

## FO 8000

### Models available

- FO 8011 : Synchronous V11/ X21 or RS422
- FO 8035 : Synchronous V35 or V36
- FO 8028 : Synchronous V24 and asynchronous at 115,2 kbps.
- FO 80E1 : Synchronous G703 2 Mbps and G704
- FO 80T1 : Synchronous G703 1,5 Mbps and G704
- FO 80BT : Ethernet bridge
- FO84E1 : Synchronous 4 x G703
- FO 84BR : 4 BRI ISDN (So/ To)

### Features

- Rate : from 64 kbps to 10 Mbps
- Multimode fiber 62,5/125  $\mu\text{m}$  LED 820 nm coverage 4 km.
- Single-mode fiber 9/125  $\mu\text{m}$ : LED 1310 nm coverage 30 km, LASER 1310 nm coverage 60 km LASER 1550 nm coverage 117km
- Connector : 2 x ST in option SC or FC
- Configuration and test of the local modem and distant
- Configuration : by console port with VT100 menu, or AT commands or by rack with SNMP
- Standalone 48 Vcc, 110/230 Vac or rack card
- Chassis 4 or 16 cards AMS4/ AMS16 mixed RTC/LS, RNIS, XDSL, DSU, FO, with SNMP in option .

## WAN LINKS OVER FIBER OPTIC

CXR introduces a new range of fiber optic modems, the FO8000. These modems are designed to enhance point to point applications for inter-connection of LAN and WAN.

These modems can also be used in the local loop or in the customer's premises in order to extend a LAN to LAN connection



By using the latest optical technology in the FO8000 series, CXR offers a high performance to cost ratio.

The entire FO8000 series, whatever the user interface, is enhanced with the following fiber type and connector :

For short distances such as campus environments, the multimode optical fiber incorporates an LED transmitter running at 820 nm wavelength. The transmission will reach 4 km.

For longer distances, we use the single-mode fiber. CXR employs an E-LED transmitter at 1310 nm, transmitting up to 15 km, and for even longer distances a laser transmitter is used to reach distances of 60 km or 120 km.

Upon special requests, the FO8000 can be equipped with a special transmitter and receiver.

All modems are built with ST connectors, optional connectors include SC or FC.

The FO8000 reach speeds of 10 Mbps. Available with synchronous interfaces V24 up

to 128 kbps, V11/X21 or V35 up to 8 Mbps, for interconnecting routers. The V24/RS232 models reach 102.5 kbps in asynchronous mode.

The FO8000 can be equipped with G703/G704 interfaces. CXR offers E1 or T1 single interface or 4 E1 interfaces, very often used in the PABX interconnection, or by the operator in the local loop.

The FO8000 can also be used for BRI delivery. Today an FO80E1 coupled with a CB2000 will deliver 16 BRI, and tomorrow CXR will provide 4 or 8 BRI integrated in a simple FO8000.

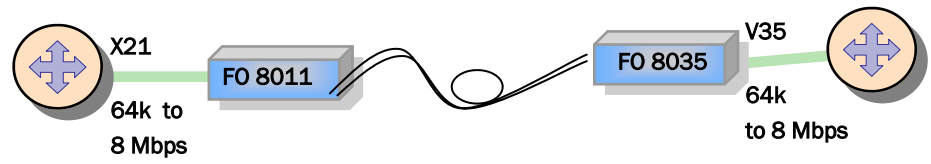
The whole range of modems can be delivered in desktop models with internal or external 230 power supplies, 48V, or in rack card format, powered by redundant power supplies.

The management is done through a console port or with SNMP management. The FO8000 has been developed with a fast-install concept usable for corporate as well as for operators. The user will be able to administer the local FO8000 and the remote unit.

FO8000 is also provided with a Windows graphical software for installation, maintenance and configuration management.

*The fiber optic modems applications*

**INTERCONNECTION IN CAMPUS**

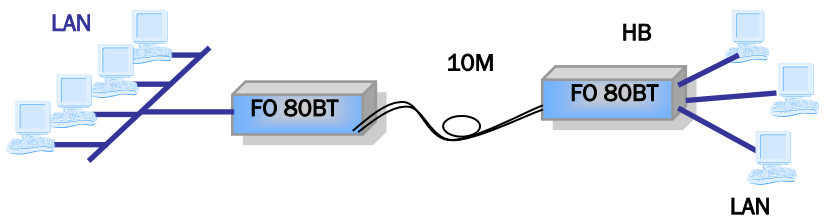


**Interconnection of routers**

The FO8011 and FO8035 interconnect networks with remote routers over 120 km apart. They are also a particularly convenient solution in disturbed or industrial environments, or when distances can not be reached by a DSL modem in campus environment. The V28/V24, V35, V36 or X21/V11 version of the FO8000 can be synchronised by the equipment's or the router's clock and will transmit the clock up to 8 Mbps to the remote router. They optimise the connection of the routers from 64 k to 8 Mbps.

