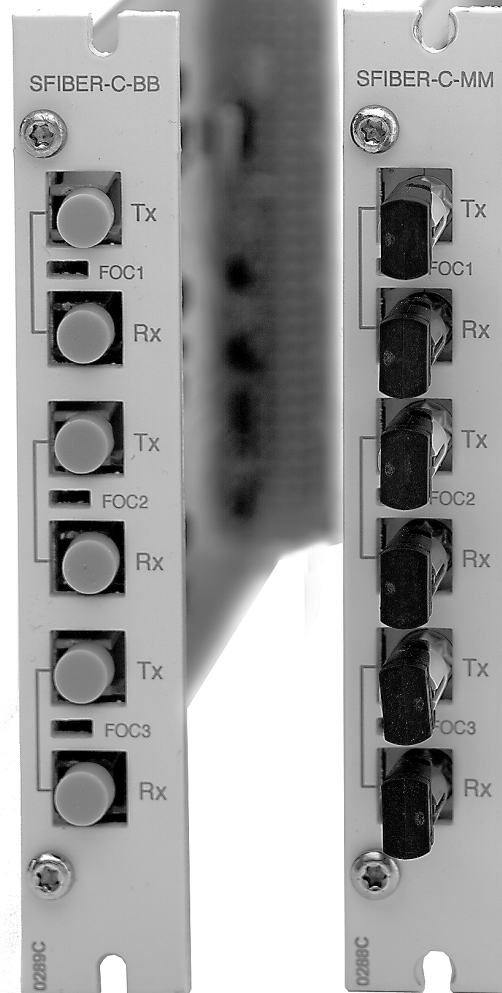


# SFIBER Fibre-optic Option Card for Lon<sup>®</sup> Star Coupler RER 111

Technical Reference Manual





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Technical Reference Manual

We reserve the right to change data without prior notice.

**Contents:**

**1. Introduction .....4**

**2. Functions .....5**

**3. Mechanical and electrical design .....6**

    3.1. Block diagram .....6

    3.2. Mechanical structure .....6

**4. Interfaces .....7**

    4.1. General .....7

**5. Installation .....8**

**6. Technical data .....9**

**7. Maintenance and service .....10**

    7.1. Self-diagnostics .....10

        7.1.1. Fibre-optic receiver LED .....10

    7.2. Service and spare parts .....10

**8. Ordering information .....11**

**Revision history**

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21.11.1996	A	T. Peltoniemi	Original version
29.12.1999	B1	M. Kiikkala	Update version (Q4/99)
18.02.2000	B2	M. Kiikkala	References to SMA-transceiver option removed

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## 1. Introduction

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

The fibre-optic option card has three fibre-optic transceiver pairs for interconnection between bay-level devices, between RER 111 units or between RER 111 unit and higher level devices, e.g. MicroSCADA.

The fibre-optic card can be equipped with two different transceivers. These transceiver types are fixed and have to be chosen upon ordering. For further information refer to chapter 8 Ordering information.

The fibre-optic transceiver types are:

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

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## **2. Functions**

The fibre-optic option card has no local intelligence. The option card operates as a repeater between multiple connections. The RER 111 unit, using a fibre-optic option card which is receiving a message from one of the interfaces, re-transmits that same message to the other interfaces. The communication speed is 1.25 Mbit/s.

The fibre-optic option card is designed so that a logical "1" is equivalent to no light within the optical cables. When no message is being transmitted or received there is not either any light within the optical cabling.

If multiple messages are received within the RER 111 unit at the same time, then these messages will collide. Thus, the fibre-optic option card has an built-in support for collision detection.

The fibre-optic option card also has an indication LED for each receiver on the card. This LED flashes whenever a message is received within the concerned receiver.

The fibre-optic option card has a self supervision feature for continuous light reception. If one (or several) fibre-optic channel receives continuous light, the reception on the channel in question is cut off and other channels (or devices connected to the LON Star Coupler) can continue communication via the open collector bus.

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.

