

# Router Control Panel Series

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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 un-insulated “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 TO USERS IN EUROPE

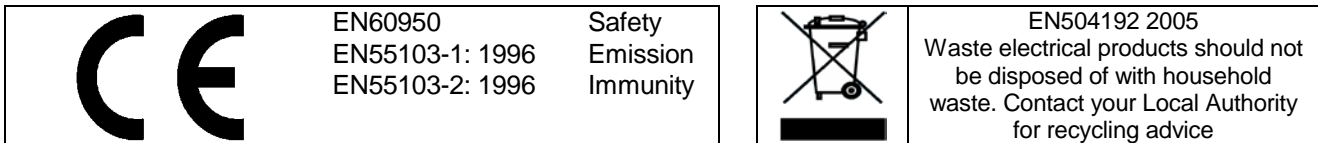
## NOTE

This equipment with the CE marking complies with both the EMC Directive (2004/108/EC) and the Low Voltage Directive (2006/95/EC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European standards:

- EN60950 Product Safety
- EN55103-1 Electromagnetic Interference Class A (Emission)
- EN55103-2 Electromagnetic Susceptibility (Immunity)

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.



# 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.

Evertz Microsystems Ltd  For Home or Office Use	Tested to comply with FCC Standards	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:	This device may cause harmful interference, and This device must accept any interference received, including interference that may cause undesired operation.
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## ELECTROSTATIC SENSITIVE DEVICES



The hand symbol within an equilateral triangle is intended to alert the user to instructions related to precautions for handling electrostatic-sensitive devices. See “Electro Static Discharge (ESD) Precautions” section for further details.

## INFORMATION FOR NEBS COMPLIANT VERSIONS



The intra-building port(s) of this equipment is suitable for connection to intrabuilding 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.



This equipment must be installed in a restricted access location.



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.

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**REVISION HISTORY**

<b><u>REVISION</u></b>	<b><u>DESCRIPTION</u></b>	<b><u>DATE</u></b>
0.1	Preliminary	Jul 2008
0.2	Added Installation and configuration information	Dec 2008
0.3	Removed references to Q-Link, WinSetup, CHOP & ENGINEERING functions	Feb 2009
1.0	Released	Mar 2009
1.1	Added information on the control system, configuration with rotary encoder, configuring with LCD button panels.	May 2009
1.2	Removed references to single destination mode in section 1.3.5 and fuse info	Dec 2009
1.3	Revised for E series control panels	Apr 2010
1.4	Added Desktop Mounting Kits information	Feb 2012

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## **1. PANEL TYPE OVERVIEW**

The panels in this manual are supported by two types of Evertz router control systems; our advanced award winning EQX Server, and our legacy router controller, the SC-1000. Additionally most of our routers, for smaller applications and for legacy reasons, support directly connecting router panels. Panels connected to the EQX Server are ALWAYS ONLY connected via Ethernet. The panel configuration is managed and hosted by EQX Server. Panels connected DIRECTLY to a router or connected to the legacy SC-1000 are ALWAYS ONLY connected via QLINK, are hosted by the router or SC-1000 and are managed by Winsetup software. For details on configuring and connecting the panels to an appropriate router control system refer to section 2.6 “Configuring Remote Control Panels” of this manual. Please note that the panels have very similar operation between EQX Server and in legacy mode and may vary slightly from the descriptions of functions within this manual. For more specific features of the panels as they relate to the 2 types of router control systems please see either the EQX Server manual or the Winsetup Help File.

### **1.1. BUTTON PER SOURCE CONTROL PANELS**

The ‘Button per Source’ panels are versatile programmable panels with 20, 40 or 80 illuminated push buttons. A wide range of panel operations including XY and multi-destination may be configured using the router control system. Buttons can be individually configured for any combination of source, destination, breakaway or control functions.

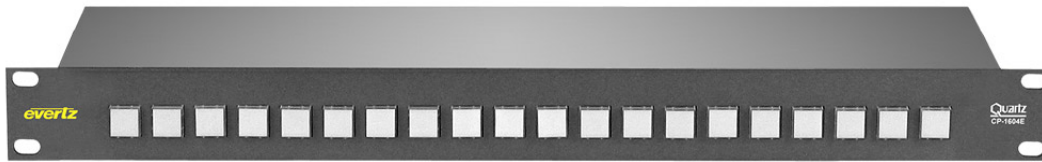
#### **Features:**

- 15mm square buttons suitable for film legends with green LED illumination, uniform over whole legend surface
- Buttons with high quality positive action
- All panels are fully programmable to operate in a number of modes
- Split panels can be programmed in many ways, for instance, permitting two separate destinations to be controlled using two rows of source buttons
- Buttons can be programmed for breakaways
- Program/Preview/Take mode can be programmed, emulating vision mixer operation, useful in transmission environments
- Optional Lock button protects against accidental or unauthorized selections
- Camera joystick override on any eight GPI inputs, with momentary or latching action

#### **1.1.1. CP-1604E Remote Control Panel**

The CP-1604E is a fully programmable panel and therefore the operation of the panel is entirely dependent upon its configuration. The CP-1604E has 20 illuminated push buttons and is ideal for use with 16 sources leaving four buttons to select breakaways, lock, and destinations, etc.

See section 3.3 for more information on the operation of the CP-1604E Control Panel.



**Figure 1-1: CP-1604E Control Panel**

### 1.1.2. CP-3201E Remote Control Panel

The CP-3201E is a fully programmable panel and therefore the operation of the panel is entirely dependent upon its configuration. The CP-3201E has 40 illuminated pushbuttons and is ideal for use with 32 sources leaving eight buttons to select destinations, breakaways and lock, etc. Alternatively, it can be programmed with 16 source buttons and 16 destination buttons to provide an XY panel suitable for small systems.

See section 3.4 for more information on the operation of the CP-3201E Control Panel.



**Figure 1-2: CP-3201E Control Panel**

### 1.1.3. CP-6401E Remote Display Panel, Multi-Mode, 80 Button-Per-Source

The CP-6401E is a fully programmable panel and therefore the operation of the panel is entirely dependent upon its configuration. The CP-6401E has 80 illuminated pushbuttons and is ideal for use with 64 sources in systems that require selection of the source with a single button press leaving 16 buttons to select destinations, breakaways and lock, etc. Alternatively, it can be used as an XY panel for systems up to 32x32.

See section 3.5 for more information on the operation of the CP-6401E Control Panel.



**Figure 1-3: CP-6401E Control Panel**

## 1.2. INTELLIGENT LCD BUTTON CONTROL PANELS

The 'Intelligent LCD Button' control panels feature assignable and dynamic LCD button technology. Each of the LCD buttons is capable of displaying multiple text characters. These panels can be programmed to have many pages of menus allowing users to select a large number of sources or destinations.

When a menu button is pressed, some or all of the buttons change their function and legend. Their operation is then defined by the configuration setup for this menu.

### Features:

- Flexible menu driven configurations providing quick and simple access
- Easily reconfigured for regularly changing environments
- Each LCD display features a 32x24 dot matrix capable of supporting two or three rows of five character text
- Each LCD display supports full RGB illumination with two level programmable intensity providing unprecedented visual indication of the button status
- Fully programmable button operation - user-definable
- Button-per-source selection with Page mode NEXT and LAST buttons to select more sources
- LOCK or ENABLE button to protect against unauthorized or accidental selection
- Buttons can be programmed for breakaways or to give a menu structure to the panel
- Camera joystick override on any eight GPI inputs, with momentary or latching action

### 1.2.1. CP-1000E Remote Control Panel

The CP-1000E is a fully programmable panel and therefore the operation of the panel is entirely dependent upon its configuration. The CP-1000E has 16 physical buttons which offers up to 800 virtual buttons. The CP-1000E panel is ideal in applications where changes to sources and destinations are needed regularly. For example, it could be used in OB trucks or other applications where the user needs to pre-configure panels to suit different or recurring tasks.

See section 3.6 for more information on the operation of the CP-1000E Control Panel.



**Figure 1-4: CP-1000E Control Panel**

### 1.2.2. CP-2024E Remote Control Panel

The CP-2024E is a fully programmable panel and therefore the operation of the panel is entirely dependent upon its configuration. The CP-2024E is a fully programmable panel and therefore the operation of the panel is entirely dependent upon its configuration. The CP-2024E panel has 32 buttons laid out with a keypad section in the style of a traditional XY panel. The CP-2024E is ideal in applications where changes to sources and destinations are needed regularly. For example, it could be used in OB trucks or other applications where the user needs to pre-configure panels to accommodate different or recurring tasks.

See section 3.7 for more information on the operation of the CP-2024E Control Panel.

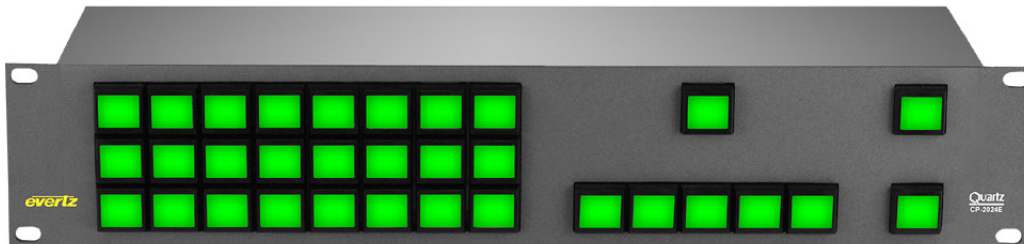


Figure 1-5: CP-2024E Control Panel

### 1.2.3. CP-2032E Remote Control Panel

The CP-2032E is a fully programmable panel and therefore the operation of the panel is entirely dependent upon its configuration. The CP-2032E panel has 32 buttons laid out in two rows of 16 buttons. These panels are ideal in applications where changes to sources and destinations are needed regularly. For example, it could be used in OB trucks or other applications where the user needs to pre-configure panels to accommodate different or recurring tasks.

See section 3.8 for more information on the operation of the CP-2032E Control Panel.

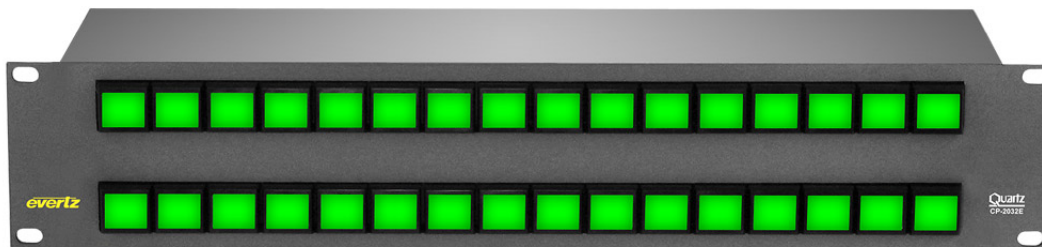


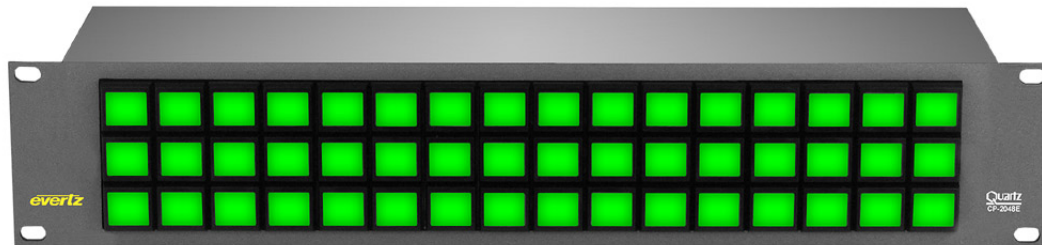
Figure 1-6: CP-2032E Control Panel



**1.2.4. CP-2048E Remote Control Panel**

The CP-2048E is a fully programmable panel and therefore the operation of the panel is entirely dependent upon its configuration. The CP-2048E features assignable and dynamic LCD button technology. Each of the LCD buttons is capable of displaying multiple characters. The CP-2048E panel has 48 buttons arranged in three rows of 16. These panels are ideal in applications where changes to sources and destinations are needed regularly. For example, it could be used in OB trucks or other applications where the user needs to pre-configure panels to accommodate different or recurring tasks.

