BELDEN
SENDING ALL THE RIGHT SIGNALS®

Product Bulletin

PB 494

Belden HDMI Connectivity Solutions

Belden now offers a complete solution for sending HDMI signals over long distances without a reduction in signal quality.

Whether using Category Cable or Fiber, installation is simple

HDMI Technology

As Audio/Video installations migrate away from discrete wired solutions towards digital signal solutions, the problem of long distance runs without signal degradation has become a serious issue. Belden recognizes this issue and presents the following solutions to help you navigate in a digital world.

HDMI Over Category 6 HDBaseT Signal Extenders

The HDMI over Category 6 Uncompressed Signal Extender sends HDMI signals over a single Category 6 cable to extend your HDMI video and audio signal up to 330 feet from the source. By utilizing HDBaseT technology, the Extender is capable of transmitting fully-uncompressed HDMI 1080p and 3D video signals while providing flexibility with greater signal distances and installation.

- Features HDBaseT Technology to connect all of the entertainment devices in a setting through its 5Play™ feature set, converging uncompressed full HD digital video, audio, 100BaseT Ethernet, power over cable and various control signals

- Audio and video are transmitted digitally over Category 6 cable without signal loss

- Single Link Range: 100 meters with 1080p/60 and 2000x4000

- Compliant with High Speed HDMI HDCP 2.0 and DVI1.1 standards

- Supports digital video formats in 480i, 480p, 720p, 1080i, 1080p

- Supports PCM 2 Channel audio, 5.1, 7.1, DTS-HD, Dolby audio format

- Supports Infrared (IR) Remote Pass through function to control HDMI source devices (set-top box, DVD player and BluRay DVD Player) in Receiver by its IR remote controller

HDMI Over Category 6 Gigabit (IP) Ethernet Extenders with LED Display

The HDMI over Gigabit (IP) Ethernet Extender with LED Display can send out a Standard HDMI signal to one or more HDMI devises using a single Category 6 cable over a 100 Mb/s Ethernet infrastructure while simultaneously returning an Infrared (IR) control signal back to the source controlling it.

- Audio and video are transmitted digitally over 100 Ohm Category 6 cable for lower signal loss

- Single Link Range: 1080p/60 and 1920x1200

- Compliant with Standard HDMI, HDCP 2.0 and DVI1.1 standards

- Supports digital video formats in 480p, 720p, and 1080p

- Supports PCM 2 Channel audio

- Supports IR Pass through function and control HDMI source devices (set-top box, DVD player and BluRay DVD Player) in Receiver by its IR remote controller

- Ability to control the source channel from the IR Control, and display the source channel from the LED panel giving more control to the user

HDMI Over Fiber Extenders

The reality of high-speed digital graphic inter-connections mandates products to maintain video quality and cost effectiveness of inte-grated display systems. Optical technology for gigabit digital transmission makes it simple to extend digital graphic data above the extension limits of copper wires producing pure signal integrity for an ideal visual experience, no EMI/RFI emissions, light weight, rugged cabling and connectors, low power consumption and instal-lation ease.

The THOR-HE-HDMI Extender is a quality solu-tion for connecting equipment using the high definition, HDMIU signal. The THOR-HE-HDMI stretches your HDMI connectivity, offering the benefit of detachable cabling, with four LC connectors and a Cat5e/6 connector, which makes it easier to install.

- Supports up to WUXGA (1920x1200) resolution and HDTV 1080p (1920x1080)
- Standard speed HDMI compliance for HDTV and HDCP communication requirements
- Extend digital HDTV data with HDCP up to 100m (330 feet)
- Certified in Class B, the home standard by FCC & CE
- Optional +12V external power supply to power both modules over the DDC cable
- No tools required to install with plug and play feature
- The unit operates at 850nm over multimode fiber, 50/125um fiber is recommended
- The unit has 2 Duplex LC receptacles on each module
- Compliance with FDA/CDRH and IEC 60825-1 Class 1 Laser Eye Safety

HDMI Pre-Terminated Hybrid Extenders

The THOR-CBL-HDMI extension cable stretches your high definition multimedia interface connectivity. The THOR-CBL-HDMI is a hybrid cable solution using multi-mode glass fibers for the RGB and Clock high-speed digital graphic signals and copper wires for the low frequency HDCP control signals.

