
SA-FOM4TM
(Fiber Optical Multiplexer)

Users Reference Manual

September 2004

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System Description

V2.1

September 2004

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1. Introduction

EMX-100C Fiber Optical Multiplexer is a digital transmission system, capable of delivering four 2.048Mb/s (E1) services over a single-mode optical fiber (1310nm) for telephone and data networks. This product provides a simple, economical and flexible solution for carrying E1 signals over a fiber.

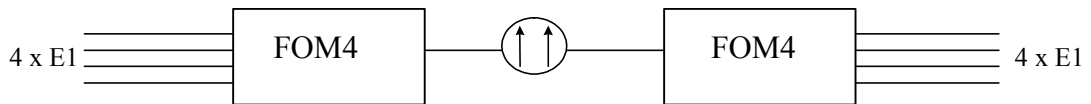


Figure 1 SA-FOM4 with 4 E1 Interfaces

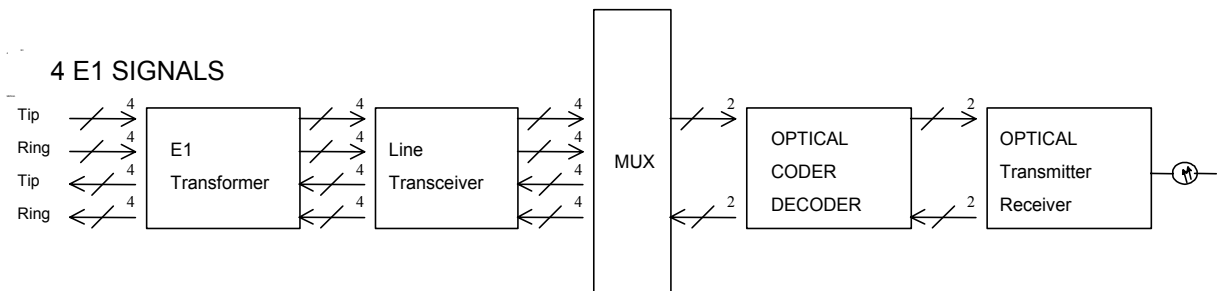


Figure 2 SA-FOM4 Block Diagram

1.1 System Features

- Single pair fiber operation for cost effective solution.
- Working temperature can be up to 60°C.
- Low Bit Error Rate (BER < 10⁻¹⁰)
- Two control models are available: DIP switch controlled model and CID controlled model, to be decided on ordering.

2. System Applications

EMX-100C consists of a high-speed interface and a low-speed interface. The high-speed interface uses a laser diode (LD) transmitter and a PINFET receiver to provide optical signal interface. The low-speed interface provides electrical facilities interface and can transmit/receive up to 4 E1 signals.

EMX-100C is designed to provide reliable and robust digital signal transmission in short, medium and long distance applications. It is a simple and economical fiber transmission equipment for inter-office networks and access networks.

The applications for EMX-100C system are as follow:

- Connections between Mobile Switch Centers (MSC) and base stations in cellular phone networks.
- Connections between the Central Office terminal (COT) and Remote Terminal (RT) of Digital Loop Carrier (DLC) systems.
- Trunk connections between digital switches.
- Optical transmission for LAN/WAN applications.
- Transmission media for ATM or B-ISDN networks.

