Operation/Reference Guide

UDM-0808-SIG

8x8 Signature Series Multi-Format Distribution Hub

UDM-RX02N

Multi-Format Receiver

UDM-ABB-8-SIG

Signature Series Audio Breakout Box

Universal Distribution Matrix

Last Revised: 11/15/2010

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AMX warrants its products to be free of defects in material and workmanship under normal use for three (3) years from the date of purchase, with the following exceptions:

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Table of Contents

Important Safety Markings

Markings Used In This Manual

The following symbols are used on the UDM hardware and throughout this Installation Guide to advise you of important instructions. All maintenance must be carried out by an AMX trained and qualified installer.

Voltage

This symbol (FIG. 1) warns the presence of a voltage of sufficient magnitude to cause a severe or fatal electric shock. Follow the appropriate instructions carefully to avoid the risk of injury.

FIG. 1 Voltage symbol

There are NO user serviceable parts within the UDM Hub.

Rating Label

The rating label (FIG. 2), containing important safety information, is found on the underside of the UDM Hub. Symbols used on this label are explained below;

The UDM Hub is powered from a suitable 24 VDC supply.

FCC (Federal Communications Commission) Standards;

TESTED TO COMPLY
WITH FCC STANDARDS

FOR HOME OR OFFICE USE

This device complies with part 15 of the FCC rules.
Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received
including interference that may cause undesirable operation.

Conforms to particular European Directives.

FIG. 2 Rating Label

Important Instructions

This symbol, used within this manual, indicates an important instruction for the correct and safe installation, operation or maintenance of your UDM Hub. Failure to comply with such instruction may result in injury to person or damage to the UDM hardware.

Compliance

FCC and IEC

Compliance with FCC and IEC standards are found within the rating label; see above.

Environmental Conditions

The criteria on this page must be observed for the installation of the UDM-0808-SIG.

Temperature

DO NOT install or operate the UDM Hub in an area where the ambient temperature exceeds 35ºC (95ºF) or falls below 5ºC (35ºF).

Ventilation

DO NOT obstruct the side ventilation grilles during operation as this will restrict the airflow and may cause the main board to overheat.

The UDM Hub is fitted with two cooling fans. These draw cool air through the right side ventilation grille and expel warm air through the grilles on the left side ventilation grilles.

Humidity

DO NOT install or operate the UDM Hub in an area in which the ambient relative humidity exceeds 85% or an area that is prone to condensation.

Water / Liquids

DO NOT install or operate the UDM Hub near water or in a location which may be prone to water **seepage**, **dripping** or **splashing**.

DO NOT place objects containing liquids on the appliance.

The Hub is not waterproof.

External use

DO NOT operate the UDM Hub externally.

UDM-0808-SIG 8x8 Signature Series Multi-Format Distribution Hub

Overview

The UDM-0808-SIG Signature Series Multi-Format Distribution Hub (FG1402-01) delivers any video source, including Component, RGB, VGA and S-Video to display devices. The UDM-0808-SIG (FIG. 1) supports 8 high-resolution input ports and 8 UDM output ports, and supports delivery of bidirectional serial and IR to/from remote devices.

FIG. 1 UDM-0808-SIG

In total, the UDM-0808-SIG can distribute any combination of the following:
8 RGBHV sources, 8 Component video sources, 8 S-Video sources or 8 Composite video sources. Source inputs to the UDM are industry standard VGA, Composite, Component or S-Video feed, and output is presented as an RJ45 port for connection to Cat5/5e/6/7 twisted-pair Ethernet cable.

Video inputs are connected via the HD15 Input connector on the rear of the UDM. Adapters are used to bring the different types of video source into the UDM.

Each UDM has an Ethernet network port to provide connectivity to a central management system. A Serial connection is also provided for CLI diagnostic purposes.

Features

- 8 multi-format inputs x 8 outputs
- Native NetLinx
- End device control (IR + Serial)
- Digital and Analog audio support
- Cascade output ports allow A/V distribution to other UDM-0808 Hubs, and to UDM-ABB-8-SIG Audio Breakout Box.
- Cascadable to support higher number of outputs

Common Application

Ideal for residential applications as a companion to the NI-3101 Signature Series NetLinx Controller or the Tango Audio Controller as all three components share the same elegant finish and mirror matched showroom styling. An ideal solution for high quality whole home AV distribution of up to eight sources to up to eight displays.

Compatibility

The UDM-0808-SIG is compatible for use with UDM-RX02N (FG-1402-20) Multi-Format Receivers. See the *UDM-RX02N Multi-Format Receiver* section on page 39 for details.

Product Specifications

UDM-0808-SIG Specifications	
Power Requirements:	• 3 PIN IEC, 100 to 240Vac 50/60Hz • Dissipation: 130W
Front Panel Components	
LEDs	• Power Status bar - Blue light bar on front panel indicates unit is powered. • Status LEDs - Eight blue LEDs light to indicate which of the eight outputs are currently routing video to a connected UDM-RX02N Receiver.
Rear Panel Components	
UDM Output Ports (1-8):	Eight RJ45 ports provide connectivity to up to 8 UDM-RX02N receivers via Cat5/5e/6/7.
A/V Source Input Connectors (A-H):	Eight sets of Input connections for up to 8 A/V inputs with the following connectors: • Video (see *Video Inputs* below) • Analog audio Left / Right (see *Audio Inputs* below) • SPDIF digital audio (see *Audio Inputs* below)
Video Inputs:	HD15 female connector supports the following formats: • VGA • Component - requires an UDM-HD15RCA3 Breakout Cable (FG-HD15RCA3, not included) • S-Video - requires an UDM-SVID01 HD15 to SVideo cable (FG-UDM-SVID01, not included) • Composite - requires an UDM-HD15RCA3 Breakout Cable (FG-HD15RCA3, not included) • Max Video Input: • 8 x RGBHV (or) • 8 x S-Video (or) • 8 x component (or) • 24 composite inputs
Audio Inputs:	• Analog Audio In - RCA female analog audio connectors (white = Left, red = Right). • SPDIF Audio In - RCA female digital audio connector (black).
NETWORK Port:	RJ45 Ethernet port provides 100 BaseT network connectivity.
SERIAL Port:	RJ12 port allows an administrator to receive debugging and diagnostic information via RS232. ***Note**: Serial Interface: 115200, 8, N, 1*
CASCADE Ports (1-4 / 5-8):	• Cascade Out and In ports send and receive cascaded A/V signals to other UDM-0808-SIG Hubs. • The Cascade Out ports also provide audio-only to an UDM-ABB-8-SIG Audio Breakout Box. ***Note**: Depending on the application, up to four UDM-0808-SIG Hubs can be cascaded together.*
IEC Power Connector:	Universal switch-mode power supply. • As a Class 1 appliance the Hub should be connected to a mains supply with a protective earthing connection. • On/Off switch is located beside the power connector. ***Note**: The rating label found on the bottom left of the rear panel (beneath the IEC connector) contains important information applicable to the Hub's installation environment.*
Operating Environment:	• 35°F to 95°F (5°C to 35°C) • Max. relative humidity - 85% (non-condensing)

UDM-0808-SIG Specifications (Cont.)	
Dimensions:	• 3.5" x 19" x 12 1/2" (889 mm x 440 mm x 320 mm) • 2 RU
Weight:	13.6 lbs. (6.16 kg)
Certifications:	• CE • FCC part 15 Class A
Included Accessories:	• IEC power cord • 19" mounting brackets • UDM-RC05 Multi-Format IR Remote Control (FG1402-70) • IR03 External Infrared Receiver Module (FG-IR03) ***Note**: No A/V interface cables supplied.*
Other AMX Equipment:	• HD15 to S-Video Cable (FG-UDM-SVID01) • HD15 to 3x RCA Breakout Cable (FG-HD15RCA3) • UDM-RX02N Multi-Format Receiver (FG-1402-20) • UDM-ABB-8-SIG Audio Breakout Box (FG1402-60) • IR01 IR Emitter Module (FG-IR01) • UDM-EXP-02 Cascade Cable (FG1402-71) • RS-232 DB-9/RJ-12 connection cable (FG-RS01) • 6' Ethernet Crossover Cable

Configuration Options

- Use NetLinx SEND_COMMANDs to configure and control the UDM-0808-SIG. Refer to the *UDM-0808-SIG NetLinx Programming* section on page 13 for programming details.
- The UDM-0808-SIG WebConsole can be used to configure master connection, networking, and time settings. Refer to the *UDM-0808-SIG WebConsole* section on page 23 for details.

Rack-Mounting the UDM-0808-SIG

The UDM-0808-SIG occupies two rack spaces in a standard 19" equipment rack. Rack mounting brackets and screws are located in the accessories box supplied with the UDM-0808-SIG.

WARNING

Exercise extreme care when lifting or moving the Hub within the rack to avoid injury. It is recommended that you seek the assistance of another person when rack mounting the UDM-0808-SIG.

1. Remove the aluminum feet from the bottom of the Hub.
2. Attach one rack mounting bracket to each side of the UDM-0808-SIG using two M4 screws for each bracket (FIG. 2).

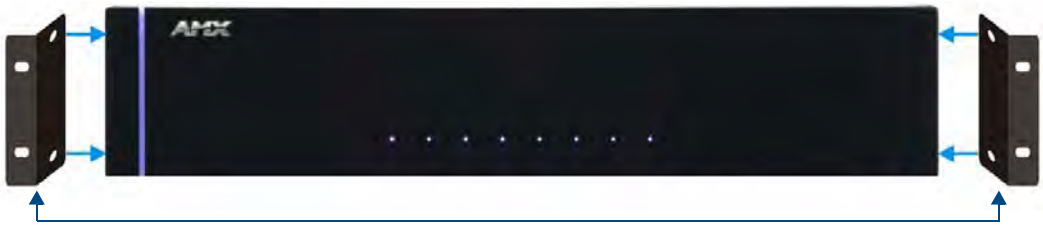


FIG. 2 Attach the mounting brackets to each side of the Hub (2 brackets per side)

WARNING

To prevent injury the Hub must be securely attached to the rack in accordance with the installation instructions.
Always use the special rack mount brackets supplied and high quality fixing screws to ensure the Hub is installed in the rack correctly.

3. Place the UDM-0808-SIG in the equipment rack and hold steady.

4. Two Mounting holes are located on each side of the UDM-0808-SIG. Screw the Hub into the rack using the Mounting holes (FIG. 3).

FIG. 3 Screw the Hub into the rack using the fixing holes

WARNING

DO NOT stand other units directly on top of the Hub when it is rack mounted, as this will place excessive strain on the mounting brackets.

Ventilation

ALWAYS ensure that the rack enclosure is adequately ventilated.

Sufficient airflow must be achieved (by convection or forced-air cooling) to satisfy the ventilation requirements of all the items of equipment installed within the rack.

UDM-0808-SIG Wiring and Connections

Overview

The system diagram in FIG. 4 illustrates a basic installation using the UDM-0808-SIG Hub, UDM-RX02N receivers, UDM-ABB-8-SIG audio breakout box, and attached display and audio playback devices:

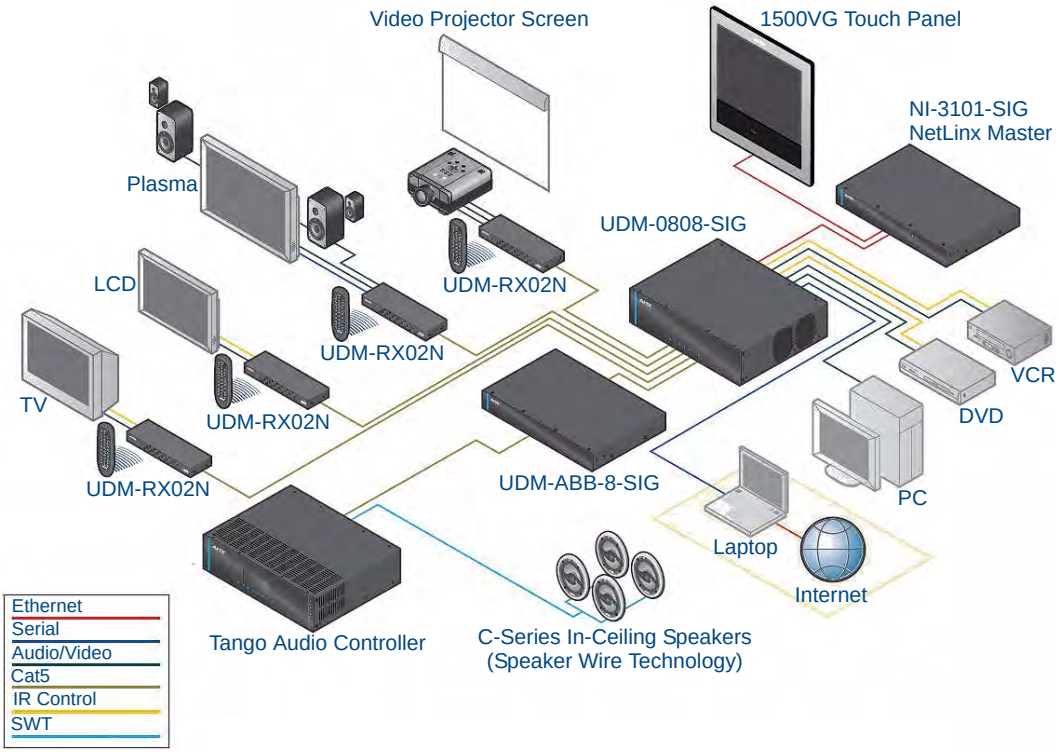


FIG. 4 UDM-0808-SIG System Diagram

UDM-0808-SIG Front Panel Components

The components on the front panel of the UDM-0808-SIG are described below (FIG. 5).

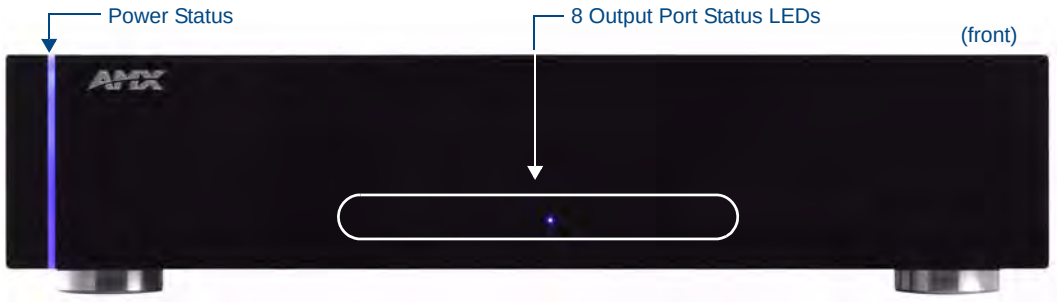


FIG. 5 UDM-0808-SIG - Front Panel Components

Power Status bar

The blue light bar on front panel indicates that the unit is powered.

Status LEDs

The eight blue LEDs on the front panel light to indicate which of the eight outputs are currently routing video to a connected UDM-RX02N Receiver.

UDM-0808-SIG Rear Panel Components

FIG. 6 shows the components on the rear panel of the UDM-0808-SIG:

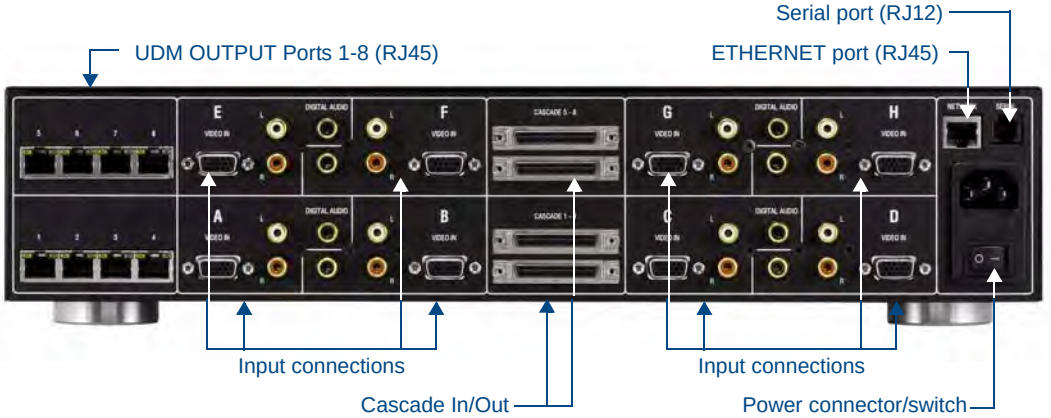


FIG. 6 UDM-0808-SIG - Rear Panel Components

Connecting UDM-RX02N Receivers to the UDM-0808-SIG

1. Connect a standard Cat 5/5e/6/7cable to a UDM OUTPUT port (1-8) on the UDM-0808-SIG.
2. Connect the other end of the Cat 5/5e/6/7 cable to the “UDM Hub” port on the UDM-RX02N Receiver.
3. When the power is switched on 2 LEDs will be visible at the Hub port – Amber (*phantom power enabled*) and Green (UDM receiver connected to Hub port).

UDM Output Ports (RJ45)

The eight RJ45 ports on the rear panel of the UDM-0808 (see "UDM Output Ports 1-8" in FIG. 6 above) provide connectivity to a UDM-RX02 Multi-Format Receiver.

UDM Port Pinouts

The following table provides detailed pinout information for the UDM port:

A/V Transmission Over UTP (UDM)

RJ45 Pin #	568A Termination		A/V Signals				568B Termination	
	Color	Pair #	RGB	YPbPr	CVBS	S-Video	Color	Pair #
1		3	Red +	Y +	CVBS S1 +	Y +		2
2		3	Red -	Y -	CVBS S1 -	Y -		2
3		2	Blue +	Pr +	CVBS S3 +	C +		3
4		1	Green +	Pb +	CVBS S2 +			1
5		1	Green -	Pb -	CVBS S2 -			1
6		2	Blue -	Pr -	CVBS S3 -	C -		3
7		4	Audio, Data, Power +	Audio, Data, Power +	Audio, Data, Power +	Audio, Data, Power +		4
8		4	Audio, Data, Power -	Audio, Data, Power -	Audio, Data, Power -	Audio, Data, Power -		4

An incorrectly terminated cable will result in the following scenarios:

Incorrectly Terminated Cable Results

RJ45 Pin #	RGBHV Video	Component Video	Composite Video	SVideo	UDM Audio & Data RX Green LED
1-2	No RED	No Y	No Video 1	No Y	On With Audio & Data RX
3-6	No BLUE	No Pr	No Video 2	No C	On With Audio & Data RX
4-5	No GREEN	No Pb	No Video 3	NONE	On With Audio & Data RX
7-8	NONE	NONE	NONE	NONE	Always OFF

A/V Source Input Connectors

There are eight sets of input connectors to the rear panel of the UDM-0808-SIG, labelled A - H (FIG. 7).

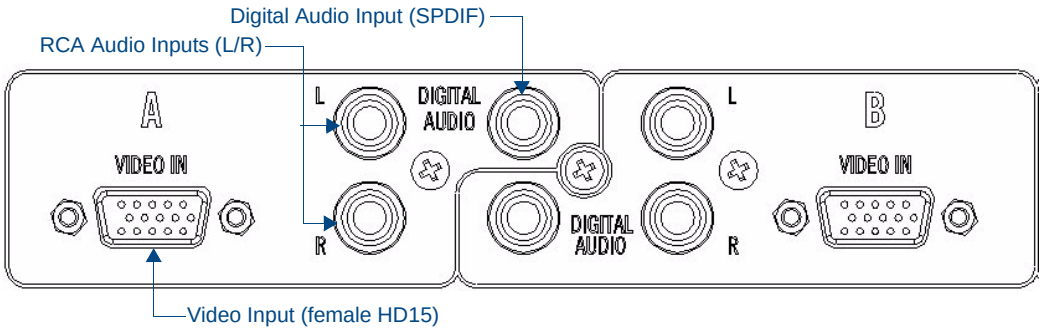
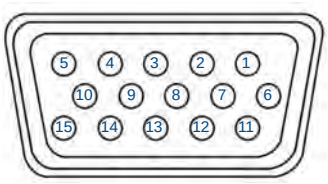


FIG. 7 A/V Source Input connectors (A and B shown)

VIDEO IN Connectors (HD15)

FIG. 8 provides the pin layout for the VIDEO IN HD15 Connectors:



HD15 Pinouts

Input Pin	VGA	Component	S-Video	Composite
1	Red	Pr	Luminance	CVBS1
2	Green	Y	n/c	CVBS2
3	Blue	Pb	Chrominance	CVBS3
4	n/c	n/c	n/c	n/c
5	Ground	n/c	n/c	n/c
6	Red - Ground	Pr - Ground	Luminance - Ground	CVBS1 - Ground
7	Green - Ground	Y - Ground	n/c	CVBS2 - Ground
8	Blue - Ground	Pb - Ground	Chrominance - Ground	CVBS3 - Ground
9	n/c	n/c	n/c	n/c
10	Ground	n/c	n/c	n/c
11	n/c	n/c	n/c	n/c
12	n/c	n/c	n/c	n/c
13	Horz. Synch	n/c	n/c	n/c
14	Vert. Synch	n/c	n/c	n/c
15	n/c	n/c	n/c	n/c

FIG. 8 VIDEO IN HD15 Connector

Connecting a VGA Video Input

1. Connect one end of a VGA cable to the source device's VGA output port.
2. Attach the other end of the cable to the appropriate VIDEO IN connection (A-H) on the UDM-0808-SIG.
3. Connect the source audio to the analog (RCA) audio jacks, or digital (SPDIF) Input connector.

NOTE

Ensure the UDM Hub port to which the RX02N Receiver is attached is configured correctly (via NetLinx programming). Also ensure the correct Audio Type (Analog L/R, S/PDIF, or None) is selected for the relevant input.

Connecting a Composite Video Input

1. Connect the *UDM-HD15RCA3 Breakout Cable* (FG-HD15RCA3, not included) to the source device's Composite output ports:
   A1 = red RCA
2. Attach the other end of the cable to the appropriate VIDEO IN connector (A-H) on the UDM-0808-SIG.
3. Connect the source audio to the analog (RCA) audio jacks, or digital (SPDIF) Input connector.

Connecting a Component Video Input

1. Connect the *UDM-HD15RCA3 Breakout Cable* (FG-HD15RCA3, not included) to the video source device's Component video output connectors (Red, Green and Blue).
2. Attach the other end of the cable to the appropriate VIDEO IN connector (A-H) on the UDM.
3. Connect the source audio to the analog (RCA) audio jacks, or digital (SPDIF) Input connector.

Connecting an S-Video Input

1. Connect the *UDM-SVID01 HD15 to SVideo Cable* (FG-UDM-SVID01, not included) to the video source's S-Video connection.
2. Attach the other end of the cable to the appropriate VIDEO IN connector (A-H) on the UDM.
3. Connect source audio to the analog (RCA) audio jacks, or digital (SPDIF) Input connector.

Video Adapter Cables

The following adapter cables are available from AMX, to allow connecting various video input types to the UDM-0102:

Video Adapter Cables

Name	FG #	Description
UDM-HD15RCA3	FG-HD15RCA3	HD-15 to 3x RCA Breakout Cable
UDM-SVID01	FG-UDM-SVID01	HD-15 to S-Video Cable Breakout Cable

Audio & Video Formats/Resolutions/Distance

The following table provides recommended maximum distances for cable runs, based on video class type at various resolutions:

Audio & Video Formats/Resolutions/Distance

Class	Format	Name	UDM-RX02N
Composite/S-Video	720 x 480	NTSC	300 m / 1000'
	720 x 576	PAL	300 m / 1000'
Component	720 x 480	480p	300 m / 1000'
	720 x 576	576p	300 m / 1000'
	1280 x 720	720p	300 m / 1000'
	1920 x 1080	1080i	300 m / 1000'
	1920 x 1080	1080p	300 m / 1000'
RGBHV	640 x 480	VGA	300 m / 1000' *
	800 x 600	SVGA	300 m / 1000' *
	1024 x 768	XGA	300 m / 1000' *
	1280 x 1024	SXGA	300 m / 1000' *
	1600 x 1200	UXGA	140 m / 460'
	1920 x 1080	HD	140 m / 460'
	* When using VGA modes **with audio enabled**, the maximum cable distance is approximately 200 m / 650' (UDM-RX02N).		

It is important to note that the maximum distances indicated above are not absolute, but are recommended distances that have been tested to deliver video at the specified resolutions, without significant signal degradation. In particular, lower resolutions (640 x 480, 720 x 480 and 800 x 600) can often be delivered significantly further than what is indicated in the table.

Several factors affect the overall quality of the displayed video, including the quality of the twisted pair cable and connectors used, the nature of the video image itself, as well as the particulars of the installation and how the video is displayed and viewed.

