

# GRL DisplayPort AUX Protocol Decode Software GRL-DP-AUX-DEC

Installation and Quick Start Guide

| DisplayPort-AUX Protocol Decode Software (Version: 1.0.0.0)  | - • ×                                       |
|--|---|
| Application Options License Windows Help   | 0   |
|  |   |
| Packets Info 4 b x   | Packets Details 4 D ×                       |
| Packets:   | Selected Packet Details:                    |
| Ind TimeStamp PacketType Command Command DPConfigReg Details   | Header (0X9)                                |
| 26 4 01316650 REQUEST I2C TRANS. READ CMD RESERVED Request to read 0 Byte(s)   | Bit3 - Native/12C 1                         |
| 27 4 08193830 REPLY I/C TRANS I/C ACK RESERVED //CACK of 0 Byte(s)   | Bit2 - Command Bit 2 0                      |
| 28 4.15873529 REQUEST NATIVE AUX READ CMD SINK COUNT Request to read 1 Byte(s) at address 0X00200 (SINK COUNT)         | Bit I - Command Bit I U                     |
| 29 4.46437000 REPLY NATIVE AUX AUX ACK SINK COUNT AUX ACK of 1 Byte(s)   | Header Description (0X9)                    |
| 30 99.0640473 REQUEST NATIVE_AUX READ_CMD LANE_COUNT_SET Request to read 1 Byte(s) at address 0X00101 (LANE_COUNT_SET) | Bit 3 : Native Packet                       |
| 31 99.3697121 REPLY NATIVE_AUX_AUX_ACK_LANE_COUNT_SET AUX_ACK of 1 Byte(s)   | Bit 2:0 : READ_CMD                          |
| 32 99.4344787 REQUEST NATIVE_AUX WRITE_CMD LANE_COUNT_SET Request to write 1 Byte(s) at address 0X00101 (LANE_COUNT_S  | Address                                     |
| 33 99.7481935 REPLY NATIVE_AUX_AUX_ACK LANE_COUNT_SET AUX_ACK of 0 Byte(s)   | 20 Bit Address : 0x0 0x0 0x1 0x1 (LANE_COUN |
|  |   |
| Signal/Bus Diagram \ 4 b ×   | Payload                                     |
| 🖑 🔍 🔿 🐩 🌀 Horiz 🔹 🗆 Solit Analysis 🖉 Signal 🖉 Bus Diagram 🗌 Vert Marker 🛛 Horz Marker                                  | DU0-01: 0x00<br>Rayload Description         |
|  | Bits 7:0 :0(Read Data Length (0Bytes))      |
| SYNC STOP 0X9 Data STOF  |   |
| READ_CMD   |   |
|  |   |
|  |   |
|  |   |
|  |   |
|  |   |
|  |   |
|  |   |
| Vmin 156.00 mV   |   |
| 99.06403 mS 99.13661 mS  |   |



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#### **1.Introduction**

This Installation and Quick Start Guide provides procedures for installing, configuring, and verifying the operation of the GRL DisplayPort-AUX Protocol Decode Software. It also will help you familiarize yourself with the basic operation of the analyzer.

### 2. Pre-requisite

Following are pre-requisites for using the software on Keysight Oscilloscope:

- 1. Keysight Technologies 90000 X-Series, 9000, 90000, or 90000Q Series model oscilloscope
- 2. Agilent IO software (Pre-installed on the Oscilloscope)
- 3. Microsoft .NET 4.5 (If not available, please download and install from www.microsoft.com)
- 4. Differential probes and probe heads (Minimum 1 ea.)
- 5. Keyboard and Mouse

Following are pre-requisites for using the software on Tektronix Oscilloscope:

- 1. Tektronix DPO/MSO 70000 Series oscilloscope
- 2. TekVISA software (Pre-installed on the Oscilloscope)
- 3. Microsoft .NET 4.5 (If not available, please download and install from www.microsoft.com)
- 4. Differential probes and probe heads (Minimum 1 ea.)
- 5. Keyboard and Mouse

## **3.Installing the software**

Download the latest software from www.graniteriverlabs.com. If you have received a product CD carefully open the CD and note the media serial number printed on the CD; you may require this information to obtain the activation key for this software.

Locate the installer file named "GRL Automated Test Solutions - Installer.exe". Open the application by double clicking the installer file. The install wizard will install the software

Install the software as follows:

Step 1: Double click Installer.exe.