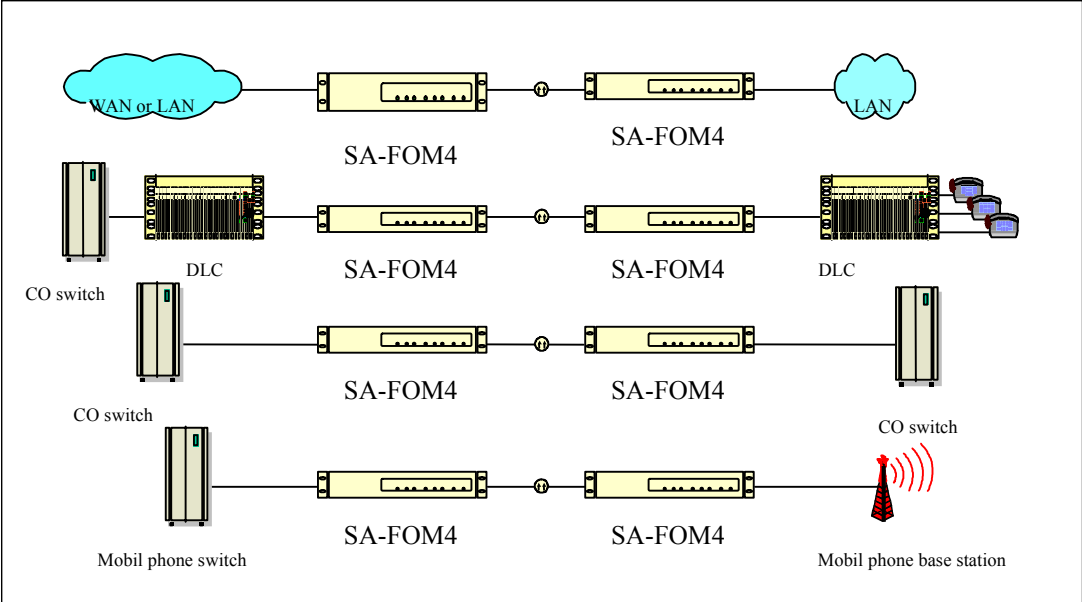


Figure 3 System Application

3. System Specifications

3.1 Mechanical Specifications

Shelf size: 45 mm (Height) × 436 mm (Width) × 200 mm (Depth)

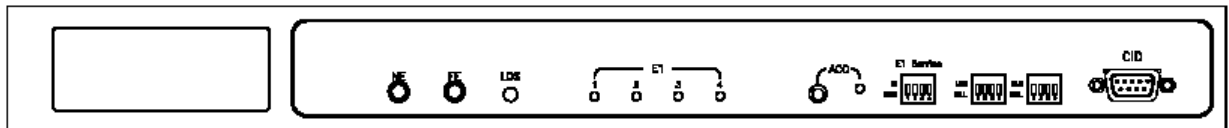


Figure 4 SA-FOM4 Front View

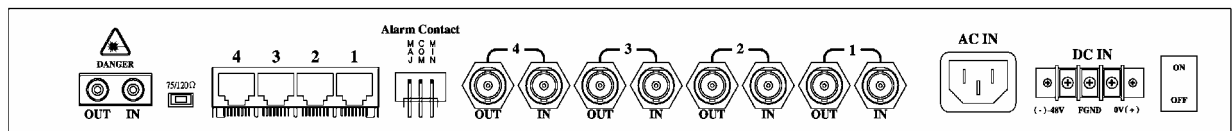


Figure 5 SA-FOM4 Rear View – w/RJ-45 Connector

3.2 Interface connector

E1 interface: Jumper selectable with RJ-45 (120 Ω) type connector and BNC(75 Ω).

Optical interface: FC/PC type (single-mode)

Alarm interface: NELTRON™ 3.96mm center wire to board connector.

Power interface: DC power terminal and AC Socket. Both are controlled by ON-OFF switch.

CID interface: RS-232 female connector.

3.3 Interface Specifications

3.3.1 System Capacity:

Four 2.048 Mb/s (E1)

3.3.2 E1 signal interface

- (1) Bit Rate: 2.048Mb/s ± 50 ppm
- (2) Line code: HDB3
- (3) Pulse Shape: ITU-T G.703
- (4) Impedance: 120 ohm $\pm 5\%$
75 ohm $\pm 5\%$
- (5) The allowable attenuation range of an E1 input signal:
0~6dB @1024KHz (0.65mm E1 copper line)
- (6) E1 Jitter characteristics: G.742/G.823
- (7) Input Port Return Loss:
51 to 102 KHz : 12dB
102 to 2048 KHz : 18dB
2048 to 3072 KHz : 14dB

3.3.3 Optical signal interface

Optical source: MLM-1310 nm type LD
Optical connector: FC/PC type
Operating wave-length : 1310 nm (single mode) ± 50 nm
Line coding format: Scrambled NRZ
Output power: -7 ~ -15 dBm @1310nm
Receive sensitivity : < -34 dBm @ 10^{-10} BER

System Gain: > 19 dB

3.4 Alarm and Indicators

The system monitors all alarm signals, such as loss of signals, optical signal loss, remote alarm, etc. in real time. The LED alarm display status is referred to *SA-FOM4 Installation Description Page 2*.

3.5 Loopback

The SA-FOM4 system provides local and remote loopback tests via the DIP switch or CID Console port. These functions test the integrity and connectivity of E1 and optical signals. (Note: Before the system executes the local or remote loopback functions, the E1 channel have to be set to OOS model.)

3.6 Power Supply

3.6.1 Input power

DC: -36V to -72V

AC: 100V to 240V @ 47 to 63 Hz

3.6.2 Power consumption

Maximum power consumption: 15W

3.7 Operating Environment

Ambient temperature: 0°C to 60°C

Relatively humidity: 5% to 90% (Non-condensing)

3.8 Reliability

Mean Time Between Failures (MTBF) : 57,000 hours

3.9 EMI

The SA-FOM4 complies with specifications of the Class A of CISPR 22 and Class A of subpart B of Part 15 of the FCC Rules of U.S.A.

