

Specifications

NAV SD 511

TRUE 4K specification

Max. 4K Capabilities		
Resolution and Refresh Rate	Chroma Sampling	Max. Bit Depth per Color
4096 x 2160 at 60 Hz ¹	4:4:4	8 bit
3840 x 2160 at 60 Hz		
4096 x 2160 at 30 Hz		10 bit
3840 x 2160 at 30 Hz		
4096 x 2160 at 60 Hz	4:2:0	
3840 x 2160 at 60 Hz		

Frame rate² 24, 25, 30, 50, or 60 fps
 Chroma sampling² 4:4:4, 4:2:2, or 4:2:0
 Color bit depth² 8, or 10 bits per color
 Signal type DVI v 1.0, HDMI v1.4 and v2.0, HDCP v1.4 and v2.3
 Max. video data rate 18 Gbps (6 Gbps per color)

NOTE: ¹4096 x 2160 @ 50-60 Hz is available only for HDMI connectors.

NOTE: ²Subject to the maximum data rate limit. Use our calculator at www.extron.com/8KdataRate to determine video parameters supported by this data rate.

Video input stream

Number/signal type 1 PURE3[®] digital video over IP
 Connector 1 SFP connector (SM or MM)

Video processing

Digital sampling 8 or 10 bits per color; 600 MHz pixel clock maximum
 Compression PURE3
 Latency <1 frame (encode/decode)

NOTE: Indicates minimum end-to-end latency. Network and video processing dependencies may apply.

Scaling Vector™

Video Output

NOTE: Appropriate DVI-D to HDMI or DisplayPort to HDMI cables or adapters are required for DVI or DisplayPort signal output.

Number/signal type 1 digital HDMI video
 Connectors 1 female HDMI type A
 Resolution range Up to 4K (4096x2160 at 60 Hz) and UHD (3840x2160 at 60 Hz)

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Scaled resolution	640x480 ⁸ , 800x600 ⁸ , 1024x768 ⁸ , 1280x768 ⁸ , 1280x800 ⁸ , 1280x1024 ⁸ , 1360x768 ⁸ , 1366x768 ⁸ , 1400x1050 ⁸ , 1440x900 ⁸ , 1600x900 ⁸ , 1600x1200 ⁸ , 1680x1050 ⁸ , 1920x1200 ⁸ , 2048x1200 ⁸ , 2048x1536 ⁸ , bypass* 480p ^{7,8} , 576p ⁶ , 720p ^{3,4,5,6,7,8} , 1080p ^{1,2,3,4,5,6,7,8} , 2048x1080 (2K) ^{1,2,3,4,5,6,7,8} , 2560x1080 ⁸ , 2560x1440 ⁸ , 2560x1600 ⁸ , 3840x2160 ^{1,2,3,4,5,6,7,8} , 4096x2160 ^{1,2,3,4,5,6,7,8} ¹ = 23.98 Hz, ² = 24 Hz, ³ = 25 Hz, ⁴ = 29.97 Hz, ⁵ = 30 Hz, ⁶ = 50 Hz, ⁷ = 59.94 Hz, ⁸ = 60 Hz
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NOTE: When the output resolution is set to "bypass," the input signal is output without scaling.

Standards	DVI v1.0, HDMI v1.4/v2.0, HDCP v1.4/v2.3
Formats	RGB and YCbCr digital video

Audio

Gain.....	Analog to Analog: -6.5dBu balanced, -12.5 unbalanced HDMI to Analog: -5.3dBu balanced, -11.3 unbalanced
Frequency response	20 Hz to 20 kHz, ± 0.5 dB
THD + Noise	<0.1% @ 20 Hz to 20 kHz at nominal level
S/N.....	Analog to Digital: >90dB, 20 Hz to 20kHz, at Full scale output, unweighted Digital to Analog: >90dB, 20 Hz to 20kHz, at Maximum balanced output, unweighted Analog to Analog: >90dB, 20 Hz to 20kHz, at Maximum balanced output, unweighted
Crosstalk	≤ -80 dB @ 1 kHz, fully loaded
Stereo channel separation.....	>80 dB @ 1 kHz
Sampling rates.....	48 kHz
Bit depths	24 bit

Audio Input stream

Number/signal type	1 audio over IP NAV (LPCM) or AES67
Connector.....	1 SFP connector (SM or MM)

Audio Output

Number/signal type	1 analog stereo, unbalanced or balanced 1 digital stereo, de-embedded from HDMI
Connectors.....	(1) 3.5 mm captive screw connector, 5 pole 1 female HDMI (shared with video output)
Supported formats.....	LPCM (2 channel), analog stereo
Impedance	50 ohms unbalanced, 100 ohms balanced
Maximum level (Hi-Z).....	>+15 dBu balanced, +9 dBu unbalanced
Gain error.....	± 0.5 dB channel to channel
Gain range.....	Adjustable, -18 dB to +24 dB
Volume control range	-100 dB to 0 dB (control 0 to 100 in 1 dB steps)

