

## Using IVI instrument driver on LabVIEW

This supplementary explanation is to explain how to use IVI instrument driver attached to product of NF corporation on LabVIEW software.

IVI instrument driver can be used on LabVIEW in following two methods.

- (1) Using with LabVIEW Instrument Driver Import Wizard.

Import IVI instrument driver with LabVIEW Instrument Driver Import Wizard and each API of IVI instrument driver can be used as respective VIs on LabVIEW. Arrange these VIs on block diagram to construct LabVIEW programs.

- (2) Using automation Refnum which calls an ActiveX object.

Add an Automation Refnum on your VI and associate it with ActiveX object of the IVI instrument driver. Construct LabVIEW programs using this Refnum and invoke nodes.

Section 1 of this supplementary explanation details method shown above as (1), and section 2 details method shown as (2)

## 1. Method with LabVIEW Instrument Driver Import Wizard

### 1.1 Installing LabVIEW Instrument Driver Import Wizard

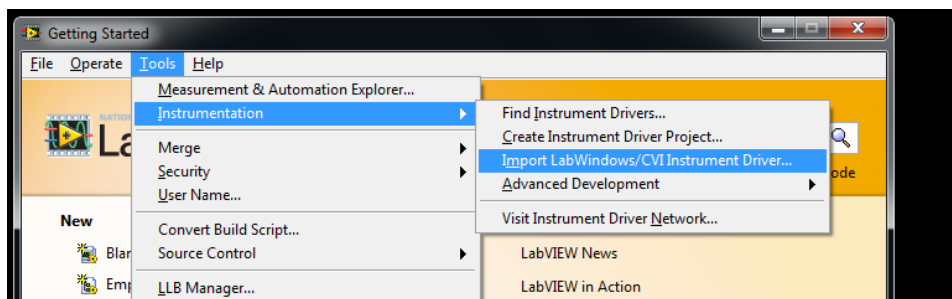
It is convenient to import IVI instrument drivers using **LabVIEW Instrument Driver Import Wizard**, and generate LabVIEW VI libraries. LabVIEW software package does not contain LabVIEW Instrument Driver Import Wizard, therefore download it from National Instruments' website and install it first.

### 1.2 Importing IVI instrument driver

This subsection shows how to import IVI instrument driver to LabVIEW environment.

To import instrument driver, Use LabVIEW Instrument Driver Import Wizard. With Instrument Driver Import Wizard installed, launch LabVIEW and select

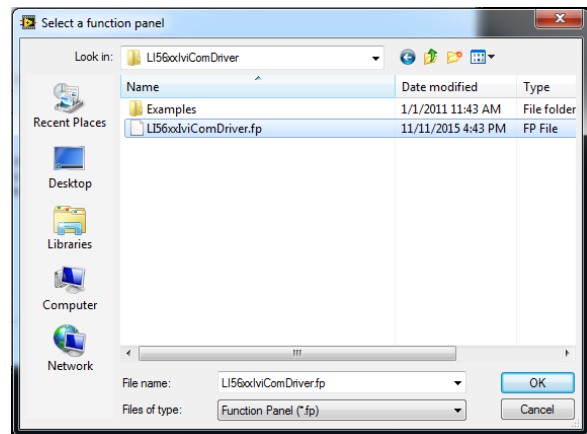
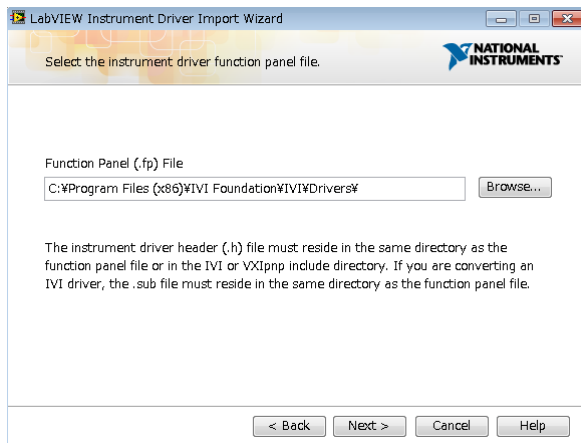
**Tools > Instrumentation > Import LabWindows/CVI Instrument Driver** in LabVIEW.



