How to Control Tabor AWGs with LabVIEW

Using the IVI Driver

In the previous tutorials, we have shown how to install all the necessary drivers and how to communicate with Tabor AWG using SCPI commands. Another way of using LabVIEW to control Tabor AWGs, is by using the Tabor IVI driver. This way, one can communicate with the Tabor AWG, using pre-defined functions. In this tutorial, we will give a quick start guide on how you can communicate with the Tabor AWG using the IVI driver.

For this tutorial, we will use LabVIEW 2015 32bit and a USB interface, together with the Tabor WX2184C and its latest version of the WX218x 32bit IVI driver. While there are differences when using other Tabor families of instruments the basics are the same. To ensure you successfully established all the necessary settings for remote control over the Tabor instrument using LAN/USB/GPIB, please go over our <u>connectivity tutorials</u> on Tabor's website.

→ To connect and control the Tabor's Instrument using the IVI driver

 Set the USB/LAN/GPIB as the remote interface, using the Tabor's front panel buttons. To do so, go to: "Utility"->"Remote Interface"->"Select Interface"->"Control from Interface". Press Enter to select the active Interface you need. Wait for the answer "Done". We chose to demonstrate using USB.





2. Once the LabVIEW is up and running, go to Tools->>Instrumentation->>Find Instrument Drivers...

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		Measurement & Automation Explorer					
		Instrumentation Find Instrument Drivers					
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		LLB Manager Import Shared Visit Instrument Driver Network visting					
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Expand the installed Instrument drivers to see what drivers are installed. Expand the Connected instruments to see if LabVIEW identifies the Tabor unit.

NI Instrument Driver Finder - Configure Search Connected Instruments Tabor Electronics WX2184C Installed Instrument Drivers Agilent 34401 ini579x win1WS ww107x ww107x ww107x ww257x wv218x	You are not logged in. Instrument Driver downloads are available free of charge to registered ni.com users. You will be prompted to create a new profile or login after you have selected a driver to install. Login Login Scan for Instruments Manufacturer <select one=""> <sli>Additional Keywords WX2184C NI Certified Drivers Only</sli></select>
"You can double-click a connected instrument in this tree to help create your query, or double-click an installed driver to start using it.	< Back Search > Close Help

Double click on the 'wx218x' icon, it will open a new window.

NOTE

If the Tabor driver isn't visible on the NI Instrument Driver Finder, please refer to the instructions in "How to Control Tabor AWGs with LabVIEW – Getting started" tutorial, regarding how to copy & paste the 'wx218x' folder into LabVIEW's instr.lib folder.



3. Click on the 'Open Palette':

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It will open the Tabor wx218x VIs Palette, which you could use to drag & drop each VI found in the IVI driver's wrapper, to your generated code:

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4. Right click on the 'wx218x VI tree' & choose to 'Open VI':

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	wx218x VI Tree.vi						
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It will show you all the available VIs in the Tabor VI tree:

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Arbitrary Sequence	
Arbitrary Waveform Frequency	
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- 5. You can reach the Tabor VI tree in a similar way:
 - a. open a new VI:

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b. Go to Tools->>LLB manager...

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					Find VIs on Disk		
					Prepare Example VIs for NI Example Finder Remote Papel Connection Manager		
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					Control and Simulation	•	
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c. Select the path as seen below, then double click on the wx218x.llb file:

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C/	C:\
Program Files (x86)	Program Files (x86)
National Instruments	National Instruments
LabVIEW 2015	LabVIEW 2015
instr.lib	instr.lib
C Template - Spectrum Analyzer	wx218x
Agilent 34401	dir - Instrument Specific - Trigg
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d. Double click on the 'wx218x VI Tree.vi':



e. Once it will open, go to Window->>Show Block Diagram:

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It will show you all the available VIs in the Tabor VI tree:

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- 6. Here is a short basic example, to set a 50MHz 2Vp-p square waveform in standard mode, just to get a feel of how to communicate using the Tabor IVI driver VIs:
 - a. Drag & drop the 'Initialize with Options.vi' and the 'close.vi' to a new blank VI:

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b. Wire them as seen below:

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c. Create an Error-out indicator for the 'Close.vi' by right clicking on the VI and choosing to create all controls and indicators as can be seen below:







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- d. In the same way, create all controls and indicators for the 'Initialize with options.vi':

e. Delete the Optional string control, as it is not necessary at this point:

Enable Database Access

Relink To SubVI

SubVI Node Setup...

Indicator

All Constants

All Controls and Indicator

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wx218x VI Tree.vi Block Diagram	Context Help
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	Untitled 1.vi Block Diagram *
Sync	File Edit View Project Operate Tools Window Help
Pattern (not for WX218x models)	
Composer (not for WX218x models)	
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StandardWaveform	
StandardWaveform (only for 4Ch. models)	
StandardWaveform (not for 4Ch. models, WS835x)	
StateStorage	

f. Drag and drop the 'wx218x Configure.vi' found under Standard Waveform:

g. Do the same for the 'wx218x Configure Output Enabled.vi':



h. Wire them as with the initialize & close VIs in a row (handle and error wires). Right click on the 'wx218x Configure.vi' to create all controls and indicators:



i. Do the same for the 'wx218x Configure Output Enabled.vi'. Make sure you wire the VIs as can be seen below:





j. Now that we are all set, please go to the VI's front panel and choose the Tabor's resource name. Set to 'Waveform Square', offset OV, Amplitude 2Vp-p, Frequency 50MHz. Choose the active channel to be 'Channel1' and set the 'channel enabled' to 'On' as can be seen below:

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Waveform Square 2	id query (Off)	source	source			
DCOffset	Off					
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Channel1 Frequency	On					
5E+7						
StartPhase						
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Press the run button.

7. As can be seen on scope, a 50MHz 2Vp-p square waveform was created:



The outputted 50MHz 2Vp-p Square waveform.



8. In order to save this process as LabVIEW code, go to File->>Save as...







 Go to the 'wx218x VI Tree' block diagram and double click on the 'Function generator Example' VI:

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	Amp	litude Mod	ulation	WX218X				

This example shows how to use standard mode. It also shows how you can change some of the parameters on the fly:





Use the 'Update' button to write the parameters you change or use the cursors to change them on the fly. Use the 'Stop' button to finish and close the operation of this example. If the 'Abort Generation' option is chosen, then after you will press the 'Stop' button, the unit will perform a reset.

10. For more information regarding the IVI driver functions:

a. Go to: C:\Program Files (x86)\IVI Foundation\IVI\Drivers\wx218x

& open the "WX218x" HTML file:

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🔚 Recent Places	ConfigStore	10/20/2014 2:52 PM	XML Document	4 KB			
	Readme	12/11/2014 4:19 PM	Text Document	13 KB			
🥽 Libraries	😤 WX218x	12/18/2014 9:33 AM	Compiled HTML	2,087 KB			
Documents	wx218x.fp	12/18/2014 8:42 AM	FP File	372 KB			
J Music	wx218x.sub	11/5/2014 11:47 AM	SUB File	76 KB			
Pictures							

b. Follow the path as shown below:





In the next tutorials of the series "How to Control Tabor AWGs with LabVIEW", we will show a few practical LabVIEW coding examples.

For More Information

To learn more about how to remote control Tabor instruments using LabVIEW, visit our website Support & Tutorials zone. If you encounter difficulties with connecting to Tabor units using LabVIEW, please contact us at <u>support@taborelec.com</u> and our support team will gladly help. For more of Tabor's solutions or to schedule a demo, please contact your local Tabor representative or email your request to <u>info@tabor.co.il</u>. More information can be found at our website at <u>www.taborelec.com</u>

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