TELEDYNE LECROY
Everywhereyoulook™

M42d 80G Video Analyzer/Generator

for DisplayPort 2.0 Testing

Quick Start Guide

Rev: A5

Table of Contents

1 Scope of this Quick Start Guide

This Quick Start Guide provides basic setup and configuration of the M42d 80G 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 M42d.
- Installing the M42d ATP Manager on a PC.
- Establishing an IP session between an M42d and the host PC running the ATP Manager.
- Connecting the DisplayPort source or sink devices under test to the M42d.

This ***Quick Start Guide does not include*** descriptive or procedural information for any of the video test functions of the M42d applications themselves. Procedures for the functional applications are covered in the M42d User Guide. The User Guide is available from the product page on the quantumdata website https://www.quantumdata.com/M42d.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/M42d.html) for updates to this Quick Start Guide & User Guide.

2 About the M42d

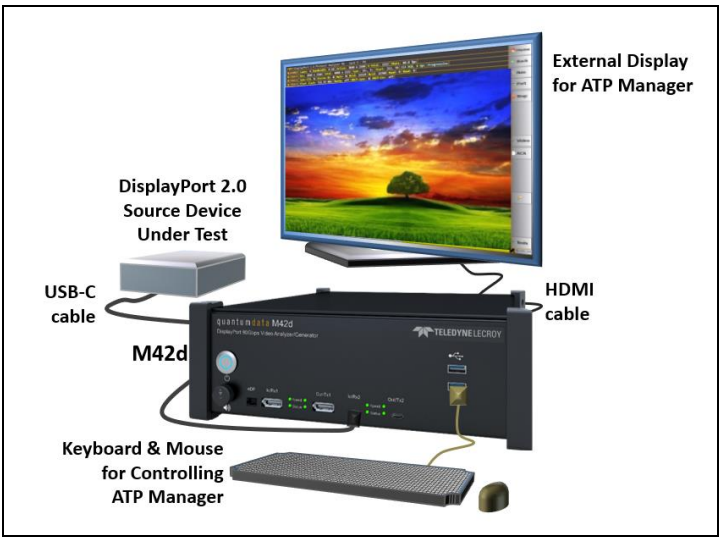
The M42d is a compact versatile test instruments offering entry level functional testing that can be extended through software licenses to full compliance testers with sophisticated analysis and diagnostic capabilities.

M42d 80G Video Analyzer/Generator

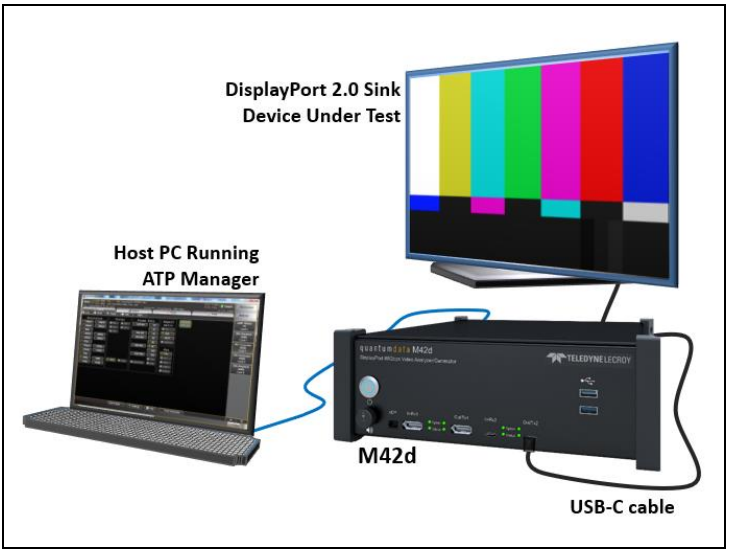
3 About the ATP Manager GUI Application

The M42d 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 M42d.

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 M42d 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 M42d up and operating.

4.1 What is in the M42d shipping box?

When a Teledyne LeCroy quantumdata M42d is shipped it will contain the following additional items:

- AC Power Line Cord.
- CE mark declaration.
- DisplayPort to DisplayPort Cable.
- USB-C cable (Unmarked)
- USB-C cable (Marked)
- CATC Micro-D Cable Assembly
- Ethernet cable
- Mouse.
- This Quick Start Guide.

4.2 Positioning/Orientation

The M42d can be positioned either flat or upright. These two orientations are depicted below:

Flat Positioning

Upright Positioning

4.3 Connectors and Controls

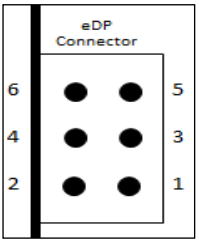
The table below describes the M42d connectors and controls.

