

## Specifications HC 400 Series

**NOTE:** These products consist of a switching transmitter and a scaling receiver (HCR 102) sold together as a system.

- The HC 404 includes the HCT 103 transmitter.
- The HC 403 includes the HCT 102 D transmitter.
- The HC 402 includes the HCT 101 D transmitter.
- The HC 402 EU includes the HCT 101 EU transmitter.
- The HC 402 MK includes the HCT 101 MK transmitter.

### Video input

Number/signal type

Analog..... HCT 103: 1 VGA RGBHV

Digital

HCT 103..... 2 HDMI (or single link DVI-D with the appropriate DVI-HDMI adapters)

HCT 102 D ..... 1 HDMI (or single link DVI-D with the appropriate DVI-HDMI adapter)

HCT 101 D/EU/MK..... 1 HDMI (or single link DVI-D with the appropriate DVI-HDMI adapter)

HCR 102 ..... 1 HDMI (or single link DVI-D with the appropriate DVI-HDMI adapter)

Connectors

HCT 103 ..... 1 female 15-pin HD  
2 female HDMI type A

HCT 102 D ..... 1 female 15-pin HD  
1 female HDMI type A

HCT 101 D/EU/MK..... 1 female HDMI type A

HCR 102 ..... 1 female HDMI type A

Nominal level..... Analog: 0.7 Vp-p

Min./max. level

HC 404, HC 403 ..... Analog, 0.3 V to 1.5 Vp-p with no offset at unity gain

Impedance..... Analog: 75 ohms

Horizontal frequency

HC 404, HC 403 ..... Analog: 15 kHz to 100 kHz

Vertical frequency

HC 404, HC 403 ..... Analog: 30 Hz to 75 Hz

HDMI equalization..... Automatic

HDMI input cable length..... ≤50' (15 m) for resolutions up to 1920x1200 or 1080p @ 60 Hz; 2K, using Extron HDMI Pro Series cable

Resolution range..... 640x480 to 1600x1200 and 1920x1200\*, 480p, 576p, 720p, 1080i, 1080p, and 2K

\*reduced blanking

Return loss

HC 404, HC 403 ..... <-40 dB @ 5 MHz

HC 402, HC 402 EU/MK ..... <-40 dB @ 5 MHz

DC offset (max. allowable)

HC 404, HC 403 ..... 1.5 V

HC 402, HC 402 EU/MK ..... 1.5 V -- PLEASE CHECK.

Standards ..... DVI 1.0, HDMI 1.4, HDCP 1.4

## Specifications • HC 400 Series (Continued)

### Sync — VGA

Input type .....	RGBHV, bi-level and tri-level sync
Input level .....	1.9 V to 5.0 Vp-p
S/N .....	>90 dB at maximum input (unweighted)
Max. input voltage.....	5.0 Vp-p

### Interconnection between transmitter and receiver

Connector.....	1 female RJ-45 on each unit (transmitter and receiver)
Termination standard.....	TIA/EIA T568B
Transmission distance.....	Up to 230' (70 m) using shielded twisted pair (STP) cable or XTP DTP 24 STP cable with a 1080p, 60 Hz signal
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.

### Video processing

Decoder.....	12 bit digital (3D-adaptive comb filter)
Analog sampling .....	12 bits per color, 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.....	1 HDMI (with CEC)
Connectors.....	1 female HDMI
HDMI peripheral device power .....	250 mA
Tally port pin configuration .....	Pin 1 = input 2 tally, pin 2 = input 3 tally, pin 3 = input 4 tally, pin 4 = +5 VDC
Contact closure remote control	(1) 3.5 mm, 4 pole captive screw connector
Contact closure pin configuration	Pin 1 = input 2, pin 2 = input 3, pin 3 = input 4, pin 4 = Gnd
HCT 102 D	
Contact closure remote control	(1) 3.5 mm, 3 pole captive screw connector
Contact closure pin configuration	Pin 1 = Gnd, pin 2 = input 2, pin 3 = input 3
USB control port.....	1 receiver front panel female USB mini-B
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> , 1360x768 <sup>6,8,9</sup> , 1360x1024 <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