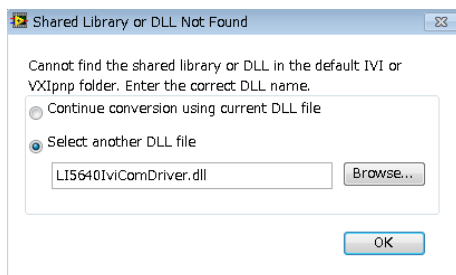
Select **Basic** in first screen of Instrument Driver Import Wizard.



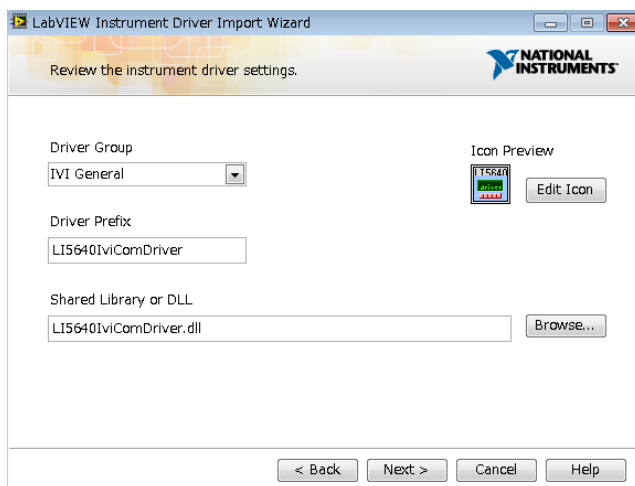
Click **Next** and a dialog to designate function panel (.fp) file is shown, then choose **<driver identification name>.fp** in **Program Files\IVI Foundation\IVI\Drivers\<driver identification name>**



Click **Next** button and a dialog to designate DLL file, therefore choose **Select another DLL file** and select **<Driver identification name>.dll** in **Program Files\IVI Foundation\IVI\Bin** folder.



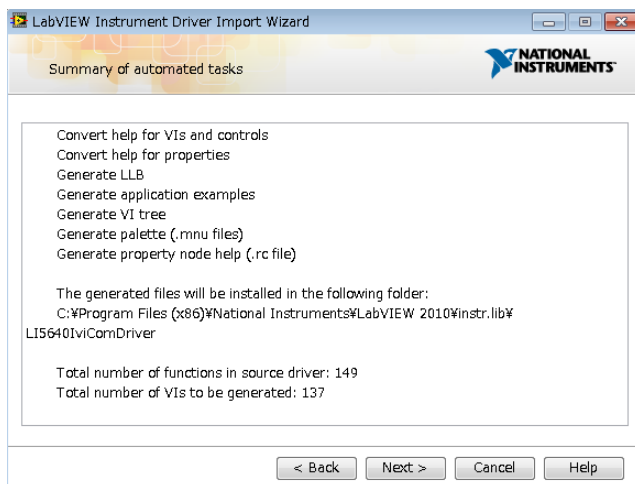
Click **OK** button and dialog for instrument driver setting is shown.



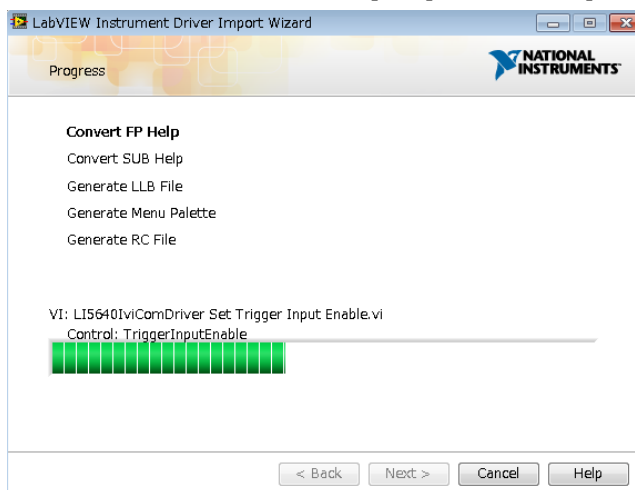
In **Driver Group** field, choose instrument class which is written on **IVI Instrument Class** column in Readme file. Choose **IVI General** if "None" written in "IVI Instrument Class" column.