M42d Configurations	Information / Function
Protocol Analyzer in M42d   	**Front panel:** ▪ A – USB-C Out/Tx port for UHBR data rates. ▪ B – USB-C In/Rx port for UHBR data rates. ▪ C – DP Out/Tx port for HBR3 & 10G data rates. ▪ D – DP In/Rx port for HBR3 & 10G data rates. ▪ E – USB ports (2) used for connecting a mouse and keyboard. ▪ F – Knob for turning up or down the volume for the internal speaker. ▪ G – Power button; press and release. ▪ H – eDP block for Backlight Control (See Note Below). **Back panel:** ▪ I – Power plug (110-220VAC 50/60Hz) ▪ J - HDMI – Admin port for connecting external HDMI UHD display for M42d ATP Manager. ▪ K - DisplayPort – Not recommended for use currently. ▪ L - USB/USB-C (2 ea.) – For mouse & keyboard. ▪ M - RJ45 (2) - E1 Network for connecting host PC running ATP Mgr. E2 Aux – Future. ▪ N - DVI – Possible future use. ▪ O - RS-232 (2) – Possible future use. ▪ P - Audio (2) – Possible future use. ▪ Q – CrossSync™ for TRIG IN/OUT – Future. ▪ R - RCA SPDIF OUT – OUT:

M42d Configurations	Information / Function
	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 Gettting the M42d Up and Running

Use the following procedures to get your M42d up and running.

1. Remove the M42d from the shipping box and lay it flat or upright on your desktop or benchtop.
2. Connect the M42d power cable (provided) to a suitable outlet (110-240V 50/60Hz). The power socket is on the back of the M42d as shown below.

3. Connect an external HDMI monitor to the HDMI connector on the back of the M42d; labeled “External Monitor” at the location indicated below.

The setup is depicted below.

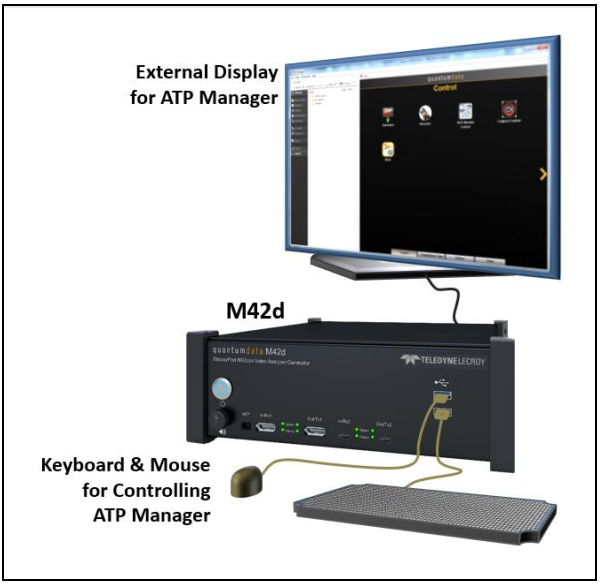
4. Connect a mouse to one of the USB ports on the front or back of the M42d as shown below.
5. Optionally connect a keyboard to one of the other USB ports on the front or the back of the M42d. You can also use the virtual keyboards that present themselves in the ATP Manager.

6. Power up the M42d via the power button on the front of the M42d.

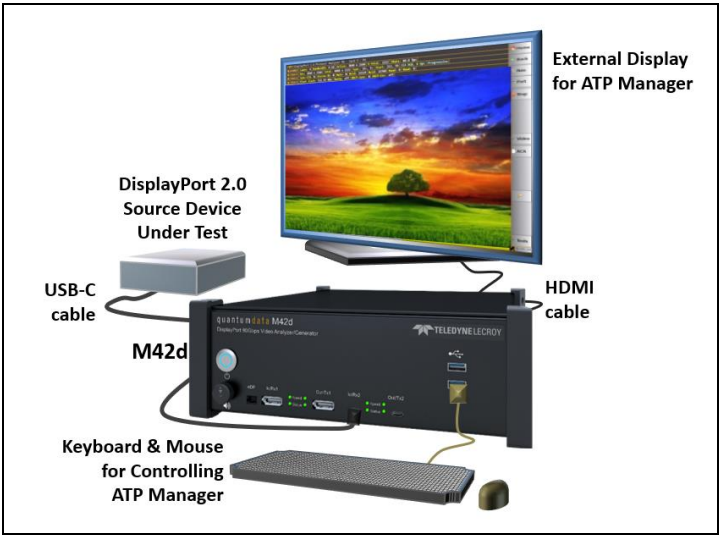
Notes: Regarding Power Button color:

- The Power button will be Red if the power is off when a power connection in is in place in the back of the M42d.
- The Power button will be Blue (or Yellow) during initialization.
- The Power button will be Green when the M42d 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 M42d. The following example shows an DisplayPort source device connected.