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV \approx 2 dBu

Network interconnection (NAV)

Number/type.....	2 fiber optic
Connector type.....	1 SFP connector (SM or MM), supporting 2 LC fiber connectors
Ethernet standards	1GbE (802.3z), 1000 Base-LX (SFP) SM, 1000 Base-SX (SFP) MM
Termination	MDI (SFP)
Protocols	
Streaming.....	SRTP (AES-128) on video, audio, and USB
Transport.....	Multicast UDP
All supported.....	DHCP, HTTPS, IGMPv2/v3, IPv4, PTPv2, QoS, SSH, TCP, UDP
Security	AES-256, 802.1X, Active Directory authentication

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Signal transmission distance	
Singlemode	1000Base-LX (SFP) SM - up to 10km (6.25 miles)
Multimode	1000Base-SX (SFP) MM - up to 550m (1804 feet)
Nominal peak wavelength	850 nm for multimode, 1310 nm for singlemode
Transmission power	
Singlemode	-7.6 dBm, minimum
Multimode	-8.1 dBm, minimum
Maximum receiver sensitivity	
Singlemode	-19.0 dBm, maximum
Multimode	-18.0 dBm, maximum
Optical loss budget	
Singlemode	11.4 dB, maximum
Multimode	9.9 dB, maximum

Network extension (EXT)

Connector.....	1 RJ-45 female
Termination	Auto-MDIX, TIA/EIA T568B
Ethernet standards	1Gbps (802.3ab), 10/100/1000 Base-T, half/full duplex with autodetect
Signal transmission distance	330' (100 m) using CAT-5e/6/6a/7 cables

USB extension (USB)

USB device port — Host mode configuration	
Number/signal type	1 USB 2.0 high speed
Connector	1 USB type C female
Power.....	N/A
Maximum built-in USB hubs	1
Minimum built-in USB hubs	0
Optional built-in USB hubs	1 (peripheral emulation enabled)
USB device port configuration — Device mode configuration (default)	
Number/signal type	1 USB 2.0 high speed
Connector	1 USB type C female
Power.....	5V DC, 500mA (when in device mode)
Maximum built-in USB hubs	0
Minimum built-in USB hubs	0
Optional built-in USB hubs	0
Host support.....	xHCI (USB 3.0), EHCI (USB 2.0), OHCI/UHCI (USB 1.1)
Data rates	Low speed (1.5 Mbps), full speed (12 Mbps), high speed (480 Mbps)
Traffic types.....	Bulk, control, interrupt, and isochronous
Network switch hops	5 hops (typical)

NOTE: Network switch hop limitations may apply. Typical limit is up to five network switches.

Communications - external devices

Serial	
Quantity/type.....	1 bidirectional RS-232
Connector	(1) 3.5 mm captive screw connector, 5 pole (shared with IR port)
Baud rate and protocol.....	300 to 115200 baud (9600 baud = default) 8 (default) or 7 data bits 1 (default) or 2 stop bits no parity (default), even or odd parity
Pin configuration.....	Tx, Rx, and Gnd

Specifications • NAV SD 511 (Continued)

IR control	
Quantity/type.....	1 TTL level (0 to 5 V) infrared (carrier and non-carrier) up to 300 kHz
Connector	(1) 3.5 mm captive screw connector, 5 pole (shared with RS-232)
Pin configuration.....	S = signal and G = Gnd
IR output carrier frequency	30 kHz to 300 kHz
CEC control	1 HDMI type A connector
USB configuration port	
Quantity/type.....	1 front panel USB mini-B
Standard	Ethernet over USB

General

Power supply	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 2.0 A, 24 watts
Power consumption	
Device	22.0 watts
Device and power supply	24.7 watts
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +104 °F (0 to +40 °C) / 10% to 85%, noncondensing
Cooling	Fan, air flows from top to rear
Thermal dissipation	
Device	65.5 BTU/hr
Device and power supply	74.9 BTU/hr
Mounting	
Rack mount.....	Yes, with optional rack shelf
Furniture mount	Yes, with optional under desk mounting kit
Enclosure type	Metal
Enclosure.....	1.00" H x 8.75" W x 6.00" D (half rack wide) (25 mm H x 222 mm W x 152 mm D)
Product weight	1.5 lbs (0.68 kg)
Regulatory compliance.....	CE, c-UL UL, C-tick, FCC Class A, ICES, VCCI, Complies with the appropriate requirements of RoHS, WEEE
Product warranty	3 years parts and labor
Everlast power supply warranty.....	7 years parts and labor

NOTE: All nominal levels are at ±10%.

NOTE: Specifications are subject to change without notice.

NOTE: Shipping weights and dimensions are available at www.extron.com.

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