

Overview

The information in this guide applies to the HDMI-UTPRO-0808, UTP Distribution Kit (FG1047-88K) which includes the HDMI UTPro (matrix switcher with integrated transport), 8 receivers, 8 patch cables, and 8 desktop power supplies. For complete documentation, see the *Instruction Manual – HDMI-UTPRO-0808* at www.amx.com.

General Specifications	
Approvals	CE, UL, cUL, FCC Class A, RoHS
Operational Temperature	32° F to 113° F (0° C to 45° C)
Storage Temperature	-22° F to 158° F (-30° C to 70° C)
Humidity	0 to 90% non-condensing
AC Power	100 VAC to 240 VAC single phase (50 Hz to 60 Hz)
Enclosure Power Consumption	110 W, fully loaded
Enclosure Thermal Dissipation	375 BTU/hr, fully loaded
MTBF	71,000 hours (HDMI UTPro only; for RX, see below)
Enclosure Dimensions	12 in. (30.5 cm) depth 18.9 in. (48.0 cm) width with rack ears 17.4 in. (44.2 cm) width without rack ears 3.5 in. (8.9 cm) height (2 RU)
Enclosure Weight	Approximately 13 lb. (5.9 kg)
Shipping Weight	46 lbs (20.87 kg) for complete system kit (2 shipping boxes)
Digital Video - HDMI	
Compatible Formats	HDMI 1.3a (HDCP 1.3), DVI 1.0 (DVI is supported with appropriate conversion cable)
Supported Twisted Pair Cable Types	Cat5e, Cat6/6e, Cat6a, Cat7, STP, FTP
Supported Twisted Pair Cable Length	Up to 328 ft. (100 m)*
Progressive Resolution Support	480p, 576p, 720p, 1080p and 640x480 through 1920x1200 @ 60 Hz (1600x1200 @ 60 Hz and higher requires reduced blanking)
Interlaced Resolution Support	480i, 576i, 1080i
Audio Format Support	Dolby Digital**, DTS**, L-PCM
Audio Resolution	16 bit to 24 bit
DDC/EDID Support	EDID provided by HDMI UTPro enclosure
HDCP Support	Yes, full matrix HDCP support (includes any input to any or all outputs). AMX HDCP InstaGate® Technology
Connectors	HDMI Type A female
HDMI-UTPRO-RX	
Approvals	CE, UL, cUL, FCC Class A, RoHS
MTBF	203,000 hours (combined set of 8 RX modules)
DC Power	12 V to 24 V (+/-10%, desktop supply included)
RX Power Consumption	12 Watts, fully loaded
RX Thermal Dissipation	41 BTU/hr, fully loaded
RX Dimensions	3.8 in. (9.69 cm) depth 6 in. (15.24 cm) width 1 in. (2.54 cm) height
RX Weight	Approximately 1.5 lbs (0.68 kg)

*Cable quality required in order to meet 100 meter distance should meet ANSI/TIA/EIA 568A-5 specification or better and be rated for 250 MHz or better.

**Dolby Digital and DTS support up to 48 kHz, 5.1 channels.

Installation

Rack Mounting

To rack mount an HDMI UTPro enclosure:

1. Attach the rack ears per FIG. 1 (screws provided).
2. Install in a rack with front-mounting screws leaving a minimum of one empty rack unit above and below (required); three empty rack units above and below are recommended.

Tip: The optimal viewing angle for the control panel when the system is installed in a rack is eye level.

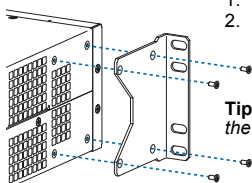


FIG. 1 Attach rack ears to sides of enclosure

Note: To allow for adequate cooling, receivers should not be stacked. If mounting in a rack using some type of tray, a minimum of one empty rack unit above and below is recommended. A Surface Mounting kit (FG525) is available.

Attaching Cables for Switching/Transport

The 8 HDMI input and 8 HDMI output matrix switching connectors are on the top; the 8 HDMI transport connectors are on the bottom right; the 8 RJ-45 transport connectors are on the bottom left.