You can fully operate the M42d 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 M42d with ATP Manager from a PC

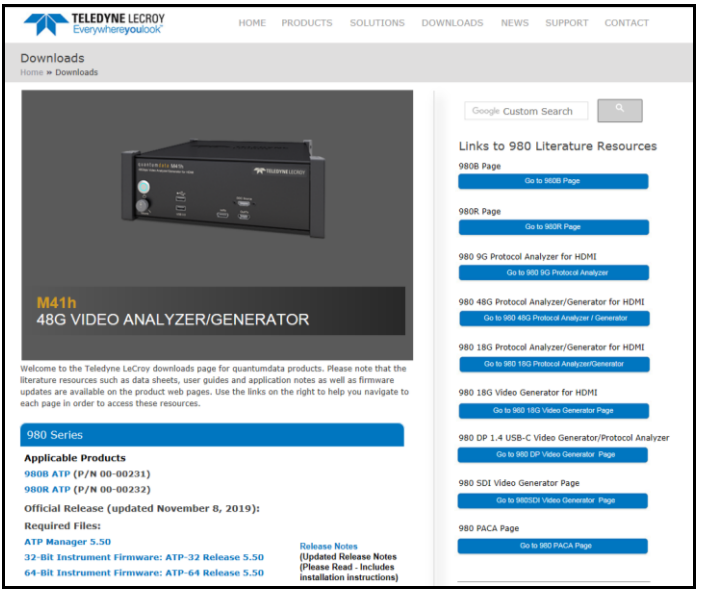
You can operate the M42d from the ATP Manager application installed on a host PC. You will have to first download and install the ATP Manager GUI application on your Windows PC. You will then need to connect your PC to the M42d over an Ethernet IP connection. These procedures are provided below.

Please note: You will have to have completed the procedures in the subsection above **(4.3 Gettting the M42d Up and Running)** in order to complete the following steps.

5.1 Install the M42d 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.



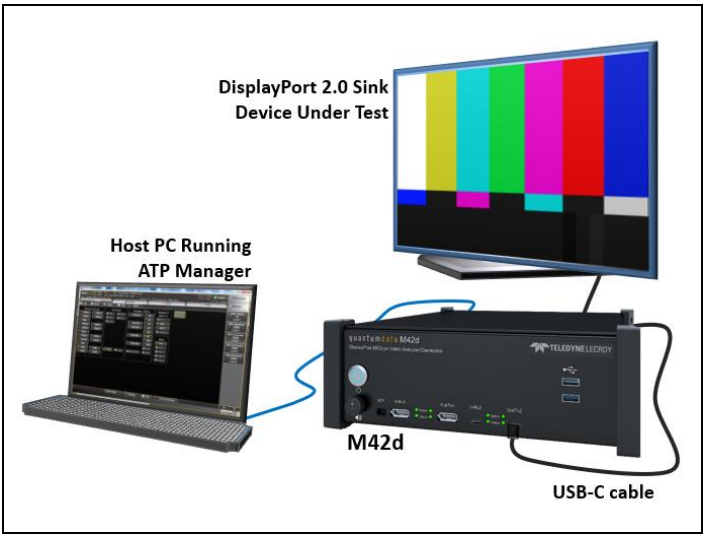
Double click on ATP Manager and follow the installation prompts to install the ATP Manager on your Windows PC.

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.

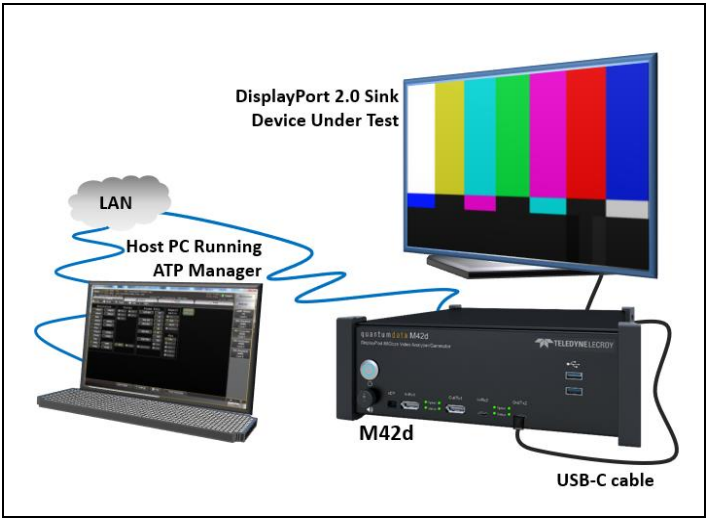
   Note: Verify that the version number in the title bar matches the version on the website.

