcessMBS
p.GetfirstProcess ' get first
do
if p.name = "TextEdit" then
call p.KillProcess
Return
end if
loop until not p.GetNextProcess

Notes: You may want to check the result of killProcess function. Not every user is allowed to kill every application.

6.0.151 How to know how many CPUs are present?

Plugin Version: all, Platform: macOS.

Answer: Try this function:
Example:

```
Function GetCPUCount() as Integer
Declare Function MPProcessors Lib "Carbon" () as Integer

Return MPProcessors()
End Function
```

Notes: Your app will than need that library to launch on Classic. To avoid this the MBS plugin checks if this library is available and return 1 if it's not available.

6.0.152 How to know the calling function?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac you can use a helper function like this this code:
Example:

```
Public Function CallingFunction() as string
// Query name of calling function of a function

#Pragma BreakOnExceptions false

try

// raise a dummy exception
dim r as new NilObjectException
raise r

catch x as NilObjectException

// get stack
dim stack() as string = x.Stack

// pick function name and return
dim name as string = stack(2)
Return name

end try
End Function
```

Notes: You need to include function names in your application.

6.0.153   How to launch an app using it's creator code?

Plugin Version: all, Platform: macOS.

Answer: Send an AppleEvent "oapp" with the creator code to the Finder ("MACS"):
Example:

Dim a as AppleEvent
dim creator as string

creator = "MSIE" ' here the Internet Explorer

a = NewAppleEvent("aevt", "odoc", "MACS")
a.Timeout = -1

a.ObjectSpecifierParam("—-") = GetUniqueIDObjectDescriptor("appf", nil, creator)

if not a.send then
msgBox "An error has occured"
else

end if

6.0.154   How to launch disc utility?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use this code:
Example:

dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS("","com.apple.DiskUtility","")

if f<>Nil then
f.Launch
end if

Notes: This works even if people renamed the disc utility or moved it to another folder.

6.0.155   How to make a lot of changes to a REAL SQL Database faster?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You may try to embed your changes to the database between two transaction calls.
Example:

dim db as Database // some database

db.SQLExecute "BEGIN TRANSACTION"
// Do some Stuff
db.SQLExecute "END TRANSACTION"

Notes: This can increase speed by some factors.

6.0.156   How to make a NSImage object for my retina enabled app?

Plugin Version: all, Platform: macOS.

Answer: You can use code like this:
Example:

Function NewRetinaImage(pic as Picture, mask as Picture = nil) As NSImageMBS
// first make a NSImageMBS from it
dim n as new NSImageMBS(pic, mask)

// now set to half the size, so we have 2x pixels for the image
n.size = new NSSizeMBS(n.width/2, n.height/2)

// and return
Return n
End Function

Notes: The thing to do is to have 2x the pixels, but assign a size to the image which gives it the right size in points.
You can pass the NSImageMBS from here to NSMenuItemMBS. For Retina displays, the full resolution is used. For others it will be reduced.

6.0.157   How to make a window borderless on Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this declares:
Example:

// Sets window to borderless popup type, and sets its initial dimensions.
// Call this method, then Win32SetBorderlessPos, and then RB's Show
// method. Use RB Frame type 7 (Global Floating Window).

Const SWP_NOMOVE = &H2
Const SWP_FRAMECHANGED = &H20
Const HWND_TOPMOST = -1
Const GWL_STYLE = -16
Const WS_POPUPWINDOW = &H80880000

Dim styleFlags as Integer

#If TargetWin32 Then

Declare Function SetWindowLong Lib "user32" Alias "SetWindowLongA" (hwnd as Integer, nIndex as Integer, dwNewLong as Integer) as Integer
Declare Function SetWindowPos Lib "user32" (hwnd as Integer, hWndInstertAfter as Integer, x as Integer, y as Integer, cx as Integer, cy as Integer, flags as Integer) as Integer

styleFlags = SetWindowLong(w.WinHWND, GWL_STYLE, WS_POPUPWINDOW)
styleFlags = BitwiseOr(SWP_FRAMECHANGED, SWP_NOMOVE)
styleFlags = SetWindowPos(w.WinHWND, HWND_TOPMOST, 0, 0, wd, ht, styleFlags)

#EndIf

6.0.158   How to make an alias using AppleEvents?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

Sub MakeAlias(folder as folderitem, target as folderitem, aliasname as string)
dim ev as AppleEvent
dim myResult as boolean
dim properties as AppleEventRecord

ev = NewAppleEvent("core","crel","MACS")
ev.MacTypeParam("kocl") = "alis"
ev.FolderItemParam("to ") = target
ev.FolderItemParam("insh") = folder

properties=new AppleEventRecord

properties.StringParam("pnam")=aliasname

ev.RecordParam("prdt")=properties

myResult = ev.send
// true on success, false on error
End Sub

Notes: Call it like this:
MakeAlias SpecialFolder.Desktop, SpecialFolder.Desktop.Child("Gif Copy.rb"), "test.rb alias"

Seems to not work on Mac OS X 10.6

6.0.159   How to make AppleScripts much faster?

Plugin Version: all, Platform: macOS.

Answer: use "ignoring application responses" like in this example:
Notes: on run { fn,fpx,fpy }
ignoring application responses
tell app "Finder" to set the position of folder fn to fpx,fpy
end ignoring
end run

6.0.160   How to make double clicks on a canvas?

Plugin Version: all, Platform: macOS.

Answer:

Update: Newer Xojo versions support DoubleClick event, so you don't need this code.

Here's my tip from the tips list on how to add a double-click event to the Canvas control. The technique could easily be used for a window or any Rectcontrol:

Because of its built-in drawing methods, the Canvas control is often used to create custom interface controls. But while the Canvas control has event handlers for most mouse events, it doesn't have an event handler for DoubleClick events. Fortunately, you can add a double-click event handler to a Canvas control easily. Basically, you're going to create a new class based on Canvas and add a double-click event to that. You can then use the new class anytime you need a Canvas with a double-click event.

To create a new Canvas class with a DoubleClick event handler, do this:

1. Add a new class to your project.
2. Set the Super property of the new class to "Canvas".
3. Change the name of this new class to "DoubleClickCanvas".

A double-click occurs when two clicks occur within the users double-click time (set in the Mouse control panel on both Macintosh and Windows) and within five pixels of each other. So, you'll need a few properties to store when and where the last click occurred.

4. Add a new property with the following declaration and mark it as private: lastClickTicks as Integer
5. Add a new property with the following declaration and mark it as private: lastClickX as Integer
6. Add a new property with the following declaration and mark it as private: lastClickY as Integer

Since the Canvas control doesn't have a DoubleClick event, you will need to add one.

7. Add a new event to your class by choosing New Event from the Edit menu and enter "DoubleClick" as the event name.

Double-clicks occur on MouseUp. In order for the mouseUp event to fire, you must return True in the MouseDown event.

8. In the MouseDown event, add the following code:
Return True

In the MouseUp event, you will need to determine what the users double-click time is. This value is represented on both the Mac and Windows in ticks. A tick is 1/60th of a second. Since there isn't a built-in function for this, you'll need to make a toolbox call. The mouseUp event code below makes the appropriate toolbox call for both Macintosh and Windows. It then compares the time of the users last click to the time of the current click and compares the location of the users last click to the location of the current click.

9. Add the following code to the MouseUp event:

dim doubleClickTime, currentClickTicks as Integer

#if targetMacOS then
Declare Function GetDblTime Lib "Carbon" () as Integer
doubleClickTime = GetDblTime()
#endif

#if targetWin32 then
Declare Function GetDoubleClickTime Lib "User32.DLL" () as Integer

doubleClickTime = GetDoubleClickTime()/60 // convert to ticks from milliseconds
#endif

currentClickTicks = ticks
//if the two clicks happened close enough together in time
if (currentClickTicks - lastClickTicks) <= doubleClickTime then
//if the two clicks occured close enough together in space
if abs(X - lastClickX) <= 5 and abs(Y - LastClickY) <= 5 then
DoubleClick //a double click has occured so call the event
end if
end if
lastClickTicks = currentClickTicks
lastClickX = X
lastClickY = Y

10. Now to test out your new DoubleClickCanvas, drag the class from the Project window to a window in your project to create an instance of it.

11. Double-click on the canvas you just added to your window to open the Code Editor. Notice that the canvas has a DoubleClick event handler. In this event handler, add the following code:
BEEP

6.0.161   How to make my Mac not sleeping?

Plugin Version: all, Platform: macOS.

Answer: Just inform the Mac OS about some system activity with code like this:
Example:

Sub UpdateSystemActivity()

#if TargetCarbon
declare function myUpdateSystemActivity lib "Carbon" alias "UpdateSystemActivity" (activity as Integer)
as short

const OverallAct = 0 // Delays idle sleep by small amount */
const UsrActivity = 1 // Delays idle sleep and dimming by timeout time */
const NetActivity = 2 // Delays idle sleep and power cycling by small amount */
const HDActivity = 3 // Delays hard drive spindown and idle sleep by small amount */
const IdleActivity = 4 // Delays idle sleep by timeout time */

dim e as Integer

e=myUpdateSystemActivity(UsrActivity)

// you may react on an error if e is not 0 after the call.

#endif
End Sub

Notes: You may use another constant if you prefer some different behavior.
Call it maybe every second.

6.0.162   How to make my own registration code scheme?

Plugin Version: all, Platform: Windows.

Answer: There are excellent articles about how to make a registratin code scheme, but you can also simply
use our RegistrationEngineMBS class.
Notes: If you need a license text, why not use the one from Xojo as a starting point?

6.0.163   How to make small controls on Mac OS X?

Plugin Version: all, Platform: macOS.

Answer: You can try this code on Mac OS X:
Example:

```
'/*
'* Use the control's default drawing variant. This does not apply to
'* Scroll Bars, for which Normal is Large.
'*/
const kControlSizeNormal = 0

'/*
'* Use the control's small drawing variant. Currently supported by
'* the Check Box, Combo Box, Radio Button, Scroll Bar, Slider and Tab
'* controls.
'*/
const kControlSizeSmall = 1

'/*
'* Use the control's small drawing variant. Currently supported by
'* the Indeterminate Progress Bar, Progress Bar and Round Button
'* controls.
'*/
const kControlSizeLarge = 2
```

```
'/*
'* Control drawing variant determined by the control's bounds. This
'* ControlSize is only available with Scroll Bars to support their
'* legacy behavior of drawing differently within different bounds.
'*/
const kControlSizeAuto = &hFFFF

const kControlSizeTag = "size"

declare function SetControlData lib "Carbon" (controlhandle as Integer, part as short, tagname as OS-Type, size as Integer, data as ptr) as short

dim m as MemoryBlock

m=NewMemoryBlock(2)
m.UShort(0)=kControlSizeSmall

Title=str(SetControlData(CheckBox1.Handle, 0, kControlSizeTag, 2, m))
```

6.0.164 How to mark my Mac app as background only?

Plugin Version: all, Platform: macOS.

Answer: You can run a build script on each build with this code:
Example:

```
Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSUIElement"" YES")
```

Notes: This will set the NSUIElement flag to YES.