See section 3.9 for more information on the operation of the CP-2048E Control Panel.



**Figure 1-7: CP-2048E Control Panel**

### 1.3. XY/MULTI-BUS CONTROL PANELS

The XY/Multibus panels are panels with a variety of layouts. A wide range of panel operations including XY and multi-destination may be configured using the router control system. Buttons can be individually configured for any combination of source, destination, breakaway or control functions.

#### Features:

- Buttons with high quality positive action
- All panels are fully programmable to operate in a number of modes
- Buttons can be programmed for breakaways
- Program/Preview/Take mode can be programmed, emulating vision mixer operation, useful in transmission environments
- Optional Lock button protects against accidental or unauthorized selections
- Camera joystick override on any eight GPI inputs, with momentary or latching action

#### 1.3.1. CP-2402E Dual Display Remote Control Panel

The CP-2402E is a fully programmable panel and therefore the operation of the panel is entirely dependent upon its configuration. The CP-2402E is a versatile programmable panel with 29 illuminated pushbuttons and two display windows. The CP-2402E is fully programmable and therefore the operation of the panel is entirely dependent upon its configuration. It can be configured in a number of different ways including XY or dual destination using the router control system. Each button can be individually configured for any combination of source, destination, breakaway or control functions.

The physical button layout of the CP-2402E guides its configuration. For example, the left hand block of 24 buttons can be programmed as sources. 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.

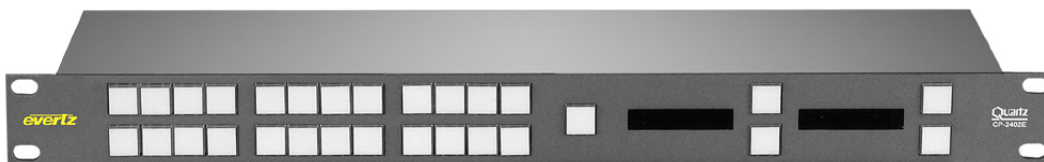


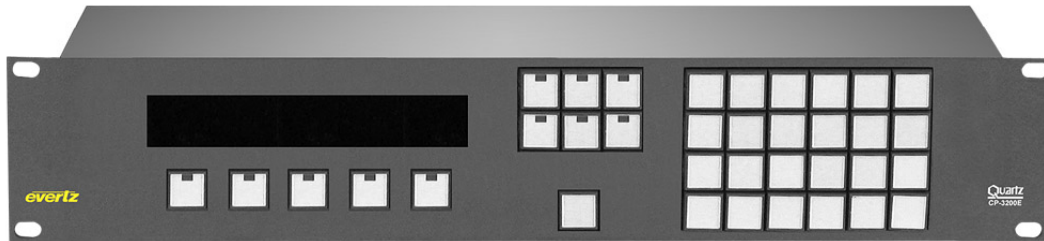
Figure 1-8: CP-2402E Remote Control Panel

See section 3.10 for more information on the operation of the CP-2402E Control Panel.

### 1.3.2. CP-3200E Remote Panel with Keypad and Display

The CP-3200E is a fully programmable panel and therefore the operation of the panel is entirely dependent upon its configuration. The CP-3200E has a keypad panel normally arranged to operate as an XY panel allowing control of any input or output, with up to four levels of breakaway. The CP-3200E is normally used as a master XY panel in engineering or MCR type applications where access to any input or output is required.

Advanced programming control enables the CP-3200E to be configured to control five destinations without breakaway or a single destination with up to eight levels of breakaway. It has XY mode with up to eight levels of breakaway, "Five destination mode" with a TAKE button for each destination but without breakaways, and single destination mode with up to eight levels of breakaway. It also features a 24 + 6 button keypad for source and destination names, for which source names can be up to seven characters long and destination names can be up to eight characters long. The CP-3200E also has in use displays for all four levels plus preset.

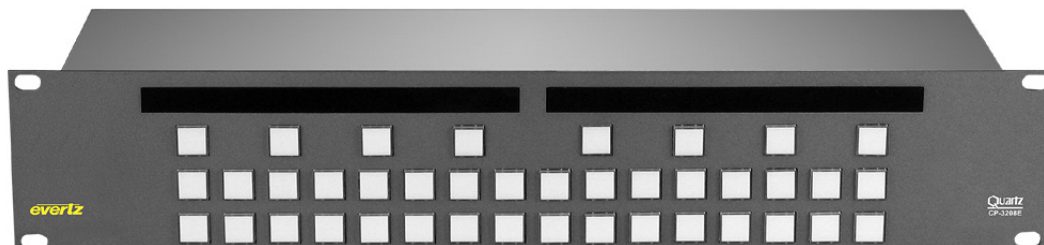


**Figure 1-9: CP-3200E Control Panel**

See section 3.11 for more information on the operation of the CP-3200E Control Panel.

### 1.3.3. CP-3208E Remote Control Panel

The CP-3208E is a fully programmable panel and therefore the operation of the panel is entirely dependent upon its configuration. The CP-3208E is an eight destination control panel that can handle up to 32 sources. It is ideal in applications such as monitoring or live operational areas, where several destinations are to be controlled rapidly with a single button selection. The status of each destination is visible at all times for increased operational confidence. It has eight high brightness, green LED displays with up to seven character names that show the current source selected to each destination. The CP-3208E features 32 buttons for source selection and eight TAKE buttons for the destinations.



**Figure 1-10: CP-3208E Control Panel**

See section 3.13 for more information on the operation of the CP-3208E Control Panel.

### 1.3.4. CP-6400E Remote Display Panel, XY Keypad

The CP-6400E is a fully programmable panel and therefore the operation of the panel is entirely dependent upon its configuration. The CP-6400E is an XY panel ideal for larger applications above 64x64 but can be used with any size router. It is typically used as a master panel to control any input or output, with up to eight levels of breakaway. Its extra large keypad and eight character names provide great flexibility to name sources and destinations in larger systems. Flexible architecture permits any key to be programmed to provide any function. It has a large keypad with 32 buttons and eight character names on high brightness green LED displays

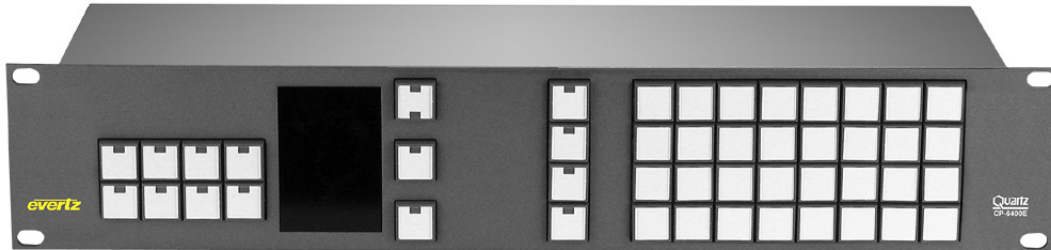


Figure 1-11: CP-6400E Control Panel

See section 3.14 for more information on the operation of the CP-6400E Control Panel.

### 1.3.5. CP-6408E Remote Control Panels

The CP-6408E is a fully programmable panel and therefore the operation of the panel is entirely dependent upon its configuration. The CP-6408E panel is a multi-destination panel for the control of eight destinations. Up to eight levels of breakaway are supported. The LED displays give visible readout of the current source status. The large keypad and eight character names provide great flexibility to name sources and destinations in larger systems. Flexible architecture permits any key to be programmed to provide any function.

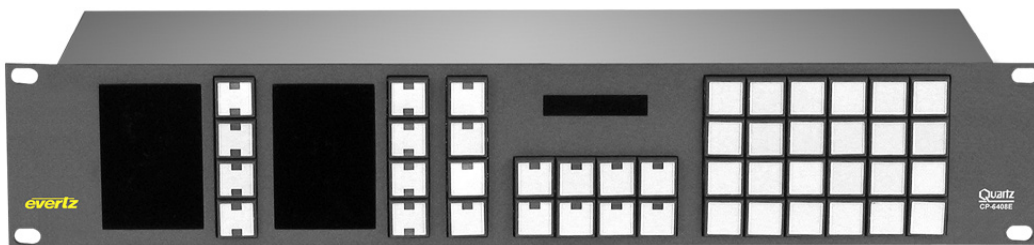


Figure 1-12: CP-6408E Control Panel

See section 3.15 for more information on the operation of the CP-6408E Control Panel.

## 2. INSTALLATION

### 2.1. ELECTRO STATIC DISCHARGE (ESD) PRECAUTIONS



**All semiconductor devices are sensitive to ESD. To prevent any damage or degradation on components of the product caused by ESD, observe these precautions when installing or removing modules from the frame.**

1. Discharge static from your body. Wear a grounded anti-static wrist or heel strap to discharge the static voltage from your body.
2. Use a Safe Work Area. Avoid handling modules in areas that have a floor or work surface covering capable of generating a static charge. Also nothing capable of generating or holding a static charge should be allowed in the work area.
3. Handle ESD sensitive modules carefully. Do not slide modules over any surface. Do not touch exposed connector pins. Pick-up modules by the edges of the modules, never by touching exposed leads.
4. Transport and store sensitive components or assemblies in a static-protected bag or container.

### 2.2. MOUNTING

The control panels are equipped with rack mounting rails and fit into a standard 19" 1RU or 2RU rack space. To securely fasten the frame to the equipment rack, make sure that all four mounting screws on each mounting rail are tightened securely.

#### 2.2.1. Desk Top Mounting

A Desk Top mounting kit (DMK) is available that allows the panel to be separated from the electronics using a 40 in (1m) ribbon cable. The panel thickness in the DMK configuration is only 1.4 in (35mm). This configuration is ideal for mounting the control panel in consoles that are limited in the amount of space available. Contact the Factory for information about the Desk Top mounting kit. Figure 2-1 shows a cross section of a control desk with a panel mounted in the Desk Top configuration.

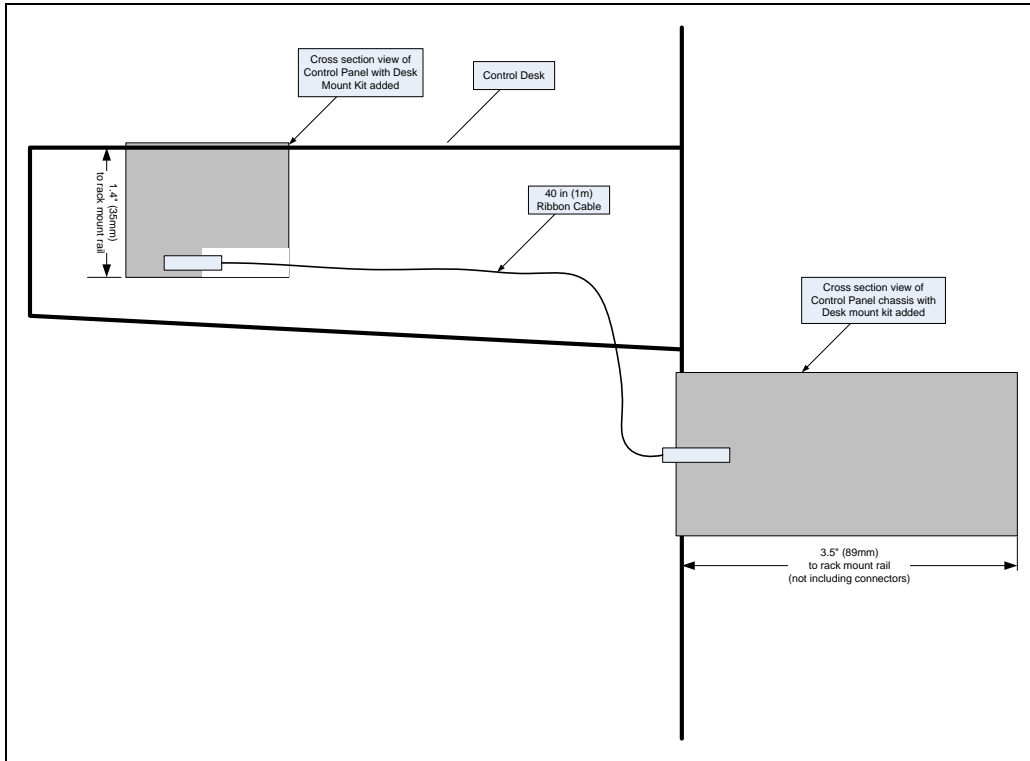
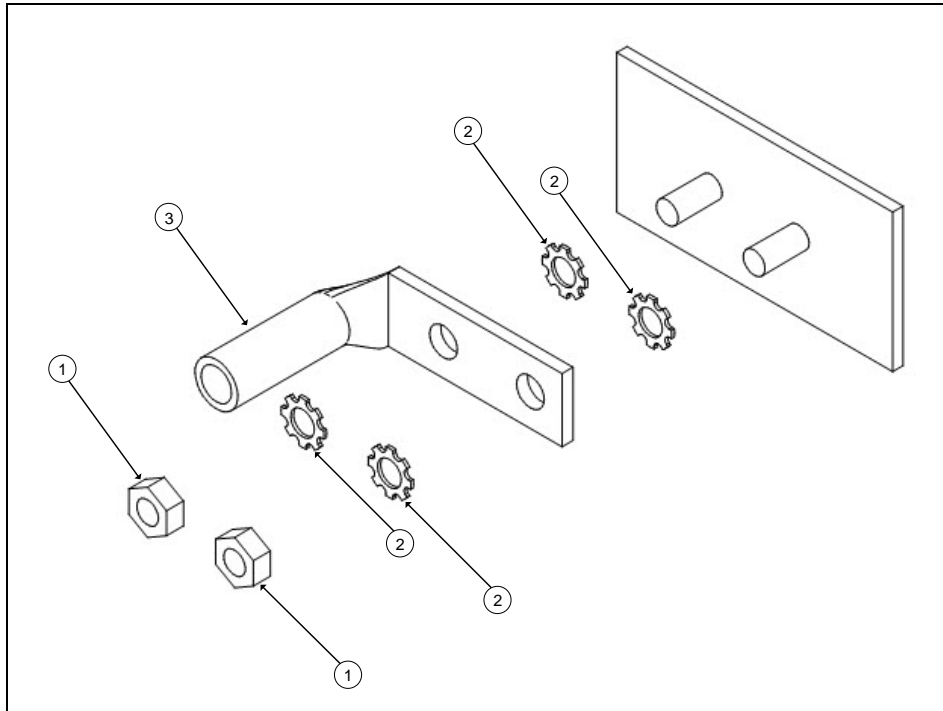


