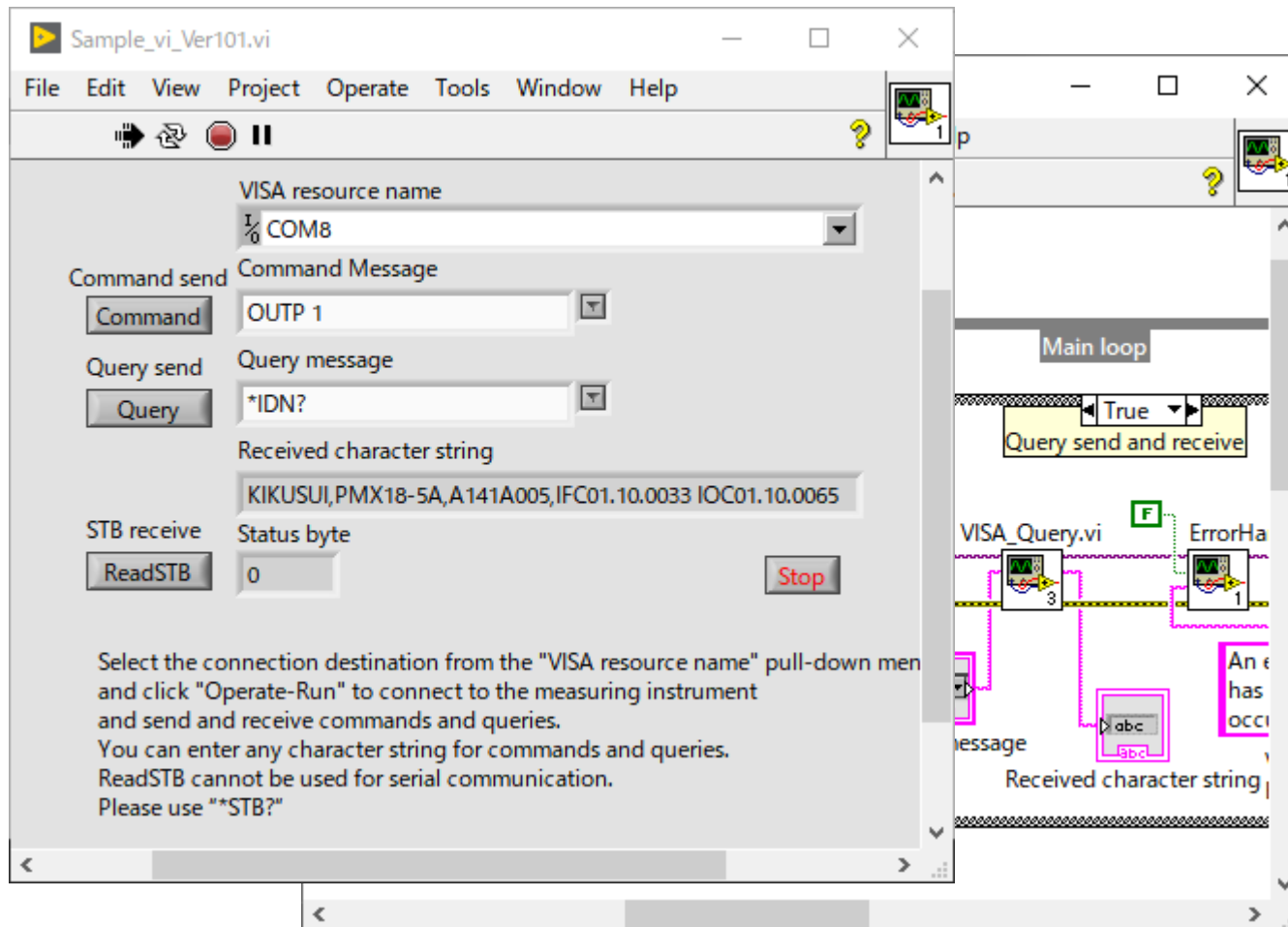


Introduction to sample LabVIEW VIs for device control



Contents

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Introduction to our sample VIs

- **Purpose of our sample VIs?**

Our sample VIs simplify the control of measurement instrumentation by enabling the sending and receiving of SCPI commands via NI LabVIEW 2017 or later using the VISA Write & Read function. You can easily control devices, such as power supplies and measuring instruments, by modifying the initial value of our sample VIs, according to the user's manual or communication interface manual.

