FOM-40

Fiber Optic Modem

Provides a secure and long-range data link of up to 100 km (62 miles)

- Selectable data rates from 56 to 2048 kbps
- Multimode or single mode operation
- Extended transmission range of up to 100 km (62 miles) with 1550 nm laser diode option
- V.54 diagnostic loopbacks and built-in V.52 BERT

FOM-40 is a long-range fiber optic modem that transmits data over up to 100 km (62 miles), and is a secure data link between computers, routers, multiplexers, and other data communication devices. It operates at twelve selectable synchronous data rates from 56 kbps to 2048 kbps.

FOM-40 converts electrical signals from the DTE into optical signals via a laser diode. At the opposite end of the fiber, the optical signals are converted back into electrical signals, in compliance with the appropriate interface.

The following DTE interfaces are available:

- V.24/RS-232
- V.35
- X.21
- RS-530
- V.36 (RS-449)
- G.703 Codirectional (64 kbps)
- 10/100BaseT built-in Ethernet bridge.

RAD data communications
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FOM-40 operates with several grades and sizes of fiber optic cable. Different optical interfaces are available:

- 850 nm VSCEL for use with multimode fibers
- 1310 nm laser for use with single mode fibers
- 1550 nm laser for use with single mode fibers for an extended range of up to 100 km (62 miles).

The built-in Ethernet bridge enables cost-effective LAN-to-LAN connectivity without the need for an external bridge.

Diagnostics include local analog and digital loopbacks, and remote digital loopback. The loopback commands are controlled either by a manual switch, or via the DTE interface signals. A front panel switch generates an internal pseudo-random test pattern (511 bits) according to the ITU V.52 standard, for testing end-to-end connectivity. The ERR LED flashes whenever a bit error is detected.

FOM-40 is available as a standalone unit (1U high).

An optional mounting kit (RM-29) is available for mounting one or two standalone units side-by-side in a 19-inch rack.

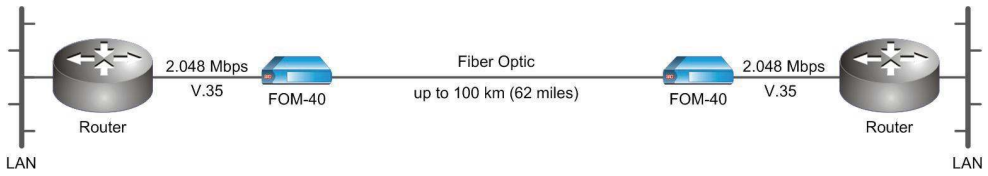


Figure 1. Serial Data Transmission over a Fiber Optic Link

Table 1. FOM-40 Fiber Optic Interface Characteristics

Wavelength	Fiber Type	Transmitter Type	Typical Output Power	Receiver Sensitivity	Typical Max. Range	
[nm]	[µm]		[dBm]	[dBm]	[km]	[miles]
850	62.5/125 multimode	VCSEL	-18	-39	4.5	2.8
1310	9/125 single mode	Laser	-12	-40	50	31
1550	9/125 single mode	Laser	-12	-40	100	62

* *Receiver sensitivity is calculated for BER ≤ 10E-11.*

Specifications

ELECTRICAL

Data Rates
56, 64, 112, 128, 256, 384, 512, 768, 1024, 1536, 1544, 2048 kbps

Interfaces and Connectors
V.24/RS-232, 25-pin D-type, female
V.35, 34-pin D-type, female
RS-530, 25-pin D-type, female
X.21, 15-pin D-type, female
V.36/RS-449, 37-pin D-type, female (via cable adaptor)
Built-in (10/100BaseT) Ethernet bridge, RJ-45
G.703 codirectional (64 kbps), terminal block or RJ-45

***Note**: For G.703 codirectional interfaces, there is no end-to-end byte synchronization.*

OPTICAL

Operating Wavelength
850 nm multimode fiber, LED/VCSEL
1300 nm single mode fiber, laser diode
1550 nm single mode fiber, laser diode