Figure 2-1: Desk Top Mounting Configuration

2.2.2. Grounding and Bonding – NEBS Applications



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



**Figure 2-2: NEBS Bonding System**

This NEBS compliant version of the frame is provided with the following components to facilitate connection to a common bonding network:

Item#	Description	Qty.
1	M4 HEX Nut	2
2	#6 external tooth lock washer	4
3	Bonding Lug	1

**Table 2-1: Bonding Parts Included with NEBS Compliant Version**

- This equipment is to be installed in the telecommunication network facilities.
- Provide a dedicated connection from a common bonding network to this equipment by connecting a stranded AWG #6 (16 mm<sup>2</sup>) copper wire to the bonding lug provided.
- When using insulated wire, strip 7/8 inch (2 cm) of insulation.
- Bare conductors of the bonding wire must be coated with antioxidant before crimp connections to the bonding lug are made.
- Fasten the bonding lug to the equipment as shown in Figure 2-2. The ground lug must be secured as shown using four star washers (to prevent anti-rotation of the nuts) and two M4 nuts. Tighten the nuts securely to provide a good bonding connection.

## 2.3. COOLING

The control panel is designed to cool using normal convection air currents. There are no fans in the control panels. Adjacent equipment may be mounted immediately to the top and bottom of the unit.



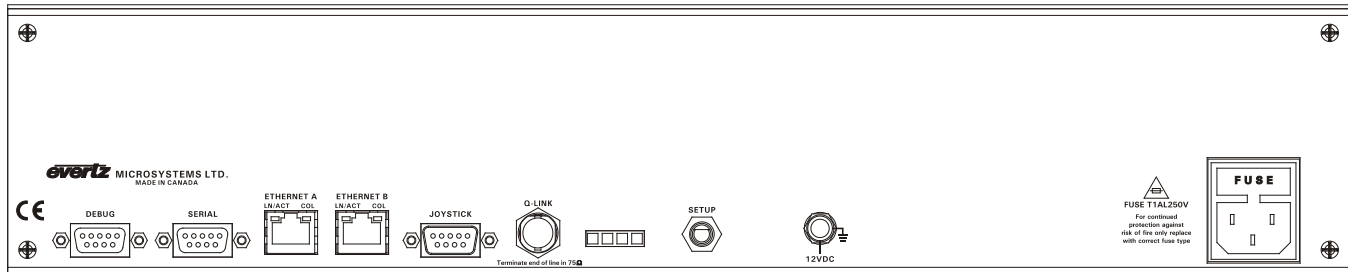
**CAUTION:** To ensure adequate cooling, care should be taken to ensure that the air inlets and exhaust openings on the sides of the unit are free of obstructions.

## 2.4. USE OF SHIELDED CABLES



In order to maintain the electromagnetic (EMI) shielding integrity of the control panel it is recommended that shielded cables be used to connect the signals to the various modules wherever possible. For all ports using shielded cables (Serial RS232/422, etc.) both ends of the shield must be grounded.

## 2.5. REAR PANEL CONNECTIONS



**Figure 2-3: Rear Panel**

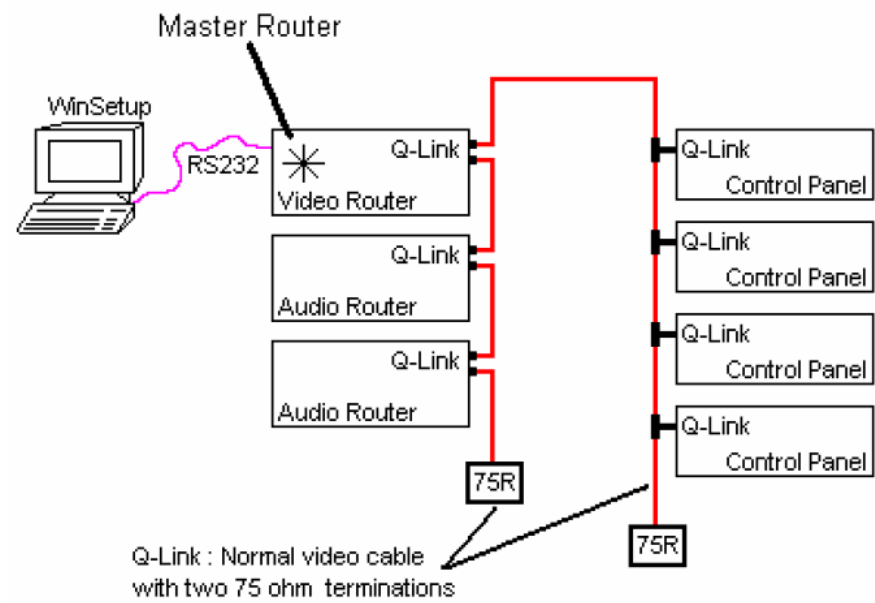
The rear panel connections to the 1RU and 2RU panels are identical. The following sections provide an overview of the connections.

### 2.5.1. Connecting the Panels using Q-link

All the frames and remote control panels are connected by a coaxial link called **Q-link**. This link uses standard 75Ω video cable daisy-chained from frame to frame and panel to panel. **Each end of the link must be terminated in 75Ω.** A pair of connectors is fitted to the frames and the link looped through them.

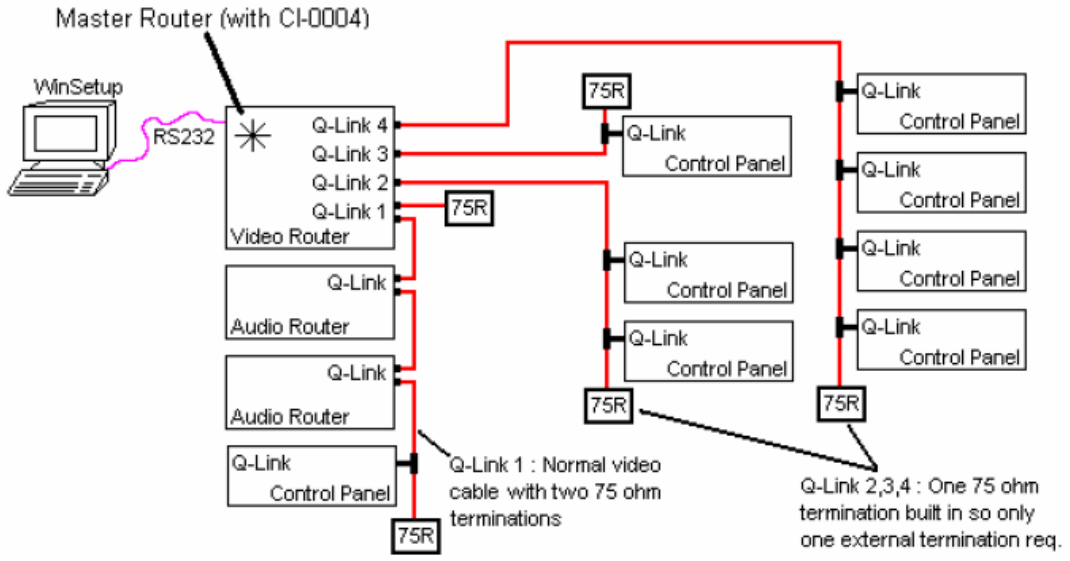
On frames with several Q-Link connectors the “Q-Link-1” or “Q-Link 1a/1b” is always available. The extra Q-link connectors are only supported when a CI-0004 module is installed onto the FU-0003 processor. Only one connector is fitted on the panels and a T-piece needed to tap off the **Q-link**. In this way a panel can be removed from service and replaced without disrupting the link, even temporarily.



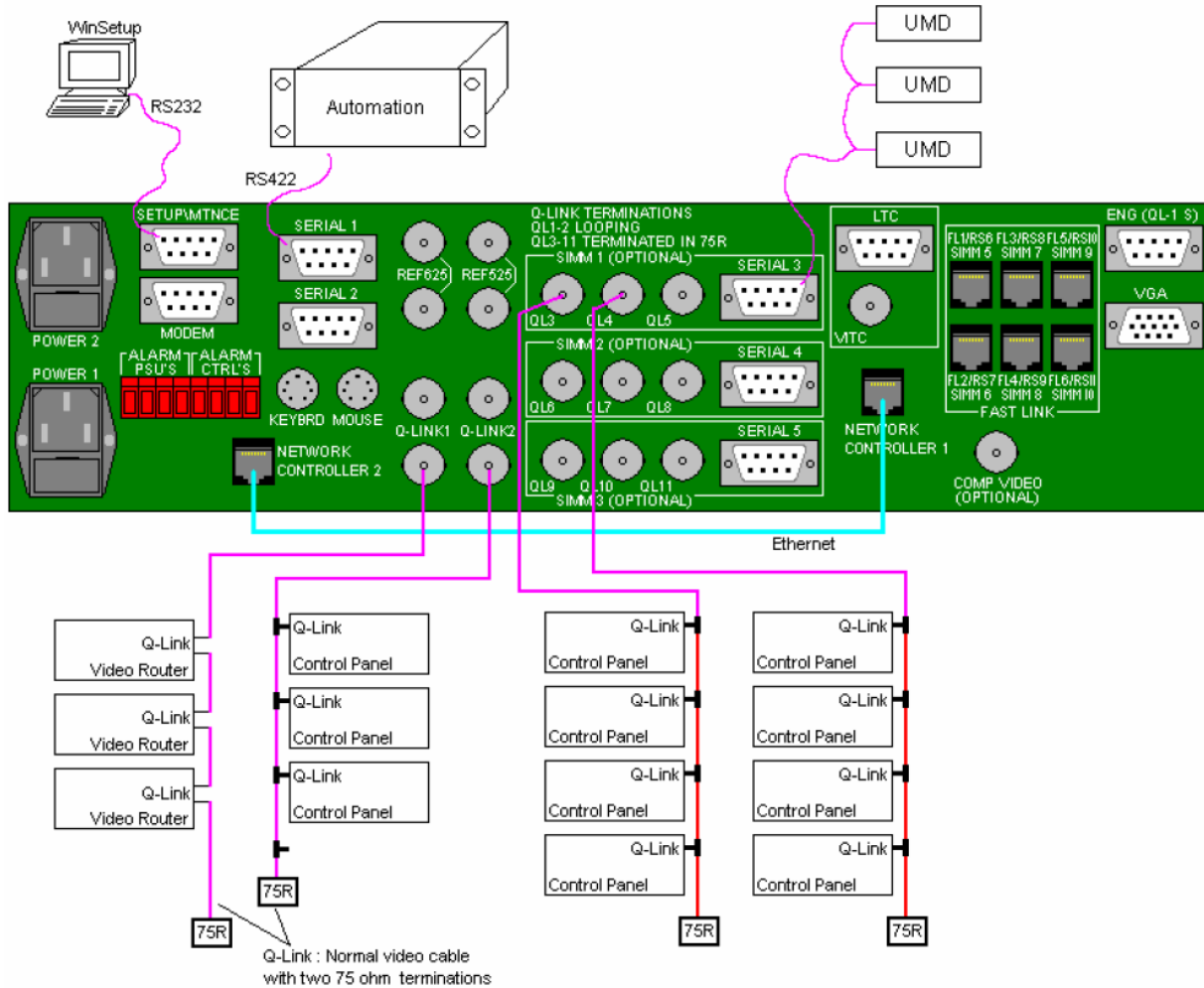


This daisy chain method ensures the best transmission quality of the control signals down the cable. Short cuts that might save cable, such as running stubs to some panels, are not recommended as this may cause data errors under certain circumstances. A total of 64 devices (V5 firmware) can be supported, normally organized as 16 frames and 48 panels. Each unit connected to the **Q-link** has its own *addressswitch* that is set up as part of the system setup.