As a typical example, we provide our sample VIs specifically for our DC power supply PMX18-5A.

- **Intended user**

Our sample VIs are designed for development engineers who need guidance in creating VIs to control the devices via LabVIEW 2017 or later.

- **What is needed to run or modify our sample VIs?**

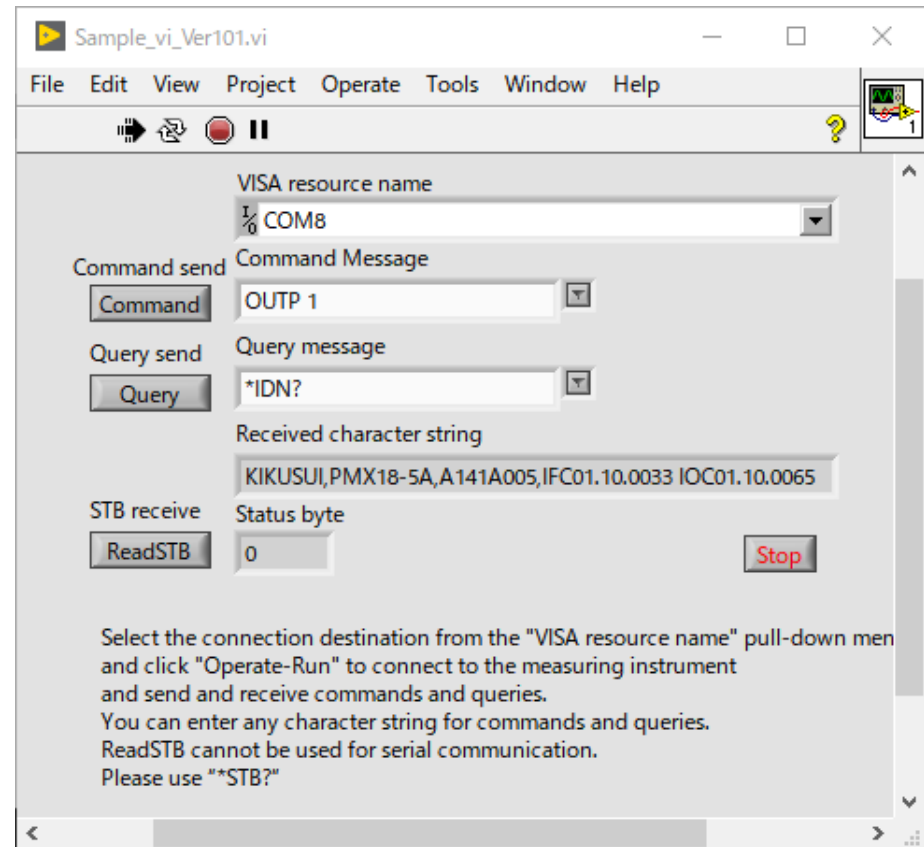
NI LabVIEW 2017 or later (either the production, evaluation or community edition) is required. You can download it from the following website:

[LabVIEW Download – NI](#)

*LabVIEW Community edition has no expiration date but is for non-commercial use only. (Please check the license.)

What can our sample VIs do?

- **Connect a PC and device**
Select the VISA resource name from the VISA resource name pull-down menu. Click **Operate > Run** to open the VISA session and establish a communication link with the device.
- **Send a command**
[Command] button
Select the command from the Command Message pull-down menu. Click **Command** to send the command to the device. You can also manually send commands that are not in the pull-down menu.
- **Send a query command**
[Query] button
Select the command from the Query message pull-down menu. Click **Query** to send the query command to the device. The result data is returned and displayed in the Received character string field. You can also manually send query commands that are not in the pull-down menu.
- **Read a status byte register**
[ReadSTB] button
Click **ReadSTB** to execute the ReadSTB method. The value of the status byte register is displayed in the Status byte field.
*Available only when connected via the GPIB or USB interface.



What is needed to run our sample VIs?

- **Windows PC with the following requirements**

- NI-VISA 19.0 or later
- LabVIEW 2017 or later (32-bit version)
 - * The sample VIs compatible with LabVIEW 2011 to 2016 are also included.
 - * The sample VIs were tested on the LabVIEW 32-bit version, but it may also run on the 64-bit version as they use only standard functions.

- **Connection Cable**

You will need one of the following connection cables.