### Audio

Gain.....	Unbalanced output: 0 dB; balanced output +6 dB
Frequency response .....	20 Hz to 20 kHz, ±0.5 dB
THD + Noise	
HC 402 .....	0.03%, 20 Hz to 20k Hz at nominal level
All other models.....	<0.1%, 20 Hz to 20k Hz at nominal level
S/N	
HC 402 .....	>90 dB, at maximum output (15 dBu), balanced (unweighted)
All other models.....	>90 dB, at maximum input (unweighted)
Crosstalk .....	≤-80 dB @ 1 kHz, fully loaded
Stereo channel separation	
HC 402 .....	>80 dB @ 1 kHz to 20 kHz
All other models.....	>80 dB @ 1 kHz

## Specifications • HC 400 Series (Continued)

### Audio input

Number/signal type

HC 404 .....	1 analog stereo, unbalanced or 3 digital audio, embedded in the HDMI
HC 403 .....	2 analog stereo, unbalanced or 2 digital audio, embedded in the HDMI signal
HC 402 .....	1 analog stereo, unbalanced or 2 digital audio, embedded in the HDMI signal

**NOTE:** Analog audio is not embedded onto the HCT 101 HDMI digital signal. You can select analog audio or digital embedded audio using Extron PCS Product Configuration Software.

HC 402 EU/MK .....	2 digital audio, embedded in the HDMI signal
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Connectors

HC 404 .....	1 female 3.5 mm mini stereo jack; tip (L), ring (R), sleeve (ground) 3 female HDMI Type A
HC 403 .....	2 female 3.5 mm mini stereo jacks; tip (L), ring (R), sleeve (ground) 2 female HDMI Type A
HC 402 .....	1 female 3.5 mm mini stereo jack; tip (L), ring (R), sleeve (ground) 2 female HDMI Type A
HC 402 EU/MK .....	2 female HDMI Type A

Source formats

Analog.....	Analog stereo audio
HDMI.....	LPCM up to 7.1/24-bit/192 kHz, Dolby TrueHD, Dolby Digital Plus, Dolby Digital EX, Dolby Digital 5.1, Dolby Digital 2/0 Surround, Dolby Digital 2/0, DTS-HD Master Audio, DTS-HD, DTS-ES Discrete 6.1, DTS-ES Matrix 6.1, DTS Digital Surround 5.1, DTS 2 Channel
Impedance.....	10k ohms, DC coupled
Nominal level.....	-10 dBV (3.16 mVrms), unbalanced
Maximum level	
HC 402 .....	+7 dBV, unbalanced
All other models.....	+6 dBV, unbalanced
CMRR.....	>60 dB typical, unbalanced, @ 1 kHz

**NOTE:** 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

### Audio output

Number/signal type.....	1 analog, line level stereo, balanced or unbalanced (variable) 1 digital, embedded in HDMI (fixed)
Connectors.....	(1) 3.5 mm captive screw connector, 5 pole 1 female HDMI
Impedance.....	50 ohms unbalanced, 100 ohms balanced
Gain error.....	±0.5 dB channel to channel
Maximum level (Hi-Z).....	>+15 dBu, balanced; >+9 dBu, unbalanced
Output volume range .....	0 to 100% in 1% steps

### Communications

HCT 103

Tally port.....	(1) 3.5 mm, 4 pole captive screw connector
USB standards .....	USB 2.0, high speed
Program control.....	Extron Product Configuration Software (PCS) for Windows®

