

PD 3.2

Power
Video
Data



USB-C SIGNAL MODULE MODEL A223810

The Chroma A223810 USB-C Signal Module is a comprehensive testing solution designed to inspect a wide range of USB-C interface functions. It integrates USB data transmission (Pass-Thru), Power Delivery (PD), and DisplayPort Alternate Mode testing into a single platform. With built-in status monitoring capabilities, the module enables fast role detection and parameter verification. In automated testing environments, the A223810 allows users to create custom test sequences tailored to specific DUT requirements. Once programmed, a single click initiates fully automated USB-C testing.

DisplayPort Alternate Mode Testing

The American Video Electronics Standards Association (VESA) officially supports DisplayPort Alternate Mode (DP Alt Mode) through the USB Type-C standard. With DP Alt Mode, the USB-C interface can be used to provide complete audio and video output. The USB-C Signal Module supports DP 1.4 Alt Mode video transmission with up to High Bit Rate 3 (HBR3) 8.1Gbps bandwidth transmission and provides 8K (7680x4320)@30Hz display testing. A223810 also has High-Bandwidth Digital Content Protection (HDCP) 1.3, 2.2 and 2.3 test functions.

Automatic and Manual Power Role Swap

Supports Power Source, Sink, and Dual Role Power (DRP) modes along with real-time monitoring. Through PD communication, the module can automatically detect the power role of the DUT and supports both automatic and manual Power Role Swap.

This functionality allows users to easily verify whether the DUT is sourcing or sinking power.

Power Delivery 3.2 Testing Capabilities

When paired with the Chroma A223808 Power Module, the A223810 supports Extended Power Range (EPR) up to 140W (28V/5A), enabling both Source and Load testing for Power Delivery 3.2. It is also equipped with programmable power functions including PPS (Programmable Power Supply) and AVS (Adjustable Voltage Supply), as well as FRS (Fast Role Swap) for seamless transition between sourcing and sinking.

USB Pass-Through Testing

Chroma A223810 supports both USB 3.2 Gen 2 specifications and 10Gbps/5Gbps/480Mbps transfer speed. The USB-C simulator measures data including voltage, current, USB version, and USB read/write file transfer rate.

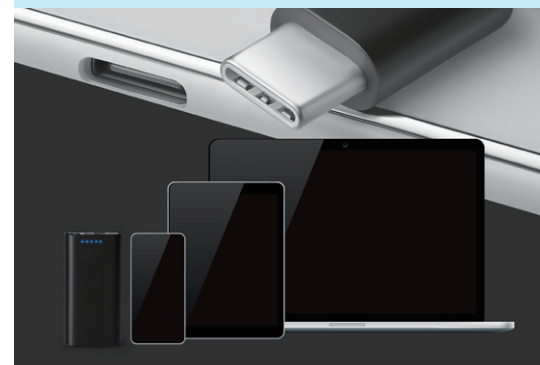
Programmable Automated Testing

For USB-C testing, the Chroma A223810 module supports programmable automated test functions. Users can edit the test program according to the specifications of the test object. Test items cover DP Alt Mode image output, Power Delivery VBus/CC Pin, Power Data Object (PDO) setting parameter comparison, pass-through rate, software-based cable flip, and other test items required by various USB-C products, even including simultaneous testing of multiple modules. The test results can be confirmed directly through the output screen, or read through communication commands.

MODEL A223810

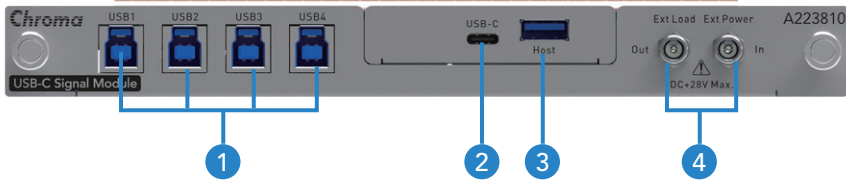
Key Features

- Module options for signal generator 2238
- USB-C Status Monitoring
 - Roles & modes status
 - Power role
 - Data role (UFP/DFP/DRP)
 - VCONN status
 - DP Alt mode status
 - Fixed supply PDO
 - Contract RDO
- DisplayPort Alternate Mode
 - Display Port v1.4
 - Max. resolution 8Kx4K@30Hz
 - HBR3 transmission rate (4 lanes) bandwidth transmission
 - HDCP 1.3/2.2/2.3
 - 1.62/2.7/5.4/8.1 Gbps per lane
- Power Delivery 3.2 testing
 - Voltage and current testing functionality
 - Power source & power sink role switch
 - Built-in power output 15W (5V/3A)
 - Up to 140W (28V/5A) output when used with A223808 Power Module
- USB pass-through testing
 - USB 3.2 Gen 2 (10 Gbps)
 - USB 3.1 Gen 1 (5 Gbps)
 - USB 2.0 (480 Mbps)
 - USB version detection
 - USB transfer speed check
- USB-C cable information interpretation (E-marked)
- Supports cable flip testing
- PPS, AVS, FRS, and MST testing functions
- Display Stream Compression (DSC) support (optional)
- 4 USB-B simulator ports
- Automatized editing & test result display



