



M41d HBR3 Video Analyzer/Generator

for DisplayPort Testing

Quick Start Guide

Rev: A11



Table of Contents

1	Scope of this Quick Start Guide	3
1.1	Topics Covered in this Quick Start Guide	3
1.2	Changes to this Quick Start Guide	3
2	About the M41d	4
3	About the ATP Manager GUI Application	4
4	Getting Started	6
4.1	What is in the M41d shipping box?	6
4.2	Positioning/Orientation	6
4.3	Connectors and Controls	7
4.4	Getting the M41d Up and Running	8
5	Managing the M41d with ATP Manager from a PC	12
5.1	Install the M41d ATP Manager GUI Application	13
5.2	Setting the Instrument date and time	20
6	Connecting the Devices Under Test	21
6.1	Connecting a DisplayPort Source Device Under Test	22
6.2	Connecting a DisplayPort Sink Device Under Test	23
6.3	Connecting a DisplayPort Source and Sink for Passive Aux Channel Monitoring	24
7	Upgrading ATP Manager	26

1 Scope of this Quick Start Guide

This Quick Start Guide provides basic setup and configuration of the M41d HBR3 Video Analyzer/Generator and the Advanced Test Platform (ATP) Manager GUI application used to manage it.

1.1 Topics Covered in this Quick Start Guide

The following high level tasks are described in this Quick Start Guide:

- ◆ Getting Started Procedures
- ◆ Provisioning the IP address of the M41d.
- ◆ Installing the M41d ATP Manager on a PC.
- ◆ Establishing an IP session between an M41d and the host PC running the ATP Manager.
- ◆ Connecting the DisplayPort source or sink devices under test to the M41d.

This **Quick Start Guide does not include** descriptive or procedural information for any of the video test functions of the M41d applications themselves. Procedures for the functional applications are covered in the M41d User Guide. The User Guide is available from the product page on the quantumdata website <https://www.quantumdata.com/M41d.html>.

1.2 Changes to this Quick Start Guide

This QSG has been updated to include information about the supported HDMI Admin monitor: ViewSonic 27" 4K UHD Monitor Model VX2776-4K-MHD.

Note: Please be sure to check the quantumdata website (<https://www.quantumdata.com/M41d.html>) for updates to this Quick Start Guide & User Guide.

2 About the M41d

The M41d is a compact versatile test instruments offering entry level functional testing that can be extended through software licenses to full compliance testers with sophisticated analysis and diagnostic capabilities.

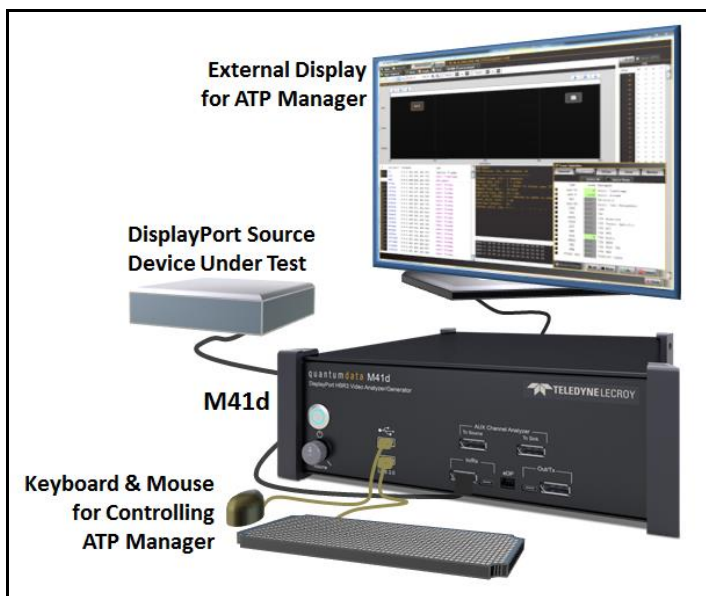


M41d HBR3 Video Analyzer/Generator

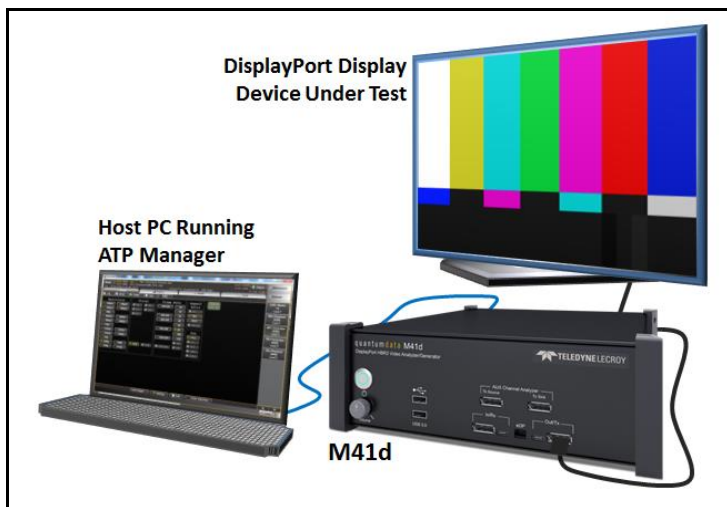
3 About the ATP Manager GUI Application

The M41d is operated through the Advanced Test Platform (ATP) Manager. The ATP Manager is a GUI application that can run either on a **Windows host PC** or on an **external display** connected to the HDMI or DisplayPort port on the back of the M41d.