## Specifications • HC 400 Series (Continued)

### Communications — control processor

#### Memory

SDRAM ..... 512 MB

Flash ..... 512 MB

#### Software

Configuration software ..... Extron Global Configurator® Plus and Professional

Utilities ..... Toolbelt, embedded web page

#### Ethernet

Network interface controllers (NICs) ..... 1

Connectors ..... 1 female RJ-45 connector

Data rate ..... 10/100Base-T, half/full duplex with autodetect

Protocols ..... DHCP, DNS, HTTP, HTTPS, ICMP, IEEE 802.1X, 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

Quantity/type ..... 1 bidirectional RS-232

Connectors ..... (1) 3.5 mm captive screw connector, 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, or odd parity

**NOTE:** This 3-pole port supports software flow control. The default is no flow control.

Pin configuration ..... Pin 1 = Tx, 2 = Rx, 3 = Gnd

#### Digital I/O

Quantity/type ..... 4 digital input/output (configurable)

Connectors ..... (1) 3.5 mm captive screw connector, 6-pole

#### Digital inputs

Input voltage range ..... 0 to 24 VDC, clamped at +30 VDC

Input impedance ..... >10k 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.

Pin configurations ..... Pins 1, 2, 4, 5 = digital I/Os 1, 2, 3, 4; pins 3, 6 = Gnd

#### IR

Quantity/type ..... 1 programmable TTL level (0 to 5 V) infrared (carrier and non-carrier) up to 300 kHz

Connector ..... (1) 3.5 mm captive screw connector, 2-pole

Pin configuration ..... Pin 1 = signal, 2 = Gnd

IR output carrier frequency ..... 30 kHz to 300 kHz

## Specifications • HC 400 Series (Continued)

### General

Power supply.....	External, included Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 4.2 A, 50 watts
Power consumption	
HC 404 system	
Device .....	22.0 watts
Device and power supply...	24.7 watts
HC 403 system	
Device .....	20.5 watts
Device and power supply...	23.0 watts
HC 402 system	
Device .....	17.2 watts
Device and power supply...	19.6 watts
HC 402 EU or HC 402 MK system	
Device .....	16.8 watts
Device and power supply...	19.0 watts

**NOTE:** Connect the included 4.2 A, 50 W, external power supply to the HCR 102, and the receiver remotely powers the HCT transmitter. Alternatively, the transmitter can be powered locally by an optional external power supply.

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 90%, noncondensing

Cooling ..... Convection, vents on top and sides

### Thermal dissipation

HC 404 system	
Device .....	70.7 BTU/hour
Device and power supply...	79.7 BTU/hour
HC 403 system	
Device .....	68.9 BTU/hour
Device and power supply...	77.3 BTU/hour
HC 402 system	
Device .....	57.6 BTU/hour
Device and power supply...	65.7 BTU/hour
HC 402 EU or HC 402 MK system	
Device .....	56.4 BTU/hour
Device and power supply...	63.9 BTU/hour

### Mounting

#### HCT 102 D

Rack mount..... Yes, with optional UCM R308 rack mounting panel  
Furniture or wall mount ..... Yes, with 2-gang junction box or mud ring mounting bracket and the included decorator-style wallplate, or with an optional AAP 424 panel

#### HCT 101 D

Furniture or wall mount ..... Yes, with 1-gang junction box or mud ring mounting bracket and the included decorator-style wallplate or an optional AAP 314 or AAP 424 panel

#### HCT 101 EU

Furniture or wall mount ..... Yes, with an EU 1-gang electrical junction box and included EU 1-gang frame

#### HCT 101 MK

Furniture or wall mount ..... Yes, with an MK 1-gang electrical junction box and included MK 1-gang frame

#### HCR 102, HCT 103

Rack mount..... Yes, with optional 1U high rack shelf or back of the rack mounting kit

Furniture mount ..... Yes, with included, attached MBU 125 under-desk mounting brackets

