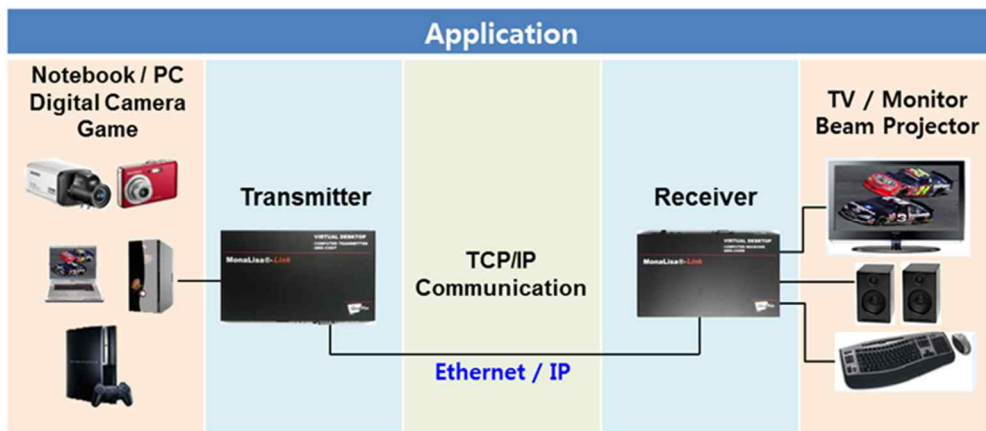


***MonaLisa®-Link* – Virtual Desktop**

Manual, Features, Specifications - QMS-330xT/R

1. Overview

'MonaLisa®-Link' products transfer high resolution video (Full-HD, HD, SD, VGA, and etc.) with audio to wherever it wants to send thorough standard TCP/IP network. They are composed of transmitter ('T' tagged to its name) and receiver ('R' tagged to its name) in regard of video. Also, it transfers control data such as USB keyboard/mouse, RS232, and even USB storage data from a receiver to its corresponding transmitter. In bottom line, MonaLisa®-Link implements the virtual desktop solutions.



[Picture] Virtual Desktop System Structure

Products	Description	Remarks
QMS-3303T/ QMS-3303R	Basic features for virtual desktop implementation; Users on remote receiver side can control PC via mouse and keyboard. It transmits video that is imported via HDMI only.	Basic features
QMS-3300T / QMS-3300R	In addition to QMS3303 features, it supports RS232 communication, VGA video (D-sub) transmission, and USB lock key.	RS232, USB control key, VGA

2. Features, Specification

2-1. Features

[Table] Features of QMS-330xT/R

Features	Description	Remarks
Various Resolutions	1920 x 1080 (Full-HD, 1080p), 1680 x 1050 (WSXGA), 1280 x 1024 (SXGA) 1280 x 720 (HD, 720p), 1024 x 768 (XGA), 800 x 600 (SVGA), 640 x 480 (VGA)	Progressive video only - 1080p, 720p, 480p, and etc; 60Hz / 50Hz
Long Distance of Transmission	UTP 100m ~ 200m; optic cable ~ 2Km; Reaches anywhere TCP/IP network connects	Repeated by every Ethernet switch hub
Latency	30ms ~ 60ms	1080p
Bandwidth (typical)	5Mbps ~ 15Mbps	Varies according video complexity
Low Power consumption	QMS-310xR 2.65W QMS-310xT 3.4W	Typical
Media	UTP cable, optic cable, Ethernet switch hub	
Operating Temp.	0°C ~ 60°C	

- QMS-3300T's D-Sub (VGA) port transmits 1024 x 768 resolution only.

