

neo

8X10 HDBASET MATRIX



INSTALLATION GUIDE

HDMI™ eHDBT™ HDCP2.2 amazon alexa

SAFETY PRECAUTIONS

Please read all instructions before attempting to install or operate this equipment.

Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

CONCEPTS AND DEFINITIONS

When reading this manual we refer to devices that send video into the matrix as source devices or sources. Examples of source devices include Blu-Ray players, Set Top Boxes, Game Consoles and Media Centres.

Devices that receive video from the matrix are called sink devices or sinks. Examples of these are Amplifiers (AVRs) TVs and projectors.

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CABLING ADVICE

WHAT IS THE BEST TYPE OF CABLE TO USE?

You can use Cat5e, Cat6, Cat6A or Cat7 with Pulse-Eight products.

The minimum cable standard for this neo system is Cat5e. Slightly greater distances may be achieved by using Cat6A, or slightly better still with Cat7, which has stricter shielding requirements and reduces potential cross talk between data pairs.

Whichever network cable type you choose, ensure that the main wiring architecture is solid core, not stranded patch cabling. Patch cabling can be used for the last few metres of a run (e.g. from a wall plate) but must be avoided over longer runs as signal transfer over stranded cores is heavily reduced.

The use of pre-made leads is not recommended unless you can be absolutely sure of their construction credentials (i.e. solid core 568B). Please note that CCA (Copper Clad Aluminium) cable is NOT supported.

SHIELDED CABLES

Unlike other systems, shielded FTP cable is not a stipulation. If, however, you prefer this type of cable please ensure compatible shielded accessories are used. Failure to terminate cable screen at all points can induce interference rather than eliminating it.

CABLING BEST PRACTICE

Our best practice policy is to terminate to a wall plate at either end and then use solid core patch cables (usually it is better to make your own than use pre-made) between the patch panel and the matrix and the wall plate and HDBaseT™ receiver.

HDBaseT™ WITH PATCH PANELS AND WALL PLATES

If the patch panels are terminated correctly, there is minimal loss of distance. The use of wall plates and patch panels, however, has the potential to cause increased resistance on the cable if not done correctly, introducing pinch points for signal transmission, and could reduce advertised transmission lengths.

Instead of using RJ45 wall plates, you can use brush plates to maintain the neat finish.

