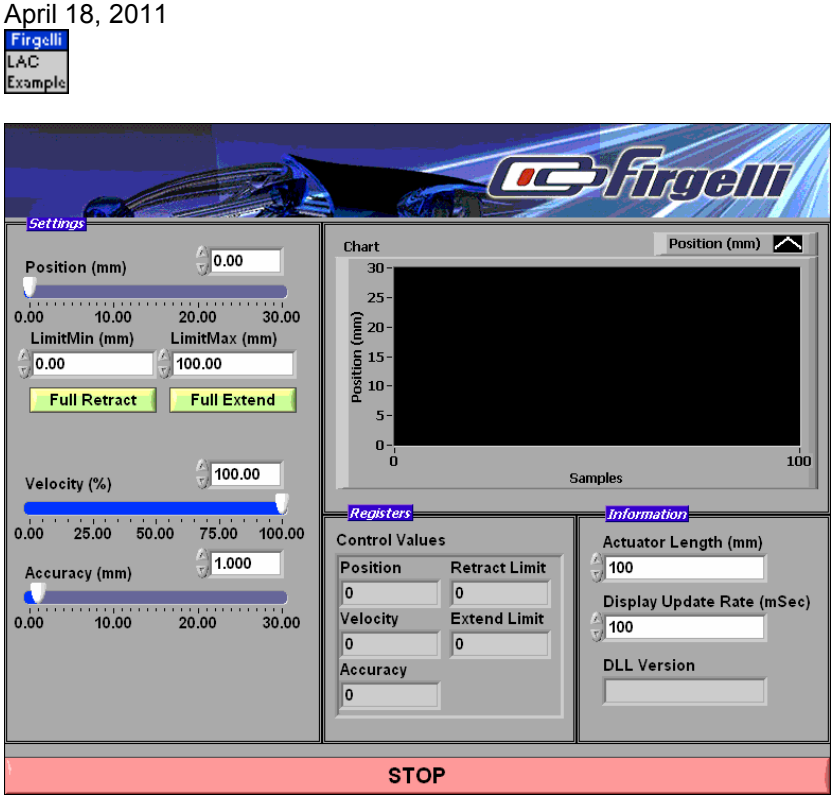
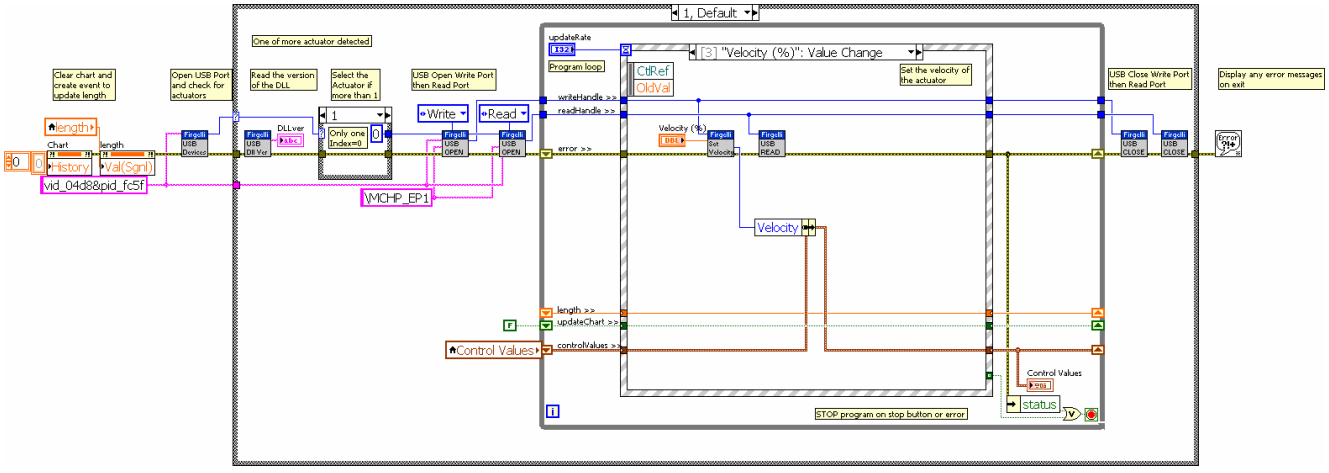
Firgelli_LAC_LabVIEW.vi
Interactive program that allows control and display of linear actuator parameters. Portions of this example can be copied and pasted into your application following this example.

Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

April 18, 2011





readPosistionFirgelli.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\supportVIs\readPosistionFirgelli.vi

writeLimitsFirgelli.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\supportVIs\writeLimitsFirgelli.vi

writeAccuracyFirgelli.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\supportVIs\writeAccuracyFirgelli.vi

writeVelocityFirgelli.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\supportVIs\writeVelocityFirgelli.vi

MPUSBRead.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\USB_VIs\MPUSBRead.vi

writePositionFirgelli.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\supportVIs\writePositionFirgelli.vi

actuatorSelect.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\supportVIs\actuatorSelect.vi

MPUSBClose.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\USB_VIs\MPUSBClose.vi

MPUSBOpen.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\USB_VIs\MPUSBOpen.vi

MPUSBGetDLLVersion.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\USB_VIs\MPUSBGetDLLVersion.vi

General Error Handler.vi
C:\Program Files\National Instruments\LabVIEW 2010\vi.lib\Utility\error.llb\General Error Handler.vi

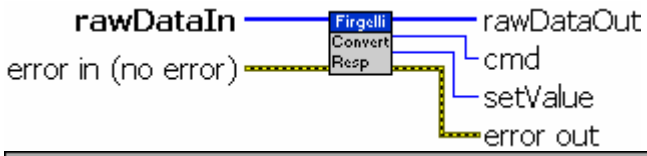
MPUSBGetDeviceCount.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\USB_VIs\MPUSBGetDeviceCount.vi

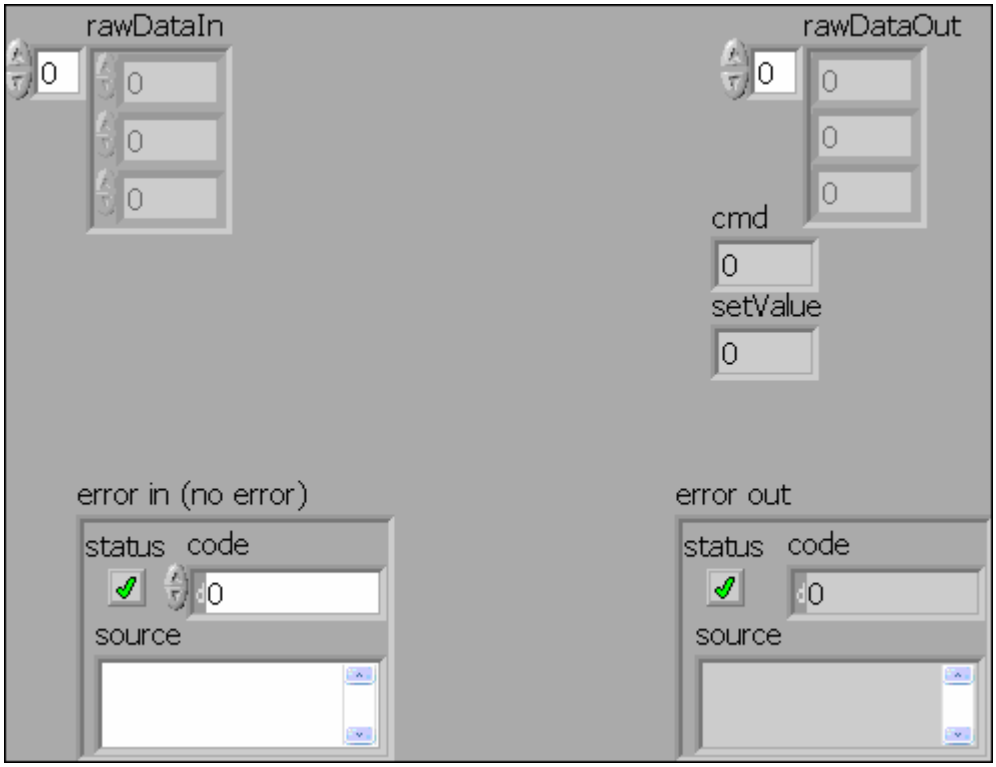
controlValues.ctl
C:\Documents and Settings\Matt\My

Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\typeDefs\control Values.ctl

"Firgelli_LAC_LabVIEW.vi History"
Current Revision: 13
rev. 0 Mon, Apr 18, 2011 8:25:52 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

convertReadResponse.vi





rawDataIn Points to the buffer that receives the data read from the pipe.

error in (no error) error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

rawDataOut Points to the buffer that receives the data read from the pipe.

cmd The LAC command

setValue The LAC set point for position

error out error out passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

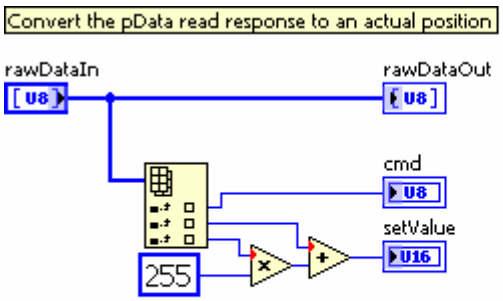
Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source string describes the origin of the error or warning.

