

4K HDMI2.0, USB2.0, RS-232 HD-BaseT Extender



User's Manual for the ST-C6USB4K-HDBT



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Welcome!

Congratulations on your purchase of the 4K HD-BaseT extender, ST-C6USB4K-HDBT. This manual contains information that will assist you in installing and operating the product.

Product Description

New HD-BaseT 4K HDMI2.0 extender, ST-C6USB4K-HDBT is designed compact enough to be fitted into various installation environments, and enables to transmit 4K UHD (3840x2160) @ 60Hz 4:2:0 (or 30Hz 4:4:4), USB2.0 and RS-232 signal up to 100m (330feet) over one (1) CAT5e or CAT6 cable.

USB2.0 could access to printers, scanners, touch panels and external storages as well as HID and VCP. Its max speed is 280Mbit /sec.

RS-232 serial interface offers device-to-device and device-to-controller connections to build up control system for A/V integration.

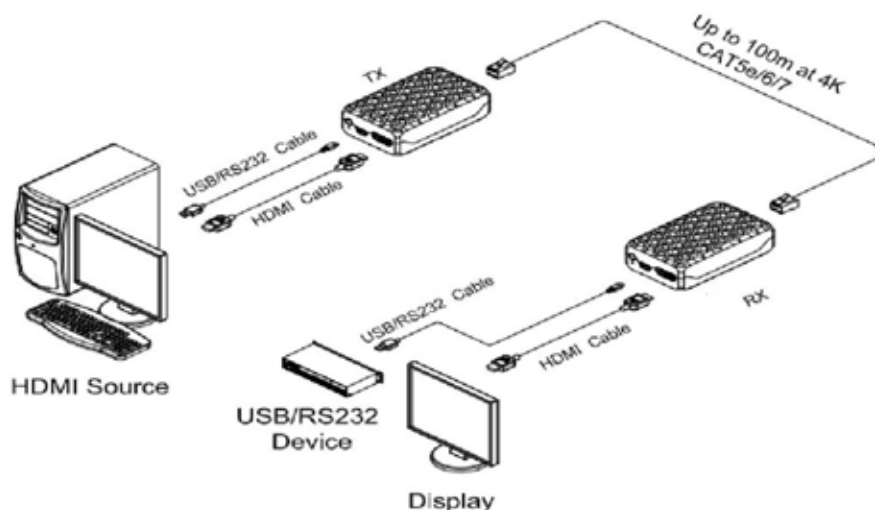


Figure 1 – Overall Connection

The Shipping Group of ST-C6USB4K-HDBT

- ❑ One (1) Transmitter (Tx) and One (1) Receiver (Rx)
- ❑ Two (2) DC +5V,2A power adapter
- ❑ One (1) 3pin connector for RS-232
- ❑ User's Manual
- ❑ **Optional Product:** Mounting Bracket MK-STC6USB4KHDBT

1-1 Welcome, Product Description

System Requirements for Setup

- **Hardware requirements**
 - DVD, Blu-Ray or media receiver with standard HDMI ports.
 - PC with HDMI port regardless of OS version.
 - Any HDMI TVs, monitors and Projectors are applicable.
 - Proper initial trial of the entire platform with its application using a short length copper cable is recommended prior to install with the product.

- **Software requirements**
 - No special needs, but make sure that media contents protected by HDCP should be played with HDCP certified players and TVs.

- **Connection Advisory**
 - It is highly recommend that HDMI media source is directly connected into HDMI display output via ST-C6USB4K-HDBT without connection to incompatible distributor, switcher and selector.

Installation

Important: Please keep the installation procedure below. Improper or no operation may result if the start-up sequence is not correctly followed.

Step 1

Carefully unpack the contents in the shipping group.

Step 2

Connect one (1) CAT5e or CAT6 cable between the transmitter and the receiver.

Step 3

Connect the transmitter to the HDMI receptacle of PC or other HDMI video source equipment by HDMI cable

If necessary, connect the RS-232 cable between 3pin terminal of ST-C6USB4K-HDBT and D-sub 9pin of PC and the USB cable between receptacle USB of ST-C6USB4K-HDBT and receptacle USB of PC.

Step 4

Connect the receiver to the HDMI display over HDMI copper cable.

If necessary, connect the RS-232 cable and USB cable to RS-232 device and USB device.