Two major factors that can affect the quality of signal transmission include:

- **Cable Distance**: Long distance cable runs (in excess of 300 meters/1000 feet) are subject to resistance and capacitance losses which can negatively impact the quality of the image.
- **Skew**: "Skew" represents the slight delay that results from the variation in wiring lengths for each of the twisted pairs. The effects of skew on A/V signals increases with cable length. Excessive skew can adversely affect video image quality, especially at long cable lengths and high signal resolutions.

NETWORK Port (RJ45)

The NETWORK (RJ45) port provides 10/100 BaseT network connectivity. The following table lists the pinouts, signals, and pairing for the Network port.

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

FIG. 9 diagrams the pinouts and signals for the Network RJ45 connector and cable.

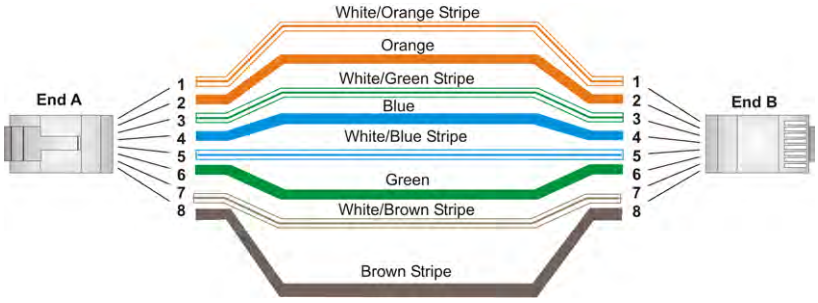


FIG. 9 RJ45 wiring diagram

By default, the UDM-0808-SIG is configured for **DHCP**. Refer to the *IP Settings* section on page 29 for details.

NOTE

*Consult the Network Administrator for correct cabling from the UDM-0808-SIG onto the network. For remote connectivity, the Firewall may have to be configured to open port **2008** for remote connectivity over UDP*

SERIAL (RJ12) Port

NOTE

Connecting the SERIAL port on the UDM-0808-SIG is not an essential step in the installation process.

The SERIAL (RJ12) port on the rear panel is available for diagnostic and troubleshooting purposes. The Serial port on the UDM-0808-SIG is an RJ12 connector, and requires a DB9-to-RJ12 adapter cable (FG-RS01, not included) to connect to a PC for Terminal control.

Serial Port - Default Communication Settings

Use hyper terminal with default serial settings to communicate with the UDM-0808-SIG (and UDM-RX02N):

Default Serial Settings	
Baud Rate:	115200
Data Bits:	8
Parity:	None
Stop Bits:	1
Flow Control:	None

DB9-to-RJ12 Adapter Cable Pinouts

The following table provides the pinout configuration for the DB9-to-RJ12 (FG-RS01, not included) adapter cable:

DB9-to-RJ12 Adapter Cable Pinouts			
DB9 connector	**Function**	**Abbreviation**	**RJ12 connector**
Pin 1	Not used	NC	
Pin 2	Transmit Data	TD or TX or TXD	Pin 2
Pin 3	Receive Data	RD or RX or RXD	Pin 3
Pin 4	Data Set Ready	DSR	Pin 1
Pin 5	Signal Ground	GND	Pin 4, 5
Pin 6	Data Terminal Ready	DTR	Pin 6
Pin 7	Not Used	NC	
Pin 8	Not Used	NC	
Pin 9	Not Used	NC	

CASCADE Ports

The CASCADE ports allow UDM-0808-SIG Hubs to be chained together to increase the number of outputs which can be delivered to the end points. The CASCADE IN and OUT connectors on the UDM Hubs require a UDM-EXP-02 Cascade Cable (FG-1402-71 - not included).

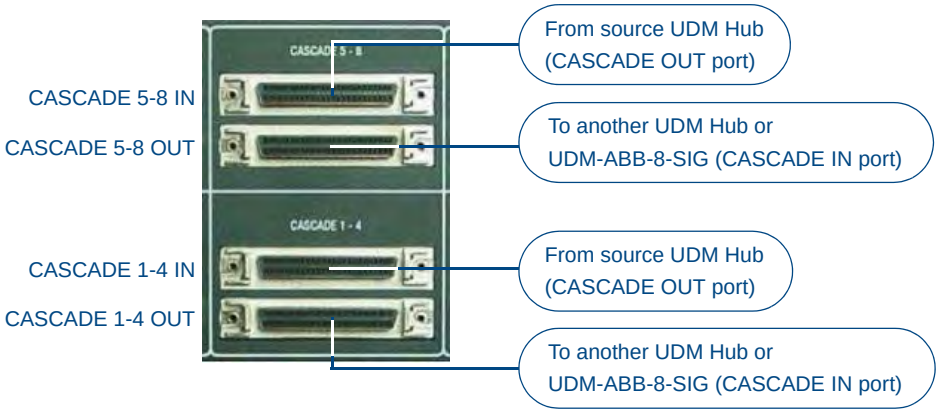


FIG. 10 Cascade 5-8, 1-4 Ports

The CASCADE (Out) ports can also be used to send audio to the UDM-ABB-8-SIG Signature Series Audio Breakout Box (**FG1402-60**). Refer to the *UDM-ABB-8-SIG Audio Breakout Box* section on page 71 for details.

- Refer to the *Cascading Hubs* section on page 77 for details on configuring cascaded Hubs.

IEC Power Connector

The UDM-0808-SIG uses a universal switch-mode power supply, which operates from 90-264V AC, 50/60Hz, with a power consumption of 130W fully loaded.

- The rating label found to the bottom left of the Hub, beneath the IEC connector, contains important information applicable to the Hub's installation environment.
- The Power On/Off switch is located beside the IEC power connector.

WARNING

As a Class 1 appliance the UDM-0808-SIG should be connected to a wall socket with a protective earthing connection.

Powering the UDM-0808-SIG Hub On

1. Ensure a standard PC mains lead has been connected to the 3-pin power connection, and then connected to a mains power source.
2. Flip the power switch down to its On (|) position.

The Power Status light bar indicates that the Hub is receiving power.

While the Hub boots, the left-most front panel LED (FIG. 11) will blink until the Hub is fully booted and connected to a NetLinx Master. If the Hub is not configured to properly connect to a master it will continue to blink indefinitely until the configuration is changed.

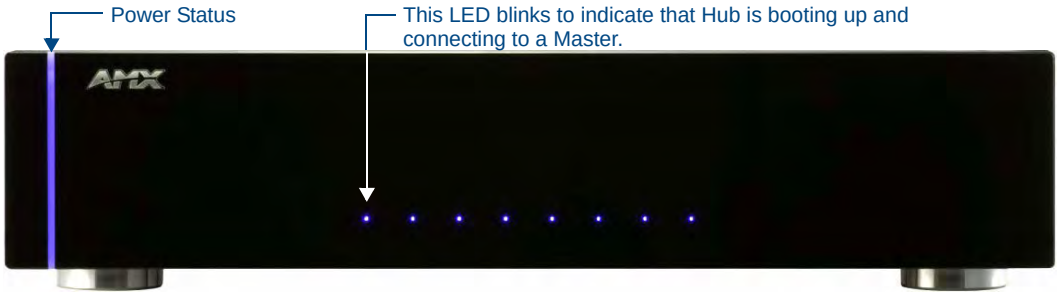


FIG. 11 UDM-0808-SIG - LED blinks to indicate

Powering the UDM-0808-SIG Hub Off

WARNING

Where a mains plug (or appliance coupler) is used in the event of a fault, the Hub can be disconnected from the mains by removing the lead from the IEC inlet or from the mains socket.
It is important that the Hub is installed in such a way that this method remains readily operable.
The user should have easy access to either the IEC inlet or the mains socket in the event of a fault.

To turn the UDM-0808-SIG off, flip the Power switch to it’s Off (0) position.

UDM-0808-SIG NetLinx Programming

Overview

There are a select number of LEVELs and SEND_COMMANDs recognized by the UDM-0808-SIG. Use NetLinx Studio to send these commands to the UDM Hub.

Device Numbering

By default, the Device Number assigned to the UDM-0808-SIG is **05600.**

In NetLinx Studio's online device tree, the UDM-0808-SIG is listed as a device with a single port, and each UDM-RX02N Receiver connected to the Hub is listed as a separate device immediately following the Hub (FIG. 12).

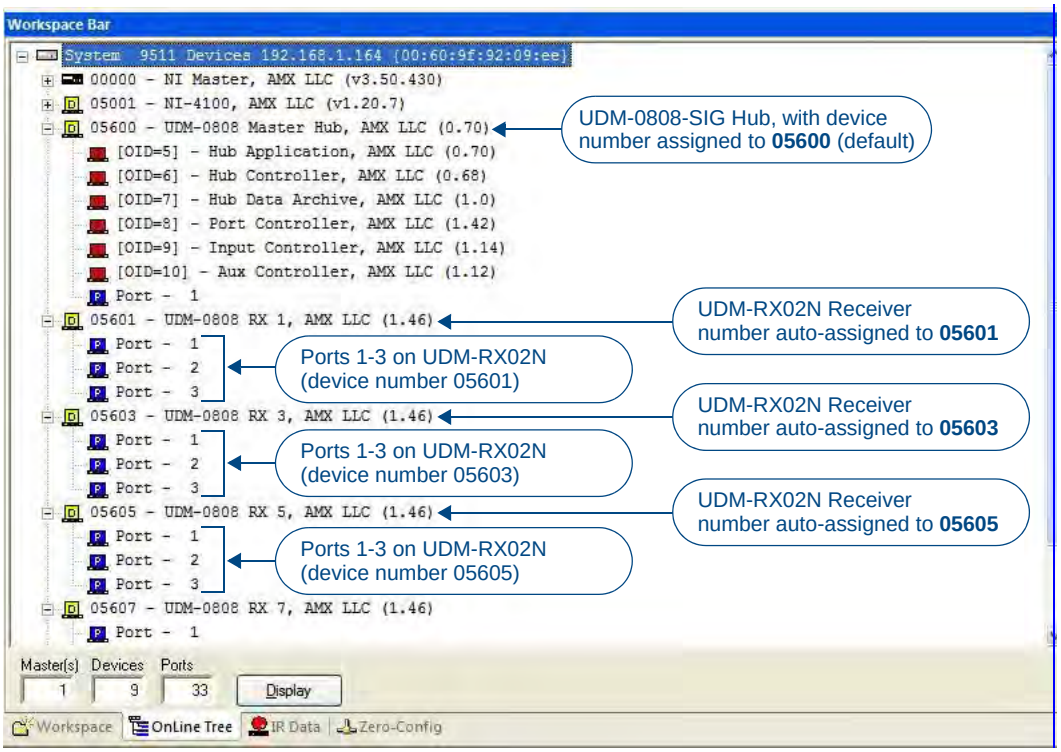


FIG. 12 NetLinx Studio Online Tree - indicating UDM-0808-SIG hubs and connected RX02N receivers

NOTE

Only UDM-RX02N units that are physically connected to the Hub will be represented in the Online Tree.

Note that the device number for each UDM-RX02N Receiver currently connected to the Hub is automatically designated a device number, based on the device number of the Hub to which it is connected, and the number of the UDM Output RJ45 port on the Hub (1-8) to which it is physically connected.

For example, if the UDM-0808-SIG is using it's default device number assignment of **05600**, and there are eight UDM-RX02N receivers connected to all eight UDM Output ports on the Hub, then the device numbering would be assigned as follows:

- UDM-0808-SIG = device number **05600**
- UDM-RX02N connected to UDM Output Port **#1** = device number **05601**
- UDM-RX02N connected to UDM Output Port **#2** = device number **05602**
- UDM-RX02N connected to UDM Output Port **#3** = device number **05603**
- UDM-RX02N connected to UDM Output Port **#4** = device number **05604**
- UDM-RX02N connected to UDM Output Port **#5** = device number **05605**
- UDM-RX02N connected to UDM Output Port **#6** = device number **05606**
- UDM-RX02N connected to UDM Output Port **#7** = device number **05607**
- UDM-RX02N connected to UDM Output Port **#8** = device number **05608**

Therefore, it important to avoid assigning device numbers that will conflict with this auto-numbering scheme. Reserve the eight device numbers following the UDM Hub's device number assignment for up to eight UDM-RX02N receivers.

NOTE

It is not required that the UDM-RX02N receivers are connected to the UDM Output ports on the Hub in sequential order. For example, if you had three UDM-RX02N units, plugged into UDM Outputs 2, 5 and 7, the device numbers (assuming the default device number of the UDM-0808-SIG - 05600) would be 05602, 05605 and 05607.

In the device tree, each UDM-RX02N Receiver shows three ports (FIG. 13)

FIG. 13 NetLinx Studio Online Tree - Ports 1-3 on each connected UDM-RX02N

These three ports relate directly to the three types of NetLinx commands recognized by the UDM-RX02N:

- Port 1 - SEND_COMMANDS/LEVELS and Button Pushes
- Port 2 - SERIAL (RS232) SEND_COMMANDS
- Port 3 - IR SEND_COMMANDS

NOTE

When transferring files to RX02Ns, the UDM-0808-SIG Hub to which the RX02Ns are connected must be rebooted in order for the files to be transferred from the Hub to the Receivers.

Refer to the *UDM-RX02N NetLinx Programming* section on page 49 for instructions on programming the UDM-RX02N.

LEVELs

Level	Function
33	Internal temperature (in deg C)

SEND_COMMANDs

All text is based on a Unicode index.

UDM-0808-SIG SEND COMMANDs	

"'?FWVERSIOND'"
Returns the firmware version of various Hub components.
	Syntax:
	`SEND_COMMAND <DEV>, "'?FWVERSIOND<D#>'"`
	Variables:
	• D# = Hub component description:
	"MAIN",
	"PORT",
	"INPUT",
	"AUX",
	Return Value:
	`"FWVERSION-<version>"`
	If the D and component description is omitted then the command will return the version number of the Hub.

"'?TEMP'"
Returns internal temperature in degrees (Celsius).
	Syntax:
	`SEND_COMMAND <DEV>,"'?TEMP'"`
	Example:
	`SEND_COMMAND dvUDM,"'?TEMP'"`
	Return value:
	`"TEMP-<temperature>"`

"'AI'"
Connect audio inputs to outputs.
	Syntax:
	`SEND_COMMAND <DEV>,'"AI<I#>O<O#>"'`
	Variables:
	• I# = input number - initial 'I' may be omitted if desired
	1-8 = Inputs A-H - a value of 0 means no input (disconnect)
	• O# = output port number:
	1-8 = Outputs 1-8 - a value of 0 or "ALL" means all outputs
	Example 1:
	`SEND_COMMAND dvUDM,'"AI4O4,5,6"'`
	Connect input D audio to outputs 4, 5 and 6.
	Example2:
	`SEND_COMMAND dvUDM,'"A0O1,4,5"`
	Disconnect audio from outputs 1,4 and 5.

UDM-0808-SIG SEND COMMANDs (Cont.)	

"'?A'"
Returns connection status for audio outputs in the Hub.
	Syntax:
	`SEND_COMMAND <DEV>, "'?A<O#>'"`
	Variables:
	• O# = output port number:
	1-8 = Outputs 1-8 - a value of 0 or "ALL" means all outputs
	Example 1:
	`SEND_COMMAND dvUDM,"'?A'"`
	Returns which audio inputs are connected for all outputs.
	Example 2:
	`SEND_COMMAND dvUDM,"'?A1"`
	Returns which audio input is connected to output 1.
	The returned string is of the form
	`AO#-II#`
	Where:
	• O# is the queried output port number
	• I# is the connected input number (zero if disconnected)
	For example:
	`A6-I3`
	Indicates that audio output 6 was connected to input 3.

"'CI'"
Connect video and audio inputs to outputs.
	Syntax:
	`SEND_COMMAND <DEV>,'"CI<I#>O<O#>"'`
	Variables:
	• I# = input number
	1-8 = Inputs A-H - a value of 0 means no input (disconnect)
	• O# = output port number:
	1-8 = Outputs 1-8 - a value of 0 or "ALL" means all outputs
	• S# = optional sub input number (1-3) for selection of CVBS inputs
	Example 1:
	`SEND_COMMAND dvUDM,'"CI2O4"'`
	Connect input B video and audio to output 4.
	Example 2:
	`SEND_COMMAND dvUDM,'"CI3O0"`
	Connect input C video and audio to all outputs.
	Example 3:
	`SEND_COMMAND dvUDM,'"C0O0"'`
	Disconnect all outputs from inputs.

UDM-0808-SIG SEND COMMANDs (Cont.)	

"'CL'"
Connects inputs to outputs.
	Syntax:
	`SEND_COMMAND <DEV>, "'CL<L#>I<I#>O<O#>S<S#>'"`
	Variables:
	• L# = level:
	"ALL" - both video and audio
	"VIDEO" - video only
	"AUDIO" - audio only
	• I# = input number
	1-8 = Inputs A-H - a value of 0 means no input (disconnect)
	• O# = output port number:
	1-8 = Outputs 1-8 - a value of 0 or "ALL" means all outputs
	• S# = optional sub input number (1-3) for selection of CVBS inputs
	Example 1:
	`SEND_COMMAND dvUDM,"'CLALLI3O5'"`
	Connects audio & video on input C to output 5.
	Example 2:
	`SEND_COMMAND dvUDM,'"CLALLI2O4,5,6,7,8'"`
	Connects audio and video on input B to outputs 4 through 8.
	Example 3:
	`SEND_COMMAND dvUDM,'"CLAUDIOI4O1,2,6,7,8'"`
	Connects audio only on input D to outputs 1, 2,6, 7 and 8.
	Example 4:
	`SEND_COMMAND dvUDM,'"CLAUDIOI0O1,4,5"'`
	Disconnect audio source from outputs 1,4,5.
	Example 5:
	`SEND_COMMAND dvUDM,'"CLVIDEOI2O0"`
	Connect video on input B to all outputs.

"'?C'"
Returns connection status for video outputs in the Hub.
	Syntax:
	`SEND_COMMAND <DEV>, "'?C<O#>'"`
	Variables:
	• O# = output port number:
	1-8 = Outputs 1-8 - a value of 0 or "ALL" means all outputs
	Example 1:
	`SEND_COMMAND dvUDM,"'?C'"`
	Returns which video inputs are connected for all outputs.
	Example 2:
	`SEND_COMMAND dvUDM,"'?C1"`
	Returns which video input is connected to output 1
	The returned strings are of the form:
	• VO#-II#
	• AO#-II#
	Where:
	• O# is the queried output port number
	• I# is the connected input number (zero if disconnected), for example
	`V4-I2`
	`A4-I2`
	Indicates that output 4 is connected to input 2.

UDM-0808-SIG SEND COMMANDs (Cont.)	

"'MMOFF'"
Configures the Hub as a Target (Slave) Hub in a cascaded system.
	This command configures the cascade video inputs and outputs to be correctly driven and designates this Hub to receive audio and data clocks from a cascaded Source Hub. This command takes effect the next time the Hub is rebooted (via the RESET command or a power cycle).
	Syntax:
	`SEND_COMMAND <DEV>,"'MMOFF'"`
	Example:
	`SEND_COMMAND dvUDM,"'MMOFF'"`
	Sets this Hub to Target Mode.
	***Note**: If Source or Target mode is changed, then the Hub must be rebooted via the '"RESET"' Send Command. When changing a Hub from a Target Hub back to a Source Hub, you must send the MMON command, RESET the unit, allow it to come online, then RESET it again.*

"'MMON'"
Configures the Hub as the Source (Master) Hub in a cascaded system.
	There can only be one Source Hub in a chain. This command configures the cascade video outputs to be correctly driven and designates this Hub to generate audio and data clocks. This command takes effect the next time the Hub is rebooted (via the RESET command or a power cycle).
	Syntax:
	`SEND_COMMAND <DEV>,"'MMON'"`
	Example:
	`SEND_COMMAND dvUDM,"'MMON'"`
	Sets this Hub to Master Mode.
	***Note**: If Source or Target mode is changed, then the Hub must be rebooted via the '"RESET"' Send Command. When changing a Hub from a Target Hub back to a Source Hub, you must send the MMON command, RESET the unit, allow it to come online, then RESET it again.*

"?MM"
Shows whether the Hub is set to be a cascade Master (MMON) or a cascade Target (Slave) (MMOFF).
	Syntax:
	`SEND_COMMAND <DEV>,"'?MM'"`
	Example:
	`SEND_COMMAND dvUDM,"'?MM'"`

"'RESET'"
Performs a soft boot on the Hub.
	Syntax:
	`SEND_COMMAND <DEV>,"'RESET'"`
	Example:
	`SEND_COMMAND dvUDM,"'RESET'"`
	Reboots the Hub.
	***Note**: If Source or Target mode is changed, then the Hub must be rebooted via the '"RESET"' Send Command. When changing a Hub from a Target Hub back to a Source Hub, you must send the MMON command, RESET the unit, allow it to come online, then RESET it again.*

UDM-0808-SIG SEND COMMANDs (Cont.)	

"'RESETFACTORY'"
Resets values to factory defaults.
	Syntax:
	`SEND_COMMAND <DEV>, "'RESETFACTORY'"`
	Example:
	`SEND_COMMAND dvUDM, "'RESETFACTORY'"`
	Resets the Hub to factory defaults
	Factory Defaults:
	• All video inputs set to type VGA
	• All audio inputs set to type ANALOG
	• All connections reset
	• RPU set to ON
	• All compensation values set to default (no compensation, SD0)
	Default values are:
	Brightness = 48
	Sharpness = 0
	Red Skew = 0
	Green Skew = 0
	Blue Skew = 0
	• IR Remote Protocol is set to RPAMX
	• After reboot: All webserver settings are set to default.

"'RPUOFF'"
Configures the Hub to clear all connections and status after a power up or reboot.
	Syntax:
	`SEND_COMMAND <DEV>,"'RPUOFF'"`
	Example:
	`SEND_COMMAND dvUDM,"'RPUOFF'"`
	Configures the Hub so that connections and status are cleared after a power up or reboot.

"'RPUON'"
Configures the Hub to restore status and connections after a power up or reboot.
	Syntax:
	`SEND_COMMAND <DEV>,"'RPUON'"`
	Example:
	`SEND_COMMAND dvUDM,"'RPUON'"`
	Configures the Hub so that connections and status are restored.

"?RPU"
Returns whether RPU is ON or OFF.
	If RPU is ON, the Hub restores connections and settings internally. If RPU is OFF, the Hub relies on the connected Master to restore status and settings.
	Syntax:
	`SEND_COMMAND <DEV>,"'?RPU'"`
	Example:
	`SEND_COMMAND dvUDM,"'?RPU'"`

UDM-0808-SIG SEND COMMANDs (Cont.)	

"'SAI'"
Configures an audio input.
	Configures an audio input to accept signals of a certain type, and sets the source as either the local (back panel) connection or cascaded from an upstream Hub.
	Syntax:
	`SEND_COMMAND <DEV>, "'SAI<I#>T<T#>C<C#>'"`
	Variables:
	• I# = input number - a value of zero indicates all inputs, initial 'I' may be omitted
	1-8 = Inputs A-H
	• T# = type of incoming audio:
	"NONE"
	"ANALOG"
	"DIGITAL"
	• C# = Cascade selector - if present assume CASCADE, if not assume LOCAL
	"LOCAL"
	"CASCADE"
	Example 1:
	`SEND_COMMAND dvUDM,"'SAI2TANALOG'"`
	Sets input B to accept analog stereo signals from the back panel connectors.
	Example 2:
	`SEND_COMMAND dvUDM,"'SA3TDIGITALC'"`
	Sets input C to accept digital audio from an upstream Hub.
	Example 3:
	`SEND_COMMAND dvUDM,'"SAI7DIGITALCLOCAL"'`
	Sets input G to accept digital audio from back panel.

"'?SAI'"
Returns configuration of audio inputs.
	Syntax:
	`SEND_COMMAND <DEV>, "'?SAI<I#>'"`
	Variables:
	• I# = input number - a value of zero indicates all inputs, initial 'I' may be omitted
	1-8 = Inputs A-H
	Example 1:
	`SEND_COMMAND dvUDM,"'?SA3'"`
	Returns configuration of input C.
	Example 2:
	`SEND_COMMAND dvUDM,"'?SA'"`
	Returns configuration of all inputs.

"'SFI'"
Determines whether the cascade audio output follows the local input or follows whichever input is connected to the associated port.
For example, the cascade output for input A can be the signal on the local input A connector, or it can be whatever signal is switched through to port 1.
	Syntax:
	`SEND_COMMAND <DEV>, "'SFI<I#>F<F#>'"`
	Variables:
	• I# = input number - initial 'I' may be omitted
	1-8 = Inputs A-H
	• F# = Output to follow selector
	"INPUT"
	"PORT"
	Example 1:
	`SEND_COMMAND dvUDM,"'SFI2FINPUT'"`
	Sets expansion channel 2 to be whatever is connected to input B.
	Example 2:
	`SEND_COMMAND dvUDM,"'SF2FPORT'"`
	Sets expansion channel 2 to be whatever is connected to output port 2 (it follows port 2 as it is switched from one input to another).

