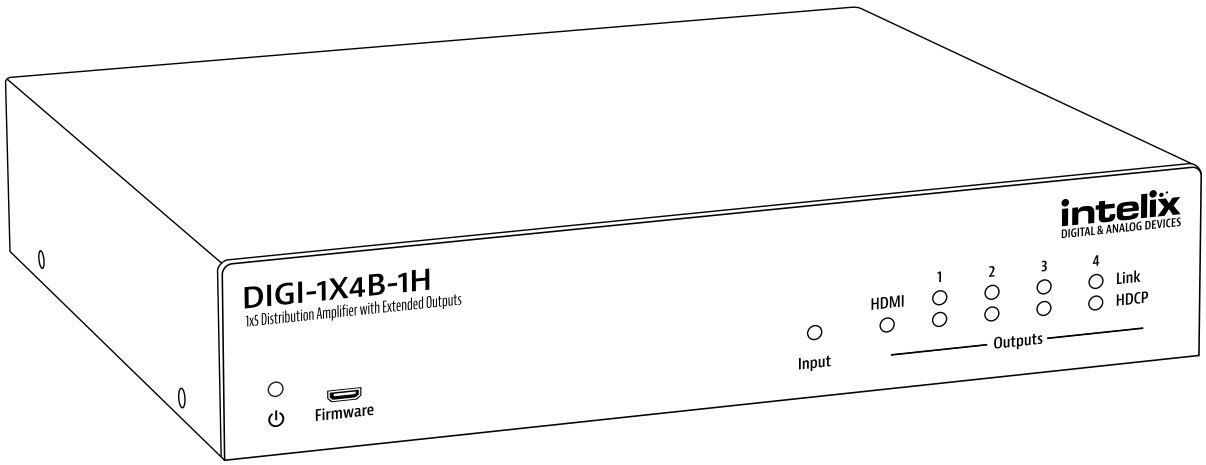
DIGI-1X4B-1H Installation and Operation Guide



Rev 150416

8001 Terrace Ave
Suite 201
Middleton, WI 53562

Phone: 608-831-0880
Toll-Free: 866-462-8649
Fax: 608-831-1833

Important Safety Instructions

Read all of these instructions. Save them for future reference.

- Follow all warnings and instructions marked on the device.
- This product is for indoor use only.
- Do not place the device on any unstable surface (cart, stand, table, etc.). If the device falls, serious damage will result.
- Do not use the device near water.
- Do not place the device near, or over, radiators or heat registers.
- The device cabinet is provided with slots and openings to allow for adequate ventilation. To ensure reliable operation, and to protect against overheating, these openings must never be blocked or covered.
- The device should never be placed on a soft surface (bed, sofa, rug, etc.) as this will block its ventilation openings. Likewise, the device should not be placed in a built in enclosure unless adequate ventilation has been provided.
- Never spill liquid of any kind on the device.
- Unplug the device from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Clean only with a dry cloth.
- The device should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- To prevent damage to your installation it is important that all devices are properly grounded.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Use only accessories specified or recommended by Intelix.
- Explanation of graphical symbols:
  - Lightning bolt/flash symbol: the lightning bolt/flash and arrowhead within an equilateral triangle symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product enclosure which may be of sufficient magnitude to constitute a risk of shock to a person or persons.

  - Exclamation point symbol: the exclamation point within an equilateral triangle symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

- Do not allow anything to rest on the power cord or cables. Route the power cord and cables so that they cannot be stepped on or tripped over. If an extension cord is used with this device make sure that the total of the ampere ratings of all products used on this cord does not exceed the extension cord ampere rating. Make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.
- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Never push objects of any kind into or through cabinet slots. They may touch dangerous voltage points or short out parts resulting in a risk of fire or electrical shock.
- Do not attempt to service the device yourself. Refer all servicing to qualified service personnel.
- If the following conditions occur, unplug the device from the wall outlet and bring it to qualified service personnel for repair.
  - The power cord or plug has become damaged or frayed.
  - Liquid has been spilled into the device.
  - The device has been exposed to rain or water.
  - The device has been dropped, or the cabinet has been damaged.
  - The device exhibits a distinct change in performance, indicating a need for service.
  - The device does not operate normally when the operating instructions are followed.
- Only adjust those controls that are covered in the operating instructions. Improper adjustment of other controls may result in damage that will require extensive work by a qualified technician to repair.
- Use only with the cart, stand, table, or rack specified by Intelix or sold with the equipment. When/if a cart is used, use caution when moving the cart/equipment combination to avoid injury from tip-over.

- Unplug this apparatus during lightning storms or when unused for long periods of time.

Table of Contents

Product Overview

The Intelix DIGI-1X4B-1H is an HDMI distribution amp with four HDBaseT outputs and one HDMI Loop output. This distribution amplifier is designed for any system that requires an HDMI signal to be distributed to multiple remote locations.