CONNECTION TERMINATION

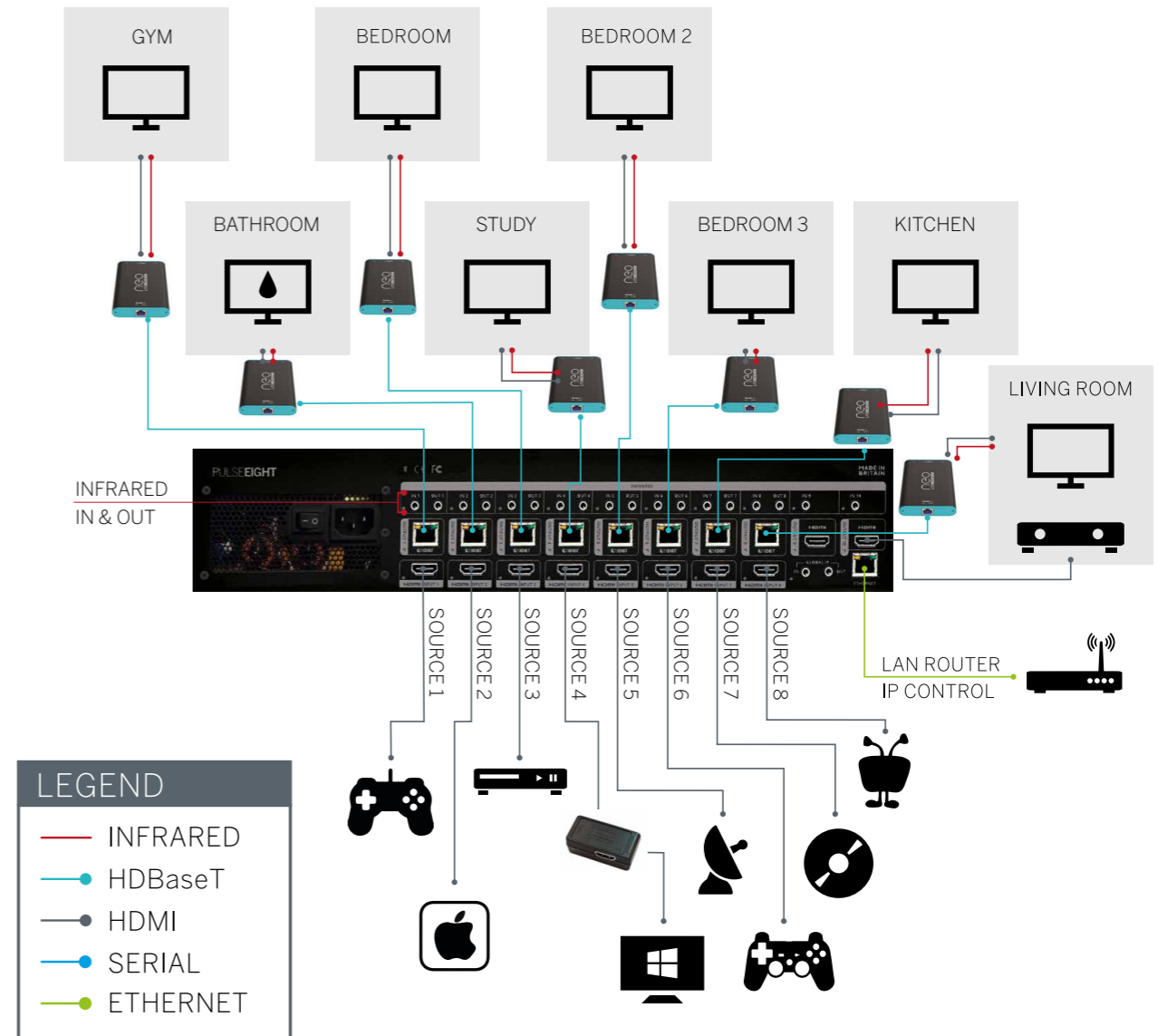
Terminate the cabling using RJ45 connectors to the 568B wiring standard. (See diagram)

