

Teamlink **FABIO-2CX** helps in interfacing the attached devices with ITU-T V.21/V.23 to connect to E1 or Optical 1+1 channel. It is most suitable for Indian Railway Signaling Applications like Axle Counter/UFSBI Inter-connection. The equipment's auto-change over facility allows automatic diversion of V.21/V.23 traffic to the available stand-by Copper circuit when the E1 or Optical link fails. Critical events reporting enables immediate resolution of the problem. The unit is available in 18 V DC to 72V DC redundant power supply.

FABIO-2CX is a modular integrated Access TDM multiplexer with cross connect ability, which integrates multiple dedicated data, voice and LAN channels over multiple main (network) links. It can provide maximum 2 Electrical and 2 optical E1's and 2W/4W E&M, Quad Cable Ports, RS232/V.24, ETH capacity for accessing and transmission with cross-connect capacity is 512×512 64K. It provides full range of voice and digital data services to subscribers located at different locations require to interconnect and establish a voice and data network over E1 link or optical.

FABIO-2CX enables carriers to successfully deploy bundled services and Internet access. The integration of a broad range of services makes **FABIO-2CX** a cost-effective access device, with reduced deployment and maintenance costs. The equipment conforms to international standards, ensuring compatibility in multi-vendor environments worldwide.

FABIO-2CX is designed to carry Various Original Equipment Manufacturer's Digital Axle Circuits over optical fiber (STM).

Key Features

- Automatic Changeover to bypass copper (QUAD) circuit if E1 / Optical link fails or FABIO-2CX unit is powered OFF
- Event log Facility is provided E1, V.21 and Optical extra
- The bypass copper (QUAD) circuit is constantly checked for availability as long as the E1 / Optical Link is UP
- Potential Free Alarm Relay Contacts for Local and Remote monitoring or these relay contacts may be connected to a Data Logger for centralised monitoring of these alarms
- Compact 1U high, 19-inch chassis
- Max. E1 channels : 2 Electrical and 2 Optical E1s
Frame structure : Supports optional CRC-4 and PCM 30/31 settings.
Timing : Internal Crystal Oscillator clock, Clock received from any link (loopback)
- Versatile 64Kbps User interface : E&M 2/4-wire module with adjustable voice gain, Quad Cable Ports and V.24/RS-232 low speed Ports and 4Ethernet
Optical 1+1 155Mbps Interface
Max E&M channels : 6 (2W/4W)
Quad Ports : 6
Async / V.24 Ports : 2 over optical
Max FE channels : 4 over optical
- Performance Monitor: Control panel provides ample control and alarm function. When an E1 channel occurs errors, sound alarm will be activated and LOS/LOF warning message of each E1 channel will be displayed.
Customer service can be allocated by on-line network operator.
Flexible network topologies : Point-to-Point , Daisy Chain.
- Local and Remote Telnet support
- Realtime Clock setting for Monitoring the Signals and creating the Log File for the E1 UP and DOWN events as well as Copper UP and DOWN Events.
- Potential Free contacts for indicating the events E1 Link UP, E1 Link DOWN, V.21 Signal UP and DOWN between two axle counters.
- Resettable buzzer to draw attention in case E1 or OFC Link Fails

TECHNICAL SPECIFICATIONS

FABIO-2CX

I/O modules	: 2 Electrical and 2 optical E1's and 6 E&M 2W/4W, 6 Quad Cable Ports 2/4W, 2 RS232/V.24, 4ETH Ports 4 Potential Free Contacts for extending alarms
Chassis(height)	: 1U, 19-inch wide
Console port	: 1 (RJ-45), Serial
Telnet port	: 10/100Mbps (RJ-45), Ethernet

Quad Cable Ports

Number of Ports : Six 2W/4W Selectable
Connector : RJ45

Voice Interfaces

Channel sampling rate : 8 KHz
Companding law : A-law
Voice Interface : 2W, 4W, Signalling, E&M
Frequency : 300 to 3400 Hz
Impedance : 600 Ohms

Data Interfaces

Number of Ports : Two
Low speed data interface : RS232, V.24
Characteristic : ITU-T V.24
Data Format : Asynchronous
Asynchronous data : Auto baud upto 115.2 Kbps

Ethernet Data Interface

Number of Ports : Four
Compliance : IEEE 802.3
Speed : 10/100 Mbps High speed
Supports Auto MDI / MDIX
Auto Negotiation as per 802.3x
Supports Half / Full Duplex Flow control

Potential Free Contacts

Number of contacts : 4
Potential Free Contacts for extending alarms
The Device will Facilitates the E1 Link DOWN E1 LINK UP, Individual Quad Status, Power OFF, OFC Link alarms
Bypass Link Monitoring or Copper Link Monitoring.

