4K HDBaseT™ EXTENDER WITH KVM



Vanco Part Number
EVEXKVM2

4K HDBaseT™
Extender with KVM

EVOLUTION BY VANCO
ADVANCING DIGITAL CONNECTIVITY

www.vanco1.com • 800.626.6445

DEAR CUSTOMER

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.

This product is 100% inspected and tested in the United States to verify HDMI performance parameters.

WARNING

1. Do not expose this unit to water, moisture, or excessive humidity.
2. Do not install or place this unit in a built-in cabinet, or other confined space without adequate ventilation.
3. To prevent risk of electrical shock or fire hazard, due to overheating do not obstruct unit's ventilation openings.
4. Do not install near any source of heat, including other units that may produce heat.
5. Do not place unit near flames.
6. Only clean unit with a dry cloth.
7. Unplug unit during lightening storms or when not used for an extended period of time. A surge protector is strongly recommended.
8. Protect the power cord from being walked on or pinched, particularly at the plugs.
9. Use unit only with accessories specified by the manufacturer.
10. Refer all servicing to qualified personnel.

CAUTION

HDMI is a very complex technology requiring continuous authentication of the signal and the same video resolution and audio settings on all electronic equipment in the system. When there are multiple sources and displays, the video resolution and audio setting on all connected units must be adjusted to correspond with that of the display having the lowest video and audio capability.

INTRODUCTION

The Evolution by Vanco EVEXKVM2 HDBaseT 2.0 Extender over Single Cat5e/6 with KVM, bi-directional IR, auto EDID/EQ, and PoC extends 4K/UHD and high definition video and audio with HDR, USB and IR signals, and power up to 230ft/70m over a single Cat5e/6 cable. USB 2.0 KVM allows for controlling a security NVR/DVR, computer, NAS system, or any other component that is controlled by USB with this extender. No need to run a separate line or extender just for KVM control! Also features Power over Cable (PoC) Technology, which transmits power over Cat5e/6, allowing either the Transmitter or Receiver to be powered without the use of a power supply, you pick and choose which side to power. No EDID or EQ adjustments are necessary as the units automatically adjust for compatibility and gain. This product fully supports DTS-HD and Dolby TrueHD audio formats and is HDCP compliant. For extending HDMI over a single Cat5e/6 with KVM and PoC, the EVEXKVM2 is a great plug and play solution for any device that needs to be extended and controlled with a keyboard and mouse!

The EVEXKVM2 includes two units: transmitting unit (EVEXKVM2-TX) and receiving unit (EVEXKVM2-RX). The transmitting unit is used to capture the HDMI input with KVM signals and carries the signals over a single Cat5e/6 cable. The receiving unit is responsible for equalizing the transmitted HDMI signal and reconstructing KVM signals.

4K HDBaseT™ Extender with KVM

Part # EVEXKVM2

- Transmits audio and video via HDMI as well as complete KVM (Keyboard, Video, Mouse) functionality via USB 2.0 ports over a single Cat5e/6 up to 230ft/70m with PoC
- Power Over Cable (PoC), integrates power into the Cat5e/6 cable, requiring no power supply for either the Transmitting unit or Receiving unit (opposite of unit that is plugged in to power)
- Auto EDID management automatically adjusts to overcome compatibility issues
- Auto EQ distance for perfect transmission and reception of HDMI signals
- Supports up to 3840 x 2160 @ 60Hz resolutions
- HDR10 Compatible
- Supports LPCM, DTS and Dolby Digital Audio Formats
- Transmission Range: Extends 4K HDMI signals up to 230ft/70m over a single Cat5e or Cat6 cable
- Extends USB 2.0 high speed at 480Mbps to 230ft/70m
- RX unit provides 2 USB 2.0 high speed ports at display end
- TX unit provides a single USB port for connection to computers and other devices
- USB ports allow for charging of connected USB devices (please use properly certified and licensed cabling with utilizing the charging feature)
- Bi-Directional Wide Band IR 20-60kHz
- HDBaseT 2.0 with CEC Support
- Compatible HDMI 2.0*/DVI 1.0
- HDCP 2.2/1.4
- Dimensions: 4.1" W x .8" H x 3.4" D