When operating from a host PC the ATP Manager application has to be installed on the PC. When operating from an external display, a mouse (provided) is required and a keyboard is optional but recommended. In this case of the external display, the ATP Manager is running on the M41d itself but the ATP Manager GUI is displayed on the external monitor. These operational scenarios are shown below.



ATP Manager Running on External Display (Source Test Example)



ATP Manager Running on Host PC (Sink Test Example)

4 Getting Started

This chapter explains what is involved in getting your M41d up and operating.

4.1 What is in the M41d shipping box?

When a Teledyne LeCroy quantumdata M41d is shipped it will contain the following additional items:

- AC Power Line Cord.
- CE mark declaration.
- DisplayPort to DisplayPort Cable.
- DisplayPort to USB-C Cable.
- DisplayPort Passive Monitoring Cable
- DisplayPort Passive Monitoring Cable Quick Reference Sheet.
- Ethernet Cable.
- Mouse.
- This Quick Start Guide.

4.2 Positioning/Orientation

The M41d can be positioned either flat or upright. These two orientations are depicted below:



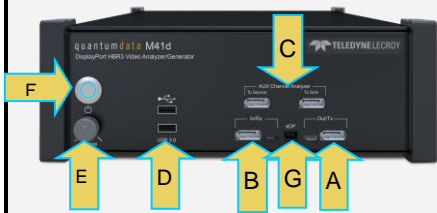
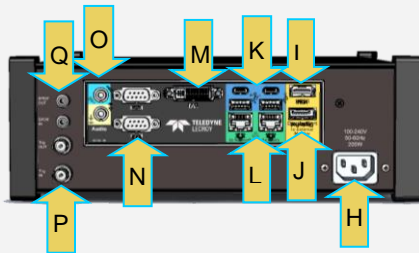
Flat Positioning



Upright Positioning

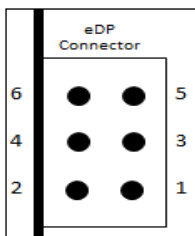
4.3 Connectors and Controls

The table below describes the M41d connectors and controls.

M41d Configurations	Information / Function
<p>Protocol Analyzer in M41d</p>  	<p>Front panel:</p> <ul style="list-style-type: none"> A – DP HBR3 Rx ports for testing DP sources. One (1) Standard DP port; One (1) USB-C DP Alt Mode port. B – DP HBR3 Rx port for analyzing DP sinks. One (1) Standard DP port; One (1) USB-C DP Alt Mode port. C – Aux Channel Monitor ports for passive monitoring of DP Aux Chan. D – USB ports (2) used for connecting a mouse and keyboard. E – Volume knob for turning up or down the volume for the internal speaker. F – Power button; press and release. G – eDP block for Backlight Control (See Note Below). <p>Back panel:</p> <ul style="list-style-type: none"> H – Power plug (110-220VAC 50/60Hz) I - HDMI – Admin port for connecting external HDMI UHD display for M41d ATP Manager. J - DisplayPort – Not recommended for use currently. K - USB/USB-C (2 ea.) – For mouse & keyboard. L - RJ45 (2) - E1 Network for connecting host PC running ATP Mgr. E2 Aux – Future. M - DVI – Possible future use. N - RS-232 (2) – Possible future use. O - Audio (2) – Possible future use. P - TRIG IN/OUT – Future. Q - RCA SPDIF OUT – OUT: Possible future use.

Note: The eDP header block is used for controlling the backlight of an eDP display. The pinout and functions are shown below.

eDP Pin Configurations:



1. BL_Enable (Possible Future Rx input)
2. BL_Enable (Tx Output)
3. BL_PWM_DIM (Possible Future RX input)
4. BL_PWM_DIM (TX Output)
5. Ground
6. Ground

4.4 Getting the M41d Up and Running

Use the following procedures to get your M41d up and running.

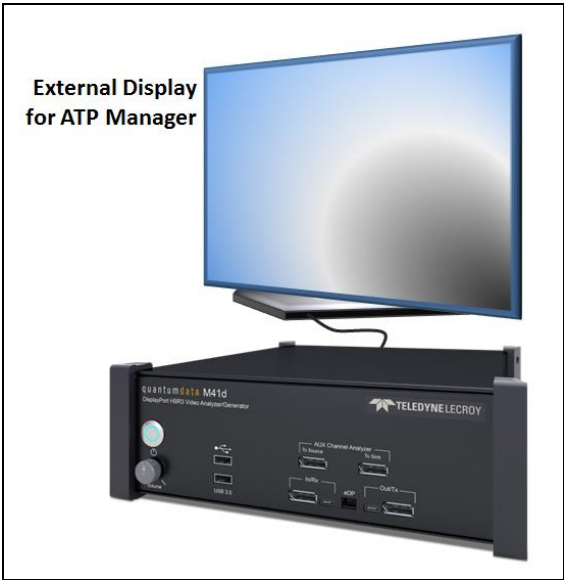
1. Remove the M41d from the shipping box and lay it flat or upright on your desktop or benchtop.
2. Connect the M41d power cable (provided) to a suitable outlet (110-240V 50/60Hz). The power socket is on the back of the M41d as shown below.



