LON® Star Coupler
RER 111

Technical Reference Manual, General

ABB

Contents:

1. Introduction

The LON® Star Coupler, RER 111, is a device that enables various modules to be interconnected over the LON bus.

A LON bus is a communication system between multiple devices, which are using the LonWorks™ Network and its corresponding LonTalk® Protocol. Features of this communication system are:

- speed 1.25 Mbit/s
- multiple communication media
- low maintenance
- multi-vendor equipment
- low support cost.

For more information regarding the LON bus refer to document “LonWorks™ Network in Protection and Control Systems”, 1MRS 750035-MTD EN.

The RER 111 unit provides a star connection point where other Lon devices can be connected. This is achieved by means of option cards, which are located in the nine slots available in the RER 111 unit. Each option card has a specific function within the LON bus system.

The standard RER 111 unit includes:

- optional single or double auxiliary power supply units with the input voltage range 110…240 VAC/DC or 24…60 VDC
- input/output (I/O) card
- mother board
- 9 slots for option cards

2. Option cards

The following types of option cards are available (for more information regarding the option cards, refer to the corresponding manuals):

- Fibre-optic option card SFIBER-C- provides three fibre-optic transceiver pairs for interconnecting bay level devices, connecting two RER 111 units equipped with a fibre-optic option card, or the RER 111 unit and higher level devices, e.g. a MicroSCADA.
  User's Guide 1MRS750106-MUM.
- Option card SRS485-C- is used for connecting a device using the RS485 interface to the LonWorks network. This card also comprises a fibre-optic transceiver pair.
  User's Guide 1MRS750105-MUM.
- Serial LonTalk™ Adapter option card SSLTA-C- provides the RS232 connection for connecting higher level devices (e.g. monitoring terminals, a PC, etc.) to the LonWorks network. It can also be used for interconnecting RER 111 units by using the fibre-optic transceiver pair. Physically the SSLTA-C- option card provides an RS232 interface for the network.
  User's Guide 1MRS750107-MUM.
- Router option card SROUT-C- is used to connect devices with twisted pair (TP/XF-78 or TP/XF-1250) transceivers and/or fibre-optic transceiver pairs. It also provides a means for dividing an overall system into multiple subsystems.
  User's Guide 1MRS750109-MUM.
- Double connection option card SREDU-C- can be used for connecting devices together through double connections. It can be used for connecting two fibre-optic transceiver pairs to any device supporting double connection. The double connection option card allows a fault to occur in one fibre-optic connection, while still remaining able to receive and transmit data to a device.
  User's Guide 1MRS750108-MUM.
- Star Coupler LON Clock Master with RS232/TTL interface option card SLCM-C- and Star Coupler LON Clock Master with fibre-optic interface option card SLCMFO-C- to clock reference device used for performing time synchronization on LON. Depending on the type of the bay level device used and the accuracy required, there are five different time synchronization methods available.
  User's Guide 1MRS750985-MUM.

3. Applications for using option cards

3.1. Fibre-optic interface

The RER 111 unit can be equipped with a fibre-optic option card. This option card contains three fibre-optic transceiver pairs for the connection to other LON devices such as bay level devices, elements within another RER 111 unit or higher level devices e.g. a MicroSCADA.

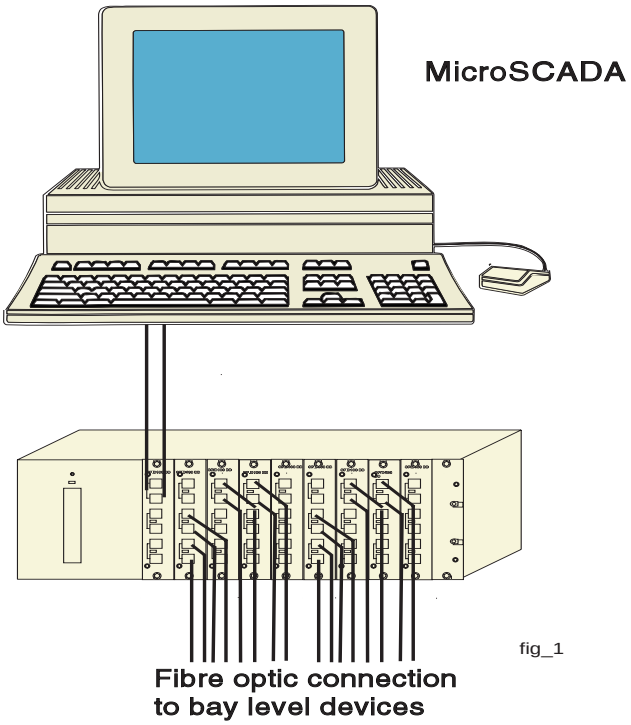

Fig. 3.1.-1 A small fibre-optic LON bus system including one RER 111 unit with fibre-optic option cards.

A maximum of three consecutive RER 111 units may be used within any LON bus system. This is achieved by using one of the RER 111 units as a main unit, the rest being subordinate units. The main RER 111 provides the connection to higher level devices for monitoring, control, programming, etc.

NOTE! The maximum distance between any two nodes in the system is 2 km.

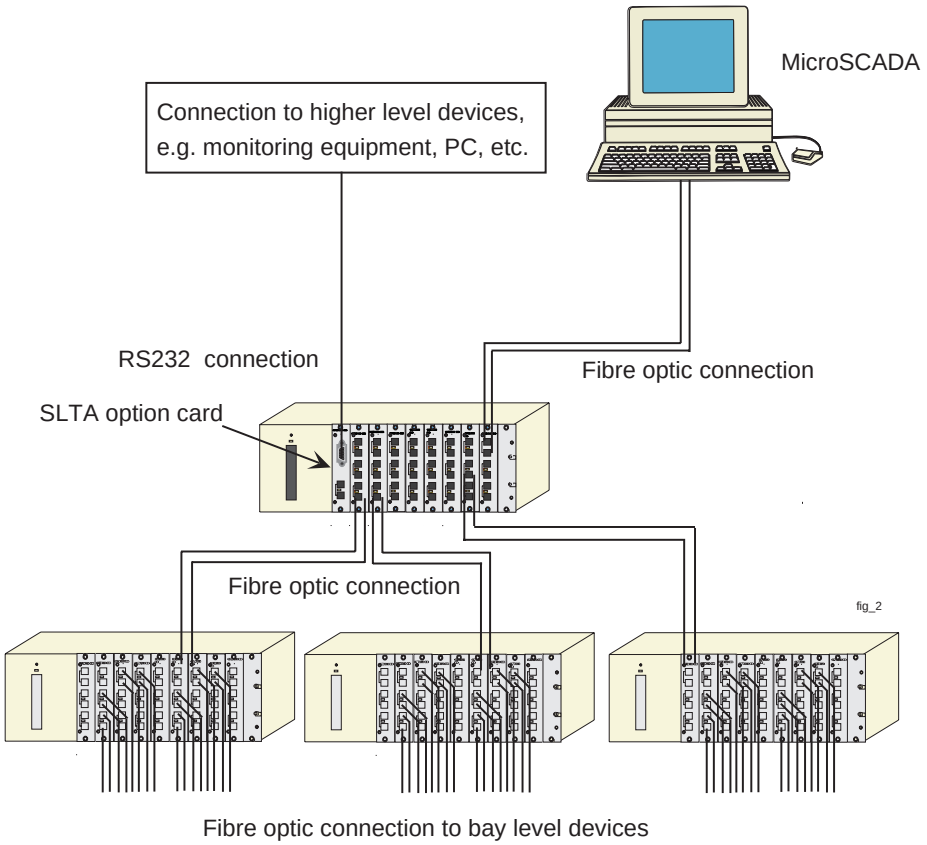

Fig. 3.1.-2 Large fibre-optic LON bus system including many RER 111 units.

3.2. RS485 interface

The RER 111 unit can be equipped with an RS485 card. This card includes a 9-pin D-type connector for the connection to LON devices using an RS485 transceiver and a normal fibre-optic transceiver pair. This interface may also be used with other devices equipped with an RS485 transceiver.