Important: Do not use a tightly bundled or rolled cable.

UTP cable is designed to carry Full HD content with control over 100 meters (328 ft.). In a typical installation, the cables should be stretched to their full length between the HDMI UTPro and its Receivers. Minimize service loops or coils whenever possible, as they may reduce overall cable performance. The total run of a UTP cable installation may include up to two patch cables, typically as connections to RJ-45 wall jacks.

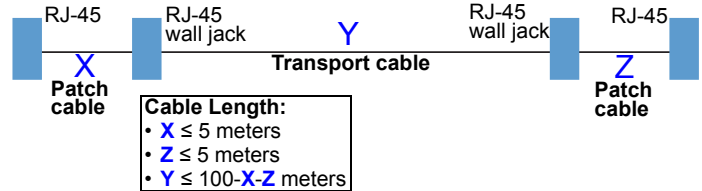


FIG. 2 UTP cable installation (only X and Z can be patch cables)

LEDs on UTP (RJ-45) Transport Connectors

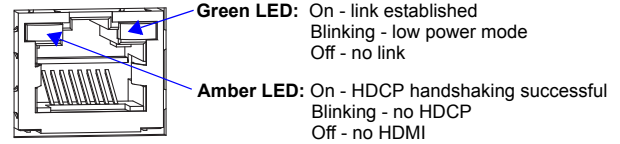


FIG. 3 RJ-45 connector LEDs

If long cable runs are not required, HDMI outputs can be cabled directly to the destination devices (or mix/match short and long cable runs). However, by using the included Receivers, you gain the NetLinX functionality benefit of end point control.

Important: Each HDMI switching output connector must be connected (with HDMI patch cable) to its corresponding HDMI transport input connector (1 to 1, 2 to 2, etc.).

Important: Do not use the UTP Transport connectors for connecting to a standard Ethernet network.

Before attaching cables, read “Setting Up an HDMI System” on the next page.

Important: Do not use a tightly bundled or rolled cable. In addition, minimize service loops or coils whenever possible as they may reduce overall cable performance.

To attach cables for switching/transport:

1. Attach HDMI cable from first source device to first HDMI switching input on top.
2. Attach one end of an HDMI patch cable to the first HDMI output on the top.
3. Attach other end of HDMI patch cable to first HDMI transport input on bottom.
4. Repeat Steps 1 through 3 for the remaining source devices.
5. Attach a UTP cable to the first RJ-45 transport output connector.
6. Attach the other end of the UTP cable to the RJ-45 input on the first Receiver.
7. Repeat Steps 5 and 6 for the remaining Receivers.
8. Connect the Receivers to the destination devices using HDMI cable.

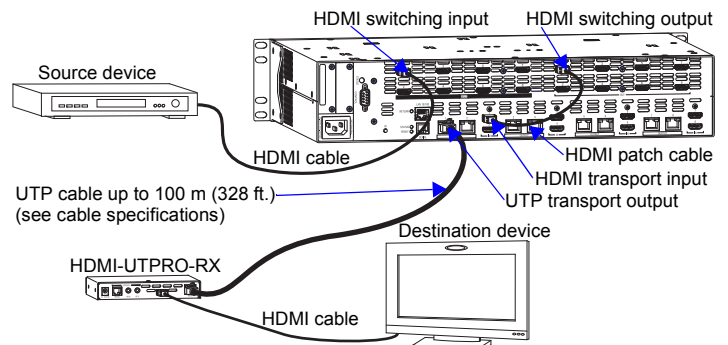


FIG. 4 Cables connected for switching/transport from first source to first destination

The HDMI UTPro is HDMI 1.3 compatible and fully HDCP compliant. Priming the system for InstaGate® technology (pre-authorization of all connected source and destination devices) significantly reduces HDCP latency (time required for authentication) in the matrix switcher for HDCP negotiations with all displays in a system (see the *Instruction Manual – HDMI-UTPRO-0808*).