Uplink Interfaces(E1)

Supports 512×512 cross connect ability based on 64K with signaling
Number of Ports : 2
Bit rate : 2048 +/- 50 ppm
Code : HDB3
Impedance : 120 Ohms Balanced
Electrical characteristics : ITU-T G.703
Transfer characteristics : ITU-T G.823
Jitter performance : ITU-T G.823

Event LOG

TEAMLINK FABIO-2CX will records the events Link E1 UP, E1 DOWN, QUAD UP, QUAD down conditions in the flash so even the Power Goes OFF also we can monitor the events after the Power comes.
Changing the RTC clock timing is using the menu driven program.
E1 Line Error Rate Monitoring Log.

LED Indicators

Power, E1 UP, E1 DOWN, QUAD UP, QUAD DOWN, OPTICAL UP, OPTICAL DOWN, 2/4 Wire Mode
V.21 working Line status, E1 ERROR status

Modular Version TRIBUTARY Cards

10FXS Interface Card

10FSO Interface Card

8 Number of 2 wire or 4 Wire E&M Interface Card

2 E1 Interface RSTP card for the SCADA applications

2 Port Ethernet Interface card which will supports up to 2Mbps speeds on the WAN Interface either in E1 channel or Optical channel.

RS232 Card which will supports 8 channels with the 9.6Kbps / 19.2 Kbps speeds.

Single channel RS422, RS485 or RS232 Card which will supports up to 230Kbytes of speeds

4 Port E&M channel with the auto media change over facility which will switch the E&M channel (V.21 / V.23) From E1/ Optical E1 interface to the QUAD mode in less than 5 milli seconds.

FXS User Interface Card

Feeding voltage -48V

Loop current is 20milli amps

TIP / RING Reversal checking

Ringing voltage 65vrms

Return Loss 16dB at 300-500Hz

Tip Ring Reversal Setting time is 50 milli seconds

Connector Type RJ45 Interface

FXO User Interface Card

Return Loss 16dB at 300-500Hz

Tip Ring Reversal Setting time is 50 milli seconds

Return loss 600Ohms is 18 to 35dB.

ON hook reception

Transformer isolation providing the high common-mode rejection CMRR for use in un grounded systems.

Connector Type RJ45 Interface

8 Channel E&M Interface Card

Supports 2 wire and 4 wire channel configurations.

2 wire / 4 wire selection is software configurable not required to plug out the interface card.

E and M signals transmission for each channel

50 pin SCSI Female connector

50Pin SCSI Male connector with the cable is provided for connecting the E&M channels.

8 Channel (4+4) E&M & QUAD Interface Card (With Auto Changeover)

Supports 2 wire and 4 wire channel configurations.

2 wire / 4 wire selection is software configurable not required to plug out the interface card.

E and M signals transmission for each channel

Switching from network interface E1 / Optical to the QUAD is for each channel

Switching time is less than 5 milli seconds.

QUAD interface health checking.

Each E&M channel present working interface LED indication E1/Optical / QUAD

2 channel E1 RSTP Interface Card

Supports 2 E1 interface

2 E1 Interfaces can be connected to two different directions for SCADA.

Logical ethernet interface with the RSTP facility

Each E1 Link UP and the DOWN checking.

Routing the SCADA interface traffic on working E1 Interface.

Supports UNFRAMED/FramedPCM31/PCM30 Operations.

Supports HDLC and GFP on E1 interface

Compatible with the Teamengineers standalone E1 to ethernet converter.

Ethernet Interface (SCADA) Card

Number of the Ethernet interfaces three

Supports RSTP protocol on this ethernet interfaces

STP and RSTP as per the IEEE802.w, IEEE802.d

Supports up to 2Mbps speeds on E1 / Optical logical interface in steps of 64Kbps speeds

Rs232 Card

Number of ports 8

Supports 9.6Kbps to 19.6 kbps on each timeslot and if 2 timeslots are configured for each RS232 port then the baud rate will support upto 115.2kbps speeds.