SPECIFICATIONS

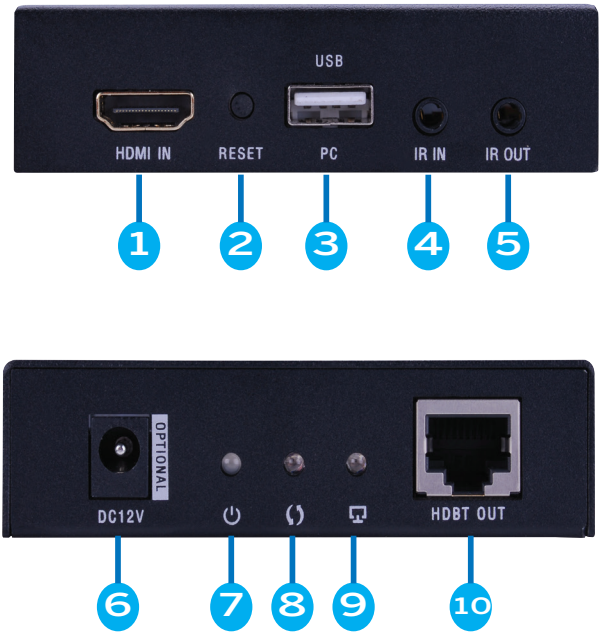
HDMI Signal	Supports HDMI 2.0
Resolutions Supported	480i/480P/576i/576P/720P/1080i/1080P/ 3D/3840×2160
Audio Supported	LPCM, DTS and Dolby Digital
Network Cable	Cat5e/Cat6/Cat6a/Cat7
Transmission Length	3840x2160p@60Hz up to 230ft/70m
IR	Bi-directional, 20-60kHz
USB	2.0
USB Transmission	480 Mbps @230ft/70m
Working Temperature	32~131F°/ 0~55°C
Storage Temperature	14~158F° / -10~70°C
Humidity	0~90% (no condensation)
Power Supply	12V, 2A
Power Consumption	TX: <6W; RX: <8W
Product Dimension	TX: 4.1" W x .8" H x 3.4" D; RX: 4.1" W x .8" H x 3.4" D
Weight	TX: 0.65 lbs; RX: 0.5 lbs

PACKAGE CONTENTS

- EVEXKVM2 (TX & RX)
- (2) IR Transmitters (IR TX)
- (2) IR Receivers (IR RX)
- USB Cable (Type A)
- (1) DC 12V/2A power supply
- Product Manual

PANEL DESCRIPTIONS

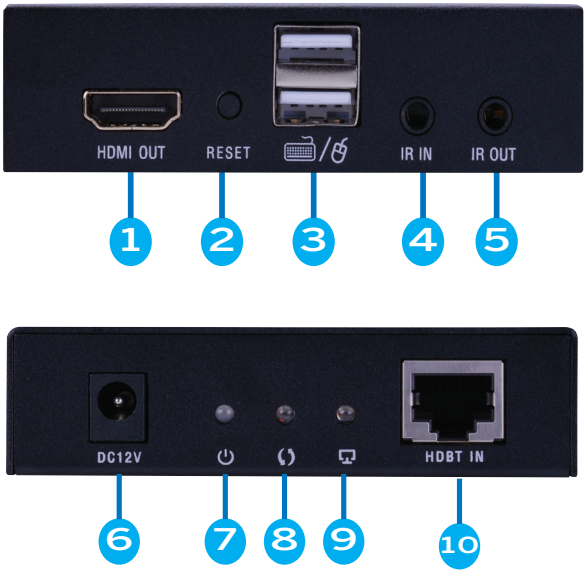
EVEXKVM2-TX (Transmitting Unit)



1. HDMI INPUT: Connect a source such as a Security NVR/DVR, computer, NAS system, etc.
2. Reset button
3. USB 2.0 type A port (connect the included USB cable to the source for KVM control)
4. IR IN – Connect IR Receiver (IR RX) to control display
5. IR OUT - Connect IR Emitter (IR TX) to control source
6. DC 12V: Connect the included power supply to power the extender unit (Powering this unit up requires no power supply needed at the RX unit)
7. Power Indicator LED
8. Data Transmission Indicator LED: Solid shows communication between transmitter and receiver, flashes when there is no communication between transmitter and receiver
9. Connection Indicator LED: Flashes when connected to HDMI device, off when there is no transmission of audio/video between the transmitter and receiver
10. HDBaseT RJ45 Output

