



# Specifications

## IN1608 Series

### Video input

Number/signal type	
Local inputs (all models) .....	2 RGB, RGBcvS, component video (YUVi/YUVp/HDTV), S-video, composite 4 HDMI/DVI (HDCP compliant)
Remote inputs.....	2 DTP 230 (HDCP compliant) (60-1238-0x only) 2 DTP 330 (HDCP compliant) (all other models)
Connectors.....	2 female 15-pin HD 4 female HDMI type A 2 female RJ-45 connectors
HDMI equalization.....	Automatic
HDMI input cable length.....	Up to 75' (22.9 m) for all supported input rates
Nominal level.....	1 Vp-p for Y of component video and S-video, and for composite 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.3 Vp-p for C of S-video
Minimum/maximum levels.....	Analog: 0.0 V to 1.0 Vp-p with no offset at unity gain
Impedance.....	75 ohms
Horizontal frequency .....	15 kHz to 100 kHz
Vertical frequency.....	24 Hz to 75 Hz
Resolution range.....	640x480 to 1600x1200 and 1920x1200* NTSC, PAL, SECAM, 480i, 480p, 576i, 576p, 720p, 1080i, 1080p, and 2K *reduced blanking
Return loss .....	>30 dB @ 5 MHz
DC offset (max. allowable).....	1.5 V

### Video processing

Decoder.....	12 bit digital (3D-adaptive comb filter)
Analog sampling .....	12 bits per color; 13.5 MHz standard (video) 170 MHz standard (RGB)
Digital pixel data bit depth.....	8, 10, or 12 bits per channel; 165 MHz pixel clock (HDMI)
Colors.....	1 billion (10 bit processing)

### Video output

Number/signal type	
Local outputs (all models) .....	2 HDMI/DVI (HDCP compliant)
Remote output .....	1 DTP 230 (HDCP compliant) (60-1238-0x only) 1 DTP 330 (HDCP compliant) (60-1238-1x, 60-1238-5x only) 1 HDBT (HDCP compliant) (60-1238-7x only)
Connectors.....	2 female HDMI 1 female RJ-45 connector
HDMI peripheral device power .....	200 mA per output
Scaled resolution .....	640x480 <sup>6,8,9</sup> , 800x600 <sup>6,8,9</sup> , 852x480 <sup>6,8,9</sup> , 1024x768 <sup>6,8,9</sup> , 1024x852 <sup>6,8,9</sup> , 1024x1024 <sup>6,8,9</sup> , 1280x768 <sup>6,8,9</sup> , 1280x800 <sup>6,8,9</sup> , 1280x1024 <sup>6,8,9</sup> , 1360x765 <sup>6,8,9</sup> , 1360x768 <sup>6,8,9</sup> , 1365x768 <sup>6,8,9</sup> , 1365x1024 <sup>6,8,9</sup> , 1366x768 <sup>6,8,9</sup> , 1400x1050 <sup>6,8</sup> , 1440x900 <sup>6,8,9</sup> , 1600x900 <sup>6,8</sup> , 1600x1200 <sup>6,8</sup> , 1680x1050 <sup>6,8</sup> , 1920x1200 <sup>6,8</sup> HDTV 480p <sup>7,8</sup> , 576p <sup>6</sup> , 720p <sup>3,4,5,6,7,8</sup> , 1080i <sup>6,7,8</sup> , 1080p <sup>1,2,3,4,5,6,7,8</sup> , 2048x1080 <sup>1,2,3,4,5,6,7,8</sup> <sup>1</sup> = at 23.98 Hz, <sup>2</sup> = at 24 Hz, <sup>3</sup> = at 25 Hz, <sup>4</sup> = at 29.97 Hz, <sup>5</sup> = at 30 Hz, <sup>6</sup> = at 50 Hz, <sup>7</sup> = at 59.94 Hz, <sup>8</sup> = at 60 Hz, <sup>9</sup> = at 75 Hz

# Specification • IN1608 Series (Continued)

## Sync

Input type .....	RGBHV, RGBS, RGsB, RGBcvS, bi-level or tri-level component video
Input standards.....	NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level .....	2.75 V to 5.0 Vp-p for RGBHV or RGBS 0.6 Vp-p for component video with tri-level sync 0.3 Vp-p for component video with bi-level sync or RGsB
Input impedance.....	Horizontal: 510 ohms Vertical: 510 ohms
Max. input voltage.....	5.0 Vp-p

