ATLONA

PROFESSIONAL

Atlona HDMI 16 by 16 Matrix Switcher over CAT5e/6

AT-PRO2HD1616M

User Manual

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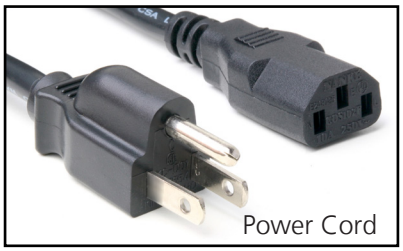
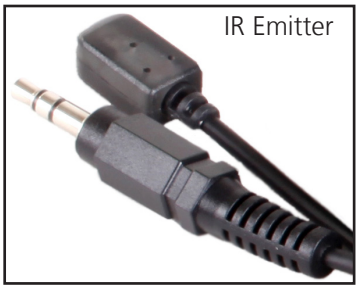
Introduction

Extend HDMI and DVI (with HDMI to DVI adapter ex. AT-14040) sources up to 330ft at 1080p or 1920x1200. The Atlona HDMI 16 by 16 Matrix Switcher over CAT5e/6/7 allows for effortless control of up to 32 devices through IR remote control, RS-232, 3rd party IR controllers and the front panel. With stereo audio embedding combine stereo audio with DVI signals over one CAT5e/6/7 cable. To ensure all audio passes through the 16 by 16 Matrix Switcher supports all Lossy and Lossless formats of Dolby and DTS. The AT-PRO2HD1616M delivers the best quality available with pass through of up to 1080p, 1920x1200, 3D, and Dolby TrueHD and DTS-HD Master audio signals.

Package Contents

- 1 x 16x16 Matrix Switcher over CAT5e/6/7
- 1 x IR Receiver
- 17 x IR Emitter
- 2 x 24V/6.25A DC adaptor
- 2 x Power Cord
- 1 x Remote Control
- 1 x User Manual





Features

- HDBaseT allows IR, RS-232, audio and visual signals to pass over a single CAT5e/6/7 cable.
- IR ports for zone dedicated control through IR remote control and 3rd party IR controllers.
- 8 programmable I/O memories, save up to 8 routes for faster switching to the most commonly used configurations.
- EDID learning function for up to 8 video display EDIDs.
- Multiple control interfaces such as RS-232, IR, and the front panel.
- Dolby TrueHD and DTS-HD Master Audio pass through HDMI output interface.
- Compatible with DVI/D (with DVI/D to HDMI adapter such as AT14040), allowing DVI/D source signal to be passed to displays.
- Audio embedding enabled with DVI/D sources. The built in 3.5mm audio import port allows DVI/D audio to be passed through with the CAT5e/6/7 connection to HDMI displays.
- Optional receiver module AT-PRO2HDREC-DA de-embeds audio and sends it to an amp through the S/PDIF port.
- HDCP compliant

Before You Start

- Make sure when connecting the CAT5e/6/7 cables a 568B termination method is used.
- Avoid using patch panels and wall plates during initial set up and testing of the matrix switcher.
- Make sure the matrix is connected to a component surge suppressor and line conditioner.

Note: *Atlona's warranty does not cover damage due to electrical disturbances. A component surge suppressor and line conditioner are highly suggested especially in areas with electrical storms.*

- Be sure you're using a mono to mono (2 conductor) 3.5mm IR cable (i.e. AT-MINIMONO6 - available to purchase at Atlona.com) when using IR output control from 3rd party controllers, stereo (3 conductor) 3.5mm cables are not compatible.

Specifications

Bandwidth frequency	6.75 Gbps
Input Ports	16 x HDMI (Female Type) 17 x IR 3.5mm 1 x Firmware update 16 x 3.5mm Stereo Audio
Output Ports	16 x CAT 5e/6/7 1 x RS-232 17 x IR 3.5mm
Resolution outputs	Video: up to 1080p@60Hz Vesa: up to 1920x1200
Dimensions (HxWxD)	6.93x18.98x14.27 (inch) or 176x482x362.5 (mm)
Weight	21.61lbs or 9.8 kg
Temperature	-4°F to 158°F or -20°C to 70°C
Power consumption	125W

Remote Control

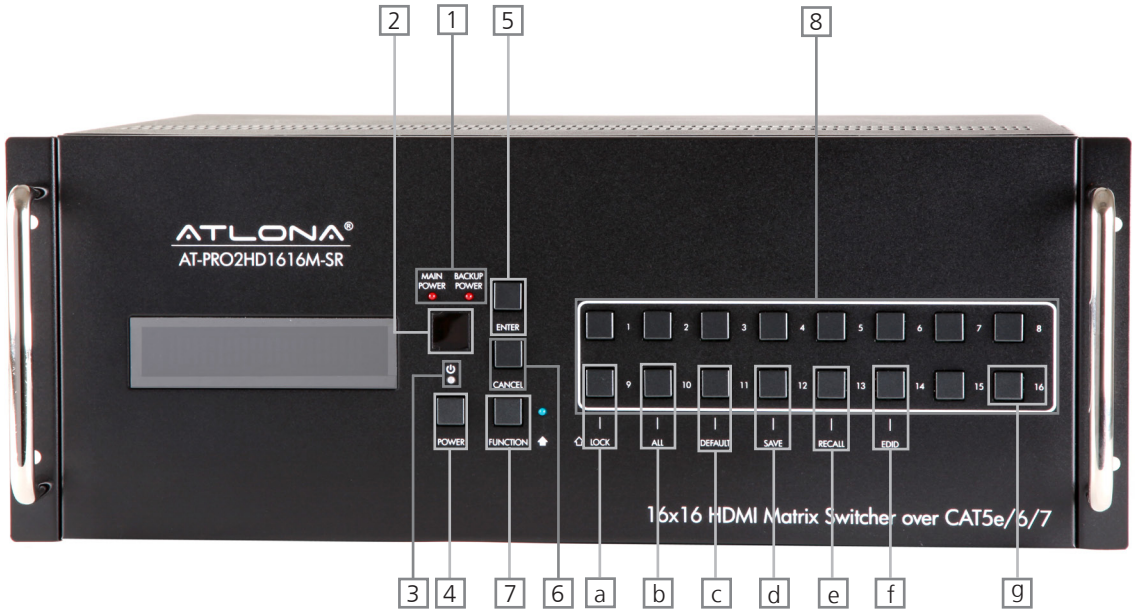
Output selection. Numbers correspond with the CAT5e/6/7 category cable outputs on the matrix.

