4K60Hz HDMI KVM & USB, RS232, IR, Audio over IP Extender

Introduction

HKM01-4K6G is a 4K60Hz HDMI KVM extender that use a cost-effective Ethernet cable to send HDMI, USB, Analog audio, RS232 and IR signals with transmission distance up to 100 meters. Its TX unit has an HDMI loop out port for an extra HDMI display. The built-in 4 USB2.0 ports at RX unit allow you to control the connected HDMI device at remote end. The KVM extender can perfectly apply to the broadcasting system, digital signage, home network integration, industrial control...etc.

Features

- Resolution up to 4K60Hz 4:4:4.
- Signal extension up to 100M.
- 60KM over single mode fiber optic.
- Built-in local loop out for an extra HDMI display at TX side.
- Built-in 4 USB ports at RX unit.
- Supports bi-directional analog audio transmission for microphones and headphones.
- Supports RS232 transmission and EDID management.
- Supports IR passthrough.

Application Diagram
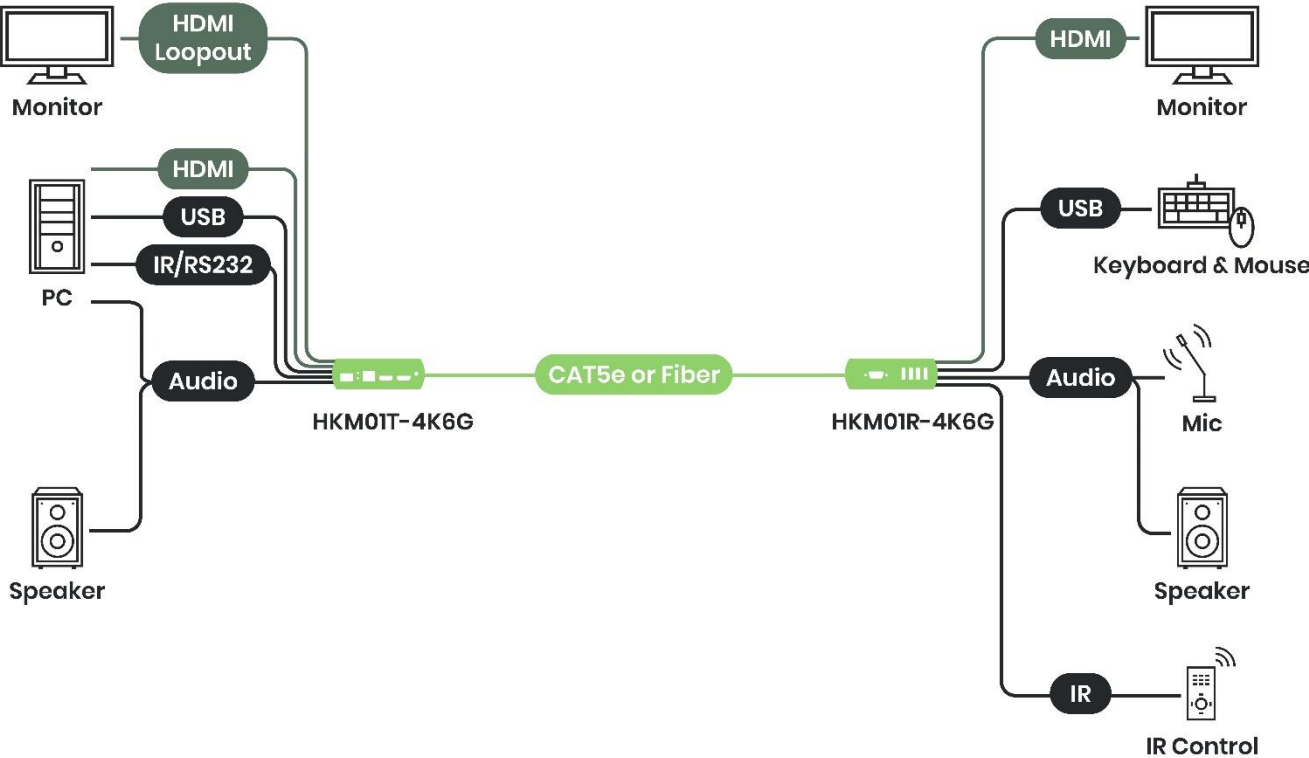
I/O Interface

HKM01T-4K6G
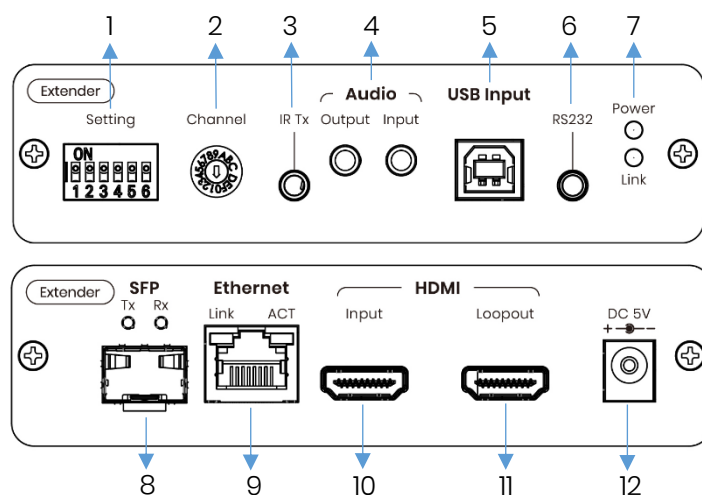
| Item	Interface	Description
1	DIP Switch	Refer to Settings
2	Rotary Switch	To set up the grouping function
3	IR Tx	To connect an IR emitter
4	LINE OUT	To connect a 3.5mm jack for a speaker
4	LINE IN	To connect a 3.5mm jack for Analog Audio Input
5	USB HOST	To connect an USB-B cable
6	RS232	To connect a RS232-command-controllable device (needs 3.5mm jack cable to RS232)
7	Power/LINK	To indicate the status of Power and LINK