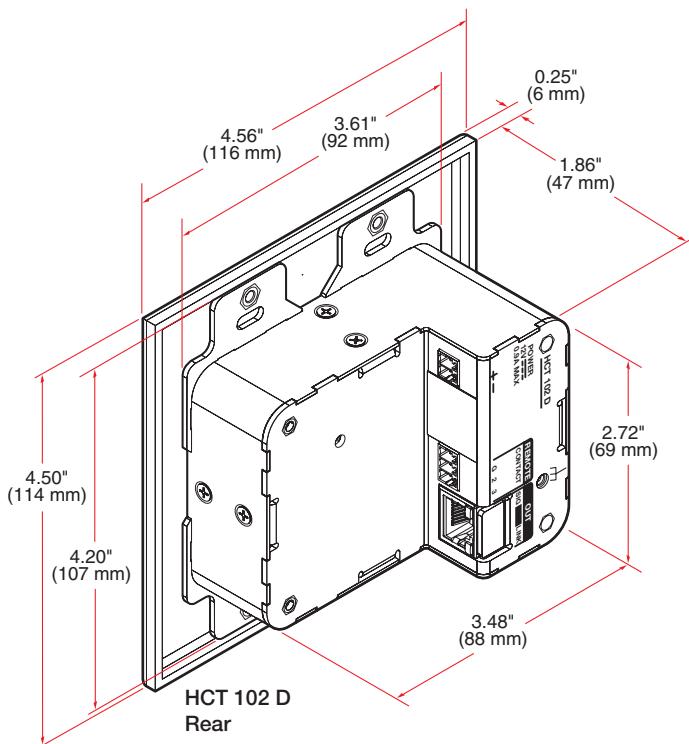
Enclosure type ..... Metal

## Specifications • HC 400 Series (Continued)

Enclosure dimensions

HCT 102 D

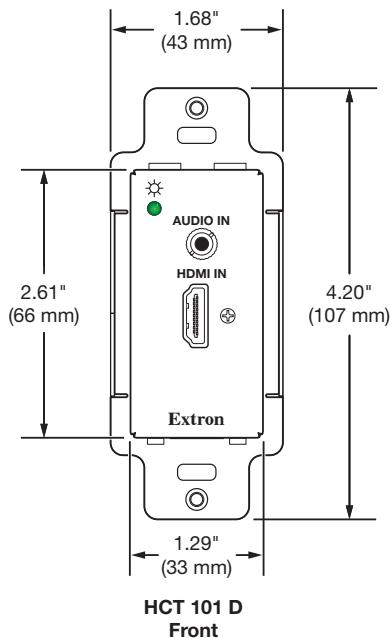
Faceplate.....	2.6" H x 3.2" W x 0.2" D (66 mm H x 81 mm W x 6 mm D) (Fits the openings in a 2-gang decorator-style wallplate)
Device .....	2.72" H x 3.48" W x 1.86" D (69 mm H x 88 mm W x 47 mm D) (Depth excludes connectors, height excludes mounting tabs. Allow at least 3.0", 76 mm, depth in the wall or furniture.)



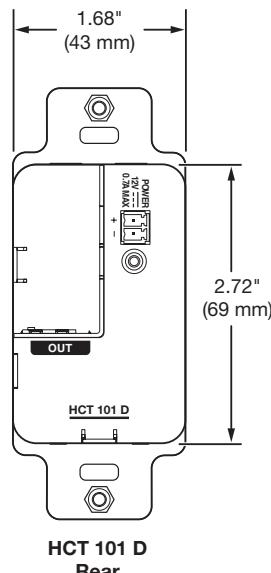
## Specifications • HC 400 Series (Continued)

