Quartz

Routing Control System

And Control Panels

Manual

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PREFACE

Thank you for buying a Quartz routing switcher. We are confident that you have made a sound investment in equipment that will give satisfaction for many years to come. This manual is a complete guide to the installation, operation and maintenance of your router control system including control panels.

SAFETY

WARNING: Dangerously high voltages are present inside this equipment.

WARNING: To reduce the risk of fire or electrical shock, do not expose this appliance to rain or moisture.

WARNING: This equipment uses power/mains connectors fitted with earth pins. It is most important as a matter of personal safety that the equipment is properly earthed.

CAUTION: This equipment may have more than one power supply cord. To reduce the risk of electric shock, disconnect all power supply cords before servicing.

CAUTION: These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified personnel.

CAUTION: To reduce the risk of electric shock, plug each power supply cord into separate branch circuits employing separate service grounds.

NEVER use flammable or combustible chemicals for cleaning components.

NEVER operate this product with any covers removed.

NEVER wet the inside of this product with any liquid.

NEVER bypass any fuse or replace any fuse with a value or type other than those specified.

NEVER operate this product in an explosive atmosphere.

NEVER block the airflow through ventilation slots.

NEVER expose this product to extremely low or high temperatures.

This product complies with the requirements of the product family standards for video, audio, audio-visual entertainment, and lighting control apparatus for professional use as mentioned below.

CE	EN60950	Safety
	EN55103-1: 1996	Emission
	EN55103-2: 1996	Immunity

Quartz Electronics Ltd

FC

Tested to comply with FCC Standards

For Home or Office Use

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1) This device may cause harmful interference, and
2) This device must accept any interference received, including interference that may cause undesired operation.

Contents

INSTALLATION

Introduction

This section describes how to install your router control system, mainly control panels, with the minimum of fuss and time. The system has been designed with the aim of being simple to install.

Unpacking

Carefully remove the equipment from the boxes and check it against the Packing List. This shows what items have been shipped against your order and includes all options. 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 if the unit needs 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 (to be found on the rear or side of each unit).

Check that power cords supplied are suitable for your country and that the equipment has been set to the correct mains (line) voltage. Note that standard remote panels are mains powered and must also be checked. Instructions are to be found later in this section on how to change the voltage.

Do NOT change any DIP switch or rotary switch settings at this stage as these will have been correctly set before leaving the factory.

Physical Installation

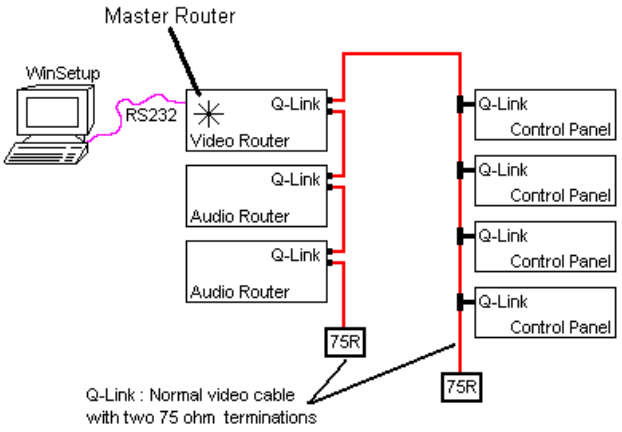
Standard remote control panels are designed to fit into standard 19" equipment racks. Panels can be mounted at any angle. Standard panels are 130mm deep plus connectors.

Electrical Connections

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 75W.** A pair of connectors is fitted to the frames and the link looped through them.

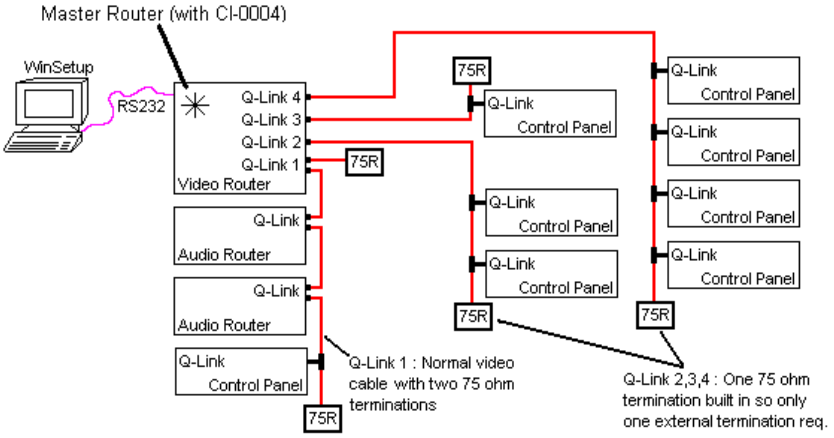
On frames with several Q-Link connectors the “Q-Link-1” or “Q-Link 1a/1b” is always available. The extra Q-link connectors are only supported when a CI-0004 module is installed on to the FU-0003 processor. Only one connector is fitted on the panels and a T-piece needed to tap off the **Q-link**. In this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



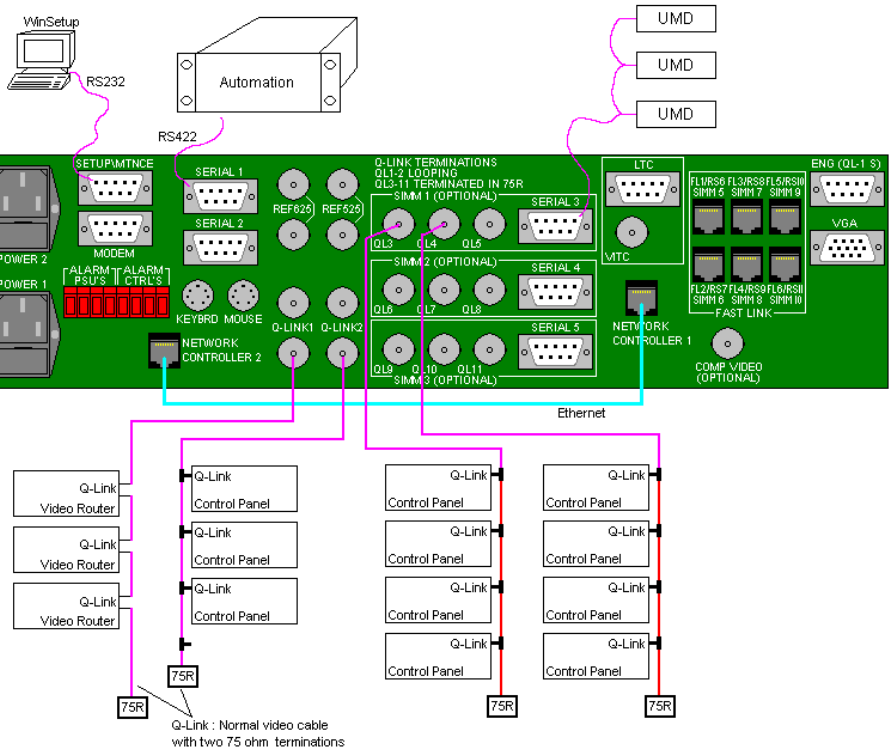
This daisy chain method ensures the best transmission quality of the control signals down the cable. Short cuts that might save cable, such as running stubs to some panels, are not recommended as this may cause data errors under certain circumstances. The maximum cable length is shown in the Technical Specification in Section 2 of this manual.

A total of 64 devices (V5 firmware) can be supported, normally organised as 16 frames and 48 panels. Each unit connected to the **Q-link** has its own *address* switch 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.

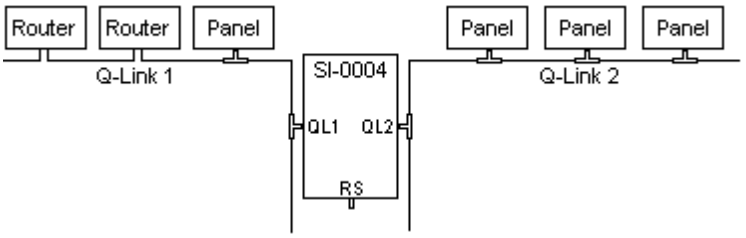


In larger systems the extra processing power of the SC-1000 is often required. This is a separate 2U controller that supports an optional backup controller and backup PSU. The large number of Q-Links allows a system to be split into physical areas such as vision control, audio, production, and engineering.

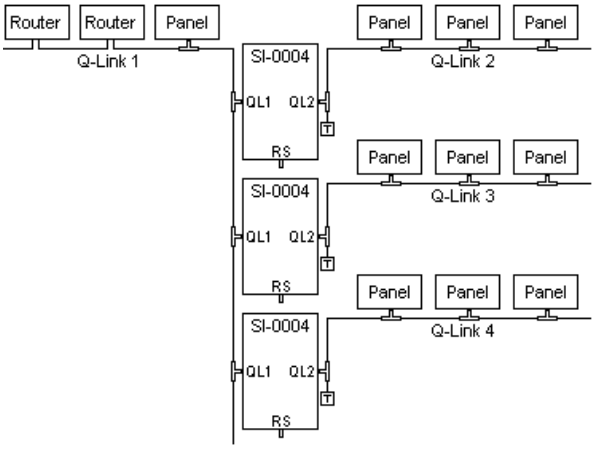


As a system design guide the SC-1000 should be considered when the router grows above 128x128 single level or has more than 10-15 total Q-Link devices. See section 6.10 for further information on the SC-1000.

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.

