



maxsquare

## MSQ-300E

4K HDR HDMI USB KVM Extender over Fiber with IR & RS-232



MADE IN TAIWAN

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## 1. Introduction

The MSQ-300E is a 4K HDMI USB KVM extender that can boost your video/audio transmission distance up to 10km (6.25miles) over a single-mode fiber optic cable in Ultra-HD 4K@60Hz. It guarantees seamless and no latency transmission, making it an ideal solution for places which require high-quality video and KVM control over long distances.

Users can easily extend Ultra-HD sources from DVD players, Blu-ray Disc player, PS4, PC, and any other HDMI sources broadcasting to distant display monitors, including HDMI or DVI enabled TV sets or LCD PC monitors. The MSQ-300E is equipped with HDMI 2.0 ports that are HDCP 2.2 compliant and support HDR video signal, delivering stunning visuals with uncompromising clarity and detail.

Moreover, the MSQ-300E supports bi-directional IR and RS-232 pass-through and keyboard/mouse USB signal transmission, offering flexible control for various applications. With the MSQ-300E, you can expect outstanding performance that meets the highest standards of quality and reliability.

## 2. Package Contents

- 1x MSQ-300E[TX & RX]
- 1x IR Blaster
- 1x IR Receiver
- 2x DC 12V
- 2x Single-Mode Module
- 1x User Manual

### 3. Features

- Supports 4K@60 4:4:4 8bits
- Supports HDR\* (4K@60 4:2:0 10bits)\*\*
- Supports HDCP2.2
- Supports USB 1.1 for Keyboard & mouse only
- Extend HDMI signals up to 10km (6.25miles) over single-mode fiber optic cables
- Full frequency IR signal from 20KHz to 60KHz
- Bi-directional IR path-through
- Link LED indicator light
- Easy and robust installation with wall mounting housing design

\* HDR = High Dynamic Range.

\*\* The video bandwidth of 4K2K@60 4:2:0 10bits (HDR) is 384 MHz, and the 4K2K@60 4:4:4 8bits is 594MHz.



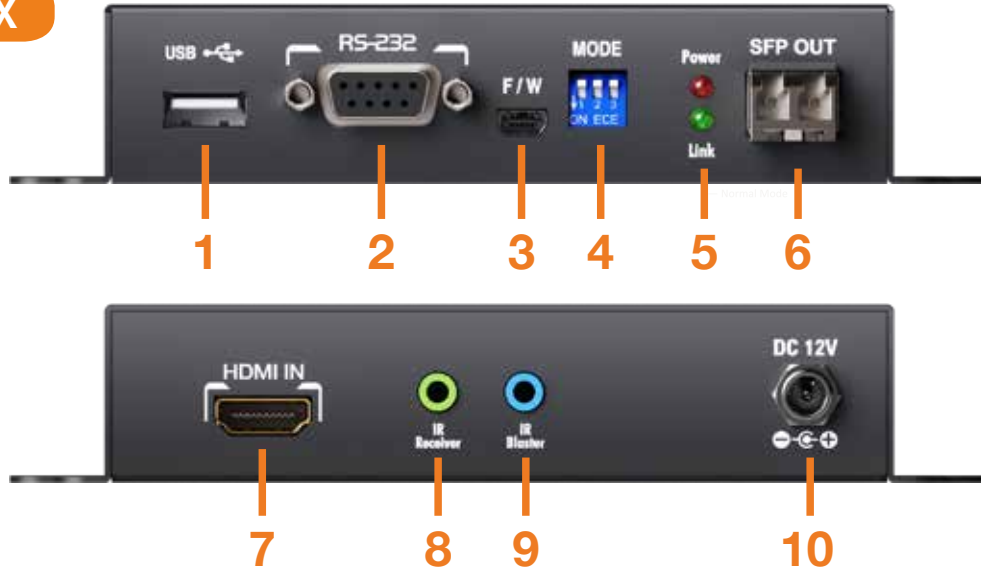
The RS-232, IR and USB function cannot be used at the same time.