6.0.165 How to move a file or folder to trash?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like below:
Example:

```
Function MoveToTrash(f as FolderItem) As Boolean
#if TargetMacOS then
dim r as FolderItem
dim e as Integer = MacFileOperationMBS.MoveObjectToTrashSync(f, r, MacFileOperationMBS.kFSFileOperationDefaultOptions)
```

if e = 0 then
Return true // Ok
end if

#elseif TargetWin32 then
dim w as new WindowsFileCopyMBS

dim flags as Integer = w.FileOperationAllowUndo + w.FileOperationNoErrorUI + w.FileOperationSilent + w.FileOperationNoConfirmation
if w.FileOperationDelete(f, flags) then
Return true // OK
end if

flags = w.FileOperationNoErrorUI + w.FileOperationSilent + w.FileOperationNoConfirmation
if w.FileOperationDelete(f, flags) then
Return true // OK
end if
#else
// Target not supported
break
Return false
#endif
End Function

Notes: If you want to move a file to trash, you could use f.movefileto f.trashfolder, but that will overwrite existing files in the trash. You can use our MacFileOperationMBS class to move a file on Mac to the trash. And it uses the same code as the Finder, so files are renamed when the same name is already in use in the trash:

On Windows we use WindowsFileCopyMBS class.
Requires Mac OS X 10.5.

6.0.166   How to move an application to the front using the creator code?

Plugin Version: all, Platform: macOS.

Answer: This makes SimpleText (Code ttxt) to the frontmost application:
Example:

dim a as appleevent

a=newappleEvent("misc","actv","ttxt")

```
if a.send then
end if
```

Notes: (Code is Mac only)

6.0.167 How to move file with ftp and curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can set post/pre quotes to have ftp commands executed before or after the download/upload.
Example:

```
dim d as CURLMBS // your curl object

// rename/move file
dim ws() As String
ws.Append "RNFR Temp.txt"
ws.append "RNTO MyFile.txt"

d.SetOptionPostQuote(ws)
```

Notes: Use SetOptionPostQuote, SetOptionPreQuote or SetOptionQuote.
The ftp commands you pass here are native ftp commands and not the commands you use with ftp applications. So rename is two commands. First RNFR to tell where to rename from and second RNTO with the new file name. To delete use DELE and the file path.

6.0.168 How to normalize string on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like below:
Example:

```
Function Normalize(t as string) As string
const kCFStringNormalizationFormD = 0 // Canonical Decomposition
const kCFStringNormalizationFormKD = 1 // Compatibility Decomposition
const kCFStringNormalizationFormC = 2 // Canonical Decomposition followed by Canonical Composition
const kCFStringNormalizationFormKC = 3 // Compatibility Decomposition followed by Canonical Composition

dim s as CFStringMBS = NewCFStringMBS(t)
dim m as CFMutableStringMBS = s.Normalize(kCFStringNormalizationFormD)
```

Return m.str
End Function

Notes: This uses Apple's CFString functions to normalize unicode variants.

6.0.169   How to obscure the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:
Example:

Declare Sub ObscureCursor Lib "Carbon" ()

ObscureCursor

Notes: The MBS Plugin has this function, but it's not supported for Windows.

6.0.170   How to open icon file on Mac?

Plugin Version: all, Platform: macOS.

Answer: Use the NSImageMBS class like this:
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.ico")
dim n as new NSImageMBS(f)

window1.Backdrop = n.CopyPictureWithMask

6.0.171   How to open PDF in acrobat reader?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

dim pdf as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

```
// open PDF in Acrobat Reader on Mac:

// find app
dim bundleID as string = "com.adobe.Reader"
dim app as FolderItem = LaunchServicesFindApplicationForInfoMBS("", bundleID, "")

if app<>nil then

// launch app with parameters

dim docs() as FolderItem
docs.Append pdf

dim param as new LaunchServicesLaunchParameterMBS
param.Defaults = true
param.Application = app

dim x as FolderItem = LaunchServicesOpenXMBS(docs, param)

// on failure, simply launch it
if x = nil then
pdf.Launch(true)
end if

else
pdf.Launch(true)
end if
```

Notes: On Windows, simply use pdf.launch or WindowsShellExecuteMBS.

6.0.172   How to open printer preferences on Mac?

Plugin Version: all, Platform: macOS.

Answer: You can use our OpenMacOSXPreferencesPaneMBS function like this:
Example:

```
dim e as Integer = OpenMacOSXPreferencesPaneMBS("PrintAndFax")
if 0 = e then
MsgBox "OK"
elseif e = -43 then
MsgBox "File not found."
else
MsgBox "Error: "+str(e)
end if
```

6.0.173   How to open special characters panel on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have functions for that in Cocoa and Carbon.
Example:

dim a as new NSApplicationMBS
a.orderFrontCharacterPalette

Notes: For Cocoa, you can use orderFrontCharacterPalette method in NSApplicationMBS class.

Or simply for Carbon and Cocoa the ShowCharacterPaletteMBS method.

6.0.174   How to optimize picture loading in Web Edition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the WebPicture class.
Notes: Take your picture and create a WebPicture object. Store this WebPicture in a property of the
WebPage, Session or app (as global as possible). On the first time you use this picture on an user session,
the browser will load it. Second time you use it, the browser will most likely pick it from the cache.
Having pictures in App or some module reuses the same picture for all sessions which reduces memory foot-
print.
This does not work well with pictures you change very often or use only for one webpage on one user.

If you like to see an example, check our Map example.

6.0.175   How to parse XML?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:
Example:

dim s as string = ”<test><test /></test>”

try

```
dim x as new XmlDocument(s)
MsgBox "OK"
catch xe as XmlException
MsgBox "invalid XML"
end try
```

Notes: If you got an exception, you have a parse error.

6.0.176   How to play audio in a web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the HTML5 audio tag and control it with javscript.
Notes: This is just another example app I made today. It plays a christmas song. The audio file is provided by the application to the server, so no external web server is needed and this application can run stand alone. To compile and run you need Xojo 2010r5.

In the open event we search the audio files and open them as binarystreams. We create the two webfile objects. Those webfiles are part of the app class, so we have them globally. There we set the data with the content of our streams. We also define file names and mime types. They are needed so browser know what we have here:

```
audioFileM4V = new WebFile
audioFileM4V.Data = bM.Read(BM.Length)
audioFileM4V.Filename = "music.m4a"
audioFileM4V.MIMEType = "audio/m4a"


audioFileOGG = new WebFile
audioFileOGG.Data = bO.Read(BO.Length)
audioFileOGG.Filename = "music.ogg"
audioFileOGG.MIMEType = "audio/ogg"
```

Next in the open event of the webpage we have a PageSource control. The location is set to be before content. In the open event we define the html code for this. First we pick the URLs for the audio files. Than we build the html to use the audio tag. As you see, we give it an ID for later use and have it preload automatically. If you add an autoplay tag, you can have the audio play right away. Inside the audio tag we have two sources so we provide audio for both Firefox (OGG) and Safari (MPEG4). Finally we have a text to display if HTML5 audio tag is not supported.

You can set the source in the EditSource event:

dim urlo as string = app.audioFileOGG.URL
dim urlm as string = app.audioFileM4V.URL
me.Source = "<audio id=""mymusic"" preload=""auto""><source src="""+urlo+""" type=""audio/ogg""
/><source src="""+urlm+""" type=""audio/mpeg"" />Your browser does not support the audio ele-
ment.</audio>"

Next in the Play button we execute code to play the audio. This is a short javascript code which searches
in the html document for the element with the ID "mymusic" which is the ID of our audio tag above. Once
we got the object, we call it's play method to start playback.

me.ExecuteJavaScript("document.getElementById('mymusic').play();")

same for pause:

me.ExecuteJavaScript("document.getElementById('mymusic').pause();")

and finally for changing volume:

me.ExecuteJavaScript("document.getElementById('mymusic').volume="+str(me.Value/100.0)+";")

6.0.177   How to pretty print xml?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the XML Transform method with the right XLS.
Notes: Learn more here:
http://docs.xojo.com/index.php/XMLDocument.Transform

6.0.178   How to print to PDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: This code below shows how to redirect printing to a PDF file on Mac OS X.
Example:

```
// get Xojo printer setup
dim p as new PrinterSetup

// now put it into NSPrintInfo to manipulate
dim n as new NSPrintInfoMBS
n.SetupString = p.SetupString
```

```
// change destination to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
n.SetSaveDestination(f)

// move back
p.SetupString = n.SetupString

// and print as usual
dim g as Graphics = OpenPrinter(p)
g.DrawString "Hello World", 20, 20
```

Notes: And you can use normal graphics class for that.

6.0.179   How to query Spotlight's Last Open Date for a file?

Plugin Version: all, Platform: macOS.

Answer: You can use a MDItemMBS objec to query this value:
Example:

```
Function LastOpenedDate(Extends F As FolderItem, DefaultOtherDates As Boolean = True) As Date
#If TargetMacOS Then
Dim xMDItem as New MDItemMBS(F)
Dim xDate as Variant

If xMDItem <>Nil Then
xDate = xMDItem.GetAttribute(xMDItem.kMDItemLastUsedDate).DateValue
If xDate IsA Date Then Return xDate
Else
If xDate <>Nil Then Break
End If
#EndIf

If DefaultOtherDates Then
If F.ModificationDate <>Nil Then Return F.ModificationDate
If F.CreationDate <>Nil Then Return F.CreationDate
End If
End Function
```

Notes: Thanks for Josh Hoggan for this example code.

6.0.180 How to quit windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Example:

```
#if targetwin32 then
dim i1,i2,r as Integer
declare function ExitWindowsEx lib "user32" (uFlags as Integer, dwReserved as Integer) as Integer
i1 = 2
i2 = 0
r = ExitWindowsEx(i1,i2)
if r<>0 then
' Error()
end if

#endif
```

Notes: uFlags parameters:

```
'4 = EWX_Force
'0 = EWX_Logoff
'2 = EWX_Reboot
'1 = EWX_shutdown, should shut down computer
```

Also check the ExitWindowsMBS method.

6.0.181 How to read a CSV file correctly?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With all the rules for quotes and delimiters, you can simply use the SplitCommaSeparatedValuesMBS method in our plugins like this:
Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.csv")
dim t as TextInputStream = f.OpenAsTextFile

while not t.EOF
dim s as string = t.ReadLine(encodings.ASCII)

dim items() as string = SplitCommaSeparatedValuesMBS(s, ";", """")
```

```
List.AddRow ""
dim u as Integer = UBound(items)
for i as Integer = 0 to u
List.Cell(List.LastIndex,i) = items(i)
next

wend
```

Notes: Please make sure you choose the right text encoding.

6.0.182 How to read the command line on windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Example:

```
#if targetwin32 then
dim line as string
Dim mem as MemoryBlock

Declare Function GetCommandLineA Lib "kernel32" () As Ptr

mem=GetCommandLineA()
s=mem.cstring(0)

#endif
```

Notes: Newer Xojo versions have a system.commandline property.

6.0.183 How to render PDF pages with PDF Kit?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Example:

```
// choose a file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

// open it as PDF Document
dim sourceFile as New PDFDocumentMBS(f)
```

```
if sourceFile.handle <>0 then // it is a PDF file

// get upper bound of pages
dim c as Integer = sourceFile.pageCount-1

// from first to last page
for n as Integer = 0 to c

// pick that page
dim page as PDFPageMBS = sourceFile.pageAtIndex(n)

// render to image
dim p as NSImageMBS = page.Render

// and convert to RB picture and display
Backdrop = p.CopyPictureWithMask

next

end if
```

Notes: PDFKit works only on Mac OS X.

6.0.184   How to restart a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:
Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR","rest","MACS")
if not ae.send then
msgBox "The computer couldn't be restarted."
end if
```

6.0.185   How to resume ftp upload with curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: CURL supports that and you simply need to set the right options.