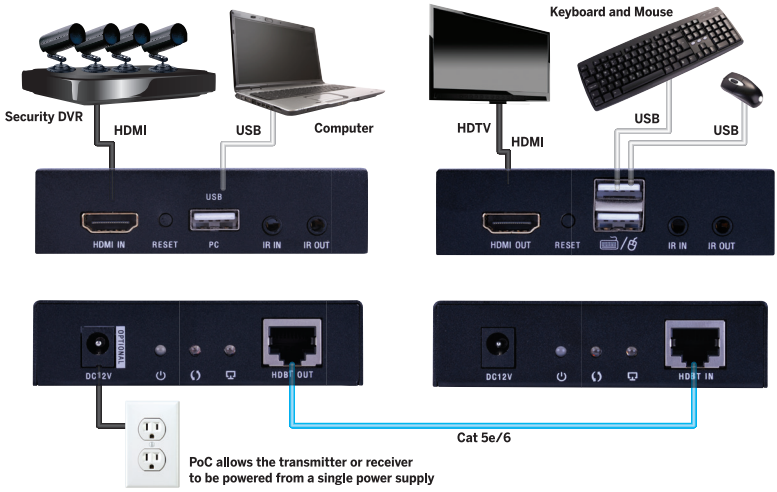
PANEL DESCRIPTIONS

EVEXKVM2-RX (Receiver Unit)



1. HDMI OUTPUT: Connect an HDMI display such as an HDTV or Projector
2. Reset button
3. USB 2.0 PORTS: Connect any 2.0 USB capable device such as a keyboard or mouse to control the source
4. IR IN – Connect IR Receiver (IR RX) to control source
5. IR OUT - Connect IR Emitter (IR TX) to control display
6. DC 12V: Connect the included power supply to power the extender unit (Powering this unit up requires no power supply needed at the TX unit)
7. Power Indicator LED
8. Data Transmission Indicator LED: Solid shows communication between transmitter and receiver, flashes when there is no communication between transmitter and receiver.
9. Connection Indicator LED: Flashes when connected to HDMI device, off when there is no transmission of audio/video between the transmitter and receiver.
10. HDBaseT RJ45 Output

CONNECTION DIAGRAM



CONNECT AND OPERATE

1. Connect a source such as a Blu-Ray Player, game console, A/V Receiver, Cable or Satellite Receiver, etc. to the HDMI input on the Transmitting unit.
2. Connect a display such as an HDTV or HD Projector to the HDMI output on the Receiving unit.
3. Connect a single Category 5e/6/7 up to 164ft/50m to the UTP output of the Transmitting unit, and the other end to the UTP input of the Receiving unit. A home-run category cable is strongly recommended, any coupling point results in signal loss that could affect the video signal. Patch panels are not recommended as they can slightly change the frequency of the signal.
4. For power, plug in either the Transmitting unit or Receiving unit with the included power supply, opposite unit will not have to be plugged in as it features Power over Ethernet (PoE).
5. Power on each device in the same sequence (receiver and transmitter will already be powered when either unit is plugged in.)

At this point the display connected should display the source signal connected to the extender set. If no signal is being displayed, connect a shorter Cat5e/6 cable (jumper or patch cable). If a display is having difficulty receiving a signal, access the display's menu and adjust the resolution (lowest to highest until signal is displayed). A 24 Hz vertical refresh rate may work better than 60 Hz or higher.

IR

IR PASS-THROUGH

The bi-directional IR system allows you to control the source that is connected to the extender unit, from the display; or the display from the source, not simultaneously. There are two important things to note when setting up the IR system:

1. The IR Receiver (IR RX) is always what you point your remote at to send an IR signal. This pigtail is placed at the display for controlling the source; or at the source for controlling the display.
2. The IR Emitter (IR TX) is what sends the IR signal to what you are intending to control, whether it's the source or the display. This pigtail is placed at the source; either pointed at the source, or placed on the front panel of the source, see below for placement tips. Or placed at the display to control the display from the source.



