Steps on using IVI-COM drivers in Agilent VEE Programs

Objective: This document provides an example in how to use an IVI-COM driver for U2701A modular oscilloscope in Agilent VEE Pro.

Installation of IVI-COM driver:

1) To download the Agilent U2701A IVI Driver, go to Agilent’s website (www.agilent.com) and search for “U2701A IVI-COM driver”.
2) Select the latest IVI-COM / IVI-C to download the driver package.
3) Save it to your hard disk (any location).
4) Disconnect any instrument that is connected to your PC.
5) Double-click the saved installation package and it will automatically begin installation.
6) The latest version of the IVI Shared Components should be downloaded automatically prior to the installation of the IVI driver package.
7) The AgilentU2701A IVI Driver Setup Wizard dialog will appear. Click Next to begin.

8) Read the License Agreement and select “I accept the terms in the License Agreement” to proceed. Click Next to proceed.
9) Select the Typical or Full option in the Setup Type to install the AgilentU2701A IVI Driver package. Advanced users may select the Custom option to customize the program features to be installed and where they will be installed. Click Next to proceed.
10) Click Install to begin the installation of the AgilentU2701A IVI Driver package.
11) Click Finish when the installation has completed.

Setting up of IVI-COM driver in Agilent VEE Pro:

1) Load your Agilent VEE Pro application.
2) Connect your U2701A modular oscilloscope to your PC.
3) Bring up the Instrument Manager and highlight “My configuration”. Click Find Instruments.
4) The Instrument Manager should find the USB card, and any instruments attached to your PC.
5) By default, VEE will assign the name “newInstrument” for the detected instrument.
6) For consistency, name the U2701A modular oscilloscope as “osc”.
7) Open up Instrument Manager again and select the osc card.
8) Right-click the card and select **Instrument Properties** and then click the **Advanced** button.

![Instrument Manager](image1.png)

9) Select the IVI-COM Driver tab. Then select the “**AgU2701A**” driver from the drop-down of the IVI-COM Driver/Session Name. Leave all the settings as it is. Click **OK** to proceed.

![Advanced Instrument Properties](image2.png)

10) This allows you to use the IVI-COM driver in your VEE program.
Concept of using IVI-COM drivers in Agilent VEE Pro:

1) Firstly, you have to understand that the IVI-COM driver does not reside within the Agilent VEE Pro environment.
2) Since, Agilent VEE Pro is a graphical programming language, all the programming are within certain objects on its workspace.
3) In order to use the IVI-COM driver, you have to create a link between an object in Agilent VEE Pro and the IVI-COM driver itself. In analogy, it is like referencing to a memory location in C.

Using IVI-COM driver in Agilent VEE Pro:

1) Right-click the USB card and choose Create IVI-COM Driver Object. Place the IVI-COM object on the workspace.

2) Double-click to add operation.
3) Click Create Instance first followed by the Initialize function. The Create Instance function or Instantiate creates a link between your VEE program to the IVI-COM via the driver object. It is going to create an output terminal on the object.
4) The Initialize function initializes the instrument for usage. Just click OK and proceed.
5) To control the instrument via the IVI-COM driver, you just have to select the functions required by adding operations on the IVI-COM object.

6) If you need to clear the status of the osc, just select “Status” -> “Clear”.

7) To reset the osc, select “Utility” -> “Reset”.

8) To read the manufacturer identification of the osc, select “Identity” -> “Instrument Manufacturer” and click Get. This will create an output terminal on the IVI-COM object. You can view other information by selecting the various functions from the “Identity” tree.

Having multiple IVI-COM objects in Agilent VEE Pro:

1) You are only required to instantiate the instrument once, normally at the beginning of your program. As mentioned earlier, the instantiate function creates a link between the VEE program and the IVI-COM driver via the IVI-COM objects residing in the workspace.

2) From the earlier portion, you would have already created an IVI-COM object to instantiate and initialize the instrument already. Notice that VEE would automatically create an output terminal on the IVI-COM object. The output terminal holds the link between that IVI-COM object with the IVI-COM driver.

3) To have another IVI-COM object, just create the IVI-COM object from the Instrument Manager and place it on the workspace.
4) You do not need to **instantiate** the new IVI-COM object as you have already done so on the earlier IVI-COM object. You just need to choose to add the functions that you require on this new IVI-COM object.

5) When you start to add new functions on the new IVI-COM object, an input terminal would automatically be added. As all IVI-COM objects has to be linked to the IVI-COM driver, you need to link all the newly created IVI-COM objects with that IVI-COM object that does the **Instantiation** process. There is an option to do this, using variables.

6) The following are some of the commonly used functions in oscilloscope measurements:
   - Auto scale = “**Measurements**” -> “**Auto Setup**”
   - Vpp = “**Measurements**” -> “**Item(Name)**” -> “**ReadWaveformMeasurement**” -> “AgilentU2701AMeasurementPeriod” (Select the enumerators from the pull-down)
   - Period = “**Measurements**” -> “**Item(Name)**” -> “**ReadWaveformMeasurement**” -> “AgilentU2701AMeasurementVoltagePeakToPeak”

7) You need to input the channel name as “**Channel1**” if you are using channel 1 of the oscilloscope, “**Channel2**” for channel 2.

8) For certain measurements, VEE will create both input and output terminals. You need to initialize those inputs by connecting it to a data object. Select from VEE menu (**Data** -> **Constant** -> **Real64**).