ROBOfiber

RB-4KHDMI series

4K HDMI Uncompressed Video Converter

User's manual (please read before installation)

1. Description

The RB-4KHDMI video digital optical converter uses an all-digital fiber technology that allows transmission of 4K uncompressed HDMI video signal over two fiber optic strands only at high-quality and for long reaches. RB-4KHDMI offers transport of a single high-definition HDMI interface over fiber optic. If two fiber strands are used, converter also provides a bidirectional RS-232 interface path for control signals. The single port series converters can also be installed in a 16 slot 19", 2RU chassis with redundant AC power supplies. RB-4KHDMI is backward compatible with DVI video signal.

2. Technical Specifications

HDMI input/output	
Video interface	HDMI
Video resolution	4096×2160@30Hz or 1080p@120Hz
Video standard	HDMI 1.4, HDMI 1.2a
Fiber interface	
Optical connectors	Dual LC (can operate over one strand without RS232 interface)
Operating distance SMF	20Km (40Km or 60Km by demand only)
Operating distance MMF	300 meters
Optical Tx Power	-5dBm (either MMF or SMF)
Optical Rx Sensitivity	-12dBm for MMF and -18dBm for SMF
EDID	supported
Data	
TDMS signal I/O	1.2Vp-p
DC signal input	5V p-p (TTL)
Interface Type	RS232/Manchester
Baud Rate	0-400Kbps
BER	$< 10^{-9}$
Operation Mode	Full duplex / half duplex
Operating parameters	
Input power	AC 100-240V(adapter), DC12V/2A converter
Power consumption	10W
Work Temp	-10°C to 70°C
Storage Temp	-40°C to 85°C
Humidity	0 ~ 95% (non-condensing)

3. LED status

LED	Description
FIBER	ON when fiber link is established
SYS	ON when HDMI video signal is available
PWR	ON when power is present
DATA	ON when data is running through port

4. Installation

Package Contents: Converter, Power Adapter, and this Manual

Please identify Transmitter and Receiver units in the RB-4KHDMI package. "-T" ending unit is Transmitter and must be installed at the source of HDMI signal, "-R" unit will be installed at receiving end of the HDMI video signal path.

Please connect optical fiber first and the HDMI copper connections before powering up the units. Check LED lights to confirm proper connectivity has been established. HDMI signal should be available at remote end.

Only use the power supply provided with the converter unit. Power adapter provides stable and filtered power for the fiber converters; if adapter is lost please contact vendor for a replacement part. A 3rd party AC adapter can only be used if output voltage, polarity and power jack connector are identical to the original AC adapter.

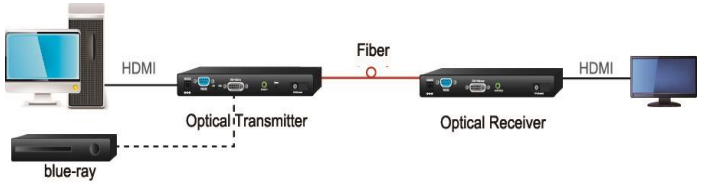

Diagram of RB-4KHDMI series installation

5. Safety

Please avoid exposure to water and do not install unit in high humidity areas. Make sure all connectors (optical and copper) are properly secured.

Please verify that power supplied is matching the input required for operation:

- for AC adapter input： 100~240V, 50~60Hz

- for DC input：12V/1A

Stop using devices if they have been exposed to water or mechanical shocks affecting the physical form of the units.

6. Troubleshooting

The RB-4KHDMI series converters are simple plug and play devices. There are very few adjustments to be made for proper operation. Check below list for potential adjustments:

- no light on POWER LED: please check power sources, make sure AC power is available and properly connected. Replace AC adapter with a similar one

- no light on SYS LED: please check copper HDMI connections

connectivity: each SYS LED reflects local copper connection; make sure each SYS LED is ON, the end without SDI LED “ON” should be reset with a power cycle. If connectivity is proper and LED is not turning on, please use a different RB-4KHDMI unit

- video quality: too much fiber attenuation or weak/improper copper HDMI connectivity. Multiple potential causes:

- normal fiber attenuation due to too long fiber circuit or improper high attenuation fiber splicing: please measure total fiber attenuation with an OPM (optical power meter) and OLS (optical laser source) to determine the level of optical attenuation on your fiber circuit. If local splicing is bad, replace or redo the fiber splices
- fiber attenuation caused by fiber overbending: please observe fiber path and reduce bends in the fiber run
- fiber attenuation caused by dirty optical connectors: clean connectors with a fiber cleaning pen (female) or fiber cleaning cassette (male)
- improper copper HDMI connectivity: please check quality of copper wiring
- AC power interference: please avoid running AC lines over or under the fiber extenders. Make sure the AC power lines have proper grounding. AC “noise” can affect quality of video signal

7. Models available

The RB-4KHDMI series single port HDMI over fiber has following models available (fiber type and reach)

Part Number	Description
RB-4KHDMI-T	Transmitter unit for MM/SM fiber up to 10Km
RB-4KHDMI-R	Receiver unit for MM/SM fiber up to 10Km

All RB-4KHDMI series have dual LC/UPC optical connectors.

Recommended 19” chassis installation is the RB-CH16-AA unit.