



Using IntuiLink Software to Control an Arbitrary Waveform Generator

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Objective

In this laboratory exercise the capabilities of the IntuiLink software in controlling the Agilent 33120A Function /Arbitrary Waveform Generator (Arb) via the IEEE-488 bus are introduced. Various types of waveforms, in addition to the standard signals such as sine wave and square wave, are generated.

Equipment and Software

- Agilent IntuiLink Software
- Agilent 33120A Function/Arbitrary Waveform Generator
- Agilent 54602B Oscilloscope (or Agilent 54621A/22A Scope)

Reference:

- Agilent 33120A Function/Arbitrary Waveform Generator User's Guide

Procedure:

1. Instrument Interconnection

- a. Connect the output of the Arb to channel 1 of the oscilloscope

2. Verifying the Bus Addresses of the Instruments

- a. On the Arb press **Shift** and **Enter**. **A:MOD MENU** will be displayed.
- b. Press **>** until **I/O MENU** is displayed, **v** to display **HPIB ADDR**, and **v** again to display the bus address.
- c. To change the address press **Enter Number**, type the desired address number, and press **Enter**.
- d. Display the oscilloscope address by pressing the **Print/Utility** button and then **I/O Menu**.

3. Running IntuiLink

- a. Using the computer load **Agilent IntuiLink, Waveform Generator**, and **Waveform Editor**.

4. Connecting the Instruments to the Computer

- a. When the **Agilent IntuiLink Waveform Editor** is displayed select **Communications** and **Connection**.
- b. Under **Select Address(es)** the bus addresses of the Arb and oscilloscope will be displayed.



- c. Select **Identify Instruments** and under **Identified Instruments on My Computer** highlight the Arb and select the **Connect** button. Repeat this procedure for the oscilloscope.

5. Displaying Common Waveforms

- a. From the toolbar select the sinewave icon. Note that only one cycle will be displayed.
- b. Send it to the oscilloscope by selecting **Communications** and **Send Waveform**. Make the following changes: frequency to 2.5KHz, voltage to 3.2 vpp, and offset to 0.8 Vdc.
- c. Select **Send** and **Ok**.
- d. When the transfer is completed, select **Close**.
- e. Referring to the oscilloscope display, measure and record the following characteristics of the waveform: frequency, peak-to-peak voltage, and dc offset.
- f. On the computer display delete the sinewave by selecting the X in the upper right hand corner of the **Waveform** box. Don't save the changes.
- g. Click on the white paper icon in the upper left-hand corner of the display to select a new waveform.
- h. Select the sinewave icon and then the triangle icon. Note that the second waveform is attached to the right side of the first waveform.
- i. Select the icons of various other waveforms.
- j. Send this composite waveform to the Arb and view the oscilloscope display.
- k. On the computer display delete the waveform.

6. Generating Arbitrary Waveforms

- a. Again click on the white paper icon in the upper left-hand corner of the display to select a new waveform.
- b. From the toolbar select the pencil icon and sketch an arbitrary waveform in the black grid area by pressing and holding the mouse left button.
- c. Send the generated waveform to the Arb.
- d. On the oscilloscope, if necessary, adjust the **TRIGGER Level** and **Time/Div** controls to properly display the waveform.

7. Saving the File of a Generated Waveform

- a. Select the disk icon, give the file a name, and select **Save**.
- b. The file will be stored in c:\program files\Agilent\IntuiLink\waveform generator\.
- c. Delete the waveform box.

8. Loading a Stored File

- a. Select the yellow folder icon and the name of the file previously saved.

9. Transferring a Waveform from the Oscilloscope to the Computer

- a. Open a new waveform, then **Tools** and **Import Waveform Agilent 546xx Scope**.
- b. Use the pencil icon to modify the waveform.
- c. Select **Communications** and **Send Waveform** to send the waveform to the Arb.
- d. On the oscilloscope press **Autoscale**.



10. Transferring Waveform Data to an Excel Spreadsheet

- a. Load the Microsoft Excel spreadsheet software and open a new file.
- b. In IntuiLink open a new waveform.
- c. Create a waveform by selecting the sinewave and other icons.
- d. Place the cursor in the graph area, press the mouse right button, and click on **Select All**.
- e. Select **Edit** and **Copy**.
- f. Go to the Excel file and select **Edit** and **Paste**. The data points used to plot the waveform are now in the spreadsheet.
- g. Plot the data by selecting the graph icon.