

7SG17 Rho 3

Multifunction Protection Relays

Document Release History

This document is issue 2010/02. The list of revisions up to and including this issue is:

Pre release

2010/02	Document reformat due to rebrand

Software Revision History

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1 INTRODUCTION

This document describes how to connect the IEC60870- 5-103 compliant Informative Communication Interface to a control system or interrogating computer. To access the interface you will need appropriate software within the control system or, on the interrogating computer, for example, Reydisp Evolution. More detailed information regarding the communications interface can be found in a separate manual, the IEC60870-5-103 Communications Interface. This contains information about the format and content of the data available. It is available to developers writing software to interrogate the relays. Section 2 defines the connection medium as defined by IEC60870-5-103. Appendix A shows some typical communication connections. The Sigma range of products are available to connect to the fibre optic ports of the relays. Sigma 1 is a fibre optic hub with one system port and up to 29 ports for connecting to the relays. Sigma 3 is a fibre optic to dual RS232 interface. It has one fibre optic port for connection to the relay(s), and two electrical RS232 ports. The rear electrical port is intended for connection to a control system. The front port allows local access, for example, from a laptop PC. When a device is connected to the front port the rear is overridden. Sigma 4 is a portable fibre optic to RS232 conversion unit.

2 CONNECTION SPECIFICATION AND RELAY SETTINGS

2.1 Recommended cable

Selection of fibre optic cable is critical. Fibres should be terminated with 9mm SMA connectors. The recommended type is 200µm Plastic Coated Silica (PCS). This will allow a maximum transmission distance of 100m between Argus relays. This will also be the maximum distance between the ring network and the fibre to RS232 converter. Alternatively, 1mm polymer cable may be used to reduce cost. This will provide transmission distances of up to 43m between relays. Note that the distance from the transmit output of the RS232 / fibre optic converter to the receive input of the first Argus relay should not be more than 6m. The distance from the transmit output of the last Argus to the receive input of the converter may be up to 43m. No other types of cable are suitable for use with Argus relays.

2.2 Transmission method

Half Duplex serial asynchronous transmission. In IEC60870-5-103 the line idle state is defined as **Light On**. This can alternatively be selected as **Light Off** in the Communications Interface menu of the settings list if required for use with alternate hardware (See Section 2.3.4).

2.3 Relay Settings

2.3.1 Baud Rate

Rates of **19200, 9600, 4800, 2400, 1200, 600, 300, 150, 110** and **75** bits per second (BPS) are available. Only **19200** and **9600** BPS are defined in IEC60870-5-103. The additional rates are provided for local or modem communications. Default 19200.

2.3.2 Parity setting

IEC60870-5-103 defines the method of transmission as using **Even** Parity. However, in some instances an alternative may be required. This option allows the setting of parity to **None**. Default Even.

2.3.3 Address setting

The address of the relay must be set to a value between 1 and 254 inclusive before communication can take place. Setting the address to zero disables communications to the relay. All relays in an optical ring, as illustrated in figure 3, must have a unique address. Address 255 is reserved as a global broadcast address. Default zero.

2.3.4 Line idle setting

The line idle setting must be set to be compatible with the device connected to the relay IEC60870-5-103 defines a line idle state of **Light On**. The Sigma range of products for connecting to the fibre-optic ports on the relays support either **Light ON** or **OFF**. All sigma units are supplied Light Off. Sigma 1 has internal DIL switches to set the condition for each fibre optic channel, Sigma 3 and 4 have an internal jumper to set the state of their fibre optic channel. Refer to diagrams in appendix A. The setting allows you to switch the line idle state to that suitable for your hardware. The following table shows the line-idle settings for the Honeywell type HFM5500 fibre-optic to RS232 convertors. Default off.

Device	Line Idle Setting Required
HFM5500-AAM, HFM5500-AAF	Light Off
HFM5500-BAM, HFM5500-BAF	Light On

2.3.5 Connection method

Communication networks can be connected as Star, figure 4, or Optical Ring, figure 3, configuration. The Optical Ring architecture requires data to be passed from one relay to the next. When using this method all relays in the ring must have Data Echo = **ON** selected in the Communications Interface menu of the settings list. Otherwise this setting is to be Data Echo = **OFF**.

Note, if the address setting is zero Data Echo = ON will still allow echo data. Default off.

2.4 Modems

The communications interface has been designed to allow data transfer over a telephone system via modems. For more information regarding using and installing modems refer to document 434/TIR/7 Remote Communication to Argus Relays.

