

quantumdata™ M42d DisplayPort 2.0 Video Analyzer/Generator

Full 80Gb/s Link Rate Functional and Compliance Tester



Key Features

- Equipped with both DP standard and USB-C ports for Tx and Rx functions
- Test DP sources up to 20 Gb/s lane rates at the new 128b/132b line coding
- View incoming video and metadata—including DSC compressed—from a source device
- Capture and decode incoming video, protocol, and control packets including Display Stream Compression (DSC)
- Run functional tests on displays and monitors up to 20 Gb/s lane rates with large format and test pattern library
- Configure link training parameters to test display's handling of link training
- Generate Display Stream Compression (DSC), select patterns and configure slices and video parameters
- View and edit EDID and DPCD registers
- Monitor Aux Channel transactions while emulating a DP 1.4 or DP 2.0 source or sink
- Passively monitor the Main Link and Aux Channel between a source & display even at 20 Gb/s lane rates (future)
- Panel Replay and LTPR testing for sources and sinks (future)
- View Power Delivery (PD) negotiations for USB-C DP Alt Mode
- Run DP 1.4 Link Layer compliance tests on sources and sinks up to 8.1Gb/s per lane
- Run DP 1.4 Forward Error Correction (FEC) and Display Stream Compression (DSC) compliance tests for sources and sinks
- Run HDCP 2.2/3 compliance tests on DisplayPort sources, sinks and branch devices
- Run audio tests using programmable LPCM sine wave audio tones
- Run tests on embedded DisplayPort (eDP) 1.4b sources and panels using fast link training, ALPM & backlight control

The Teledyne LeCroy quantumdata M42d Video Analyzer/Generator provides an unprecedented combination of functional and compliance testing for video, audio and protocol of DisplayPort 2.0 and DisplayPort 1.4. The M42d supports legacy DisplayPort lane rates of 1.62, 2.7, 5.4, 8.1 Gb/s and the new DP 2.0 higher speed lane rates and new line coding—128b/132b—of 10.0, 13.5, & 20.0 Gb/s data rates on 1, 2 & 4 lanes. The protocol analyzer provides a snapshot status view and deep analysis using captures of incoming DisplayPort 2.0 streams from source devices including DSC/FEC compressed streams. The M42d's video generator can be used for testing displays, USB-C adapters, extenders, etc. The video generator offers a large library of standard video timings and test patterns necessary for testing next generation high resolution displays.

The M42d supports a full suite of DP 1.4 link layer, forward error correction (FEC) and display stream compression (DSC) compliance tests for both sources and sinks. (Compliance tests for DP 2.0 are planned for the future.)

The new Passive Probe feature, based on Teledyne LeCroy's cutting-edge T.A.P.4™ technology, enables full monitoring of the DisplayPort Main Link and the Aux Channel between two DisplayPort devices up to 20 Gb/s lane rates.

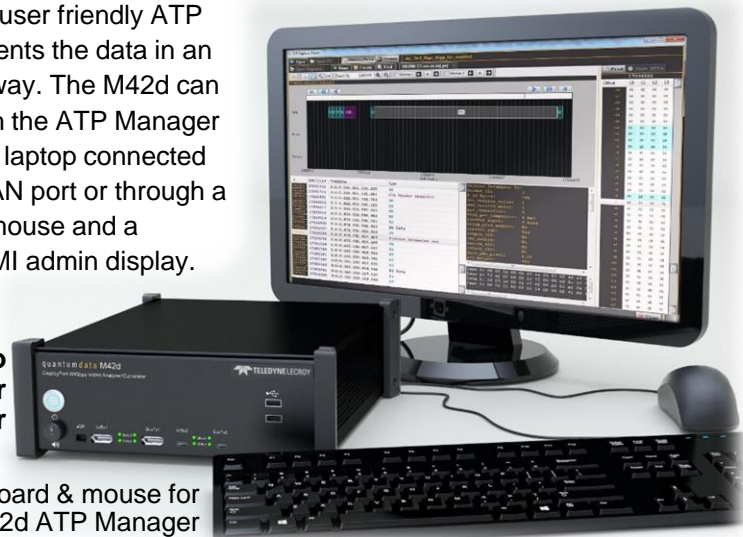
For developers of Embedded DisplayPort (eDP), the M42d offers fast link training, alternate scrambler seed, Advanced Link Power Management (ALPM) and Tx backlight control. A pin header is available to provide access to the backlight Tx control test feature.

Operation

The M42d supports generation and analysis of the DisplayPort data streams through the user friendly ATP Manager which presents the data in an easy to understand way. The M42d can be controlled through the ATP Manager operated either via a laptop connected to the M42d RJ45 LAN port or through a USB keyboard and mouse and a connected UHD HDMI admin display.

M42d Video Analyzer Generator

Keyboard & mouse for M42d ATP Manager Control



SPECIFICATIONS

DisplayPort 2.0 / USB-C/ eDP Capabilities

Version	DisplayPort 2.0
Standard Formats	VESA, CTA
Video Data Rates	1.62, 2.7, 5.4, 8.1, 10.0, 13.5 & 20 Gb/s lane rates 1, 2, 4 Lanes
Color Depths	6, 8, 10, 12, 16 bits
Video Encoding	RGB, YCbCr
Video Sampling Modes	4:4:4, 4:2:2, 4:2:0
HDCP	Versions 1.3 and 2.2/3
Audio	8 Channel LPCM programmable sine wave
Capture memory	8 GBytes

Connectors - Front

DP Standard	Tx (1) DP Full-Sized; Rx (1) DP Full-Sized
USB-C	Tx (1) USB-C with DP Alt Mode; Rx (1) USB-C with DP Alt Mode
eDP Header	Pins to access eDP Tx backlight controls
USB (2)	For connecting keyboard and mouse for ATP Manager control & external storage media

Connectors - Back

HDMI - Admin Connector	HDMI 2.0 Port for external monitor
USB (2); USB-C (2)	Keyboard / mouse connected to USB ports to control ATP Manager on external display connected to Admin HDMI 2.0 port
RJ45 E1	For admin control over LAN from computer running ATP Manager
Cross Sync connector	Use for triggering a capture or for a capture event to trigger an oscilloscope
All other connectors	Not used

Physical / Electrical / Admin

Power	100-240 VAC, 50-60 Hz, 200 Watts
Weight	7.6 LBS; 5.057 Kg
Size	Height: 3.44 in. (8.74 cm) Width: 9.57 in. (24.30 cm) Depth: 10.94 in. (27.79 cm)
Rack mountable	2 RU mounts in 19 inch rack with rack mounting brackets
Internal speaker	Speaker with volume control for monitoring incoming LPCM audio
Command Line Control	Ethernet (RJ-45) for external GUI
System Control	Either through External PC connected over LAN to Ethernet RJ45 or: Keyboard / mouse to control external 4K UHD TV at Admin HDMI 2.0 port
Environmental	Operating Temp: 32 to 104 (F); 0 to 40 (C)