Notes: First of course OptionUpload must be true. Second OptionFTPAppend must be true so the OptionResumeFrom is used. Store there (or in OptionResumeFromLarge) your start value.
Don't forget to implement the read event and return data there as requested.

6.0.186 How to rotate a PDF page with CoreGraphics?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: This code opens a PDF and draws the first page into a new PDF with 90¬∞ rotation.
Example:

```realbasic
// Rotate a PDF page

// our files
dim sourcefile as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim destfile as FolderItem = SpecialFolder.Desktop.Child("rotated.pdf")

// open PDF
dim pdf as CGPDFDocumentMBS = sourcefile.OpenAsCGPDFDocumentMBS

// query media size of first page
dim r as CGRectMBS = pdf.MediaBox(1)

// create new PDF
dim c as CGContextMBS = destfile.NewCGPDFDocumentMBS(r,"title","Author","Creator")

// create rotated rectangle
dim nr as new CGRectMBS(0,0,r.Height,r.Width)

// create new page
c.BeginPage nr
c.SaveGState

const pi = 3.14159265

// rotate by 90¬∞
c.RotateCTM pi*1.5

// fix origin
c.TranslateCTM -r.width,0

// draw PDF
c.DrawCGPDFDocument pdf,r,1

// cleanup
c.RestoreGState
c.EndPage
```

c = nil

// show in PDF viewer
destfile.Launch

Notes: This code is Mac only as it needs CoreGraphics.

6.0.187   How to rotate image with CoreImage?

Plugin Version: all, Platform: macOS.

Answer: Use the code like the one below:
Example:

```
// Rotate image with CoreImage

// load image
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim image as new CIImageMBS(f)

// rotate 45 degree
dim n as new NSAffineTransformMBS
n.rotateByDegrees(45)

dim TransformFilter as new CIFilterAffineTransformMBS
TransformFilter.inputImage = image
TransformFilter.inputTransform = n

// get result
dim resultImage as CIImageMBS = TransformFilter.outputImage

// for saving to file
dim outputImage as NSImageMBS = resultImage.RenderNSImage(false)

f = SpecialFolder.Desktop.Child("output.png")
dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write outputImage.PNGRepresentation

// as Xojo picture object for display
dim pic as Picture = outputImage.CopyPictureWithMask

Backdrop = pic
```

6.0.188   How to run a 32 bit application on a 64 bit Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Install 32 bit compatibility libraries.
Notes: The package is called ia32-libs for ubuntu (and others).
Some applications need to be run on a 32 bit system as they need some hardware related libraries. Like libUSB or libHID for USB devices.

6.0.189   How to save HTMLViewer to PDF with landscape orientation?

Plugin Version: all, Platform: macOS.

Answer: You can use NSPrintInfoMBS to change the options for PrintToPDFFile function.
Example:

```
// make it landscape
dim n as NSPrintInfoMBS = NSPrintInfoMBS.sharedPrintInfo
n.orientation = n.NSLandscapeOrientation

// save html to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
call HTMLViewer1.PrintToPDFFileMBS(f,10,30,10,30)
```

Notes: You may want to reset options later.
This code is only for Mac OS X.

6.0.190   How to save RTFD?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With NSTextViewMBS you can use this code to save to RTFD:
Example:

```
// save text as RTFD including image attachments
dim f as FolderItem = GetSaveFolderItem(FileTypes1.ApplicationRtfd, "test.rtfd")

if f = nil then Return

dim a as NSAttributedStringMBS = textView.textStorage
dim w as NSFileWrapperMBS = a.RTFDFileWrapperFromRange(0, a.length, DocumentAttributes)

dim e as NSErrorMBS
if w.writeToFile(f, e) then
```

else
MsgBox e.LocalizedDescription
end if

Notes: For TextArea you can query the underlaying NSTextViewMBS object via TextArea.NSTextViewMBS method.

6.0.191   How to save RTFD?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: How to load PDF to htmlviewer on desktop?
Example:

```
Public Sub LoadPDFData(viewer as HTMLViewer, PDFData as string)
Dim base64string As String = EncodeBase64(PDFData)

// remove line endings to make it a big line
base64string = ReplaceLineEndings(base64string, "")

// build data URL
// https://en.wikipedia.org/wiki/Data_URI_scheme
Dim dataURL As String = "data:application/pdf;base64," + base64string

// show in webviewer
HTMLViewer1.LoadURL(dataURL)

// may not work everywhere due to URL length limit
// for Web projects, use WebFile instead!
End Sub
```

Notes: This avoids a temporary file, which may also work.
For Web Apps, please use WebFile.

6.0.192   How to scale a picture proportionally with mask?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: For a proportional scaling, we calculate the new picture size relative to the target maximum size.
Example:

Function ProportinalScaledWithMask(extends pic as Picture, Width as Integer, Height as Integer) As Picture
// Calculate scale factor

dim faktor as Double = min(Height / Pic.Height, Width / Pic.Width)

// Calculate new size
dim w as Integer = Pic.Width * faktor
dim h as Integer = Pic.Height * faktor

// create new picture
dim NewPic as new Picture(w,h,32)

// check if we have a mask and clear it
dim m as picture = pic.mask(False)
pic.mask = nil

// draw picture in the new size
NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

if m <>nil then
// restore mask and scale it
pic.mask = m
NewPic.mask.Graphics.DrawPicture m, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height
end if

// return result
Return NewPic
End Function

Notes: This version handles mask. As you see we actually have to remove mask in order to copy the picture part correctly.

6.0.193 How to scale a picture proportionally?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: For a proportional scaling, we calculate the new picture size relative to the target maximum size.
Example:

Function ProportionalScaled(extends pic as Picture, Width as Integer, Height as Integer) As Picture
// Calculate scale factor

dim faktor as Double = min(Height / Pic.Height, Width / Pic.Width)

```
// Calculate new size
dim w as Integer = Pic.Width * faktor
dim h as Integer = Pic.Height * faktor

// create new picture
dim NewPic as new Picture(w,h,32)

// draw picture in the new size
NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

// return result
Return NewPic
End Function
```

Notes: This does not handle mask, but you can scale the mask the same way and assign it to the new picture.
(see other FAQ entry with mask)

6.0.194   How to scale/resize a CIImageMBS?

Plugin Version: all, Platform: Windows.

Answer: Use the CIFilterLanczosScaleTransform filter to scale down a picture to a specific size.
Example:

```
Dim pic As Picture = LogoMBS(500)
Dim image As CIImageMBS = CIImageMBS.imageWithPicture(pic)

Dim filter As New CIFilterLanczosScaleTransformMBS

Const targetWidth = 600.0
Const targetHeight = 400.0

Dim scale As Double = targetHeight / image.Extent.Height
Dim aspect As Double = targetWidth / (image.Extent.Width * scale)

filter.inputImage = image
filter.inputScale = scale
filter.inputAspectRatio = aspect

Dim result As Picture = filter.outputImage.RenderPicture

Backdrop = result
```

Notes: This is same code as our scaleTo convenience method.

6.0.195   How to scale/resize a picture?

Plugin Version: all, Platform: Windows.

Answer: There are several ways to scale or resize a picture. The easiest way may be the ScaleMBS function in the Picture class.
Example:

dim Original,Scaled as Picture

Original=LogoMBS(500)
Scaled=Original.ScaleMBS(100,100,true)

Notes: The plugin ways:
- GraphicsMagick can scale/resize.
- CoreImage scale filter may result in the fastest and best images on Mac OS X 10.4.
- NSImageMBS can scale, but is Mac OS X only.
- CGImageMBS can scale, but is Mac OS X only.
- CIImageMBS can scale, but is Mac OS X only.
- QuickTime Graphics exporter and importer can be connected to scale. (this was used more often a few years ago)
- ImageMagick can scale very nice and crossplatform. But the ImageMagick libraries are big.
- The picture.ScaleMBS function is self written and results in equal output on Mac, Windows and Linux without any additional libraries installed.
- Picture.ScalingMBS does crossplatform scaling with several modes.

with pure Xojo:
- make a new picture and draw the old one with new size inside.

6.0.196   How to search with regex and use unicode codepoints?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can specify unicode characters in search string with backslash x and digits.
Example:

dim r as RegExMbs
dim s as string
dim c as Integer

s="123 √§√√° ABC 456"

r=new RegExMBS
if r.Compile(".√.") then
c=r.Execute(s,0)
MsgBox str(c)+" "+str(r.Offset(0))+" "+str(r.Offset(1))
// shows: 1 4 10
// 1 for ubound of the offset array
// 4 for 4 bytes before the matched pattern
// 10 for the 10 bytes before the end of the matched pattern
end if

r=new RegExMBS
if r.Compile(".\xF6.") then // finds √ using Unicode codepoint
c=r.Execute(s,0)
MsgBox str(c)+" "+str(r.Offset(0))+" "+str(r.Offset(1))
// shows: 1 4 10
// 1 for ubound of the offset array
// 4 for 4 bytes before the matched pattern
// 10 for the 10 bytes before the end of the matched pattern
end if

6.0.197   How to see if a file is invisible for Mac OS X?

Plugin Version: all, Platform: macOS.

Answer: Try this function:
Example:

Function Invisible(F As FolderItem) As Boolean
Dim TIS As TextInputStream
Dim S,All As String
Dim I as Integer
dim g as folderitem

If Left(F.Name,1)="." or not f.visible Then
Return True
End If

g=F.Parent.Child(".hidden")
If g.Exists Then
TIS=g.OpenAsTextFile
if tis<>Nil then
All=TIS.ReadAll
For I=1 to CountFields(All,Chr(11))
S=NthField(All, Chr(11), I)

```
If S=F.name Then
Return True
End If
Next
end if
End if
End Function
```

6.0.198 How to set cache size for SQLite or REALSQLDatabase?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You use the pragma cache_size command on the database.
Example:

```
// set cache size to 20000 pages which is about 20 MB for default page size
dim db as REALSQLDatabase
db.SQLExecute "PRAGMA cache_size = 20000"
```

Notes: Default cache size is 2000 pages which is not much.
You get best performance if whole database fits in memory.
At least you should try to have a cache big enough so you can do queries in memory.
You only need to call this pragma command once after you opened the database.

6.0.199 How to set the modified dot in the window?

Plugin Version: all, Platform: macOS.