Arrow buttons are not functional for this product.

Input selection. Numbers correspond with the HDMI inputs on the matrix.

Panel Description

Front Panel



1. Power Indicators. Red LED will light up when using main or backup power supply.
2. IR Receiver Window. Receives the signal from the included IR Remote Control or a 3rd party IR Controller.
3. Power Indicator. The light will illuminate red when the Matrix is in standby mode or green when the matrix is on.
4. Power Button. Cycles the power between on or off (standby) mode.
5. Enter Button. Use to view current status for inputs and outputs or to confirm a command.
6. Cancel Button. Within the functions menu use to go back one screen or to the home screen.

Note: You cannot power off or change functions unless you go to the home screen.

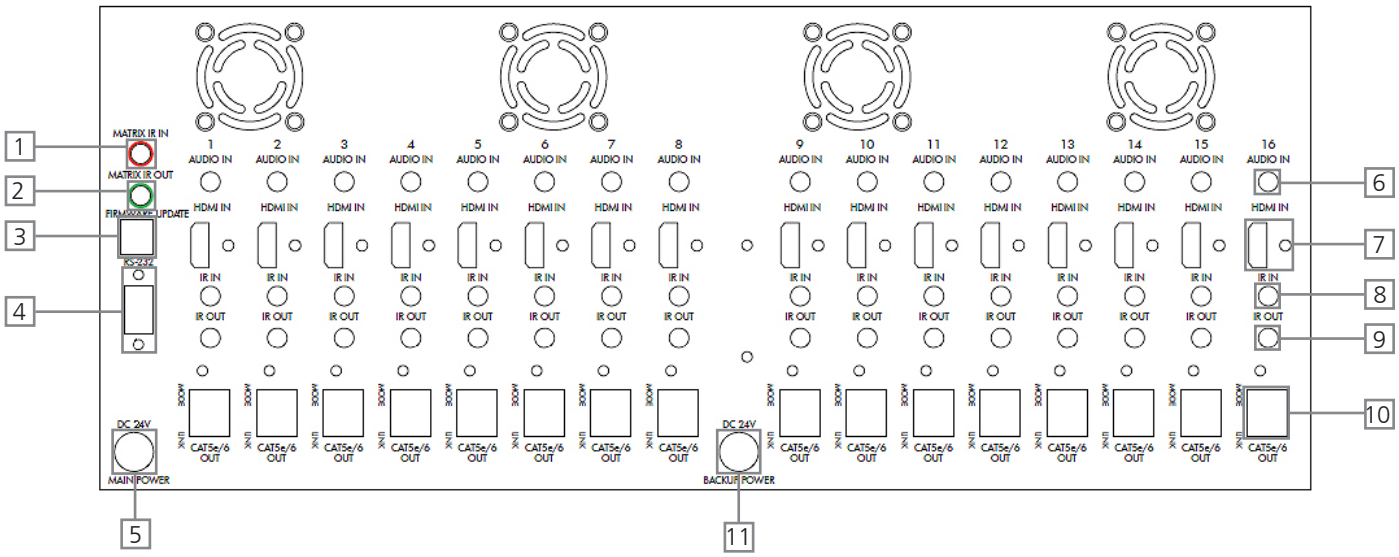
7. Function Button. Allows you to select command options.
    a. ***Lock:*** Locks all the panel keys so nothing can be altered until unlocked.
    b. ***All:*** Save a single input to all the outputs with this function.
    c. ***Default:*** Mirrors all inputs to corresponding outputs. (i.e. 1 to 1, 2 to 2, 3 to 3, etc.)
    d. ***Save:*** Save the current input and output route to memory. Up to 8 programmable memories.
    e. ***Recall:*** Load the input and output routes that you have previously saved.
    f. ***EDID:*** This function allows for individual output properties to be saved, altered or loaded to inputs. EDID has 8 memory settings to save to for easy loading later.

Note: Default setting for EDID is the highest common HD resolution of all connected devices. (i.e. if you have resolutions ranging 720p, 1080i, and 1080p then 720p would be the default resolution for all connected displays.)

    g. ***Firmware:*** This function option will display the current firmware the Matrix has installed.

8. Number buttons. Use these buttons to select input and output paths or use with the function button to change multiple matrix settings.

