Integrating E1 Multiplexer

**FCD-24**

**FEATURES**

- Integrates high speed data with a PABX E1 link into E1 or Fractional E1 services
- Two or four data channels, optional E1 sub-link
- V.35, X.21, RS-530 or V.36/RS-449 interfaces
- Sync data rate: n x 64 kbps
- Selectable 2 or 16 frames per multiframe with CRC-4 support
- Multiple clock sources
- Setup and control via front panel or supervisory port
- Complies with ITU-T G.703, G.704 and G.732
- Dial-out on alarm events
- Can be used as a multi-channel short range modem

**DESCRIPTION**

- The FCD-24 is an Integrating Multiplexer for E1 and Fractional E1 services. Two or four synchronous data channels and one E1 sub-link can be connected over the public E1 network, while paying only for the bandwidth required. The E1 sub-link enables PABX connection to the E1 interface.
- Four FCD-24 models are available: (see Ordering)
  - FCD-24 with four synchronous data channels;
  - FCD-24/E1 with four synchronous data channels and one E1 sub-link;
  - FCD-24-2 with two synchronous data channels;
  - FCD-24-2/E1 with two synchronous data channels and one E1 sub-link.
- Data rates are selectable for any multiple of 64 kbps. Selectable timeslotting places data into timeslots (DSOs) either consecutively (bundled), or by user-definition (without restrictions). Selected timeslots on the E1 sub-link are bypassed to the same timeslots on the E1 main link.
- Data channel interfaces available are V.35, X.21, RS-530 or V.36/RS-449. (V.36/RS-449 is converted from RS-530 via cables supplied with V.36 interface option - see Ordering.)
- The FCD-24 is compatible with virtually all carrier-provided E1 services, meeting all requirements of ITU-T G.703, G.704 and G.732. It supports 2 or 16 frames per multiframe, with or without CRC-4. Zero suppression over the line is HDB3. An optional integral LTU (Line Termination Unit) supports ranges up to 1.6 km (1 mile), enabling the FCD-24 to be used as a multi-channel short range modem for private applications.
- Multiple clock source selection allows the E1 main link to be clocked from the recovered clock (LBT), from the data channel source, from E1 sub-link, or from an internal oscillator.
- Data channels may be set to DCE (FCD-24 provides RX and TX clocks to user equipment), DTE1 (FCD-24 provides RX clock to user, while TX clock is received from user) or DTE2 (both clocks received from user) clocking modes.
- The E1 sub-link transmit clock is locked to the E1 main link clock. The receive clock can be used as an external clock source for the E1 main link transmit clock.
- Setup, control and monitoring of status and diagnostic information can be activated from the front panel or via a terminal or PC connected to the supervisory port.
- Remote line diagnostics, alarm information, unit configuration and other control/monitoring information can be accessed remotely via dial-up modems.
- Maintenance capabilities include local and remote loopbacks at various points, as well as built-in BERT for rapid identification of faults.
- For dial-out operation, the FCD-24 activates the modem to automatically dial a pre-programmed number whenever an alarm event occurs.

Order from: Cutter Networks
Ph: 727-398-5252/Fax: 727-397-9610
www.bestdatasource.com
**FCD-24**

**Integrating E1 Multiplexer**

### SPECIFICATIONS

**E1 MAIN AND SUB-LINKS**
- **Bit Rate**
  2.048 Mbps
- **Framing**
  Selectable:
  - 16 or 2 frames per multiframe, with or without CRC-4
  Note: CRC-4 available for main link only
- **Line Code**
  HDB3
- **Impedance**
  Selectable:
  - 120Ω, balanced
  - 75Ω, unbalanced
- **Signal Levels**
  - **Receive:**
    - 0 to -33 dB, with LTU
    - 0 to -10 dB, without LTU
  - **Transmit:**
    - Balanced: ±3 V, ±10%
    - Unbalanced: ±2.37 V, ±10%
- **Signal Levels**
  - **Receive:**
    - 0 to -10 dB
  - **Transmit:**
    - Balanced: ±3 V, (±10%) soft-adjustable to be measured at 0-655 feet
    - Unbalanced: ±2.37 V, ±10%
- **Jitter Performance**
  As per ITU-T G.823
- **Transmit Timing**
  Soft-selectable:
  - Internal: ±32 ppm
  - Receive Timing: ±50 ppm
  - External Timing: ±100 ppm, from data channel or E1 sub-link source
- **Connectors**
  15-pin D-type, female, balanced
  Two BNC coaxial, unbalanced

**DATA CHANNELS**
- **Interface**
  V.35, X.21, RS-530 or V.36/RS-449 (converted from RS-530 via supplied cables)
- **Connectors**
  V.35: 34-pin, female
  X.21: 15-pin D-type, female
  RS-530: 25-pin D-type, female
  V.36/RS-449 (on conversion cables): 37-pin D-type, female
- **Bit Rate**
  n x 64 kbps (n = 1 to 31)
- **Clock Modes**
  - **DCE:** FCD-24 provides RX and TX clocks to user DTE;
  - **DTE1:** FCD-24 provides RX to user while receiving TX clock from user;
  - **DTE2:** FCD-24 receives both RX and TX clocks from user DCE.
- **Control Signals**
  Support RTS, CTS, DCD, DSR
  Support C, I (X.21)

**GENERAL**
- **Timeslot Allocation**
  Selectable:
  - Consecutive (bundled)
  - User-defined (no restrictions)
- **Diagnostics**
  E1 main link loopback
  Data channel loopback
  E1 sub-link loopback
  BERT through remote FCD-24
- **Statistics and Alarms**
  OOS (Out-Of-Sync) counter
  CRC-4 error counter
  Alarm buffer size: 100 events
- **Supervisory Port**
  Interface: V.24/RS-232, async
  Speed: 0.3 to 9.6 kbps, autobaud
  Dial-out: Alarm event activated

### POWER
- **115 or 230 VAC (±10%)**
  47 to 63 Hz, 25W

### INDICATORS
- **Main and Sub-links:**
  - Local and remote sync loss;
  - Per channel: TD, RD; TEST
- **Physical**
  - Depth: 24.3 cm / 9.5 in
  - Width: 43.2 cm / 17.0 in
  - Height: 4.3 cm / 1.7 in (1U)
  - Weight: 2.3 kg / 5.0 lb
- **Environment**
  - Temperature: 0-45°C/32-113°F
  - Humidity: Up to 90%, non-condensing

### ORDERING

**FCD-24/*/#/&**
Integrating E1 Multiplexer with 4 channels

**FCD-24-2/*/#/&**
Integrating E1 Multiplexer with 2 channels

* Specify **E1** for E1 sub-link
  (default is without sub-link)

# Specify data channels interface:
- **V35** for V.35 interface (default)
- **X21** for X.21 interface
- **530** for RS-530 interface
- **V36** for V.36/RS-449 interface
  (via supplied conversion cables)

& Specify **LTU** for integral LTU
  (default is without LTU)

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Specifications are subject to change without prior notice.