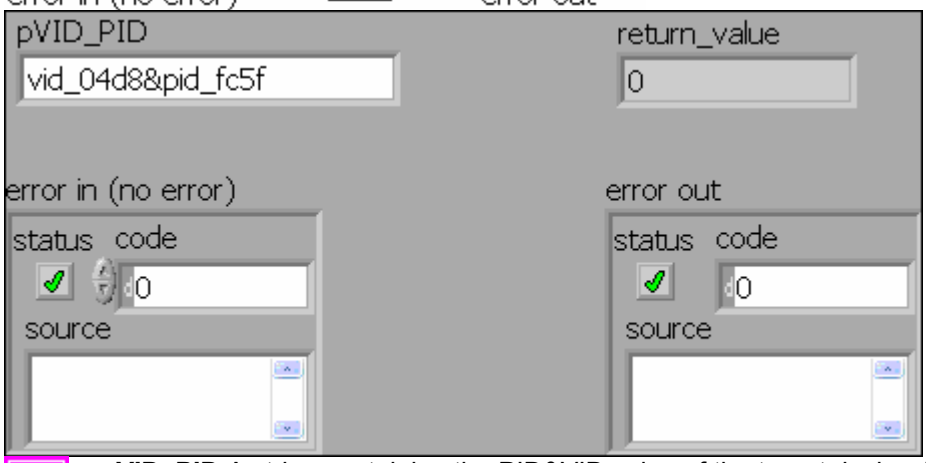
Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



"convertReadResponse.vi History"
Current Revision: 1
rev. 0 Mon, Apr 18, 2011 8:31:32 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

MPUSBGetDeviceCount.vi
Returns count of devices found

Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com



pVID_PID A string containing the PID&VID value of the target device. The format is "vid_xxxx&pid_yyyy". Where xxxx is the VID value in hex and yyyy is the PID value in hex.
Example: If a device has the VID value of 0x04d8 and PID value of 0x000b, then the input string should be: "vid_04d8&pid_000b"

error in (no error) error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate

a warning or that no error occurred.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

return_value

error out error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

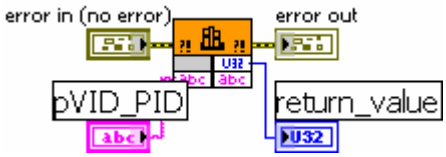
Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



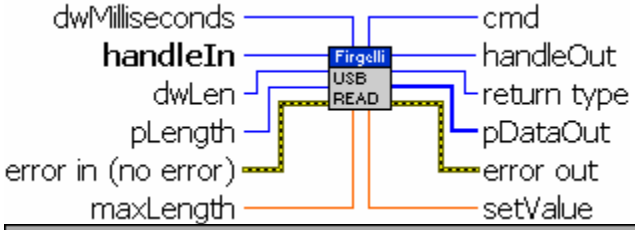
"MPUSBGetDeviceCount.vi History"
Current Revision: 1
rev. 0 Mon, Apr 18, 2011 8:28:21 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

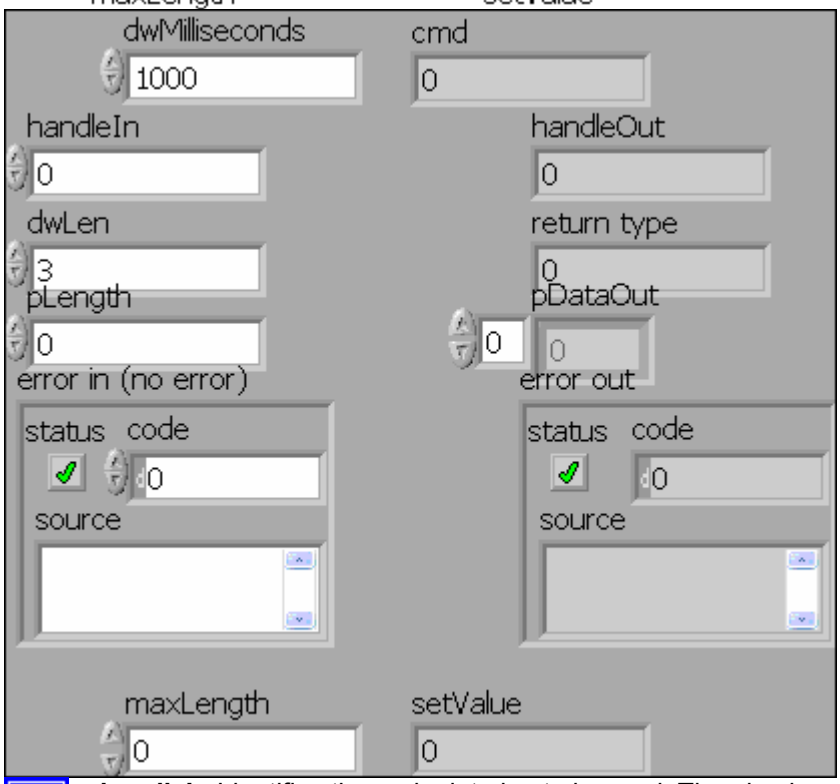
MPUSBRead.vi

```
//      Note that "input" and "output" refer to the parameter designations in calls
//      to this function, which are the opposite of common sense from the
//      perspective of an application making the calls.
//
```

```
DWORD MPUSBRead(HANDLE handle,          // Input
                PVOID pData,            // Output
                DWORD dwLen,            // Input
                PDWORD pLength,         // Output
                DWORD dwMilliseconds);  // Input
```

Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com





U32 **handleIn** Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

U32 **dwLen** Specifies the number of bytes to be read from the pipe.

U32 **dwMilliseconds** Specifies the time-out interval, in milliseconds. The function returns if the interval elapses, even if the operation is
incomplete. If dwMilliseconds is zero, the function tests the
data pipe and returns immediately. If dwMilliseconds is INFINITE, the function's time-out interval never elapses.

U32 **pLength** Points to the number of bytes written by this function call.
MPUSBWrite sets this value to zero before doing any work or error checking.

error in (no error) error in can accept error information wired from VIs previously called.

Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

maxLength The maximum lenght of the actautor

return type

pDataOut Points to the buffer that receives the data read from the pipe.

handleOut Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

error out error out passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

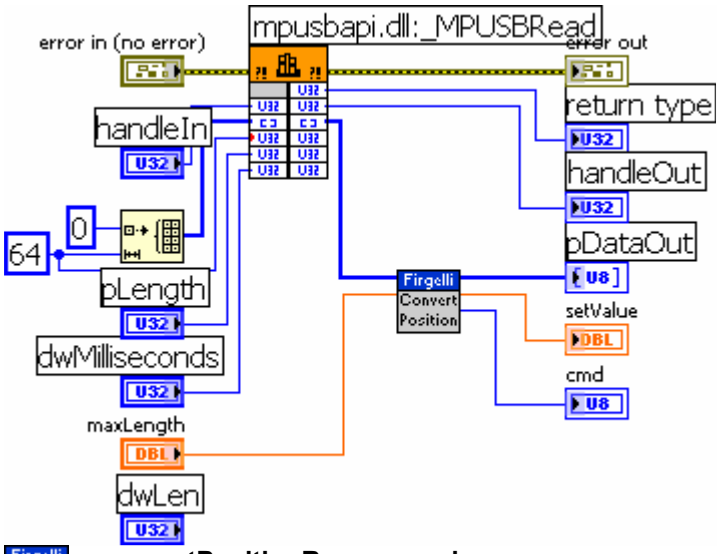
Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source string describes the origin of the error or warning.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

cmd

setValue The register set valure (0-1023)



convertPositionResponse.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\supportVIs\convertPositionResponse.vi

"MPUSBRead.vi History"
Current Revision: 1
rev. 0 Mon, Apr 18, 2011 8:26:46 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

writeLimitsFirgelli.vi
0x02 SET_RETRACT_LIMIT and 0x03 SET_EXTEND_LIMIT
These are the values that are set with the Limits Potentiometers. Setting the Extend_Limit to 1023 and the Retract_Limit to zero will allow movement over the full range. However, it is recommended to offset these values to ensure the actuator is never driven into the physical end stops. This increases cycle life considerably. To set the desired limits take the distance (mm) from the physical stop you wish to limit the actuator to, and plug it into the following equation.

