

MODEL A223801

KEY FEATURES

- Option module for Chroma 2238 Video Pattern Generator
- DisplayPort v1.4
- VESA standard timing output
- Supported resolutions:
 - Up to 8K x 4K@60Hz (2 ports)
 - Up to 8K x 4K@30Hz (1 port)
- MST testing functionality
- Lane Count and bandwidth settings:
 - Lane Count: 1 / 2 / 4 / 4+4 lane(s)
 - Bandwidth: 1.62 / 2.7 / 5.4 / 8.1 Gbps
- Swing Level and Pre-Emphasis settings:
 - Swing Level: 400 / 600 / 800 / 1200 mV
 - Pre-Emphasis: 0 / 3.5 / 6 / 9.5 dB
- RGB 4:4:4 and YCbCr 4:4:4 / 4:2:2 formats
- RGB / ITU-R BT.601 / ITU-R BT.709 / ITU-R BT.2020 / DCI-P3 color space
- 6 / 8 / 10 / 12 bits color depth
- HDCP 2.3, 2.2 and 1.3 testing
- DPCD reading functionality
- HDR testing (HDR Infoframe & Metadata / EOTF)
- 10-bit BMP format image output
- ESD protection



DISPLAYPORT SIGNAL MODULE MODEL A223801

Chroma DisplayPort Signal Module A223801 features a built-in high-speed graphics processing unit and complies with the DisplayPort 1.4 specification, supporting HBR3 (High Bit Rate 3, 32.4Gbps) bandwidth transmission at an 8Kx4K@60Hz resolution. Supported test functions include both basic image output test as well as HDCP, MST, and HDR. The A223801 supports single-port 8K UHD (Ultra High Definition) output with 12-bit color depth, ITU-R BT.601, ITU-R BT.709, ITU-R BT.2020, and DCI-P3 gamut output, as well as YCbCr 4:4:4 and 4:2:2 pixel encoding modes. In addition, the programmable automated test functions enable the user to tailor test programs to each DUT's specific requirements and start testing with just a single tap on the screen.

8K UHD Video Signal Output

The DisplayPort 1.4 specification supports transmission rates up to HBR3 and a maximum 4 Lanes output. Users can set Lane data rates according to different resolutions (1.62 / 2.7 / 5.4 / 8.1Gbps). This provides a 50% increase in total bandwidth compared to HBR2 supported by the DP 1.2a specification, resulting in a much more efficient transmission. At the same time, by increasing the overall bandwidth, a single port can deliver 8K signal output, in line with today's high-specification 8K video testing needs.

DPCD DisplayPort

DPCD (DisplayPort Configuration Data) acts as the main communication channel between the source and sink of the DisplayPort interface. By reading the DPCD register of the sink

device, Chroma A223801 can display the transmission channel and rate supported by the sink device, and carry out related tests by outputting the corresponding standard signal.

HDCP Testing

HDCP (High-Bandwidth Digital Content Protection) prevents illegal copying of data as it is transmitted through the interface. The A223801 supports HDCP versions 2.3, 2.2 and 1.3 and allows the user to freely switch between the three versions. The built-in dedicated HDCP test patterns can be output directly on the screen of the DUT, enabling users to instantly view related HDCP handshaking information.

HDR Testing

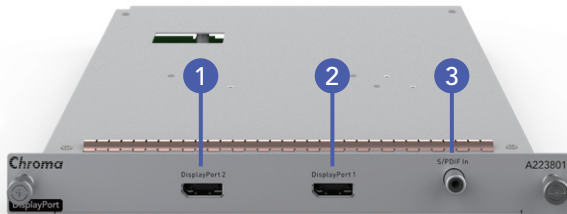
HDR (High Dynamic Range) output greatly improves brightness range and color level, closely approaching real image quality as seen by the human eye. HDR test items include the factors that most affect the consumer's visual perception, such as brightness, contrast, color, sharpness and moving image. Users can freely adjust the HDR metadata to carry out HDR related tests. The module also comes with built-in HDR test patterns, such as grayscale images, color bars and various window types.

