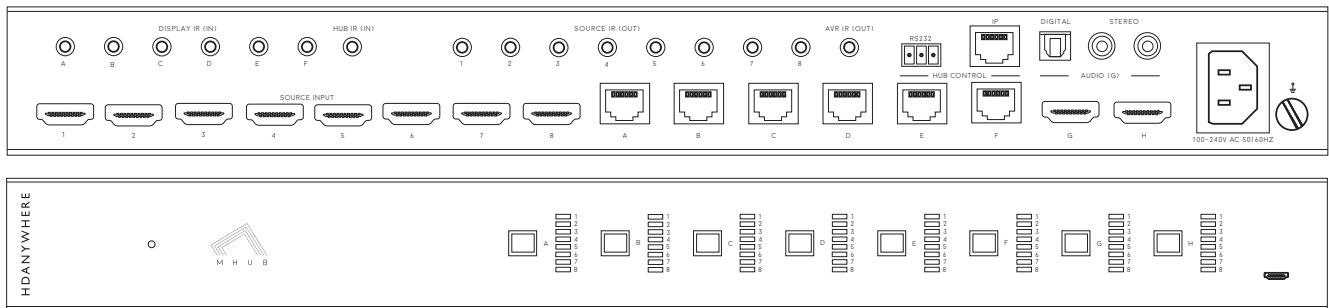# MHUB 4K (8x6+2) Manual

Product Code: MHUB4K862

HDANYWHERE ™

YOUR MHUB

This multiroom system with support for the newest 4K devices with HDCP 2.2 encryption is the perfect addition to your smart home. Watch any eight entertainment devices in 4K ULTRA HD on up to eight HDTVs and send PoH.

MHUB 4K uses a two methods to deliver 4K Ultra HD to your HDTV's. Six outputs use a single Cat 5/6 cable to deliver 4K Ultra HD up to distances of 40m, the remaining 2 outputs use a HDMI cable to send 4K Ultra HD up to 8m.

Discrete IR means you can control your media device's as usual, using your normal set top box remote at each of the eight TVs.

This manual should contain everything you need to get the MHUB 4K (8x6+2) up and running.

IN THE BOX

1. x1 MHUB 4K (8x6+2) hub

2. x1 MHUB 4K (8x6+2) remote control

3. x1 EC lead

4. x6 display receivers

5. x8 IR transmitters (TX)

6. x8 IR receivers (RX)

7. x2 IR Injector Dongle

8. x12 RS232 Phoenix connectors

CONTENTS

QUICK SETUP

If you have installed an MHUB or other HDanywhere device before, this quick start guide will get you up and running in the fastest time possible. If you have not installed one of our systems, we would recommend reading the rest of this manual.

1. Power off all displays and your HDMI source devices.

2. Connect your HDMI sources to the HDMI inputs on the central hub using appropriate HDMI cables.

3. Connect a display such as a HDTV or HD Projector to the HDMI output port on the display receiver using a HDMI cable for outputs A-F*. For outputs G & H connect a HDMI cable to the HDMI output on the MHUB to you HDTV.

4. Now connect a single Cat5e/6 up to 70m in length between the Cat output ports of the matrix and the cat input port of each of the six display receivers.

5. Plug in the power for the central hub.

6. Power on your HDMI source devices followed by each display.

7. At this point the eight displays should show the video and audio of the HDMI source devices connected to the matrix.

*We recommend that you use high-speed HDMI cables no longer than 5 meters in length.

SYSTEM FEATURES

1. Uses single CAT-5e/6 or HDMI cable to send uncompressed video and audio over long distances from upto eight source devices to upto eight Displays

2. Supported video resolutions: **720p, 1080i ,3D 1080i (50Hz), 1080p (30Hz) , 1080p (60Hz) , 4K (30Hz) 4:4:4, 4K (60Hz) 4:2:0 , UHD (30Hz) 4:4:4, UHD (30Hz) 4:4:4**

3. Supported stereo or multichannel audio formats including: **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, 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, LPCM 2.0, LPCM 5.1, LPCM 6.1, LPCM 7.1, PCM 2.0, Dolby Atmos.**

4. Two-way IR supported on outputs A-F.

5. IR passback allows you to select and control what you watch from every room

6. Control is delivered via two-way RS232, TCP/IP, IR and front panel buttons.

7. Stereo and Digital audio breakout on output G via twin RCA connectors for stereo or Optical SPDIF for surround sound formats.