3. Connect your PC to the M42d using an Ethernet cable. The connection is made to the Rj45 jack on the back of the M42d labeled E1 to Network as shown below.

The Ethernet IP connection from the host PC to the M42d can be accomplished through your corporate network or you can connect directly. Both scenarios are depicted below.



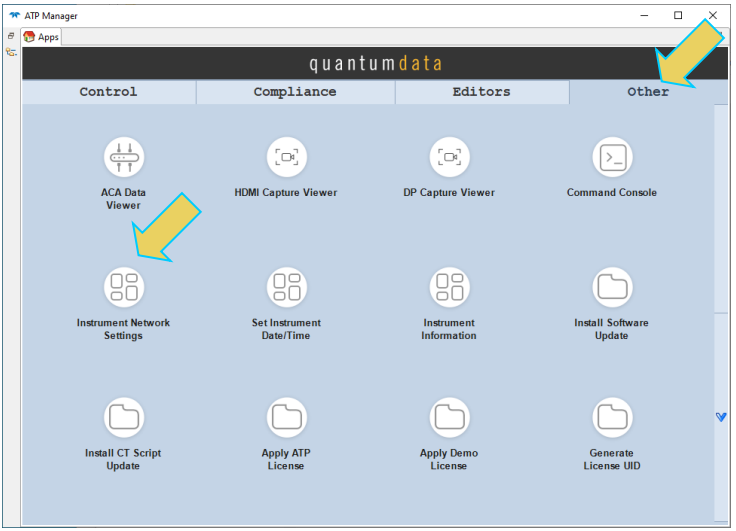
PC Running ATP Manager with Ethernet Direct Connection

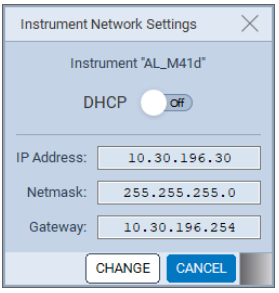


PC Running ATP Manager w/ Ethernet Connection thru Corporate LAN

4. Set the IP address of the M42d 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.

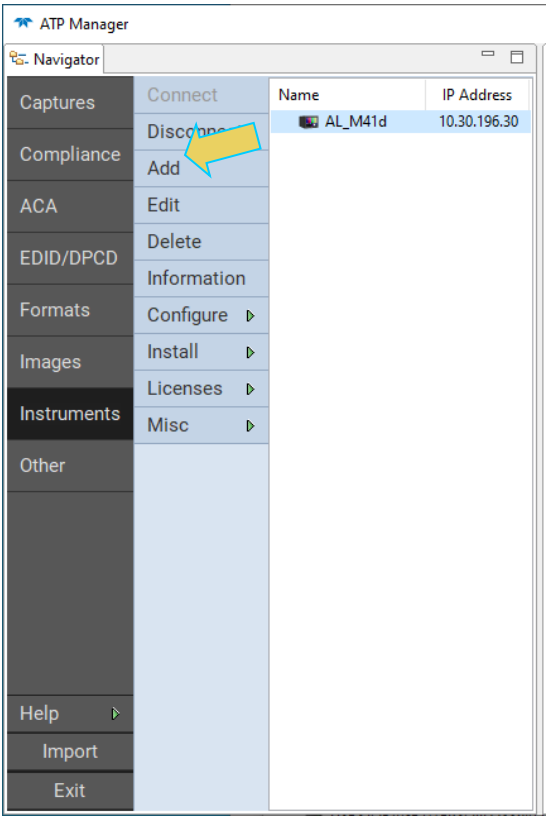




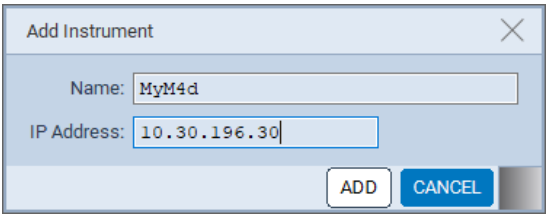
Note: Be sure to use an IP address that is compatible with your corporate LAN or your PC if you are connecting directly.

5. Power cycle the M42d with the power button on the front panel.

6. Add your M42d to the ATP Manager application using the green + Add icon or the + Add item on the Instrument pull-down menu identified below.

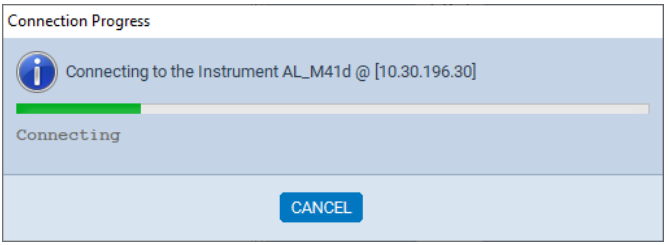


The **Add Instrument** dialog appears enabling you to enter the name and IP information for the M42d that you are trying to connect to (below).