Note: Some destination devices have a longer lag time than others between receiving a signal and displaying that signal. Although InstaGate® reduces latency in the matrix switcher, it cannot reduce the lag time inherent in a device.

If needed, use EDID Programmer software (at www.amx.com) to assist with in-field programming of custom EDIDs (see the *Instruction Manual – HDMI-UTPRO-0808*).

Function of Optional Ports

The enclosure has two ports which are *not* required for installation: the RJ-12 Serial port for external device control and the DB-9 Control port for external controllers. The Receivers have IR ports for IR control of external devices. Complete information for these ports can be found in the *Instruction Manual – HDMI-UTPRO-0808*.

Applying Power

Important: We recommend attaching all power cords to a surge protector and/or an AC line conditioner.

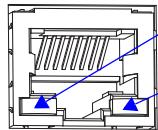
To apply power:

1. Attach the power cord and plug it into the power source (turn on power source if necessary). The Power Indicator on the front of enclosure illuminates green.
2. Apply power to the HDMI-UTPRO-RXs.* The Power LEDs illuminate green.
3. Apply power to the source and destination devices.

* We recommend using a regulated power supply for the Receivers. If you exceed the specified voltage level for the power jack on the RX, the warranty will be void.

Establishing an Ethernet 10/100 Network Connection

The LAN 10/100 port provides Ethernet 10/100 BaseT connectivity. An RJ-45 cable (either crossover or straight-through) is required to connect the HDMI UTPro directly to a LAN (or to a network card in a computer; see the manual for details).



- Amber LED:** On - Link status is active
Off - Link status is not active
- Green LED:** On - Speed status is 100 Mbps
Off - Speed status is 10 Mbps

FIG. 5 Lan 10/100 port LEDs

Ethernet Pinouts and Signals				
Pin	Signals	Connections	Pairing	Color
1	TX+	1-----1	1-----2	White/Orange
2	TX-	2-----2		Orange
3	RX+	3-----3	3-----6	White/Green
4	no connection	4-----4		Blue
5	no connection	5-----5		White/Blue
6	RX-	6-----6		Green
7	no connection	7-----7		White/Brown
8	no connection	8-----8		Brown

By default, the HDMI UTPro is configured for DHCP.

Important: Consult the Network Administrator for correct cabling from the HDMI UTPro onto the network. For remote connectivity, the Firewall may have to be configured to open port 1319 for remote connectivity over UDP.

To connect the HDMI UTPro to a NetLinX Controller:

1. Complete the installation of the HDMI UTPro including power up of the system.
2. Insert one end of the RJ-45 cable into the LAN 10/100 port on the enclosure.
3. Connect the other end of the RJ-45 cable to a network with a DHCP server (the NetLinX Controller must be on the same network).
4. Check the indicator LEDs on the LAN 10/100 connector (FIG. 5).
5. Access Zero-Config information in the NetLinX Studio WebConsole. Make note of the IP address for the HDMI UTPro (the IP address is necessary for the test procedure below). NetLinX start up takes approximately 3 minutes.

To determine the IP address of the HDMI UTPro in NetLinX Studio 3.0:

1. In NetLinX Studio (v3.0 or higher), left-click the Zero-Config tab of the Workspace Bar to open the tab.
2. Right-click anywhere in the Workspace bar and select Refresh Zero-Config List to generate an initial listing of all Zero-Config devices that have been detected.
3. Click the plus symbol (+) to the left of any device in the Zero-config list to expand its information.
4. The HDMI UTPro's current IP Address is listed below the device name.

To test the HDMI UTPro WebConsole connection:

1. Launch a browser on the PC.
2. In the address bar of the browser, type the IP address and press Enter (the PC must be on same subnet (e.g., 192.168.X.X)).

If the WebConsole does not open, check the following:

- Be sure all power, signal, and link connections on all equipment are secure.
- Be sure the enclosure is correctly plugged into a network with a DHCP server.
- Be sure the LEDs on the LAN 10/100 connector indicate activity and that the Ready LED is illuminated.
- Be sure the LED indicators on the NetLinX Master are functioning.
- Ping the system, i.e., at the DOS prompt enter: ping XXX.XXX.XXX.XXX (where XXX.XXX.XXX.XXX is the HDMI UTPro IP address).