Back Panel



1. Matrix IR IN - Used to control matrix I/O switching from a 3rd party IR controller.
2. Matrix IR Out - Global output, combines IR for all discrete IR output ports.
3. Firmware Update - Type B USB Port used for updating the matrix firmware only
4. RS-232 - Connect to this port for control from a computer or 3rd party controller.
5. Main Power - Plug included 24V/6.25A DC adaptor to power the matrix switcher
6. Audio Input Ports - 3.5mm stereo audio port enabled only when a DVI/D adaptor is connected, disabled when HDMI cable is connected.
7. HDMI Input Ports - Connect HDMI sources into these ports, such as DVD players, Blu-ray players, computers, etc.
8. IR 3.5mm mono In ports - Used in conjunction with 3rd IR party controller to extend IR control commands to video displays over CAT5e/6/7.

Note: ***Be sure you're using a mono to mono 3.5mm IR cable (i.e. AT-MINIMONO6) for 3rd party control boxes, stereo 3.5mm cables are not compatible.***

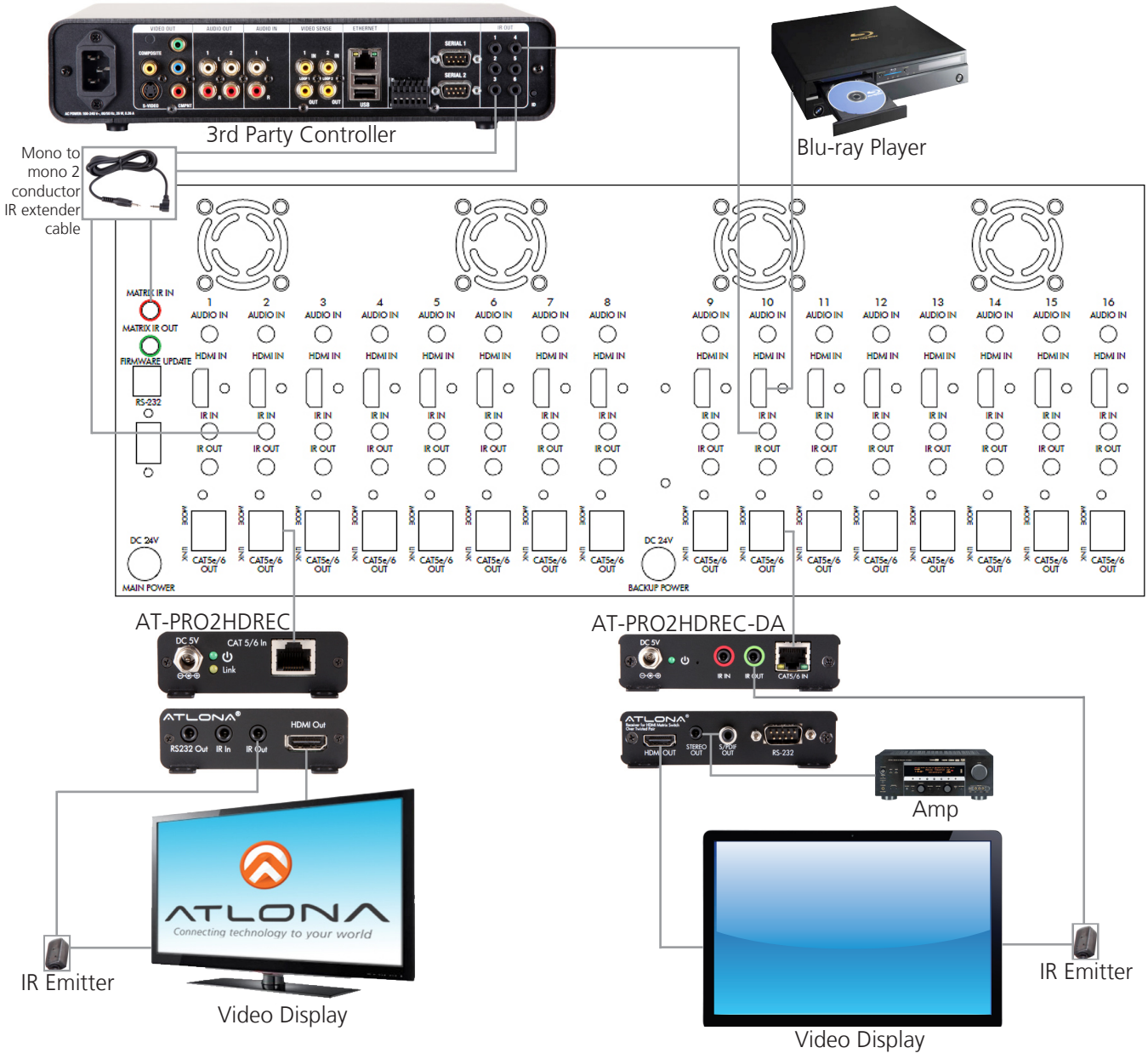
9. IR Out ports - Sends IR signal to sources through a 3.5mm mono IR emitter
10. CAT5e/6/7 Output ports - Extends video and bidirectional RS-232, IR, and audio signals through a single CAT5e/6/7 cable.
11. Backup Power - Redundant power supply in case the main power supply fails. Includes second 24V/6.25A DC adaptor.

