



maxsquare

MSQ-100E

4K HDMI 2.0 Extender Over Single Coaxial Cable with Bi-directional IR



MADE IN TAIWAN

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1. Introduction

The MSQ-100E 4K HDMI 2.0 Extender over Single Coax with Bi-directional IR improves your HDMI transmission range in Ultra HD 4K2K format to 110m (363ft) with a single coaxial cable. The MSQ-100E is simple to set up and works flawlessly with Belden 1694A coaxial cables. Other coaxial cables can also be used with the MSQ-100E, and the transmission distance is limited by the coaxial cable's quality and bandwidth. Additionally, the MSQ-100E has a bi-directional IR pass-through path. This added feature enables users to utilize the same coax cable to operate IR-equipped devices such as TVs and Blu-ray players, and the MSQ-100E allows IR control through a single coax cable in addition to high-quality HDMI A/V signals.

The MSQ-100E consists of two units: a transmitting (MSQ-100E [TX]) and a receiving (MSQ-100E [RX]). The transmitting device captures the HDMI and HDCP input signals and transmits them only through coaxial cable. The receiving device is responsible for automatically equalizing the transmitted HDMI multimedia data. In Ultra HD (4K2K) with 2 channel audio, the transmission range between the transmitting and receiving devices can be up to 110m (363ft).

The length is determined by the coax cable's characteristics and quality. Low-skew cables are required for higher resolutions and longer transmission distances. A robust and shielded coax cable with metal 75BNC connectors, such as Belden 1694A, is recommended.

2. Package Contents

- 1x MSQ-100E[TX & RX]
- 2x DC 5V wall wart
- 1x User Manual

3. Features

- Extends the transmission range from HDMI sources to 110m (363ft) in 4K2K@60 4:4:4 8bits
- HDMI 2.0 compliant
- Single coaxial cable
- Auto signal equalization
- Supports up to 4K2K@60 4:4:4 8bits*
- Supports HDCP input and output
- Bi - directional infrared path
- Unaltered uncompressed 2ch digital HDMI over Coaxial cable transmission
- Supports audio sample rate 32KHz, 44.1KHz and 48KHz
- Supports full-frequency infrared signals ranging from 20KHz to 60KHz
- Wall-mounting housing that is simple and durable to install

***Noted:**

Technical		
480i 60Hz	1080P 29.97(30)Hz	4K2K 50Hz 4:2:0
480P 60Hz	1080P 50Hz	4K2K 50Hz 4:2:0 10/12bit**
576i 50Hz	1080P 59.94(60)Hz	4K2K 50Hz 4:2:2
576P 50Hz	1080P 59.94(60)Hz 10/12bit**	4K2K 50Hz 4:4:4
720P 50Hz	4K2K 24Hz 4:4:4	4K2K 60Hz 4:2:0
720P 59.94(60)Hz	4K2K 24Hz 4:4:4 10/12bit	4K2K 60Hz 4:2:0 10/12bit**
1080i 59.94(60)Hz	4K2K 25Hz 4:4:4	4K2K 60Hz 4:2:2
1080P 23.98(24)Hz	4K2K 30Hz 4:4:4	4K2K 60Hz 4:4:4
1080P 25Hz	4K2K 30Hz 4:4:4 10/12bit**	

**** ONLY input resolution supports 10/12 bit**

4. Notice

1. High quality and bandwidth coaxial cables are required for long transmission distances. We recommend using Belden 1694A coaxial cable with our MSQ-100E. According to the results of laboratory testing, Belden 1694A coaxial cables can transmit HDMI signals up to 110m (363ft).
2. Please noticed that audio must be 48KHz.