The Intelix DIGI-1X4B-1H features HDBaseT twisted pair extension for four outputs, allowing the same signal to be routed to a remote destination with an HDBaseT receiver. The HDBaseT ports support up to 4Kx2K HDMI video with audio, wide-band IR tunneling (for IR control of source or displays), RS232 tunneling, and HDCP up to 60 meters (196 feet). Each HDBaseT output port supplies power to the attached extender, eliminating the need for a power supply at the display end.

The Intelix DIGI-1X4B-1H is designed with an HDMI loop out which is intended to cascade to additional units, allowing for system expansion for larger systems. A unique control design allows the RS232 port to be addressed and cascaded, allowing control commands to be discretely directed to the RS232 port of any attached HDBaseT receiver. This design allows third party control systems to reduce the number of COM ports required, thus reducing hardware costs.

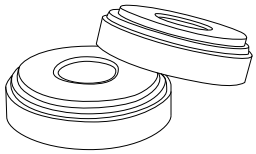
The Intelix DIGI-1X4B-1H is HDMI compatible and supports up to 4kx2k resolutions, Deep Color, and full 3D capabilities. The DA features advanced EDID and HDCP handling, including EDID copy and preset modes.

Package Contents

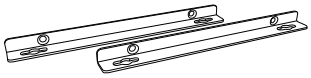
Please verify the following items are in the shipping box prior to installation of the DIGI-1X4B-1H.

