

# SREDU Double Connection Option Card for Lon<sup>®</sup> Star Coupler RER 111

Technical Reference Manual

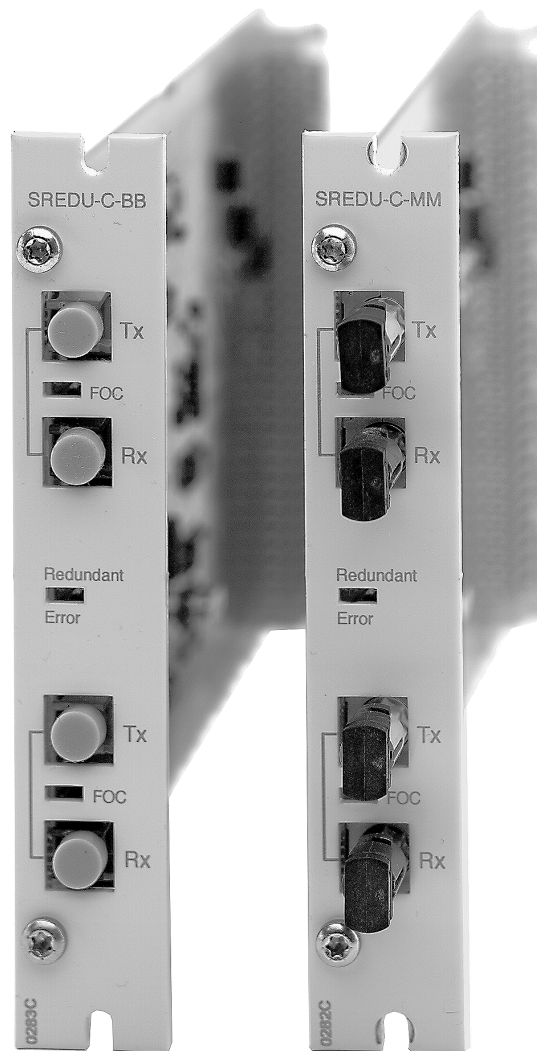


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Technical Reference Manual

We reserve the right to change data without prior notice.

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## Revision history

Date	Revision	Author	Description
??.??.????	A	T. Peltoniemi	Original version
29.12.1999	B1	M. Kiikkala	Update version (Q4/99)
21.02.2000	B2	M. Kiikkala	References to SMA-transceiver option removed

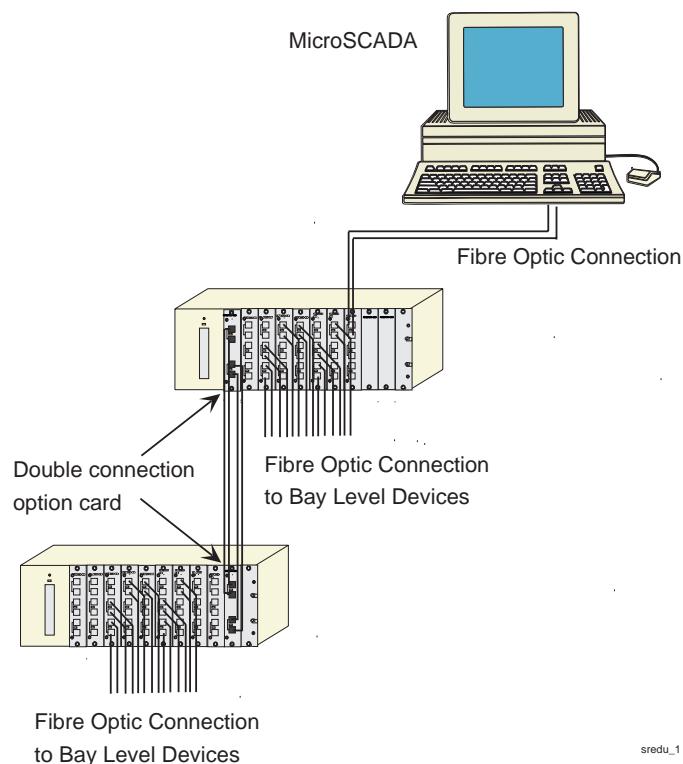
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## 1. Introduction

The double connection option card is designed for use within the LON® Star Coupler RER 111. This device is not a "stand-alone" device, but part of an integrated communication system.

The double connection option card provides the means to connect two RER 111 units together by using double connections. This method enables two fibre optic cables to be used. This double connection allows for the possibility of a fault to occur in one fibre optic connection, still remaining able to receive and transmit data to the device.

