

7SR210 Non-Directional Relay **7SR220** Directional Relay **Configuration Guide**

(Software Version 2435H85008R7a-7a) (7SR210)

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Document Release History

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Section 1: Introduction

1.1 Relay Menus And Display

All relay fascias contain the same access keys although the fascias may differ in appearance from model to model. The basic menu structure is also the same in all products and consists of four main menus, these being,

Settings Mode - allows the user to view and (if allowed via the settings mode password) change settings in the relay.

Instruments Mode - allows the user to view the relay meters e.g. current, voltage etc.

Fault Data Mode - allows the user to view the type and data of any fault that the relay has detected.

Control Mode - allows the user to control external plant under the relays control for example the CB (if allowed via the control mode password)

The menus can be viewed via the LCD by pressing the access keys as below,

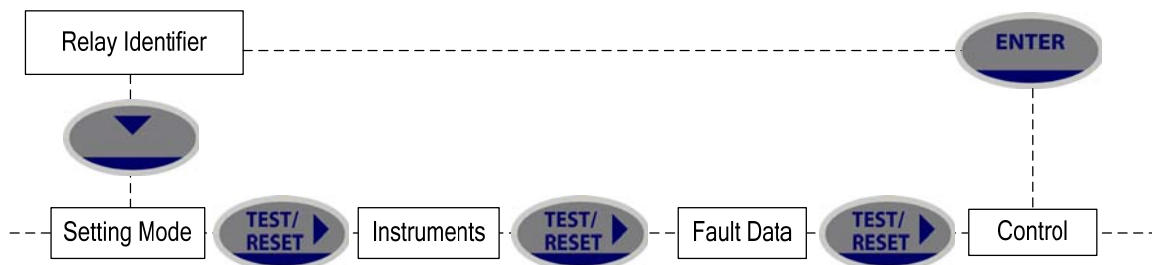


Figure 1.1-1 Menu Navigation

Pressing CANCEL returns to the Identifier screen

LCD Contrast

To change the contrast on the LCD insert a flat nosed screwdriver into the screwhead below the contrast symbol, turning the screwhead left or right decreases and increases the contrast of the LCD.



Figure 1.1-2 Fascia Contrast symbol

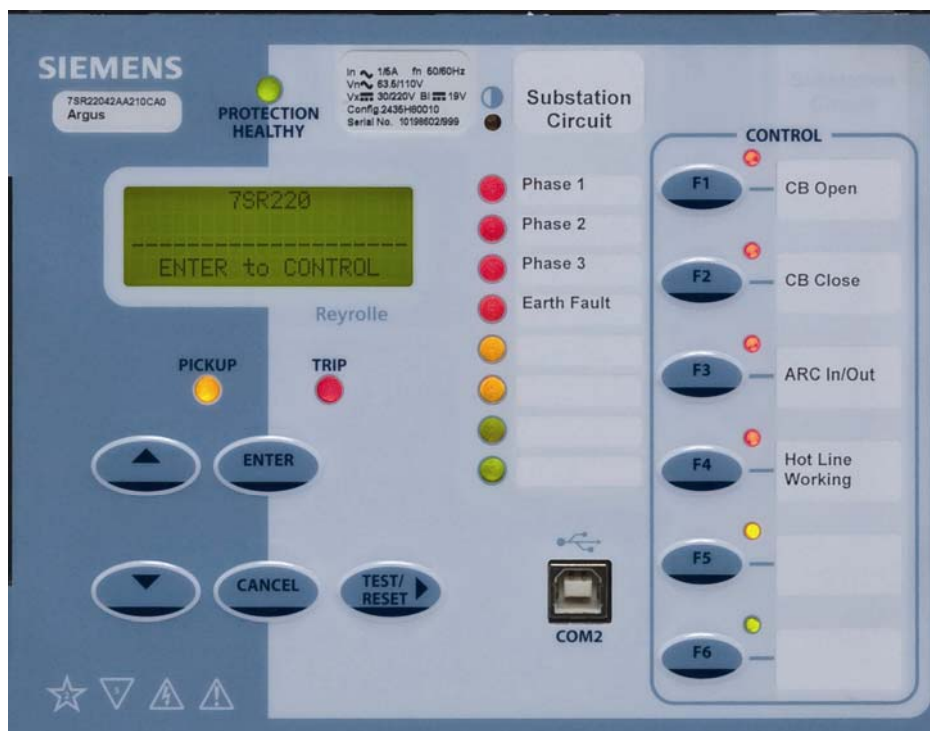


Figure 1.1-3 Relay Fascia (Please note fascia may differ from illustration)

1.2 Operation Guide

1.2.1 User Interface Operation

The basic menu structure flow diagram is shown in Figure 1.2-2. This diagram shows the main modes of display: Settings Mode, Instrument Mode, Fault Data Mode and Control Mode.

