

quantumdata 980 Firmware & External Manager v5.30 Release Notes

Mar 21, 2019

1 Overview

This document provides information on Release 5.30 of the firmware and External Manager software release for the quantumdata 980B and 980R Advanced Test Platforms.

For further information, please refer to the Quick Start Guide for the 980 Advanced Test Platforms, and the User Guides for the individual modules, all available on our website at <https://www.quantumdata.com>

2 Installation Instructions

Important Note: When upgrading the 980 system firmware, please be sure to disconnect any HDMI cables that are connected to the 980 Protocol Analyzer / Video Generator modules. Failure to do so may result in issues during upgrade.

Begin by installing the **Windows External Manager** software:

1. Download the **Windows External Manager 5.30** file R_980mgr_5.30_Win32.msi
2. Double-click or Run this file to install it.

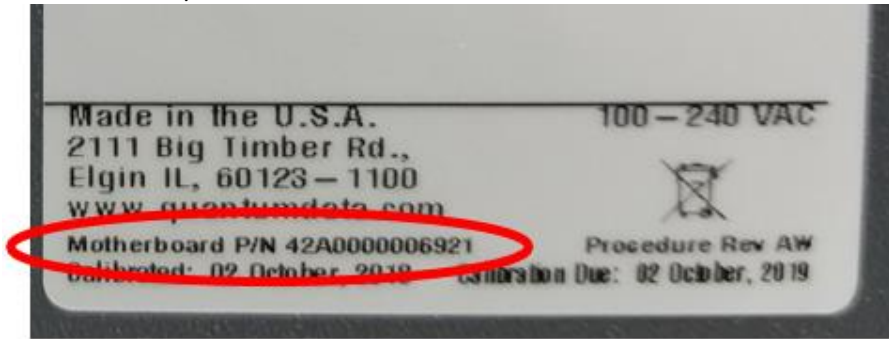
Then install the Instrument Firmware **Release**.

Important Note: 2 different versions of the Instrument Firmware are available, for 32-bit and for 64-bit operating systems. You must install the correct version for your specific 980. (The incorrect version will be refused during the upgrade process.) Please make one or both of the following checks to determine whether you need the 64-bit firmware:

1. At the bottom of the instrument Card Control screen, check for “64 bit” indication:



2. On the product label on the back (980B) or bottom (980R) of the instrument, check for Motherboard P/N **42A0000006921** or **42A0000009220**:



If the ATP version shows 64 bit, or if the label shows either of the above part numbers, then download the “980-atp-64” firmware. Otherwise, you have a 32-bit system, so download the “980-atp-32” firmware.

1. Download the release “980-atp-xx” .deb firmware file as indicated above.
2. Launch the newly installed External Manager (980 Manager) and connect to the 980 via Ethernet TCP/IP. (For information on the 980 network connections, please refer to the Advanced Test Platform Quick Start Guide and related erratum below.)
 - a. Note: you may see a warning about version mismatch. This is normal and indicates that you should continue with the version upgrade before using the instrument with the new version of the External Manager.
3. From the External 980 Manager program, pull down the **Instrument** menu and select **Upgrade UI/Firmware/Gateware**. Browse to and select the 980-atp-xx release file, select **Open**, and continue with the process. The 980 will power down at the end.

If the 980 is licensed for **HDR Lab Images** (License 45):

4. Download the HDR Lab Images .deb file.
5. From the External 980 Manager program, pull down the **Instrument** menu and select **Upgrade System Components**. Browse to and select the hdr-lab-images.deb file, select **Open** and continue with the process.

If the 980 is licensed for **HDMI HDCP CTS 2.2 Compliance Test for Sinks** (License 29):

6. Download the 980-hdcp2-sink-ct.deb file.
7. From the External 980 Manager program, pull down the **Instrument** menu and select **Upgrade CT Scripts**. Browse to and select the 980-hdcp2-sink-ct.deb file, select **Open** and continue with the process.

If the 980 is licensed for **HDMI CTS 1.4b Compliance Test for Sinks** (License 6):

8. Download the 980-hdmi-sink-ct.deb file.
9. From the External 980 Manager program, pull down the **Instrument** menu and select **Upgrade CT Scripts**. Browse to and select the 980-hdmi-sink-ct.deb file, select **Open** and continue with the process.

