

# Bus Connection Module RER 103

Technical description



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Technical Descriptiopn

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## Technical Description

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## Document Revisions

Version	Date	
E	17.01.2007	Layout & document reference in the chapter 3 changed.

1

General

The bus connection module RER 103 acts as an interfacing unit between an RE\_500 device and the fibre-optic SPA, LON<sup>®</sup> and IEC 60870-5-103 bus. The bus connection module converts incoming optical signals from the SPA, LON<sup>®</sup> and IEC\_103 bus to electrical RS-485 signals for the RE\_500 devices and vice versa. The module is plugged into the RS-485 D-type subminiature connector on the rear plate of the RE\_500 device. It can be used together with any RE\_500 device provided with a 9-pin D-type connector. The bus connection module is powered from the D-type connector of the RE\_500 device.

RER 103 contains a Service Pin for LON<sup>®</sup> nodes. The RS-485 interface of the bus connection module RER 103 is shown in figure below.

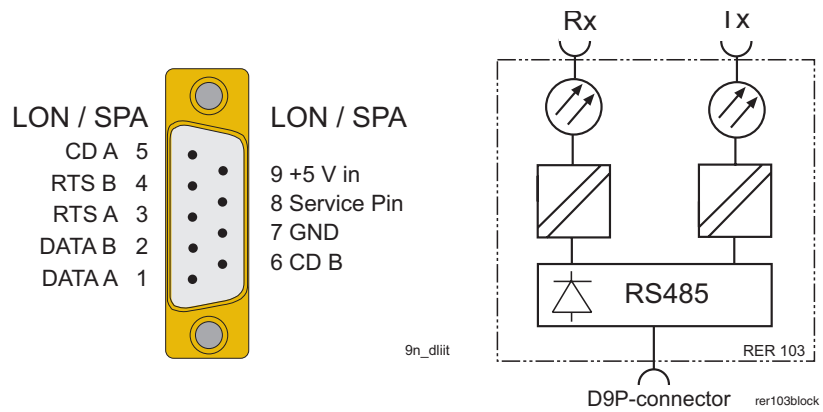


Fig. 1.-1 9-pin D-type connector and block diagram

## 2 Principle of operation

The RER 103 Bus Connection Module can be used in Loop and Star type bus topologies. Also the line idle state of the module is selectable. It can be light on or off. The selection of Loop/Star and light on/off is made by jumpers.

In the Loop topology the RER 103 module passes a message received from the fibre-optic interface both to the fibre-optic transmitter and the RS-485 interface.

In the Star topology the module passes a message received from the fibre-optic receiver only to the RS-485 interface.

A message received from the RS-485 interface is passed to the fibre-optic transmitter in both bus topologies.

SPA bus communication is using Loop and light off modes, when the module jumpers are in Loop and light off positions. LON<sup>®</sup> bus communication is using Star and light off modes, when the module jumpers are in Star and light off positions. IEC\_103 bus communication is using Star and light on or off modes, when the module jumpers are in Star and light on or off positions.

In LON<sup>®</sup> bus communication the RER 103 module supports collision detection. The Service Pin is connected via the RS-485 interface to the Neuron<sup>®</sup> chip of the device connected to the RER 103.



Fig. 2.-1 Rear side of the RER 103 module

**Table 2.-1 Settings of the jumper**

Topology	Light on/off	Protocol
Star	Off	LON or IEC 60870-5-103
Star	Light	IEC 60870-5-103
Loop	Off	SPA
Loop	Light	Not supported

3

Construction

The bus connection module RER 103 consists of a printed circuit board and is housed in a plastic case.

The incoming optical fibre is connected to the receiver input Rx and the outgoing optical fibre to the transmitter output Tx. Special attention must be paid to the handling, mounting, connection, etc. of optical fibres. For additional information, see manual 1MRS752089-MUM "Plastic-core fibre-optic cables. Features and instructions for mounting".

