

Application Note AN-0016

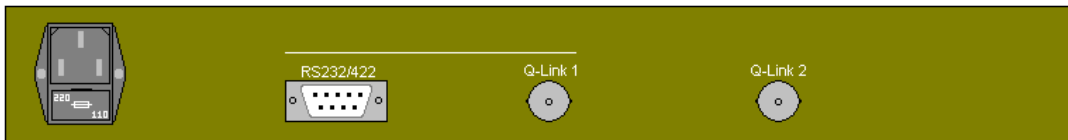
SI-0004 Q-Link Isolator

As standard, Quartz routers have one or more Q-Link connectors for connection to other Quartz equipment, routers, panels, interfaces, etc. The QLink can operate over 500m and this is adequate in most broadcast applications.

In larger buildings or outside broadcast sites problems with mains/line earth currents can lead to problems with single ended signals, such as the Q-Link or normal video feeds. Video signal problems can be removed by the use of simple video isolating transformers. Due to its electrical properties these isolating transformers cannot be used with the Q-Link and in these situations the SI-0004 can be used.

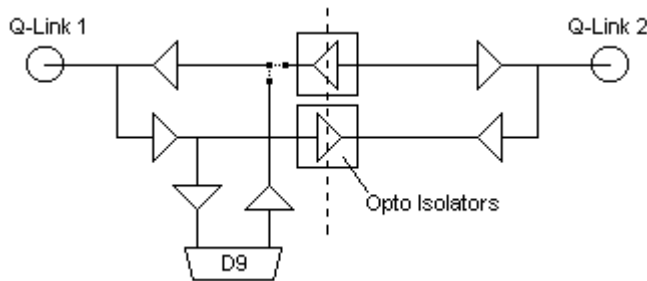
Another use of the SI-0004 is as a repeater. Two SI-0004 units can increase the total Q-Link length to 1500m.

The last application of the SI-0004 is in outside broadcast vehicles. When the truck is designed with only one internal Q-Link, this can be vulnerable to damage when taken outside the truck. By taking the Q-Link through the SI-0004 the internal section is isolated and protected from faults on the external section.



Rear view of SI-0004

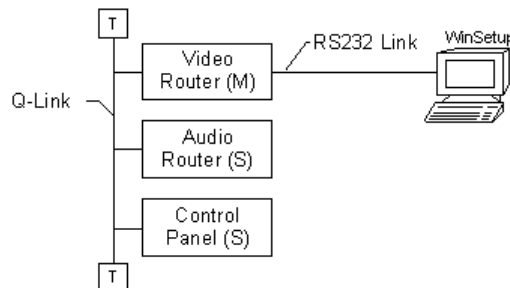
The internal structure is shown below.



This application note describes the hardware and software requirements of the Quartz equipment and shows typical uses.

Typical Quartz Router System

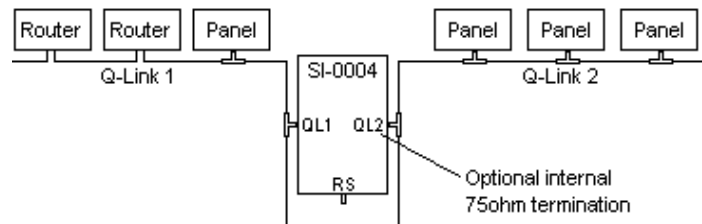
Quartz routers use a communication system called QLink that allows routers and panels to be connected together using a single co-ax video cable. A typical Quartz router system is shown below:



The router system has one of the routers set as a master (M), in this case the video router. The master holds the system set-up and controls the Q-Link communication. All other Quartz routers and control panels are slave (S) devices. The RS232 link is optional but allows either the set-up of the router to be changed (only if connected to the master) or the computer to control the router.

SI-0004 Typical Q-Link Application

The SI-0004 is mains powered and provides an optically isolated connection between two sections of Q-Link. A router system using a SI-0004 is shown below:

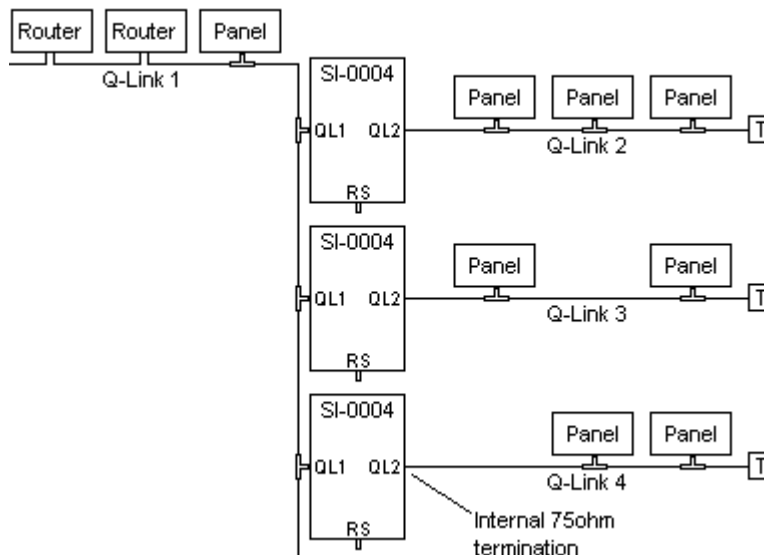


In this mode the SI-0004 internal link LK3 has been set in the 'QL' (Q-Link) position. LK5 and LK4 can be used to add/remove internal Q-Link terminations to Q-Link 1 and Q-Link 2 respectively.