When the relay leaves the factory all data storage areas are cleared and the settings set to default as specified in settings document.

When the relay is first energised the user is presented with the following message: -

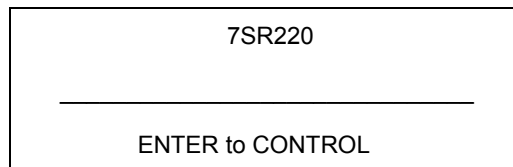


Figure 1.2-1 Relay Identifier Screen

On the factory default setup the relay LCD should display the relay identifier, on each subsequent power-on the screen that was showing before the last power-off will be displayed.

The push-buttons on the fascia are used to display and edit the relay settings via the LCD, to display and activate the control segment of the relay, to display the relays instrumentation and Fault data and to reset the output relays and LED's.

The five push-buttons have the following functions:



Used to navigate the menu structure.



ENTER

The ENTER push-button is used to initiate and accept setting changes.

When a setting is displayed pressing the ENTER key will enter the edit mode, the setting will flash and can now be changed using the ▲ or ▼ buttons. When the required value is displayed the ENTER button is pressed again to accept the change.

When an instrument is displayed pressing ENTER will toggle the instruments favourite screen status.



CANCEL

This push-button is used to return the relay display to its initial status or one level up in the menu structure. Pressed repeatedly will return to the Relay Identifier screen. It is also used to reject any alterations to a setting while in the edit mode.



TEST/RESET

This push-button is used to reset the fault indication on the fascia. When on the Relay Identifier screen it also acts as a lamp test button, when pressed all LEDs will momentarily light up to indicate their correct operation. It is also moves the cursor right ► when navigating through menus and settings.