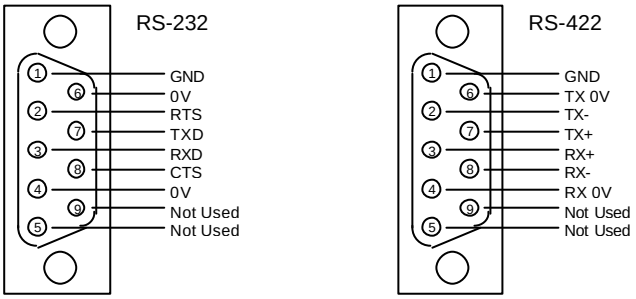


Refer to Application Note AN-0016 for further information on the SI-0004 interface.

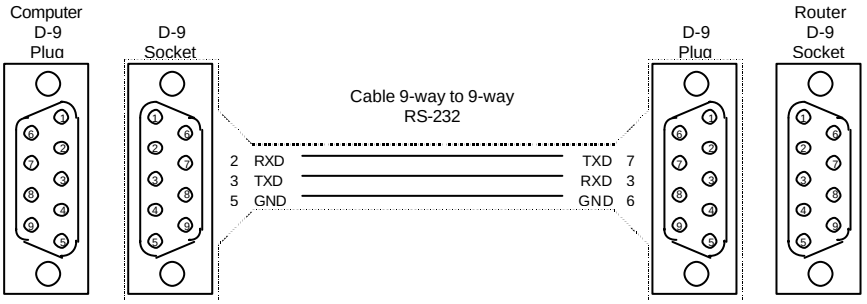
RS232/422 Computer Port

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-3200-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.



Joystick Override

Joystick or camera micro-switch override is provided as a standard feature on all control panels and is accessed on the PARALLEL port. The mating connector is a 9 way D-type socket; use a tin and

dimple type with an earthed metal shell to prevent RFI emissions from the equipment. The pin connections are:

Pin	Function
1	Camera 1
2	Camera 2
3	Camera 3
4	Camera 4
5	Camera 5
6	Camera 6
7	Camera 7
8	Camera 8
9	0V

By default the eight cameras are assigned to be the first eight inputs of the matrix, but it is possible for them to be mapped to any input by the customer using the WinSetup. Also the destination controlled is normally set to the same destination accessed from the panel, but once again this is programmable to suit individual applications. If more than eight cameras are needed then the Parallel Interface PI-1600 is used.

Power

IEC connectors are used to supply power to panels. Each connector has an earth pin and as matter of safety this earth pin must be connected to a *solid* ground to ensure proper earthing of the metalwork.

In the UK equipment is often supplied with a power cord suitable for wiring into a plug of the user's choice. Please wire the plug using the colour code below:

Brown	Live (Line or Phase)
Blue	Neutral (Return)
Green/Yellow	Earth (Ground)

Setting the Power Line Voltage in Panels

On most products the voltage must be checked and if necessary set prior to inserting the power cord.

The 220v (or 230v) setting is suitable for both 220v and 240v countries. The 110v (or 115v) setting is suitable for 100v and 120v countries. Refer to the technical specifications in Section 2 for the voltage ranges permitted.

1. Remove the power cord(s).
2. Use a small screwdriver to ease loose the voltage selector/fuse holder.
3. Pull out the fuse drawer. The main fuse is clearly visible, but there may also a spare. The fuse rating is shown on the rear of the unit and on a label fitted to the lid.
4. Some equipment uses a voltage selector in which a single voltage is visible through a small window, in which case please follow step 4a below. Other equipment uses a voltage selector in which two voltages are visible, in which case please follow step 4b below.

4a. Remove the voltage selector insert from the main fuse holder, select the required voltage setting, and replace in the fuse holder. Fit the correct fuse and replace the fuse holder, pushing until it snaps home.

4b. Rotate the drawer so that the correct power line voltage can be read (and the incorrect is upside down). Fit the correct fuse and replace the fuse holder, pushing until it snaps home.

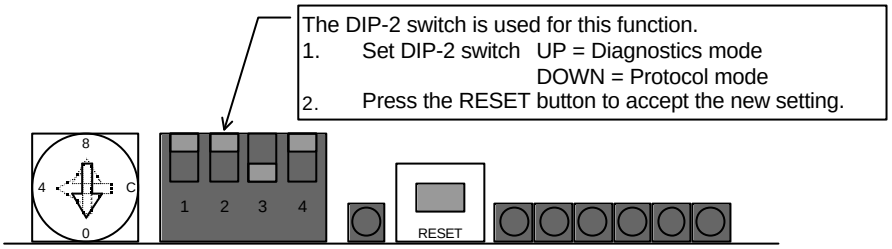
5. Plug the power cord into the equipment.
6. Remember to repeat the procedure for the backup supply, if fitted.

Configuring Remote Control Panels

The main setup or configuration, generated by WinSetup, determines the detail of the way each panel functions. However there are a few functions set on the panels by the user. This section describes how to alter them. Note that the rotary *hex* and DIP switches are only read at power up or following a RESET. If you make any changes you must press the RESET button so that the new settings are acted upon.

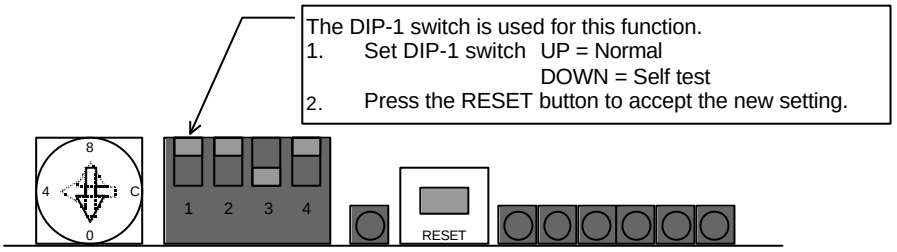
Serial Port Mode: Diagnostics or Protocol

The computer port can be set to diagnostics mode or protocol mode. Normally the setting is for diagnostics mode so that the matrix outputs basic error logging information. Use this mode with the WinSetup 'PC Comms Window' or any dumb terminal. The protocol mode is used if a computer is being used to download a new system configuration from WinSetup, or if the matrix is to be controlled from an external computer in a remote switching application.



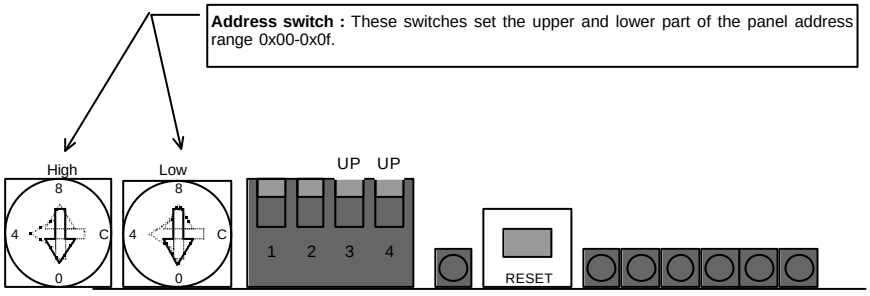
Self Test: Normal power up or Self Test

Most panels can be made to perform a power up lamp, display, and button test.



Panel Address

Panels connected to the Q-link are fitted with two rotary *hex* switches to set the unique address of the panel. If you have more than one panel in your system then you must set each panel to have a different code. If this is not done then the panel communications on the Q-link cannot function properly. Also the master unit will not be able to download a configuration for the panels. Normally equipment is shipped with these addresses set correctly to suit the customer's requirement.



Panels with identical hardware can be exchanged in a system by transposing the Panel Addresses. Note that these instructions only apply to current control panels fitted with PU-0006 (PC-223 Issue 2).

Buzzer

Most panels are fitted with a sounder or buzzer to provide warnings when certain buttons are pressed. This can be enabled or disabled by moving a link adjacent to the buzzer.

CP-1601A

There are two jumper links in this control panel to set up Lock and Enable modes. Unscrew the front panel catches. The links are to be found on the right-hand side of the PCB upon which the buttons are mounted. Set the links to the following positions A or B as shown on the ident of the module (viewed from panel front):

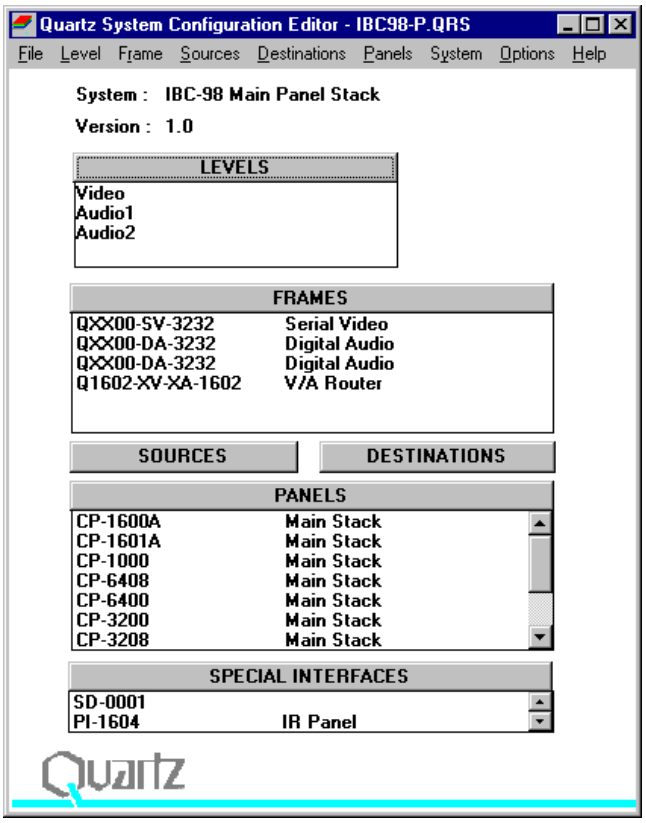
Left Link:	A (left position) = 17th button as normal button
	B (right position) = 17th button as enable for other 16 buttons
Right Link:	A (left position) = 17th button LED off
	B (right position) = 17th button LED on

WinSetup – A Quick Guide

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 routing frames and panels are connected to the system, what the names are for the inputs and outputs.