IR RECEIVER



IR EMITTER

IR Emitter (TX)

To control the source: Plug IR Emitter into IR TX port of transmitter unit (EVEXKVM2-TX); place emitter in front of the IR eye of the source.

To control the display: Plug IR Emitter into IR TX port of receiver unit (EVEXKVM2-RX); place emitter in front of the IR eye of the display.

Note: Placement of the IR Emitter is important and can result in the IR system not working if improperly placed.

- First, locate the IR eye or window on the source
- If placing the IR Emitter right on the front panel of the source, do not stick right on top of the IR eye or IR window. The IR signal cannot travel through the double-sided tape on the emitter. Instead place the emitter on either side, or on the top or bottom of the IR eye or window, with the tip of the emitter facing the IR eye or window. See below for illustration of where IR signal shoots from on IR Emitter:





IR RECEIVER (RX)

- To control the source: Plug IR Receiver into IR RX port of receiver unit (EVEXKVM2-RX); place receiver at or near display.
- To control the display: Plug IR Receiver into IR RX port of transmitter unit (EVEXKVM2-TX); place receiver in position where it is able to receive remote signals.

To Control the Source:

1. Plug the IR Emitter into the IR OUT Port on the Transmitter



2. Plug the IR Receiver into the IR IN Port on the Receiver



To Control the Display:

1. Plug the IR Receiver into the IR IN Port on the Transmitter



2. Plug the IR Emitter into the IR OUT Port on the Receiver



EDID

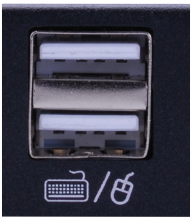
Extended Display Identification Data (EDID) is a data structure provided by a digital display to describe its capabilities to a video source (e.g. graphics card or set-top box). In a nutshell, the display provides its EDID info to the source to send the proper signal format, this is essential for a proper handshake to occur.

The EVEXKVM2 is equipped with EDID management, however there is no need to adjust any dip switches or dials, the unit automatically reads the EDID from the display and saves it internally. This feature was created for the installer in mind, for a plug and play installation!

KVM PASS-THROUGH

The KVM extension system allows you to control the source that is connected to the extender unit, from the display location using USB 2.0 ports.

The (2) USB 2.0 ports on the Receiving unit (RX) can be connected to any USB 2.0 capable device, such as keyboards or mice to control the source. A wireless keyboard/mouse system can be used here, as long as the system is capable of USB 2.0, and is within the normal wireless operation of the third party wireless product.



NOTICE

1. Vanco HDMI and Cat5e/6 cables are strongly recommended for use with this product to ensure best results.
2. The transmission length is largely affected by the type of Cat5e/6 cables utilized, the type of HDMI sources, and the type of HDMI display. The testing result shows solid UTP cables (usually in the form of 300m (1,000ft) bulk cables) can transmit a lot longer signals than stranded UTP cables (usually in the form of fixed length patch cords). Shielded STP cables are better suited than unshielded UTP cables. A solid UTP Cat5e/6 cable shows longer transmission range than stranded STP Cat-6 cable. For long extension applications, use solid UTP/STP category cables.
3. EIA/TIA-568-B termination (T568B) for Cat5e/6 cables is recommended for better performance.



Pin	TIA/EIA-568B Wire color
1	Orange/ White
2	Orange
3	Green/ White
4	Blue
5	Blue/ White
6	Green
7	Brown/ White
8	Brown

4. To reduce the interference among the unshielded twisted pairs of wires in Cat5e/6 cables, one can use shielded STP cables to improve EMI problems, which worsens in long cable transmission.

5. The quality of Cat5e/6 cables can have a major effect on how long the transmission limit can achieve and quality of picture, the actual transmission range is subject to the Cat5e/6 cable utilized. For the best results, Cat6 is recommended.

6. If your HDMI display has multiple HDMI inputs, it is found that the first HDMI input (HDMI input #1) generally can produce better transmission performance among all HDMI inputs.

