# QUESTTEL
**Broadcast Systems**

# DVI to IP Encoder Decoder kit

## User Manual

## B-DVI-IP-GB-TX/RX
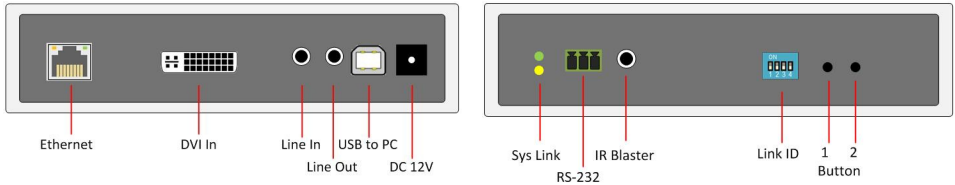
## Panel and Connectors

# B-DVI-IP-GB-TX Transmitter

Ethernet　　DVI In　　Line In　　USB to PC
　　　　　　　　　　　Line Out　　DC 12V

Sys Link　　IR Blaster　　　Link ID　　1　2
　　RS-232　　　　　　　　　　　　　　Button

| No. Connector | Description |
|---|---|
| 1 Ethernet | Connect to Gigabit Ethernet switch or directly to B-DVI-IP-GB-RX. |
| 2 HDMI/DVI In | Connect to HDMI/DVI Source. |
| 3 Line in | Audio line in, it will be extended to the Line Out of B-DVI-IP-GB-RX. |
| 4 Line out | Audio line out, it is extended from Mic. In of B-DVI-IP-GB-RX. |
| 5 USB-to-PC | Connect this USB to PC to provide Remote Virtual USB for B-DVI-IP-GB-RX. |
| 6 DC 12V In | System power input. |
| 7 System LED (Green) Link LED (Amber) | **Green Blinking/Amber Off:** System is starting up.<br>**Green On/Amber Off:** System is ready, but TX/RX not connected.<br>**Green On/Amber Blinking:** TX/RX connected, but waiting for HDMI input.<br>**Green On/Amber On:** TX/RX connected, HDMI input is ready. |
| 8 RS-232 | Provide Serial-over-IP function. (TxD, RxD, GND) |
| 9 IR Blaster | Connect to external IR LED |
| 10 Link ID | 4 bit hardware Group ID. It can be overwritten by the software Group-ID of Setting program or Connection Manager. **(not used from A6.3.x)** |
| 11 (Button 1) | Press and Hold at Power ON until **Green and Amber** LED blinking | 1. Reset to the Factory default setting.<br>2. Enter Setup and Firmware upgrade mode in 192.168.0.88 |
| 12 (Button 2) | Short press | Set to Video/Graphic mode. |
| | Long press (3 sec.) | To Enable/Disable Anti-Dither.<br>**Note:** For some of ATI graphic card with Dithering function enabled, you may enable Anti-Dither to achieve the better video quality. |
| | Press and Hold at Power ON until **Green** LED blinking | Get and Use EDID from Loop-out monitor |