In medium sized systems it may be more suitable to have several Q-Links on the master frame and to wire off in different directions. This requires a CI-0004 module in the master router. Only routers of 32x32 and above have the extra BNC connectors to support a CI-0004.

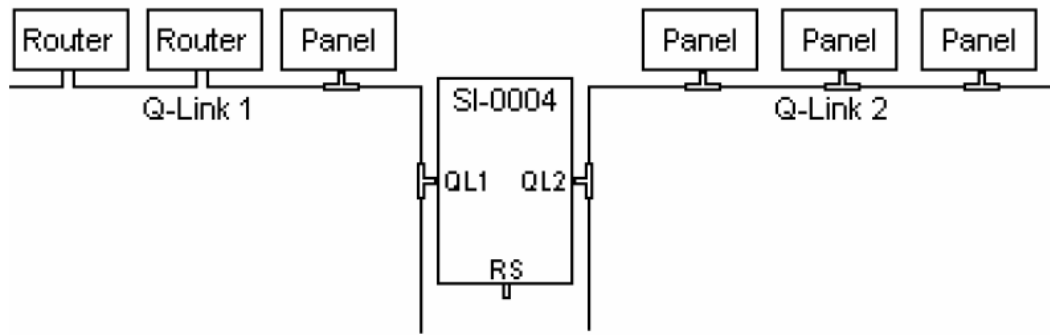


In larger systems the extra processing power of the SC-1000 is often required. This is a separate 2U controller that supports an optional backup controller and backup PSU. The large number of Q-Links allows a system to be split into physical areas such as vision control, audio, production, and engineering.

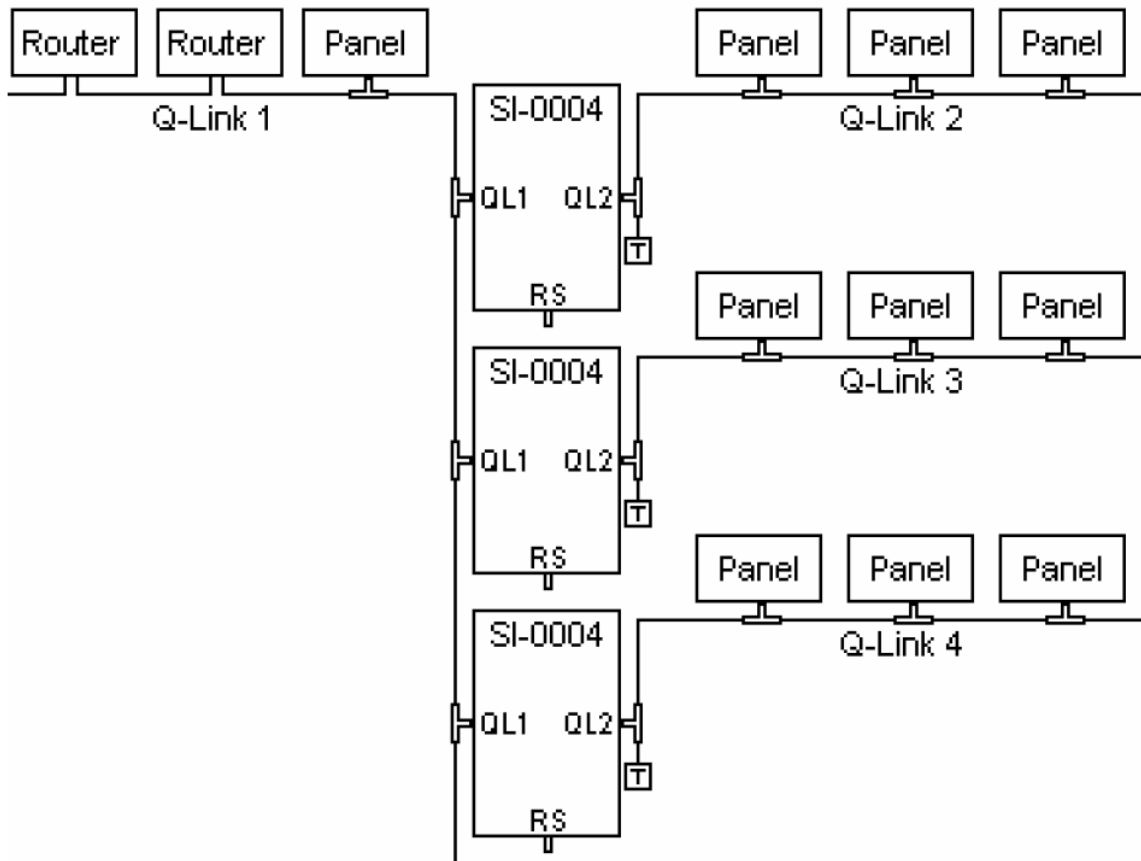


As a system design guide the SC-1000 should be considered when the router grows above 128x128 single level or has more than 10-15 total Q-Link devices.

In large buildings or outside broadcast vehicles (OB trucks) the Q-Link system can be affected by mains earth differences between physically remote areas. This causes currents to flow in the outer of the Q-Link cable that can disrupt the Q-Link communications. To prevent this problem Quartz can supply a SI-0004 Q-Link opto-isolator unit.

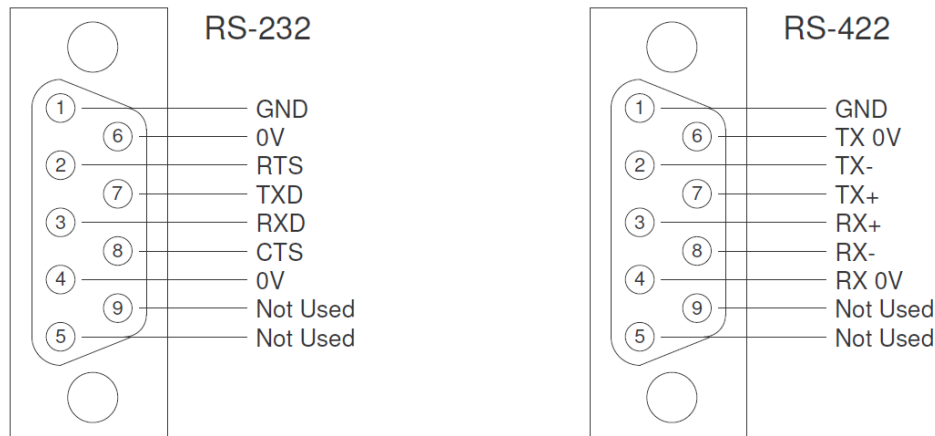


In large buildings the SI-0004 would only be installed once a problem had been identified. In OB trucks it is good practice to install an SI-0004 between the internal Q-Link and any external 'tail gate' or bulk head patch panels. Multiple SI-0004 units can be used where several external Q-Links are required.

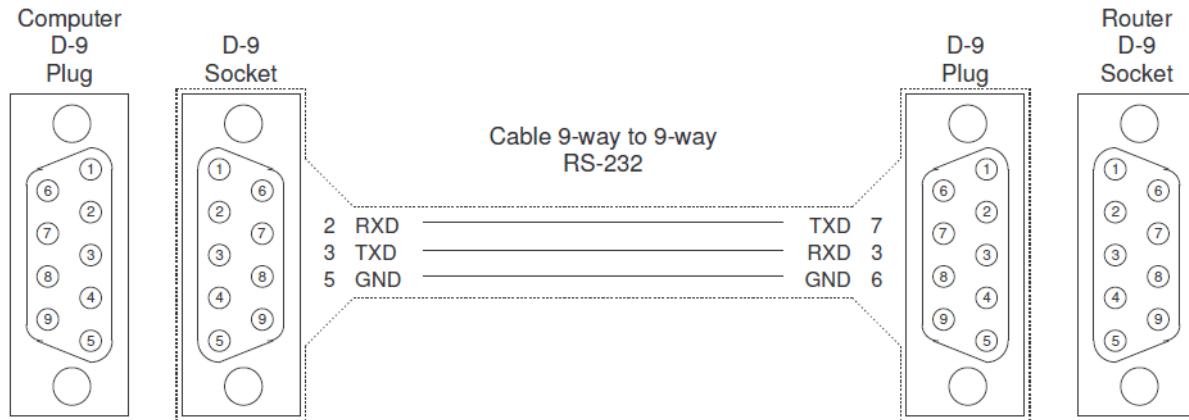


**2.5.2. RS232/422 Computer Port**

The computer port connector on the rear of a remote control panel only functions if a CI-0003 module is installed. Controlling the routing system through a panel computer port is possible but is not recommended, these ports are only provided for stand-alone S7 panels i.e. CP-3200E-S7. All Quartz products use the same pin-out for the serial D9 connectors. The wiring of the connectors is different for RS232 and RS422.



The cable between the PC and the router (RS232) only needs to use TX, RX, and GND as shown below.



**2.5.3. Connecting the Control Panels using Ethernet**

The Router control panels are designed for connection using 10Base-T (10 Mbps), 100Base-TX (100 Mbps) Ethernet cabling systems. There are two Ethernet ports labelled ETHERNET A and ETHERNET B, to provide for redundancy in the control system. As a result, either port may be used for connection to the router frames without compromise. "Straight-Through" Ethernet cables may be used when connecting the control panels to an Ethernet hub.

Straight-through RJ-45 cable can be purchased or can be constructed using the pinout information in Table 2-2. A colour coded wiring table is provided in Table 2-2 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 2-2: 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.

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.

**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 control panel has established a valid linkage to its hub, and whether the control panel is sending or receiving data. This LED will be ON when the control panel 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 control panel is sending or receiving data. The LED will be OFF if there is no valid connection.

The control panel has a specific IP address that must be set using the shaft encoder and dot matrix display on the rear panel, or by using the Engineering menu on the DEBUG serial port. On panels with front panel display capabilities, the IP address can also be set using a Setup front panel menu.



**Please note that once a change to the control panel’s IP address is made, the change in IP address DOES NOT become effective until the unit is power cycled.**

2.5.4. Debug RS-232 Port

The DEBUG connector provides an RS-232 serial control port used for loading firmware and providing access to the Diagnostic menu. The wiring of the connector is the RS-232 pinout shown in Table 2-3.

	Pin #	Name	Description
	1		
	2	TxD	RS-232 Transmit Output
	3	RxD	RS-232 Receive Input
	4		
	5	Sig Gnd	RS-232 Signal Ground
	6		
	7		
	8		
9			

Table 2-3: DEBUG Port Pin Connections



When building the cable; use a connector with a grounded metal shell, and a shielded cable with the shield connected to the connector metal shell to prevent RFI emissions from the equipment.

