Quartz

Routing Switcher

System Options

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 provides full information on a variety of options available for the Q1602, Q16, Q32, Q6400, and Q128 Routing Switcher systems. Related diagrams and parts lists are included within this section.

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

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:

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

Contents

Parallel Interface PI-1604 & PI-1608

General Description

The Parallel Interface is used to provide interfaces between the Quartz coaxial communication system, Q-link, and various equipment requiring parallel rather than serial control information. Typical applications include:

- custom button per crosspoint panels
- tally lamp drives
- relay drives eg tallies, RS422 or other types of relay crosspoints

The most common application of the Parallel Interface Unit is to connect to special control panels. The Quartz routing system uses serial communications between matrix frames and control panels. This is because it is much easier to prepare and install a single coaxial cable than a multi-way cable and is inherently more reliable as there are fewer contacts and joints to fail. However there are times when the standard panels will not fit into a desk or the buttons of the matrix must be integrated into a common panel with the controls of completely independent equipment. The Quartz Parallel Interface is designed to meet this requirement.

The Quartz Parallel Interface Unit has either four or eight parallel ports each of which can be connected to 16 parallel input/output lines. Each line can both read a button and drive a lamp wired to the button in the traditional *button per input* method. Each port also carries power for the lamps, 0v and chassis ground.

The two versions available support four or eight panel ports. The PI-1604 supports four panels and the PI-1608 eight panels.

Power

The interface includes its own mains power supply which generates 5v for internal use and 24 volts for external use to power the lamps in the remote panels. The external power feeds are fused to protect the unit from accidental abuse. The panel will then continue to make route selections even if there is no power for the lamp to confirm the source selection. A red LED in the unit lights when one of these fuses fails.

Installation

Setting the Power Line Voltage

All units are fitted with a voltage selector on the rear panel. The voltage must be checked and if necessary set prior to inserting the power cord.

The 230v setting is suitable for both 220v and 240v countries. The 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.
2. Use a small screwdriver to ease loose the voltage selector/fuse holder by prising from above.
3. Pull out the fuse drawer. The main fuse is clearly visible, but there is also a spare, slid inside the drawer. The fuse rating is shown on the serial number plate on the base of the unit.
4. Rotate the drawer so that the correct power line voltage is orientated to be read (top of the text up) with the top of the frame also facing upwards. Fit the correct fuse and replace the fuse holder drawer until it snaps home.
5. Plug the power cord into the equipment.

Physical Installation

The Remote Parallel Interface Unit is designed to fit into standard 19" equipment racks. It can be mounted at any angle.

Installation in a 19" rack is simple. Guide the unit through the aperture in the front of the rack until the rack-mounting flanges are flush against the side member of the rack and bolt in place with fixing screws (not supplied).

Behind the unit you should allow for a depth of 170mm plus provision for the connection of external cables.

Parallel Ports

The parallel ports use standard 25 way D connectors. A diagram at the end of this section entitled **Parallel Interface: User Interface**, shows the electrical ratings and recommended method of wiring custom panels with lamps to the ports.

It is possible to use the +5v rail to drive LEDs, but note that there is a much reduced current capability. **This method is not preferred** please consult the factory for further details.

1. Connect the input pin to one side of the switch, lamp or relay. +0.8v is the permitted maximum value of voltage for a valid low button reading.

2. Connect the other side of the relay or lamp to +24v for power but note carefully the power limitations. The unit is intended to drive 24v lamps. Up to ten 24v/50mA lamps can be lit at any one time. This is normally sufficient, as only one button/lamp of each of the eight ports will be lit.
3. The 0 volts pin is connected to the technical ground within the Parallel Interface. Connect it to the other side of the buttons if a switch contact is to be read.

4. The chassis ground pin is connected to the earth of the power plug and the metalwork. This is used to ensure that any metal surfaces in custom panels are grounded via the parallel control cable. The shield of the D25 connector is also connected to this ground. Use mating connectors with tin plating and metal hoods to maintain earth continuity and RFI shielding. Also connect the shield of the control cable to this ground pin for RFI shielding.

   Note that D25 connectors and their hoods must not exceed 18mm width. Some designs are wider than this and will not fit correctly the rear of the unit if both rows are used.

The list below shows the pin connections of the D25 connectors on the rear of the unit.

Pin	Function	Pin	Function
1	Input 1	14	Input 14
2	Input 2	15	Input 15
3	Input 3	16	Input 16
4	Input 4	17	
5	Input 5	18	
6	Input 6	19	
7	Input 7	20	
8	Input 8	21	
9	Input 9	22	+5 volts dc (contact factory)
10	Input 10	23	+24 volts dc (500mA total)
11	Input 11	24	0 volts
12	Input 12	25	Chassis Ground
13	Input 13		

Q-link Connection

All Quartz frames and panels are connected by a single coaxial link called **Q-link**. This link uses standard 75Ω video cable daisy-chained from frame to frame and panel to panel. Only one connector is fitted on the PI-160x and a T-piece is needed to tap off the **Q-link**. In this way the unit can be removed from service and replaced without disrupting the link, even temporarily. Refer to **Section 3: Installation** for details.

Configuring the Parallel Interface

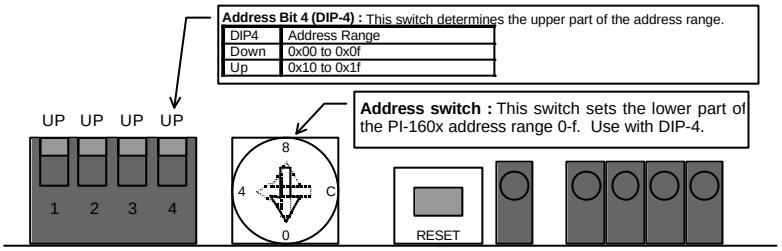
The WinSetup program defines the precise operation of the Parallel Interface. This allows the user to edit the system configuration that is stored as a file on the PC. This file can then be downloaded to the master router (DIP-3 down) where it is stored in NVRAM. When the system powers up the configuration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

This section describes how to configure the Parallel Interface hardware for your particular application.

Panel Address

The rotary 'hex' switch just to the left of the ribbon cable is used to set the unique address of the unit. If you have more than one in your system then you **must** set each to have a different code. If this is not done then the communications down the coaxial Q-link cannot function properly.

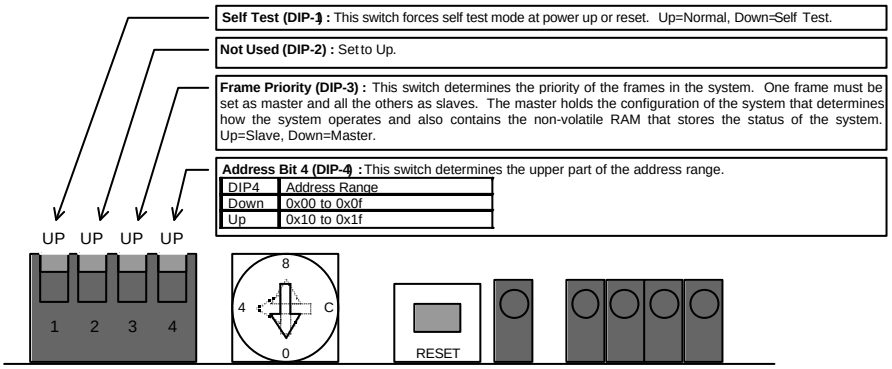
Details of how these switches should be configured are shown in **Section 1: Custom Features.** The equipment is normally supplied with the switches set for your application, so you should not need to alter them.



A small screwdriver is needed to fit the hex switch slot and make the selection. Rotate the switch which has 16 positions from 0 through 9, then A to F (hexadecimal notation). Press the RESET button to accept the new setting.

DIP switches

There are four DIP switches at the front of the main PI-160x module. The DIP functions are :



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

Maintenance

If you experience problems then initially refer to Section 5 of this manual for general advice on the maintenance of the system. If you have isolated the problem to the Parallel Interface then read on....

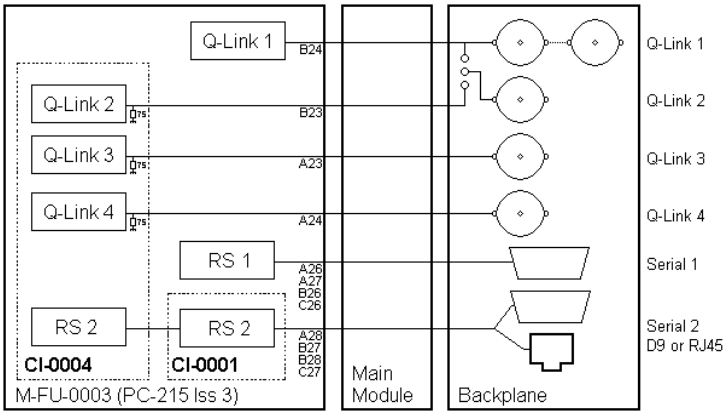
The +24v and +5v external supplies fed from the Parallel Ports are protected from damage by quick blow fuses. If a fuse has blown then all panels select the correct route but do not show any tally (by lighting the lamp in the switch).

To investigate further, remove the front panel to reveal a red LED towards the right-hand side of the unit. This will light if either of the fuses has blown. The adjacent yellow LED indicates the presence of the main +24v supply within the unit. Check and, if necessary, replace with a fuse.

Computer I/F Modules CI-0001, 3, 4

Introduction

Systems fitted with the FU-0003 processor option (supplied from August 1998 onwards) have one RS232/422 interface built in as standard. Additional interfaces can be added to most products by installing a Communications Interface (CI) module.



- CI-0001: used with the FU-0003 processor to add an additional serial port. This option requires a FU-0003 processor using PC-215 Issue A1 or later and firmware PC215 V5.30 or later. Could also be used with older (non FU-0003) products to add a serial port, or with older control panels.

- CI-0003: used with all current control panels to add a serial port.

- CI-0004: used with the FU-0003 processor to add one additional serial port and 3 additional Q-Link ports (full features may not be available on all products). This option requires a FU-0003 processor using PC-215 Issue 3 or later and firmware PC215 V5.30 or later.

