

Application Note AN-0017

Long Distance Control of Quartz Routers Over WAN and Telephone Links

Introduction

Many systems require control of a central routing system from a remote location, sometimes several kilometres away. This can be achieved in a number of different ways with the final approach being based on such criteria as

- The distances involved.
- The frequency of use of the remote site.
- Any established links such as a computer network or fibre.

Dedicated Links

These fall into three categories, leased lines, fibre links, and computer networks.

Leased Lines: Leased lines are dedicated phone lines between two locations that do not require a dial sequence to access the link. Your telecommunication service provider will probably be able to provide an interface to the leased line allowing two-way (full duplex) communication via an RS232 interface. If this is available then use methods 2, 3 or 4 but without the modems.

Fibre Links: Fibre links can be installed by the user or by a telecommunications service provider. The link must be fitted with interfaces to allow two-way (full duplex) communication via an RS232 interface. If this is available then use methods 2, 3 or 4 but without the modems.

Computer Networks: A computer network may already be installed over which a low speed 'virtual' RS232 link can be established. This means that serial RS232 data sent into a connector on one part of the network will appear at another connector on a different part of the network, as if a dedicated cable were installed. If this is available then use methods 2, 3 or 4 but without the modems.

Dial-up links

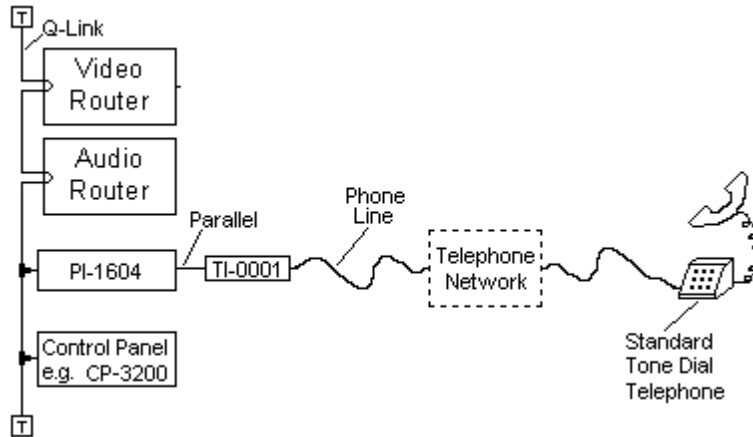
Dial up links use standard telephone networks to establish an RS232 data link between the two locations. The link is not present until required and a phone number must be stored at the remote end to dial the central router. As a delay of several seconds will be incurred during the dial up process some thought must be given to the operational sequence, which might typically be:

- 1) Prior to going live the link should be 'opened' by dialling up.
- 2) During the 'live' event, route changes will be passed to the central router.
- 3) After an agreed time of inactivity (say 30 minutes) the link would shut down.

Physical Installation Methods

Method 1: Simple via Standard Phone

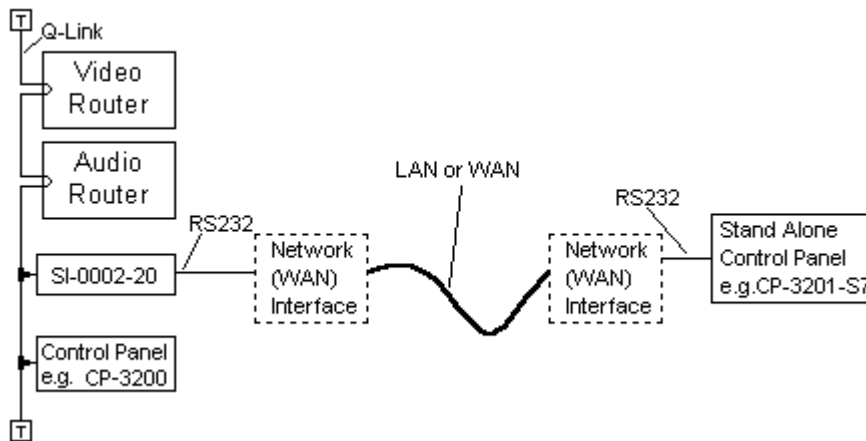
This method is good for controlling one output and up to 10 inputs, although these can be part of a larger router. It involves a small interface unit TI-0001 that connects to the incoming phone line. It answers the call, checks a 4-digit password, and then allows control of one router output, all using tone dial telephone key presses.



This technique has been used to implement an emergency control facility to allow limited router control in the event of a building evacuation.

