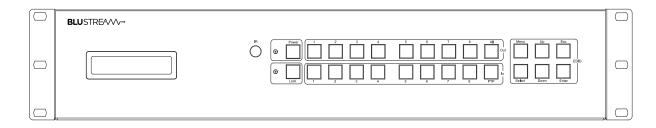
PLATINUM MATRIX SOLUTIONS



- ► PLA88ARC
- ► PLA88L
- ► PLA66ARC
- ► PLA66L

User Manual



Thank you for purchasing this product.

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.



Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

Safety And Performance Notice

The transmission distances of HDMI over UTP cables are measured using TE CONNECTIVITY 1427071-6

EIA/TIA-568-B termination (T568B) of cables is recommended for optimal performance.

To minimize interference of the unshielded twisted pairs in the CAT5e/6 cable do not run the HDBaseT / Cat5e/6/6a cabling with or in close parallel proximity to mains power cables.

Do not substitute or use any other power supply other than the enclosed unit, or a Bluestream approved replacement.

Do not disassemble either the Transmitter or Receiver units for any reason. Doing so will void the manufacturer's warranty.

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Introduction

Our Platinum Range of HDBaseT matrix products offer the very best performance and flexibility for the custom installer. Built on our advanced modular 8x8 chassis, any combination of inputs and outputs can be specified to suit the exact AV distribution needs of the project. Blustream Platinum Matrix include both HDBaseT/HDMI inputs and outputs allowing extension of HDMI signal of up to 100m*. The built-in audio matrix with HDMI/analogue/digital embedding and de-embedding further adds audio distribution capabilities to a feature rich HDMI matrix.

PLATINUM FEATURES:

- 8x HDMI inputs which can be independently routed to 8x HDBaseT/HDMI video outputs (quantity dependent on model)
- 4K video support
- Supports distances of up to 100m* on a single CAT cable
- HDBaseT inputs (quantity dependent on model) allowing sources to be located remotely using Blustream HDBaseT transmitters
- Supports POH (Power Over HDBaseT) to power Blustream transmitters and receivers - no local power supplies required
- LAN serving (Ethernet Switch) with compatible Blustream receivers

- Integrated audio matrix (24x16 PLA88 models, 18x12 PLA66 models)
- Audio Return Channel (ARC) with compatible Blustream HDBaseT receivers
- Analogue audio L/R embedding onto HDMI outputs
- HDMI Audio de-embedding to analogue audio L/R + digital coaxial outputs
- Bi-directional RS-232 and IR from all input and output locations (with compatible Blustream transmitters and receivers)
- Control of Matrix via front panel, IR, RS-232 & TCP/IP
- Advanced EDID management

You can purchase any one of four pre-configured Blustream Platinum Matrix or alternatively specify any combination of inputs and outputs to suit project requirements.

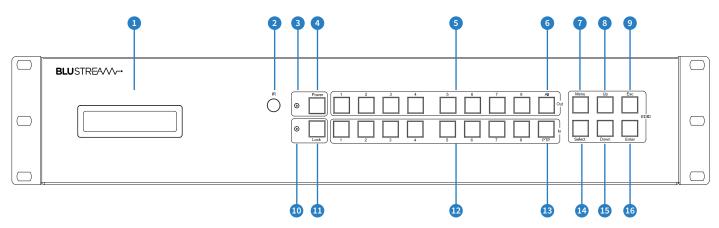
PLA88ARC/PLA66ARC

The PLA88ARC/PLA66ARC are an industry leading 4K 8x8 HDBaseT /HDMI matrix, delivering HDMI, network, Bi-directional IR & RS-232 and PoH (PoE) up to lengths of 100m over a single CAT cable. The PLA88ARC/PLA66ARC feature an embedded audio matrix, simultaneous HDBaseT/HDMI outputs, HDMi audio de-embedding/analogue audio embedding, ARC, RS-232, TCP/IP & IR control and the option of adding Blustream HDBaseT transmitters to integrate remote sources.

PLA88L/PLA66L

Our Platinum Range of HDBaseT matrix products offer the very best in performance and flexibility. The PLA88L/PLA66L are a feature rich 4K 8x8 HDBaseT/HDMI matrix, delivering HDMI, Bi-directional IR and PoH (PoE) up to lengths of 70m over a single CAT cable. The PLA88L/PLA66L also feature an embedded audio matrix, simultaneous HDBaseT/HDMI outputs, HDMi audio de-embedding/analogue audio embedding, RS-232 / IP & IR control and the option of adding Blustream HDBaseT transmitters to integrate remote sources.