Answer: Try this declares:
Example:

```
window1.ModifiedMBS=true
```

6.0.200 How to show a PDF file to the user in a Web Application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use a WebHTMLViewer control and load the
Example:

dim CurrentFile as WebFile // a property of the WebPage

// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer

// load into html viewer
HTMLViewer1.URL = CurrentFile.URL

Notes: See our Create PDF example for the Xojo Web Edition.

6.0.201   How to show Keyboard Viewer programmatically?

Platform: macOS.

Answer: Use Xojo or AppleScript to launch the KeyboardViewerServer.app.
Example:

dim a as new AppleScriptMBS
dim text as string
dim lines(-1) as string

lines.append "set theApplication to ""KeyboardViewerServer"""
lines.append "set thePath to ""/System/Library/Components/KeyboardViewer.component/Contents/Shared-Support/KeyboardViewerServer.app"""
lines.append ""
lines.append "set POSIXPath to ((POSIX file thePath) as string)"
lines.append "tell application ""System Events"" to set isRunning to 0 <(count (application processes whose name is theApplication))"
lines.append "if isRunning then tell application POSIXPath to quit"
lines.append "delay 0.15"
lines.append ""
lines.append "ignoring application responses"
lines.append " tell application POSIXPath to run"
lines.append "end ignoring"

text=join(lines,EndOfLine.macintosh)

a.Compile text
a.Execute

Notes: AppleScript code:

set theApplication to "KeyboardViewerServer"
set thePath to "/System/Library/Components/KeyboardViewer.component/Contents/SharedSupport/Key-boardViewerServer.app"

set POSIXPath to ((POSIX file thePath) as string)
tell application "System Events" to set isRunning to 0 <(count (application processes whose name is theAp-plication))
if isRunning then tell application POSIXPath to quit
delay 0.15

ignoring application responses
tell application POSIXPath to run
end ignoring

6.0.202 How to show the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:
Example:

Declare Sub ShowCursor Lib "Carbon" ()

ShowCursor

Notes: The MBS Plugin has this function and supports it on Windows, too.

6.0.203 How to shutdown a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:
Example:

dim ae as appleevent
ae=newappleEvent("FNDR","shut","MACS")
if not ae.send then
msgBox "The computer couldn't be shutdown."
end if

Notes: Or toolbox call (Attention: This method will stop the computer immediataly: No document asked to be saved, all applications quitting without knowing).

Declare Sub ShutDwnPower Lib "Carbon" ()
ShutDwnPower

6.0.204   How to sleep a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:
Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR","slep","MACS")
if not ae.send then
msgBox "The computer doesn't want to sleep."
end if
```

6.0.205   How to speed up rasterizer for displaying PDFs with DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Here a few speed tips:
Notes:

- Use the DynaPDFRasterizerMBS function instead of our render functions.

- Reuse DynaPDFRasterizerMBS as long as the target picture size doesn't change.

- Import only the PDF pages you want to display.

- Let DynaPDF do zooming, rotating or other effects instead of you change it.

6.0.206   How to use PDFLib in my RB application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The PDFlib plugin was discontinued in favor of our DynaPDF plugin.
Notes: If you need help to move, please contact us.

6.0.207   How to use quotes in a string?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Just double them.
Example:

msgbox "This String contains ""quotes"""."

6.0.208   How to use Sybase in Web App?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use our MBS Xojo SQL Plugin to connect to a Sybase Database in your web application.
Notes: If you see db.Connect giving the error message "cs_ctx_alloc ->CS_MEM_ERROR", than some things are not setup right for Sybase.
The Apache process may not have all the SYBASE environment variables being set when the CGI was launched.

Adding these lines to /etc/httpd/conf/httpd.conf stopped the faux memory errors for us:

SetEnv LD_LIBRARY_PATH /opt/sybase/OCS-15_0/lib:/opt/sybase/OCS-15_0/lib3p64:/opt/sybase/OCS-15_0/lib3p:
SetEnv SYBROOT /opt/sybase
SetEnv SYBASE_OCS /opt/sybase
SetEnv SYBASE /opt/sybase

6.0.209   How to use the Application Support folder?

Plugin Version: all, Platform: macOS.

Answer:

I was saving a registration code for an app to the Preferencefolder.
People on the list have suggested that it would be better in
the ApplicationSupportFolder. How do I save the file called CWWPrefs
into that folder using MBS?

I have checked for examples and the docs but can't see how to apply it

//f = SpecialFolder.Preferences.child("CWWPrefs")
f = ApplicationSupportFolderMBS(-32768)

Example:

dim folder,file as FolderItem

folder = createApplicationSupportFolderMBS(-32763)

if folder=nil then
// Some very old Mac OS Versions may not support it
// or the plugin may fail for any reason
folder=SpecialFolder.Preferences
end if

file=folder.Child("CWWPrefs")

MsgBox file.NativePath

Notes:

You may not be able to write there with a normal user account!

6.0.210   How to use the IOPMCopyScheduledPowerEvents function in Xojo?

Plugin Version: all, Platform: macOS.

Answer: You can use the following code which does this using the SoftDeclareMBS class.
Example:

Sub Open()
dim c as CFDateMBS
dim t as CFAbsoluteTimeMBS

// get current date
c=NewCFDateMBS

// in absolute time (seconds since x)
t=c.AbsoluteTime

// add 600 seconds (= 10 Minutes)
t.Value=t.Value+600

// Make a Date from it
c=t.Date

// Schedule the event
// 0 on success
// E00002C1 for missing root rights

Title=hex(schedulePowerEvent(c, "wake"))

// Just for information, display the scheduled stuff
CFShowMBS CopyScheduledPowerEvents
End Sub

Function CopyScheduledPowerEvents() As cfarrayMBS
dim s as SoftDeclareMBS
dim m as MemoryBlock

s=new SoftDeclareMBS

if s.LoadLibrary("IOKit.framework") then
if s.LoadFunction("IOPMCopyScheduledPowerEvents") then
if s.CallFunction(0,nil) then
Return NewCFArrayMBSHandle(s.Result,true)
else
MsgBox "Failed to Call IOPMCopyScheduledPowerEvents."
end if
else
MsgBox "Failed to load IOPMCopyScheduledPowerEvents."
end if
else
MsgBox "Failed to load IOKit."
end if

Return nil
End Function

Function SchedulePowerEvent(time_to_wake as CFDateMBS, Type as CFStringMBS) as Integer
dim s as SoftDeclareMBS
dim m as MemoryBlock

'/*
'* Types of power event
'* These are potential arguments to IOPMSchedulePowerEvent().
'* These are all potential values of the kIOPMPowerEventTypeKey in the CFDictionaries
'* returned by IOPMCopyScheduledPowerEvents().
'*/
'/*!
'@define kIOPMAutoWake
'@abstract Value for scheduled wake from sleep.
'*/
'#define kIOPMAutoWake "wake"
'
'/*!
'@define kIOPMAutoPowerOn
'@abstract Value for scheduled power on from off state.

```
'*/
'#define kIOPMAutoPowerOn "poweron"
'
'/*!
'@define kIOPMAutoWakeOrPowerOn
'@abstract Value for scheduled wake from sleep, or power on. The system will either wake OR
'power on, whichever is necessary.
'*/
'
'#define kIOPMAutoWakeOrPowerOn "wakepoweron"
'/*!
'@define kIOPMAutoSleep
'@abstract Value for scheduled sleep.
'*/
'
'#define kIOPMAutoSleep "sleep"
'/*!
'@define kIOPMAutoShutdown
'@abstract Value for scheduled shutdown.
'*/
'
'#define kIOPMAutoShutdown "shutdown"

s=new SoftDeclareMBS

if s.LoadLibrary("IOKit.framework") then
if s.LoadFunction("IOPMSchedulePowerEvent") then

m=NewMemoryBlock(12)
m.Long(0)=time_to_wake.handle
m.Long(4)=0 // nil
m.Long(8)=type.Handle

if s.CallFunction(3,m) then
Return s.Result
end if
end if
end if

End Function
```

Notes: Requires Mac OS X and to execute root rights.

6.0.211 How to validate a GUID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use this function below which uses a regular expression to verify that the string is a valid UUID/GUID:
Example:

```
Function IsGUID(guid as string) As Boolean
dim r as new RegEx

r.SearchPattern = "^(\{ { 0,1 } ( [ 0-9a-fA-F ] ) { 8 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 4 }
-( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 12 } \} { 0,1 } )$ "

Return r.Search(guid)<>nil
End Function
```

Notes: Simply parsing the GUID with CFUUIDMBS does not give the same result as CFUUIDMBS will also take a string like "DDDD".

6.0.212 How to walk a folder hierarchie non recursively?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this one:
Example:

```
Sub Walk(folder as FolderItem)
dim folders() as FolderItem

folders.Append folder

while UBound(folders)>=0

dim currentFolder as FolderItem = folders.pop

dim c as Integer = currentFolder.Count
for i as Integer = 1 to c
dim item as FolderItem = currentFolder.TrueItem(i)

if item = Nil then
// no permission
elseif item.Visible then // only visible

if item.Directory then
folders.Append item
```

else
// work with file here
end if

end if

next

wend
End Sub

Notes: As you see we go with a long loop which runs until we don't have more folders to process.
We ignore items we can't access due to permission limits.
And we only work visible items.
If you like, check folderitem.isBundleMBS on item to handle packages and applications better on Mac OS X.

6.0.213 I got this error: PropVal, QDPictMBS.Name (property value), Type mismatch error.   Expected CGDataProviderMBS, but got Variant, Name:QDPictMBS

Plugin Version: all, Platform: macOS.

Answer: The plugins MacOSX and MacOSXCF belong together. If you use one part, please also install the other part.
Notes: We splitted the plugin because the Xojo IDE on Windows crashed on compilation.

6.0.214 I registered the MBS Plugins in my application, but later the registration dialog is shown.

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: There are two main reasons.
Notes: 1. you may use the plugin before registering them. This is often the case if you register in a window open event and use the plugin in a control open event.
On the console on Mac OS X or Windows, you may see a message like this "MBS Plugins were used by the application before the RegisterMBSPlugin function was called. Please fix this in your code!".

2. you may have mixed different plugin versions which are not compatible.
In this case you can see a message "Internal plugin registration error." on the console on Mac OS X. Newer plugins may show a message dialog reporting this. Older version simply think they are not registered.

If the installer just merges old and new applications, users may have libraries of older and newer plugin versions in the libs folder. If your application loads the wrong version, the registration fails.

If you use remote debugging, make sure you clear the tempory files there, too. Otherwise you may have old DLLs on your hard disc which may disturb your application.

You can run into issues if you use your registration code on different places of your app. Please register only once in app.open (or app Constructor). If you have several codes, simply call them one after the other.

Also check that you only call RegisterMBSPlugin with valid serial number. If you later call RegisterMBSPlugin with Demo like in example code above, you remove the license.

Next check if you can clear the Xojo caches and that helps. This includes the Xojo Scratch folder and the Plugins & Project caches. Simply locate those folders and delete them. For Windows look in hidden AppData folder in your user folder. For Mac, please check
textasciitilde /Library/Caches and your temp folders.

Finally make sure you use the right serial number. Not an older one or a misspelled one.

6.0.215 I want to accept Drag & Drop from iTunes

Plugin Version: all, Platform: macOS.

Answer: You need to accept AcceptMacDataDrop "itun" and Handle the DropObject.
Example:

```
Sub Open()
window1.AcceptMacDataDrop "itun"
End Sub

Sub DropObject(obj As DragItem)
dim s as string
dim f as folderItem
dim d as CFDictionaryMBS
dim o as CFObjectMBS
dim key as CFStringMBS
dim dl as CFDictionaryListMBS
dim i,c as Integer
dim u as CFURLMBS
dim file as FolderItem

if obj.MacDataAvailable("itun") then
s = obj.MacData("itun")
```

```
// Parse XML
o=NewCFObjectMBSFromXML(NewCFBinaryDataMBSStr(s))

// Make dictionary
if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

// get Tracks Dictionary
key=NewCFStringMBS("Tracks")
o=d.Value(key)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)
dl=d.List

// Walk over all entries in the Tracks dictionary
c=dl.Count-1
for i=0 to c
o=dl.Value(i)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

key=NewCFStringMBS("Location")
o=d.Value(key)
if o isa CFStringMBS then
u=NewCFURLMBSCFStringMBS(CFStringMBS(o),nil)

file=u.file
if file<>nil then
MsgBox file.NativePath
end if
end if
end if
next
end if
end if
end if
End Sub
```

Notes: The code above inside a window on Xojo 5.5 with MBS Plugin 5.3 will do it nice and show the paths.

6.0.216 I'm drawing into a listbox but don't see something.

Plugin Version: all.

Answer: If you draw this in a listbox cellbackground, you need to draw on the correct position
Example:

Function CellBackgroundPaint(g As Graphics, row as Integer, column as Integer) As Boolean
dim f as FolderItem
f=SpecialFolder.Desktop
f.DrawWideIconMBS(g,listbox1.left,listbox1.top+row*20,16)
Return true
End Function

Notes: Try this in a listbox. The Graphics object there has a cliping and an offset which the plugin doesn't know about.

6.0.217 I'm searching for a method or so to move a window from position x.y to somewhere else on the screen.

Platform: macOS.

Answer:

The code I produced in RB isn't smooth enough. Is there a call in MBS, if not, can it be done? The speed of it has to be like the show of a DrawerWindow.

Try the declare below for Carbon. With WindowLib it will work on Mac OS 8.5 and newer.
Notes:

See Window.Transition functions.

6.0.218 If I use one of your plug-ins under windows, would this then impose the use of dll after compilation or my would my compiled soft still be a stand-alone single file software?

Platforms: macOS, Linux, Windows.

Answer: Stand alone.
Notes: Xojo compiles all used plugins into the application binary.
Some plugin parts need external dlls but you will find that in the documentation. (e.g. pdflib for some classes)

6.0.219   Is the fn key on a powerbook keyboard down?

Plugin Version: all, Platform: macOS.

Answer: I am unable to figure out how or if it is possible to detect if the fn key is down on a powerbook keyboard. Is it possible?
Example:

' Window.Open Event of a blank project:

dim i as Integer

for i=0 to 127
if keyboard.asynckeydown(i) then
title=str(i) // found
return
end if
next
title="" // not found

Notes: This test application shows the keycode (decimal) 63 for the fn key.

6.0.220   Is there a case sensitive Dictionary?

Plugin Version: all.

Answer: The MBS Plugin has several classes which can work as a replacement.
Notes: First you could use VariantToVariantHashMapMBS or VariantToVariantOrderedMapMBS.
If you know that all keys are Strings or Integers only, you can use the specialized classes which are a little bit faster due to avoiding variants:

IntegerToIntegerHashMapMBS class
IntegerToIntegerOrderedMapMBS class
IntegerToStringHashMapMBS class
IntegerToStringOrderedMapMBS class
IntegerToVariantHashMapMBS class
IntegerToVariantOrderedMapMBS class
StringToStringHashMapMBS class
StringToStringOrderedMapMBS class
StringToVariantHashMapMBS class
StringToVariantOrderedMapMBS class

6.0.221 Is there a way to use the MBS plugin to get only the visible item and folder count on a volume?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the DirectorySizeMBS class for this as in the example below:
Example:

```
dim d as DirectorySizeMBS

d=new DirectorySizeMBS

// volume(1) as my boot volume is very full
if d.update(volume(1),true,0) then
MsgBox str(d.VisibleItemCount)+" visible items, "+str(d.HiddenItemCount)+" invisible items."
end if
```

Notes: Complete Question: Is there a way to use the MBS plugin to get only the visible item and folder count on a volume? The FileCount and FolderCount properties of VolumeInformationMBS seem to provide the total # of items including invisible items such as .DS_Store and more importantly .Trashes which is causing me a great amount of difficulty during a recursive scan of a volume. I've got a progress bar which uses the total of the filecount and foldercount properties as the maximum value, but my routine needs to filter out all invisible items, as it is creating a catalog of a volume for archiving purposes. Any thoughts how I could get accurate number.

6.0.222 Is there an easy way I can launch the Displays preferences panel?

Plugin Version: all, Platform: macOS.

Answer: Use the code below:
Example:

```
dim error as Integer

error=OpenMacOSXPreferencesPaneMBS("Displays")
if error<>0 then
MsgBox "Failed to launch QuickTime System Preferences panel."
end if
```

6.0.223   List of Windows Error codes?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have a list of windows error codes on our website.
Notes: http://www.monkeybreadsoftware.de/xojo/winerror.shtml

6.0.224   Midi latency on Windows problem?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The issue is system related, not a problem with RB or the plugin.
Notes: Two things will adversely affect the timing:

(1) latency of the software synthesizer output driver. The default Windows wavetable synthesizer has considerable latency. I don't know how many milliseconds, but it is noticeable.

(2) latency of the digital audio output driver. Different systems have different drivers for different audio hardware. My Dell laptop has a minimum 15ms latency in the audio driver.

These two things put together were causing a very sluggish MIDI response. I was able to verify these as the culprits by routing MIDI directly out of RB into a sample player, which only introduces the latency of (2) and does not include latency of (1).

I don't know how widely known are these facts, if not then you may want to add this information to the documentation, since Windows programmers using the MIDI plugin may not know those problems, and might mistakenly blame your plugin, as I did :) Sorry about that!

(From Aaron Andrew Hunt)

6.0.225   My Xojo Web App does not launch. Why?

Plugin Version: all, Platform: macOS.

Answer: Here is a list of checks to do for linux apache installations with Xojo or Xojo Web applications:
Notes: Just a list of checks to do for linux apache installations:

- You have 64bit linux? Than you need 32 bit compatibility libraries.
- The folder of your app is writable? Set permissions to 777.
- The cgi script is executable? Set permissions to 755.

- The app file itself is executable? Set permissions to 755.

- You uploaded cgi file as text, so it has unix line endings? (this often gives error "Premature end of script headers" in apache log)

- You uploaded config.cfg file and made it writable? Set permissions to 666.

- Your apache allows execution of cgi scripts? You enabled cgi for apache and uncommented addhandler command for CGI on a new apache installation?

- You uploaded the app file and libraries as binary files? Upload as text breaks them.

- You did upload the libs folder?

- You don't have code in app.open, session.open and other events which crashes app right at launch?

- You don"t have a print command in your app.open event? (see feedback case 23817)

- You allowed htaccess file to overwrite permissions?

6.0.226   SQLDatabase not initialized error?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Before you can use SQLDatabaseMBS, it must be initialized.
Example:

dim d as new SQLDatabaseMBS

Notes: This happens normally when you use "new SQLDatabaseMBS".
But if you just have a SQLConnectionMBS and get a recordset there, the initialization may not have happend, yet.
So please simply add a line "dim d as new SQLDatabaseMBS" to your app.open code after registration, so the plugin part can initialize and late provide recordsets.

6.0.227   Textconverter returns only the first x characters. Why?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

Some older Xojo versions limit the Textconverter to around 1024 characters in input and output.
This should be fixed with RB5.
Notes:

Xojo seems not to support Textconverters at all on Windows.

6.0.228   The type translation between CoreFoundation/Foundation and Xojo data types.

Plugin Version: all, Platform: macOS.

Answer: The plugin does conversion between Cocoa/Carbon data types and native Xojo data types. The following list help you knowing what the current plugins support:
Notes: Cocoa NSObject to Variant:

nil ->nil
NSDictionary ->Dictionary
NSData ->MemoryBlock
NSString ->String
NSAttributedString ->NSAttributedStringMBS
NSDate ->Date
NSNumber ->double/integer/Int64/UInt64/UInt32/Boolean
NSURL ->String
NSValue with NSRect ->NSRectMBS
NSValue with NSPoint ->NSPointMBS
NSValue with NSSize ->NSSizeMBS
NSValue with NSRange ->NSRangeMBS
NSValue with QTTime ->QTTimeMBS
NSValue with QTTimeRange ->QTTimeRangeMBS
NSArray ->Array of Variant
QuartzFilter ->QuartzFilterMBS

- ->*MBS

Variant to Cocoa NSObject:

nil ->nil
Dictionary ->NSDictionary
Boolean ->NSNumber
Integer ->NSNumber
Color ->NSColor
Int64 ->NSNumber
Single ->NSNumber
Double ->NSNumber
Date ->NSDate
MemoryBlock ->NSData
String ->NSString
NSImageMBS ->NSImage
NSAttributedStringMBS ->NSAttributedString
NSColorMBS ->NSColor
NSRectMBS ->NSValue with NSRect
NSSizeMBS ->NSValue with NSSize

NSPointMBS ->NSValue with NSPoint
NSRangeMBS ->NSValue with NSRange
NSBurnMBS ->NSBurn
NSViewMBS ->NSView
NSFontMBS ->NSFont
NSParagraphStyleMBS ->NSParagraphStyle
NSAttributedStringMBS ->NSAttributedString
WebPolicyDelegateMBS ->WebPolicyDelegate
WebUIDelegateMBS ->WebUIDelegate
WebFrameLoadDelegateMBS ->WebFrameLoadDelegate
WebResourceLoadDelegateMBS ->WebResourceLoadDelegate
NSIndexSetMBS ->NSIndexSet
QTTimeMBS ->QTTime
QTTimeRangeMBS ->QTTimeRange
Array of Variant ->NSArray
Array of String ->NSArray
CFStringMBS ->NSString
CFNumberMBS ->NSNumber
CFDataMBS ->NSData
CFURLMBS ->NSURL
CFArrayMBS ->NSArray
CFDictionaryMBS ->NSDictionary
CFBinaryDataMBS ->NSDate

Carbon CFTypeRef to Variant:

CFDictionaryRef ->Dictionary
CFStringRef ->String
CFDataRef ->String
CFURL ->String
CFNumber ->Integer/Double/Int64
CFArray ->Array
CFDate ->date
nil ->nil
CGColorSpace ->CGColorSpaceMBS
CGColor ->CGColorMBS
CGImage ->CGImageMBS
CF* ->CF*MBS

Variant to Carbon CFTypeRef:

Dictionary ->CFDictionaryRef
Boolean ->CFBooleanRef
Color ->CFNumberRef
Integer ->CFNumberRef

Int64 ->CFNumberRef
Single ->CFNumberRef
Double ->CFNumberRef
String ->CFStringRef
Color ->CGColorRef
Date ->CFDateRef
nil ->nil
Memoryblock ->CFDataRef
FolderItem ->CFURLRef
Dictionary ->CFDictionaryRef
Array of Variant/String/Date/Double/Single/Int64/Integer ->CFArray
CGRectMBS ->CGRect as CFDataRef
CGSizeMBS ->CGSize as CFDataRef
CGPointMBS ->CGPoint as CFDataRef
CGColorMBS ->CGColor
CGColorSpaceMBS ->CGColorSpace
CGImageMBS ->CGImage
CGDataConsumerMBS ->CGDataConsumer
CGDataProviderMBS ->CGDataProvider
CF*MBS ->CF*

Strings without encodings should be put into dictionaries as memoryblocks.

6.0.229   Uploaded my web app with FTP, but it does not run on the server!

Plugin Version: all, Platform: Windows.

Answer: If you see errors like a simple "Segmentation Fault" on Linux or some other wired errors, you may want to check your FTP upload mode. It must be binary for web apps. ASCII mode corrupts the application.

6.0.230   What classes to use for hotkeys?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use CarbonHotKeyMBS class on Mac and WindowsKeyFilterMBS on Windows.
Notes: CarbonHotKeyMBS will also work fine in Cocoa apps.

6.0.231   What do I need for Linux to get picture functions working?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In order to get our plugins working on Linux systems without GUI, the plugin loads graphics

libraries dynamically.

Notes: To get it working, the plugin tries to load gtk with this paths:

- libgtk-x11-2.0.so"

- libgtk-x11-2.0.so.0"

- /usr/lib/libgtk-x11-2.0.so"

- /usr/lib32/libgtk-x11-2.0.so"

- /usr/lib/libgtk-x11-2.0.so.0"

- /usr/lib32/libgtk-x11-2.0.so.0"

gdk is loaded with this paths:

- libgdk-x11-2.0.so"

- libgdk-x11-2.0.so.0"

- /usr/lib/libgdk-x11-2.0.so"

- /usr/lib32/libgdk-x11-2.0.so"

- /usr/lib/libgdk-x11-2.0.so.0"

- /usr/lib32/libgdk-x11-2.0.so.0"

For the paths without explicit path, the system will search in /lib, /usr/lib and all directories in the LD_LI-BRARY_PATH environment variable.

6.0.232 What does the NAN code mean?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

6.0.233 What font is used as a 'small font' in typical Mac OS X apps?

Plugin Version: all, Platform: macOS.

Answer:

Xojo 4.5 has a constant "SmallSystem" to use for a font name.
For older versions try this code:
Example:

```
Sub GetThemeFont(fontType as Integer, ByRef fontName as String, ByRef fontSize as Integer, ByRef
fontStyle as Integer)
dim err as Integer
dim theFont, theFontSize, theFontStyle as MemoryBlock

const smSystemScript = -1

Declare Function GetThemeFont Lib "Carbon" (inFontID as Integer, inScript as Integer, outFontName
as Ptr, outFontSize as Ptr, outStyle as Ptr) as Integer

theFont = NewMemoryBlock(256) //Str255
theFontSize = NewMemoryBlock(2) //SInt16
theFontStyle = NewMemoryBlock(1) //Style

err = GetThemeFont(fontType, smSystemScript, theFont, theFontSize, theFontStyle)

if err = 0 then
fontName = theFont.PString(0)
fontSize = theFontSize.UShort(0)
fontStyle = theFontStyle.Byte(0)
else
fontName = ""
fontSize = 0
fontStyle = 0
end if
End Sub
```

6.0.234   What is last plugin version to run on Mac OS X 10.4?

Plugin Version: all, Platform: Windows.

Answer: Last Version with 10.4 support is version 15.4.
Notes: With version 15.4 you can build applications for OS X 10.4 and newer.
For Version 16.0 we disabled 10.4 and moved minimum to 10.5. We may be able to enable it again to build
a version of 16.x, but may need to charge for this by hour.

6.0.235   What is last plugin version to run on PPC?

Plugin Version: all, Platform: Windows.

Answer: Last Version with PPC is 15.4.
Notes: With version 15.4 you can build PPC applications for OS X 10.4 and newer.
For Version 16.0 we disabled PPC. We may be able to enable it again to build a PPC version of 16.x, but
may need to charge for this by hour.

6.0.236 What is last version of the plugins for macOS 32-bit?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use version 23.0 or older.
Notes: We stopped including 32-bit code for macOS in version 23.1.
Please us older versions if you use an old Xojo.

Xojo 2017r3 and newer load our 64-bit plugins.

6.0.237 What is the difference between Timer and WebTimer?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Time is server side and WebTimer client side.
Notes: Timer is the normal timer class in Xojo. It runs on the server. On the side the WebTimer runs on the client. It triggers a request to the server to perform the action. So a WebTimer is good to keep the connection running and the website updated regularly. A timer on the server is good to make regular jobs like starting a database backup every 24 hours.

6.0.238 What is the list of Excel functions?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Below a list of function names known by LibXL.
Notes: LibXL parses the functions and writes tokens to the excel file. So even if Excel can do more functions, we can only accept the ones known by LibXL.

ABS, ABSREF, ACOS, ACOSH, ACTIVE.CELL, ADD.BAR, ADD.COMMAND, ADD.MENU, ADD.TOOL-BAR, ADDRESS, AND, APP.TITLE, AREAS, ARGUMENT, ASC, ASIN, ASINH, ATAN, ATAN2, ATANH, AVEDEV, AVERAGE, AVERAGEA, BAHTTEXT, BETADIST, BETAINV, BINOMDIST, BREAK, CALL, CALLER, CANCEL.KEY, CEILING, CELL, CHAR, CHECK.COMMAND, CHIDIST, CHIINV, CHITEST, CHOOSE, CLEAN, CODE, COLUMN, COLUMNS, COMBIN, CONCATENATE, CONFIDENCE, COR-REL, COS, COSH, COUNT, COUNTA, COUNTBLANK, COUNTIF, COVAR, CREATE.OBJECT, CRIT-BINOM, CUSTOM.REPEAT, CUSTOM.UNDO, DATE, DATEDIF, DATESTRING, DATEVALUE, DAV-ERAGE, DAY, DAYS360, DB, DBCS, DCOUNT, DCOUNTA, DDB, DEGREES, DELETE.BAR, DELETE.COM-MAND, DELETE.MENU, DELETE.TOOLBAR, DEREF, DEVSQ, DGET, DIALOG.BOX, DIRECTORY, DMAX, DMIN, DOCUMENTS, DOLLAR, DPRODUCT, DSTDEV, DSTDEVP, DSUM, DVAR, DVARP, ECHO, ELSE, ELSE.IF, ENABLE.COMMAND, ENABLE.TOOL, END.IF, ERROR, ERROR.TYPE, EVAL-UATE, EVEN, EXACT, EXEC, EXECUTE, EXP, EXPONDIST, FACT, FALSE, FCLOSE, FDIST, FILES, FIND, FINDB, FINV, FISHER, FISHERINV, FIXED, FLOOR, FOPEN, FOR, FOR.CELL, FORECAST,

FORMULA.CONVERT, FPOS, FREAD, FREADLN, FREQUENCY, FSIZE, FTEST, FV, FWRITE, FWRITELN, GAMMADIST, GAMMAINV, GAMMALN, GEOMEAN, GET.BAR, GET.CELL, GET.CHART.ITEM, GET.DEF, GET.DOCUMENT, GET.FORMULA, GET.LINK.INFO, GET.MOVIE, GET.NAME, GET.NOTE, GET.OBJECT, GET.PIVOT.FIELD, GET.PIVOT.ITEM, GET.PIVOT.TABLE, GET.TOOL, GET.TOOL-BAR, GET.WINDOW, GET.WORKBOOK, GET.WORKSPACE, GETPIVOTDATA, GOTO, GROUP, GROWTH, HALT, HARMEAN, HELP, HLOOKUP, HOUR, HYPERLINK, HYPGEOMDIST, IF, IN-DEX, INDIRECT, INFO, INITIATE, INPUT, INT, INTERCEPT, IPMT, IRR, ISBLANK, ISERR, ISER-ROR, ISLOGICAL, ISNA, ISNONTEXT, ISNUMBER, ISPMT, ISREF, ISTEXT, ISTHAIDIGIT, KURT, LARGE, LAST.ERROR, LEFT, LEFTB, LEN, LENB, LINEST, LINKS, LN, LOG, LOG10, LOGEST, LOGINV, LOGNORMDIST, LOOKUP, LOWER, MATCH, MAX, MAXA, MDETERM, MEDIAN, MID, MIDB, MIN, MINA, MINUTE, MINVERSE, MIRR, MMULT, MOD, MODE, MONTH, MOVIE.COM-MAND, N, NA, NAMES, NEGBINOMDIST, NEXT, NORMDIST, NORMINV, NORMSDIST, NORM-SINV, NOT, NOTE, NOW, NPER, NPV, NUMBERSTRING, ODD, OFFSET, OPEN.DIALOG, OP-TIONS.LISTS.GET, OR, PAUSE, PEARSON, PERCENTILE, PERCENTRANK, PERMUT, PHONETIC, PI, PIVOT.ADD.DATA, PMT, POISSON, POKE, POWER, PPMT, PRESS.TOOL, PROB, PRODUCT, PROPER, PV, QUARTILE, RADIANS, RAND, RANK, RATE, REFTEXT, REGISTER, REGISTER.ID, RELREF, RENAME.COMMAND, REPLACE, REPLACEB, REPT, REQUEST, RESET.TOOLBAR, RESTART, RESULT, RESUME, RETURN, RIGHT, RIGHTB, ROMAN, ROUND, ROUNDBAHTDOWN, ROUND-BAHTUP, ROUNDDOWN, ROUNDUP, ROW, ROWS, RSQ, RTD, SAVE.DIALOG, SAVE.TOOLBAR, SCENARIO.GET, SEARCH, SEARCHB, SECOND, SELECTION, SERIES, SET.NAME, SET.VALUE, SHOW.BAR, SIGN, SIN, SINH, SKEW, SLN, SLOPE, SMALL, SPELLING.CHECK, SQRT, STANDARD-IZE, STDEV, STDEVA, STDEVP, STDEVPA, STEP, STEYX, SUBSTITUTE, SUBTOTAL, SUM, SUMIF, SUMPRODUCT, SUMSQ, SUMX2MY2, SUMX2PY2, SUMXMY2, SYD, T, TAN, TANH, TDIST, TER-MINATE, TEXT, TEXT.BOX, TEXTREF, THAIDAYOFWEEK, THAIDIGIT, THAIMONTHOFYEAR, THAINUMSOUND, THAINUMSTRING, THAISTRINGLENGTH, THAIYEAR, TIME, TIMEVALUE, TINV, TODAY, TRANSPOSE, TREND, TRIM, TRIMMEAN, TRUE, TRUNC, TTEST, TYPE, UNREG-ISTER, UPPER, USDOLLAR, USERDEFINED, VALUE, VAR, VARA, VARP, VARPA, VDB, VIEW.GET, VLOOKUP, VOLATILE, WEEKDAY, WEIBULL, WHILE, WINDOW.TITLE, WINDOWS, YEAR and ZTEST.

6.0.239   What is the replacement for PluginMBS?

Plugin Version: all, Platform: macOS.

Answer: Use the SoftDeclareMBS class to load libraries dynamically.

6.0.240   What to do on Xojo reporting a conflict?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

I get an error like "This item conflicts with another item of the same name" when using one of the plugin functions.

Xojo just wants to tell you that you dropped something in the plugins folder what is not a plugin.
Notes:

Some users dropped the examples, the documentation or other files into the plugins folder. Don't do it.

6.0.241 What to do with a NSImageCacheException?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You need to add exception handlers for NSExceptionMBS in order to catch this exception.
Notes: You may also add code to write the stack of the exception into a log file for later locating the error source.

A NSImage has several image representations in memory. So basicly you pass in the base image and for whatever size an image is needed, the NSImage class will create a cache image representation of the requested size so on the next query it can use that cache for the same requested size.

6.0.242 What to do with MySQL Error 2014?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can get this error on MySQL if you have a recordset open while you create another one.

6.0.243 What to do with SQL Plugin reporting Malformed string as error?

Plugin Version: all, Platform: macOS.

Answer: Please make sure the table and/or database fields have a text encoding set.
Notes: For Firebird our plugin tries to use UTF-8 encoding if possible and to correctly convert between various tables, the tables and their fields need to have a text encoding defined.
e.g. if the text field in the table is windows-1252 and the other ISO 8859-5, then the Firebird database can convert them to UTF-8 and deliver texts to the plugin.
If encoding is set to none, it may get confused for non-ascii text.

6.0.244 Where is CGGetActiveDisplayListMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetActiveDisplayList.

6.0.245   Where is CGGetDisplaysWithPointMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetDisplaysWithPoint.

6.0.246   Where is CGGetDisplaysWithRectMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetDisplaysWithRect.

6.0.247   Where is CGGetOnlineDisplayListMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetOnlineDisplayList.

6.0.248   Where is GetObjectClassNameMBS?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use this replacement method:
Example:

```
Function GetObjectClassNameMBS(o as Object) As string
dim t as Introspection.TypeInfo = Introspection.GetType(o)
Return t.FullName
End Function
```

Notes: GetObjectClassNameMBS was removed from the plugins.

6.0.249   Where is NetworkAvailableMBS?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We removed NetworkAvailableMBS some versions ago. It was not working right and basicly it's not useful. If you want to check whether you have a network, than do a DNS resolve:
Example:

```
// two independend domain names
const domain1 = "www.google.com"
const domain2 = "www.macsw.de"

// resolve IPs
dim ip1 as string = DNSNameToAddressMBS(Domain1)
dim ip2 as string = DNSNameToAddressMBS(Domain2)

// if we got IPs and not the same IPs (error/login pages)
if len(ip1)=0 or len(ip2)=0 or ip1=ip2 then
MsgBox "no connection"
else
MsgBox "have connection"
end if
```

Notes: This way you can detect whether you got something from DNS. And you can make sure that a DNS redirection to a login page won't catch you.

6.0.250 Where is StringHeight function in DynaPDF?

Plugin Version: all, Platform: Windows.

Answer: Use the function GetFTextHeight or GetFTextHeightEx.
Notes: Be aware that GetFTextHeight works with format commands and you may want to escape your text if you don't use them.

6.0.251 Where is XLSDocumentMBS class?

Plugin Version: all, Platform: macOS.

Answer: This class has been removed in favor of XLBookMBS class.
Notes: This classes have been removed XLSCellMBS, XLSDocumentMBS, XLSFormatRecordMBS, XLSMerged-CellsMBS, XLSRowMBS and XLSSheetMBS.

6.0.252 Where to get information about file formats?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

Please visit this web page:
http://www.wotsit.org

6.0.253   Where to register creator code for my application?

Plugin Version: all, Platform: macOS.

Answer:

Register at Apple:
http://developer.apple.com/dev/cftype/information.html

6.0.254   Which Mac OS X frameworks are 64bit only?

Plugin Version: all, Platform: macOS.

Answer: Some frameworks from Mac OS X do not support 32 bit applications, so we can't provide plugins
for Xojo until 64bit target is available.
Notes: For Mac OS X 10.8:

- Accounts

- EventKit

- GLKit

- Social

and in 10.9:

- Accounts

- AVKit

- EventKit

- GameController

- GLKit

- MapKit

- MediaLibrary

- Social

- SpriteKit

In general Apple makes all new frameworks being 64 bit only.

6.0.255   Which plugins are 64bit only?

Plugin Version: all, Platform: macOS.

Answer: Some of our plugins work only in 64 bit modes as operation systems do not provide 32 bit code.
Notes: This effects currently: EventKit, Accounts, Social frameworks from Apple and our matching plugins.

6.0.256   Why application doesn't launch because of a missing ddraw.dll!?

Plugin Version: all, Platform: Windows.

Answer: Some RB versions require that you install DirectX from Microsoft on your Windows.

6.0.257   Why application doesn't launch because of a missing shlwapi.dll!?

Plugin Version: all, Platform: Windows.

Answer: Some RB versions require that you install the Internet Explorer from Microsoft on your Windows.
Notes: This bug is for several older Windows 95 editions.

6.0.258   Why do I hear a beep on keydown?

Plugin Version: all, Platform: Windows.

Answer: When the user presses a key, RB goes through all keydown event handlers till on returns true.
Notes: If no keydown event handler returns true for the key, a beep is performed.

6.0.259   Why does folderitem.item return nil?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Because Xojo fails to make a folderitem for you. Reason may be an alias file which can't be resolved or simply that you don't have enough access rights to read the folder content.
Notes: A more rarely reason is that the directory changed and the file with the given index or name does no longer exist.

6.0.260   Why doesn't showurl work?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

There are three main reasons:

1. showurl is not supported by Xojo in 68k applications.
2. there is now application defined for the protocol (e.g. http) in the Internet Control panel.
3. You don't have Internet Config installed.

You can use the InternetConfigMBS class to check for this stuff.

6.0.261   Why don't the picture functions not work on Linux?

Plugin Version: all, Platform: macOS.

Answer: Please make sure libcairo is installed.
Notes: For accessing pictures on Linux, the MBS Plugin relays on the cairo library.
Please install the package if you don't have it already.
Our plugin looks for library called libcairo.so or libcairo.so.2.

6.0.262   Why have I no values in my chart?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You have no data points visible, there may be several reasons:
Notes: For example one of the data values may be infinite or invalid.
Or the scaling may be out of range, so you simply see nothing.

6.0.263   Will application size increase with using plugins?

Plugin Version: all, Platform: Windows.

Answer: All plugins used by your application will be included in the application.
Notes: If you use no plugins, your application will not change size.
And if you use one class from the plugins, your application size will increase by a few kilobytes.
The documentation of the plugins include a list of all plugin parts and their sizes for the different platforms.

6.0.264   XLS: Custom format string guidelines

Plugin Version: all, Platform: macOS.

Answer: You have to download the source code and compile a static version of the library.

Notes: Up to four sections of format codes can be specified. The format codes, separated by semicolons, define the formats for positive numbers, negative numbers, zero values, and text, in that order. If only two sections are specified, the first is used for positive numbers and zeros, and the second is used for negative numbers. If only one section is specified, it is used for all numbers. Four sections example:

#,###.00_); [Red] (#,###.00);0.00;"sales "@

The following table describes the different symbols that are available for use in custom number formats.

Specify colors

To set the text color for a section of the format, type the name of one of the following eight colors in square brackets in the section. The color code must be the first item in the section.

Instead of using the name of the color, the color index can be used, like this [Color3] for Red. Valid numeric indexes for color range from 1 to 56, which reference by index to the legacy color palette.
Specify conditions

To set number formats that will be applied only if a number meets a specified condition, enclose the condition in square brackets. The condition consists of a comparison operator and a value. Comparison operators include: = Equal to; >Greater than; <Less than; >= Greater than or equal to, <= Less than or equal to, and <>Not equal to. For example, the following format displays numbers that are less than or equal to 100 in a red font and numbers that are greater than 100 in a blue font.
[Red] [<=100] ; [Blue] [>100]
If the cell value does not meet any of the criteria, then pound signs ("#") are displayed across the width of the cell.
Dates and times

Examples

6.0.265   Xojo doesn't work with your plugins on Windows 98.

Plugin Version: all, Platform: Windows.

Answer: Please upgrade your Windows version.

6.0.266   Xojo or my RB application itself crashes on launch on Mac OS Classic. Why?

Plugin Version: all.

Answer:

You may check if the application has enough memory to be loaded.
RB should have on Mac OS Classic more than 20 MB of RAM.
I prefered to use 50 MB and for an application a 10 MB partition is a good way to start.

Parameter	Description
x	The x value of the data point. For an enumerated x-axis (see Axis.setLabels on what is an enumerated axis), the first data point is 0, and the nth data point is (n-1).
xLabel	The bottom x-axis label of the data point.
x2Label	The top x-axis label of the data point.
value	The value of the data point.
accValue	The sum of values of all data points that are in the same x position and same data group as the current data point, and with data set number less than or equal to the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
totalValue	The sum of values of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
percent	The percentage of the data point based on the total value of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
accPercent	The accumulated percentage of the data point based on the total value of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
gpercent	The percentage of the data point based on the total value of all data points in a layer.
dataSet	The data set number to which the data point belongs. The first data set is 0. The nth data set is (n-1).
dataSetName	The name of the data set to which the data point belongs.
dataItem	The data point number within the data set. The first data point is 0. The nth data point is (n-1).
dataGroup	The data group number to which the data point belongs. The first data group is 0. The nth data group is (n-1).
dataGroupName	The name of the data group to which the data point belongs.
layerId	The layer number to which the data point belongs. The first layer is 0. The nth layer is (n-1).
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using Layer.addExtraField, Layer.addExtraField2, BaseChart.addExtraField or BaseChart.addExtraField2.

diFieldN	Same as fieldN. See above.
dsFieldN	Similar to fieldN, except that dsFieldN means the extra field is indexed by data set number. The Pth data set corresponds to the Pth element of the extra field.
dsdiFieldN	Similar to fieldN, except that dsdiFieldN means the extra fields are indexed by both the data set number and data point number. The Pth data item of the Qth data set corresponds to the Pth element of the (N + Q)th extra field.

Parameter	Description
zx	The symbol scale in the x dimension. Applicable for layers with symbol scales set by LineLayer.setSymbolScale.
zy	The symbol scale in the y dimension. Applicable for layers with symbol scales set by LineLayer.setSymbolScale.
z	The symbol scale without distinguishing the dimension to use. Applicable for layers with symbol scales set by LineLayer.setSymbolScale.

Parameter	Description
slope	The slope of the trend line.
intercept	The y-intercept of the trend line.
corr	The correlation coefficient in linear regression analysis.
stderr	The standard error in linear regression analysis.

Parameter	Description
top	The value of the top edge of the box-whisker symbol.
bottom	The value of the bottom edge of the box-whisker symbol.
max	The value of the maximum mark of the box-whisker symbol.
min	The value of the minimum mark of the box-whisker symbol.
med	The value of the median mark of the box-whisker symbol.

Parameter	Description
high	The high value.
low	The low value.
open	The open value.
close	The close value.

Parameter	Description
dir	The direction of the vector.