## B-DVI-IP-GB-RX Receiver



Ethernet   Link   Mode   Video Out   Mic In   Line Out   DC 12V

Sys Link   IR Receiver   RS-232   Link ID   USB

| No.  Connector | Description | |
|---|---|---|
| 1  Ethernet | Connect to Gigabit Ethernet switch or directly to B-DVI-IP-GB-TX. | |
| 2  Mode button | Short press | Set to Video or Graphic mode. |
| | Long press (3 sec.) | To Enable/Disable Anti-Dither. **Note:** For some of ATI graphic card with Dithering function enabled, you may enable Anti-Dither to achieve the better video quality. |
| | Press and Hold at Power ON until **Green** LED blinking | Get and Use this RX's EDID as the system EDID (update B-DVI-IP-GB-TX EDID) |
| 3  Link button | Short press | To enable/disable Transmitter List OSD |
| | Long press (3 sec.) | To get the USB access right. |
| | Press and Hold at Power ON until **Green and Amber** LED blinking | 1. Reset to the Factory default. 2. Enter Setup and Firmware upgrade mode in 192.168.0.88 |
| 4  Video Out | This DVI-I connector supports HDMI/DVI-D and VGA output. Use DVI-to-DVI or DVI-to-HDMI or DVI-to-VGA cable for DVI/HDMI/VGA monitor. | |
| 5   Mic. IN | Microphone Input, it will be extended to the Line Out of B-DVI-IP-GB-TX. | |
| 6  Line OUT | Audio line out, it is extended from Line In of B-DVI-IP-GB-TX. | |
| 7  DC 12V In | System power input. | |
| 8 System LED (Green)    Link LED (Amber) | **Green Blinking/Amber Off:** System is starting up. **Green On/Amber Off:** System is ready, but TX/RX not connected. **Green On/Amber Blinking:** TX/RX connected, but waiting for HDMI input. **Green On/Amber On:** TX/RX connected, HDMI input is ready. | |
| 9  RS-232 | Provide Serial-over-IP function (optional). | |
| 10  IR Receiver | Remote Universal IR receiver (optional). | |
| 11  Link ID | 4 bit hardware Channel select ID. It can be overwritten by the software Ch-Select of Setting program or Connection Manager. **(not used from A6.3.x)** | |
| 12  USB Host | 3 USB-A ports, the default setting are USB-over-IP mode can support USB Disk, Touch Screen, Printer, keyboard, mouse … (but not isochronous device) | |

■   **Configuration**

The TX/RX unit built with Web page for Setup mode and Operation mode configurations.

## ■ Setup Mode Configuration

1. Press and Hold the TX/RX's **[Button 1]/[Link]** button and Power ON until **Green and Amber** LED blinking then release the button. This will force TX/RX enter Setup mode.
2. Directly connect TX or RX to PC LAN port, set PC IP to 192.168.0.1, Net Mask 255.255.255.0.
3. Open PC's Web Browser (recommend Chrome) and enter **192.168.0.88** <Enter>
4. The Setup Mode Web page containing **[System]** tab with sub-tabs of **[Version Information]**, **[Update Firmware]**, **[Utilities]**, and **[Statistics]**.

## ■ Reset to Factory default (Setup Mode)

If the device settings lost, you can reset the device back to the factory default:
1. Enter Setup Mode Web page **[System]** ---> [**Utilities**] ---> [**Factory Default**]
   **(The Factory default setting are shown on the label that under the TX/RX unit)**
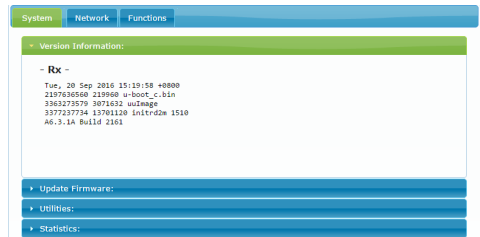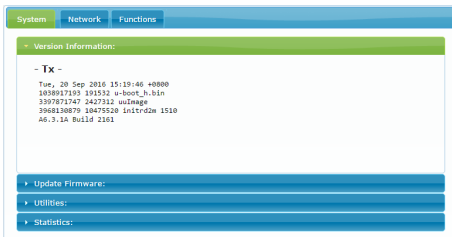
## ■ Firmware Upgrade (Setup Mode)

1. Enter Setup Mode Web page **[System]** ---> [**Update Firmware**] ---> navigate to the firmware file (.bin) then click [**Upload**] to start firmware upgrade.
2. The firmware upgrade takes about 3 min., it will display "DONE Rebooting…" to indicate the unit has been upgraded and rebooted.