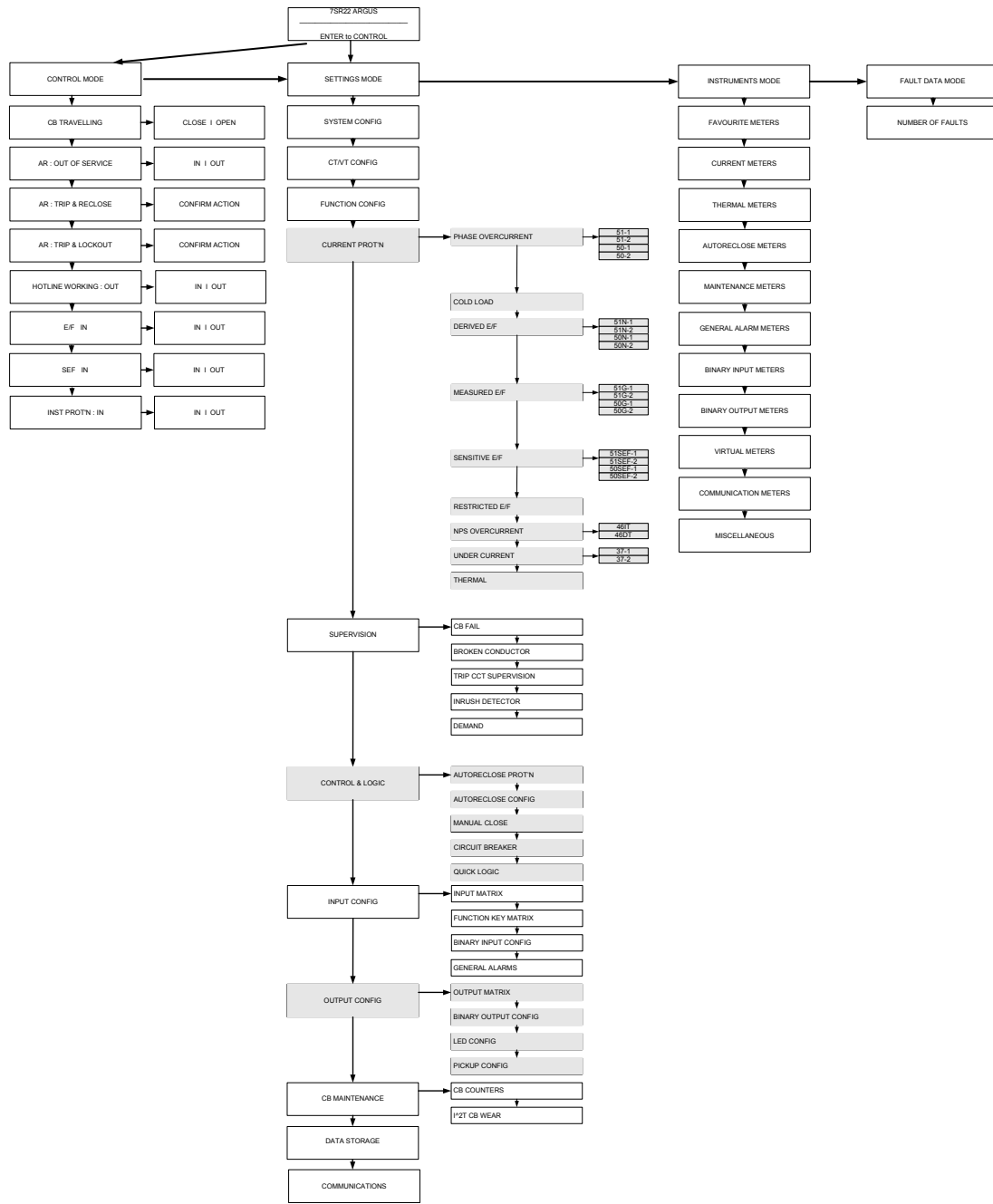


Figure 1.2-2 Typical Menu Structure for 7SR21 relay

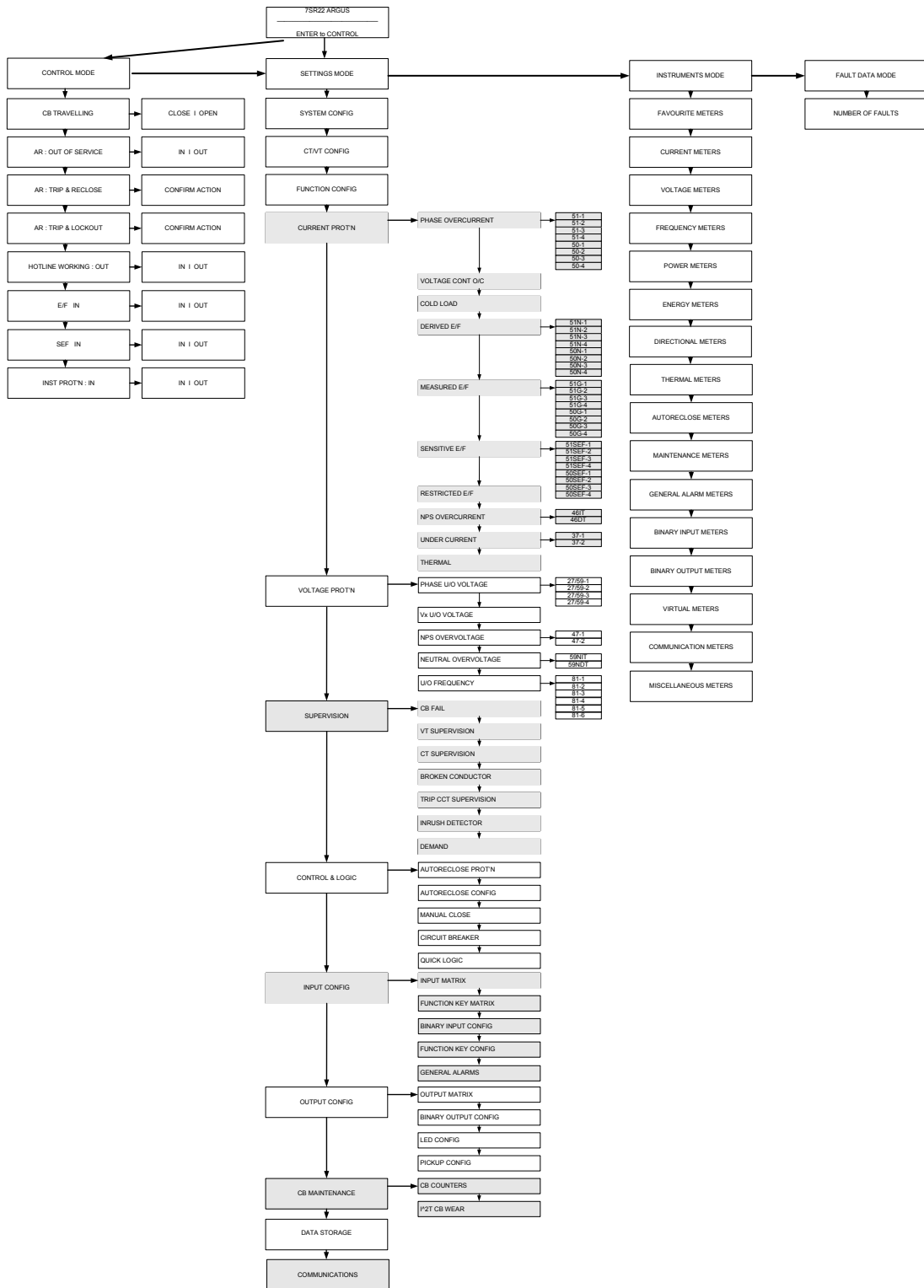


Figure 1.2-3 Typical Menu Structure for 7SR22 relay

Section 1: Configuring the Relay Using Reydisp Evolution

To set the relay using the communication port the user will need the following:-

PC with Reydisp Evolution Installed. (This can be download from our website www.siemens.com/energy and found under the submenu 'Software'). This software requires windows 2000-service pack 4 or above, or windows XP with service pack 2 or above.

1.1 Physical Connection

The relay can be connected to Reydisp Evolution via any of the communication ports on the relay. Suitable communication Interface cable and converters are required depending which port is being used.

1.1.1 Front USB connection

To connect your pc locally via the front USB port.