An example of this type of connection can be seen below in figure 1.-1.



*Fig. 1.-1 Example of a double fibre optic system.*

The double connection option card is equipped with two fibre optic transceiver pairs. Two types of transceiver pairs are available:

- ST-type glass fibre optic transceiver
- snap-in-type plastic fibre optic transceiver

These transceiver types are not interchangeable, but should be specified in the order. For ordering information see chapter 8.

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## **2. Functions**

The double connection option card has two fibre optic transceiver pairs. These are connected to a LON device allowing a double fibre optic connection.

LON messages can be received from one receiver or both receivers at the same time. The message received is then passed on to the mother board of the RER 111 unit.

Both fibre optic receivers are connected to the open collector bus on the mother board through a receiver selection logic. This allows the message to be transmitted in both fibre optic channels. The receiver selection logic only permits one of the receivers to transmit the duplicated data to the open collector bus, thus avoiding message duplication on the open collector bus. The receiver is selected at random.

If a message is to be transmitted from the mother board through the double connection option card, then this message is transmitted via both fibre optic transmitters to the attached device.

Both fibre optic receivers have indication LEDs that flash when a message is being received.

The double connection option card also supports message collision detection within the RER 111 unit.

The double connection option card has a self supervision feature for continuous light reception. If one (or both) fibre optic channel receives continuous light, the reception on the channel in question is cut off.

The error is notified to the I/O module of the RER 111 LON Star Coupler via the error line. Error reset is also notified. For information regarding the error line of the RER 111 Star Coupler, refer to the RER 111 manual 1MRS750104-MUM, chapter 4.1.

The indication LED of a channel is continuously lit if continuous light is received in the corresponding channel. Then the redundant error LED is continuously lit as well.

### 3. Mechanical and electrical design

#### 3.1. Block diagram

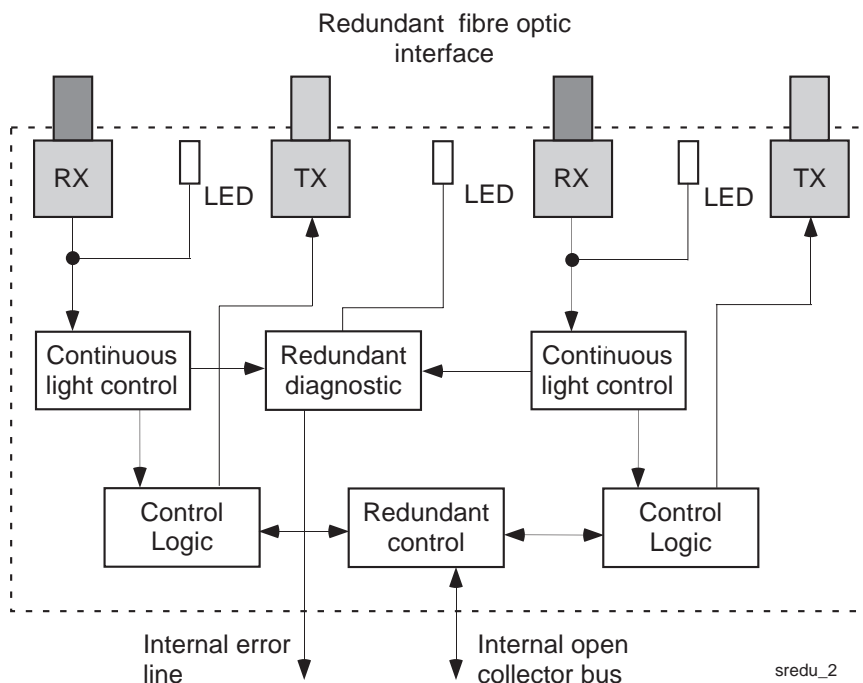


Fig. 3.1.-1 Block diagram of the double connection option card

#### 3.2. Mechanical structure

The double connection option card is built on a printed circuit board (PCB) of size 100 mm x 160 mm. The size of the front plate is 116.4 mm x 19.8 mm.