In **Shared Library or DLL** field, enter path of **<Driver identification name>.dll** in **Program Files\IVI Foundation\IVI\Bin** folder.

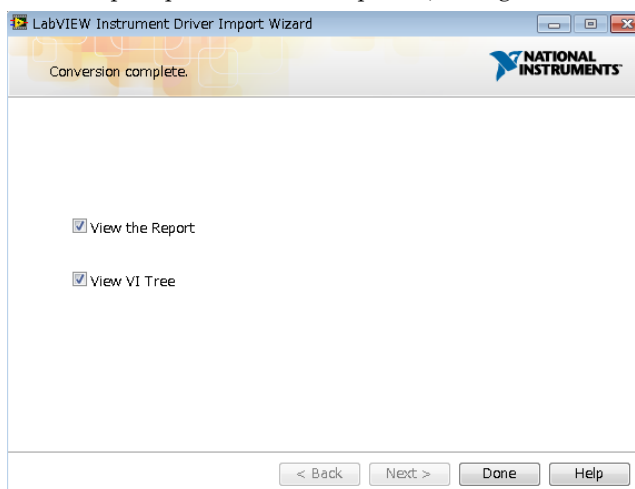
Click **Next** button to display summary information of VI library to be generated.



Click **Next** button to execute import procedure. Import procedure may take a few minutes.



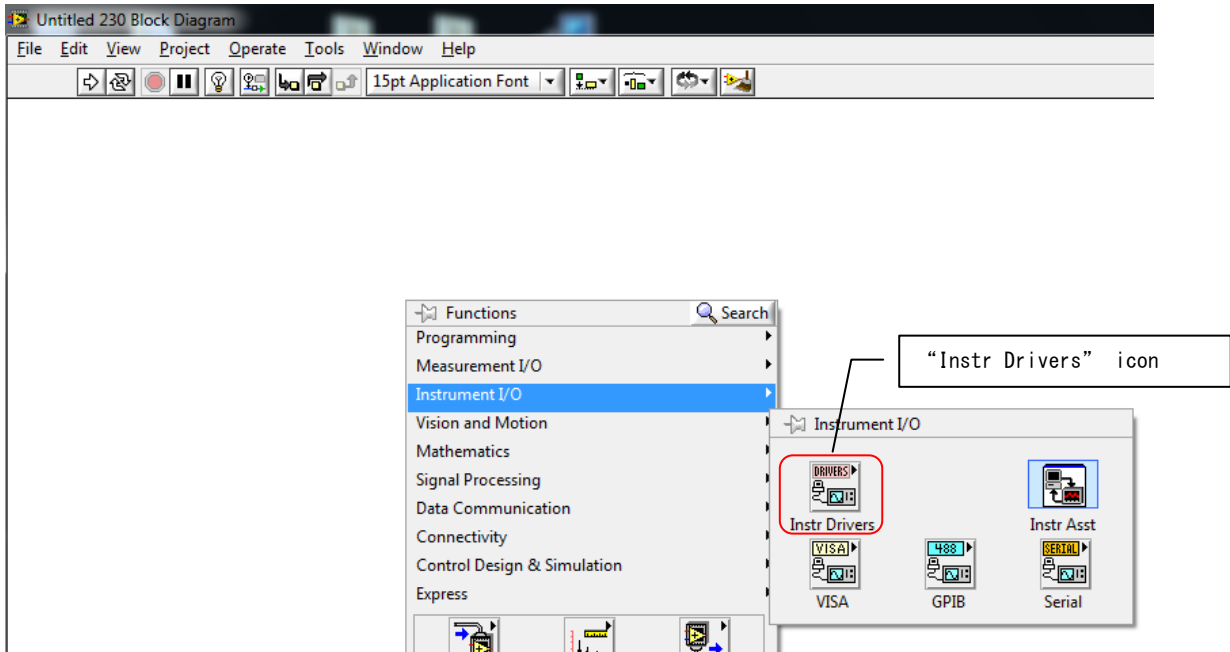
When import procedure is completed, dialog shown below will be displayed. Click **Done** to finish.