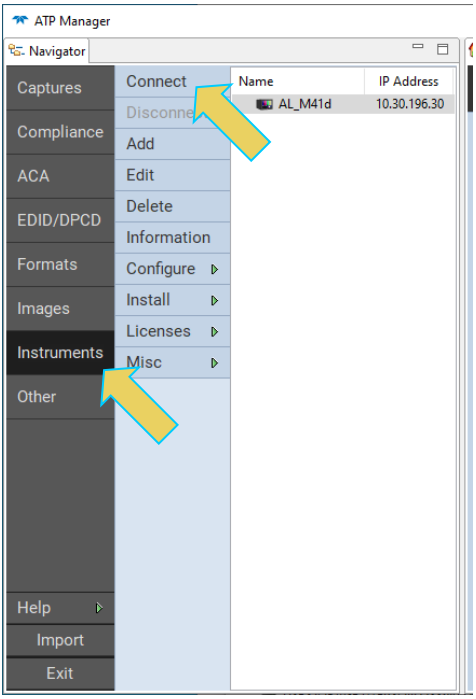
7. Enter the name (any suitable name) and IP address of the M42d that you want to connect to in the **Add Instrument** dialog box (above) and click on the **Add** activation button.

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



   The M42d 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 M42d once you add the M42d to the application.

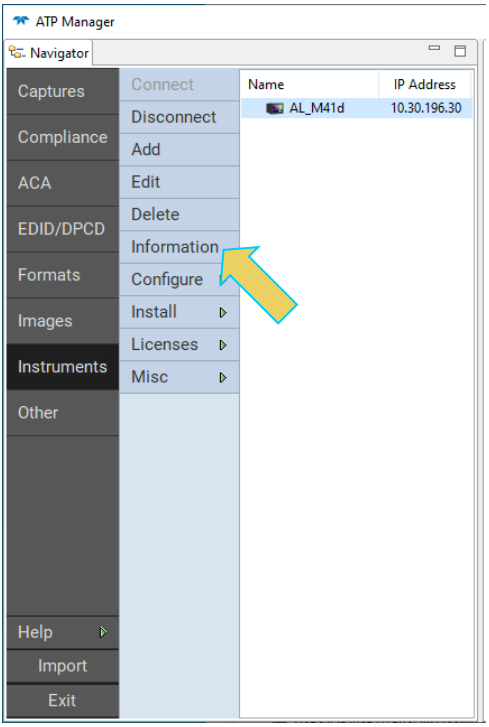
8. (If not already connected) Connect to the M42d using the **Connect** button or the **Connect** item on the right click menu as shown in the screen below.



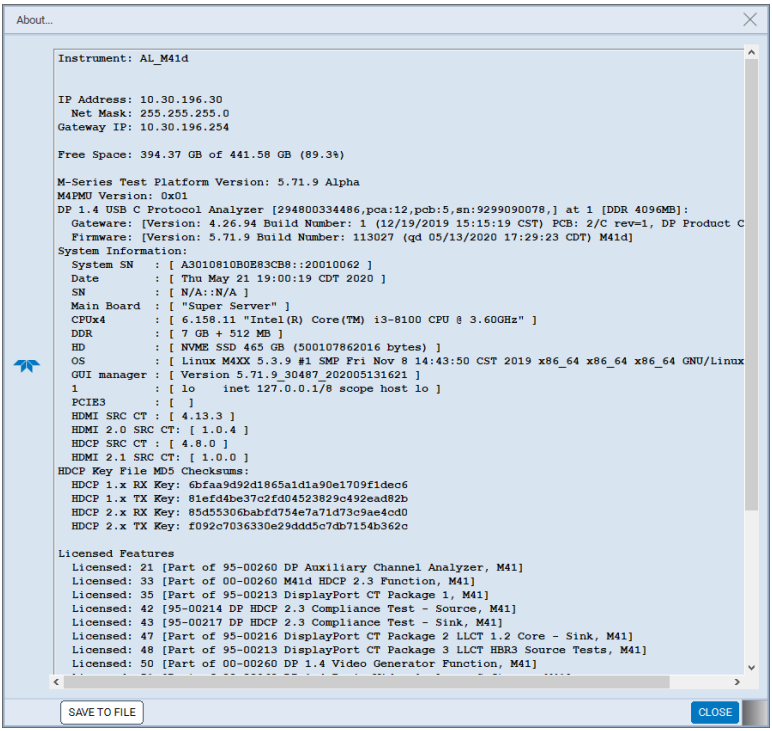
The information is then displayed in a separate window. The information on the Instrument Information window tells you the firmware and hardware release and version information as well as what options you have. This information will be helpful if you call quantumdata customer support during an upgrade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

A dialog box appears indicating that a connection is in progress.