## Shielded twisted pair interconnection

Connectors .....	3 female RJ-45
Termination standard.....	TIA/EIA-T568B
Signal transmission distance	
DTP 330.....	Up to 330' (100 m) using shielded twisted pair cable or XTP DTP 24 STP cable
HDBaseT.....	Up to 330' (100 m) using shielded twisted pair cable or XTP DTP 24 STP cable
DTP 230.....	Up to 230' (70 m) using shielded twisted pair cable or XTP DTP 24 STP cable
Cable requirements.....	Solid conductor, 24 AWG or better
Cable recommendations.....	400 MHz bandwidth, STP (shielded twisted pair)

**NOTE:** Extron XTP DTP 24 shielded twisted pair cable is strongly recommended for optimal performance.

**NOTE:** Output signals:

**DTP:** HDMI with embedded audio, analog audio, RS-232 and IR, and remote power

**HDBaseT:** HDMI with embedded audio, RS-232 and IR

## Audio

Gain.....	Unbalanced output: -6 dB; balanced output: 0 dB
Frequency response .....	20 Hz to 20k Hz, $\pm 0.5$ dB
THD + Noise .....	<0.1%, 20 Hz to 20k Hz at nominal level
S/N.....	>90 dB at maximum balanced output (unweighted)
Crosstalk .....	$\leq -80$ dB @ 1 kHz, fully loaded
Stereo channel separation.....	>80 dB @ 1 kHz
Bass .....	+12 dB to -24 dB @ 100 Hz
Treble.....	+12 dB to -24 dB @ 8 kHz

## Audio input

Number/signal type.....	8 stereo line level balanced or unbalanced 2 mono mic/line level balanced or unbalanced (with available phantom power) 4 stereo, de-embedded from HDMI (PCM only) 2 DTP (de-embedded from HDMI [PCM only], or remote balanced/unbalanced, analog)
Connectors.....	(6) 3.5 mm captive screw connectors, 5 pole for line (2) 3.5 mm captive screw connectors, 3 pole for mic/line 4 female HDMI type A 2 female RJ-45 connectors
Impedance.....	>10k ohms unbalanced, >20k ohms balanced
Nominal level.....	Line inputs: +4 dBu, -10 dBV, adjustable Mic/line inputs: -60 dBV, +4 dBu, -10 dBV, adjustable
Maximum level.....	+21 dBu at rated THD+N when input gain is set to 0 dB
CMRR.....	>80 dB @ 1 kHz

## Specification • IN1608 Series (Continued)

Input gain adjustment..... Line inputs: -18 dB to +24 dB, 1 dB steps, adjustable per input  
 Mic/line inputs: -18 dB to +60 dB, 1 dB steps, adjustable per input  
 LPCM-2Ch: -18 dB to +24 dB, 0.1 dB steps, adjustable per input

**NOTE:** Unbalanced analog inputs applied at a DTP Tx input have +12 dB of gain applied to bring the signal to a nominal level for balanced operation.

DC phantom power ..... +48 VDC  $\pm$ 10% (can be switched on or off per mic/line input)

### Audio output

Number/signal type  
 Local outputs (all models) ..... 1 balanced or unbalanced stereo (variable)  
 1 balanced or unbalanced stereo; can be configured as stereo or two  
 independently mixed mono channels  
 2 HDMI embedded  
 Remote output ..... 1 DTP (embedded digital, and remote balanced/unbalanced analog) (60-1238-0x,  
 60-1238-1x, 60-1238-5x only)  
 1 HDBT (embedded digital) (60-1238-7x only)  
 Connectors ..... (2) 3.5 mm captive screw connectors, 5 pole  
 2 female HDMI  
 1 RJ-45 connector  
 Impedance..... 50 ohms unbalanced, 100 ohms balanced  
 Gain error.....  $\pm$ 0.5 dB channel to channel  
 Maximum level (Hi-Z).....  $>$ +20 dBu, balanced;  $>$ +14 dBu, unbalanced  
 Output volume range ..... 0 to -100 dB in 1 dB steps

**NOTE:** System gain for the analog DTP Rx output is rated at -12 dB (unbalanced) and -6 dB (balanced).

### Audio output – power amplifier (MA and SA models only)

Number/signal type  
 Stereo models ..... 1 stereo (default) or 2 mono (2 channels total)  
 Mono models ..... 1 mono, 70 V line  
 Connectors

