DIGITUS®

HDMI Fiber KVM IP Extender Set, 4K/60Hz

Installation Guide

DS-55348, DS-55349

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Important Safety Instructions:

- Do not expose this device to rain/liquids or place it near water. Any liquid that goes into the device may cause a failure, fire, or electric shock.
- Never insert anything metallic into the open parts of this device. This may cause a danger of electric shock.
- Do not place this device near or over a radiator or heat register, or where it is exposed to direct sunlight.
- The device should be repaired only by a qualified technician.
- If a third-party power supply is used, please ensure that the power supply specifications meet the product requirements.

1. Introduction

The HDMI Fiber KVM Extender Set enables high-resolution AV signal transmission in 4K/60Hz (3840x2160p) over long distances using fiber optic cables. Both Singlemode (SM) and Multimode (MM) cables are supported. In a point-to-point connection, signals can be transmitted loss-free over distances of up to 40 km (Singlemode) or 300 m (Multimode). In addition, the device allows a point-to-multipoint connection with the option of distributing signals to up to 253 receivers (displays).

Thanks to the support of 1G network switches and the use of the existing 1G infrastructure, signal transmission over unlimited distances is possible. This is achieved by cascading, allowing the system to be expanded flexibly. For projects with many displays, the extender set can be expanded with additional receivers (RX), whereby additional receiver units are available separately (model: DS-55349).

The system is compatible with LC and SC SFP modules, whereby the appropriate SFP modules are available separately (LC Singlemode (SM): DN-81002, LC Multimode (MM): DN-81000). The option of using both Singlemode and Multimode fiber optic cables ensures a high degree of flexibility for different areas of application.

Another outstanding feature of the extender is the KVM function on the receiver side, which enables the connection of a mouse and keyboard to control the signal source directly. In addition, a 3.5 mm stereo connection is available for

separate audio output to ensure optimum sound transmission.

These extensive functions make the HDMI Fiber KVM Extender Set ideal for data centers, conference rooms, digital signage, broadcast environments and industrial applications that require stable, lossless and high-resolution AV transmission over long distances.

2. Main Features

- Long range: AV signal transmission via fiber optic cable
  – Singlemode up to 40 km, Multimode up to 300 m
  – Point-to-point connection
- Expandable via IP: Supports up to 253 receivers (displays)
  – Point-to-multipoint connection
- Flexible & powerful over IP: Use of existing 1G network infrastructure or use of 1G network switches for signal transmission at unlimited distances possible – Cascading
- Expansion options: Additional receivers (RX) available separately (model: DS-55349)
- SFP modules available separately (not included)
  – LC Singlemode (SM): DN-81002,
  LC Multimode (MM): DN-81000
- Wide compatibility: Supports LC & SC-SFP modules as well as Singlemode and Multimode fiber optic cables
- Outstanding image quality: Transmission in UHD of up to 4K/60Hz (3840x2160p) with low latency of 80-140 ms

- KVM function on the receiver side – Connection of mouse & keyboard to control the signal source
- Additional audio output: 3.5 mm stereo connection for separate audio transmission
- HDMI Loop-Out: Connection of a local monitor to the transmitter unit (TX)

3. Specification

Item	Transmitter	Receiver
Video		
Input interface	1x HDMI	1x SFP
Output interface	1x HDMI 1x SFP	1x HDMI
HDMI length	5 m max.	5 m max.
Maximum video transfer rate	18 Gbps	
Compatibility	HDMI 2.0	
	HDCP 1.4 / HDCP 2.2	
Resolutions	3840x2160@24/30/50/60Hz, 1080p@50/60Hz, 720p@50/60Hz, 1920x1200@60Hz, 2560x1440@60Hz, 2560x1600@60Hz	
Connection types	One-to-one connection One-to-many connection Cascading (by network switch)	

Transmission distance	Singlemode 40 km, Multimode 300 m	
Transmission latency	80~140ms	
Audio Signal		
Input interface	1x HDMI 1x 3.5 mm L/R	1x SFP
Output interface	1x SFP	1x HDMI 1x 3.5 mm L/R
HDMI output	LPCM 2.0	
3. 5mm L/R output	PCM	
Command Signal		
RS-232(GND/RXD/TXD)	Default baud rate: 115200 Supported: 2400, 4800, 9600, 19200, 38400, 57600, 115200	
Power		
Power Supply	DC 5V/2A	DC 5V/2A
Power Consumption	TX 7.5W	RX 7.5W
Operating Environment		
Working temperature	- 10℃ - 50℃	
Storage temperature	- 30℃ - 70℃	
Humidity	0-90% RH (no condensation)	