## ■ Operation Mode Configuration

The TX/RX can be configured in Operation Mode through Ethernet Switch or direct connection.
To enter Operation mode Web page:
1. Set PC IP 10.0.1.1, Net Mask 255.0.0.0.
2. Open Browser (recommend Chrome) then enter TX/RX IP: 10.xx.xx.xx
3. The TX/RX Operation Mode Web page are shown as the below screenshots, contain 3 tab menus **[System], [Network], Functions]**:



## ■ Firmware Upgrade (Operation Mode)

It is possible to do the firmware upgrade in Operation mode for TX/RX:
1. Enter Operation Mode Web page **[System] ---> [Update Firmware]** ---> navigate to the firmware file (.bin) then click **[Upload]** to start firmware upgrade.
2. The firmware upgrade takes about 3 min., it will display "DONE Rebooting…" to indicate the unit has been upgraded and rebooted.

## ■ Network Configuration

The TX/RX provides the following Network related settings:

> ➢ **To change IP**
>
>   Enter TX/RX Operation Mode Web page **[Network] ---> [IP Setup]** ---> select Auto IP, DHCP, Static ---> enter
>   device IP, Subnet Mask, Default Gateway ---> **[Apply]**.
>
> ➢ **Casting Mode**

The B-DVI-IP-GB-TX factory default is **Multicast IP: 225.0.x.x**. **(shown on the unit label)** The B-DVI-IP-GB-RX factory default is **First Available**.

➢ **Connection Method (RX only)**

There are 4 Connection Methods f**or Multicast RX:** First Available, Multicast IP, OSD Transmitter List, and Direct Connection.

There are 3 Connection Methods for **Unicast RX:** OSD Transmitter List, TX IP and Direct Connection.

**First Available:** the RX will connect to the first available TX.

**Multicast IP**: 225.0.xxx.xxx: the RX will connect to the TX that is using the same Multicast IP address. (You can setup TX Multicast IP on the TX [Network] ---> [Casting Mode])

**OSD Transmitter List:** the RX will show up  available Transmitters for user to select.

**TX IP:** x.x.x.x: the RX will connect to this dedicated TX only.

**Direct Connection:** this setting enables RX to connect TX by the same subnet, same Casting Mode, Jumbo Frame will be enabled.

➢ **To show TX Device name when connected (RX only)**

This feature enable RX to pop up the TX name (or IP) when connected. Default is enabled with 5 seconds.

➢ **To Enable/Disable Jumbo Frame**

To enable or disable it, enter TX/RX Operation mode Web page ---> **[Network]** ---> **[Jumbo Frame]** ---> Enable/Disable ---> **[Apply]** ---> the unit will save the setting and reboot automatically.

■

## Functions Configuration

The TX/RX provides Operation mode Web page for Functions Configuration. The following screenshot shows RX Web page as an example (TX is similar):

➢ **To change Device Name**

Enter TX/RX Operation mode Web page ---> **[Functions]** ---> **[Device Name]** ---> enter name (8 characters) ---> [**Apply**] to save the device name.

➢ **To Enable/Disable KM over IP**

The system supports both USB-over-IP and KM-over-IP for USB extension. The USB-over-IP works as a virtual 5-port USB HUB when TX is connected to PC, it is compatible with most of USB devices such as keyboard, mouse, Pen Drive, Touch Screen… etc. The KM-over-IP is a HID emulation built for multiple RXs to share keyboard/mouse for one PC, it takes one port of the 5 virtual ports. The KM-over-IP setting is different for TX and RX:

**For TX**: enter TX Operation mode Web page ---> **[Functions]** ---> **[USB over IP]** ---> **[Compatibility Mode]** ---> check/uncheck [K/M over IP] to Enable/Disable ---> **[Apply] (default disabled)**.

**For RX**, enter RX Operation mode Web page ---> **[Functions]** ---> **[KMoIP ports]** ---> check/uncheck 1, 2, 3 to Enable/Disable KM-over-IP ports **(default all disabled)** ---> **[Apply]**.