DIGI-1X4B-1H Distribution Amplifier
1 ea

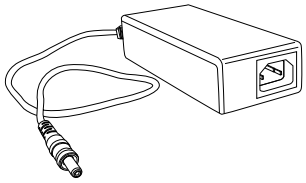
Shelf Feet with Screws
4 ea



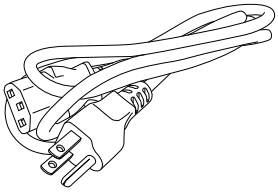
Mounting Rails with Screws
2 ea



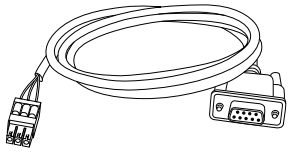
24V DC 2.5A Power Supply
1 ea



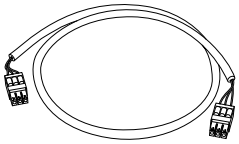
US IEC Power Cable
1 ea



RS232 Cable
1 ea

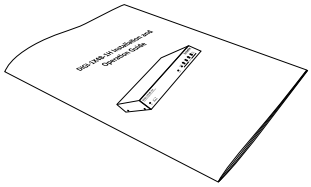


RS232 Loop Cable
1 ea



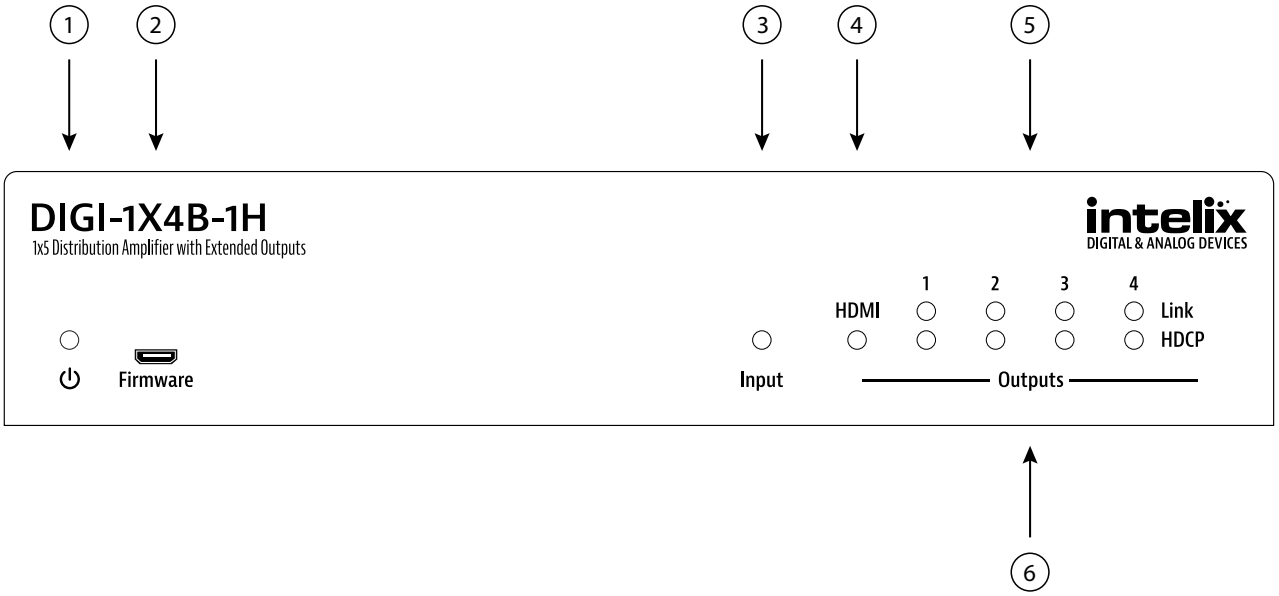
IR Loop Cable
1 ea

DIGI-1X4B-1H Installation and Operation Guide
1 ea



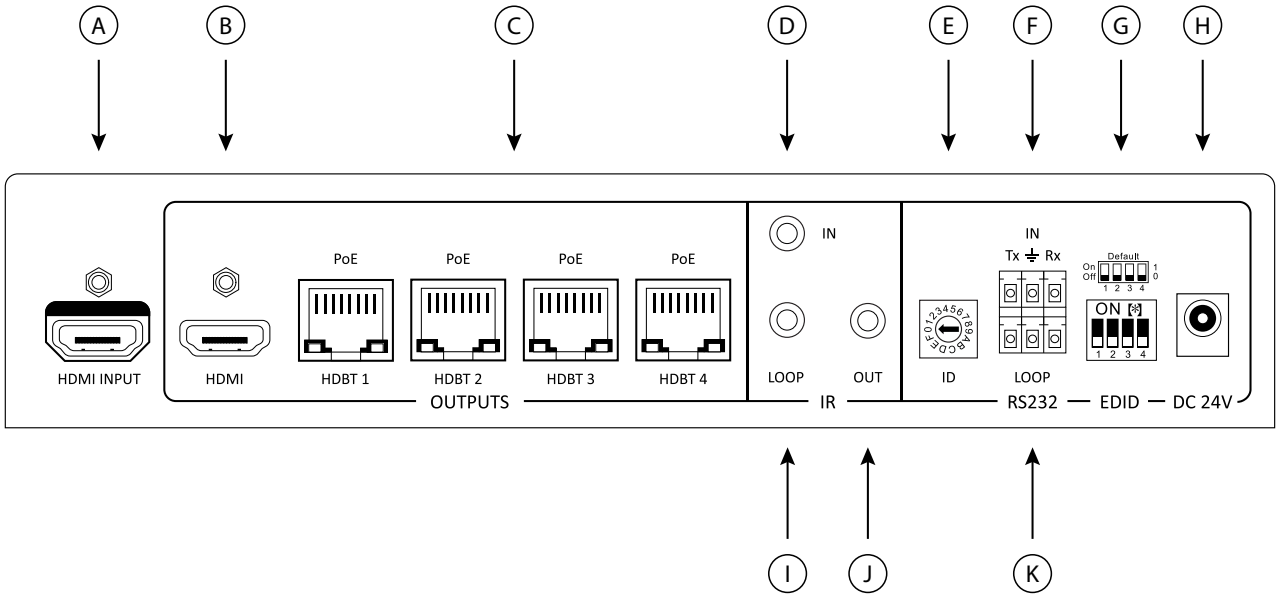
Front and Rear Panels

Front Panel



1. Power Indicator LED
2. Firmware Update Port
3. HDMI Input Indicator LED
4. HDMI Output Indicator LED
5. HDBaseT Link Indicator LED (4 ea)
6. HDBaseT HDCP Indicator LED (4 ea)

Rear Panel



A. HDMI Input
B. HDMI Output
C. HDBaseT Outputs with PoE (4 ea)
D. IR Input
E. ID Selector
F. RS232 Input
G. EDID Selector Switches
H. 24V DC Input
I. IR Loop
J. IR Output
K. RS232 Loop

Installation Instructions

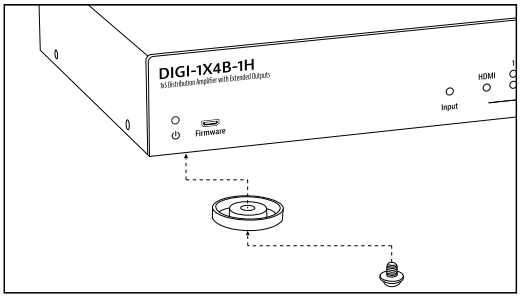
Quick Start

1. Mount the distribution amplifier
2. Set EDID mode and device ID
3. Connect source
4. Connect displays
5. Connect IR control (optional)
6. Connect RS232 control (optional)
7. Daisy-chain additional distribution amplifiers (optional)
8. Apply power
9. Verify signal status

Mount the Distribution Amplifier

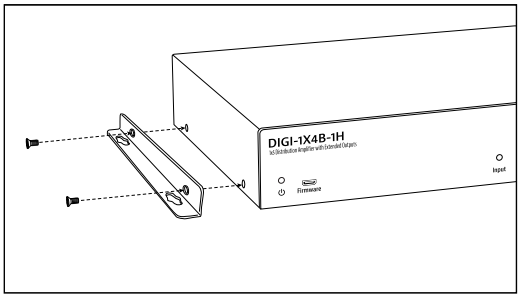
At least 2 inches of free air space is required on both sides of the DIGI-1X4B-1H for proper side ventilation. Avoid mounting the DIGI-1X4B-1H near a power amplifier or any other source of significant heat.

Shelf Mounting Instructions



Attach the shelf feet to the bottom of the DIGI-1X4B-1H.