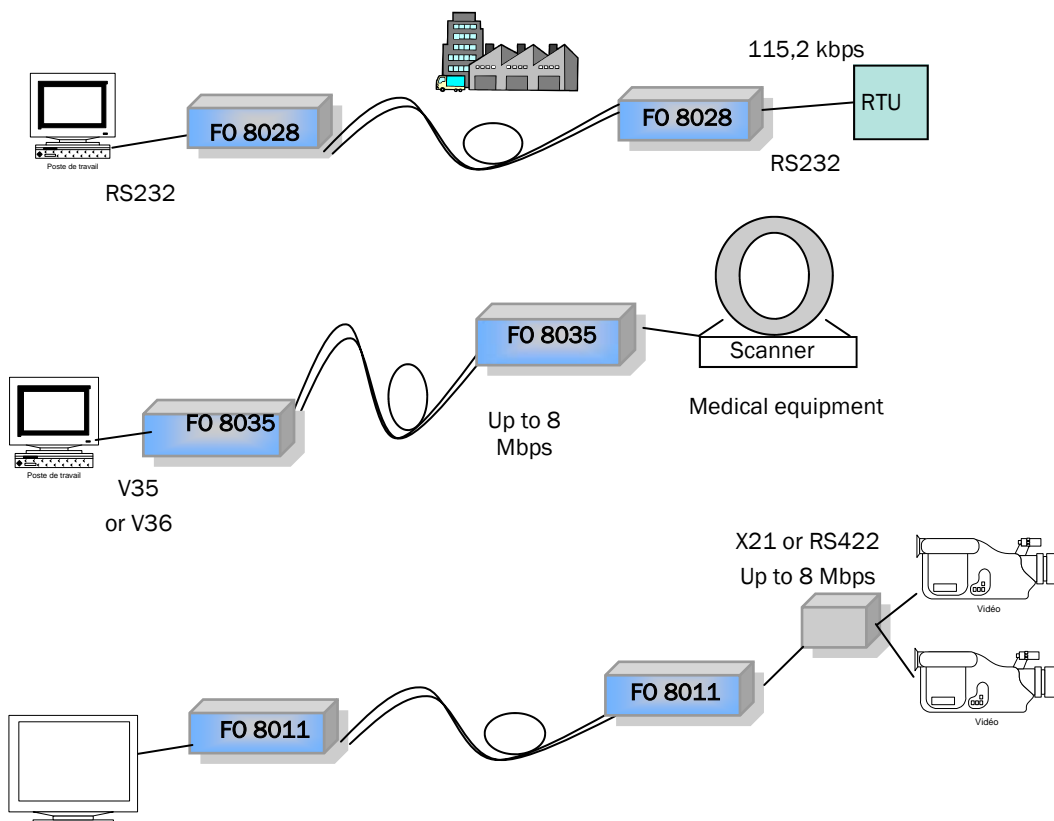
**LAN Interconnection**

The FO80BT or FO80HB, equipped with a bridge including overbridge and an 8-port HUB, will interconnect two LAN in a campus without requiring any LAN administration. The speed is 10 Mbps with the ability to compress the Ethernet frame.



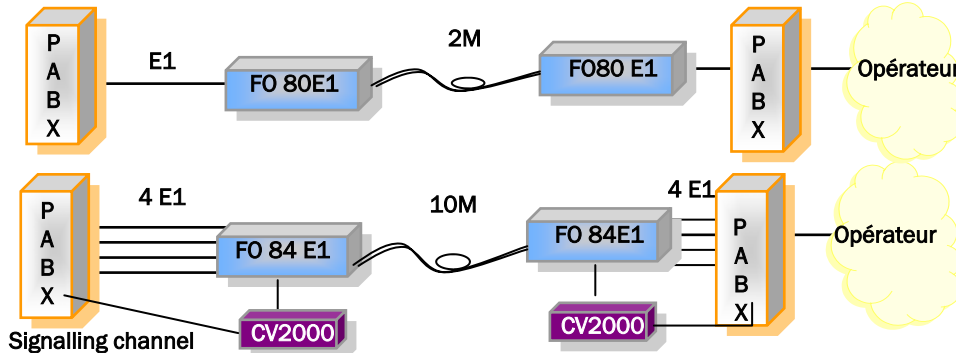
**Interconnection of industrial, medical or specialized equipment**

The FO8028 in synchronous or asynchronous mode, the FO8011 in synchronous X21 or RS422 and also the FO8035 in synchronous V35 or V36 mode, is used to interconnect industrial equipment such as RTU or PLC, medical equipments, high resolution cameras, or interconnecting several applications requiring transparency of communication.