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 WinSetup, intended to get you started.

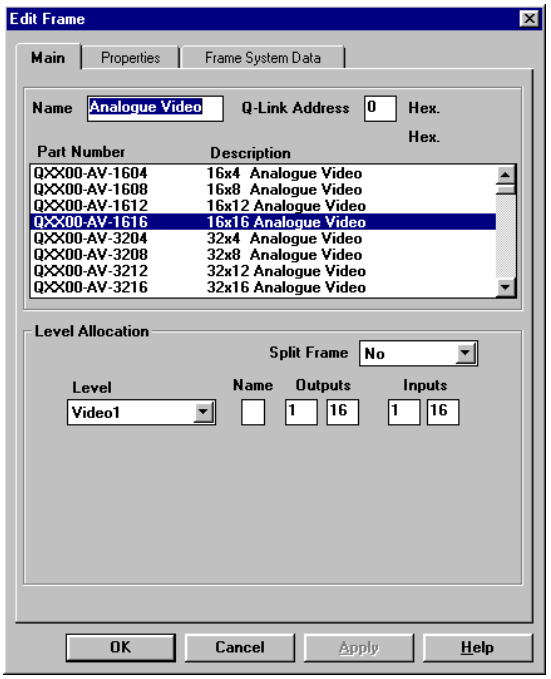
The following dialog is the WinSetup main screen. Any part of the system can be configured from the menu at the top of the screen. The grey bars above each main section and the lines items within the main sections can both be used for quick access to specific items.



If you are generating a system configuration from new then some of the menu's and functions are greyed out (not available). This is deliberate to 'lead you through' the functions that need to be set up. Carry out the following functions to configure your system.

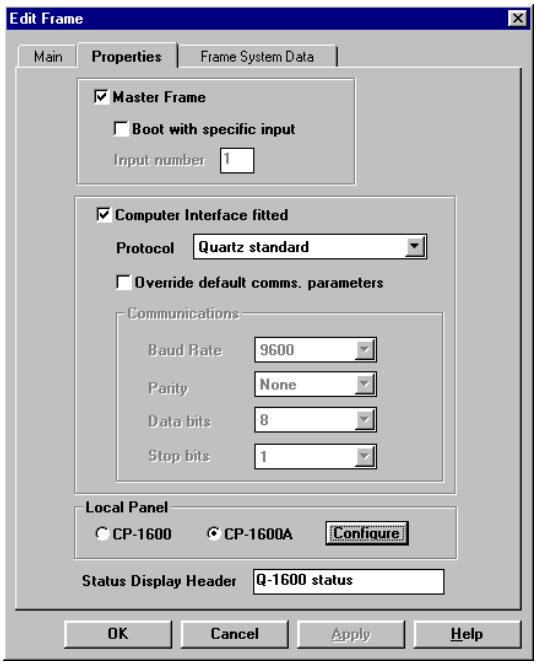
(1) Levels: Enter the level names for each of the signal levels you want to control. The example above shows a typical small system with video and stereo audio. Do not tick the Complex box at this stage.

(2) Frames: Enter the frames dialog and use the new button. This will show all Quartz routers listed by part number. Select the part number that matches the part number on the routers serial number label. If you cannot find an exact match then use one of the generic part numbers like Qxx00-SV-3232 for a Q3200-SV-3232 or a Q6400-SV-3232.

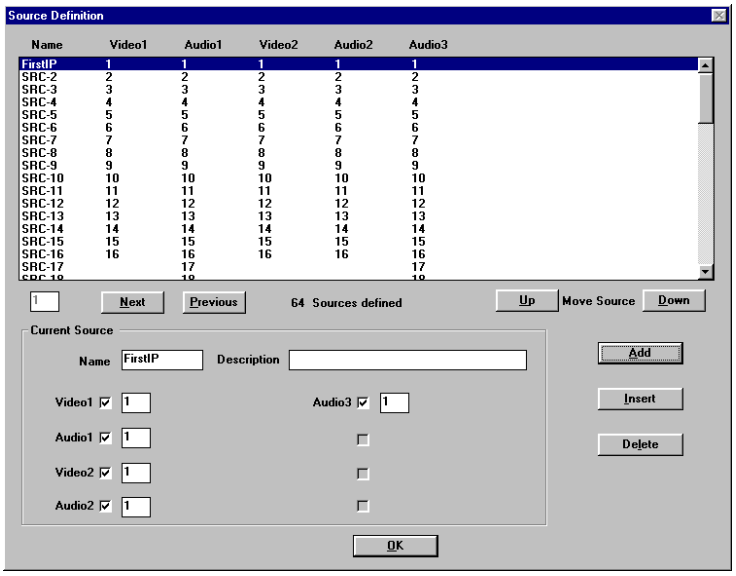


Router frames have to be 'attached' to the router level that they are to follow, and this is set in the level allocation section in the lower half of the screen.

Now use the properties tab to set the routers internal control functions. Note that this dialog is not essential for system operation, but if filled in helps to document how the system is to be used.



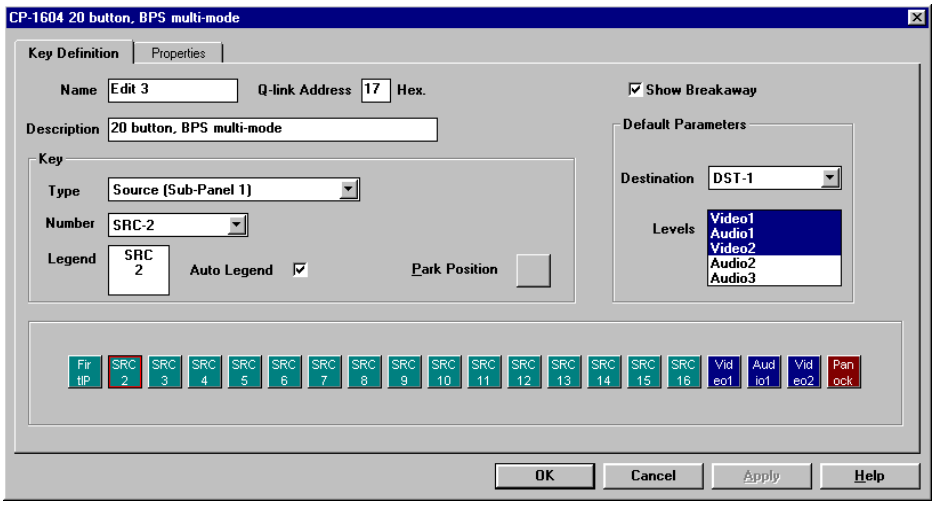
(3) Sources: Enter the sources dialog and use the add button to fill the name table with SRC-1 to SRC-x. The names can be edited later when a few panels are configured and working.



If you want the edit a name now then 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.

(5) Panels : Enter the panels dialog and use the new button. This will show all Quartz panels listed by part number. Select the part number that matches the part number on the panels serial number label. A new dialog will appear showing a graphic of the panel.



Each button can be programmed by selecting the button and then editing the functions in the key section. Each panel should also be given a name for later identification, EDIT 3 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.

(5) Download: Use the System menu, Download-to-Router, to transfer the setup data to the router, having first set the correct COM port and baud rate (normally 38400). Remember to save the setup as it can **NOT** be retrieved from the router.

GENERAL DESCRIPTION

Introduction

This section describes features of the Quartz Router Control System and how to apply them in your own particular situation.

The Quartz range of routing switchers handles virtually all signal formats in sizes from 16x1 to 1024x1024. Sophisticated control is built into each router (except Q1601/Q1602) allowing the full range of standard Q-Link panels to be added to a system. Any mix of routers and control panels is possible within one system as all products share a common control system.

Q1601/Q1602 range of routing switchers that can handle 8 or 16 inputs and 1 or 2 outputs is covered in Manual-06. The video and audio is contained in a 1U package and can be expanded for more inputs by cascading. These routers are normally supplied with a simple control system, but this can be upgraded by the addition of a standard processor module enabling all the control features found in the larger routers.

Topaz range handles 16 inputs to 16 outputs or 32 inputs to 32 outputs, with each signal format in a separate 2U package. Backup power supplies are available as an option.

Q16 range handles 16 inputs and up to 16 outputs, with each signal format in a separate 1U package. Backup power supplies are not available in this range, see equivalent Q32 product.

Q32 range handles 32 inputs and up to 32 outputs, with each signal format in a separate 2U package. Backup power supplies are available as an option.

Q6400 range handles up to 64 inputs and up to 64 outputs, with each signal format in a separate package ranging from 3U to 8U. Backup power supplies are available as an option.

Xenon range handles up to 128 inputs and up to 128 outputs, with different signal formats being mixed within the 4U or 8U chassis. Backup controllers and power supplies are available as an option. There is no expansion outside the 4U or 8U chassis.

Q128 range handles up to 128 inputs and up to 128 outputs, with each signal format in a separate package ranging from 6U to 12U. Backup power supplies are available as an option. Expansion to 256x256 is available using external signal splitters and the expansion output module option.

Q256 range handles up to 256 inputs and up to 256 outputs in a single frame or up to 1024x1024 by combining frames. The Q256 is covered in a Manual-08.

Units are stacked together to provide multiple levels. E.g. a system could be provided with serial digital, composite video, three levels of component video, four levels of audio, time code and RS422. Remote control panels are usually supplied as part of a system and these are connected back to the routers by a standard video co-ax cable called **Q-Link**.