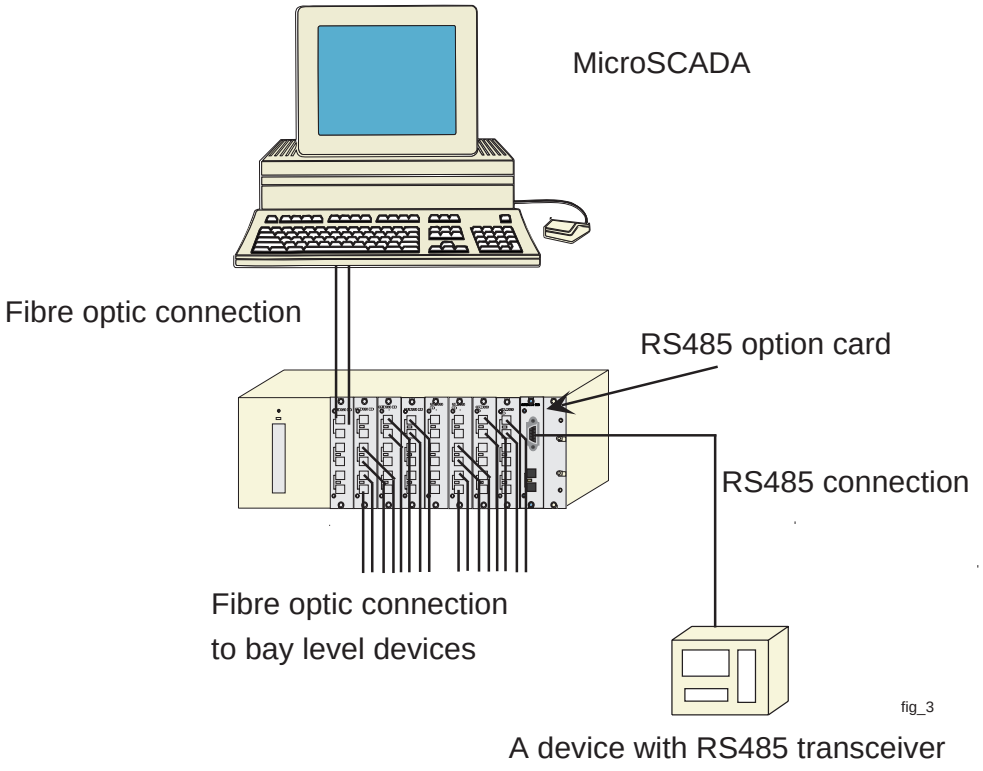

Fig. 3.2.-1 Interface for a LON bus device using an RS485 transceiver.

3.3. RS232 interface to the LON bus

The RER 111 unit can be equipped with an SLTA option card. This card is used to connect the unit to higher level devices such as monitoring and control equipment and/or a PC by using the RS232 interface with a 9-pin D-type connector. It also facilitates installation and improves tolerances against disturbances.

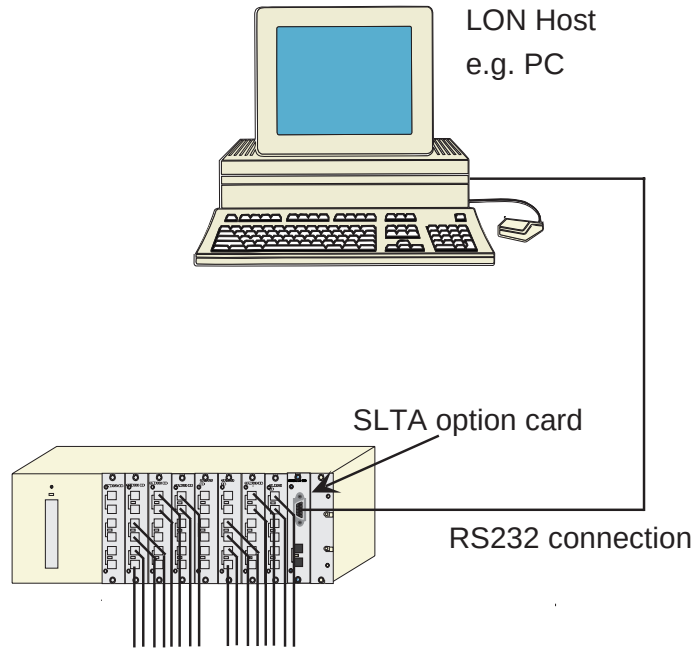

Fig. 3.3.-1 System structure where the interface to the host is implemented with an SLTA.

3.4. Division of a system into fibre-optic or twisted pair subnets

The RER 111 unit can be equipped with a router option card. This card includes a 9-pin D-type connector for the connection to LON devices using twisted pair transceivers (TP/XF-78 or TP/XF-1250) and a fibre-optic connector for the connection to LON devices using fibre-optic connection. The router option card can be used to divide the LON bus system into subnets, which echance the reliabilty of the network and improve overall network performance.

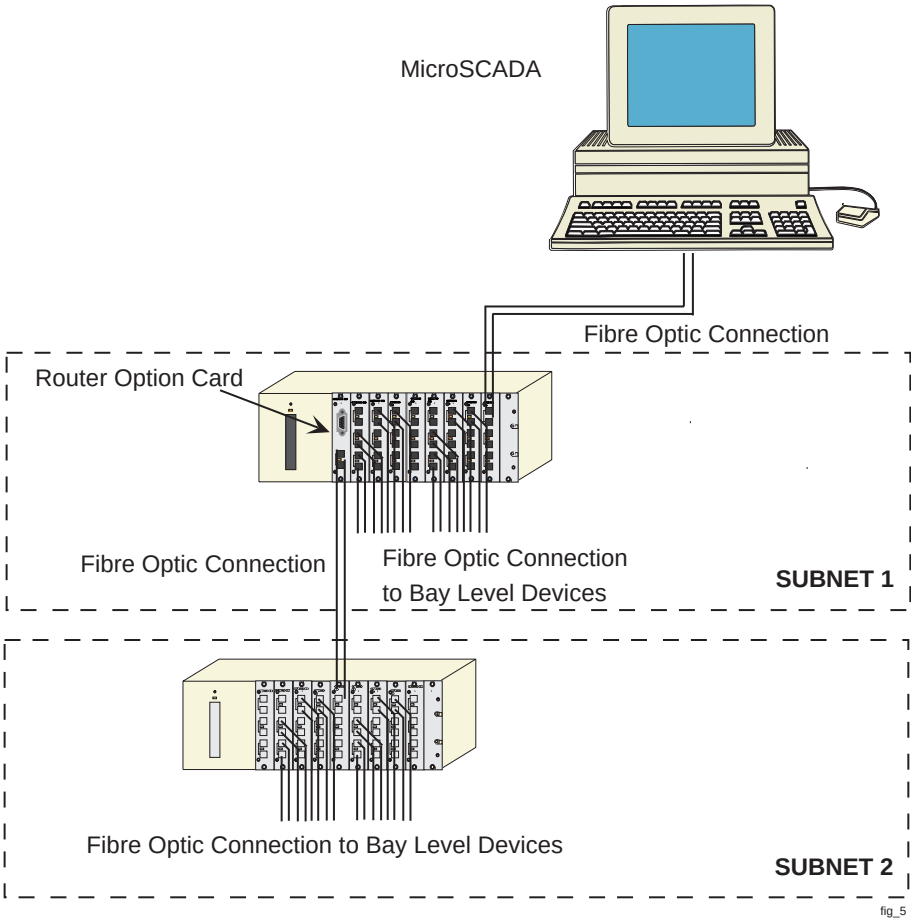

Fig. 3.4.-1 System structure where the system is divided into fibre-optic subnets.

The router option card also connects to LON bus devices with twisted pair transceivers (TP/XF-78 or TP/XF-1250), and thus LON devices currently on the market can be used to communicate with substation control and protection systems. Another advantage is the interconnection of subnets with varying transfer rate.