This section describes the installation, setup and use of the module. If the Communications Interface is ordered with the main system it is fitted at the factory prior to shipment.

Routers

Physical Installation

The following instructions are for use if the Computer Interface is supplied after shipment of the main unit.
Remove the computer interface module from its packing. Check that its pins are straight and undamaged.

1. Remove the front panel or local panel.

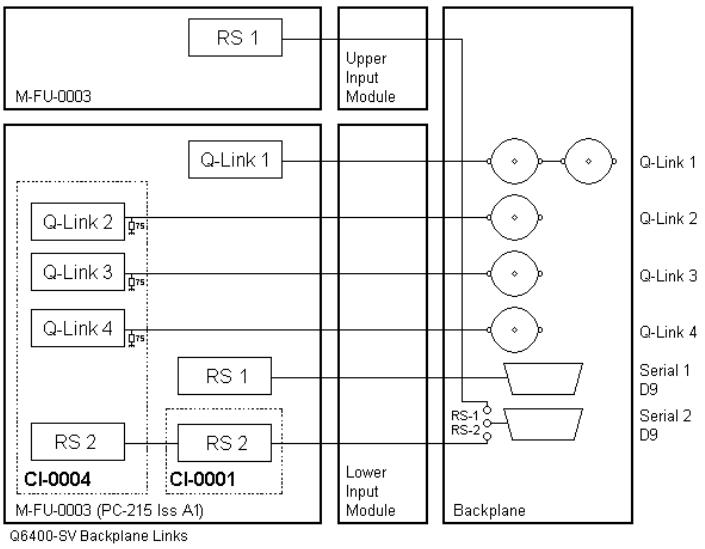
2. The card ejector handles on most products include a locking catch. Use the release catches to initially release the locks that hold the main module in place, and then pull the catches outwards to eject the module or module pair from its edge connectors. Withdraw the router module and place it carefully on a flat anti-static surface.

   Q16: The CI-0001 module cannot be used with these products as they only have one rear panel 'Serial' connector that is driven by the FU-0003 serial port. They can support the CI-0004 module to enable one extra Q-Link port but this requires a jumper to be set on the backplane.

Q32-AA: Fit the CI module to the **upper** matrix module pair.

Q32-SV & Q32-AV: Fit the CI module to the matrix module.

Q6400-SV: Fit the CI module to the lower matrix input module FU-0003 processor. The lower matrix input module FU-0003 processor always connects the rear panel "Serial 1" connector. The rear panel "Serial 2" connector is link selectable and is factory set to connect to the upper matrix input module FU-0003 processor. Moving the four backplane links (under lower input module, right hand side) from the RS-1 position to the RS-2 position will connect "Serial 2" to the lower matrix input module serial 2 port provided by the CI-0001 or CI-0004 module.



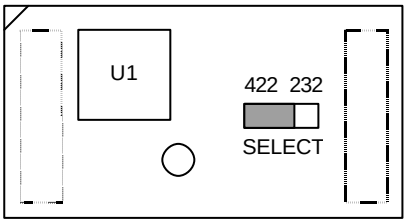
Q6400-SV Backplane Links

Q128-SV: Fit the CI module to the FU-0003 processor fitted to the inside of the door.

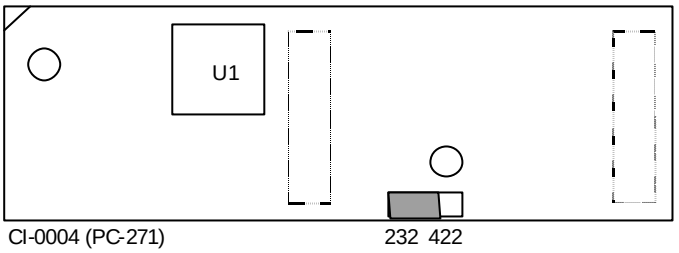
3. Orientate the computer interface card over the matrix card using the hole(s) as a guide. Line the pins over the sockets and push the card down gently and evenly so that all pins enter the sockets at the same time. Push home firmly. **NB If the card is fitted incorrectly damage may result to both cards!**

RS422 or RS232 Mode

This is the hardware standard supported by the Computer Port. You should set it to suit the computer or studio equipment to be used. You change it by moving a jumper link on the Computer Interface Card. Text on the module by the selection link indicates 232 or 422.

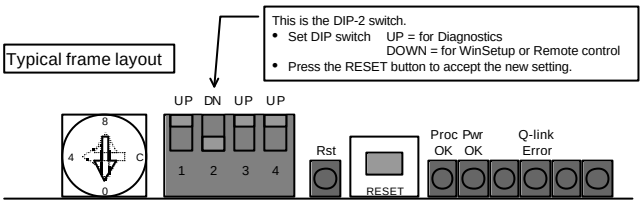


CI-0001 (PC-180)



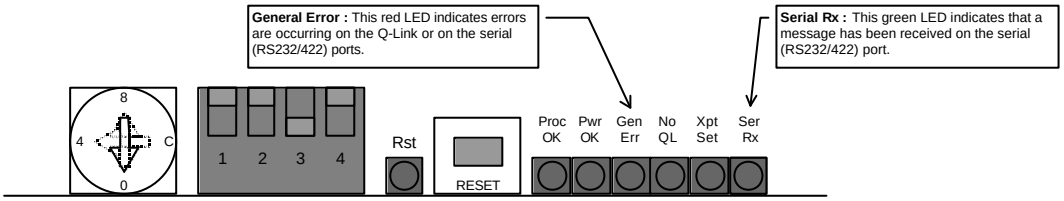
Remote Control or Diagnostics Mode

The processor DIP switch sets the mode of operation of the computer port between remote control mode and diagnostics. The diagnostics mode is used on the master router and by Quartz for development purposes. The remote control mode is used if you wish to use the WinSetup program with the master router or the matrix is to be controlled from an external computer or control other studio equipment.



Status LED's

There are two LED's giving status information for the serial ports.



Control Panels

The computer port on control panels is only used for special applications and only supports Quartz standard (-1) protocol and Quartz P-Link (-7) protocol.

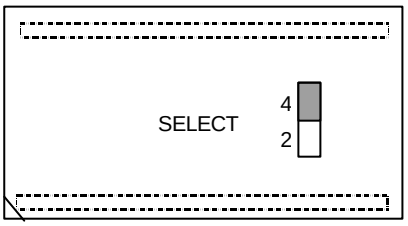
Physical Installation

The following instructions are for use if the Computer Interface is supplied after shipment of the main unit. Remove the computer interface module from its packing. Check that its pins are straight and undamaged.

1. Unplug the power cord. Remove the top cover from the control panel.
2. Orientate the computer interface card over the panel card using the hole as a guide. Line the pins over the sockets and push the card down gently and evenly so that all pins enter the sockets at the same time. Push home firmly. **NB If the card is fitted incorrectly damage may result to both cards!**
2. Set the RS232/422 jumper link, see later in this section.
3. Set the DIP switches (DIP-2 normally DOWN), see later in this section, and re-fit the top cover and reinstall the panel.

RS422 or RS232 Mode

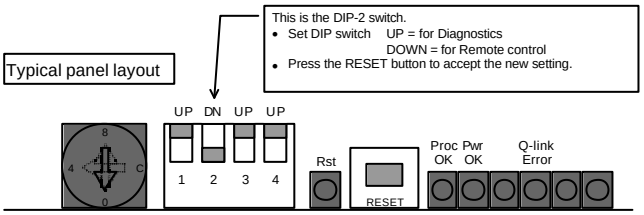
This is the hardware standard supported by the Computer Port. You should set it to suit the computer or terminal to be used. You change it by moving a jumper link on the Computer Interface Card. Text on the module by the SELECT link indicates 2 (RS232) or 4 (RS422).



CI-0003 (PC-224)

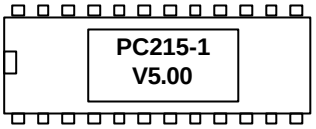
Remote Control or Diagnostics Mode

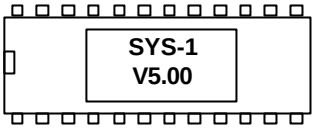
The panel processor DIP switch sets the mode of operation of the computer port between remote control mode and diagnostics. The diagnostics mode is used by Quartz for development purposes. The remote control mode is used if the panel is to be controlled from an external computer or control other studio equipment.



Protocols

For remote control from a computer or other studio equipment the protocol built in to the router must match the protocol being used by the other equipment. The router only supports one protocol at any one time and the router 'system' EPROM has a -1, -2, -3 etc number to indicate the protocol. Routers support the full set of protocols shown below. Control panels only support Quartz standard (-1) protocol and P-Link (-7) protocol.





	Protocol	Baud, P, D, S	Quartz is …
-1	Quartz standard	38400, N, 8, 1	Master
-2	TSL UMD	38400	Master
-3	Probel simple	38400	Slave
-4	EBU Geneva	38400	Slave
-5	frame-frame master link	9600	Master
-6	GVG K Scope interface	Parallel	Slave
-7	P-Link (Panel Link)	38400	Slave
-8	Utah Scientific PL-320 (Zaxcom mixer)	9600	Slave
-9	Nvision	38400	Master
-10	NTL / Pathfinder	9600	Slave
-11	Probel UMD 1 SW-P-04	38400	Master
-12	Frame-frame slave link	38400	Slave
-13	Pro-bel SW-P-02	38400	Slave
-14	Image Video	9600	Slave
-15	DMV 3000 PSR	9600	Master
-16	Philips/BTS	9600	Master
-17	Probel SW-P-08	19200	Master
-18	GVG 20-Ten	9600	Master
-19	GVG Horizon	19200	Master
-20	Quartz P-Link (Panel Link)	38400	Master
-21	Sony DVS-V1616	38400	Master
-22	GVG 10XL ASCII	38400	Slave
-23	GVG 10XL SMPTE	38400	Slave
-24	GVG HX-GPI	9600	Slave
-25	Panasonic	38400	Slave
-26	Maddox	9600	Master
-27	Pro-bel SW-P-02	38400	Master
-28	Leitch Via	38400	Master
-29	Pesa	38400	Master
-30	Thomson SW-P-62 (mixer serial cue)		Slave
-31	GVG Periph I/F II		Master
-32	Sony Flexicart		Slave
-33	Quasar UMD		Master
-34	Philips DD Mixer		
-35	Sony VTR (9 pin)		Master
-36	Sony DVS Mixer		Slave
-37	GVG M2100 (QMC only)		Slave
-38	GVG SMS-7000 MCPU		Master
-39	Philips/BTS		Slave
-40	Stagetec Nexus		Master
-41	Forward Vision		Slave
-42	GVG 200 Aux Bus		Master
-43	Utah RCP-1		Master

Quartz Type-1 Protocol
The Quartz standard ASCII protocol (-1) operates at 38400, 8 data bits, no parity, and 1 stop bit. The router can be controlled at any time by using the WinSetup 'PC Comms Window'.