Front Panel

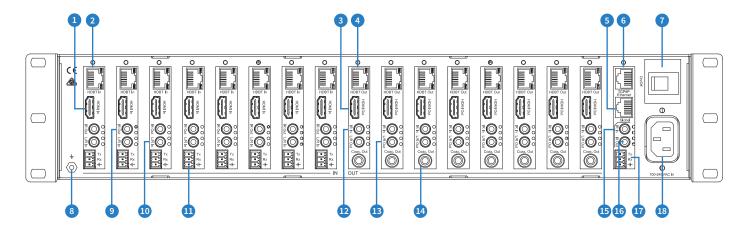


- LCD display Show the status of input & output selection and EDID info.
- IR receiver window Receives IR from a hand held remote control or processor.
- Power LED indicator Indicates the power status of the matrix.
- Power button Press to toggle power of the matrix on/off
- 6 HDMI output selection button 1 to 8 Press to select the output from 1 to 8.
- 6 All button for HDMI outputs Press to select all of the outputs from 1 to 8.

- Menu button Press to enter EDID setup
- Up Press to change up through the adjustable values.
- 9 ESC Press to quit EDID set up menu.
- Lock LED indicator Indicate the status of the key lock
- Lock button Press to lock the buttons on the front panel (Press and hold for 2 seconds)
- ## HDMI input selection button 1 to 8 Press to select the input from 1 to 8.

- PTP button-Press to mirror all inputs and outputs (e.g. output 1 to input1, output 2 to input2 and so on).
- Select Press to select an EDID parameter to change. Selected segment will blink.
- Down Press to change down through the adjustable values
- Enter Press to set EDID to specified INPUT or copy EDID from specified OUTPUT to specified INPUT.

Rear Panel



- HDMI inputs 1 to 8 Connect HDMI sources
- 4 HDBT inputs 1 to 8 Connect remote HDBT transmitter
- HDMI outputs 1 to 8 Output for displays.
- HDBT outputs 1 to 8 Output for displays.
- Ethernet-embedded 1x16 Ethernet switch for LAN serving to all connected HDBT transmitters and receivers

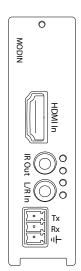
- 6 RJ45 TCP/IP control
- Power switch
- 6 GND Ground connection
- SS232 port Connect to this port for the control of the matrix from a computer or control processor.
- L/R stereo inputs 1 to 8 3.5mm stereo jack
- IR outputs 1 to 8 3.5mm mono jack for routed IR emitter outputs for discrete source control.

- Coaxial Digital outputs 1 to 8 RCA connector.
- L/R stereo outputs 1 to 8 3.5mm stereo jack.
- IR Inputs 1 to 8 3.5mm stereo jack for integration with a control processor.
- B RS232 Port 1x 3-pin phoenix terminal
- Global IR Output 3.5mm mono jack.
- Global IR Input 3.5mm stereo jack.
- AC power input 100V-240V input.



Matrix Input Cards

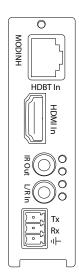
There are two types of input boards that are available to be used with the MOD88 chassis:-



MODIN

Entry level input board with HDMI connection and Analogue audio input HDMI Input

Analogue Audio L/R 3.5mm Stereo Input RS232 (Phoenix Connector) IR Output 3.5mm Mono Jack



MODINH

Premium input board with HDMI and Analogue audio input + additional HDBaseT connection to allow source equipment to be located up to 100m* from the Matrix.

HDBaseT and HDMI inputs are auto signal sensing or can be controlled manually.

HDMI Input

HDBaseT Input (RJ45)

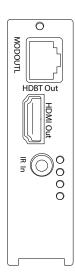
Analogue Audio L/R 3.5mm Stereo Input

RS232 (Phoenix Connector)

IR Output 3.5mm Mono Jack

Matrix Output Cards

There are two types of Output boards that are available to be used with the MOD88 chassis:-



MODOUTL

Feature rich Video and Audio Output card allowing both HDMI & HDBaseT video playback concurrently.

Analogue and digital audio can be routed independently of HDMI/HDBaseT outputs. The MODOUTL supports display distances of up to 70m.