Step 2: Click "Next" in the welcome screen



|                    | Installing GRI. Automated Test Solutions   |  |
|--------------------|--|--|
| astalling GRL Auto | mated Test Solutions   |  |
|                    | 🖬 Installing GRL Automated Test Solutions 🚽 🗆 💌  |  |
|                    | Welcome to the GRL Automated Test<br>Solutions Installation!   |  |
|                    | This setup program will instal GRL Automated Test Solutions on<br>your computer Click Carsell iny our host want to install this<br>application. Cick Versit is continue the installation.                          |  |
|                    | VARNING. This program is protected by international copyright law<br>and treates.<br>Unauthorized reproduction or distribution of this program, or any<br>Unauthorized reproduction and command penalties and will |  |
|                    | Dis prosileculario do the mademonin exemit service   |  |
|                    | GRLAutomated Test Solutions  |  |
|                    |  |  |
|                    |  |  |
|                    |  | County Dury Lake Area Duratio Des Linds - Mitchiel |

Step 3: Read and agree the license agreement and click "Next"



Step 4: Review the install folders and click "Next"

| installed.   | d Test Solutions will be              |
|--|---------------------------------------|
| Setup will install files in the following folder.  |                                       |
| If you would like to install GRL Automated Test Sol<br>Browse and select another folder. | utions into a different folder, click |
| Destination folder   |                                       |
| C:/Program Files (x86)/GRL   | Browee                                |
|  |                                       |
| Space required: 33.93 MB   |                                       |
| Space available: 183.89 GB   |                                       |
|  |                                       |
|  |                                       |



Step 5: Click "Install" and the Install wizard installs all required files.

| Ū.                      | Installing GRL Automated Test Solutions 🛛 – 🗖 💌                 |
|-------------------------|---|
| Installing I<br>Copying | Files<br>J GRL Automated Test Solutions files to your computer. |
| To stop                 | p or pause the installation process, click Cancel.              |
|                         | Directory: C:\GRL\GRL-UHS-II\SampleFiles<br>File: Lane0.bin     |
| — GRL Automat           | ed Test Solutions   |

Step 6: Click "Finish" to complete the installation

| 081             | Installing GRL Automated Test Solutions 🛛 – 🗖 💌        |
|-----------------|--|
| Finish<br>GRLAu | tomated Test Solutions has been successfully installed |
| Click           | Finish to complete the installation.                   |
|                 |  |
|                 |  |
|                 |  |
| – GRL Automa    | ted Test Solutions                                     |



## **4. Running the Software**

The software installer automatically creates short cuts in the Desktop and Start Menu.

To open the application follow the below procedure:

Step 1: Navigate to Start Menu > All Programs > GRL > GRL Automated Test Solutions



Step 2: Click "GRL- Automated Test Solutions" to open the application.



Step 3: Click the Application Menu, and open "DisplayPort-AUX Protocol Decode Software"

|    | Application | Options     | License    | Windows      | Help |
|----|-------------|-------------|------------|--------------|------|
| Γ  | DisplayP    | ort-AUX Pr  | otocol Dec | ode Software |      |
|    | DisplayP    | ort Protoco | l Decode S | oftware      |      |
| F  | HDMI P      | rotocol Dec | ode Softwa | re           |      |
| ١  | UHS-II P    | rotocol Dec | ode Softwa | are          |      |
| I. | USB-PD      | Protocol De | code Softv | vare         |      |



#### Step 4: DisplayPort AUX Protocol Decode Application is ready to use





## **5.Introduction to Software User Interface**

The software user interface includes a Menu, Action Item Bar, and Action Window as shown in the below image. The Action Window changes according to the selection of Action Item Bar.



The Action Item Bar provides access to all functionalities of the software. When an action item is selected, the Action Window is loaded with the Action Item. You can navigate to various Action Items using the arrow bars located in the left and right side of the window. The Minimize/Maximize action button minimizes and maximizes the Action Window.

## 6. Activating the Application

Application by default is provided with 10 days of activation. Without any activation key the application can be used for 10 days for evaluation.

After the purchase, if you received a CD of the software, you can find the Media number. You may need to use this media number for any further communications.



Below are the steps to activate the application license:

Step 1: Open the application (For more information, see <u>Running the application</u>) Step 2: In the application menu, Click License > License Details

| G                   |         |             | Dis          |
|---------------------|---------|-------------|--------------|
| Application Options | License | Help        |              |
| Connection Setup    | Lice    | nse Details | <b>_</b> 🔿 💿 |

Step 3: Review the installed applications

| called Decidents  |                             |
|---|-----------------------------|
| Istalled Froducts.  |                             |
|   |                             |
| DisplayPort Protocol Decode Software - Demo(Expires in 10 days OR al<br>UHS-II Protocol Decode Software - Demo(Expires in 10 days OR after1 | tter10 trials)<br>0 trials) |
|   |                             |
|   |                             |
| Host ID (For enquiries or license request please send this information):  |                             |
| aqexueb 51 AEU YF1 Aqz17<br>++nAy80g3mNARmJLqhb6yxFgJ4gFZYXSBCPaJw39EyuAdXlGyn5ybM  | Copy to                     |
| IDUZPENUZWIN+KUZAPAIHKKU IIT IDaBIN8k2r1mKN1tw4grKoo181JX<br>TDF/YPnY9XPnZDzI/JCIIr2qaDcy3sx  | Clipboard                   |
| For license enquiries send the Host ID to info@graniteriverlabs.com   |                             |
| Activation Key Received:  |                             |
|   |                             |
|   |                             |
|   |                             |
|   |                             |