Written by: Complete Automated Solutions
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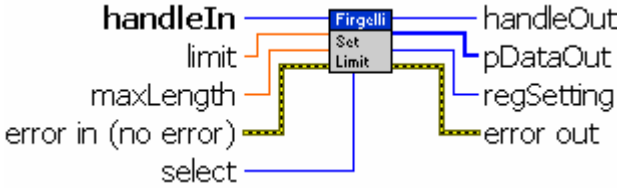

error in (no error) error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

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Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

handleIn Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

limit The value to set the limit

select Select Retract or Extend

maxLength The value to set the limit

error out error out passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

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code code is the error or warning code.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

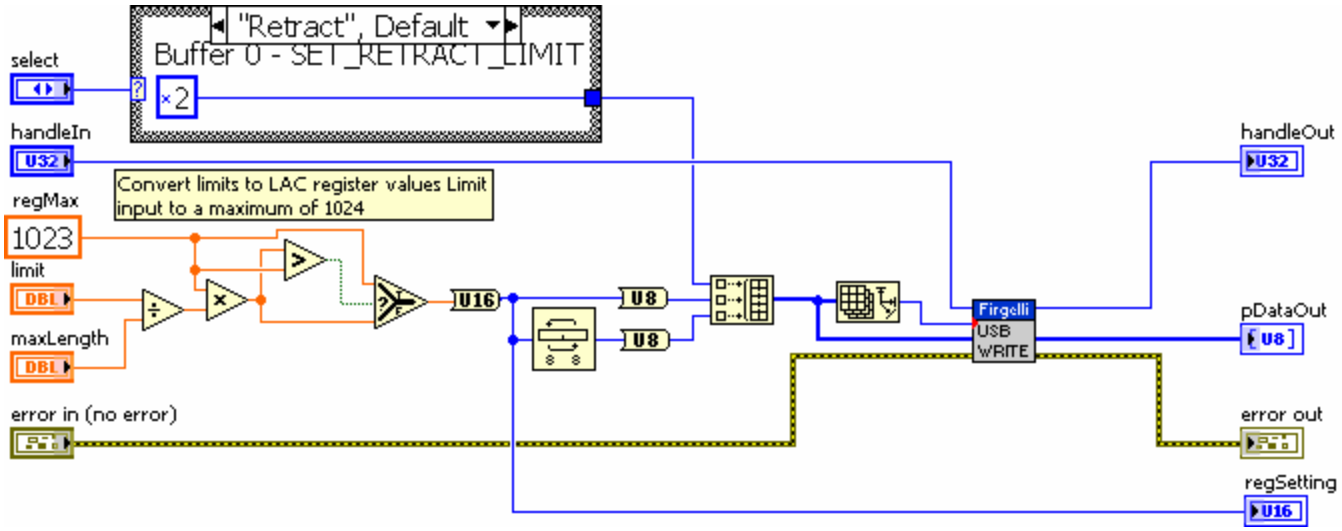
source source string describes the origin of the error or warning.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

handleOut Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

pDataOut Points to the buffer that receives the data read from the pipe.

regSetting The current register LAC setting



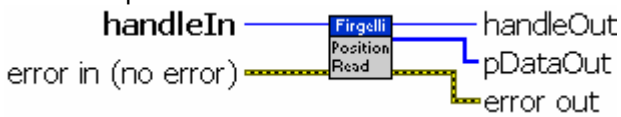
MPUSBWrite.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\USB_VIs\MPUSBWrite.vi

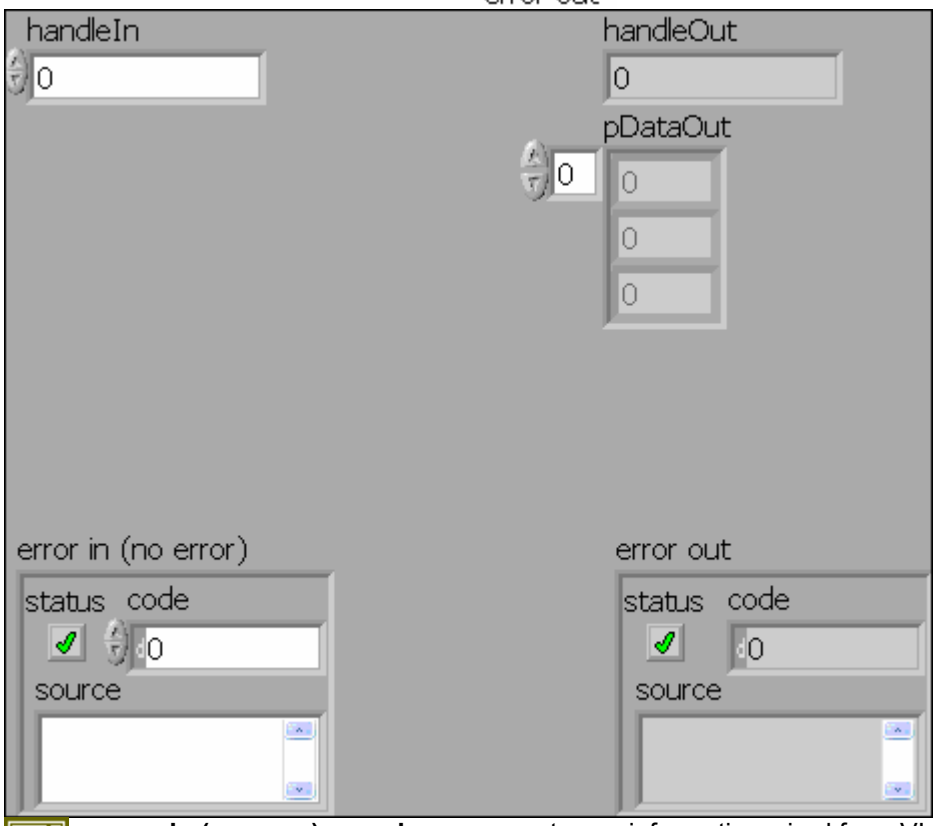
"writeLimitsFirgelli.vi History"
Current Revision: 2
rev. 0 Mon, Apr 18, 2011 8:30:43 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

readPosistionFirgelli.vi
(Distance / Stroke) × 1023

For example, to half way extend(25mm) a 50mm actuator, send 512. (The calculated value is rounded to a whole number).

Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com





error in (no error) error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

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source source describes the origin of the error or warning.

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handleIn Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

error out error out passes error or warning information out of a VI to be used by other VIs.

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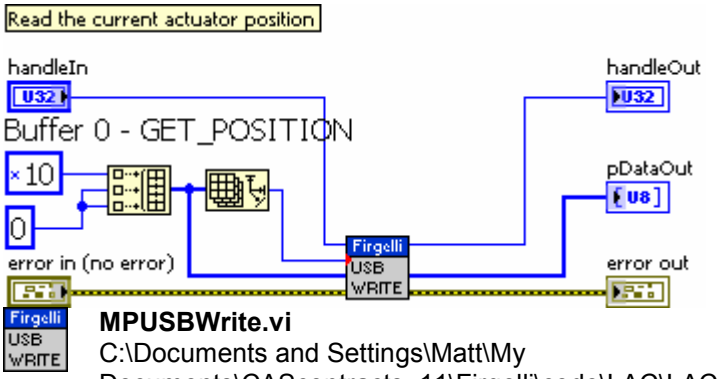
source source string describes the origin of the error or warning.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

handleOut Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

pDataOut Points to the buffer that receives the data read from the pipe.