➢ **To define Hotkey (RX only)**

The RX supports Hotkey for OSD Menu. You can choose the Hotkey: enter RX Operation mode Web page ---> **[Functions]** ---> **[Hotkey]** ---> select the Hotkey of <Ctrl><Ctrl>, <Shift> <Shift>, <Alt> <Alt>, or <Scroll> <Scroll> **(default Ctrl Ctrl)**.

➢ **To Enable/Disable USB over IP (TX only)**

Enter TX Operation mode Web page ---> **[Functions]** ---> **[USB over IP]** ---> **[Enable USB over IP] --->** check/uncheck to Enable/Disable **(default Enable)**.

**Auto select mode**: Auto select "Active on link" if unit is in Unicast, select "Active per request" if unit is in Multicast.

**Active on link**: USB over IP will be established in sharing mode when TX/RX connection established.

**Active per request**: USB over IP can be manually requested in exclusive mode, the former RX of the USB over IP connection will be stopped if the current request is succeeded.

➢ **To Enable/Disable Serial over IP, and select Operation Mode**

Enter TX/RX Operation mode Web page ---> **[Functions]** ---> **[Serial over IP]** ---> check/uncheck to Enable/Disable **(default Enable)**.
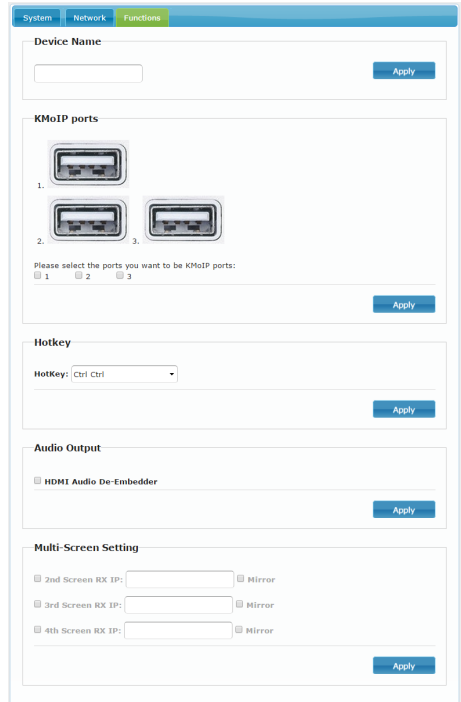
Enter TX/RX Operation mode Web page ---> **[Functions]** ---> **[Serial over IP]** ---> **[Operation Mode]** ---> select options of Type 1, Type 2, Type 1 guest mode, Type 2 guest mode **(default Type 2)**.

**Note:** Type 1 is mainly for Unicast application where user can dynamically link with any target RX.

Type 2 is mainly for Multicast application where TX RS-232 will link with all of connected RXs **(default)**.

Type 1 guest mode is similar to type 1 but using PC to link with RX's RS-232.

Type 2 guest mode is similar to type 2 but using PC to link with RX's RS-232.

For details, please refer to "How to Use RS232 over IP" manual.

➢ **To define RS-232 parameters for Type 2**

Enter TX/RX Operation mode Web page ---> **[Functions]** ---> **[Serial over IP]** ---> **[Baudrate Setting for Type 2]** ---> select Baudrate, Data bits, Parity, Stop bits. (default 115200, 8-n-1)

➢ **Audio Output (RX only)**

If the TX's input audio is HDMI, you can select the Audio to be output on Line Out:
Enter RX Operation mode Web page ---> **[Functions]** ---> **[Audio Output]** ---> check **"HDMI Audio De-Embedder"** for the audio output to Line-Out. Click **[Apply]** to save the setting and reboot.

