TECHNICAL NOTE

XPS LabVIEW Programming Using XPS.NET Assembly

Introduction

Extremely low latency motion control is critically important for most industrial applications such as fiber optic and laser alignment and for success in many research applications. Newport's XPS motion controllers are an excellent choice for these applications requiring real-time or near real-time motion control. This Technical Note describes the implementation of Newport XPS.NET in LabVIEW using Nodes.

XPS.NET Assembly in LabView

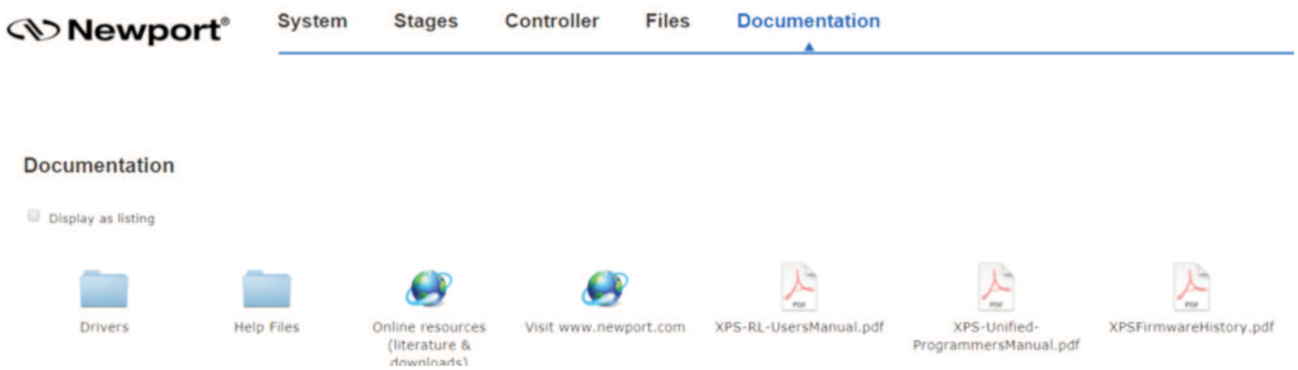
1. Install .NET XPS Driver

Download the appropriate XPS driver from one of three locations:

1. FTP (File Transfer Protocol)
   ftp://download.newport.com/MotionControl/Current/MotionControllers/XPS-D/Drivers

2. XPS family and product pages
   a. https://www.newport.com/f/xps-d-universal-motion-controller
   b. https://www.newport.com/p/XPS-D2
      i. Select the latest version of XPS_Assembly.net file under Software section.

3. The XPS Documentation tab within the XPS GUI

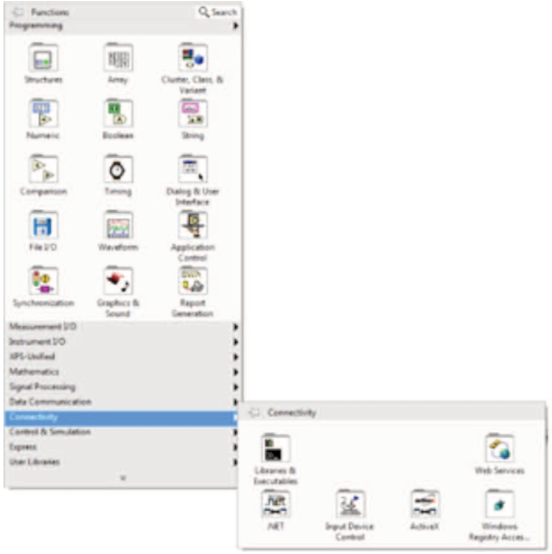


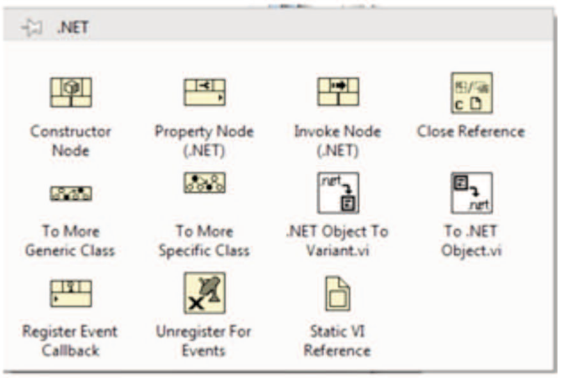
Once downloaded, choose either the 32-bit or 64-bit version, depending on your operating system.