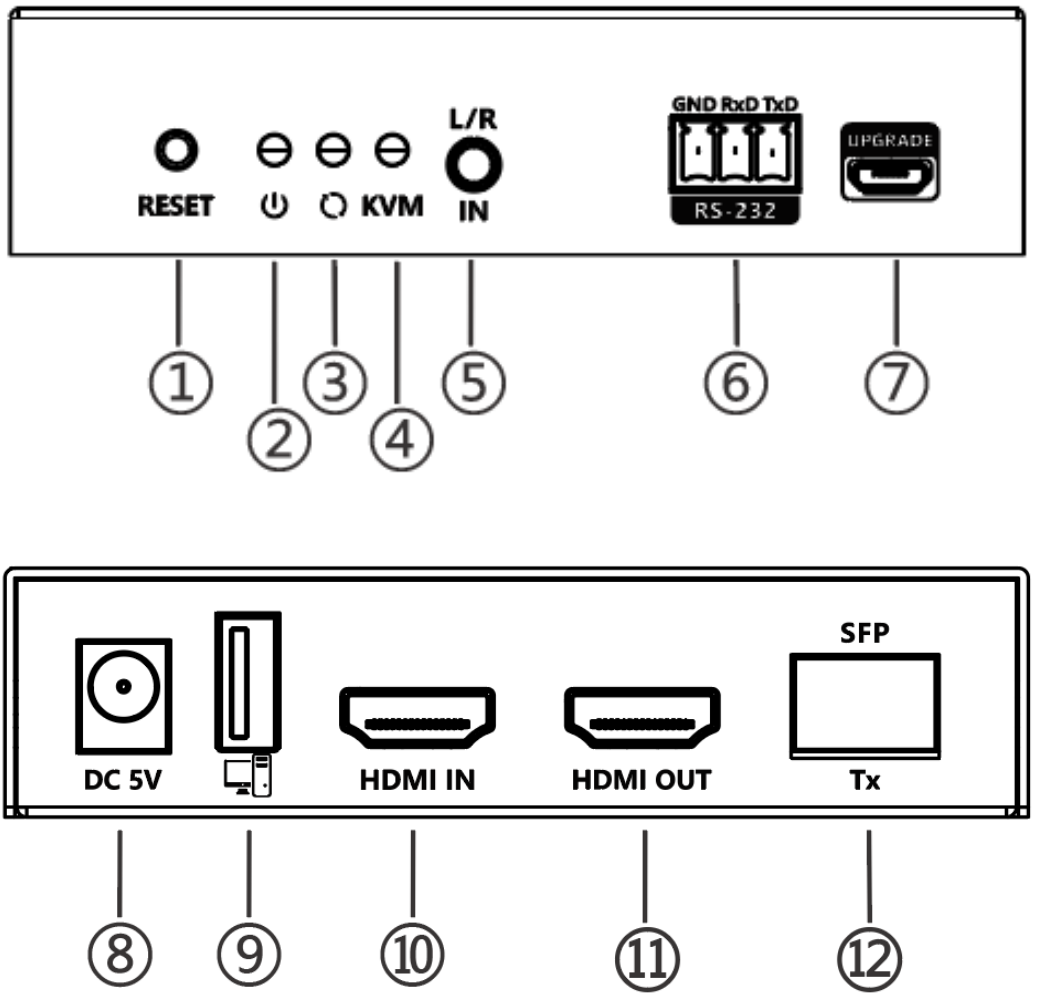
Physical Properties		
Housing	Metal	
Weight	TX: 307 g	RX: 303 g
Color	Black	
Dimensions	106.0 (L) x 103.0 (W) x 20.6 (H) mm	
Protection	ESD protection 1a Contact discharge level 2 (±4KV) 1b Air discharge level 3 (±8KV) Implementation of the standard: IEC61000-4-2	
	Lightning protection, Surge protection	

4. Package Content (DS-55348)

- 1x Transmitter unit
- 1x Receiver unit
- 2x Mains adapter, EU plug (DC 5V/2A, 1.2 m)
- 1x USB cable (1.2 m)
- 1x Mounting material (wall mounting brackets, screws)
- 2x RS232 terminal block
- 2x Earthing screws
- 1x Installation Guide