Connection and Installation

3rd Party Controller Set Up

Note: *3.5mm 3 conductor (stereo) cables are not compatible. Please use 2 conductor (mono) IR cables with IR input ports.*

Important: When using a 3rd party IR controller remember to connect a mono to mono 2 conductor IR extender cable into the matrix IR IN port for IR control of the matrix switcher I/O.

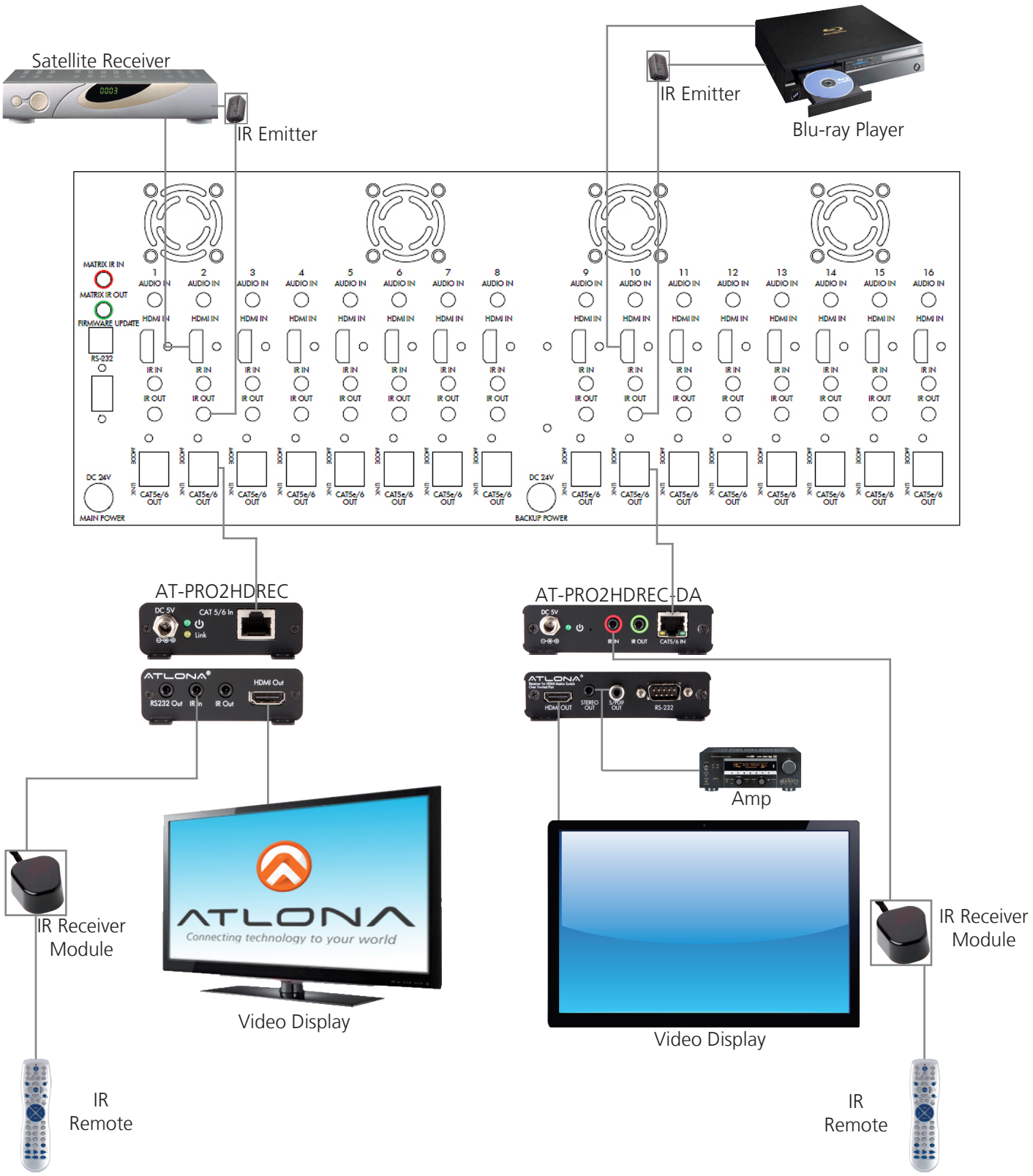


With the new feature of the IR in ports the AT-PRO2HD1616M has the unique ability to receive IR commands through a 3rd party controller and send it out through the CAT5e/6 port to control the displays in any zone.

Note: *Be sure to use a mono to mono (2 conductor) 3.5mm IR extender from the 3rd party controller to the AT-PRO2HD1616M (example: AT-MINIMONO6)*

IR Remote Control Set Up

Note: *When using an IR remote control all sources can be controlled as well as the local display.*

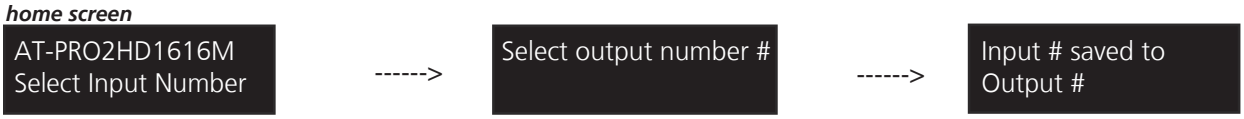


Matrix I/O Control

Setting inputs and outputs on the Matrix front panel: There are 3 ways to set up inputs and outputs to start with.