3. Connect an external HDMI monitor to the HDMI connectors on the back of the M41d; labeled "External Monitor" at the location indicated below.



The setup is depicted below.



4. Connect a mouse to one of the USB ports on the front or back of the M41d as shown below.
5. Optionally connect a keyboard to one of the other USB ports on the front or the back of the M41d. You can also use the virtual keyboards that present themselves in the ATP Manager.

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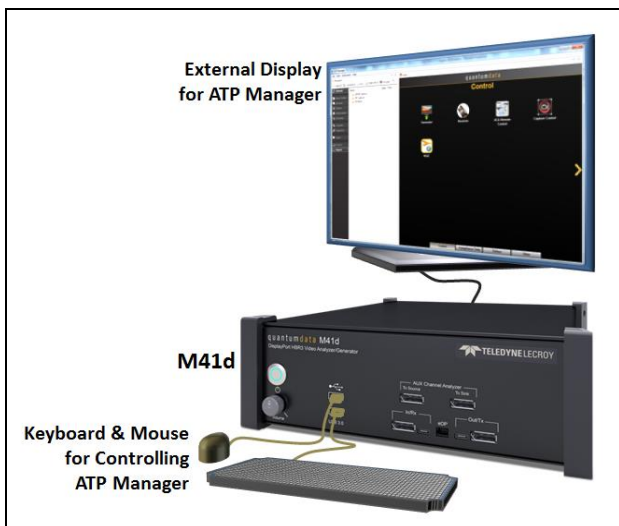
6. Power up the M41d via the power button on the front of the M41d.



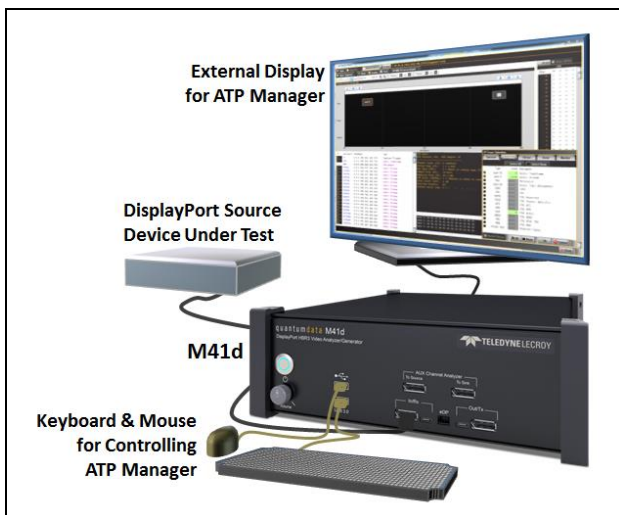
Notes: Regarding Power Button color:

- The Power button will be Red if the power is off when a power connection in is in place in the back of the M41d.
- The Power button will be Blue (or Yellow) during initialization.
- The Power button will be Green when the M41d has completed full initialization.

The ATP Manager application will appear on the external display as shown below.



7. Connect your DisplayPort source or sink device under test to the appropriate In/Rx or Out/Tx port on the front of the M41d. The following example shows an DisplayPort source device connected.



You can fully operate the M41d through the ATP Manager using this connection scenario with a keyboard, mouse and external monitor. However, there is an alternative way with the ATP Manager

application running on a host Windows PC as described in the following section.

Important Notes Using External Monitor for ATP Manager

Note 1: Selection of external monitor

Due to HDCP 2.3 content protection schemes you will have to use an HDCP 2.3-enabled external monitor to view HDCP 2.3 protected content from a 4K or 8K source in the ATP Manager GUI. We have qualified the following displays:

- Dell UltraSharp 27 inch Monitor Model U2718Q.
- Dell UltraSharp 27 inch 4K Monitor Model U2720Q.
- ASUS 28" 4K UHD Monitor Model VP28U.
- ViewSonic 27" 4K UHD Monitor Model VX2776-4K-MHD.
- Other 4K HDCP 2.3 displays may work as well.

Note 2: Changing the ATP Manager GUI Display Resolution

You can change the resolution that the ATP Manager GUI is display at on the connected monitor using the Mint Linux utilities. Follow these steps:

Step 1: Click on the lower right corner icon to access **Shutdown** menu. Under GUI Appliation click on the Close button. The ATP Manager GUI will close.

Step 2: Once the ATP Manager is shutdown, click on the Mint icon (green M) on the lower left corner of the monitor to access the Mint Linux Controls.

Step 3: Select the **Settings** primary menu on the left and then on the right select **Display Configuration** secondary menu. The Display Configuration menu appears.

Step 4: Set the resolution to 1080p using the **Resolution** pull-down menu. The resolution should change and persist through a reboot.