5. Interfaces

5.1 Transmitter (TX)

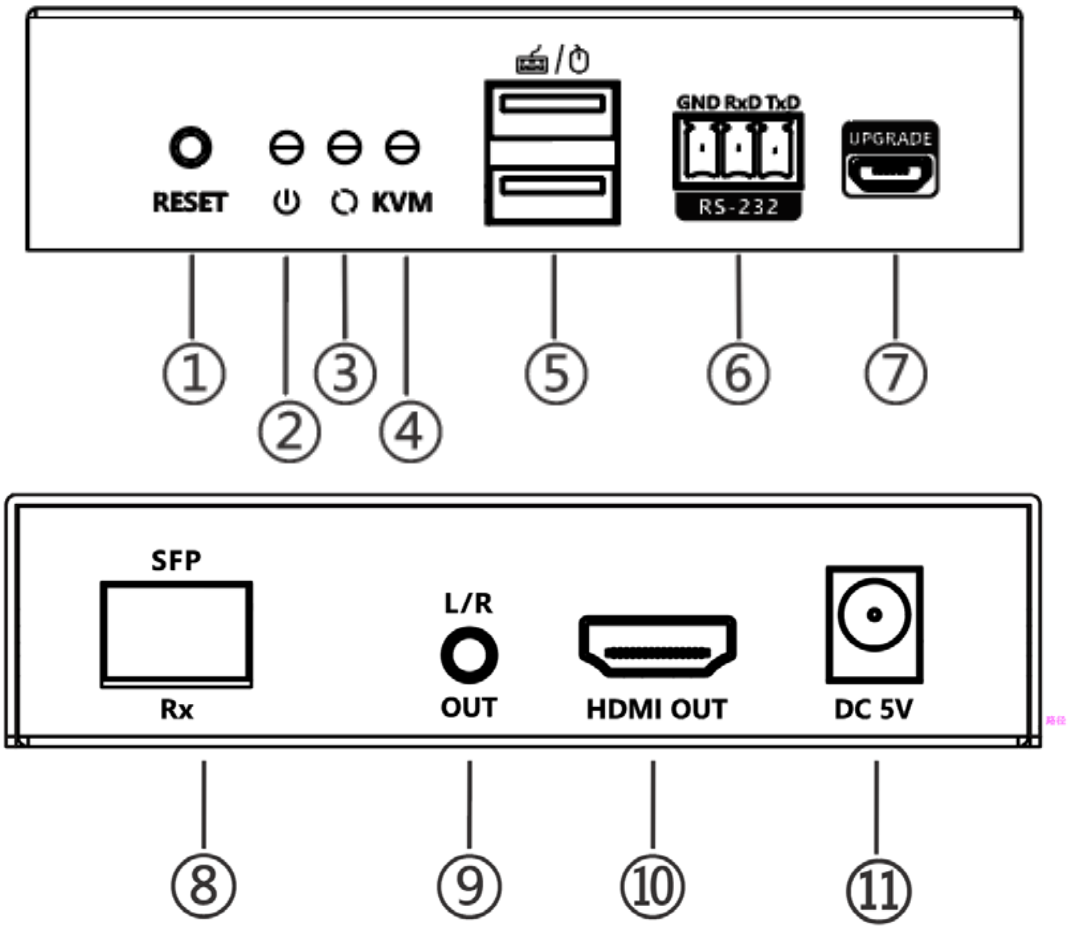


1	Reset	Press to restart the device
2	Power indicator (blue)	The indicator will turn on when the power is turned on
3	Status indicator(orange)	· **Light off:** The transmitter and the receiver have not established a connection

		· **Slow flash:** The transmitter and the receiver are connected but no video data transmission (gigabit Ethernet) · **Quick flash:** The transmitter and the receiver are connected but no video data transmission (100M Ethernet) · **Steady on:** The video data is transmitting
4	KVM indicator	· **Light flashing:** The KVM data is transmitting · **Steady on:** The computer and the USB port are connected
5	L/R IN	Connect to the audio source device with 3.5mm stereo audio cable
6	RS-232 (GND/RXD/TXD)	Used for RS-232 passthrough
7	Micro USB port	Used for firmware upgrading
8	DC 5V	Connect with DC5V/2A power adapter
9	USB-A port	Connect to the computer with USB cable
10	HDMI input	Connect with HDMI source device