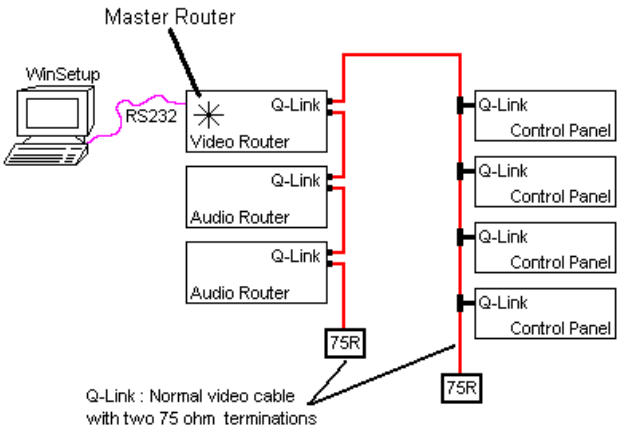
To allow re-configuration, all systems are supplied with WinSetup, which is a Windows program enabling the user to edit the PC based setup files and then download the selected file to the router.

Control System

The microprocessor based control system activities are:

- Read buttons and update displays on both local and remote control panels,
- Respond to data received through the computer port
- Update the router crosspoint switches.
- Handle the communications between different switching levels e.g. audio and video frames.

A small system would typically consist of the routers and control panels connected on a single Q-Link:



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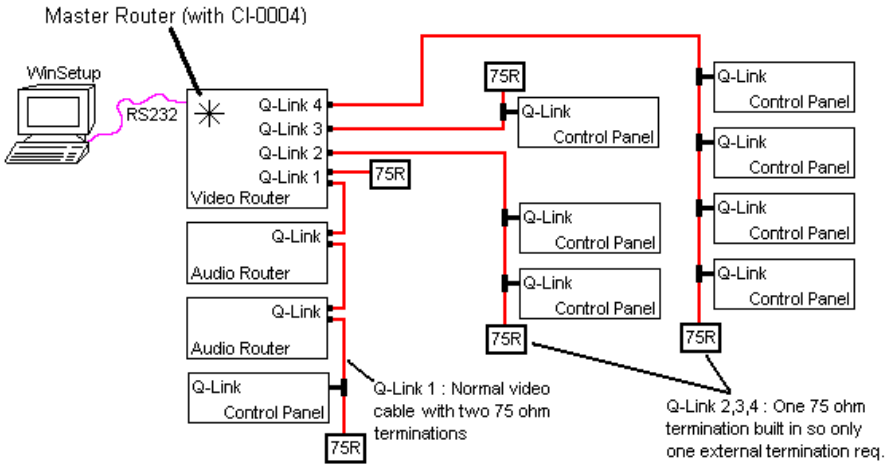

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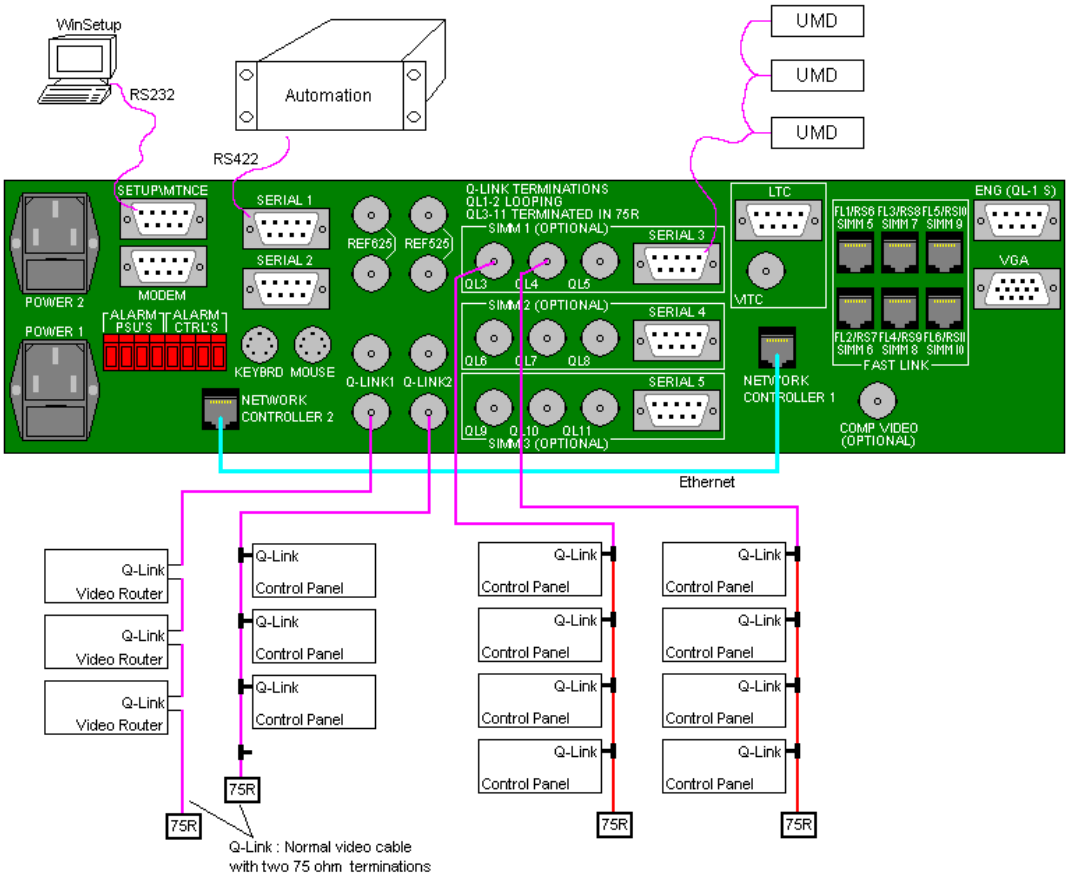


As a system design guide the SC-1000 should be considered when the router grows above 128x128 single level or has more than 10-15 total Q-Link devices. See section 6.10 for further information on the SC-1000.

A variety of other options may be supplied. These include additional RS232/422 Computer Interface Cards to communicate with computers, Parallel Interfaces for connection to custom control panels, or a Video Status Display to show on a TV picture monitor how the routes have been assigned. The options are fully described in **Section 6: Options** of this manual.

Systems are generally configured before shipment to make them work in the unique way required by each customer. This configuration is generated by the WinSetup program and downloaded to the **master** router, where it is stored in non-volatile memory (NVRAM).

Finally, the control system maintains its status in a battery-backed memory so that when the unit is powered down the router remembers its current settings and on powering up again it switches the unit to those settings. The non-volatile RAM that stores this information is fitted inside the Master unit of the system (see below).

There are a number of switches provided which are used to configure the system to suit your own requirements. They are briefly described below, but for more details and a procedure for how to set them up you should refer to the **Installation Section 3.**

Embedded Control: FU-0003

All routers use a standard processor module called the FU-0003. The FU-0003 is capable of acting as a Q-Link master and running a routing system up to approximately 128x128 single level with 10-15 devices on the Q-Link. For systems above this size it is recommended that the SC-1000 be used.

System Controller: SC-1000

The SC-1000 acts as the system controller in larger systems and supports multiple Q-Links and serial ports. It has many advantages over the FU-0003 in larger systems such as:

- Larger database support.
- Faster boot-up time on large systems.
- No disruption as panels are added and removed on large systems.
- Supports multiple Q-Links and Serial ports.
- Dual redundant controller option
- Reduced down-time during re-configuration

Firmware Versions

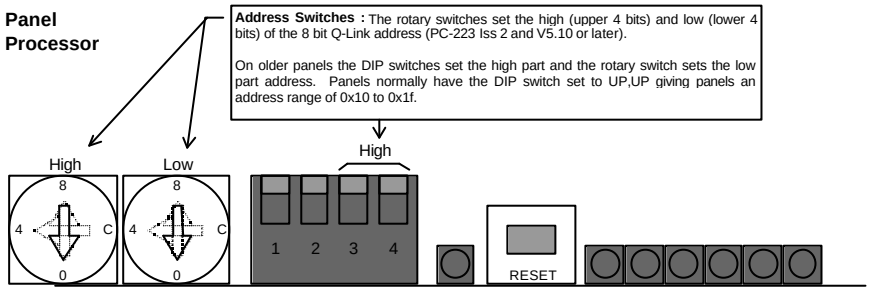
When the FU-0003 processor is used in a router it is fitted with firmware, typically labelled

PC215 V5.00

The **V5**.xx is the major firmware version, and all devices on one Q-Link must have the same major firmware version. The Vx**.00** is the minor firmware version and is used to indicate small improvements and bug fixes.

Address Switches - Panels

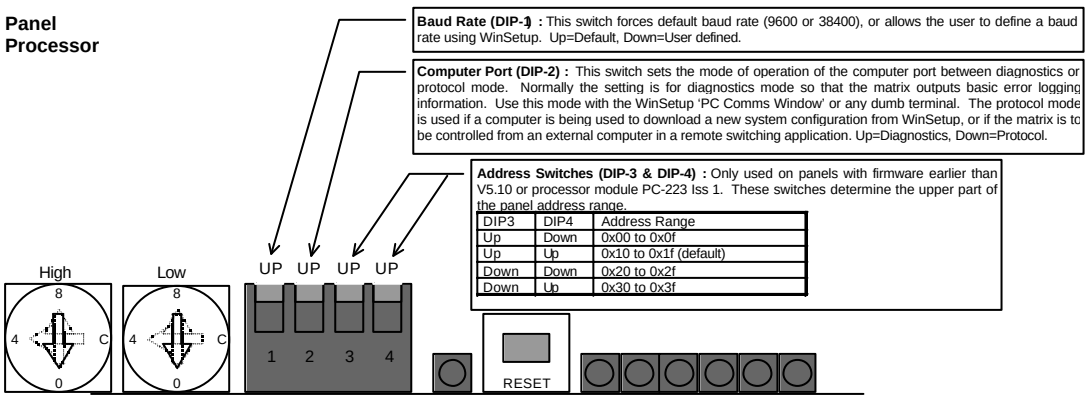
The rotary *hex* switch in each panel determines its unique *address* in the system. This ensures that all devices have a different code allowing the communications down the coaxial **Q-link** to distinguish different units.