- USB connection: USB cable (USB Type A-Type B)
- Serial connection: Serial cable (9-pin cross type)
USB-RS232C conversion cable
(e.g., REX-USB60F manufactured by RATO Systems, Inc.)
 - *If your PC has a serial port, the conversion cable is not required.
- GPIB connection: USB-GPIB conversion cable
(e.g., USB-GPIB-HS manufactured by National Instruments)
 - *Use the cable that supports the VISA COM library.
 - You cannot use the GPIB-USB cable by RATO Systems, Inc.
- LAN connection: LAN cable (cross-type)
 - *In case of AUTO-MDIX LAN interface, straight cables are also available.

- **Device such as measuring instrument or power supply**

- You will need the device that supports the SCPI commands (e.g., PMX-A, PWR-01), with the following interfaces:
 - GPIB interface
 - Serial interface (RS232C)
 - USB interface (USBTMC)
 - LAN interface (VXI-11, HiSLIP)

Details of our sample VIs

- **Contents of the ZIP file**

- The set of LabVIEW 2017 VIs, including sub-VIs
- The set of LabVIEW 2011-2016 VIs, including sub-VIs
 - **Please save all sub-VIs to the same folder after unzipping.**

- **Programming Language**

- LabVIEW 2017 language
- *The sample VIs compatible with LabVIEW 2011 to 2016 are also included.

- **What can our sample VIs exactly do?**

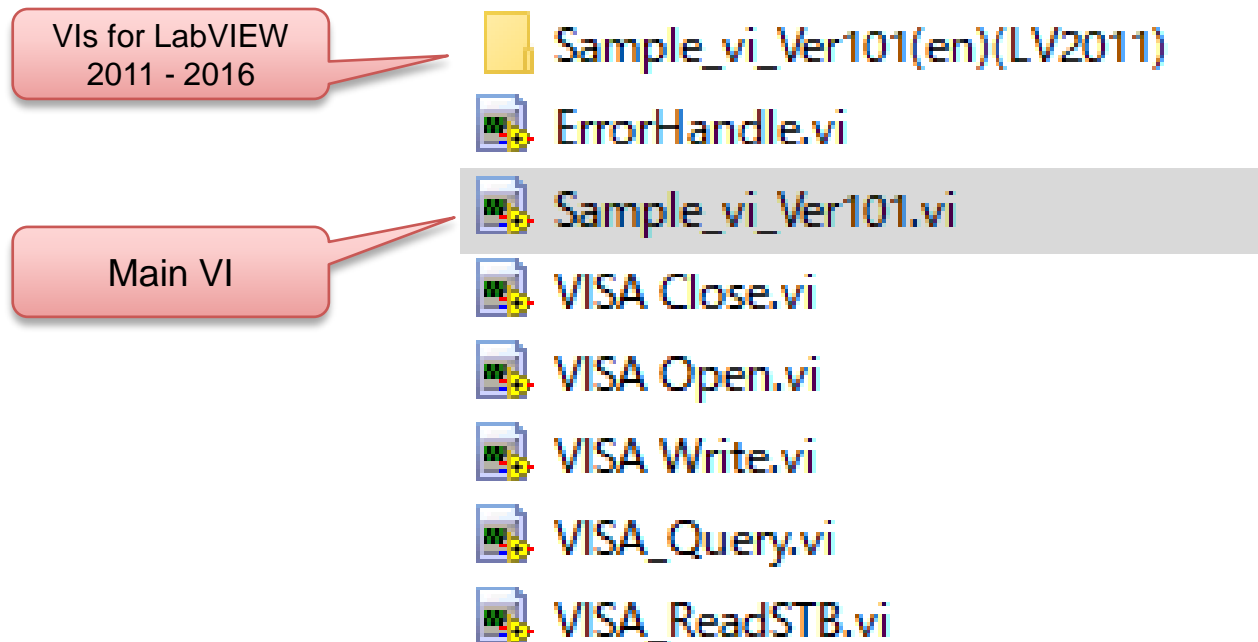
- Sending and receiving commands using the VISA Write/Read function (VISA Write.vi and VISA_Query.vi)
- Opening the VISA session and setting the RS-232C baud rate (VISA Open.vi)
Since no specific IVI driver is included in the sample VIs, you can use them for different devices.

