EQT-1602-3G-CS
16x2 SD/HD/3G Clean and Quiet Router
User Manual

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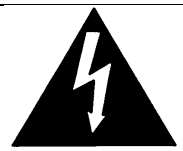
IMPORTANT SAFETY INSTRUCTIONS

	The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated “Dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (Servicing) instructions in the literature accompanying the product.

- Read these instructions
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

WARNING
TO REDUCE THE RISK OF FIRE OR ELECTRIC – SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE

WARNING
DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS ARE PLACED ON THE EQUIPMENT

WARNING
TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE

WARNING
THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE

INFORMATION FOR NEBS COMPLIANT VERSIONS

The intra-building port(s) of this equipment is suitable for connection to intra-building or unexposed wiring or cabling only. The intra-building port(s) of the equipment MUST NOT be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

The intra-building port(s) of the equipment or subassembly must use shielded intra-building cabling/wiring that is grounded at both ends.

This equipment is to be connected to a Common Bonding Network. See Installation section for further information.

This equipment is to be installed in the network telecommunication facilities.

To ensure that radiated emissions do not exceed NEBS requirements, all Ethernet (Cat-5 or better) connections must use shielded cable.

The use of unshielded Ethernet cable may cause excessive electromagnetic radiation in excess of NEBS specifications.

INFORMATION TO USERS IN EUROPE

NOTE

CISPR 22 CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the European Union EMC directive. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE

EN60065	Safety
EN55103-1: 1996	Emission
EN55103-2: 1996	Immunity

EN504192 2005
Waste electrical products should not be disposed of with household waste.
Contact your Local Authority for recycling advice

INFORMATION TO USERS IN THE U.S.A.

NOTE

FCC CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

Changes or Modifications not expressly approved by Evertz Microsystems Ltd. could void the user's authority to operate the equipment.

Use of unshielded plugs or cables may cause radiation interference. Properly shielded interface cables with the shield connected to the chassis ground of the device must be used.

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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	Jul 2015

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1. OVERVIEW

The EQT-1602-3G-CS is a routing solution for mission critical applications. It has the ability to route up to 16x8 signals in a compact 1RU frame. The EQT is ideal for all mission critical and demanding 24/7 environments.

The EQT has format independent data paths which support digital signals from 3Mb/s to 3Gb/s including SD-SDI, HD-SDI, DVB-ASI, and SMPTE310.

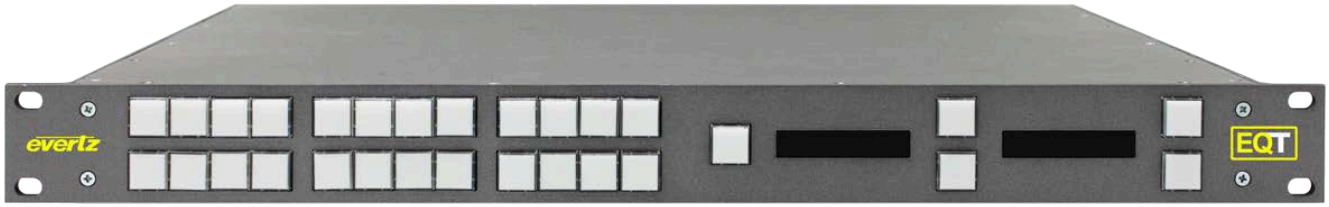

Figure 1-1: The EQT Signal Processing Router

The EQT CS versions provide a line buffer for clean switching video and SoftSwitching audio.

1.1. CONFIGURATION

The EQT-1602-3G-CS is housed in a 1RU frame and switches 16 sources and 8 (2 clean/quiet, and 6 auxiliary) destinations.

1.2. CONTROL

The EQT router is compatible with the existing range of Quartz routers, remote control panels and control systems. The EQT router has a number of control options, which include:

- **Remote Control Panel:** Any panel(s) from the entire series of Quartz remote control panels can be used with the EQT router connected via Q-Link or Ethernet.

- **External Third Party Control:** The EQT router can be remotely controlled via an external third party control device, such as an automation system, when connected to the routers serial port.

EQT-1602-3G-CS is equipped with a local Ethernet Control Panel and the operation of the panel is entirely dependent upon its configuration. It is a versatile programmable panel with 29 illuminated pushbuttons and two display windows. Each button can be individually configured for any combination of source, destination, breakaway or control functions etc:-The left hand block of 16 buttons can be programmed as sources and rest 8 buttons can be programmed as destinations. A number of these buttons can also be used for other functions such as level selection, lock, prefix etc. The two display windows can be used to show the current selected destination and the selected source. The two buttons located next to the display windows can be used to scroll up or down through the source or destination list. The TAKE button confirms the selection.

NOTE: This panel can be configured using Winsetup or Magnum, panel configuration must be defined using the type CP-2402E.

1.3. POWER SUPPLY

The power supply for the EQT-1602-3G-CS router is internal, and is fitted with a redundant internal power supply.

1.4. TECHNICAL

The EQT router offers a full 3Gb/s bandwidth to handle uncompressed HD signals. Automatic Bit Rate Detection on the input equalizer allows any mix of HD and SD signals in the same unit.

1.5. FEATURES

- Units can be genlocked to an external source so that a “clean switch” can be achieved for sources that are +/- ½ line, +/- 1 line, +/- 2 line, +/- 4 line with respect to genlock reference
- SoftSwitch™ provides popless AES switching audio outputs
- Switch point is fully controllable

1.6. HOW TO USE THIS MANUAL

This manual will assist you in the use of the EQT router, and contains all the necessary information to successfully operate this product. If further product information or assistance is required, please contact Evertz or your local Evertz/Quartz distributor.

This manual is organized into 8 sections: Overview, Installation, Technical Description, System Control Overview, VistaLINK® Remote Monitoring/Control, Configuration and Upgrading Firmware.

Section 1 contains a brief overview of the EQT operation, features and a glossary to define concepts and terms used throughout the remainder of the manual. We highly recommend taking the time to become familiar with the terms and concepts described in this section before proceeding into the rest of the manual.

Section 2 provides instructions on how to unpack, install and setup the EQT.

Section 3 provides technical specifications and information on configuring the connector pin-outs of the EQT system.

Section 4 describes how to control the EQT. More specifically, front and rear view control, video signals, and system monitoring and control are outlined in this chapter.

Section 5 describes how to control and monitor some of the features of the EQT using VistaLINK®.

Section 6 provides instructions on how to configure the EQT.

Section 7 provides instructions on how to upgrade the firmware on the EQT.

Section 8 provides definitions relevant to the manual.

This symbol is intended to alert the user to important operating instructions.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important safety related operating and maintenance (Servicing) instructions in this manual.

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2. INSTALLATION

2.1. UNPACKING

Remove the equipment carefully from the box and look it over. Any error should be reported to your supplier immediately. After you have unpacked the equipment please save all the packing material as this could be useful in the future should the unit need to be returned for maintenance.

Check each item supplied for transit damage. Any damage should be reported in detail to your supplier. You must state the serial number of the unit, which can be found on the rear of the frame. Check that power cords supplied are suitable for your country and that the equipment is compatible with your mains (line) voltage. Note that remote panels are mains powered and must also be checked.

2.2. PHYSICAL INSTALLATION

2.2.1. Router Frames

All units are designed for mounting in standard 19" equipment racks. The depth of the frame is 477mm deep. In addition allowance must be made to accommodate the various cables which are to be installed at the rear of the frame.

Power dissipation in all units is low and cooling is achieved by fan-assisted convection.

2.2.2. Remote Panels

The Q-Link and Ethernet remote panels are 130mm deep plus the size of the cables. All remote panels are designed to fit into standard 19" equipment racks and can be mounted at any angle.

2.3. ELECTRICAL CONNECTIONS

Figure 2-1 displays the EQT rear panel connections.

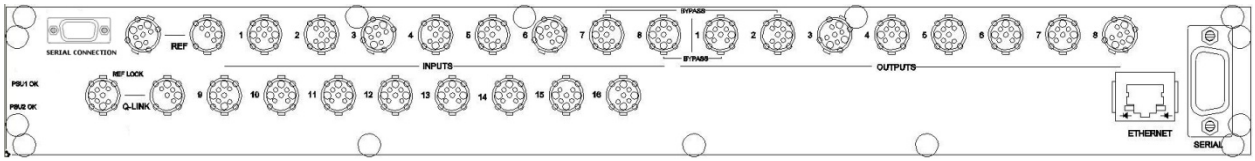


Figure 2-1: EQT Rear View (EQT-1602-CS (Newer Rear Plate)

2.3.1. Video Inputs and Outputs

These connections are made using standard 75Ω video BNC connectors. A high quality coax cable such as PSF1/2 (TF3255) for analog video, PSF1/3 (TF3304) for SDI video, Belden 8281 or 1694 for SDI-HD video or suitable equivalents should be used for optimum performance.

It is both important and good practice that cables are properly supported and not hanging on the connectors as this can put unnecessary stress on the connectors and possibly reduces their working life.

2.3.2. Q-LINK Connections (Coax versions ONLY)

There is one Q-LINK 75Ω termination BNC connectors located on the rear of the EQT, with a second connector which is a loop through. The EQT supports Evertz control panels that have a Q-Link connection.

The rear of the EQT has one BNC connector to allow connection to one terminated external Q-Link. Q-Link is a dedicated control system specific to Evertz brand of Quartz products. The Q-Link system works as a single transmission line with devices connected along the length of the cable. It must be terminated at either end in 75Ω.

2.3.2.1. Manual Remote Control - Using Q-Link

All EQT routers can be connected to remote control panels by a single coaxial link called Q-Link. This link uses standard 75Ω video cable daisy-chained from panel to panel over a maximum cable length of 500m. Each end of the link must be terminated in 75Ω.

Note: The installer must fit a 75Ω terminator at each end of the cable.

This daisy-chain method ensures the best transmission quality of the control signals down the cable. Short cuts that might save cable (i.e. running stubs to some panels) are not recommended as this may, under certain circumstances, cause data errors.

Each unit being connected to the Q-Link has its own address switch, which is set up as part of the system configuration.

2.4. SERIAL CONNECTIONS

The rear panel of the EQT has one DB9 female serial connector. The EQT supports Quartz protocol commands over the serial port. For information regarding the Quartz protocol, contact Evertz service.

The pin-out for the serial port is shown in Table 1 below:

RS422 9 WAY FEMALE D-TYPE	
PIN	**SIGNAL**
1	0V
2	Tx+
3	Rx+
4	0V
5	-
6	0V
7	Tx-
8	Rx-
9	-

Table 1: RS422 Pin Out

As an option it is possible to convert the serial port to RS232 with the following pin-out, as shown in Table 2.

RS232 9 WAY FEMALE D-TYPE	
PIN	**SIGNAL**
1	0V
2	TXD
3	RXD
4	0V
5	-
6	0V
7	RTS
8	CTS
9	-

Table 2: RS232 Pin Out

2.5. MICRO-D SERIAL CONNECTION (NEW REAR PLATE ONLY)

The newer rear panels of EQT-1602-CS and have one Micro-D male serial connector. This connector provides access to serial menus of the modules inside the frame. Units come with special breakout cable which converts Micro-D to four standard Female DB-9 connectors. Split cable is shown in Figure 2-2: Micro-D to DB9 Split Cable.

The pin-out for the Micro-D port is shown in Table 3 below:

RS232 9 WAY MALE MICRO-D TYPE (MI)	
PIN	**SIGNAL**
1	TXD-2
2	TxD-1
3	RXD-1
4	TXD-4
5	GND
6	RXD-2
7	TXD-3
8	RXD-3
9	RXD-4

Table 3: RS232 Micro-D Port Pin Out

Cable number and the corresponding devices are shown in the Table 4 below:

Micro-D to DB9 Split Cable		
MIRO-D F	**DB9-1 F**	Provides access to EQT
	DB9-2 F	Provides access to ACO2 slot 1
	DB9-4 F	Provides access to front panel

Table 4: Micro-D to DB9 Split Cable Number

Figure 2-2: Micro-D to DB9 Split Cable

Note: All these four DB9 cables can be connected to PC with a straight through cable and the default port settings are 115200, 8, none, 1, none.

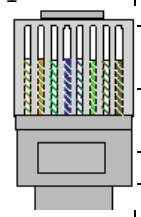
2.6. ETHERNET CONNECTIONS

There is one RJ-45 network connector on the rear panel. The RJ-45 connector is an Ethernet port used for monitoring and control of the system, etc. See section 4.4.1 for information on connecting to an Ethernet network. See section 4.2.3 for information on configuring the network address for the router.

2.6.1. Connecting to an Ethernet Network

The EQT uses 10Base-T (10 Mbps), 100Base-TX (100 Mbps) or Gigabit (1Gbps) twisted pair Ethernet cabling systems. When connecting for 10Base-T systems, category 3, 4, or 5 UTP cable as well as EIA/TIA – 568 100Ω STP cable may be used. When connecting for 100Base-TX systems, category 5 UTP cable is required. The cable must be "straight-through" with a RJ-45 connector at each end. Establish the network connection by plugging one end of the cable into the RJ-45 receptacle of the EQT and the other end into a port of the supporting hub.

The straight-through RJ-45 cable can be purchased or can be constructed using the pin-out information in Table 5. A colour coded wiring table is provided in Table 5 for the current RJ-45 standards (AT&T 258A or EIA/TIA 258B colour coding shown). Also refer to the notes following the table for additional wiring guide information.



Pin #	Signal	EIA/TIA 568A	AT&T 258A or EIA/TIA 568B	10BaseT or 100BaseT
1	Transmit +	White/Green	White/Orange	X
2	Transmit –	Green/White or White	Orange/White or Orange	X
3	Receive +	White/Orange	White/Green	X
4	N/A	Blue/White or Blue	Blue/White or Blue	Not used (required)
5	N/A	White/Blue	White/Blue	Not used (required)
6	Receive –	Orange/White or Orange	Green/White or Green	X
7	N/A	White/Brown	White/Brown	Not used (required)
8	N/A	Brown/White or Brown	Brown/White or Brown	Not used (required)

Table 5: Standard RJ-45 Wiring Colour Codes

Note the following cabling information for this wiring guide:

- Only two pairs of wires are used in the 8-pin RJ-45 connector to carry Ethernet signals.
- Even though pins 4, 5, 7 and 8 are not used, it is mandatory that they be present in the cable.
- 10BaseT and 100BaseT use the same pins (a crossover cable made for one will also work with the other).
- Pairs may be solid colours and not have a stripe.
- Category 5 cable must use Category 5 rated connectors.

The maximum cable run between the router and the supporting hub is 300 ft (90 m). The maximum combined cable run between any two end points (i.e. router and PC/laptop via network hub) is 675 feet (205 m).

Devices on the Ethernet network continually monitor the receive data path for activity as a means of checking that the link is working correctly. When the network is idle, the devices also send a link test

signal to one another to verify link integrity. The EQT rear panel is fitted with two LEDs to monitor the Ethernet connection.

10/100: This Amber LED is ON when a 100Base-TX link is last detected. The LED is OFF when a 10Base-T link is last detected (the LINK LED is ON). Upon power-up the LED is OFF as the last detected rate is not known and therefore defaults to the 10Base-T state until rate detection is completed.

LN/ACT: This dual purpose Green LED indicates that the EQT has established a valid linkage to its hub, and whether the EQT is sending or receiving data. This LED will be ON when the EQT has established a good link to its supporting hub. This gives you a good indication that the segment is wired correctly. The LED will BLINK when the EQT is sending or receiving data. The LED will be OFF if there is no valid connection.

2.7. REFERENCE

2.7.1. Video Reference

There must be an analog reference present to ensure the crosspoint changes occur during the field-blanking interval. If the reference is missing then the routing will occur asynchronously. If you experience problems with clean switching then refer to application note AN-0008.

The reference signal should be connected to the Ref 1 input and this is terminated in 75R. The Ref 2 connector is a passive loop-through. The EQT rear panel is fitted with one LED to monitor the reference connection.

