

FCD-2L

E1 or Fractional E1 Access Unit



E1 or Fractional E1
access unit with one
digital data port

- Selectable synchronous data rates of $n \times 64$ kbps or $n \times 56$ kbps (up to 1736 or 1984 kbps)
- V.35, RS-530, V.36/RS-449, X.21 synchronous data interfaces
- 2 or 16 frames per multiframe, with or without CRC-4, or unframed over E1 framing format
- E1 link available with or without LTU

FCD-2L is a single-port access unit for E1 or Fractional E1 services. Data port rates are selectable for any multiple of 64 or 56 kbps, up to 1984 kbps. User data is placed into an E1 frame using only the required number of timeslots.

FCD-2L is available with or without an LTU (Line Termination Unit). This allows connection directly to the service provider's line or, alternatively, via an integral LTU ensuring a range of up to 2 km (1.2 miles).

The E1 interface of FCD-2L is compatible with virtually all carrier-provided E1 services and meets the requirements of ITU recommendations G.703, G.704, G.706, and G.732. It supports either 2 or 16 frames per multiframe, with or without CRC-4, as well as unframed data streams.



data communications

The Access Company

FCD-2L

E1 or Fractional E1 Access Unit

FCD-2L can also be used as a rate and interface converter between the user data port interface and E1 (G.703, G.704) lines.

FCD-2L has a single user port, which can be a synchronous data port with V.35, RS-530, V.36/RS-449 or X.21 interface, or a single LAN port with built-in bridge.

The synchronous data ports can operate in the following clock modes:

DCE: FCD-2L provides both transmit and receive clocks to the connected user equipment, with optional sampling of the incoming data with an inverted clock

DTE1: FCD-2L provides the transmit clock; the connected user equipment provides the receive clock

DTE2: the connected user equipment provides both transmit and receive clocks to FCD-2L.

Timeslot assignment is according to the data port speed and is consecutive, starting from any timeslot.

The E1 link timing may be taken from the recovered receive clock (LBT) or from an internal oscillator.

FCD-2L is set up and controlled by internal jumpers. Front-panel switches control all diagnostic options.

Diagnostic capabilities include user-activated local loopbacks on the E1 link and on the digital data port. The data port can respond to an inband ANSI FT1 loop code that can be generated from the remote FCD-2L data port. A pseudo-random data pattern (BERT) can be activated and detected on the data channel.

The FCD-2L front panel displays major and minor alarms. The high Bit Error Rate (BER) indicator lights when the BER on the E1 line is higher than 1×10^{-3} .

FCD-2L is available as a standalone unit or as a card for the 19-inch rack mount enclosure, ASM-MN-214. A rack-mount adaptor kit (RM-9) enables installation of one or two standalone units in a 19-inch rack.

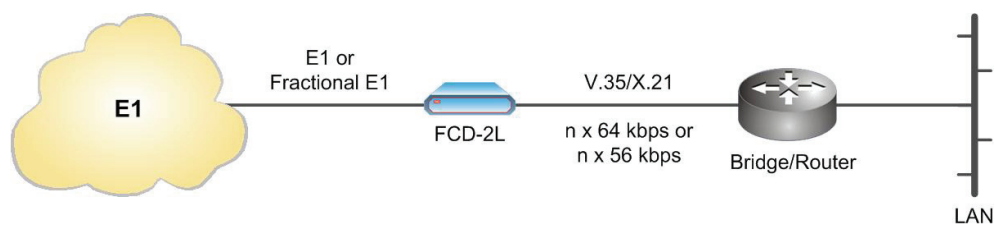


Figure 1. Typical FCD-2L Application

Specifications

E1 PORT (NETWORK)

Framing

256N (no MF, CCS)
256N with CRC-4 (no MF, CCS)
256S (TS16 MF, CAS)
256S with CRC-4 (TS16 MF CAS)
Unframed

Data Rate

2.048 Mbps

Line Code

HDB3

Impedance

120 Ω , balanced
75 Ω , unbalanced

Signal Level

Receive:

0 to -36 dB with LTU
0 to -10 dB without LTU

Transmit:

$\pm 3V$ ($\pm 10\%$), balanced
 $\pm 2.37V$ ($\pm 10\%$), unbalanced

Jitter Performance

As per ITU G.823

Connectors

RJ-45, 8-pin, balanced
Two BNC coaxial, unbalanced

Transmit Timing

Internal clock: ± 30 ppm
Loopback timing: ± 130 ppm

Timeslot Allocation

Consecutive (bundled) starting from any timeslot

Compliance

ITU G.703, G.704, G.706, G.732

SYNC DATA PORT

Interface

RS-530
V.35, V.36/RS-449 and X.21 available via adapter cables (see *Ordering*)

Connectors

D-type 25-pin RS-530, female

Data Rate

$n \times 56$ or $n \times 64$ kbps ($n=1$ to 31)

Clock Modes

DCE: Rx and Tx clock to DTE
DTE1: Rx clock to user device,
Tx clock from user device
DTE2: Rx and Tx clock from DCE

Control Signals

CTS follows RTS or constantly On, soft-selectable
DSR constantly On, unless in test mode
DCD constantly On, unless in SYNC LOSS

GENERAL

Interface

RS-530
V.35, V.36/RS-449 and X.21 available via adapter cables (see *Ordering*)

Diagnostics

Local loopback on E1 port
Local and remote loopbacks on data port
BER test on data port

Indicators

PWR: Power

RTS: State of data port RTS line (C line for X.21 interface) (not active in Ethernet version)

TEST: Test active (not active in Ethernet version)

ERR: Test pattern error (not active in Ethernet version)

10^{-3} : Excessive BER (above 10^{-3})

TD: Transmit data

RD: Receive data

LOC: Local sync loss

REM: Remote sync loss

MAJ ALARM: Major alarm

ALARM MIN: Minor alarm

Physical

Standalone:

Height: 4.4 cm (1.7 in) (1U)
Width: 19.3 cm (8 in)
Depth: 24 cm (9.5 in)
Weight: 1.3 kg (2.9 lb)

Card:

Dimensions: fits the ASM-MN-214 modem rack
Weight: 360 g (10 oz)

Power

AC: 100 to 240 VAC; 47 to 63 Hz
DC: -48 VDC (-40 to -57 VDC)
24 VDC (18 to 36 VDC)

Power consumption

5W

Environment

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

FCD-2L

E1 or Fractional E1 Access Unit

Ordering

FCD-2L/~/&/@

E1 or Fractional E1 Access Standalone Unit

FCD-2L/R/&/@

E1 or Fractional E1 Access Card for
ASM-MN-214 Rack

Legend

~ Power supply type:

AC 110 to 240 VAC

48 -48 VDC

24 24 VDC

& Data port interface:

530 RS-530

V35 V.35

X21 X.21

V36 V.36/RS-449

@ Integral line termination unit
(Default=without LTU)

LTU with LTU

SUPPLIED ACCESSORIES

AC power cord (when AC power supply is ordered)

DC connection kit (when DC power supply is ordered)

The following cables (suitable for use in DCE clock mode only) are supplied for each data port interface specified. Cable length is 2m (6 ft).

CBL-HS2/^

Adapter cables for DB-25 channel connectors for use in DCE clock mode only

Legend

^ Data port interface:

V/1 34-pin V.35

R/1 37-pin V.36/RS-449

X/1 15-pin X.21

OPTIONAL ACCESSORIES

RM-9

Hardware kit for mounting one or two units side-by-side in a 19-inch rack

CBL-HS2/*/#

Adapter cables for DB-25 channel connectors for use in DTE clock mode only

Legend

* Interface, clock mode:

V/2 34-pin V.35, DTE1

V/3 34-pin V.35, DTE2

R/2 37-pin V.36/RS-449, DTE1

R/3 37-pin V.36/RS-449, DTE2

Cable connector type:

F Female

M Male

CIA-FCD2L/*

Mechanical adapter for converting DB-25 connectors into standard connectors for FCD-2L/R

* Interface type:

V35/1 V.35

X21/1 X.21

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