11	HDMI out	Connect with local HDMI display device
12	SFP signal out	Insert the SFP module

5.2 Receiver (RX)



1	Reset	Press to restart the device
2	Power indicator (blue)	The indicator will turn on when the power is turned on

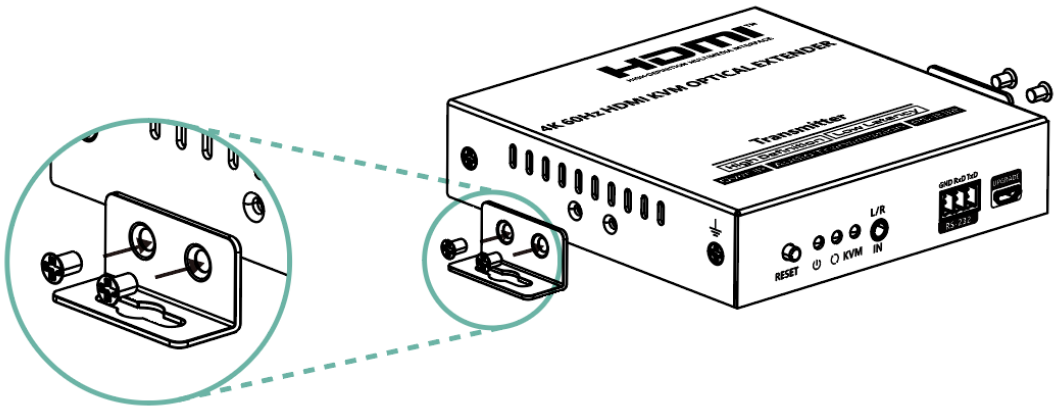
3	Status indicator(orange)	▪ **Light off:** The transmitter and the receiver have not established a connection ▪ **Slow flash:** The transmitter and the receiver are connected but no video data transmission (gigabit Ethernet) ▪ **Quick flash:** The transmitter and the receiver are connected but no video data transmission (100M Ethernet) ▪ **Steady on:** The video data is transmitting
4	KVM indicator	▪ **Light flashing:** The KVM data is transmitting ▪ **Steady on:** The mouse and the keyboard are connected
5	USB-A ports	Connect mouse and the keyboard
6	RS-232 (GND/RXD/TXD)	Used for RS-232 passthrough
7	Micro USB port	Used for firmware upgrading
8	SFP signal out	Insert the SFP module
9	L/R OUT	Connect to the audio source device with 3.5mm stereo audio cable
10	HDMI out	Connect with HDMI display

11	DC 5V	Connect with DC5V/2A power adapter

6. Installation Requirements

Item	Description	Requirement
Signal source device	PC, NVR, etc. with HDMI port	HDMI cable, 5 m max.
Optical fiber cable	Singlemode Multimode	40 km 300 m
Display device	TV, projector, LED screen, etc. with HDMI port	HDMI cable, 5 m max.
Optical fiber switch	One-to-one, one-to-many (by network switch) or cascading (by network switch)	Gigabit switch

7. Wall Mounting

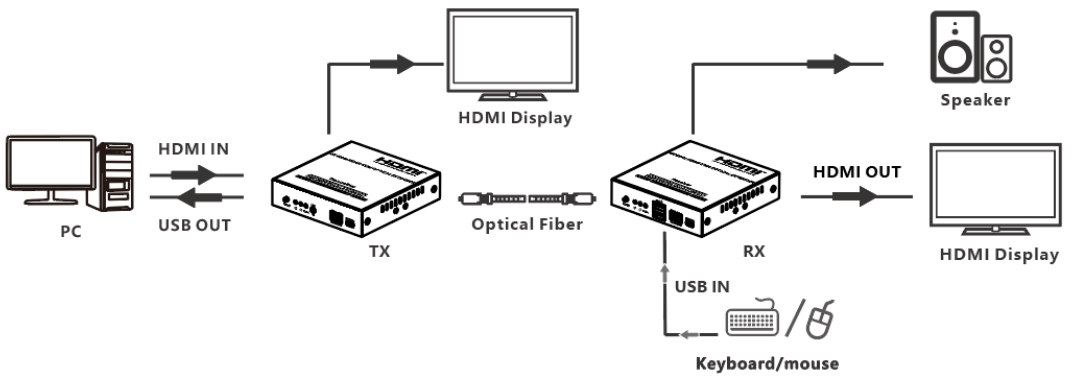


Note:
Choose the wall mounting position and attach the mounting ears to the unit according to the diagram.