To verify the installation:

1. After installing any necessary packages from above, press the front button and Reboot the 980.
2. View the Instrument Information report in one of the following ways:
 - a. From the External 980 Manager, when connected to the 980, pull down the **Instrument** menu and select **Information**.

- b. From the External 980 Manager, when connected to the 980, locate the **Instruments** section in **Navigator**, right-click on the instrument, and select **Information**.
 - c. From the 980-front panel touch screen, select the **Other** page and then select **About the 980 Manager**.
3. Verify the following version information from the Instrument Information report, for the specific versions of modules installed:

Table 1: Module revisions and Build Versions

| Module | FPGA Versions (Changes compared to previous release are in GREEN) | |
|--|---|--------------------------|
| | 980 | |
| | 5.20 | 5.30 |
| DP 1.2 980 Protocol Analyzer Rev D | 4.17.85 Build Number: 1 | 4.17.85 Build Number: 1 |
| DP 1.2 980 Protocol Analyzer Rev E | 4.17.85 Build Number: 1 | 4.17.85 Build Number: 1 |
| DP 1.2 980 Protocol Analyzer Rev E (410) | 4.18.42 Build Number: 1 | 4.18.42 Build Number: 1 |
| DP 1.2 980 Protocol Analyzer Rev F | 4.18.62 Build Number: 1 | 4.18.62 Build Number: 1 |
| DP 1.4 980 Protocol Analyzer | 4.25.215 Build Number: 1 | 4.25.218 Build Number: 1 |
| DP 1.4 USB-C 980 Protocol Analyzer | 4.26.27 Build Number: 1 | 4.26.32 Build Number: 1 |
| SDI Scope | 4.33.7 Build Number: 32 | 4.33.7 Build Number: 32 |
| HDMI 2.0 980 Video Generator Rev B | 4.34.1 Build Number: 32 | 4.34.1 Build Number: 32 |
| HDMI 2.0 980 Video Generator Rev C | 4.34.1 Build Number: 32 | 4.34.1 Build Number: 32 |
| HDMI 1.4 980 Protocol Analyzer | 4.22.1 Build Number: 57 | 4.22.1 Build Number: 57 |
| HDMI 2.0 980 Protocol Analyzer | 4.22.7 Build Number: 43 | 4.22.7 Build Number: 43 |
| HDMI 2.0 RX/TX | 4.27.1 Build Number: 55 | 4.27.1 Build Number: 55 |
| HDMI 2.1 RX/TX | 5.20.1 Build Number: 66 | 5.30.1 Build Number: 173 |
| Phy and Protocol Aux Channel Analyzer | 5.16.24 Build Number: 12 | 5.16.24 Build Number: 12 |