2-2. Specification

[Table] Specification of MonaLisa®-Link Products

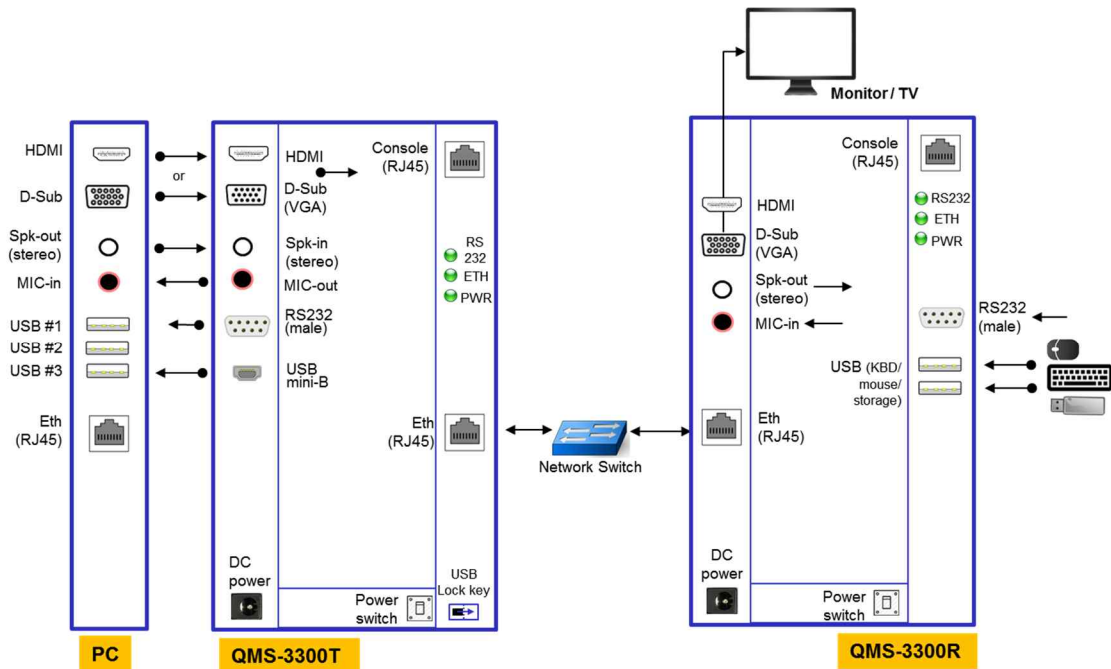
Interface Ports	Transmitter (QMS-3300T)	Receiver (QMS-3300R)	Transmitter (QMS-3303T)	Receiver (QMS-3303R)	Remarks
HDMI	In	Out	In	Out	HDMI or VGA transmission over TCP/IP network
D-Sub (VGA)	In	Out	-	Out	
Speaker	In	Out	In	Out	Stereo
MIC	Out	In	Out	In	
RS232 (UART)	Male	Male	-	-	IoT control
USB	1-port to PC	2-ports	1-port to PC	2-ports	KBD, mouse, storage
Ethernet	GbE	GbE	GbE	GbE	
Console	RJ45	RJ45	RJ45	RJ45	IP configuration
USB Lock Key	O	-	-	-	
Others	Power switch DC-in (5V)	Power switch DC-in (5V)	Power switch DC-in (5V)	Power switch DC-in (5V)	

3. Product Components

Items	Specifications	Q'ty	Remarks
Transmitter (QMS-330xT)	105mm(L) x 166mm(W) x 28(H)	1	
Receiver (QMS-330xR)	105mm(L) x 166mm(W) x 28(H)	1	
USB cable	USB-to-USB-mini-B, 1m (A-type to mini B-type)	2	PC-to-Transmitter
HDMI cable	1m	2	Sales option Length to be determined
Power Adaptor	DC output: 5V/2A AC input: 110V ~ 220V, 50/60Hz	2	Sales option Length to be determined
Manual		1	

4. How to Connect and Build System Structure

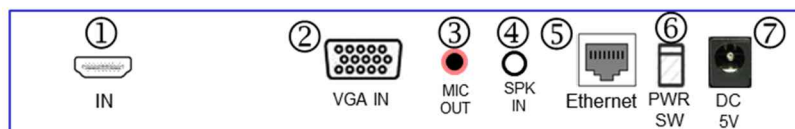
The guide to connect PC, transmitter, network, receiver refers to below picture.