The command format to set a route is:

	.SV1,2(cr)	switch input 2 to output 1 on level 1
	.SA1,2(cr)	switch input 2 to output 1 on level 2
	.SB1,2(cr)	switch input 2 to output 1 on level 3
or	.SVABC1,2(cr)	switch input 2 to output 1 on level 1,2,3 and 4

A reply is only generated after the carriage return (cr). The router replies with;

.UV1,2(cr)	Update (take) on crosspoint input 2 to output 1 on level 1

To interrogate a route;

.IV1(cr)	Interrogate output 1 on level 1
.IA1(cr)	Interrogate output 1 on level 2
.IB3(cr)	Interrogate output 3 on level 2

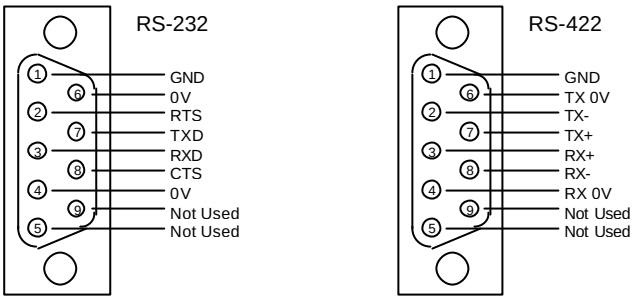
The full specification of this protocol can be found in "Remote Control Protocol Type 1" available from Quartz. Other Protocols are manufacturer dependent.

External Connections

The products have been built to minimise RF emissions. It is important you use *tin and dimple* D-type connectors with metallised shells connected to the screen of external cables in order to achieve low RF emissions from this equipment. The shells are fixed with screwlocks with 4-40 UNC threads.

The Computer Interface connector on the equipment is a D-Type 9 way socket using the pinout shown below. It is usually labelled 'SERIAL' or 'COMPUTER' to distinguish it from any other D-Type connector.

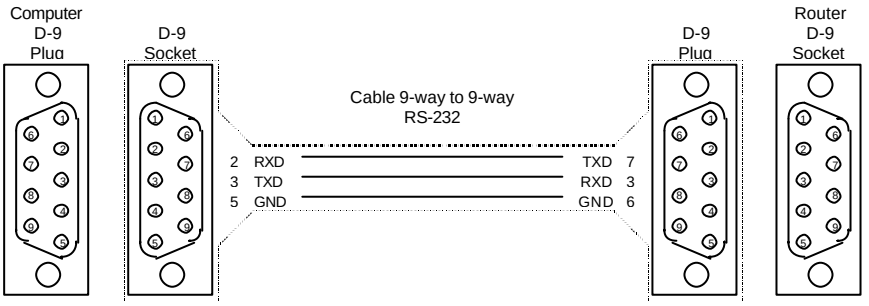
The wiring of the connectors is different for RS232 and RS422.



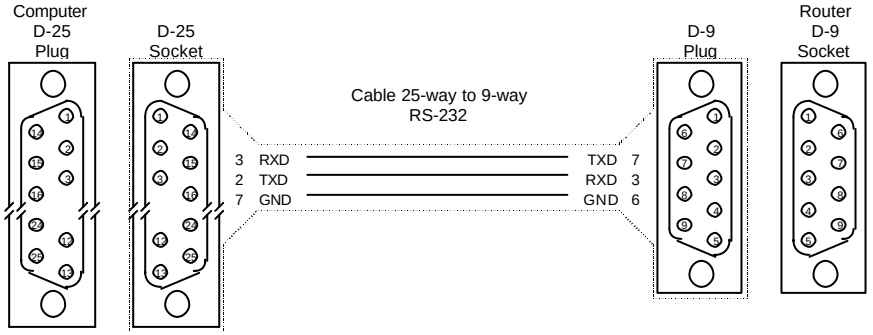
The RS232 PC interface Cable

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

The cable between a PC with a D-Type 9 way connector and the router :



The cable between a PC with a D-Type 25 way connector and the router :



Diagnostic Messages from Master Router

The diagnostic mode on the master router gives useful information about Q-Link activity. On slave devices this mode is only used by Quartz during software development. Use the WinSetup 'PC Comms Window' to view messages. The baud rate is set to 38400 with 8 data bits, 1 stop bit, and no parity.

Typical warning\diagnostic messages and their meaning

PC-215 S/W: 5.00 Compiled Oct 14 1998 at 12:44:23 Board type (bf): PC197 AV Router (variant 00) Status: Master Q-Link address: 00	*Typical power up messages*
Device detected at addr 0x1c .. Sending device table .. Sending route settings 3 2 1 .. Device on-line at addr 0x1c	*Typical messages for a device (panel or router) being recognised on the Q-Link for the first time a placed on-line.*
Q-link : Uxx poll time out	The unit with address 'xx' did not respond to a poll within the required time. The unit is re-polled up to 3 times.
Q-link : Uxx off line	*The unit with address 'xx' did not respond to 3 successive polls and has now been placed off line. It will only be polled infrequently.*
Q-link : Uxx failed update	*The unit with address 'xx' was being placed on line but failed to respond correctly when given the current system status.*
Q-link : receive F/O error	*The receiving unit had a framing or overrun condition. These may occur when the Q-link cable is broken or left unterminated.*

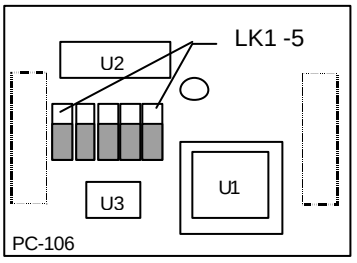
Older Products

Baud Rate

Older products had a maximum baud rate of 9600.

RS422 or RS232 Mode

Older CI-0001 modules had five links to set the RS232/422 mode. Orientate the card with the large chip bottom right and the Quartz logo bottom centre (South). Set LK1-5 South for RS422 or North for RS232.



TR-3200 Tally Router

General Description

The Tally Router is router is used to process tally inputs eg from a vision mixer, process them according to the current settings of the (video) matrix and provide up to 32 tally outputs to feed eg camera tally or cue lights. Most tally routers use a matrix of relays to follow the video router and thus route the tally back to the camera. For a 16x16 router 256 relays would be needed; this is both expensive and large compared to the Quartz solution. The Quartz Tally Router has input and output interfaces only, and relies on software to process the matrix pattern, instead of a complete matrix of relays. This is sometimes called a virtual matrix.

It is based on the hardware of the Parallel Interface with a relay interface added. The four lower ports (1-4) are used to read up to 64 tally inputs eg from a vision mixer. These are processed by software in conjunction with the current settings of the (video) matrix to provide 16 or 32 tally outputs to feed eg camera tally or cue lights.

To provide electrical isolation the tally outputs are provided as closing relay contacts on the four upper connectors (5-8). The Relay Interface is a module that fits into the upper position of the unit.

Power

The interface includes its own mains power supply that generates 5v (for the logic) and 24 volts for the relays. These are made available for external use to power sensing circuits on the input side. The external power feeds are fused to protect the unit from accidental abuse. A red LED in the unit lights when one of these fuses fails.

Installation

Physical Installation

The Tally Router is designed to fit into standard 19" equipment racks. It can be mounted at any angle.

Rack-mount flanges (or ears) are vulnerable to damage so these are packed separately for protection and must be removed from the accessory kit and fitted to the sides of the unit with the screws supplied in the kit.

Installation in a 19" rack is simple. Guide the unit through the aperture in the front of the rack until the rack-mounting flanges are flush against the side member of the rack and bolt in place with fixing screws (not supplied).

Behind the unit you should allow for a depth of 170mm plus provision for the connection of external cables.

Electrical Connections

A diagram at the end of this section entitled **Tally Router: User Interface**, shows the electrical ratings and recommended method of wiring to the ports.

The chassis ground pin of the 25 way D-type connectors is connected to the earth of the power plug and the metalwork. Use mating connectors with tin plating and metal hoods to maintain earth continuity and RFI shielding. Also connect the shield of the control cable to this ground pin for RFI shielding.

Note that the connectors and their hoods must not exceed 17mm width. Some designs are wider than this and will not fit correctly the rear of the unit if both rows are used.

Input Ports

These ports are used to read the tallies from, say, the vision mixer (production switcher) and use standard 25 way D-type socket connectors.

1. The mixer tally output will usually be an isolated circuit eg a relay. The receiver circuit in the Tally Router has its own logic pull-up so there should be no need for extra interface circuitry. Nevertheless some **small** amount of power is made available for special purposes. Please take note of the ratings below.

2. Connect one pin of the mixer tally to an input pin. Note that +0.8v is the permitted maximum value of voltage for a valid low reading.

3. Connect the other pin of the mixer tally (or common) to the common 0 volts pin of the connector pin 24. This pin is connected to the technical ground within the Tally Router.

The list below shows the pin connections of the D25 socket connectors on the rear of the unit.

Pin	Signal	Pin	Signal
1	Input 1	14	Input 14
2	Input 2	15	Input 15
3	Input 3	16	Input 16
4	Input 4	17	not used
5	Input 5	18	not used
6	Input 6	19	not used
7	Input 7	20	not used
8	Input 8	21	not used
9	Input 9	22	+5 volts dc (50mA total for whole unit)
10	Input 10	23	+24 volts dc (50mA total for whole unit)
11	Input 11	24	0 volts (technical ground)
12	Input 12	25	Chassis Ground
13	Input 13		

Output Ports

These ports are used to drive the camera tally lamps and use standard 25 way D-type socket connectors.