8. Multichannel to stereo downmix on the 3.5mm jack outputs.

9. AVR IR for integrating IR control for an AVR in addition to 8 source devices.

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THE CENTRAL HUB (X1)

MHUB 4K (8X6+2) CHASSIS (FRONT)

1

2

3
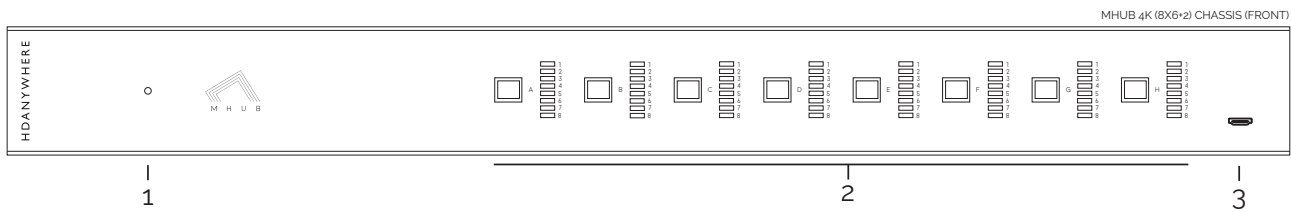
1. **Power LED:** If this is lit up your matrix is receiving power

2. **Source Selector [1-8]:** Select which source you want to switch to via the button

3. **USB port:** Used to manually firmware update your MHUB.

MHUB 4K (8X6+2) CHASSIS (REAR)
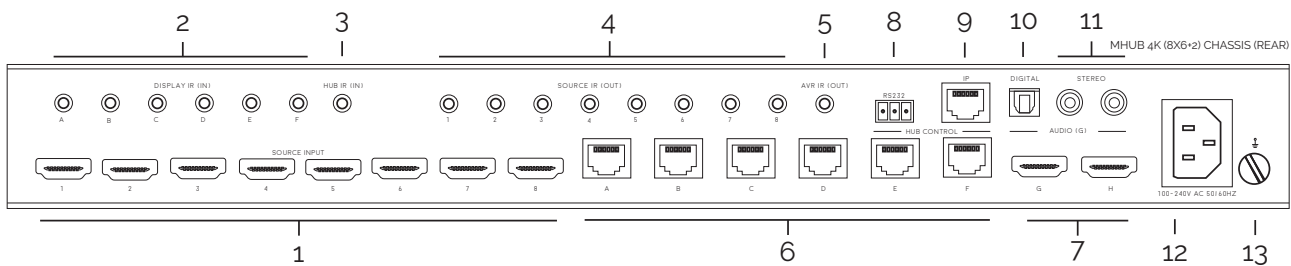
1. **"SOURCE INPUTS" [1-8]:** Use to Connect HDMI source devices to the MHUB

2. **DISPLAY IR (IN)" [A-F]:** Connect IR RXs to these ports to control your displays via IR with a third party control system

3. **"HUB IR (IN)":** Connect an IR RX to this port to control your MHUB via IR locally

4. **"SOURCE IR (OUT)" [1-8]:** Connect IR TXs to these ports to control your source devices via IR. The Source IR port number should correspond with the HDMI input number

5. **"AVR IR (OUT)":** If you have an AVR in your system, connect an IR TX to this port and place it on the IR window of your AVR

6. **HDBaseT Outputs [A-F]:** Connect your MHUB receivers to these ports via a CAT cable

7. **"HDMI Outputs" [G-H]:** Connect displays to these ports via HDMI cables

8. **"HUB CONTROL RS232"** Port: Use to integrate your MHUB with a control system via RS232

9. **"HUB CONTROL IP"** Port: Connect the MHUB system to your router via this port to enable DASH features and IP control from the uControl App

10. **"DIGITAL" Audio [G)]:** Use this port to extract multi-channel audio via a toslink cable from output [G]

11. **"STEREO" Audio [G]:** Use this port to extract stereo audio via a left and right phono cable from output [G]

12. **Plug** in your IEC power cable to the 100-240V socket

13. **Earthing Point:** Use to earth your MHUB.