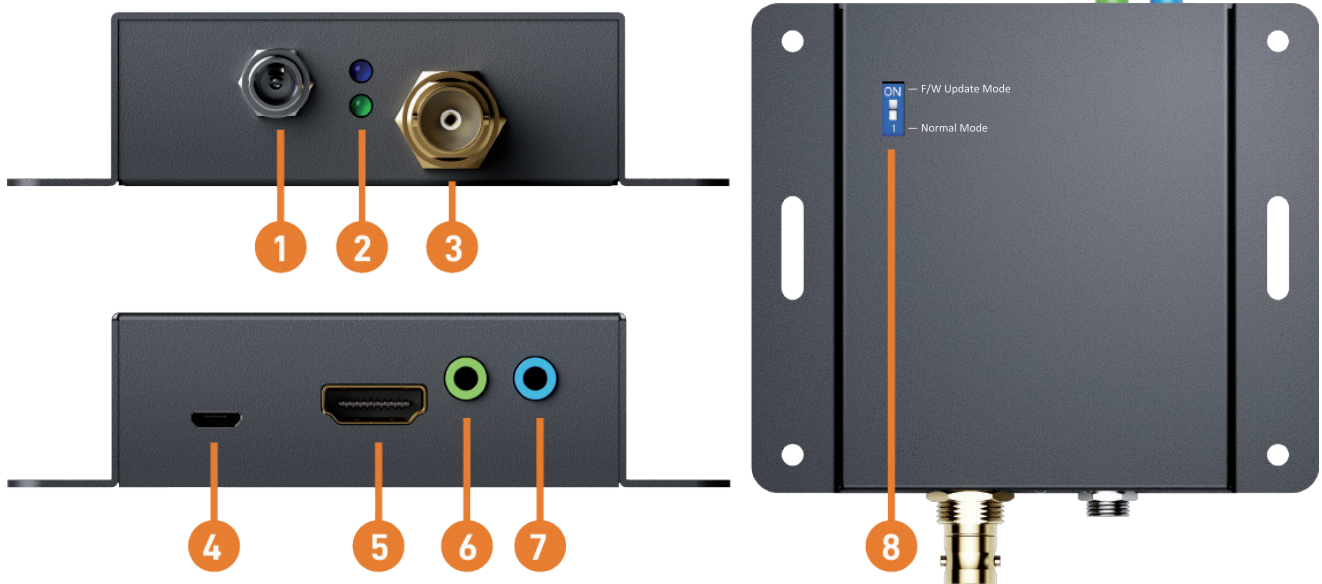
5. Specifications

MSQ-100E

Technical		
Role of usage	Transmitter [TX]	Receiver [RX]
HDMI compliance	HDMI 2.0a	
HDCP compliance	Yes	
Video bandwidth	Single-link 594MHz [18Gbps]	
Video support	up to 4K2K@60 4:4:4 8bits	
Audio support	Stereo audio	
HDMI over Coax transmission range	Ultra HD [4K2K 24-bit color] – up to 110m [363ft]	
HDMI Equalization	Auto	
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]	
Input	1x HDMI/ 1x IR socket	1x BNC/ 1x IR socket
Output	1x BNC/ 1x IR socket	1x BNC/ 1x IR socket
IR remote control	Electro-optical characteristics: $\pi = 25^\circ$ / Carrier frequency: 20-60kHz	
HDMI connector	Type A [19-pin female]	
RJ-45 connector	75Ω interlocking socket	
USB connector	3.5mm earphone jack for IR blaster to control HDMI source device	
Mechanical		
Housing	Metal enclosure	
Dimensions [L x D x H]	Model	90 x 96 x 25mm[3.5" x 3.7" x 1"]
	Package	263 x 170 x 97mm [10.3" x 6.7" x 3.8"]
Weight	Model	127g [4.5oz]
	Package	1140g [2.5lbs]
Fixedness	Interlocking power supply	
Power supply	5V DC	
Power consumption	10 Watt [max]	6 Watt [max]
Operation temperature	0~40°C [32~104°F]	
Storage temperature	-20~60°C [-4~140°F]	
Relative humidity	20~90% RH [no condensation]	