REF LOCK: This Green LED is ON when there is a valid reference present on the REF BNC. This LED is OFF when no reference is being applied.

2.7.2. Termination of Video Reference

TERM: The REF TERMINATION jumper J21 located at the rear of the main module is used to terminate the reference loop input. When it is in the 75R position a 75 ohm terminating resistor will connect the input to ground. When it is in the HI-Z position the reference input will be high impedance.

2.8. POWER SUPPLY

The EQT router power supplies operate on 100 to 240 volts AC at 50 or 60 Hz and automatically sense the input voltage. Power should be applied by connecting a 3-wire grounding type power supply cord to the power entry module on the rear panel. The power cord should be a minimum 18 AWG wire size; type SVT marked VW-1, maximum 2.5 m in length.

CAUTION - TO REDUCE THE RISK OF ELECTRIC SHOCK, EARTHING OF THE EARTH PIN OF THE MAINS PLUGS MUST BE MAINTAINED

For NEBS compliant installations, the AC power cords of the EQT Series Router shall be connected to an external surge protection device (SPD).

The power entry modules contain a standard IEC power inlet connector and an EMI line filter. A separate fuse holder is located inside the power supply module.

Fuse Rating:

EQT-16xx Series 2 amps, 250 Volt time delay 5 x 20 mm

If there is a fuse failure, contact Evertz customer service regarding the power supply immediately. The power supplies are short circuit protected and should not blow the fuse under a short circuit condition.

2.9. GROUNDING AND BONDING – NEBS APPLICATIONS

The NEBS compliant version of this equipment is to be connected to a Common Bonding Network.

The primary grounding mechanism of the EQT router is through the Earth connector of the AC Mains.

For NEBS compliant installations, the AC power cords of the EQT Router shall be secured using retaining clips provided to ensure that proper grounding of the Earth pin of the AC mains plug is maintained.

3. SPECIFICATION

3.1. CONFIGURATION

Inputs:	Fixed at 16
Outputs:	Fixed at 8 (2 clean/quiet, 6 auxiliary)
Redundant Protection:	Redundant Power Supply

3.2. VIDEO INPUTS

Standards:	SMPTE 259M, SMPTE 292M, SMPTE 310M, SMPTE 424M, ASI
Signal Level:	800mV p-p
Impedance:	75Ω terminating
Return Loss:	>15db typical (5-1485 MHz)
Cable Equalization:	Belden 1694A 200m @ 270MHz, 150m @1.5Gb/s, 100M @ 3Gb/s
Connectors:	BNC per IEC 61169-8 Annex A

3.3. VIDEO OUTPUTS

Signals Supported:	SMPTE 259M, SMPTE 292M, SMPTE 310M, SMPTE 424M, ASI
Reclocking:	Configurable
Non-Reclocking:	Configurable
Signal Level:	800mV p-p ± 10%
Impedance:	75Ω terminating
Return Loss:	>15 db typical (5-1485 MHz)
DC Offset:	0 ± 0.5V
Output Jitter:	0.2 UI
Connectors:	BNC per IEC 61169-8 Annex A

3.4. REFERENCE TIMING

Switching Reference:	Analog 525/625/tri-level HD looping
Connector:	BNC per IEC 61169-8 Annex A
Signal Level:	1 V p-p ± 3dB
Impedance:	75Ω
Switching Line:	Lines 6/319 (625), Lines 10/273 (525), Line 7 (HD)

3.5. CONTROL

Q-Link:	75Ω video cable (max length 500m)
Serial	RS422/232: 1x DB9 female
Ethernet:	10/100baseT, 1x RJ45

3.6. PHYSICAL

Height:	3.5” (89mm) 2RU 1.75” (44.5mm) 1RU
Width:	19” (483mm) 19” Rack Mount
Depth:	18.75” (477mm) over hinges and BNCs
Weight:	6 kg Fully Loaded
Operating Temperature:	0°C to 40°C
Cooling:	Fan cooled, left to right

3.7. ELECTRICAL

Input Voltage:	Auto ranging 100-240V AC, 50/60Hz
Input Power:	200W 1RU 60W 1RU

4. OPERATION

4.1. SYSTEM OVERVIEW

The EQT router is a matrix router that provides a simple cost-effective solution for small router applications. The EQT-1602-3G-CS consists of 16 equalized inputs and 8 reclocked outputs. Each input and each output is interfaced through a common crosspoint that is controlled by the main processing unit.

The processing unit interfaces the various control options such as Q-Link, Ethernet and serial with the crosspoint, allowing full control of the routing resources. The processing unit also provides a video reference to the crosspoint to maintain clean switching on the switch line.

The major components of the EQT router are shown below in Figure 4-1, Figure 4-2.

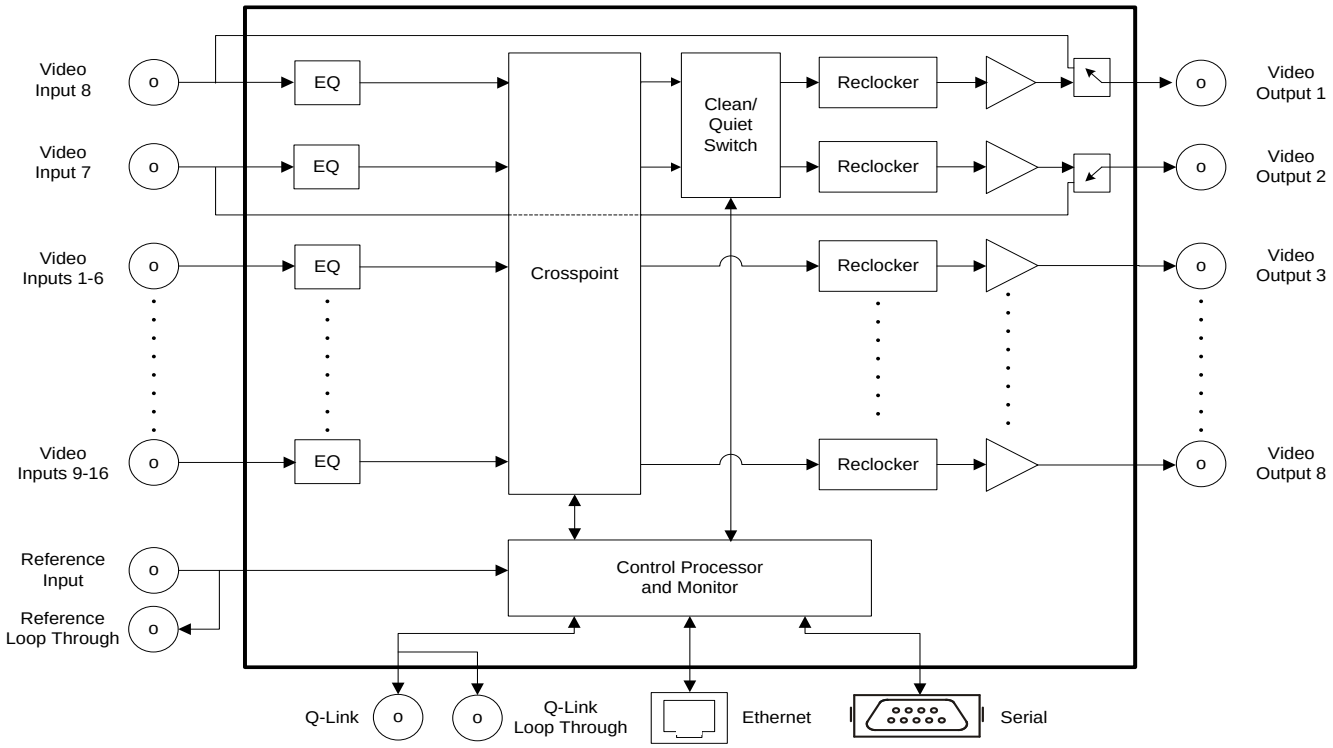


Figure 4-1: EQT Clean Switch Block Diagram

Note: The relay protected outputs are Video Outputs 1 and 2 in EQT-1602-CS Refer to block diagram for connection.

4.1.1. Front View

The clean switch versions of the EQT do not have front accessibility of the electronics or power supplies.

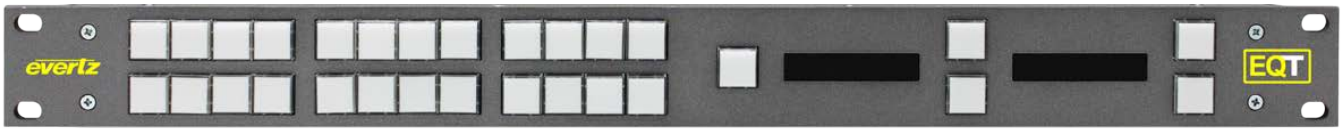


Figure 4-2: Front View of EQT Clean Switch with Control Panel

4.1.2. Rear View

There are a number of communication connections on the rear of the EQT frame. Figure 4-3 identifies all of the connections on the rear panel. These connections provide access to the various communication facilities of the EQT router, such as control and video status monitoring.

Figure 4-3: Rear Communication Connections on EQT-1602-CS Newer Rear Plates

4.2. SYSTEM CONFIGURATION

4.2.1. Setting the IP

The EQT-1602-3G-CS clean switch router consists of three individual components, each with its own IP address. Each of these devices can be accessed through the Ethernet port or the Micro-D serial port at the back.

When shipped from the factory, the default IP addresses of the devices are as follows:

1. Router component (EQT) 192.168.9.190
2. Clean/quiet switch component (ACO2) 192.168.9.191
3. Control panel component 192.168.9.193

Note: The default IP addresses for Router component and Control panel component always stay the same e.g. (Router 192.168.9.190 and Panel 192.168.9.193)

To change the IP address of the components via Ethernet, follow the instructions below:

1. For the EQT:

    1. Telnet to port 4000 of the EQT IP address *(i.e. telnet 192.168.9.190 4000).*
    2. Once the configuration menu is displayed, select the Network Settings menu.
    3. Follow the on-screen instructions to set the IP address.

2. For the ACO2 Slot1:

    1. Telnet to the IP address of the clean/quiet switch component *(i.e. telnet 192.168.9.191)*
    2. Once prompted with the boot menu, you will be asked for a Login and Password. Use *config* for username and password.
    3. Once logged in to the main menu, select the Network Setup menu
    4. Follow the on-screen instructions to set the IP address
    5. Once finished, exit the screen and exit the main menu using the *x* to ensure the changes are saved to flash

3. For the Control Panel:

    1. Telnet to the IP address of the control panel component *(i.e. telnet 192.168.9.193)*
    2. Once the configuration menu is displayed, select the Network Configuration menu
    3. Follow the on-screen instructions to set the IP address

To change the IP address of the components via Serial, follow the instructions below:

1. For the EQT:

    1. Connect the serial cable to “DB9-1 F” of the breakout cable.
    2. Set the hyperterminal parameters to 115200,8, none, 1, none.

3. Once prompted with the boot menu, you will be asked for a Login and Password. Use *root* for username and *evertz* for password.
4. At the prompt type " telnet localhost 4000"
5. Once logged in to the main menu, select Network Settings menu
6. Follow the on-screen instructions to set the IP address
7. Once finished save all the changes.

2. For the ACO2 Slot1:

    1. Connect the serial cable to "DB9-2 F" connector of the breakout cable.
    2. Set the hyperterminal parameters to 115200,8, none, 1, none.
    3. Once prompted with the boot menu, you will be asked for a Login and Password. Use *config* for username and password.
    4. Once logged in to the main menu, select the Network Setup menu
    5. Follow the on-screen instructions to set the IP address

Once finished, exit the screen and exit the main menu using the *x* to ensure the changes are saved to flash.

3. For the Control Panel:

    1. Connect the serial cable to "DB9-4 F" connector of the breakout cable.
    2. Set the hyperterminal parameters to 115200,8, none, 1, none.
    3. Once the main menu is displayed, select the Network Configuration menu
    4. Follow the on-screen instructions to set the IP address

Once the IP addresses of all the devices have been set and saved, reboot the entire unit by cycling the power to the unit.

Note: The router must be rebooted in order for network changes to take effect.

4.2.2. Accessing the Configuration and Monitoring Menu

The EQT router contains configuration and monitoring menu that allows the user to change some internal settings of the device and also to monitor various components on the router. Before accessing the configuration and monitoring menu, the IP address of the device must be set.

The configuration and monitoring menu can be accessed using the TELNET network protocol or Serial connection. As standard EQT uses port 4000 as its server port, which allows control and monitoring to be achieved from a PC using the Telnet function. Using any TELNET client, telnet into the configuration and monitoring menus of the device by typing *telnet* followed by the IP address, and then followed by *4000*. (For example, telnet 192.168.0.0 4000). Or connect the PC to DB9-1 F, use root and evertz for user name and password and then type "telnet localhost 4000" to access the configuration and monitoring menus.

Note: Access to the configuration and monitoring menu is done through port 4000. Port 4000 cannot be used for controlling the router or connecting to Magnum.

If there is a problem communicating over Ethernet, then the user should check that there is a network connection to the router from a PC command prompt by typing *ping* followed by the IP address. (For example, ping 192.168.0.0) and check the network settings via serial menu.

All menu items can be accessed using the number listed beside the menu item. Once in a menu, use the numbers beside the items to set the value. Follow the on screen instructions to set the value of the parameter, save and exit the configuration.

When all desired changes have been made, exit the telnet section by hitting Ctrl-D or closing the telnet session.

4.2.3. Configuration and Monitoring Menu

The following chart provides a brief description of the menus that are accessible through the configuration and monitoring option.

Network Configuration	Configuration of network settings.
SNMP Setup	Configuration of Simple Network Management Protocol settings.
Status Monitoring	Monitoring of crosspoint and signal paths.
Engineering/Debug	Configuration of video signal settings.

4.2.4. Configuring Network Settings

The *Network Configuration* menus are used to configure parameters associated with the Ethernet communications of the device. The following chart provides a brief description of the items available in the *Network Configuration* menu.

Set IP Address	Sets the IP Address for the device.
Set Netmask	Sets the subnet mask for the device.
Set Gateway	Sets the Gateway for the device.
Set Broadcast Address	Sets the Broadcast Address for the device.
Use DHCP	Sets the Dynamic Host Configuration Protocol mode for the device.
View Live Network Settings	Displays the current network settings of the device.

Note: The router must be rebooted in order for network changes to take effect.

4.2.5. Setting the SNMP Setup

The *SNMP Setup* menus are used to configure parameters associated with the SNMP communications of the device. The following chart provides a brief description of the items available in the *SNMP Setup* menu.

Set Trap IP Address	Sets the IP addresses that will receive traps from the device.
Remove Trap IP Address	Removes IP addresses of devices receiving traps.
Set Read Only Community String	Sets the Read Only community string for message authentication.
Set Read Write Community String	Sets the Read Write community string for message authentication.

4.2.6. Setting the Status Monitoring

The *Status Monitoring* menus are used to view parameters associated with the crosspoint and reclocker of the device. The following chart provides a brief description of the items available in the *Status Monitoring* menu.

View Live XPT Status	Displays the input that is currently mapped to each of the outputs through the crosspoint.
View Video Signal Information	Displays various information regarding both inputs and outputs, such as locked status, video standard, and reclocker status.

4.2.7. Setting the Engineering/Debug

The *Engineering/Debug* menus are used to view and set parameters associated with the frame and video configuration of the device. The following chart provides a brief description of the items available in the *Engineering/Debug* menu.

View / Set Frame Configuration	Configuration of the Q-Link address, inputs, outputs, level, and Q-Link port.
View/Set Clean Switch Configuration	Configuration of the clean/quiet outputs and relays. Clean switch and relays.
View / Set Video Signal Configuration	Configuration of the video input standard, reclockers.
View/Set Test Modes	Enables or Disables Chop Switch Test mode.
Trace Information	Enables or Disables Crosspoint, Serial port and Socket port trace.
Reboot	Reboots the unit.