Method 2: Single Remote Panel via computer WAN

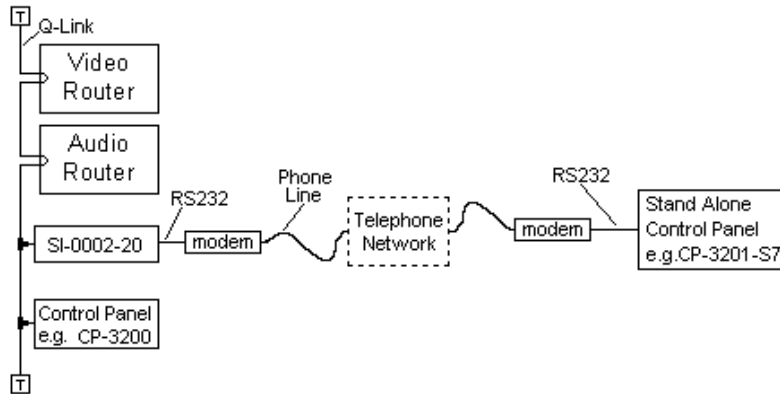
This method is good for locating a single Quartz remote control panel in a remote location. The control panel at the remote location is a special -S7 type that has different firmware and a RS232 port fitted. The SI-0002 at the router is fitted with special -20 protocol that can talk to the panel on the RS232-WAN-RS232 link, which operates at 9600 baud.



The configuration options for the SI-0002 only allow simple BPX panels (CP-1601, CP-1604, and CP-3201) to be used and each panel only supports source buttons. The destination and levels to be controlled are defined during configuration and cannot be changed by the panel operator.

Method 3: Single Remote Panel via Telco

This method is good for locating a single Quartz remote control panel in a remote location. The control panel at the remote location is a special -S7 type that has different firmware and a RS232 port fitted. The SI-0002 at the router is fitted with special -20 protocol that can talk to the panel on the RS232-modem-RS232 link, which operates at 9600 baud.



The configuration options for the SI-0002 only allow simple BPX panels (CP-1601, CP-1604, and CP-3201) to be used and each panel only supports source buttons. The destination and levels to be controlled are defined during configuration and cannot be changed by the panel operator. The main difficulty with this type of system is storing Telco related parameters such as the phone number to be dialled at the remote site. This is solved by using the modems internal storage features but does require the Modem to be configured on a PC before use in the system. The main parameters stored are

Parameter

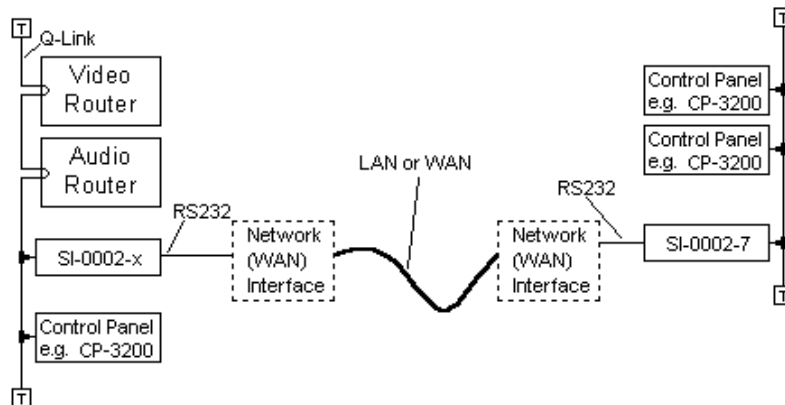
- Phone number to dial
- Duration before dropping line

In most applications one button on the remote site control panel will be configured as the 'open a phone connection' button and this will cause the modem to dial. This function can therefore be used several minutes before route changes need to be made.

Method 4: Multiple Remote Panels via WAN

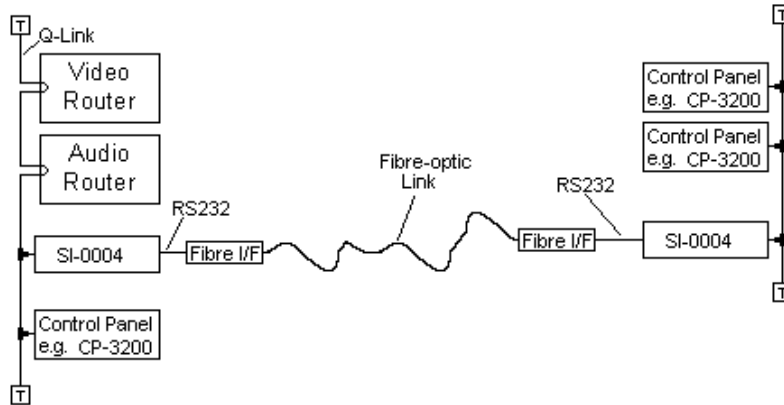
Not currently supported as shown, contact Quartz for more information.

This method is good for locating several Quartz remote control panels in a remote location. The control panels at the remote location are completely standard. The SI-0002-x interface converts Q-Link protocol into a simple message structure. The SI-0002-7 converts this to a special Q-Link format.. The link operates at 38400 baud but does not have any critical timing requirements making it ideal for indeterminate computer networks.