- **Precautions before implementing our sample VIs**

- You can modify our sample VIs, but please note that they are provided only as a reference of your programming.
- Our sample VIs do not guarantee complete operation in all environments.
- Error handling has been minimized to simplify our sample VIs.
We strongly recommend handling all errors on your actual system.

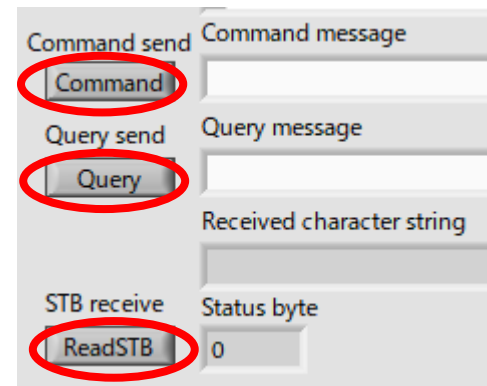
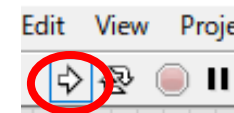
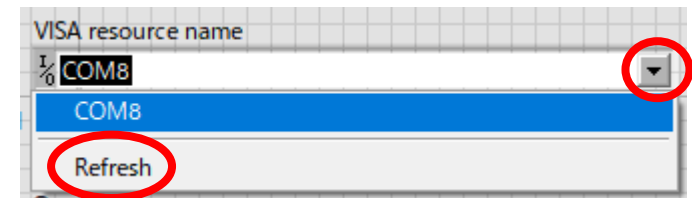
What is in our ZIP file?

- The following sample VIs are included.
Please extract all VI files to the same folder.



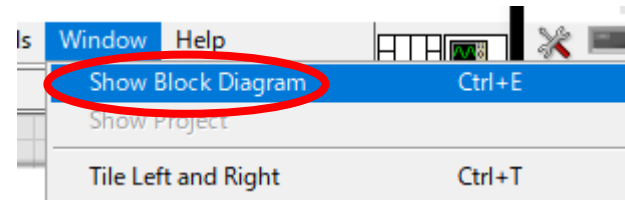
How to run our sample VIs

- Install LabVIEW.
- Connect your PC and device.
- Double-click 'Sample_vi_Verxxx.vi' (where 'xxx' is the sample VI version number).
- The front panel window will appear. Click **View > Tools Palette** to display the Tools palette. Click the **Operating Tool** icon.
- Click the downward arrow [▼] of the VISA resource name dropdown and select the resource name of the device you want to connect.
If the resource name does not appear in the dropdown, click **Refresh**.
- Click **Operate > Run** (or click the play icon [=>]) to open the VISA session and establish a communication link with the device.
- Select a command in the Command message field. Click **Command** to send the command to the device.
- Select a query command in the Query message field. Click **Query** to send the query command to the device and receive the query response.
- Click **ReadSTB** to receive the status byte.
- Click **Stop** to stop the sample VI.

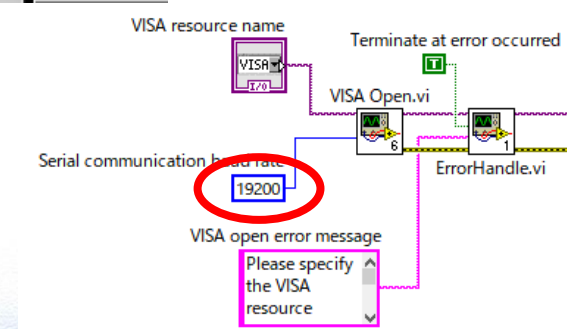
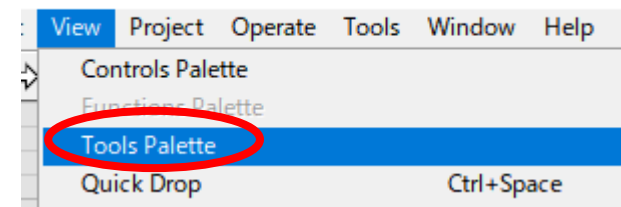


How to change the serial communication speed

- Click **Window > Show Block Diagram** on the front panel to open the block diagram.
- Click **View > Tools Palette** to open the Tools palette. Then, click the **Labeling Tool** icon.
- Change the value of Serial communication baud rate on the block diagram and save the change.
- If you want to modify parameters other than the baud rate, double-click 'VISA_Open.vi' to edit parameters such as stop bit and XON/OFF.