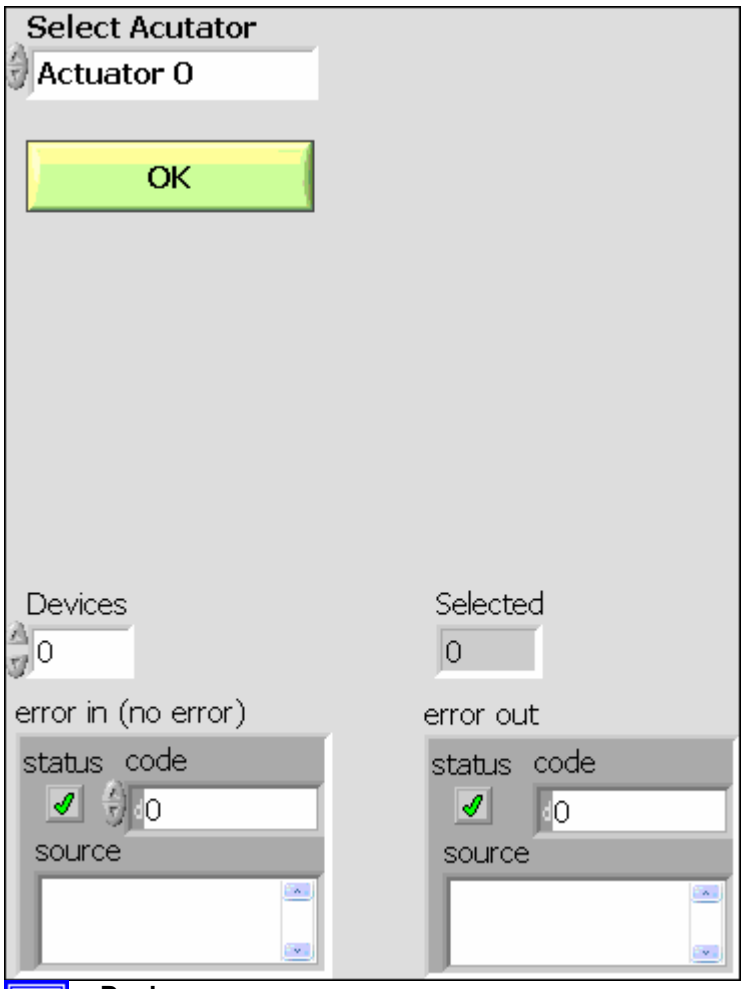


MPUSBWrite.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\USB_VIs\MPUSBWrite.vi

"readPosistionFirgelli.vi History"
Current Revision: 1
rev. 0 Mon, Apr 18, 2011 8:31:20 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

actuatorSelect.vi
Allows user to select the actuator to communicate with. Currently supports up to 6 actuators.

Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com



Devices

error in (no error) error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

Selected

error out error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

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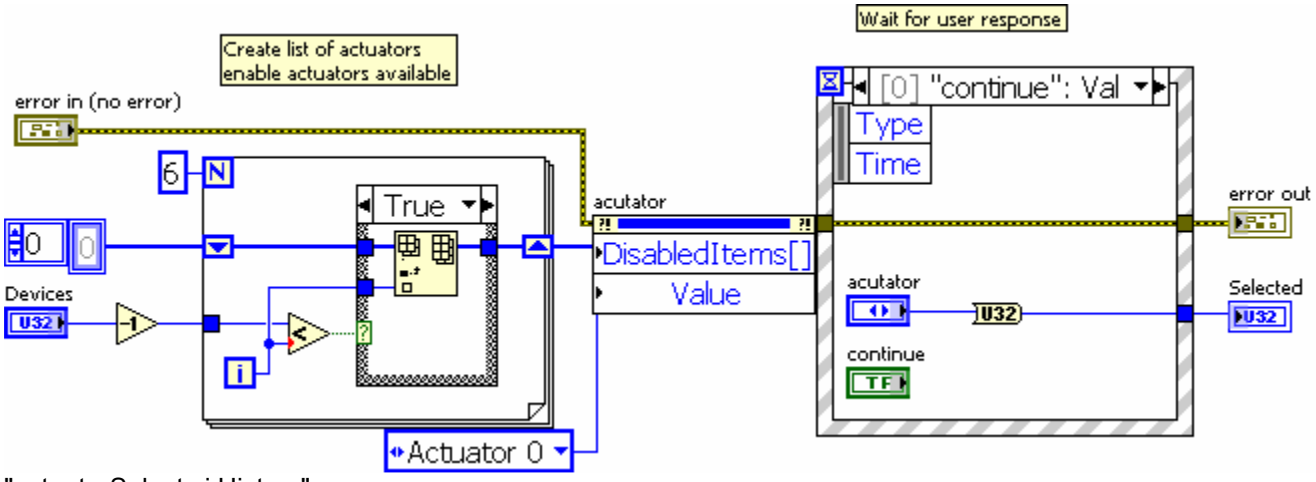
code code is the error or warning code.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source describes the origin of the error or warning.

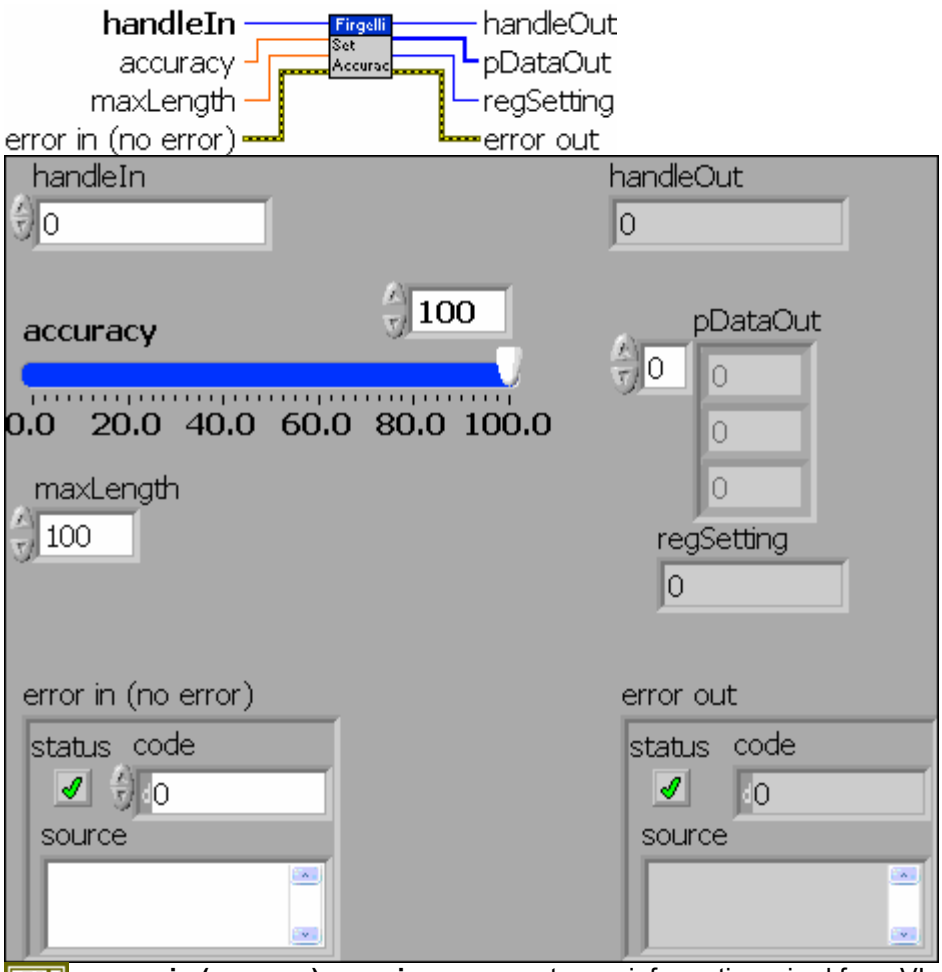
Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