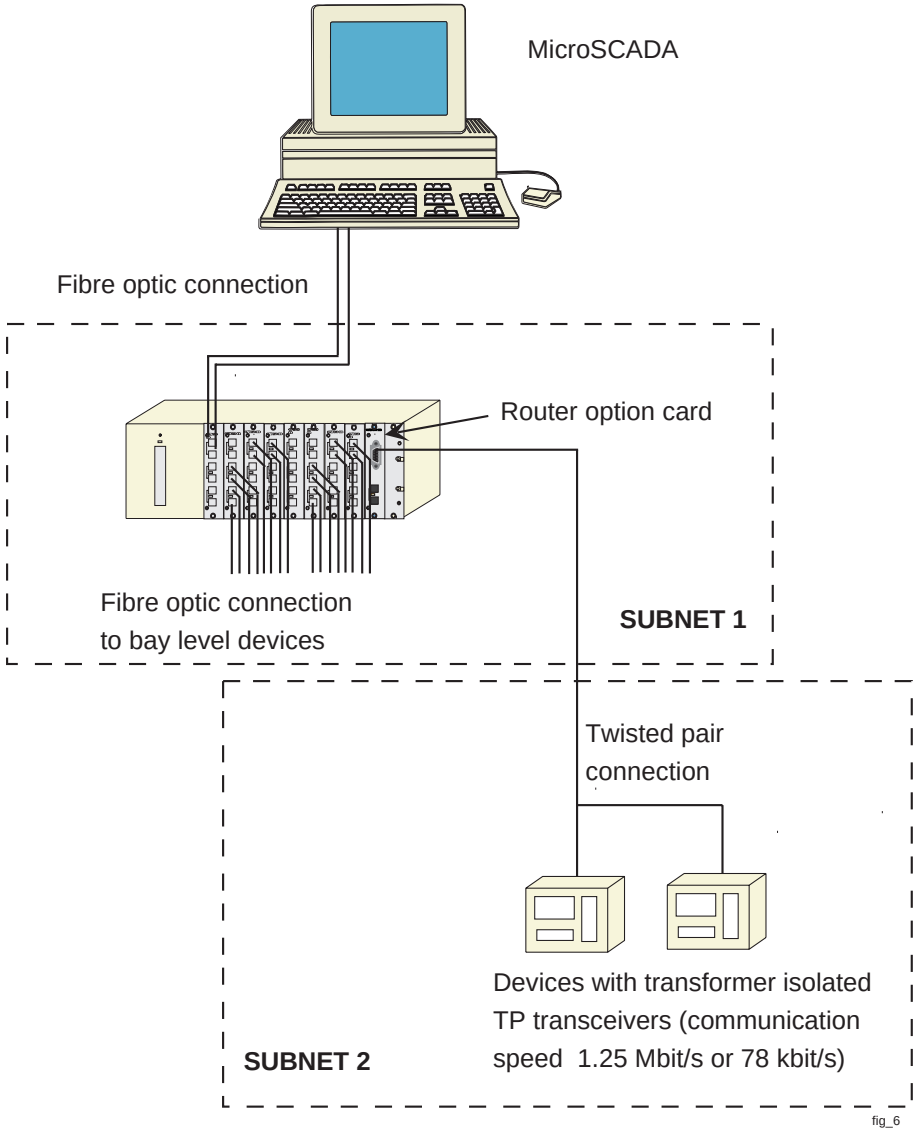

Fig. 3.4.-2 System structure when using transformer-isolated twisted pair channels.

In addition, the router option card can be used as a network repeater to increase the number of LON Star Couplers in the network. Without a repeater, the maximum number of LON Star Couplers between any two nodes is three.

3.5. Using a double interface

The RER 111 unit can be equipped with a double connection option card. This card has two fibre-optic transceiver pairs, which are used for double connections between LON devices. The LON message is received in either or both of the transceivers at the same time. The message is then forwarded to the other cards in the RER 111 unit. Messages are passed on to both transmitters at the same time. Figure 3.5.-1 illustrates how a message is transmitted and received on a double connection option card.

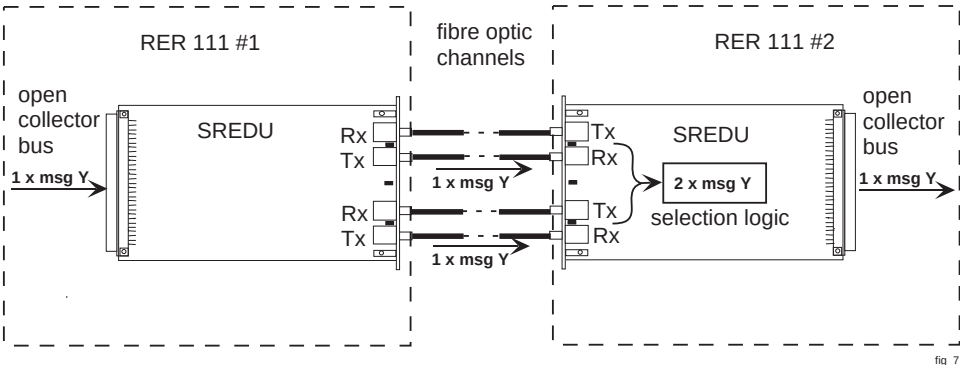

Fig. 3.5.-1 Double interface.

The double connection option card can be used to connect RER 111 units to each other. See figure 3.5.-2.

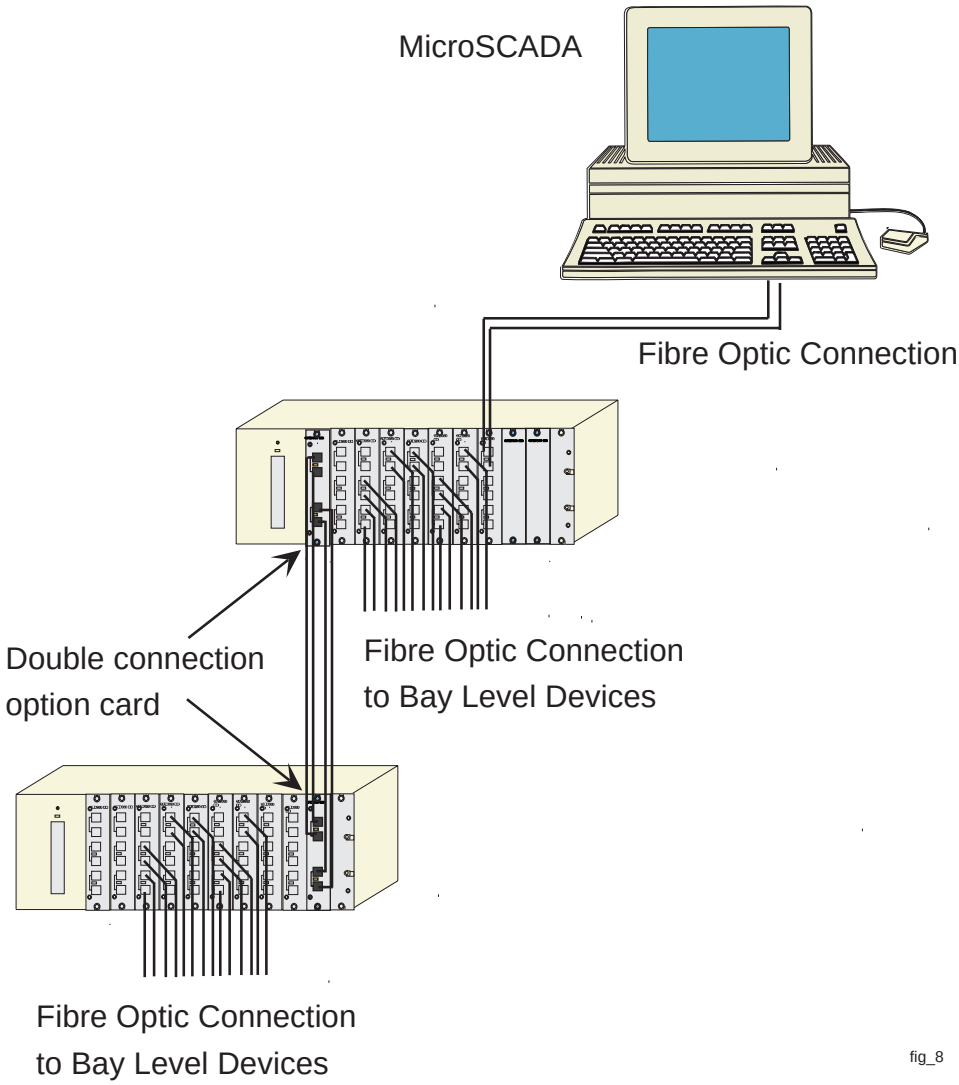

Fig. 3.5.-2 System structure when using the double connection option card.

3.6. Using a LON Clock Master for time synchronization

The RER 111 unit can be equipped with an SLCM or SLCMFO option card. The option card provides a TTL (SLCM) or a fibre-optic (SLCMFO) connection from a time reference device to the LONWORKS network. The option card includes an internal clock and an application program which uses the internal clock to generate various synchronization messages and signals in order to synchronize other devices on the LONWORKS network.