File_VI_Ver101.vi Front Panel

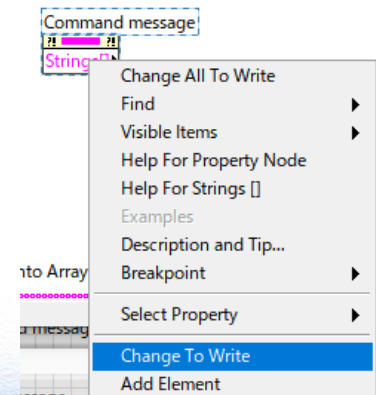
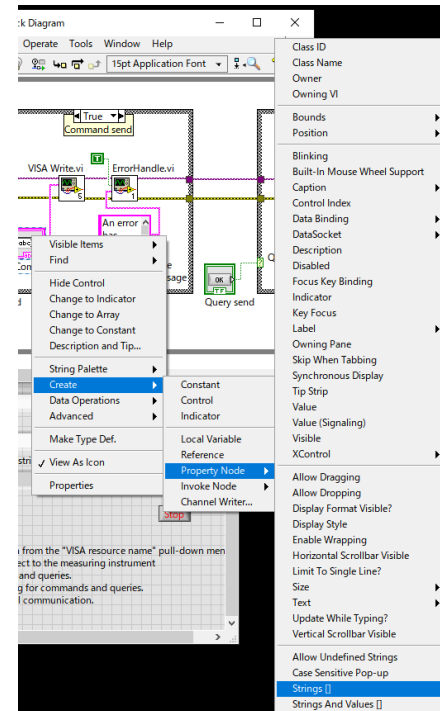


Properties of Front Panel Controls and Indicators

- Our sample VIs utilize the property node to modify the settings of the front panel controls and indicators.
- Right-click on the nested control on the block diagram.

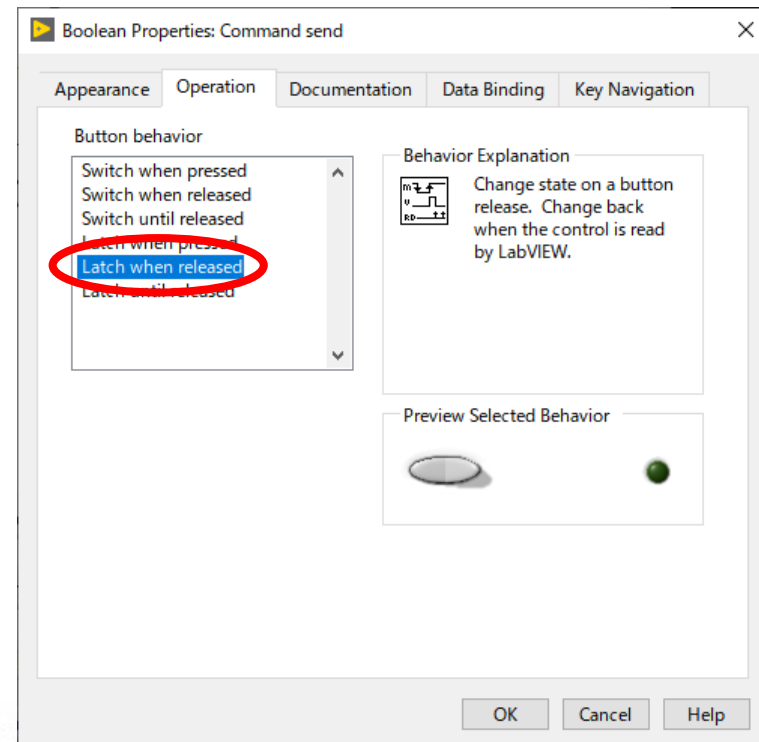
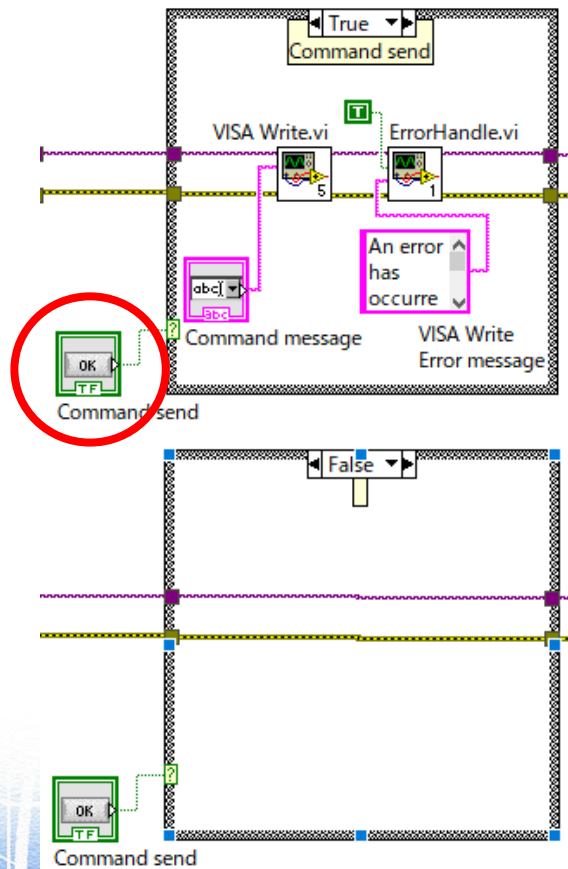
Then, click **Create > Property Node** to show the property.

