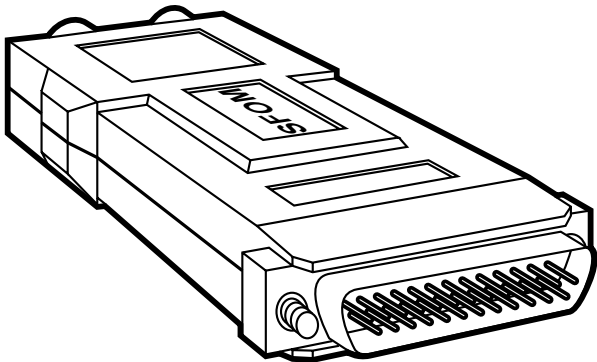




JULY 1993  
MD630A-F  
MD630A-M  
MD630A-FST  
MD630A-MST

# Synchronous Fiber Optic Modem



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## CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S. 24 hours, 7 A.M. Monday to midnight Friday: **877-877-BBOX**  
FREE technical support, 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**  
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**FEDERAL COMMUNICATIONS COMMISSION  
AND  
INDUSTRY CANADA  
RADIO FREQUENCY INTERFERENCE STATEMENTS**

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

*This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.*

*Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le règlement sur le brouillage radioélectrique publié par Industrie Canada.*

# 1. Specifications

<b>Interface</b> —	EIA RS-232-C/CCITT V.24
<b>Protocol</b> —	Synchronous
<b>Clock</b> —	Internal, external from DTE, or external (received) from remote modem (user-selectable)
<b>Operating Modes</b> —	Full or half-duplex over dual optical cable
<b>Speed</b> —	1200, 1800, 2400, 3600, 4800, 7200, 9600, 14,400, or 19,200 bps (user-selectable)
<b>Maximum Distance</b> —	1.86 mi. (3 km) of continuous fiber
<b>Optical Output</b> —	-30 dBm into 100/140 optical fiber; -36 dBm into 50/125 optical fiber
<b>Receiver Sensitivity</b> —	-45 dBm
<b>Operating Wavelength</b> —	820 nm
<b>Attenuation</b> —	4 dBm/km using 100/140 fiber; 3 dBm/km using 50/125 fiber

<b>Controls</b> —	(4) Internal: (1) Rotary switch: Speed; (3) Jumpers: Clock, Carrier Behavior, RTS/CTS Delay
<b>Indicator</b> —	(1) Rear-mounted LED: DATA
<b>Connectors</b> —	MD630A-F: (1) DB25 female, (1 TX, 1 RX) SMA female; MD630A-M: (1) DB25 male, (1 TX, 1 RX) SMA female; MD630A-FST: (1) DB25 female, (1 TX, 1 RX) ST female; MD630A-MST: (1) DB25 male, (1 TX, 1 RX) ST female
<b>Maximum Altitude</b> —	10,000 ft. (3048 m)
<b>Operating Temperature</b> —	32° to 122°F (0 to 50° C)
<b>Humidity</b> —	Up to 95%, non-condensing
<b>Power</b> —	From RS-232/V.24 interface
<b>Size</b> —	0.96"H x 2.1"W x 4"D (2.4 x 5.3 x 10.2 cm)
<b>Weight</b> —	0.16 lb. (0.07 kg)

# 2. Introduction

## 2.1 Description

The Synchronous Fiber Optic Modem (SFOM) is used for local distribution of synchronous data via fiberoptic cables. This compact unit is designed to be used primarily as a line driver in a “campus” environment: an industrial or commercial complex, an R&D site, a college or university campus—any widespread set of buildings among which there is a need to rapidly transfer data between mainframe computers and associated terminals or personal computers with synchronous emulation boards.

The Synchronous Fiber Optic Modem transfers synchronous data rapidly (up to 19,200 bps), connects full- or half-duplex synchronous computers and terminals, and is intended for use in point-to-point applications.

## 2.2 Benefits

- **Protect your data from electrical noise and other types of environmental interference during transmission.** The SFOM transmits data without the problems associated with copper-cable-based communications links. No need to worry about power surges, spikes, or drops corrupting or eliminating your data.

- **A variety of transmission rates for your convenience.** With this modem, you can take full advantage of RS-232 specifications. It offers you nine data transmission rates—from 1200 bps to the RS-232 limit of 19,200 bps. Select the speed that's right for your application by turning the small rotary switch inside the unit.
- **Select from three possible sources of transmit timing.** The SFOM links synchronous computing devices (for example, IBM®, WANG®, etc. mainframes). The synchronizing element (the timing signal) for data transmission can be provided by three different sources: an internal oscillator; an external “clock” (use of Pin 24 on the computer terminal's RS-232 port), or a loopback clock based on the Receive signal. As with the speed, select the clock source that's right for your application by setting an internal jumper.
- **No need for a separate power supply or extra cables.** The SFOM's design enables the unit to operate without connection to a main power supply. This modem utilizes the ultra-low power from the RS-232/V.24 data and control signals.

### 2.3 Applications

Used for local distribution of synchronous data via fiber-optic cables, this modem is designed to be used much like a line driver in a campus environment. Transmit synchronous data across a large local area (up to 1.86 miles [3 km]) and be sure that the data remains safe and intact. You can configure the unit for either continuous carrier operation or for switched carrier operation—controlled by the RTS (Request To Send) signal—by setting an internal jumper.

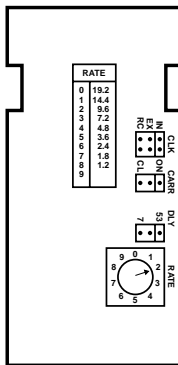
## 3. Installation

To configure and install your Synchronous Fiber Optic Modem, follow these steps:

1. Open the unit by squeezing the marked places on the side of its case.
2. “Strap” the modem (set its jumpers) and set its speed switch as you desire. Refer to **Figure 3-1** below and **Table 3-1** on the next page. (Explanations of the jumpers are also written on the printed circuit board.)

*(text continues on page 9)*

**Figure 3-1. Strapping diagram.**





## SYNCHRONOUS FIBER OPTIC MODEMS

Table 3-1. Jumper/switch selection.

Control Identity	Function	Positions
Speed ("RATE")	Use to set rate for data transmission	0 = 19,200
		1 = 14,400
		2 = 9600*
		3 = 7200
		4 = 4800
		5 = 3600
		6 = 2400
		7 = 1800
		8 = 1200
9 = Not used		
Clock ("CLK")	Use to set timing source	Internal (IN)*
		External from DTE (EX)
		Receive Clock (External from Remote Modem, RC)
Carrier Behavior ("CARR")	Use to set carrier constantly ON or controlled by RTS	Always ON (ON)* Controlled (CL)
RTS/CTS Delay ("DLY")	Use to set RTS/CTS delay	7 ms* 53 ms

\*Factory-default setting.

3. To close the unit, press the two halves of the case together. Plug the modem directly into the DB25 connector of the terminal or computer port and fasten with the screws on each side of the modem's connector.
4. Remove the plastic dust caps from the fiberoptic (SMA or ST<sup>®</sup>) connectors and connect the fiber cable to the unit. Please note:
  - TX on the local modem should be connected to RX on the remote modem.
  - RX on the local modem should be connected to TX on the remote modem.

The Synchronous Fiber Optic Modem is now ready for use. The red "DATA" LED will light when transmission occurs.

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## NOTES

## NOTES

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