2.5.5. SERIAL RS232/422 Serial Ports

The SERIAL connector provides a RS-232/RS-422 serial control port. The wiring of the connectors is different for RS-232 and RS-422 as shown in Table 2-4.

	Pin #	Name	RS-232 Function	RS-422 Function
	1	GND	Chassis ground	Chassis ground
	2	TxD/Tx-	Transmit Data Output	TX- Transmit Output
	3	RxD/Rx+	Receive Data Input	RX+ Receive Input
	4	Sig Gnd	Signal Ground	Receive Ground
	5		Not used	Not used
	6	Sig Gnd	Signal Ground	Transmit Ground
	7	RTS/Tx+	RTS Output	TX+ Transmit Output
	8	CTS/Rx-	CTS Input	RX- Receive Input
9	GND	Chassis ground	Chassis ground	

Table 2-4: SERIAL Port Pin Connections



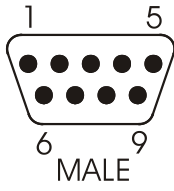
When configured for RS-422 communications, the pinout is a standard SMPTE 207M RS-422 tributary pinout. When configured for RS-232 communications, the pinout is similar to a DCE pinout, except for pin 5 which is not connected.



When building the cable; use a connector with a grounded metal shell, and a shielded cable with the shield connected to the connector metal shell to prevent RFI emissions from the equipment.

### 2.5.6. Joystick Override

The Joystick or camera micro-switch override is provided as a standard feature on all control panels and is accessed on the JOYSTICK port which is a male 9 pin D-type socket. When building a cable to connect to the JOYSTICK port; use a tin and dimple type connector with an earthed metal shell, and a shielded cable with the shield connected to the connector metal shell to prevent RFI emissions from the equipment. The pin connections are:

	Pin #	RS232 Function
		1
	2	Camera 2 Input
	3	Camera 3 Input
	4	Camera 4 Input
	5	Camera 5 Input
	6	Camera 6 Input
	7	Camera 7 Input
	8	Camera 8 Input
	9	Chassis ground

**Table 2-5: JOYSTICK Port Pin Connections**

It is possible for them to be mapped to any input by the customer. Also the destination controlled is normally programmable to suit individual applications.

### 2.5.7. Power

The power entry module contains a standard IEC 320 power inlet connector, two 5 x 20 mm fuse holders, and an EMI line filter. The control panel comes with an auto-ranging power supply that automatically senses the input voltage over the range of 100 to 240 VAC.

Power should be applied by connecting a three-wire, grounding-type power supply cord to the power entry module on the rear panel of each power supply. For use in North America, the power cord should be a minimum 18 AWG wire size; type SVT marked VW-1, maximum 2.5 m in length. For use outside North America, use a power cord approved for the country of use with a minimum 1.00 mm<sup>2</sup> wire size.



**CAUTION: To reduce the risk of electric shock, grounding of the ground pin of the main plug must be maintained.**



**For NEBS compliant installations, the AC power cord of the frame shall be connected to an external surge protection device.**

An external 12 VDC input is provided to provide fully redundant powering of the unit. The DC input connector is a 0.218 inch diameter center positive miniature DC power jack.



To connect the 12 VDC supply use an AC to DC converter rated at 12 VDC, 3 A minimum. A power supply converter can be ordered from your Evertz Products dealer (Evertz part # VSHES34-120300). The DC cable of the voltage adapter should be connected to the DC power jack on the rear panel. The voltage adapter DC connector-fastening collar can be screwed to the DC power jack to prevent accidental disconnection.

## 2.6. CONFIGURING REMOTE CONTROL PANELS

The main setup or configuration, generated within the router control system, defines the way each panel functions. However, there are a few functions set on the panels by the user.

There are generally two types of panels, those with intelligent LCD buttons and those without. All panels have a multi-segment LCD display in the rear of the panel and a rotary shaft encoder. These may be used to select a communications method (Ethernet or QLINK) and set the various addresses. Additionally panels with intelligent LCD buttons can be set from the front panel using the LCD buttons. These methods are described in the following sections 2.6.1 and 2.6.2.

### 2.6.1. Configuring ANY Panel via the Rotary Shaft Encoder

The multi-segment display on the rear of the panel should be scrolling the current firmware revision.

To configure the panel for a specific communication method:

1. Turn the encoder until COMM is shown on the multi-segment display.
2. Once displayed, push in the encoder knob. The current communication method will be displayed (either ENET or QLNK)
3. To select the method, push in the encoder knob again, and then turn the encoder to select QLNK/ENET as desired. Once complete push in the encoder to select the item.
4. Turn the encoder knob to END, and then push in the encoder knob again. This will apply the setting.

To set the QLINK Address:

1. Turn the encoder until QLAD is shown on the multi-segment display.
2. Push in the encoder knob to make your selection. The current QLINK Address is shown (a HEX Value).
3. Push in the encoder knob to change the first value, then turn the encoder to select the value you wish to use.
4. Press the encoder to move the cursor to the next digit and then press the encoder to select the digit. Turn the encoder to select the value and then push in the encoder to apply the values.
5. Turn the encoder to END and press in the encoder knob to apply the settings.



To set the IP Settings:

1. The following settings may be edited in the same manner as below:
  - a. IP Address (IPAD)
  - b. Subnet Mask (NETM)
  - c. DHCP enable or disable (1 or 0) (DHCP)
  - d. For more advanced IP configuration, such as gateways, the debug port must be used. Please follow the instructions in sections 4.4.1 through 4.4.3 for connecting to the debug port.
2. Scroll to the parameter to be configured (IE. IPAD), then click the encoder to select it.
3. The first four characters (including periods ".") will be displayed, and the very first segment of the display will have a cursor on the bottom.
4. Scroll the cursor to the character you wish to edit then push in the encoder to select it.
5. Turn the encoder to select the desired character then push in the encoder to save that value and return to the cursor mode.
6. Repeat until all settings are correct and END is displayed. Push in the encoder on END to apply the value.

### 2.6.2. Configuring Intelligent LCD Button Panels via Front Panel LCD Buttons

If the panel has not yet been connected to a control system or a connection is NOT present (IE the Ethernet or QLINK have been unplugged) then the panel will be in "Comms information Mode" and will display information about the current version, Comms mode, and address information. There will also be a setup button to enter the configuration mode. If the panel already has a configuration loaded and is actively connected to a control system you may display this Comms Information Mode by simultaneously pushing in and holding the bottom left most and bottom right most buttons for approximately 10 seconds. At that time you can press setup to enter the configuration mode.

Once in setup mode, follow the instructions below to configure the panel for a specific communication method:

1. Click on COMMS SETUP.
2. Next to the MODE control, ETHERNET or QLINK will be highlighted showing the current selection. Click on method you wish to use.
3. Click save and reset.

Once in setup mode, follow the instructions listed below to set the QLINK Address:

1. Use the arrows next to ADDR to select a new value. The current value will be displayed.
2. Click **save** and **reset**.

Once in setup mode, follow the instructions listed below to set the IP Settings:

1. Click the value to edit (IP Setup, Mask Setup, Gate Setup) as the configuration is similar for each item.
2. The page will change (i.e. Under IP Setup) to display IP= *and the current IP value*.
3. Choose the octet to edit. Use the up and down arrows to select the desired value.
4. Once all IP Settings are complete, click **save** and **reset**.

### 3. CONTROL PANELS AND OPERATION

Once the system has been fully installed the user can configure the control panels. This section describes the standard control panels supplied and their operation, regardless of the router control system in use.

#### 3.1. CONFIGURING PANELS

The router control system configuration application defines the precise operation of all control panels. This allows the user to edit the system configuration that is stored. This file can then be downloaded to the system. When the system powers up the configuration data is transferred to each panel as it comes on-line.

#### 3.2. COMMON FEATURES OF ALL CONTROL PANELS

##### 3.2.1. Buzzer Feature

The control panels are fitted with a buzzer to provide warnings when certain buttons are pressed. The buzzer can be enabled or disabled by moving a link adjacent to the buzzer. See section 4.5.2 for information on changing the buzzer control.

##### 3.2.2. Joystick or Micro-switch Override

This feature is used for matching the colour balance of several cameras. Micro-switches in the joysticks of the camera control units are pressed by the engineer conducting the line-up to select the camera in use onto the line-up monitor. It overrides the current selection made on a remote panel. When the micro-switch contact is released the override selection can revert to the previous selection made on the conventional panel (momentary) or stay with the selected camera (latching). See section 0 for information on making connections to the JOYSTICK connector.

Each control panel can support up to eight cameras. The software configuration of the system determines which inputs of the matrix are selected by the joystick contacts. Normally the joystick only selects video, but there is in fact no limitation placed by the system and any level may be selected.

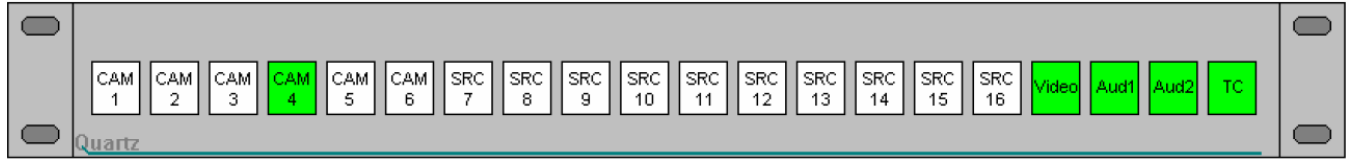
1. Press and hold the joystick to make an override selection.
2. Release the joystick to return to the previous selection made by the panel.
3. If two or more joystick buttons are pressed, they queue or stack with the last press taking priority.

##### 3.2.3. Computer Port

Currently not supported.

### 3.3. CONTROL PANEL TYPE: CP-1604E

This panel has 20 buttons and each button is programmable from the router control system to act as either a source, destination, level, or lock/enable, or many other button types.



**Figure 3-1: CP-1604E Control Panel**

The destination and the levels controlled by this panel are determined by the setup of the system and can be changed using the router control system.

#### 3.3.1. Sources Button

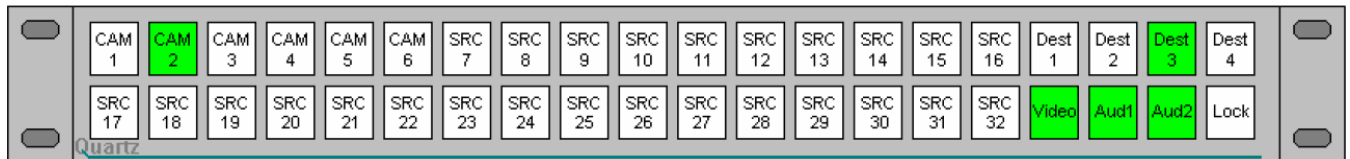
Press the required source button to select a new source.

If the Enable mode is active then you must press and hold the ENABLE button while you press the source button. This protects against accidental selection of a route.

If Lock mode is enabled then the lock button toggles between the locked and unlocked state. First select the route then press the LOCK button to protect the selection.

### 3.4. CONTROL PANEL TYPE: CP-3201E

This panel uses LED buttons with re-legendable caps and status indication. There are 40 switches which can be used for the selection of sources, destinations, breakaways and lock functions.



**Figure 3-2: CP-3201E Control Panel**

There are many modes in which the panel can operate, determined by the setup of the system. Some examples are:

- 16x16 XY with breakaways and lock
- 32x1 with breakaways and lock
- 32x2 with a row of buttons for each destination and with breakaways and lock
- 32x8 XY without breakaway or lock

The destination and the levels controlled by this panel are determined by the setup of the system and can be changed using the router control system. In this way the buttons are re-configurable so any of the buttons can perform any function. The generic operation below covers all the facilities which can be used, but please note they may not all be available, because if it is set up as a 32 x 8 XY panel there are no buttons left for lock or breakaway functions.

### 3.4.1. Destinations

Press one of the destination buttons to choose a new destination. Its button then lights up to confirm the selection and a source button is illuminated to show the currently selected source.

### 3.4.2. Sources Button

Press the required source button to select a new source.