1. The tally output is an isolated closing relay contact pair. The camera will normally provide the power to drive its lamp. Nevertheless some small amount of power is made available for special purposes. Please take note of the ratings below, as **this unit is not able to provide sufficient current to drive camera tally lamps!**

2. Connect the contact pair to the pins shown below.

The list below shows the pin connections of the D25 socket connectors on the rear of the unit.

Pin	Signal	Pin	Signal
1	Output 1A	14	Output 7B
2	Output 1B	15	Output 8A
3	Output 2A	16	Output 8B
4	Output 2B	17	not used
5	Output 3A	18	not used
6	Output 3B	19	not used
7	Output 4A	20	not used
8	Output 4B	21	not used
9	Output 5A	22	+5 volts dc (50mA total for whole unit)
10	Output 5B	23	+24 volts dc (50mA total for whole unit)
11	Output 6A	24	0 volts (technical ground)
12	Output 6B	25	Chassis Ground
13	Output 7A		

Q-link
Refer to **Section 3: Installation** for details.

Setting the Power Line Voltage
The voltage must be checked and if necessary set prior to inserting the power cord. The 230v setting is suitable for both 220v and 240v countries. The 115v setting is suitable for 110v and 120v countries. Refer to the technical specifications in Section 2 for the voltage ranges permitted.

1. Remove the power cord.
2. Use a small screwdriver to ease loose the voltage selector/fuse holder by prising from above.
3. Pull out the fuse drawer. The main fuse is clearly visible, but there is also a spare, slid inside the drawer. The fuse rating is shown on the serial number plate of the unit.
4. Rotate the drawer so that the correct power line voltage is orientated to be read (top of the text up) with the top of the frame also facing upwards. Fit the correct fuse and replace the fuse holder drawer until it snaps home.
5. Plug in the power cord into the equipment.

Configuring the Tally Router
This section describes how to configure the Tally Router for your particular application.

Panel Address
The rotary 'hex' switch just to the left of the ribbon cable is used to set the unique address of the unit. If you have more than one in your system then you **must** set each to have a different code. If this is not done then the communications down the coaxial Q-link cannot function properly.

Details of how these switches should be configured are shown in **Section 1: Custom Features.** The equipment is normally supplied with the switches set for your application, so you should not need to alter them.

A small screwdriver is needed to fit the slot and make the selection. Rotate the switch which has 16 positions from 0 through 9, then A to F (hexadecimal notation).

1. Rotate the switch to the desired position.
2. Press the RESET button to accept the new setting.

DIP switches
These should all be set to the UP position.

Maintenance

If you experience problems then initially refer to Section 5 of this manual for general advice on the maintenance of the system. First of all isolate the problem to the Tally Router. The +24v and +5v external supplies fed from the Tally Input/Output Ports are protected from damage by quick blow fuses. If a fuse has blown it does not affect the internal circuitry. Remove the front panel to reveal a red LED towards the right-hand side of the unit. This will light only if either of the fuses has blown. The adjacent yellow LED indicates the presence of the main +24v supply within the unit. Check and, if necessary, replace with a fuse of the same type and rating (1A quickblow).

Q-Link to RS232/RS422 Adapter SI-0001

General Description

The SI-0001 Q-Link to RS232/422 Adapter is used to provide a stand alone serial port to enable remote control from a computer or connection to other studio equipment. This option is typically used when all frame serial ports have been used, yet there is still a requirement for another serial interface.

Power

The SI-0001 includes its own mains power supply that generates 5v for internal use. The mains power inlet is fitted with a voltage selector. Please check the setting of the voltage selector prior to inserting the power cord. Both the mains inlet and the internal power supply are fuse protected.

System Configuration: WinSetup

The WinSetup program defines the precise operation of the routing system and allows the user to edit the system configuration that is stored as a file on a 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 device as it comes on-line

Ensure the system setup includes a SI-0001, and its address is set correctly.

Firmware

The SI-0001 is fitted with firmware, typically labelled “CP6408-1 V5.00”. The ‘V5’ refers to the major firmware version, and all devices on one Q-Link must have the same major firmware version. The ‘.00’ refers to the minor firmware version and is used to indicate small improvements and bug fixes.

Installation

Physical Installation

The SI-0001is designed to fit into standard 19" equipment racks and installation is simple. Guide the unit through the aperture in the front of the rack until the rack-mounting flanges are flush against the side member of the rack and bolt in place with fixing screws (not supplied). Behind the unit you should allow for a depth of 150mm plus provision for the connection of external cables.

Setting the Power Line Voltage

The Q-Link to RS232/422 Adapter is fitted with a voltage selector on the rear panel, *the voltage selector must be checked*, and if necessary set *prior to inserting the power cord*.

Rear voltage selector

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

- **Remove the power cord.**
- Use a small screwdriver to ease loose the voltage selector/fuse holder by prising from above.
- Pull out the fuse drawer. The main fuse is clearly visible, but there is also a spare, slid inside the drawer. The fuse rating is shown on the rear of unit next to the fuse holder.
- Rotate the drawer so that the correct power line voltage is orientated to be read (top of the text up) with the top of the frame also facing upwards. Fit the correct fuse and replace the fuse holder drawer until it snaps home.
- Plug the power cord into the equipment.

Q-Link Connection

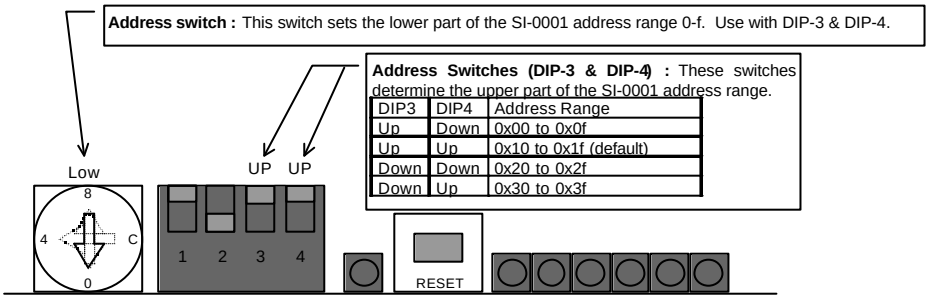
All Quartz frames and panels are connected by a single coaxial link called **Q-link**. This link uses standard 75Ω video cable daisy-chained from frame to frame and panel to panel. Only one connector is fitted on the SI-0001 and a T-piece is needed to tap off the **Q-link**. In this way the unit can be removed from service and replaced without disrupting the link, even temporarily. Refer to **Section 3: Installation** for details.

Q-Link Address

Remove the front panel, and disconnect the pilot led. The SI-0001 address rotary 'hex' switch will be found to the left as you look-in, and is used to set the unique address of the unit. If you have more than one device in your system then you **must** set each to have a different code. If this is not done then the communications down the coaxial Q-link cannot function properly. If you change the position of these switches from the factory settings you should record them for each unit in your installation so as to avoid duplication; this may also prove useful during maintenance.

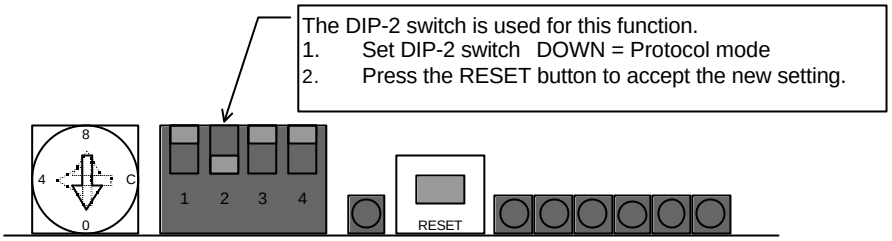
Details of how these switches should be configured are shown in **Section 1: Custom Features.** The equipment is supplied with the switches set for your application, so you should not need to alter them.

A small screwdriver is needed to fit the slot and make the selection. Rotate the switch which has 16 positions from 0 through 9, then A to F (hexadecimal notation).



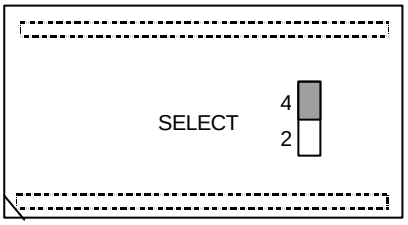
Remote Control Mode or Diagnostics

A processor DIP switch (normally set 'DOWN') sets the mode of operation of the computer port between remote control protocol ('DOWN') and diagnostics ('UP'). The remote control mode should always be used with the SI-0001.



RS422 or RS232 Mode

This is the hardware standard supported by the SI-0001. You should set it to suit the computer or other equipment to which you are connecting. You change it by moving a jumper link on the Computer Interface sub-module (CI-0003) fitted in the rear left hand corner of the SI-0001. Text on the module by the SELECT link indicates 2 (RS232) or 4 (RS422).



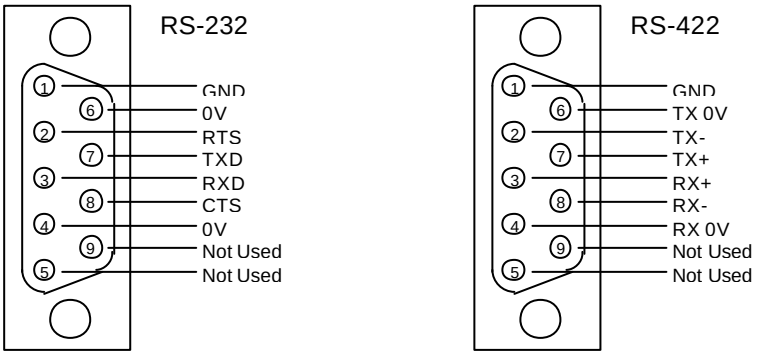
CI-0003 (PC-224)

Serial Port Connections

The SI-0001 has been built to minimise RF emissions. It is important you use *tin and dimple* D-type connectors with metallised shells connected to the screen of external cables in order to achieve low RF emissions from this equipment. The shells are fixed with screwlocks with 4-40 UNC threads.