[Picture] <QMS-3300T – QMS-3300R> System Connection Structure

* In above picture, product's port location is placed and denominated for recognition's sake.

Transmitter - Rear (QMS-330xT)



Transmitter - Front (QMS-330xT)

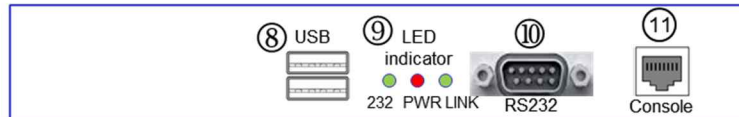


Port / Key	Description	Remarks
① IN	Connects to PC's HDMI output port.	Use HDMI cable.
② VGA IN	Connects to PC's VGA (D-Sub) output port.	QMS-3300T only
③ MIC OUT	Connects to PC's MIC input port.	
④ SPK IN	Connects to PC's speaker (output) port.	
⑤ Ethernet	Connects to Ethernet switch or MonaLisa receiver's corresponding Ethernet port.	Use UTP cable.
⑥ PWR SW	Power ON/OFF switch	
⑦ DC 5V	DC power input port	
⑧ USB mini-B	Connects to PC's USB port. Conveys USB signal from QMS-330xR receiver to PC.	
⑨ USB Lock O/L	O : Allows the use of USB keyboard/mouse on remote (QMS-330xR receiver) side. L : Locks the use of USB keyboard/mouse on remote (QMS-330xR receiver) side.	<u>QMS-3300T only</u>
⑩ LED Indicator 232 PWR LINK	232 : blinks as RS232 communications run. PWR : turn on when power is imported. LINK : blinks when it transacts Ethernet data with QMS-330xR receiver.	
⑪ RS232	Connects to PC for RS232 communication.	<u>QMS-3300T only</u>
⑫ Console	Console port (RJ-45) used for configuration of IP addresses, device setting values.	<i>Refer to 5-2</i>

Receiver - Rear (QMS-330xR)



Receiver - Front (QMS-330xR)



Port / Key	Description	Remarks
① Ethernet	Connects to Ethernet switch or MonaLisa transmitter's corresponding Ethernet port.	Use UTP cable.
② OUT	Connects to TV/monitor's HDMI input port.	Use HDMI cable.
③ VGA OUT	Connects to TV/monitor's VGA (D-Sub) video input port.	
④ SPK OUT	Connects to speaker.	
⑤ MIC IN	Connects to user's MIC	
⑥ PWR SW	Power ON/OFF switch	
⑦ DC 5V	DC power input	
⑧ USB	Connect to USB keyboard/mouse to control the PC which is connected to MonaLisa transmitter.	
⑨ LED indicator 232 PWR LINK	232 : Blinks as RS232 communications runs. PWR : turn on when power is imported. LINK : blinks when it transacts Ethernet data with QMS-330xT transmitter.	
⑩ RS232	Connects to RS232 devices.	<u>QMS-3300T only</u>
⑪ Console	Console port (RJ-45) used for configuration of IP addresses, device setting values.	<i>Refer to 5-2</i>

5. FAQs, Device Information and Configuration

5-1. FAQs (frequently asked questions)

- (1) Can QMS-330xT transmit video imported from VGA (D-Sub) port?

Answer) Only QMS-3300T product has D-Sub (VGA) port through which VGA video signal is received. However, only 1024x768 resolution is supported through D-Sub port.

- (2) On receiver side, does QMS-330xR output video through both D-sub (VGA) and HDMI cable?

Answer) Yes, it outputs video through both ports simultaneously. Video content is the same on both outputs.

- (3) What is 'USB Lock' key of QMS-3300T used for ?

Answer) Local administrator who is in front of MonaLisa transmitter may need to allow or prevent the use of USB keyboard/mouse on the MonaLisa receiver for safety/security's sake

O : Allows the use of USB keyboard/mouse on remote (receiver) side.