Method 5: Multiple Remote Panels via Fibre Link

This method is good for locating several Quartz remote control panels in a remote location. The control panels at the remote location are completely standard. The SI-0004 interface units act as Q-Link to RS232/422 converters. The link operates at 38400 baud and has critical timing requirements. For this reason this method is not supported over computer networks or Telco links.

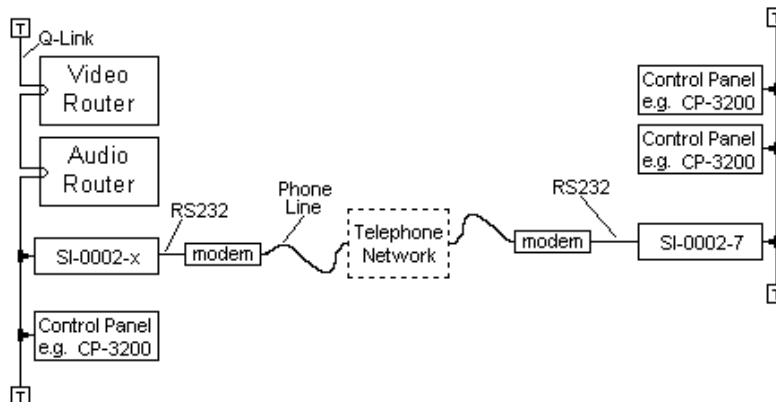


Application note AN-0016: SI-0004 Q-Link Isolator/repeater gives more detailed information on use of the SI-0004.

Method 6: Multiple Remote Panels via Telco

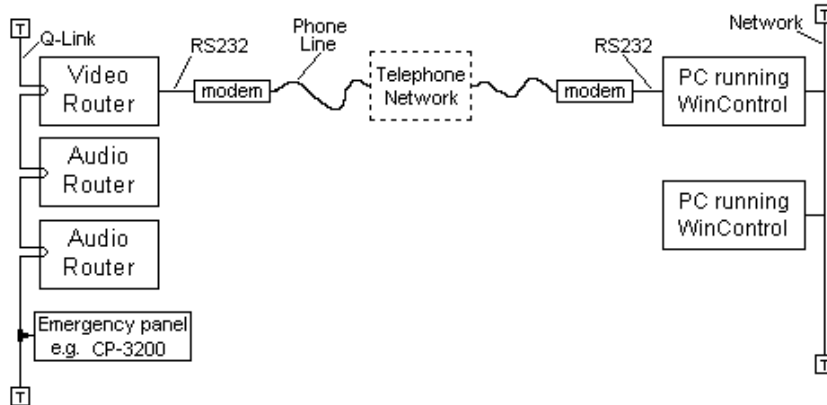
Not currently supported as shown, contact Quartz for more information.

This method is good for locating several Quartz remote control panels in a remote location. The control panels at the remote location are completely standard. The SI-0002 at the remote location acts as a RS232 to Q-Link converter. The SI-0002 at the router is fitted with special -20 protocol that can talk to the remote SI-0002 at 38400 baud.

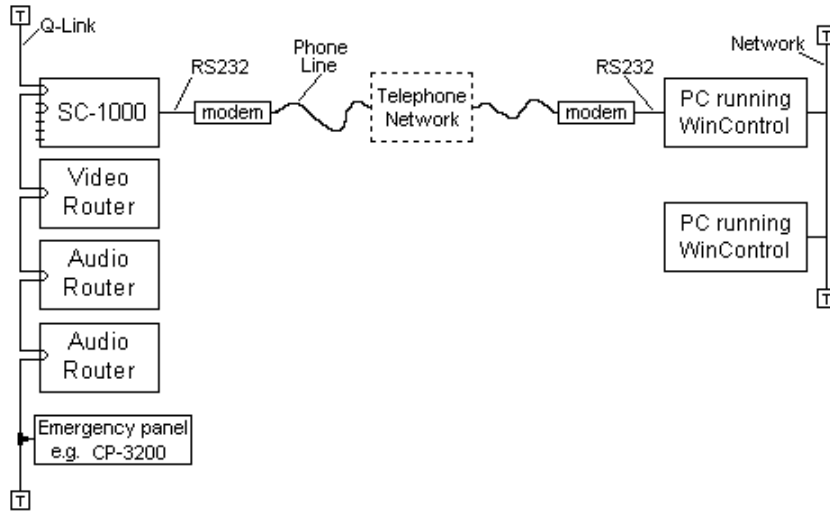


Method 7: Remote PC via Telco

This uses a standard PC and modem with the PC running Quartz WinControl software.



A variation on this for larger routing systems uses the SC-1000 system controller at the router.



Method 8: Remote PC via WAN

This uses a standard PC and makes use of a Wide Area Network using TCP/IP protocol.