The Computer Interface connector on the equipment is a D-Type 9 way socket using the pin out shown below. It is labelled 'COMPUTER' to distinguish it from the other D-Type connector.

The wiring of the connectors is different for RS232 and RS422.



Protocols

For remote control from a computer or other studio equipment the protocol built in to the SI-0001 must match the protocol being used by the other equipment. The SI-0001 only supports one protocol at any one time and the 'system' EPROM has a -1, -2, -3 etc number to indicate this protocol. The SI-0001 supports the full set of protocols shown below.

	Protocol	Baud, P, D, S	Quartz is …
-1	Quartz standard	9600, N, 8, 1	Master
-2	TSL UMD	38400	Master
-3	Probel simple	38400	Slave
-5	frame-frame master link	9600	Master
-8	Utah Scientific PL-320 (Zaxcom mixer)	9600	Slave
-9	Nvision	38400	Master
-10	NTL / Pathfinder	9600	Slave
-11	Probel UMD 1 SW-P-04	38400	Master
-12	Frame-frame slave link	38400	Slave
-13	Pro-bel SW-P-02	38400	Slave
-15	DMV 3000 PSR	9600	Master
-16	BTS.....	9600	Master
-17	Probel SW-P-08	19200	Master
-18	GVG 20-Ten	9600	Master
-19	GVG Horizon	19200	Master
-20	Quartz P-Link (Panel Link)	38400	Master
-21	Sony DVS-V1616	38400	Master
-22	GVG 10XL ASCII	38400	Slave
-23	GVG 10XL SMPTE	38400	Slave
-24	GVG HX-GPI	9600	Slave
-25	Panasonic	38400	Slave
-26	Maddox	9600	Master
-27	Pro-bel SW-P-02	38400	Master
-28	Leitch Via	38400	Master
-29	Pesa	38400	Master

Quartz Type-1 Protocol

The Quartz standard ASCII protocol (-1) operates at 38400, 8 data bits, no parity, and 1 stop. The router can be controlled at any time by using the WinSetup 'PC Comms Window'. The command format is :

	.SV1,2(cr)	switch input 2 to output 1 on level 1
	.SA1,2(cr)	switch input 2 to output 1 on level 2
	.SB1,2(cr)	switch input 2 to output 1 on level 3
or	.SVABC1,2(cr)	switch input 2 to output 1 on level 1,2,3 and 4

a reply is only generated after a the carriage return (cr). The full specification of this protocol can be found in TD-0002 available from Quartz. Other Protocols are manufacturer dependent.

Maintenance

If you experience problems then initially refer to Section 5 of this manual for general advice on the maintenance of the system, especially those sections referring to panels.

Multi-Mode Serial Interface SI-0002

General Description

The SI-0002 Multi-Mode Serial Interface is used to provide either a Q-Link expansion facility, or to permit an interface to 4 or 5 serial devices. Typical applications include:

- Isolation of remote panels from the main system Q-Link, i.e. OB trucks.
- Low cost solution for more than two serial ports in a single frame configuration
- Serial port concentrator, allowing multi independent computer control of the system

The SI-0002 consists of two cards. The processor and control functions are carried on a standard 'Front-of-Board' processor card, M-FU-0003, with an I/O module attached at the rear carrying the power supply for both modules and the 4 port Q-Link / Serial interfaces. The FU-0003 processor has its own internal Q-Link and RS232/422 port giving the SI-0002 a maximum capability of 5 Q-Links and 1 serial port (Q-Link Expander mode) or 1 Q-Link and 5 serial port (RS Expander mode).

Some older units were supplied with the FU-0001 processor. This is no longer supported and all SI-0002 units using this should be upgraded to the FU-0003 processor.

Power

The SI-0002 includes its own mains power supply which generates 5v for internal use. The mains power inlet is fitted with a voltage selector. Please check the setting of the voltage selector prior to inserting the power cord. Both the mains inlet and the internal power supply are fuse protected.

System Configuration: WinSetup

The WinSetup program defines the precise operation of the routing system and allows the user to edit the system configuration that is stored as a file on a PC. This file can then be downloaded to the SI-0002 when in master mode (DIP-3 down), or to the master router, where it is stored in NVRAM. When the system powers up the configuration data is transferred to each device as it comes on-line. Ensure the system setup includes a SI-0002, and its address is set correctly.

Firmware

The SI-0002 is fitted with firmware, typically labelled "SI-0002-1 V5.00". The 'V5' refers to the major firmware version, and all devices on one Q-Link must have the same major firmware version. The '.00' refers to the minor firmware version and is used to indicate small improvements and bug fixes.

Protocols

The SI-0002 can be supplied with three different firmware versions to support different communication protocols.

The –1 version (SI-0002-1) is the standard firmware supporting Quartz native protocol.

The –7 version (SI-0002-7) is used when Q-Link dumb panels are being controlled from a third party control system such as the BBC BNCS or AVS Omnibus systems.

The –20 version (SI-0002-20) is used when the unit is operating in RS232/422 Expander mode but is controlling special Quartz serial controlled panels such as CP-3201-S7.

Installation

Physical Installation

The Multi-Mode Serial Interface is designed to fit into standard 19" equipment racks. Installation in a 19" rack is simple. Guide the unit through the aperture in the front of the rack until the rack-mounting flanges are flush against the side member of the rack and bolt in place with fixing screws (not supplied). Behind the unit you should allow for a depth of 250mm plus provision for the connection of external cables.

Setting the Power Line Voltage

The Multi-Mode Serial Interface is fitted with a voltage selector on the rear panel, ***the voltage selector must be checked***, and if necessary set ***prior to inserting the power cord***.

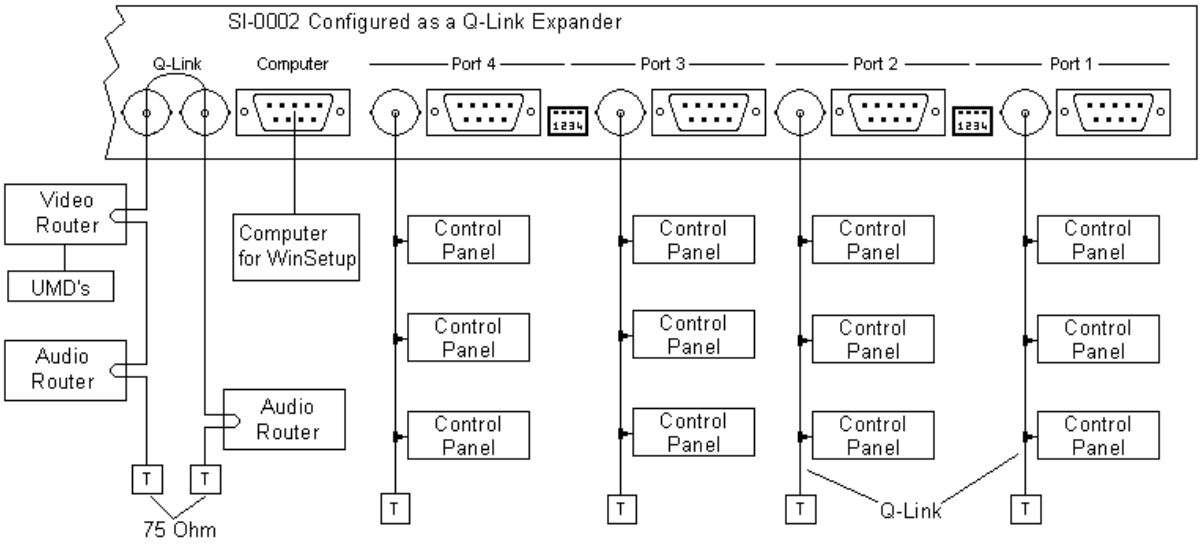
Rear voltage selector

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

- **Remove the power cord.**
- Use a small screwdriver to ease loose the voltage selector/fuse holder by prising from above.
- Pull out the fuse drawer. The main fuse is clearly visible, but there is also a spare, slid inside the drawer. The fuse rating is shown on the rear of unit next to the fuse holder.
- Rotate the drawer so that the correct power line voltage is orientated to be read (top of the text up) with the top of the frame also facing upwards. Fit the correct fuse and replace the fuse holder drawer until it snaps home.
- Plug in the power cord into the equipment.

Using the SI-0002 in Q-Link Expander Mode

This section describes how to configure the SI-0002 to work as a Q-Link Expander. A typical system diagram is shown below.



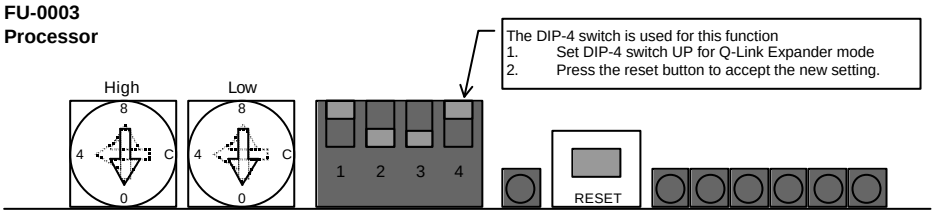
The SI-0002 must always be the **master** (DIP-3 down) of the system in which it operates. For improved system performance, panels and frames should be evenly distributed across all five ports, and not all connected onto one port. Any unused Q-Links must be fitted with a 75Ω termination.

Any panel or frame, with any address (so long as it is unique) may be attached to any port. The single BNC ports have an internal 75Ω termination that can be enabled by a link set inside the SI-0002. As these links can only be set with the cover removed this should be done at installation. The Q-Link expander allows up to 64 devices to be controlled on the Q-Link.

For configuration of the system the COMPUTER port is available and is used in conjunction with the WinSetup program.

Setting Q-Link Expander Mode

This is set by one of the processor DIP switches, DIP-4.