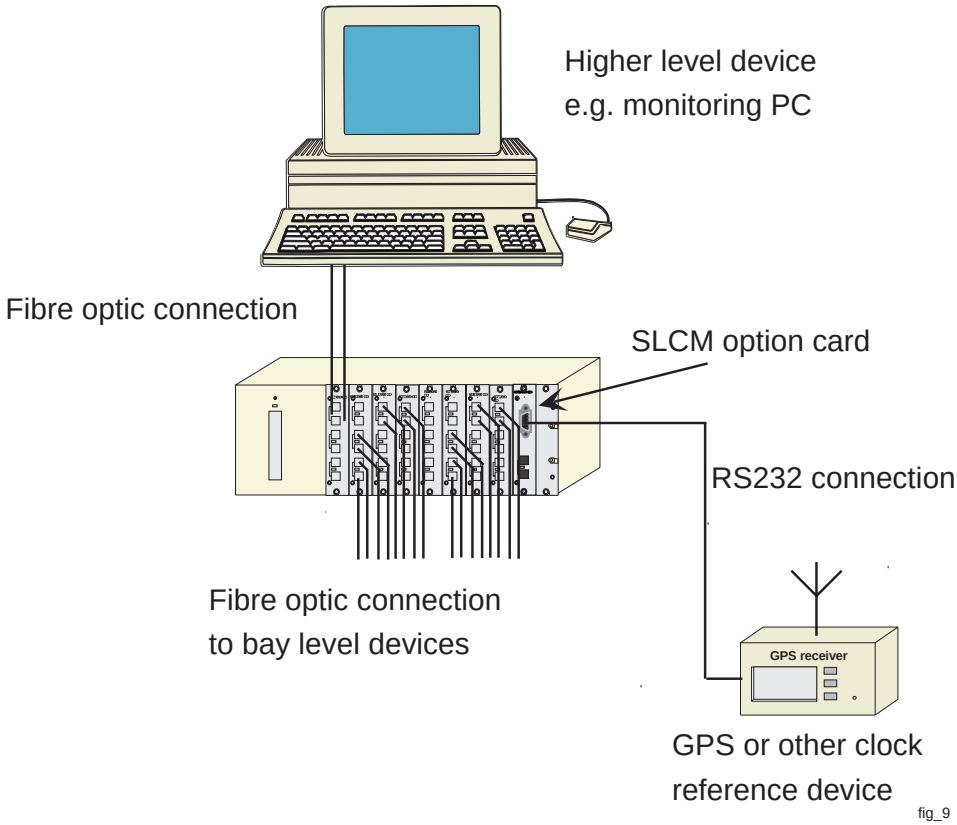

Fig. 3.6.-1 A small system where a LON Clock Master is used for synchronizing other devices.

4. Functions

The main function of the RER 111 unit is to provide the option cards with the mother board connection. For this purpose, the mother board contains an internal open collector bus to which all nine card slots are attached. The mother board also provides the power needed for the attached option cards.

A single or double power supply integrated in the RER 111 unit provides the power supply required by all cards contained in the unit. The supply voltage for the power supply cards is either 110…240 VAC/DC or 24…60 VDC. These cards can be used in any combination.

The RER 111 unit also contains the I/O module. The external power source required for the power supply cards are wired through this card.

4.1. Self-supervision

The I/O module is provided with two fault relays which are used for diagnosing faults in the power supply cards. To improve system supervision properties the module also contains the electronics required for indicating power supply and option card errors via the LON. These LON-based alarms must be sent periodically to indicate the status of the different components of the RER 111 unit. The following four error situations are indicated:

- power supply fault activated
- power supply fault reset
- option card error activated
- option card error reset

The I/O card (SIO card) of the RER 111 observes the error line states and sends an error alarm. To make possible the detection of an option card error, an error line is added to the mother board of the RER 111. This error line is shared by the option cards connected to the mother board. Therefore it is important that all option cards support self-supervision and error line activity when connected to a mother board equipped with an error line. Otherwise advantage cannot be taken of the error line.

Both power supplies have an error line of their own and these lines are located only on the I/O card of the RER 111.

To enable the I/O card to send and receive messages over the LON network the open collector bus of the mother board has been extended to the I/O card (SIO card) slot.

4.2. Version compatibility

Self-supervision features have been added to the RER 111C version of the LON Star Coupler and its option cards. The type designation is marked in the right corner of the upper plastic strip of the LON Star Coupler case (see figure 5.3.-1).

These added features set certain limitations to the use of the different versions of the LON Star Coupler and the option cards.

To find out whether you have an option card of the RER 111C version or an older one, you must check the front plate of the option card. The name of the option card is found in the upper corner of the plate (see figure 7.3.-1). The option cards of the RER 111C version are listed below:

- SFIBER-C-MM
- SFIBER-C-BB
- SLCM-C-MM
- SLCM-C-BB
- SLCMFO-C-MM
- SREDU-C-MM
- SREDU-C-BB
- SROUT-C-MM
- SROUT-C-BB
- SRS485-C-MM
- SRS485-C-BB
- SSLTA-C-MM
- SSLTA-C-BB

An option card of the RER 111C version or later can be connected to both the RER 111C unit and older units. An old option card (earlier than the RER 111C version) connected to the RER 111C unit will cause an error event and disable other self-supervision functions.

5. Mechanical and electrical design

5.1. Block diagram

The RER 111 unit consists of single or double power supplies, an I/O card, a mother board and slots for nine option cards.

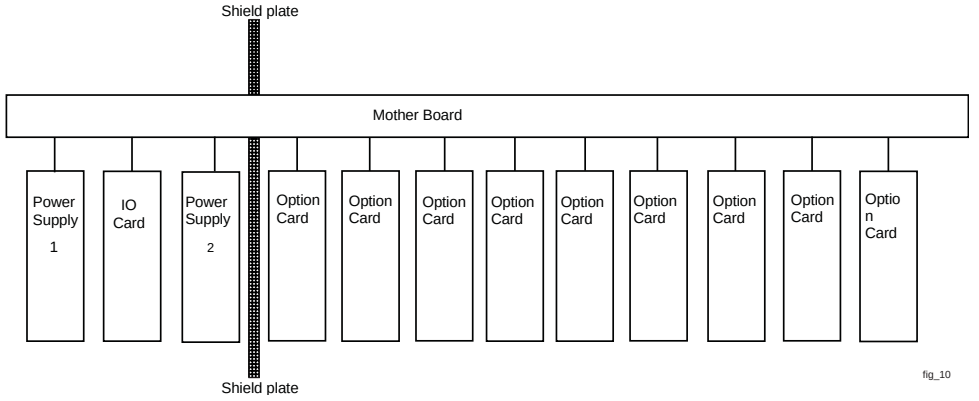

Fig. 5.1.-1 Block diagram of the internal components of the RER 111 unit.

The power supply card(s) and the I/O card have fixed positions in the casing of the RER 111 unit. The cards are situated to the left, so that the first power supply (U_{1aux}) is in the leftmost slot, the I/O card is in the middle slot and the second power supply card (U_{2aux}), if any, is in the rightmost slot. Further, the case is divided into two sections by a shield plate.

There are two types of power supply cards available, SPGU 240 and SPGU 48.

Table 5.1.-1 SPGU 240

SPGU 240 A1	
Rated Voltage	U_N = 110/120/230/240 VAC U_N = 110/125/220 VDC
Operative Voltage Range	U = 80…265 VAC

Table 5.1.-2 SPGU 48

SPGU 48 B2	
Rated Voltage	U_N = 24/48/60 VDC
Operative Voltage Range	U = 18…80 VDC

Both power supply modules are transformer-connected, i.e. the primary circuit is galvanically separated from the secondary circuits with flyback type rectifiers. The primary circuit is protected by a fuse F1, 1 A (slow) in SPGU 240 A1 and 4 A (slow) in SPGU 48 B2. The fuses are located on the circuit board of the module.

The two power supply cards can be used in any combination. The power supply of the RER 111 unit is marked on the marking strip on the front plate of the device. Each power supply card is provided with a green LED that is lit when the card is energized, i.e. in use.

The I/O card includes two fault relays and a 12-pin screw terminal. The terminal is used for the wiring of the power supply inputs and the fault relay outputs. The contact gap of the relays is defined to be either open or closed under normal conditions. When the auxiliary voltage is interrupted the contact gap changes state. Then, the error line of the power supply in question will also be activated. This is detected by a Neuron chip of the I/O card and an error alarm will be sent over the LON network.