8	SFP Connector	To insert an SFP transceiver module with LINK/ACT LED
9	RJ45 Connector	To connect HKM01T-4K6G/ HKM01R-4K6G
10	HDMI IN	To connect a HDMI source
11	HDMI LOOPOUT	To connect a HDMI display
12	Power Supply	To plug in DC 5V power adapter

HKM01R-4K6G
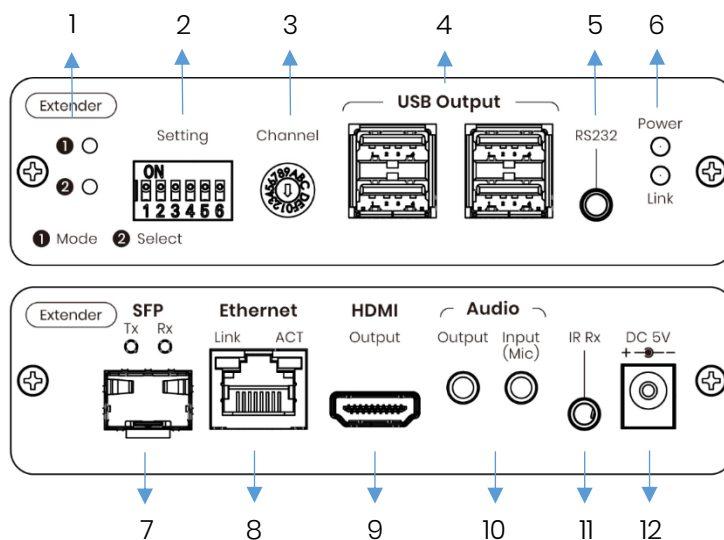
| Item	Interface	Description
1	Button	Mode & Select button. Refer to settings
2	DIP Switch	Refer to Settings
3	Rotary Switch	To set up the grouping function
4	USB	To connect an USB-A cable
5	RS232	To connect a RS232-command-controllable device (needs 3.5mm jack cable to RS232)
6	Power/LINK	To indicate the status of Power and LINK
7	SFP Connector	To insert an SFP transceiver module
8	RJ45 Connector	To connect HKM01T-4K6G/ HKM01R-4K6G
9	HDMI OUT	To connect a HDMI display
10	LINE OUT	To connect a 3.5mm jack for a speaker
	MIC IN	To connect a 3.5mm jack for a microphone
11	IR Rx	To connect a 3.5mm jack for an IR receiver
12	Power Supply	To plug in DC 5V power adapter

LED Indication

LED Indication	LED Color	Status
Power	Green On/ Off	Power On/ Off
Link	Blue Blink	Fiber or RJ45 Unlinked 0.25 seconds on, 2 seconds off Fiber or RJ45 Video Linked TX: 0.25 seconds on, 0.25 seconds off RX: 0.25 seconds on, 0.25 seconds off repeat 3 times then 2 seconds off
Fiber Connection	Green On/ Off	Fiber Linked/ Unlinked
Fiber Connection	Yellow On	Data Transferring
RJ45 Connection	Green On/ Off	RJ45 Linked/ Unlinked
RJ45 Connection	Yellow On	Data Transferring