Once the connection is made the information about the connected M42d is available via the Information button as shown below.



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.

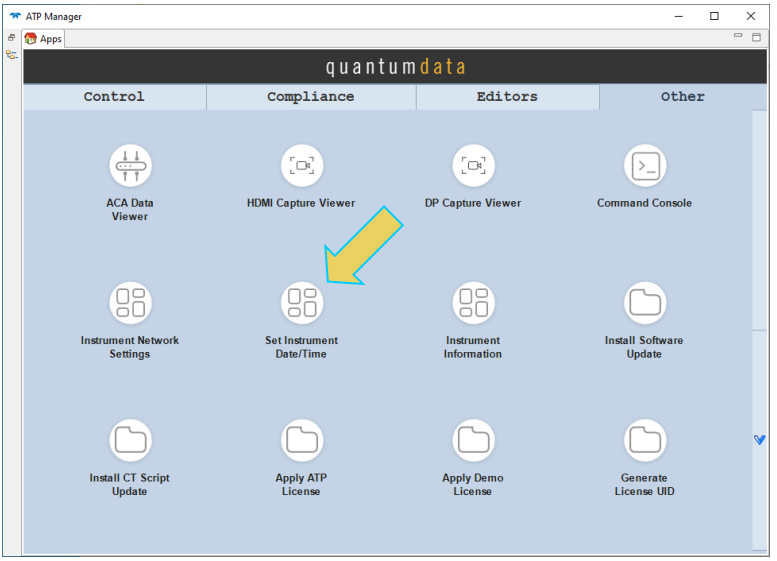


5.2 Setting the Instrument date and time

This procedure describes how to set a M42d's data and time. The procedure assumes that you have connected to an M42d through the external ATP Manager.

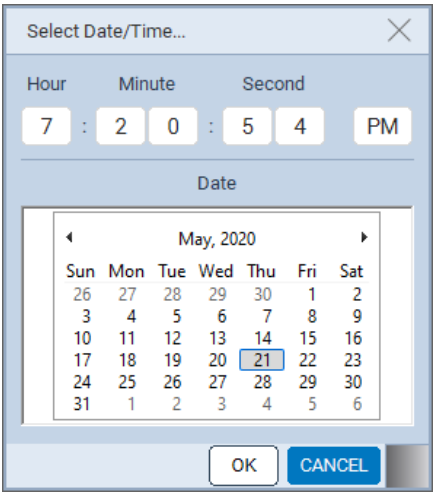
To set the date and time of the M42d:

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



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 M42d for testing.

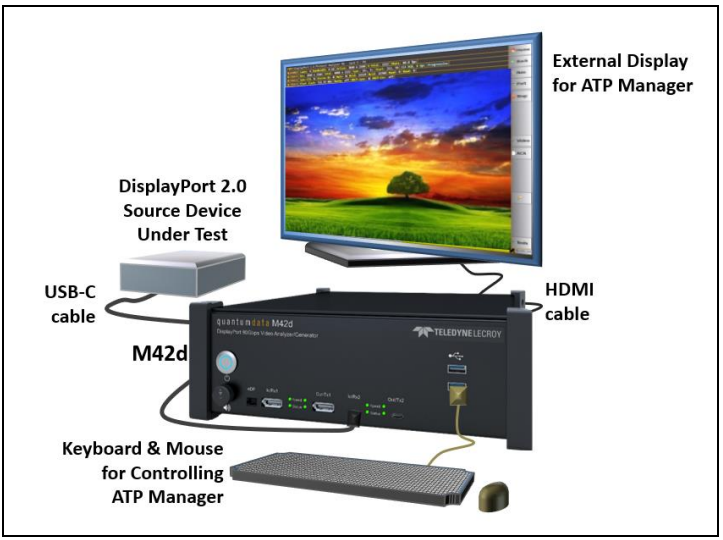
6.1 Connecting a DisplayPort Source Device Under Test

This procedure describes how connect your DisplayPort source device to the M42d for testing. This example show the ATP Manager running on the M42d with the ATP Manager GUI on the external monitor.

To connect your source DUT to the M42d:

1. Connect the source device under test to the M42d 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 depending on the lane rate (USB-C port shown in the example below).

The full test setup up is shown below with the connected external monitor running the M42d ATP Manager application. The sample screen show shows an DisplayPort analysis screen.