Try the following:

- Try connecting to the WebConsole again.
- If the WebConsole still does not open, you may need to add an exception in the Proxy Setting dialog box (see the *Instruction Manual – HDMI-UTPRO-0808*).

Executing a Test Switch

We recommend using the control panel to execute a test switch. The system stores sink information when a switch is executed and retains that information even after the switch is disconnected. Therefore, when you execute the test switch, you should also disconnect it and then clear the sink key cache.

Test switches may also be done from NetLinX Studio or a number of compatible AMX control devices (see the specific device's documentation).

To execute a test switch from the control panel:

1. Upon power up, the LCD on the panel illuminates and displays the menu screen. In order, press each of the following: the Function Key, the Select Key (places the system in Change mode), an input key, one or more output keys, and the Take key.
2. Locate Disconnect by scrolling with the Control Dial, and then press the Select Key.
3. Press Input Key 1, and then press the Take Key.
4. Clear the sink key cache (use either method) –

NetLinX commands:

```
Enter SEND_COMMAND dvUTPRO, "INSTAGATECLEAR" (disconnects all currently routed signals and clears the cache).  
Enter SEND_COMMAND dvUTPRO, "INSTAGATEPERSIST" (persists the empty cache).
```

Or

BCS commands*:

```
Enter @et (disconnects all currently routed signals and clears the cache).
```

```
Enter ~app! (persists the empty cache).
```

Note that the response to the @et command is @ev.

*To enter BCS commands, the system must be attached via the Control (DB-9) port using a null modem serial cable to a serial control device running HyperTerminal (or another terminal emulation program). The settings on the PC serial communication software and the enclosure must correspond to each other (baud rate – 9600, data bits – 8, parity – none, stop bits – 1, and flow control – none). The pinout for the DB-9 connector is: 5 GND to 5 GND, 2 RXD to 3 TXD, and 3 TXD to 2 RXD.

Setting Up an HDMI System

HDMI System Conditions

- HDCP is used only when source content is copyright protected. Unprotected content is not affected and may be routed as desired.
- If a source device enforces HDCP compliance, only those destination devices which are HDCP compliant (as judged so by the source device) will be capable of displaying the source's HDCP protected content.
- Each HDMI input supports a maximum of 16 downstream devices, which are referred to as sinks (destination devices and repeaters).

Note: Be sure the destination devices support the resolution of the source device.

If you attempt to route the source to one more sink than the HDMI input's limit of 16, the protected content will *not* be transmitted to any of the routed sinks. As long as repeaters are not between the source device and enclosure, the HDMI UTPro and its Receivers do not add to the sink total.

Regarding system setup, the *Instruction Manual – HDMI-UTPRO-0808* covers:

- Determining sink support
- Dealing with limited sink support
- Initializing InstaGate® Technology
- Persisting and clearing the sink key cache

Troubleshooting Audio

If the destination device does not output the audio or if the audio crackles, it may indicate that the destination device does not support all of the features in the default EDID on the HDMI UTPro (e.g., Dolby Digital). We recommend using the EDID Programmer to read the EDID from the destination and to write it to the HDMI UTPro switching input (see the *Instruction Manual – HDMI-UTPRO-0808*).

Configuration

- Use HDMI UTPro web pages to configure the master connection, networking, and time settings.
- Use the NetLinX SEND_COMMANDS in the manual to configure and control the HDMI UTPro.

Additional HDMI UTPro Documentation

The *Instruction Manual* at www.amx.com contains information on the following:

- NetLinX programming and firmware upgrades for the HDMI UTPro and its RXs
- IR control and IR file transfers
- Complete control panel operation
- Creating virtual matrices and local presets; customizing channel names
- Use splash screen to show system component information for diagnostics

Reference Document

The *Instruction Manual – BCS Basic Control Structure Protocol* can be found at www.amx.com. BCS is a programming language used for programming control operations and for diagnostics purposes.