RESOLUTIONS SUPPORTED

Hactive	*Vactive*	*Frequency*
720	576	50Hz
720	480	60Hz
640	480	75/60Hz
800	600	75/60Hz
1024	768	75/60Hz
1280	800	60Hz
1280	1024	60Hz
1440	900	60Hz
1680	1050	60Hz
1280	720	25/30/50/60Hz
1920	1080	25/30/50/60Hz

TROUBLE-SHOOTING

1. Best results are usually achieved when the source and display resolutions are the same. If resolutions differ, the extenders will try to adjust the signal to match the resolution of the HDTV with the lowest resolution. This will result in a picture with a lower resolution on the other HDTV sets.
2. If you do not get audio and video, access the “setup” menu on the TV to adjust the audio and video settings. If the HDMI control circuit cannot establish a handshake, then there usually will be no audio or video in addition to a blue or black screen with a statement similar to “this protocol not supported” or “weak signal”.
3. If the above mentioned messages display, reset the receiver by disconnecting the power supply. You can also disconnect all of the HDMI and power cables, wait 15 minutes for any voltages to decay and then reconnect all of the cables.
4. If you are still encountering issues, attempt the “hot-plug concept. With all of the HDMI cables disconnected, turn on the source and plug in the HDMI cable into it’s output, then power up the Vanco unit and plug the HDMI cable into it’s input, finally turn on the display and plug the HDMI cable from the receiver into it. This activates all of the devices in corresponding order and results in a signal being plugged into a device that is on and will attempt to connect the signal.
5. Most of the major source and display manufacturers employ a proprietary control channel to communicate between devices from the same manufacturer. Sometimes this can interfere with the HDMI control circuit or the authentication of the signal. Call the manufacturer if you experience this issue. Sometimes a player, an audio/video receiver, or a cable/satellite box may not have the latest software update, usually this can be downloaded from the manufacturer’s website.
6. If you have problems with the IR control circuit, make sure that the IR RX pigtail is plugged into extender receiver and pointed at the display, and the IR TX pigtail is attached to the extender sender and pointed at the source.

SAFETY AND NOTICE

The EVEXKVM2 has been tested for conformance to safety regulations and requirements, and has been certified for EVEXKVM2 should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit
- Do not attempt to service this unit yourself, except where explained in this manual
- Provide proper ventilation and air circulation and do not use near water
- Keep objects that might damage the device and assure that the placement of this unit is on a stable surface
- Use only the power adapter and power cords and connection cables designed for this unit
- Do not use liquid or aerosol cleaners to clean this unit
- Always unplug the power to the device before cleaning

LIMITED WARRANTY

With the exceptions noted in the next paragraph, Vanco warrants to the original purchaser that the equipment it manufactures or sells will be free from defects in materials and workmanship for a period of two years from the date of purchase. Should this product, in Vanco's opinion, prove defective within this warranty period, Vanco, at its option, will repair or replace this product without charge. Any defective parts replaced become the property of Vanco. This warranty does not apply to those products which have been damaged due to accident, unauthorized alterations, improper repair, modifications, inadequate maintenance and care, or use in any manner for which the product was not originally intended.

Items integrated into Vanco products that are made by other manufacturers, notably computer hard drives and liquid crystal display panels, are limited to the term of the warranty offered by the respective manufacturers. Such specific warranties are available upon request to Vanco. A surge protector, power conditioner unit, or an uninterruptible power supply must be installed in the electrical circuit to protect against power surges.

If repairs are needed during the warranty period the purchaser will be required to provide a sales receipt/sales invoice or other acceptable proof of purchase to the seller of this equipment. The seller will then contact Vanco regarding warranty repair or replacement.

TECHNICAL SUPPORT

In case of problems, please contact Vanco Technical Support by dialing 1-800-626-6445. You can also email technical support issues to techsupport@vanco1.com.

When calling, please have the Model Number, Serial Number (affixed to the bottom of the unit) and Invoice available for reference during the call.

Please read this Instruction Manual prior to calling or installing this unit, since it will familiarize you with the capabilities of this product and its proper installation.