HCT 101 D

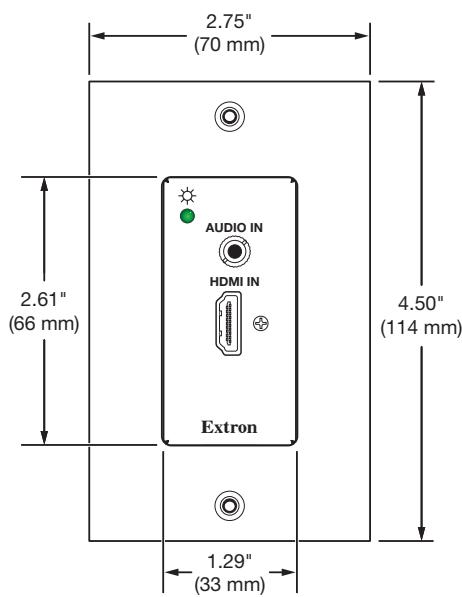
Faceplate..... 2.61" H x 1.29" W x 0.25" D  
 (66 mm H x 33 mm W x 6.4 mm D)  
 Device ..... 2.72" H x 1.68" W x 1.87" D  
 (69 mm H x 43 mm W x 48 mm D)  
 (Depth excludes connectors, height excludes mounting tabs. Overall height is 4.20" (107 mm), including mounting tabs. Mounting holes are 3.2" (82 mm) apart on center. Fits the opening in a 1 gang decorator wallplate.  
 Allow at least 3.0", 76 mm, depth in the wall or furniture.)



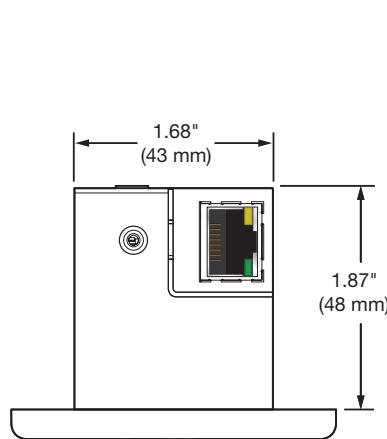
HCT 101 D  
 Front



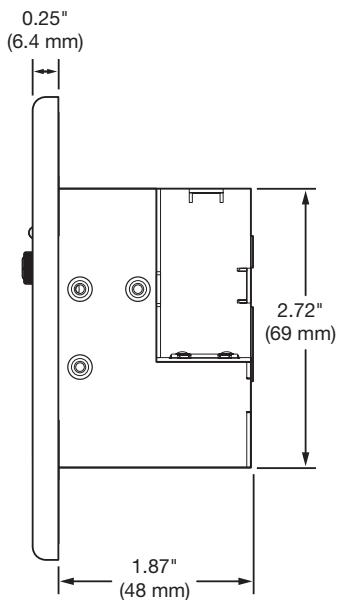
HCT 101 D  
 Rear



HCT 101 D  
 (with Faceplate)  
 Front



HCT 101 D  
 (with Faceplate)  
 Top



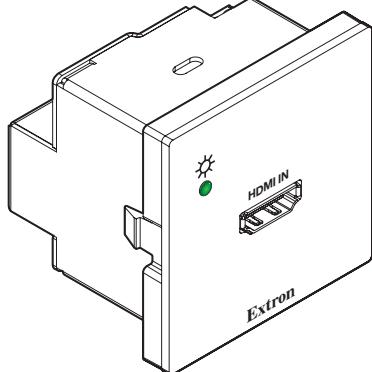
HCT 101 D  
 (with Faceplate)  
 Side

## Specifications • HC 400 Series (Continued)

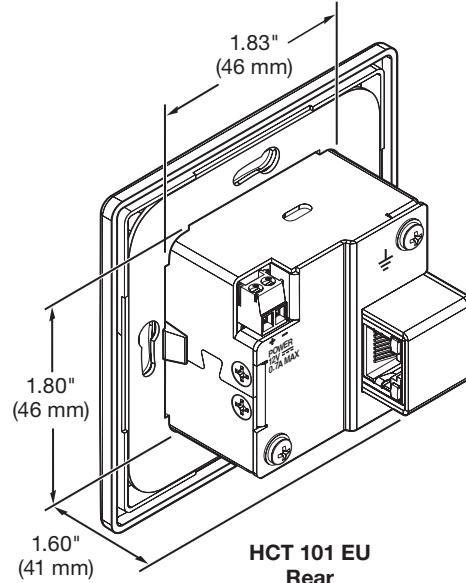
### HCT 101 EU

Frame ..... 3.17" H x 3.17" W x 0.40" D (1-gang)  
                  (81 mm H x 81 mm W x 10 mm D)