UDM-0808-SIG SEND COMMANDs (Cont.)	

"'?SFI'"
Returns cascade configuration of inputs.
	Syntax:
	`SEND_COMMAND <DEV>, "'?SF<I#>'"`
	Variables:
	• I# = input number - a value of zero indicates all inputs, initial 'I' may be omitted
	1-8 = Inputs A-H
	Example 1:
	`SEND_COMMAND dvUDM,"'?SF2'"`
	Returns configuration of input B.
	Example 2:
	`SEND_COMMAND dvUDM,"'?SF'"`
	Returns cascade configuration of all inputs.

"'SVI'"
Configures a video input.
	Configures a video input to accept signals of a certain type, and sets the source as either the local (back panel) connection or cascaded from an upstream Hub.
	Syntax:
	`SEND_COMMAND <DEV>, "'SVI<I#>T<T#>C<C#>'"`
	Variables:
	• I# = input number - a value of zero indicates all inputs, initial 'I' may be omitted
	1-8 = Inputs A-H
	0 = All inputs
	• T# = type of incoming video:
	"VGA"
	"CVBS"
	"SVIDEO"
	"COMP"
	• C# = Cascade selector - if present assume CASCADE, if not assume LOCAL
	"LOCAL"
	"CASCADE"
	Example 1:
	`SEND_COMMAND dvUDM,"'SV2TVGA'"`
	Sets input B to accept VGA signals from the back panel connectors.
	Example 2:
	`SEND_COMMAND dvUDM,"'SVI0TCVBSC'"`
	Sets all inputs to CVBS from the cascade inputs.

"'?SVI'"
Returns configuration of inputs.
	Syntax:
	`SEND_COMMAND <DEV>, "'?SVI<I#>'"`
	Variables:
	• I# = input number
	1-8 = Inputs A-H
	Example 1:
	`SEND_COMMAND dvUDM,"'?SV2'"`
	Returns configuration of input B.
	Example 2:
	`SEND_COMMAND dvUDM,"'?SV'"`
	Returns configuration of all inputs.

UDM-0808-SIG SEND COMMANDs (Cont.)	

"'VI"'
Connect video inputs to outputs.
	Syntax:
	`SEND_COMMAND <DEV>,'"VI<I#>O<O#>S<S#>"'`
	Variables:
	• I# = input number
	1-8 = Inputs A-H - a value of 0 means no input (disconnect)
	• O# = output port number:
	1-8 = Outputs 1-8 - a value of 0 or "ALL" means all outputs
	• S# = optional sub input number (1-3) for selection of CVBS inputs
	Example 1:
	`SEND_COMMAND dvUDM,'"VI6O4"'`
	Connect input F video to output 4.
	Example2:
	`SEND_COMMAND dvUDM,'"VI3O0"`
	Connect input C video to all outputs.

"'?V"'
Returns connection status for video outputs in the Hub.
	Syntax:
	`SEND_COMMAND <DEV>, "'?V<O#>'"`
	Variables:
	• O# = output port number:
	1-8 = Outputs 1-8 - a value of 0 or "ALL" means all outputs
	Example 1:
	`SEND_COMMAND dvUDM,"'?V'"`
	Returns which video inputs are connected for all outputs.
	Example 2:
	`SEND_COMMAND dvUDM,"'?V3,4"`
	Returns which video input is connected to output 3 and which video input is connected to output 4.
	The returned string is of the form:
	`VO#-II#`
	Where:
	• O# is the queried output port number
	• I# is the connected input number (zero if disconnected)
	For example
	`V6-I3`
	Indicates that output 6 is connected to input 3.

UDM-0808-SIG WebConsole

Overview

UDM-0808-SIG hubs have a built-in WebConsole that allows you to make various configuration settings via a web browser on any PC that has access to the Hub. The web console consists of a series of web pages that are collectively called the "Configuration Manager" (FIG. 14).

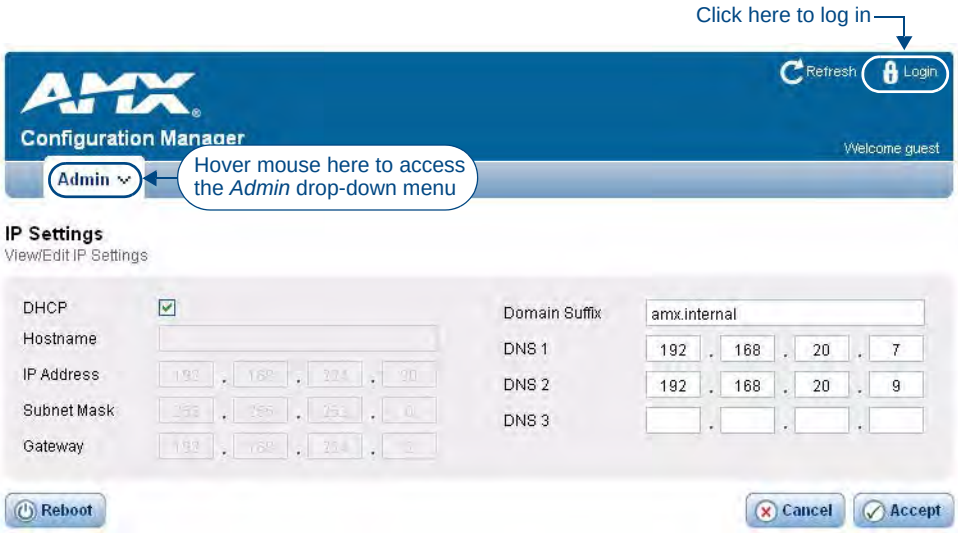


FIG. 14 Configuration Manager - IP Settings Page (initial view)

Determining the IP Address of the UDM-0808-SIG

UDM-0808-SIG hubs feature a built-in zero-configuration networking client that allows you to determine the unit's IP address via Bonjour or a similar zero-configuration client. Zero-configuration (or Zeroconf, also known as "Bonjour") technology provides a general method to discover services on a local area network. In essence, it allows you to set up a network without any configuration, as described below.

Bonjour (Zero-Configuration) Client

You will need a zero-configuration client to determine the IP address of the UDM-0808-SIG. There are many zero-configuration clients available. However, for the purposes of this document, we will refer to *Bonjour for Windows*. It is free and widely available for download.

If you don't already have it installed on your PC, download and install *Bonjour for Windows* before you begin.

NOTE

*The UDM-0808-SIG is set to **DHCP** by default.*

1. With *Bonjour for Windows* running on a PC that has access to the LAN that the UDM-0808-SIG resides on, connect the Hub to the network (see the *UDM-0808-SIG Wiring and Connections* section on page 5).
2. In Bonjour, you will see the UDM-0808-SIG join the network at power up.
3. In Bonjour, double-click on the UDM-0808-SIG link to access the selected unit's Configuration Manager (IP Settings page).
4. The unit's IP Address is displayed in the IP Settings page (FIG. 15).

At this point you can assign a new IP Address if necessary.

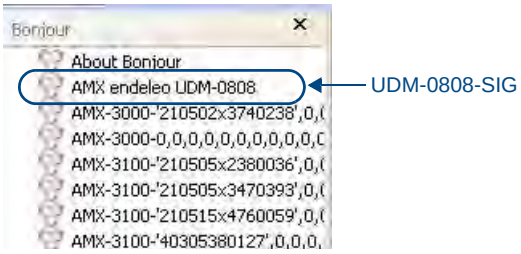


FIG. 15 Bonjour for Windows - example screen

NOTE

As shown in FIG. 15, Bonjour for Windows operates as a plug-in to Internet Explorer (version 7 shown), and is displayed in the IE Explorer Bar. If you have installed Bonjour for Windows, but don't see the Bonjour toolbar icon, you may need to "unlock" and expand the toolbars to see it.

Accessing the WebConsole

From any PC that has access to the LAN that the UDM-0808-SIG resides on:

1. Open a web browser and type the IP Address of the target UDM-0808-SIG Hub in the Address Bar.
2. Press Enter to access the WebConsole for the specified UDM-0808-SIG Hub. The initial view is the *IP Settings* page (see FIG. 14 on page 23).

Note that this view is display-only, because you have not yet logged in. You must log in before making changes to the IP Settings page, and to access the other pages described in this section.

Admin Menu

There are several configuration pages included in the Configuration Manager, all of which are accessed via the *Admin* drop-down menu (FIG. 16):

FIG. 16 Configuration Manager -Admin menu

Click on an option in this menu to access each of the configuration pages, as described in the following sub-sections:

UDM Control Page

Select **Control** from the Admin menu to access the *UDM Control* page (FIG. 17). The options on this page allow commands to be directly entered and replies (notifications) to be displayed for the UDM-0808-SIG hub and connected UDM-RX02N receivers. This page provides a rudimentary control method if there is no master connection.

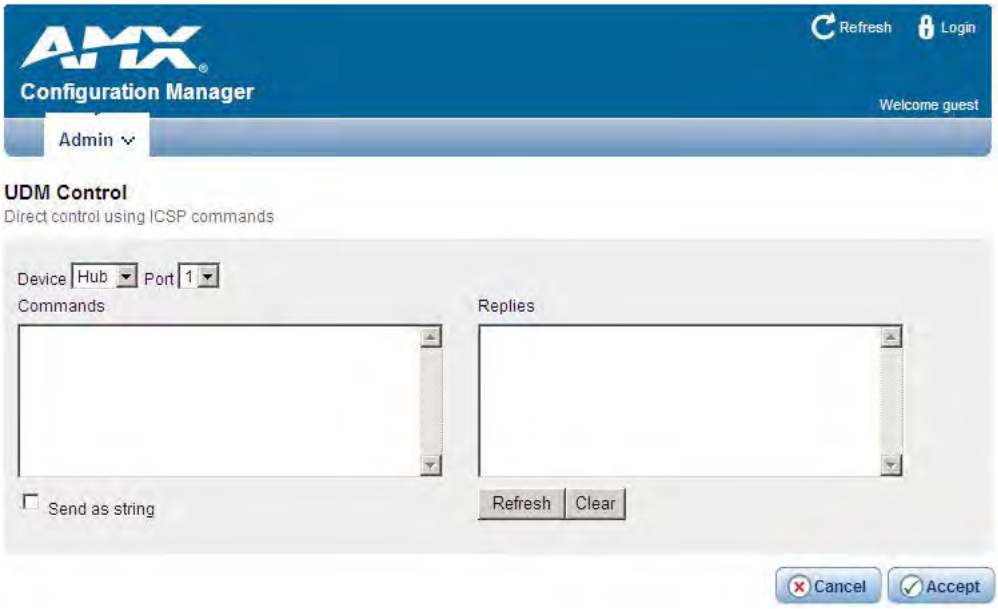


FIG. 17 UDM Control Page

NOTE

Only ASCII-printable characters are supported.

Sending Commands to the UDM-0808-SIG

1. Select **Hub** from the *Device* drop-down menu.
2. Select Port 1 from the *Port* drop-down.
3. Type a send command into the *Commands* window.
4. Click the **Accept** button to send the command.
5. Click the **Refresh** button to receive new replies (notifications). New replies are added to the bottom of the list. Press the **Clear** button to clear the *Replies* window.

Sending Commands to a Connected UDM-RX02N

1. Select the target receiver (RX1 - RX8) from the *Device* drop-down menu.
2. Check the **Send as string** option.
3. Select the appropriate port on the RX02N to receive the command(s):
   - Port 1 - SEND_COMMANDS/LEVELS
   - Port 2 - SERIAL (RS232) SEND_COMMANDS
   - Port 3 - IR SEND_COMMANDS
4. Type a send command into the *Commands* window.
5. Click the **Accept** button to send the command.
6. Click the **Refresh** button to receive new replies (notifications). New replies are added to the bottom of the list. Press the **Clear** button to clear the *Replies* window.

Device Configuration Page

Select **Device Configuration** from the Admin menu to access the *Device Configuration* page (FIG. 18). Use this page to view/edit the device configuration for the UDM-0808-SIG. Note that this page consists of two tabs: *Device Configuration* and *Master Connection*.

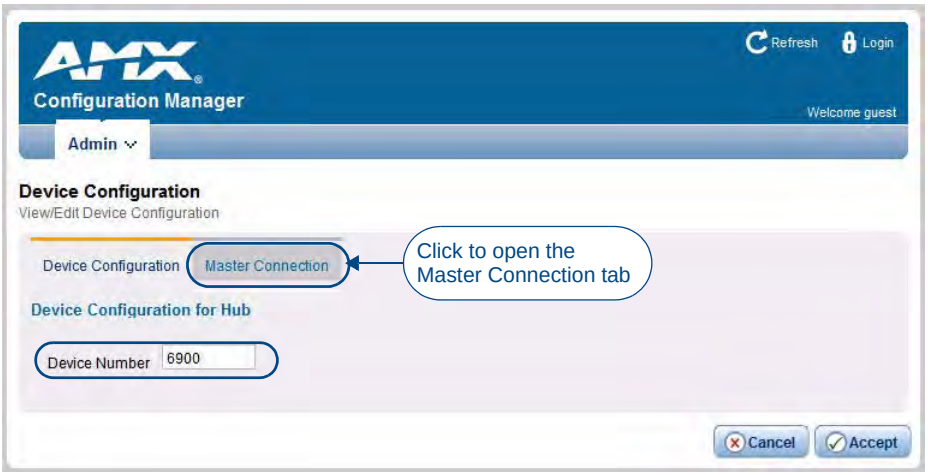


FIG. 18 Device Configuration Page (Device Configuration tab)

Device Configuration tab

The *Device Number* field in this tab allows you to manually change the device number of the UDM-0808-SIG.

By default, the Device Number assigned to the UDM-0808-SIG is **05600**.

To change the device number, enter the new device number and click **Accept** (or click **Cancel** to discard changes).

Master Connection tab

Click the *Master Connection* tab in the Device Configuration page to view/edit the Master Connection for the Hub (FIG. 19).

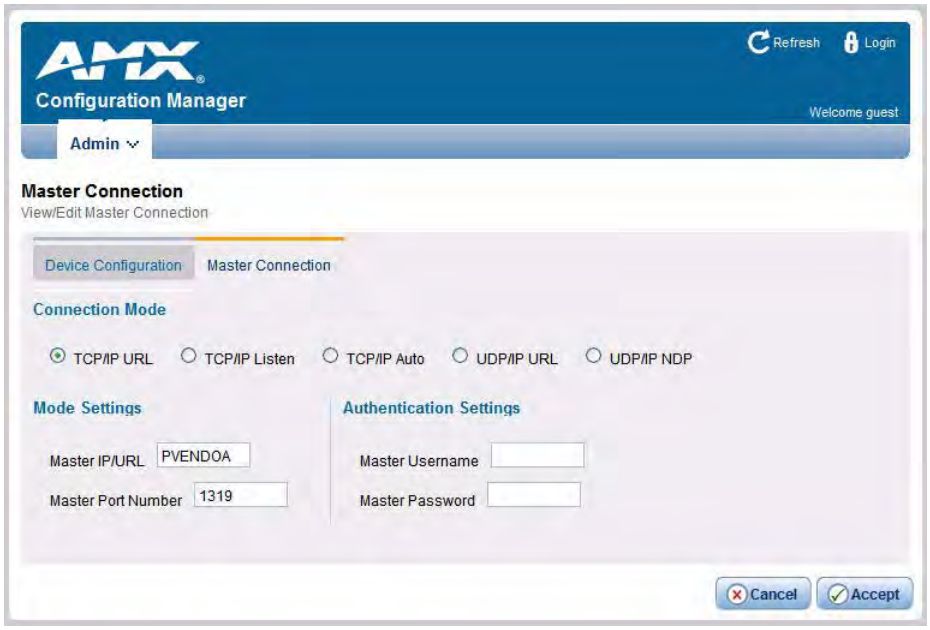


FIG. 19 Device Configuration Page (Master Connection tab)

Use the options on this page to view/edit the Connection Mode, Mode Settings and Authentication Settings for the UDM-0808-SIG's connection to the NetLinx Master.

Changing the Connection Mode

The available connection modes are indicated under Connection Mode (default = TCP/IP URL). Click on the radio buttons to select a different mode.

NOTE

The options under Mode Settings will change, depending on the Connection Mode selected.

Changing the Mode Settings

The supported Connection Modes and the available mode settings for each are described below:

Connection Modes and Mode Settings Options	
TCP/IP URL	• Master IP/URL - • Master Port Number - The default value is **1319**, and *should not be changed.*
TCP/IP Listen	• Master Port Number - The default value is **1319**, and *should not be changed.*
TCP/IP Auto	• System Number - • Master Port Number - The default value is **1319**, and *should not be changed.*
UDP/IP URL	• Master IP/URL - • Master Port Number - The default value is **1319**, and *should not be changed.*
UDP/IP NDP	• Master IP - • Master Port Number - The default value is **1319**, and *should not be changed.*
Accept:	Click to save changes. Changes on this page take effect immediately.
Cancel:	Click to exit this page without saving any changes.

Authentication Settings

If the NetLinx Master requires authentication, enter the *Master Username* and *Master Password* here.

Security Settings

Select **Security Settings** from the Admin drop-down menu to open the *Security Settings* page (FIG. 20). Use the options on the page to specify security options and login information for this UDM-0808-SIG Hub.

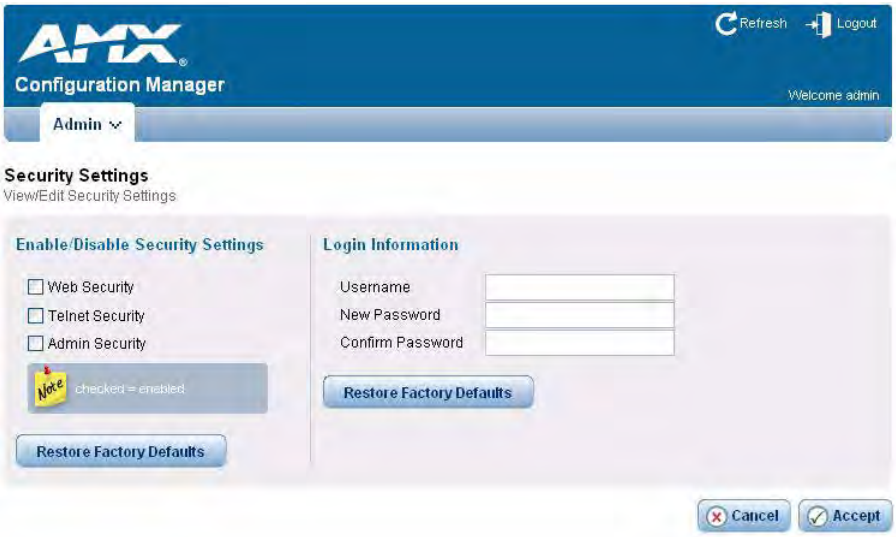


FIG. 20 Security Settings page

Enable / Disable Security Settings

Web Security:	Click this checkbox to enable Web Security. When Web security is enabled, a username and password are required to access any system Web pages (default = disabled).
Telnet Security:	Click this checkbox to enable Telnet Security. With Telnet Security enabled, a username and password are required to establish a Telnet or SSH connection (default = disabled).
Admin Security:	Click this checkbox to enable Admin Security. With Admin Security enabled, a username and password are required to modify any system configuration item (default = disabled).
Restore Factory Defaults:	Click to restore all security settings to their factory default (all disabled).
Accept:	Click to save changes. Changes on this page take effect immediately.
Cancel:	Click to exit this page without saving any changes.

Login Information

Use this set of options to specify a Username and Password. These will be required only if one or more of the Security Settings are enabled.

Username:	Enter the Username that will be required to login to this unit if security is enabled. The default Username is "administrator".
New Password:	Enter a new password that will be required to login to this unit if security is enabled. The default Password is "password".
Confirm Password:	Re-enter the new password in this field.
Restore Factory Defaults:	Click to restore the login information to the factory defaults: • Default Username = **administrator** • Default Password = **password**
Accept:	Click to save changes. Changes on this page take effect immediately.
Cancel:	Click to exit this page without saving any changes.

Logging Into the Configuration Manager (With Security Enabled)

Login is only required if the *Web* and/or *Admin* security options have been enabled on the unit.

1. Click the **Login** link in the upper-right corner of the initial page (FIG. 14). This invokes the Login popup page (FIG. 21).

FIG. 21 Configuration Manager - Login popup page

Enter the default login information:

- Username = **administrator**
- Password = **password**

2. Click the **Login** button.

Once you have successfully logged into the Configuration Manager, the IP Settings page is displayed, and can be edited as needed.

IP Settings

Select **IP Settings** from the Admin drop-down menu to open the *IP Settings* page (FIG. 22). Use the options on the page to specify network/IP settings for this UDM-0808-SIG.

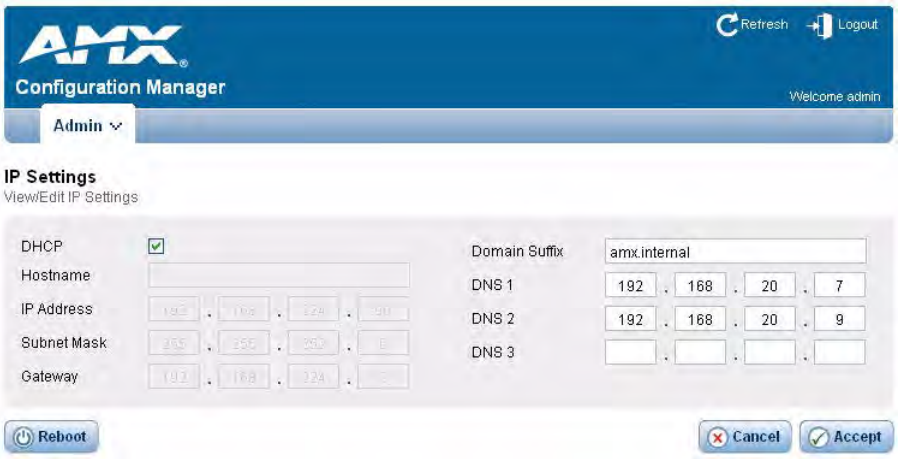


FIG. 22 IP Settings page

DHCP:	Click to toggle DHCP on this unit (default = enabled). Note that DHCP must be enabled in order for the zero-configuration client (i.e. Bonjour for Windows) to detect the UDM-0808-SIG on the network. See the *Bonjour (Zero-Configuration) Client* section on page 23 for details.
Hostname:	Enter a Hostname for this unit (enabled only if DHCP is disabled).
IP Address:	Enter an IP Address for this unit (enabled only if DHCP is disabled).
Subnet Mask:	Enter a Subnet Mask for this unit (enabled only if DHCP is disabled).
Gateway:	Enter a Gateway for this unit (enabled only if DHCP is disabled).
Domain Suffix:	Enter the Domain Suffix for this unit.
DNS 1, 2, 3:	Enter up to three DNS addresses for this unit.
Accept:	Click to save changes. Note that IP Settings changes require a reboot (see below).
Cancel:	Click to exit this page without saving any changes.
Reboot:	Click to initiate a system reboot. IP Settings changes only take effect after a reboot.

Port Settings

Select **Port Settings** from the Admin drop-down menu to open the *Port Settings* page (FIG. 23). Use the options on the page to specify various Port settings for this UDM-0808-SIG.

FIG. 23 Port Settings page

The options on this page provide inputs for enabling and disabling of HTTP, HTTPS, Telnet, SSH and FTP ports, and allow you to change each port number from it's standard default assignment.

HTTP Port Number:	Default = enabled, default port number = 80.
HTTPS Port Number:	Default = enabled, default port number = 443.
Telnet Port Number:	Default = enabled, default port number = 23.
SSH Port Number:	Default = enabled, default port number = 22.
FTP Port Number:	Default = enabled, default port number = 21.
Restore Factory Defaults:	Click to restore all Port settings to the factory defaults.
Accept:	Click to save changes. Note that Port Settings changes require a reboot (see below).
Cancel:	Click to exit this page without saving any changes.
Reboot:	Click to initiate a system reboot. Port settings changes only take effect after a reboot.

Clock Manager

Hover the cursor over the **Clock Manager** option in the Admin menu to open the Clock Manager sub-menu (FIG. 24).