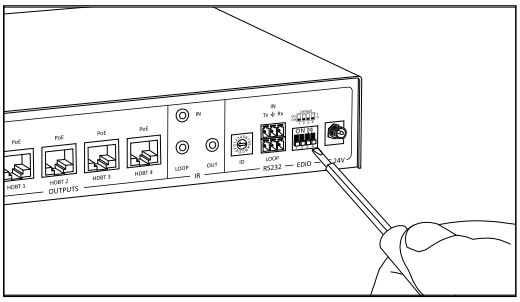
Table Mounting Instructions



Attach the mounting rails to the sides of the DIGI-1X4B-1H. Once the rails are installed, the distribution amplifier is ready to be mounted under a table or onto a wall.

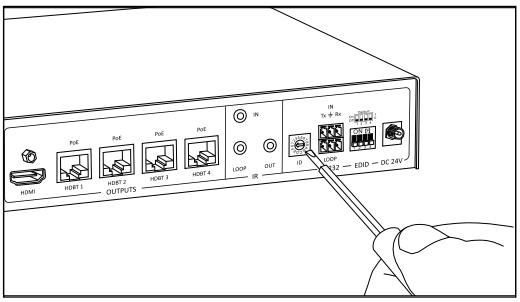
Currently, there is not a rack mounting kit available for the DIGI-1X4B-1H.

Set EDID Mode and Device ID



Set the EDID of the DIGI-1X4B-1H to the highest compatible resolution of all displays to be connected to the device.

DIP Switch Settings	Resolution
Down, Down, Down, Down	1080p/60; Stereo PCM
Down, Down, Down, Up	720p/60; Stereo PCM
Down, Down, Up, Down	1280x800/60; Stereo PCM
Down, Down, Up, Up	1024x768/60; Stereo PCM
Down, Up, Down, Down	1920x1200/60; Stereo PCM



When sending RS232 through the HDBaseT outputs to the displays, each distribution amplifier should have a unique identifier assigned to it. Reply signals may jam if multiple DIGI-1X4B-1H units have matching IDs.

The rotary switch is labeled in hexadecimal (Hex), while the RS232 commands use decimal (Dec). Use a small, flat blade screwdriver to set the ID of each DIGI-1X4B-1H to a different hexadecimal value.

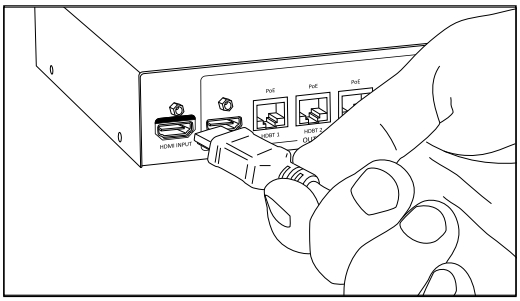
Hex	*Dec*
0	00
1	01
2	02
3	03

Hex	*Dec*
4	04
5	05
6	06
7	07

Hex	*Dec*
8	08
9	09
A	10
B	11

Hex	*Dec*
C	12
D	13
E	14
F	15

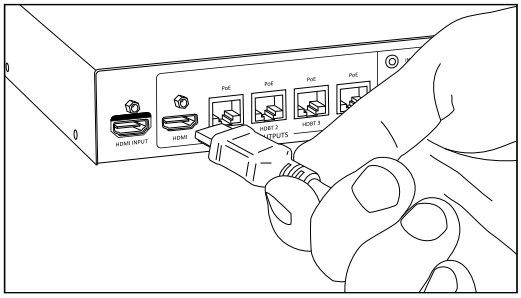
Connect Source



Connect the source devices to HDMI inputs using HDMI cables that are less than or equal to 5 meters in length. For source devices that are further away, an HDMI extension device will be required to complete the connection.

Connect Displays

HDMI Output



Connect the display device or second DIGI-1X4B-1H to the HDMI output using an HDMI cable that is less than or equal to 5 meters in length. For a display that further away, it is highly recommended to utilize the HDBaseT outputs.

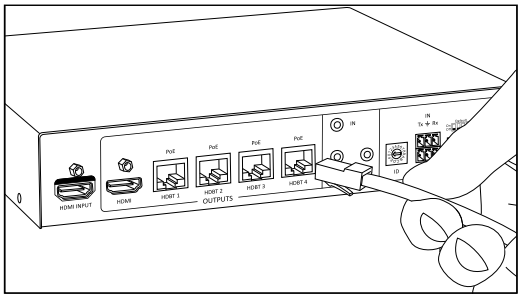
HDBaseT Outputs

TIA/EIA-568B

Pin 1	Orange/White
Pin 2	Orange
Pin 3	Green/White
Pin 4	Blue
Pin 5	Blue/White
Pin 6	Green
Pin 7	Brown/White
Pin 8	Brown

For all HDBaseT cabling, the EIA/TIA-568B crimp pattern must be used on Category 6 or greater cable. In areas with large amounts of electromagnetic (EM) or radio frequency (RF) interference, a shielded variety of Category 5e or greater cable is recommended with shielded connectors on both ends of the selected cable.