5 Managing the M41d with ATP Manager from a PC

You can operate the M41d from the ATP Manager application installed on a host PC. You will have to first download and install the ATP Manager GUI application on your Windows PC. You will then need to connect your PC to the M41d over an Ethernet IP connection. These procedures are provided below.

Please note: You will have to have completed the procedures in the subsection above (**4.3 Getting the M41d Up and Running**) in order to complete the following steps.

5.1 Install the M41d ATP Manager GUI Application

This procedure describes how to install the ATP Manager application on your host PC.

1. Download the ATP Manager GUI application from the quantumdata downloads page: <http://www.quantumdata.com/downloads.html>.

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M41h
48G VIDEO ANALYZER/GENERATOR

Welcome to the Teledyne LeCroy downloads page for quantumdata products. Please note that the literature resources such as data sheets, user guides and application notes as well as firmware updates are available on the product web pages. Use the links on the right to help you navigate to each page in order to access these resources.

980 Series

Applicable Products

980B ATP (P/N 00-00231)
980R ATP (P/N 00-00232)

Official Release (updated November 8, 2019):

Required Files:

ATP Manager 5.50
32-Bit Instrument Firmware: ATP-32 Release 5.50
64-Bit Instrument Firmware: ATP-64 Release 5.50

Release Notes
(Updated Release Notes
(Please Read - Includes
Installation Instructions))

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980R Page
Go to 980R Page

980 9G Protocol Analyzer for HDMI
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980 48G Protocol Analyzer/Generator for HDMI
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980 DP 1.4 USB-C Video Generator/Protocol Analyzer
Go to 980 DP Video Generator Page

980 SDI Video Generator Page
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980 PACA Page
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Double click on ATP Manager and follow the installation prompts to install the ATP Manager on your Windows PC.

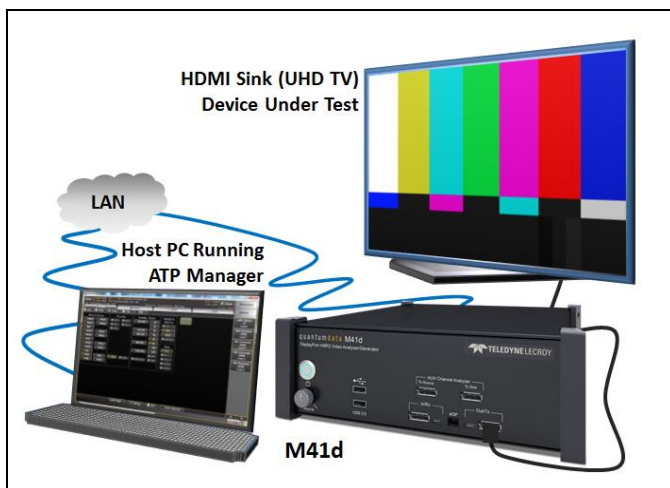
2. After installation completes, run the new ATP Manager. It should be available in the Start Menu under All Programs → Quantum Data, and also from an icon on your host PC Desktop.

Note: Verify that the version number in the title bar matches the version on the website.

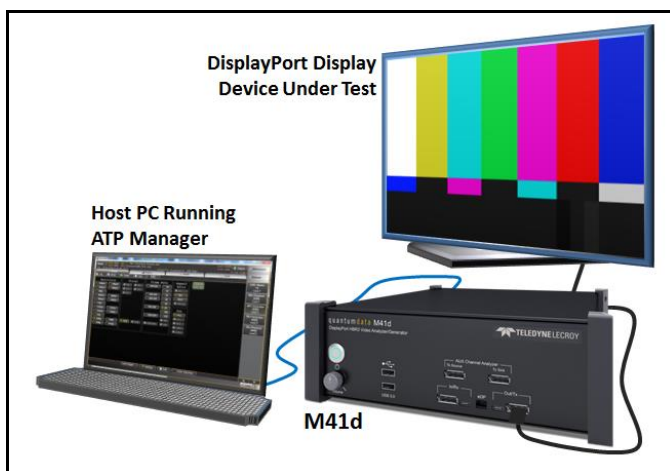
3. Connect your PC to the M41d using an Ethernet cable. The connection is made to the Rj45 jack on the back of the M41d labeled E1 to Network as shown below.



The Ethernet IP connection from the host PC to the M41d can be accomplished through your corporate network or you can connect directly. Both scenarios are depicted below.