MST Testing

MST (Multi-Stream Transport) allows multiple displays to be connected to a single DisplayPort port, greatly simplifying the wiring configuration. The A223801 supports MST transmission specifications for simultaneous multi-screen output (4 Stream max or 8K 30Hz) up to 8.1Gbps.



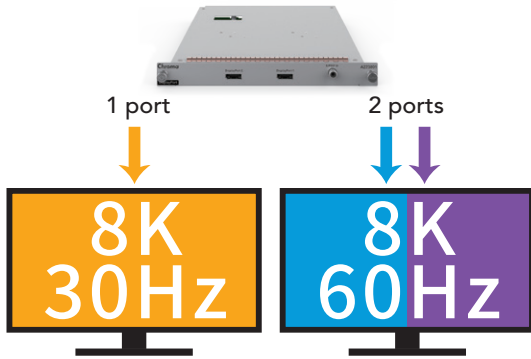
PANEL DESCRIPTION



DisplayPort Signal Module

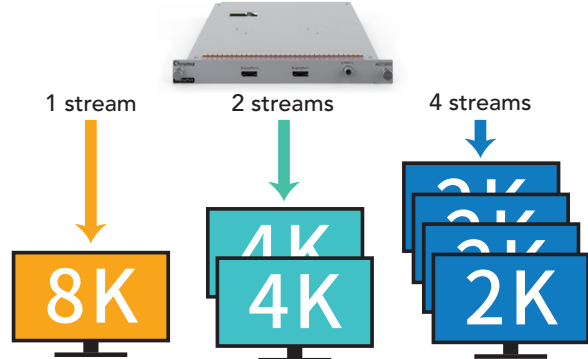
1. DisplayPort 2
2. DisplayPort 1
3. S/PDIF In

APPLICATIONS



8K UHD (Ultra High Definition)

- 1 Port 8K@30Hz image output
- 2 Ports support up to 8K@60Hz
- Supports 1.62 / 2.7 / 5.4 / 8.1 (HBR3) Gbps (per lane)



MST (Multi-Stream Transport)

- Supports lane rate up to 8.1Gbps
- Maximum supported output: 8K (1 stream) / 4K (2 streams) / 2K (4 streams)

SPECIFICATIONS


DisplayPort Signal Module A223801	
Video Output	
Resolution	8K x 4K@30Hz (1 port) 8K x 4K@60Hz (2 ports)
3D Format	Frame Sequential Dual Pipe 3D
Signal Compliant	DisplayPort v1.4 specification
Video Signal Type	RGB / YCbCr
Sampling Mode	RGB 4:4:4 / YCbCr 4:4:4 or 4:2:2
Color Depth	6 / 8 / 10 / 12 bits per component
Color Space	RGB / ITU-R BT.601 / ITU-R BT.709 / ITU-R BT.2020 / DCI-P3
HDCP	HDCP v1.3 / v2.2 / v2.3
Main Link Data Rate	1.62 / 2.7 / 5.4 / 8.1 (HBR3) Gbps per lane
Lane Count	1 / 2 / 4 / 4+4 lane(s)
Pre-emphasis	0dB / 3.5dB / 6dB / 9.5dB selectable
Swing Level	400mV / 600mV / 800mV / 1200mV selectable
HDR	HDR 10 / HLG
MST	4 streams max. or 8K 30Hz Supports up to 8.1Gbps

Audio	
Channel	2 channels (L-PCM) - internal 8 channels (AC3 / DTS) - external
Sample Rate	32, 44.1, 48, 88.2, 96, 176.4, 192KHz +/- 1000ppm
Bits per Sample	16 / 20 / 24 bits
Amplitude	-90.3 ~ 0.0 dBFS -138.47 ~ 0.0 dBFS programmable
Frequency	10 Hz ~ 20 KHz, 1 Hz/step


Other	
Connector	DisplayPort x 2 S/PDIF In x 1 (coaxial)
Dimensions (H x W x D)	25 x 232 x 300 mm
Operating Temperature	+5 ~ +40°C
Storage Temperature	-20 ~ 60°C
Humidity	20 ~ 90%
Weight	< 2 kgs


*All specifications are subject to change without prior notices.

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