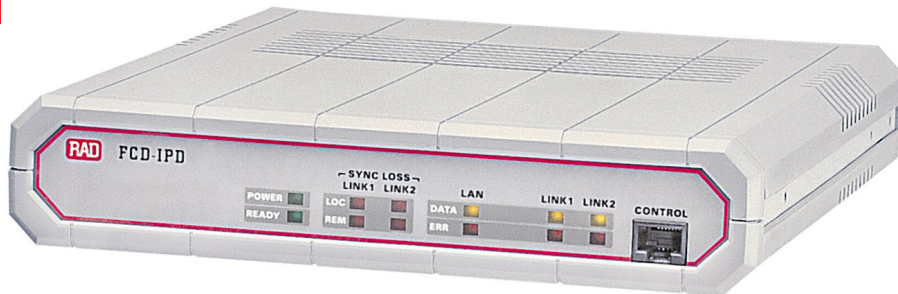


FCD-IPD

Dual E1 Router



FEATURES

- Dual E1 router adapted to ADM management over SDH
- Enables shared E1 bandwidth over SDH or other E1 rings
- Supports up to 100 hops
- Spanning tree protocol for Layer-2 ring applications
- IP routing
- Frame Relay and PPP
- Variety of LAN ports:
 - Single 10/100BaseT port
 - 4-port Ethernet/Fast Ethernet switch
- PAP/CHAP authentication
- Solid Firewall protection
- NAT and Single IP address translation
- DHCP server
- Quick setup and configuration
- Inband remote management
- SNMP and Telnet support
- Dual management authorization levels (carrier/user)
- Remote software and parameter file download
- Integral E1 with or without LTU

DESCRIPTION

- FCD-IPD is a dual E1 main link router, enabling E1 bandwidth to be shared over SDH or other E1 rings.
- The unit is specially adapted for management applications in SDH environments. In these applications, FCD-IPD can manage up to 100 add-drop multiplexers (ADMs) from different manufacturers over one shared E1 link with full 2-Mbps bandwidth for high-speed management.
- In ring (see *Figure 1*) or daisy chain (see *Figure 2*) topologies customer LANs are shared between multiple sites.
- Alternative routing is provided, if a physical ring failure occurs.
- In Layer 2 applications, spanning tree protocols enable formation of a protected Layer-2 ring.
- A specially developed proprietary routing protocol supports up to 100 hops.
- Supported WAN services are:
 - Dual E1 main links, with or without LTU, operating at up to 2.048 Mbps
 - Frame Relay with auto-learn of DLCI and maintenance protocol.
- FCD-IPD supports IP routing.

FCD-IPD

Dual E1 Router

- Internet access capabilities are enhanced through:
 - **PAP/CHAP** – authentication that provides IP service access
 - **Solid Firewall** – protects an office LAN from undesired entry from the Internet
 - **NAT** – allows the sharing of several legal IP addresses between the various LAN users
 - **Single IP Address Translation** – allows a small or medium office LAN to connect to the Internet using a single dynamically or statically allocated IP address
 - **DHCP Server** – allows the sharing of IP address pools between DHCP clients on the LAN.
- The unit can be easily configured through a quick setup menu using a terminal attached to the control port or by Telnet access over the LAN/WAN.
- The SNMP agent provides management by RADview or any other standard SNMP management station.
- Undesired access to FCD-IPD via Telnet or SNMP can be blocked or password protected.
- The dual-level management authentication allows user access to router configuration parameters, while restricting user access to network configuration parameters.
- Software download is available via the control port using XMODEM and via LAN/WAN using TFTP.
- Parameter file download and upload is available via LAN or WAN using TFTP.

APPLICATIONS

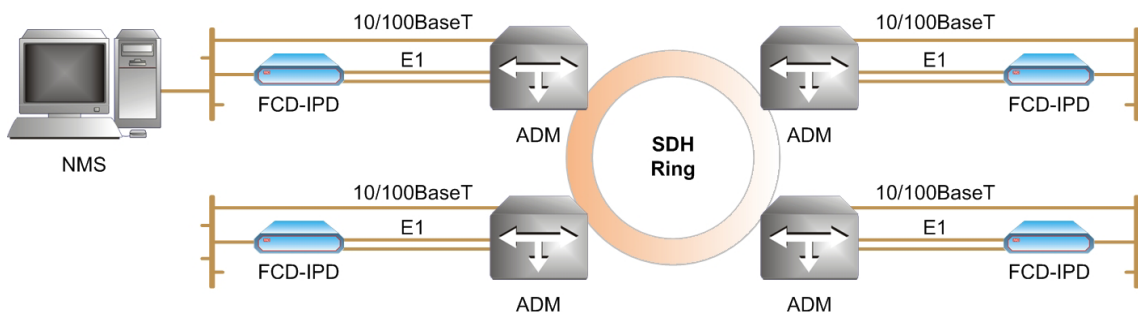


Figure 1. SDH Ring Management

SPECIFICATIONS

E1 LINK INTERFACE

- **Framing**
256N (no MF, CCS)
256N (no MF, CCS) with CRC-4
256S (TS16 MF, CAS)
256S (TS16 MF CAS) with CRC-4
- **Bit Rate**
2.048 Mbps
- **Line Code**
AMI
- **Zero Suppression**
HDB3
- **Impedance**
120Ω, balanced
75Ω, unbalanced
- **Signal Level**
Receive:
0 to -30 dB with LTU
0 to -12 dB without LTU
Transmit:
3V (±10%), balanced
2.37V (±10%), unbalanced
- **Jitter Performance**
As per ITU-T G.823