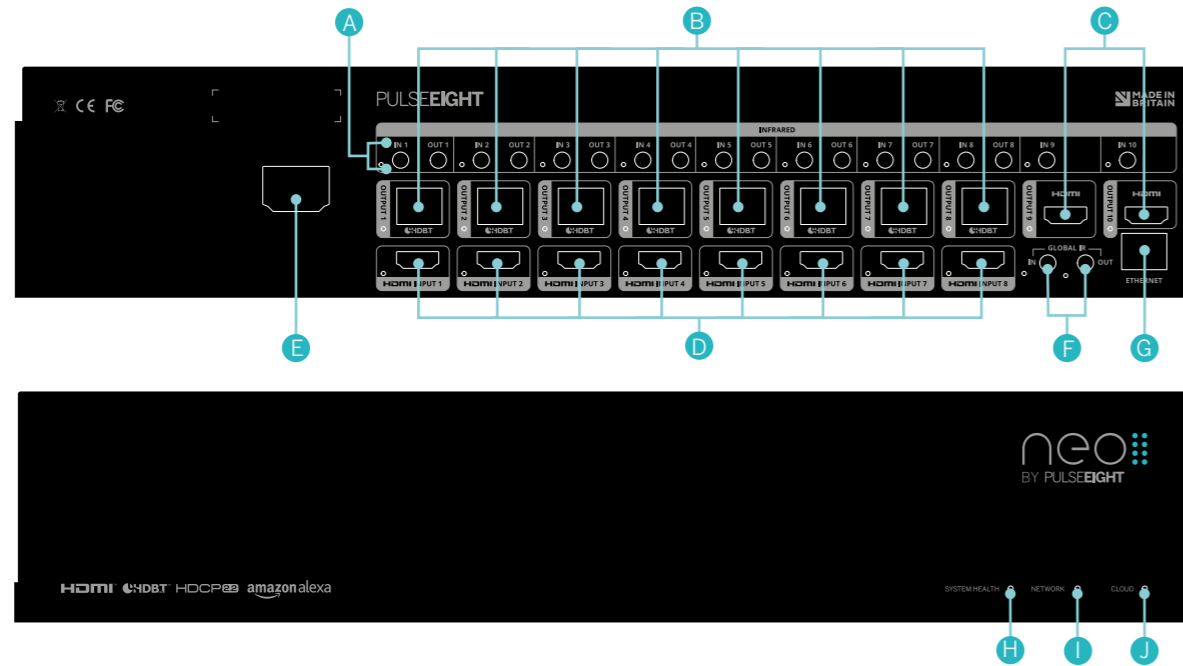
IMPORTANT

Please note that local building regulations may apply to the installation of cabling in properties. It is important to check building regulations to guarantee that you are in accordance with the laws of your territory.



CONCEPT WIRING GUIDE





- A IR Receiver and Transmitter Ports** Use the supplied IR buds to link the neo receivers to the relevant Infrared ports. LED indicators will light when connected correctly. In ports 1-8 send IR from the matrix to the sink and in ports numbered 9-10 send IR from the matrix to the active source for that port.
- B HDBaseT Outputs - Connect your sink devices** Connect the appropriate Cat5e or higher grade cable to each output, these cables should be attached to the receiver at the sink end (TV/amplifier etc)
- C HDMI Outputs - Connect your sink devices** Connect the appropriate high speed HDMI cable to each output, these cables should be attached directly to the sink device
- D HDMI Inputs - Connect your source devices** Connect your source devices via a high speed HDMI cable
- E Power** Use the supplied mains power cable and connect to the chassis. Do not use any other power cables with this product.
- F Global IR** Used for a control system to be able to see all IR signals from all zones. We recommend using a P8-IR-Optocable for connectivity from this port to your control system
- G Ethernet - Connect to your home router** Use a standard Cat5e (or higher grade) cable to provide internet access to the matrix. This will allow you to receive automatic updates and remote monitoring services
- H System Health LED Indicator** When system is running correctly, the LED will light green
- I Network LED Indicator** When system is connected correctly to the network, the LED will light green
- J Cloud LED Indicator** When system is connected correctly to the cloud, the LED will light green

INITIAL SETUP

1 CONNECT SOURCE DEVICES

Connect your source devices into the input ports using a High Speed HDMI cable or better (not supplied). It is recommended to connect devices from Input 1 to Input 8, although you can connect them in any order you wish.

2 CONNECT SINKS

Sink devices are connected to ports 1-8 via category cable (see cabling advice at the start of this guide) from the Output port to the supplied receivers. Complete the connection from the receiver to the Sink device (i.e. your TV) via a HDMI cable.

For Output ports 9 and 10, connect sink devices directly via high speed HDMI cables. Once all connections have been made, turn the matrix on by connecting the power supply to the mains.

3 CONNECT INFRARED

Using the supplied IR pairs, insert the IR Emitter (matte) into the relevant Infrared Out port (for example Out 1 for Input 1) and attach the bud to the front of the source device, over the IR window. On the sink device (i.e TV) place the IR Receiver (shiny) on the underside of the device with the smallest shiny side facing out and plug the end into the RX port on the neo receiver. Each IR port has an LED which flashes Red when IR is transmitting and flashes green when IR is being received.

IR BUDS

The IR Emitter is to be mounted over the source's IR window. The IR Receiver bud should be mounted underneath the sink (TV) with the smallest end forwards and the sticky pad affixed upwards.

IR Receiver
Square with a shiny surface



IR Emitter
Identified by a matt surface



4 CONNECT RACK EARS

You can mount the system either at the front or back with the supplied rack ears. Simply screw in the supplied M4 screws to connect the rack ears to the matrix.