- To switch the property node from read to write, right-click on the property node and click **Change to Write**.



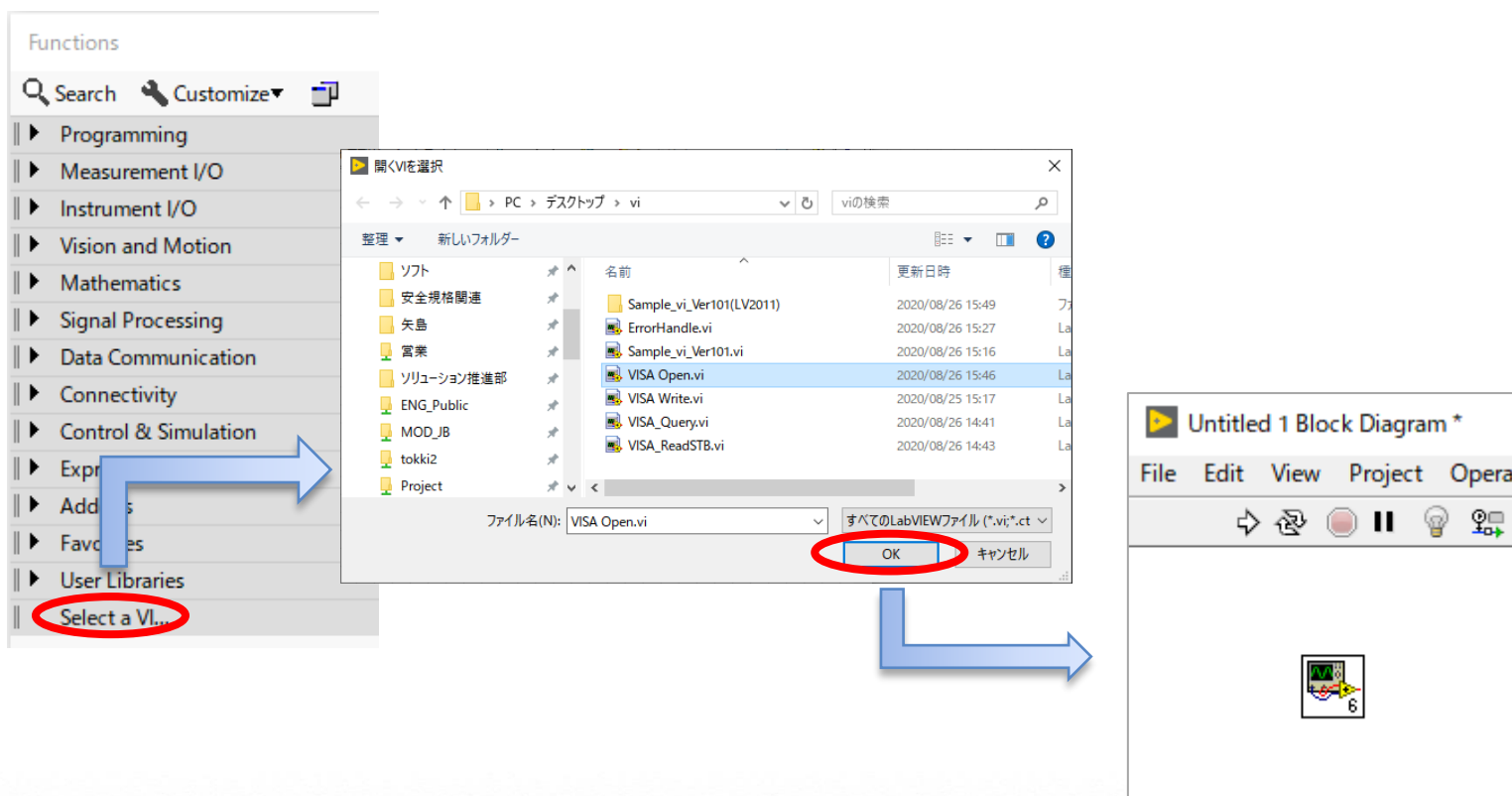
How to send commands only when needed

- The Case Structure function enables you to send commands only when the Command button is clicked.
- In the Boolean properties dialog, choose either Latch when pressed or Latch when released.



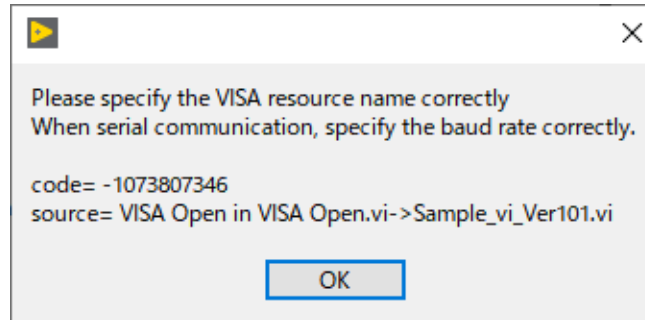
How to utilize our sample VIs

- You can integrate our sample VI into your own VI.