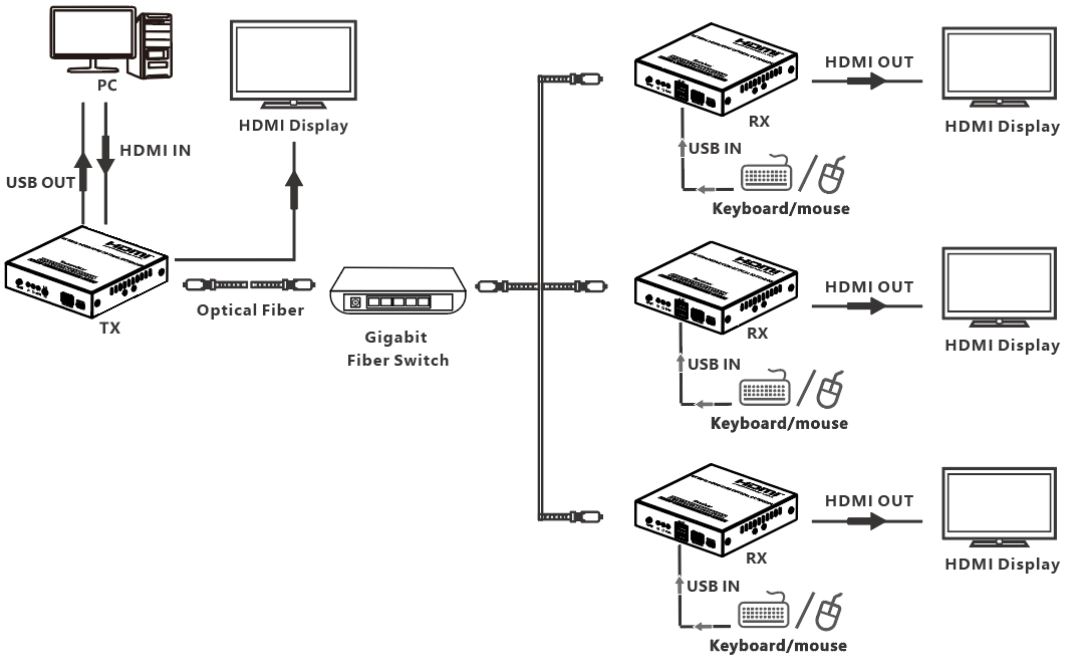
8. Installation Procedures

8.1 Connection Diagrams

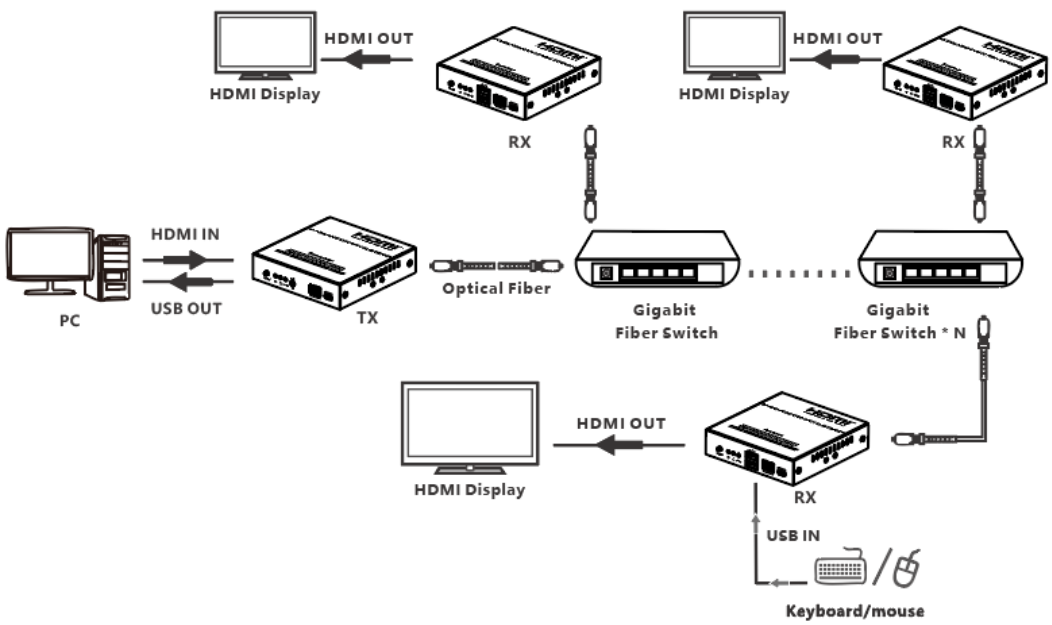
8.1.1 One-to-one connection



8.1.2 One-to-many connection (be network switch)



8.1.3 Cascading (by network switch)



Note:
It is suggested to use gigabit (1000 Mbps) switches in LAN transmission, and 100Mbps switches should not be mixed with gigabit switches when cascading.