5 NETWORK CONNECTION

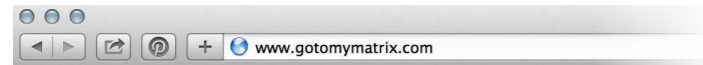
neo:8 is designed to be on and connected to an active internet connection at all times. It will operate correctly when not connected to a network (or the internet) but certain functions will not be available. Connect a standard Ethernet cable between the ethernet port and your router/network switch, cross over cables are not supported.

CONNECT TO THE WEB INTERFACE

To setup your neo matrix you need to use the built in web interface. Firstly check your system is connected correctly by ensuring the network LED is lit green on the front of the matrix.

The web interface can be accessed from any locally connected device via Wi-Fi or a fixed wire connection. You can access the neo web interface from a mobile, tablet, laptop or desktop PC. Many of the controls in the user interface (UI) are drag and drop friendly.

GOTOMYMATRIX.COM





You can easily access the neo web interface by visiting www.gotomymatrix.com into any web browser, on any device, this will locate the matrix automatically on your local network. (An Android app version is also available)

VIDEO ROUTING


The home page of the UI displays the current routing - devices in blue are active, we have detected they are powered up*. Select an input with a single click/press and the outputs that this input is routed to will be highlighted. Press again the same input to restore the normal display.

To change the routing of the matrix, drag the input and drop it on the output you want to send that video to. Once routing is successful a green success message will display at the top of the screen. If for some reason this routing cannot be done a red error message will be shown explaining the reason.


You can also change the routing by click on the  display icon (or  when in user mode) on the output and then selecting the input from the drop down list. You do not need to click to save changes, the change is immediate.

**Due to certain HDMI limitations this may not be 100% accurate at all times*


ACCESS THE ADMIN SETTINGS

Some options are hidden to the user so to access the admin settings go to the  'Cloud Connection' link on the left hand nav, then click on the '[Admin]' link at the foot of the page. The default password is **'admin'**.


LINK MONITORING PORTAL

Keep your system up to date and get notified automatically if a problem occurs by linking your monitoring account, simply insert your Installer ID in the box under the  **Cloud Connection** tab and it will link to your account. (If you do not have a monitoring account please contact your sales manager)

RENAMING SINKS

Click on the  display icon, enter a new name and click on Save Changes. This name is purely cosmetic and only used within the web interface. Names must be 13 characters or less and cannot be blank, start with or end with a space, certain special characters are also not allowed..

RENAMING A SOURCE DEVICE

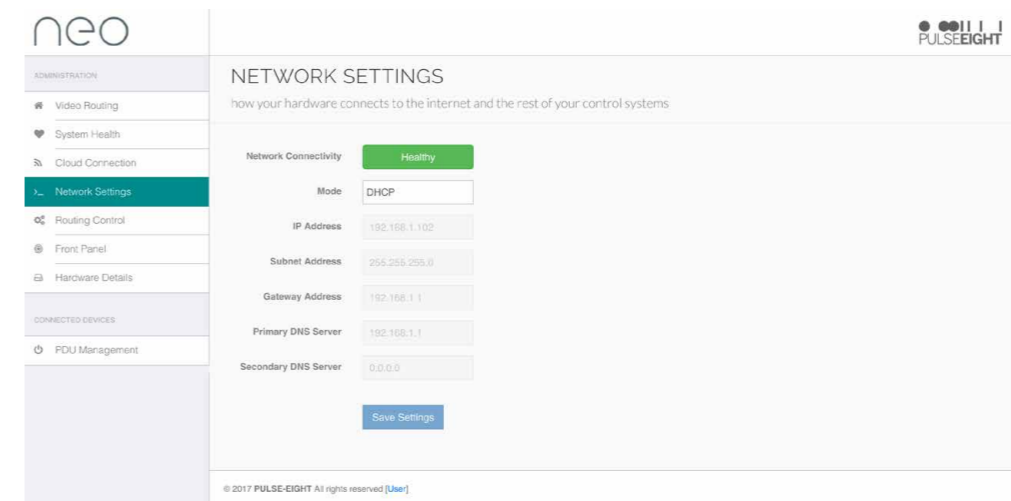
Click on the  display icon, enter a new name and click on Save Changes. This name is used by Voice Services when controlling specific sinks- be careful when naming these if you intend to use voice control to make sure they are pronounceable.