- Extend HDMI signals up to100m (330 feet) with no signal degradation
- Supports up to 1080p resolution

- Standard speed HDMI compliance for HDTV and HDCP communication requirements
- DVI standard compliance (165Mpixels/sec maximum) and supports DDC2B mode
- Uses the host +5V source from the HDMI connector pin number 18 to drive the Tx and Rx modules with a minimum of 500mA is available from the host
- If your HDTV source is unable to provide a minimum of +5V, 500mA on pin 18, then plug external AC/DC power supply in Tx module for operation
- Data security inherent with fiber and no RFI/EMI emissions
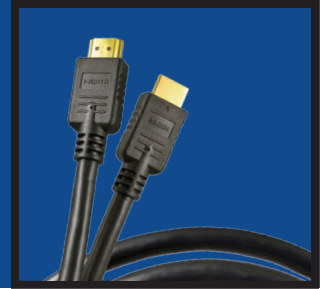
HDMI Distribution Amplifiers

The THOR-DA-HDMI is designed to deliver the highest quality picture, preserving the native resolutions of the video source. Since digital noise can affect the picture quality, the THOR-DA-HDMI amplifier is transparent in the signal path as it eliminates digital noise and boosts the signal strength to preserve and enhance the video signal quality.

The THOR-DA-HDMI is a digital media distri-bution amplifier allowing one HDMI digital video source to drive up to eight independant multimedia LCD, LED or Plasma flat panel dis-plays. The THOR-DA-HDMI is available in a four output and an eight output device, using one standard HDMI connector without losing signal quality. THOR-DA-HDMI supports Standard Speed HDMI and is HDCP1.1 compliant on all outputs.

- Supports a wide range of PC and HDTV resolutions from VGA to WUXGA (1920x1200) and 480p to 1080i/p
- Standard speed HDMI compliance for HDTV and HDCP communication requirements
- Simultaneously displays one HDMI source on four displays and eight displays with option of either device
- Features EDID (internal and external) for Deep Color up to 12bits, 1080p at 24/60Hz and color space
- Supports DVI source and display via an HDMI to/from DVI adapter cable
- 5V DC power adapter supplies adequate power to amplify the video signals from the video source
- Can be cascaded up to two layers
- Supports DDC/HDC
- Provides status LED indicators

Belden offers a broad selection of THOR HDMI extenders over fiber for a variety of broadcast and professional audio/video applications.

Complete information for the entire line of Belden THOR Category 6 and fiber extenders, digital media DA's, converters and small and large-scale mission critical KVM switches are located at www.telecast-fiber.com.

HDMI over Category 6 HDBaseT Signal Extender

Description	Signal Strength		HDMI Comp.	Digital Video Format	Resolution Capabilities	HDBaseT Technology	Part Number
	Meter	Feet					
HDBaseT Transmitter and Receiver	100	338	High Speed	480i, 480p, 720p, 1080ii, & 1080p	1080p/60 up to 2000x4000	✓	BEL-HDBASET

Comp.= Compliancy

HDBASET-XMIT, HDBaseT Transmitter and Receiver

HDMI over Category 6 Gigabit (IP) Ethernet Extender with LED Display

Description	Signal Strength		HDMI Comp.	Digital Video Format	Resolution Capabilities	Part Number
	Meter	Feet				
Ethernet Transmitter	100	338	Standard Speed	480p, 720p, & 1080p	1080p/60 up to 1920x1200	IP-XMIT
Ethernet Receiver	100	338	Standard Speed	480p, 720p, & 1080p	1080p/60 up to 1920x1200	IP-RECEIVE

Comp.= Compliancy

IP-XMIT & IP-RECEIVE, Ethernet Transmitter and Receiver

HDMI over Fiber Extenders

Description	Part Number
THOR module extends high-resolution digital graphic data and multi-channel audio data over fiber up to 100 m/ 330 ft	THOR-HE-HDMI-1F
THOR module extends high-resolution digital graphic data and multi-channel audio data over fiber up to 100 m/ 330 ft	THOR-HE-HDMI-4F

THOR-HE-HDMI-4F, THOR HDMI Over Fiber Extender

HDMI Pre-Terminated Hybrid Extenders

Description	Part Number
THOR HDMI Point-To-Point Extender Cable, 10 meter	THOR-CBL-HDMI-10M
THOR HDMI Point-To-Point Extender Cable, 20 meter	THOR-CBL-HDMI-20M
THOR HDMI Point-To-Point Extender Cable, 30 meter	THOR-CBL-HDMI-30M
THOR HDMI Point-To-Point Extender Cable, 40 meter	THOR-CBL-HDMI-40M
THOR HDMI Point-To-Point Extender Cable, 50 meter	THOR-CBL-HDMI-50M
THOR HDMI Point-To-Point Extender Cable, 70 meter	THOR-CBL-HDMI-70M
THOR HDMI Point-To-Point Extender Cable, 100 meter	THOR-CBL-HDMI-100M