## PABX Interconnection

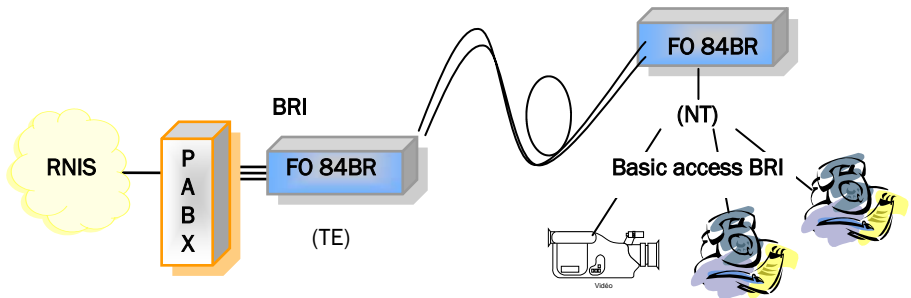
The FO80E1 and FO84E1 are specially developed for the interconnection of PABX systems using E1 with PRI/ISDN or MIC signalling. They are able to carry framed and unframed signals with synchronisation in order to interconnect the PABX with networking application. For some PABX, the network configuration will be done via the signalling link carried by the FO80E1 or FO84E1 coupled with a CV2000.



*The fiber optic modems applications*

## Distribution of ISDN basic access BRI

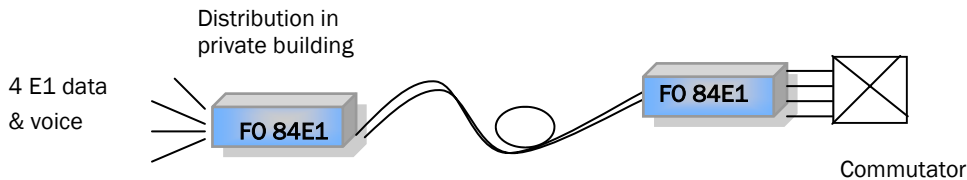
The FO80E1 used with a CB2000 is capable of delivering up to 16 BRI access ports from a PABX or a PRI connected on the other side with another FO80E1. The FO84BR will forward 4 BRI (S0/T0) from one site to another directly connected to the BRI of a PABX or a network access.



# LOCAL LOOP

## Local loop carrier side

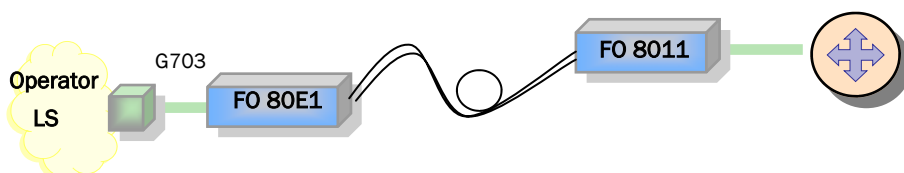
The FO80E1 and FO84E1 are exceptionally beneficial when deploying the TDM local loop links over fiber optic link. They can be used for both voice and data. Available in standalone and rack with SNMP administration, the network administrator is able to control the link and the interface in the customer's premises.



## Extension of the local loop in the private side with interface conversion

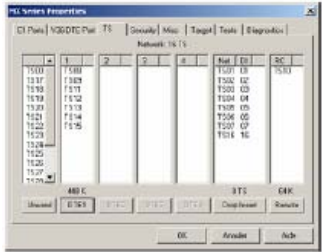
The FO80E1, and FO84E1 offer solutions targeted at extending the local loop in the campus environment. These modems are able to transport and convert the G703 2 Mbps link or G704 with a rate of n x 64 Kbps.

The combination of the FO80E1 and FO8011 modems provides the transmission in any environment and interface conversion on the customer's side. By combining the benefits of these two units the need of having to purchase a separate interface converter is eliminated.