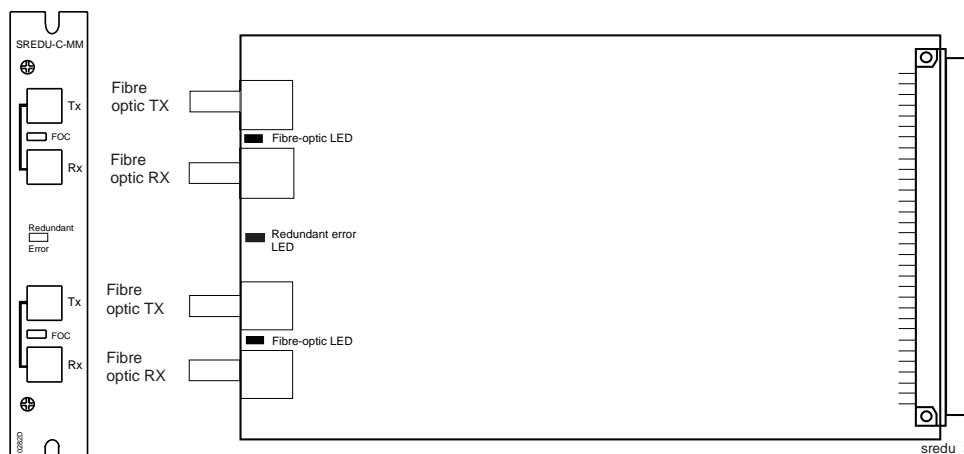


Fig. 3.2.-1 Mechanical structure of the double connection option card.

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## **4. Interfaces**

The double connection option card has three separate interfaces:

- a 64 pin E1 card connector for the connection to the mother board of the RER 111 unit
- 2 fibre optic transceiver pairs.

The length of the fibre optic cables used in the different channels of the double connection option card may vary, but have to be within the limits specified in the RER 111 manual 1MRS750104-MUM, chapter 6.2

For more information regarding the fibre optic cables and the fibre optic connection of the option cards, refer to the RER 111 manual 1MRS750104-MUM, chapter 6.2

## 5. Installation

As the double connection option card is not intended for "stand-alone" use, it has to be installed in the RER 111 unit. It can be placed in any of the 9 slots available.

To install the double connection option card in the RER 111 unit:

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

**Notice!** Do not touch the fibre optic transceiver.

Do not remove dust shields from transceivers not in use.

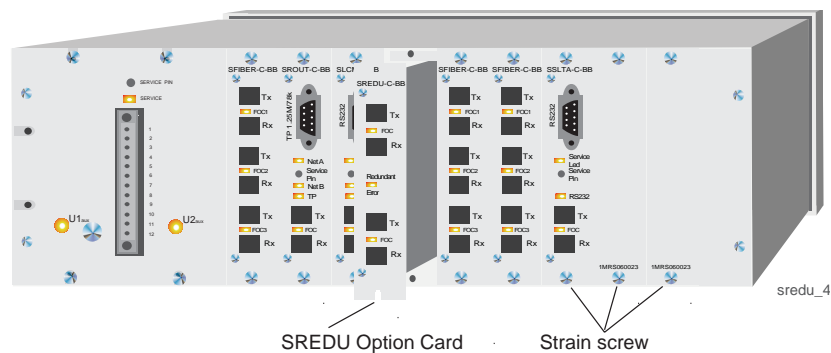


Fig. 5.-1 Installation of the double connection option card in the RER 111 unit.



## 6. Technical data

### Interfaces

Fibre optic interface	glass fibre with ST-type connectors plastic fibre with snap-in-type connectors
Communication speed	1.25 Mbit/s
Connection to the mother board	64 pin E1 connector

### Power source

Mother board interconnection	+8 VDC
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### Power consumption

SREDU-C-MM option card	<1.4 W
SREDU-C-BB option card	<1.4 W

### Size

E1 card	100 mm x 160 mm (E1 card)
Front plate	116.4 mm x 19.8 mm (front plate)

### 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, cl. 4	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 according to IEC 60068-2-1	-10°C
Damp heat test according to IEC 60068-2-30	RH = 93%, 55°C, 6 cycles

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## 7. Maintenance and service

### 7.1. Fibre optic receiver LED

The receiver LED flashes when a message is being received from the corresponding fibre optic channel.

If the LED is continuously lit, the corresponding channel is heavily loaded or the channel receives continuous light.

### 7.2. Redundant error LED

The redundant error LED indicates errors as follows:

1. If the error LED flashes, then one of the channels is broken.
2. If the error LED is continuously lit, then one of the channels or both channels receive continuous light.

### 7.3. Service and spare parts

If a fault occurs in the double connection option card, the faulty option card should be replaced with a new one. For ordering information, see chapter 8.





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