### 3.4.3. Breakaways

Buttons may be configured, to enable breakaway selections of signal levels, such as video, audio 1, audio 2 and time code.

If the breakaways are allowed, then normally all the level buttons light up denoting the *married* mode in which all switching levels are switched simultaneously. If a breakaway selection is required then press the buttons to deselect the levels which are not required to switch. Then press a source button to choose a new source on the breakaway level.

If a breakaway is selected then source LEDs flash to denote that a breakaway condition exists. If all four levels are selected to different source signals then three of the LEDs flash while the fourth is steady. To find out which source LED corresponds to a particular signal level then select the desired level (by deselecting the other levels) and the steady LED is the source selected on that level of the matrix.



**Note that if more than one level is lit then the steady LED corresponds to the left-most lit level button.**

### 3.4.4. Lock Button

This button allows you to protect a route that you have selected. The lock mode can be configured to function in several ways but, by default, it locks its own panel independently for each destination. Press the LOCK button once to lock the route/panel. The button illuminates to show that the panel is locked.

Press the button again to unlock the route/panel.

The panel remembers the lock status so that when a destination is locked and this destination is reselected then the lock button will light up to show that this destination is locked.

### 3.5. CONTROL PANEL TYPE: CP-6401E

This panel uses LED buttons with re-legendable caps and status indication. There are 80 switches that can be used for the selection of sources, destinations, breakaways, and lock functions.

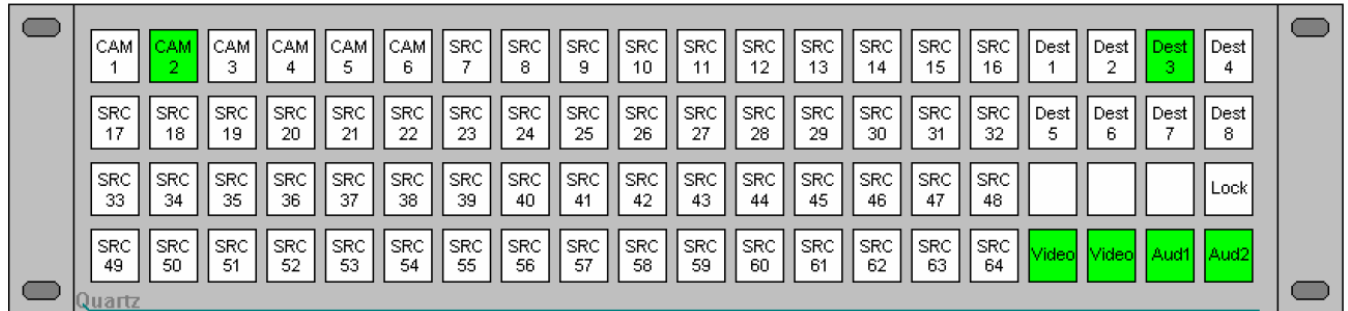


Figure 3-3: CP-6401E Control Panel

There are many modes in which the panel can operate, determined by the setup of the system. Some examples are:

- 32x32 XY with breakaways and lock
- 64x1 with breakaways and lock
- 64x2 with a row of buttons for each destination and with breakaways and lock
- 64x8 XY without breakaway or lock

The destination and the levels controlled by this panel are determined by the setup of the system and can be changed using the router control system. In this way the buttons are re-configurable so any of the buttons can perform any function. The generic operation below covers all the facilities which can be used, but please note they may not all be available because, for example, if it is set up as a 64 x 8 XY panel there are no buttons left for lock or breakaway functions.

#### 3.5.1. Destinations

Press one of the destination buttons to choose a new destination. Its button then lights up to confirm the selection and a source button also lights up to show the currently selected source.

#### 3.5.2. Sources Button

Press the required source button to select a new source.

#### 3.5.3. Breakaways

Buttons may be configured to enable breakaway selections of signal levels, such as video, audio 1, audio 2 and time code.

If the breakaways are allowed, then normally all the level buttons light up denoting the *married* mode in which all switching levels are switched simultaneously. If a breakaway selection is required then press the buttons to deselect the levels which are not required to switch. Then press a source button to choose a new source on the breakaway level.

If a breakaway is selected then source LEDs flash to denote that a breakaway condition exists. If all four levels are selected to different source signals then three of the LEDs flash while the fourth is steady. To find out which source LED corresponds to a particular signal level then select the desired level (by deselecting the other levels) and the steady LED is the source selected on that level of the matrix.

Note that if more than one level is lit then the steady LED corresponds to the left-most lit level button.

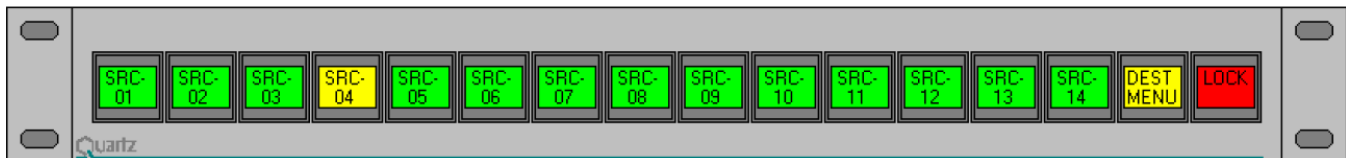
### 3.5.4. Lock Button

This button allows you to protect a route that you have selected. The lock mode can be configured to function in several ways but, by default, it locks its own panel independently for each destination.

1. Press the LOCK button once to lock the route/panel. The button lights up to show that the panel is locked.
2. Press the button again to unlock the route/panel.
3. The panel remembers the lock status so that when a destination is locked and this destination is reselected, then the lock button will light up to show that this destination is locked.

## 3.6. CONTROL PANEL TYPE: CP-1000E

This panel has 16 active LCD buttons and each button is programmable to act in many different modes, including source, destination, level, or lock/enable modes.



**Figure 3-4: CP-1000E Control Panel**

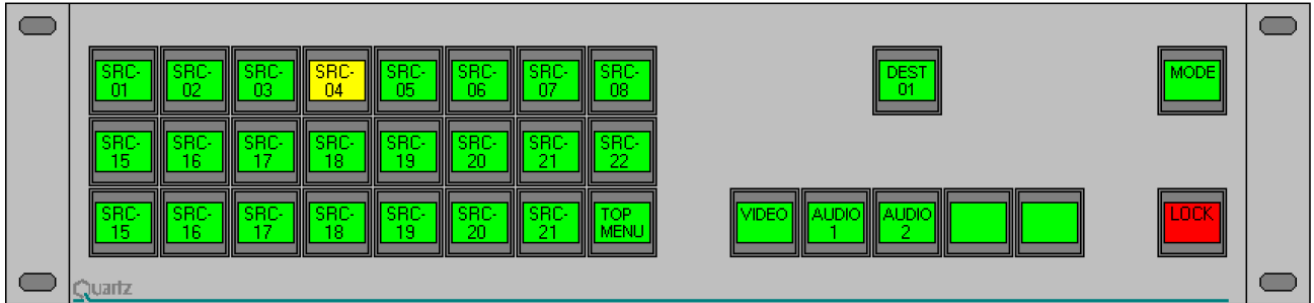
The destination and the levels controlled by this panel are determined by the setup of the system and can be changed using the router control system.

### 3.6.1. Sources Button

Press the required source button to select a new source. If the Lock mode is enabled then the lock button toggles between the locked and unlocked state. First select the route then press the LOCK button to protect the selection.

**3.7. CONTROL PANEL TYPE: CP-2024E**

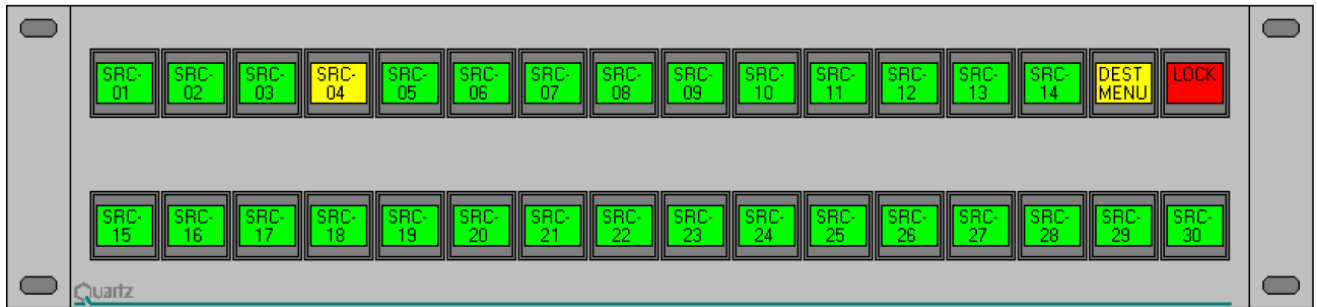
This panel has 32 active LCD buttons and each button is programmable from the router control system to act in many different modes, including source, destination, level, or lock/enable modes.



**Figure 3-5: CP-2024E Control Panel**

**3.8. CONTROL PANEL TYPE: CP-2032E**

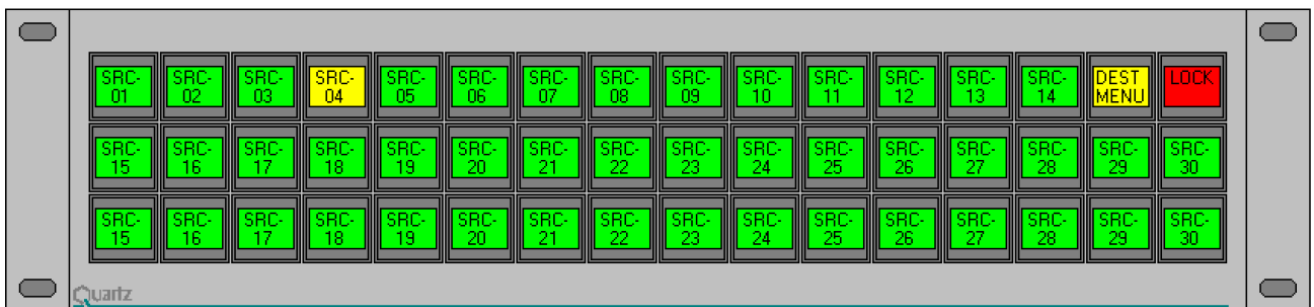
This panel has 32 active LCD buttons and each button is programmable from the router control system to act in many different modes, including source, destination, level, or lock/enable modes.



**Figure 3-6: CP-2032E Control Panel**

**3.9. CONTROL PANEL TYPE: CP-2048E**

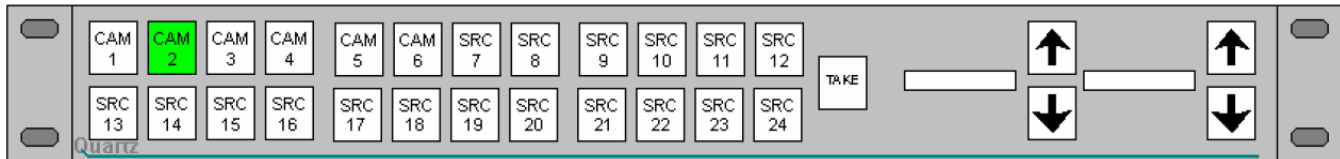
This panel has 48 active LCD buttons and each button is programmable from the router control system to act in many different modes, including source, destination, level, or lock/enable modes.



**Figure 3-7: CP-2048E Control Panel**

### 3.10. CONTROL PANEL TYPE: CP-2402E

This panel uses LED buttons with re-legendable caps and status indication. There are 24 switches which can be used for the selection of sources, destinations, breakaways and control functions, such as salvos. The two uncommitted display windows can be assigned to the functions of selecting the sources or for selecting the destinations.



**Figure 3-8: CP-2402E Control Panel**

There are many modes in which the panel can operate, determined by the setup of the system. Some examples are:

- 16x16 XY with breakaways and lock
- 32x1 with breakaways and lock
- 32x2 with a row of buttons for each destination and with breakaways and lock
- 32x8 XY without breakaway or lock

The destinations and the levels controlled by this panel are determined by the setup of the system and can be changed using the router control system. In this way the buttons are re-configurable so any of the buttons can perform any function. The generic operation below covers all the facilities which can be used.