HDMI Output

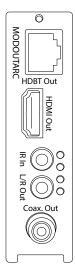
HDBaseT Output (RJ45)

Analogue Audio L/R 3.5mm Stereo Output

Coaxial Digital Output (RCA)

Lip-sync Audio Adjustment for Analogue and Digital Audio Outputs

IR Input 3.5mm Mono Jack



MODOUTARC

Premium Output card with the same features of the MODOUTL but with the additional feature of supporting HDMI ARC (Audio Return Channel). The MODOUTARC also increases display distances up to 100m*

HDMI Output

HDBaseT Output (RJ45)

Analogue Audio L/R 3.5mm Stereo Output

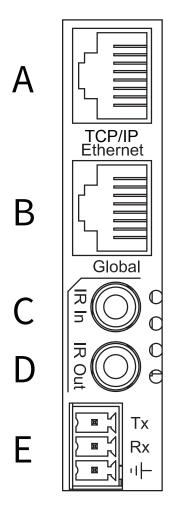
Coaxial Digital Output (RCA)

Support of ARC (Audio Return Channel) from compatible Blustream Receiver

IR Input 3.5mm Mono Jack

Matrix Main Com Board

The Matrix main communication board is located on the rear panel and has the following connections:-



Connections:

- A. TCP/IP For control of Matrix (RJ45 Connector)
- B. Ethernet Matrix includes 1x16 10/100 Ethernet switch (RJ45 Connector)
- C. Global IR Input 3.5mm stereo jack
- D. Global IR Output 3.5mm mono jack
- E. RS232 2-way (Phoenix Connector)

TCP/IP

The Blustream Matrix can be controlled via TCP/IP.

For full list of protocols please see 'Matrix Control Protocols' located at the rear of this manual.

A 'Straight-through' RJ45 patch lead should be used

RS232 2-Way

The Blustream matrix can be controlled via supplied 3-pin Phoenix to 9-pin serial cable

For full list of protocols please see 'Matrix Control Protocols' located at the rear of this manual.

Details of RS232 pin assignment and communication are below:

MT0808-FAV		REMOTE CONTROL CONSOLE	
PIN	Assignment	PIN	Assignment
1	NC	1	NC
2	Tx	2	Rx
3	Rx	3	Tx
4	NC	4	NC
5	GND	5	GND
6	NC	6	NC
7	NC	7	NC
8	NC	8	NC
9	NC	9	NC

Baud Rate: 57600 bps

Data Bit: 8-bit

Parity: None

Stop Bit: 1-bit

Flow Control: None

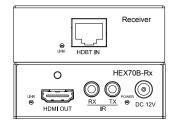


Matrix HDBaseT Receiver Options

There are four HDBaseT receiver options that are compatible with the Output cards supplied with the Blustream Matrix:-

HEX70B-RX

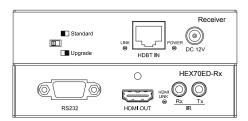
Basic HDBaset Receiver with 2-way IR pass-through. Supports distances up to 70m*. Compatible with all Platinum Blustream Matrix products.



HDBaseT input/HDMI output IR Output 3.5mm mono jack IR Input 3.5mm stereo jack

HEX70ED-RX

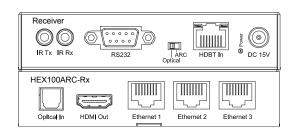
Mid-Level HDBaseT receiver which has the same features as the HEX70B receiver but with added 2-way RS-232 control. Compatible with all Platinum Blustream Matrix products.



HDBaseT input/HDMI output 2-way RS232 (9-pin serial) IR Output 3.5mm mono jack IR Input 3.5mm stereo jack

HEX100ARC-RX

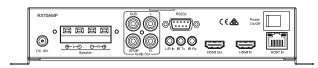
Premium HDBaseT receiver which features 2-way IR & RS232, HDMI ARC (when used with associated MODOUTARC Matrix output card) and display distances up to 100m*. Only compatible with PLA88ARC and PLA66ARC Blustream Matrix products.



HDBaseT input/HDMI Output
Optical Audio input (Toslink)
2-way RS232 (9-pin serial)
IR Output 3.5mm Mono Jack
IR Input 3.5mm Mono Jack
3x 10/100 Ethernet connections (RJ45)

RX70AMP

The RX70AMP is a combination of HDBaseT receiver and Class D digital audio amplifier (30W per channel). The unit has local HDMI and Analogue audio inputs as well as supporting HDMI ARC (audio Return Channel) with compatible products. Should you wish to use alternate power amplification the unit has variable analogue outputs. Control of the unit is possible via front panel or by bi-directional RS232 or IR control. Supports distances up to 70m. Compatible with all Platinum Blustream Matrix products.