- **Connectors**
 - RJ-45, 8-pin, balanced
 - Two BNC coaxial, unbalanced
- **Compliance**
ITU-T G.703, G.704, G.706, G.732
- **Diagnostics**
Local and remote loopbacks

PROTOCOLS

- **WAN**
Frame Relay (RFC 1490), PPP and MLPPA
- **Routing**
Static, RIP-1, RIP-2, proprietary RIP, RIP/SAP

LAN INTERFACE

- **Number of Ports**
1 or 4
- **Standards**
Ethernet IEEE 802.3
- **Type**
 - Single 10/100BaseT (RJ-45)
 - 4-port 10/100BaseT (RJ-45) switch

GENERAL

- **Indicators**
POWER (green):
ON – the unit is powered up
READY (green):
ON – packets can be transferred
LAN DATA (yellow):
ON – a packet is received or transmitted on the LAN side
LAN ERROR (red):
ON – an error has been detected on LAN interface
LINK1 and LINK2 DATA (yellow):
ON – a packet is received or transmitted on the link side
LINK 1 and LINK 2 ERROR (red):
ON – an error has been detected on link 1 or link 2 interface
LINK1 and LINK2 LOCAL SYNC LOSS (red):
ON – local loss of synchronization on link 1 or link 2
LINK1 and LINK2 REMOTE SYNC LOSS (red):
ON – remote loss of synchronization on link 1 or link 2
- **Power**
AC source: 100–230 VAC, 47 to 63 Hz
DC source: 24/48 VDC
- **Power Consumption**
13W max
- **Physical**
Height: 4.4 cm (1.8 in)
Length: 24.0 cm (9.6 in)
Width: 21.6 cm (8.5 in)
Weight: 1.16 kg (2.55 lb)
- **Environment**
Temperature: 0–50°C (32–122°F)
Humidity: Up to 90%, non-condensing

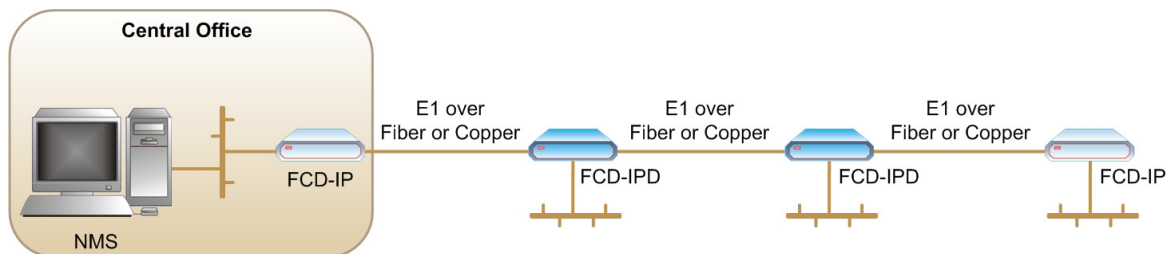


Figure 2. Daisy Chain Topology for Shared 2-Mbps LAN Connectivity

FCD-IPD

Dual E1 Router

ORDERING

FCD-IPD/~/E1/?!/+

Dual E1 router

- ~ Specify **DC** for 24/48 VDC power supply
- ? Specify fiber optic connector type:
 - ST** for ST connector
 - FC** for FC/PC connector
 - SC** for SC connector
- ! Specify wavelength and transmitter type:
 - 85** for 850 nm, multimode, LED
 - 13L** for 1310 nm, single mode laser diode
 - 15L** for 1550 nm, single mode laser diode
- + Specify LAN interface type:
 - U** for 10/100BaseT (UTP)
 - 4U** for 4 × 10/100BaseT (UTP) built-in switch

SUPPLIED ACCESSORIES

AC power cord

DC connection kit (if a DC-powered unit is ordered)

OPTIONAL ACCESSORIES

RM-17

Hardware kit for mounting one or two FCD-IPD units into a 19-inch rack



data communications

www.rad.com

- **International Headquarters**
24 Raoul Wallenberg Street
Tel Aviv 69719, Israel
Tel: 972-3-6458181
Fax: 972-3-6498250
Email: market@rad.com
- **North America Headquarters**
900 Corporate Drive
Mahwah, NJ 07430, USA
Tel: (201) 529-1100
Toll free: 1-800 444-7234
Fax: (201) 529-5777
Email: market@radusa.com

676-102-12/05