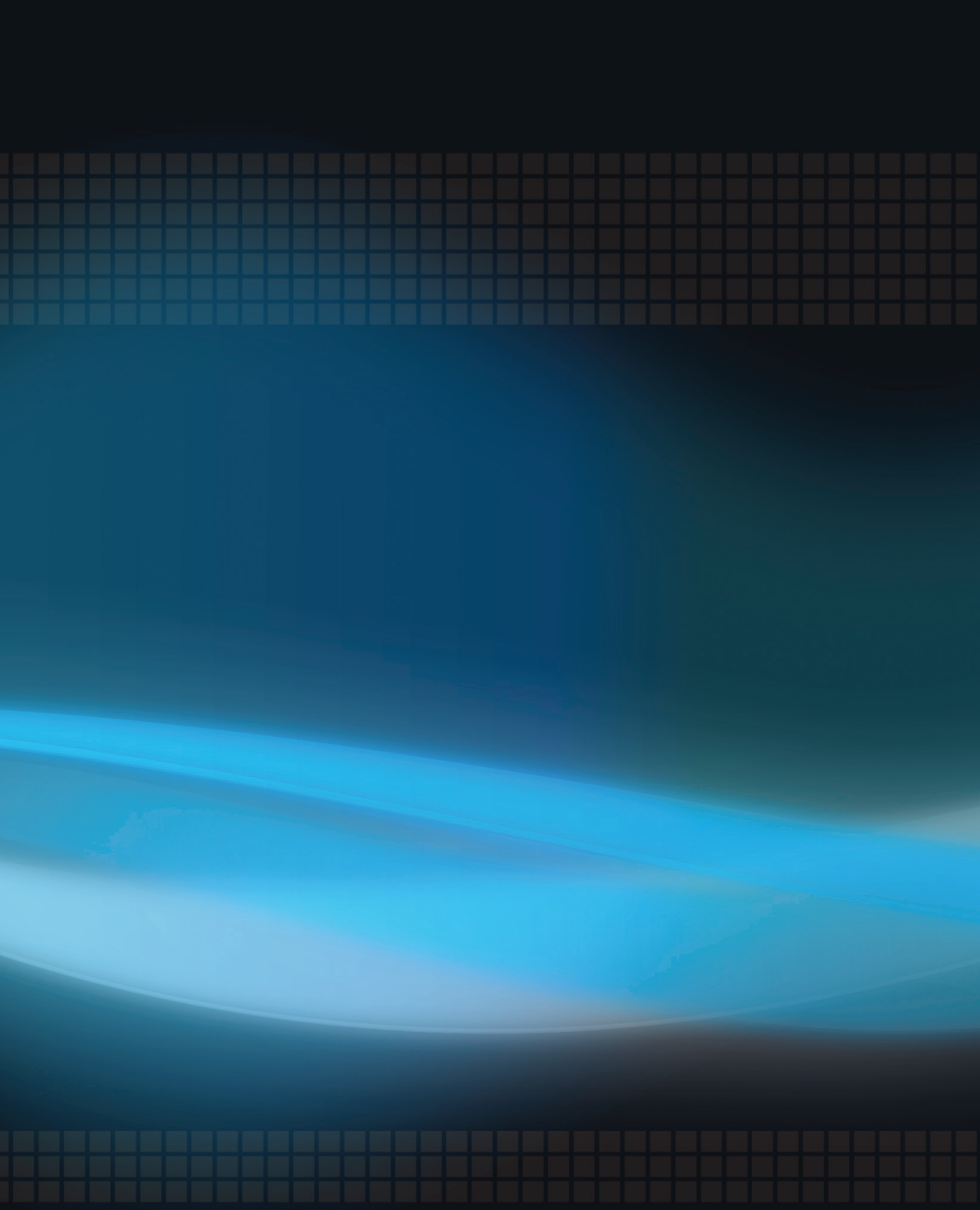
All active electronic products are 100% inspected and tested to insure highest product quality and trouble-free installation and operation. The testing process utilizes the types of high-definition sources and displays typically installed for entertainment and home theater applications.

For additional information, such as helpful installation videos, etc. please visit www.vanco1.com

LIABILITY STATEMENT

Every effort has been made to ensure that this product is free of defects. The manufacturer of this product cannot be held liable for the use of this hardware or any direct or indirect consequential damages arising from its use. It is the responsibility of the user and installer of the hardware to check that it is suitable for their requirements and that it is installed correctly. All rights are reserved. No parts of this manual may be reproduced or transmitted by any form or means electronic or mechanical, including photocopying, recording or by any information storage or retrieval system without the written consent of the publisher.

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