HDBaseT input/HDMI output

HDMI Local input for connection of local source

2.1 Stereo audio output @ 30W per channel (capable of drive 4, 6 & 8 Ohm speakers) & analogue Subwoofer output (RCA)

Variable analogue line level outputs (RCA)

Digital Coaxial S/PDIF output

Local analogue L/R audio input 3.5mm Stereo Jack

2-way RS232 (9-pin serial)

IR Output 3.5mm mono Jack

IR Input 3.5mm stereo Jack

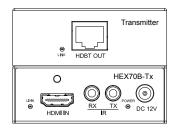
Built-in IR receiver on front panel of unit

Matrix HDBaseT Transmitter Options

When it is a requirement that source equipment is to be located away from the central Blustream Matrix there are two Blustream HDBaseT Transmitters that that can be partnered with the MODINH Input board and allow hardware to be located at distances up to $100m^*$;-

HEX70B-TX

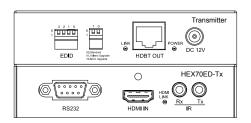
Basic HDBaset Transmitter with 2-way IR pass-through. Supports distances up to 70m.



HDMI input/HDBaseT output IR output 3.5mm mono jack IR input 3.5mm stereo jack

HEX70ED - TX

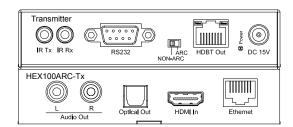
HDBaseT Transmitter which features 2-way IR & RS232 and distances up to 70m.



HDBaseT input/HDMI output 2-way RS232 (9-pin serial) IR output 3.5mm mono jack IR input 3.5mm stereo jack

HEX100ARC - TX

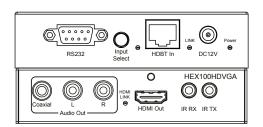
Premium HDBaseT Transmitter which features 2-way IR & RS232 and distances up to 100m.



HDMI input/HDBaseT output 2-way RS232 (9-pin serial) IR output 3.5mm mono Jack IR input 3.5mm stereo jack

HEX100HDVGA-TX

Premium HDBaseT Transmitter which features selectable HDMI or VGA+ audio inputs and 2-way IR & RS232. Supports distances up to 100m.



HDMI & VGA+ audio input/ HDBaseT output 2-way RS232 (9-pin serial) IR output 3.5mm mono jack IR input 3.5mm stereo jack



EDID Control

EDID (Extended Display Identification Data) is a data structure that is used between a display and a source. This data is used by the source to find out what audio and video resolutions are supported by the display then from this information the source will determine what the best audio and video resolutions need to be outputted.

While the objective of EDID is to make connecting a digital display to a source a simple plug and play procedure issues do arise when multiple displays or video matrix switching is introduced because of the increased number of variables.

By pre-determining the video resolution and audio format of the source and display device you can reduce the time need for EDID hand shaking thus making switching quicker and more reliable. Settings for EDID Video and Audio resolutions can be found on the right.

32	10	
Combination of DIP p	ositions	EDID TYPE
00	00	Copy EDID from output1
00	01	1080P 2.0CH
00	10	1080P 5.1CH
00	11	1080P 7.1CH
01	00	1080i 2.0CH
01	01	1080i 5.1CH
01	10	1080i 7.1CH
01	11	3D 2.0CH
10	00	3D 5.1CH
10	01	3D 7.1CH
10	10	4K 2.0CH
10	11	4K 5.1CH
11	00	4K 7.1CH
11	01	DVI 1280x1024
11	10	DVI 1920x1080
11	11	DVI 1920x1200

Configuration of Matrix EDID settings can be achieved in one of three ways:-

- 1 Via Matrix PC Software (See 'Platinum Matrix Software Guide' for further details)
- 2 Via Matrix Front Panel Buttons
 - a. Press MENU button
 - b. Panel will display 'EDID settings. Press SELECT button
 - c. Select the input you wish to fix the EDID on or select 'All'. Use UP/DOWN buttons to toggle selection and SELECT button to confirm
 - d. Select video resolution required (4K, 1080p, 3D etc). Use UP/DOWN buttons to toggle selection and SELECT button to confirm
 - e. Select audio format required (2.0, 5.1, 7.1). Use UP/DOWN buttons to toggle selection and SELECT button to confirm
- 3 Via Supplied Matrix IR Remote Control
 - a. Fixed EDID to INPUT / ALL INPUTS:

To select video resolution - Press 1080I/1080P/3D/4K To select Audio resolution - Press 2.0CH/5.1CH/7.1CH

To serious settings to individual input /ell inputs Dress INDI

To assign settings to individual input/all inputs – Press INPUT /ALL button in 'ZONE INPUT' area of remote control

b. Copy EDID of any specific OUTPUT to any assigned INPUT or ALL INPUTS:

Press COPY button

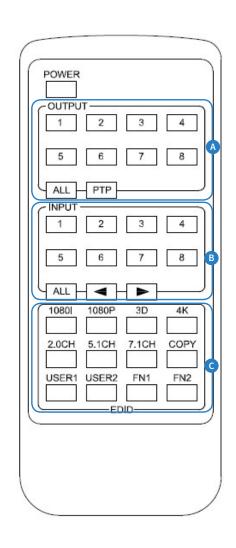
Press OUTPUT zone button you wish to copy EDID from

Press INPUT zone button /ALL button to copy EDID to

c. User defined EDID to any INPUT or ALL INPUTS:

Press USER1/USER2 button

Press selected INPUT or ALL button to assign EDID



Infrared (IR) Distribution

The Blustream Platinum range of matrix products include multiple options for control and routing of IR. As default setting IR is globally routed meaning that ALL IR inputs are routed to ALL IR outputs on both Matrix and HDBaseT Receivers and Transmitters.

Blustream Infrared products are all 5V and NOT compatible with alternate manufacturers Infrared solutions.

Each Blustream Matrix and HDBaseT receiver is supplied with all necessary IR hardware required and includes:

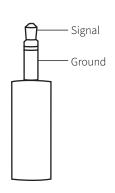
IR Emitter

Blustream IR Emitter designed for discrete IR control of hardware



Infrared 3.5mm Pin-Out

IR Emitter - Mono 3.5mm

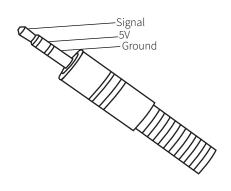


IR Receiver

Blustream IR receiver to receive IR signal and pass-through Blustream products



IR Receiver - Stereo 3.5mm



IR Control Cable

Blustream IR Control cable 3.5mm-3.5mm for linking third party control solutions to Blustream products.

Will work with 12v IR third party products.

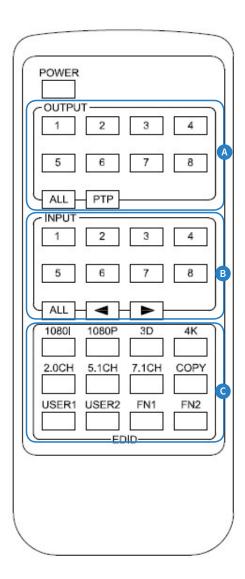
Note: Cable is directional as indicated



Infrared (IR) Control

The Blustream Platinum matrix units are supplied with IR Remote Control for source selection and general setup. As well as controlling matrix solutions using the original Blustream remote the Blustream products can be controlled using the original Infrared RC5 codes shown at the rear of this manual.

Remote Control Description



OUTPUT AND INPUT SELECTION

- A Select the zone OUTPUT you wish to change the source on (Numbers 1-8 correspond to the zone outputs 1-8).
- B Select the source INPUT you wish to change on the selected zone to (Numbers 1-8 corresponds to the source inputs 1-8)
- Press PTP button If you wish to instantly mirror all inputs and outputs (Example Input 1 to output 1, input 2 to output 2 etc).