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DISPLAY RECEIVERS (X6)
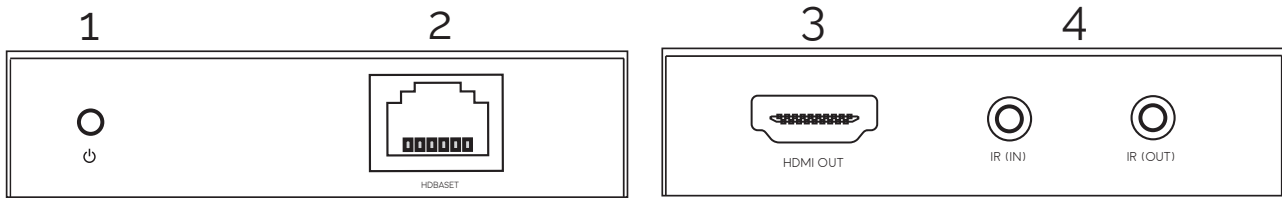
1. **Power LED**: This LED indicates that the receiver has a PoE connection with the matrix

2. **"HDBASET"**: Connects back to the HDBaseT output on the MHUB Chassis

3. **"HDMI OUT"**: Connect this to your local display using a HDMI cable

4. **"IR (IN)" and "IR (OUT)"**: Connect an IR RX to the 'IR (IN)" port to send IR commands back to the MHUB Chassis, Connect an IR TX to the "IR (OUT)" port to enable control of your display

SETTING UP IR CONTROL

This will enable IR control to be sent from your display location back to your central hub to enable control of your IR source devices.

## SOURCE CONTROL VIA IR (BACKWARDS IR) FOR OUTPUTS A - F

1. Plug IR transmitter TX into the numbered 3.5mm jack port labelled SOURCE IR (OUT) on the MHUB 4K 4x4 hub . Make sure the number corresponds with the HDMI input the source device is connected to.

2. Place IR transmitter TX bud (small rectangular part) in front of the IR eye of the source (where you would normally point the remote to control the HDMI source device). Repeat these steps for each source device.

3. Plug IR receiver RX into the 3.5mm jack port labelled IR RX on the display receiver.

4. Place IR receiver at or near the display (position it close to where you would usually point your remote to turn your TV on or off).

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SOURCE CONTROL VIA IR (BACKWARDS IR) FOR OUTPUTS G & H

1. As per Outputs A-F

2. As per Outputs A-F

3. Connect the IR Injector Dongle into HDMI port on display

4. Plug IR receiver RX into the 3.5mm jack port on the IR Injector Dongle.

5. Place IR receiver at or near the display (position it close to where you would usually point your remote to turn your TV on or off).

DISPLAY CONTROL VIA IR (FORWARDS IR) FOR OUTPUTS A - F

1. Plug IR transmitter TX into the 3.5mm jack port labelled IR TX on the display receiver.

2. Place IR transmitter TX in front of the IR eye of the display (position it where you would usually point your remote to turn on or off your TV).

3. Plug IR receiver RX into the numbered 3.5mm jack port labelled IR RX on the central hub. Make sure the number corresponds with the display you want to control