Note: The Engineering/Debug menu contains some controls that are intended for debug purposes. Any item not mentioned in this manual should not be modified under normal circumstances.

4.2.8. Viewing/Setting the Frame Configuration

The *View / Set Frame Configuration* menus are used to view and set parameters associated with the frame. The following chart provides a brief description of the items available in the *View / Set Frame Configuration* menu.

View Frame Information	Displays Q-Link address, inputs, outputs, level, and Q-Link port.
Set QLink Address	Sets the Q-Link address of the device.
Set Number of Inputs	Sets the number of Inputs of the device.
Set Number of Outputs	Sets the number of Outputs of the device.
Set Level Number	Sets the level number for the device (Currently Only Level 1 is supported).
Set Xpt Restore at Bootup	Sets the XPT to be restore at the bootup.

4.2.9. Viewing/Setting the Clean Switch Configuration

The *View / Set Video Signal Configuration* menus are used to view and set parameters associated with the video signals. The following chart provides a brief description of the items available in the *View / Set Video Signal Configuration* menu.

View Clean Switch Configuration	Displays clean switch status, relay status and companion IP address.
View Clean Switch/Relay Capability	Displays clean switch capability.
Enable/Disable Clean Switching for Outputs	Sets the state of the clean/quiet outputs, whether they are enabled or bypassed (-CS version only).
Enable/Disable Relays	Sets the state of the relays, whether they are enabled or disabled.
Set Companion IP Address	Sets the IP address of the ACO2 (clean/quiet switch) module.

In EQT-1602 there is only one ACO2 and its IP address will be the companion IP address of EQT-1602-3G-CS

4.2.10. Viewing/Setting the Video Signal Configuration

The *View / Set Video Signal Configuration* menus are used to view and set parameters associated with the video signals. The following chart provides a brief description of the items available in the *View / Set Video Signal Configuration* menu.

View Video Signal Configuration	Displays input video standard and output cable driver and reclocker status.
Set Video Input Standard	Sets the input video standard of the device.
Set Cable Driver Slew Rate Control	Sets the state of Cable Driver Slew Rate to be Automatic or Manual.
Set Cable Driver Slew Rate	Sets the Cable Driver Slew Rate to be HD or SD only when the Cable Driver Slew Rate control is set to Manual.
Enable/Disable Cable Driver	Sets the Cable Driver to be enabled or disabled.
Set Output Reclocker Data Rate Mode	Sets the state of Output Reclocker Data Rate Mode to Auto or Manual.
Set Output Reclocker Data Rate	Sets the Output Reclocker Data Rate to SD, HD or 3G only when Output Reclocker Data Rate mode is set to Manual.
Enable/Disable Output Reclocker	Sets the state of Output Reclocker to Enabled or Disabled.
Set Output Reclocker Routing Mode	Sets the state of Output Reclocker Routing Mode to Bypassed or Auto Bypassed.
View Live Video Signal Configuration	Displays the current video signal configuration.

4.3. SIGNAL AND SYSTEM MONITORING

The EQT router supports full signal monitoring of both inputs and outputs. It also incorporates comprehensive system monitoring, including power supply voltages and interior temperatures.

Monitored data is available through VistaLINK® SNMP for facility-wide monitoring systems. System status may also be monitored remotely by a network based remote connection over TCP/IP or a direct serial connection to a PC. User configurable closing contacts are also provided for connection to an external alarm system.

4.4. CONTROL SYSTEM

The EQT router is fully compatible with all Quartz router control panels and interfaces, including connectivity to a comprehensive list of third-party control solutions.

The EQT router can be configured with the following control options: Q-Link, Ethernet, or Serial interfaces. Sections 4.4.1 to 4.4.3 provide more details regarding these options.

4.4.1. Controlling the EQT using Ethernet

The EQT supports Evertz control panels that have an Ethernet connection. The EQT supports Quartz protocol commands over the Ethernet port therefore, any control device that supports Quartz protocol can control the EQT via Ethernet.

The EQT router can also be controlled using direct router controls via the CP-2116E and CP-2232E or using Ethernet panels.

Note: Ethernet control access to the EQT is done using user defined ports as explained in section 6.1.

Section 6.1.1 describes the method used to setup the EQT for use with Ethernet control panels. Consult the instruction manual for the respective panels to setup their IP address and configuration.

4.4.2. Controlling the EQT using Q-Link

The EQT router supports Evertz control panels that have a Q-Link connection. Section 6.1.2 describes the method used to setup the EQT for use with Q-Link control panels. Consult the instruction manual for the respective panels to setup their Q-Link address and configuration.

When using Q-Link, it is important to ensure that each device within the Q-Link chain has a unique Q-Link address.

Note: EQT can support up to a maximum of 6 Q-Link panels or 20 R-Link panels.

4.4.3. Controlling the EQT using Serial

The rear panel of the EQT has one DB9 female serial connector. The EQT supports Quartz protocol commands over the serial port (slave end). Any control device that supports Quartz protocol can control the EQT via the serial port.

For information regarding the Quartz protocol, contact Evertz service. See section 2.4 for a description of the pin outs.

5. VISTALINK® REMOTE MONITORING/CONTROL

5.1. WHAT IS VistaLINK®?

*Vista*LINK® is Evertz' remote monitoring and configuration platform which operates over an Ethernet network using Simple Network Management Protocol (SNMP). SNMP is a standard computer network protocol that enables different devices sharing the same network to communicate with each other. *Vista*LINK® provides centralized alarm management, which monitors, reports, and logs all incoming alarm events and dispatches alerts to all the VLPro Clients connected to the server. Card configuration through *Vista*LINK® PRO can be performed on an individual or multi-card basis using simple copy and paste routines, which reduces the time to configure each module separately. Finally, *Vista*LINK® enables the user to configure devices in the network from a central station and receive feedback that the configuration has been carried out.

There are 3 components of SNMP:

1. A SNMP manager, also known as a Network Management System (NMS), is a computer running special software that communicates with the devices in the network. Evertz VistaLINK® Pro Manager graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz VistaLINK® enabled fiber optic products.

2. Managed devices (such as EQT), each with a unique address (OID), communicate with the NMS through an SNMP Agent.

3. A virtual database, known as the Management Information Base (MIB) lists all the variables being monitored, which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.

5.2. GENERAL MONITORING AND CONTROL PARAMETERS

The following shows the *General* tab for the EQT. Table 6 provides further details about each control:

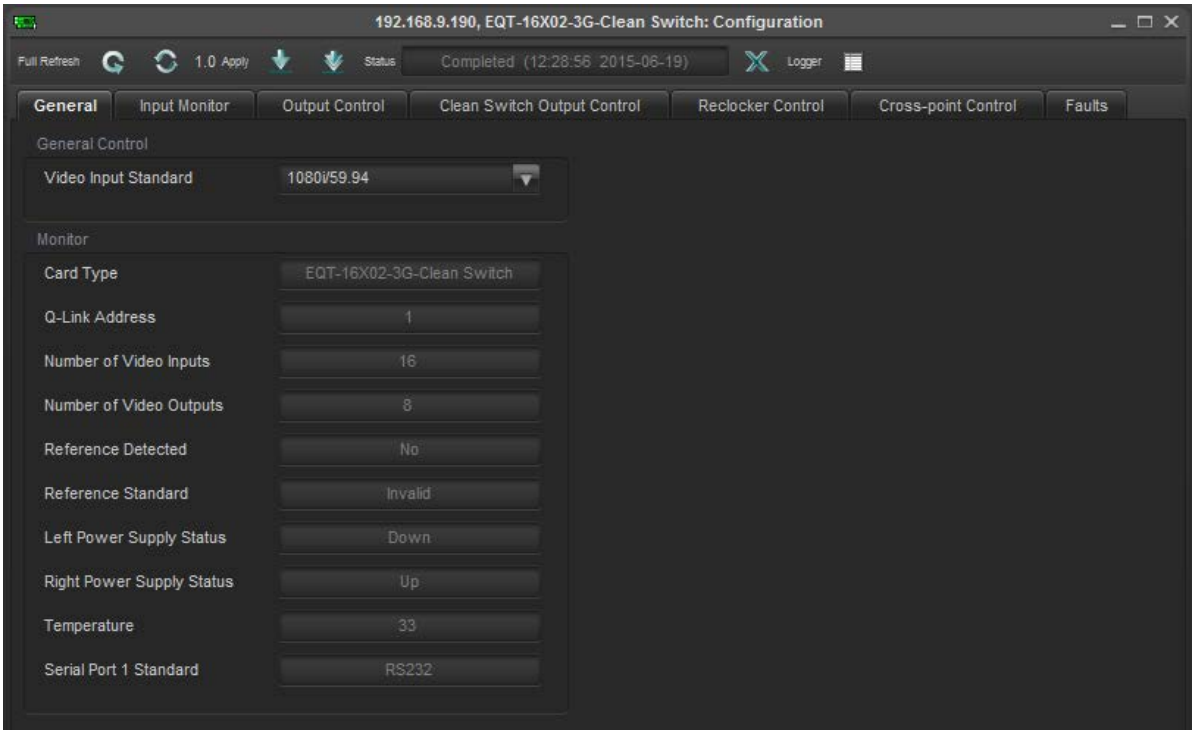


Figure 5-1: General Tab

Parameter	Description
Video Input Standard	Sets the video input standard for the device.
Card Type	Indicates the model of the device.
Q-Link Address	Indicates the Q-Link address of the device.
Number of Video Inputs	Indicates the number of video inputs of the device.
Number of Video Outputs	Indicates the number of video outputs of the device.
Reference Detected	Indicates the presence of a valid video reference signal.
Reference Standard	Indicates the video standard of the reference signal.
PSU 1 Status	Indicates the state of power supply unit 1. (Left power supply when viewed from the front.)
PSU 2 Status	Indicates the state of power supply unit 2. (Right power supply when viewed from the front.)
Temperature	Indicates the internal temperature of the device.
Serial Port 1 Standard	Indicates the standard of the serial port, whether it's RS-232 or RS-422.

Table 6: General Parameters

5.3. INPUT MONITORING PARAMETERS

The following shows the *Input Monitor* tab for the EQT. Table 7 provides further details about each control:

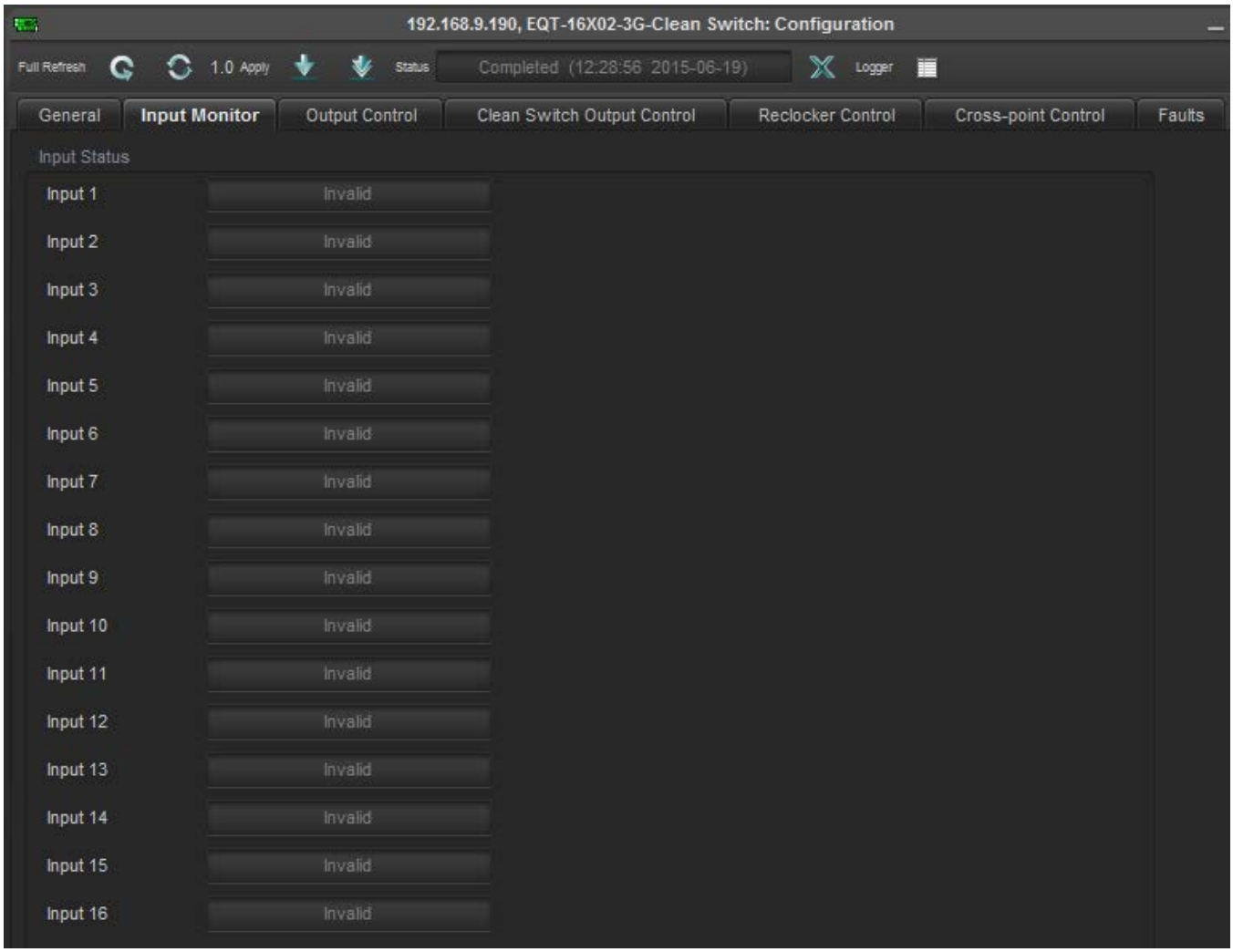


Figure 5-2: Input Monitor Tab

Parameter	Description
Input Status	Indicates if a video signal is present (Valid) or not present (Invalid).

Table 7: Input Monitor Parameters

5.4. OUTPUT CONTROL PARAMETERS

The following shows the *Output Control* tab for the EQT. Table 8 provides further details about each control:

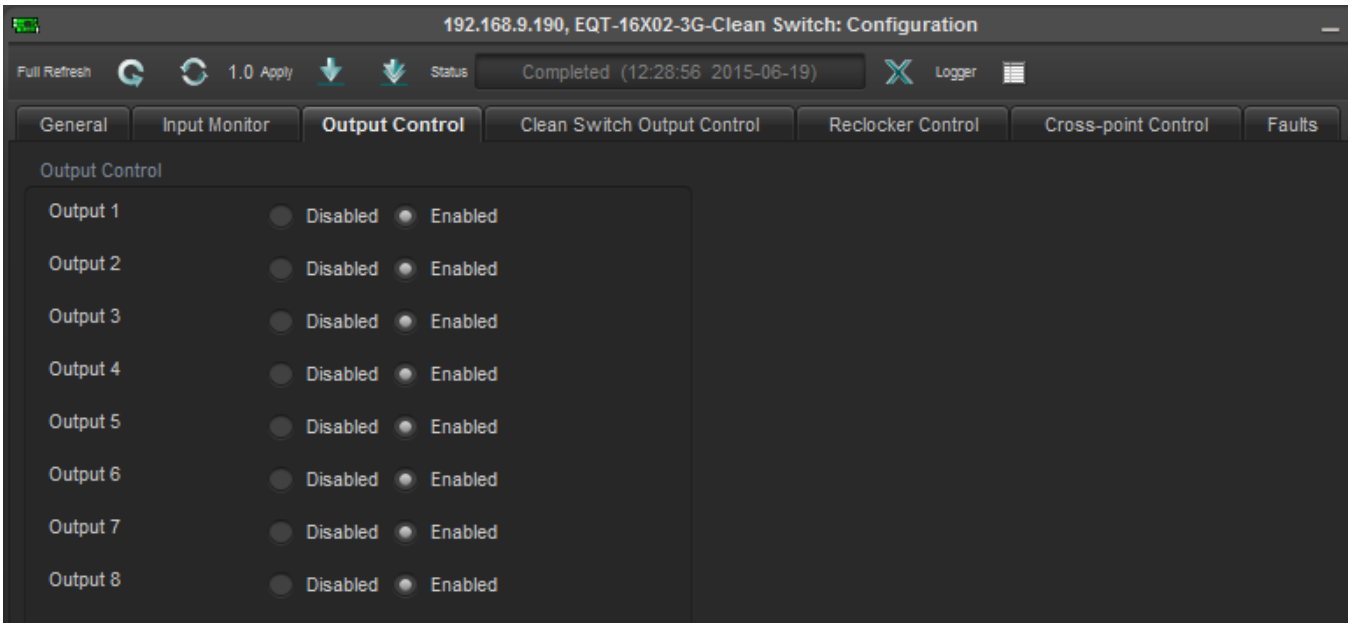


Figure 5-3: Output Control Tab

Parameter	Description
Output Status	Enables or disables video output on the output BNCs.