1. **Basic Control**.

Note: From the home screen press the enter button to check the status.



***Important**: To bypass the home screen and access function options, press the Function key.*

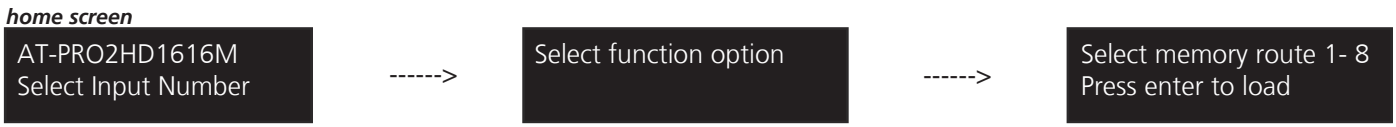
2. To route **one input** device **to all outputs.** Function option is "**ALL**".

3. To **Mirror** all inputs and outputs. Function option is "**Default**".

Once the basic control set up is done there is the option to save the matrix's route. The AT-PRO2HD1616M has 8 programmable memories which are useful for fast switching to the most used routes.

To **save** a route. Function option is "**Save**".

To **load** the saved memory. Function option is "**Recall**"

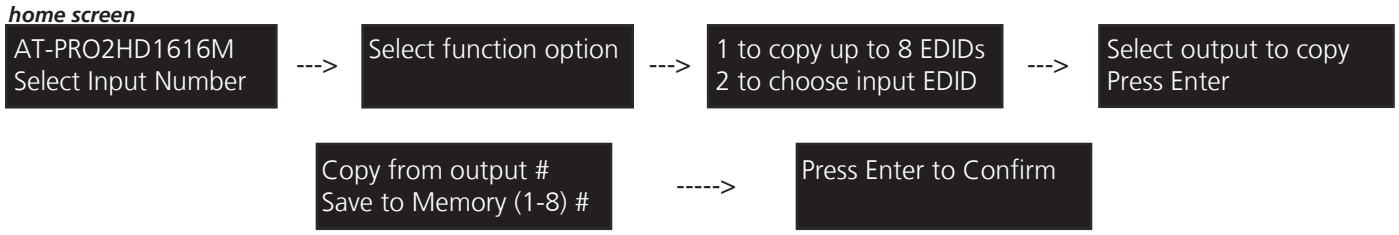


EDID Set Up

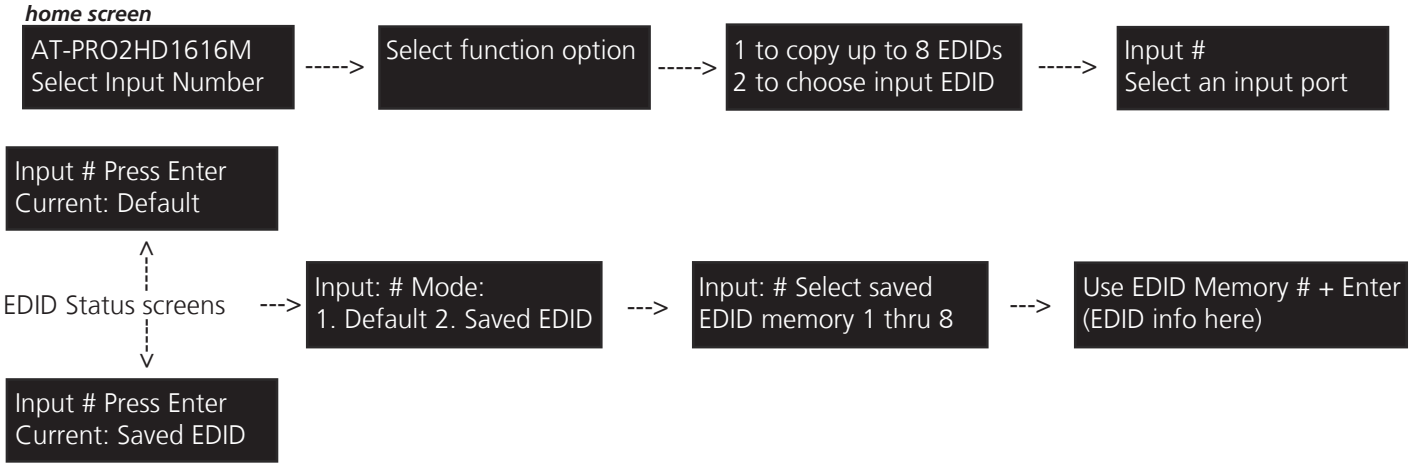
The final set up for the Matrix Switcher is for the EDID. When the matrix is completely connected and turned on it will load the **default EDID**, which is the highest common native resolution of the devices. (*i.e. With devices connected that range from 720p, 1080p, 2 channel audio, multi-channel audio and 3D, the default resolution will be 720p.* **Multi-channel audio and 3D are not available on default unless all devices have these features.**)

There are two options when setting up EDID: Default and Copy. In order to have any options other than default different EDIDs must first be learned. The AT-PRO2HD1616M can copy up to 8 EDIDs to memory.

To save EDIDs follow the LCD on screen prompts of the switcher choosing option 1.



To load a saved EDID follow the on screen instructions of the Matrix LCD choosing option 2.