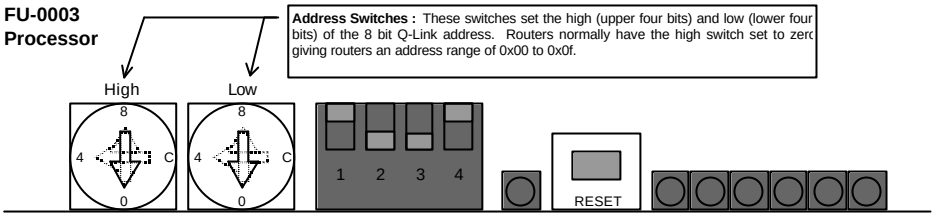
Note that DIP-3 must be in the down position (Q-Link master) when the unit is used in Q-Link Expander mode.

Q-Link Address

Remove the front panel, and disconnect the pilot led. The SI-0002 address rotary 'hex' switches will be found to the left as you look-in, and are used to set the unique address of the unit. The SI-0002 must have an address that is unique from all other units on the Q-Link. If this is not done then the communications down the Q-link cannot function properly.

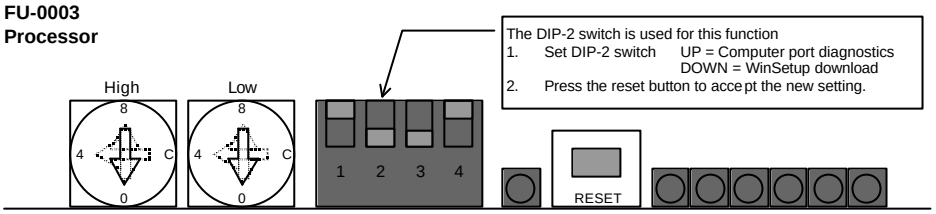
The equipment is supplied with the switches set for your application, so you should not need to alter them. Details of this are shown in **Section 1: Custom Features.** If you change the position of these switches from the factory settings then you will also need to change the WinSetup configuration file.

A small screwdriver is needed to fit the slot and make the selection. Rotate the switches which have 16 positions from 0 through 9, then A to F (hexadecimal notation).

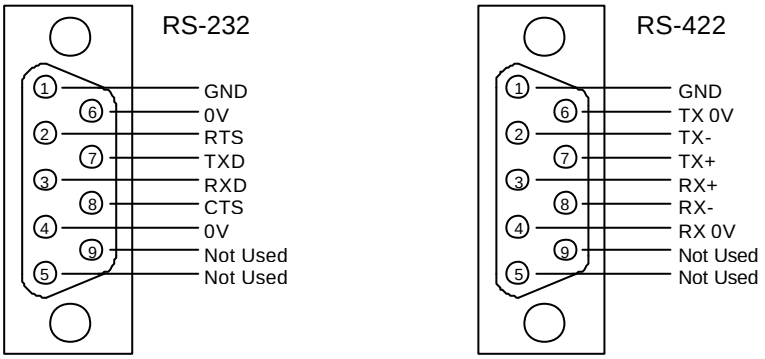


Computer Port

The computer port is used to download new setup files from WinSetup, or to investigate error status information. The switch DIP-2 selects these modes.

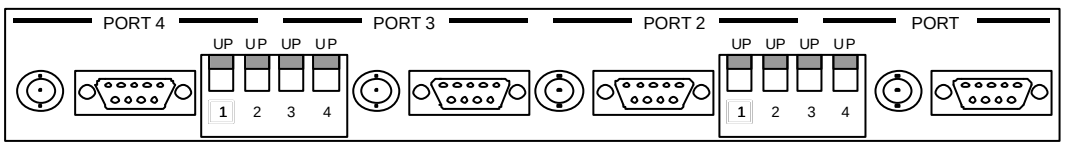


The serial interface connectors on the equipment are D-Type 9 way sockets using the following pinout.



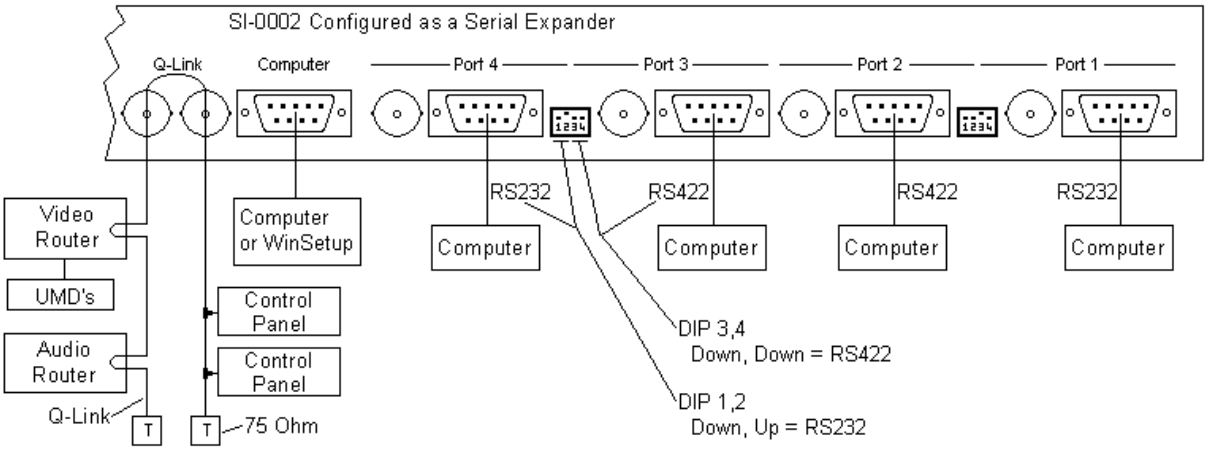
Rear Panel DIP switches

All these switches should be set to the UP position for Q-Link hardware settings. Any other setting will result in a continuos BEEP, BEEP, BEEP from the SI-0002.



Using the SI-0002 in RS232/422 Expander Mode

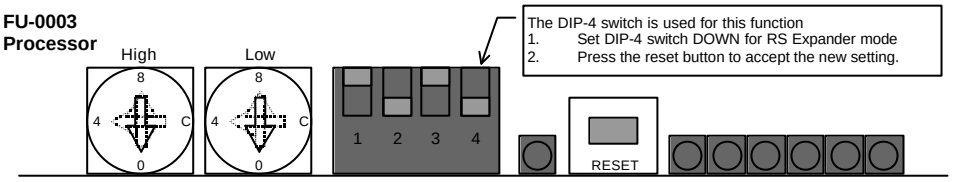
This section describes how to configure the SI-0002 to work as a RS232/422 Expander. A typical system diagram is shown below.



The SI-0002 uses the twin Q-LINK connectors as its point of reference to the system. The Expander can be the **master** (DIP-3 down) or a **slave** (DIP-3 up) of the system in which it operates. If the SI-0002 is the QLink master then the computer port would normally be used to download system configurations from the WinSetup computer. If the SI-0002 is a slave then this port is available for connection in the same way as the other four serial port connectors.

Setting RS232/422 Expander Mode

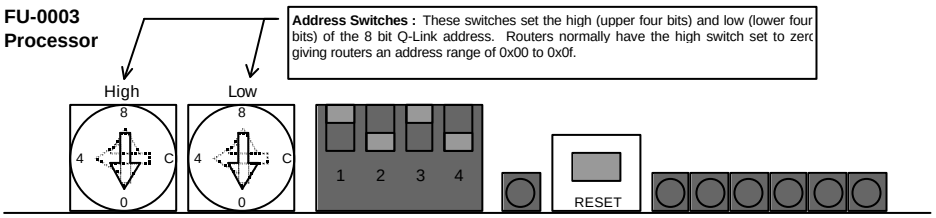
This is set by one of the processor DIP switches, DIP-4.



Q-Link Address

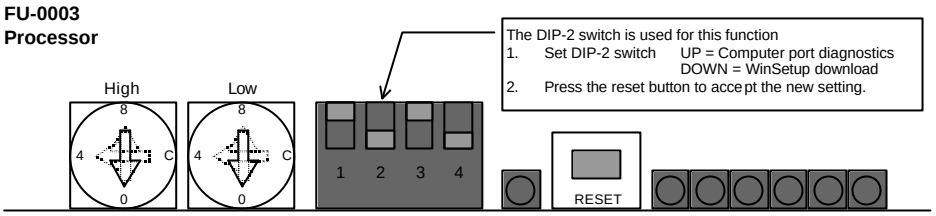
Remove the front panel, and disconnect the pilot led. The SI-0002 address rotary 'hex' switches will be found to the left as you look-in, and are used to set the address of the unit. The SI-0002 must have an address that is unique from all other units on the Q-Link. If this is not done then the communications on the Q-link cannot function properly.

The equipment is supplied with the switches set for your application, so you should not need to alter them. Details of this are shown in **Section 1: Custom Features.** If you change the position of these switches from the factory settings then you will also need to change the WinSetup configuration file. A small screwdriver is needed to fit the slot and make the selection. Rotate the switches which have 16 positions from 0 through 9, then A to F (hexadecimal notation).

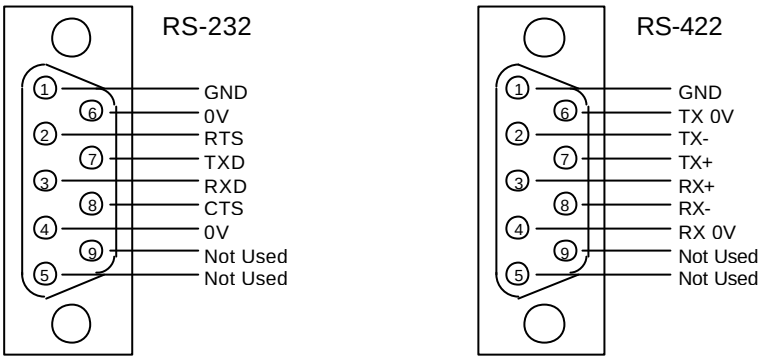


Computer Port

The computer port is used to download new setup files from WinSetup, or to investigate error status information. The switch DIP-2 selects these modes.



The serial interface connectors on the equipment are D-Type 9 way sockets using the following pinout.