Table 8: Output Control Parameters

5.5. CLEAN SWITCH OUTPUT CONTROL PARAMETERS

The following shows the *Clean Switch Output Control* tab for the EQT. Table 9 provides further details about each control:

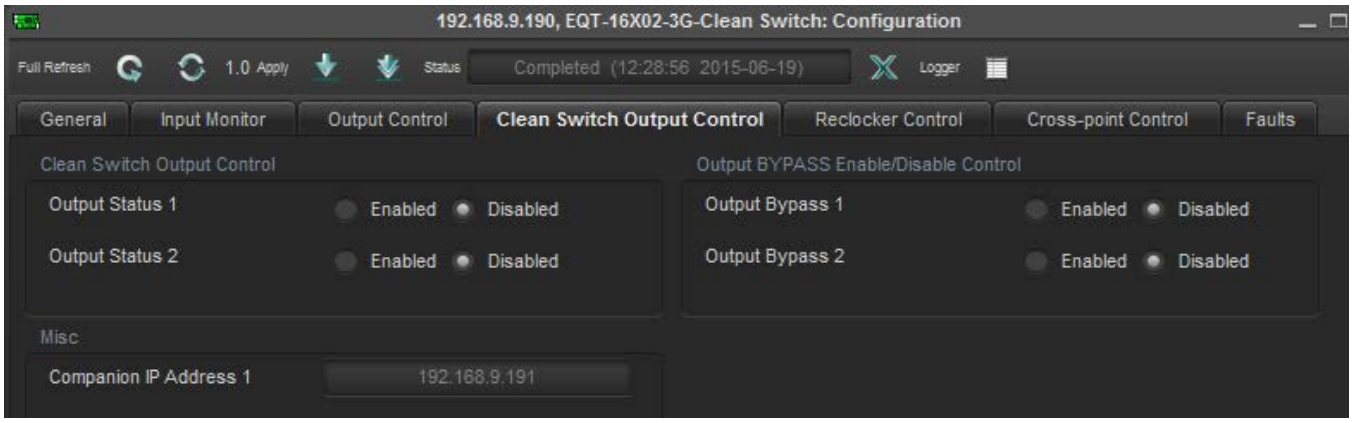


Figure 5-4: Clean Switch Output Control Tab

Note: ACO2 slot 1 is responsible for outputs 1 and 2 clean switch.

Note: The companion IP address must be set in order to control the clean/quiet switch functions in VistaLINK PRO. Details are in section 4.2.10

Parameter	Description
Output Status	Enables or disables the clean and quiet path on outputs 1 and 2
Relay Status	Enables or disables the relay to bypass outputs 1 and 2
Companion IP Addresses	Displays the Companion Address.

Table 9: Clean Switch Output Control Parameters

5.6. RECLOCKER CONTROL PARAMETERS

The following shows the *Reclocker Control* tab for the EQT. Table 10 provides further details about each control.

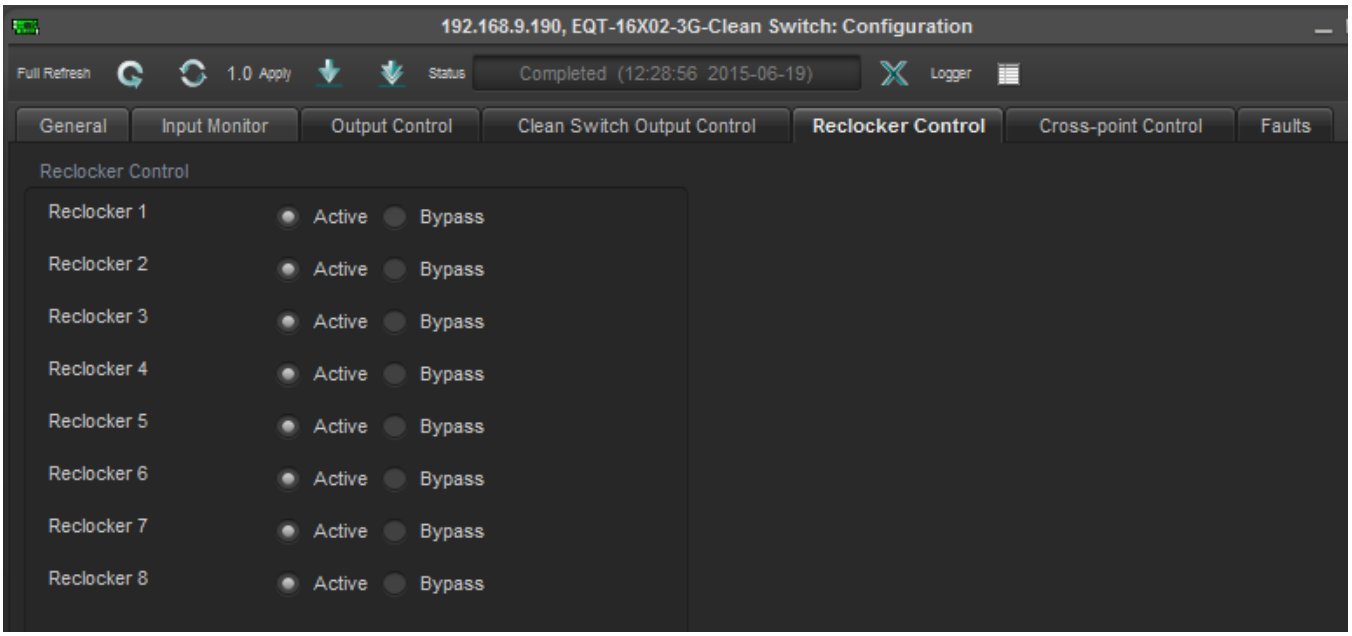


Figure 5-5: Reclocker Control Tab

Parameter	Description
Reclocker Status	Enables or disables the reclocker on the output BNCs.

Table 10: Reclocker Control Parameters

5.7. CROSSPOINT CONTROL PARAMETERS

The following shows the *Crosspoint Control* tab for the EQT. Table 11 provides further details about each control.

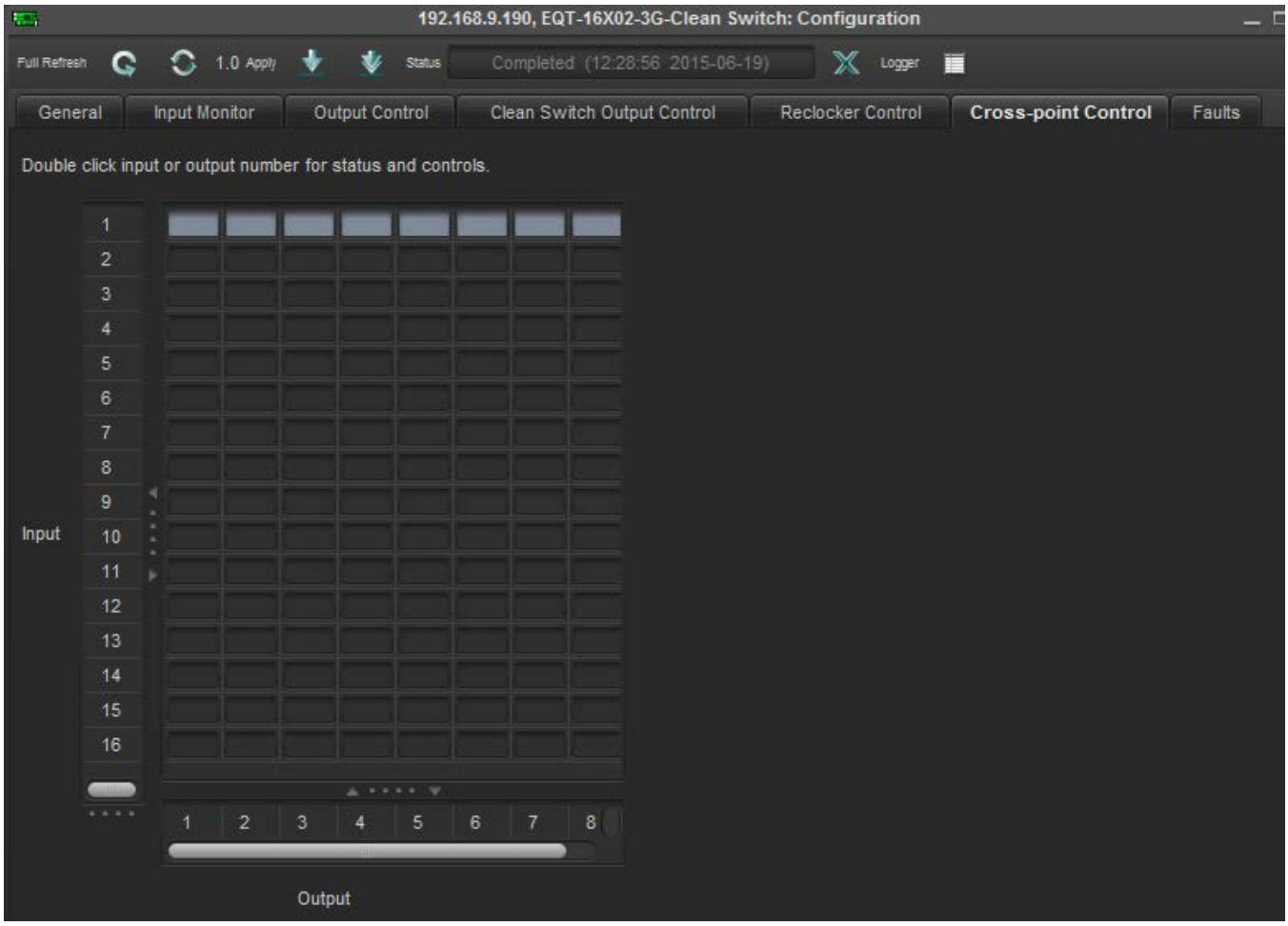


Figure 5-6: Crosspoint Control Tab

Parameter	Description
Crosspoint Control	Sets the input routed to the output BNCs.

Table 11: Crosspoint Control Parameters

5.8. GENERAL FAULT PARAMETERS

The following shows the *General Faults* tab for the EQT. Table 12 provides further details about each control.

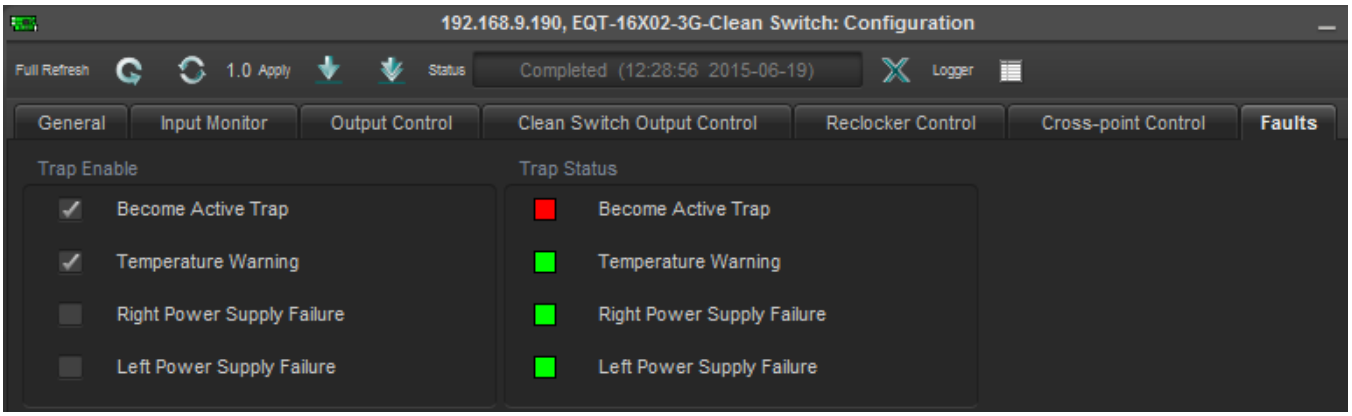


Figure 5-7: General Faults Tab

Parameter	Description
Become Active Trap	Green when the router is active, red when it's not
Temperature Warning	Raises a trap when the temperature exceeds ideal conditions.
Right Power Supply Failure	Raises a trap when the right (when viewed from the front) power supply fails.
Left Power Supply Failure	Raises a trap when the left (when viewed from the front) power supply fails.

Table 12: General Fault Parameters

5.9. CLEAN SWITCH OUTPUT MODULE CONTROL PARAMETERS

The following shows the *Module Control* tab for the EQT clean switch routers. Table 13 provides further details about each control.

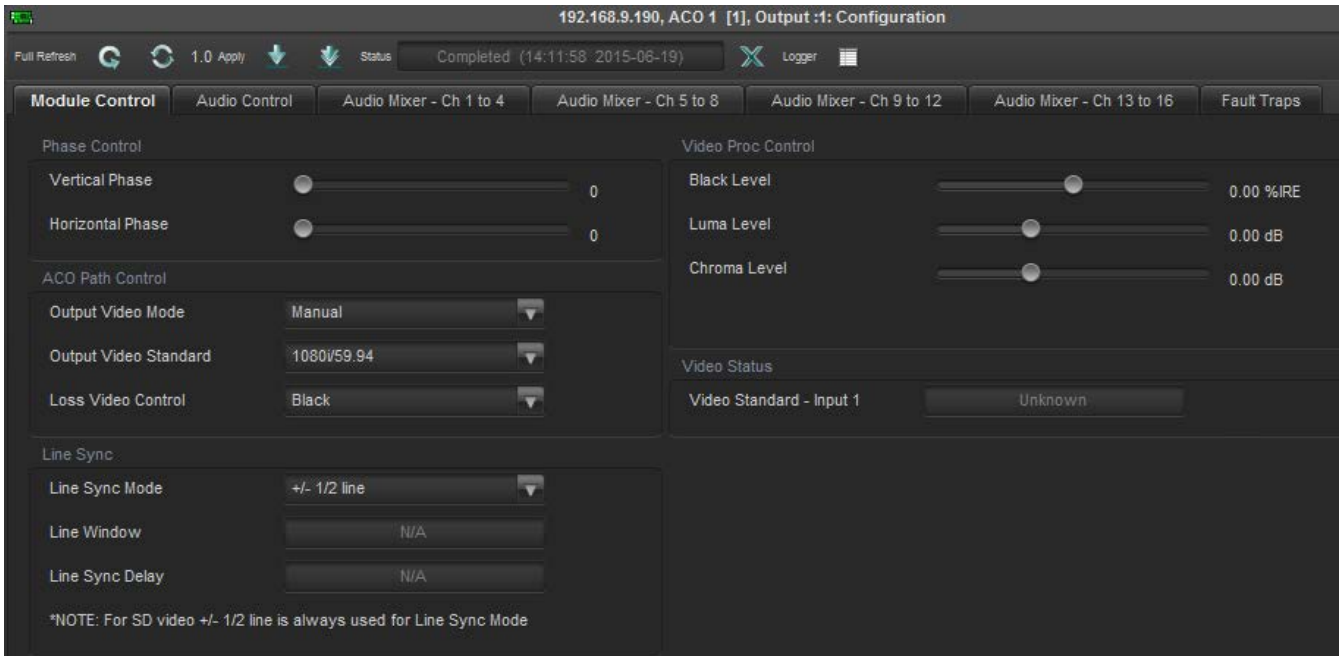


Figure 5-8: Module Control Tab

Parameter	Description
Vertical Phase	Sets the vertical phase of the output video with respect to reference.
Horizontal Phase	Sets the horizontal phase of the output video with respect to reference.
Output Video Mode	Sets the output standard to be auto detect or manually selected.
Output Video Standard	Displays output video standard.
Loss of Video	Sets the output to blue or black when no input is present.
Line Sync Mode	Sets the line buffer size to +/-1/2, +/- 1, +/- 2 and +/- 4 lines
Line Window	Shows whether the line buffer size is In range or Out of range with respect to reference
Line Sync Delay	Shows the percentage of how much the input signal are identical
Black Level	Sets the black level of the output in % IRE increments.
Luma Level	Sets the luma level of the output in dB increments.
Chroma Level	Sets the chroma level of the output in dB increments.
Video Standard	Displays the input video standard.