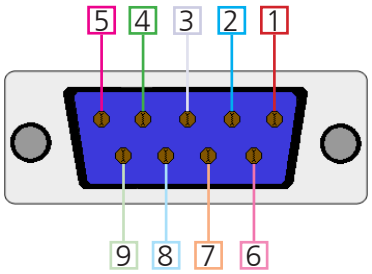


The AT-PRO2HD1616M at this time should be fully set up and ready to use.

RS-232

Connection

RS-232 is connected through a 9-pin female D connector. The pins will have functions associated with them, some will be unassigned.



No.	Pin	Function
1	----	Not used
2	Tx	Transmit
3	Rx	Receive
4	----	Not used
5	Gnd	Ground
6	----	Not used
7	----	Not used
8	----	Not used
9	----	Not used

Command

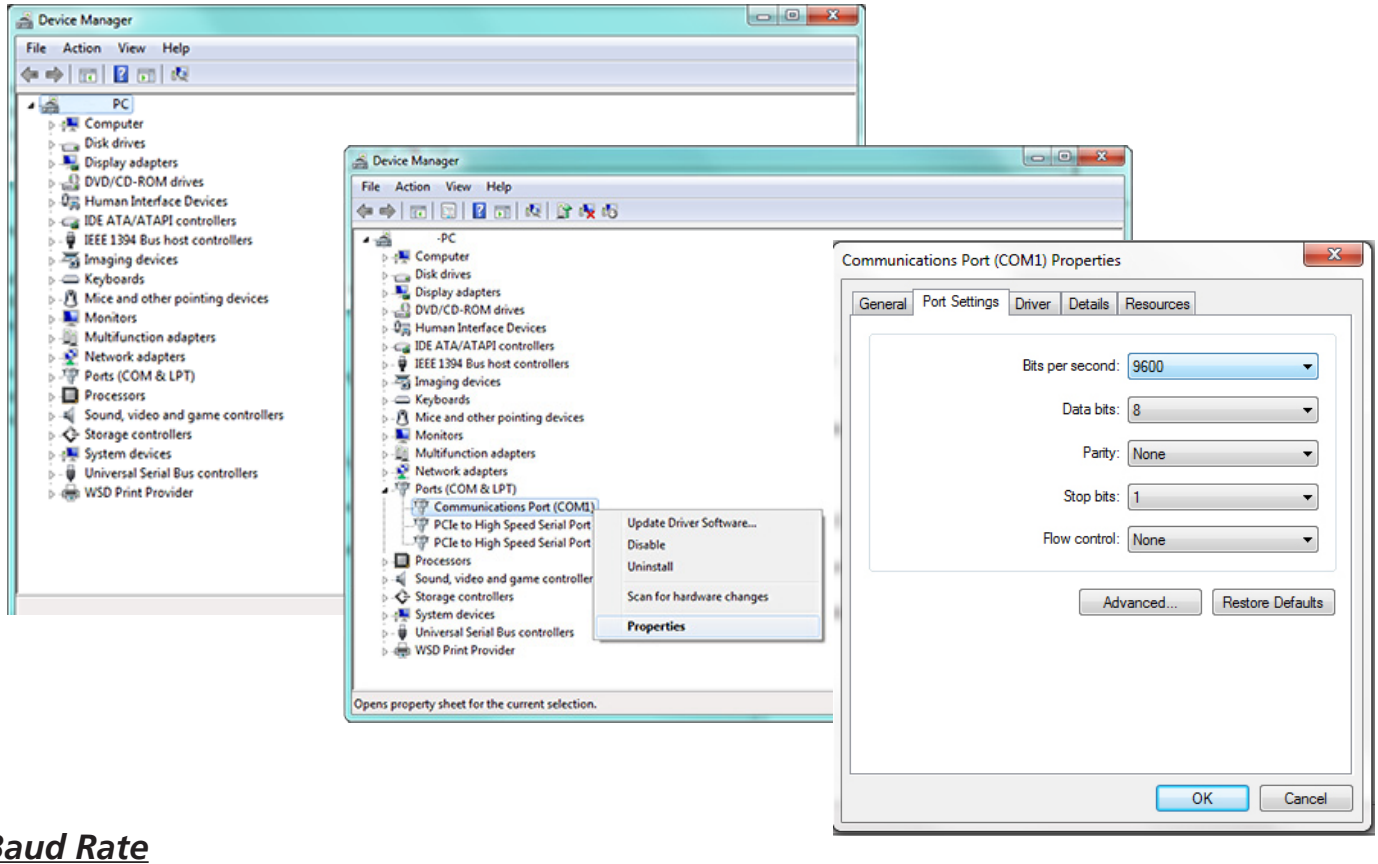
The command codes are very sensitive, do not change capitalization, spacing, or lettering.