4. Place IR receiver in a visible uncovered position where it is able to receive remote signals.

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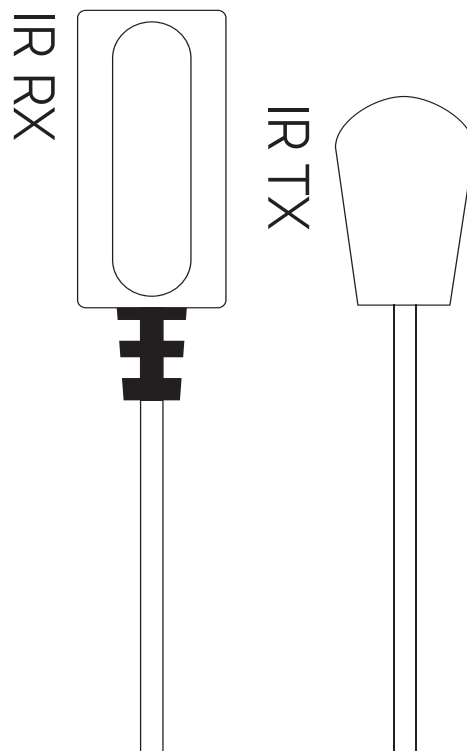
TESTING YOUR IR SETUP

TEST BASIC OPERATION

The easiest way to verify your IR setup is to go to your display device connected to output 1 of the central hub. Use the matrix remote to select source input 1 and then use the remote control for your chosen source 1 to verify control. Do this for each of the other sources connected to the matrix. If you wish, you can then repeat the process at each of the display locations you have connected to the system.

FORWARD IR PORTS

MHUB 4K 4x4 has forward IR ports on the rear of the matrix. These allow IR signals to be sent from the central hub to the individual TV receivers. This feature is for use when integrating with third party control systems. In normal use these ports are not used or required. For example, a third party smart home system such as Control4, Crestron, AMX or RTI can send IR commands to control devices at the TV receiver location from the location of the central hub.
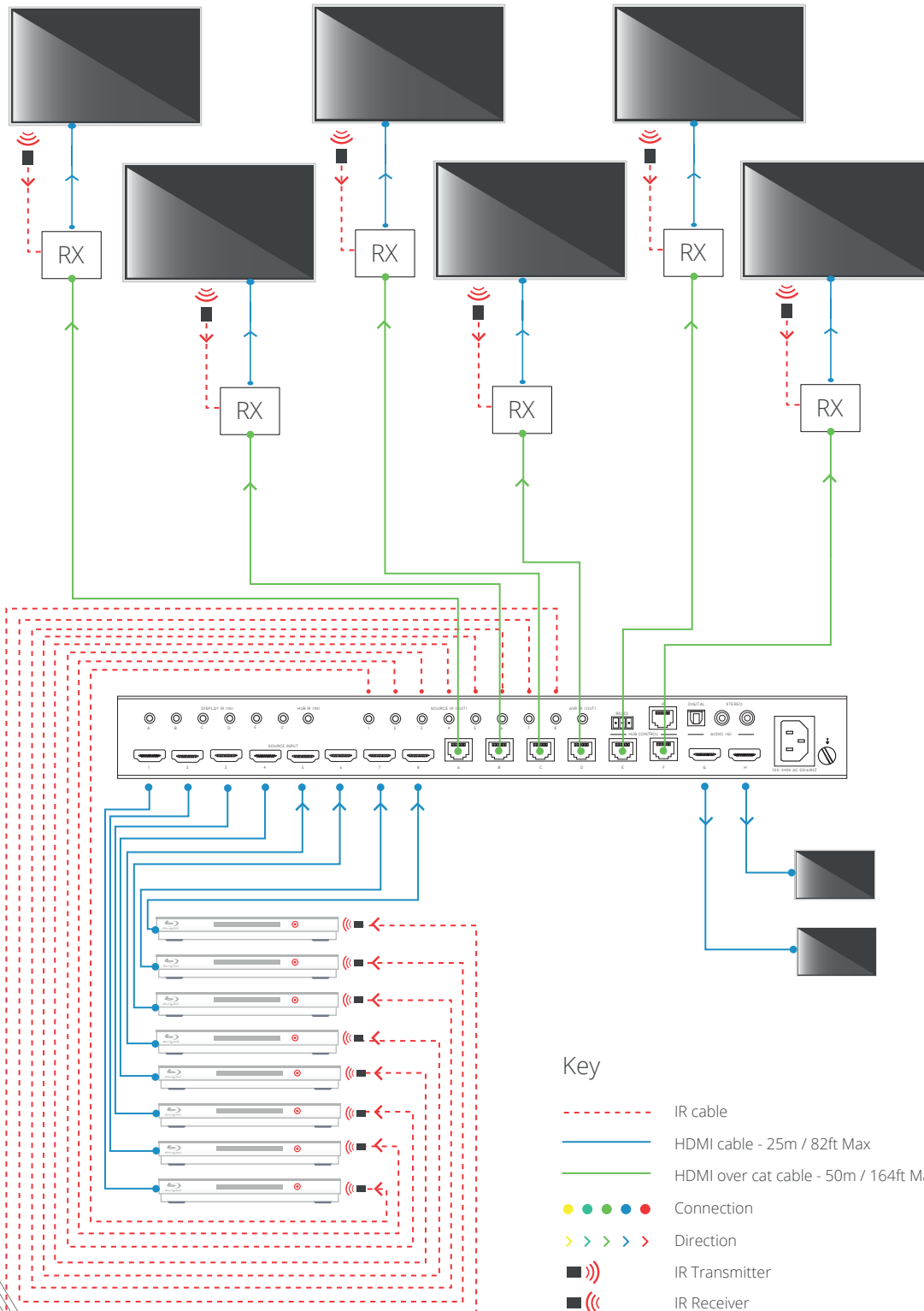
WORKING WITH IDENTICAL SOURCE DEVICES