HKM01T-4K6G DIP Switch for Settings
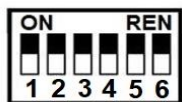
No.	Function
1	To set up EDID Manage
2	To set up EDID Manage
3	To set up RS232
4	To set up RS232
5	To set up RJ45/Fiber Link
6	Reserved

HKM01R-4K6G DIP Switch for Settings
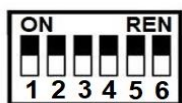
No.	Function
1	Reserved
2	Reserved
3	Reserved
4	To set up RS232

5	To set up RJ45/Fiber Link
6	Reserved

RJ45 Pin Define

Pin	Color	Data
1	Orange-white	DATA0 +
2	Orange	DATA0 -
3	Green-white	DATA1 +
4	Blue	DATA2 +
5	Blue-white	DATA2 -
6	Green	DATA1 -
7	Brown-white	DATA3 +
8	Brown	DATA3 -
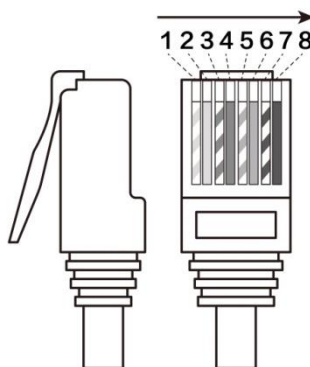
Grouping

1. Set up the Channel
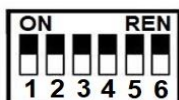   a. The channel of Tx and Rx in a same group should be the same.
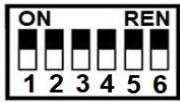

(Up to 16 pairs of Tx and Rx can be set)

2. Remove the power and plug it in again.

RS232 Setting

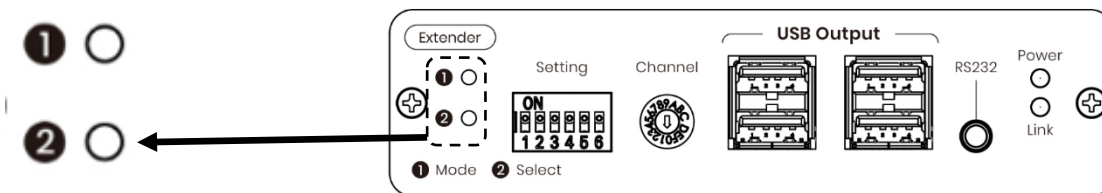Refer to the instructions below to adjust the DIP switch.

Tx (HKM01T-4K6G)

SWITCH	Function/Settings							
SW3	RS232 On (Default)	OFF ↓	Reserved	ON ↑	Debug Mode	OFF ↓	Reserved	ON ↑
SW4		OFF ↓		OFF ↓		ON ↑		ON ↑

Rx (HKM01R-4K6G)

SWITCH	Function/Settings				
SW4	RS232 On (Default)	OFF ↓	Reserved		ON ↑

Panel

1. Check the panel of the receiver (HKM01R-4K6G).
2. Press Button 1 show Mac address, IP address, Baud Rate.
3. Press Button 2 to select a Baud Rate.
   115200 (Default), 57600, 38400, 19200, 14400, 9600, 4800, 2400, 1200bps
4. Press Button 1 again to confirm the change.

EDID Setting
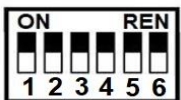
Tx (HKM01T-4K6G)

SWITCH	EDID Mode / Settings								
SW1	Copy the resolution from RX side(Default)	OFF ↓	Copy the resolution from loop out side	ON ↑	1080P 2 CH	OFF ↓	4k30 2CH	ON ↑
SW2		OFF ↓		OFF ↓		ON ↑		ON ↑

1. Remove all the HDMI cables.
2. Set up the DIP switch of Tx (HKM01T-4K6G).

Digital /Analog Audio Conversion

Function	Transmitter LINE IN	Transmitter LINE OUT	Receiver MIC IN	Receiver LINE OUT	Description
Analog Bypass	O	O	O	O	Analog Audio IN, Analog Audio OUT
Audio Embedder	O	X	X	X	Analog Audio IN, HDMI Audio OUT
Audio Extractor	X	X	X	O	HDMI IN, Analog Audio OUT (support LPCM 2CH)
HDMI Bypass	X	X	X	X	HDMI IN, HDMI Audio OUT