Names must be 13 characters or less and cannot be blank, start with or end with a space, certain special characters are also not allowed. Custom names are displayed in the source menu in a CEC enabled TV* and used for voice services.

**where supported.*


CONFIGURING NETWORK SETTINGS



By default, the matrix is set to retrieve an IP address via DHCP, you must connect the system to a router or server that has DHCP enabled. Once initially configured you can modify this setting and switch to a static IP address.



You must ensure that the new settings are correct before saving them as you will no longer be able to access the matrix if they are incorrect. In order for the internet based functions to operate such as the cloud based monitoring and gotomymatrix.com facility you must provide at least one valid DNS address. We recommend using the Google Public DNS address 8.8.8.8 for Primary DNS and 8.8.4.4 for Secondary DNS

DIAGNOSTICS & SETTINGS

Within the web interface you can also check the hardware health under the  **System Health** tab. Here you will find the system status, power, connectivity and temperature. You will also find a HDBaseT link quality test which will indicate if the HDBaseT link is stable over a sustained period of time.

Under the  **Routing Control** tab you will find useful options to create custom IR profiles and disable HDMI-CEC support. Backlight options for the front LEDs can be accessed under the  **Front Panel** tab.

Additional setup information can be found under 'Documentation & Guides' on the installer monitoring portal.

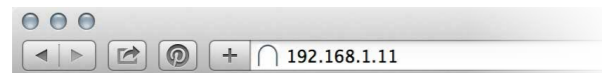
ACCESSING THE MATRIX WITHOUT AN INTERNET CONNECTION

While neo works best with an active internet connection it is possible to still configure and operate the system without one. However to configure the system from its defaults a local network connection is required. Normal operation of the CEC and IR control systems does not require any network connection, but IP based API control or Web based controlled does require a persistent network connection.

DISCOVERY TOOL

You can download a discovery tool from your monitoring portal at <http://monitoring.pulse-eight.com/> this program will run on Windows 7 or newer only, when run it will scan your network and detect the IP address of your matrix. If you have multiple neo systems on the same network, the discovery tool will only display the last found. If you do have more than one system, it is advised that you disconnect other systems first.

The discovery tool will display the IP address of the matrix, you can then access the matrix by typing that IP address into your web browsers address bar.



It is recommended in this mode that you configure the networking to use a static IP address, this allows for you to bookmark the page easily and return to the web interface easily without needing to run the discovery tool again.

THIRD PARTY CONTROL DRIVERS

We supply drivers for common control systems, including Control 4, AMX, Crestron, RTI and Elan. We are constantly improving our native integration with other platforms, more information and driver downloads are available at <http://monitoring.pulse-eight.com/>

API REFERENCE

We provide a fully documented API for neo, this is available in your monitoring portal (<http://monitoring.pulse-eight.com/>). You must be logged in to access it.

If you have questions, please speak with your distributor, we are not able to provide programming support directly.

SETTING UP CEC

Consumer Electronics Control (CEC) is a built in technology within HDMI, widely supported in modern TVs, AVRs, Blu-Ray players and Media Centres.

INTRODUCTION

neo has built in support for all CEC implementations from different vendors, where possible we have included additional vendor specific support to maximise compatibility. That said implementation varies between different brands and continues to improve, certain features described in this manual may not be available on all makes and models in your setup. If we can detect that a feature is not supported, this incompatibility will be displayed in the web interface.