➢ **Multi-Screen Setting**

The system supports Multi-Screen feature for PC with multiple screens. Each TX/RX can define its associated 2nd, 3rd, 4th TX/RX IP. So, when the Main RX switches to a new TX, its associated RXs will also be switched to that new TX's associated TXs automatically.
Enter TX/RX Operation mode Web page ---> **[Functions]** ---> **[Multi-Screen Setting]** ---> then enter IP address for the associated 2nd, 3rd, 4th TX/RX IP.
There is an option of **"Mirror"**, when enabled, the associated RXs will connect to the same TX as the Main RX is connecting. This enables multiple RXs to display the same TX as a splitter.

■ **Installation**

1. By factory default, the B-DVI-IP-GB-TX is pre-configured with a **Multicast IP: 225.0.x.x. (shown on the unit label).** The B-DVI-IP-GB-RX factory default Connection Method is **First Available**.
2. Connects RX DVI-I to HDMI/DVI/VGA screen by a DVI-to-HDMI/DVI-to-DVI/DVI-to-VGA cable.
3. You can assign a specific RX as the "EDID Master" among multiple RXs. To do this, press and hold the [**Mode**] button of that RX unit and power ON until **Green** LED blinking, then release the [Mode] button. Then power ON other RX units sequentially. In this step, RX's **Green** LED will blink then ON, and **Amber** LED Off to indicate it is ready and waiting for connection with TX.
4. The RX will display the following start-up messages when powered on:
   FW: 15-Nov-18 A6.3.x ---> Firmware version
   Local IP: 10.0.29.72 ---> RX's IP address
   Remote IP: 10.0.29.73 ---> Connecting TX IP address
   ID: 0020FE001122 ---> RX's MAC address
   Connection Method ---> Direct Connection
5. You can use a CAT6 UTP cable (straight, EIA 568B) to directly connect TX/RX as a pair connection. Or connect multiple RXs with one TX (recommended for first time) to Gigabit Ethernet switch.
6. **If you connect TX/RX via Gigabit Ethernet switch, you can enable the "Jumbo Frame" setting for the Ethernet Switch and TX/RX in Network setting with minimum setting > 8K bytes to get the best video quality. Please refer to page 5 "Enable/Disable Jumbo Frame".**
7. Attach HDMI/DVI source (PC or Blue-Ray) to the TX's HDMI-IN, attach a HDMI/DVI screen to TX's HDMI-OUT for local loop-out, then power ON the TX unit. The TX's **Green** LED will blink then ON indicating ready and waiting for connection with RX.
8. As long as TX/RX connection established, both of TX and RX Amber LED will start to blink indicating wait for video input source (Green LED is ON).
9. If you are using PC as video source, it is recommended to check if the correct screen EDID shown on PC graphic card control panel?
10. Activate video source with audio to TX, then check if RX correctly display. In this step, both Green and Amber LED should be ON indicating the unit is ready and video source is also ready.

■ **USB and KM over IP installation:**

11. Connect TX USB-B to PC, OS will detect a Generic USB Virtual Hub Device.

12.    The system can support both "USB-over-IP" and "KM-over-IP".
       The USB-over-IP works as a Virtual 5-port HUB when connected to TX, it is compatible with most kind of USB devices such as keyboard, mouse, Pen Drive, Touch Screen… The USB-over-IP connection can be configured in "Active on link" (Sharing) mode or in "Active per request" (Exclusive) mode (default). In "Active on link" mode, the maximum USB-over-IP connection for a TX is 5 due to the 5 ports of Virtual HUB. The KM-over-IP means that port will work as HID device only for keyboard/mouse emulation, the PC don't get BIOS "Keyboard Error" if there is no real keyboard attached during boot up. It is not necessary to gain USB access right for the KM-over-IP port. The TX (PC) can be shared with multiple RXs for keyboard/mouse access in KM-over-IP mode.

13.    There are 3 USB-A ports on the RX. The factory default setting for the TX is USB-over-IP enabled and KM-over-IP disabled, all 3 USB ports of RX are in USB-over-IP mode (KM-over-IP disabled).