The reset switch must be pressed after changing the address switch.

DIP Switches - Panels

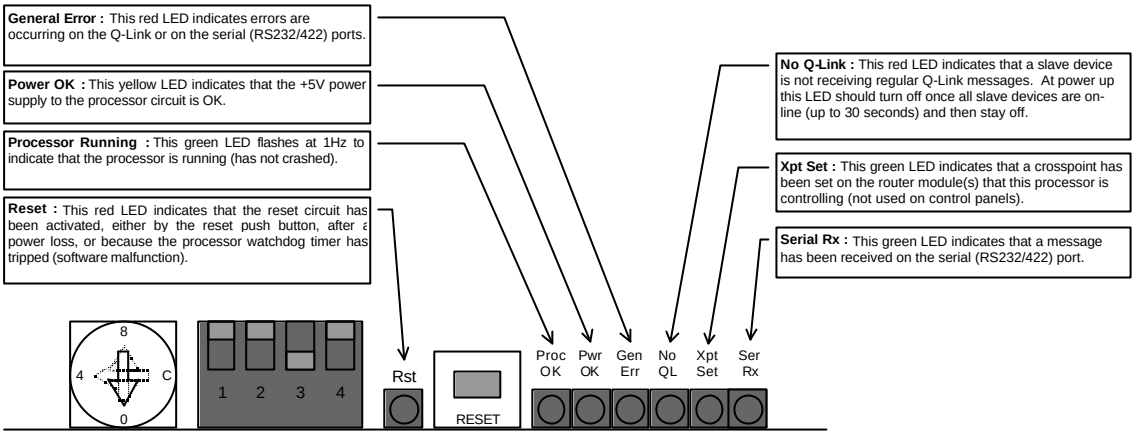
There are four DIP switches at the front of the matrix modules. The DIP functions are :



The reset switch must be pressed after changing the DIP switch.

Status LED's

There are a number of LED's giving status information.



System Control Bus: Q-Link

The **Q-link** used to interconnect the panels and frames uses a single coaxial cable. This method was chosen because it is the easiest for installation.

The **Q-link** is daisy-chained from one panel to the next and between the frames. Messages are sent by injecting signal currents onto the link, to be received by all the other panels or frames on the line. The link is terminated with 75Ω at both ends, as is standard video practice, and will not work without at least one termination.

A *hex* switch in each frame and panel sets the identity of each so that they are correctly addressed by the control system. A total of 64 devices (V5 firmware) can be supported normally organised as 16 frames and 48 panels.

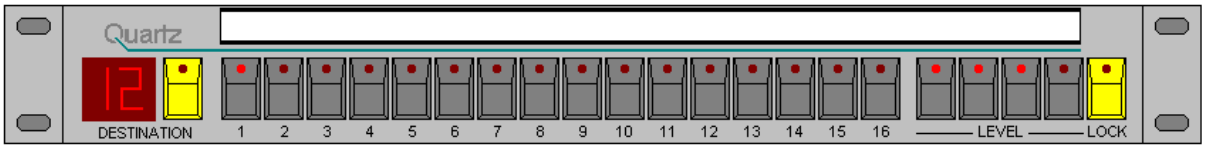
Two BNC sockets are provided on the frames fed from a single driver/receiver. Thus short lengths of coax cable can be used to interconnect the frames in a multi-frame system by looping through the frames. The panels are however fitted with just one BNC connector, as it is better practice to use a T-piece to *tap off* the **Q-link** into the panels. In this way a panel can be removed from service without the **Q-link** being interrupted.

A total run of over 500 metres of video cable can be used between panels and the frames. For installations that require several long runs in different directions the CI-0004 module or SC-1000 System Controller should be used. The SI-0004 Q-Link Opto-Isolator can be used to eliminate earth current problems, particularly in OB installations or large buildings, see section 3 for more details.

As part of the fault diagnosis system detectors are provided in the frame and panels to identify loss of Q-Link to slave devices. This is highlighted by the control system with a LED on the front of the router or panel processor module ('No QL' LED on previous page). This feature is very useful at installation as it enables the cable and its terminations to be verified.

Local Control Panel

This panel is available only on 1U frames, mainly Q16 units. The design of the panel is similar to the CP-1600A remote panel and can be ordered as CP-1600A-LP.



It can be fitted to the front of the frame. This saves an extra rack unit when a panel is required adjacent to the rack, perhaps for engineering use and, because it shares the electronics hardware in the main unit, it is of lower cost than the CP-1600A remote panel.

It has the capability to control all 16 inputs, 16 outputs and four signal levels. It also has a **lock** feature to protect established routes. Refer to **Section 4: Control Panels and Operation** for details of how to use it.

Remote Control Panels

Remote panels are used to indicate current routes and to make new route selections at various locations to suit the user. Most panels are connected to the frame via the 'Q-link' coaxial link. The identity of each panel is determined by the unique setting of a rotary hex switch in each panel.

Each panel is set up to operate in a particular way by the *system setup* located in the master frame of the system and edited using the WinSetup program. This determines, for instance, which destinations can be controlled from each panel. The rotary hex switch mentioned above serves to route the correct setup to each panel.

Most panels are powered from a local 115/230v mains supply.

Custom panels using button-per-source selection can be connected back to the matrix frames via the Parallel Interface PI-1604A or PI-1608A (see Sec 6: Options) and then the Q-link.

CONTROL PANELS and OPERATION

Introduction

Once the system has been fully installed you can start to use it. This section describes the standard control panels supplied with this system and their operation. Router frames of 1U size can support a CP-1600-LP local panel that fits the front of the frame.

Configuring Panels

The WinSetup program defines the precise operation of all control panels. This allows the user to edit the system configuration that is stored as a file on the PC. This file can then be downloaded to the master router (DIP-3 down) where it is stored in NVRAM. When the system powers up the configuration data is transferred to each panel as it comes on-line

Common Features of all Control Panels

Buzzer

The sounder fitted inside all control panels is used to provide warnings when certain buttons are pressed. This can be enabled or disabled by moving a link adjacent to the buzzer.

Joystick or Microswitch Override

This feature is used for matching the colour balance of several cameras. Microswitches in the joysticks of 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 microswitch 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).

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. Refer to **Section 1: Custom** for details of how your system has been set up at the factory.

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.

The Parallel or Joystick connector has the following pin-out:

Pin	Function
1	Camera 1
2	Camera 2
3	Camera 3
4	Camera 4
5	Camera 5
6	Camera 6
7	Camera 7
8	Camera 8
9	0V

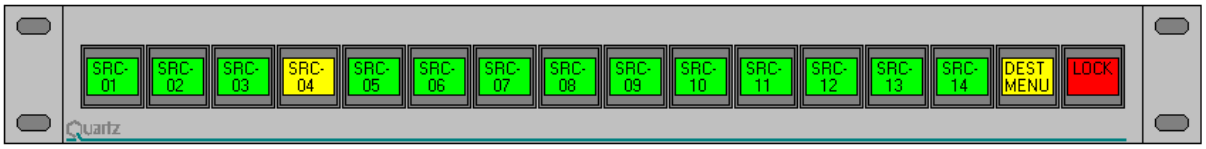
Computer Port

The computer port in the remote panels is an option that provides most of the facilities to be found on the matrix frames. Although this port can be used to control the routing system, it is recommended that the router serial ports should be used in preference. To enable the port the plug-in computer interface card CI-0003 must be fitted.

Stand Alone Serial Panels

Most control panels can be supplied with special software and a CI-0003 fitted to allow stand alone (no Q-Link) operation, with the panel being controlled via the computer port. This is useful when the panel is to be used with a third party control system such as the BBC BNCS or Omnibus systems. These panels should be ordered with the –S7 suffix e.g. CP-3200-S7.

Control Panel Type: CP-1000



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

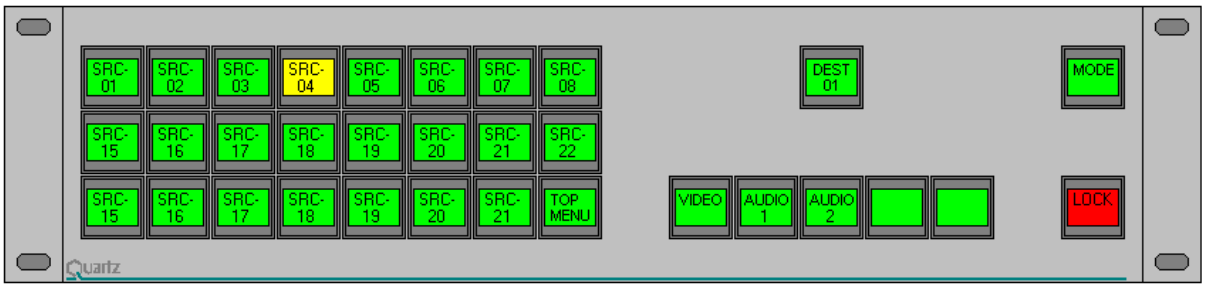
Operation
The destination and the levels controlled by this panel are determined by the setup of the system and can be changed using the WinSetup program, if supplied.

Sources
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.