Step 4: Copy the Host ID by clicking "Copy to Clipboard"

| Framwork License Details  |                            |
|---|----------------------------|
| stalled Products:   |                            |
| Joensed To: New License<br>DisplayPort Protocol Decode Software - Demo(Expires in 10 days OR af<br>JHS-II Protocol Decode Software - Demo(Expires in 10 days OR after10   | ter10 trials)<br>) trials) |
| vas tu črvi e inkaines vi rucei ise reguesti presele serio tinis information).<br>igEx08bs7tAE0VPTXqz17<br>noh200g3rtAE0VPTXqz17<br>p02p2rbo2Mh-K02APAHkK011Y1paBIN8k2r1mKN1ttw4grKoo181JX<br>DY7MPh3YSAFD2J/JCII/2gapcy3ex | Copy to<br>Clipboard       |
|   |                            |
| or license enquiries send the Host ID to info@graniteriverlabs.com  |                            |
| or license enquiries send the Host ID to info@granteriverlabs.com   |                            |



Step 5: Send the following details to info@graniteriverlabs.com:

Media Number / Order Number: Company Name: Contact person:

Note: Media number will be written on the CD case. If you would have ordered online and received an application installer, use the Order Number specified in the confirmation e-mail.

Step 6: Paste the activation key received from info@graniteriverlabs.com in the Activation Key Received text box provided in the License Dialog

| Framwork License Details   |                             |
|--|-----------------------------|
| nstalled Products:   |                             |
| Licensed To: New License   |                             |
| DisplayPort Protocol Decode Software - Demo(Expires in 10 days OR a<br>UHS-II Protocol Decode Software - Demo(Expires in 10 days OR after1                                 | fter10 trials)<br>O trials) |
| Host ID (For enquiries or license request please send this information):   |                             |
| λqEx06bSTAEQVPTXqz17<br>+nAγ80g3mNARmJLqhb6yxFgJ4gFZYXSBCPaJw39EyuAdXlGyn5ybM<br>[po2Pchc20H-KO2APAHikKD1IY1paBIN8k2r1mKN1tw4grKoo181JX<br>[Df/YPnY9XPnZDzl/JClir2qaDcy3sx | Copy to<br>Clipboard        |
| For license enquiries send the Host ID to <u>info@graniteriverlabs.com</u>   | Ļ                           |
| Activation Key Received:   | V                           |
| m5ecZm9J/9BkWn6efcVj+KeMnitlzA38VTPIX4vTDk6WZ56gGKAJPYe<br>nfdwWebz+n+mulk94QWyytl0rdEeFAlZ/wK+<br>4/SEvXfzVg6oZ74g2udNjhPuikgy9Rfe8Q9WOXOCJ8dH3                           | eErqxmN 🔺                   |
|  | Ĩ                           |

Step 7: Click "Activate"

| 12.00 202 (C22.0 12.02) | VU       |
|-------------------------|----------|
| Browse                  | Activate |



Step 8: The following Confirmation message will be shown, Click OK

|  | Granite River Labs   |                      |
|--|--|----------------------|
|  | Framwork License Details   |                      |
| stalled Produc   | cts:   |                      |
| icensed To: I  | New License  |                      |
| DisplayPort Pr   | otocol Decode Software - Permanent   |                      |
| HS-II Protoci  | ol Decode Software - Permanent   |                      |
|  | Granite River Labs License   | ×                    |
| and the second s |  |                      |
| 4  |  |                      |
| c<br>c   |  |                      |
| Display  | Port Protocol Decode Software: Updated to Pern   | nanen                |
| Display<br>UHS-III   | Port Protocol Decode Software: Updated to Pern<br>Protocol Decode Software: Updated to Permaner  | nanen <mark>:</mark> |
| c<br>Display<br>UHS-III  | Port Protocol Decode Software: Updated to Pern<br>Protocol Decode Software: Updated to Permaner  | nanen <b>t</b>       |
| c<br>Display<br>UHS-II I   | Port Protocol Decode Software: Updated to Perm<br>Protocol Decode Software: Updated to Permaner  | ok                   |
| Display<br>UHS-III   | Port Protocol Decode Software: Updated to Perm<br>Protocol Decode Software: Updated to Permaner  | nanent<br>ht<br>OK   |
| c Display<br>c UHS-III<br>c  | Port Protocol Decode Software: Updated to Perm<br>Protocol Decode Software: Updated to Permaner  | OK                   |
| c Display<br>UHS-III   | Port Protocol Decode Software: Updated to Perm<br>Protocol Decode Software: Updated to Permaner<br>Xwr/NZ+<br>vSf/QZFq+rH3FY/rDJ74g2udNjhPv0I0PgTCpOctW0 | OK<br>XOCJ8dH3       |