Table 13: Module Control Parameters

5.10. CLEAN SWITCH OUTPUT AUDIO CONTROL PARAMETERS

The following shows the *Audio Control* tab for the EQT clean switch routers. Table 14 provides further details about each control.

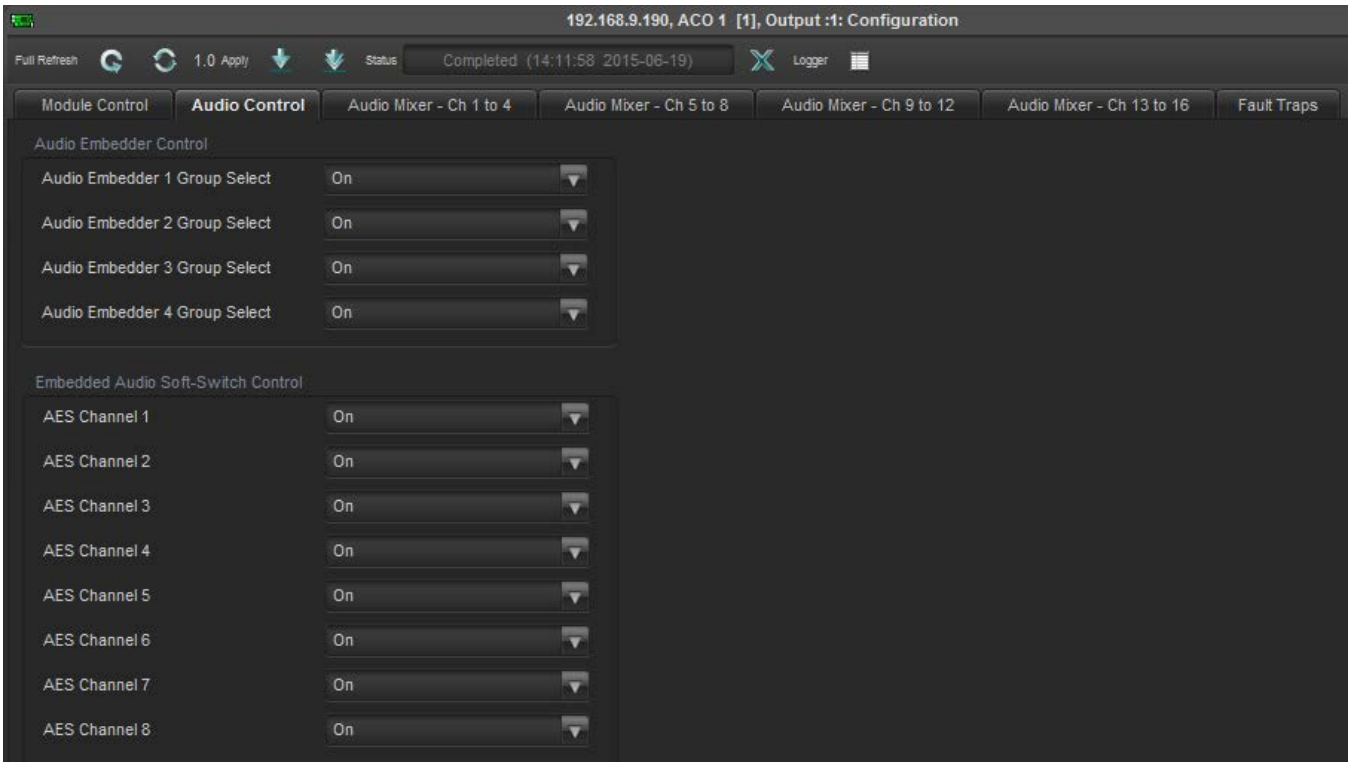


Figure 5-9: Audio Control Tab

Parameter	Description
Audio Embedded Control	Enables or disables embedded audio on each group.
Embedded Audio SoftSwitch Control	Enables or disables audio Softswitch on each AES pair.

Table 14: Audio Control Parameters

5.11. CLEAN SWITCH OUTPUT AUDIO MIXER PARAMETERS

The following shows the *Audio Mixer* tab for the EQT clean switch routers. Table 15 provides further details about each control. Only the controls for channels 1 to 4 are shown and only the controls for Channel 1 are explained in detail, but the controls for channels 5 to 16 follow the same logic.

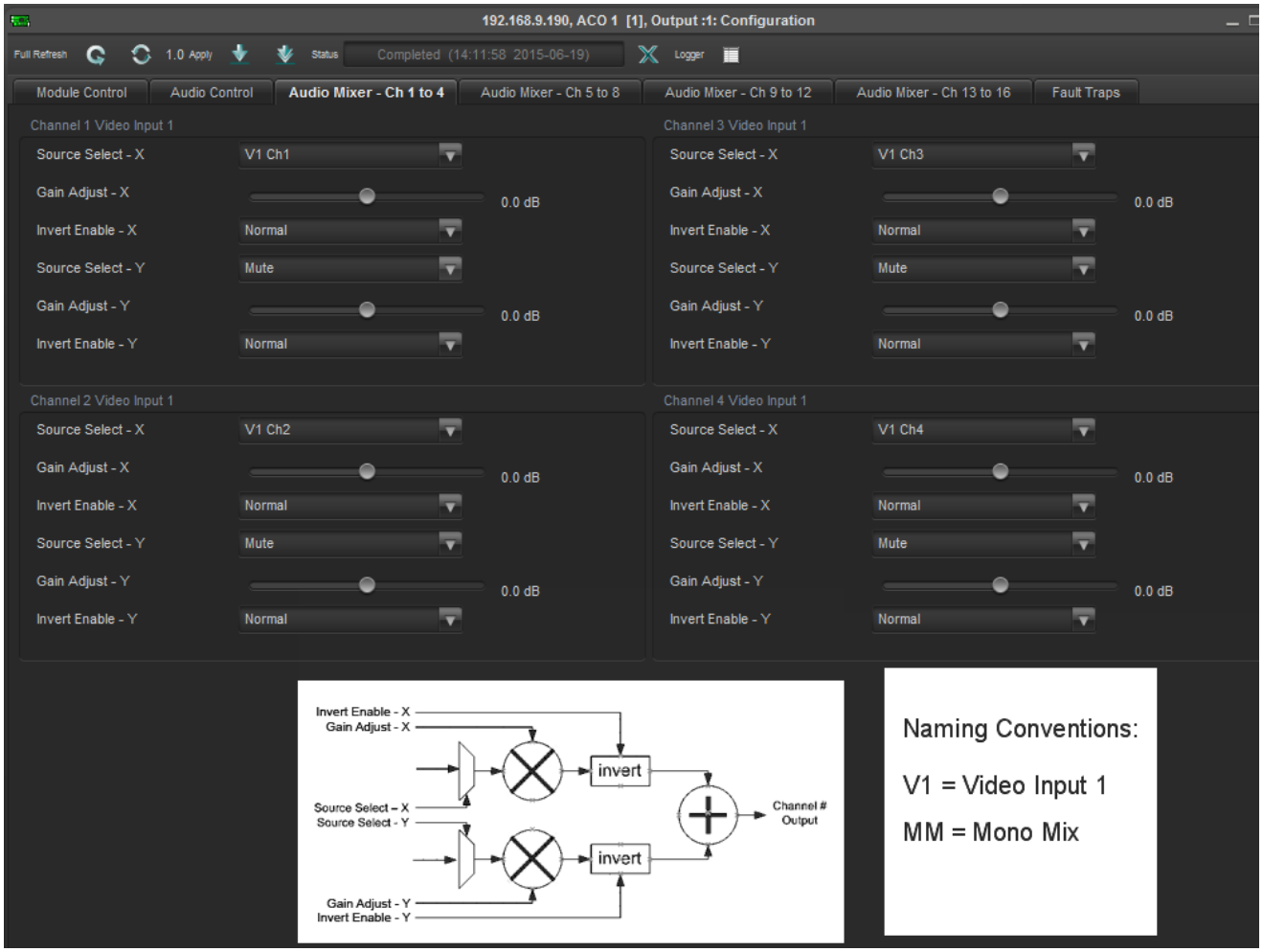


Figure 5-10: Audio Mixer Tab

Parameter	Description
Source Select - X	Sets the audio source for input X of the mixer for audio output channel 1.
Gain Adjust - X	Sets the gain level for input X of the mixer for audio output channel 1.
Invert Enable - X	Sets the phase for input X of the mixer for audio output channel 1.
Source Select – Y	Sets the audio source for input Y of the mixer for audio output channel 1.
Gain Adjust – Y	Sets the gain level for input Y of the mixer for audio output channel 1.
Invert Enable - Y	Sets the phase for input Y of the mixer for audio output channel 1.

Table 15: Audio Mixer Parameters

5.12. CLEAN SWITCH OUTPUT FAULT PARAMETERS

The following shows the *Clean Switch Output Faults* tab for the EQT. Table 16 provides further details about each control.

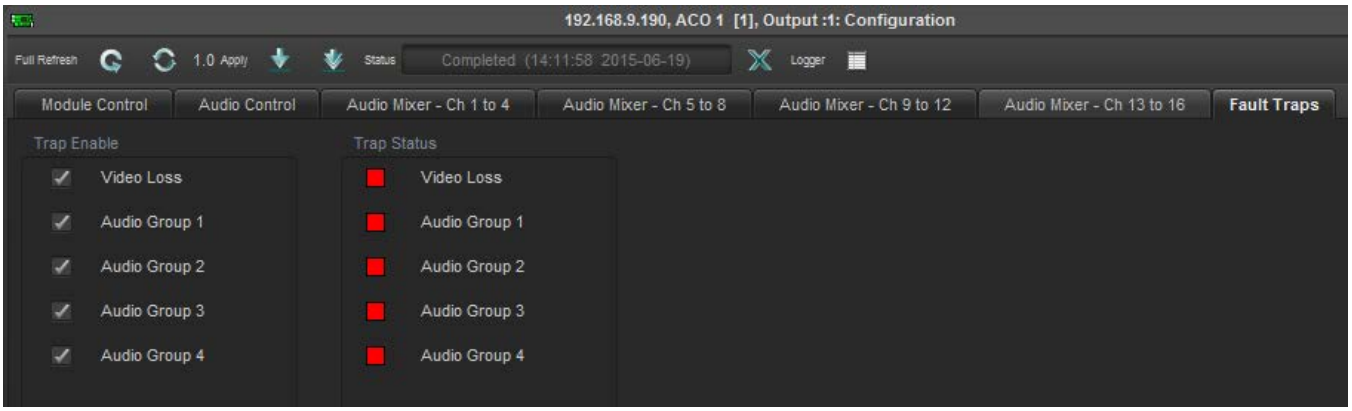


Figure 5-11: Clean Switch Output Faults Tab

Parameter	Description
Video Loss	Raises a trap when there is a video loss on the output of the clean switch.
Audio Group 1	Raises a trap when audio is missing on group 1 of the output of the clean switch.
Audio Group 2	Raises a trap when audio is missing on group 2 of the output of the clean switch.
Audio Group 3	Raises a trap when audio is missing on group 3 of the output of the clean switch.
Audio Group 4	Raises a trap when audio is missing on group 4 of the output of the clean switch.

Table 16: Clean Switch Output Fault Parameters

6. CONFIGURING THE SYSTEM USING WINSETUP

The WinSetup program is used to configure most of the routing functions, including control panel operation. It allows such things as the number of signal levels to be defined, which control panels are connected to the system and the names of the inputs and outputs.

The configuration of the EQT uses a special version of WinSetup. To ensure that the correct version is used, check the *Options> System Version* menu. The correct version has the SC-500E as the only system inside the Routing System Controller box.

Note: Configuration of the EQT requires a specific version of WinSetup.

WinSetup is supplied with a comprehensive help system that can be accessed by pressing **F1** (function key F1) from any screen (dialog). The help system can also be entered from the *Help> Index* menu. The following notes are a very brief guide to getting started with WinSetup.

The following dialog box is the WinSetup main screen. Any part of the system can be configured from the menu at the top of the screen. The grey bars above each main section and the line items within the main sections can both be used for quick access to specific items.

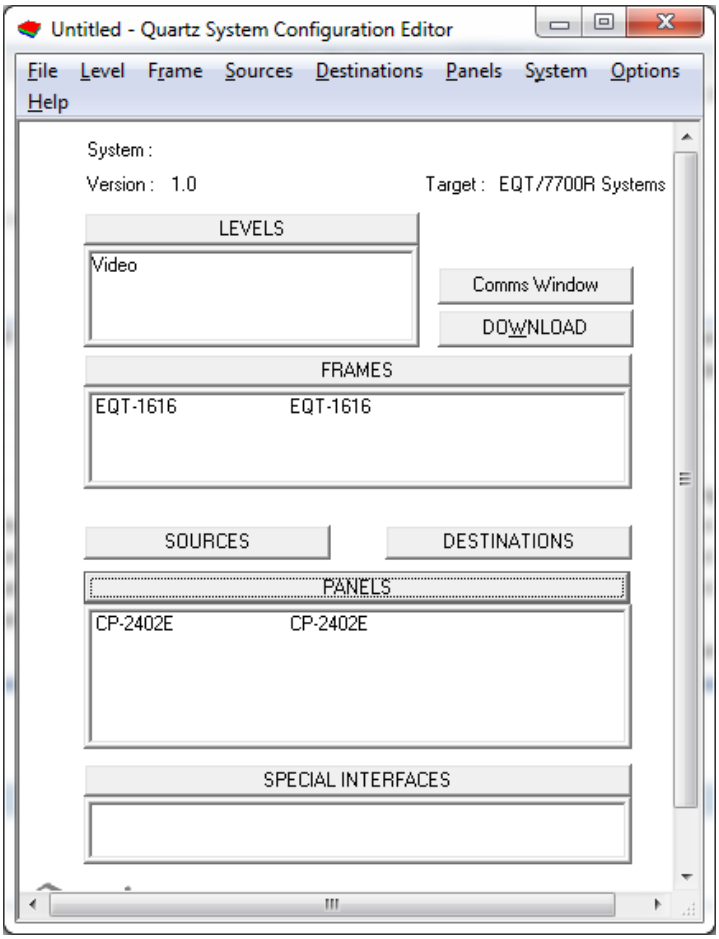


Figure 6-1: WinSetup Configuration Editor

When generating a new system configuration some of the menus and functions are grayed out (not available). This is deliberate to 'lead the user through' the functions that need to be set up. Carry out the following functions to configure the system.

1. **Levels:** Enter the level names for each of the signal levels you want to control. Do not tick the "Complex" box at this stage.

2. **Frames:** Enter the frames dialog and use the new button. Select the appropriate router from the list available. The only change that needs to be made in the Edit Frame dialog is the *Q-Link* address. This address must be unique among all devices in the system and it must match the one that has been set on the router from section 4.2.9.