2. Using .NET in LabVIEW

Open LabVIEW, then open a new or existing virtual instrument (VI) and go to the block diagram. Under "Functions" use the "Connectivity" tab to access the .NET functions. The main .NET functions to be used are:

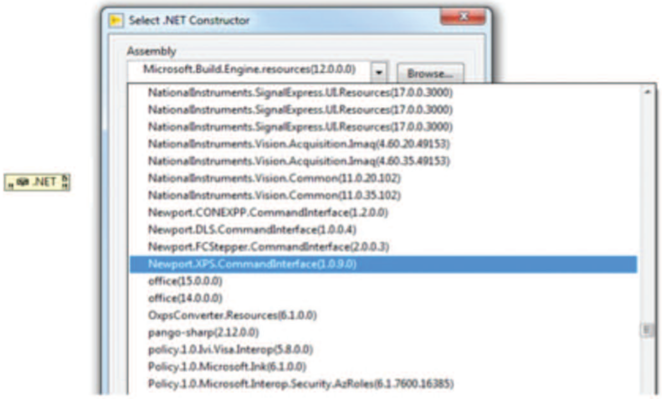
1. Invoke Node
2. Constructor Node
3. Close Reference

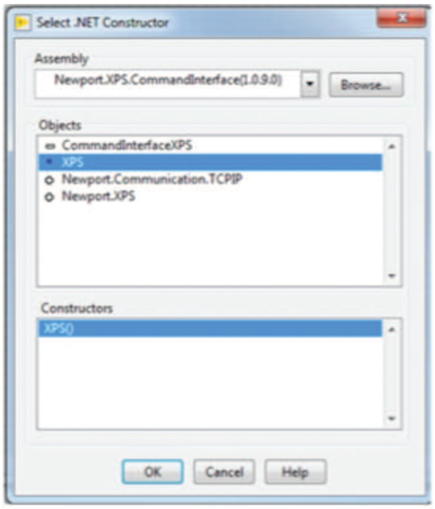




3. Starting and Constructor Node

Select Constructor Node to start programming using the .NET assembly. Once in the Constructor Node, use the "Assembly" drop-down menu to select Newport.XPS.CommandInterface. Once in CommandInterface, select XPS under "Objects".

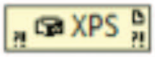

.NET
Select .NET Constructor
Assembly
Microsoft.Build.Engine.resources(12.0.0.0)
Browse...
NationalInstruments.SignalExpress.UI.Resources(17.0.0.3000)
NationalInstruments.SignalExpress.UI.Resources(17.0.0.3000)
NationalInstruments.SignalExpress.UI.Resources(17.0.0.3000)
NationalInstruments.Vision.Acquisition.Imaq(4.60.20.49153)
NationalInstruments.Vision.Acquisition.Imaq(4.60.35.49153)
NationalInstruments.Vision.Common(11.0.20.102)
NationalInstruments.Vision.Common(11.0.35.102)
Newport.CONEXPP.CommandInterface(1.2.0.0)
Newport.DLS.CommandInterface(1.0.0.4)
Newport.FCStepper.CommandInterface(2.0.0.3)
Newport.XPS.CommandInterface(1.0.9.0)
office(15.0.0.0)
office(14.0.0.0)
OxpsConverter.Resources(6.1.0.0)
pango-sharp(2.12.0.0)
policy.1.0.Ivi.Visa.Interop(5.8.0.0)
Policy.1.0.Microsoft.Ink(6.1.0.0)
Policy.1.0.Microsoft.Interop.Security.AzRoles(6.1.7600.16385)


Select .NET Constructor

Assembly: Newport.XPS.CommandInterface(1.0.9.0)