DIFFERENT BRANDS

Common brand names for CEC are, Anynet+ (Samsung), BraviaLink or BraviaSync (Sony), EasyLink (Philips), SimpLink (LG), VieraLink (Panasonic) Kuro Link (Pioneer) CE-Link and Regza Link (Toshiba), RIHD (Onkyo)

More and more devices are using the common name "HDMI-CEC", often it is disabled by default, and you may need to enable it in the settings menu before continuing. (Consult the manual for your source or sink device on how to do this)

HOW IT WORKS AND SWITCHING SOURCES

Depending on the TV you are using will depend on exactly which button you press, for example, on a Sony TV you press the "Sync Menu" button, this brings up a menu, from here select HDMI Device selection and your source devices are listed, if you have customised their names, these names will be listed.

The order in which they are displayed may change from time to time, there is no ability to specify the sort order of devices in these lists. In other brands, simply pressing the "Source" button will list all of the devices alongside other inputs (such as Network or USB media)

TROUBLESHOOTING

Should you encounter installation difficulties or issues with device communication, the following checklist of common issues and causes should help resolve your issues. If you still continue to experience issues, please contact your place of purchase.

NO OR POOR PICTURE QUALITY:

- Connected and powered? Double check all HDMI, Ethernet and power cables are firmly connected into the correct ports and all devices are correctly powered.
- Cable length? Are you approaching the maximum distance of the cable (70m) if so, adjust the picture quality or try using an additional extender kit to go further distance. Cables bundled together may cause cross talk and further degrade signal quality.
- Signal strength? The use of cable joins, stranded patch panels, wall outlets and stranded patch leads as interconnects between them, can significantly reduce signal strength. Use solid core straight through connections wherever possible.
- If you reduce the resolution of the source do you get a picture? If so, this suggests a conflicting resolution between source and display or a bandwidth capacity issue with your cable. Check all inputs and outputs share the same resolution capabilities.
- Picture 'snow' / HD 'noise' signifies a failure to fully establish a signal and can often be caused by poorly terminated RJ45 connectors or excess cable lengths. Ensure your cable is correctly wired to 568B standards.
- Pink or off-colour picture? This could be caused by an invalid EDID or the source device failing to read the EDID from the matrix. Try re-booting matrix and all source devices to force the re-reading of the EDID.
- Cable quality and condition - HDMI cable/connectors can easily be damaged and the quality of material can vary. Always use good quality leads and cables and try swapping cables that are known to be working into the solution to see if this improves your image.

IR CONTROL:

- Are the IR emitters and receivers correctly positioned to allow infrared signals to be transmitted and received? Emitters should be fixed firmly over infrared sensors of sources. Receivers should be attached to displays ensuring a clear line of sight to the remote control used to operate. Each IR port has an LED, when correctly installed the LED will flash red when IR is transmitting and flashes green when IR is being received
- Is your remote control powered and sending a signal? As IR is invisible to the naked eye, check your remote is transmitting a signal by viewing the remote handset sensor through a digital camera/camera phone. The sensor should flash when a button on the handset is held down.
- IR signal dropout can be experienced due to exterior emissions of infrared radiation. Ensure emitters and receivers are away from direct sunlight. Halogen lighting and plasma screens may also interfere with IR signals

FRONT PANEL LED VALUES

SYSTEM HEALTH LED

- Solid red - Powering on or fault found
- Solid green - System healthy

CLOUD LED:

- Solid red - Not connected to the cloud
- Solid green - Connected to our cloud

NETWORK LED:

- Solid red - No network cable connected
- Flashing yellow - Discovering IP address
- Solid yellow - Have IP but cannot ping router
- Flashing green - Cannot reach internet
- Solid green - Network healthy