MHUB has discrete IR, so it is possible to have two or more identical source devices without IR clashes that result in the operation of all identical devices. When using two or more identical source devices, please take measures to avoid IR transmission leaks that could cause the other identical source devices to respond. You can take measures to shield source devices from the IR being emitted by other source device IR TX emitters by locating them on different shelves, for example.

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STANDARD WIRING DIAGRAM

This is a typical wiring diagram that shows how we would expect an MHUB 4K (8x6+2) to be cabled. This diagram features eight HDMI source devices (any combination of source devices) being sent to eight rooms. 6 of the displays are located upto 70m away (40m if 4K is required) with an additional two rooms on a short HDMI run. All devices are being controlled via backwards IR.

Key

- - - - -	IR cable
————	HDMI cable - 25m / 82ft Max
————	HDMI over cat cable - 50m / 164ft Max
● ● ● ● ●	Connection
❯ ❯ ❯ ❯ ❯	Direction
■))	IR Transmitter
■((	IR Receiver

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EDID MANAGEMENT

Extended display identification data (EDID) is data sent by a display to describe its capabilities to a HDMI source. For example, it's what enables a modern computer to know what kinds of monitors are connected to it.

WHAT IS EDID?

Extended display identification data (EDID) is data sent by a display to describe its capabilities to a HDMI source. For example, it's what enables a modern computer to know what kinds of monitors are connected to it.

EDID management allows you to fix a specific EDID profile internally on the MHUB to assist with the connection between the display and source. By 'fixing' the EDID you can specify the maximum resolution, 3D functionality and audio output type from the matrix instead of the HDTV dictating what the source should output.

The matrix has multiple EDID management modes that will control how the EDID profiles from the individual displays and devices are combined, ignored and routed.

A good example of when you might like to use this is if you have an AVR in your setup, that AVR would normally default to stereo audio when connected to multiple displays. However, with EDID management you can force that AVR to always use multi-channel audio.

EDID data can be modified using the settings page on DASH.

OPERATING YOUR SYSTEM

MANUAL OPERATION

You can switch between sources manually by using the buttons on the front of the central hub. Each output has its own button which cycles through the inputs.

REMOTE OPERATION

The small remote control shown below is included with MHUB. This can operate the system from directly in front of the matrix, via the IR receiver window on the front of the matrix and also via the IR RX cables connected to TV Receivers. There are also 4 additional buttons ALL, EDID, CLEAR and OK.

ALL - This selects all outputs so they can be set to the same input

EDID - This enables capture/learn and set EDID profiles

CLEAR - Will cancel all operations, such as Switching/EDID learning.