6. Panel Description

MSQ-100E-TX



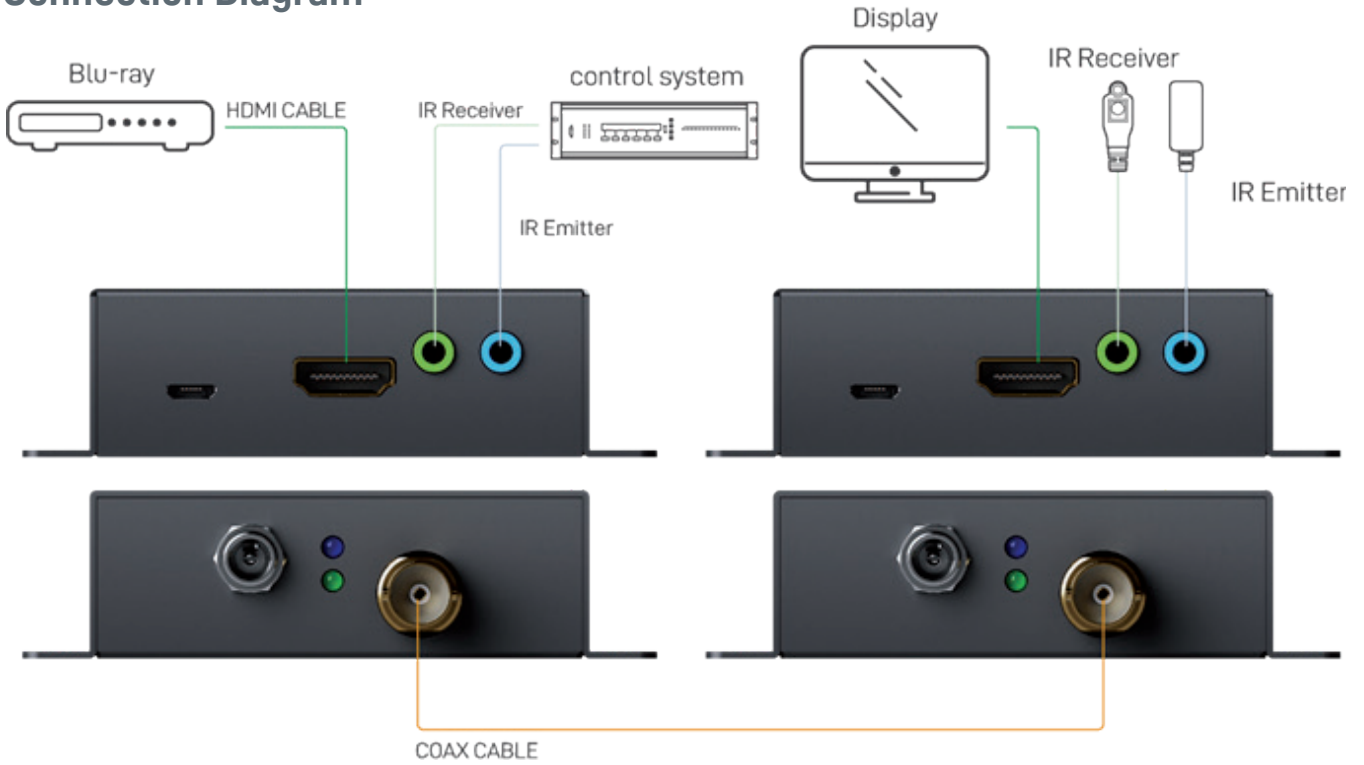
1. +5V DC: Connects to 5V DC power supply
2. POWER/SIGNAL LED: Blue light - POWER; Green light - SIGNAL ACTIVE
3. COAX OUT: Connects to a high standard coaxial cable here
4. Micro-USB: for F/W update
5. HDMI IN: Connects to a HDMI source device with a HDMI male-to-male cable here
6. IR Receiver: Infrared 3.5mm socket for plugging in the extension cable of IR receiver
7. IR Blaster: Infrared 3.5mm socket for plugging in the extension cable of IR blaster
8. DIP Switch: [ON] FW update mode; [OFF] Normal mode

MSQ-100E-RX

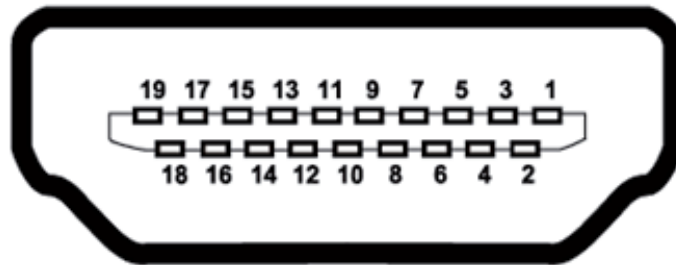


1. +5V DC: Connects to 5V DC power supply
2. POWER/SIGNAL LED: Blue light - POWER; Green light - SIGNAL ACTIVE
3. COAX IN: Connect to a high standard coaxial cable here
4. Micro-USB: for F/W update
5. HDMI OUT: Connects to a HDMI display with a HDMI male-male cable here
6. IR Receiver: Infrared 3.5mm socket for plugging in the extension cable of IR receiver
7. IR Blaster: Infrared 3.5mm socket for plugging in the extension cable of IR blaster

7. Connection Diagram



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-100E 4K HDMI 2.0 Extender over Single Coaxial Cable with Bi-directional IR 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-100E's features and specifications is subject to change without further notice.