Note: During normal operation, the Receiver unit will get hot. The receiver is designed as a heatsink and will operate hot.

Step 5

Power on the HDMI source and display. Power on both transmitter and receiver by using supplied power supply.

Note 1. Indicator information of ST-C6USB4K-HDBT

LED Indicator	Enable	Disable
Blue LED(POWER)	ON	OFF
Green LED(LINK)	ON	OFF
Yellow LED(HDCP)	ON	OFF

1-3 Installation

Note 2: Be recommended NOT to use any other intermediate cables or adapters between source and transmitter and display and receiver except the supplied cable to avoid undesirable performance degradation.

Note 3: Be recommended to use the SFTP cable between transmitter and receiver to prevent a signal interference problem.

In case of UTP cable, please use the straight type cable.

(Be recommended to NOT to use the rolled cable type to avoid undesirable performance degradation.)

Step 7

If the system does not work properly, go to the page 1-5 trouble shooting.

- **Bracket installation guide** (MK-STC6USB4KHDBT Mounting Bracket is optional)

The following image provides instruction for installing the transmitter and/or receiver unit(s) in the bracket of ST-C6USB4K-HDBT

Step 1. Put on the ST-C6USB4K-HDBT unit on bottom bracket.

Step 2. Line up holes between top bracket and bottom bracket.

Step 3. Install countersink screws.

Step 4. Ensure the unit is installed securely

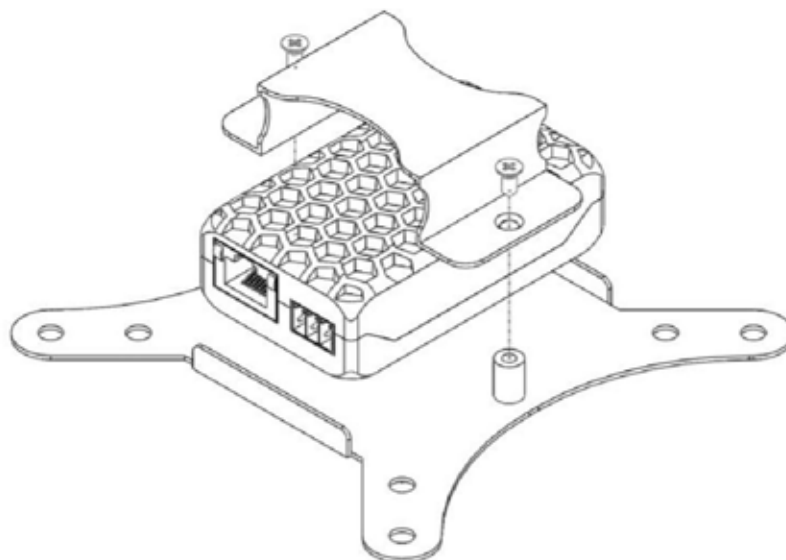


Figure 2 – MK-STC6USB4KHDBT Bracket installation

1-4 Installation

Troubleshooting

The display shows only black screen.

- Ensure that all plugs and jacks used by supplied power supplies are firmly connected. Ensure that the LED ON.
- Ensure that the HDMI ports are firmly plugged in to the source and display.
- Ensure that the transmitter and receiver modules plugged correctly to the source and display respectively.
- Check if the HDMI source and display are powered on and properly booted.
- Reset the system by de-plugging and re-plugging the transmitter HDMI port or receiver HDMI port, or by de-plugging and re-plugging the USB to DC plug cables that are plugged to transmitter and receiver module.
- Re-boot up the system while connecting the module.

Screen is distorted or displays noises.

- Check if the graphic resolution is properly set. Go to the display properties and tap the settings. Ensure that the resolution sets less than 4K UHD (3840x2160) at 60Hz (YCbCr 4:2:0) refresh ratio.
- Reset the system.
- Power down, disconnect and reconnect the CAT5e/CAT6 cable or DC power adaptors, and power up.

Maintenance

No special maintenance is required for the HD-BaseT system cables and power supplies. Ensure that the cables and power modules are stored or used in a benign environment free from liquid or dirt contamination.

There are no user serviceable parts. Refer all service and repair issues to NTI, or its authorized local distributor.