**NOTE:** This connector accepts wires of 22 AWG to 12 AWG.

Stereo models ..... (1) 5 mm screw lock captive screw connector, 4 pole  
 Mono models ..... (1) 5 mm screw lock captive screw connector, 2 pole  
 Load impedance  
 Stereo models ..... 4 ohms minimum  
 Mono models ..... 50 ohms minimum  
 High pass filter — MA models only. 100 Hz, 12 dB/octave roll off  
 Frequency response  
 Stereo models ..... 20 Hz to 20 kHz, -3 dB to +1 dB @ 1 W  
 Mono models ..... 100 Hz to 20 kHz, -3 dB to +1 dB @ 1 W  
 THD + Noise .....  $<$ 0.1% @ 1 kHz, 3 dB below clipping  
 S/N .....  $>$ 90 dB, 20 Hz to 20 kHz, unweighted  
 Amplifier type ..... Class D  
 Output power  
 Stereo models ..... 25 watts per channel, 8 ohms, 1 kHz, 0.1% THD  
 50 watts per channel, 4 ohms, 1 kHz, 0.1% THD  
 Mono models ..... 100 watts (rms) @ 70 V, 1 kHz, 0.1% THD  
 Protection ..... Clip limiting, thermal, short circuit, DC output

## Specification • IN1608 Series (Continued)

### Communications – scaling presentation switcher

Serial control port.....	1 bidirectional RS-232, 3.5 mm captive screw connector, 3 pole (rear panel)
Baud rate and protocol.....	9600, 8 data bits, 1 stop bit, no parity (default)
Serial control pin configuration .....	1 = Tx, 2 = Rx, 3 = Gnd
USB control port.....	1 front panel female mini USB B
USB standards .....	USB 2.0, high speed
All models except IPCP models	
Ethernet control port.....	1 female RJ-45 connector
Ethernet data rate.....	10/100Base-T, half/full duplex with autodetect
Ethernet protocol.....	ARP, ICMP (ping), IP, TCP, DHCP, HTTP, Telnet
Ethernet default settings .....	Link speed and duplex level = autodetected IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Gateway = 0.0.0.0 DHCP = off
Program control.....	Extron control/configuration program for Windows® Extron Simple Instruction Set (SIS™) Microsoft® Internet Explorer®

### Communications – external device (pass-through, unidirectional or bidirectional) (RS-232/IR over DTP or RS-232/IR over HDBT)

**NOTE:** Protocol is mirrored between the connected twisted pair endpoints and the "Over DTP" or "Over HDBT" ports on the IN1608. Signals from a control device pass into each IN1608 "Over DTP" or "Over HDBT" port, are embedded with the twisted pair signal, and sent to individual twisted pair Tx or Rx endpoints for control of remote sink or source devices.

The "Over DTP" or "Over HDBT" ports are simply pass-through connections to twisted pair endpoints. There is no RS-232 or IR insertion from any IN1608 control port to the "Over DTP" or "Over HDBT" ports.

Serial control pass-through ports	
IN1608 input/DTP Tx.....	RS-232 via (2) 3.5 mm, 5 pole captive screw connectors (shared with IR ports)
IN1608 output/TP Rx .....	RS-232 via (1) 3.5 mm, 5 pole captive screw connector (shared with IR port)
Baud rates.....	Up to 115200 baud
Protocol.....	6 - 8 data bits 1 or 2 stop bits no parity (default) even or odd parity flow control = XON, XOFF, none
Serial control pin configuration .....	1 = Tx, 2 = Rx, 3 = Gnd
IR pass-through control ports..... TTL level (0 to 5 V) modulated infrared control from 30 kHz up to 60 kHz	
IN1608 input/DTP Tx.....	(2) 3.5 mm captive screw connectors, 5 pole (shared with RS-232 ports)
IN1608 output/TP Rx .....	(1) 3.5 mm captive screw connector, 5 pole (shared with RS-232 port)
IR control pin configuration .....	3 = Gnd, 4 = IR Tx, 5 = IR Rx

### Communications – IPCP Pro 350 control processor – IPCP models only

Memory	
SDRAM.....	512 MB
Flash .....	4.5 GB
Software and control options	
Software.....	Extron Global Configurator Plus and Professional for Windows®
Control options.....	GlobalViewer®, TouchLink® for Web, TouchLink for iPad®, or TouchLink Pro touchpanels

## Specification • IN1608 Series (Continued)

### Ethernet control

Network interface controllers (NICs)	1
Network switch .....	1 unmanaged 3 port switch
Connectors .....	3 female RJ-45 connectors
Data rate .....	10/100/1000Base-T, half/full duplex with autodetect
Protocols.....	DHCP, DNS, HTTP, HTTPS, ICMP, NTP, SFTP, SMTP, SNMP, SSH, TCP/IP, UDP/IP
Default settings.....	Link speed and duplex level = autodetected IP address = 192.168.254.250 Subnet mask = 255.255.255.0 Gateway = 0.0.0.0 DHCP = off DNS: 127.0.0.1

### Serial control

Quantity/type.....	1 bidirectional RS-232, RS-422, RS-485 (port 1) 2 bidirectional RS-232 (ports 2 and 3)
Connectors .....	(1) 3.5 mm captive screw connector, 5 pole (2) 3.5 mm captive screw connectors, 3 pole
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, odd, mark, or space parity

**NOTE:** The 5-pole ports support both hardware and software flow control.  
The 3-pole ports support software flow control.  
The default for both types of ports is no flow control.