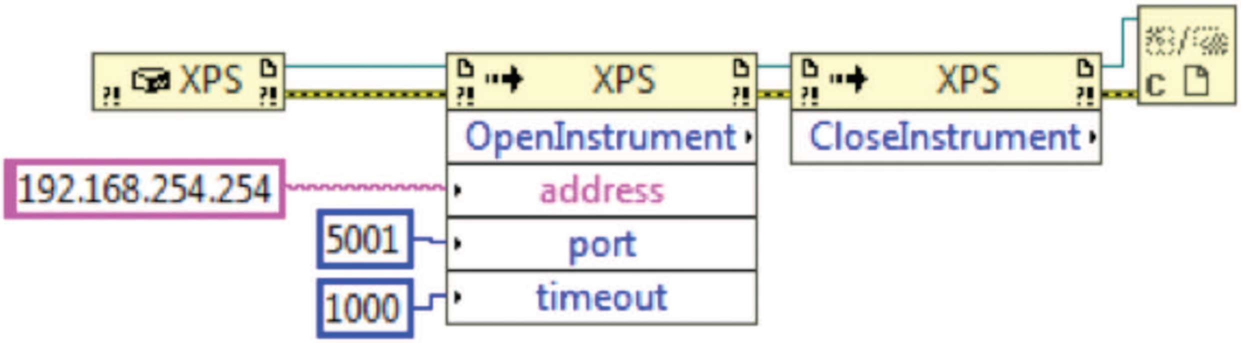
Objects: XPS

Constructors: XPS()

Once XPS is set by clicking “OK” in the “Object” panel, you should see the following icon: 

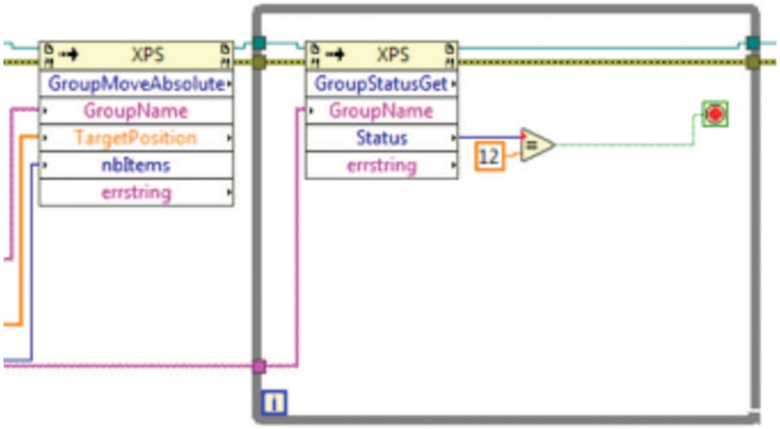
4. Invoke Nodes

Add parameters and terminate the sequence with “Close Instrument” and “Close Reference” vi.



5. Checking Group Status/Socket Ready

This commonly occurs when attempting to send a command during long movements.
The problem can be avoided by adding a loop to check the socket status or the group status

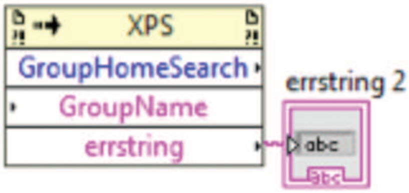


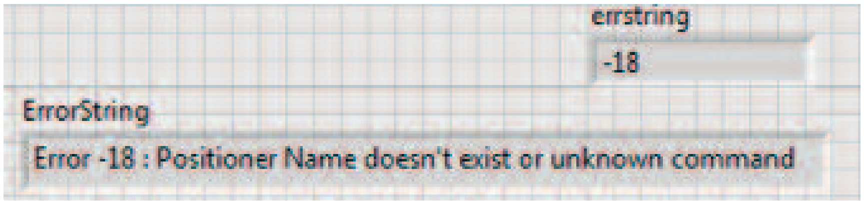
Examples of state diagrams and group status codes can be found in the Unified Programmer’s Manual, Sections 5.3.1, 5.4.1, 5.5.1, 5.6.1, and 5.7.1.

6. **Errors**

Should a program fail to run successfully, an indicator can be added to the “errstring” output of the Invoke Node:

- An error code string will be output when an error occurs. The error code explanations can be found in the Unified Programmer’s Guide or by using the function ErrorStringGet.




errstring

-18

ErrorString

Error -18 : Positioner Name doesn't exist or unknown command

MKS Instruments Information

MKS Instruments MKS Instruments XPS Motion Controller products can be found at https://www.newport.com/c/xps-universal-multi-axis-motion-controller.