The HDBaseT output provides 15 watts of Power over Ethernet, which eliminates the need for a power supply with a compatible HDBaseT receiver. Intelix recommends using the DIGI-HD60C-R or DIGI-HD60-R for installations which require remote power.



Connect the HDBaseT receiver to the display per the manufacturer's instructions. Connect the HDBaseT cable to the distribution amplifier and the HDBaseT receiver.

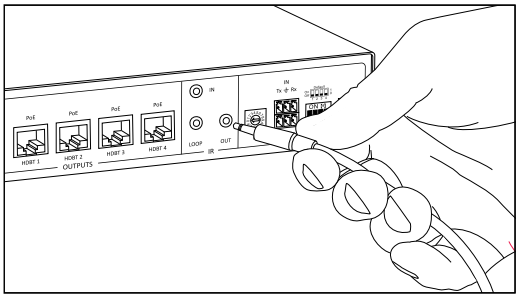
Connect IR Control (Optional)

The DIGI-1X4B-1H has an advanced bidirectional IR control protocol through the HDBaseT output port, which allows for the control of the source or displays. Intelix recommends using the DIGI-HD60C-R for installations which require IR extension.

Only use Intelix branded IR components, DIGIB-EMT (IR transmitter) or DIGIB-EYE (IR receiver) with the DIGI-1X4B-1H. Third party 12V DC IR components are not compatible with the DIGI-1X4B-1H. The DIGIB-EYE and DIGIB-EMT are sold separately.

Source Device Control via Remote IR

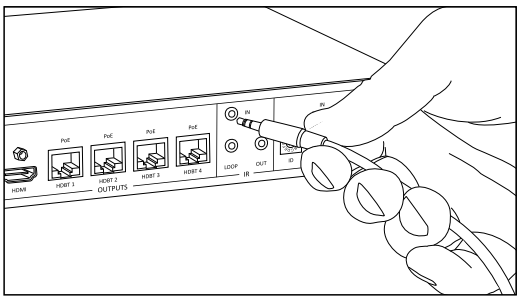
An IR signal passed from the display location through the HDBaseT connection can provide control of the source device.



Attach the plastic end of the DIGIB-EMT to the IR receiver of the source device. Insert the TS 3.5 mm plug of the DIGIB-EMT to the IR output port (IR OUT) of the distribution amplifier for the source device to control.

Remote Display Control via Local IR

An IR signal may be passed to a remote display location through the HDBaseT connection. In order to extend an IR signal to a remote display, the included DIGIB-EYE must be connected to the IR input port (IR IN) of the distribution amplifier.



Insert the TRS 3.5 mm plug of the DIGIB-EYE to the IR input port (IR IN) of the distribution amplifier.

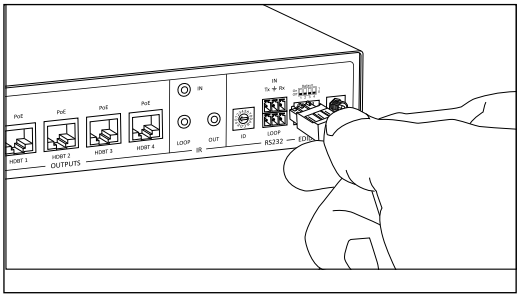
Connect RS232 Control (Optional)

In addition to traditional RS232 control, the DIGI-1X4B-1H has an advanced RS232 control mechanism which allows RS232 tunneling through the HDBaseT output port to control remote devices. Intelix recommends using the DIGI-HD60C-R for installations which require RS232 extension.

The RS232 control port requires a standard straight-through serial cable for operation, which is included with the product. The default settings for the RS232 port are:

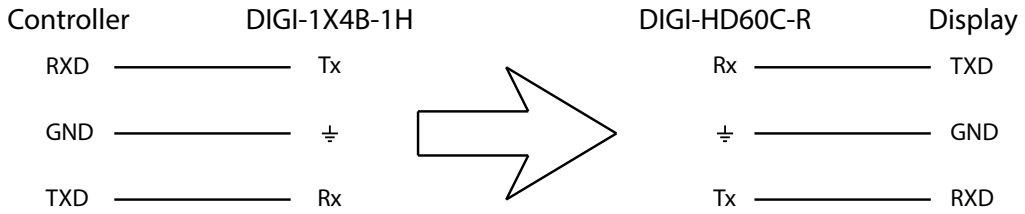
- 9600 baud
- 8 Data Bits
- 1 Stop Bit
- Parity = none

While the DIGI-1X4B-1H requires RS232 commands to be sent to it at 9600 baud, multiple baud rates are available to communicate with the remote devices.



Connect the included straight-through serial cable between the RS232 port on the DIGI-1X4B-1H and the controller.