### 1.3 Use of Imported IVI Instrument Drivers

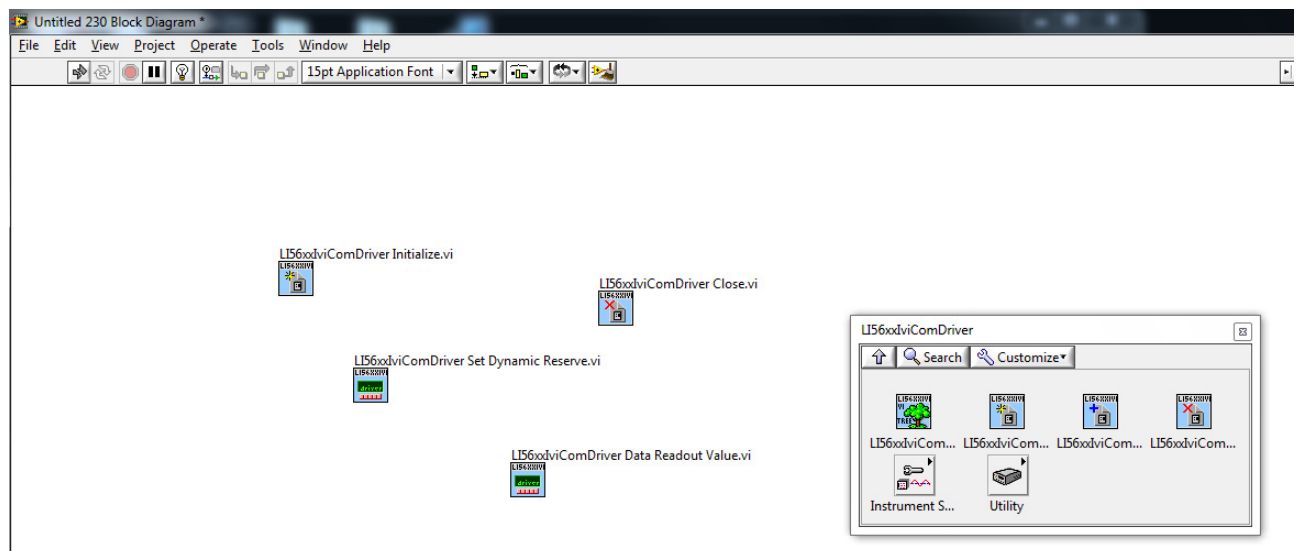
This section explains how to use IVI drivers imported in section 1.2 in LabVIEW software.

With VI (Virtual Instrument) block diagram of LabVIEW is shown, choose **Instrument I/O > Instr Drivers**, and choose icon of imported instrument driver.