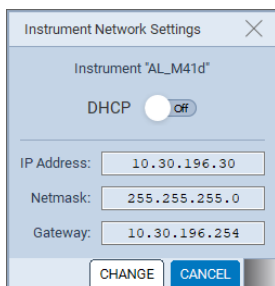
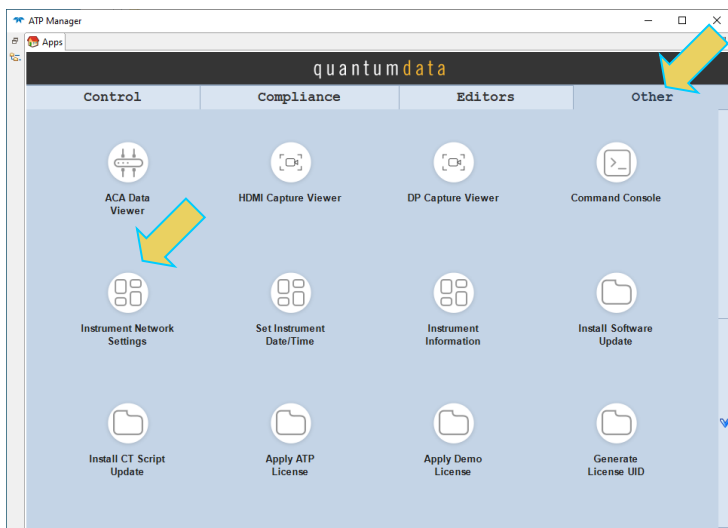
PC Running ATP Manager w/ Ethernet Connection thru Corporate LAN



PC Running ATP Manager with Ethernet Direct Connection

4. Set the IP address of the M41d from the **Other** page under the Control window of the ATP Manager GUI. Select the **Instrument Network Settings** icon. A dialog box appears enabling you to set DHCP or specify an IP address. Sample screen shots of these windows are shown below.

M41d HBR3 Video Analyzer/Generator - Quick Start Guide



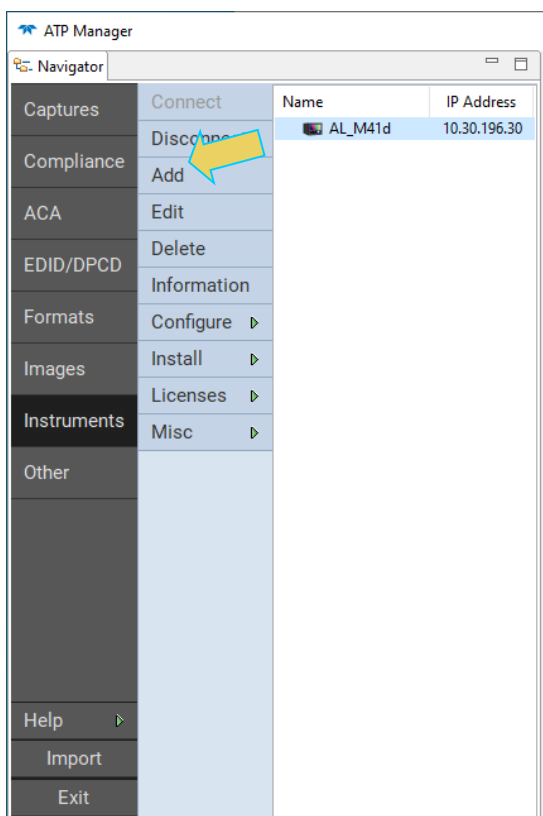
Note: Be sure to use an IP address that is compatible with your corporate LAN or your PC if you are connecting directly.

5. Power cycle the M41d with the power button on the front panel.

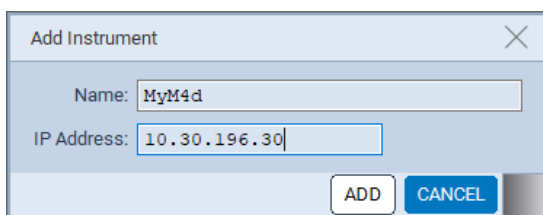


6. A dialog box will appear on the ATP Manager. Select Shutdown. Wait 5 seconds and reapply power.

7. Add your M41d to the ATP Manager application using the green + Add icon or the + Add item on the Instrument pull-down menu identified below.

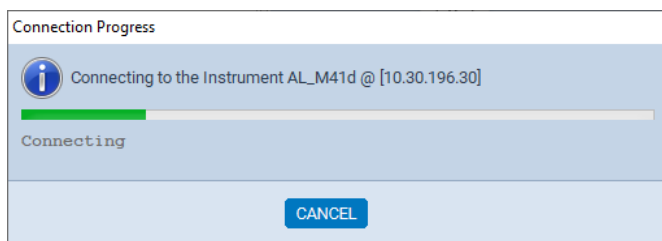


The **Add Instrument** dialog appears enabling you to enter the name and IP information for the M41d that you are trying to connect to (below).



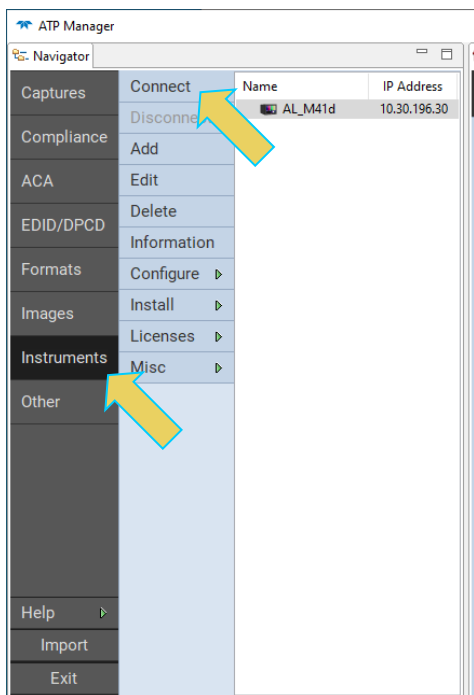
8. Enter the name (any suitable name) and IP address of the M41d that you want to connect to in the **Add Instrument** dialog box (above) and click on the **Add** activation button.