"actuatorSelect.vi History"
Current Revision: 1
rev. 0 Mon, Apr 18, 2011 8:32:11 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

writeAccuracyFirgelli.vi
0x01 SET_ACCURACY:
This is the value controlled by the Accuracy Potentiometer. A value between 0-1023 is accepted. When the feedback position is plus or minus this value, the actuator will stop moving. Reducing this too far will result in the actuator continuously moving back and forth, never reaching the set point. The default value is four. To find the equivalent distance, use the formula:

Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com



error in (no error) error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

handleIn Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

accuracy The accuracy LAC setting

maxLength

error out error out passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

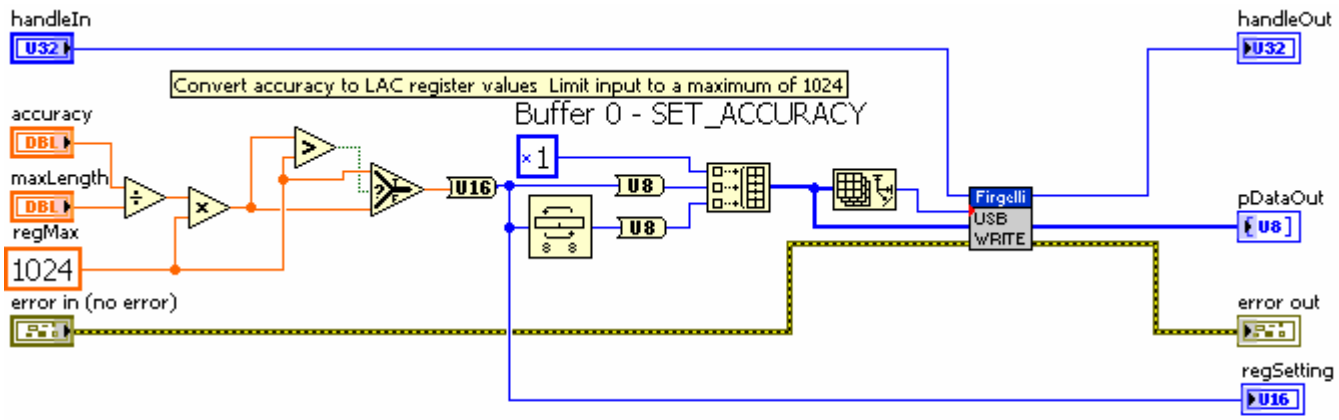
source source string describes the origin of the error or warning.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

handleOut Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

pDataOut Points to the buffer that receives the data read from the pipe.

regSetting The current LAC register value



(accuracy / stroke) * 1024 = register setting

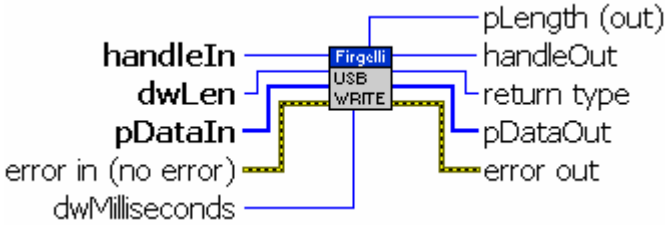
MPUSBWrite.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\USB_VIs\MPUSBWrite.vi

"writeAccuracyFirgelli.vi History"
Current Revision: 3
rev. 0 Mon, Apr 18, 2011 8:30:57 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

MPUSBWrite.vi

```
//          Note that "input" and "output" refer to the parameter designations in calls
//          to this function, which are the opposite of common sense from the
//          perspective of an application making the calls.
//
DWORD MPUSBWrite(HANDLE handle,          // Input
                 PVOID pData,            // Input
                 DWORD dwLen,            // Input
                 PDWORD pLength,         // Output
                 DWORD dwMilliseconds);  // Input
```

Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com



handleIn Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

dwLen Specifies the number of bytes to be read from the pipe.

dwMilliseconds Specifies the time-out interval, in milliseconds. The function returns if the interval elapses, even if the operation is incomplete. If dwMilliseconds is zero, the function tests the data pipe and returns immediately. If dwMilliseconds is INFINITE, the function's time-out interval never elapses.

pDataIn Points to the buffer that receives the data read from the pipe.

error in (no error) error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

return type

pLength (out) Points to the number of bytes written by this function call. MPUSBWrite sets this value to zero before doing any work or error checking.

pDataOut Points to the buffer that receives the data read from the pipe.

error out error out passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

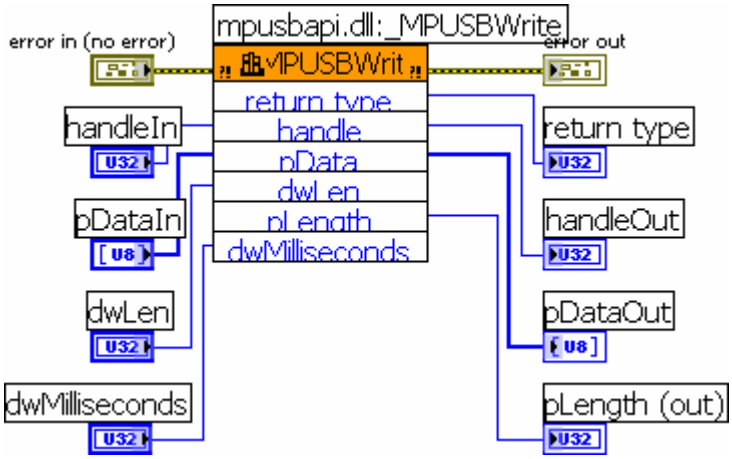
code code is the error or warning code.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source string describes the origin of the error or warning.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

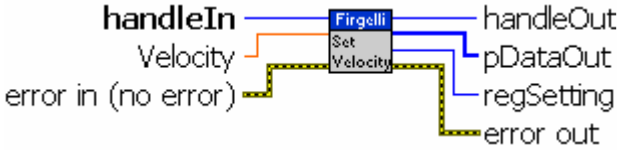
handleOut Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

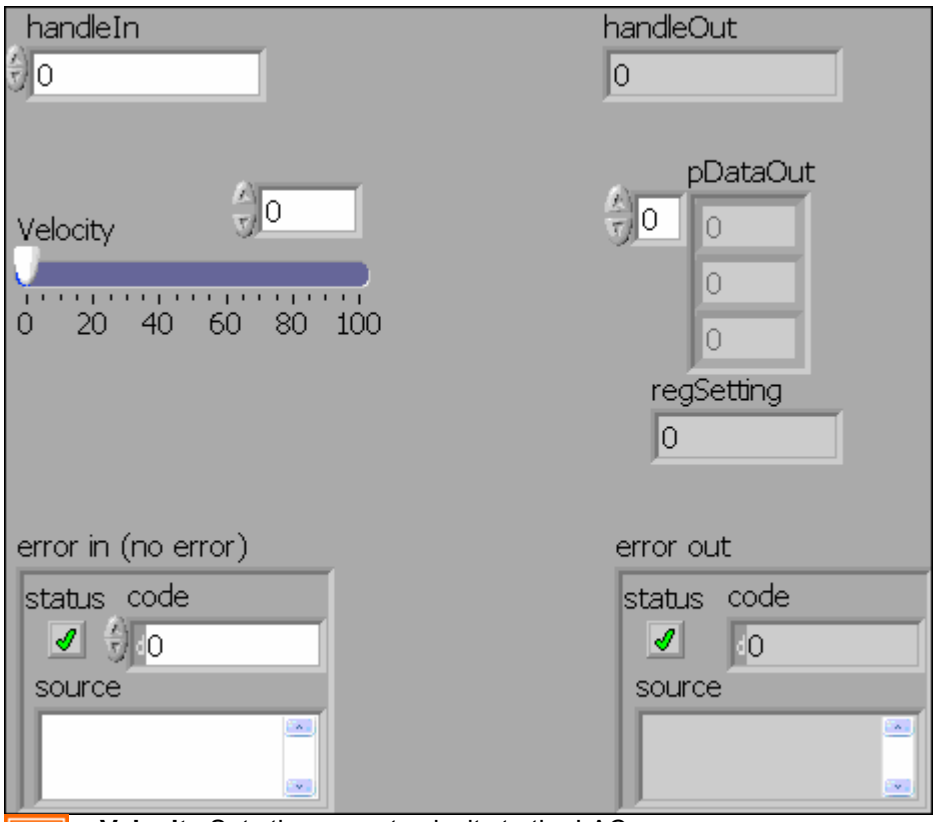


"MPUSBWrite.vi History"
Current Revision: 1
rev. 0 Mon, Apr 18, 2011 8:29:03 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

writeVelocityFirgelli.vi
0x0A SET_MAX_PWM_VALUE
This is the value that is manually controlled by the speed potentiometer. This is the speed that the actuator runs at when outside the PWM_THRESHOLD. Setting this to 1023 will allow the actuator to achieve full speed. The actuator may exceed this value while attempting to overcome a stall condition.

Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com





Velocity Sets the current velocity to the LAC

error in (no error) error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

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source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

handleIn Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

error out error out passes error or warning information out of a VI to be used by other

VIs.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

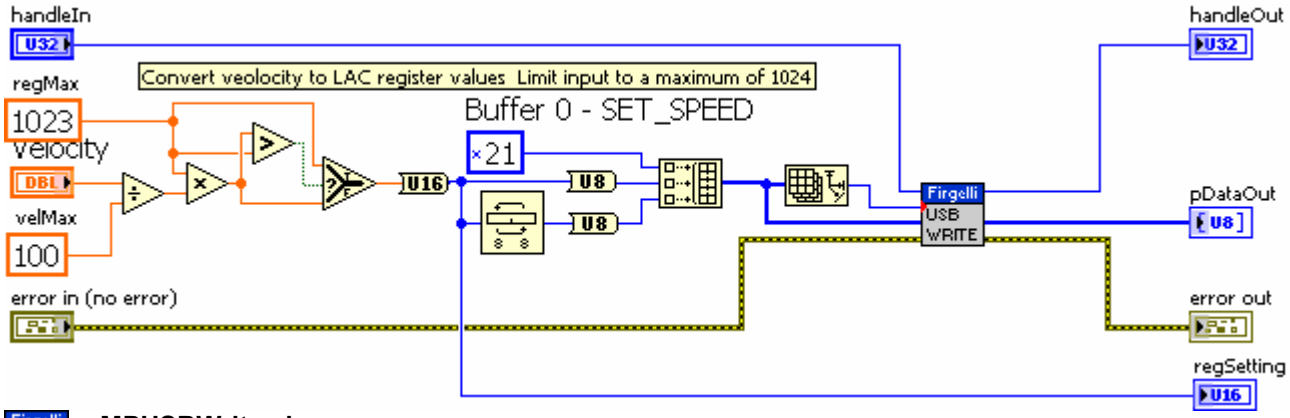
source source string describes the origin of the error or warning.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

handleOut Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

pDataOut Points to the buffer that receives the data read from the pipe.

regSetting The current LAC register setting



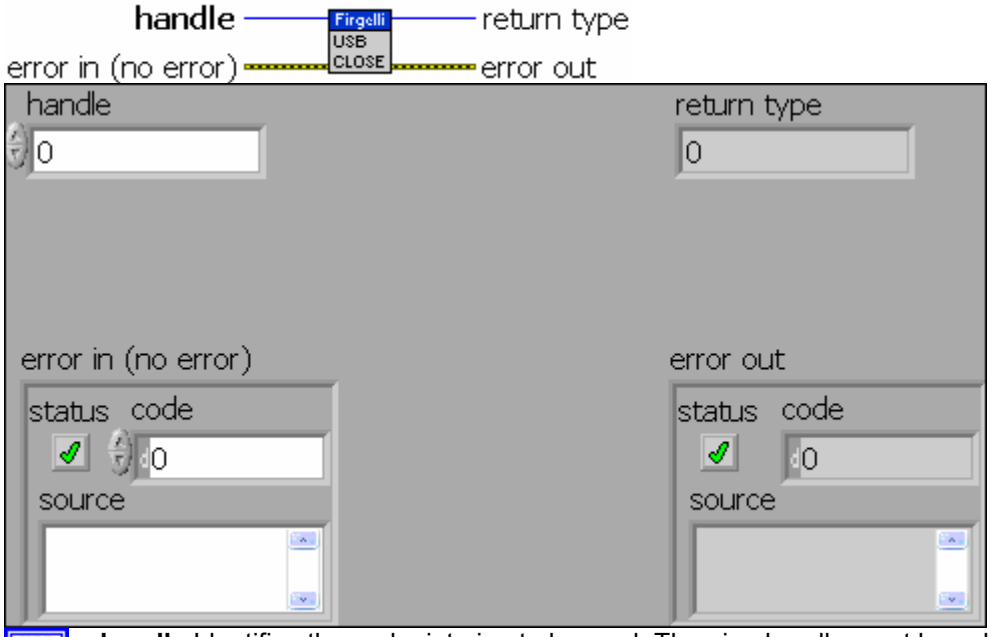
MPUSBWrite.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\USB_VIs\MPUSBWrite.vi

"writeVelocityFirgelli.vi History"
Current Revision: 1
rev. 0 Mon, Apr 18, 2011 8:32:36 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

MPUSBClose.vi

//	MPUSBClose : closes a given handle.
//
//	Note that "input" and "output" refer to the parameter designations in calls
//	to this function, which are the opposite of common sense from the
//	perspective of an application making the calls.

Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com



handle Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

error in (no error) error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

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source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

return type

error out error out passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

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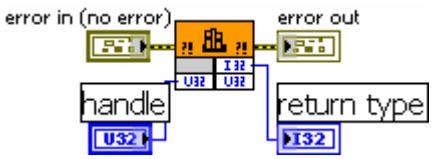
Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source string describes the origin of the error or warning.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

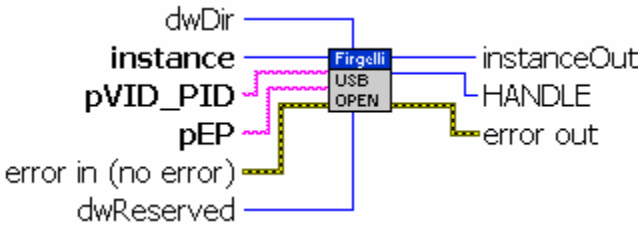


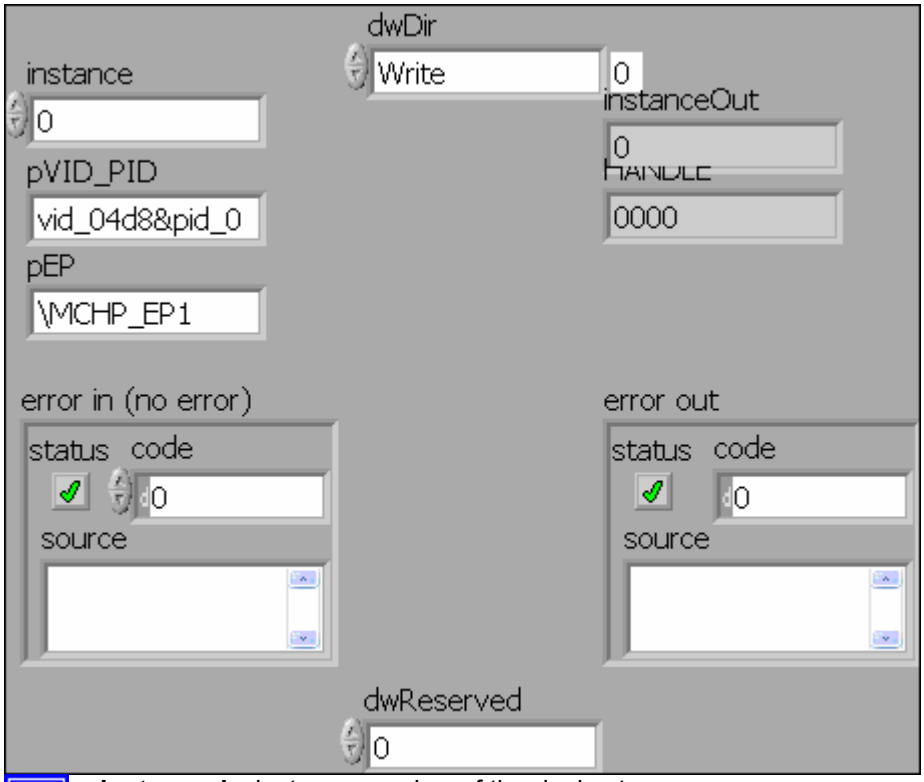
"MPUSBClose.vi History"
Current Revision: 1
rev. 0 Mon, Apr 18, 2011 8:28:52 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