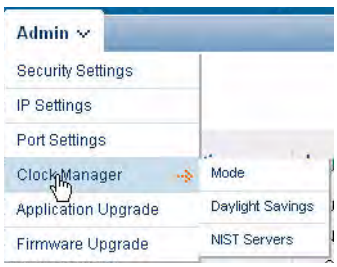


FIG. 24 Clock Manager sub-menu

Each of the options listed in the submenu are also accessible via options on the Clock Manager page (FIG. 25).

FIG. 25 Clock Manager options

Clock Manager - Mode Manager

Select the main Clock Manager entry in the Admin Menu, or select **Mode** from the Clock Manager sub-menu, and the *Mode Manager* page will be displayed (FIG. 26):

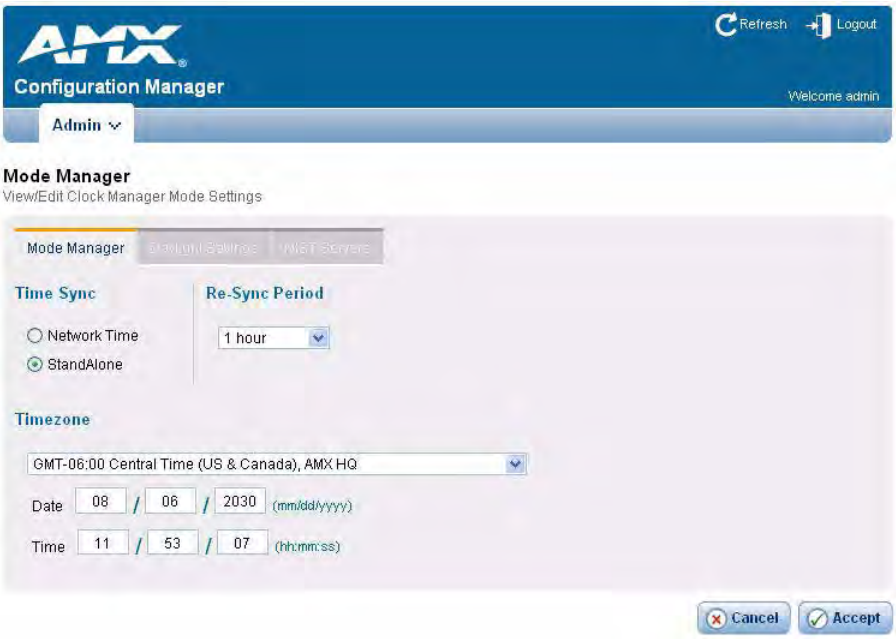


FIG. 26 Clock Manager - Mode Manager page

The options on the Mode Manager page provide inputs for selecting the current mode of the system time:

Time Sync:	Use the radio buttons to select either *Network Time* or *StandAlone*. ***Note**: If using StandAlone mode, the time will be valid only until the unit is rebooted. Once the unit is rebooted, the time will be lost, and will have to be reset.* Note that the *Daylight Savings* and *NIST Servers* tabs are enabled only if *Network Time* is selected as the mode.
Re Sync Period:	Select the desired re-synch period for the clock from this drop-down menu. Re-synch period options include 5 minutes, 15 minutes, 1, 2 and 4 hours (default = 1 hour).
Timezone:	Select the appropriate Time Zone from the drop-down menu.
Date:	Use these fields to manually enter today's date (mm/dd/yyyy).
Time:	Manually enter the current time (hh:mm:ss).
Accept:	Click to save changes. Changes on this page take effect immediately.
Cancel:	Click to exit this page without saving any changes.

- Click **Accept** to save your changes. Note that changes on this page take effect immediately.
- Click **Cancel** to cancel any changes.

Clock Manager - Daylight Savings

Select **Daylight Savings** from the Clock Manager sub-menu (or from the main Clock Manager page), and the *Daylight Savings Manager* page will be displayed (FIG. 27):

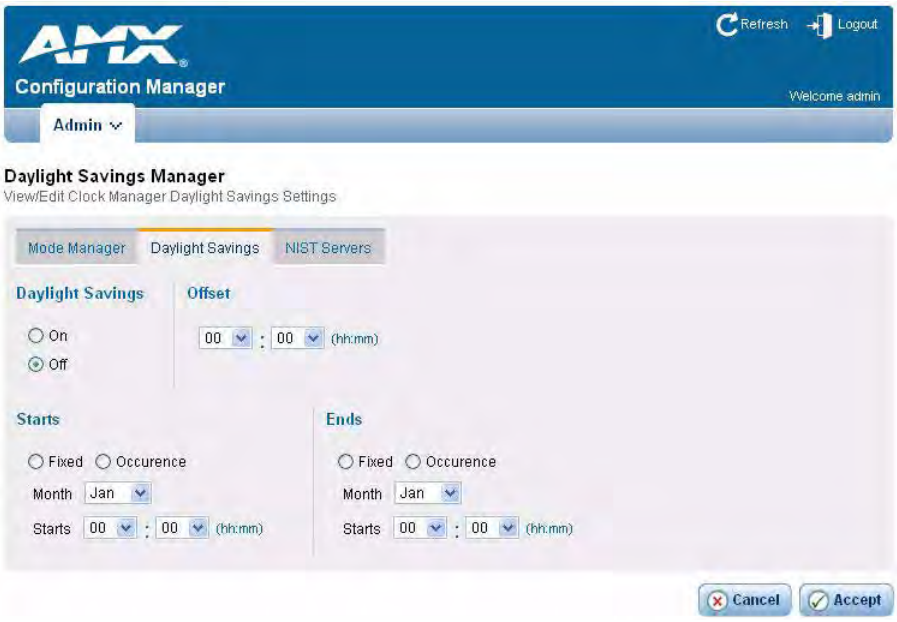


FIG. 27 Clock Manager - Daylight Savings Manager page

Note that this tab is enabled only if *Network Time* is selected (on the Mode Manager page).

The options on this page allow you to enable and disable daylight savings, and specify daylight savings start and end times.

Daylight Savings:	Use these radio buttons to turn daylight savings time on and off (default = Off).
Offset:	Use these drop-down menus to specify the amount of time to offset the clock for daylight savings.
Starts:	These options allow you to specify when to start using daylight savings time. Select a month and time to start from the drop-down menus. • Select *Fixed* to start daylight savings at a specific Day, Month and Time (an additional field for *Day* is provided when this radio button is selected). • Select *Occurrence* to start daylight savings at a specified occurrence (additional fields for *Week of the Month*, and *Day of the Week* are provided).
Ends:	These options allow you to specify when to stop using daylight savings time. Select a month and time to start from the drop-down menus. • Select *Fixed* to end daylight savings at a specific Day, Month and Time (an additional field for *Day* is provided when this radio button is selected). • Select *Occurrence* to end daylight savings at a specified occurrence (additional fields for *Week of the Month*, and *Day of the Week* are provided).
Accept:	Click to save changes. Changes on this page take effect immediately.
Cancel:	Click to exit this page without saving any changes.

Clock Manager - NIST Servers

Select **NIST Servers** from the Clock Manager sub-menu (or from the main Clock Manager page), and the *NIST Server Manager* page will be displayed (FIG. 28):

FIG. 28 Clock Manager - NIST Server Manager page

Note that this tab is enabled only if *Network Time* is selected (on the Mode Manager page).

The options on this page allow you to select the NIST server that will be queried at each clock synchronization, and allow you to add more NIST servers to the list.

NOTE

Only one NIST server is selectable at any given time.

To add a NIST server, enter the *NIST Server Name*, *IP Address* and *Location* in the fields provided.

To remove a NIST server from the list, click the *Remove* button.

- Click **Accept** to save your changes. Note that changes on this page take effect immediately.
- Click **Cancel** to cancel any changes.

UDM-0808-SIG Firmware Upgrades

Overview

The NetLinx Studio software application (available for free download from www.amx.com) provides the ability to transfer KIT firmware files to a NetLinx device such as the UDM-0808-SIG Hub.

To send firmware files, select **Tools > Firmware Transfers,** then select *Send to NetLinx Device* from the sub-menu.

Before You Start

1. Verify you have the latest version of NetLinx Studio on your PC. Use the **Web Update** option in NetLinx Studio's Help menu to obtain the latest version. Alternatively, go to www.amx.com and login as a Dealer to download the latest version.
2. Go to **www.amx.com** and download the latest Firmware file. Firmware files are available to download from www.amx.com - on the product's page in the online catalog.
3. Verify that an Ethernet cable is connected from the NetLinx Master to the Ethernet Hub.
4. Verify that the NetLinx Master is powered On.
5. Determine the Device Number assigned to the target UDM-0808-SIG.
   - By default, the Device Number assigned to the UDM-0808-SIG is **05600**.
   - The Device Number can be viewed/edited in the UDM-0808-SIG Configuration Manager - Device Configuration Page (see the *Device Configuration tab* section on page 26 for details).
6. Launch NetLinx Studio and open the Online Device Tree.

Sending a Firmware (*.KIT) File To the UDM-0808-SIG

Use the *Firmware Transfers* options in the Tools menu to update the firmware in the UDM-0808-SIG. NetLinx Devices such as the UDM-0808-SIG use KIT files for firmware upgrades.

A Kit file (.KIT) is a package of several files, all of which are required to upgrade the firmware, and are available online via www.amx.com. Firmware download links are provided in the relevant product page.*

- The Online Device Tree (Online Tree tab of the Workspace Window) displays information about each online device, including the current firmware version.
- Before attempting to upgrade the firmware, you must have the appropriate Kit file for your UDM-0808-SIG.

To update NetLinx firmware:

1. Choose **Tools > Firmware Transfers > Send to NetLinx Device** to open the *Send To NetLinx Device* dialog (FIG. 29).

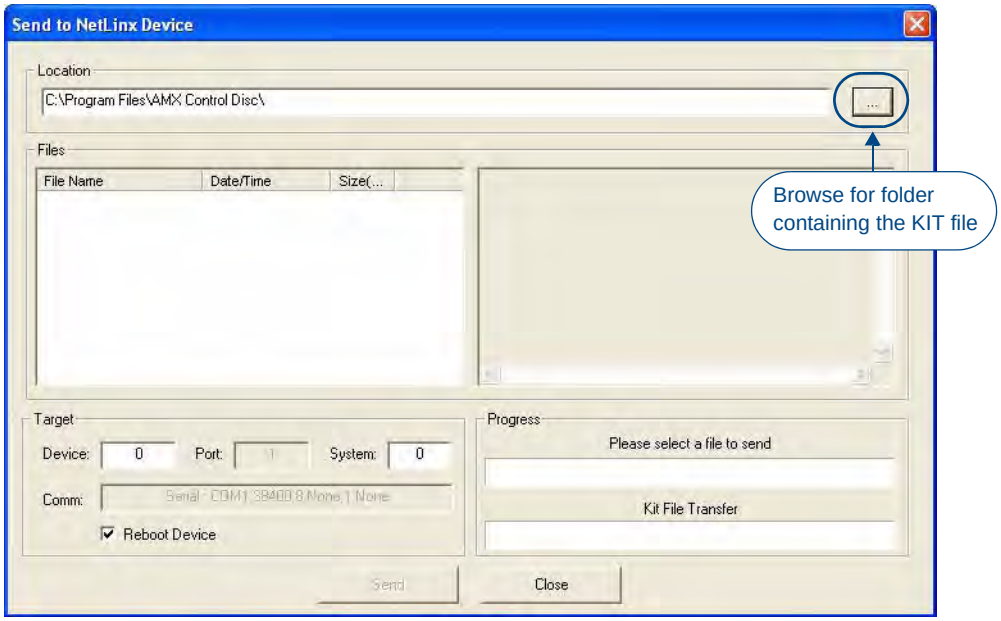


FIG. 29 Send To NetLinx Device dialog (NetLinx Studio)

2. Click the **Browse (...)** button to navigate to the target directory in the *Browse For Folder* dialog (FIG. 30).

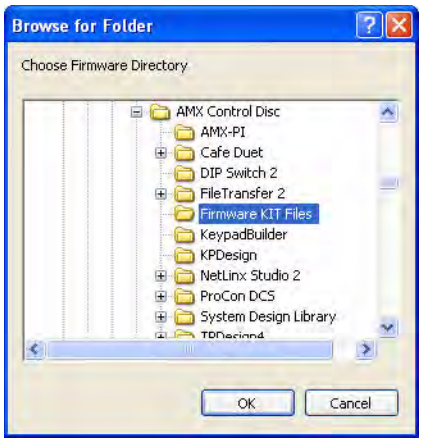


FIG. 30 Browse For Folder dialog (NetLinx Studio)

- The selected directory path is displayed in the *Send To NetLinx Device* dialog (*Location* text box).
- Assuming that the specified target directory contains one or more KIT files, the KIT files in the selected directory are displayed in the *Files* list box, with the file's last modified date and time (FIG. 31).

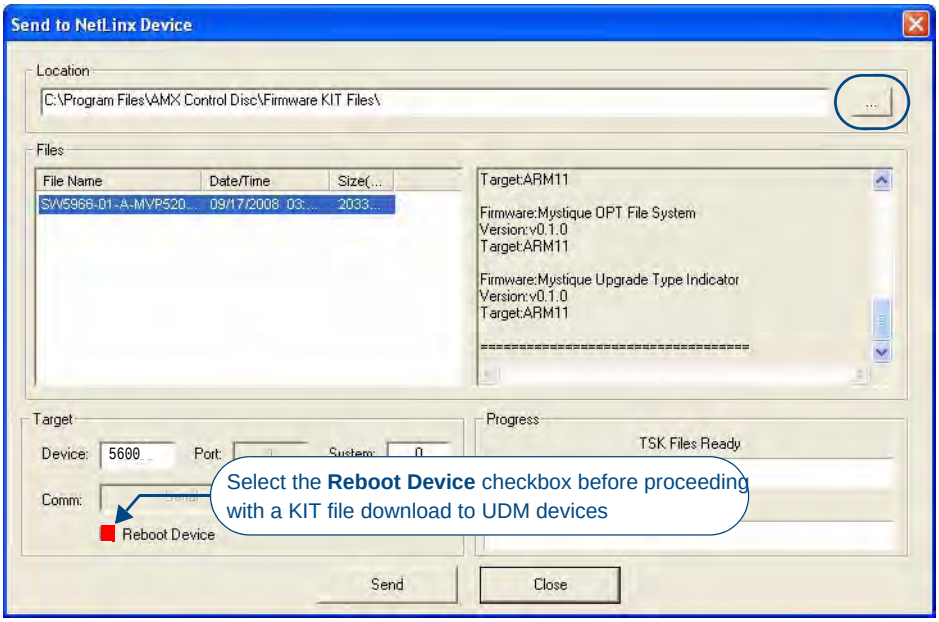


FIG. 31 Send To NetLinx Device dialog (NetLinx Studio)

3. Select the appropriate *.KIT file from the *Files* list.
4. Enter the Device and System ID numbers for the UDM-0808-SIG in the **Device** and **System** text boxes.
   - By default, the Device Number assigned to the UDM-0808-SIG is **05600**.
   - Use the Online Device Tree to determine the device's assigned ID, if it has been changed.
5. Review the File, Connection, Address, and Target Device information before you send.
6. Select the **Reboot Device** checkbox.
7. Click the **Send** button. You can watch the progress of the transfer in the *Send to NetLinx Device* dialog.

   NetLinx Studio transfers the files to the Hub and then tells it to reboot.

   After it reboots, the Hub actually goes through its upgrade process. Upgrading the UDM Hub takes ~15 minutes as its individual subcomponents are upgraded.
   - During the upgrade process, the left most front panel LED(s) will blink, and the device stays offline.
   - Telnet to the IP of the UDM Hub, type **MSG ON<enter>** to see firmware transfer progress of each of the subcomponents.
   - Once the upgrade is complete, the LED will stop blinking and the Hub will come online.

WARNING

If for any reason your Kit file transfer should fail, continue to retry the transfer until you are successful. DO NOT reboot the Hub, or change connections until the transfer is complete. Failure to complete this operation successfully may require a factory repair of the Hub.

Firmware Readme.TXT

For details on any particular firmware release, refer to the Readme.TXT file that is included with the firmware file(s).

Additional Documentation

For additional information on using NetLinx Studio, refer to the NetLinx Studio online help and Operation/ Reference Guide (available at www.amx.com).

UDM-RX02N Multi-Format Receiver

Overview

Installed at the display device, the UDM-RX02N (FG1402-20) converts the signal received from UDM-0808-SIG Hubs to standard audio/video signals. In addition, the RX02N supports AMX IR(.irl) files to provide native AMX device control. Serial control of the display device is also possible via standard asynchronous serial support.

FIG. 32 UDM-RX02N

The UDM-RX02N is powered locally to support long cable runs and is capable of being powered remotely when short cable runs are used. With intelligent receiver technology, each UDM-RX02N is powered remotely from the Multi-Format Distribution Hub via Cat5/5e/6/7 Ethernet cable.

Distances of 1,000 feet/300 meters are supported at 1280x1024; higher resolutions are supported at shorter distances.

Common Application

Perfect for the receiving end of a variety of sources such as HDTV Satellite tuners, Blu-Ray DVD players and PCs just to name a few to be displayed in rooms throughout a residence or in classrooms, conference rooms presentation rooms or other commercial applications.

Features

- Video Support for 1600 x 1200 (UXGA), 1920 x 1080 (HDTV), Component Y/Pb/Pr, S-Video, CVBS-PAL/NTSC
- S/PDIF, Digital and analog stereo audio support
- IR blaster and receiver ports

NOTE

Unlike previous versions of the UDM receiver, the UDM-RX02N is a native NetLinx device, and can be configured using the NetLinx Studio software application in cases where it is connected to a UDM-0808-SIG or DVX-2100HD.

Compatibility

The UDM-RX02N is primarily intended for use with the UDM-0808-SIG Hub (FG1402-01).

The UDM-RX02N may also be used with the DVX-2100HD Total Environment Controller (FG1905-01/02). Refer to the *DVX-2100HD Operation Reference Guide* for details of this usage.

Product Specifications

UDM-RX02N Specifications	
Power Requirements:	• 24VDC @ .75A • Power via UDM-0808-SIG (UTP pins 7 & 8) supported for cable runs of less than 328' / 100M. • Local 24VDC, 750mA Power Supply required for cable distances above 328' / 100M (FG-UDM-PS, included)
Rear Panel Connectors:	
Power Socket:	2.1mm barrel-style DC power socket (female)
UDM Hub (RJ45) Port:	Provides a/v transport as well as control via Cat5/5e/6 to an UDM Hub.

UDM-RX02N Specifications (Cont.)	
Serial (RJ12) port:	Provides bi-directional serial control of remote devices. It Also allows administrators to control the various functions to the UDM-RX02N from a command line prompt and terminal connection. • Requires a DB9-to-RJ12 adapter cable (FG-RS01) to connect to a PC. • See the *Serial Control Considerations With UDM-0808 and UDM-RX02N* section on page 56 for details.
IR Rx (3.5mm) Port:	3.5mm input port, for connection of an IR receiver to allow setup of the UDM-RX02N, local compensation controls, and remote control of centrally located IR devices.
IR Tx (3.5mm) Port:	3.5mm IR Transmitter output port allows one IR-controlled device (such as a DVD or VCR player) to be controlled via optional wired IR emitter.
Audio Connectors:	• Black RCA female connector - Digital audio • White RCA female connector - Analog audio Left • Red RCA female connector - Analog audio Right
Video Connectors:	• Yellow RCA female connector - CVBS (supports composite video) • S-Video - S-video female connector • VGA - HD15 female connector (supports VGA video) • Green/Blue/Red RCA female connectors - Component outputs: Y/Pb/Pr
Operating Environment:	• 35°F - 95°F (5°C - 35°C) • Max. relative humidity - 85% (non-condensing)
Dimensions (HWD):	1" x 8 15/16" x 3 3/8" (25 mm x 227 mm x 85 mm)
Weight:	1.45 lb. (658 g)
Certifications:	• CE • FCC part 15 Class A
Included Accessories:	UDM-PS 24VDC, 750mA Power Supply (FG-UDM-PS) ***Note**: No A/V interface cables supplied.*
Other AMX Equipment:	• RS232 DB9/RJ12 Connection Cable (FG-RS01) • UDM-RC05 Multi-Format IR Remote Control (FG-UDM-RC05) • IR01 IR Emitter Module (FG-IR01) • IR03 External IR Receiver Module (FG-IR03)

Configuration Options

The UDM-RX02N is configured via the UDM Hub that it is connected to, via NetLinx Studio or via serial commands. Refer to the *UDM-RX02N NetLinx Programming* section on page 49 for details.

The UDM-RX02N will appear in NetLinx Studio's Online Device Tree as being connected to the UDM Hub (see *Device Numbering* section on page 13 for details).

- By default, the UDM-0808-SIG is assigned device # **05600**.
- By default, the UDM-RX02N is assigned device # **0560X,** where **X** is the port number used by each UDM-RX02N.

When adding a UDM Hub to a system, it is highly recommended that you reserve the next eight device numbers (by default, these would be 05601 - 05608), to accommodate having an UDM-RX02N connected to each of the eight UDM ports on the Hub. This will help to avoid overlapping device numbers in the event that additional RX02Ns are added to the system later.

UDM-RX02N Wiring and Connections

Overview

The UDM-RX02N is designed to connect to the network via a connection to an UDM Hub. In this document, the UDM-0808-SIG is used as the example, but the UDM-RX02N is compatible with other previous versions of the UDM Hubs. Refer to the relevant UDM Hub documentation (available at **www.amx.com**) for more information on connecting the UDM-RX02N to other UDM Hubs.

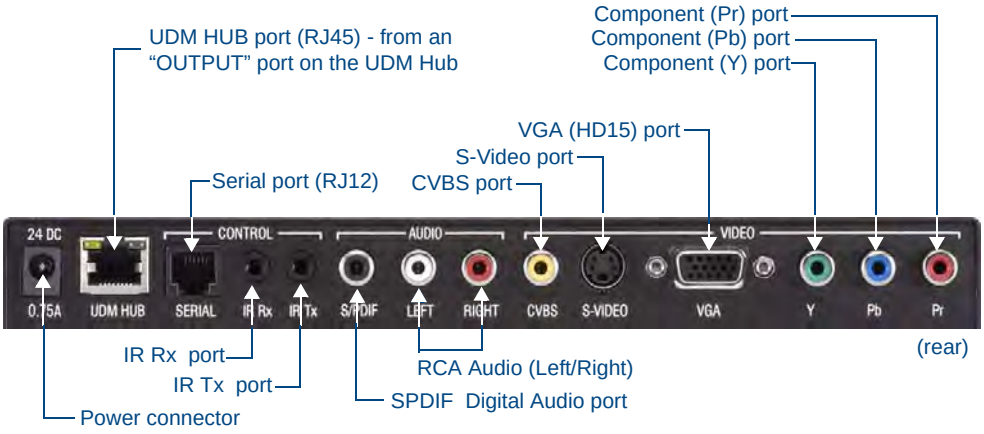


FIG. 33 UDM-RX02N Hub and Serial Ports

Power Connector

Use the 2.1mm barrel-style DC power socket (female) to connect to a 24VDC, 750mA power supply.

NOTE

While the UDM-RX02N is powered by the Hub for short cable runs; a local (24VDC, 750mA) power supply is required for cable distances above 328' / 100M. The recommended power supply is the UDM-PS (FG-UDM-PS, included).

Powering on the UDM-RX02N

To connect the UDM-RX02N to the optional power supply, insert the barrel connector of the power supply into the power connector on the UDM-RX02N (FIG. 34).

FIG. 34 UDM-RX02N - Power connector

To power down the UDM-RX02N, remove the barrel connector of the power supply from the power connector and remove the patch cable from the UDM HUB RJ45 connector.

UDM HUB (RJ-45) Port

The following table provides detailed pinout information for the UDM port:

A/V Transmission Over UTP (UDM)								
RJ45 Pin #	568A Termination		A/V Signals				568B Termination	
	Color	Pair #	RGB	YPbPr	CVBS	S-Video	Color	Pair #
1		3	Red +	Y +	CVBS S1 +	Y +		2
2		3	Red -	Y -	CVBS S1 -	Y -		2
3		2	Blue +	Pr +	CVBS S3 +	C +		3
4		1	Green +	Pb +	CVBS S2 +			1
5		1	Green -	Pb -	CVBS S2 -			1
6		2	Blue -	Pr -	CVBS S3 -	C -		3
7		4	Audio, Data, Power +	Audio, Data, Power +	Audio, Data, Power +	Audio, Data, Power +		4
8		4	Audio, Data, Power -	Audio, Data, Power -	Audio, Data, Power -	Audio, Data, Power -		4

Connecting the UDM-RX02N to a UDM-0808-SIG Hub

The UDM-0808-SIG Hub features eight UDM OUTPUT RJ45 connectors, each of which support one UDM-RX02N. The UDM-RX02N will then be connected to a display device.