Step 9: Review the license, and click close in the License Dialog

| GRL Framework License   |                      |
|---|----------------------|
| Granite River Labs  |                      |
| Framwork License Details  |                      |
| Installed Products:   |                      |
| Licensed To: New License<br>DisplayPort Protocol Decode Software - Permanent<br>UHS-II Protocol Decode Software - Permanent   |                      |
| I<br>Host ID (For enquiries or license request please send this information):<br>GqEx06bSTAEQVPTXqz17<br>+nAy80g3mVARmLlqhb6yxFgJ4gFZYXSBCPaJw39EyuAdXlGyn5ybM<br>Tp02Fch02Mh+K02APAIHkKD1IY1paBIPBzs0yesuY2x2B7(0vp6HCb<br>aYts1Wk/SSKHGp0(3Sz46FkfmyoT844bjfX8WC8s= | Copy to<br>Clipboard |
| For license enquiries send the Host ID to info@graniteriverlabs.com   |                      |
| Activation Key Received:  |                      |
| +ci5Xi0hpxf3t3qmEDs9PYxBlnPvLlRtMXllgLkFoJe9OwY56gGKAJPYeEq<br>dwWWJaP+CGXw7NZ+<br>5bUthZuXnGZvSf/QZFq+rH3FY/rDJ74g2udNjhPx0l0PgTCpOctWOXOC.  | pomNmf 🔨<br>J8dH3 🗸  |
| Activation License File Received: Browse  | Activate             |
| Close   |                      |
|   |                      |



## 7.Instrument/OscilloscopeConfiguration

To operate GRL Automated Test Solutions may require configuring the VISA aliasing to make the software communicate with the Oscilloscope.

Click "Oscilloscope Configuration" in the Action Bar button. The following action window appears:

| Oscilloscope Configuration |  | 🎽 🗊 🗊 🎯 + 🕨 + 🗐   | Remote mode: OFF | ? |  |
|----------------------------|--|---|------------------|---|--|
|                            | VISA Alias Name<br>IDN:<br><u>Click he</u> | Scope Connection Setup<br>No Instrument Detected<br>IDN Not Available<br>Test Connection<br>re to know how to configure VISA Alias Name |                  |   |  |

If the software is properly connected to the Oscilloscope, the VISA Alias Name will be shown. Otherwise click the "Refresh" button to repeat the process of detecting the Oscilloscope. Once the Oscilloscope is detected, click the "Test Connection" button to verify for successful connection with the software.

For more help on instrument VISA aliasing, select <u>Click here to know how to configure VISA</u> <u>Alias Name</u>.

For Tektronix Oscilloscope use GPIB8::1::INSTR for the VISA aliasing

The following instructions helps to configure the VISA aliasing in Agilent Oscilloscope.

#### **Prerequisite:**

- 1. Agilent Technologies 90000 X-Series, 9000, 90000, or 90000Q Series model oscilloscope
- 2. Keyboard and Mouse
- 3. GRL Automated Test Solutions Software

#### **Step 1: Open the Agilent IO Control**

Find the Agilent IO icon on the system tray as shown below and **right click** the Agilent IO control.





Step 2: Open Agilent Connection Expert

Click "Agilent Connection Expert" and open the application



This opens the Agilent Connection Expert as shown below <u>File Control Setup Trigger Measure Analyze Utilities Demos Help</u> 7 Nov 2013 11



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#### Step 3: Select LAN instrument

In Agilent Connection Expert Select the LAN instrument



#### Step 4: Add Instrument

Right click the LAN as shown below and click "Add Instrument" or click "Add Instrument" in the ribbon bar.



#### **Step 5: Configure the LAN instrument**

Click "Add Address" in the "Add LAN Instrument" dialog as shown below:

#### GRL GRANITE RIVER LABS Add LAN Instruments cover or locate LAN instruments. Select any number of them to add to the config Add Address Search Auto Find Add Other Use or Use IP Address able to oles: IPv4: 192.168.0.100 IPv6: fe80::218:e77f o Default ins O HISLIP Device inst0 🔿 Socket Port number: 5025 Test Connection Web information (recommended \*IDN query 🔿 None Instrument Web Page Identify Instrument Add to configurat OK Cancel Help

### Step 6: Configure the IP address of LAN Instrument

In Add Address page, select "Use Hostname" and type "localhost" in the text box provided for local host.