Technical Specification

Video Bandwidth	3.4GHz
Transmitter	
Input Port	1 X HDMI, 1 X RS232, 1 X USB2.0
Output Port	1 X CAT5e or CAT6
Receiver	
Input Port	1 X CAT5e or CAT6
Output Port	1 X HDMI, 1 X RS232, 1 X USB2.0
LED Indicator	Power(Blue), Link(Green), HDCP(Yellow)
HDMI Cable length	1m
RS232 Baud Rate	115200bps
Power supply	5V/2A DC Power
ESD Protection	Yes
Dimensions	44 * 73 * 25mm (WDH)
Chassis Material	AL
Silkscreen Color	Black
Operating Temperature	0°C~50°C
Storage Temperature	-20°C~75°C
Relative Humidity	40°C / 95%RH
Power Consumption	<10W

CAT5e/6/7 Cable Specification

Cable Type	Range	Pixel Clock Rate	Video Data Rate	Supported Video
CAT5e	100m	<=225MHz	<=5.3Gbps (HD Video)	Up to 1080p@60Hz 36bpp (Data rates lower than 5.3Gbps or below 225MHz TMDS clock)
	90m			
CAT6/CAT6a/CAT7	100m	>225MHz	>5.3Gbps (Ultra HD Video)	1080p@60Hz,48bpp, 1080p@60Hz 3D, 4K2K/30Hz/4:4:4and 4K2K/60Hz/4:2:0 video format

HDBT Specification

HDBT FEATURE	SUPPORT
ARC	NO
Video & Audio	YES
LAN	NO
IR	NO
RS-232	YES
Send Power to Tx	NO
Send Power to Rx	NO
USB	YES

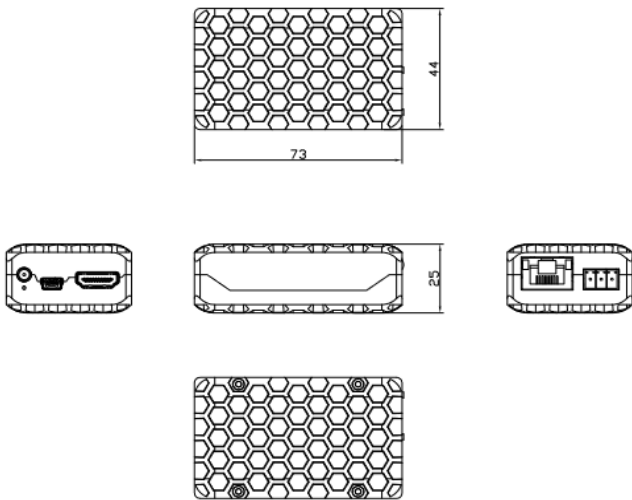
Supported Resolution

Resolution	Input	Output
640X480@60	Yes	Yes
720X480@60	Yes	Yes
720X576p@60	Yes	Yes
800X600@60	Yes	Yes
1024X768@60	Yes	Yes
1280X720@50	Yes	Yes
1280X720p@50	Yes	Yes
1280X720p@60	Yes	Yes
1280X1024@60	Yes	Yes
1360X768@60	Yes	Yes
1600X1200@60	Yes	Yes
1920X1080i@50	Yes	Yes
1920X1080i@60	Yes	Yes
1920X1080p@24	Yes	Yes
1920X1080p@25	Yes	Yes
1920X1080p@30	Yes	Yes
1920X1080p@50	Yes	Yes
1920X1080p@60	Yes	Yes
1920X1200@60(RB)	Yes	Yes
3840X2160@24	Yes	Yes
3840X2160@25	Yes	Yes
3840X2160@30	Yes	Yes
3840X2160@60	Yes	Yes
3840X2160@60(YUV420)	Yes	Yes
4096X2160@24	Yes	Yes