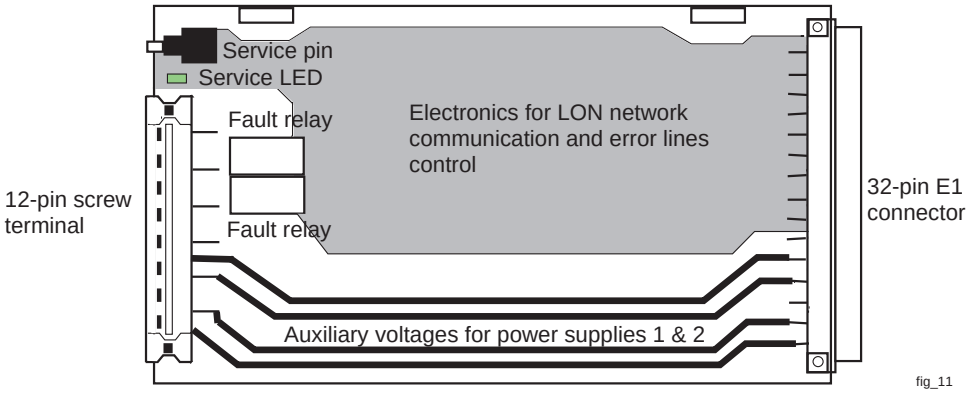

Fig. 5.1.-2 Mechanical structure of the SIO card.

5.2. Option card slots

The nine slots for the option cards are located to the right in the casing. As the slots are identical in construction, it is up to the user how to place the option cards in these slots.

The mother board of the RER 111 unit contains 9 option card connectors (64-pin E1 connectors). The power lines, the data line and error line for the option card connectors are identical.

5.3. Mechanical design

The RER 111 unit is built into a rack with the dimensions of 3U x 3/4. The wall mounting bracket can be installed on either side of the rack.

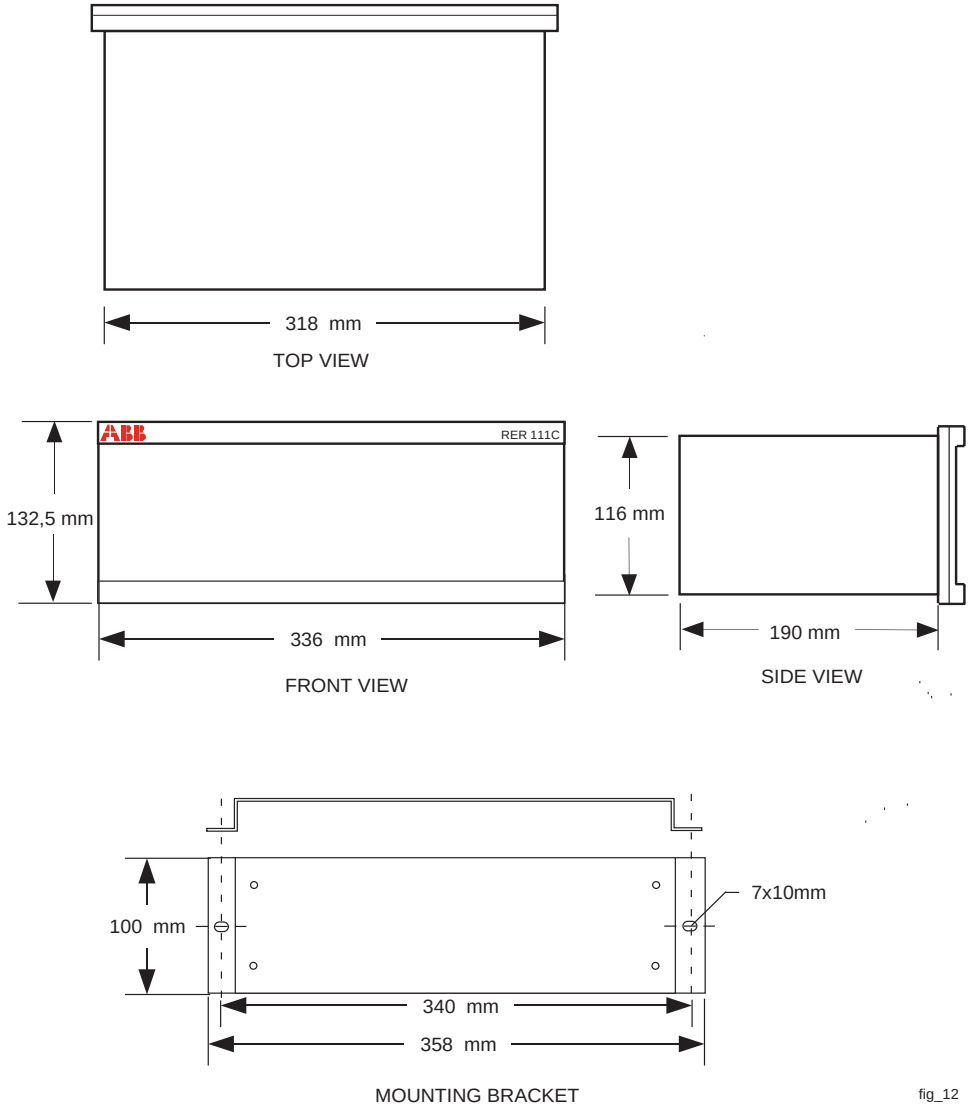

Fig. 5.3.-1 Mechanical drawing of the casing of the RER 111 unit and the wall mounting bracket.

Each option card is covered with its own front plate attached to the circuit board. There is a separate plate covering the power supplies and the I/O card.

6. Interfaces

6.1. Screw terminal for power supplies and fault relays

The RER 111 unit has only one directly dedicated interface, i.e. the screw terminal for power supplies and fault relays. The other interfaces available are dedicated to the specific cards to which they are attached.

The pin designations for the 12-pin screw terminal are:

Pin No. Designation

1, 3 Fault relay output for power supply 1. Under normal service conditions, the relay is energized, the contact gap 1 - 2 is closed and 2 - 3 is open. When the auxiliary voltage is interrupted, the contact gap 1 - 2 is open and 2 - 3 is closed.

2 Common to fault relay 1 and fault relay 2.

4, 5 Fault relay output for power supply 2. Under normal service conditions, the relay is energized, the contact gap 2 - 4 is closed and 2 - 5 is open. When the auxiliary voltage is interrupted, the contact gap 2 - 4 is open and 2 - 5 is closed.

6, 7 Not used

8 Auxiliary power supply ($U1_{aux}$) 1 N- (see the table below)

9 Auxiliary power supply ($U1_{aux}$) 1 L+

10 Not used

11 Auxiliary power supply ($U2_{aux}$) 2 N- (see the table below)

12 Auxiliary power supply ($U2_{aux}$) 2 L+

The earth wire is connected to the earth pin on the front plate covering the power supplies and the I/O card.

Note! Before disconnecting the earth wire, turn off the auxliary power supply and disconnect the screw terminal from the power supplies and fault relays.

Table 6.1.-1 Power supply arrangement

Order code RER111C	U_{1aux} Power type	U_{2aux} Power type
A	110…240 VAC SPGU 240 A1	
AA	110…240 VAC SPGU 240 A1	110…240 VAC SPGU 240 A1
C	24…60 VDC SPGU 48 B2	
CC	24…60 VDC SPGU 48 B2	24…60 VDC SPGU 48 B2
AC	110…240 VAC SPGU 240 A1	24…60 VDC SPGU 48 B2

6.2. Fibre-optic connections

A fibre-optic transceiver consists of a transmitter and a receiver. In fibre-optic connections it is possible to use glass fibre-optic cables or plastic fibre-optic cables. Depending on the cable type used, an ST-type or snap-in-type connector can be selected, see the table below.

Table 6.2.-1 Specification of the fibre-optic connections.

	Glass fibre core	**Plastic fibre core**
Cable connector Cable diameter Max. cable length Min. cable length Attenuation Wavelength	ST connector 62.5/125 µm 1000 m 1 m 3.0 – 3.8 dB/km 820 – 900 nm	snap-in connector 1 mm 20 m 1 m 0.15 – 0.23 dB/m 660 nm
Transmitted power Receiver sensitivity	-13 dBm (HFBR – 1414) -24 dBm (HFBR – 2412)	-13 dBm (HFBR – 1521) -20 dBm (HFBR – 2521)

7. Installation and configuration

7.1. Mechanical installation

The RER 111 unit can be mounted on a wall, in a panel or a 19” rack.