Other features
For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

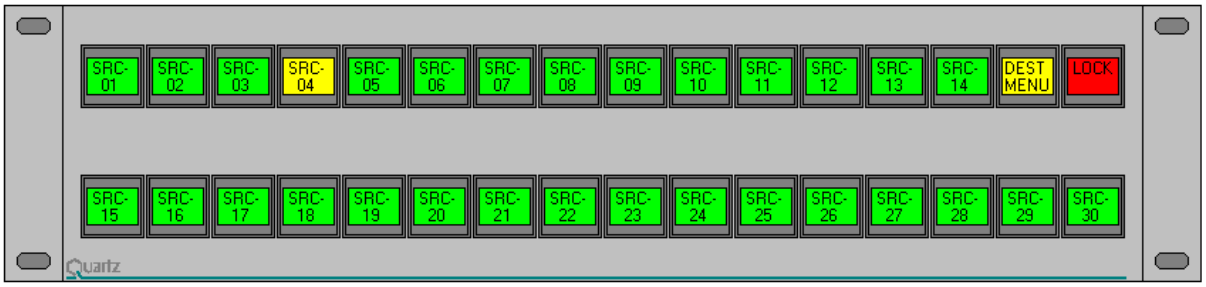
Control Panel Type: CP-2000-24



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

Other features
For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

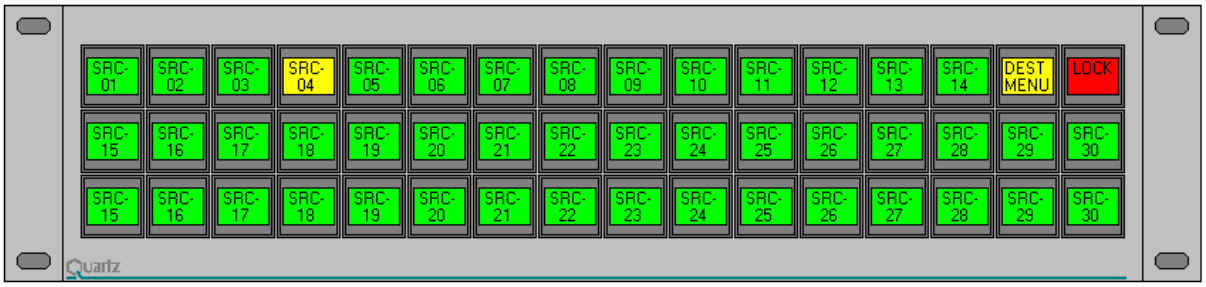
Control Panel Type: CP-2000-32



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

Other features
For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

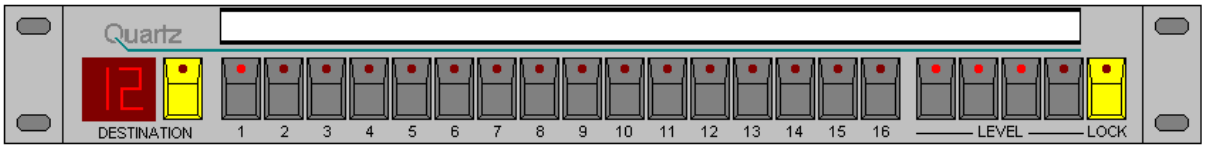
Control Panel Type: CP-2000-48



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

Other features
For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

Control Panel Type: CP-1600A



Description
This panel has 16 SELECT buttons to choose the 16 sources (inputs) and 16 destinations (outputs). They are shared between source and destination selection using a further switch to engage the *destination select* mode. A dual seven segment LED display is used to show the destination which is currently being controlled.

Designation Strip
A slide-in designation strip may be used to label both source and destinations by easy-to-remember names above the SELECT buttons. It can also be used to show the names of the breakaway levels in use.

Operation
Destinations
Press the DESTINATION button to engage the *destination select* mode. The LED in this button lights and the LEDs in the SELECT buttons light to show which destinations can be selected; so if destinations 5, 6, 7 and 8 are allowed to be selected from the panel then all these four LEDs will light up. This *menu* acts as a warning to show that the panel is in an unusual mode, otherwise the operator might be confused as to whether the panel is in source or destination mode.

Then press one of the lit SELECT buttons to choose a destination. The number corresponding to the button pressed is transferred to the numeric display to show the current destination and then the source currently selected to that destination is shown by one of the LEDs in the select buttons.

Sources
When the destination has been selected the source button is pressed to initiate the *take* or *cut*.

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 labelled to suit each application using the designation strip. The system configuration determines which buttons are active ie which breakaways are allowed. Eg in a video only system the left hand LED only would be lit, and in a video and single level (mono) audio system a breakaway may be required, in which case the left two buttons would be used.

If the breakaways are allowed, then when a new destination is selected, all the level buttons light up denoting the *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. Then press a SELECT 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.

Lock
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; further, 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. Please refer to **Section 1: Custom**.

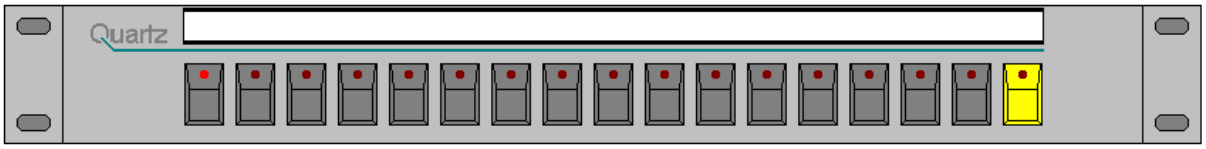
1. Press the button once to lock the route/panel. The LED lights to show that the panel is locked.
2. Press the button again to unlock the route/panel.
3. The panel remembers the lock status so that when a destination is locked and this destination is reselected then the lock button will light to show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

Chop
This feature is useful for engineering checks and system alignment of gains and phasing. In this mode the output switches rapidly between two inputs. Note that you can select **chop** mode only when a single breakaway is selected. This is to protect against accidental selection, and is of no operational disadvantage.

The output remains in chop mode until any button on the panel is pressed, or until a source is changed on the current destination by another control panel or by an external computer.

Other features
For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

Control Panel Type: CP-1601A



Description
This panel has 17 buttons and each button is programmable from WinSetup to act as either a source, destination, level, or lock/enable. An earlier version of this panel, CP-1601, had only 16 buttons.

Designation Strip
A slide-in designation strip may be used to label sources by easy-to-remember names above the buttons.

Operation
The destination and the levels controlled by this panel are determined by the setup of the system and can be changed using the WinSetup program, if supplied.

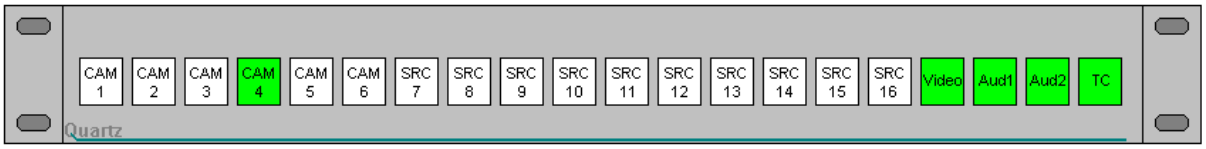
Sources
Press the required source button to select a new source.

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 the Lock mode is enabled then the 17th button toggles between the locked and unlocked state. First select the route then press the LOCK button to protect the selection.

Other features
For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

Control Panel Type: CP-1604



Description
This panel has 20 buttons and each button is programmable from WinSetup to act as either a source, destination, level, or lock/enable.

Operation
The destination and the levels controlled by this panel are determined by the setup of the system and can be changed using the WinSetup program, if supplied.

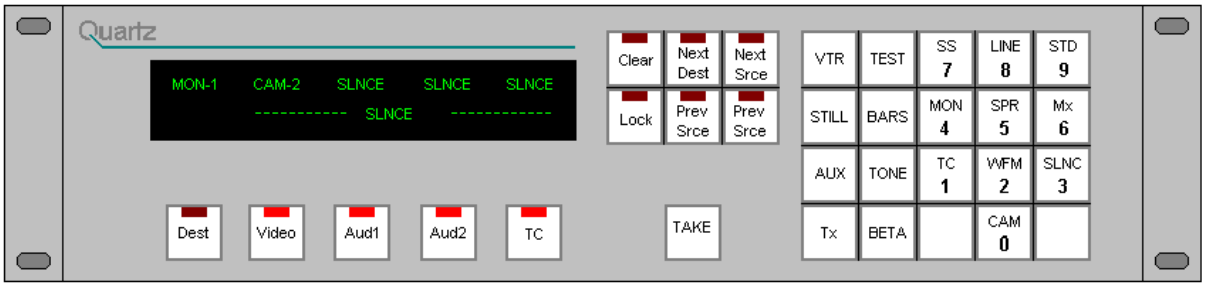
Sources
Press the required source button to select a new source.

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 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.

Other features
For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

Control Panel Type: CP-3200



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

The keys may be labelled with the names of sources, destinations and breakaway levels printed onto plain paper using a laser printer. Further information on how to do this may be found in **Section 3: Installation** of this manual.

The vacuum fluorescent display has a lifetime of around 5 years continuous useage. In many systems there will be long periods of time when the panel is not in use, so we have installed a *sleep mode* which blanks the display if there is no activity on the panel. In most applications this will extend very significantly the working life of the display.

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

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 WinSetup program is available to allow users to alter these names and their assignment.

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

Destinations
To enter the **destination select** mode press the left-hand button under the display; the LED in this button lights. 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 the **in use** upper section of the display, alongside its current source selections.

Sources
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 for destinations.

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.

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 labelled 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.

Lock
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; further, 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. Please refer to **Section 1: Custom**.

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.