Command	Feedback	Description
PWON	PWON	Power on
PWOFF	PWOFF	Power off
All#	All#	Resets all inputs to corresponding outputs (input 3 to output 3)
x1$	x1$	Turns off output channel (to turn off output 3 = x3$)
x1AVx2	x1AVx2	Switch input to output (input 3 to output 5 = x3AVx5)
x1AVx2,x3,x4	x1AVx2,x3,x4	Switch input to multiple outputs (input 3 = x3AVx1,x2)
RS232zoneX[command] ex: RS232zone1[PWON]	RS232zoneX[command] ex: RS232zone1[PWON]	Send commands to devices connected to the receiver RS-232 ports. Commands are the same as the ones stated in this table. X = zone number example: Turning the power on for the device connected in zone 1
Statusx1	x7AVx1	Shows what input is connected to selected output
Status	x1AVx1,x2AVx2, x3AVx4, ...	Displays which inputs are currently connected to which outputs (feedback will have no spaces)
Save**Y** (ex. Save2)	Save**Y** (ex. Save2)	Saves settings for future use, saves vary from 0 to 9
Recall**Y** (ex. Recall2)	Recall**Y** (ex. Recall2)	Pulls up saved settings for the number you selected
Clear**Y** (ex. Clear2)	Clear**Y** (ex. Clear2)	Erases the save for the number you selected
IRON	IRON	Turns IR receiver on
IROFF	IROFF	Turns IR receiving off
Mreset	Mreset	Sets matrix back to the default settings

Each command is terminated with a carriage return.
Each feedback is terminated with a carriage return and line feed.
Note: If the command fails or is incorrect the feedback should be "Command FAILED"

RS-232 Set Up

To set up the RS-232 hyperterminal (if not using 3rd party software) the first thing needed is to find the RS-232 communications port under the computer's device manager. Once there right click the port and select properties. Under the properties menu select the port settings tab and update the menu to the matrix default: Bits Per Second: 115200, Data Bits: 8, Parity: None, Stop Bits: 1 and Flow Control: None.



Baud Rate

To change the baud rate of the matrix or the receivers (i.e. AT-PRO2HDREC or AT-PRO2HDREC-DA) an RS-232 hyperterminal will be needed. Once the RS-232 hyperterminal is set up changing the baud rate will be done with a command line. **The baud rate for the matrix is for matrix control and the receiver baud rate is for control of the RS-232 device in the zone being altered.**

Note: *Baud Rate must be only 2400, 4800, 9600, 19200, 38400, 57600, or 115200*

To **view** the current baud rate of the Matrix: select function, press 16, and then press 4.

home screen

AT-PRO2HD1616M Select Input Number -----> Select function option -----> AT-PRO2HD1616M FW Ver: 1.0.X -----> AT-PRO2HD1616M Console: 115200 8 None 1

To **view** the current baud rate of the Outputs: select function, press 16, and then press 5 (press 5 repeatedly to cycle through each output).

home screen

AT-PRO2HD1616M Select Input Number -----> Select function option -----> AT-PRO2HD1616M FW Ver: 1.0.X -----> AT-PRO2HD1616M Port x: 9600 8 None 1

Command for Matrix baud rate

CSpara[baudrate,data-length,parity,stop-bit] (data, parity, and stop for matrix must be 8,0,1)

For example if you wish to change the baud rate to 38400 the command would look like this:
CSpara[38400,8,0,1]

Command for Receiver baud rate status

RS232para

The RS-232 status command will provide feedback for the current parameters for each output.

Example: (See example of feedback below)

RS232para
Current RS232 parameter:
- Port 1 :BaudRate 2400bps, DataBits 0, Parity None, StopBits 1.
- Port 2 :BaudRate 9600bps, DataBits 0, Parity ODD, StopBits 1.
- Port 3 :BaudRate 9600bps, DataBits 0, Parity None, StopBits 1.
- Port 4 :BaudRate 9600bps, DataBits 0, Parity None, StopBits 1.
- Port 5 :BaudRate 19200bps, DataBits 0, Parity None, StopBits 1.
- Port 6 :BaudRate 9600bps, DataBits 0, Parity None, StopBits 1.
- Port 7 :BaudRate 9600bps, DataBits 0, Parity None, StopBits 1.
- Port 8 :BaudRate 9600bps, DataBits 0, Parity None, StopBits 1.
- Port 9 :BaudRate 38400bps, DataBits 0, Parity None, StopBits 1.
- Port 10 :BaudRate 9600bps, DataBits 0, Parity None, StopBits 1.
- Port 11 :BaudRate 9600bps, DataBits 0, Parity None, StopBits 1.
- Port 12 :BaudRate 9600bps, DataBits 0, Parity None, StopBits 1.
- Port 13 :BaudRate 9600bps, DataBits 0, Parity None, StopBits 1.
- Port 14 :BaudRate 9600bps, DataBits 0, Parity None, StopBits 1.
- Port 15 :BaudRate 57600bps, DataBits 0, Parity None, StopBits 2.
- Port 16 :BaudRate 9600bps, DataBits 0, Parity None, StopBits 1.

Note: *Default for the outputs is: Baud-9600bps, Data length-8bit, Parity-None, Stop Bit-1*

The ability to check baud rate status on the outputs will help to identify control compatibility for in zone RS-232 devices.

Command for Receiver (output zone) baud rate

RS232paraX[baudrate,data-length,parity,stop-bit]

X represents the zone# (output#), the data length must be 7 or 8, partity bit will be 0 for none, 1 for odd, 2 for even, and the stop-bit must be 1 or 2.

For example if you wish to change the baud rate to 19200, data length 8, ODD parity, and 1 stop-bit on other receiver in zone 6 to 19200 the command would look like this:

RS232para6[19200,8,1,1]

Updating and Resetting

Updating firmware

At times there will be new firmware to update, fix, or change functionality of products. Atlona has made this as easy as possible for updating on the job by simply downloading the firmware onto a PC.