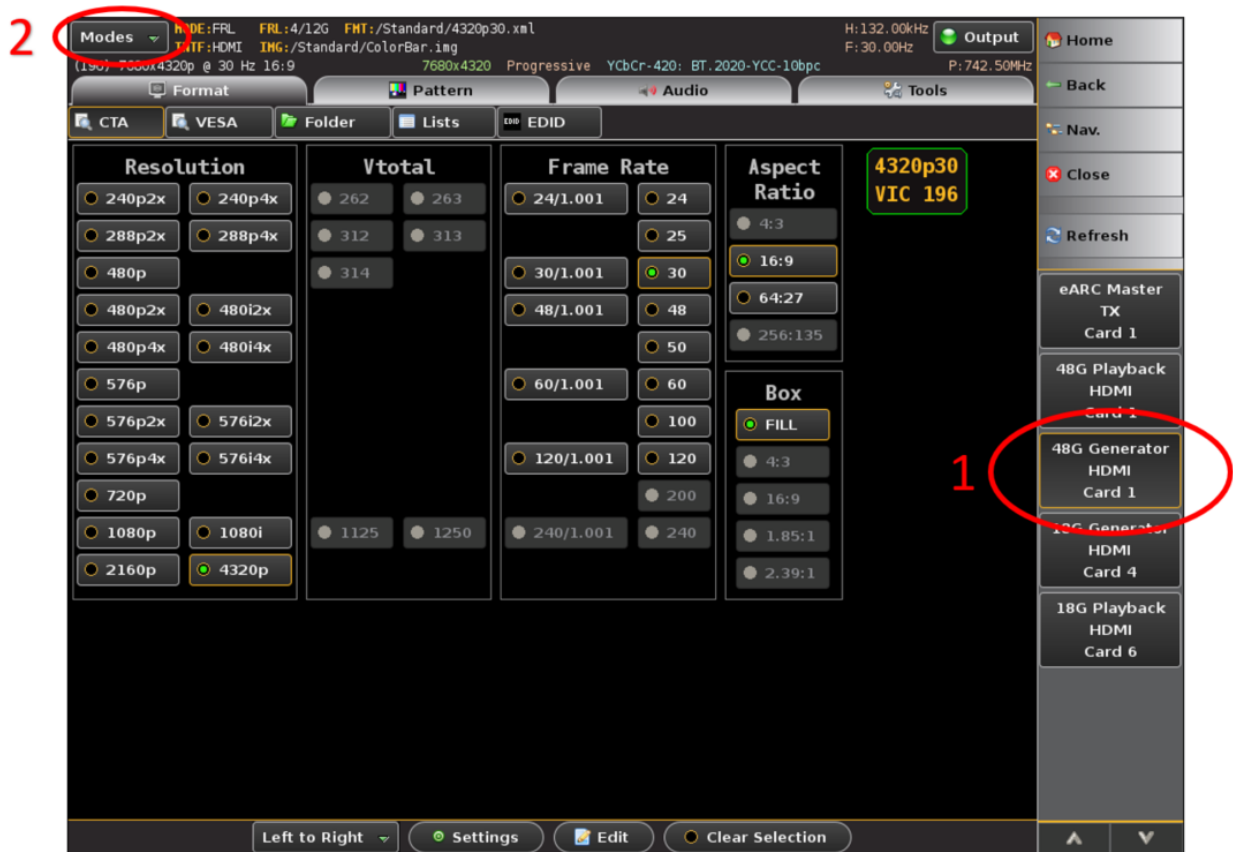
3 New and Improved Features and Functions

3.1 New HDMI 2.1 TMDS/FRL 48Gb/s Video Generator functionality

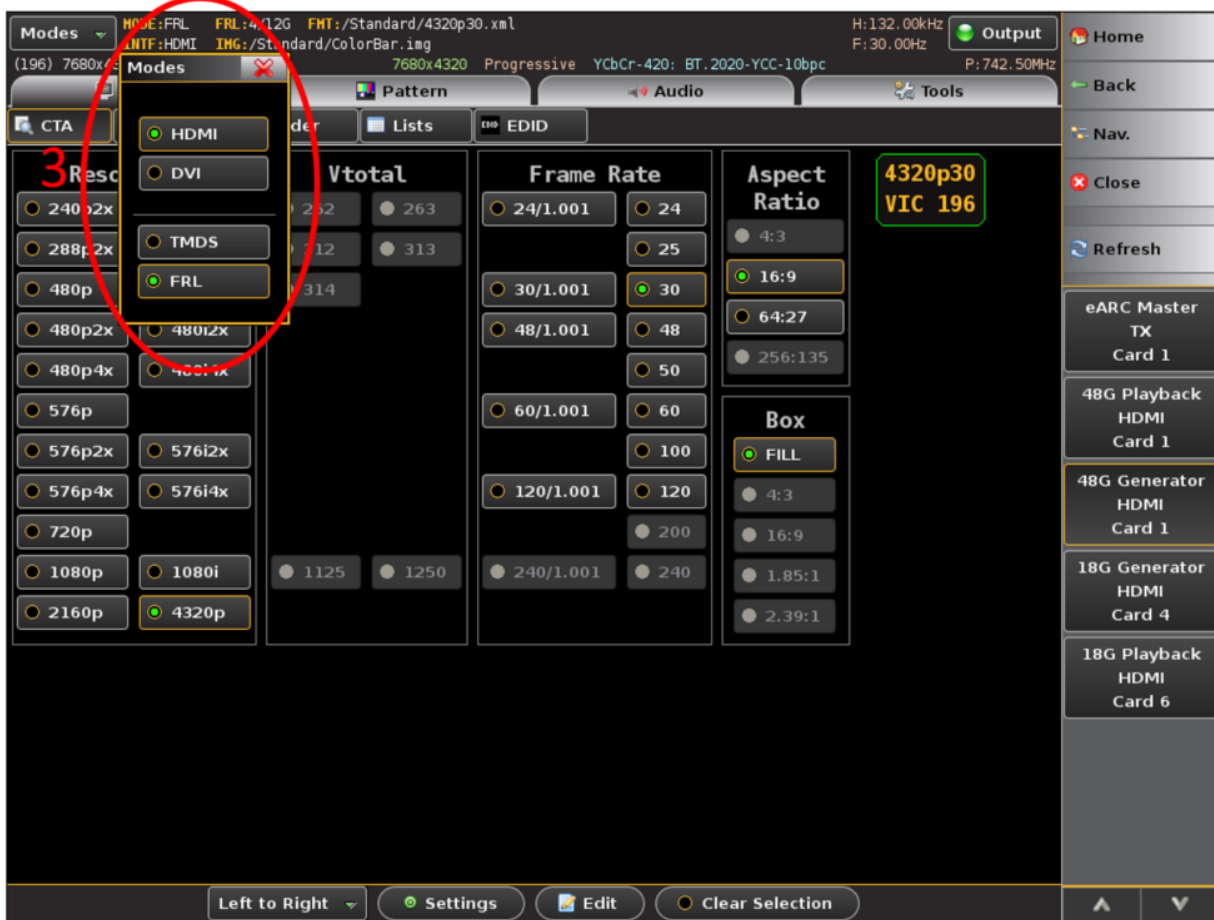
Release 5.30 adds Video Generator function to 95-00158