O = Connected   X = Disconnected

Technical Specification

HKM1-4K6G	HKM01T-4K6G	HKM01R-4K6G
Compliance		
Standard	HDMI 2.0 HDCP 2.2 USB 2.0/ 1.1/ 1.0	
Max. Video Resolution	4K@60Hz	
Max. Transmission Distance	100M over CAT5e 60KM over single mode fiber optic	
Audio Format	Pass-through	
RS232 Baud Rate	115200bps	
IR Support	20-60Khz, ±45°, 5M	20-60Khz , ±45°, 5M
Ports & Interfaces		
Video Input	1 x HDMI Type-A	1 x RJ45 1 x SFP
Video Output	1 x RJ45 1 x SFP	1 x HDMI Type-A
Video Loop-out	1 x HDMI Type A	
Analog Audio Input	1 x 3.5mm Stereo Phone Jack	1 x 3.5mm Mono Phone Jack
Analog Audio Output	1 x 3.5mm Stereo Phone Jack	1 x 3.5mm Stereo Phone Jack
USB	1 x USB Type-B	4 x USB Type-A
IR	External Receiver: 3.5mm Stereo Phone Jack 20~60KHz / ±45° / 5M	
	External Transmitter: 3.5mm Stereo Phone Jack: 20~60KHz / ±45° / 5M	
RS232	1 x 3.5mm Phone Jack	1 x 3.5mm Phone Jack
Power		
Power Supply	5V 2A	5V 2A
Power Consumption	4.75W	3.25W
Power Saving	2.05W	1.85W
Ambient Temperature		
Operation	0 to 55℃	
Storage	-40 to 80℃	

| Operating Altitude	2000m	
Humidity	Up to 95%	
Physical Characteristics		
Dimension	125 x 123 x 32mm	125 x 123 x 32mm
Weight	345g	353.6g

Caution

- This product is designed for indoor applications. If it is desired for outdoor use, please install additional equipment for waterproof protection and surge protectors to prevent damages caused by lighting.
- Do not put anything on the power and system cables, place them where they cannot be stepped on. Please be sure there is nothing resting on any cables.
- Avoid using this product close to water places, or near high temperature devices such as radiators, stoves, etc.
- Shut down the power supply and unplugged all equipment immediately if:
  - water or any kind of liquid has been spilled into the product;
  - the product has been damaged by external force;
  - the product does not operate normally as this manual indicates;
- Please contact us for further repair if above conditions happen.
- Using certified Premium HDMI cable to transfer high-resolution video is recommended.
- We strongly recommend using high quality CAT5e, CAT6 UTP/STP/FTP cable. Improper installation may cause unstable connection, and video & audio interruption.
- The highest data rate can be 850Mbps, which might affect other devices at the same LAN.
- Either UTP or SFP can be used as transmission medium.
- Analog audio of Rx (MIC IN) is mono sound for microphone only, not stereo audio (Line in)
- If all four USB ports are needed to supply 5V 500mA, the power supply should be replaced by a 5V 3A adapter
- RS232 does not support hardware handshake.

Package Includes

| Item	Amount
HKM01T-4K6G (Transmitter)	1 pc
HKM01R-4K6G (Receiver)	1 pc
DC 5V2A Power Adapter	2 pcs
IR Emitter Cable	1 pcs
USB A to B cable	1 pcs
Screw	8 pcs
Screw plug	8 pcs
Rubber gasket	2 pcs

Installation Procedure

- Install on a Platform
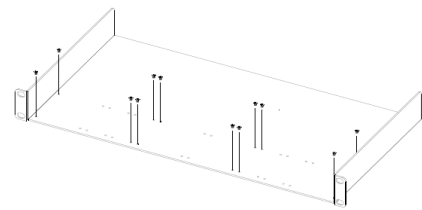   - Use machine screws to fix angle brackets on both sides of your products
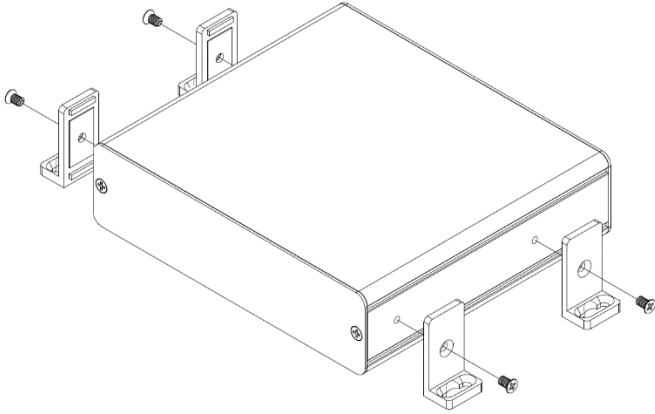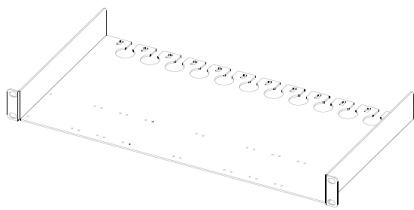