| Connect to an instrument by using address of the strument by | ver or locate LAN instrument  | s. Select any number         | er of them to add to the con | figuration. | 21<br>72<br>9   |
|--|---|------------------------------|------------------------------|-------------|---|
| Optional Connection mormation         O Default Instrument         HISLIP       Device name: inst0         Socket       Port number:         5025  | Enter Instrument Addre<br>Use Hostname<br>or<br>Use IP Address                                  | iocalhost<br>Examples: IPv4  | 192.168.0.100 IPv6: fe8      | 0::218:e77f | Connect to an instrument by using<br>an address or hostname you<br>already know. This has the<br>advantage of being able to<br>connect devices that are not auto<br>discovered. |
| Test Connection Instrument identification Web information (recommended) None Instrument Web Page Identify Instrument Add to configuration  | O Default instrument     O HiSLIP     Socket  | Device name:<br>Port number: | inst0<br>5025                |             |   |
|  | Test Connection Instrument identification Web information (i HDN query None Identify Instrument | recommended)                 |                              |             | Instrument Web Page   |

#### **Step 7: Test the connection**

Click "Test Connection" to make sure that the Agilent IO configuration is correct. After this you should be able to see "The instrument is present"

#### GRI GRANITE RIVER LABS ate LAN instruments. Select any number of them to add to the config Add Address Auto Find arch 4: 192.168.0.100 IPv6: fe80::218:e7 Socket The in nt is pr Test > \*IDN query None Instrument Web Page Identify Instrument Add to configuratio Cancel Help ОК

#### **Step 8: Check the Instrument Identification**

In the instrument identification, select "\*IDN Query" and click "Identify Instrument". If the instrument is configured correctly you should be able to see the instrument name next to the "Identify Instrument" button as shown below:

| cover local instruments  | Add Address<br>Vanually add a<br>unown IP address<br>yr hostname<br>netwo | Add Other<br>odress retroot        | a><br>778<br><b>3</b>  |
|--|---|------------------------------------|--|
| <ul> <li>Enter Instrument Addr</li> <li>✓ Use Hostname<br/>or</li> <li>✓ Use IP Address</li> </ul> | ess<br>localhost<br>Examples: IPv4  | 192.168.0.100 IPv6: fe80::218:e77f | Connect to an instrument by usin<br>an address or hostname you<br>already know. This has the<br>advantage of being able to<br>connect devices that are not auto<br>discovered. |
| Optional Connection In     O Default instrumer     HiSLIP     Socket                               | formation<br>It<br>Device name:<br>Port number:                           | inst0<br>5025                      |  |
| Test Connection  | The in<br>The in<br>(recommended)   | strument is present                |  |

#### **Step 9: Complete Add LAN Instrument**

Click "OK" to complete Add LAN Instrument

### Step 10: Copy VISA alias name

At the end of Step 9, you should be able to see your Oscilloscope in the LAN instrument. Copy or note the VISA address:



#### Step 11: Configure the GRL Automated Test Solution

Click the "Refresh" button in the Oscilloscope Configuration setup screen. Then click the "Test Connection" to ensure that the Oscilloscope is ready for use.

| Oscilloscope Configuration | 🎁 💽 🗃 💷 🍥 + 🕨 + 🗎  | 0 🔺 |
|----------------------------|--|-----|
|                            | VISAAlias Name: GPIB:1:INSTR  DN: Oscilloscope name Click here to know how to configure VISAAlias Name |     |



## 8. Test Setup Connection

Click "Test Setup Connection" action bar button to view the test setup required to efficiently run the GRL DisplayPort AUX Protocol Decode tool. Connect the AUX signal to Oscilloscope as shown in the image.

| Test Setup Connection $7 \ddagger \overline{0} \equiv 0 \Rightarrow b \Rightarrow \overline{0}$  | 0 |   |
|--|---|---|
| Test Setup: Use the following test setup<br>Connection Diagram with Pass Through Test<br>Use Super Aux CH<br>Dispose Port<br>Pass Through Test<br>Display<br>Sink<br>Fixture |   | 8 |

## 9. Test Selection

(Note: This feature will be supported in a future software version.)

| Test Selection   | († ≩ 🔲 🍥 → 🕨 → 🗎 |  |
|--|------------------|--|
| Test List: (Not Supported In This Version Video Timing Test VB-ID Test Secondary Data Packet Test CRC Test |                  |  |



#### **10. Decoder Configuration**

To configure the decoder, click "Decoder Configuration" button in the Action Bar. It is essential to review this configuration before running the software.

|            |               | Signal Source | :e | Standard                        |  |
|------------|---------------|---------------|----|---------------------------------|--|
| Source Typ | e: 🖲 Live 🔿 C | Offline       |    | <ul> <li>DisplayPort</li> </ul> |  |
| DP Aux La  | ine: CH1      | ~             |    | O Embedded DisplayPort          |  |
|            |               |               |    | Manchester Encoding             |  |
|            |               |               |    |                                 |  |
|            |               |               |    | Invert Signal Bits              |  |
|            |               |               |    |                                 |  |
|            | Reference     |               |    |                                 |  |
| Auto Fi    | nd            |               |    |                                 |  |
| Type:      | Absolute      | ~             |    |                                 |  |
| Voltage:   | 2             | VV            |    |                                 |  |
|            | 0             | V             |    |                                 |  |

#### Signal Source:

If you want to analyze the signal using a live waveform captured using Oscilloscope select "Live". If you want to analyze a waveform stored previously, select "Offline".