FIG. 35 UDM-0808-SIG - UDM OUTPUT connectors

1. Connect a UTP patch cable to the appropriate UDM OUTPUT RJ45 connector. The UDM-0808-SIG is marked with the port number for each output (1- 8).
2. Connect the other end of the UTP patch cable to the **UDM HUB** port on the UDM-RX02N.

FIG. 36 UDM-RX02N Hub and Serial Ports

3. When the power is switched on, two LEDs will be visible at the **UDM HUB** port:

UDM Port LEDs

2 LEDs are visible at the UDM HUB port on the UDM-RX02N, when the Hub is switched on:

- **Green** - Audio/Control Communication from UDM Hub (if UTP patch cable is removed, LED switches off)
- **Amber** - Power

CONTROL Connectors

NOTE

The UDM-RX02N can be controlled via SEND_COMMANDS (UDM-0808-SIG), or via the (optional) UDM-RC05 IR Remote Control (FG-UDM-RC05)

The CONTROL connectors on the UDM-RX02N include the **SERIAL** (RJ12) connector, the **IR Rx** (IR receive), and **IR Tx** (IR transmit) ports.

SERIAL (RJ12) Port

The SERIAL (RJ12) port (FIG. 37) allows administrators to control the various functions to the UDM-RX02N from a command line prompt and terminal connection.

FIG. 37 UDM-RX02N - SERIAL Port

- Requires a DB9-to-RJ12 adapter cable (FG-RS01) to connect to a PC.
- Default settings = 9600, 8 bit, No Parity, 1 Stop Bit.

The Serial port can also be used as a control port for sending serial data to a connected device. In this mode the UDM-RX02N supports baud rates from 1200 - 115200. If a display device is controlled using a serial connection instead of IR, then a serial cable is connected from the UDM-RX02N to the serial port on the display device.

NOTE

The baud rate on the UDM-RX02N must match the baud rate as the receiver is set up for. For example, if the baud rate has been changed to 115200 for a certain display, then you'll need to change your terminal to the same 115200 baud rate.
*Also note that you must type 'setup' **within 30 seconds of powering up** - after this time period, anything typed will be sent back to the UDM Hub.*

Depending on the screen manufacturer, it may be necessary to introduce a cross into this connection by instead using the FG-RS02 cable, or a null modem DB9-DB9 adaptor with the FG-RS01. In some cases the null modem adaptor may need a link between RTS/CTS at the DB9 end.

For example, NEC LCD panels act as DTE equipment and work with standard serial cable, while Fujitsu and Panasonic Plasma screens act as DCE equipment and therefore require cross connections.

FIG. 38 describes the pinouts on the SERIAL (RJ12) connector.

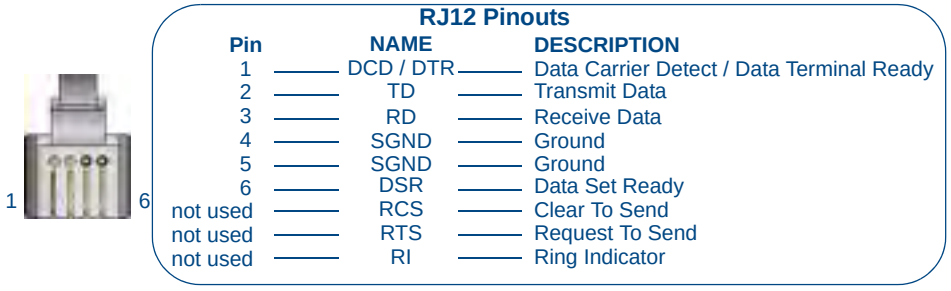


FIG. 38 SERIAL Connector - RJ12 Pinouts/Descriptions

To connect to a display device using a serial cable:

1. Connect a serial cable to the UDM-RX02N's SERIAL port (see FIG. 37 on page 43).
2. Run the serial cable (observing distance limitations) to the display device's serial port and connect.

NOTE

The serial cable must be pinned out according to the Manufacturer's instructions. Failure to do so will result in serial commands failing.

IR Rx (IR Receiver) Port

The IR Rx IR Receiver port supports pass-through remote control of connected IR devices (FIG. 39).

FIG. 39 UDM-RX02N - IR Rx Port

If pass-through mode is required (where an IR-controlled device is controlled via the UDM-RX02N using a an AMX or UDM remote control), then an IR03 External IR Receiver (**FG-IR03**, not included) is required to receive IR commands from the remote control. Likewise, an IR Receiver is required to compensate video on the UDM-RX02N using the UDM RC05 (Endeleo) remote control.

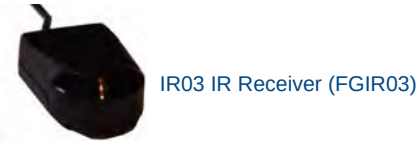


FIG. 40 IR03 IR Receiver (FGIR03 - not included)

To connect an IR Receiver to the UDM-RX02N:

1. Connect the IR03 IR Receiver cable to the **IR Rx** port on the UDM-RX02N.
2. Run the cable and attach the IR receiver bud such that it has a clear line-of-sight with the intended remote control device.

Using the UDM-RC05 for Video Compensation

FIG. 41 indicates the buttons on the UDM-RC05 IR Remote Control that can be used for video compensation n the UDM-RX02N:

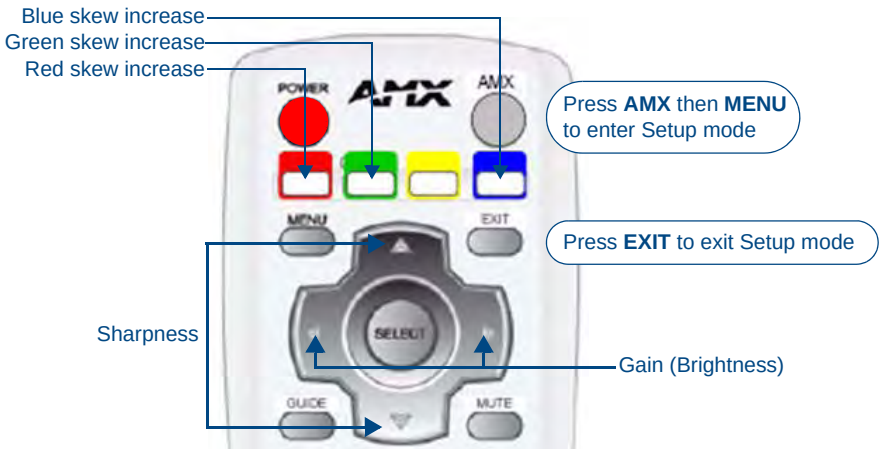


FIG. 41 UDM-RC05 IR Remote Control - Video Compensation buttons

- Enter setup mode - press AMX, then MENU
- Exit setup mode - EXIT
- Red skew increase - RED
- Green skew increase - GREEN
- Blue skew increase - BLUE
- Gain (brightness) - LEFT and RIGHT
- Sharpness - UP and DOWN

IR Tx (IR Transmitter) Port

The IR Tx IR Transmitter port supports wired control of connected IR devices (FIG. 39).

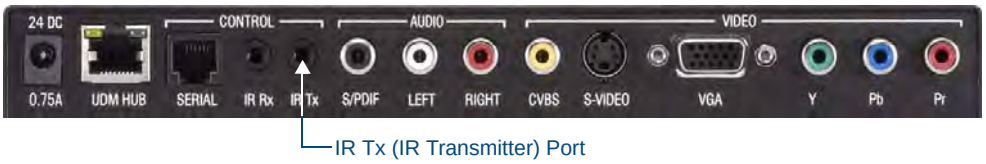


FIG. 42 UDM-RX02N - IR Tx Port

To issue IR commands to a display device, an IR01 External IR Emitter Module (**FG-IR01**, not included) is required.

FIG. 43 IR01 IR Emitter

To connect an IR Emitter:

1. Connect an IR01 IR Emitter cable (**FG-IR01**) to the **IR Tx** port on the UDM-RX02N.
2. Run the other end of the IRTX cable to the display device and locate the IR window.
3. Attach the IR Emitter bud over the device's IR sensor by removing the cover of the reverse side of the Emitter and sticking it directly over the IR window.

AUDIO & VIDEO Output Connectors

The rear of the UDM-RX02N has two sets of output connectors: AUDIO and VIDEO (FIG. 44).

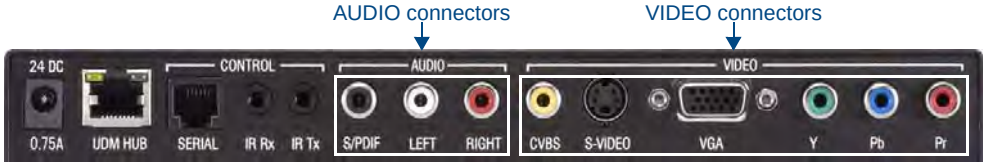


FIG. 44 UDM-RX02N - AUDIO and VIDEO Output Connectors

Each of these sets of outputs has connections for Digital Audio, Analog Audio (L & R) and Video:

UDM-RX02N Output Connectors	
Audio:	
SPDIF	Digital audio
Left	Analog audio left
Right	Analog audio right
Video:	
CVBS	Composite Video Blanking & Sync analog video
S-Video	S-Video
VGA	HD 15 female connector for VGA format
Y	Analog component video output: Y
Pb	Analog component video output: Pb
Pr	Analog component video output: Pr

CVBS (Composite) Video Output Port

FIG. 45 UDM-RX02N - CVBS Port

1. Attach a composite cable to the **CVBS** connector on the UDM-RX02N (FIG. 45).
2. Run the other end of the composite cable to the Composite connector on the display device and establish a firm connection.
3. If the display device has audio feeds, connect its audio to the audio connectors on the UDM-RX02N.

S-VIDEO Video Output Port

FIG. 46 UDM-RX02N - S-VIDEO Port

FIG. 47 describes the pinouts on the S-VIDEO connector:

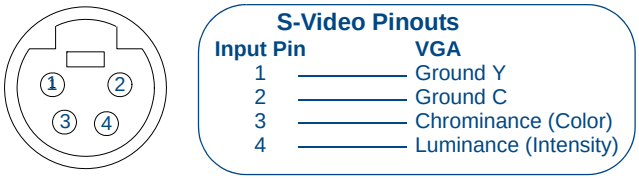


FIG. 47 S-Video Pinouts

1. Connect an S-Video cable (**FG-UDM-SVID01**) to the 4 pin **S-Video** connector (FIG. 47) on the UDM-RX02N.
2. Run the other end of the S-Video cable to the S-Video connector on the display device and establish a firm connection.
3. If the display device has audio feeds, connect its audio to the audio connectors on the UDM-RX02N.

VGA Video Output Port

FIG. 48 UDM-RX02N - VGA Port

FIG. 49 provides the pin layout for the VGA HD15 Connector:

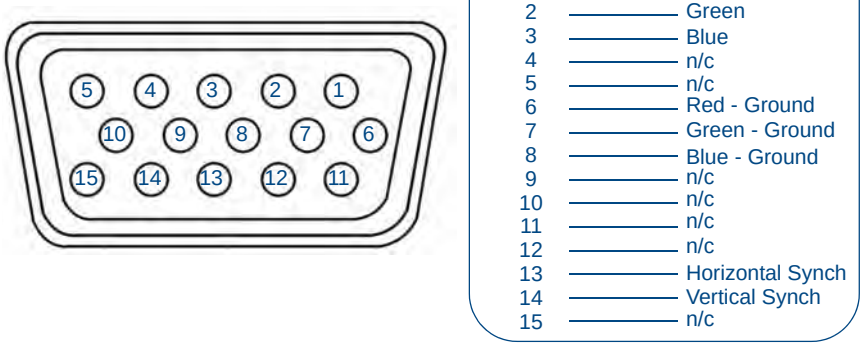


FIG. 49 VGA HD15 Connector

1. Attach one end of the VGA cable to the UDM-RX02N's VGA connector.
2. Run the other end to the VGA connector on the display device and make a firm connection.
3. If the display device has audio feeds, connect its audio to the audio connectors on the UDM-RX02N.

Component (Y/Pb/Pr) Video Output Port

FIG. 50 UDM-RX02N - Component Ports

1. Attach the Component cables to the **Y** (green), **Pb** (blue) and **Pr** (red) connectors on the UDM-RX02N.
2. Run the other end of the Component cable to the Component connectors on the display device and make sure of a firm connection.
3. If the display device has audio feeds, connect its audio to the audio connectors on the UDM-RX02N.

Video Compensation

Video can be compensated at the UDM-RX02N using two methods:

- Via the UDM-0808-SIG, using the NetLinx LEVEL Commands listed in the *LEVELs* section on page 50.
- Via the included UDM-RC05 UDM Remote Control - see the *Using the UDM-RC05 for Video Compensation* section on page 69 for details.

UDM-RX02N NetLinx Programming

Overview

There are a select number of NetLinx CHANNELs, LEVELs and SEND_COMMANDs recognized by the UDM-RX02N.

NetLinx programming is supported only if the UDM-RX02N is connected to the UDM-0808-SIG Hub (a native NetLinx device).

- The main Device SEND_COMMANDs are described on page 50.
- IR SEND_COMMANDs are described on page 52.
- Serial SEND_COMMANDs are described on page 55.

Device Numbering

In NetLinx Studio's online device tree, the UDM-0808-SIG is listed as a device with a single port, and each UDM-RX02N receiver connected to the Hub is listed as a separate device immediately following the Hub (the default device number for the UDM-0808-SIG is **05600** - refer to the *Device Numbering* section on page 13 for details).

NOTE

Only RX units that are physically connected to the Hub will be represented in the Online Tree.

Note that the device number for each UDM-RX02N currently connected to the UDM-0808-SIG Hub is automatically designated a device number, based on the device number of the Hub to which it is connected, and the number of the UDM OUTPUT port on the Hub (1-8) to which it is physically connected.

Therefore, it important to avoid assigning device numbers that will conflict with this auto-numbering scheme. Reserve the eight device numbers following the UDM Hub's device number assignment for up to eight UDM-RX02Ns.

In NetLinx Studio's online device tree, each UDM-RX02N receiver shows three ports (FIG. 51)

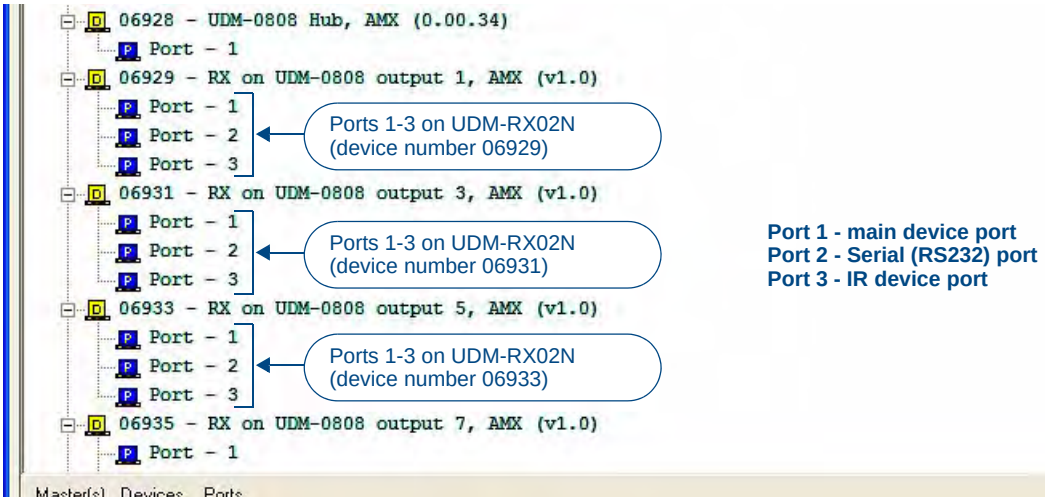


FIG. 51 NetLinx Studio Online Tree - Ports 1-3 on each connected UDM-RX02N

These three ports relate directly to the three types of NetLinx commands recognized by the UDM-RX02N:

- Port 1 - SEND_COMMANDS/LEVELS (Video Control and IR Receive)
- Port 2 - SERIAL (RS232) SEND_COMMANDS
- Port 3 - IR SEND_COMMANDS (IR Output)

CHANNELs

Channel	Function
255	This channel on shows that the Rx has a valid CAT5 connection to the UDM hub. If channel is off the Rx is not connected correctly.

LEVELs

Levels are sent to **Port 1** on the UDM-RX02N:

Level	Function
10	**Brightness** - controls the gain applied to the video signal to compensate for CAT5 cable losses - a value of 0 provides no additional gain, whereas a value of 90 would compensate for around 300m cable
13	**Sharpness** - controls the high frequency boost applied to compensate for cable losses - a value of 0 provides no additional boost, whereas a value of 70 will compensate for around 300m cable
15	**Red skew** - controls the delay added to a video signal to compensate for different pair lengths in the cable - a value of 0 applies no delay, whereas a value of 31 (maximum) applies 62nS delay
16	**Green skew** - controls the delay added to the green video signal
17	**Blue skew** - controls the delay added to the blue video signal

SEND_COMMANDs

- Device SEND_COMMANDS are sent to **Port 1** on the UDM-RX02N.
- All text is based on a Unicode index.

UDM-RX02N SEND COMMANDs	

"'RP'"
Sets the protocol used by the IR remote.
	The Rx can support a number of different remotes which are mapped through to button pushes
	Syntax:
	`SEND_COMMAND <DEV>, "'RP<P#>'"`
	Variables:
	• P#:
	"ENDELEO", "AMX", "SKY", "TIVO", "DIRECTV", "MIOR1", "MIO", "RC02", "RC05"
	Example:
	`SEND_COMMAND dvRX, "'RPAMX'"`
	Configures the Rx to use an AMX remote.
	The available remotes are:
	• RC02 - grey 33 button and 13 button remotes
	• ENDELEO (*deprecated*) - grey 33 button and 13 button remotes
	• RC05 - beige 43 button remote
	• AMX (*deprecated*) - beige 43 button remote
	• SKY - Sky satellite remote
	• TIVO - standard Tivo remote
	• DIRECTV - standard DirecTV remote
	• MIOR1 - AMX R1 remote
	In all the above cases, the push and release codes are endeleo codes.
	• MIO - AMX R1 remote - this setting uses all 255 push/release codes.

"'?RP'"
Returns the protocol used by the IR remote.
	The Rx can support a number of different remotes which are mapped through to button pushes.
	Syntax:
	`SEND_COMMAND <DEV>, "'?RP'"`
	Example:
	`SEND_COMMAND dvRX, "'?RP1'"`
	The port would respond with RP-ENDELEO.

"'SB'"
Sets the brightness of the signals delivered to a connected display.
	Syntax:
	`SEND_COMMAND <DEV>,"SB<B#>'"`
	Variables:
	• B# = brightness
	0-90 = brightness value
	Example:
	`SEND_COMMAND dvRX1,"'SB46'"`
	Sets the brightness to 46 (about half way).

"'?SB'"
Returns the brightness of the signals delivered to a connected display.
	Syntax:
	`SEND_COMMAND <DEV>,"?SB'"`
	Example:
	`SEND_COMMAND dvRX1,"'?SB'"`
	The command would return with SB-nn, where nn is the brightness setting.

"'SD'"
Sets the brightness, sharpness and skew of the signals delivered to a connected display based on distance and cable type.
	Syntax:
	`SEND_COMMAND <DEV>,"SD<D#CC#>'"`
	Variables:
	• D# = distance
	0-255 = cable length in meters
	• C# = cable type
	"CAT5"
	"CAT5e"
	"CAT6"
	"CAT7"
	Example:
	`SEND_COMMAND dvRX1,"'SD100CCAT5e'"`
	Sets the cable compensation for 100m of CAT5e cable

"'SKB'"
Sets the skew on the blue video channel
	Syntax:
	`SEND_COMMAND <DEV>,"SKB<B#>'"`
	Variables:
	• B# = skew value (delay in 2nS intervals)
	0-31 = skew value
	Example:
	`SEND_COMMAND dvRX1,"'SKB4'"`
	Sets the blue skew value to 4 (adds 8nS delay to blue video)

"'SKG'"
Sets the skew on the green video channel.
	Syntax:
	`SEND_COMMAND <DEV>,"SKG<G#>'"`
	Variables:
	• G# = skew value (delay in 2nS intervals)
	0-31 = skew value
	Example:
	`SEND_COMMAND dvRX1,"'SKG17'"`
	Sets the green skew value to 17 (adds 34nS delay to green video).

UDM-RX02N SEND COMMANDs (Cont.)	

"'SKR'"
Sets the skew on the red video channel.
	Syntax:
	`SEND_COMMAND <DEV>,"SKR<R#>'"`
	Variables:
	R# = skew value (delay in 2nS intervals)
	0-31 = skew value
	Example:
	`SEND_COMMAND dvRX1,"'SKR8'"`
	Sets the red skew value to 8 (adds 16nS delay to red video).

"'?SK'"
Returns the skew values of the signals delivered to a connected display.
	Syntax:
	`SEND_COMMAND <DEV>,"?SK'"`
	Example:
	`SEND_COMMAND dvRX1,"'?SK'"`
	The command would return with SK-RrrGggBbb, where rr is the red skew value, gg is the green skew value and bb is the blue skew value.

"'SS'"
Sets the sharpness of the signals delivered to a connected display.
	Syntax:
	`SEND_COMMAND <DEV>,"SS<S#>'"`
	Variables:
	• S# = sharpness
	0-70 = sharpness value
	Example:
	`SEND_COMMAND dvRX1,"'SS24'"`
	Sets the sharpness to 24.

"'?SS'"
Returns the sharpness of the signals delivered to a connected display.
	Syntax:
	`SEND_COMMAND <DEV>,"?SS'"`
	Example:
	`SEND_COMMAND dvRX1,"'?SS'"`
	The command would return with SS-nn, where nn is the brightness setting.

IR SEND_COMMANDs

IR CHANNELS and SEND_COMMANDS and are sent to **Port 3** on the UDM-RX02N:

IR CHANNELs

Channel	Function
1-255	Generate the IR or serial command assigned to that channel.

IR SEND_COMMANDs

UDM-RX02N IR SEND COMMANDs	

"'CAROFF'"
Disable the IR carrier signal until a 'CARON' command is received.
	Syntax:
	`SEND_COMMAND <DEV>,"'CAROFF'"`
	Example:
	`SEND_COMMAND dvRXIR,"'CAROFF'"`
	Stops transmitting IR carrier signals to the IR port.

"'CARON'"
Enable the IR carrier signals (default).
	Syntax:
	`SEND_COMMAND <DEV>,"'CARON'"`
	Example:
	`SEND_COMMAND dvRXIR,"'CARON'"`
	Starts transmitting IR carrier signals to the IR port.

UDM-RX02N IR SEND COMMANDs (Cont.)	

"'CH'"
Send IR pulses for the selected channel.
Uses 'CTON' and 'CTOF' times for pulse times.
	All channels below 100 are transmitted as two digits.
	If the IR code for ENTER (function #21) is loaded, an Enter will follow the number.
	If the channel is greater than or equal to (>=) 100, then IR function 127 or 20 (whichever exists) is generated for the one hundred digit.
	Syntax:
	`SEND_COMMAND <DEV>,"'CH',<channel number>"`
	Variable:
	• channel number = 0 - 199 channels
	Example:
	`SEND_COMMAND dvRXIR,"'CH',18"`
	The IR port on the UDM Rx performs the following:
	• Transmits IR signals for 1 (IR code 11).
	• The transmit time is set with the CTON command.
	• Waits until the time set with the CTOF command elapses.
	• Transmits IR signals for 8 (IR code 18).
	• Waits for the time set with the CTOF command elapses.
	If the IR code for Enter (IR code 21) is programmed, the IRS4 performs the following steps.
	• Transmits IR signals for Enter (IR code 21).
	• Waits for the time set with the CTOF command elapses.

"'CP'"
Halt and Clear all active or buffered IR commands, and then send a single IR pulse.
	Pulse and Wait times can be set with the 'CTON' and 'CTOF' commands.
	Syntax:
	`SEND_COMMAND <DEV>,"'CP',<code>"`
	Variable:
	• code = IR port's channel value 0 - 252 (253 - 255 reserved).
	Example:
	`SEND_COMMAND dvRXIR,"'CP',2"`
	Clears the active/buffered commands and pulses IR port's channel 2.

"'CTOF'"
Set the duration of the Off time (no signal) between IR pulses for channel and IR function transmissions.
	This command sets the delay time between pulses generated by the 'CH' or 'XCH' send commands in tenths of seconds.
	Off time settings are stored in non-volatile memory.
	Syntax:
	`SEND_COMMAND <DEV>,"'CTOF',<time>"`
	Variables:
	• time = 0 - 255. Given in 1/10ths of a second. Default is 5 (0.5 seconds).
	Example:
	`SEND_COMMAND dvRXIR,"'CTOF',10"`
	Sets the off time between each IR pulse to 1 second.