### 3. Mechanical and electrical design

#### 3.1. Block diagram

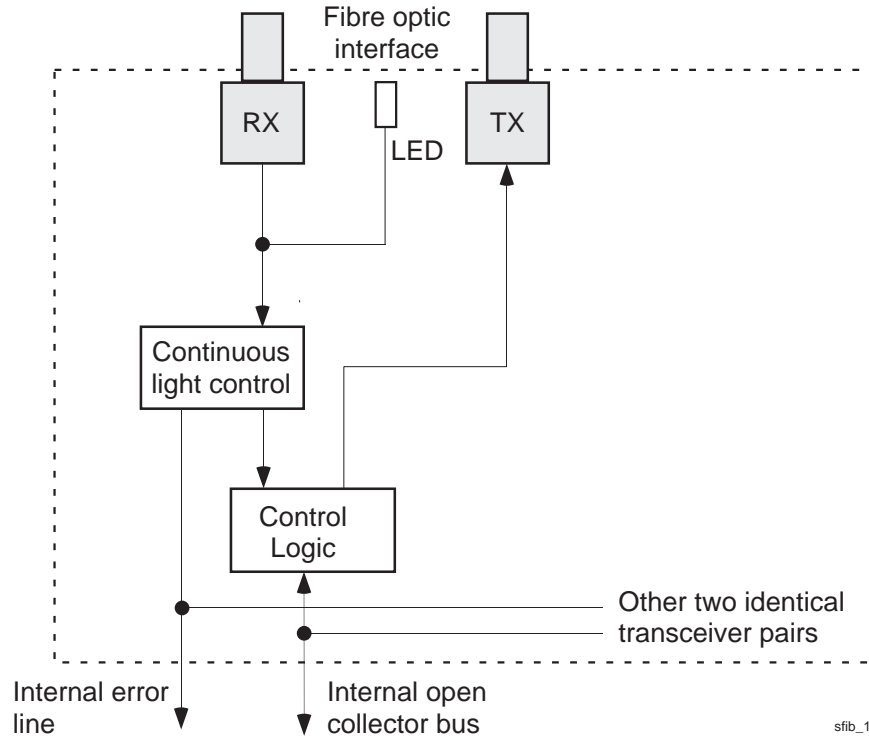


Fig. 3.1.-1 Block diagram of the fibre-optic option card.

#### 3.2. Mechanical structure

The fibre-optic 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.

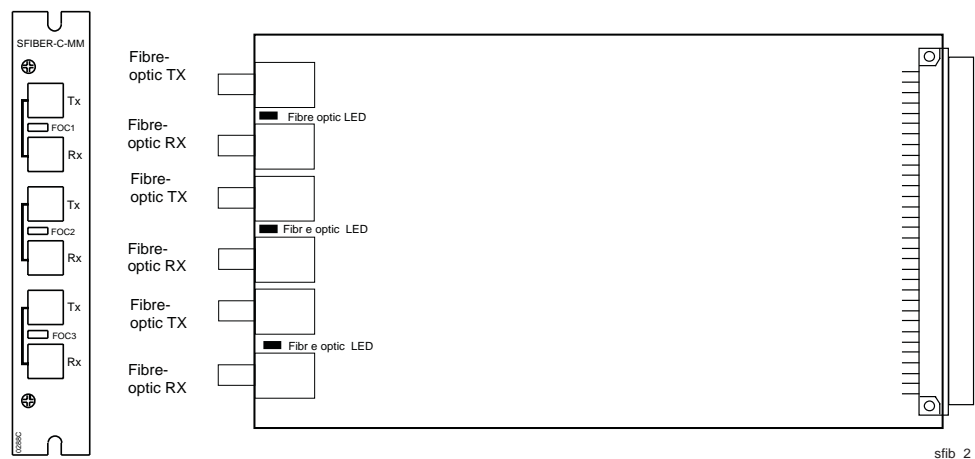


Fig. 3.2.-1 Mechanical structure of the fibre-optic option card.

## **4. Interfaces**

### **4.1. General**

The fibre-optic connection option card has four separate interfaces:

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

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

## 5. Installation

As the fibre-optic 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 fibre-optic 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.

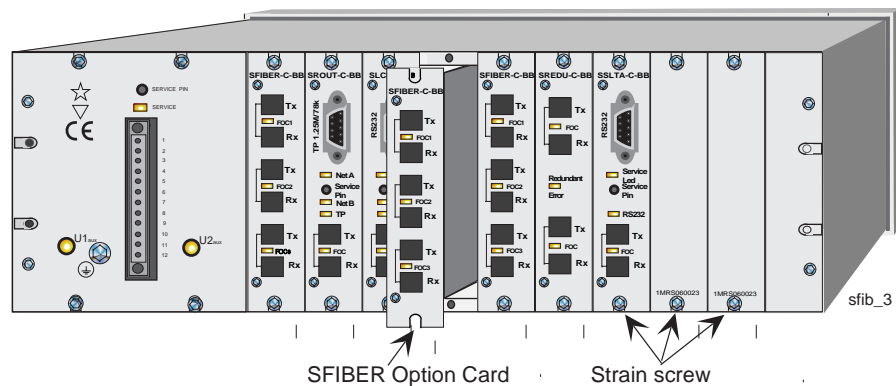


Fig. 5.-1 Installation of the fibre-optic option card in the RER 111 unit.



## 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 mother board	64 pin E1 connector

### Power source

From the mother board	+8 VDC
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### Power consumption

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

### 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. Self-diagnostics**

#### **7.1.1. 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 there is a malfunctioning device sending continuous light.

### **7.2. Service and spare parts**

If a fault occurs in the fibre-optic option card, the faulty option card should be replaced with a new one. For ordering information please see chapter 8.





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