Interface Characteristics
See *Table 1*

Connectors
ST, SC, or FC

GENERAL

Diagnostics
Local Loopback (LLB): activated by a front panel pushbutton or by the DTE interface signal (V.35, V.24,RS-530 and V.36)
Remote Loopback (RLB): activated by a front panel pushbutton or by the DTE interface connector signal (V.35, V.24, RS-530 and V.36)
Local Digital Loopback (DIG): activated by a front panel pushbutton
Pattern (PATT): activated by a front panel pushbutton, injects and detects an ITU V.52 511 test pattern

Timing Elements
Receive clock: derived from the receive signal
Transmit clock: derived from one of the following:

- Internal oscillator
- External from the DTE
- Loopback clock (receive clock) recovered from the receive signal, looped back as a transmit clock

Indicators
PWR (green) – Power
RTS (yellow) – Request to send
TD (yellow) – Transmit data
RD (yellow) – Receive data
DCD (yellow) – Data carrier detect
TEST (yellow) – Loopback mode, BER test
ERR (red) – BER test error

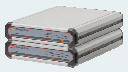
Power Supply
100 to 240 VAC (±10%), 50 to 60 Hz
24/-48 VDC (±10%)

Power Consumption
AC: 3 VA max
DC: 4W max

Physical
Height: 4 cm (1.5 in)
Width: 19 cm (7.4 in)
Depth: 16 cm (6.2 in)
Weight: 0.6 kg (1.3 lb)

Environment
Temperature: 0°–50°C (32°–122°F)
Humidity: Up to 90%, non-condensing

Table 2. Fiber Optic Modem Comparison Chart

Feature	FOM-E1/T1 	FOMi-E1/T1 	FOM-20 	FOM-40 	FOMi-40 	FOM-E3 FOM-T3 	FOMi-E3 FOMi-T3 
Data rates	E1: 2.048 Mbps T1: 1.544 Mbps	E1: 2.048 Mbps T1: 1.544 Mbps	19.2–256 kbps	56–2048 kbps	56–2048 kbps	E3: 34.368 Mbps T3: 44.736 Mbps	E3: 34.368 Mbps T3: 44.736 Mbps
DTE Interfaces	E1/T1	E1/T1	Serial, Ethernet	Serial, Ethernet	Serial, Ethernet, E1/T1	E3/T3	E3/T3
SNMP management	–	✓	–	–	✓	–	✓
Card version for rack	ASM-MN-214	–	ASM-MN-214	–	–	–	–

FOM-40

Fiber Optic Modem

Ordering

FOM-40/~/#/^

Standalone unit

Legend

~ Power supply:

AC	100–240 VAC
48	-48 VDC
24	24 VDC

Optical interface:

SC85	850 nm multimode, SC
ST85	850 nm multimode, ST
FC85	850 nm multimode, FC
SC13L	1310 nm laser diode, SC
ST13L	1310 nm laser diode, ST
FC13L	1310 nm laser diode, FC
SC15L	1550 nm laser diode, SC
ST15L	1550 nm laser diode, ST
FC15L	1550 nm laser diode, FC

^ DTE interface:

V24	V.24/RS-232
V35	V.35
530	RS-530
X21	X.21
V36	V.36/RS-449, female
703/%	G.703 codirectional (64 kbps)
UTP/QV	10/100BaseT built-in Ethernet bridge

% G.703 interface connector:

TB	Terminal block
RJ	RJ-45

SUPPLIED ACCESSORIES

AC power cord (when AC power supply is ordered)

DC adapter plug (when DC power supply is ordered)

CBL-530/449

Adapter cable (supplied with V.36 interface only)

OPTIONAL ACCESSORIES

RM-29

Hardware kit for mounting one or two FOM-40 standalone units in a 19-inch rack

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