Needs:

- Verify the current firmware version
- PC (not compatible with MACs)
- OS that supports USB mass storage devices
- USB A to USB B cable (i.e. AT11008)

To **view** the current firmware. Function option is "**16**"

home screen

AT-PRO2HD1616M Select Input Number	------>	Select function option	------>	AT-PRO2HD1616M Firmware 1.0.X

Preparing the Matrix:

- Unplug the power cable.
- Hold the Cancel button while replugging in the power.
- Connect the USB B to USB A cable into the Matrix and the Computer.

Updating the Matrix:

The computer should auto detect the connection, if it does not, open the USB device from my computer.

- Click open in a new folder. (if auto run detects connection)
- Delete the file in the folder. (there should be only one file, if more delete all files)
- Copy and Paste the new firmware file into the USB folder.
- Unhook the Matrix from the computer.
- Unplug the power cable from the AT-PRO2HD1616M
- Replug the power and start the matrix normally. Your update should be complete

If you wish to verify the new firmware, press function then button 16 and it will display on the OSD.

Resetting to factory settings

Atlona understands that settings can be troublesome and at times its just easier to set things back to factory settings. To make things easier a simple one step reset was created.

To reset the matrix, hold down the buttons 1 and 4 while powering on. If done correctly the matrix will be back to factory settings when it turns on.

Safety Information

Safeguards

To reduce the risk of electric shock, do not expose this product to rain or moisture

If the wall plug does not fit into your local power socket, hire an electrician to replace your obsolete socket.

Do not modify the wall plug. Doing so will void the warranty and safety features.

This equipment should be installed near the socket outlet and the device should be easily accessible in the case it requires disconnection.

Precautions

FCC regulations state that any unauthorized changes or modifications to this equipment, not expressly approved by the manufacturer, could void the user's authority to operate this equipment.

Operate this product using only the included external power supply. Use of other power supplies could impair performance, damage the product, or cause fires.

In the event of an electrostatic discharge this device may automatically turn off. If this occurs, unplug the device and plug it back in.

Protect and route power cords so they will not be stepped on or pinched by anything placed on or against them. Be especially careful of plug-ins or cord exit points from this product.

Avoid excessive humidity, sudden temperature changes or temperature extremes.

Keep this product away from wet locations such as bathtubs, sinks, laundries, wet basements, fish tanks, and swimming pools.

Use only accessories recommended by Atlona to avoid fire, shock, or other hazards.

Unplug the product before cleaning. Use a damp cloth for cleaning and not cleaning fluid or aerosols. Such products could enter the unit and cause damage, fire, or electric shock. Some substances may also mar the finish of the product.

Never open, remove unit panels, or make any adjustments not described in this manual. Attempting to do so could expose you to dangerous electrical shock or other hazards. It may also cause damage to your AT-PRO2HD1616M. Opening the product will void the warranty.

Do not attempt to service the unit. Disconnect the product and contact your authorized Atlona reseller or contact Atlona directly.

Warranty

Limited Warranty

Atlona Technologies warrants that (a) its products (the AT-PRO2HD1616M) will perform substantially in accordance with the accompanying written materials for a period of 3 years from the date of receipt and (b) that the product will be free from defects in materials and workmanship under normal use and service for a period of 3 years. In the event applicable law imposes any implied warranties, the implied warranty period is limited to 3 years from the date of receipt. Some jurisdictions do not allow such limitations on duration of an implied warranty, so the above limitation may not apply to customers that fall within those areas.

Customer Remedies

Atlona Technologies' and its suppliers' entire liability and Customer's exclusive remedy shall be, at Atlona Technologies' decision, either return of the price paid for the product, repair, or replacement of the product that does not meet this Limited Warranty and which is returned to Atlona Technologies with a copy of the Customer's receipt. This Limited Warranty is void if failure of the product has resulted from accident, abuse, misapplication, or natural occurrence. In example but not limited to: power surges (electrical storms, local power outage), dropping the product (or items on the product), contact with fluids, and physical misconduct (i.e. kicking or punching). Any replacement product will be warranted for the remainder of the original warranty period.

No other warranties

To the maximum extent permitted by applicable law, Atlona Technologies and its suppliers disclaim all other warranties, either expressed or implied, including, but not limited to, implied warranties of merchantability and fitness for a particular purpose, with regard to the product and any related written materials. This Limited Warranty gives customer specific legal rights. Customers may have other rights depending on the jurisdiction.

No liability for damages

To the maximum extent permitted by applicable law, in no event shall Atlona Technologies or its suppliers be liable for any damages arising out of the use of or inability to use this product, even if Atlona Technologies has been advised of the possibility of such damages. Such damages include but are not limited to: special, incidental, consequential, or indirect damages for personal injury, loss of business profits, business interruption, loss of business information, or any other pecuniary loss. Atlona Technologies' and its suppliers' entire liability under any provision of this agreement shall be limited to the amount actually paid by you for the product. Some Jurisdictions do not allow the exclusion or limitation of liability for consequential or incidental damage. The above limitations may not apply to you in such jurisdictional cases.

Atlona Product Registration

Thank you for purchasing this Atlona product. - We hope you enjoy it and will take an extra few moments to register your new purchase.

Registration creates an ownership record if your product is lost or stolen and helps ensure you'll receive notification of performance issues and firmware updates.

At Atlona, we respect and protect your privacy, assuring you that your registration information is completely secure. Atlona product registration is completely voluntary and failure to register will not diminish your limited warranty rights.

To register go to: http://www.atlona.com/registration