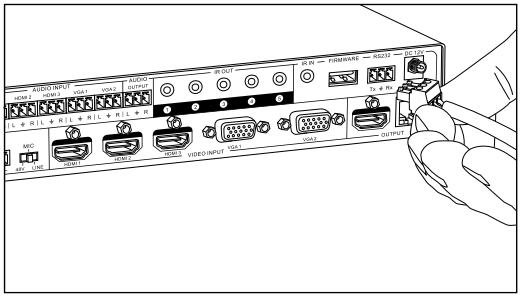
Some controllers may not have a DE9 port available for RS232 communication, but may have removable terminal block connections. Consult the manual of the control device(s) to determine which pins the TX/RX signals are carried on. Be sure to always connect TX to RX and RX to TX.



Daisy-chain Additional Distribution Amplifiers

Multiple DIGI-1X4B-1H distribution amplifiers may be connected to distribute a single source signal to up to 64 displays via HDBaseT extenders.

Assign Unique Identifier for RS232 Control



When sending RS232 through the HDBaseT outputs to the displays, each distribution amplifier should have a unique identifier assigned to it. Reply signals may jam if multiple DIGI-1X4B-1H units have matching IDs.

The rotary switch is labeled in hexadecimal (Hex), while the RS232 commands use decimal (Dec). Use the supplied screwdriver to set the ID of each DIGI-1X4B-1H to a different hexadecimal value.

Hex	*Dec*
0	00
1	01
2	02
3	03

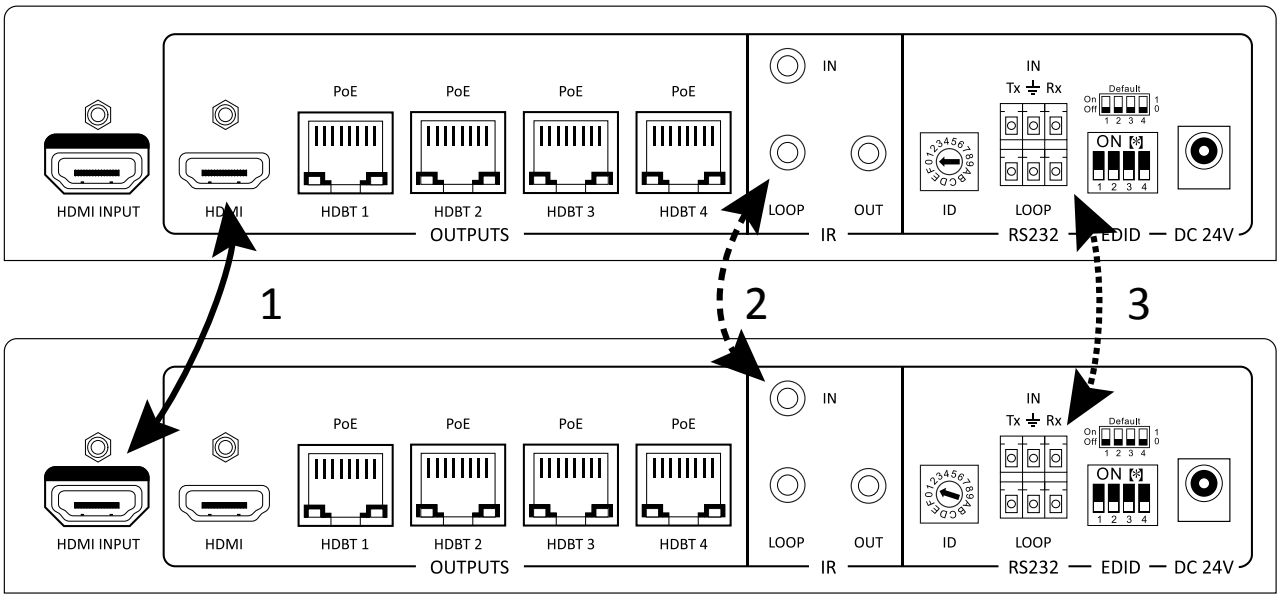
Hex	*Dec*
4	04
5	05
6	06
7	07

Hex	*Dec*
8	08
9	09
A	10
B	11

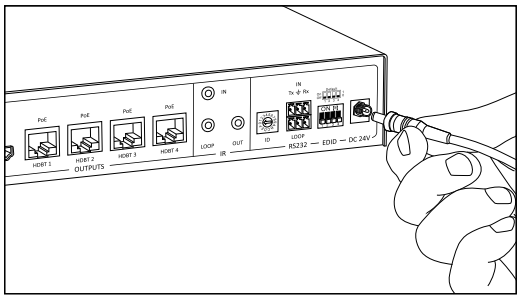
Hex	*Dec*
C	12
D	13
E	14
F	15

Daisy-chain Cabling

1. Connect the HDMI output of the first distribution amplifier to the HDMI input of the next distribution amplifier with an HDMI cable.
2. If sending IR to the remote display, connect the IR LOOP port of the first distribution amplifier to the IR IN port of the next distribution amplifier with the supplied IR Loop Cable.
3. If sending RS232 to the remote display, connect the RS232 LOOP port of the first distribution amplifier to the RS232 port of the next distribution amplifier with the supplied RS232 Loop Cable.