## 4. Specifications

| Technical             |   |                          |
|-----------------------|---|--------------------------|
| Role of usage         | Transmitter [TX]  | Receiver [RX]            |
| HDMI compliance       | HDMI 2.0a   |                          |
| HDCP compliance       | HDCP 2.2  |                          |
| Video bandwidth       | Single-link 594MHz [18Gbps]   |                          |
| Video support         | HDR 4K2K@60 (4:2:0 10bits) / 4K@60 (4:4:4 8bits)                        |                          |
| HDMI over UTP         | Yes   |                          |
| Audio support         | Surround sound [up to 7.1ch] or stereo digital audio                    |                          |
| Input TMDS signal     | 1.2 Volts [peak-to-peak]  |                          |
| Input DDC signal      | 5 Volts [peak-to-peak, TTL]   |                          |
| ESD protection        | Human body model — ±15kV [air-gap discharge] & ±8kV [contact discharge] |                          |
| PCB stack-up          | 4-layer board [impedance control — differential 100Ω; single 50Ω]       |                          |
| IR pass-thru          | Bi-directional  |                          |
| RS-232 support        | Yes   |                          |
| Input                 | 1x HDMI/ 1x 3.5mm   | 1x fiber/ 1x 3.5mm       |
| Output                | 1x fiber/ 1x 3.5mm  | 1x HDMI/ 1x 3.5mm        |
| In / Out              | 1x RS-232/ 1x USB   | 1x RS-232/ 2x USB        |
| HDMI source control   | Controllable via IR pass-through from RX to TX with IR extenders        |                          |
| HDMI connector        | Type A [19-pin female]  |                          |
| USB connector         | Type A  |                          |
| 3.5mm connector       | IR receiver / IR blaster  | IR receiver / IR blaster |
| Mechanical            |   |                          |
| Housing               | Metal enclosure   |                          |
| Fixedness             | Wall-mounting case with screws  |                          |
| Power supply          | 12V 2A  |                          |
| Power consumption     | Max 10W   |                          |
| Operation temperature | 0~40°C [32~104°F]   |                          |
| Storage temperature   | -20~60°C [-4~140°F]   |                          |
| Relative humidity     | 20~90% RH [no condensation]   |                          |

## 5. Panel Description

### MSQ-300E-TX



- 1. USB[Host]:** Connect to a USB port from the computer for keyboard & mouse control
- 2. RS-232:** Connect to serial port device with a DSUB-9 male-male or male-female cable here
- 3. Mini USB:** For technical support only [firmware update]

#### 4. Dip Switch

| DIP Switch Position |         | Description                |
|---------------------|---------|----------------------------|
| TX & RX             |         |                            |
| PIN #1              | ON [↓]  | For system firmware update |
|                     | OFF [↑] | Normal                     |
| PIN #2              | ON [↓]  | USB function ON            |
|                     | OFF [↑] | RS-232/IR function ON      |
| PIN #3              | ON [↓]  | Disable IR function        |
|                     | OFF [↑] | Enable IR function         |

#### 5. LED indicator

- [Red]: Power LED indicator
- [Green]: Link LED indicator

- 6. SFP OUT:** Plug in single mode fiber optic cables that needs to be linked to the receiving unit MSQ-300E-RX
- 7. HDMI IN:** Connect to a HDMI source with a HDMI male-male cable
- 8. IR Receiver:** Infrared 3.5mm socket for plugging in the extension cable of IR receiver
- 9. IR Blaster:** Infrared 3.5mm socket for plugging in the extension cable of IR blaster
- 10.+12V DC:** Connect to a 12V power supply unit

MSQ-300E-RX



- 1. **USB[Device]:** Connect to the USB keyboard & mouse
- 2. **RS-232:** Connect to serial port device with a DSUB-9 male-male or male-female cable here
- 3. **Mini USB:** For technical support only [firmware update]
- 4. **Dip Switch**