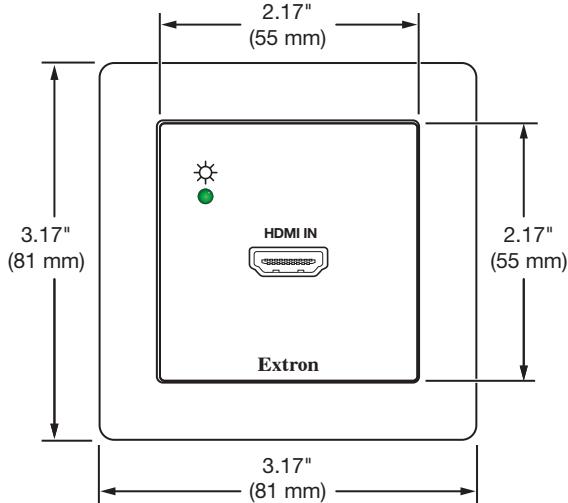
Device ..... 2.17" H x 2.17" W x 1.60" D  
                  (55 mm H x 55 mm W x 41 mm D)  
                  (Excludes faceplate. Fits mounting frames that accept 55 mm x 55 mm modules and fits many 1 gang EU junction boxes. Allow at least 2.4" [61 mm] depth in the wall or furniture.)