#### Note: Refer to the datasheet for list of Oscilloscope and waveform formats supported.

For Live Signal Capture, connect the signals as shown in the <u>Test Setup Connection</u> and select the appropriate channels in the software.

To analyze previously stored waveforms, select "Offline Mode" and input the appropriate files in using the "File Browse" button.

Currently the software supports Agilent's BIN file format and Tektronix .wfm file format.

#### Standard:

Select the type of AUX channel you are probing. Select DisplayPort or embedded DisplayPort depending on the type of source.

#### Manchester Encoding:

If using self-clocked data signals, select the option to invert Manchester encoded signal bits.

#### Reference:

If you want to perform an auto search for a DisplayPort reference source, select the "Auto Find" option. Or manually specify the type and parameters for the reference source.



## 11. Run / Start the Decoder

#### Before Run / Start the Decoder, ensure that:

- 1. The <u>Oscilloscope configuration</u> is appropriate if you are using live signal mode capture
- 2. Connect all the probes as per the recommended <u>Test Setup</u> if you are using live signal mode in the decoder configuration
- 3. Ensure that you have <u>selected the required tests</u> you would like to perform. (Note, this feature will be supported in a future software version)
- Based on the DisplayPort Source device configuration you have <u>Configured the</u> <u>AUX Decoder</u> software and connected the appropriate signals to the Oscilloscope if you are using Live signal source. Or you have selected the appropriate offline signal files.

Make sure that you have completed all the above required steps before enabling Run/Start on the decoder software. Any inappropriate inputs will lead to undetermined output of the decoder application.

| G                                | DisplayPort Protocol Decode Software (Version: 0.9.0. |
|----------------------------------|---|
| Application Options License Help |   |
| Decoder Configuration            | 2 🗃 💷 🔯 - 💽 - 📂                                       |
| Signal Source                    | Lane Configuration                                    |

Click the "Run/Start" button in the Action Bar to start the application:

Once you click Run, the decode software takes the inputs from the configuration and decodes the signal.

The status bar displays the progress and shows the activities being carried out. To stop the Decode/Analysis operation, click the "Stop" button as shown below:

| Application Options License Help |              |
|----------------------------------|--------------|
| Decoder Configuration            |              |
| Processed 23% : 1310000 sym      | Dols decoded |



After completing the analysis, the software minimizes the action window and displays the decode results.

## **12.Analyzing The Results**

After completing the decode process, the GRL DisplayPort AUX Protocol Decode software displays comprehensive test results.

Note: If the test results do not meet your expectations, first review the test setup, decoder configuration. Any inappropriate inputs in the decoder configuration may result in incorrect test results.

The software provides a list of packets, description of each packets, bus diagram, and physical layer waveforms.