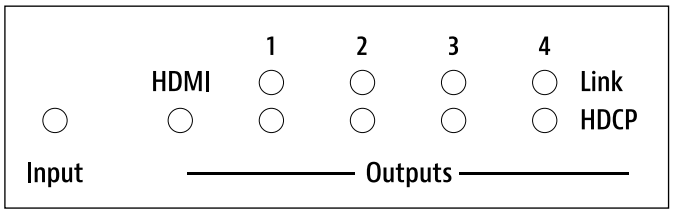
Apply Power



Plug the power supply into the power input port on the rear of the distribution amplifier. Twist the locking ring clockwise to prevent accidental disconnection of power.

Verify Signal Status

The LEDs on the front of the DIGI-1X4B-1H will assist in verifying the operation in the system without having to leave the primary equipment area.



Input LED
- LED is off when an active source is not present.
- LED is on when an active source is present.

HDMI Output LED
- LED is off when a display is not present or powered on.
- LED is flashing when source content is not encrypted.
- LED is solid when source content is encrypted.

HDBaseT Link LEDs
- LED is off when a compatible HDBaseT receiver is not connected to the HDBaseT port.
- LED is on when a compatible HDBaseT receiver is connected to the HDBaseT port.

Note: If the LED is flickering, there is poor communication between the DIGI-HD-1X4B-1H and the HDBaseT receiver, which may indicate a cabling issue or interference.

HDBaseT HDCP LEDs
- LED is flashing when source content is not encrypted.
- LED is solid when source content is encrypted.

RS232 Protocol

The default settings for the RS232 port are:

- 9600 baud
- 8 Data Bits
- 1 Stop Bit
- Parity = none

While the DIGI-1X4B-1H requires RS232 commands to be sent to it at 9600 baud, multiple baud rates are available to communicate with the remote devices.

Baud Rate	Baud Code
2400	1
4800	2
9600	3
19200	4
38400	5
57600	6
115200	7

When sending RS232 through the HDBaseT outputs to the displays, each distribution amplifier should have a unique identifier assigned to it. Reply signals may jam if multiple DIGI-1X4B-1H units have matching IDs.

The rotary switch is labeled in hexadecimal (Hex), while the RS232 commands use decimal (Dec). Use the supplied screwdriver to set the ID of each DIGI-1X4B-1H to a different hexadecimal value.

Hex	*Dec*
0	00
1	01
2	02
3	03
4	04
5	05
6	06
7	07

Hex	*Dec*
8	08
9	09
A	10
B	11
C	12
D	13
E	14
F	15

When daisy-chaining multiple distribution amplifiers, please allow 100 ms (0.10 s) between commands.

Video Output On and Off

The output video stream going to the HDMI and HDBaseT ports may be turned on and off per distribution amplifier or per specific output(s) on a distribution amplifier.

XX two digit decimal value for the distribution amplifier
Y 0 = all outputs; 1 = HDMI; 2 through 5 = HDBaseT outputs 1 through 4

Command Structure	Command Description	Response
`OFFXX0.`	Turn off the video stream for the DA	`OFF All`
`ONXX0.`	Turn on the video stream for the DA	`ON All`
`OFFXXY1,Y2.`	Turn off the video stream for specific outputs	`OFF Y1, Y2`
`ONXXY1,Y2.`	Turn on the video stream for specific outputs	`ON Y1, Y2`

Examples:

Command Structure	Command Description	Response
`OFF040.`	Turn off the video stream for DA 4	`OFF All`
`ON022,3,4.`	Turn on the video stream for outputs 2, 3, and 4 on DA 2	`ON 2, 3, 4`

RS232 to Displays via HDBaseT

Command strings may be passed through the DIGI-1X4B-1H to the displays connected to the HDBaseT output ports. When sending commands to all outputs, the strings will be staggered by 500 milliseconds to allow time for all outputs to reply.

XX two digit decimal value for the distribution amplifier
B baud code
Y 0 = all outputs; 1 through 4 = HDBaseT outputs 1 through 4
string command string to remote displays (48 character limit)

Command Structure	Command Description
XXB0$string	Send command string to all outputs on the DA at baud code
XXBY1,Y2$string	Send command string to specific outputs on the DA at baud code

Examples:

Command Structure	Command Description
`1250$Power On`	Send command string *Power On* to all outputs on DA C at 38400 baud
`0971,3,4$Input 1 Select`	Send command string *Input 1 Select* to outputs 1, 3, and 4 on DA 9 at 115200 baud

Troubleshooting

Distribution amplifier does not power on

» Verify power outlet is active.
» Verify the power supply connector is secured to the rear of the distribution amplifier.

No video from HDBaseT output

» Verify the link LED for the HDBaseT output is lit solid.
» Verify the Category 6 cable is continuous between the distribution amplifier and HDBaseT receiver.
» Verify the HDBaseT receiver has power if it cannot accept power via PoE.