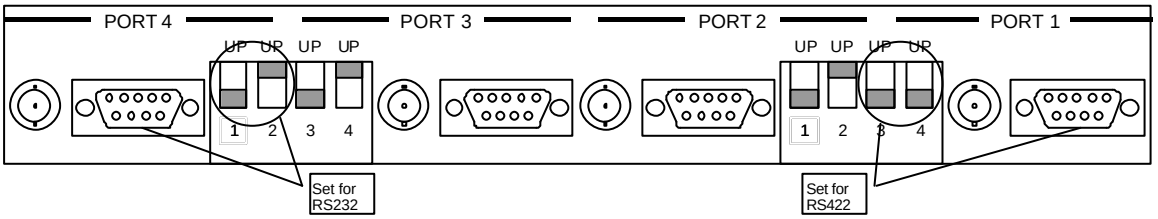


RS232/422 Ports

These have the same pin-out as the computer port shown above.

Rear Panel DIP switches

All these switches should be set in pairs to DOWN+UP for RS232 mode, or DOWN+DOWN for RS422 mode hardware settings. It is possible to inter-mix RS-232 & RS-422. Any other setting will result in a continuos BEEP, BEEP, BEEP from the SI-0002.



Maintenance

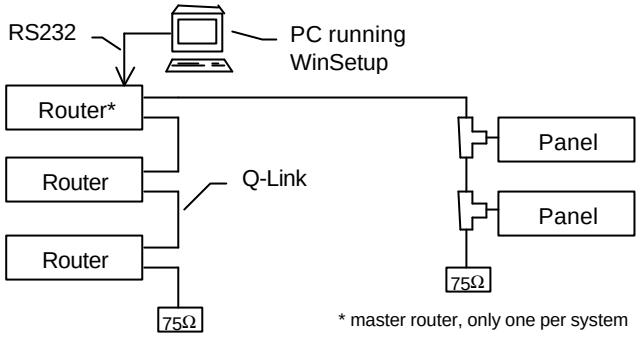
If you experience problems then initially refer to Section 5 of this manual for general advice on the maintenance of the system, especially those sections referring to panels.

If the SI-0002 emits a continuous BEEP, BEEP, BEEP then an illegal combination of settings has been made for DIP-3, DIP-4 and the rear panel DIP switches. Check and re-set correctly.

Q-Link Isolator/Repeater SI-0004

General Description

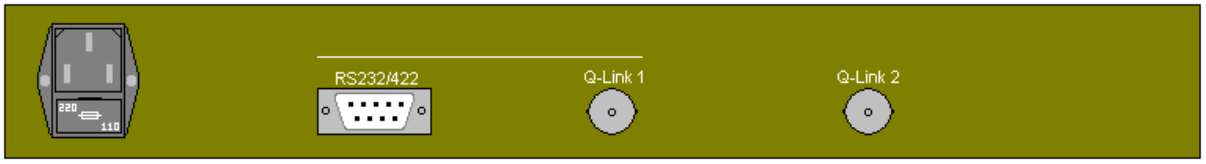
All Quartz routing equipment is connected together on a system called Q-Link. This uses standard video cable carrying a 1V data signal operating at 38400 baud. The maximum recommended cable length is 500m. A typical system is shown below.



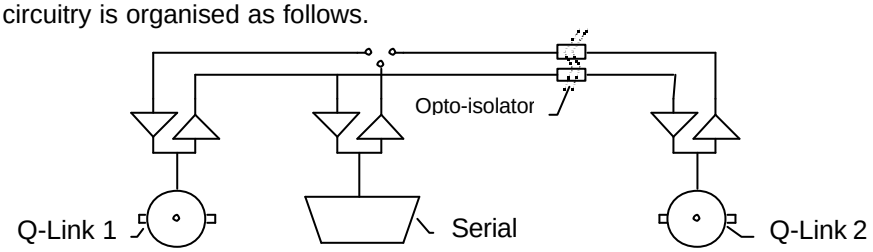
There are four situations when the SI-0004 can be used to enhance Q-Link performance.

1. The Q-Link needs to be extended beyond 500m but not more than 1000m.
2. Electrical isolation is required between two segments of Q-Link, also good for protection.
3. A fibre-optic link is required between two segments of Q-Link.

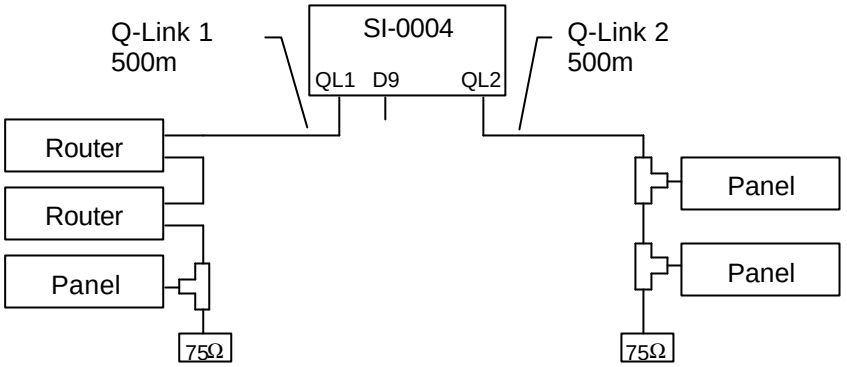
The SI-0004 rear panel is shown below and can be used in one of these three modes.



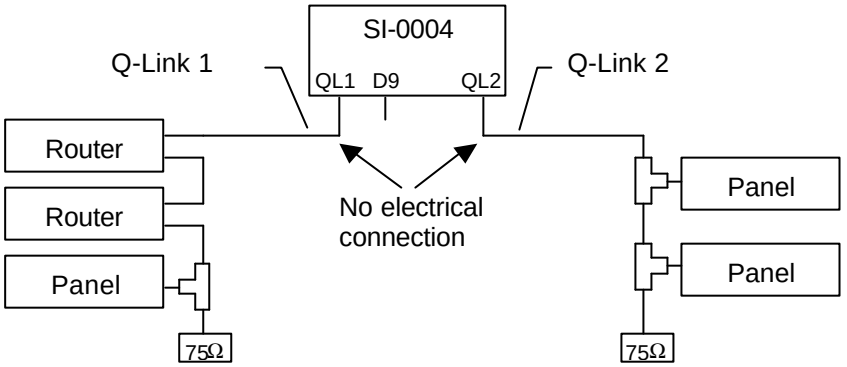
The internal circuitry is organised as follows.



Application 1: To extend the Q-Link beyond 500m.

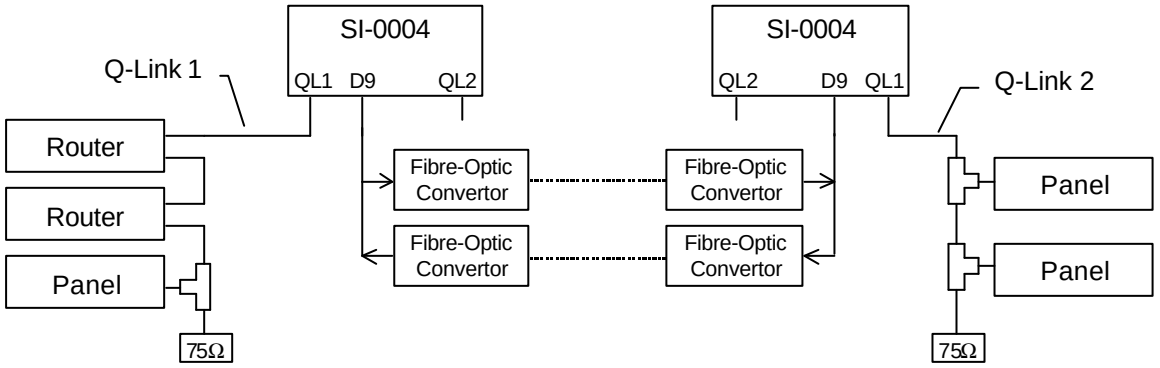


Application 2: As a Q-Link opto-isolator it provides electrical isolation between two segments of Q-Link to avoid problems such as ground loops and earth currents.



This method can also be used to protect a Q-Link that is leaving a safe area, such as inside an OB truck to be routed to a less safe area.

Application 3: As a Q-Link to RS232/422 converter two SI-0004 units may be used in conjunction with standard RS232 to fibre-optic translators to provide very long distance Q-Links connections.



Power
The SI-0004 includes its own mains power supply that generates two isolated +5V feeds for internal use. The mains power inlet is fitted with a voltage selector. Please check the setting of the voltage selector prior to inserting the power cord. Both the mains inlet and the internal power supplies are fuse protected.

Installation

Physical Installation

The SI-0004 is designed to fit into standard 19" equipment racks.

Installation in a 19" rack is simple. Guide the unit through the aperture in the front of the rack until the rack-mounting flanges are flush against the side member of the rack and bolt in place with fixing screws (not supplied). In the rack you should allow for a depth of 130mm plus provision for the connection of external cables.

Setting the Power Line Voltage

The Q-Link Opto-Isolator is fitted with a voltage selector on the rear panel, ***the voltage selector must be checked***, and if necessary set ***prior to inserting the power cord***.

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

- **Remove the power cord.**
- Use a small screwdriver to ease loose the voltage selector/fuse holder by prising from above.
- Pull out the fuse drawer. The main fuse is clearly visible, but there is also a spare, slid inside the drawer. The fuse rating is shown on the rear of unit next to the fuse holder.
- Rotate the drawer so that the correct power line voltage is orientated to be read (top of the text up) with the top of the frame also facing upwards. Fit the correct fuse and replace the fuse holder drawer until it snaps home.
- Plug in the power cord into the equipment.

Signal Connections

Q-Link 1

Connect one Q-Link to this connector. Note that the BNC has a plastic body to provide electrical isolation from the chassis metal work.

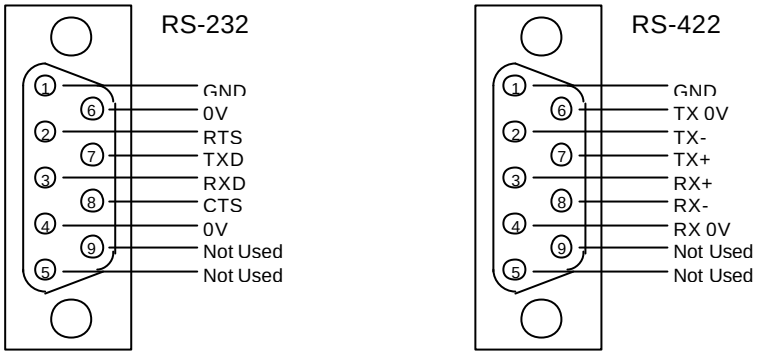
Q-Link 2

If the unit is being used as a Q-Link repeater or Q-Link opto-Isolator (application 1 or 2) then connect the other Q-Link to this connector. Note that the BNC has a plastic body to provide electrical isolation from the chassis metal work.