MATRIX TECHNICAL DATA

Dimensions (WxHxD):	43 cm / 8.9 cm / 29.5 cm
Material:	Smooth textured powder coated steel
Operating Temperature Range:	0 to +35°C (32 to +95°F)
Operating Humidity Range:	5 to 90 % RH (no condensation)
Power Supply:	1 x IEC C14 Inlet - 100-240V 4.0/2.0A 50/60Hz
Power Consumption:	Max 2Amps @ 240V
Video Input:	8x HDMI
Clock Speed:	Input: 340Mhz, Output: 340Mhz
Video Output:	2x HDMI and 8x HDBaseT™ Class B (Lite)
Colour Supported:	4K/24bit, 1080p/36bit
3D Supported:	Up to 1080/24p - Frame packing/sequential (Blu-ray), Interlaced stereoscopic (Satellite/cable broadcasts)
Additional:	HDMI 2.0a 3840 x 2160p 60Hz YCC 4:2:0 format pass-through
Encryption:	HDCP and HDCP 2.2
Supported Video Resolutions:	720p, 1080i, 1080p (+3D), 4k (30Hz) 4:4:4, 4k (50/60Hz) 4:2:0
Supported Audio Formats:	PCM 2.0, LPCM 2.0, LPCM 5.1, LPCM 6.1, LPCM 7.1, Dolby Digital 2.0, Dolby Digital 5.1, Dolby Digital EX 6.1, Dolby Digital Plus 7.1, Dolby TrueHD 5.1, Dolby TrueHD 7.1, Dolby Atmos 5.1.2, Dolby Atmos 5.1.4, Dolby Atmos 7.1.2, Dolby Atmos 7.1.4, Dolby Atmos 9.1.2, DTS 5.1, DTS-HD Master 5.1, DTS-HD Master 7.1, DTS 96/24 5.1, DTS-ES Discrete 6.1, DTS-ES Matrix 6.1
ESD Protection:	± 8kV (Air-gap discharge) ± 4 kV (Contact discharge)
Surge Protection:	IEC 61000-4-4 (EFT Burst) Level 2, IEC 61000-4-5 (Surge) Level 2
Certification:	CE, FCC, RoHS

WARRANTY INFORMATION

IMPORTANT INFORMATION ABOUT YOUR RIGHTS AND OBLIGATIONS, AS WELL AS LIMITATIONS AND EXCLUSIONS THAT MAY APPLY TO YOU. YOUR RIGHTS AND THIS LIMITED WARRANTY

This Limited Warranty gives you specific legal rights. You may also have other legal rights that vary by state, province or jurisdiction. The disclaimers, exclusions, and limitations of liability under this Limited Warranty will not apply to the extent prohibited by applicable law. For a full description of your legal rights you should refer to the laws applicable in your jurisdiction and you may wish to contact a relevant consumer advisory service.

1. WHAT THIS LIMITED WARRANTY COVERS; PERIOD OF COVERAGE

Pulse-Eight Limited ("Pulse-Eight"), 8-12 Alder Hills, Poole, BH12 4AL, UK, warrants to the owner of the enclosed product that the product contained in this box ("Product") will be free from defects in materials and workmanship for a period of three years from the date of delivery following the original purchase (the "Warranty Period"), or if this product has been professionally installed, the warranty start date is from the date your installer purchased the item, not your system commissioning date. Please check with your installer for their purchase date. If the Product fails to conform to this Limited Warranty during the Warranty Period, Pulse-Eight will, at its sole discretion, either (a) repair or replace any defective Product or component; or (b) accept the return of the Product and refund the money actually paid by the original purchaser for the Product. Repair or replacement may be made with a new or refurbished product or components, at Pulse-Eight's sole discretion.

If the Product or a component incorporated within it is no longer available, Pulse-Eight may replace the Product with a similar product of similar function, at Pulse-Eight's sole discretion. This is your sole and exclusive remedy for breach of this Limited Warranty. Any Product that has either been repaired or replaced under this Limited Warranty will be covered by the terms of this Limited Warranty for the longer of ninety (90) days from the date of delivery or the remaining Warranty Period. This Limited Warranty is transferable from the original purchaser to subsequent owners, but the Warranty Period will not be extended in duration or expanded in coverage for any such transfer.