# SPECIFICATIONS

## WAN Fiber Optic Modem



MXCFG

Graphical management software



### Fiber Optic Line

- Double optic fiber
- ST Connectors, option for SC or FC
- Type of multi-mode fiber (NM) with diameter 62,5/125µm or single-mode (SM) 9/125 µm (internal/external)

The customer will calculate its coverage according to the number of connectors and the fiber quality :

$$\text{coverage} = \frac{\text{Budget} - x (1\text{dB})}{\text{Attenuation}}$$

with x: number of connectors

Models F08xxx	M8Tzw	SLTzw	Z3Tzw	Z5Tzw
<b>Emitter type</b>	MM LED	SM /ELED	SM LASER	SM LASER
<b>Distance and wave</b>	820 nm	1310 nm	1310 nm	1550 nm
<b>Minimum optic Budget</b>	15 dB	14 dB	23 dB	29 dB
<b>Attenuation typical of the fiber</b>	3 dB/ km	0,35 dB/km	0,35 dB/ km	0,23 dB/ km
<b>Coverage</b>	4 km	30 km	60 km	117 km

### V11/X21, V35, V36, RS422 Interfaces

- Synchronous, with a choice of rates from 64 to 2048 kbps by 64 kbps increments, 4096, 6144 and 8192 kbps.
- Connector BD25 F delivered with the adapted cable
- F08011 delivered with DB15F cable (CA601461) using X21, cable on request for RS422
- F08035 delivered with M34F cable(CA601460) using V35, special cable for V36 on request (CA 601619).
- Internal, external or enslaved mode clock

### 4 E1 Interface

- 4 E1, G703/G704, 2.048 Kbps
- RJ45, 120 Ohms,
- Clock: internal, slave from remote unit, or extracted from an E1 interce

### V28/V24/RS232 Interfaces

- Synchronous V24 from 1,2 to 128 kbps
- Asynchronous RS232 from 0 to 112,5 kbps
- F08028 with DB25F delivered without cable
- Internal, external or enslaved mode clock
- F08028 avec DB25F livré sans câble

### Ethernet Interfaces

- Ethernet bridge 10 BaseT
- Filtering and compression of the Ethernet frames
- Memorization of 10 000 MAC address and 256 frames
- F080BT modem Ethernet 1 RJ45
- F080HB modem Ethernet bridge with HUB of 8 ports

### E1 Interfaces

- G703 E1: RJ45 at 120 Ohms; in option 2 BNC in 75 Ohms
- Mode unframed at 2 Mbps, framed G704 at 32 x 64 kbps.
- Coverage 300 m or 1200 m
- Internal, external or enslaved mode clock
- Codage HDB3

### Configuration

- By consol port : interactive menu VT100 and AT command , memorization of 4 customer configurations and a plant one.
- By the CFIP management card from the chassis AMS16 in VT100 or Telnet and by SNMP.
- Prise en main du modem local (boîtier ou carte rack) et du modem distant hors bande ou dans la bande.

### T1 Interfaces

- G703, connected RJ45 100 Ohms
- Mode unframed at 1,544Mps, framed G704 at 24 x 64kbps
- DSX-1 and CSU
- Coding B8ZS or AMI

### Signalling : standalone or rack card

- LED : Power, DTE, SYNC, ERR, DATA and test
- Push button CLR to delete the ERR mode

### 4 BRI Interface

- 4 BRI interfaces, RJ45
- Mode: TE or NT (switch)
- Transparent to level 2 and 3 protocols
- Clock: slave from remote, or extracted from a BRI interface

### Power supply

- Standalone : 96 to 230 Vac internal or external or 48 Vcc
- Chassis AMS16 230 V, 48 VAC or redundant 230V/48V

### Physical characteristics

- Plastic standalone treated EMC : P x L x H = 29 x 17 x 3,5 cm
- Operating temperature : from 0 to 50 °C

### References F08xxx-mmyz-w

- **xxx = Interfaces** 011 (X21/V11),  
035 (V35),  
028 (V28/V24-RS232),  
0E1 (G703/G704 E1 2 Mbps)  
0T1 (G703/G704) T1 1,5 Mbps)  
4E1 (4 G703 E1 2 Mbps)  
0BT (10 BaseT)  
0HB (HUB 8 ports)
- **mm = Emitter** M8 (multimode LED 820 nm)  
SL (monomode LED 1310 nm)  
Z3 (monomode Laser 1310 nm)  
Z5 ( monomode Laser 1550 nm)
- **y= connectique** T (ST), in option C(SC), F (FC)
- **z = Power supply** I internal 90 to 240 Vac (SL/Z3/Z5 models)  
V external 220 Vacc (M8 model)  
C internal 40 Vdc (all models)  
R AMS4/16 rack (all models)
- **w = Version** E = Europe  
U = North America

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