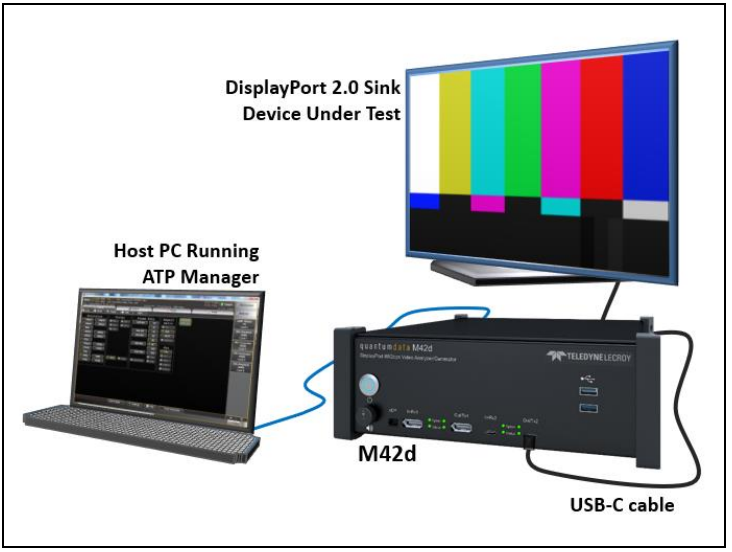
6.2 Connecting a DisplayPort Sink Device Under Test

This procedure describes how connect your DisplayPort sink device to the M42d for testing. This example shows the ATP Manager running on a host PC.

To connect your sink DUT to the M42d:

1. Connect the sink device under test to the M42d DisplayPort Out/Tx 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 depending on the lane rate (example shows connection to USB-C port).

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

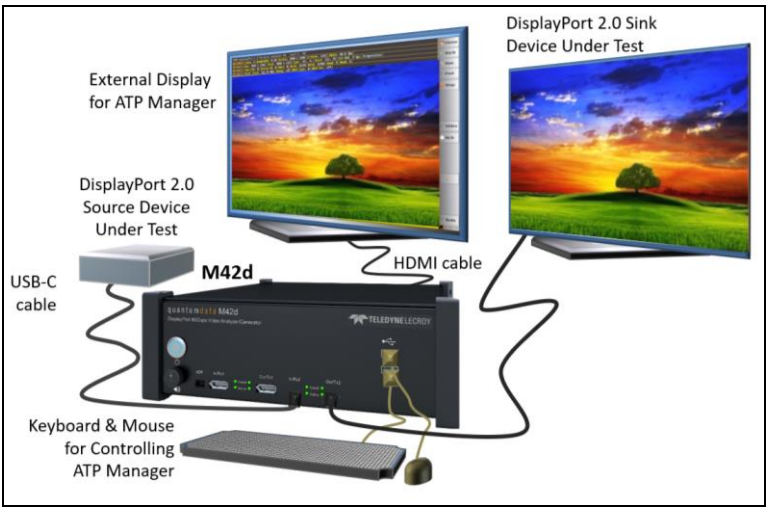


6.3 Connecting a DisplayPort Source and Sink Device Under Test

This procedure describes how to connect a source and a sink device to the M42d for Passive Monitoring. Connections can be made to the M42d via native high quality 8K DP cables (one meter or less) or the USB-C cables provided.

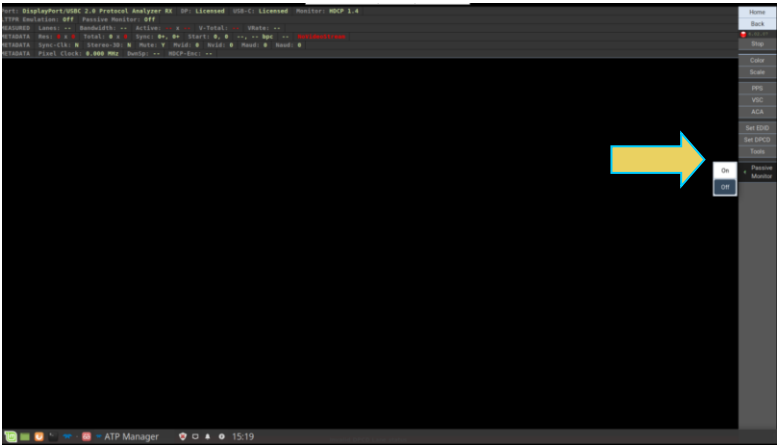
The following procedure will provide for a stable connection. Use the diagram below as a guideline. Note that this diagram shows connections only to the USB-C ports. Alternatively, you can use the DisplayPort connectors up to 10G lane rates. But you have to use the same type ports (DP or USB-C) on each side.

Note: Please note that as this is passive monitoring, the activation of HDCP will encrypt any video on the M42d display as it cannot process any data, just monitor it.