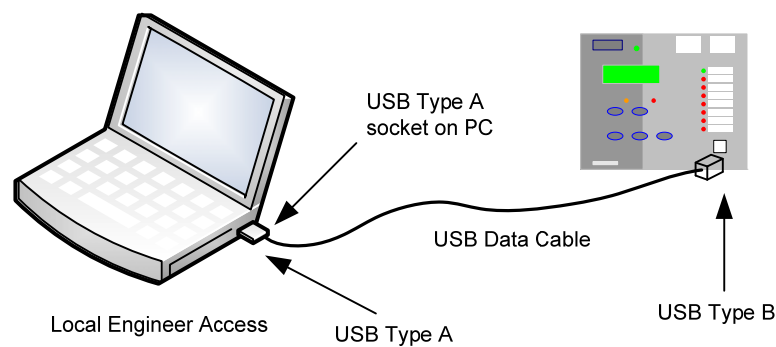


Figure 2.1-1 USB connection to a PC

1.1.2 Standard rear RS485 connection

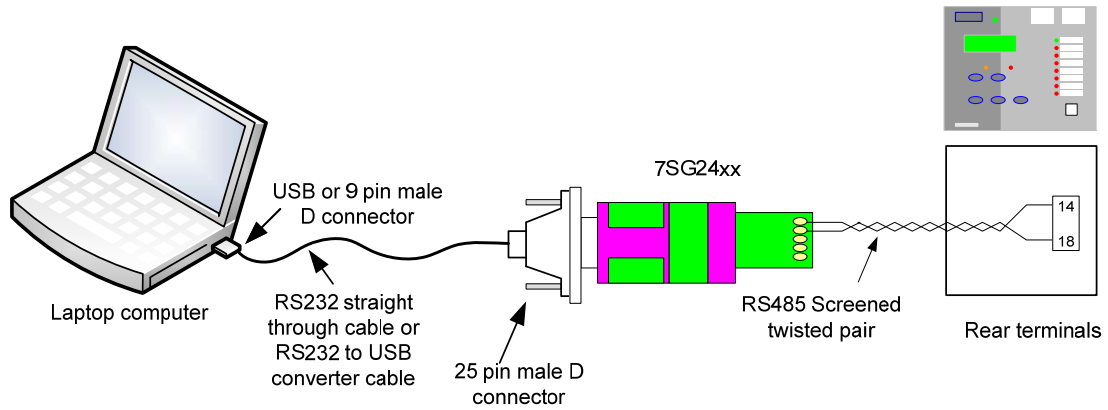


Figure 2.1-2 Standard rear RS485 connection to a PC

1.1.3 Optional rear fibre optic connection

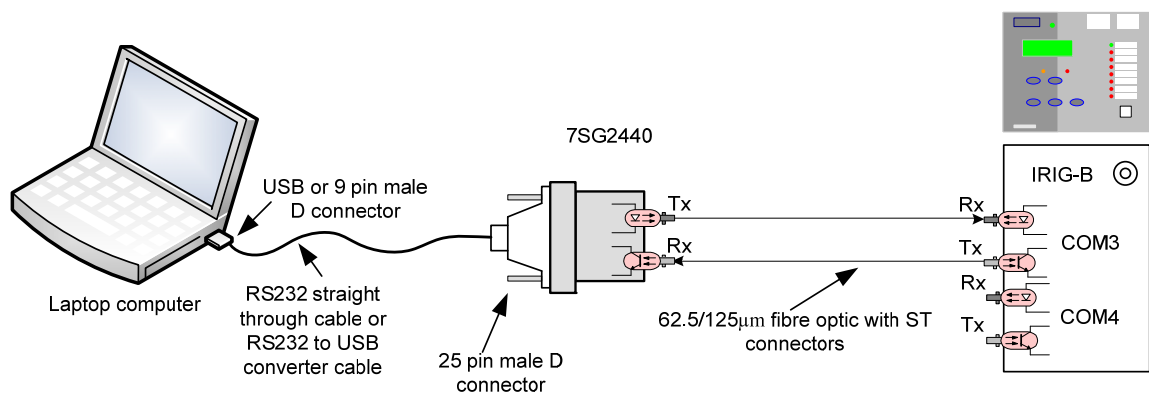


Figure 2.1-3 Additional (Optional) rear fibre optic connection to a PC

Sigma devices have a 25 pin female D connector with the following pin out.

Pin	Function
2	Transmit Data
3	Received Data
4	Request to Send
5	Clear to Send
6	Data set ready
7	Signal Ground
8	Received Line Signal Detector
20	Data Terminal Ready