"'CTON'"
Set the total time of IR pulses transmitted and is stored in non-volatile memory.
	This command sets the pulse length for each pulse generated by the 'CH' or 'XCH' send commands in tenths of seconds.
	Syntax:
	`SEND_COMMAND <DEV>,"'CTON',<time>"`
	Variables:
	• time = 0 - 255. Given in 1/10ths of a second. Default is 5 (0.5 seconds).
	Example:
	`SEND_COMMAND dvRXIR,"'CTON',20"`
	Sets the IR pulse duration to 2 seconds.

"'IROFF'"
Halt and Clear all active or buffered IR commands.
	Halt and Clear all active or buffered IR commands being output on the designated port.
	Syntax:
	`SEND_COMMAND <DEV>,"'IROFF'"`
	Example:
	`SEND_COMMAND dvRXIR,"'IROFF'"`
	Immediately halts and clears all IR output signals on the IR port.

UDM-RX02N IR SEND COMMANDs (Cont.)	

"'SP'"
Generate a single IR pulse.
	You can use the 'CTON' to set pulse lengths and the 'CTOF' for time Off between pulses.
	Syntax:
	`SEND_COMMAND <DEV>,"'SP',<code>"`
	Variables:
	• code = IR code value 1 - 252 (253-255 reserved).
	Example:
	`SEND_COMMAND dvRXIR,"'SP',25"`
	Pulses IR code 25 on IR port on RX

"'XCH'" Transmit the selected channel IR codes in the format/pattern set by the 'XCHM' Send Command.	Syntax: `SEND_COMMAND <DEV>,"'XCH <channel>'"` Variables: • channel = 0 - 999. Example: For detailed usage examples, refer to the 'XCHM' command (below).

"'XCHM'"
Changes the IR output pattern for the 'XCH' send command.
	Syntax:
	`SEND_COMMAND <DEV>,"'XCHM-<extended channel mode>'"`
	Variables:
	• extended channel mode = 0 - 4.
	Example:
	`SEND_COMMAND dvRXIR,"'XCHM 3'"`
	Sets the IR device's extended channel command to mode 3.
	Mode 0 Example (default): [x][x]<x><enter>
	`SEND_COMMAND dvRXIR,"'XCH 3'" -`
	Transmits the IR code as 3-enter.
	`SEND_COMMAND dvRXIR,"'XCH 34'"`
	Transmits the IR code as 3-4-enter.
	`SEND_COMMAND dvRXIR,"'XCH 343'"`
	Transmits the IR code as 3-4-3-enter.
	Mode 1 Example: <x><x><x><enter>
	`SEND_COMMAND dvRXIR,"'XCH 3'"`
	Transmits the IR code as 0-0-3-enter.
	`SEND_COMMAND dvRXIR,"'XCH 34'"`
	Transmits the IR code as 0-3-4-enter.
	`SEND_COMMAND dvRXIR,"'XCH 343'"`
	Transmits the IR code as 3-4-3-enter.
	Mode 2 Example: <x><x><x>
	`SEND_COMMAND dvRXIR,"'XCH 3'"`
	Transmits the IR code as 0-0-3.
	`SEND_COMMAND dvRXIR,"'XCH 34'"`
	Transmits the IR code as 0-3-4.
	`SEND_COMMAND dvRXIR,"'XCH 343'"`
	Transmits the IR code as 3-4-3.
	Mode 3 Example: [[100][100]....]<x><x>
	`SEND_COMMAND dvRXIR,"'XCH 3'"`
	Transmits the IR code as 0-3.
	`SEND_COMMAND dvRXIR,"'XCH 34'"`
	Transmits the IR code as 3-4.
	`SEND_COMMAND dvRXIR,"'XCH 343'"`
	Transmits the IR code as 100-100-100-4-3.
	Mode 4 Example:
	• Mode 4 sends the same sequences as the 'CH' command.
	• Only use Mode 4 with channels 0 - 199.

Serial SEND_STRING

Use the SEND_STRING keyword to send a string to a controlled device, based on a specified NetLinx device/port:

Syntax:

```
SEND_STRING DEV, '<string>'
```

-or-

```
SEND_STRING DEV[ ], '<string>'
```

Serial SEND_COMMANDs

The following Serial SEND_COMMANDs are used to configure the Serial Port.

Serial (RS232) SEND_COMMANDS and are sent to **Port 2** on the UDM-RX02N:

UDM-RX02N Serial SEND COMMANDs	

"'CHARD'"
Set the delay time between all transmitted characters to the value specified (in 100 Microsecond increments).
	Syntax:
	`SEND_COMMAND <DEV>,"'CHARD-<time>'"`
	Variables:
	• time = 0 - 255. Measured in 100 microsecond increments.
	Example:
	`SEND_COMMAND dvRXRS232,"'CHARD-10'"`
	Sets a 1 millisecond delay between all transmitted characters.

"'CHARDM>'"
Set the delay time between all transmitted characters to the value specified (in 1 Millisecond increments).
	Syntax:
	`SEND_COMMAND <DEV>,"'CHARDM-<time>'"`
	Variables:
	• time = 0 - 255. Measured in 1 millisecond increments.
	Example:
	`SEND_COMMAND dvRXRS232,"'CHARDM-10'"`
	Sets a 10-millisecond delay between all transmitted characters.

"'GET BAUD'"
Get the Rx serial port's current communication parameters.
The port sends the parameters to the device that requested the information.
	Syntax:
	`SEND_COMMAND <DEV>,"'GET BAUD'"`
	Example:
	`SEND_COMMAND dvRXRS232,"'GET BAUD'"`
	The port responds with:
	`<port #>,<baud>,<parity>,<data>,<stop>`
	(Example):
	`Port 1,38400,N,8,1`

"'RXCLR'"
Clear all characters in the receive buffer waiting to be sent to the Master.
	Syntax:
	`SEND_COMMAND <DEV>,"'RXCLR'"`
	Example:
	`SEND_COMMAND dvRXRS232,"'RXCLR'"`
	Clears all characters in the Rx serial port receive buffer waiting to be sent to the Master.

"'RXOFF'"
Disable the transmission of incoming received characters to the Master (default).
	Syntax:
	`SEND_COMMAND <DEV>,"'RXOFF'"`
	Example:
	`SEND_COMMAND dvRXRS232,"'RXOFF'"`
	Stops the Rx serial device from transmitting received characters to the Master.

UDM-RX02N Serial SEND COMMANDs (Cont.)	

"'RXON'"
Start transmitting received characters to the Master (default).
Enables sending incoming received characters to the Master.
	This command is automatically sent by the Master when a 'CREATE_BUFFER' program instruction is executed.
	Syntax:
	`SEND_COMMAND <DEV>,"'RXON'"`
	Example:
	`SEND_COMMAND dvRXRS232,"'RXON'"`
	Sets the Rx serial port to transmit received characters to the Master.

"'SET BAUD'"
Set the serial communication parameters.
	Syntax:
	`SEND_COMMAND <DEV>,"'SET BAUD <baud>,<parity>,<data>,<stop>'"`
	Variables:
	• baud = baud rates are: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200.
	• parity = N (none), O (odd), E (even)
	• data = 8 data bits
	• stop = 1 bit
	Example:
	`SEND_COMMAND dvRXRS232,"'SET BAUD 19200,N,8,1 '"`
	Sets the Rx serial port's communication parameters to 19200 baud, no parity, 8 data bits, 1 stop bit.

"'TXCLR'"
Stop and clear all characters waiting in the transmit out buffer and stops transmission.
	Syntax:
	`SEND_COMMAND <DEV>,"'TXCLR'"`
	Example:
	`SEND_COMMAND dxRXRS232,"'TXCLR'"`
	Clears and stops all characters waiting in the Rx serial port transmit buffer.

Serial Control Considerations With UDM-0808 and UDM-RX02N

The UDM-0808 (and DVX) has a native NetLinx interface which exposes the serial ports integrated into the RX02N as standard NetLinx serial ports. While this makes using these ports a lot simpler than using them with other UDMs (UDM-1604c, for example), the same physical transport is used, and this has some restrictions which might not be apparent from the programming model.

The UDM series transports video, audio and data over a single CAT5 cable. Each CAT5 cable has four pairs – three of these are used to transport the video (one pair for each of the color components).

The fourth pair is used to carry audio, data and power Audio from the hub to the RX02N is carried as a standard AES3 digital stream. If the hub is operating with analog audio it is digitized in the hub before being transported – the signal on the CAT5 cable is always digital.

Serial data from the UDM-0808 hub to the RX02N is embedded in the digital audio stream. This embedded data has a potential throughput of approximately 10kbps. If the serial ports are configured to handle data rates above this (38400kbps for example) then the hub will buffer incoming data. The buffers in the hub are very large and dynamic, so this buffering should not be a problem in normal practice.

Rx data from the RX02N to the hub has a much slower data rate. The data is transmitted by modulating the power supply and so is much more limited in throughput. The average data rate from RX02N to the hub is around 50bps.

The serial port on the RX02N can be configured to the usual selection of baud rates, but the RX02N must buffer this data and return it back to the hub at around 50bps (approximately 5 characters per second). The buffer in the RX02N is limited to 256 bytes, so care must be taken in how return data is handled in order to avoid buffer overflow.

In controlling most RS232 devices, the host usually sends a command string and the device replies with some data. Most devices have command strings and replies in the 8-64 character range. Because return feedback data is very slow, care should be taken programmatically not to depend on real time responses when programming feedback logic.

The RX02N is primarily designed to control display devices which deliver the media content from the RX02N via the UDM Hub. Most display devices use simple non-verbose protocol with limited and simple feedback functionality. As such, the RX02N is ideal for one-way serial control (or IR control) of most display devices.

Additionally, it can control low traffic two-way devices not dependent on real time feedback. An appropriate 2-way example would be a query of lamp hours from a projector once per hour which is dumped into a variable for viewing on a touch panel page.

An inappropriate use of serial control of a device via a RX02N would be the control of a verbose device via programming that is heavily dependent on real time feedback. A 32 byte reply from a device would take around 7 seconds, so this is significant. Because of this, for example, using a Duet module to control a video conferencing unit will not work.

When using 2-way communication, the serial port on each RX02N connected to a UDM hub operates independently, so the host need not wait for the reply from one port before sending data to another – they operate in parallel, but data to and from the same port must be serialized in order to avoid data loss. The UDM host would have to send the command and then wait until the reply had been received from the device, before sending the next command. The UDM-0808 handles incoming serial data in the same way as a normal serial port so data will arrive at the data event in the usual way. However, the next command should not be sent until the previous reply has been received in order to avoid Rx data loss.

232 traffic considerations above apply to UDM-0808 and other AMX devices which incorporate RX02N cat5 receivers such as DVX series.

UDM-RX02N Firmware Upgrades

Overview

The NetLinx Studio software application (available for free download from www.amx.com) provides the ability to transfer KIT firmware files to a NetLinx device such as the UDM-RX02N Receiver.

To send firmware files, select **Tools > Firmware Transfers,** then select *Send to NetLinx Device* from the sub-menu.

Before You Start

1. Verify you have the latest version of NetLinx Studio on your PC. Use the **Web Update** option in NetLinx Studio's Help menu to obtain the latest version. Alternatively, go to www.amx.com and login as a Dealer to download the latest version.
2. Go to **www.amx.com** and download the latest Firmware file. Firmware files are available to download from www.amx.com - on the product's page in the online catalog.
3. Verify that an Ethernet/ICSNet cable is connected from the NetLinx Master to the Ethernet Hub.
4. Verify that the NetLinx Master is powered On.
5. Determine the Device Number assigned to the target UDM-RX02N. See the *Device Numbering* section on page 49 for details.
6. Launch NetLinx Studio and open the Online Device Tree.

Sending a Firmware (*.KIT) File To the UDM-RX02N

Use the *Firmware Transfers* options in the Tools menu to update the firmware in the UDM-RX02N. NetLinx Devices such as the UDM-RX02N use KIT files for firmware upgrades.

A Kit file (.KIT) is a package of several files, all of which are required to upgrade the firmware, and are available online via www.amx.com. Firmware download links are provided in the relevant product page.*

- The Online Device Tree (Online Tree tab of the Workspace Window) displays information about each online device, including the current firmware version.
- Before attempting to upgrade the firmware, you must have the appropriate Kit file for your RX02N.

To update NetLinx firmware:

1. Choose **Tools > Firmware Transfers > Send to NetLinx Device** to open the *Send To NetLinx Device* dialog (FIG. 52).

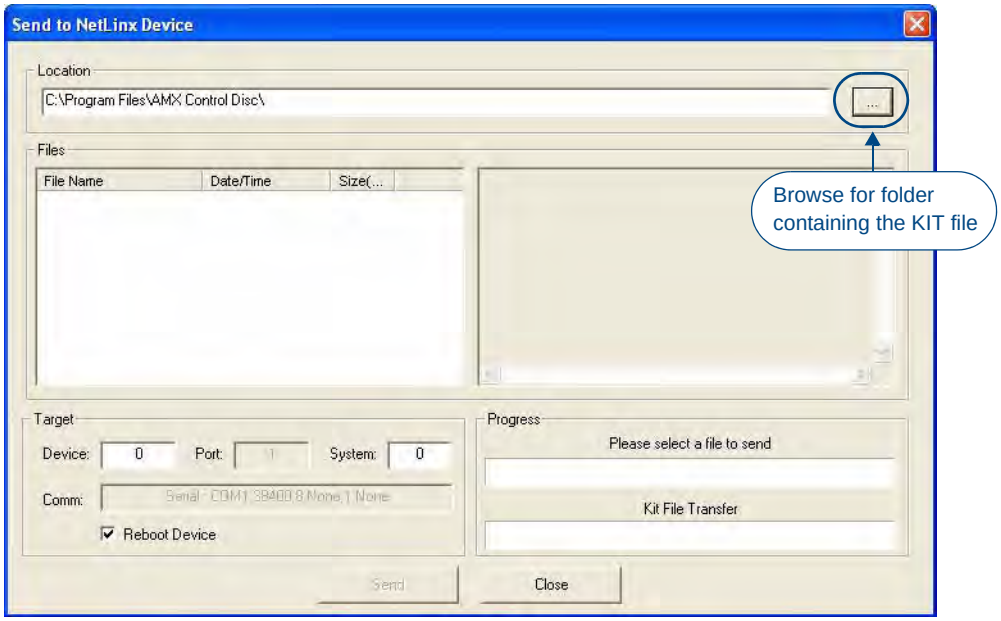


FIG. 52 Send To NetLinx Device dialog (NetLinx Studio)

2. Click the **Browse (...)** button to navigate to the target directory in the *Browse For Folder* dialog (FIG. 53).

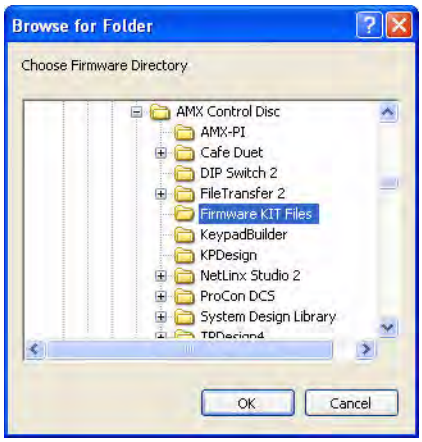


FIG. 53 Browse For Folder dialog (NetLinx Studio)

- The selected directory path is displayed in the *Send To NetLinx Device* dialog (*Location* text box).
- Assuming that the specified target directory contains one or more KIT files, the KIT files in the selected directory are displayed in the *Files* list box, with the file's last modified date and time (FIG. 54).

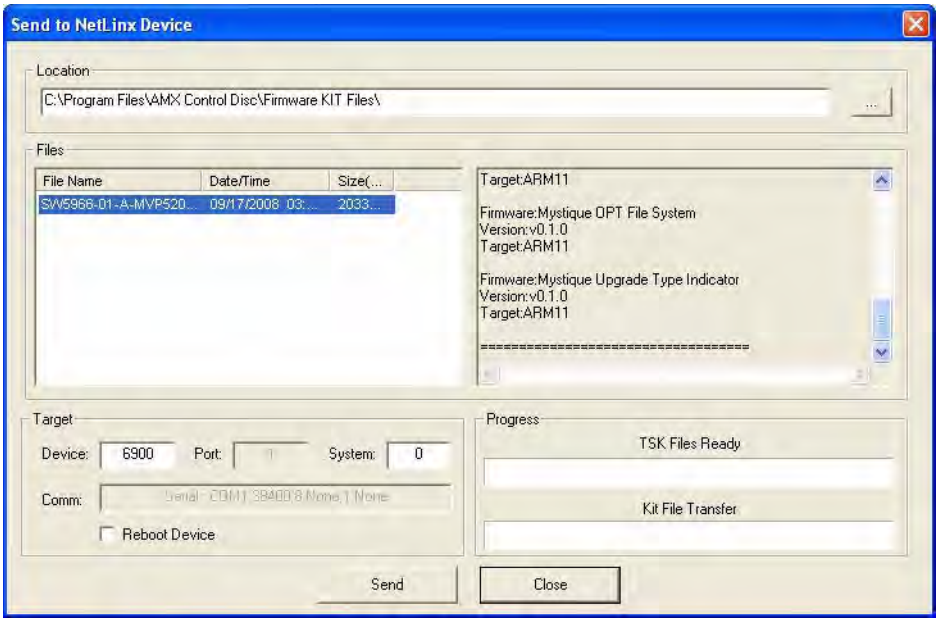


FIG. 54 Send To NetLinx Device dialog (NetLinx Studio)

3. Select the appropriate *.KIT file from the *Files* list.
4. Enter the Device and System ID numbers for the host UDM-0808-SIG in the **Device** and **System** text boxes.
   - During the upgrade process, the left most front panel LED(s) will blink, and the device stays offline.
   - Telnet to the IP of the UDM Hub, type MSG ON<enter> to see firmware transfer progress of each of the subcomponents.
5. Review the File, Connection, Address, and Target Device information before you send.
6. Click the **Send** button. You can watch the progress of the transfer in the *Send to NetLinx Device* dialog.

   NetLinx Studio transfers the files to the Hub and then forces it to reboot.

   After it reboots, the Hub goes through its upgrade process which may take several minutes to complete.

NOTE

When transferring files to RX02Ns, the UDM-0808-SIG Hub to which the RX02Ns are connected must be rebooted in order for the files to be transferred from the Hub to the Receivers.

- During the upgrade process, the left-most front panel LED blinks, and the device stays offline.
- Once the upgrade is complete, the LED will stop blinking and the Hub will come online.

Additional Documentation

For additional information on using NetLinx Studio, refer to the NetLinx Studio online help and Operation/ Reference Guide (available at www.amx.com).

UDM-RX02N IR File Transfers

Overview

The NetLinx Studio software application (available for free download from www.amx.com) provides the ability to transfer IR Library files to a NetLinx device such as the UDM-RX02N Receiver.

In the case of UDM-RX02Ns, IRL files are transferred to the RX02Ns, via the UDM-0808-SIG Hub.

FIG. 12 on page 13 shows how the UDM-0808-SIG and connected RX02Ns appear in NetLinx Studio's online device tree (see the *UDM-0808-SIG NetLinx Programming* section on page 13 for details).

Use the *File Transfer* tool in NetLinx Studio to map IRL files to one or more RX02Ns connected to a UDM-0808-SIG Hub.

Sending a IR Library (*.IRL) File To the UDM-RX02N

Use the *File Transfers* option in the Tools menu to update the firmware in the UDM-RX02N. NetLinx Devices such as the UDM-RX02N use IR Library (*.IRL) files.

1. Choose **Tools > File Transfer** to open the *File Transfer* dialog (FIG. 55).

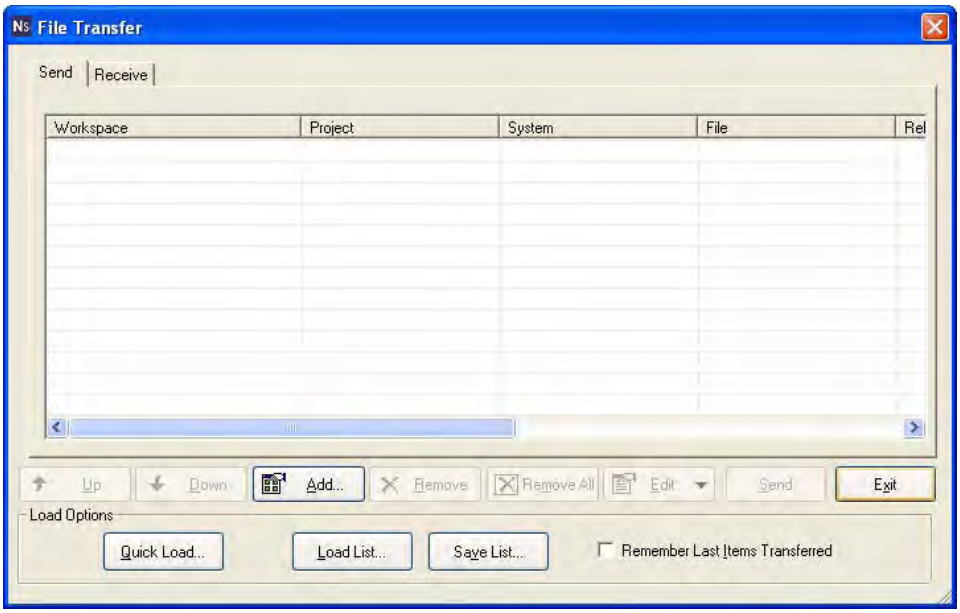


FIG. 55 File Transfer dialog (NetLinx Studio)

2. Click the **Add** command button to open the *Select Files For File Transfer* dialog, and open the **Other** tab (FIG. 56).

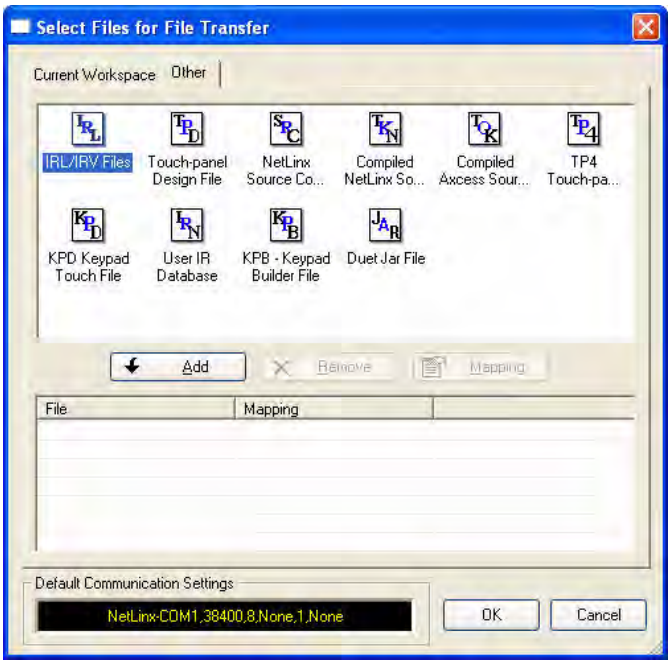


FIG. 56 Select Files for File Transfer dialog (NetLinx Studio)

Use this tab if the file(s) you want to transfer are not included in the open Workspace. This tab consists of a display of the different types of files that can be transferred to the Master or System devices on the bus.

3. Select the type of file (in this case, **IRL/IRV Files**) that you want to add to the Transfer List.
4. Click the **Add** button. This invokes the Open dialog, with the *Files of Type* selection already set to "**IR Files (*.irl, *.irv)**".
5. Locate and select the IR file that you want to add.
6. Click **Open**.
   a. If the selected file has not been mapped to a device, the *Enter Device Mapping Information* dialog is displayed (FIG. 57).

