

FCD-24



Integrating E1 Multiplexer



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.

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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:
±3 V, (±10%) soft-adjustable
to be measured at 0-655 feet
- **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
Connector: 9-pin D-type, female
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*/#/I/&

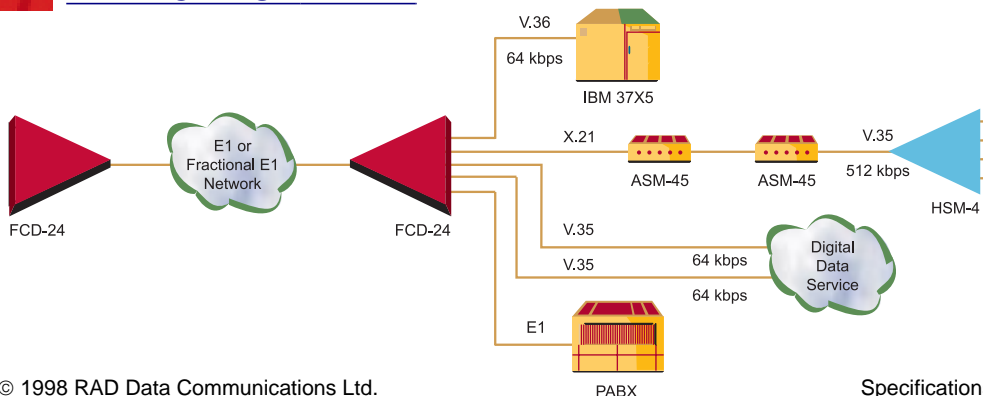
Integrating E1 Multiplexer with 4
channels

FCD-24-2*/#/I/&

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)

APPLICATION

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data communications

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