RS422,RS485 Card

Number of ports 1

Supports 9.6Kbps to 230 kbps

Equipment Fail Safe Mechanism

In case the power to device is OFF The individual V.21/V.23 channel will automatically shift to Quad Without affecting end-to-end communication.

Quad Health Indications

The Front Panel Supports 2W Quad Health Status, the Quad Connected health is monitored when that particular Port is working On E1 or OFC, the status can also be Linked to data logger. If the Errors in the Quad increase beyond a threshold -30db an alarm can be triggered through Potential free contacts

Power Supply

DC : -18V ~ -72V (nom : -48V DC) redundant available / AC : 100V ~ 240V AC (220V nom) DC to AC adaptor

Environment

Operating Temperature : -5 to +55°C

Operating Humidity : 5% to 90 %

To TEC QM333 Environmental Standard tested in NABL accredited LAB

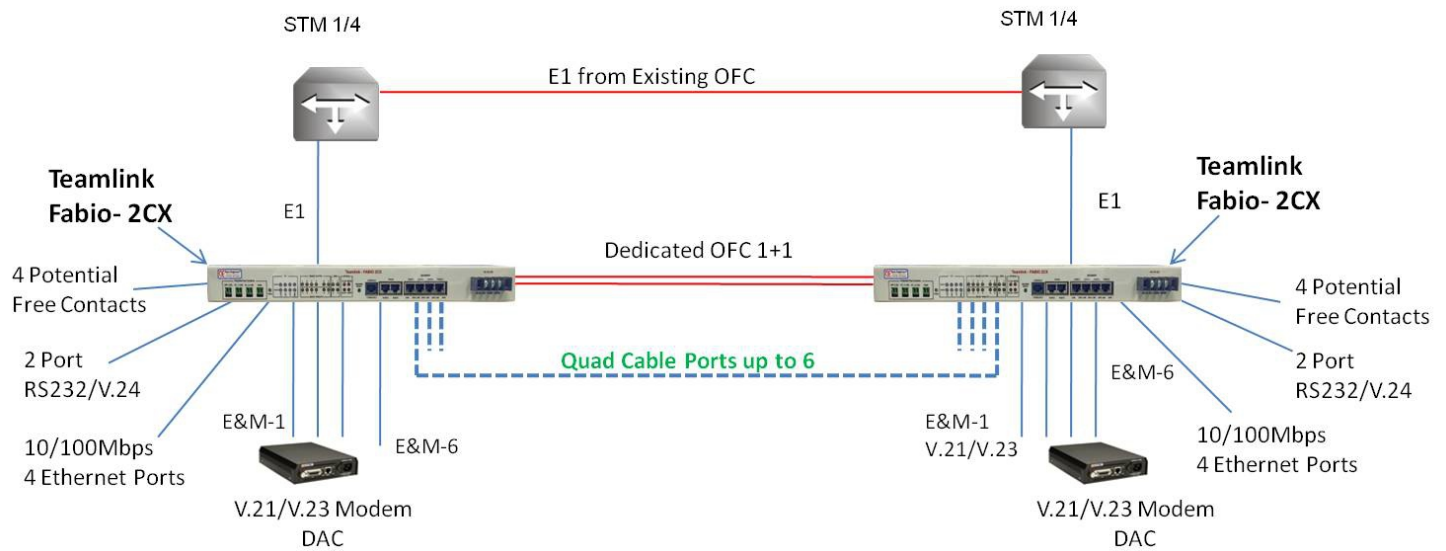
Disaster Management Communication (IR)

FABIO-2CX series devices are suitable for disaster communication for extending various services to mid-section in Indian Railways

Configuration

The unit is configurable via Console / Telnet with built-in user friendly menu driven application and does not require any additional software, unit can be configured by using any PC or LAPTOP available.

APPLICATION DIAGRAM



Auto Changeover feature Enables Digital Axle Counter to be get connected with redundant Quad Cable path in case of **OFC or E1** Link failure using **Teamlink Fabio-2CX**

Equipment Supports Max:

- 2 Dedicated Optical Ports for 1+1 Protection
- 2 Electrical E1 Ports
- 6 E&M Ports (2W/4W)
- 6 Quad Ports
- 4 Ethernet Ports over Optical
- 2 RS232/V.24 Ports over Optical
- 4 Potential Free Contacts