| GR     |                 |                       |                   |                | DisplayPort-A           | UX Protocol Decode Software (Version: 1.0.0.0)                |                           | - 0 ×                      |
|--------|-----------------|-----------------------|-------------------|----------------|-------------------------|---|---------------------------|----------------------------|
| App    | lication Option | ns License            | Windows Help      |                |                         |   |                           |                            |
|        |                 |                       |                   |                |                         |   | :                         |                            |
| Packet | s Info          |                       |                   |                |                         | 4 Þ ×   | Packets Details           | 4 Þ ×                      |
| Packe  | ts:             |                       |                   |                |                         |   | Selected Packet Deta      | ils:                       |
| Ind    | TimeStamp       | PacketType            | e Command         | . Command      | DPConfigReg             | Details   |                           | Header (0X9)               |
| 0      | -934.607982     | REQUEST               | NATIVE_AUX        | READ_CMD       | SET_POWER_SET_DP_P      | Request to read 1 Byte(s) at address 0X00600 (SET_POWER_SET = | Bit3 - Native/I2C         | 1                          |
| 1      | -629.007087     | REPLY                 | NATIVE_AUX        | AUX_ACK        | SET_POWER_SET_DP_P      | AUX_ACK of 1 Byte(s)  | Bit2 - Command Bit 2      | 0                          |
| 2      | -564.752468     | REQUEST               | NATIVE_AUX        | READ_CMD       | DPCD_REV                | Request to read 13 Byte(s) at address 0X00000 (DPCD_REV)      | Bit1 - Command Bit 1      | 0                          |
| 3      | -259.182585     | REPLY                 | NATIVE_AUX        | AUX_ACK        | DPCD_REV                | AUX_ACK of 12 Byte(s)   | Bitu - Command Bit U      | der Description (0V0)      |
| 4      | -87.1193370     | REQUEST               | I2C_TRANS         | WRITE_CMD      | RESERVED                | Request to write 0 Byte(s)                                    | Bit 3 · Native Packet     | der Description (0x3)      |
| 5      | 466.304000      | REPLY                 | I2C_TRANS         | I2C_ACK        | RESERVED                | I2C_ACK of 0 Byte(s)  | Bt 2:0 : READ CMD         |                            |
| 6      | 56.4628754      | REQUEST               | I2C_TRANS         | WRITE_CMD      | RESERVED                | Request to write 1 Byte(s) at address 0X00050                 |                           | Address                    |
| 7      | 160.190612      | REPLY                 | I2C_TRANS         | I2C_ACK        | RESERVED                | I2C_ACK of 0 Byte(s)  | 20 Bt Address :           | 0x0 0x0 0x6 0x0 (SET_POWER |
| 8      | 215.600627      | REQUEST               | I2C_TRANS         | READ_CMD       | RESERVED                | Request to read 0 Byte(s)                                     |                           |                            |
| 9      | 303.186304      | REPLY                 | I2C_TRANS         | I2C_ACK        | RESERVED                | I2C_ACK of 0 Byte(s)  |                           | Pavload                    |
| 10     | 358.606826      | REQUEST               | I2C_TRANS         | READ_CMD       | RESERVED                | Request to read 15 Byte(s) at address 0X00050                 | D00-01: 0x00              |                            |
|        |                 |                       |                   |                | -                       |   | Р                         | ayload Description         |
| Signal | Bus Diagram     | and the second second |                   |                |                         | 4 Þ ×   | Bits 7:0 :0(Read Data Ler | igth (OBytes))             |
| d (    | QQSX            | 🙆 🗆 Sp                | olit Analysis 🔽 S | Signal 🖌 Bus D | Diagram 🗌 Marker        |   |                           |                            |
| Ċ      |                 |                       | 0.010             |                | 0700 010                |   |                           |                            |
|        |                 |                       | SYNC              |                | STOP 0X9                | Data STOP   |                           |                            |
|        |                 |                       |                   |                | READ_CMD                |   |                           |                            |
|        |                 |                       |                   |                |                         |   |                           |                            |
|        |                 |                       |                   |                |                         |   |                           |                            |
| 0      |                 |                       |                   |                |                         |   |                           |                            |
| ħΥ     | nax:,980.00 mV  | Denode                | Needbar           |                |                         |   |                           |                            |
|        |                 |                       |                   |                |                         |   |                           |                            |
|        |                 |                       |                   |                |                         |   |                           |                            |
| Ű      | UUUUUUU         |                       |                   |                |                         |   |                           |                            |
| v      | nin: 156.00 mV  |                       |                   | -40-0401       | اليا فألما استا فالالاه |   |                           |                            |
| -9     | 34.6217 µS      |                       |                   |                |                         | T: -879.89 μS -862.1097 μS                                    |                           |                            |
| Cistur | onner           |                       |                   |                |                         |   | telia.                    |                            |



### Packet List

Packet List provides the list of AUX data transactions with the stamp. By clicking the packet list the packet details and bus diagrams will get updated.

| Packets | Info        |            |            |           |                    | 4 ▷ ★   |  |  |  |  |
|---------|-------------|------------|------------|-----------|--------------------|---|--|--|--|--|
| Packet  | Packets:    |            |            |           |                    |   |  |  |  |  |
| Ind     | TimeStamp   | PacketType | Command    | Command   | DPConfigReg        | Details 🔶   |  |  |  |  |
| 0       | -934.607982 | REQUEST    | NATIVE_AUX | READ_CMD  | SET_POWER_SET_DP_P | Request to read 1 Byte(s) at address 0X00600 (SET_POWER_SET |  |  |  |  |
| 1       | -629.007087 | REPLY      | NATIVE_AUX | AUX_ACK   | SET_POWER_SET_DP_P | AUX_ACK of 1 Byte(s)  |  |  |  |  |
| 2       | -564.752468 | REQUEST    | NATIVE_AUX | READ_CMD  | DPCD_REV           | Request to read 13 Byte(s) at address 0X00000 (DPCD_REV)    |  |  |  |  |
| 3       | -259.182585 | REPLY      | NATIVE_AUX | AUX_ACK   | DPCD_REV           | AUX_ACK of 12 Byte(s)                                       |  |  |  |  |
| 4       | -87.1193370 | REQUEST    | I2C_TRANS  | WRITE_CMD | RESERVED           | Request to write 0 Byte(s)                                  |  |  |  |  |
| 5       | 466.304000  | REPLY      | I2C_TRANS  | I2C_ACK   | RESERVED           | I2C_ACK of 0 Byte(s)  |  |  |  |  |
| 6       | 56.4628754  | REQUEST    | I2C_TRANS  | WRITE_CMD | RESERVED           | Request to write 1 Byte(s) at address 0X00050               |  |  |  |  |
| 7       | 160.190612  | REPLY      | I2C_TRANS  | I2C_ACK   | RESERVED           | I2C_ACK of 0 Byte(s)  |  |  |  |  |
| 8       | 215.600627  | REQUEST    | I2C_TRANS  | READ_CMD  | RESERVED           | Request to read 0 Byte(s)                                   |  |  |  |  |
| 9       | 303.186304  | REPLY      | I2C_TRANS  | I2C_ACK   | RESERVED           | I2C_ACK of 0 Byte(s)  |  |  |  |  |
| 10      | 358.606826  | REQUEST    | I2C_TRANS  | READ_CMD  | RESERVED           | Request to read 15 Byte(s) at address 0X00050               |  |  |  |  |