len	The length of the vector.

Parameter	Description
radius	The radial value of the data point.
value	Same as { radius } . See above.
angle	The angular value of the data point.
x	Same as { angle } . See above.
label	The angular label of the data point.
xLabel	Same as { label } . See above.
name	The name of the layer to which the data point belongs.
dataSetName	Same as { name } . See above.
i	The data point number. The first data point is 0. The nth data point is (n-1).
dataItem	Same as { i } . See above.
z	The symbol scale. Applicable for layers with symbol scales set by PolarLayer.setSymbolScale.
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using Layer.addExtraField, Layer.addExtraField2, BaseChart.addExtraField or BaseChart.addExtraField2.

diFieldN	Same as fieldN. See above.
dsFieldN	Similar to fieldN, except that dsFieldN means the extra field is indexed by layer index. The Pth layer corresponds to the Pth element of the extra field.
dsdiFieldN	Similar to fieldN, except that dsdiFieldN means the extra fields are indexed by both the data set number and data point number. The Pth data item of the Qth layer corresponds to the Pth element of the (N + Q)th extra field.

Parameter	Description
dir	The direction of the vector.
len	The length of the vector.

Parameter	Description
value	The axis value at the tick position.
label	The axis label at the tick position.

Parameter	Description
[param]	The name of the parameter
[a]	If this field a number, it specifies the number of decimal places (digits to the right of the decimal point).

[b]

textasciitilde ' for no thousand separator. The default is '
textasciitilde ', which can be modified using BaseChart.setNumberFormat.

[c]

[d]
textasciitilde ' for no negative sign character. The default is '-', which can be modified using BaseChart.setNumberFormat.

The thousand separator. Should be a non-alphanumeric character (not 0-9,
A-Z, a-z). Use '

The decimal point character. The default is '.', which can be modified using
BaseChart.setNumberFormat.
The negative sign character. Use '

Parameter	Description
yyyy	The year in 4 digits (e.g. 2002)
yyy	The year showing only the least significant 3 digits (e.g. 002 for the year 2002)
yy	The year showing only the least significant 2 digits (e.g. 02 for the year 2002)
y	The year showing only the least significant 1 digits (e.g. 2 for the year 2002)
mmm	The month formatted as its name. The default is to use the first 3 characters of the english month name (Jan, Feb, Mar ...). The names can be configured using BaseChart.setMonthNames.
mm	The month formatted as 2 digits from 01 - 12, adding leading zero if necessary.
m	The month formatted using the minimum number of digits from 1 - 12.
MMM	The first 3 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
MM	The first 2 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
M	The first character of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
dd	The day of month formatted as 2 digits from 01 - 31, adding leading zero if necessary.
d	The day of month formatted using the minimum number of digits from 1 - 31.
w	The name of the day of week. The default is to use the first 3 characters of the english day of week name (Sun, Mon, Tue ...). The names can be configured using BaseChart.setWeekDayNames.
hh	The hour of day formatted as 2 digits, adding leading zero if necessary. The 2 digits will be 00 - 23 if the 'a' option (see below) is not specified, otherwise it will be 01 - 12.
h	The hour of day formatted using the minimum number of digits. The digits will be 0 - 23 if the 'a' option (see below) is not specified, otherwise it will be 01 - 12.
nn	The minute formatted as 2 digits from 00 - 59, adding leading zero if necessary.
n	The minute formatted using the minimum number of digits from 00 - 59.
ss	The second formatted as 2 digits from 00 - 59, adding leading zero if necessary.
s	The second formatted using the minimum number of digits from 00 - 59.
a	Display either 'am' or 'pm', depending on whether the time is in the morning or afternoon. The text 'am' and 'pm' can be modified using BaseChart.setAMPM.

Shape Id	Value	Description
SquareShape	1	Square shape. See (1, 1) above.
DiamondShape	2	Diamond shape. See (2, 1) above.
TriangleShape	3	Triangle shape pointing upwards. See (3, 1) above.
RightTriangleShape	4	Triangle shape pointing rightwards. See (4, 1) above.
LeftTriangleShape	5	Triangle shape pointing leftwards. See (5, 1) above.
InvertedTriangleShape	6	Triangle shape pointing downwards. See (1, 2) above.
CircleShape	7	Circle shape. See (2, 2) above.
StarShape	[Method]	Star shapes of various points. See (2, 3), (2, 4), (2, 5), (3, 1), (3, 2), (3, 3), (3, 4), (3, 5) above for stars with 3 to 10 points.
PolygonShape	[Method]	Polygon shapes symmetrical about a vertical axis with a vertex at the top center position. See (4, 1), (4, 3), (4, 5), (5, 1) for polygons of 5 to 8 sides.
Polygon2Shape	[Method]	Polygon shapes symmetrical about a vertical axis but without any vertex at the top center position. See (4, 2), (4, 4) for polygons of 5 and 6 sides.
CrossShape	[Method]	'+' shapes. See (5, 2), (5, 3), (5, 4), (5, 5), (6, 1), (6, 2), (6. 3) for '+' shape with arm width of 0.1 - 0.7.
Cross2Shape	[Method]	'X' shapes. See (6, 4), (6, 5), (7, 1), (7, 2), (7, 3), (7, 4), (7, 5) for 'X' shapes with arm width of 0.1 - 0.7.

langEnglish	0	Roman script
langFrench	1	Roman script
langGerman	2	Roman script
langItalian	3	Roman script
langDutch	4	Roman script
langSwedish	5	Roman script
langSpanish	6	Roman script
langDanish	7	Roman script
langPortuguese	8	Roman script
langNorwegian	9	Roman script
langHebrew	10	Hebrew script
langJapanese	11	Japanese script
langArabic	12	Arabic script
langFinnish	13	Roman script
langGreek	14	Greek script using smRoman script code
langIcelandic	15	modified smRoman/Icelandic script
langMaltese	16	Roman script
langTurkish	17	modified smRoman/Turkish script
langCroatian	18	modified smRoman/Croatian script
langTradChinese	19	Chinese (Mandarin) in traditional characters
langUrdu	20	Arabic script
langHindi	21	Devanagari script
langThai	22	Thai script
langKorean	23	Korean script

Nan	Meaning
1	Invalid square root (negative number, usually)
2	Invalid addition (indeterminate such as infinity + (-infinity))
4	Invalid division (indeterminate such as 0/0)
8	Invalid multiplication (indeterminate such as 0*infinity)
9	Invalid modulo such as (a mod 0)
17	Try to convert invalid string to a number like val("x7")
33	Invalid argument in a trig function
34	Invalid argument in an inverse trig function
36	Invalid argument in a log function
37	Invalid argument in Pow function
38	Invalid argument in toolbox financial function
40	Invalid argument in hyperbolic function
42	Invalid argument in a gamma function

Symbol	Description and result
0	Digit placeholder. For example, if the value 8.9 is to be displayed as 8.90, use the format #.00
#	Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall not display extra zeros when the number typed has fewer digits on either side of the decimal than there are # symbols in the format. For example, if the custom format is #.##, and 8.9 is in the cell, the number 8.9 is displayed.
?	Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall put a space for insignificant zeros on either side of the decimal point so that decimal points are aligned in the column. For example, the custom format 0.0? aligns the decimal points for the numbers 8.9 and 88.99 in a column.
. (period)	Decimal point.
%	Percentage. If the cell contains a number between 0 and 1, and the custom format 0% is used, the application shall multiply the number by 100 and adds the percentage symbol in the cell.
, (comma)	Thousands separator. The application shall separate thousands by commas if the format contains a comma that is enclosed by number signs (#) or by zeros. A comma that follows a placeholder scales the number by one thousand. For example, if the format is #.0,, and the cell value is 12,200,000 then the number 12.2 is displayed.
E- E+ e- e+	Scientific format. The application shall display a number to the right of the "E" symbol that corresponds to the number of places that the decimal point was moved. For example, if the format is 0.00E+00, and the value 12,200,000 is in the cell, the number 1.22E+07 is displayed. If the number format is #0.0E+0, then the number 12.2E+6 is displayed.
$ -+/():space	Displays the symbol. If it is desired to display a character that differs from one of these symbols, precede the character with a backslash (\). Alternatively, enclose the character in quotation marks. For example, if the number format is (000), and the value 12 is in the cell, the number (012) is displayed.
\	Display the next character in the format. The application shall not display the backslash. For example, if the number format is 0\!, and the value 3 is in the cell, the value 3! is displayed.
*	Repeat the next character in the format enough times to fill the column to its current width. There shall not be more than one asterisk in one section of the format. If more than one asterisk appears in one section of the format, all but the last asterisk shall be ignored. For example, if the number format is 0*x, and the value 3 is in the cell, the value 3xxxxxx is displayed. The number of x characters that are displayed in the cell varies based on the width of the column.
_ (underline)	Skip the width of the next character. This is useful for lining up negative and positive values in different cells of the same column. For example, the number format _(0.0_);(0.0) aligns the numbers 2.3 and -4.5 in the column even though the negative number is enclosed by parentheses.
"text"	Display whatever text is inside the quotation marks. For example, the format 0.00 "dollars" displays 1.23 dollars when the value 1.23 is in the cell.
@	Text placeholder. If text is typed in the cell, the text from the cell is placed in the format where the at symbol (@) appears. For example, if the number format is "Bob "@" Smith" (including quotation marks), and the value "John" is in the cell, the value Bob John Smith is displayed.

[Black]   [Green]   [White]   [Blue]   [Magenta]   [Yellow]   [Cyan]   [Red]

To display	As	Use this code
Months	1-12	m
Months	01-12	mm
Months	Jan-Dec	mmm
Months	January-December	mmmm
Months	J-D	mmmmm
Days	1-31	d
Days	01-31	dd
Days	Sun-Sat	ddd
Days	Sunday-Saturday	dddd
Years	00-99	yy
Years	1900-9999	yyyy
Hours	0-23	h
Hours	00-23	hh
Minutes	0-59	m
Minutes	00-59	mm
Seconds	0-59	s
Seconds	00-59	ss
Time	4 AM	h AM/PM
Time	4:36 PM	h:mm AM/PM
Time	4:36:03 P	h:mm:ss A/P
Time	4:36:03.75	h:mm:ss.00
Elapsed time	1:02	[h] :mm
Elapsed time	62:16	[mm] :ss
Elapsed time	3735.80	[ss] .00

To display	As	Use this code
1234.59	1234.6	####.#
8.9	8.900	#.000
.631	0.6	0.#
12	12.0	#.0#
1234.568	1234.57	#.0#
44.398	44.398	???.???
102.65	102.65	???.???
2.8	2.8	???.???
5.25	5 1/4	# ??/??
5.3	5 3/10	# ??/??
12000	12,000	#,###
12000	12	#,
12400000	12.4	0.0,,