To connect your source and sink DUT to the M42d:

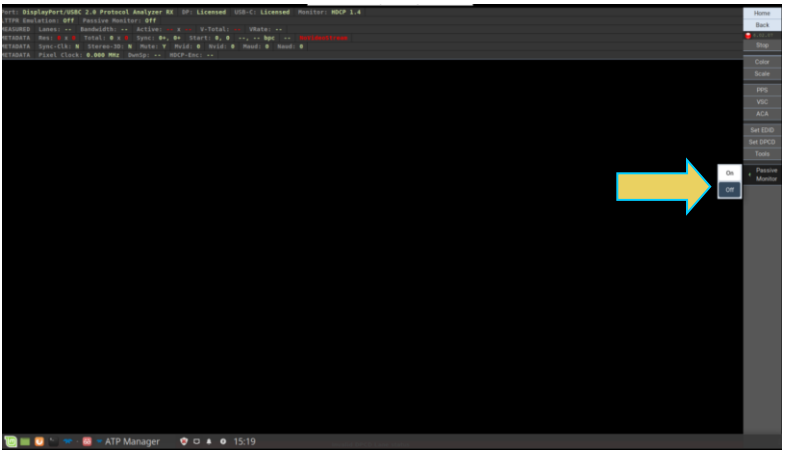
1. Open the “Real Time” Receiver window of the embedded ATP (running on the externally connected display connected to the HDMI admin port in back).
2. Click on the Passive Monitoring button and ensure it is **Off**.
   Note: You cannot do this step from the External ATP Manager running on a PC.



3. Connect your source to the M42d Rx port of your choice (either

USB-C or DisplayPort) with the appropriate cable to your source device.

4. Configure your source device to output a DisplayPort video stream.
5. In the case of USB-C cable connections, make sure that the cable connections are correct. The port status LED should be **Green** and you should see the video on the external display connected to the M42d HDMI admin port. Flip the USB-C cable at the M42d if the status LED is **Red**.
6. Connect a cable to the M42d Tx port with the appropriate cable (DisplayPort or USB-C that you used to connect from your source device) to the display device.
7. Configure the M42d to generate a DIsplayPort signal.
8. In the case of USB-C cable connections, verify that the cable connections are correct. The port status LED should be **Green** and you should see the generated video on your Sink display device. Flip the USB-C cable at the M42d if the status LED is **Red**.
9. Once you have verified that the status LED's on the ports are **Green** (Note this LED does not indicate the orientation during Passive Probing), you can enable Passive Probing by turning On Passive Monitoring through the Receiver "Real Time" window as shown below.



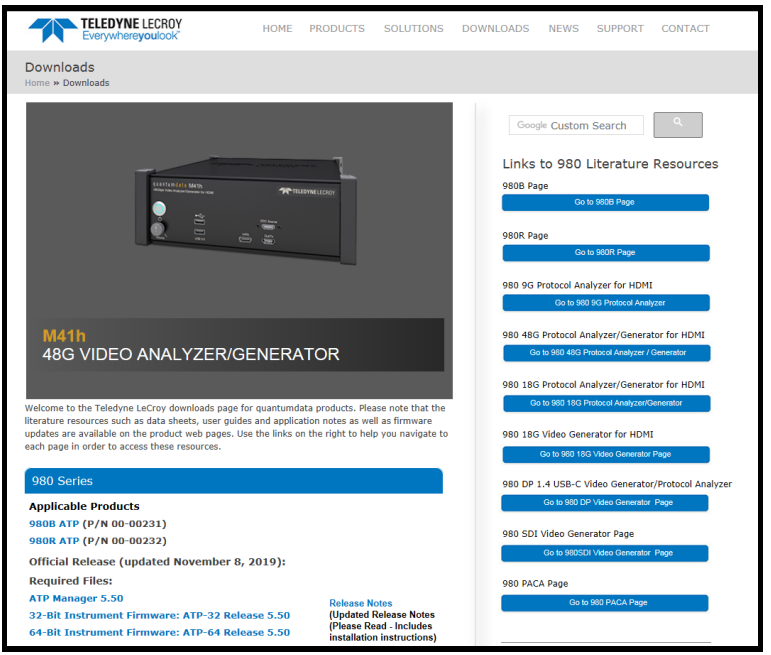
10. **Important Note**: In the passive-probing mode, you may need to generate a hot plug by physically disconnecting/connecting the cable between Source and the M42d Rx port. The cable between M42d Tx port and Sink remain connected.

7 Upgrading ATP Manager

This section provides information about upgrading your M42d and M42d 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



Two software packages are available for upgrading the M42d:

1. The firmware and gateware package for the M42d 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 M42d or if you are using a host PC for Windows. This is the ATP Manager GUI that can be used to control all M42d 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 M42d 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.