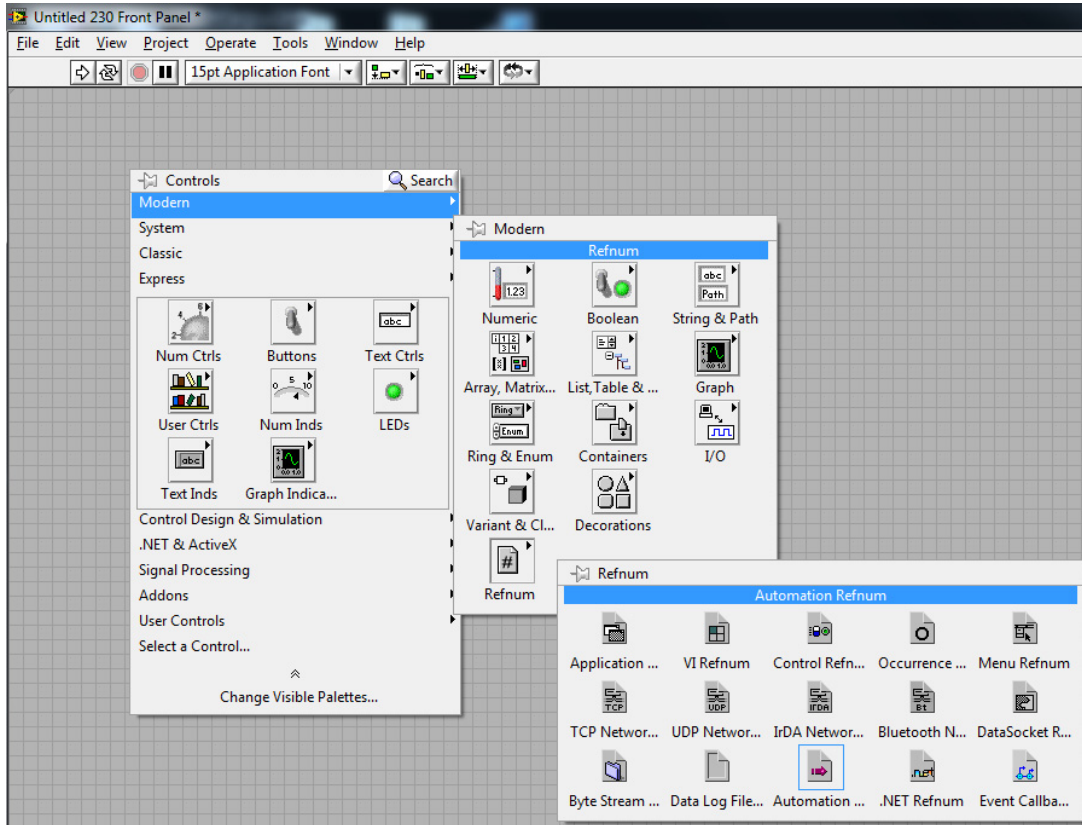
Icons of VIs, which were generated in import procedure are shown. Click these icons and click location in block diagram to place VIs.

Proceed programming by place and connect these VIs.

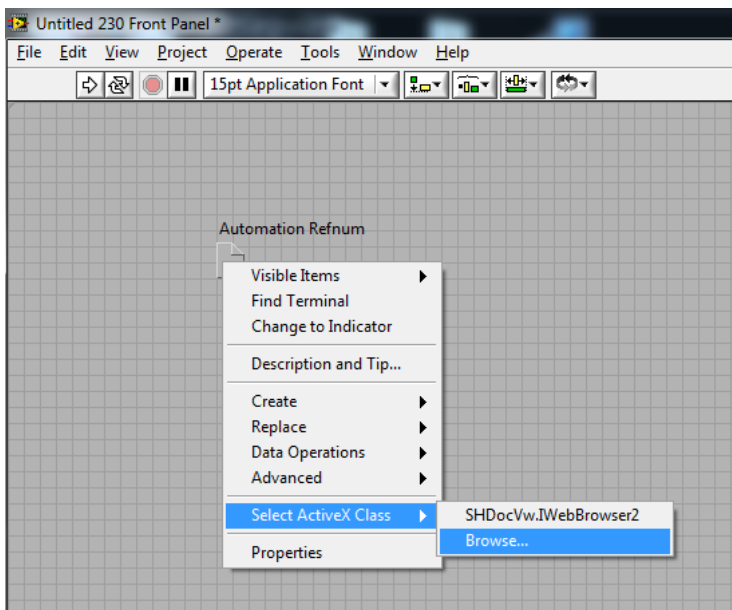


## 2. Using IVI Instrument Driver APIs from Automation Refnum

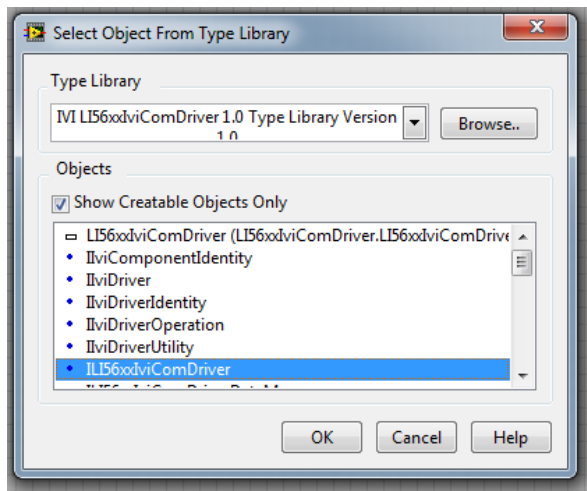
With front panel of LabVIEW VI shown and set edit mode enabled, Right-click front panel and choose **Modern > Refnum > Automation Refnum**. Click arbitrary location in front panel and icon of automation refnum will be placed.