### Pin configurations, serial, 5-pole captive screw

RS-232 (default).....	Pin 1 = Tx, 2 = Rx, 3 = Gnd, 4 = RTS, 5 = CTS
RS-422.....	Pin 1 = Tx-, 2 = Rx-, 3 = Gnd, 4 = Tx+, 5 = Rx+
RS-485.....	Pins 1 and 2 (tied together) = data-, 3 = Gnd, 4 and 5 (tied together) = data+

### Pin configurations, serial,

3-pole captive screw .....	Pin 1 = Tx, 2 = Rx, 3 = Gnd
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### Digital I/O control

Quantity/type.....	4 digital input/output (configurable)
Connectors .....	(1) 3.5 mm captive screw connector, 5 pole

### Digital inputs

Input voltage range .....	0 to 24 VDC, clamped at +30 VDC
Input impedance.....	29k ohms
Programmable pullup.....	1k ohms to +5 VDC
Threshold low to high.....	>2.8 VDC
Threshold high to low.....	<2.0 VDC

Digital outputs .....	250 mA sink from 24 VDC max.
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Pin configurations.....	1, 2, 3, 4 = digital I/Os 1, 2, 3, 4; 5 = Gnd
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### IR/serial control

Quantity/type.....	2 programmable: unidirectional RS-232 ( $\pm 5$ V), or 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
Baud rate and protocol (RS-232).....	300 to 115200 baud (9600 baud = default); 8 (default) or 7 data bits; 1 (default) or 2 stop bits; no parity (default), even, odd, mark, or space parity
Pin configurations.....	For each port, pin 1 = signal, 2 = Gnd
IR output carrier frequency .....	30 kHz to 300 kHz

### Relay control

Quantity/type.....	4 normally open relays
Relay control connectors.....	(1) 3.5 mm captive screw connector, 6 pole
Relay control contact rating .....	24 VDC, 1 A

## Specification • IN1608 Series (Continued)

### General

Power supply .....	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption	
Full load (amp output at 1/8 power)	
IN1608, IN1608 HDBT.....	44 watts
All amplifier models except IPCP models .....	67 watts
All IPCP models.....	77 watts
Power save mode	
IN1608, IN1608 HDBT.....	<36 watts
All amplifier models except IPCP models .....	<43 watts
All IPCP models.....	<55 watts
Remote power capability	
All HDBT models .....	Supports up to two endpoints (two DTP Tx)
All other models.....	Supports up to three endpoints (two DTP Tx, one DTP Rx)
Temperature/humidity .....	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling .....	Fans, air flows right to left (as viewed from front panel)
Fan noise .....	<37 dB(A) at 1 m
Thermal dissipation	
Full load (amp output at 1/8 power)	
IN1608, IN1608 HDBT.....	108 BTU/hr
All amplifier models except IPCP models .....	147 BTU/hr
All IPCP models.....	161 BTU/hr
Power save mode	
IN1608, IN1608 HDBT.....	<86 BTU/hr
All amplifier models except IPCP models .....	<111 BTU/hr
All IPCP models.....	<129 BTU/hr
Mounting	
Rack mount.....	Yes, with included, pre-installed brackets
Enclosure type .....	Metal
Enclosure dimensions	
IN1608, IN1608 HDBT .....	1.72" H x 17.5" W x 9.5" D (1U high, full rack wide) (4.4 cm H x 44.4 cm W x 24.1 cm D) (Depth excludes connectors and knobs. Width excludes rack ears.)
All other models.....	3.47" H x 17.5" W x 9.5" D (2U high, full rack wide) (8.8 cm H x 44.4 cm W x 24.1 cm D) (Depth excludes connectors and knobs. Width excludes rack ears.)
Product weight	
IN1608, IN1608 HDBT .....	5.0 lbs (2.3 kg)
All amplifier models except IPCP models.....	7.4 lbs (3.4 kg)
All IPCP models.....	7.9 lbs (3.6 kg)
Vibration .....	ISTA 1A in carton (International Safe Transit Association)

## Specification • IN1608 Series (Continued)

Regulatory compliance

Safety ..... CE, c-UL, UL

EMI/EMC ..... CE, C-tick, FCC Class A, ICES, VCCI

Environmental ..... Complies with the appropriate requirements of RoHS, WEEE.

Warranty ..... 3 years parts and labor

**NOTE:** All nominal levels are at  $\pm 10\%$ .

**NOTE:** Specifications are subject to change without notice.

**NOTE:** Shipping weights and dimensions are available at [www.extron.com](http://www.extron.com).

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