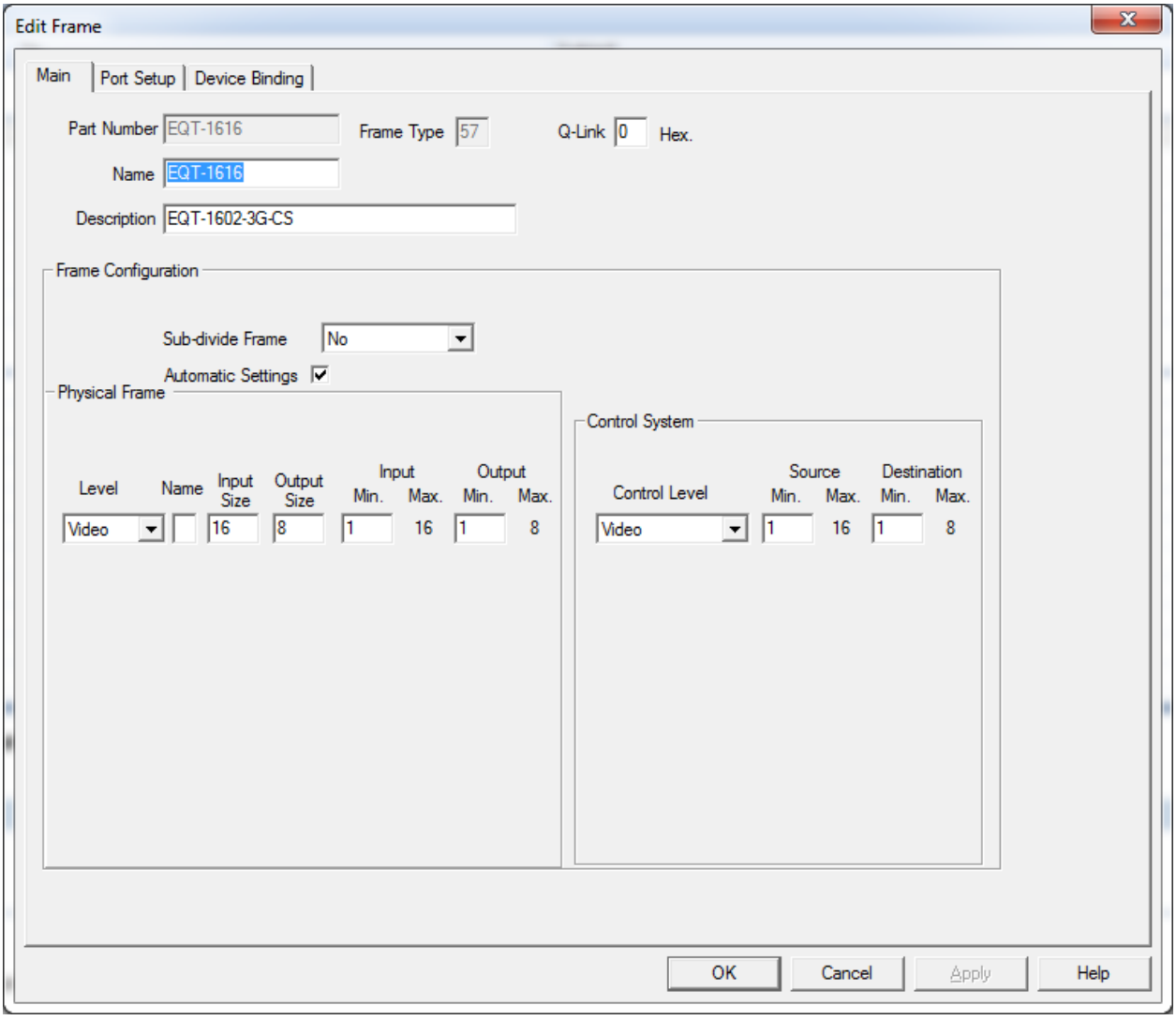


Figure 6-2: WinSetup Frame Editor

3. **Sources:** Enter the sources dialog and use the add button to fill the name table with SRC-1 to SRC-X. The names can be edited later when a few panels are configured and working correctly.

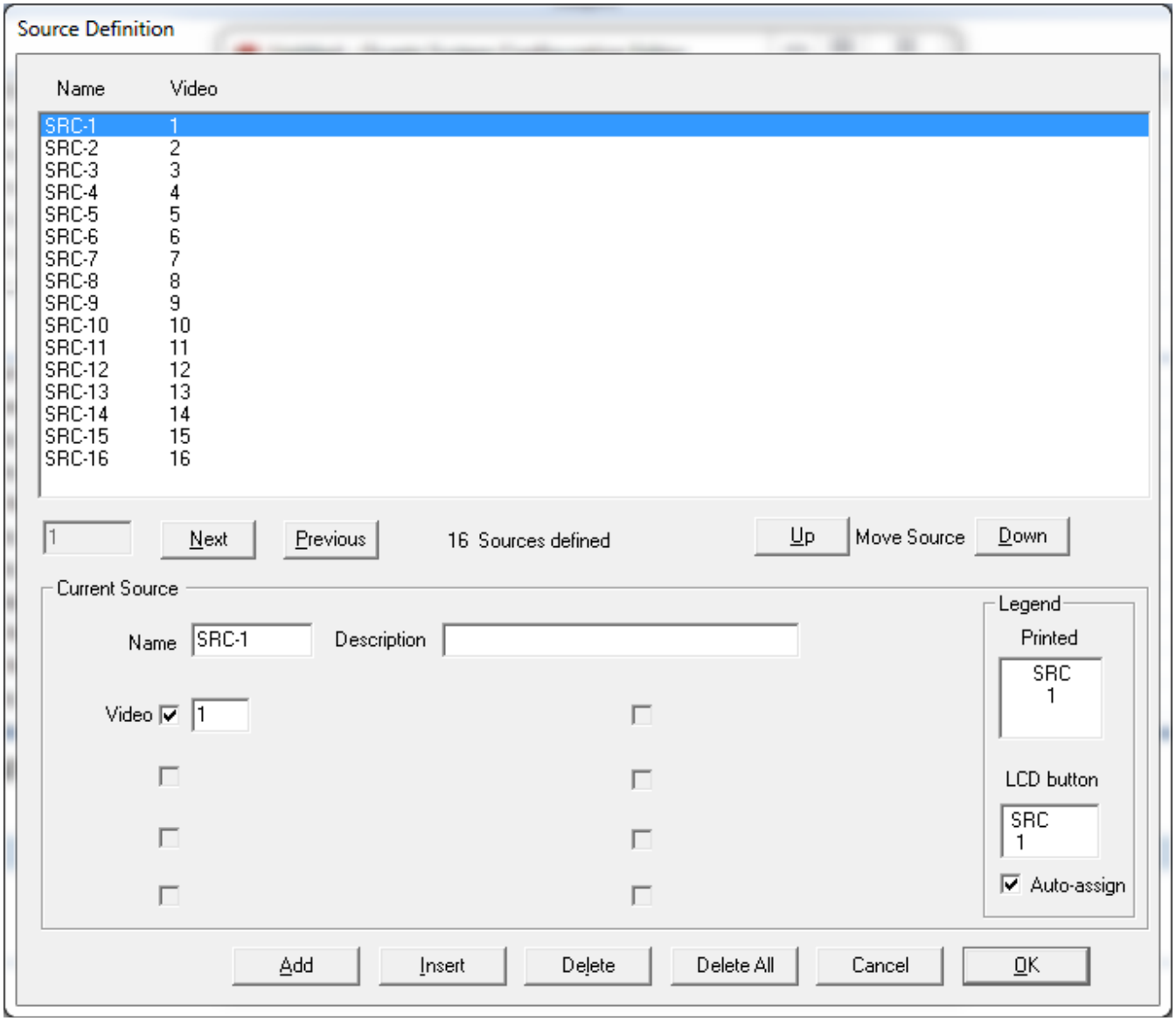


Figure 6-3: WinSetup Source Definition

If you want to edit a name now, select one row from the list of names in the upper part of the screen, the details appear in the lower part of the screen. From here you can edit the name and decide which signal levels that name will control when selected on a control panel.

4. **Destinations:** Enter the destination dialog and set up the destination names in the same way as used for the source names.

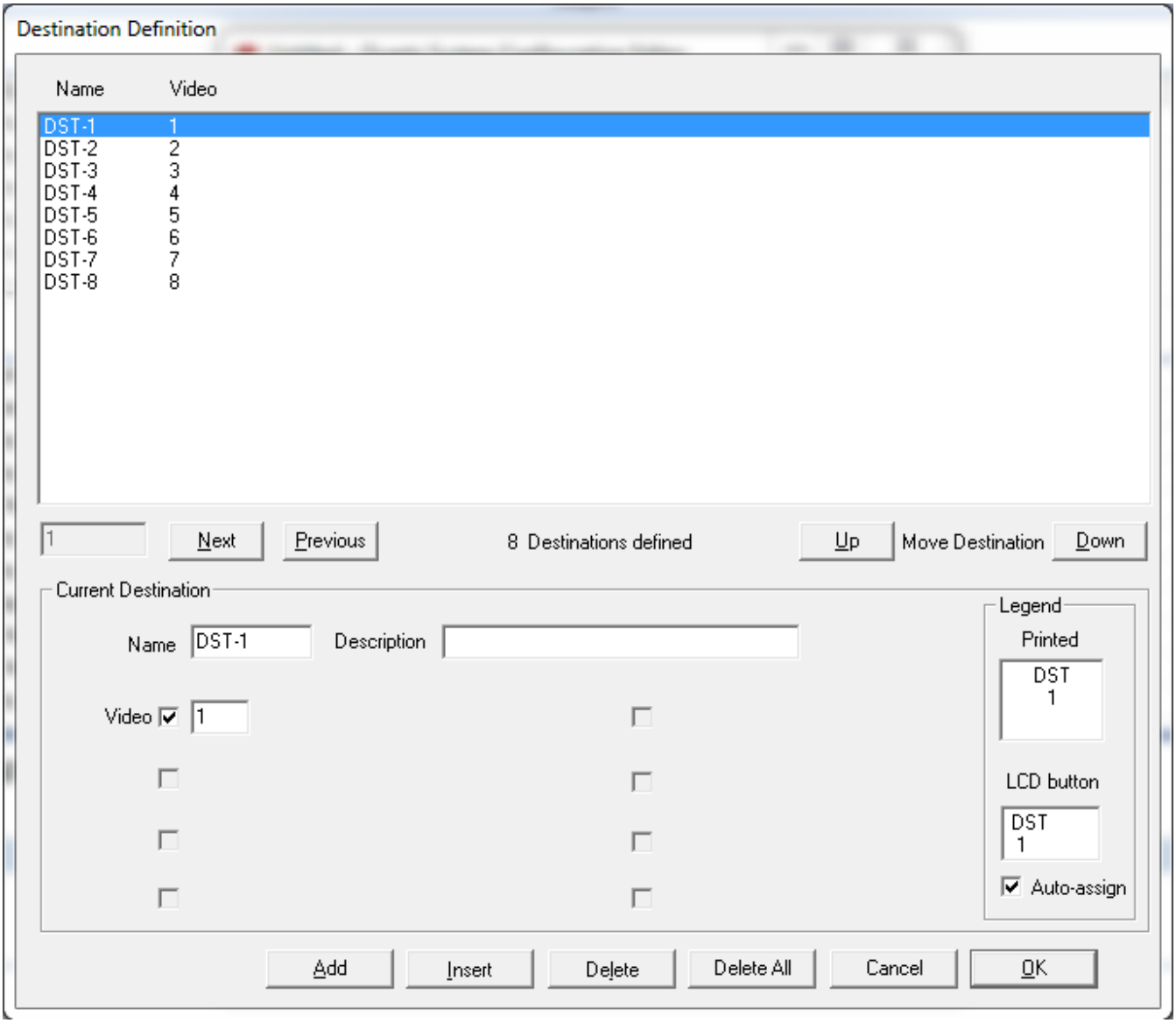


Figure: 6-4: Destination Setup

5. **Panels:** Enter the panel's dialog and use the new button. This will show all Evertz panels listed by part number. Select the part number that matches the part number on the panel's serial number label. Ignore the A/E designation as the connection method for the panel that will be defined in the panel configuration dialog. Once a part number is selected, a new dialog box will appear displaying a graphic of the panel. Figure 6-5 shows the button display for the CP-2402E control panel.

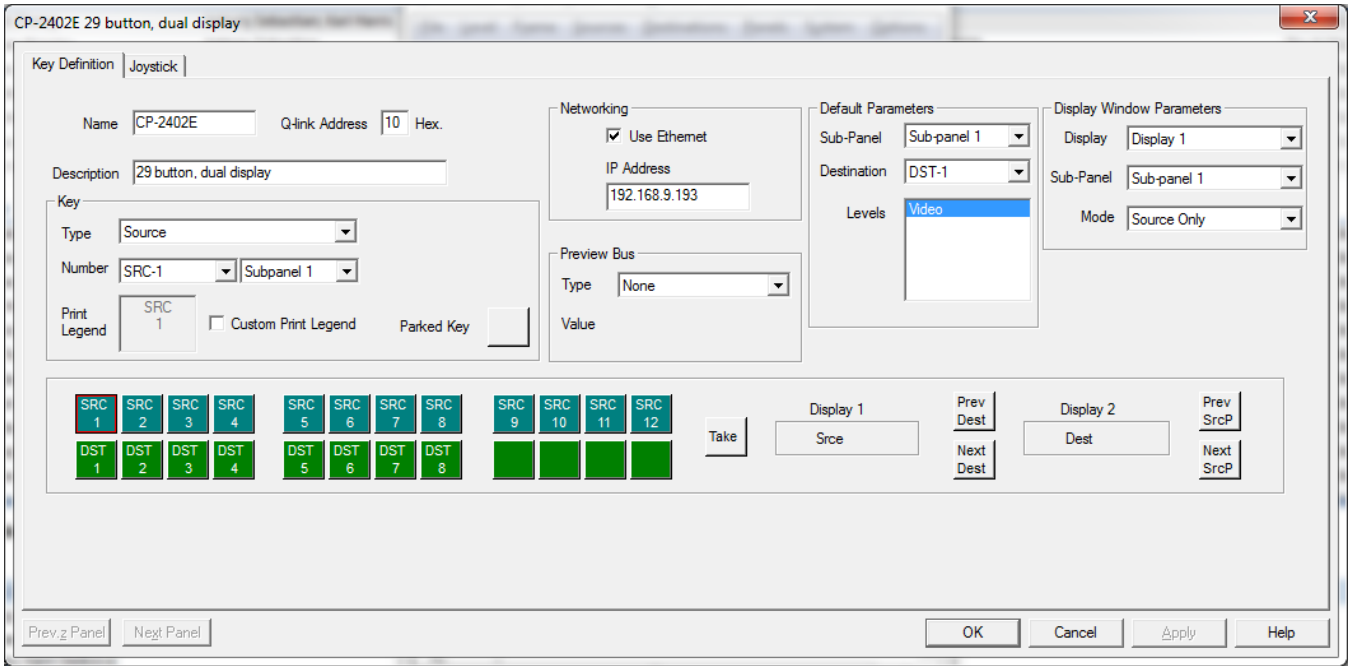


Figure 6-5: WinSetup Panel Configuration

Each button can be programmed by selecting the button and then editing the functions in the Key section of the dialog box. Each panel should also be given a name for later identification; *E Panel .54* is used in this example. The Q-Link address will be allocated automatically by the program but can be edited if required. The default parameters control how the panel will function at power up. In this example the panel will always control DST-1 to start with. Now add any further panels that the system will need.

Note: An indication for the connection method used (Q-Link or Ethernet) must be made in the panel configuration of each panel.

Note: For –CS versions that are equipped with a local control panel, an Ethernet panel configuration must be defined using the type CP-2402E.

To differentiate between a panel that is connected via Q-Link and a panel that is connected via Ethernet, check the *Use Ethernet box* when appropriate. When checked, an IP address is required to be entered. This is the IP address of the control panel.