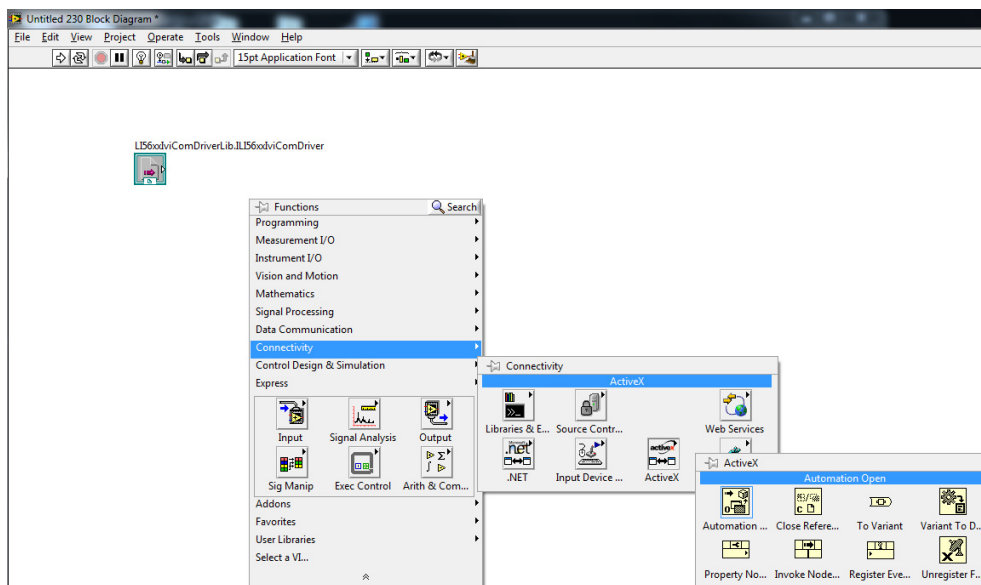
Right-click icon placed in front panel and choose **Select ActiveX class > Browse**.



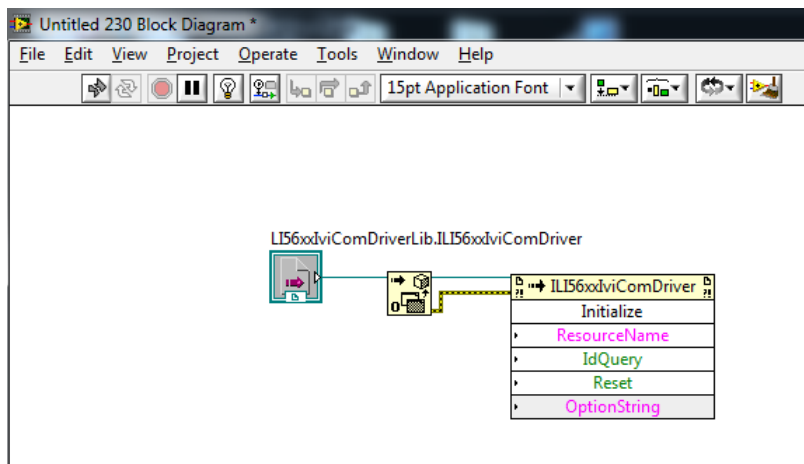
**Select object from type library** dialog is shown, then choose IVI driver to use from **Type Library** component and root object of IVI driver from "Object" component. Usually, name of root object of IVI driver is the shortest name in which contains name of product.



Next, Click **Connectivity > ActiveX > Automation Open** to place icon in block diagram.



Connect icons of automation refnum and automation open, and connect output of automation open to reference input of invoke nodes or property nodes.