- To add the sub-VI to a block diagram, click on **Functions palette > Select a VI...**

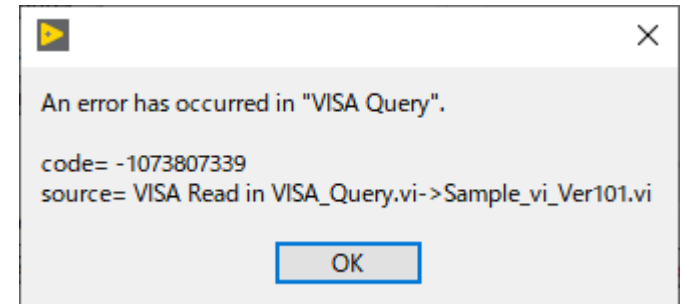
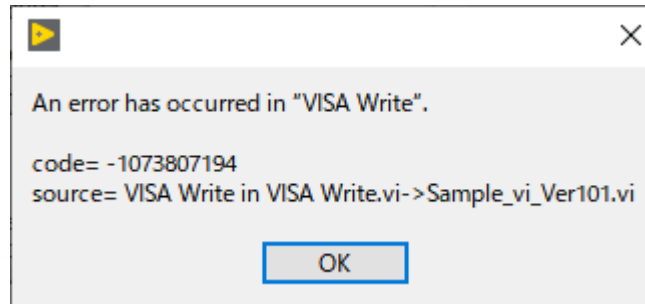


Error Messages

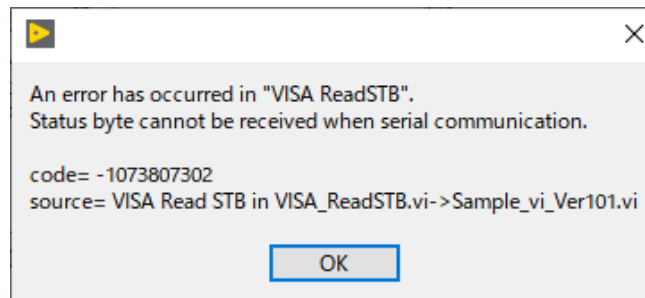
VISA Open Error



VISA Write/Query Error



ReadSTB Error



Contact Us

- For any inquiries regarding the sample VIs, please contact us using the following inquiry form:

<https://global.kikusui.co.jp/contact/lead/>

Please include the phrase “To the person in charge of the sample code” in the text and provide your question.