MPUSBOpen.vi

```
//          MPUSBOpen : Returns the handle to the endpoint pipe with matching VID & PID
//
//  All pipes are opened with the FILE_FLAG_OVERLAPPED attribute.
//  This allows MPUSBRead,MPUSBWrite, and MPUSBReadInt to have a time-out value.
//
//  Note: Time-out value has no meaning for Isochronous pipes.
```

Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com





instance An instance number of the device to open.
Typical usage is to call MPUSBGetDeviceCount first to find out how many instances there are. It is important to understand that the driver is shared among different devices. The number of devices returned by MPUSBGetDeviceCount could be equal to or less than the number of all the devices that are currently connected & using the generic driver.

pVID_PID A string containing the PID&VID value of the target device. The format is "vid_xxxx&pid_yyyy". Where xxxx is the VID value in hex and yyyy is the PID value in hex.
Example: If a device has the VID value of 0x04d8 and PID value of 0x000b, then the input string should be: "vid_04d8&pid_000b"

pEP A string of the endpoint number on the target endpoint to open. The format is "\\MCHP_EPz". Where z is the endpoint number in decimal.
Example: "\\MCHP_EP1"
This arguement can be NULL. A NULL value should be used to create a handles for non-specific endpoint functions.
MPUSBRead, MPUSBWrite, MPUSBReadInt are endpoint specific functions. All others are not. Non-specific endpoint functions will become available in the next release of the DLL.

dwDir Specifies the direction of the endpoint.
Use MP_READ for MPUSBRead, MPSUBReadInt
Use MP_WRITE for MPUSBWrite

dwReserved Specifies the direction of the endpoint.
Use MP_READ for MPUSBRead, MPSUBReadInt
Use MP_WRITE for MPUSBWrite

error in (no error) error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of

errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

HANDLE Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

error out error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

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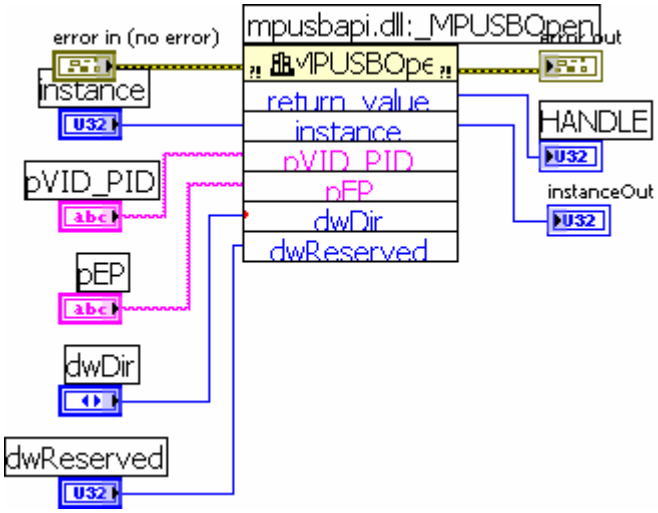
source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

instanceOut An instance number of the device to open.
Typical usage is to call MPUSBGetDeviceCount first to find out how many instances there are. It is important to understand that the driver is shared among different devices. The number of devices returned by MPUSBGetDeviceCount could be equal to or less than the number of all the devices that are currently connected & using the generic driver.

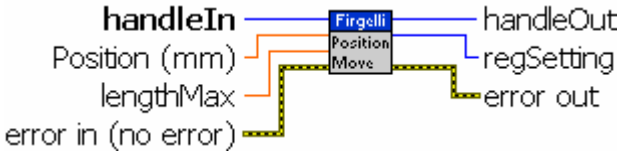


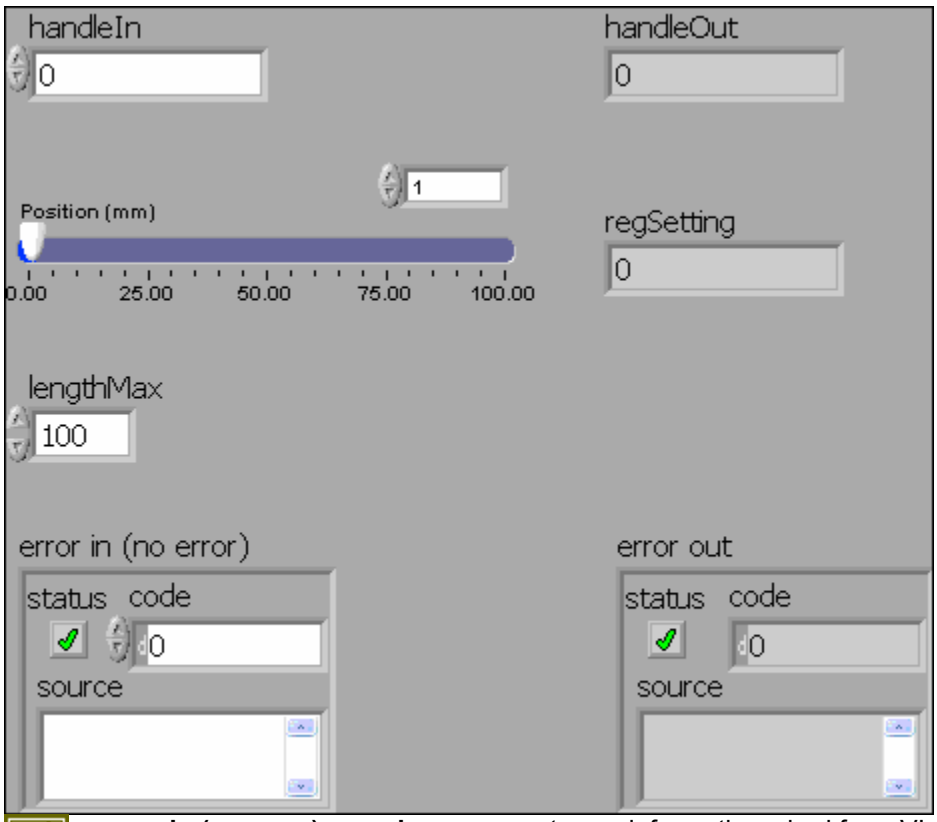
"MPUSBOpen.vi History"
Current Revision: 0
rev. 0 Mon, Apr 18, 2011 8:27:21 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

writePositionFirgelli.vi
0x20 SET_POSITION
This command allows USB control and disables RC, I, and V inputs until the system is rebooted. The data sent with this command determines what position the actuator moves too.

For example, to half way extend(25mm) a 50mm actuator, send 512. (The calculated value is rounded to a whole number).

Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com





error in (no error) error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

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code code is the error or warning code.

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source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

handleIn Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

lengthMax The maximum length of the actuator

Position (mm) Position to set the actuator

error out error out passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

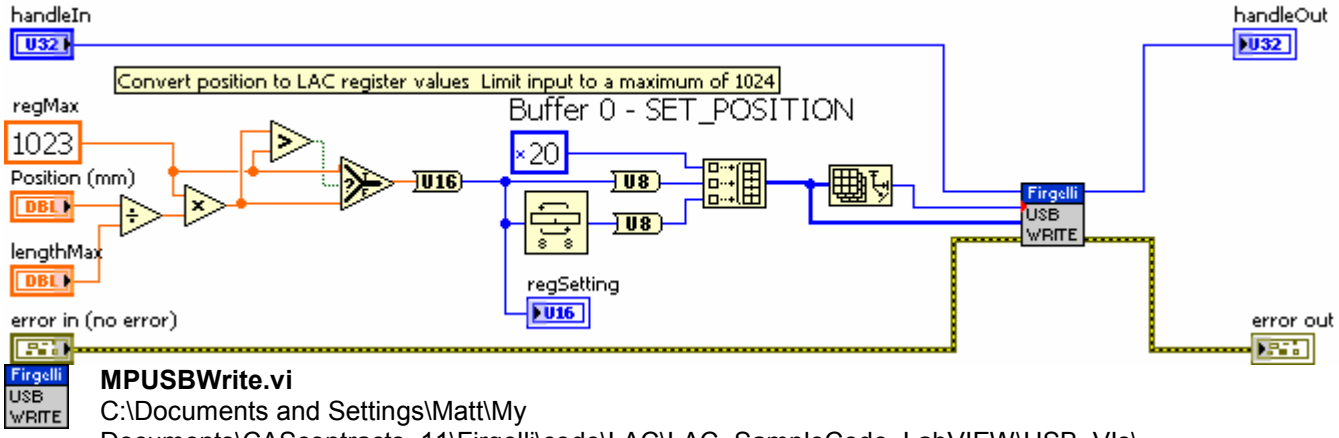
Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source string describes the origin of the error or warning.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

handleOut Identifies the endpoint pipe to be read. The pipe handle must have been created with MP_READ access attribute.