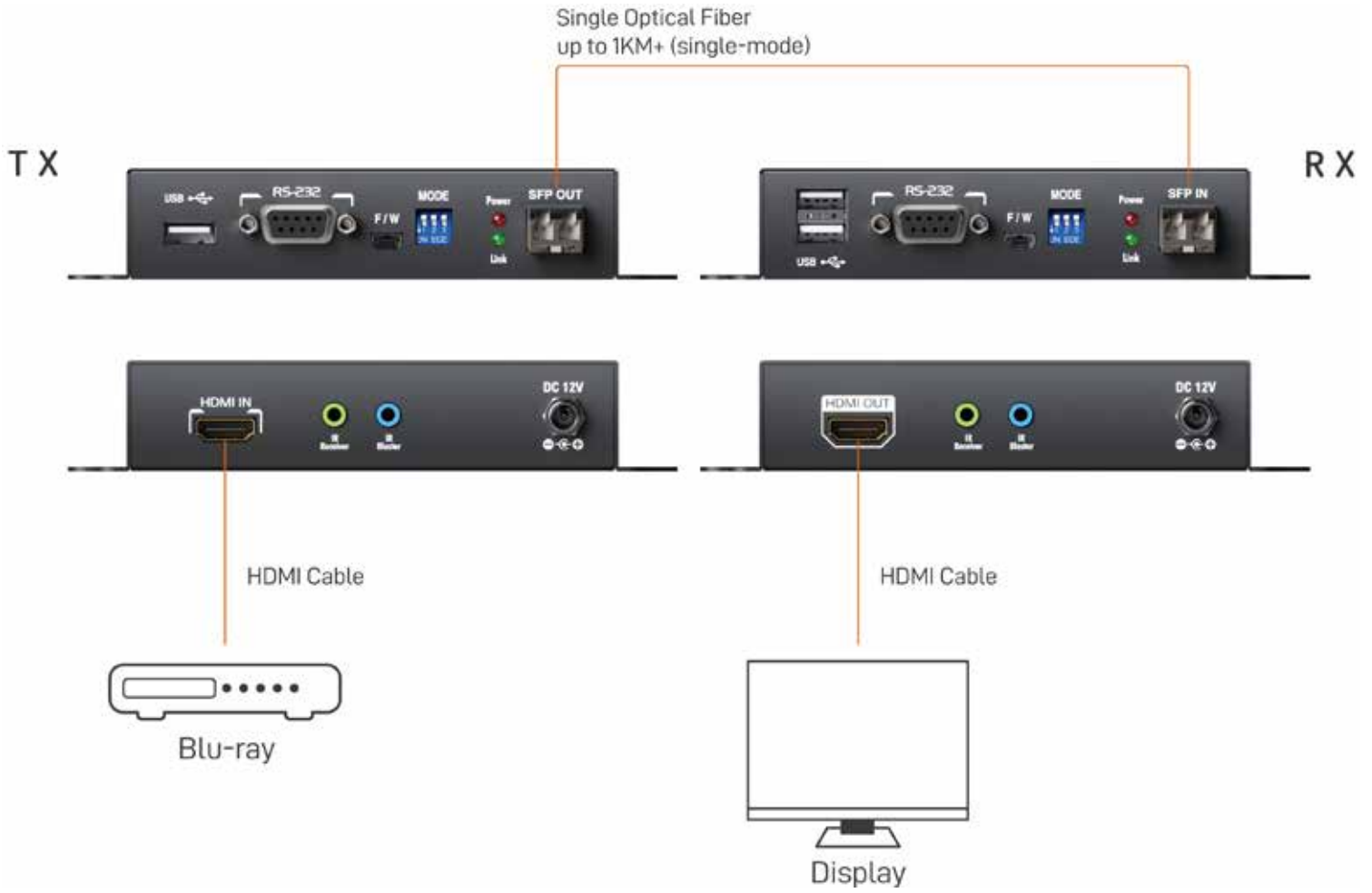
| DIP Switch Position |         | Description                |
|---------------------|---------|----------------------------|
| TX & RX             |         |                            |
| PIN #1              | ON [↓]  | For system firmware update |
|                     | OFF [↑] | Normal                     |
| PIN #2              | ON [↓]  | USB function ON            |
|                     | OFF [↑] | RS-232/IR function ON      |
| PIN #3              | ON [↓]  | Disable IR function        |
|                     | OFF [↑] | Enable IR function         |

5. LED indicator

[Red]: Power LED indicator  
 [Green]: Link LED indicator

- 6. **SFP IN:** Plug in single mode fiber optic cables that needs to be linked to the transmitting unit MSQ-300E-TX
- 7. **HDMI OUT:** Connect to a HDMI display with a HDMI male-male cable
- 8. **IR Receiver:** Infrared 3.5mm socket for plugging in the extension cable of IR receiver
- 9. **IR Blaster:** Infrared 3.5mm socket for plugging in the extension cable of IR blaster
- 10. **+12V DC:** Connect to a 12V power supply unit