Chop
This feature is useful for engineering checks and system alignment of gains and phasing. In this mode the output switches rapidly between two inputs. Note that you can select chop mode only when a single breakaway is selected. This is to to protect against accidental selection, and is of no operational disadvantage.

To enter chop mode, select a valid source in both the **in use** and **preset** sections of the display. Then press the CHOP button.

The output remains in chop mode until any button on the panel is pressed, or until a source is changed on the current destination by another control panel or by an external computer.

Sleep Mode
In this mode the vacuum fluorescent display is blanked during periods of inactivity to extend its working life. If this mode has been switched on, then the display is automatically blanked after there has been no change on the panel for more than a specified period of time. This period of time can be set to any value from one minute to over four hours. This may be altered using the WinSetup program, but is normally set at the factory to one hour. The panel automatically exits the sleep mode if any button on the panel is pressed or if another panel changes the current destination on the panel.

Engineering Mode
If the **ENG MODE** button is pressed then sources and destinations are displayed by number rather than name e.g. CAM-3 becomes SRC-022, where the numbers refer to the physical inputs and outputs of the matrix. New routes can be made but only using the destination and source scroll buttons.

Other features
For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

Control Panel Type: CP-3200 in 5 bus mode

Description
This panel is a standard CP-3200 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 vacuum fluorescent display to show both **in use** and **preset** selections.

The keys may be labelled with the names of sources and destinations etc printed onto plain paper using a laser printer. Further information on how to do this may be found in **Section 3: Installation**.

The vacuum fluorescent display has a lifetime of around 5 years continuous useage. In many systems there will be long periods of time when the panel is not in use, so we have installed a *sleep mode* which blanks the display if there is no activity on the panel. In most applications this will extend very significantly the working life of the display.

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

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 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. The WinSetup program is available to allow users to alter these names and their assignment.

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

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

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

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

Lock
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; further, 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. Please refer to **Section 1: Custom**.

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.

Chop
This feature is useful for engineering checks and system alignment of gains and phasing. In this mode the output switches rapidly between two inputs.

To enter chop mode, select a valid source in both the **in use** and **preset** sections of the display. Then press the CHOP button, then press the button for the destination which is required to chop.

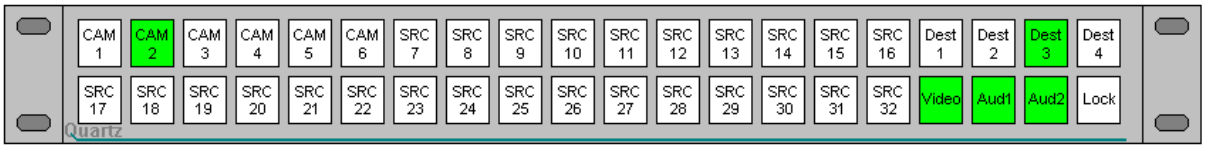
The output remains in chop mode until any button on the panel is pressed, or until a source is changed on the current destination by another control panel or by an external computer.

Sleep Mode
In this mode the vacuum fluorescent display is blanked during periods of inactivity to extend its working life. If this mode has been switched on, then the display is automatically blanked after there has been no change on the panel for more than a specified period of time. This period of time can be set to any value from one minute to over four hours. This may be altered using the WinSetup program, but is normally set at the factory to one hour. The panel automatically exits the sleep mode if any button on the panel is pressed or if another panel changes the current destination on the panel.

Engineering Mode
If the **ENG MODE** button is pressed then sources and destinations are displayed by number rather than name e.g. CAM-3 becomes SRC-022, where the numbers refer to the physical inputs of the matrix. New routes can be made but only using the source scroll buttons.

Other features
For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

Control Panel Type: CP-3201



Description
This panel uses buttons with relegendable caps and status indication by LEDs to ensure a long life. There are 40 switches which can be used for the selection of sources, destinations, breakaways and lock functions.

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

Camera microswitch override is included on the rear of each panel which is 1U high.

Operation
The destination and the levels controlled by this panel are determined by the setup of the system and can be changed using the WinSetup program, if supplied. 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 note they may not all be available because eg if it is set up as a 32x8 XY panel there are no buttons left for lock or breakaway functions.

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.

Sources
Press the required source button to select a new source.

Breakaways
Buttons may be configured, using the WinSetup program, 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.

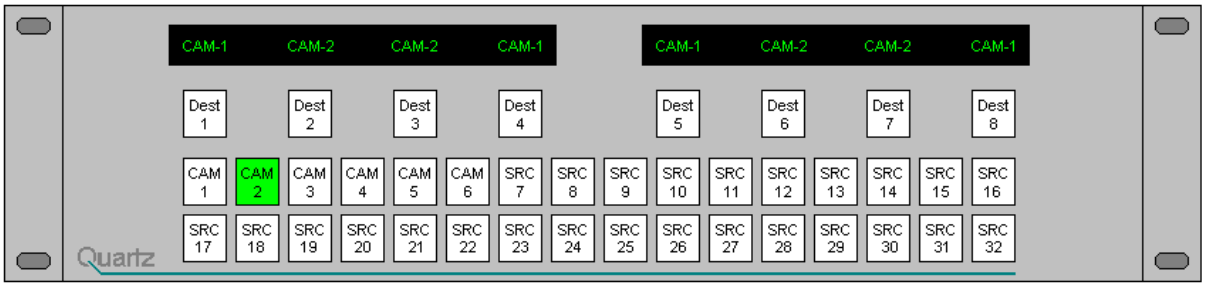
Lock
This button allows you to protect a route that you have selected. The lock mode can be configured to function in several ways but, by default, it locks its own panel independently for each destination.

1. Press the LOCK button once to lock the route/panel. The button lights 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 to show that this destination is locked.

Other features

For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

Control Panel Type: CP-3208



Description
This panel uses buttons with relegendable caps and status indication by LEDs to ensure a long life. 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 WinSetup.

Camera microswitch override is included on the rear of each panel.

Operation
The destination and the levels controlled by this panel are determined by the setup of the system and can be changed using the WinSetup program, if supplied. In this way the buttons are re-configurable.

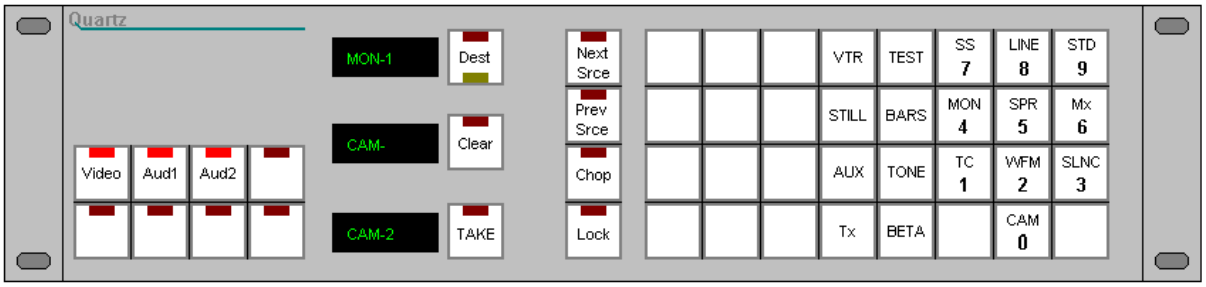
Sources
Press the required source button to pre-select the source. The source button will light. Press the take button under the display for the required destination, the display will update with the new source name. The take buttons can either leave the pre-selected source button ready for another take,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

Lock
A lock button can be setup using WinSetup and allows you to protect the panel.

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

Other features
For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

Control Panel Type: CP-6400



Description
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 labelled with the names of sources, destinations and breakaway levels printed onto plain paper using a laser printer. Further information on how to do this may be found in **Section 3: Installation** of this manual.

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

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 WinSetup program is available to allow users to alter these names and their assignment.

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

Destinations
To enter the **destination select** mode press the button by the upper display; the LED in this button lights 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.

Sources
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 for destinations.

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.

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 labelled 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.

Lock
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; further, 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. Please refer to **Section 1: Custom**.

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.

Chop
This feature is useful for engineering checks and system alignment of gains and phasing. In this mode the output switches rapidly between two inputs. Note that you can select chop mode only when a single breakaway is selected. This is to to protect against accidental selection, and is of no operational disadvantage.

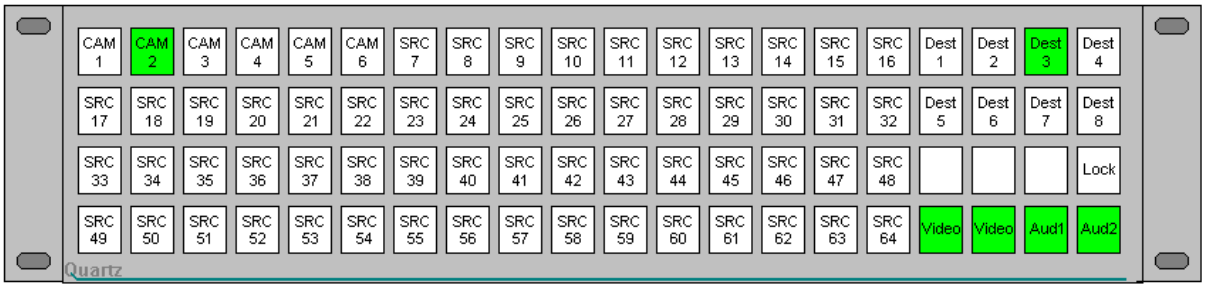
To enter chop mode, select a valid source in both the **in use** and **preset** sections of the display. Then press the CHOP button.

The output remains in chop mode until any button on the panel is pressed, or until a source is changed on the current destination by another control panel or by an external computer.

Engineering Mode
If the **ENG MODE** button is pressed then sources and destinations are displayed by number rather than name e.g. CAM-3 becomes SRC-022, where the numbers refer to the physical inputs and outputs of the matrix. New routes can be made but only using the destination and source scroll buttons.

