### FEATURES

- T1 or Fractional T1 CSU/DSU
- Supports one DTE port
- Selectable sync data rates of n x 56 or n x 64 kbps, up to 1536 kbps
- DTE interface: V.35, RS-530, RS-449/422 or X.21
- Framing format: D4, ESF, Unframed
- Zero suppression: B7ZS, B8ZS, Transparent
- T1 interface: complies with AT&T TR62411, TR62421, ANSI T1.403
- Performance monitoring according to ANSI T1.403 (ESF mode only)
- Unframed over T1

### DESCRIPTION

The FCD-1L is a low-cost, single port CSU/DSU for T1 or Fractional T1 services. The DTE port is selectable for any data rate multiple of 56 or 64 kbps up to 1536 kbps. User data is placed into a T1 frame, using only the selected number of timeslots.

- The main T1 link may be clocked from the T1 network recovered clock, from the DTE or from an internal oscillator. The DTE port interface is internally selectable for V.35, RS-530/422. The physical connector is 25 pin D-type female. Special adapter cables can be ordered separately for X.21 and RS-449/422 (see Ordering).
- Setup and control of the FCD-1L is by internal jumpers. Front panel switches control all diagnostics options. Maintenance capabilities include user activated local loopbacks at the main T1 link and DTE port.
- The FCD-1L responds to network activated loops (RLB, LLB). The DTE port can respond to an in-band ANSI FT1 loop code that can be generated from the remote FCD-1L DTE port. A pseudo-random data pattern (BERT) can be transmitted for diagnosing the T1 link.
- The FCD-1L displays two alarm types on front panel: major alarm and minor alarm. The alarms are displayed by front panel LEDs which can be reset by front panel switch. The FCD-1L has a Severely Errored Second indicator (SES). This indicator is ON when the Bit Error Rate (BER) on the T1 line is above $1 \times 10^{-3}$.
- When operating in the ESF format, T1 network statistics are stored in memory in compliance with the ANSI version. This information may be retrieved by the service supplier.
- The FCD-1L is available as a stand-alone unit or as a card for the 19" rack that can accommodate up to 14 cards (ASM-MN-214). A rack mount adapter kit (RM-9) enables installation of one or two stand alone units in a 19" rack.
SPECIFICATIONS

T1 LINK (NETWORK)

- Framing
  D4, ESF
- Bit Rate
  1.544 Mbps
- Line code
  AMI
- Zero Suppression
  Transparent, B7ZS, B8ZS
- Impedance
  100 Ω, balanced
- Signal level
  Receive
  0 to -36 dB
  Transmit
  0, -7.5, -15, -22.5 dB
- Jitter performance
  As per AT&T TR-62411
- Connector
  RJ-48C 8-pin
- Transmit timing
  Internal ±30 ppm
- Loopback Timing
  ±130 ppm
- Compliance
  AT&T TR-62411, ANSI T1.403

DTE PORT

- Number of ports
  One
- Interfaces
  V.35, RS-530 or RS-449/422 and X.21 by adapter cables
- Connector
  25-pin D-type, female

Specifications are subject to change without prior notification

APPLICATION

- Bit Rates
  n x 56 kbps or n x 64 kbps,
  (n = 1, 2 to 24)
- Clock Mode
  DCE: RX and TX clock are transmitted to the DTE port
  DTE1: RX clock is transmitted to the DTE port and TX
  clock is received from the DTE port
- Control signals
  1) CTS follows RTS or constantly ON, strap-selectable
  2) DSR constantly ON, unless in test mode
  3) DCD constantly ON, unless in RED ALARM

GENERAL

- Timeslot Allocation
  Consecutive (bundled) starting from any timeslot
- Diagnostics
  Main T1 Link local (Analog) loopback (towards local DTE);
  Local (Digital) data port loopback;
  Remote (V.54) data port loopback;
  BERT generation and detection;
  T1 network loopback, code activated (CSU option only)
- Performance Monitoring
  (On Main T1 Link)
  Full statistical diagnostics according to ANSI T1.403 -1989
- Front panel control switches for diagnostics activation
  CLR - Clears alarm indications
  DIG - Local data port loop
  ANA - Main T1 local loop
  REM - Remote data port loop
  PATT - BERT test
- Indicators
  PWR, RTS, TEST, ERR, RED
  ALARM, YELLOW ALARM, SES,
  MIN ALARM, MAJ ALARM, TD, RD

- Physical (S/A unit)
  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
- ASM-MN-214 Rack
  Height 18 cm / 7 in
  Width 48 cm / 19 in
  Depth 26.7 cm / 10.4 in
  Weight 4.0 kg / 8.8 lb
- Power
  115 or 230V (±10%), 47-63 Hz;
  24, 48 VDC Nominal (18-36V, 36-72V)
- Environment
  Temperature: 0-50°C / 32-122°F
  Humidity: up to 90%, non-condensing

ORDERING

FCD-1L/∗
T1 or Fractional T1 CSU/DSU, stand-alone version

FCD-1L/R
T1 or Fractional T1 CSU/DSU, card version for ASM-MN-214
  ∗ Specify power supply
  230 for 230 VAC
  115 for 115 VAC
  48 for -48 VDC
  24 for 24 VDC

CBL-530/449
Adapter cable for RS-449/V.36 36-pin connector

CBL-HS2X1
Adapter cable for X.21 15-pin connector

CBL-HS2V1
Adapter cable for V.35 34-pin connector

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