### 6. Connection Diagram



## 7. IR Pass-Through

### IR Extenders

IR Blaster




IR Receiver



### IR Sockets

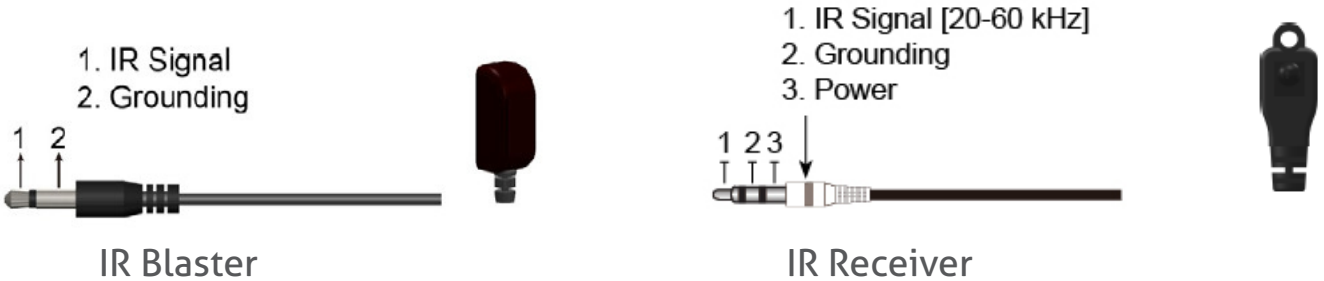
- IR BLASTER:**  
 plug in the IR blaster to emit all IR command signals received from the IR receiver from the other end to control the devices corresponding to the IR signals.
- IR RECEIVER:**  
 plug in the IR receiver to receive all IR command signals from the IR remote controls of the corresponding devices.

**CAUTION**



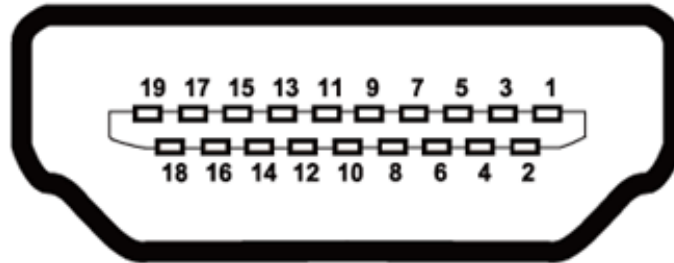
Incorrect placement of IR Blaster and Receiver may result in the failure of the IR extenders. Please check carefully before plugging in the IR extender to the respective IR sockets. Warranty will not cover the damage.

### Definition of IR Earphone Jack



**i** You can buy any IR extension cables in the market that are compatible to the definition of the IR sockets for the extender if necessary for replacement use. However, IR cables longer than 2m (6-ft) may not work.

## 8. HDMI PIN Definition



Type A (Receptacle) HDMI

|        |                   |        |                           |
|--------|-------------------|--------|---------------------------|
| Pin 1  | TMDS Data2+       | Pin 11 | TMDS Clock Shield         |
| Pin 2  | TMDS Data2 Shield | Pin 12 | TMDS Clock-               |
| Pin 3  | TMDS Data2-       | Pin 13 | CEC                       |
| Pin 4  | TMDS Data1+       | Pin 14 | Reserved (N.C. on device) |
| Pin 5  | TMDS Data1 Shield | Pin 15 | SCL                       |
| Pin 6  | TMDS Data1-       | Pin 16 | SDA                       |
| Pin 7  | TMDS Data0+       | Pin 17 | DDC/CEC Ground            |
| Pin 8  | TMDS Data0 Shield | Pin 18 | +5V Power                 |
| Pin 9  | TMDS Data0-       | Pin 19 | Hot Plug Detect           |
| Pin 10 | TMDS Clock+       |        |                           |

## 9. Warranty

Maxsquare warrants the MSQ-300E 4K HDR HDMI USB KVM Extender over Fiber with IR & RS-232 for one year from the date of purchase from Maxsquare or an authorized dealer from defects in material and workmanship. If this product fails to function properly within the first year of its warranty, Maxsquare may repair or replace it at its discretion, provided that the device has not been subjected to accident, disaster, abuse, or other unauthorized modifications, including static discharge and power surge. Maxsquare provides this warranty to its BUYER solely in the case of a direct transaction. This warranty is void if the warranty seal on the metal housing is broken.

Unit that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. These repairs are warranted by a 90-day warranty from the date of reshipment to the buyer. Customers agree to insure the unit or incur the risk of loss or damage in transit if the unit is delivered by mail. A unit will not be accepted if it does not have a return authorization number.

The warranty is in lieu of all other warranties expressed or implied, including without limitations, any other implied warranty or fitness or merchantability for any particular purpose, all of which are expressly disclaimed.

Proof of purchase may be required to claim the warranty. Customers outside of Taiwan must pay for shipping to and from Maxsquare. Cables and power adapters have a 30-day warranty and must be free of any markings or scratches, as well as neatly coiled.

This manual's material has been carefully reviewed and is believed to be accurate. Maxsquare, on the other hand, takes no responsibility for any inaccuracies or omissions in this manual. Even if advised of the possibility of such losses, Maxsquare will not be liable for direct, indirect, incidental, special, or consequential damages resulting from any defect or omission in this manual. Furthermore, the technical information contained in documents on the MSQ-300E's features and specifications is subject to change without further notice.