You will see a series of messages on a dialog boxes describing the progress. One example is shown below:



The M41d with the IP address you entered appears on the list in the **ATP Navigator** panel (below). The ATP Manager application will automatically connect to the M41d once you add the M41d to the application.

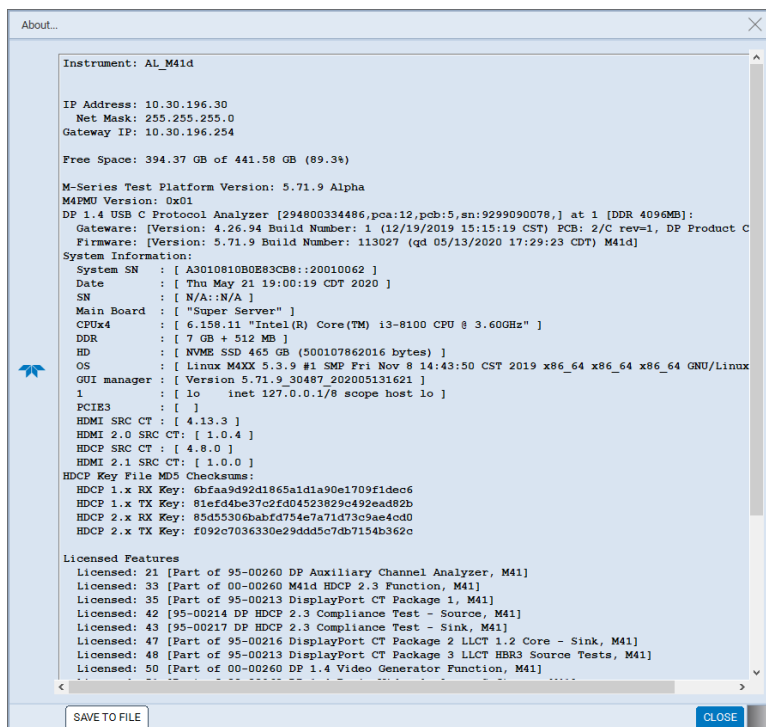
9. (If not already connected) Connect to the M41d using either the **Connect** icon or the **Connect** item on the right click menu as shown in the screen below. Note that you can also double click on the M41d in the **Instrument** dialog box in order to initiate a connection.



Once the connection is made the information about the connected M41d is available via the right click menu.

The information is then displayed in a separate window. The information on the Instrument Information window tells you the firmware and hardware release and version information as well as what options you have. This information will be helpful if you call quantumdata customer support during an upgrade process.

M41d HBR3 Video Analyzer/Generator - Quick Start Guide



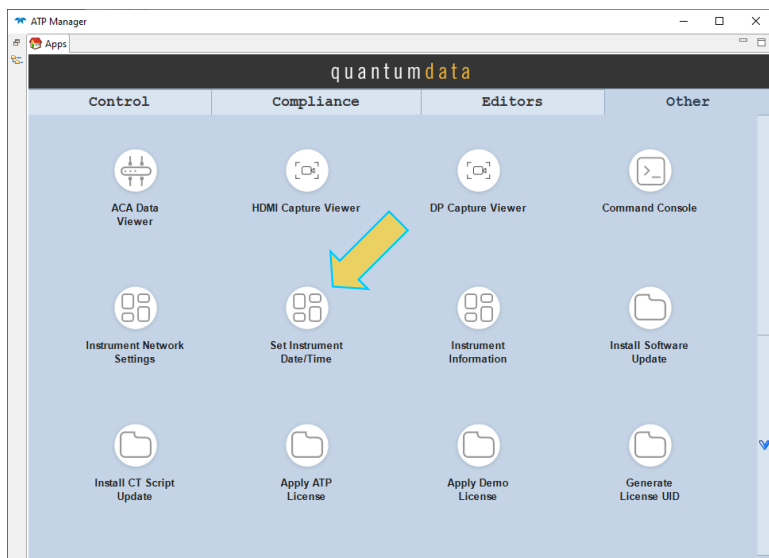
5.2 Setting the Instrument date and time

This procedure describes how to set a M41d's data and time. The procedure assumes that you have connected to an M41d through the external ATP Manager.

To set the date and time of the M41d:

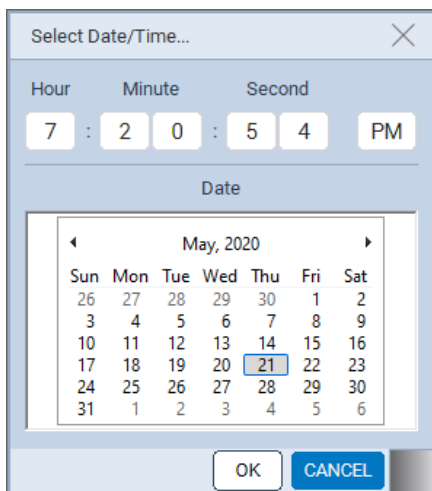
1. From the **Other** page (Page 4) of the Apps Window select **Set Instrument Date/Time**.