OK - Confirms operation
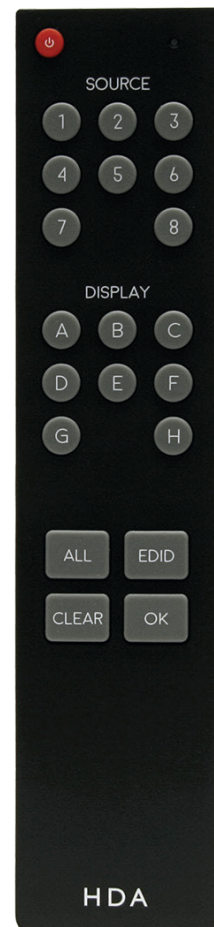
INTEGRATING WITH A CONTROL SYSTEM VIA IP OR RS232 PORT

For more information visit:
http://support.hdconnectivity.com/2015/08/MHUB-2K-control-system-integration

TROUBLESHOOTING

Should you encounter a problem when using your mHub a soft power cycle or hard reset of the matrix should resolve most issues.

TO PERFORM A HARD RESET:

Power down every device connected to the central hub: all input sources and all HDTVs. Now power down the matrix itself. Leave off at the mains for at least ten to fifteen minutes. Finally connect and power on the matrix again as if doing it for the very first time.

NO/INTERMITTENT PICTURE ON HDTV, BLOCKY IMAGES OR SPARKLES:

Find the fault: Drop the output resolution of the source device down to 1080i or 720p. If the picture appears correctly on the HDTV this indicates a bandwidth issue with the Cat cable run. The available bandwidth is too low for 1080p transmission. Check that the Cat cable is not bent, knotted, kinked or distorted in any way- this would prevent the high frequency signals from traveling throughout the intended length.

Ensure that the RJ45 connectors are fully inserted and click locked firmly into place to ensure perfect connector connection.

THIS CAN BE CAUSED BY:

1. Electromagnetic interference affecting the Cat5e/6/7 cable due to proximity to power lines.
2. Imperfect RJ45 connector termination
3. Use of wallplates or patch panels that cause too much bandwidth drop
4. Poor quality Cat cabling or internal cable strand breakages caused by poor production
5. Installation bending/strain/damage.

POSSIBLE FIXES:

Relocate cable run away from possible interference from power line (minimum 60cm)

Re-terminate RJ45 connectors or replace with better quality connectors

Remove wallplates and patch panels, replacing with direct cable runs and brush plates.

Upgrade to better quality Cat5e/6/7 cable.

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SPECIFICATION

These specifications may change or be improved without notice. HD Connectivity Ltd. may not be held responsible for discrepancies.

Frequency bandwidth
10.2Gbps

Central hub input/output ports
x8 HDMI inputs
x6 Cat 5e/6 outputs
x2 HDMI output

Display receiver input/output ports
x1 HDMI
x1 Cat 5e/6
x1 IR Transmitter
x1 IR Receiver

Power supply
Central hub (DC 24 2.71A)

ESD Protection Human Body Model
± 8kV (air-gap discharge) ± 4kV (contact discharge)

Dimensions (mm) (Width x Depth x Height)
Central hub 2.9kg
Display receiver 280g x4

Weight (g)
Central hub 910g
Display receiver 280g x4

Operating temperature
0°C ~ 50°C / 32°F ~ 122°F

Storage temperature
-20°C ~ 60°C / -4°F ~ 140°F

Relative humidity
10 ~ 90% RH (Non-condensing)

Maximum power consumption
Central hub (78W)

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TWO-YEAR REPLACEMENT WARRANTY & GUARANTEE

A two-year worldwide replacement guarantee covering HDanywhere™ electronic devices is provided by HD Connectivity Ltd. . If you need to use this guarantee, please contact HDanywhere Customer Services: support@hdconnectivity.com or telephone (0)1648 576 348 during UK office hours.

Hereby, HDanywhere™ declares that this HDMI connectivity device is in compliance with the essential requirements and other relevant provisions of the following Directives: 2006/95/EC (LVD Directive); 2004/108/EC (EMC Directive); 999/5/EC (R&TTE Directive).

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www.hdanywhere.co.uk

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