Note: at all times the Q-Link 2 circuit must be terminated with at least one 75ohm termination and there is an internal link, LK4, to add/remove an internal 75ohm termination. If this rule is not followed the main Q-Link 1 circuit will not function and will have a permanent DC offset of approximately +900mV.

Multiple SI-0004 Q-Link Application

In an Outside Broadcast (OB) truck it may be necessary to have multiple isolated Q-Links to connect to several remote locations. In this situation the above example can be extended to include multiple SI-0004 units, as shown below.

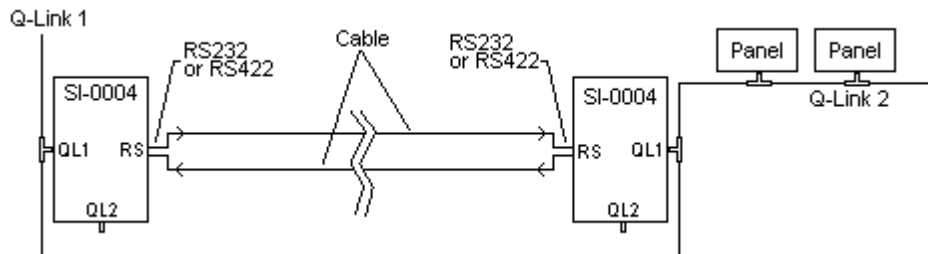


In this situation care must be taken with mains power connections. On any of the isolated Q-Links 2,3,4 all panels must be on the same mains phase and in the same physical location to prevent earth currents circulating on the Q-Link cable. This problem normally shows itself as panels failing to come on-line, or coming on-line and then dropping off-line again. If in any doubt only connect one panel to one isolated Q-Link.

Note: at all times the Q-Link 2 circuit must be terminated with at least one 75ohm termination and there is an internal link, LK4, to add/remove an internal 75ohm termination. If this rule is not followed the main Q-Link 1 circuit will not function and will have a permanent DC offset of approximately +900mV.

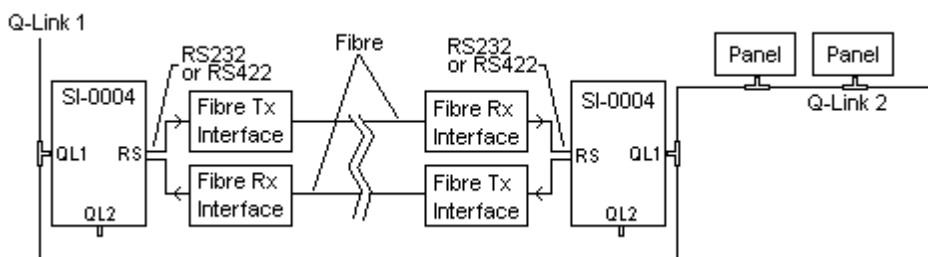
SI-0004 Typical RS232/422 Application

Two SI-0004 units can be used, one at each end of an RS232 or RS422 link. The first unit converts Q-Link data to RS232 or RS422 data. This is then transmitted to a second SI-0004 that converts the data back to Q-Link format.



SI-0004 Typical Fibre Optic Application

Two SI-0004 units can be used, one at each end of a fibre optic link. The first unit converts Q-Link data to RS232 or RS422 data, as above. Standard RS232 or RS422 to fibre optic converters are then used to achieve a long haul link. Note that two fibres are usually required, one for transmit data, and the other for receive data. In all cases the link must be capable of supporting data rates of 38400 baud.



In this mode the SI-0004 internal link LK3 has been set in the 'RS' (RS232/422) position. LK4 should be fitted in the 'ON' position. LK5 can be used to add/remove an internal Q-Link termination to Q-Link 1. LK2 is used to select RS232 or RS422 mode. LK1 is normally fitted in the position towards J3 for no RS422 termination, but can be move if a termination is required.

Router Configuration

The master router does not require any changes to use the SI-0004. Simply install the unit between two sections of Q-Link, or use two units, one at either end of a fibre optic link.

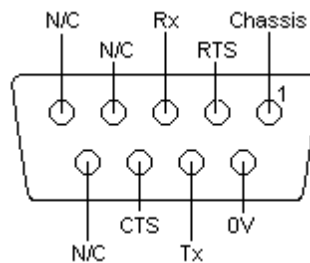
SI-0004 Configuration

The SI-0004 (module issue C2, PC-219 issue 2) has 5 internal links to set operating modes.

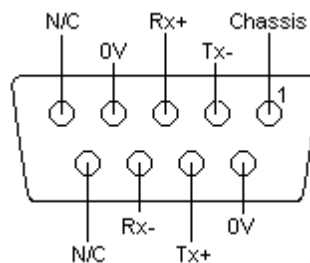
- LK1 RS422 termination, on or off
- LK2 RS232 or RS422 mode
- LK3 Q-Link or RS232/422 mode
- LK4 Q-Link 2 internal 75 ohm termination, on or off
- LK5 Q-Link 1 internal 75 ohm termination, on or off

The RS232/422 connector

Before using this connector check that the internal link for RS232 or RS422 has been set correctly.



RS-232



RS-422

There is an alternative naming convention for RS422 signals.

Tx+ = TxB Tx- = TxA Rx+ = RxB Rx- = RxA

Older Product

The SI-0004 internal module was updated in March 1999 to issue C2 (PC-219 issue 2). Product supplied before this date did not support internal Q-Link terminations.