EDID Configuration

Fixed EDID to INPUT / ALL INPUTS:

To select video resolution - Press 1080I/1080P/3D/4K

To select Audio resolution - Press 2.0CH/5.1CH/7.1CH

To assign settings to individual input/all inputs – Press INPUT /ALL button in 'ZONE INPUT' area of remote control

Copy EDID of any specific OUTPUT to any assigned INPUT or ALL INPUTS: Press COPY button

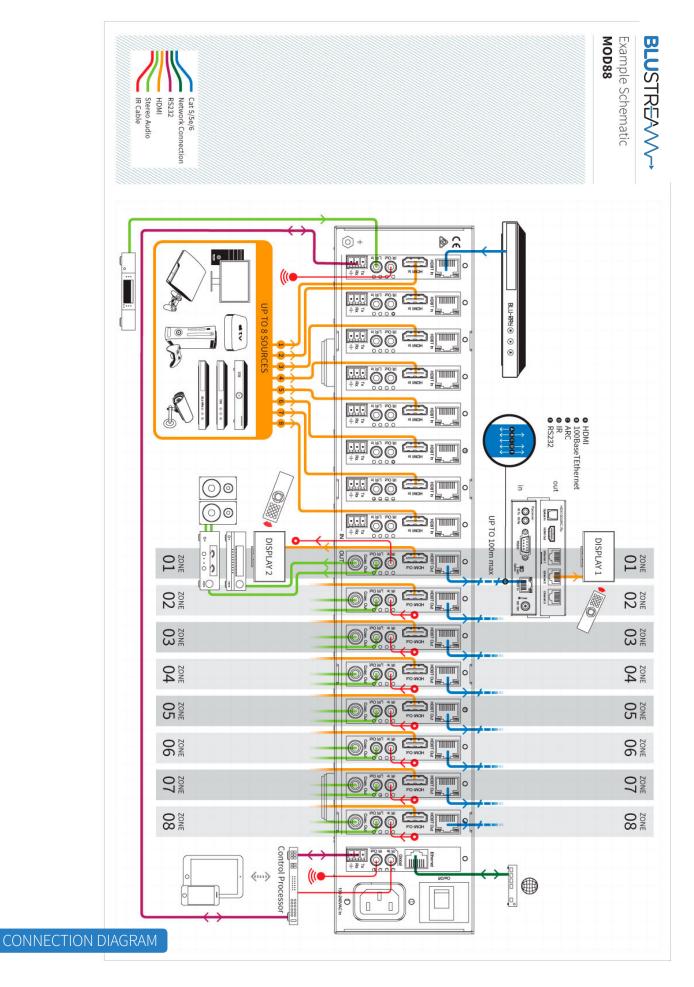
Press OUTPUT zone button you wish to copy EDID from

Press INPUT zone button /ALL button to copy EDID to

User defined EDID to any INPUT or ALL INPUTS:

Press USER1/USER2 button

Press selected INPUT or ALL button to assign EDID





Specifications

Bandwidth:

10.2Gbps

Video Input Connections:

8x HDMI Type A, 8x RJ-45 HDBaseT

Video Output Connections

8x HDMI Type A, 8x RJ-45 HDBaseT

Audio Input Connectors:

8x 3.5mm analogue stereo jack

Audio Output Connectors:

8x 3.5mm analogue stereo jack, 8x RCA (SPDIF) digital

Ethernet Input:

1x RJ-45

RS-232 serial port:

9x 3-pin phoenix terminal connector

TCP/IP Control:

1x RJ-45

IR Input ports:

9x 3.5mm stereo jack

IR Output ports:

9x 3.5mm mono jack

Rack-Mountable:

2 U rack height, rack ears included

Casing dimensions (W x H x D):

440mm x 87mm x 361mm, without feet

Dimensions inc. connections (W x H x D):

440mm x 87mm x 369mm, without feet

Shipping Weight:

8.8Kg

Operating Temperature:

32°F to 104°F (0°C to 40°C)

Storage Temperature:

-4°F to 140°F (-20°C to 60°C)

Power Supply:

100V-240V

NOTE: Specifications are subject to change without notice. Weight details are approximate and will alter per model.

Maintenance

Clean this unit with a soft, dry cloth. Never use alcohol, paint thinner or benzene to clean this unit.

Package Contents:

PLA88L Matrix

- 1x PLA88L
- 1x AC power cable
- 1x Remote control
- 9x IR emitter
- 9x IR receiver
- 9x IR 3.5-3.5mm interface cable
- 2x Serial cable 9-pin DE9 to 3-pin phoenix connector
- 1x Rack mounting kit

PLA88ARC Matrix

- 1x PLA88ARC
- 1x AC power cable
- 1x Remote control
- 9x IR emitter
- 9x IR receiver.
- 9x IR 3.5-3.5mm interface cable
- 2x Serial cable 9-pin DE9 to 3-pin phoenix connector
- 1x Rack mounting kit