7.1.1. Wall mounting

At wall mounting, the wall mounting bracket included in the delivery must be attached to the screw holes on the side of the casing. Then the rack can be screwed to the wall in a vertical or horizontal position.

NOTE! When mounting fibre-optic cables, follow the recommendations given by the the manufacturer of cable.

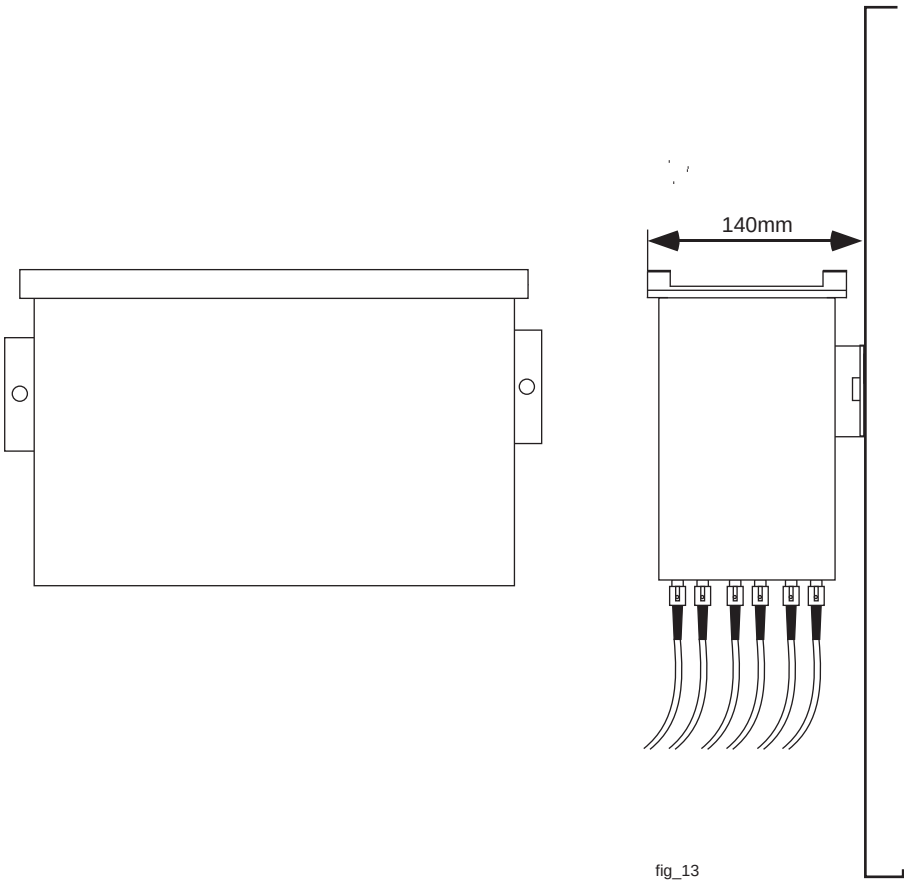

Fig. 7.1.1.-1 Wall mounting diagram.

7.1.2. Panel mounting

A special mounting kit is required for mounting the unit in a panel. This panel mounting kit is delivered against separate order. For ordering information, see chapter 10.

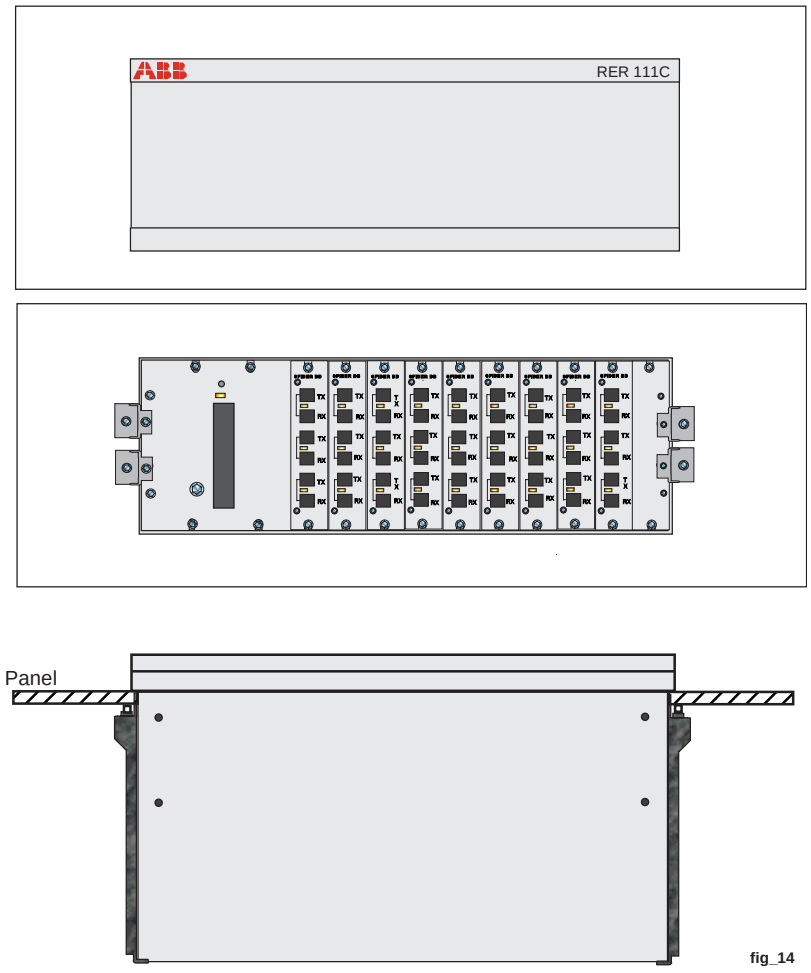

Fig. 7.1.2.-1 Panel mounting diagram.

7.1.3. Rack mounting

A special mounting kit is required for mounting the unit in a 19” rack, as shown in figure 7.1.3.-1 below. This rack mounting kit is delivered against separate order. For ordering information, see chapter 10.

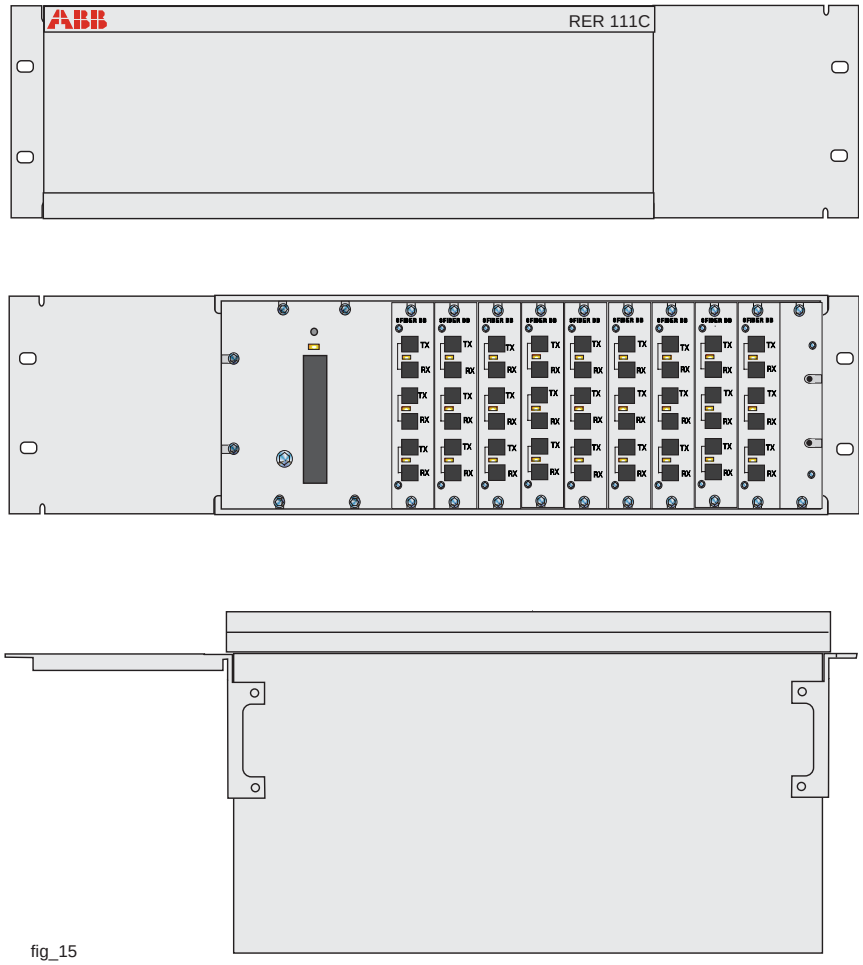

Fig. 7.1.3.-1 Rack mounting diagram.