The assignment of the displays as either source selection or destination selection is achieved during configuration.

#### 3.10.1. Destinations

Either of the two displays can be assigned to be used for selecting the desired destination. Using the up/ down arrow keys, the desired destination is displayed on the one-line display. Subsequent selection of a source, either using the second display and controls or, using an assigned source key, will make the change. The source keys can be designated to be 'Select & Take' or 'Select', in which case the 'Take' key is subsequently used to complete the change.

#### 3.10.2. Sources Button

Select the required source as the new source, either using an assigned source key or using a display and the up/ down arrow keys.

#### 3.10.3. Breakaways

Buttons may be configured to enable breakaway selections of signal levels, such as video, audio 1, audio 2 and time code.



If the breakaways are allowed, then normally all the level buttons light up denoting the *married* mode in which all switching levels are switched simultaneously. If a breakaway selection is required then press the buttons to deselect the levels which are not required to switch. Then press a source button to choose a new source on the breakaway level.

If a breakaway is selected then the source LEDs flash to denote that a breakaway condition exists. If all four levels are selected to different source signals then three of the LEDs flash while the fourth is steady. To find out which source LED corresponds to a particular signal level, select the desired level (by deselecting the other levels) and the steady LED will be the source selected on that level of the matrix.

Note that if more than one level is lit then the steady LED corresponds to the left-most lit level button.

**3.10.4. Lock Button**

This button allows you to protect a route that you have selected. The lock mode can be configured to function in several ways but, by default, it locks its own panel independently for each destination.

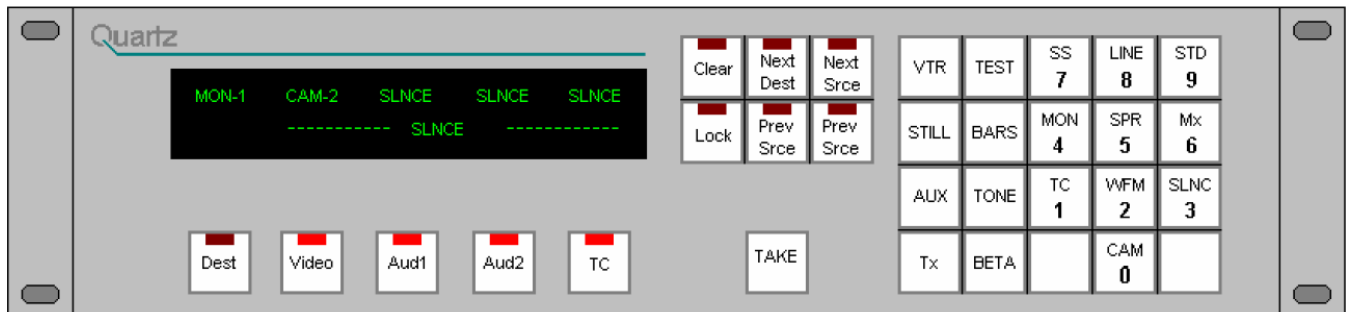
1. Press the LOCK button once to lock the route/panel. The button illuminates to show that the panel is locked.
2. Press the button again to unlock the route/panel.
3. The panel remembers the lock status so that when a destination is locked and this destination is reselected then the lock button will light up to show that this destination is locked.

**3.11. CONTROL PANEL TYPE: CP-3200E**

This panel uses a keypad with 20 keys to select sources and destinations and a green display to show both in use and preset selections.

The keys may be labeled with the names of sources, destinations and breakaway levels printed onto plain paper using a laser printer.

All of the buttons can be configured to operate in different ways, so the description that follows is somewhat generalized and some of the button functions mentioned below may not be set up on your panels.



**Figure 3-9: CP-3200E Control Panel**

### 3.11.1. Keypad

Source and destination names are entered using a single or two step process. The data is entered into the preset lower section of the display. The first press selects the name of the source/destination (e.g. CAM); subsequent presses selects the number (eg 12), to give the overall source name CAM12. If an error is made in the selection, then press the CLEAR button. The names of the sources, destinations and how they are assigned to physical inputs and outputs of the matrix is determined by the setup of the system. Users are able to alter these names and their assignment.

### 3.11.2. Clear

If an error is made during entry of names on the keypad, press the CLEAR button to clear the display.

### 3.11.3. Destinations

To enter the destination, select MODE and press the left-hand button under the display; the LED in this button lights up. Then select a new destination using the keypad. The name is built up in the lower preset section of the display. When you are satisfied with the new destination exit the destination select mode by pressing the button again, or by pressing the TAKE button. The new destination is transferred to use the upper section of the display, alongside its current source selections.

### 3.11.4. Sources Button

When you have left the destination select mode you can select the source. The source name is built up in the display in the same way as the destinations.

### 3.11.5. Take Button

When the desired source is selected into the preset section of the display, you can press the TAKE button to make a cut to the new source.

### 3.11.6. Breakaways

Four buttons are provided to enable breakaway selections of signal levels, such as video, audio 1, audio 2 and time code. These buttons can be labeled to suit each application. The system setup determines which buttons are active (ie. which breakaways are allowed). If breakaways are allowed, then when a new destination is selected, all the level buttons light up denoting the *audio-follow-video* or *married* mode in which all switching levels are switched simultaneously (this is the normal condition). If a breakaway selection is required then press the buttons to deselect the levels which are not required to switch.

### 3.11.7. Lock Button

This button allows you to protect a route that you have selected. The LOCK button locks the panel or other panels from making further selections. The lock mode can function in several ways; it is possible to lock your *own* panel, or *all other* panels or even *all* panels. Furthermore, when you press the lock button it can lock just the current destination or it can lock all destinations. The choice of lock modes is set in the software configuration according to customer requirements.

1. Press the button once to lock the panel. The green display shows that the panel is locked.
2. Press the button again to unlock the panel.

### **3.12. CONTROL PANEL TYPE: CP-3200E IN 5 BUS MODE**

This panel is a standard CP-3200E configured so that it accesses five destinations, but with no breakaway capability. It uses a keypad with 20 keys to select the sources and a green display to show both **in use** and **preset** selections.

All of the buttons can be configured to operate in different ways, so the description that follows is somewhat generalized and some of the button functions mentioned below may not be set up on your panels.

#### **3.12.1. Keypad**

Source names are entered using a single or two step process. The data is entered into the preset lower section of the display. The first press selects the name of the source/destination (eg, CAM); subsequent presses select the number (eg 12), to give the overall source name of CAM12. If an error is made in the selection, then press the CLEAR button. The names of the sources and how they are assigned to physical inputs and outputs of the matrix is determined by the setup of the system.

#### **3.12.2. Clear**

If an error is made during the entry of names on the keypad, press the CLEAR button to clear the display.

#### **3.12.3. Sources Button**

Select the source using the keypad to build up the name in the preset display.

#### **3.12.4. Destinations**

To select the preset source to a destination press one of the destination buttons under the display.

#### **3.12.5. Breakaways**

There are no breakaways on this panel. The levels controlled (eg *audio-follow-video*) are determined by the setup of the system.

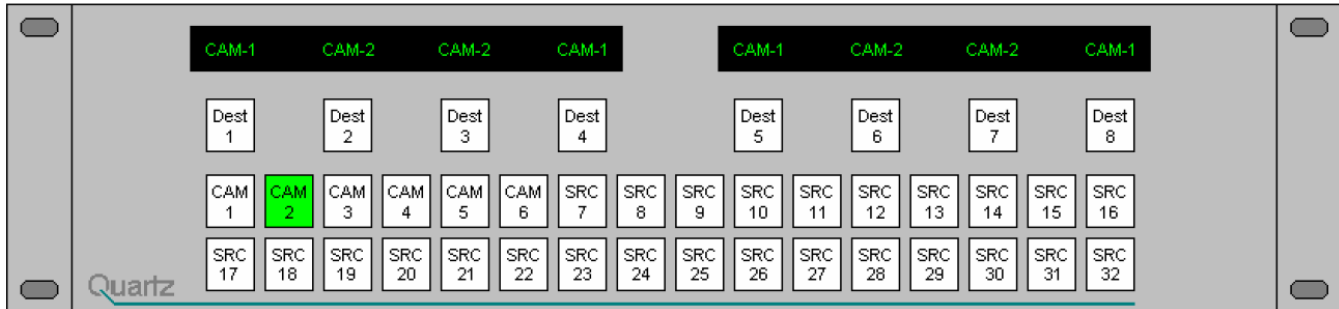
#### **3.12.6. Lock Button**

This button allows you to protect a route that you have selected. The LOCK button locks the panel or other panels from making further selections. The lock mode can function in several ways; it is possible to lock your *own* panel, or *all other* panels or even *all* panels. Furthermore, when you press the lock button it can lock just the current destination or it can lock all destinations. The choice of lock modes is set in the software configuration according to customer requirements.

1. Press the button once to lock the panel. The green display shows that the panel is locked.
2. Press the button again to unlock the panel.

### 3.13. CONTROL PANEL TYPE: CP-3208E

This panel uses LED buttons with re-legendable caps and status indication. There are 32 switches which can be used for the selection of sources, and 8 under the displays which are *take* buttons. The 7 character LED dot matrix displays show the current source routed to each of the 8 destinations, as defined in the router control system.



**Figure 3-10: CP-3208E Control Panel**

The destination and the levels controlled by this panel are determined by the setup of the system and can be changed using the router control system. In this way the buttons are re-configurable.

#### 3.13.1. Sources Button

Press the required source button to pre-select the source. The source button will illuminate. Press the take button under the display for the required destination, the display will update with the new source name. The take buttons can either leave the pre-selected source button ready for another take, or clear it to prevent accidental changes.

#### 3.13.2. Lock Button

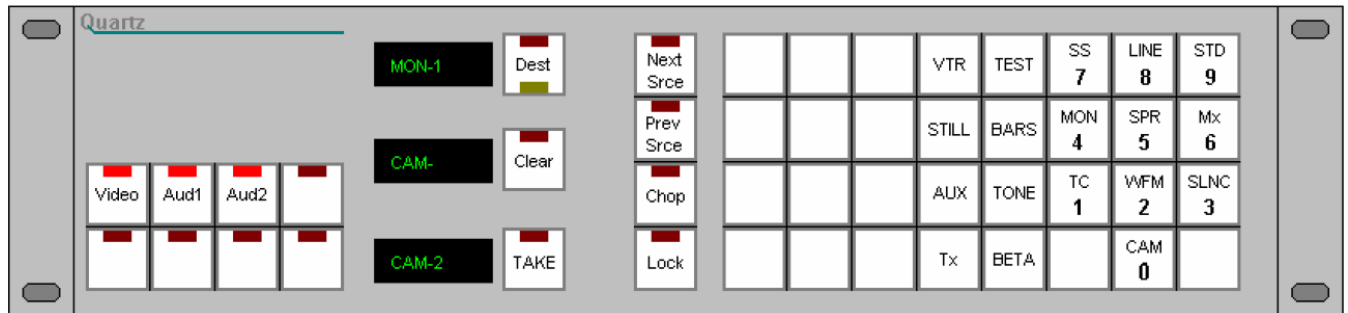
A lock button can be setup to allow you to protect the panel.

1. Press the LOCK button to lock the panel. The LOCK button illuminates to show that the panel is locked.
2. Press the button again to unlock the panel.

### 3.14. CONTROL PANEL TYPE: CP-6400E

This panel uses a keypad with 32 keys to select sources and destinations, and 3 green LED dot matrix displays to show current destination and source in use and preset selections. The left hand block of 8 keys are normally used for breakaway/level selection.

The keys may be labeled with the names of sources, destinations and breakaway levels printed onto plain paper using a laser printer.



**Figure 3-11: CP-6400E Control Panel**

All of the buttons can be configured to operate in different ways, so the description that follows is somewhat generalized and some of the button functions mentioned below may not be set up on your panels.

#### 3.14.1. Keypad

Source and destination names are entered using a single or two step process. The data is entered into the preset lower section of the display. The first press selects the name of the source/destination (for example CAM); subsequent presses select the number (eg 12), to give the overall source name CAM12. If an error is made in the selection, then press the CLEAR button. The names of the sources, destinations and how they are assigned to physical inputs and outputs of the matrix is determined by the setup of the system. The router control system is available to allow users to alter these names and their assignment.