L : Locks the use of USB keyboard/mouse on remote (receiver) side.

- (4) Do MonaLisa®-Link systems work through network equipment (switch hub, router)?

Answer) Yes, they work like normal network devices on TCP/IP network (Ethernet) so long as both transmitter and receiver configure the destination IP address as the one of the corresponding (counterpart) device. *(Contact regional sales distributor for technical support)*

- (5) **(1-to-N Broadcast)** Is it possible that a single transmitter transmits video to multiple receivers on the same network as transmitter is connected to - that is, broadcast

Answer) Yes, 1-to-N broadcasting can be implemented. *(Contact regional sales distributors for technical support.)*

Administrator should avoid conflict among keyboard/mouse users on the multiple receivers who want to operate PC.

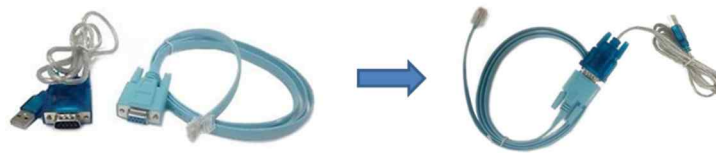
- (6) **(N-to-1 Transmission)** Is it possible that multiple transmitter send videos to a single receiver?

Answer) No, it's impossible. Only one transmitter that is configured to communicate with the receiver can send its video. *(Contact regional sales distributor for technical support)*

5-2. How to Check and Configure Device Setting Values – IP address, Port #

User can check and configure the setting values of MonaLisa devices through console port for network configuration - source / destination IP addresses, port numbers (Layer 4). (Contact regional sales distributors for detail usage support)

- Connect QMS-3105T/R's console port (RJ45) to computer's USB port using RJ45-to-Serial cable and Serial-to-USB cable as follows :



[Picture] RJ45-to-USB Cable

5-3. Network Connection – LAN / WAN

On LAN (local area network)

- Connect transmitter and receiver onto the identical network via network hub switch.
- Transmitter and receiver should be configured in its source IP address, destination IP address so that they communicate each other. (Refer to manual that is provided by regional sales distributor)

[Table] IP Addresses of MonaLisa®-Link Devices (ex.- default values)

Addresses	Transmitter (QMS-330xT)	Receiver (QMS-330xR)
Source IP	192.168.0.248	192.168.0.249
Destination IP	192.168.0.249	192.168.0.248
Gateway IP	192.168.0.1	192.168.0.1

On WAN (wide area network)

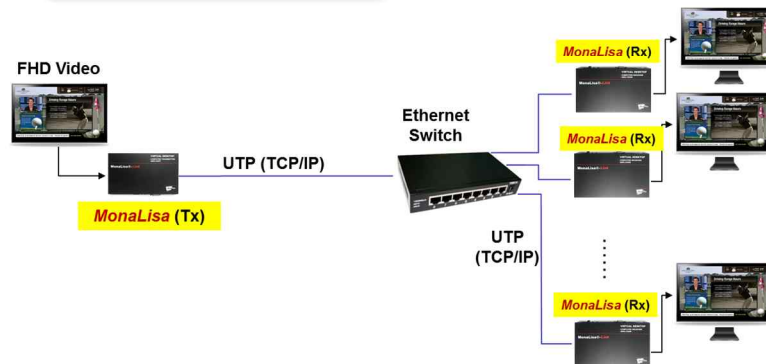
If MonaLisa transmitter and receiver are to be connected through WAN (wide area network), each device should pass through the gateway to which it is linked. The respective gateway should be configured with 'Port Forwarding' value. The transmitter and receiver should have the destination IP address be set with counterpart gateway IP address (Refer to manual that is provided by regional sales distributor)

Application (Example)

- Smart factory - Remote monitoring & control solution for factory machines



- Broadcasting system for convention hall, digital signage, school, and etc.



- Virtual Desktop / Cloud Computing – Zero-Client