This applies to a 980B or 980R that contains 95-00156, the HDMI 2.1 48Gb/s Analyzer/Generator module, and 95-00158, the HDMI 2.1 TMDS/FRL Video Generator option (license 52.)

- From the instrument GUI or Windows Manager GUI, a new button is available for **48G HDMI Generator** (#1 in the screen shot below.)
- To select between TMDS and FRL modes, select the **Modes** button (#2 in the screen shot below.)



- In the modes selector, select **TMDS** or **FRL** (#3 in the screen shot below.)



3.2 Added 27 new HDMI 2.1 FRL Compliance Tests

Release 5.30 adds the following Fixed Rate Link (FRL) Compliance Tests:

FRL Compliance Tests of Sink:

8 bpc Decoding

- HFR2-31 – Sink Pixel Decoding (FRL Mode) – RGB
- HFR2-32 – Sink Pixel Decoding (FRL Mode) – YcbCr 4:2:2/4:4:4
- HFR2-33 – Sink Pixel Decoding (FRL Mode) – YcbCr 4:2:0

Deep Color Decoding

- HFR2-33: Sink Pixel Decoding (FRL Mode) – Non-YCbCr 4:2:0 Deep Color
- HFR2-24: Sink Pixel Decoding (FRL Mode) – YCbCr 4:2:0 Deep Color

8 bpc Timing

- HFR2-11: Sink Video Timing (FRL Mode) – Sub-2160p 24-bit Color Depth
- HFR2-12: Sink Video Timing (FRL Mode) – 2160p 24-bit Color Depth

HFR2-13: Sink Video Timing (FRL Mode) – 4320p 24-bit Color Depth

Deep Color Timing

HFR2-14: Sink Video Timing (FRL Mode) – Sub-2160p Deep Color

HFR2-15: Sink Video Timing (FRL Mode) – 2160p Deep Color

Multi-Stream Audio

HFR2-30: Audio Decoding and Rendering (FRL Mode) – Multi-stream Audio (LPCM and 61937) – Sample Packet

HDMI VSIFs

HFR2-40: HDMI VSIFs – Dual View

HFR2-43: HDMI VSIFs – 3D OSD Disparity

FRL Compliance Tests of Source:

Deep Color Timing

HFR1-34 – Source Video Timing (FRL Mode) – YCbCr 4:2:0 Deep Color

3D Timing

HFR1-16: Source Video Timing (FRL Mode) – 2160p 3D

HFR1-26: Source Video Timing (FRL Mode) – Non-2160p 3D

Audio

HFR1-40: Source Audio Encoding (FRL Mode) – CTA-861-G Audio

HFR1-43: Source Audio Encoding (FRL Mode) – HBR Audio – IEC Audio Stream Packet

HFR1-44: Source Audio Encoding (FRL Mode) – 3D and MS Audio (One Bit) – Support Frequency

HFR1-45: Source Audio Encoding (FRL Mode) – Basic Audio – Allowed Rate

HFR1-46: Source Audio Encoding (FRL Mode) – Audio Clock Generation

3D Audio

HFR1-36: Source Audio Encoding (FRL Mode) – 3D Audio (LPCM) – Packet Format

HFR1-37: Source Audio Encoding (FRL Mode) – 3D Audio (One Bit) – Packet Format

HFR1-41: Source Audio Encoding (FRL Mode) – 3D Audio – IEC Sample Packet Format

MS Audio

HFR1-38: Source Audio Encoding (FRL Mode) – MS Audio (LPCM and 61937) – Packet Format

HFR1-38: Source Audio Encoding (FRL Mode) – MS Audio (One Bit) – Packet Format

3.3 Added new DisplayPort 1.4 DSC Compliance Tests

Release 5.30 introduces DP Display Stream Compression (DSC) Compliance Testing with the following 27 tests:

DP DSC Tests of Sink:

- 5.6.1.1: DSC capability verification
- 5.6.1.2: DSC RGB color depth test
- 5.6.1.3: DSC RGB block prediction test
- 5.6.1.4: DSC RGB bits-per-pixel test
- 5.6.1.5: DSC RGB slice test
- 5.6.1.6: DSC RGB lanes test
- 5.6.1.7: DSC YCbCr 4:4:4 color depth test
- 5.6.1.8: DSC YCbCr 4:4:4 block prediction test
- 5.6.1.9: DSC YCbCr 4:4:4 bits-per-pixel test
- 5.6.1.10: DSC YCbCr 4:4:4 slice test
- 5.6.1.11: DSC YCbCr 4:4:4 lanes test
- 5.6.1.12: DSC Simple 4:2:2 color depth test
- 5.6.1.13: DSC Simple 4:2:2 block prediction test
- 5.6.1.14: DSC Simple 4:2:2 bits-per-pixel test
- 5.6.1.15: DSC Simple 4:2:2 slice test
- 5.6.1.16: DSC Simple 4:2:2 lanes test
- 5.6.1.17: DSC Native 4:2:2 color depth test
- 5.6.1.18: DSC Native 4:2:2 block prediction test
- 5.6.1.19: DSC Native 4:2:2 bits-per-pixel test
- 5.6.1.20: DSC Native 4:2:2 slice test
- 5.6.1.21: DSC Native 4:2:2 lanes test

DP DSC Tests of Source:

- 4.6.1.1: DSC enable sequence verification
- 4.6.1.2: DSC PPS block prediction flag verification
- 4.6.1.3: DSC PPS convert RGB flag verification
- 4.6.1.4: DSC PPS (YCbCr 4:4:4 convert RGB = 0) flag verification
- 4.6.1.5: DSC PPS Simple 4:2:2 flag verification
- 4.6.1.6: DSC PPS Native 4:2:2 flag verification

4 Enhancements and Corrections

4.1 Updates and fixes

| | Bug Id | Description |
|---|--------|--|
| 1 | 2805 | DP 1.4 USB-C module: improved command port mapping |
| 2 | 2833 | Added video generator support for CTA VIC numbers greater than 128 |
| 3 | 2868 | Errata changes for HDMI 1.4b CTS tests 7-33, 8-1, 8-2 |
| 4 | 2872 | Corrected some GUI element positioning issues for video generator interface |
| 5 | 2878 | Added key selection to HDCP 2.3 compliance tests with HDMI 2.0 Analyzer/Generator module |
| 6 | 2806 | Marked HDMI HDCP 2.3 source test 1A-10 as deprecated, per DCP directive |

5 Errata

5.1 Known Issues

5.1.1 Power-on reboot - Important Notice!

Some quantumdata 980 systems exhibit occasional boot issue upon power-up from “cold” state. In these occasions, the system enters an abnormal state where it continuously reboots at the BIOS level, instead of booting the 980 operating system and quantumdata application.