PLA66L Matrix

- 1x PLA88L
- 1x AC power cable
- 1x Remote control
- 7x IR emitter
- 7x IR receiver
- 7x IR 3.5-3.5mm Interface cable
- 2x Serial cable 9-pin DE9 to 3-pin phoenix connector
- 1x Rack mounting kit

PLA66ARC Matrix

- 1x PLA88ARC
- 1x AC power cable
- 1x Remote control
- 7x IR transmitter,
- 7x IR receiver.
- 7x IR 3.5-3.5mm interface cable
- 2x Serial cable 9-pin DE9 to 3-pin phoenix connector
- 1x Rack mounting kit



Database of IR commands

Command	NEC NEC Codeset: 1898
Power On/Off	14
Input 1	50
Input 2	55
Input 3	48
Input 4	4A
All On	5E
All Off	06
Optical On	05
Optical Off	03
Coaxial On	47
Coaxial Off	07
Analogue On	40
Analogue Off	02

RS232 and Telnet Commands

NO.	COMAND	ACTION
1	?	Print Help Information
2	HELP	Print Help Information
3	STATUS	Print System Status And Port Status
4	PON	Power On, System Run On Normal State
5	POFF	Power Off, System Run On Power Save State
6	IR ON/OFF	Set System IR Control On Or Off
7	KEY ON/OFF	Set System KEY Control On Or Off
8	APM ON/OFF	Set Advanced Process Mode On Or Off
9	BEEP ON/OFF	Set Onboard Beep On Or Off
10	RESET	Reset System To Default Setting (Should Type "Yes" To Confirm, "No" To Discard)
11	MXIR xx FR yy Output Port IR:xx From Local IR:yy	xx=[00]: All Output IR, [0108]: Output IR yy=[0108] Local IR
12	MXIR GI (+-)xx Global IR_IN Signal To Input/ Output IR:xx	xx=[0108]: Input IR, [0916]: Local IR xx=[1724]: Output IR +: Add xx To Current Setting -: Remove xx From Current Setting
13	MXIR GO (+-)xx Global IR_OUT Signal From Input/Output IR:xx	xx=[0108]: Input IR, [0916]: Local IR xx=[1724]: Output IR, [25]: Global IR In +: Add xx To Current Setting -: Remove xx From Current Setting
14	MXUART xx TO yy Local UART:xx Con- nect To Input/ Output UART:yy	xx=[0108]: Local UART, [09]: Global UART yy=[00]: Disconnect With Any Uart yy=[0108]: Input UART, [0916]: Output UART
15	MXSTA	Print Matrix IR And UART Connect State
16	AUD TX xx STE yy	Output Port:xx Audio From Input Port:yy Stereo

NO.	COMAND	ACTION
17	AUD TX xx EXT yy	Output Port:xx Audio From Input Port:yy Extract
18	AUD TX xx ARC tt	Output Port:xx Audio From Output Port:tt ARC
19	AUD TX xx FOSTE	Output Port:xx Audio From Select Video Input Stereo
20	AUD TX xx FOEXT	Output Port:xx Audio From Select Video Extract
21	AUD TX xx DL ss	Set AUDIO:xx Delay zz ms
22	AUD STA	Print Input/Output Port Audio Setting State xx=[00]: All Output Audio, [0108]: Output Audio yy=[0108]: Input Port Audio tt=[0108]: Output ARC Audio zz=00 ~ 500ms Delay, 50ms per Step
23	AUD RX xx BPS	Input Port:xx Bypass Receive HDMI/DVI Signal
24	AUD RX xx STE	Input Port:xx Insert Stereo To HDMI/DVI Signal
25	AUD RX xx AUTO	Input Port:xx Insert Stereo To DVI Signal Only xx==[00]: All Input Port, [0108]: Input Port
26	IN xx FO yy	INPUT:xx Force Select Source:yy, Stop Auto
27	IN xx AU yy	INPUT:xx Auto Detect Source, Source:yy High Priority xx=[00]: All INPUT Port, [0108]: INPUT Port yy=[01]: HDMI, [02]: HDBT
28	OUT xx ON/OFF	Set OUTPUT:xx On Or Off
29	OUT xx FR yy	Set OUTPUT:xx From INPUT:yy
30	OUT xx EH/ET	Set OUTPUT:xx Use HDMI/HDBT EDID xx=[00]: All OUTPUT Port, [0108]: OUTPUT Port yy=[0108]: INPUT Port

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