M41d HBR3 Video Analyzer/Generator - Quick Start Guide



The **Select Date/Time...** dialog box appears as shown below:

2. Set the month and date and time by selecting from the Calendar and time dials.



6 Connecting the Devices Under Test

This section describes how to connect and DisplayPort source or sink device to the M41d for testing.

6.1 Connecting a DisplayPort Source Device Under Test

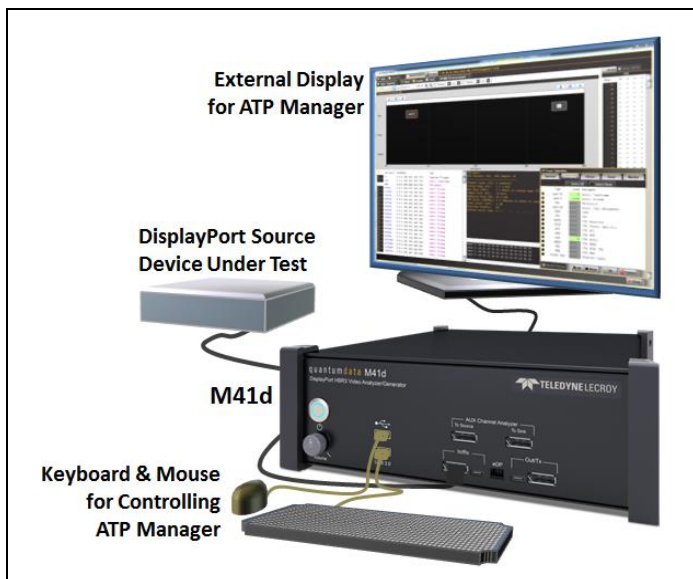
This procedure describes how connect your DisplayPort source device to the M41d for testing. This example show the ATP Manager running on the M41d with the ATP Manager GUI on the external monitor.

To connect your source DUT to the M41d:

1. Connect the source device under test to the M41d DisplayPort In/Rx port as shown below. Note that you can connect either through the full size standard DP port or the USB-C DP Alt Mode port.



The full test setup up is shown below with the connected external monitor running the M41d ATP Manager application. The sample screen show shows an DisplayPort capture analysis screen.



6.2 Connecting a DisplayPort Sink Device Under Test

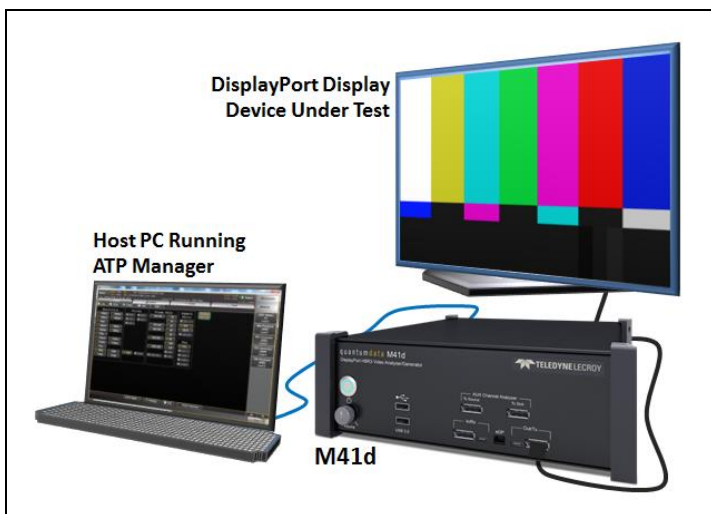
This procedure describes how connect your DisplayPort sink device to the M41d for testing. This example show the ATP Manager running on a host PC.

To connect your sink DUT to the M41d:

1. Connect the sink device under test to the M41d DisplayPort Out/Tx port as shown below (example shows connection to full sized DP port). Note that you can connect either through the full size standard DP port or the USB-C DP Alt Mode port.



The full test setup up is shown below. This example uses the ATP Manager installed on a host PC.



6.3 Connecting a DisplayPort Source and Sink for Passive Aux Channel Monitoring

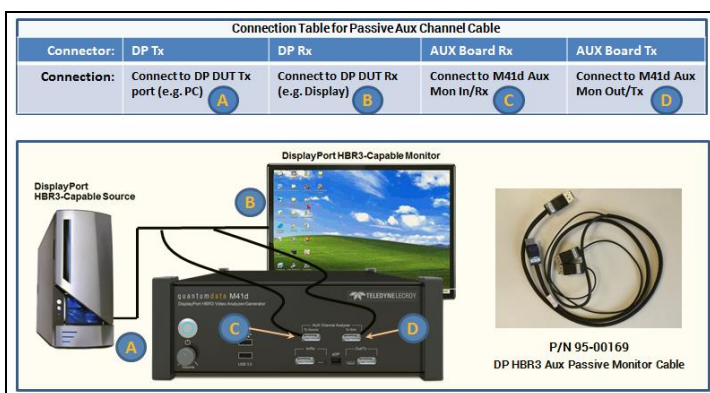
This subsection describes the procedures for setting up passive monitoring between a DisplayPort HBR3-capable source and sink device. This example show the ATP Manager running on the M41d with the ATP Manager GUI on an external host PC.