Solution: In the unlikely event that your 980 enters this state, please follow the simple steps below:

1. Turn off the main power rocker switch beside the mains power cord inlet (on the side of the 980).
2. Leave the system powered off for about 5 seconds.
3. Reapply power using the rocker switch and boot as usual.

These simple steps should get the system up and running. However, if this does not allow the 980 to boot normally, **please contact us by referring to the Support section at the end of this document.**

5.1.2 CEC Functionality on HDMI 18 Gbps RX/TX Analyzer receive port.

Regarding the HDMI 2.0 RX/TX analyzer (this is the HDMI 2.0 18 Gbps analyzer module that has 2 HDMI ports: Transmit and Receive): On this module, CEC is disabled by default on the HDMI Receive port. (2708) CEC functionality can be enabled temporarily (until the instrument is rebooted.) The following procedure will allow you to enable RX CEC functionality:

1. Launch the Windows External Manager (980 Manager) and connect to the 980.
2. From the Windows 980 Manager, select the **Other** GUI page.
3. Select the **Command Console**.
4. Select the **Connect** button.
5. Touch in the **Command** field to activate the touch screen keyboard.
6. Type the command **discover** and press **Enter**.
7. In the resulting list, locate the section that includes class: **Quantum Data, Inc. HDMI 2.0 RX/TX**.
8. Make note of the **slot** number indicated for this section. (For example, **3**)
9. Again, touch in the Command field to activate the touch screen keyboard.
10. Type the **slot** number from step 7 above and press **Enter**. (For example, **3** then press **Enter**.)
11. You should see a command prompt of **#p2c-scope>**
12. Touch in the **Command** field to activate the touch screen keyboard.
13. Type the command **wb1 350 18 0** and then press **Enter**. (After the letters wb, the other visible characters are digits. Be sure to type the 3 spaces where shown.)
14. Verify that **wb1 350 18 0** is echoed in the console window.
15. You may **Disconnect** and close the **Command Console**.

5.1.3 Difficulty connecting via Ethernet.

Under some conditions, the 980B and 980R Advanced Test Platforms may exhibit difficulty in establishing an Ethernet connection. In this case, if a connection cannot be established after following the Quick Start Guide and common procedures for establishing a network connection, please follow this procedure:

1. Press the front button of the 980 ATP and select Shutdown.

2. After shutdown is complete, turn off the physical power switch beside the mains power cord inlet.
3. While the power switch is OFF, press the front button and hold for a few seconds. Repeat this a few times to assure that all motherboard and power supply capacitors are drained.
4. Make sure the Ethernet connector is connected to your network or PC before powering on the 980 ATP. On Gigabyte motherboards with 2 Ethernet connectors, use the bottom Ethernet connector on 980B, or on the 980R, the Ethernet connector nearest the mains power inlet.
5. Power on the 980 ATP and allow it to fully boot.
6. Use the normal procedure to establish Ethernet TCP/IP connection with the External 980 Manager software.

5.1.4 HDMI 2.1 Analyzer

There is currently no real-time video display on the HDMI 2.1 Analyzer. This will be added in a future release. Please use Capture Mode Analysis.

5.1.5 HDMI HDCP 2.3 Receiver Compliance Test 2C-01

When performing test 2C-01 using the HDMI 2.0 Rx/Tx Analyzer module, the test may intermittently fail to display the encrypted video. We expect this to be corrected in the near future. Workarounds:

1. Perform the test multiple times. It may require several passes through the test for the video to display properly.
2. If the 95-00083 HDMI 1.4 Analyzer module is available in the 980, use that module to perform this test.

5.1.6 ARC/SPDIF Analyzer reports IEC headers with all zeros

The ARC/SPDIF Analyzer on the HDMI 1.4 Analyzer module 95-00083 shows IEC headers with all zeros. We expect to correct this in a future release. (2536)

6 Support

For support on the quantumdata 980 or other Teledyne LeCroy PSG products, please send an email to: psgsupport@teledynelecroy.com

Please include your full contact information and a detailed description of the problem, including product model number, serial number, firmware version, software version, etc.