1.1.4 Optional rear RS485 + IRIG-B connection

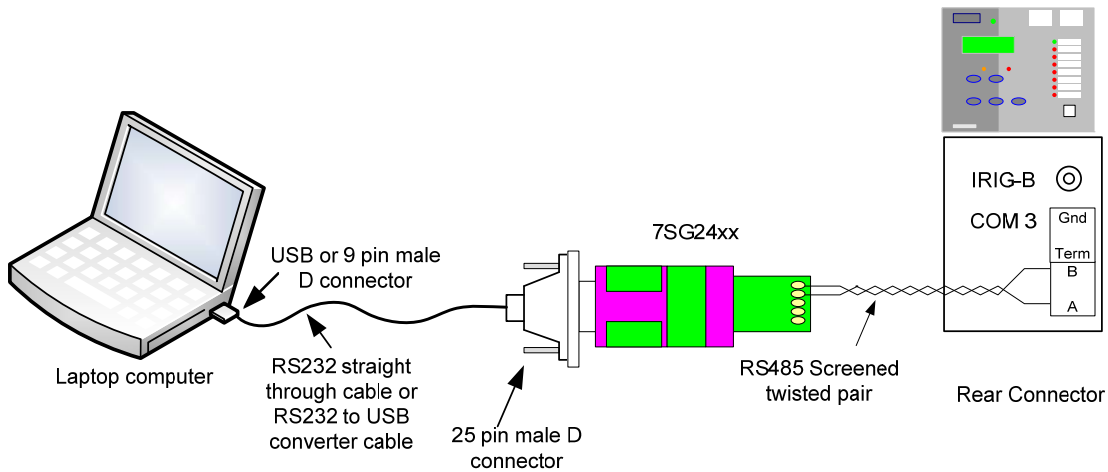


Figure 2.1-4 Additional (Optional) rear RS485 + IRIG-B connection to a PC

1.1.5 Optional rear RS232 + IRIG-B connection

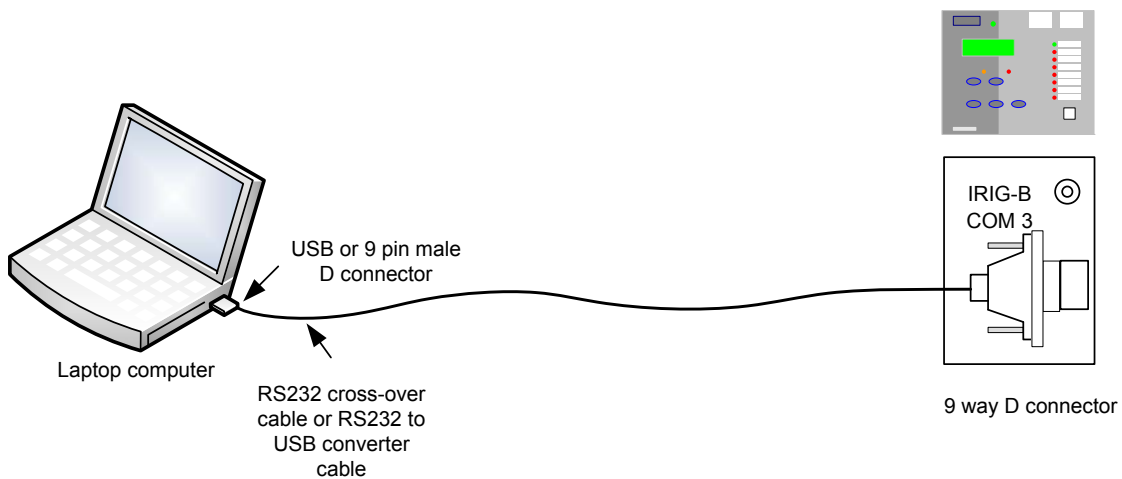


Figure 2.1-5 Additional (Optional) rear RS232 + IRIG-B connection to a PC

Pin	Function
1	Carrier Direct (CD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Signal Ground (GND)
6	Data set ready (DSR)
7	Request to send (RTS)
8	Clear to Send (CTS)
9	Ring Indicator (RI)

1.1.6 Configuring Relay Data Communication

Using the keys on the relay fascia scroll down the settings menu's into the 'communications' menu and change the settings for the communication port used on the relay. All of the below settings may not be available in all relay types. Reysdisp Evolution software uses IEC60870-5-103 protocol to communicate.

COM1 – Standard RS485 Rear Port

COM2 - USB Port

COM3 – Additional (Optional) Rear Connection

COM4 – Additional (Optional) Rear Connection**

Setting name	Range	Default	Units	Notes
Station Address	1 – 254 for IEC60870-5-103 0 – 247 for Modbus RTU 0 – 65520 for DNP3.0	0		Address given to relay to identify that relay from others which may be using the same path for communication as other relays for example in a fibre optic hub
COM1-RS485 Protocol	OFF, IEC60870-5-103, MODBUS-RTU, DNP3.0	IEC60870-5-103		COM1 is the rear mounted RS485 port
COM1-RS485 Baud Rate	75 110 150 300 600 1200 2400 4800 9600 19200 38400	19200		
COM1-RS485 Parity	NONE, ODD, EVEN	EVEN		
COM2-USB Protocol	OFF, IEC60870-5-103, DNP3.0, MODBUS-RTU, ASCII	IEC60870-5-103		COM2 is the front USB port
COM2-USB Baud Rate	75 110 150 300 600 1200 2400 4800 9600 19200 38400 57600 115200 230400 460800 921600	Auto detects		Auto detects baud rate via Connection Manager Setting
COM2-USB Parity	NONE, ODD, EVEN	EVEN		
COM3 Protocol	OFF, IEC60870-5-103, MODBUS-RTU, DNP3.0	IEC6-0870-5-103		COM3 This is an optional rear mounted connection
COM3 Baud Rate	75 110 150 300 600 1200 2400 4800 9600 19200 38400 57600 115200	57600		
COM3 Parity	NONE, ODD, EVEN	EVEN		
COM3 Line Idle*	LIGHT ON, LIGHT OFF	LIGHT OFF		
COM3 Data echo*	ON, OFF	OFF		
COM4 Protocol**	OFF, IEC60870-5-103, MODBUS-RTU, DNP3.0	OFF		COM4 This is an optional rear mounted connection
COM4 Baud Rate**	75 110 150 300 600 1200 2400 4800 9600 19200 38400	19200		
COM4 Parity**	NONE, OFF, EVEN	EVEN		
COM4 Line Idle**	LIGHT ON, LIGHT OFF	LIGHT OFF		
COM4 Data echo**	ON, OFF	OFF		