THOR-CBL-HDMI-50M, THOR HDMI Over Fiber Pre-Terminated Hybrid Extenders

HDMI over Distribution Amplifiers

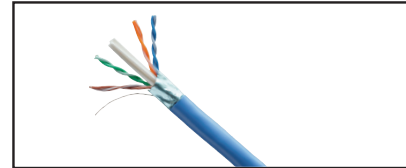| Description	Part Number
THOR Distribution Amplifier HDMI 1 Input to 4 Outputs	THOR-DA-HDMI-1X4
THOR Distribution Amplifier HDMI 1 Input to 8 Outputs	THOR-DA-HDMI-1X8

THOR-DA-HDMI-1X4, THOR Distribution Amplifier HDMI 1 Input to 4 Outputs

BELDEN

Category 6+ Horizontal Cable

DataTwist 2400 Cable

DataTwist 2400 Cable consists of 4-pair cables that exceed Category 6 requirements as per ANSI/TIA/EIA-568-C.2. The cable provides a minimum bandwidth of 250 MHz.
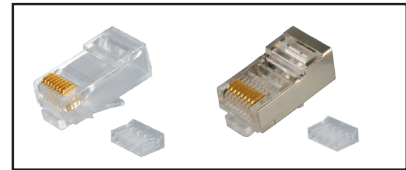
Category 6+ Non-Shielded Cable

Description	Non-Shielded Cable			
	Blue	Purple	White	Black
2400 Cable, CMR	2412 006A1000	2412 007A1000	2412 009A1000	2412 010A1000
2400 Cable, CMP	2413 006A1000	2413 007A1000	2413 009A1000	2413 010A1000

Category 6+ Shielded Cable

Description	Shielded Cable			
	Blue	Purple	White	Black
2400 Cable, CMR	2412F 006A1000	2412F 007A1000	2412F 009A1000	2412F 010A1000
2400 Cable, CMP	2413F 006A1000	2413F 007A1000	2413F 009A1000	2413F 010A1000

Category 6+ Modular Plugs

Belden now offers Modular Plugs as an accessible, easy-to-use solution to terminate twisted pair and multiconductor flat cable for security, audio/video and broadcast applications where field installation is necessary.

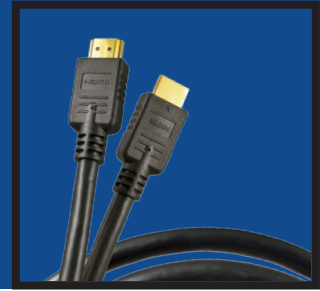### Category 6+ Modular Plugs

Description	Color	Part Number
RJ45 Category 6 Non-Shielded Modular Plug w/50 Micron Gold Contacts	Clear	HIPMP-RJ45CAT6
RJ45 Category 6 Shielded Modular Plug w/50 Micron Gold Contacts	Nickel	HIPMP-RJ45CAT6SH
RJ45 Category 6 Shielded Modular Plug w/Grounding Tabs	Nickel	HIPMP-RJ45CAT6GC

Modular Strain Relief Boots

Description	Color	Tool Req'd	Part Number
Strain Relief, Snagless Over Boot, 6 mm	Black	NO TOOL REQUIRED	SLS-RJ45-6.0
Strain Relief, Snagless Over Boot, 7 mm	Black	NO TOOL REQUIRED	SLS-RJ45-7.0
Strain Relief, Crimpable Snagless Over Boot, 5.7 mm	Black	CPRJ11-45	SLS-RJ45CR-5.7
Strain Relief, Crimpable Snagless Over Boot, 6.3 mm	Black	CPRJ11-45	SLS-RJ45CR-6.3

2413 006A100, DataTwist 4-pair Cable

HIPMP-RJ45CAT6 & HIPMP-RJ45CAT6SH, RJ45 Category 6+ Non-Shielded and Shielded Modular Plug