    - Use self-drilling screws to fix the product on a platform
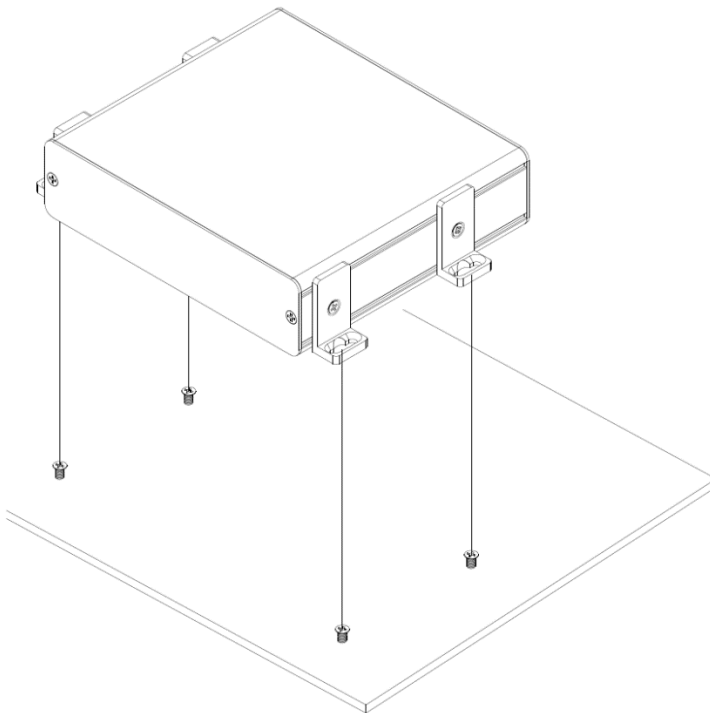
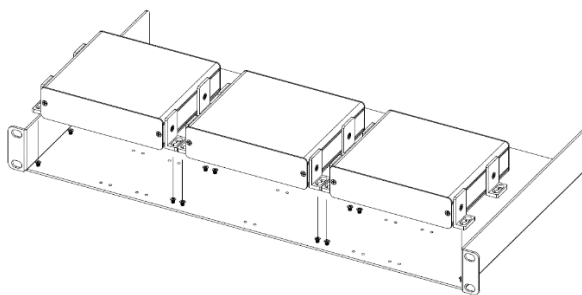   - Move the product to get fixed and then lock the screws
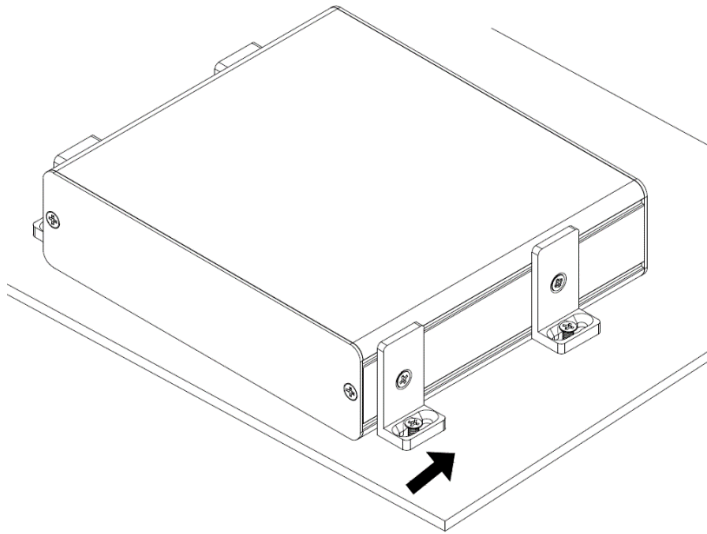
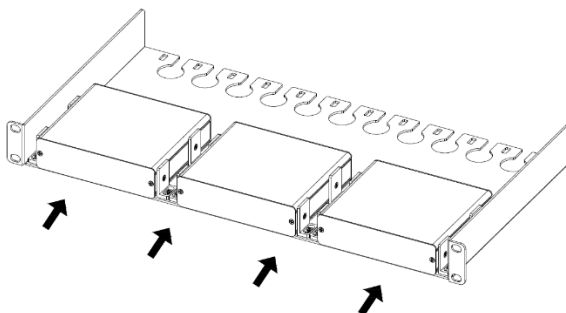- Install on a Rack
    - Lock machine screws in the rack

將螺絲鎖附於RACK 上

    - Put your products on the rack

    - Push the products to the other side of the rack

■ Install the rack in a cabinet