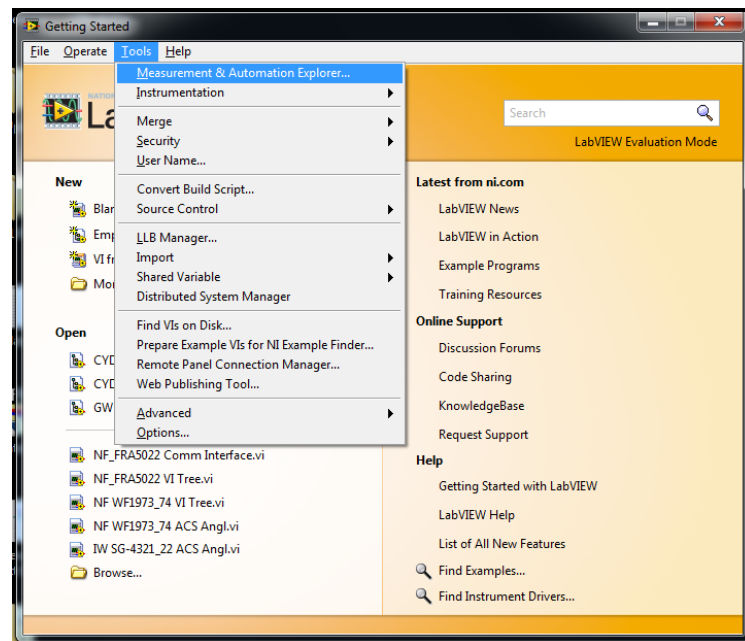
Add more invoke nodes, property nodes, controls and indicators of LabVIEW to proceed programming.



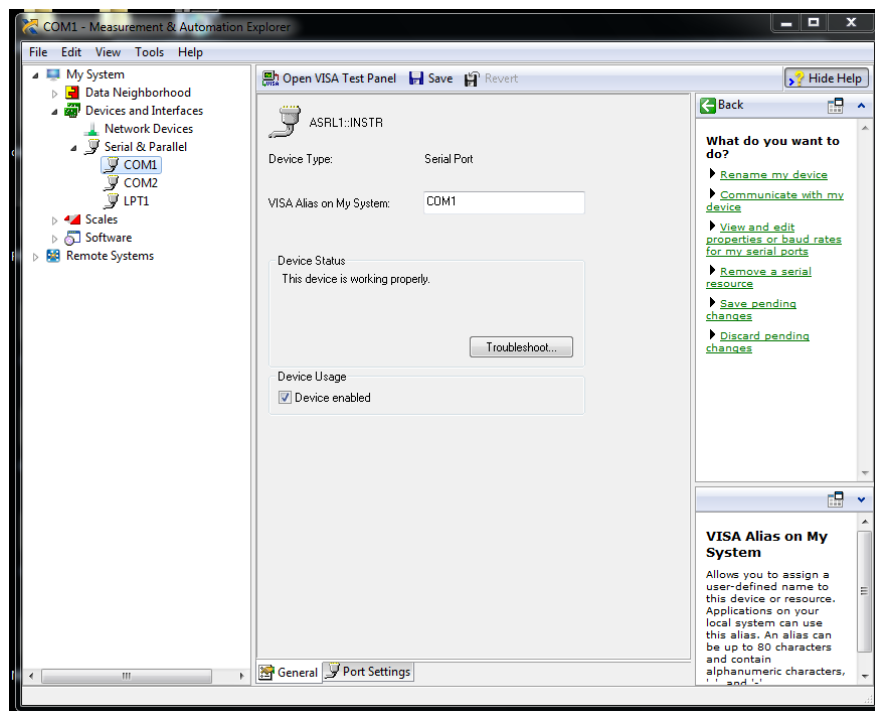
### 3. (Supplementary) Caution in Use of RS-232 Interface

Preliminary to execute VIs with PC and instrument product connected with RS-232 interface, make settings of baud rate, parity, and number of data bit same between PC and instrument. This section explains how to change RS-232 settings on PC-side. Please refer to instruction manuals of each product for RS-232 settings of instrument product side. Make termination character setting of instrument product "LF" regardless of communication interface.

On LabVIEW's **Getting Started** window, click **Tools > Measurement & Automation Explorer** and launch National Instruments Measurement & Automation Explorer (NI MAX).