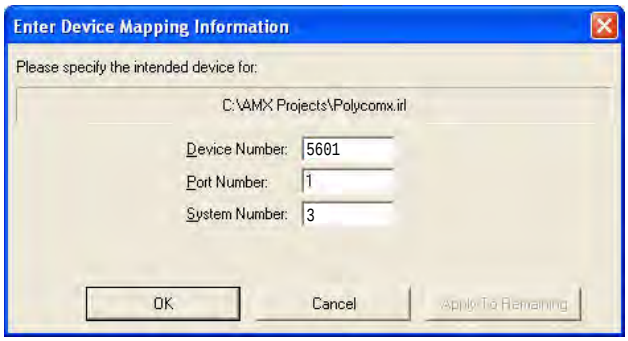


FIG. 57 Enter Device Mapping Information dialog (NetLinx Studio)

   b. Enter the device mapping information, and click **OK** to return to the *Select Files For File Transfer* dialog.
      - IR Files are sent to **Port 3** (IR Device Port) on the RX02Ns.
      - Refer to the *Device Numbering* section on page 49 for information on device numbering for UDM-RX02Ns.
      - Use the Online Device Tree to determine the device's assigned ID, if it has been changed.
7. At this point, the selected IR File and it's mapping information is indicated in the File list (FIG. 58):

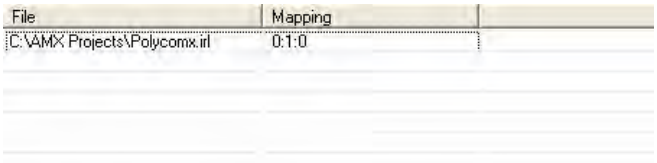


FIG. 58 Select Files for File Transfer dialog - Files To Send queue (NetLinx Studio)

8. Click **OK** to close the *Select Files For File Transfer* dialog, and return to the *File Transfer* dialog. The IR file should now appear in the Files To Send queue (FIG. 59).

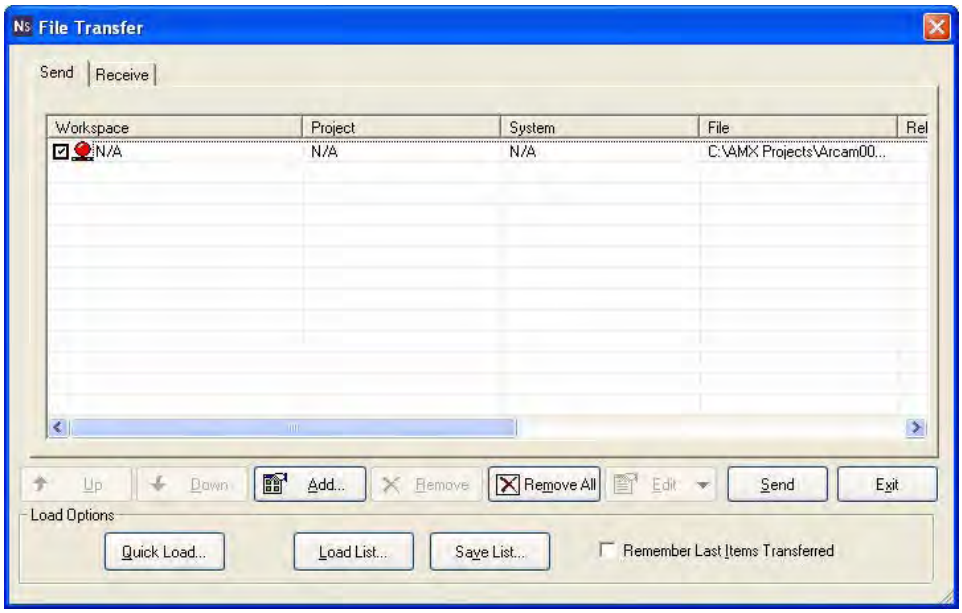


FIG. 59 File Transfer dialog (NetLinx Studio)

9. Click **Send** to transfer the file.
   - If the Host UDM-0808-SIG Hub has Firmware version v0.70 or higher, the Hub does not have to be rebooted before the IR file transfers.
   - If the Host UDM-0808-SIG has a Firmware version v0.55, the Hub must be rebooted. When the UDM-0808-SIG is rebooted, it will transfer IRL files to the target RX02Ns. If you have multiple RX02Ns connected to the UDM-0808-SIG Hub, complete all file transfers to the RX02Ns first, then reboot the Hub to update all of the RX02Ns at once.

Additional Documentation

For additional information on using NetLinx Studio, refer to the NetLinx Studio online help and Operation/ Reference Guide (available at www.amx.com).

UDM-RC05 Multi-Format IR Remote Control

Overview

The UDM-0808-SIG comes with one UDM-RC05 Multi-Format IR Remote Control (FG1402-70).

IR Codes / UDM-RC05 Pushbuttons

FIG. 60 provides the IR Codes associated with each pushbutton on the UDM-RC05.

FIG. 60 UDM-RC05 IR Remote Control

The UDM-RC05 has 43 buttons available, all of which can be mapped to the IR codes indicated in the following table:

UDM-RC05 - IR Codes		
IR Code	**Function**	**Description**
	Source A	N/A
	Source B	N/A
	Source C	N/A
	Source D	N/A
	Source E	N/A
	Source F	N/A
	Source G	N/A
	Source H	N/A
	Skip back	N/A
	Skip forward	N/A
	TV	N/A
	USER	N/A
1	1	
2	2	
3	3	
4	4	
5	5	
6	6	
7	7	
8	8	
9	9	
10	10	NetLinx (UDM-0808-SIG/DVX-2100HD)
	0	Endeleo (UDM-0102)
12	Power	Power Off of local display
13	Mute	Mute Sound of local display
14	Vol Up	Volume Up of local display
15	Vol Down	Volume Down of local display
16	Chan Up	Channel Up of Source X
17	Chan Down	Channel Down of Source X
20	Previous	Sky
43	Go Live	Sky
50	Services/Menu	Sky/DirecTV or Endeleo use
51	Select	Sky/DirecTV or Endeleo use
52	Nav Up	Sky or Endeleo use
53	Nav Down	Sky or Endeleo use
54	Nav Left	Sky or Endeleo use
55	Nav Right	Sky or Endeleo use
56	Exit	Sky/DirecTV or Endeleo use
57	I Information/Info	Sky/DirecTV
58	Help	Sky
59	Text	Sky
61	Box Office/List	Sky/DirecTV
63	Guide	Sky/DirecTV
64	Red	

UDM-RC05 - IR Codes (Cont.)		
IR Code	**Function**	**Description**
65	Green	
66	Yellow	
67	Enter Passthrough	Endeleo (UDM-0102)
	Blue	NetLinx (UDM-0808/SIG, DVX-2100HD)
68	Backup/Back	Sky/DirecTV
70	Play	Control source device/Sky+/DirecTV
71	Pause	Control source device/Sky+/DirecTV
72	Stop	Control source device/Sky+/DirecTV
73	Record	Control source device/Sky+/DirecTV
74	Fast Forward	Control source device/Sky+/DirecTV
75	Rewind	Control source device/Sky+/DirecTV
79	Interactive/Active	Sky/DirecTV
81	Cancel Passthrough	Endeleo (UDM-0102)
	AMX	NetLinx (UDM-0808/SIG, DVX-2100HD)

Using the UDM-RC05 for Video Compensation

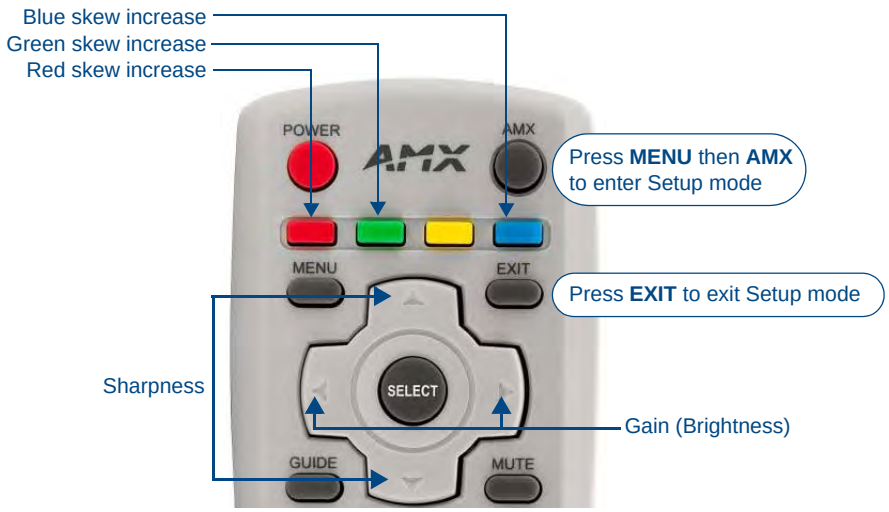


FIG. 61 UDM-RC05 IR Remote Control - Video Compensation buttons

The UDM-RC05 can also be used with UDM-RX02N receivers for video compensation (FIG. 61):

NOTE

*In order to use the UDM-RC05 to compensate video on the UDM-RX02N, the RX02N must be set to the AMX remote, via the "**RP**" command described on page 50.*

- Enter setup mode - press MENU, then AMX
- Exit setup mode - EXIT
- Red skew increase - RED
- Green skew increase - GREEN
- Blue skew increase - BLUE
- Gain (brightness) - LEFT and RIGHT
- Sharpness - UP and DOWN

UDM-ABB-8-SIG Audio Breakout Box

Overview

The UDM-ABB-8-SIG Audio Breakout Box (**FG1402-60**) delivers analog and digital audio, buffered and cascaded from the output side of an upstream UDM-0808-SIG Hub. The Audio Breakout Box (ABB) allows up to eight individual audio streams to be centrally delivered as inputs into distributed audio systems that may co-exist with the RX02N receivers.

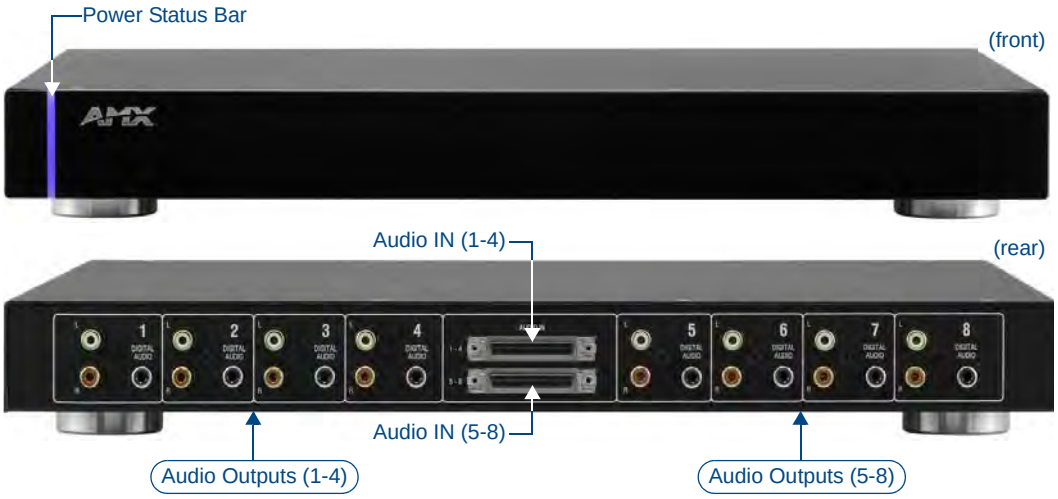


FIG. 62 UDM-ABB-8-SIG

Common Application

The ABB is ideal as an optional accessory to the UDM-0808-SIG Hub and NI-3101-SIG Central Controller. The ABB separates the audio from the eight audio / video inputs received by the UDM Hub, and delivers them in either analog or digital form to the inputs of a distributed audio system.

Features

- 8 Audio outputs (RCA analog and SPDIF digital)
- The UDM-ABB-8-SIG can be used to interface between the UDM-0808-SIG Hub and an audio distribution system (such as the DAS-T0808-SIG Distributed Audio unit)
- 1U rack-mounting

Compatibility

The UDM-ABB-8-SIG is compatible for use with UDM-0808-SIG Multi-Format Distribution Hubs.

Product Specifications

UDM-ABB-8-SIG Specifications	
Power Requirements:	• Power is supplied from the cascade output port of the UDM-0808-SIG Hub. • Power dissipated less than 5W.
Front Panel Components:	
Power Status bar:	Blue light bar on front panel indicates unit is powered.
Rear Panel Components:	
Audio In Connections:	2 SCSI ports support audio input from the Cascade Out ports on an UDM-0808-SIG Hub.
Audio Outputs:	• Black RCA female connector - Digital audio (SPDIF) • White RCA female connector - Analog audio Left • Red RCA female connector - Analog audio Right
Operating Environment:	• 32 - 104°F (0 - 40°C) • Max. relative humidity - 85% (non-condensing)
Dimensions (HWD):	• 1 3/4" x 19" x 12 1/2" (45 mm x 440 mm x 320 mm) • 1 RU
Weight:	8.0 lbs (3.62 Kg)
Certifications:	• CE • FCC part 15 Class A
Included Accessories:	• 19" mounting brackets • 2 UDM-EXP01 50-Pin Hub Cascade Cables (FG-UDM-EXP01) ***Note**: No audio cables supplied.*

Connecting the UDM-ABB-8-SIG to an UDM-0808-SIG

Use a UDM-EXP01 Cascade cable (FG1402-71) to connect the ABB to the UDM-0808-SIG Hub that will provide the audio sources (FIG. 63), as described below:

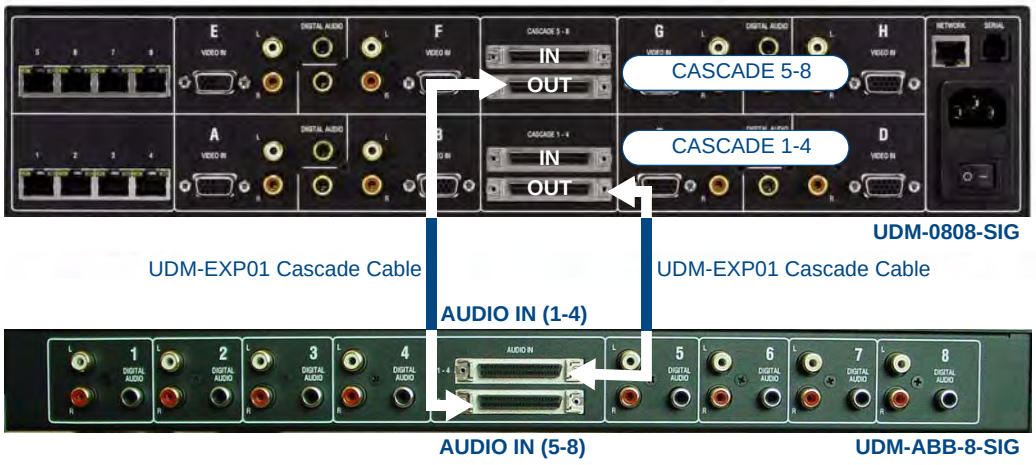


FIG. 63 Connecting the UDM-ABB-8-SIG to an UDM-0808-SIG

1. Connect a UDM-EXP01 Cascade Cable to the appropriate *CASCADE (OUT)* port on the UDM Hub (*CASCADE 1-4* or *CASCADE 5-8*):
   - Use the **CASCADE 1-4** (OUT) port to cascade audio from outputs A-D on the UDM Hub to the ABB.
   - Use the **CASCADE 5-8** (OUT) port to cascade audio from outputs E-H on the UDM Hub to the ABB.

2. Connect the other end of the Cascade Cable to the appropriate *AUDIO IN* port on the ABB (*1-4* or *5-8*):
   - Use the AUDIO IN port labeled **1-4** to connect to the **CASCADE 1-4** (OUT) port on the UDM Hub.
   - Use the AUDIO IN port labeled **5-8** to connect to the **CASCADE 5-8 (**OUT) port on the UDM Hub.

NOTE

Audio clock data is taken from the AUDIO IN 1-4 port, hence a valid connection must be made to this input for the ABB to work properly. The AUDIO IN 5-8 port is only used if you intend to cascade audio from more than four outputs on the UDM Hub.

3. Connect a UDM Cascade cable to the remaining *Cascade Out* port on the UDM-0808-SIG (CASCADE 1-4 or CASCADE 5-8), and connect the other end of the UDM Cascade cable to the appropriate *AUDIO IN* port on the UDM-ABB-8-SIG.

Connecting Audio Outputs

The UDM-ABB-8-SIG provides 8 sets of audio output ports (RCA and SPDIF).

Analog Audio (L/R) Out 

Digital Audio (SPDIF) Out

FIG. 64 UDM-ABB-8-SIG - Audio Output connectors

Use standard audio cables to connect the ABB to up to eight audio playback devices.

UDM-ABB-8-SIG Configuration

There is no direct configuration of the ABB. Rather, audio cascade options are configured on the source Hub itself (via the "SFI" Send Command described below).

NOTE

Refer to the UDM-0808-SIG NetLinx Programming section on page 13 *for a listing of all Send Commands supported by the UDM-0808-SIG.*

"SFI" Send Command

Use the "**SFI**" Send Command (on the source UDM-0808-SIG Hub) to specify whether the cascaded audio output on the source Hub will follow either:

- the local input (a source device connected directly to the Hub)

  - or -

- the input that has been programmatically switched to the associated output port (see the *SEND_COMMANDs* section on page 15).

For example, the cascade output for Input A on the source Hub can either be the signal from input A, or it can be whatever signal is switched through to port 1 from the source Hub.

Syntax:

```
SEND_COMMAND <DEV>, "'SFI<I#>F<F#>'"
```

Variables:

- **I#** = Input number (initial 'I' may be omitted):

  `1-8` = Inputs A-H (on the UDM Hub)

- **F#** = Output (on the UDM Hub) to follow selector:

  "**INPUT**" = local input (default setting)
  "**PORT**" = switched port input

Example 1:

```
SEND_COMMAND dvUDM,"'SFI2FINPUT'"
```

Sets expansion channel 2 to be whatever is connected to input B.

Example 2:

```
SEND_COMMAND dvUDM,"'SFI2FPORT'"
```

Sets expansion channel 2 to be whatever is connected to output port 2 (it follows port 2 as it is switched from one input to another).

FIG. 65 illustrates the difference between the INPUT and PORT selectors:

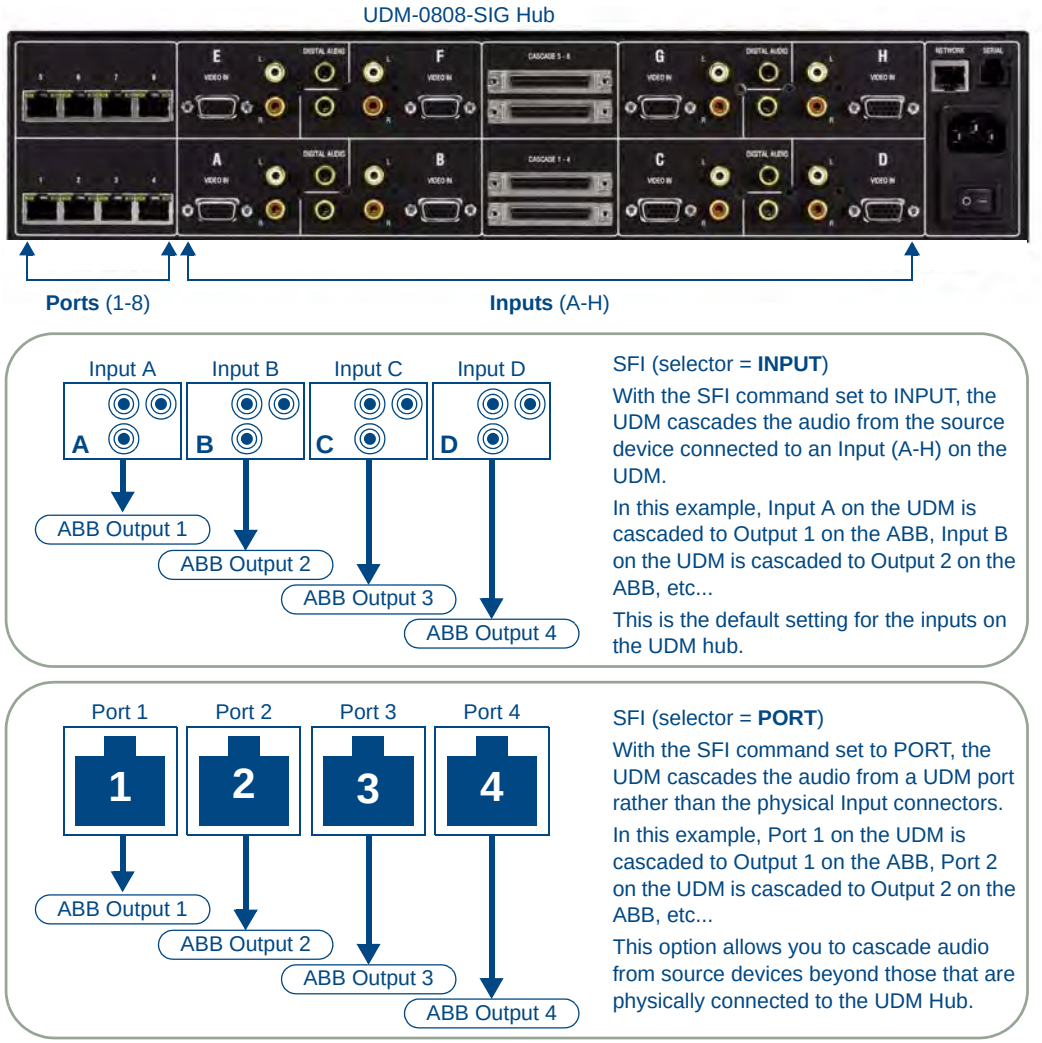


FIG. 65 "SFI" Send Command - INPUT & PORT Selectors

"SAI" Send Command

Use the "**SAI"** Send Command to configure a specific audio input to accept signals of a certain type, and set the source as either a local source (devices connected directly to the inputs A-H on the UDM Hub to which the ABB is connected) or cascaded from an upstream UDM-0808-SIG Hub.

Syntax:

```
SEND_COMMAND <DEV>, "'SAI<I#>T<T#>C<C#>'"
```

Variables:

- **I#** = input number - a value of zero indicates all inputs, initial 'I' may be omitted.
  - `1-8` = Inputs A-H
- **T#** = type of incoming audio:
  - "NONE"
  - "ANALOG"
  - "DIGITAL"
- **C#** = Cascade selector - if present assume CASCADE, if not assume LOCAL.
  - "LOCAL"
  - "CASCADE"

Example 1:

```
SEND_COMMAND dvUDM,"'SAI2TANALOG'"
```

Sets input B to accept analog stereo signals from "local" devices (source devices connected to the UDM input connectors).

Example 2:

```
SEND_COMMAND dvUDM,"'SA3TDIGITALC'"
```

Sets input C to accept digital audio from an upstream UDM Hub.

Example 3:

```
SEND_COMMAND dvUDM,'"SAI7DIGITALCLOCAL"'
```

Sets input G to accept digital audio from "local" devices.

Cascading Hubs

Overview

The UDM-0808-SIG features Cascade In/Out connectors which allow one UDM-0808-SIG to pass its inputs to another UDM-0808-SIG. This cascade port can also be used to connect the UDM-0808-SIG to the UDM-ABB-8-SIG Audio Breakout Box.

The UDM-0808-SIG supports up to eight inputs (A-H), and up to eight outputs (UDM Ports 1-8). Adding up to three more UDM-0808-SIG Hubs is possible via the two sets of CASCADE ports (In/Out 1-4, In/Out 5-8), and optional UDM Cascade Cables (FG-1402-71).

As indicated in FIG. 10 on page 10, the top set allows you to cascade Inputs E-H, while the bottom set is used for cascading Inputs A-D.

Cascading UDM-0808-SIG Hubs requires physically connecting the Hubs via the CASCADE IN and CASCADE OUT ports, as well as configuring the Source Hub and each Target Hub.

- Up to four UDM-0808-SIG Hubs (one Source Hub and up to three Target Hubs) can be cascaded together.
- Using these connectors does not reduce the number of available user ports.
- Cascading can increase the overall size of the matrix from 8x8 to 8x32.
- Inputs are only cascaded down the chain (not bi-directional).
- Each Hub can be assigned as either the Source Hub or as a Target Hub via NetLinx Send Commands ("MMON" and "MMOFF" - see page 83 for details).

Cascade In/Out Connectors

The CASCADE IN and OUT connectors on the UDM-0808-SIG require a UDM Cascade Cable (FG-1402-71 - not included).

CASCADE **IN** ports 5-8: from Source Hub's CASCADE OUT 5-8 port

CASCADE **OUT** ports 5-8: to Target Hub's CASCADE IN 5-8 port

CASCADE **IN** ports 1-4: from Source Hub's CASCADE OUT 1-4 port

CASCADE **OUT** ports 1-4: to Target Hub's CASCADE IN 1-4 port

FIG. 66 Cascade 5-8, 1-4 Ports

NOTE

Cascaded Hubs must be stacked on top of each other, to ensure that the 6" (15.24cm) UDM Cascade Cable is able to reach from Hub to Hub without strain.

Cascading Guidelines

Maximum Number of Cascaded 0808 Hubs

Due to the analog nature of the UDM-0808-SIG, the cascade limits of the product depend on how it is used.