Other features
For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

Control Panel Type: CP-6401



Description
This panel uses buttons with relegendable caps and status indication by LED's to ensure a long life. There are 80 switches that can be used for the selection of sources, destinations, breakaways, and lock functions.

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

Camera microswitch override is included on the rear of each panel which is 2U high.

Operation
The destination and the levels controlled by this panel are determined by the setup of the system and can be changed using the WinSetup program, if supplied. 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 note they may not all be available because eg if it is set up as a 64x8 XY panel there are no buttons left for lock or breakaway functions.

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.

Sources
Press the required source button to select a new source.

Breakaways
Buttons may be configured, using the WinSetup program, 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.

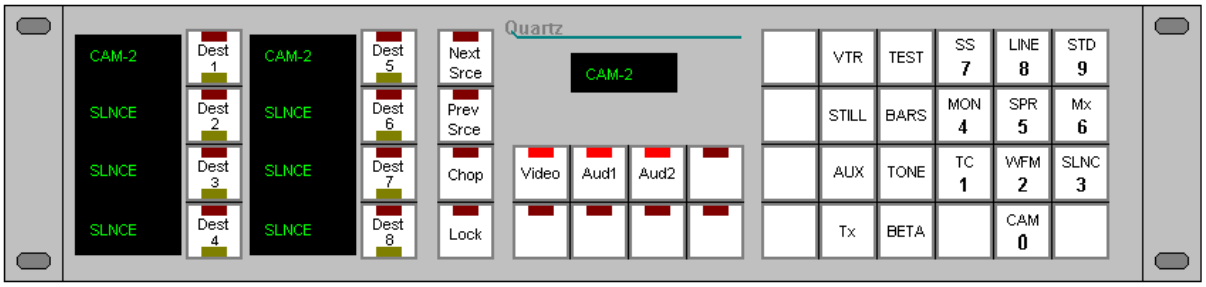
Note that if more than one level is lit then the steady LED corresponds to the left-most lit level button.

Lock
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 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 to show that this destination is locked.

Other features
For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

Control Panel Type: CP-6408



Description
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 labelled with the names of sources, destinations and breakaway levels printed onto plain paper using a laser printer. Further information on how to do this may be found in **Section 3: Installation** of this manual.

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

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 WinSetup program is available to allow users to alter these names and their assignment.

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

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

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.

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 labelled 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.

Lock

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; further, 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. Please refer to **Section 1: Custom**.

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.

Engineering Mode

If the **ENG MODE** button is pressed then sources and destinations are displayed by number rather than name e.g. CAM-3 becomes SRC-022, where the numbers refer to the physical inputs and outputs of the matrix. New routes can be made but only using the destination and source scroll buttons.

Other features

For features that are common to all control panels, such as the Parallel joystick or computer connectors, refer to **Features Common to all Control Panels** at the beginning of this section.

Adding Panels to an Existing System

When adding QLink remote control panels to an existing system, a number of checks must be made, along with changes to the system setup. The following notes assume you already have a working system.

(1) Check the major firmware issue of your existing master router. This router will have DIP-3 in the down position. Power down the router and remove the router module that has DIP-3 in the down position. There will be an EPROM labelled using one of the following methods.

PC215-n Vx.xx	e.g. PC215 V5.00
PC150-n Vx.xx	e.g. PC150-1 V5.00
SYS-n Vx.xx	e.g. SYS-1 V5.00

where n is a number (1,2,3 etc) that identifies the RS232/422 protocol installed. Quartz -1 standard protocol must be fitted if WinSetup is to be used. Vx.xx is the firmware version number.

If V5.00 or later firmware is installed then the panels must also have V5.00 or later firmware.
If V4.20-V4.99 firmware is installed then the panels must also have V4.20-V4.99 firmware.
If V4.00-V4.19 firmware is installed then the panels must also have V4.00-V4.19 firmware.
If V3.xx firmware is installed then the panels must have V1.xx firmware. If you are only adding one or two panels to a large existing system then stay with V3.xx firmware, otherwise the preferred option is to upgrade the entire system to the latest version.

(2) While this module is removed also check the **setup**. This is the device immediately behind the main firmware EPROM.

If the setup is in EPROM then it will typically be labelled J0xxx V1.00 (e.g. J0123 V1.00). Panels can only be added to this system if the setup has already had the panel types added (contact Quartz for advice), by programming a new EPROM (contact Quartz for advice), or by changing to NVRAM and using the WinSetup program (see step 3), available from Quartz as WINSETUP-KIT.

If the setup is in NVRAM, type DS1245Y or DS1230Y, then the setup has been downloaded from a computer (see step 3). Do not confuse the setup NVRAM (first device behind the firmware EPROM) with the system NVRAM (second device behind the firmware EPROM, except on old PC-100 modules).

Re-install the module in the router frame.

(3) Check the panels section of WinSetup and you will see a list of the panels already configured for your system. If you are not familiar with WinSetup then read the on-line help or contact Quartz.

If you are currently using the Tektronix/GVG Winfig program then this may work, dependant on the firmware versions fitted, but the preferred solution is to change to WinSetup. It is not possible for Quartz to give setup support on systems using Winfig. The following notes from point 4 onwards assume you are using WinSetup.

If you are currently using the Quartz DOS setup program then this works well with V3.27 firmware. If you want to make regular changes then it is best to upgrade to V4.xx firmware and WinSetup.

(4) Connect the computer to the router. Use the 'System->Compare Router Configuration' to check that the computer setup is the same as the one installed in the router. This ensures you have a known starting point. Note that PC's use RS232 so check that the router is also in RS232 mode and has the -1 protocol fitted.

Add the new panels to the setup, making sure each panel has a sensible name and access to the required destinations and sources.

(5) With the computer connected to the router, download the new setup file. The router panels will go 'off-line' for a short while but will then come back on.

Each panel on the Q-link has a unique address, set by the rotary hex switch and DIP switches DIP-3 and DIP4. Use the WinSetup 'File->Print System Setup' to get a list of all the routers and panels on your system. Set the new panels to the Q-Link address shown on the report. Each of your panels should now have a unique Q-Link address.

(6) Connect each panel in turn to the Q-Link. The panel will initially show 'No Q-Link' or a flashing pattern of LED's. After about 10 seconds the panel will clear and then display the current route assignments. If the panel shows 'Panel type error' or 'PT Error' then the panels Q-Link address does not match the information in the setup.

MAINTENANCE

Maintenance Philosophy

Customers have different approaches to equipment maintenance. As technology becomes more complex it becomes increasingly difficult for technicians to maintain equipment. Also equipment is so much more reliable than only a few years ago, so there are less opportunities to repair it!

Quartz can supply spare modules if you can fault find down to module level or spare parts and extender modules if you are able to diagnose faults down to component level. If your approach is to undertake at least some of your own maintenance then read on!

Fault Finding

Experience shows that the most common faults are the simplest! This section describes some of the most likely faults to be encountered in this equipment and how to rectify them.

Initial Checks

Before assuming that there is a fault in the routing system, check the equipment connected to the system and its cabling to ensure that the signals and power are reaching the equipment correctly.

Fuses

These are probably the most likely part to fail during the equipment's life.

If there is no sign of *life* from the frame or panel check the mains/power fuse. This is located inside a drawer in the mains/power inlet socket. To check the fuse unplug the power cord, open the drawer and check the rating. Replace with the value marked on the unit. Push the drawer home and plug the power cord in again.

If one or more of the two left-hand pilot LEDs in the power module is out then check the dc fuses. These are located on the power module. Remove the front panel of the frame and withdraw the module after first releasing the module lock on the handle. Replace any defective fuses with ones of the correct rating. Replace the module in the frame locking it in place.

The DC fuse for the remote panel can be accessed by removing the panel from its installation. Unplug the Q-link T-piece and then the power cord, remove the top cover and check the fuse. Replace with one of the correct rating. Replace the cover and re-install.

Reset Microprocessor

A green LED on the matrix modules and the remote control panels denotes that the microprocessor is running by flashing once a second. If this is not the case try pressing the RESET push button. The adjacent red LED shows briefly the reset condition.

Visual Inspection

It is surprising how many faults can be located by visual checks. Unplug the modules. Check the condition of the gold edge connector fingers (see below). Check that all the components fitted in sockets are correctly seated. Refit the modules ensuring that they are locked in place. Remove the cover of the unit and check that internal cables are correctly plugged in.

Configuration

Check that the equipment is correctly configured including any hardware links. Refer to **Section 1: Custom** and **Section 3: Installation**.

Some Common Faults

Below are some of the most common problems encountered in Quartz router installations.

Frame

1. Q-link has not been terminated properly. One end at least **must** be terminated in 75Ω. In fact, the system is **guaranteed to function on long cables only if both ends have been terminated.**
2. Two frames have the same address (hex) switch setting.
3. Two frames or no frame have been set to have **master** status.
5. A DIP or address switch has been changed but the RESET has not been pressed to **take** the new setting.

Remote Control panel

1. The Q-link has not been terminated properly. Refer to point 1 above.
2. Two panels have the same address switch setting.
3. On earlier panels a common problem was a switch stuck down. This was invariably caused by the LED in the switch having been pushed down, holding the rocker of the switch down. The effect of this is to disrupt the reading of the buttons locking up the whole panel. The solution is to simply ease up the LED to release the rocker. On later versions of the panel the LED is seated lower and cannot affect the switch action.

Further Fault Finding

Further fault finding will usually involve the use of schematic diagrams and optional extender modules. This should be entrusted to an experienced technician. Refer to the technical sections (Section 7 and 8) optionally available with this manual for further details.