7.2. Installation and configuration of SIO card

7.2.1. LON node installation (setting the node address)

When Neuron 3150 chips are shipped from the manufacturer they are assigned a unique, 6-byte identifier (Neuron ID). Each LON node has a service pin. Pressing the service pin causes the Neuron chip to transmit a network management message "Service Pin Message" containing this Neuron ID. This information may then be used by a network management device to install the node (assign the node its logical node address).

The normal node installation procedure is as follows:

1. Start the "Install Node" command of the device responsible for the network management functions (usually the "master" node). This function will ask you to press the service pin on the node being installed.
2. Press the Service Pin of the SIO card.
3. When the network manager node receives the "Service Pin Message", it will set the address of the node.

The node address is stored in the Neuron chip's internal EEPROM memory (in the domain table) and usually also in the node list of the network manager node.

7.2.2. Configuration of the network variables (binding)

During configuration the network variables of the SIO card are logically connected (bound) to network variables in other LON nodes.

In the LonTalk protocol terminology an output network variable is a variable which is sent to the LON from a node and input network variable is a variable which is received by the node.

During binding the output network variables of the SIO card are connected to the input network variables in other nodes. The input network variables of the SIO card are bound to output network variables in other nodes.

The connections between network variables are done by means of the network variable configuration table and the address table. The network variable configuration table includes the network variable selector values, which are used as system-wide addresses of the network variables. The address table of a node contains the addresses of all the other nodes to which the node is to send messages. If messages are sent to a group of nodes or if they are broadcast to the network then the address table also contains group address and broadcast address definitions.

Network variable configuration table

The network variable configuration table contains a 3-byte entry for each network variable. The table can be updated and read using network management commands. The device responsible for network management updates the network variable configuration table during binding of the network variables.

Table 7.2.2-1 Network variables of SIO card

Network variable	Direction	Index	Format	Description
nv_bcast_period	Input	0	Signed long (2 bytes)	Data of this variable indicates the period of alarm. Range 0 – 65356 seconds. 0 = no periodical sending **Note!** The value of this network variable is retained over a reset.
nv_rer111_alarm	Output	1	SNVT_alarm	Sent whenever error situation occurs/recovers. Error recovery (reset) alarm sent only once. See chapter 7.2.4
nv_rer111_status	Output	2	SNVT_state	This variable indicates the status of RER 111. The variable is not sent, only polled (e.g. by a network management node)
nv_rer111_config	Input	3	SNVT_state	Data of this variable indicates whether there is one or two power supply cards installed. See chapter 7.2.6. **Note!** The value of this network variable is retained over a reset.

Only one network variable, i.e. nv_rer111_alarm, is required for binding. This network variable is broadcast with unacked service whenever an error occurs or an error situation recovers. This network variable uses an address table (e.g. address table index 0) in which the domain broadcast is specified.

7.2.3. Error alarm peŕiod

The time interval in seconds between error alarms can be set by updating the data value of *nv_bcast_period* (nv index 0). Updating is done by means of the network management node. The alarm period can be 1 – 65356 seconds. If no periodic alarm is wanted, the data value must be set to 0 (00 00 $_{HEX}$).

The data value must be given in a two-byte hexadecimal format. See the following examples:

Alarm period	Data value
1 s	00 01
10 s	00 0A
15 s	00 0F
20 s	00 14

7.2.4. Data of periodic alarm

The error alarm (*nv_rer11_alarm*) has the format of SNVT_alarm and is 29 bytes long. The error type is indicated in the alarm_type_t field (size 1 byte) of the SNVT_alarm. All other fields are zero. The error data for different error situations are as follows:

Table 7.2.4-1 Contents of nv_rer111_alarm

Alarm type	Failure/recovery type
0 (00 $_{HEX}$)	No errors after I/O card reset
9 (09 $_{HEX}$)	Power supply fault activated
10 (0A $_{HEX}$)	Power supply fault reset
11 (0B $_{HEX}$)	Option card error activated
12 (0C $_{HEX}$)	Option card error reset

Error alarms are sent periodically according to nv_bcast_period. Recovery alarms are sent only once.

7.2.5. Polling the status of RER 111

The network variable *nv_rer111_status* (nv index 2) is not sent, but it can be polled by means of the network management node. The network variable is 2 bytes long and in different error situations it has the following data values in hexadecimal format:

- no error 00 00
- option card error: 40 00
- power supply card error: 80 00
- both option and power supply card error: C0 00

Status query by network management application.

It is also possible to check the status of the RER 111 unit with *query status* network management message sent by the network management node. In different error situations the *error log* field of the query status response has the following data values:

- option card error: 4
- power supply card error: 8
- both option and power supply card error: 12

To clear the error log field (and all the other fields of the query status response window), use the network management message *clear status*.

7.2.6. Power supply count

The SIO card assumes that the RER 111 LON Star Coupler has two power supply cards, but it is possible to use the RER 111 unit with only one power supply card. (This is not recommended because then the functionality of the system cannot be ensured in the event of a power supply failure.) In this case, the SIO card has to be adapted to the use of one power supply card, and the power supply fault alarm has to be disabled. If the second power supply is installed later, the power supply error alarm sending must be enabled.

To enable or disable the power supply fault alarm sending, the following update data are used for *nv_rer111_config* (nv index 3):

$00\ 00_{HEX}$ power supply fault alarm sending enabled (2 power supplies, default)

$00\ 01_{HEX}$ power supply fault alarm sending disabled (1 power supply)

Nv_rer111_config data value can be updated by means of the network management node.

7.3. Installation of the option cards

The option cards can be inserted into the rack in any of the nine slots available. The option cards are inserted in the following way:

- Remove the strain screws on the blank plate or the front plate of the option card installed
- Lift off the blank plate or pull the required option card out of the casing.
- Replace the old option card with new one (the component side facing away from the power supply).
- Push the option card into the unit until the front plate is flush with the rack.
- Tighten the option card or the blank plate to the case with the strain screws.

Notice! Do not touch the fibre-optic tranceiver.
Do not remove dust shields from transceivers not in use.

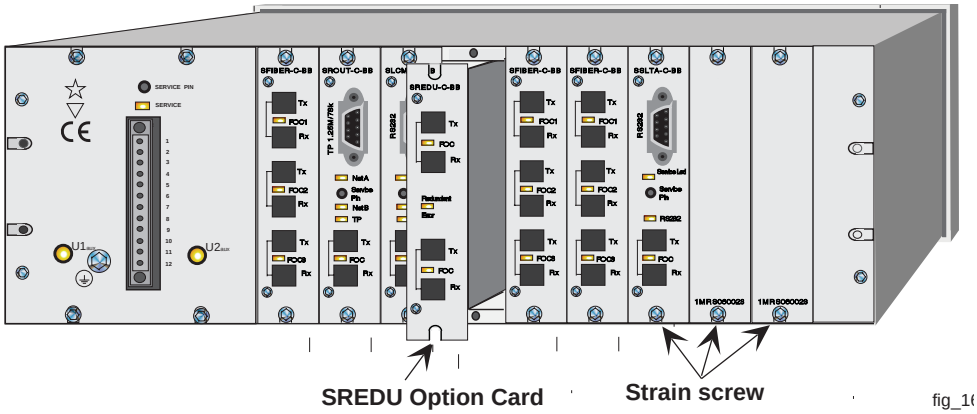

Fig. 7.3.-1 Installation of double connection option card in the RER 111 unit.