2. TOTAL SATISFACTION RETURN POLICY

If you are the original purchaser of the Product and you are not satisfied with this Product for any reason, you may return it in its original condition within thirty (30) days of the original purchase and receive a full refund. If this is a professionally installed product, you must check with your installer regarding their own returns policy.

3. WARRANTY CONDITIONS; HOW TO GET SERVICE IF YOU WANT TO CLAIM UNDER THIS LIMITED WARRANTY

Before being able to claim under this Limited Warranty, the owner of the Product must (a) notify Pulse-Eight of the intention to claim by emailing support@pulse-eight.com during the Warranty Period and providing a description of the alleged failure, and (b) comply with Pulse-Eight's return shipping instructions, and (c) ship the Product at owner's cost (except where prohibited by applicable law) to Pulse-Eight for repair or replacement. Pulse-Eight will have no warranty obligations with respect to a returned Product if it determines, in its reasonable discretion after examination of the returned Product that the Product is an Ineligible Product (defined below). Pulse-Eight will bear all costs of return shipping to owner, except with respect to any Ineligible Product, for which owner will bear all shipping costs.

4. WHAT THIS LIMITED WARRANTY DOES NOT COVER

This warranty does not cover the following (collectively "Ineligible Products"):

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Version 2.0 - July 2019

Products marked as "sample" or sold "AS IS"; or Products that have been subject to: (a) modifications, alterations, tampering, or improper maintenance or repairs; (b) handling, storage, installation, testing, or use not in accordance with the Installation Guide or other instructions provided by Pulse-Eight; (c) abuse or misuse of the Product; (d) breakdowns, fluctuations, or interruptions in electric power or the telecommunications network; or (e) Acts of God, including lightning, fire, flood, tornado, earthquake, or hurricane. This warranty does not cover consumable parts, including batteries, unless damage is due to defects in materials or workmanship of the Product, or software (even if packaged or sold with the product). Pulse-Eight recommends that you use only authorized service providers for maintenance or repair. Unauthorized use of the Product or software can impair the Product's performance and may invalidate this Limited Warranty. Pulse-Eight does not warrant that operation of the Product will be error-free or uninterrupted or that the Product will in every case process all data correctly.

5. DISCLAIMER OF WARRANTIES

Except as stated above in this limited warranty, and to the maximum extent permitted by applicable law, Pulse-Eight disclaims all express, implied, and statutory warranties and conditions with respect to the product, including the implied warranties of merchantability, fitness for a particular purpose. To the maximum extent permitted by applicable law, also limits the duration of any implied warranties or conditions to the duration of this limited warranty.

6. LIMITATION OF DAMAGES

In addition to the above warranty disclaimers, in no event will Pulse-Eight be liable for any consequential, incidental, exemplary, or special damages, including any damages for lost data or lost profits, arising from or relating to this limited warranty or the product, and Pulse-Eight's total cumulative liability arising from or related to this limited warranty or the product will not exceed the amount actually paid for the product by the original purchaser.

7. LIMITATION OF LIABILITY

Pulse-Eight disclaims all liability of any kind of Pulse-Eight's suppliers. The Pulse-Eight online services ("services") may provide you information ("product information") regarding your products performance and/or peripherals connected to your product ("product peripherals"). The type of product peripherals that may be connected to your product may change from time to time. Without limiting the generality of the disclaimers above, all product information is provided for your convenience, "as is", and "as available". Pulse-eight does not represent, warrant, or guarantee that product information will be available, accurate, or reliable. You use all product information, the services, and the product at your own discretion and risk. You will be solely responsible for (and Pulse-Eight disclaims) any and all loss, liability, or damages, including to your hvac system, plumbing, home, product, product peripherals, computer, mobile device, and all other items and pets in your home, resulting from your use of the product information, services, or product.

Product information provided by the services is not intended as a substitute for direct means of obtaining the information.

8. VARIATIONS THAT MIGHT APPLY TO THIS LIMITED WARRANTY

Some jurisdictions do not allow limitations on how long an implied warranty lasts or exclusions/limitations on incidental or consequential damages, so some of the limitations set out above may not apply to you



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