DXC Module
DE1B

E1 link Module

- Two-port E1 interface module
- Copper or fiber optic line interface
- Range of up to 100 km (62 miles) with fiber optic interface
- High-speed data rate of up to 2.048 Mbps
- ITU-T Rec. G.703, G.704, G.732, G.823, and G.956 compliance

DE1B is a two-port E1 link module for use with RAD's modular Digital Cross-Connect units DXC-8R, DXC-10A and DXC-30. Each module provides two E1 links over copper or fiber optic interfaces that support both E1 and fractional E1 rates.

DE1B can be ordered with either a balanced copper or a fiber optic interface.

The following fiber optic, laser link options are available:

- 850 nm multimode
- 1310 nm single mode
- 1550 nm single mode, providing the maximum range of 100 km (62 mi).

DE1B supports 2 or 16 frames per multiframe (256N or 256S), user-selectable TS0 multiframe with CRC-4 option, and 2 Mbps unframed mode per ITU-T Rec. G.703.

Modules with copper links have two jumper-selectable line interfaces:

- 120Ω balanced interface terminated by an RJ-45 connector
- 75Ω unbalanced interface terminated by two BNC female connectors.

Table 1. Fiber Optic Interface Characteristics

Laser Transmitter Wavelength [nm]	Fiber Type [μm]	Typical Output Power [dBm]	Receiver Sensitivity [dBm]	Typical Optical Budget [dB]	Typical Maximum Range [km]	[mi]
850	62.5/125 multimode	−17	−38	18	5	3
1310	9/125 single mode	−12	−34	25	55	34
1550	9/125 single mode	−12	−34	25	100	62

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RESILIENCY

DE1B modules support two types of redundancy:

- Single-slot/line redundancy (1:1) ensures protective switching between ports on the same module within less than 50 ms.

- Y-cable redundancy switches between different modules to protect the service from hardware failure. This type of redundancy is supported by the copper interface only.

The optional port bypass feature ensures continuous traffic in case of power failure, by bypassing port 1 to port 2.

Two user-programmable timeslot routing modes are available for the module ports:

- Bidirectional with symmetrical routing

- Unidirectional with independent control over routing in each direction.

MANAGEMENT AND SECURITY

Setup, control, and diagnostics can be performed via a supervisory port using an ASCII terminal or by the RADview SNMP element management system. Remote units can be controlled using a dedicated management timeslot in the E1 path.

MONITORING AND DIAGNOSTICS

Diagnostic capabilities include self-diagnostics on power-up, local and remote loopbacks on each port, BER test on the active timeslots, and the inband code-activated loopback, specified in ANSI T1.403.
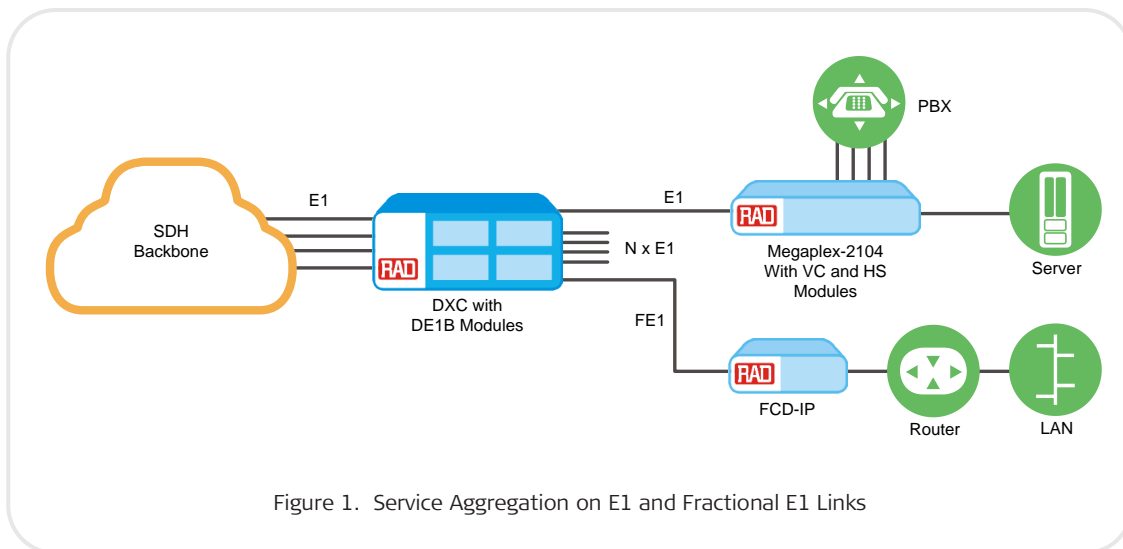

Figure 1. Service Aggregation on E1 and Fractional E1 Links

Specifications

E1 INTERFACES

Number of Ports
Two per module

Data Rate
2.048 Mbps

Compliance
ITU-T Rec. G.703, G.704, G.732, G.823

Framing
256N – no MF, CCS
256N – no MF, CCS with CRC-4
256S – TS16 MF, CAS
256S – TS16 MF, CAS with CRC-4
Unframed

Timeslots
User-defined, any timeslot to any timeslot mapping

Timing
Receive: derived from a selected data port, can be used as external source for DXC master timing

Transmit: locked to master DXC timing source

Jitter
Per ITU-T Rec. G.823, meets
ETSI TBR 12/13

COPPER LINE INTERFACE

Line Code
HDB3

Impedance
120Ω, balanced
75Ω, unbalanced

Connectors (per port)
RJ-45, for balanced
Two BNC coaxial, for unbalanced

Receive Signal Level
Receive:
0 to –10 dB

Transmit Signal Level
±3V (±10%), balanced
±2.37V (±10%), unbalanced

FIBER OPTIC LINE INTERFACE

Operating Characteristics
See *Table 1*

Connectors
ST, FC/PC, or SC (see *Ordering*)

Note: *85L optical interface is not available with ST connector.*

DIAGNOSTICS

Local and remote loopbacks on each
　　module port
BER testing
Inband code activated loopback

GENERAL

Indicators
L LOS (red) – Local port frame
　　synchronization loss
R LOS (red) – Remote port frame
　　synchronization loss

Power Consumption
3W at 0.6A

Physical
Occupies a single slot in a DXC-8R,
DXC-10A or DXC-30 chassis

DE1B

E1 link Module

Ordering

DXC-M-E1B/$/#/+

Legend

$ Link interface type:

  BP Port bypass

Link connector (Default= copper interface with coaxial BNC connectors):

  ST ST connectors

  FC FC/PC connectors

  SC SC connectors

+ Laser optical interface wavelength and transmitter (not relevant with copper interface):

  85L 850 nm, multimode

  Note: *85L optical interface is not available with ST connector.*

  13L 1310 nm, single mode

  15L 1550 nm, single mode

OPTIONAL ACCESSORIES

CBL-RJ45-Y/CROSS
Cross-cable for Y-cable redundancy. Includes four RJ-45 connectors, two on each side.

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