RS232/422

Only make a connection to this connector when the unit is being used as a Q-Link to RS232/422 converter (application 3). The Computer Interface connector on the equipment is a D-Type 9 way socket using the pin-out shown below.

The wiring of the connectors is different for RS232 and RS422.



The SI-0004 converter has been built to minimise RF emissions. It is important you use *tin and dimple* D-type connectors with metallic shells connected to the screen of external cables in order to achieve low RF emissions from this equipment. The shells are fixed with screw locks with 4-40 UNC threads.

Note: The system configuration/setup does not need any changes to use a SI-0004.

Configuring the SI-0004.

The SI-0004 is fitted with a small number of 3 way links to allow the different modes of operation to be supported.

SI-0004 Mode

The SI-0004 has two main modes of operation, Q-Link- to Q-Link, or Q-Link to RS232/422. This is controlled by link LK-3 that can be changed by removing the front door. Set to the left for Q-Link to Q-Link mode (applications 1 & 2) or set to the right for QLink to RS232/422 converter mode (application 3).

RS232 or RS422 Mode

This is controlled by link LK-2 but is only effective when the SI-0004 is working in Q-Link to RS232/422 converter mode (application 3). Set to the left for RS422 and to the right for RS232.

RS422 Termination

This is controlled by link LK-1 but is only effective when the SI-0004 is working in Q-Link to RS232/422 converter mode (application 3)and set for RS422 operation. Set to the left for an RS422 termination and to the right for no termination. The RS422 signal is very robust and line termination is not normally required.

VS-3200 Video Status Display

General Description

The VS-3200 Video Status Display provides information about the current assignment of routes through a Quartz routing switcher system on a standard monochrome or colour picture monitor.

Two display formats are available as standard. The first, intended for systems with up to 16 destinations, shows each destination with its selected sources as a separate line across the screen. Each line shows the source for each of the four breakaway levels. The text size is 40 characters per line. The second, intended for systems with between 16 and 32 destinations, shows the same information but in two columns as shown below. The size of the text is 80 characters per line in this mode and needs a monitor of better picture quality.

DESTN	VIDEO	AUDIO-1	AUDIO-2	T-CODE	DESTN	VIDEO	AUDIO-1	AUDIO-2	T-CODE
EDIT-1	VTR-5	VTR-5	VTR-5	VTR-5	STUD-1			RDTV	
EDIT-2	VTR-4	VTR-4	VTR-4	VTR-4	STUD-2				
EDIT-3	VTR-3	VTR-3	VTR-3	VTR-3	STUD-3				
EDIT-4	VTR-2	VTR-2	VTR-2	VTR-2	STUD-4	MX-1V			
VTR-1	CAM-1			CAM7	STUD-5				
VTR-2	CAM-2				LINE-1				
VTR-3	CAM-3				LINE-2				
VTR-4	TEST	TEST	TEST	TEST	LINE-3				
VTR-5					LINE-4				D1VT2
MXR-1	CAM-1				LINE-5				
MXR-2	CAM-2				MXR-TX				
MXR-3	CAM-3				MXR-PV				
MXR-4	CAM-4				AUX-1		TONE		
MXR-5	CAM-5		TONE		AUX-2				
MXR-6	CAM-5				AUX-3				
MXR-7	CAM-6				AUX-4				

Typical screen format

The display can be useful to a supervisor as it can display at a glance how the routes are currently assigned, and thus which equipment is allocated to which studio. Often the VS-3200 output is used as a source to the video router so that the information is made available to all areas by selecting this source on a remote panel.

The names of the sources and destinations may be up to 6 characters long. These names are usually programmed into the system at the factory but may be altered by the user as circumstances change, using the SETUP program. The list of the names and the matrix status are stored in battery-backed memory in the master frame.

The display is available in all of the following formats: monochrome, RGB and composite colour outputs. The composite output is link selectable between PAL and NTSC. The RGB output uses the monochrome output as a sync signal.

The Video Status Display unit can support a CP-1600 style local control panel turning it into a fully featured CP-1600 panel. Also in common with most panels the VS-3200 uses the ***Q-link*** coaxial bus to provide a simple-to-install connection back to the matrix frames.

Computer Port

The computer port is an option which provides most of the relevant facilities to be found on the matrix frames. It may be more convenient in your installation to connect to a computer here rather than at the frame. It uses the same plug-in Computer Interface Card as in the frame.

Installation

Physical Installation

The VS-3200 is designed to fit into standard 19" equipment racks. It can be mounted at any angle. Rack-mount flanges (or ears) are vulnerable to damage so these are packed separately for protection and must be removed from the accessory kit and fitted to the sides of the unit with the screws supplied in the kit.

Installation in a 19" rack is simple. Guide the unit through the aperture in the front of the rack until the rack-mounting flanges are flush against the side member of the rack and bolt in place with fixing screws (not supplied).

Behind the unit you should allow for a depth of 170mm plus provision for the connection of external cables.

Electrical Connections

Video Signals

The monochrome and composite signals may be used at the same time, but if the RGB outputs are used then you will need to use the monochrome output for syncs. Please note that the EXT REF input is not supported and so it is not possible to lock up the unit to station syncs.

Q-link

Refer to **Section 3: Installation** for details.

Setting the Power Line Voltage

Some units are fitted with a voltage selector on the rear panel and others are not. The instructions below are for both cases.

Units with Rear voltage selector

The voltage must be checked and if necessary set prior to inserting the power cord.

The 230v setting is suitable for both 220v and 240v countries. The 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.
2. Use a small screwdriver to ease loose the voltage selector/fuse holder by prising from above.
3. Pull out the fuse drawer. The main fuse is clearly visible, but there is also a spare, slid inside the drawer. The fuse rating is shown on the serial number plate on the base of the unit.
4. Rotate the drawer so that the correct power line voltage is orientated to be read (top of the text up) with the top of the frame also facing upwards. Fit the correct fuse and replace the fuse holder drawer until it snaps home.
5. Plug in the power cord into the equipment.

Units without voltage selector

Check the factory voltage setting on the Serial Number label (to be found on the bottom of the case) is suitable for your country prior to inserting the power cord. The top cover must be removed and a soldering iron used in order to alter the power line voltage setting. As it affects personal safety this should be performed by qualified personnel only.

1. Remove the power cord.
2. Remove the top cover from the unit by unscrewing the fixing screws.
3. Pull off the shroud and unsolder the wires from the transformer primary terminals and solder them to suit the local power line voltage:

   Earlier units have twin primary windings 0-120v, 0-120v

   90-132v - wire the two 120v windings in parallel

   180-264v - wire the two 120v windings in series

   Later units have a single primary winding 0-115v-230v

   90-132v - wire the 0-115v winding, leaving the 230v tap unused

   180-264v - wire the 0-230v winding, leaving the 115v tap unused

4. Replace the top cover.
5. Use a small screwdriver to ease loose the fuse holder by prising from above. Pull out the fuse drawer. The fuse is clearly visible with a spare, inside the drawer. The fuse ratings used are shown on the serial number label. Fit the correct fuse to suit the power line voltage in your country. Push home the drawer.
6. Plug in the power cord into the equipment.

Configuring the VS-3200

This section describes how to configure the VS-3200 for your particular application.

PAL/NTSC

The VS-2300 can provide a composite output of the status display in either PAL or NTSC. It will normally be supplied set up for the television system in use in your country. However if you need to change the composite output of the VS-3200 from PAL to NTSC then you will need to move the position of LK2.

You will also need to make a change in the software configuration of the system. This can be made using the SETUP program, otherwise please contact your supplier or Quartz direct for an upgrade to the configuration (a new EPROM).

Panel Address

The rotary 'hex' switch just to the left of the ribbon cable is used to set the unique address of the unit. If you have more than one in your system then you **must** set each to have a different code. If this is not done then the communications down the coaxial Q-link cannot function properly. If you change the position of these switches from the factory settings you should record the them for each unit in your installation so as to avoid duplication; this may also prove useful during maintenance.

Details of how these switches should be configured are shown in **Section 1: Custom Features.** The equipment is normally supplied with the switches set for your application, so you should not need to alter them.

A small screwdriver is needed to fit the slot and make the selection. Rotate the switch which has 16 positions from 0 through 9, then A to F (hexadecimal notation).

1. Rotate the switch to the desired position.
2. Press the RESET button to accept the new setting.

Test Patterns

Several test patterns are available, provided mainly to assist in the installation of the RGB cabling. They should not be treated as precision signals for alignment.

The patterns are selected using four DIP switches which are set to either UP=D or Down=D. They should all be set to the UP position for normal status display operation. To select the test patterns then set the switches as listed below:

UUUU Status Display Mode
UUUD vertical colour bars
UUDD horizontal colour bars
UDUD red field
UDDD green field
DUUD character set with border
DUDD convergence pattern (grille)
DDUD blue field
DDDD Quartz header screen showing firmware version

1. Set the switches to the up-down code needed for the desired test pattern
2. Press the RESET button to accept the new setting

Technical Specification

VIDEO OUTPUTS

Monochrome	1V p-p
RGB with Separate Sync using monochrome output	700mV p-p
PAL/NTSC Composite	1V p-p
Impedance	75Ω

POWER

rear panel voltage selector	90-132v 50/60Hz 180-264v 50/60Hz
Power consumption	10watts
Connector	IEC with retaining latch

CONTROL

Q-link	75Ω video cable 500m max length
Computer port RS232/RS422	D9 socket

MECHANICAL

Height	1U, 44mm
Width	rack mount
Depth	170mm
Weight	1.5Kg

ENVIRONMENTAL

Ambient Temperature	
Operating and storage	0-40 ^{o}C
Humidity	10-90% non-condensing