Distorted or no video output

» Verify the video output resolution of the source is compatible with the display.

Cannot hear HDMI input audio

» If using a DisplayPort device with a DisplayPort to HDMI adapter, verify source can pass audio via DisplayPort connection.

Cannot route RS232 after switching ID

» Disconnect the power supply from AC power for 10 seconds.

Garbled RS232 reply

» Verify baud rate settings to remote device.
» Verify baud rate settings to DIGI-1X4B-1H (9600 baud).
» Verify daisy-chained distribution amplifiers are using different IDs.

Missing RS232 reply

» Verify RS232 connection to remote display.
» Verify HDBaseT extender is powered and established HDBaseT link.

Technical Specifications

Input/Output Connections	
HDMI Input	One (1) HDMI Type A Receptacle Connector
HDBaseT Outputs	Four (4) Shielded RJ45 Female
HDMI Output	One (1) HDMI Type A Receptacle Connector
RS232 In	One (1) 3-Pole/3.5mm Euroblock
RS232 Loop	One (1) 3-Pole/3.5mm Euroblock
IR Input	One (1) 3.5mm TRS
IR Loop	One (1) 3.5mm TRS
IR Output	One (1) 3.5mm TRS
24V DC Power	One (1) Locking Barrel (5.5 mm OD, 2.1 mm ID)
Supported Audio, Video, and Control	
Maximum Video Compatibility at 60 m	Deep Color 36/30/24 Bit at 1080p
Maximum Video Compatibility at 35 m	Deep Color 48 Bit at 1080p, 3D, and 4k x 2k
Maximum Passive HDMI Cable Distance	5 m (16.4 ft)
Video Compliance	HDMI and HDCP
Embedded Audio	Up to PCM 8 channel, Dolby Digital TrueHD, and DTS-HD Master Audio
Input DDC Signal	5.0 volts p-p (TTL)
Input Video Signal	0.5 to 1.0 volts p-p
RS232 Baud Rate	9600, 19200, 38400, and 115200 baud
IR Carrier Frequency Range	33-55kHz at 5 volts
HDBaseT Signal Characteristics	
Maximum Distance	60 m
Cable Requirements	Solid core shielded Category 5e, Category 6 or greater with TIA/EIA-568B crimp pattern
Bandwidth	10.2 Gbps
Gain	0 dB – 10 dB at 100 MHz
Signal to Noise Ratio (SNR)	> 70 dB at 100 MHz over 100 m
Return Loss	< -30 dB at 5 KHz
Total Harmonic Distortion (THD)	< 0.005% at 1 KHz
Min-Max Signal Level	< 0.3 V – 1.45 Vp-p
Differential Phase Error	±10° at 135 MHz over 100 m
Chassis and Environmental	
Enclosure	Painted Aluminum
Dimensions	44 mm x 220 mm x 148 mm (1.73 in x 8.66 in x 5.83 in) – 1RU
Shipping Weight	0.67 kg (1.48 lbs.)
Operating Temperature	0° to +48° C (+32° to +120° F)
Operating Humidity	10% to 90%, Non-condensing
Storage Temperature	-20° to +70° C (+14° to +158° F)
Storage Humidity	10% to 85%, Non-condensing
Power, ESD, and Regulatory	
Power Supply Input	100V-240VAC / 50-60 Hz / 1.7A
Power Supply Output	24VDC / 2.5A
Power Consumption	60 watts (max)
ESD Protection	15kV
Product Regulatory	FCC, CE, RoHS
Power Supply Regulatory	CE, RoHS
Other	
Standard Warranty	2 years
Diagnostic Indicators	Power LED, HDMI Input LED, HDMI Output LED, HDBaseT Link LEDs, HDBaseT HDCP LEDs
Included Accessories	Installation Guide, Power Supply, US IEC Power Cable, IR Emitter, IR Receiver, IR Loop Cable, RS232 Control Cable, RS232 Loop Cable, Shelf Feet with Screws, Mounting Rails with Screws
Optional Accessories	DIGIB-EMT (IR Emitter) and DIGIB-EYE (IR Receiver)
Compatible Receivers (AV and PoE)	DIGI-HD60-R
Compatible Receivers (AV and Control)	FLX-BI4
Compatible Receivers (AV, PoE and Control)	DIGI-HDX-R, DIGI-HD60C-R

Distances and picture quality may be affected by cable grade, cable quality, source and destination equipment, RF and electrical interference, and cable patches.

Thank you for your purchase.

Please contact us with your questions and comments.

Intelix
8001 Terrace Ave, Ste 201
Middleton, WI 53562

Phone: 608-831-0880
Toll Free: 866-462-8649
Fax: 608-831-1833

www.intelix.com
intelix@intelix.com

Intelix is a brand of:

LIBERTY AV SOLUTIONS
A SUBSIDIARY OF WESCO DISTRIBUTION, INC.

11675 Ridgeline Drive
Colorado Springs, Colorado
80921 USA
Phone: 719-260-0061
Fax: 719-260-0075
Toll-Free: 800-530-8998