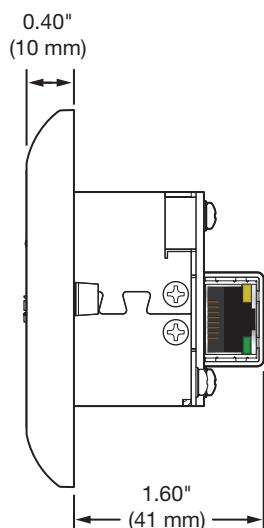
**HCT 101 EU/MK  
Device Module**



**HCT 101 EU  
Rear**



**HCT 101 EU  
Front**



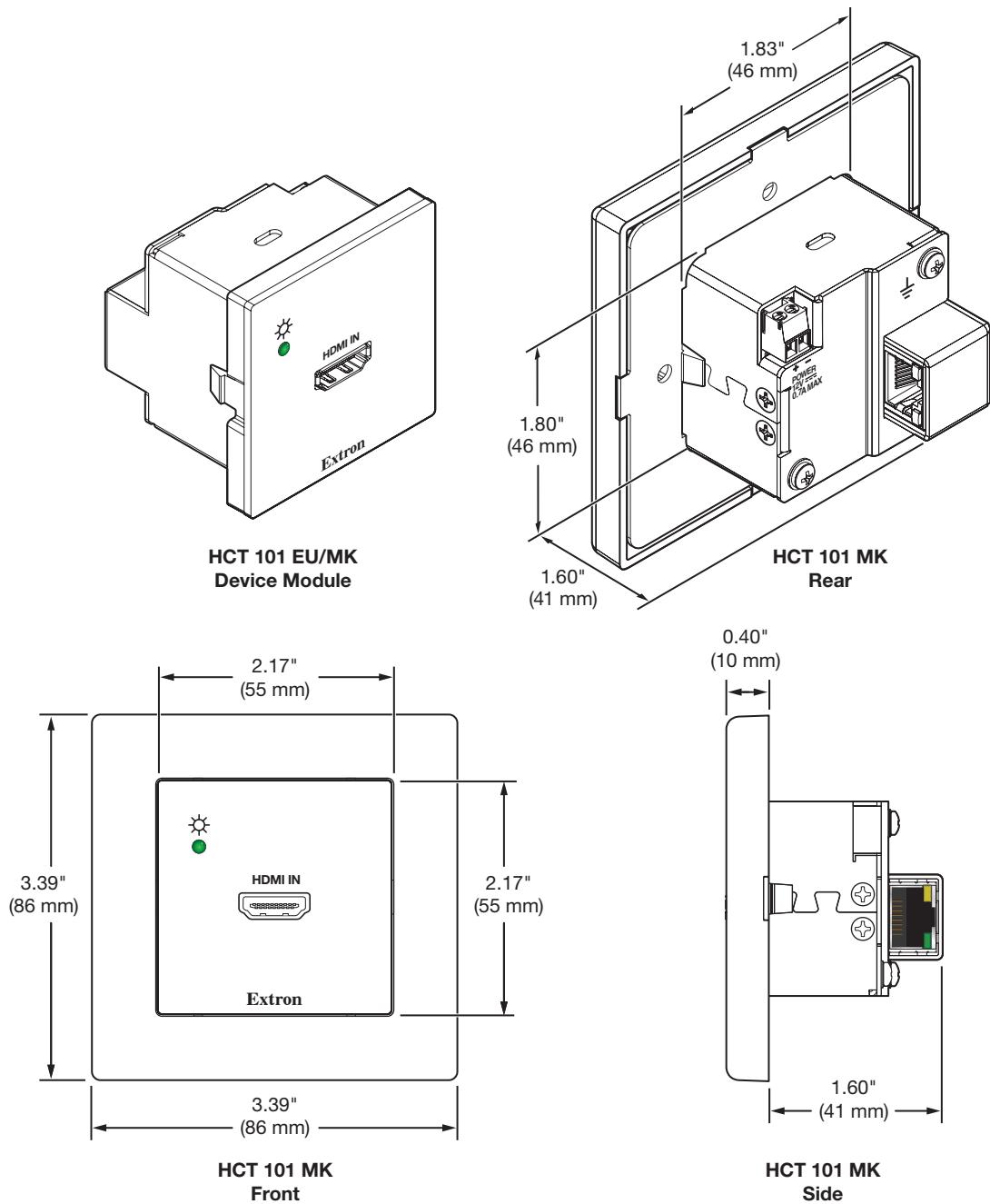
**HCT 101 EU  
Side**

## Specifications • HC 400 Series (Continued)

### HCT 101 MK

Frame ..... 3.39" H x 3.39" W x 0.40" D (1-gang)  
                  (86 mm H x 86 mm W x 10 mm D)

Device ..... 2.17" H x 2.17" W x 1.60" D  
                  (55 mm H x 55 mm W x 41 mm D)  
                  (Excludes faceplate. Fits mounting frames that accept 55 mm x 55 mm modules and fits many 1 gang EU junction boxes. Allow at least 2.4" [61 mm] depth in the wall or furniture.)



HCR 102, HCT 103 ..... 1.0" H x 8.75" W x 6.0" D (half rack wide)  
                  (25 mm H x 222 mm W x 152 mm D)  
                  (Depth excludes connectors.)

## Specifications • HC 400 Series (Continued)

Product weight

HCT 103 .....	1.1 lb (0.5 kg)
HCT 102 D.....	0.7 lb (0.3 kg)
HCT 101 D.....	0.2 lb (0.1 kg)
HCT 101 EU.....	0.2 lb (0.1 kg)
HCT 101 MK.....	0.2 lb (0.1 kg)
HCR 102 .....	1.2 lbs (0.6 kg)

Regulatory compliance..... CE\*\*, C-tick, c-UL, FCC Class A\*\*, ICES, UL, VCCI  
Complies with the appropriate requirements of RoHS, WEEE

**NOTE:** \*\*CE and FCC testing is conducted with STP (shielded twisted pair) I/O cable.

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](http://www.extron.com).

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