APPENDIX A – METHODS OF COMMUNICATION CONNECTION

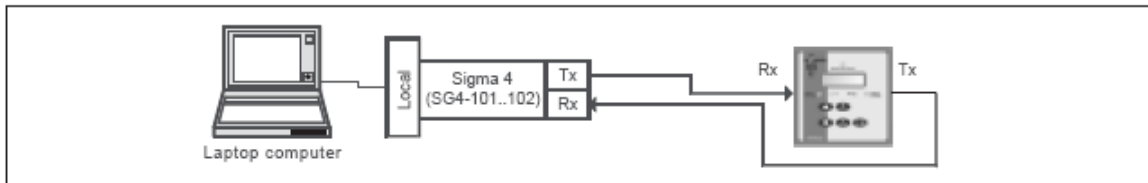


Figure 1 - Basic communications configuration (Local)

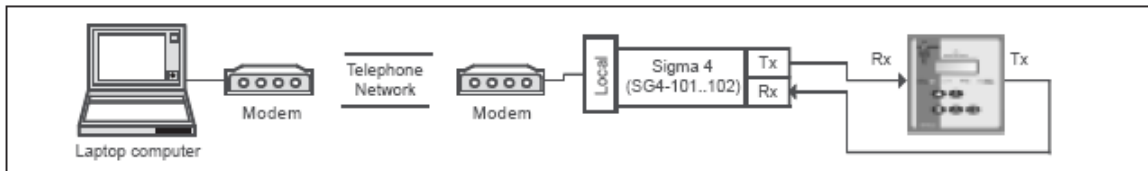


Figure 2 - Basic communications configuration (Remote)

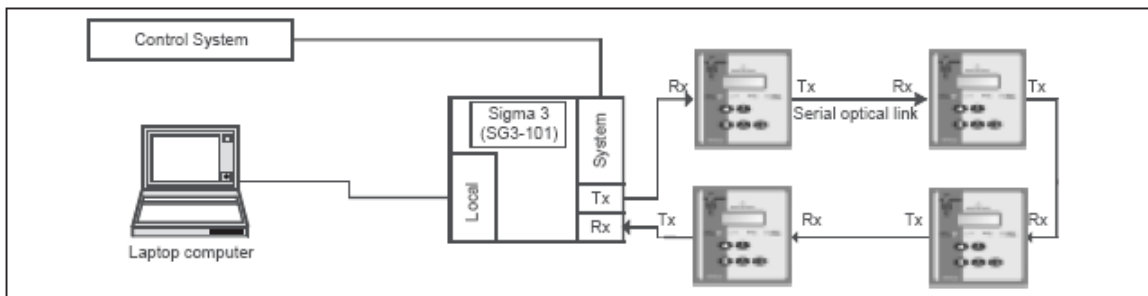


Figure 3 - Communication using Reyrolle Sigma 3 in optical ring configuration

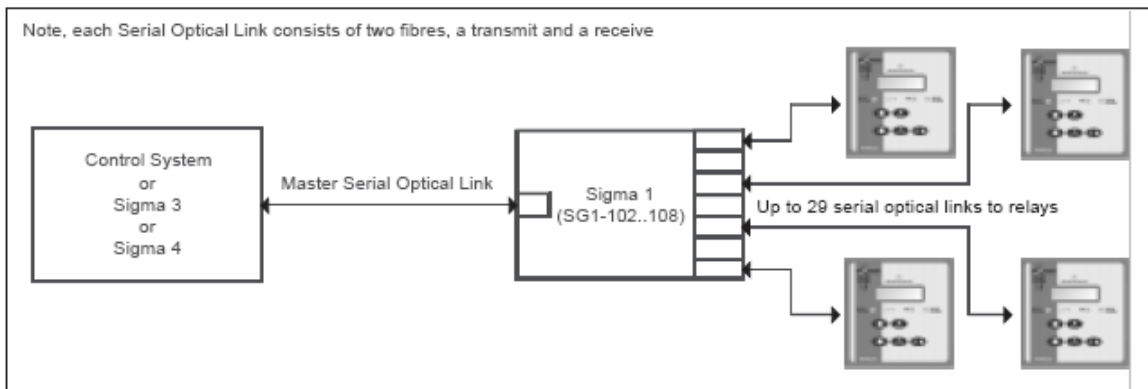


Figure 4 - Communication using Reyrolle Sigma 1 in star configuration