M41d HBR3 Video Analyzer/Generator - Quick Start Guide

Important Notes: The base M41d includes the Passive AUX Monitoring Cable 95-00169. This cable, which uses micro-coax for the Main Link lanes, will be usable if the M41d is upgraded to either 95-00219 (M41d DisplayPort Enhanced Source Testing) or 95-00220 (M41d DisplayPort Enhanced Sink Testing.) This cable allows the upgraded M41d to perform passive AUX monitoring (inserted between any 2 external DP devices) at the HBR3 link rate. (At lower link rates, standard DP cables may suffice, but the 95-00169 cable may still be used.) The base M41d is capable of Emulation AUX monitoring (when the M41d is either the Source or the Sink) using the provided standard DisplayPort cable. Please refer to the M41d User Guide for details.

To connect your source and sink DUT to the M41d for passive ACA monitoring:

1. Connect the source device under test to AUX Channel Analyzer port labeled To Source. Use the Teledyne LeCroy provided passive monitoring cable.
2. Connect the sink device under test to AUX Channel Analyzer port labeled To Sink. Use the Teledyne LeCroy provided passive monitoring cable. Refer to the diagram and table below.



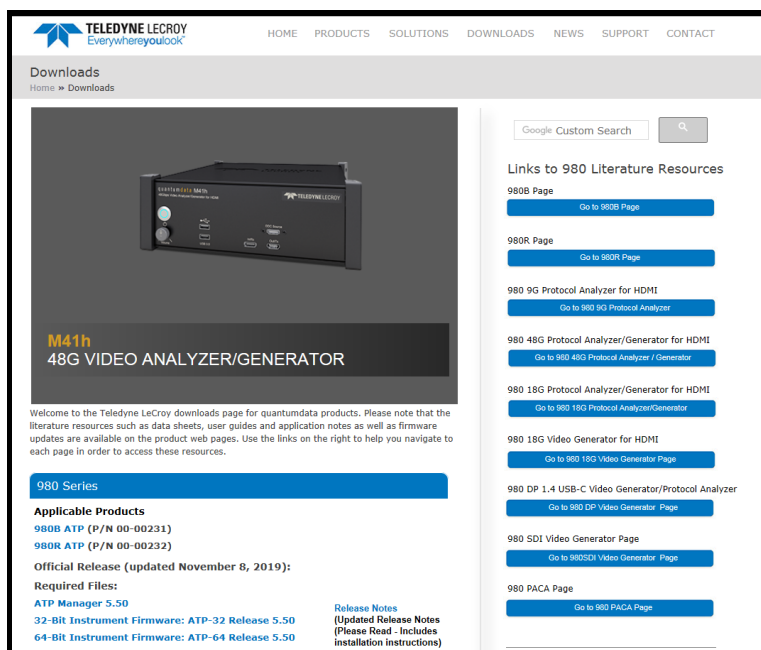
7 Upgrading ATP Manager

This section provides information about upgrading your M41d and M41d ATP Manager. Detailed procedures are not provided in this document.

Please be sure to refer to the Release Notes for a specific release for detailed upgrade instructions.

Teledyne LeCroy periodically provides maintenance release of software and firmware. The most recent versions are available on the downloads page of the quantumdata website.

<http://www.quantumdata.com/downloads.html>



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980 Series

Applicable Products

980B ATP (P/N 00-00231)
980R ATP (P/N 00-00232)

Official Release (updated November 8, 2019):

Required Files:

ATP Manager 5.50
32-Bit Instrument Firmware: ATP-32 Release 5.50
64-Bit Instrument Firmware: ATP-64 Release 5.50

Release Notes (Updated Release Notes (Please Read - Includes installation instructions))

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980B Page
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980R Page
Go to 980R Page

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Go to 980 DP Video Generator Page

980 SDI Video Generator Page
Go to 980SDI Video Generator Page

980 PACA Page
Go to 980 PACA Page

Two software packages are available for upgrading the M41d:

1. The firmware and gateware package for the M41d instrument. This is a Debian software package for installation in the Linux-based instrument. (The file extension is .deb.) This package also includes the embedded ATP Manager that will be installed.

2. ATP Manager (GUI) either for the M41d or if you are using a host PC for Windows. This is the ATP Manager GUI that can be used to control all M41d instrument from a Windows PC.

Notes:

1. You must upgrade the windows based ATP manger every time you upgrade the firmware/software on the unit. **Upgrade the ATP Manager first**, and then upgrade the M41d application firmware as indicated in the release notes.
2. Be sure to check the release notes associated with the download files. Any special installation instructions will be noted in the release notes.

Please be sure to refer to the Release Notes for the specific release for detailed upgrade instructions.