*Not applicable for RS485 or RS232 interface modules.

**Fibre Optic Module only

1.1.7 Connecting to the Relay via Reydisp Evolution

When Reydisp Evolution software is running all available communication ports of the PC will automatically be detected.

On the start page tool bar open up the sub-menu File > Connect.

The 'Communication Manager' window will display all available communication ports. With the preferred port highlighted, select the 'Properties' option and ensure the baud rate and parity match that selected in the relay Data Comms settings. Select 'Connect' to initiate the relay-PC connection.

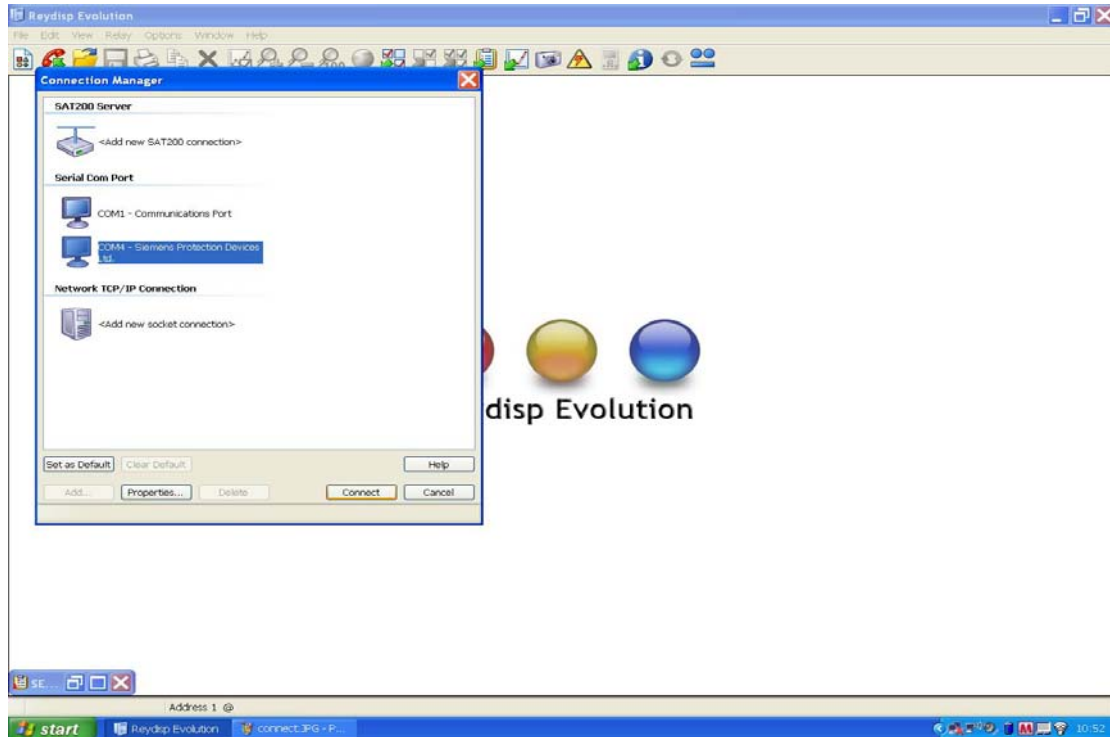


Figure 2.1-6 PC Comm Port Selection

Via the Relay > Set Address > Address set the relay address (1-254) or alternatively search for connected devices using the Relay > Set Address > Device Map. The relay can now be configured using the Reydisp Evolution software. Please refer to the Reydisp Evolution Manual for further guidance.