14.    There are 2 methods to gain the access right for a USB-over-IP port:
       14.1  Long press (3 sec.) the RX **[Link button]**
       14.2  Press "U" key to toggle during Transmitter List OSD menu.
       The RX display "Requesting USB" to indicate starting USB-over-IP connection, and message of "Starting USB" will be displayed if it successfully gained the USB access right. Meanwhile, the previous USB Master unit will show an OSD message of "USB Stopping".

■    **RX OSD Main Menu**

     The RX supports OSD menu, press the RX's **[Link]** button to get the OSD Main

     menu: **[Hotkey Setting]** and [**Connection Method**].

```
Main
>Hotkey Setting
Connection Method
```
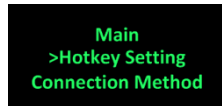
■    **RX OSD Hotkey selection Sub-Menu**

     From the OSD Main Menu, press **[Link]** button to move the highlight arrow to [Hotkey Setting]. Wait a few seconds, the sub-menu will show up with 4 possible selections: "Ctrl Ctrl", "Shift Shift", "Alt Alt", or "Scroll Scroll". Press **[Link]** button again to move the highlight arrow to the desired selection. The RX unit will be re-booted.

■    **RX OSD Connection Method Sub-Menu**

     From the OSD Main Menu, press **[Link]** button to move the highlight arrow to [Connection Method]. Wait a few seconds, either the **Multicast** or **Unicast Connection Method** sub-menu will show up depending on the RX's Multicast/Unicast setting:
     The Multicast RX supports 4 possible connection methods: First Available, Multicast IP 225.0.101.234, OSD Transmitter List, Direct Connection
     The Unicast RX also supports 4 possible connection methods: First Available, OSD Transmitter List, Dedicated TX IP, Direct Connection.
     Press the **[Link]** button to move the highlight arrow to the desired selection and wait a while to confirm the selection. Please note the Sub-Menu only provide selection, the Multicast IP or TX IP can only be changed by the Web page setting.

■    **RX OSD Transmitter List**

     Attach a keyboard to the RX's any USB port, then press <hotkey> <hotkey>. The Transmitter List with maximum 8 Transmitters will be shown, as the right-hand picture indicates, the top line "TX01 (1/2)" means the current connection is "TX01" and there are 2 pages and currently it's on page 1. The TX with an asterisk (*) mark indicates the current connected TX. You can select TX by the ↑↓←→key and <Enter>, or 1 ~ 8 key to immediately

```
    > TX01  (1/2) <

*1 : TX01      2 : TX02
>3 : TX03      4 : TX04
 5: TX05       6: TX06
 7: TX07       8: TX08
```

     connect to that TX. Press F5 to refresh Transmitter List. Press U to request (or release) USB-over-IP. To end of OSD, press <ESC>
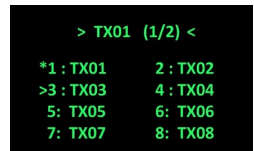
Read before operating equipment.

1. **Cleaning** - Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
2. **Power Sources** - Use supplied or equivalent UL/CSA approved low voltage DC plug-in transformer.
3. **Outdoor Antenna Grounding** - If you connect an outside antenna or cable system to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
4. **Lightning** - Avoid installation or reconfiguration of wiring during lightning activity.
5. **Power Lines** - Do not locate an outside antenna system near overhead power lines or other electric light or power circuits or where it can fall into such power lines or circuits. When installing an outside antenna system, refrain from touching such power lines or circuits, as contact with them might be fatal.
6. **Overloading** - Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
7. **Object and Liquid Entry** - Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short out parts, resulting in a fire or electric shock. Never spill liquid of any kind on the product.
8. **Servicing** - Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
9. **Damage Requiring Service** - Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
   - When the power supply cord or plug is damaged.
   - If liquid spills or objects fall into the product.
   - If the product is exposed to rain or water.
   - If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions. An improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
   - If the video product is dropped or the cabinet is damaged.
   - When the video product exhibits a distinct change in performance, this indicates a need for service.