6. **Download:** Use the System menu, Download-to-Router to transfer the setup data to the router. Remember to save the setup as it **CANNOT** be retrieved from the router.

Note: The configuration for the EQT can only be downloaded over Ethernet and not serially.

Note: Configuration downloads to the EQT must be done using port 2500.

6.1. COMMUNICATION PORT SETUP

The EQT has several communication ports that require additional setup. This section is used to define all of the interfaces that will be connected to the EQT. Enter the *Edit Frame* dialog and select the *Port Setup* tab. From this dialog, ports can be added for Ethernet or serial control, Ethernet panel hosting, and Q-Link panel hosting.

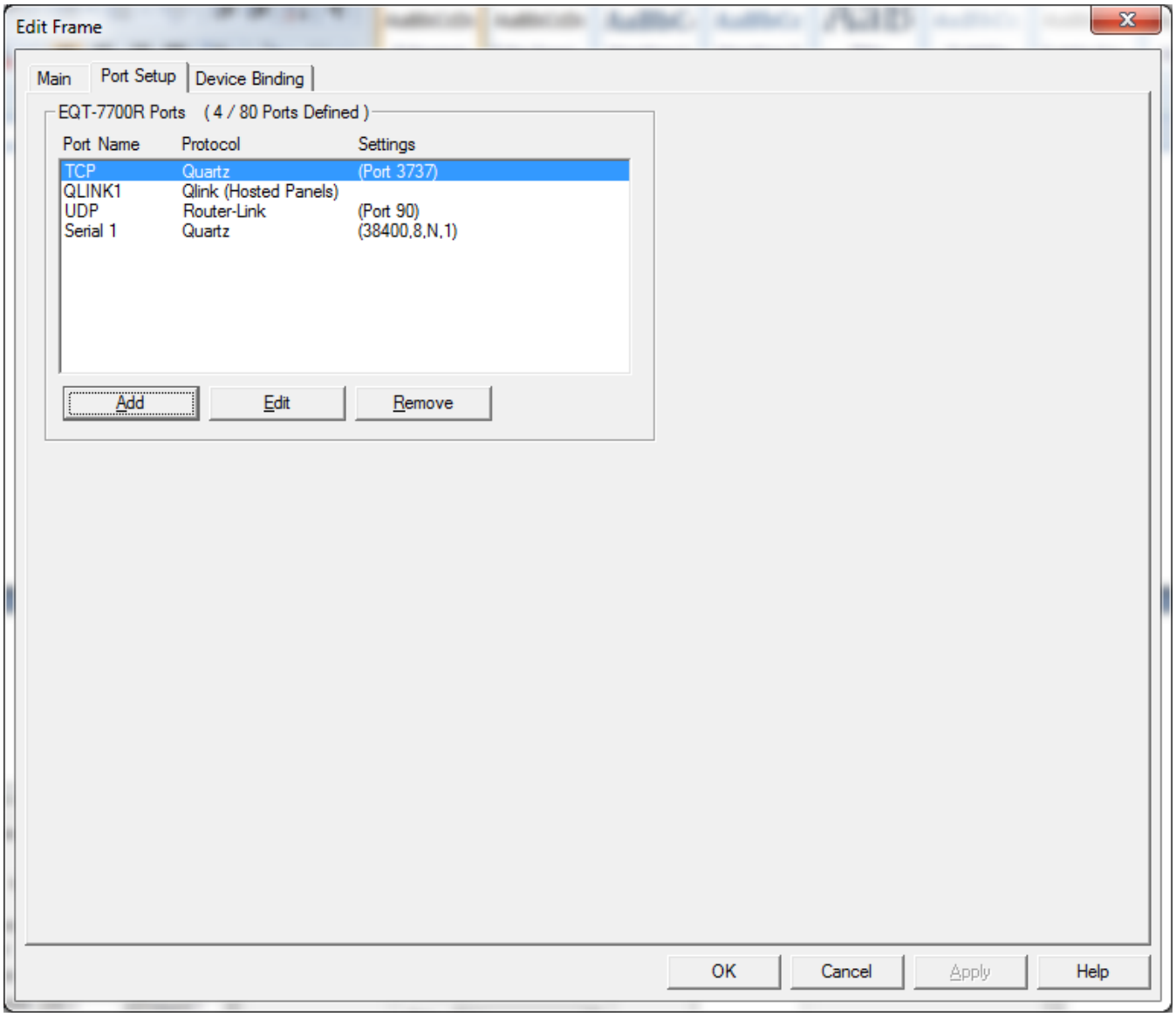


Figure 6-6: Port Setup

6.1.1. Control Panel Ethernet Interface

The control panel Ethernet port is a single interface that is defined to allow all properly equipped control panels to connect to the EQT via Ethernet. The interface is defined as a *UDP* interface using the *RouterLink* protocol. The port is always defined as *90.* A properly configured setting is shown in Figure 6-7.

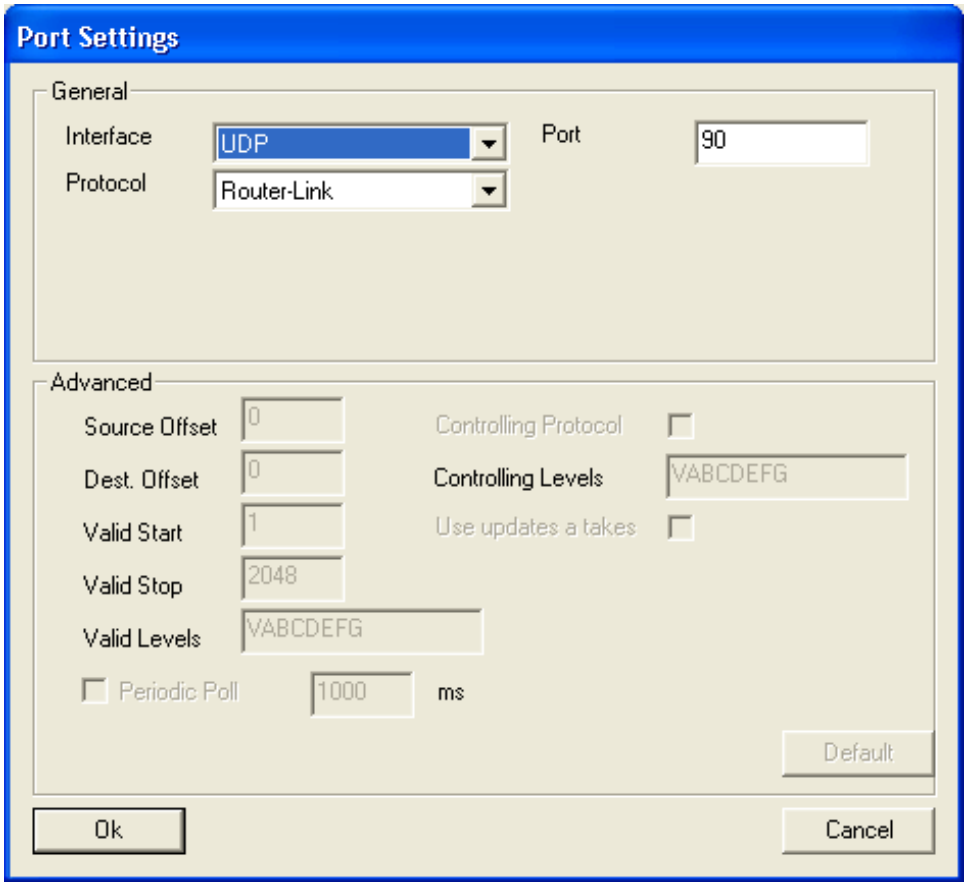


Figure 6-7: Ethernet Panels Port Settings

Note: A control panel Ethernet interface must be setup on the EQT-1602-3G-CS.

6.1.2. Control Panel Q-Link Interface

The control panel Q-Link port is an interface that is defined to allow all properly equipped control panels to connect to the EQT via Q-Link. The Q-Link port can be defined as a port to host panels using Q-Link. The interface is defined as a *QLINK1* interface using the *Qlink (Hosted Panels)* protocol. A properly configured setting is shown in Figure 6-8. In this configuration, control panels can be connected to the physical port that is labeled Q-Link 1 on the rear of the device.

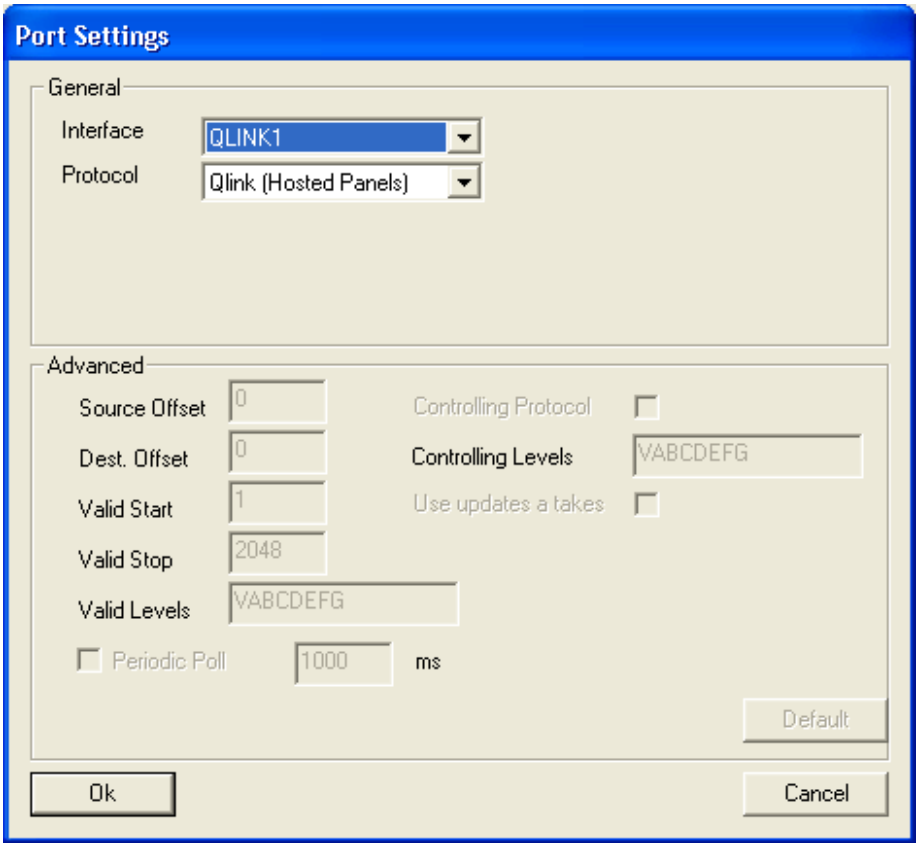


Figure 6-8: Q-Link Hosted Panels Port Settings

6.1.3. Serial Interface

The serial port is an interface that is defined to provide external automation control of the EQT. The interface is defined as a *COM1* interface using the *Quartz* protocol. The format of the serial protocol is also defined in this dialog using the options that are provided for *Baud Rate, Parity, Data bits, Stop bits* and *Standard (RS232 or RS422).* A properly configured serial port is shown in Figure 6-9.

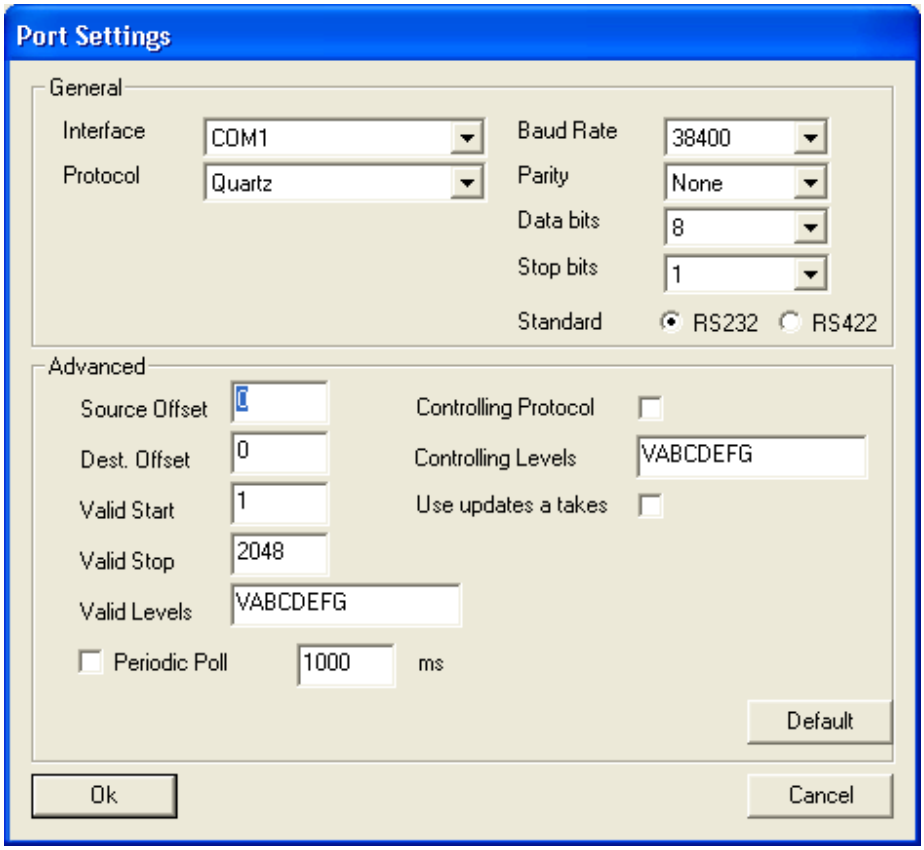


Figure 6-9: Serial Port Settings

6.1.4. Ethernet Interface

The Ethernet interface is defined to provide access to the EQT so that it can be controlled via Ethernet using Quartz protocol. Up to four control ports can be added: 3737, 3738, 3739, and 3740. An example of a properly configured Ethernet port for external control is shown in Figure 6-10.

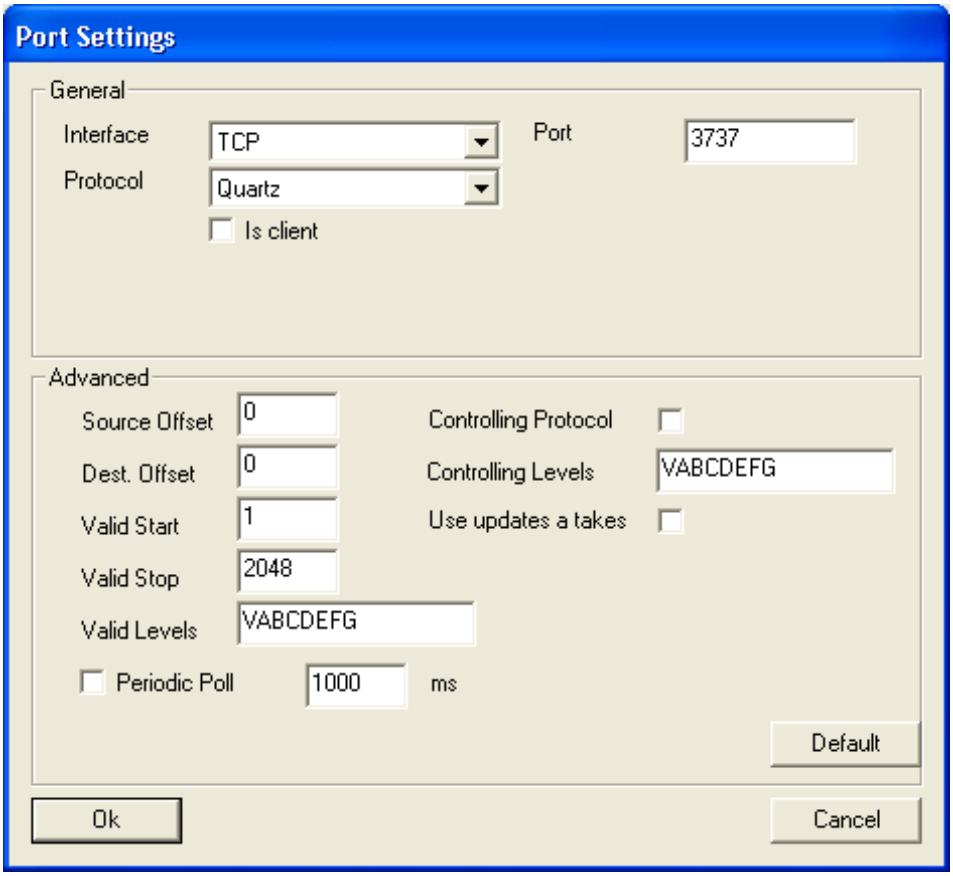


Figure 6-10: Ethernet Port Settings

7. UPGRADING FIRMWARE

Upgrading the EQT is done using a standard web browser on any computer that is connected to the same network. The following sections detail methods for upgrading the firmware on the EQT-1602-3G-CS.