regSetting The current LAC register setting



MPUSBWrite.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\USB_VIs\MPUSBWrite.vi

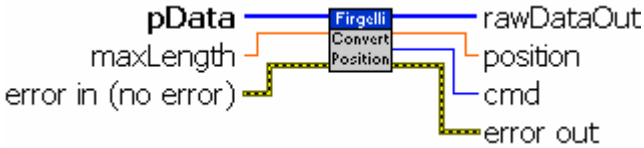
"writePositionFirgelli.vi History"
Current Revision: 2
rev. 0 Mon, Apr 18, 2011 8:30:12 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

convertPositionResponse.vi
Scale actuator value to millimeters

(Distance / Stroke)× 1023

Format: 3-byte packet
Control, Data Low, Data High
Buffer[0]=Control
Buffer[1]=Data Low
Buffer[2]=Data High

Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com



DBL **maxLength** Teh actuators maximum length

[U8] **pData** Points to the buffer that receives the data read from the pipe.

U8

error in (no error) error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

TF **status status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

I32 **code code** is the error or warning code.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

position The position of the actuator

rawDataOut Points to the buffer that receives the data read from the pipe.

cmd Teh current LAC command

error out error out passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

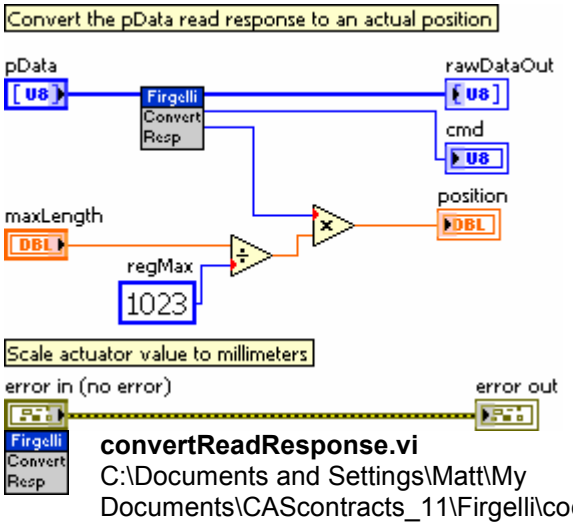
Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source string describes the origin of the error or warning.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



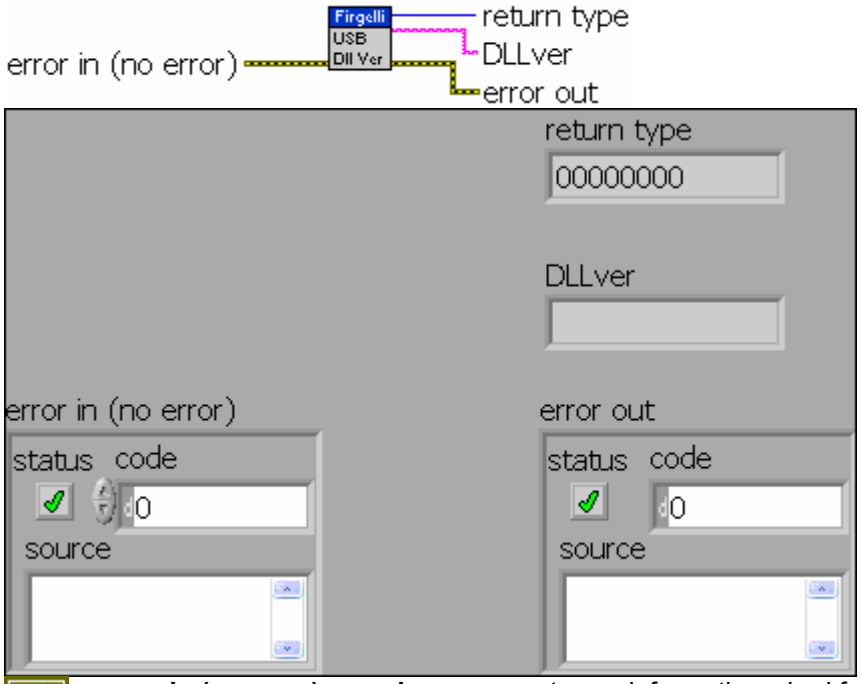
convertReadResponse.vi
C:\Documents and Settings\Matt\My Documents\CAScontracts_11\Firgelli\code\LAC\LAC_SampleCode_LabVIEW\supportVIs

\convertReadResponse.vi

"convertPositionResponse.vi History"
Current Revision: 1
rev. 0 Mon, Apr 18, 2011 8:31:59 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

MPUSBGetDLLVersion.vi
// MPUSBGetDLLVersion : get mpusbapi.dll revision level
//
// Input:
// None
// Output:
// 32-bit revision level MMmmddii
// MM - Major release
// mm - Minor release
// dd - dot release or minor fix
// ii - test release revisions

Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com



error in (no error) error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

code code is the error or warning code.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

return type

error out error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

status status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

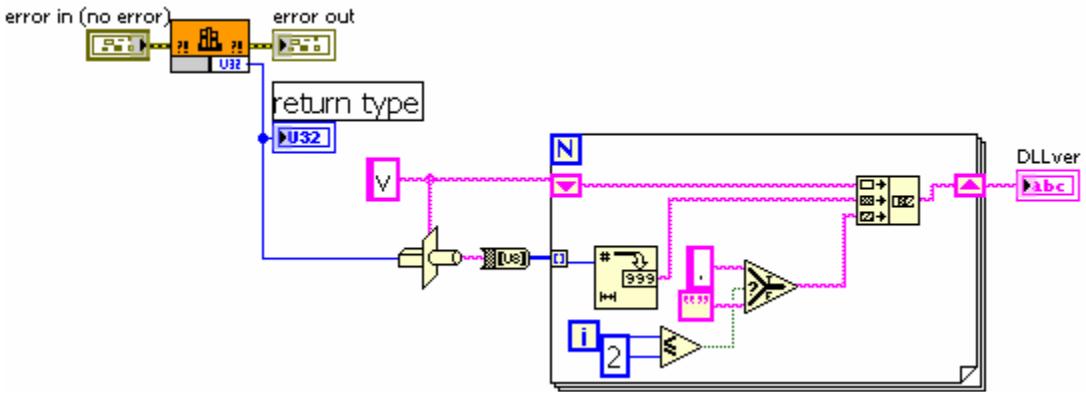
code code is the error or warning code.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

source source describes the origin of the error or warning.

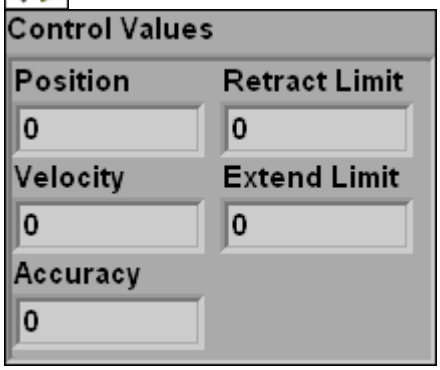
Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

DLLver



"MPUSBGetDLLVersion.vi History"
Current Revision: 1
rev. 0 Mon, Apr 18, 2011 8:27:33 AM Matt
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com

controlValues.ctl
Written by: Complete Automated Solutions
www.CompleteAutomatedSolutions.com



"controlValues.ctl History"
Current Revision: 2
rev. 0 Mon, Apr 18, 2011 8:29:46 AM Matt
Written by: Complete Automated Solutions
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