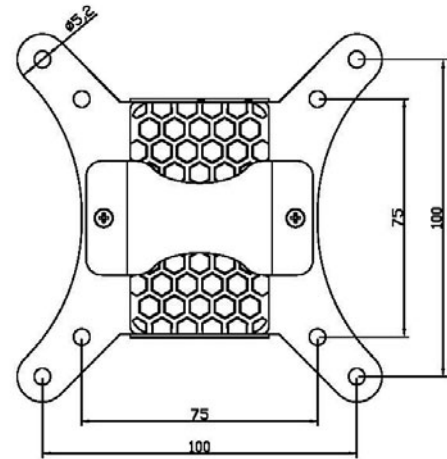
ST-C6USB4K-HDBT Drawing

Drawing of Module

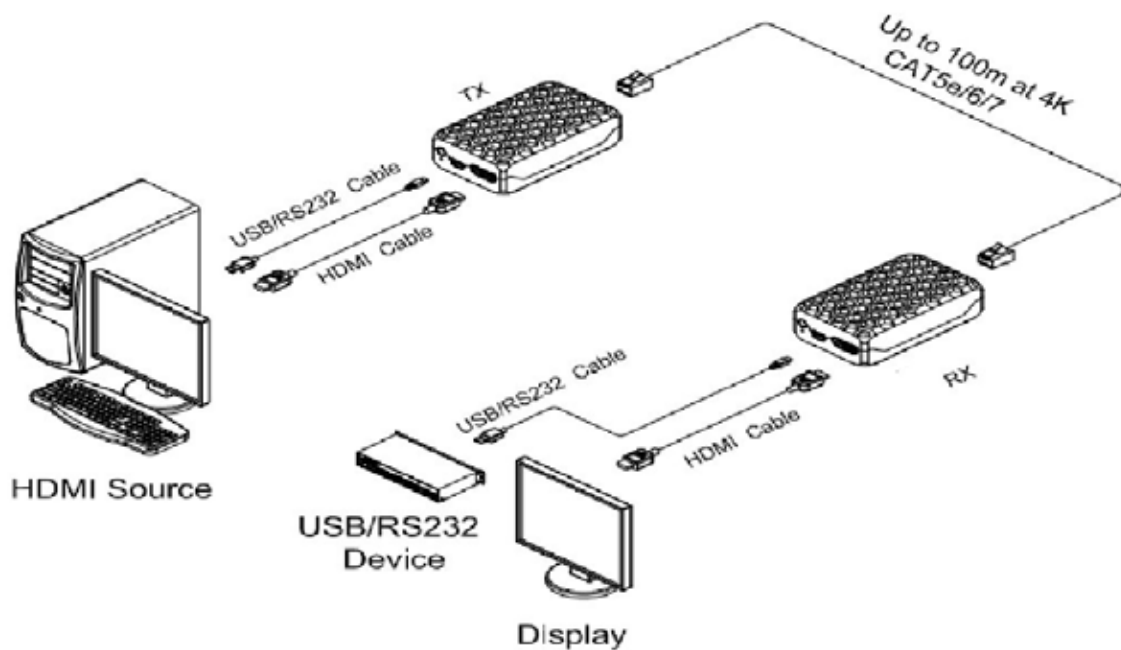
Dimension [mm]



Bracket installed Diagram



Connection Diagram



HDMI Pin Description

Pin	Symbol	Functional Description
1	CH2+	TMDS Data Signal Channel 2 Positive
2	GND	TMDS Data Signal Channel 2 Shield
3	Ch2-	TMDS Data Signal Channel 2 Negative
4	CH1+	TMDS Data Signal Channel 1 Positive
5	GND	TMDS Data Signal Channel 1 Shield
6	CH1-	TMDS Data Signal Channel 1 Negative
7	CH0+	TMDS Data Signal Channel 0 Positive
8	GND	TMDS Data Signal Channel 0 Shield
9	CH0-	TMDS Data Signal Channel 0 Negative
10	CLK+	TMDS Clock Channel Positive
11	GND	TMDS Clock Signal Shield
12	CLK-	TMDS Clock Channel Negative
13	CEC	Consumer Electronic Control
14	Reserved	Not used
15	SCL	DDC For Clock
16	SDA	DDC For Data
17	GND	DDC/CEC Ground
18	5V	5 V Input for Transmitter from Host 5 V Output for Monitor from Receiver
19	Hot plug Detect	Signal is driven by monitor to enable the system to identify the presence of a monitor

RS-232C Pin Description

Pin	Symbol	Functional Description
1	Received Line Signal Detector	Connected with Pin4 & Pin6 in module
2	RD	Data Receive: Uplink \leftrightarrow Downlink
3	TD	Data Transmit: Uplink \leftrightarrow Downlink
4	Data Terminal Ready	Connected with Pin1 & Pin6 in module
5	GND	Signal Ground
6	Data Set Ready	Connected with Pin1 & Pin4 in module
7	Request To Send	Connected with Pin8 in module
8	Clear To Send	Connected with Pin7 in module
9	NC	