Chroma
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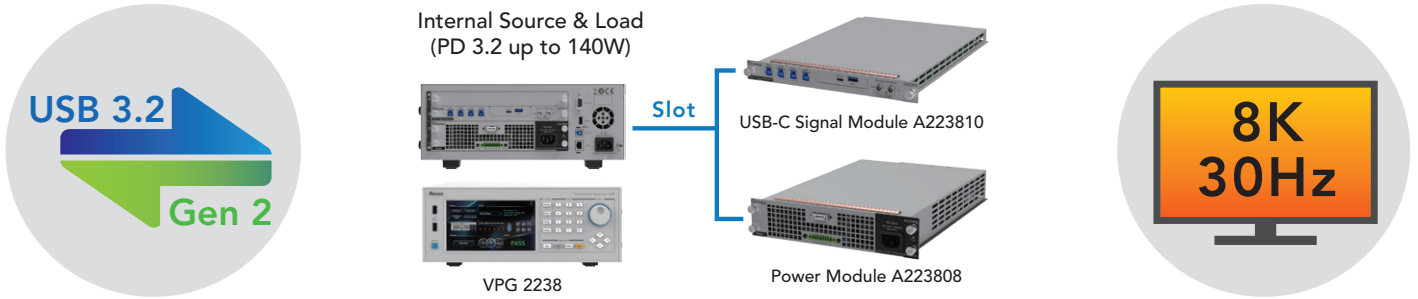
PANEL DESCRIPTION



USB-C Signal Module

1. USB-B Port (Simulator)
2. USB-C Port
3. USB-A Port (Host)
4. External Load/Power

USB-C APPLICATIONS



USB 3.2/Pass-Through & Status Monitor

- Role/modes status monitoring
- Data role swap (UFP/DFP/DRP)
- USB-C cable information interpretation (E-marked)
- Supports USB 3.2 Gen2 (10Gbps) / 3.1 Gen1 (5Gbps) / USB 2.0 (480Mbps)
- USB data read/write transfer rate & version detection
- Built-in USB simulator (USB 3.0/USB 2.0)

USB-C Power Delivery 3.2

- Power role switch between power source and power sink
- Supports Programmable Power Supply (PPS)
- Supports Fast Role Swap (FRS) between power source and power sink modes
- Built-in power output 15W
- Supports EPR (Extended Power Range) up to 140W with A223808

USB-C Alternate Mode

- DisplayPort 1.4 compliant
- Resolutions up to 8K@30Hz (HBR3, 4 lanes)
- HDCP 1.3/2.2/2.3
- EDID and DPCD read/write capability
- Full support for MST and DSC

SPECIFICATIONS

A223810 USB-C Signal Module	
USB-C Applications	
USB over USB-C	USB 3.2 Gen 2 (10 Gbps), USB 3.1 Gen 1 (5 Gbps), USB 2.0 (480 Mbps)
USB-C Cable Flip	Automatic cable flip test (straight/flipped)
USB Simulator (USB 2.0 & 3.0)	Read/write speed test
	Version detection
	Voltage/current measurement
USB Power Delivery	Internal power source Up to 5V/3A
	Source & Sink up to 28V/5A with A223808 power module (option)
PPS	Max. 3-28V/5A, 20mV/step
AVS	Max. 3-28V/5A, 100mV/step
FRS	Supported
DisplayPort Alternate Mode	
Signal Compliant	DisplayPort v1.4 specification
Pixel Rate Range	Max. 1,200 MHz
Resolution	Max. 8Kx4K@30Hz
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
HDCP	HDCP v1.3/2.2/2.3
Main Link Data Rate	1.62/2.7/5.4/8.1 Gbps per lane
Lane Count	1/2/4 lanes
MST	Max. 4 streams

Power Delivery 3.2		
Power Source Capability		
Output Power	Internal source	with A223808
	Max.15W	Max.140W
Voltage	5V only	3-28V
Current	0-3A	0-5A
Measurement Voltage		
Resolution	10 mV	1mV/step
Accuracy	2%	0.2%F.S. ± 2mV
Measurement Current		
Resolution	10mA/step	1mA/step
Accuracy	2%+0.35% F.S.	0.2%F.S. ± 2mA
Power Sink Capability		
Output Load	with A223808, max. 140W	
Voltage	3-28V	
Current	0-5A	
Measurement Voltage		
Resolution	1mV/step	
Accuracy	0.2%F.S. ± 2mV	
Measurement Current		
Resolution	1mV/step	
Accuracy	0.2%F.S. ± 2mA	
Other		
Dimensions (HxWxD)	25 x 232 x 300 mm	
Operating Temperature	5°C to 40°C	
Storage Temperature	-20°C to 60°C	
Humidity	20 to 90%	
Weight	< 2.5 kgs	

* All specifications are subject to change without notice.

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