#### 3.14.2. Clear

If an error is made during entry of names on the keypad, press the CLEAR button to clear the display.

#### 3.14.3. Destinations

To enter the destination select mode, press the button by the upper display; the LED in this button lights up and the centre preset window becomes the destination preset display. Then select a new destination using the keypad, the name is built up in the centre display. When you are satisfied with the new destination, exit the destination select mode by pressing the button again. The new destination is transferred to the in use upper section of the display, and the current source selection updates.

### 3.14.4. Sources Button

When you have left the destination select mode you can select the source. The source name is built up in the centre display in the same way as the destinations.

### 3.14.5. Take Button

When the desired source is selected into the preset section of the display, you can press the TAKE button to make a cut to the new source.

### 3.14.6. Breakaways

Eight buttons are provided to enable breakaway selections of signal levels, such as video, audio 1, audio 2 and time code. These buttons can be labeled to suit each application. The system setup determines which buttons are active (ie which breakaways are allowed). If breakaways are allowed, then when a new destination is selected, all the level buttons light up denoting the *audio-follow-video* or *married* mode in which all switching levels are switched simultaneously. This is the normal condition. If a breakaway selection is required then press the buttons to deselect the levels which are not required to switch.

### 3.14.7. Lock Button

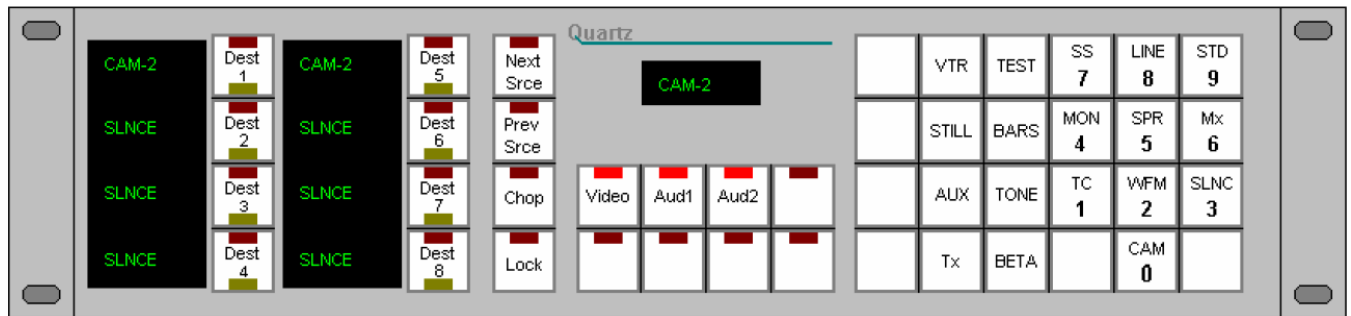
This button allows you to protect a route that you have selected. The LOCK button locks the panel or other panels from making further selections. The lock mode can function in several ways; it is possible to lock your *own* panel, or *all other* panels or even *all* panels. Furthermore, when you press the lock button it can lock just the current destination or it can lock all destinations. The choice of lock modes is set in the software configuration according to customer requirements.

1. Press the button once to lock the panel. The green display shows that the panel is locked.
2. Press the button again to unlock the panel.

### 3.15. CONTROL PANEL TYPE: CP-6408E

This panel uses a keypad with 24 keys to select sources and destinations and 9 green LED dot matrix Displays. It can work as an 8 destination panel showing the current sources for 8 destinations and the source preset selections. Alternatively it can work as an XY panel showing the status of 8 levels to the currently selected destination. The middle block of 8 keys are normally used for breakaway/level selection.

The keys may be labeled with the names of sources, destinations and breakaway levels printed onto plain paper using a laser printer.



**Figure 3-12: CP-6408E Control Panel**

All of the buttons can be configured to operate in different ways, so the description that follows is somewhat generalized and some of the button functions mentioned below may not be set up on your panels.

#### 3.15.1. Keypad

Source and destination names are entered using a single or two step process. The data is entered into the preset lower section of the display. The first press selects the name of the source/destination (eg CAM); subsequent presses select the number (eg 12), to give the overall source name CAM12. If an error is made in the selection, then press the CLEAR button. The names of the sources and destinations and how they are assigned to physical inputs and outputs of the matrix is determined by the setup of the system. The router control system is available to allow users to alter these names and their assignment.

#### 3.15.2. Clear

If an error is made during entry of names on the keypad, press the CLEAR button to clear the display.

#### 3.15.3. Sources Button

The source name is built up in the source preset display.

#### 3.15.4. Take Button

When the desired source is selected into the preset section of the display, you can press one of the 8 TAKE buttons to the right of each source display.

### 3.15.5. Breakaways

Eight buttons are provided to enable breakaway selections of signal levels, such as video, audio 1, audio 2 and time code. These buttons can be labeled to suit each application. The system setup determines which buttons are active (for example, which breakaways are allowed). If breakaways are allowed, then when a new destination is selected, all the level buttons light up denoting the *audio-follow-video* or *married* mode in which all switching levels are switched simultaneously. This is the normal condition. If a breakaway selection is required then press the buttons to deselect the levels which are not required to switch.

### 3.15.6. Lock Button

This button allows you to protect a route that you have selected. The LOCK button locks the panel or other panels from making further selections. The lock mode can function in several ways; it is possible to lock your *own* panel, or *all other* panels or even *all* panels. Furthermore, when you press the lock button it can lock just the current destination or it can lock all destinations. The choice of lock modes is set in the software configuration according to customer requirements.

1. Press the LOCK button once to lock the panel. The green display shows that the panel is locked.
2. Press the LOCK button again to unlock the panel.



## 4. SPECIFICATIONS

### 4.1. POWER

<b>Voltage:</b>	Auto ranging, 100 ⇔ 240 VAC, 50/60 Hz or 12 VDC, 3A
<b>Power:</b>	40W
<b>Fuses:</b>	1 amps, 250 Volt time delay 5 x 20 mm. – line and neutral
<b>Safety:</b>	ETL Listed, complies with EU safety directives
<b>EMI/RFI:</b>	Complies with FCC Part 15 Class A regulations Complies with EU EMC directive

### 4.2. PHYSICAL

<b>Height:</b>	
<b>1RU Panels:</b>	CP-1604E, CP-3201E, CP-1000E, CP-2402E 1.75" (45 mm) 1 RU standard rack height
<b>2RU Panels:</b>	CP-6401E, CP-2024E, CP-2032E, CP-2048E, CP-3200E, CP-3208E CP-6400E, CP-6408E 3.5" (89 mm) 2 RU standard rack height
<b>Width:</b>	19" (483 mm) 19" Rack Mount
<b>Depth:</b>	3.5" (89 mm) not including connectors
<b>Desk Top Mounting (Desk Mount Kit required)</b>	
<b>Panel Depth:</b>	1.4" (35 mm)
<b>Chassis Depth:</b>	3.5" (89 mm) not including connectors
<b>Distance from Panel to Chassis:</b>	40" (1m) max
<b>Weight:</b>	
<b>1 RU Panels:</b>	3 lbs. (1.36 kg)
<b>2 RU Panels:</b>	4 lbs. (1.81 kg)
<b>Operating Temp:</b>	0-40°C

### 4.3. CONTROL

<b>Serial:</b>	RS232/422, D9 female
<b>Debug:</b>	RS232, D9 female, firmware updates and debug
<b>Joystick:</b>	Parallel contact closure TTL Levels, D9 male, TTL levels
<b>Ethernet:</b>	10/100 Base T, 2 x RJ45

### 4.4. UPGRADING THE FIRMWARE

#### 4.4.1. Overview

The firmware in the control panel is contained on a FLASH EPROM. From time to time firmware updates will be provided to add additional features to the unit.

You will need the following equipment in order to update the Firmware:

- PC with available communications port. The communication speed is 115200 baud.
- “Straight-thru” serial extension cable
- Terminal program that is capable of Xmodem file transfer protocol. (such as HyperTerminal)
- New firmware supplied by Evertz.

#### 4.4.2. Terminal Program Setup

1. Connect the serial cable to the DEBUG connector on the rear panel.
2. Connect the 9 pin connector on the end of the serial update cable to the PCs’ RS-232 communications port.
3. Start the terminal program.
4. Configure the port settings of the terminal program as follows:

Baud	<b>115200</b>
Parity	<b>no</b>
Data bits	<b>8</b>
Stop bits	<b>2</b>
Flow Control	<b>None</b>

5. Power up the control panel unit.

#### 4.4.3. Initiating Firmware Upgrade Mode from the Terminal Program

You may send commands to the control panel Boot monitor in order to upgrade the panel application firmware.

7. Power up the control panel. After the unit powers up, a banner with the boot code version information should appear in the terminal window. The cursor to the right of the word “BOOT>” should be spinning.

For example:

```
EVERTZ MCF5272 MONITOR 2.4 BUILD 2 (66 MHZ)
COPYRIGHT 1997, 1998, 1999, 2000, 2001, 2002 EVERTZ MICROSYSTEMS LTD.
28F640BFHE FLASH DETECTED
BRD=CPE-MB
MODEL=BACPE-MB-CPE-MB-XX-REV2
PROD=CP-2048EE
FRAME=9000FR
MCF5272 COLD BOOT>
```

8. The following is a list of possible reasons for failed communications:

- Defective Serial Upgrade cable.
- Wrong communications port selected in the terminal program.
- Improper port settings in the terminal program. (Refer to step 4 for settings). Note that HyperTerminal will not change port settings while connected. Click on HyperTerminal's "Disconnect" Button then click the "Reconnect" button to activate changes to the port settings.

9. While the cursor is spinning press the <CTRL> and <X> keys, this should stop the cursor from spinning. The spinning prompt will only remain for about 5 seconds. You must press <CTRL-X> during this 5 second delay. If the unit continues to boot-up, simply cycle the power and repeat this step.

10. Hit the <ENTER> key on your computer once.

11. Type the word "upgrade", without quotes, and hit the <ENTER> key once.

12. The boot code will ask for confirmation. Type "y", without quotes.

#### **4.4.4. Uploading the New Firmware**

13. You should now see a prompt asking you to upload the file.

14. Upload the "\*.bin" file supplied using the X-Modem transfer protocol of your terminal program. If you do not start the upload within 10 minutes the unit's Boot code will time out. You can restart the upgrade process by power cycling the unit.

The control panel application firmware is contained in a "bin" file that will have a name similar to:

router\_cp\_e\_1\_4\_2.bin

The version number usually follows the main file name (e.g. 2v0\_1 is version 2.0 build 1).

15. The boot code will indicate whether the operation was successful upon completion of the upload.

For Example:

```
UPLOAD OKAY
MCF5272 COLD BOOT>
```

16. Power cycle the control panel.

### 4.5. SERVICING INSTRUCTIONS



**CAUTION:** These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing instructions in this section of the manual unless you are qualified to do so.

#### 4.5.1. Changing the Fuses



**CAUTION:** For continued protection against the risk of fire, replace only with the same type and rating of fuse.

**ATTENTION:** Pour éviter les risques d'incendie, remplacer le fusible avec un fusible de même calibre.

The fuse holder is located inside the power entry module. To change the fuses, disconnect the line cord from the power entry module and pull the fuse holder out from the power entry module using a small screwdriver. The fuse holder contains two fuses, one for the line and one for the neutral side of the mains connection. Pull out the blown fuse and place a fuse of the correct value in its place Use slo blo (time delay) 5 x 20 mm fuses rated for 250 Volts with a current rating of 1 amp. Carefully reinsert the fuse holder into the power entry module.

#### 4.5.2. Enabling/Disabling the Buzzer

In order to disable the buzzer, you must remove the top cover of the panel and change a link inside the unit. Disconnect the line cord from the power entry module and disconnect any DC power source connected to the unit. Using a small Phillips screwdriver, remove the top cover of the unit. The buzzer is a square device located in front of the two RJ-45 Ethernet connectors. Jumper J2, located to the immediate right of the buzzer controls whether the buzzer will be active or not. To enable the buzzer, move the link to the **BUZZER** position. To disable the buzzer move the line to the **OFF** position. Replace the top cover and screws, and reinstall the unit into your system.