8. Technical data

Table 8.-1

Supply voltage	
Power supply module voltage range: SPGU 240 A1 - Rated voltage - Operative range SPGU 48 B2 - Rated voltage - Operative range	 U_n = 110/120/230/240 VAC U_n = 110/125/220 VDC U = 80...265 VAC/DC U_n = 24/48/60 VDC U = 18...80 VDC
Power consumption when all option cards installed	<16 W
Fault Relays:	
Terminal numbers	X2/1-2, 3-2, 4-2, 5-2
- Nominal voltage	250 VAC/DC
- Continuous current carrying capacity	5 A
- Make and carry for 0.5 s	10 A
- Make and carry for 3 s	8 A
- Breaking capacity for dc, when the control circuit time constant L/R < 40 ms, at 48/110/220 V dc control circuit voltage	1 A/0.25 A/0.15 A
- Contact material	$AgCdO_2$
Disturbance tests	
High frequency interference test according to IEC 60255-22-1 - common mode - differential mode	 2.5 kV, 1 MHz 1.0 kV, 1 MHz
Fast transient test according to IEC 61000-4-4 and IEC 60255-22-4, class IV	4 kV
Electrostatic discharge test according to IEC 61000-4-2 and IEC 60255-22-2, class III - contact discharge - air discharge	 6 kV 8 kV
Environmental conditions	
Specified ambient service temperature range	-10...+55°C
Transport and storage temperature range	-40...+70°C
Climatic environmental tests	
Dry heat test according to IEC 60068-2-2	+55°C
Dry cold test accroding to IEC 60068-2-1	-10°C
Damp heat test according to IEC 60068-2-30	RH = 93%, 55°C, 6 cycles
Degree of protection by enclosure of the device case according to IEC 60529	IP 20

9. Maintenance and service

9.1. Self diagnostics

9.1.1. Power supply LED

Under normal operating conditions, the LED is lit when the power supply card is in operation.

9.1.2. Service LED

If the service LED is off, the Neuron Chip is in the configured state.

If the service LED is flashing, the Neuron Chip is in the unconfigured state.

If the service LED is continuously on, then the network interface has detected a hardware failure.

9.1.3. Fault relays

The fault relays are located on the I/O card. The task of the fault relays is to indicate faults in the power supply. There is one relay for each power supply. When a fault occurs, the relay changes state thus indicating which power supply has failed. These relays can be wired to external alarm or monitoring circuits via the 12-pin terminal on the I/O card. For more information, see chapter 6.0.

9.2. Resetting factory defaults

If, for some reason, factory defaults have to be reset, this can be done by pressing the service pin during power-up.

9.3. Service and spare parts

If a fault is found in the power supply, the I/O card, mother board or option card of the RER 111 unit, the faulty part should be replaced with a new one. For ordering information see chapter 10.0.

9.4. Safety Information

	Dangerous voltages can occur on the connectors, even though the auxiliary voltage is disconnected
	National and local electrical safety regulations must always be followed
	The products contain components that are sensitive to electrostatic discharge
	The frame of the device has to be carefully earthed
	Only a competent electrician is allowed to carry out the electrical installation
	Non-observance can result in death, personal injury or substantial property damage

10. Ordering information

The basic version of the RER 111 unit includes the case, the I/O card and two power supply cards (The voltage ratings of the power supply cards are selected by the purchaser). The wall mounting bracket is delivered with the RER 111 unit.

The basic type designation for the RER 111 is:

Type designation:

RER111C- _ _
| | |
| | A = U_{aux} = 110..240 VAC/DC, SPGU 240 A1
| | C = U_{aux} = 24…60 VDC, SPGU 48 B2
| | 0 = Only one power supply included
| |
| A = U_{aux} = 110..240 VAC/DC, SPGU 240 A1
| C = U_{aux} = 24…60 VDC, SPGU 48 B2
|
C = Device revision

Examples:

RER111C-AC	*RER 111 unit including two power supplies, power supply 1 of type 110..240 VAC/DC, power supply 2 of type 24…60 VDC.*
RER111C-C0	*RER 111 unit including one power supply of type 24…60 VDC.*

10.1. Mounting accesories

The brackets required for panel or rack (19”) mounting must be ordered separately.

NOTE: The brackets are delivered in pairs.

Mounting set	Type designation
Panel mounting set	1MRS050209
19” rack mounting set	1MRS050201

10.2. Option cards

All option cards must be ordered separately. A maximum of 9 option cards can be installed in one RER 111 unit. By default, empty slots are covered with blank plates.

Type designation for the option cards:

Router option card:

Router option card with ST-type glass fibre-optic transceivers	SROUT-C-MM
Router option card with snap-in-type plastic fibre-optic transceivers	SROUT-C-BB

Serial LonTalk Adapter option card:

SLTA with ST-type glass fibre-optic transceivers	SSLTA-C-MM
SLTA with snap-in-type plastic fibre-optic transceivers	SSLTA-C-BB

Double connection option card:

Double connection option card with ST-type glass fibre-optic transceivers	SREDU-C-MM
Double connection option card with snap-in-type plastic fibre-optic transceivers	SREDU-C-BB

RS485 option card:

RS485 option card with ST-type glass fibre-optic transceivers	SRS485-C-MM
RS485 option card with snap-in-type plastic fibre-optic transceivers	SRS485-C-BB

Fibre-optic option card:

fibre-optic option card with ST-type glass fibre-optic transceivers	SFIBER-C-MM
fibre-optic option card with snap-in-type plastic fibre-optic transceivers	SFIBER-C-BB

LON Clock Master option card:

SLCM with ST-type glass fibre-optic transceivers	SLCM-C-MM
SLCM with snap-in-type plastic fibre-optic transceivers	SLCM-C-BB
SLCMFO with ST-type glass fibre-optic transceivers	SLCMFO-C-MM

If needed, Blank plates can be ordered separately by using the following type designation:

Blank plate:	1MRS060023

10.3. Ordering example of RER 111

All units and option cards of the RER 111 unit should be specified in the order. If the order contains several units with same order number, the quantity should be specified.

Example 1:

If you order one RER 111 unit including 4 SFIBER-C-MM option cards and 2 SSLTA-C-BB option cards, the order is written as follows:

RER 111		
RER111C-AA	1 pc	*RER 111C unit*
SFIBER-C-MM	4 pcs	*Fibre-optic option card*
SSLTA-C-BB	2 pcs	*Serial LonTalk Adapter option card*

Example 2:

If the order includes several identical RER 111 units, the order can be written as below. This example includes three RER units with the same option cards as in the previous example:

RER 111		
RER111C-AA	3 pcs	*RER 111 unit*
SFIBER-C-MM	12 pcs	*Fibre-optic option card*
SSLTA-C-BB	6 pcs	*Serial LonTalk Adapter option card*

Example 3:

This example includes a system with one main RER 111 unit and three RER 111 subunits including option cards. All the units have the same power supply arrangements.

The main unit includes three SREDU-C-MM option cards and one SSLTA-C-MM option card. Two subunits are identical, each including one SREDU-C-MM option card and three SFIBER-C-MM option cards. The third subunit includes one SREDU-C-MM option card and three SFIBER-C-BB option cards.

RER 111		
RER111C-AA	1 pc	*RER 111 unit*
SREDU-C-MM	3 pcs	*Double connection option card*
SSLTA-C-MM	1 pc	*Serial LonTalk Adapter option card*
RER 111		
RER111C-AA	2 pcs	*RER 111 unit*
SREDU-C-MM	2 pcs	*Double connection option card*
SFIBER-C-MM	6 pcs	*Fibre-optic option card*
RER 111		
RER111C-AA	1 pc	*RER 111 unit*
SREDU-C-MM	1 pc	*Double connection option card*
SFIBER-C-BB	3 pcs	*Fibre-optic option card*

11. Customer Feedback

Date: _____ To fax: +358 10 224 1094

Category: _Comment __Query __Complaint

In case of feedback related to a specific product, please name the product.

Product: RER 111C- _____

Ser. No. _____

Description: _____

_____

_____

_____

Initiator: _____

Issuer: _____

Company: _____

Country: _____

Telefax no/

e-mail address: _____

If the unit is required to be sent back to the manufacturer, also fill in the Service Report form (overleaf).

11.1. Service Report for Star Coupler RER 111

Name of the station/project _____
(Fill in this form. Use one form per unit.)

Date & Time_____ Handled by: _____

Type designation RER 111C -__ __

Serial number Ser. No. _____

Date of purchase ___.___ 20____ (d.m.y)

Option cards included:	Number of units	Note:
SROUT-C-MM		
SROUT-C-BB		
SSLTA-C-MM		
SSLTA-C-BB		
SREDU-C-MM		
SREDU-C-BB		
SRS485-C-MM		
SRS485-C-BB		
SFIBER-C-MM		
SFIBER-C-BB		
SLCM-C-MM		
SLCM-C-BB		
SLMFO-C-MM		

Fault diagnostics: _____

_____

_____

_____

_____

_____

ABB Oy
Distribution Automation
P.O. Box 699
FI-65101 Vaasa
FINLAND
Tel. +358 10 22 11
Fax. +358 10 224 1094
www.abb.com/substationautomation

1MRS 750104-MUM EN 05.2007