#### Packet description

Packet description provides the details of the selected Packet as per the DisplayPort Specification.

| ackets Details            |                            |  |  |  |  |  |
|---------------------------|----------------------------|--|--|--|--|--|
| Selected Packet Detai     | ls:                        |  |  |  |  |  |
|                           | Header (0X9)               |  |  |  |  |  |
| Bit 3 - Native/I2C        | 1                          |  |  |  |  |  |
| Bit2 - Command Bit 2      | 0                          |  |  |  |  |  |
| Bit1 - Command Bit 1      | 0                          |  |  |  |  |  |
| Bit0 - Command Bit 0      | 1                          |  |  |  |  |  |
| Head                      | er Description (0X9)       |  |  |  |  |  |
| Bit 3 : Native Packet     |                            |  |  |  |  |  |
| Bit 2:0 : READ_CMD        |                            |  |  |  |  |  |
|                           | Address                    |  |  |  |  |  |
| 20 Bit Address :          | 0x0 0x0 0x6 0x0 (SET_POWER |  |  |  |  |  |
|                           |                            |  |  |  |  |  |
|                           | Payload                    |  |  |  |  |  |
| D00-01: 0x00              |                            |  |  |  |  |  |
| Pa                        | vload Description          |  |  |  |  |  |
| Bits 7:0:0(Read Data Leng | th (OBvtes))               |  |  |  |  |  |



#### Signal Plot and Bus Diagram

Signal Plot and Bus Diagram provides details of the bus diagram and associated physical layer waveforms.

The plot utilities such as Pan, Zoom, Un-Zoom, Un-do, Fit to screen helps to analyze the data.



## 13.Test Report

DisplayPort AUX protocol decode software's automated report generation capability provides ability to generate the report to share the test results.

| Report Generation     | 🌔 🗘 🧃 💷 🍥 + 🕨   | Remote mode: OFF   | ? |
|-----------------------|---|--|---|
| Select Report Content | DUT Information<br>Manufacturer: <dut manufacturer=""><br/>Model number: <dut model="" number=""><br/>Serial Number: <dut number="" serial=""><br/>Test Information<br/>Test Lab: <test lab=""><br/>Test Engineer: <test engineer=""><br/>Bounder: <demadico:< th=""><th>Report Generation         Choose Report Format:         CSV (.csv)         PDF (.pdf)         Report Folder Location:         C:\GRL\GRL-DP_AUX\Report         Generate         Popen Report         Folder         Folder</th><th>8</th></demadico:<></test></test></dut></dut></dut> | Report Generation         Choose Report Format:         CSV (.csv)         PDF (.pdf)         Report Folder Location:         C:\GRL\GRL-DP_AUX\Report         Generate         Popen Report         Folder         Folder | 8 |



You can also choose to include payload data in the test report as well as customize the test report with the details of the "Device Under Test Information"– you can specify the Manufacturer information, model number, serial number and other test related information.

You can also choose the environment variables such as decoder configuration details, frame image and frame information in the test report.

## 14.Feedback and Suggestion

Granite River Labs values your feedback on our products. To help us serve you better, please send us your suggestions, ideas, or comments on the DisplayPort-AUX Protocol Decode software. Direct your feedback via e-mail to info@graniteriverlabs.com and include the following information:

#### **General Information**

- Instrument model number and hardware options, if any
- Probes used
- Your name, company, mailing address, phone number, FAX number, e-mail id
- Please indicate if you would like to be contacted by Granite River Labs about your suggestions or comments

#### **Program-Specific Information**

- Software version number
- Description of the problem such that technical support can duplicate the problem
- The instrument setup files
- Configuration used in the application.
- If possible, save the waveform on which you are performing the test

Once you have gathered this information, you can contact technical support by e-mail. When you use e-mail, be sure to type in the subject line "DisplayPort AUX Protocol Decode Software Problem/Feedback/Suggestion,"