8.2 Connection Instructions

1. Connect the source device to the HDMI IN port of the transmitter with an HDMI cable and connect the HDMI OUT port of the receiver to the display device with another HDMI cable.
2. If it's one-to-one connection, then use a fiber optic cable + module to connect the SFP port of the transmitter and receiver. If it is one-to-many connection, then use the gigabit switch as a bridge to connect the transmitter and the receivers with the fiber optic cables + modules respectively.
3. If using HDMI loop out, connect the display device to the HDMI OUT port of the transmitter.
4. If using the KVM function, connect the keyboard/mouse to the USB port of the receiver and connect the computer to the USB port of the transmitter via the USB cable
5. If you need to output additional audio sources from the receiver or extend only L/R stereo audio, connect the receiver's L/R OUT port to the audio device using a 3.5mm stereo audio cable.
   - When the HDMI IN port of the transmitter is connected and the L/R IN port is not connected, the HDMI audio source can output from the HDMI OUT and L/R OUT ports of the receiver simultaneously.

- When the HDMI IN port and the L/R IN port of the transmitter is both connected, the L/R stereo audio source can output from the HDMI OUT and L/R OUT ports of the receiver simultaneously.
- When the L/R IN port of the transmitter is connected and the HDMI IN is not connected, it can be used as an audio extender, the L/R stereo audio source can only output from the L/R OUT port of the receiver.

6. Plug the power supply into the devices to get started.

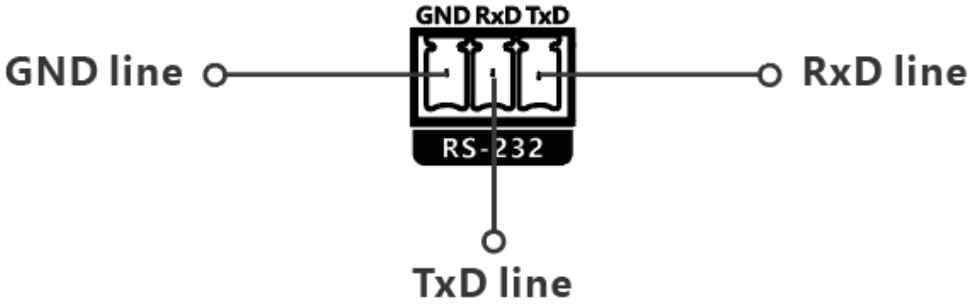
8.3 RS-232 function

8.3.1 Baud rate

Different encoding mechanisms cannot be mixed, the baud rate of the RS-232 port of this transmitter and receiver is 2400, 4800, 9600, 19200, 38400, 57600, 115200.

8.3.2 Line order

Make sure the RS-232 serial line is firmly connected, and that the serial data line is connected correctly as follows:



If the RS-232 serial does not work by following the above connection, please try to change the order of the TXD line and RXD line.

8.3.3 Check baud rate

If you need to check the baud rate, set the baud rate value of the serial port test tool to the default value of 115200, connect the serial port test tool to the product, and then power on the product. The baud rate printed at this time is the current baud rate.
For example: "Baudrate:9600", that is, the baud rate value is 9600.

8.3.4 Set baud rate

For example: the baud rate of the product is 9600, and the baud rate of the serial port test tool is 115200. At this time, the baud rate of the serial port test tool must be set to 9600, which is consistent with the product, and then input the command you want to set "Bset:19200", if "Succeed" is displayed after sending data, the baud rate 19200 is set successfully.

9. Questions and Answers

Q: Why the status indicator is off?

A:

1) Please check whether all equipment is powered on, and the fiber optic cable is connected properly.

Q: Why is the status indicator has been flashing?

A:

2) Please check whether there is HDMI signal input for the TX.

1) Try to connect the signal source directly to the display device or try to change the signal source and HDMI cable and test again.

Q: Why is the output image unstable?

A:

1) Check whether the length of the fiber optic cable is within the specified range.
2) The length of HDMI cable is recommended to be ⩽ 5 meters.
3) Press the "reset" button on TX and RX panels to restart and reconnect.

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