HIPMP-RJ45CAT6GC, RJ45 Category 6+ Shielded Modular Plug w/Grounding Tabs

SLS-RJ45-6.0 & SLS-RJ45CR-5.7, Strain Relief, Snagless Over Boot & Strain Relief and Crimpable Snagless Over Boot for RJ45 Modular Plugs

Crimp & Strip Tool for Modular Plugs

Description	Part Number
Crimp and Strip Tool for RJ11 (6 Position) and RJ45 (8 Position) Modular Plugs	**CPRJ11-45**
Cable Strip Tool for Networking Cable	**PS-NET**

CPRJ11-45, Crimp & Strip Tool for Modular Plugs

10GX Horizontal Cable

10GX Cable

The 10GX Cable delivers performance that goes beyond the ANSI/TIA/EIA 568-C.2 Category 6A standard. 10GX Cable provides 625 MHz of bandwidth and a data rate of 10 Gigabits per second.
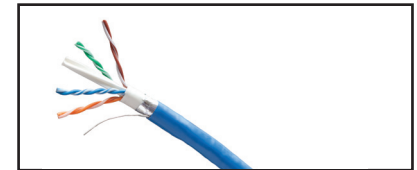
This performance is made possible through the innovative RoundFlex™ design that serves to reduce alien crosstalk by randomizing the distance between the cables.

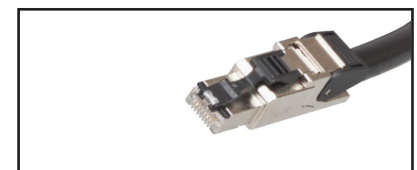PS-NET, Networking Cable Strip Tool

10GX Non-Shielded Cable

Description	Non-Shielded Cable			
	Blue	**Purple**	**White**	**Black**
10GX Cable, CMR	**10GX12 006A1000**	**10GX12 007A1000**	**10GX12 009A1000**	**10GX12 010A1000**
10GX Cable, CMP	**10GX13 006A1000**	**10GX13 007A1000**	**10GX13 009A1000**	**10GX13 010A1000**

10GX Shielded Cable

Description	Shielded Cable			
	Blue	**Purple**	**White**	**Black**
10GX Cable, CMR	**10GX62F 006A1000**	**10GX62F 007A1000**	**10GX62F 009A1000**	**10GX62F 010A1000**
10GX Cable, CMP	**10GX63F 006A1000**	**10GX63F 007A1000**	**10GX63F 009A1000**	**10GX63F 010A1000**

10GX62F 006A1000, 10GX Cable

Category 6 Field-Installable Metal Body Ruggedized Plug

Belden DataTuff Field Installable Metal Body Ruggadized Plugs for Category 6 Cables are manufactured to the industry's highest standards of quality, utilizing the most advanced equipment, systems, controls and processes.

R301601 000S1, UTP/STP, T568A Plug

Description	Part Number
DataTuff® Industrial Ethernet Ruggedized RJ45 Category 6 Shielded Modular Plug Kit UTP/STP, T568A	**R301601 000S1**
DataTuff® Industrial Ethernet Ruggedized RJ45 Category 6 Shielded Modular Plug Kit UTP/STP, T568B	**R301602 000S1**

BELDEN

HDMI Cables

Belden, the leader in professional audio/video signal transmission technology, offers a reliable HDMI interface for transferring uncompressed digital audio/video data from an HDMI-compliant device to a compatible digital audio/video device. Belden offers a complete line of 26 AWG shielded twisted pair HDMI cables to support any uncompressed TV or PC video format, including standard, enhanced, high definition, and multi-channel compressed or uncompressed digital audio.

HD2002, 2 Meter HDMI Cable

UL NEC (UL) CEC Type	Length		Connector	HDMI Assembly Compliance	1080i Verified	1080p Verified	Part Number
	Meters	Feet					
CM or CL2	1	3.28	Gold	High Speed	✓	✓	HD2001 010B5
CM or CL2	2	6.56	Gold	High Speed	✓	✓	HD2002 010B5
CM or CL2	3	9.84	Gold	High Speed	✓	✓	HD2003 010B5
CM or CL2	4	13.12	Gold	High Speed	✓	✓	HD2004 010B5
CM or CL2	7	22.96	Gold	Standard Speed	✓		HD2007 010B5

Belden End-to-End Network Performance

Belden has the end-to-end copper cabling system to meet your current networking challenges while providing the bandwidth and scalability for the needs of the future.

Consult the Belden Copper Catalog located at **www.belden.com** for a complete listing of copper cabling products.

All TMs are the property of their respective owners