7.1. UPGRADING EQT

The following steps are used to upgrade the EQT-1602-3G-CS.

1. Using a standard web browser on the same network as the EQT, browse to the IP address of the EQT. This should direct you to a web page similar to Figure 7-1 below. This screen will also show the current firmware version. In the case of this example, the version is 1.0 build 88.

Figure 7-1: EQT Browser Upgrade Screen

2. Using the *Browse…* button, select the new file that should be saved on your computer. This file should have an extension of *.img*. Once a file has been selected, a button to upload the file to the EQT will appear below, as show in Figure 7-2.

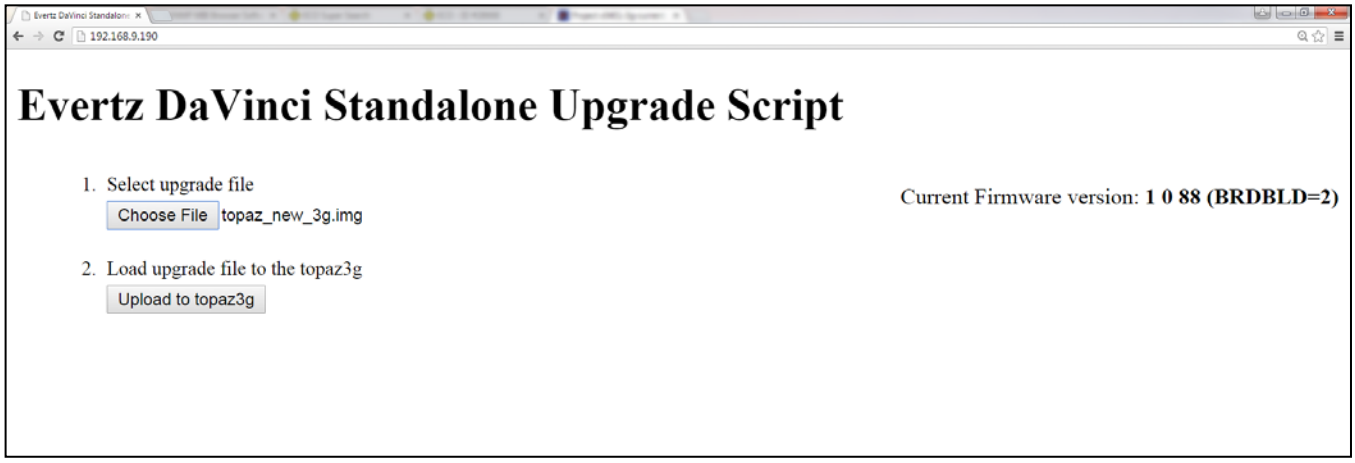


Figure 7-2: Upload Screen

Once the file is uploaded, it will be verified by the system to ensure it is valid. If the file is valid, an *Upgrade* button will appear below, as show in Figure 7-3.

Figure 7-3: EQT Upgrade Screen for Upgrade

3. After pressing the *Upgrade* button, the EQT will be upgraded. Once complete, a message indicating that the upgrade was successful will appear at the bottom of the screen as shown in Figure 7-4. Once this message appears, restart the EQT as instructed.

Figure 7-4: EQT Upgrade Screen for Success

Note: For the ACO2, upgrade procedure is exactly as the same the EQT except user will use the IP Address of the ACO2

7.2. UPGRADING CONTROL PANEL

The clean switch routers consist of three individual components. Each of the devices can be accessed through the Ethernet port on the back and upgraded individually, following the steps from Section 7.1.

The process for upgrading the router and clean/quiet switch components follows the exact same process as the above. Upgrading the control panel component can be done using standard ftp procedures as outlined below.

1. Copy the latest *bin* file for the control panel to any directory on your computer. (C:\temp)

2. FTP into the control panel using the following command. Replace 192.168.9.193 with the unique IP of the control panel as shown in Figure 7-5. When prompted for the Login and Password simply press enter for both.

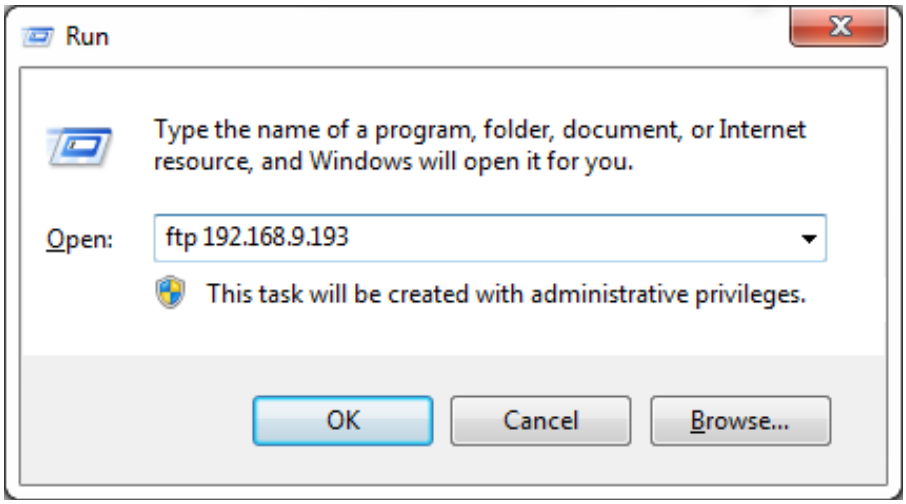
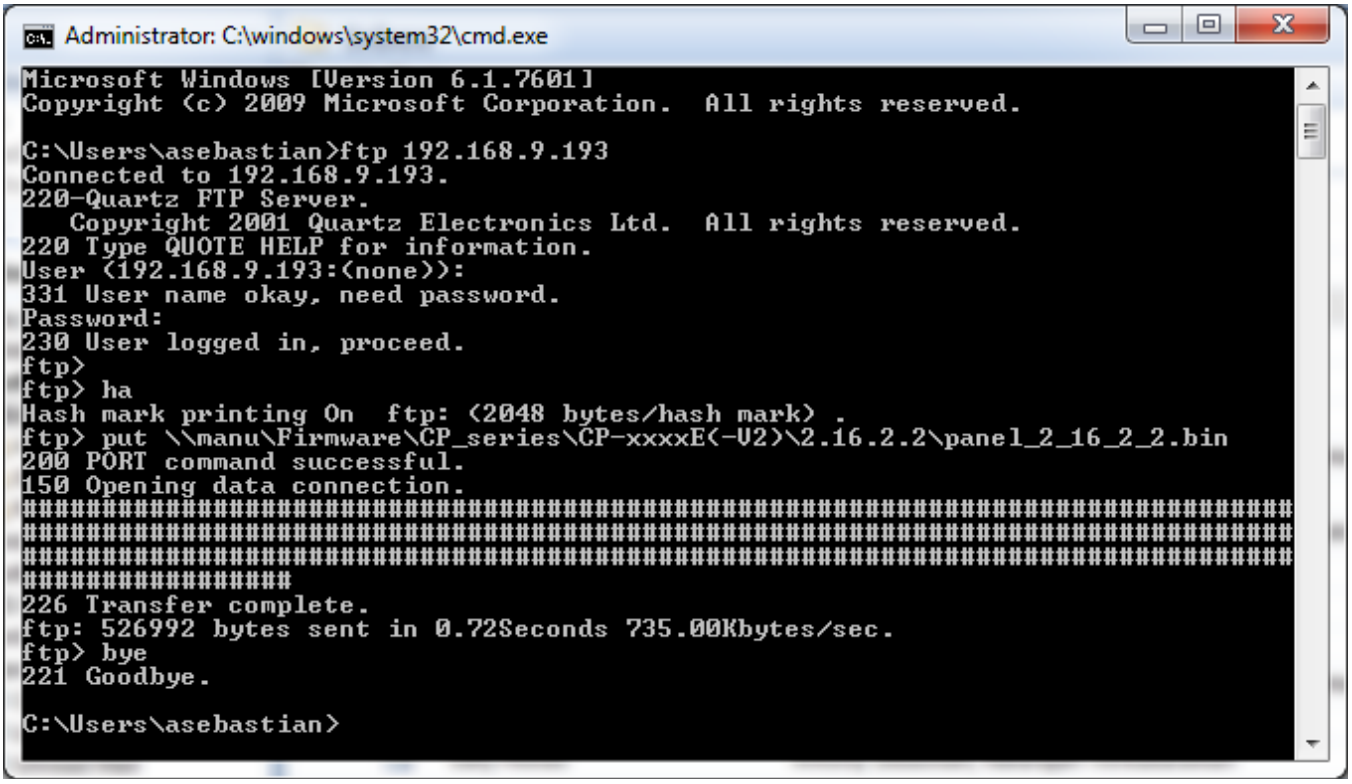


Figure 7-5: Run Window for FTP Access

3. Enter the commands below in the FTP window. If all goes well you will see the file transfer via Ethernet to the EQT and a Transfer Complete message will display.


Administrator: C:\windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.
C:\Users\asebastian>ftp 192.168.9.193
Connected to 192.168.9.193.
220-Quartz FTP Server.
Copyright 2001 Quartz Electronics Ltd. All rights reserved.
220 Type QUOTE HELP for information.
User (192.168.9.193:(none)):
331 User name okay, need password.
Password:
230 User logged in, proceed.
ftp>
ftp> ha
Hash mark printing On ftp: (2048 bytes/hash mark) .
ftp> put \\manu\Firmware\CP_series\CP-xxxxE(-V2)\2.16.2.2\panel_2_16_2_2.bin
200 PORT command successful.
150 Opening data connection.
226 Transfer complete.
ftp: 526992 bytes sent in 0.72Seconds 735.00Kbytes/sec.
ftp> bye
221 Goodbye.
C:\Users\asebastian>

8. DEFINITIONS

4:2:2: The sampling ratio used in the HDTV digital video signal. For every 4 samples of luminance there are 2 samples each of R-Y (Red minus Luminance) and B-Y (Blue minus Luminance).

16x9: A wide screen television format such as HDTV in which the aspect ratio of the screen is 16 units wide by 9 high as opposed to the 4x3 of normal TV.

AES/EBU: (Sometimes abbreviated as AES) Refers to the digital audio standard (AES3-1992) set by the Audio Engineering Society and European Broadcast Union and used by most forms of digital audio from CDs to professional digital video.

ASPECT RATIO: The ratio of width to height in a picture. Theatre screens generally have an aspect ratio of 1.85 to 1, widescreen TV (16x9) is 1.77 to 1, and normal TV (4x3) is 1.33 to 1.

CCIR (International Radio Consultative Committee): An international standards committee. (This organization is now known as ITU.)

CCIR-601: See ITU-R601.

CLIFF EFFECT: (also referred to as the 'digital cliff') This is a phenomenon found in digital video systems that describes the sudden deterioration of picture quality when due to excessive bit errors, often caused by excessive cable lengths. The digital signal will be perfect even though one of its signal parameters is approaching or passing the specified limits. At a given moment however, the parameter will reach a point where the data can no longer be interpreted correctly, and the picture will be totally unrecognizable.

COMPONENT ANALOG: The non-encoded output of a camera, video tape recorder, etc., consisting of the three primary colour signals: red, green, and blue (RGB) that together convey all necessary picture information. In some component video formats these three components have been translated into a luminance signal and two colour difference signals, for example Y, B-Y, R-Y.

COMPONENT DIGITAL: A digital representation of a component analog signal set, most often Y, B-Y, R-Y. The encoding parameters are specified by ITU-R709 for HDTV signals. SMPTE 274M and SMPTE 296M specify the parallel interface.

COMPOSITE ANALOG: An encoded video signal such as NTSC or PAL video that includes horizontal and vertical synchronizing information.

COMPOSITE DIGITAL: A digitally encoded video signal, such as NTSC or PAL video that includes horizontal and vertical synchronizing information.

DROP FRAME: In NTSC systems, where the frame rate is 29.97002618 frames per second, the drop frame mode permits time of day indexing of the frame numbers by dropping certain frame numbers. Specifically frames 0, and 1 at the beginning of each minute except minutes 0,10,20,30,40, & 50, are omitted, to compensate for an approximate timing error of 108 frames (3 seconds 18 frames) per hour. A flag bit is set in the time code to signal when the drop frame mode is in effect.

EBU (European Broadcasting Union): An organization of European broadcasters that among other activities provides technical recommendations for the 625/50 line television systems.

EMBEDDED AUDIO: Digital audio is multiplexed onto a serial digital video data stream.

ITU: The United Nations regulatory body governing all forms of communications. ITU-R (previously CCIR) regulates the radio frequency spectrum, while ITU-T (previously CCITT) deals with the telecommunications standards.

ITU-R601: An international standard for standard definition component digital television from which was derived SMPTE 125M and EBU 3246-E standards. ITU-R601 defines the sampling systems, matrix values and filter characteristics for Y, B-Y, R-Y and RGB component digital television signals.

NTSC: National Television Standards Committee established the television and video standard in use in the United States, Canada, Japan and several other countries. NTSC video consists of 525 horizontal lines at a field rate of approximately 60 fields per second. (Two fields equals one complete Frame). Only 487 of these lines are used for picture. The rest are used for sync or extra information such as VITC and Closed Captioning.

PAL: Phase Alternating Line. The television and video standard in use in most of Europe. Consists of 625 horizontal lines at a field rate of 50 fields per second. (Two fields equal one complete Frame). Only 576 of these lines are used for picture. The rest are used for sync or extra information such as VITC and Teletext.

PIXEL: The smallest distinguishable and resolvable area in a video image. A single point on the screen. In digital video, a single sample of the picture. Derived from the words *picture element*.

SMPTE (Society of Motion Picture and Television Engineers): A professional organization that recommends standards for the film and television industries.

SMPTE 12M: The SMPTE standard for Time and address code. SMPTE 12M defines the parameters required for both linear and vertical interval time codes.

SMPTE 125M: The SMPTE standard for bit parallel digital interface for component video signals. SMPTE 125M defines the parameters required to generate and distribute component video signals on a parallel interface.

SMPTE 259M-C: The SMPTE standard for 525 and 625 line serial digital component and composite interfaces.

SMPTE 272M: The SMPTE standard for embedding audio in serial digital standard definition (SMPTE 259M-C) video signals.

SMPTE 274M: The SMPTE standard for bit parallel digital interface for high definition component video signals with an active picture of 1080 lines x 1920 pixels.

SMPTE 276M: The SMPTE standard for transmission of AES/EBU Digital Audio Signals Over Coaxial Cable.

SMPTE 292M: The SMPTE standard for high definition serial digital component interfaces.

SMPTE 296M: The SMPTE standard for bit parallel digital interface for high definition component video signals with an active picture of 720 lines x 1280 pixels.

SMPTE 299M: The SMPTE standard for embedding audio in serial digital high definition (SMPTE 292M) video signals.

TRS: Timing reference signals used in composite digital systems. (It is four words long).

TRS-ID: Abbreviation for "Timing Reference Signal Identification". A reference signal used to maintain timing in composite digital systems. (It is four words long.)

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