As a general rule, AMX recommends limiting the number of cascaded units to 3, unless the system is being used in a signage application or with 4 or fewer inputs.

Applications With a Mix of Component and VGA Inputs

- Based on testing at AMX, only three 0808 Hubs should be cascaded together, providing a total of 24 outputs. The inputs will be connected to the Source ("master") Hub, and up to two Target ("slave") Hubs are connected via the cascade connectors.
- If there are less than eight inputs, these should be connected with empty inputs between them to the extent that empty inputs are available.

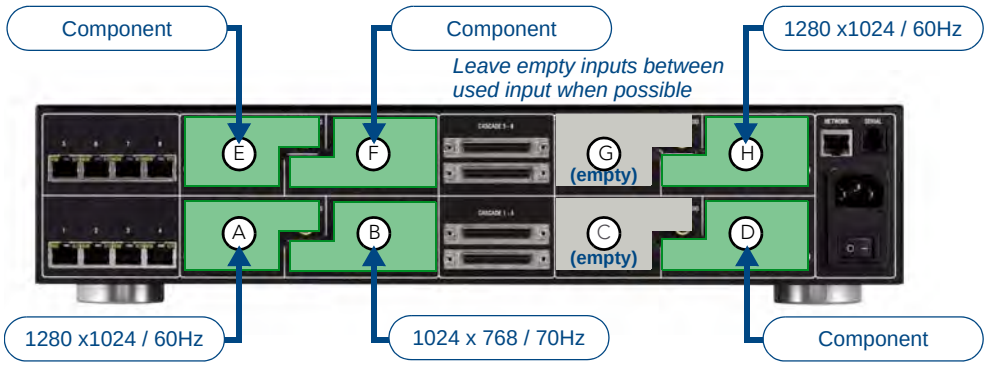


FIG. 67 Example VGA/Component application

As much as possible, the VGA and component inputs should have an input between them.

Signage Applications

- In an all-VGA installation (which could include signage applications), four hubs can be cascaded together, providing a total of 32 outputs.
- The VGA inputs will be connected to the Source Hub, and up to three Target Hubs are connected via the cascade connectors.
- If there are less than eight inputs, these should be connected with empty inputs between them as much as possible.
- If there are two adjacent inputs, these should be set to different resolutions and/or refresh rates.

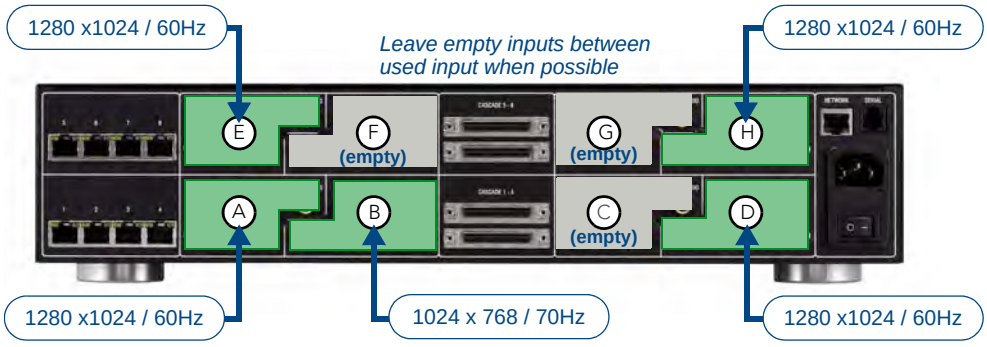


FIG. 68 Example Signage application

Maximizing Performance Of Cascaded UDM-0808-SIG Hubs

- At cable runs longer than 100m, the RX unit should be powered using a local power supply.
- When two VGA signals are placed on adjacent inputs (e.g. A and B, B and C, C and D), they should be set to different resolutions and/or refresh rates.
- Do not running audio on an input if it's not needed.
- On installations with less than eight inputs, the inputs should be spaced as far apart as possible. For example, on an installation with four inputs, inputs A, D, E, and H should be used.

Configuring a UDM-0808-SIG Hub For Cascading

The UDM-0808-SIG sends the inputs it is using to the Cascade output (no configuration required).

The exception to this is audio, which can be set to output either the audio inputs or outputs (see *Using the UDM-ABB-8-SIG Audio Breakout Box* below).

On an UDM-0808-SIG that has signals cascaded into it, you can choose the cascade input using the **SVI** (see page 21) and **SAI** (see page 20) SEND COMMANDs. If you append 'CASCADE' to the end of those commands, the UDM-0808-SIG will use the cascaded input in place of the local input.

Refer to the *Configuring the Source Hub* section on page 82 and the *Configuring the Hub as a Target Hub* section on page 83 for details.

Using the UDM-ABB-8-SIG Audio Breakout Box

The UDM-ABB-8-SIG Audio Breakout Box is used to convert the analog and digital audio inputs to analog and digital outputs in a way that tracks the configuration of the UDM-0808-SIG. For example, consider the following examples (FIG. 69 & FIG. 70):

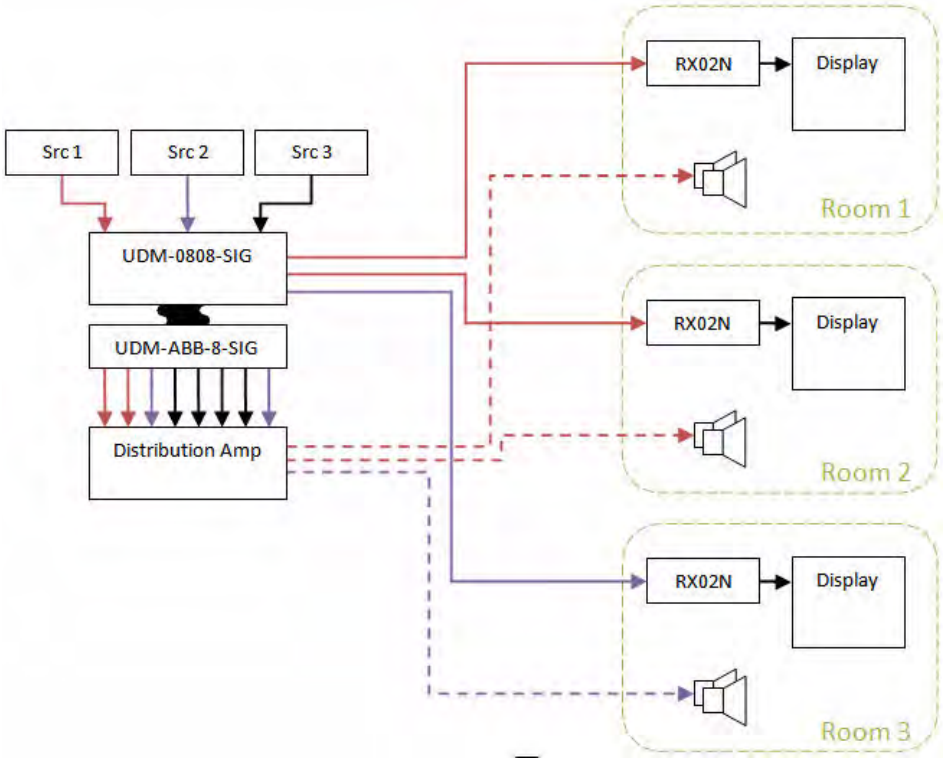


FIG. 69 UDM-ABB-8-SIG Audio Breakout Box Configuration 1

In the example shown in FIG. 69:

- Source 1 is routed to UDM-0808-SIG Outputs 1 and 2
- Source 2 is routed to Output 3

- The audio for these sources, in addition to being sent down the Cat 5 will also be output on their respective outputs on the Audio Breakout Box.

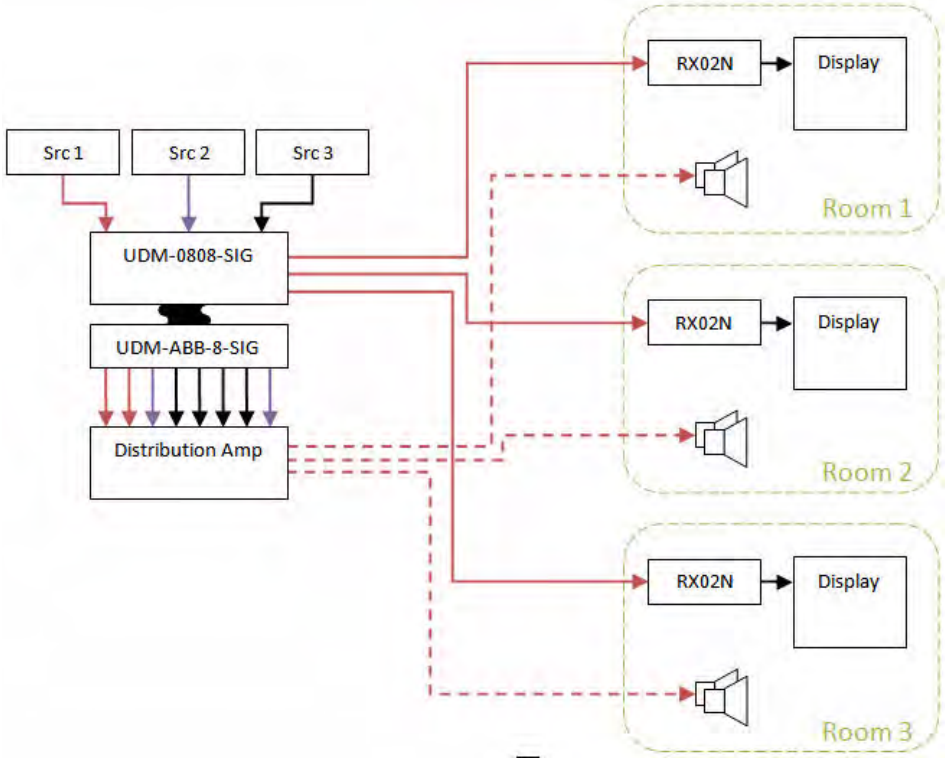


FIG. 70 UDM-ABB-8-SIG Audio Breakout Box Configuration 2

In the example shown in FIG. 70:

- The UDM-0808-SIG has been commanded to route Source 1 to Outputs 1 through 3.
- The audio outputs on the Audio Breakout Box automatically reflect this change so that the audio will be sent through the distribution amplifier to the appropriate locations.

The UDM-ABB-8-SIG can be used in a cascade of multiple UDM-0808-SIGs. However, since there are no cascade outputs on the Audio Breakout Box, it will be the last device in the cascade chain.

NOTE

There are no commands required to control the Audio Breakout Box. Once the cascade port is configured for use with the Audio Breakout Box, no other commands are required to operate the Audio Breakout Box. In this regard, everything is handled inside the UDM-0808-SIG. Refer to the UDM-ABB-8-SIG Audio Breakout Box section on page 71 *for details.*

Cascading Two Hubs - Cable Connections

1. Attach one end of the UDM Cascade cable to the CASCADE OUT port on the Source Hub. The Source Hub provides the video source that will be cascaded to the Target Hub (FIG. 71).
2. Attach the other end of the UDM Cascade cable to the CASCADE IN port on the Target Hub, which will transmit this cascaded video source to a display device (via a UDM-RX02N receiver), or to another Hub if using more than 2 hubs for cascading (see the *Cascading up to Four Hubs - Cable Connections* section on page 81).

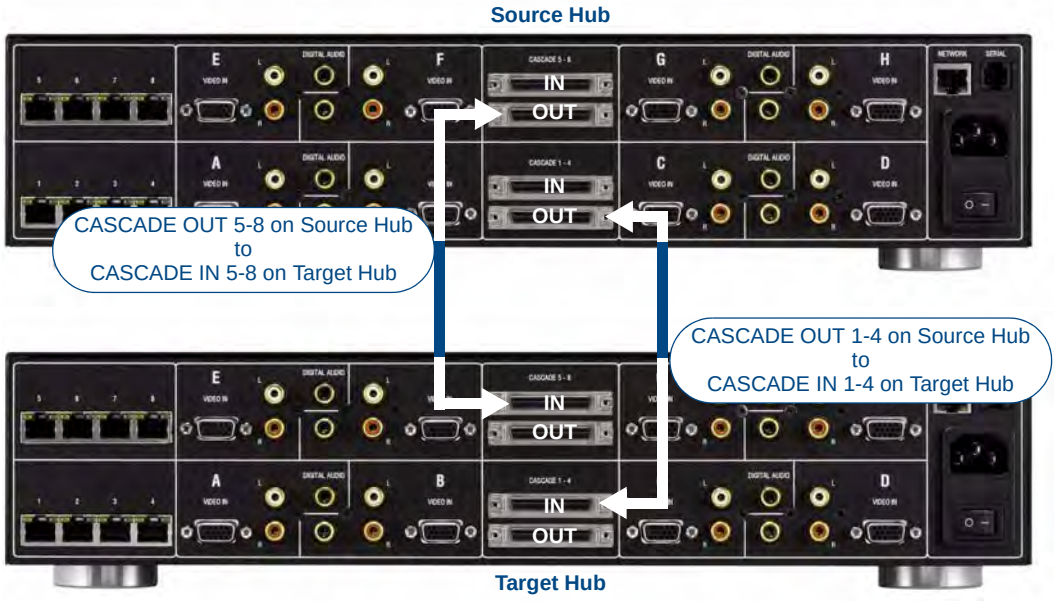


FIG. 71 Two Cascaded UDM-0808-SIG Hubs

Cascading up to Four Hubs - Cable Connections

1. Cascade A/V inputs from the Source Hub to the first Target Hub (Target Hub #1 in FIG. 72):
   a. Attach one end of the UDM Cascade cable to a **CASCADE OUT** port on the Source Hub (**1-4**, **5-8**, or both).
   b. Attach the other end of the UDM Cascade cable to the matching **CASCADE IN** port on Target Hub #1.
2. Cascade A/V inputs from Target Hub #1 to Target Hub #2:
   a. Attach one end of the UDM Cascade cable to a **CASCADE OUT** port on Target Hub #1 (**1-4**, **5-8**, or both).
   b. Attach the other end of the UDM Cascade cable to the matching **CASCADE IN** port on Target Hub #2.
3. Cascade A/V inputs from Target Hub #2 to Target Hub #3:
   a. Attach one end of the UDM Cascade cable to a **CASCADE OUT** port on Target Hub #2 (**1-4**, **5-8**, or both).
   b. Attach the other end of the UDM Cascade cable to the matching **CASCADE IN** port on Target Hub #3..

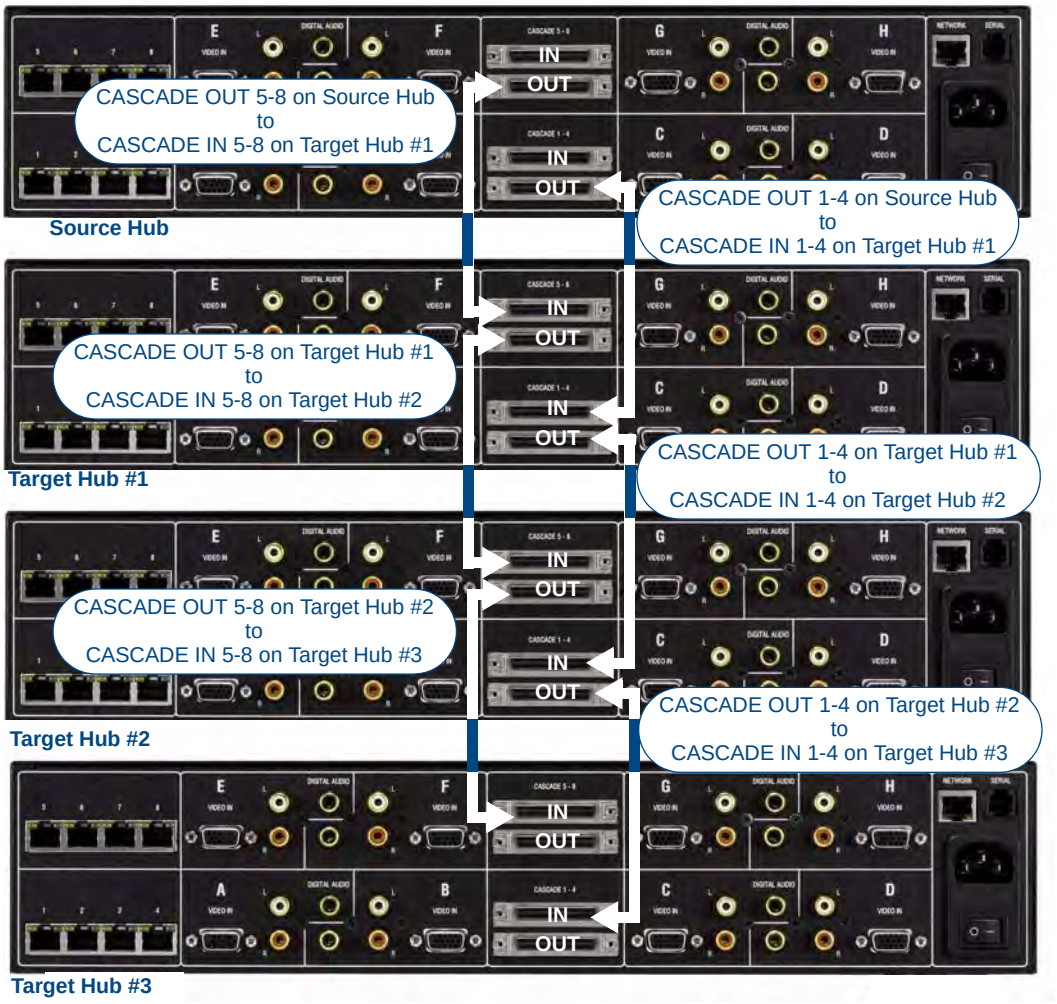


FIG. 72 Four cascaded UDM-0808-SIG Hubs

Configuring the Source Hub

In a cascaded Hub installation, the first UDM-0808-SIG Hub in the chain must be configured as the "Source" Hub. Subsequent downstream Hubs must in turn be configured as "Target" hubs, and should follow a top (Source) to bottom (Target #1, Target #2, Target #3) configuration.

NOTE

Analog audio is converted to digital audio before being sent to the UDM-RX02N receivers. The required digital audio clock data is retrieved from the Cascade out ports.

"MMON" Send Command

Use the "'**MMON**'" Send Command to configure a Hub as the Source Hub in a Cascaded system:

Syntax:

```
SEND_COMMAND <DEV>,"'MMON'"
```

Example:

```
SEND_COMMAND dvUDM,"'MMON'"
```

Sets this Hub to Source Hub mode.

If Source or Target mode is changed, then the Hub must be rebooted via the "'RESET"' Send Command (page 18).
When changing a Hub from a Target Hub back to a Source Hub, you must send the MMON command, RESET the unit, allow it to come online, then RESET it again.

Configuring the Hub as a Target Hub

In a cascaded Hub installation, downstream Hubs must be configured as "Target" hubs, and should follow a top (Source) to bottom (Target #1, Target #2, Target #3) configuration.

"MMOFF" Send Command

Use the "'**MMOFF**'" Send Command to configure a Hub as a Target Hub in a Cascaded system:

Syntax:

```
SEND_COMMAND <DEV>,"'MMOFF'"
```

Example:

```
SEND_COMMAND dvUDM,"'MMOFF'"
```

Sets this Hub to Target Hub mode.

If Source or Target mode is changed, then the Hub must be rebooted via the "'RESET"' Send Command (see page 18).

Refer to the *UDM-0808-SIG NetLinx Programming* section on page 13 for a listing of all Send Commands supported by the UDM-0808-SIG.

Specifying Cascaded Ports

Any Target UDM-0808-SIG Hub has the option of defining each of it's inputs (A-H) as either:

- **Local** - A/V sources are directly connected to the Hub, and defined as Inputs to one or more Input ports (A - H).

  - or -

- **Cascaded** - A/V sources are physically connected to the upstream Source Hub, and passed downstream to the Target Hub via the UDM Cascade cable. Any Input Ports that are configured as Cascaded will replace the available inputs on the Target Hub.

In this way, you can create a fully matrixed 8x32 system, or create zones pulling from different sets of sources, with certain sources from the Source Hub made available to all zones.

"SVI" Send Command

Use the "**SVI**" Send Command to configure a specific video input to accept signals of a certain type, and set the source as either a local source (connected directly to the UDM-0808-SIG Inputs A-H) or cascaded from an upstream UDM-0808-SIG Hub.

Syntax:

```
SEND_COMMAND <DEV>, "'SVI<I#>T<T#>C<C#>'"
```

Variables:

- **I#** = input number - a value of zero indicates all inputs, initial 'I' may be omitted
  - `1-8` = Inputs A-H
  - `0` = All inputs
- **T#** = type of incoming video:
  - "VGA"
  - "CVBS"
  - "SVIDEO"
  - "COMP"

- **C#** = Cascade selector - if present assume CASCADE, if not assume LOCAL
  - "LOCAL"
  - "CASCADE"

Example 1:

```
SEND_COMMAND dvUDM,"'SVI0TCVBSC'"
```

Sets all Inputs to CVBS from cascaded inputs.

Example 2:

```
SEND_COMMAND dvUDM,"'SVI1TVGAC'"
```

Sets Input A to VGA / Cascaded.

Example 3:

```
SEND_COMMAND dvUDM,"'SVI2TCOMPC'"
```

Sets Input B to Comp / Cascaded.

Refer to the UDM-0808-SIG NetLinx Programming section on page 13 *for a listing of all Send Commands supported by the UDM-0808-SIG.*

Cascading Hubs - Code Examples

```
BUTTON_EVENT[TP,1]  // CASCADE COMPONENT VIDEO
{
  PUSH:
     {
       // Sets all(0) inputs to COMPONENT(COMP) from the cascade inputs
      SEND_COMMAND UDM,'SVI0TCOMPC'"
     }
}

BUTTON_EVENT[TP,2] // CASCADE COMPOSITE VIDEO
{
  PUSH:
     {
      // Sets input 1 to COMPOSITE (CVBS) from the cascade inputs
      SEND_COMMAND UDM,'SVI1TCVBSC'
     }
}

BUTTON_EVENT[TP,3]  // CASCADE ANALOG AUDIO
{
  PUSH:
     {
      // Sets all(0) inputs to ANALOG from the cascade inputs
      SEND_COMMAND UDM, 'SAI0TANALOGC'
     }
}

BUTTON_EVENT[TP,4]  // CASCADE DIGITAL AUDIO
{
  PUSH:
     {
       // Sets input 1 to DIGITAL from the cascade inputs
       SEND_COMMAND UDM, 'SAI1TDIGITALC'
     }
}

BUTTON_EVENT[TP,5]  // CASCADE QUERY
{
  PUSH:
     {
       // Returns cascade configuration of all inputs
       SEND_COMMAND UDM, '?SF'
     }
       SEND_COMMAND UDM, '?SF2'
     // Returns configuration of input B
}
```

Appendix

Ascii / Hex Conversion

Devices are typically controlled either by using ascii text strings or using the HEX equivalent.

Control codes can be entered using ASCII, HEX or a combination of both where certain ASCII codes are difficult to enter (e.g. carriage return).

Char	Hex		Char	Hex		Char	Hex		Char	Hex
(nul)	00		(sp)	20		@	40		`	60
(soh)	01		!	21		A	41		a	61
(stx)	02		"	22		B	42		b	62
(etx)	03		#	23		C	43		c	63
(eot)	04		$	24		D	44		d	64
(enq)	05		%	25		E	45		e	65
(ack)	06		&	26		F	46		f	66
(bel)	07		'	27		G	47		g	67
(bs)	08		(	28		H	48		h	68
(ht)	09		)	29		I	49		I	69
(nl)	0a		*	2a		J	4a		J	6a
(vt)	0b		+	2b		K	4b		k	6b
(np)	0c		,	2c		L	4c		l	6c
(cr)	0d		-	2d		M	4d		m	6d
(so)	0e		.	2e		N	4e		n	6e
(si)	0f		/	2f		O	4f		o	6f
(dle)	10		0	30		P	50		p	70
(dc1)	11		1	31		Q	51		q	71
(dc2)	12		2	32		R	52		r	72
(dc3)	13		3	33		S	53		s	73
(dc4)	14		4	34		T	54		T	74
(nak)	15		5	35		U	55		u	75
(syn)	16		6	36		V	56		v	76
(etb)	17		7	37		W	57		w	77
(can)	18		8	38		X	58		x	78
(em)	19		9	39		Y	59		y	79
(sub)	1a		:	3a		Z	5a		z	7a
(esc)	1b		;	3b		[	5b		{	7b
(fs)	1c		<	3c		\	5c		|	7c
(gs)	1d		=	3d		]	5d		}	7d
(rs)	1e		>	3e		^	5e		~	7e
(us)	1f		?	3f		_	5f		(del)	7f

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