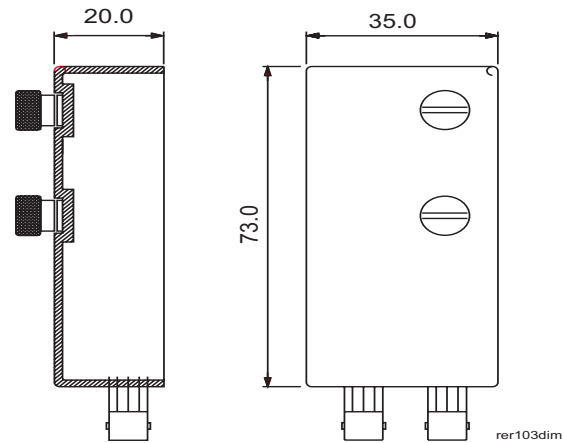


Fig. 3.-1 Dimensional drawing of bus connection module RER 103.

The bus connection module can be provided with connectors for two plastic fibre cables, two glass fibre cables or one of each type. The RS-485 communication mode is used between the RE\_ 500 device and the bus connection module.

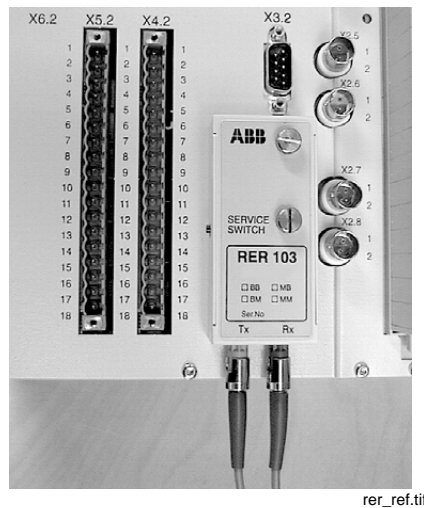
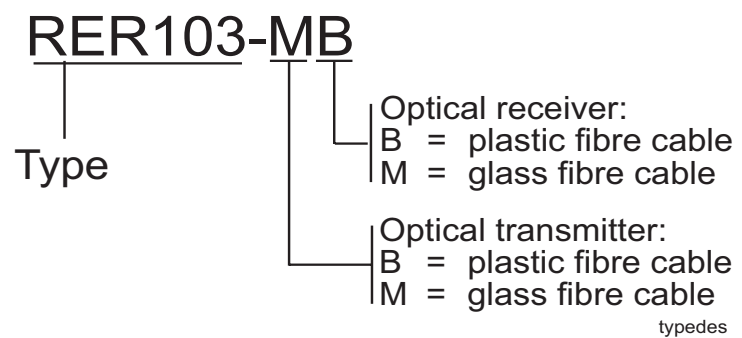


Fig. 3.-2 Routing of the optical fibres.

## 4 Type designation

Type designation	Transmitter	Receiver	Ordering number
RER103	PLASTIC	PLASTIC	RER103-BB
RER103	PLASTIC	GLASS	RER103-BM
RER103	GLASS	PLASTIC	RER103-MB
RER103	GLASS	GLASS	RER103-MM

The LON<sup>®</sup> Star-Coupler RER 111 and the IEC Star-Coupler 125 support only glass-glass and plastic-plastic transceiver connections.



## 5

**Fibre-optic connectors and technical data****Table 5.-1 Fibre-optic connectors**

	<b>Glass fibre</b>	<b>Plastic fibre</b>
Cable connector	ST connector	Snap-in connector
Cable diameter	62.5/125 um	1 mm
Max. cable length	1000 m	10 m
Wavelength	820-900 nm	660 nm
Transmitted power	-13 dBm (HFBR-1414)	-13 dBm (HFBR-1521)

**Table 5.-2 Technical data**

<b>Auxiliary power supply</b>	Powered from host device (5V dc)	
<b>Burden</b>	~ 0.4 W Max	
<b>Max data transfer rate</b>	1.25 Mbps	
<b>Mechanical dimensions</b>	RER 103	Width: 35.0 mm Height: 73.0 mm Depth: 20.0 mm
<b>Operating temperature range</b>	-10...55°C	
<b>Storage temperature range</b>	-40...70°C	



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