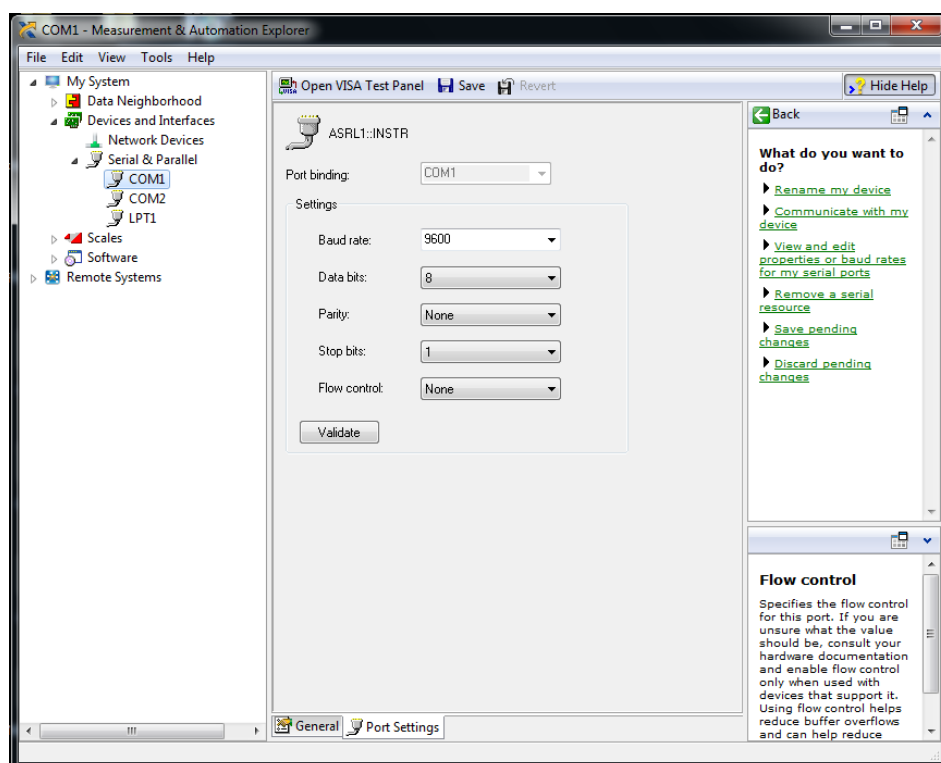


From left side pane of NI MAX window, open **My System > Devices and interfaces** and choose serial port which is connected to instrument product.

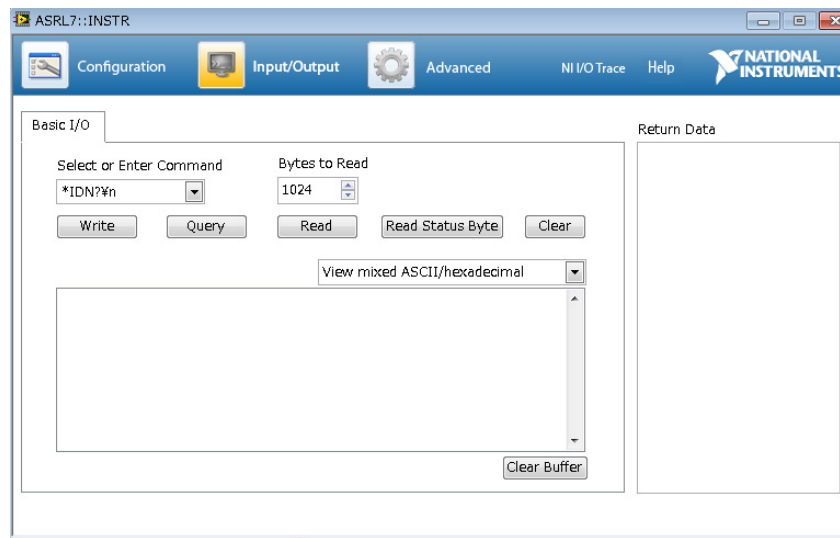


Then, right side pane of NI MAX window turns into serial port setting dialog. Click **Port settings** in bottom of the dialog, and port setting dialog is shown.

Set each setting component same values as product side.



Click **Open VISA test panel** above serial port setting dialog, and check transmission and reception of **"\*IDN?"** query is done correctly.



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