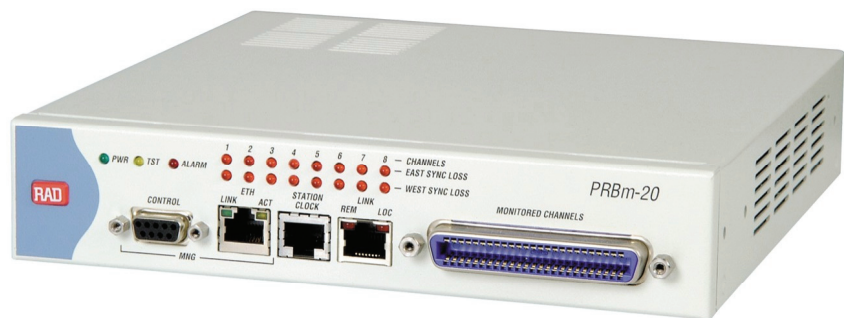


PRBm-20

E1/T1 Monitoring Probe

Protected monitoring solution for E1/T1 digital transmission lines



- Signal monitoring probe, for protected access to timeslots of 4 or 8 E1/T1 links
- One-way timeslot grooming of up to 8 E1/T1 links over a single E1/T1 uplink
- Protected grooming according to ITU-T G.772 recommendation
- Reduced monitoring solution costs
- Improved network performance

PRBm-20 is a standalone E1/T1 monitoring probe, used for protected monitoring of E1/T1 digital transmission lines.

The unit extracts any timeslot, including signaling, from up to eight E1/T1 lines and grooms them onto one E1/T1 or fractional E1/T1 output line. By extracting only the signaling timeslot from the traffic, PRBm-20 reduces the number of lines required to connect to the protocol analyzer. Furthermore, grooming the traffic to a central site eliminates the need to purchase protocol analyzer equipment at each remote site.

PRBm-20 reduces the solution cost of services such as SMS messaging, instant messaging, call forwarding, voice mail, and international roaming by collecting signaling timeslots from many leased lines and grooming them over a full link to the protocol analyzer at the central site. The analyzer reads the signals that identify each user, checks the user profile, and activates the appropriate response.



PRBm-20

E1/T1 Monitoring Probe

The device can be used to expand any existing monitoring system. It seamlessly integrates with any T-connector or patch panel used to divert the E1/T1 timeslots, and with any standard-based protocol analyzer.

Scalable design allows the unit to monitor 4 or 8 links, depending on the ordering option.

PRBm-20 monitors, collects, and transmits up to 31/24 timeslots towards a remote location, over a single E1/T1 link.

Setup, control, and diagnostics can be performed via a supervisory port using an ASCII terminal, or by the RADview SNMP element management system.

The unit can be managed via:

- Serial connection using a local terminal
- Ethernet connection using SNMP and RADview, RAD's client-server, CORBA-based Element Management System
- Telnet and ConfiguRAD.

A remote unit can also be managed inband, using a dedicated timeslot over the E1/T1 uplink.

The E1 interface meets ITU recommendations G.703, G.704, G.706, and G.732. It supports either 2 or 16 frames per multiframe, with or without CRC-4. Line coding is HDB3 or AMI. The user-selectable integral LTU ensures a range of up to 2 km (1.2 miles.) The E1 line interface is jumper-selectable for a 120Ω balanced interface or 75Ω unbalanced interface.

The T1 interface complies with AT&T TR-62411, ANSI T1.403 and AT&T Pub. 54016. It supports D4 and ESF framing formats. Zero suppression over the line is selectable for either transparent, B7ZS or B8ZS. The user-selectable integral CSU ensures a range of up to 2.1 km (1.3 miles). The T1 line interface has a 100Ω balanced interface.

Diagnostic capabilities include local and remote loopbacks on the E1/T1 uplink.

PRBm-20 can operate using the following timing modes:

- Internal: PRBm-20's internal oscillator provides clocking to the E1/T1 uplink and monitored ports
- Station: PRBm-20 uses a station clock from its station input as the transmit clock for the uplink and monitored ports. It can also transmit the station clock to another PRBm-20 device. The station clock rate is 2.048 Mbps for E1 links and 1.544 Mbps for T1 links.
- External (LBT): PRBm-20 uses one of the received clocks from the uplink or any of the monitored channels
- Automatic: PRBm-20 checks the monitored channels for synchronization and uses the receive clock of the first synchronized channel.

PRBm-20 is a compact standalone unit. A rack-mount adapter kit enables installation of one or two (side-by-side) units in a 19-inch rack.

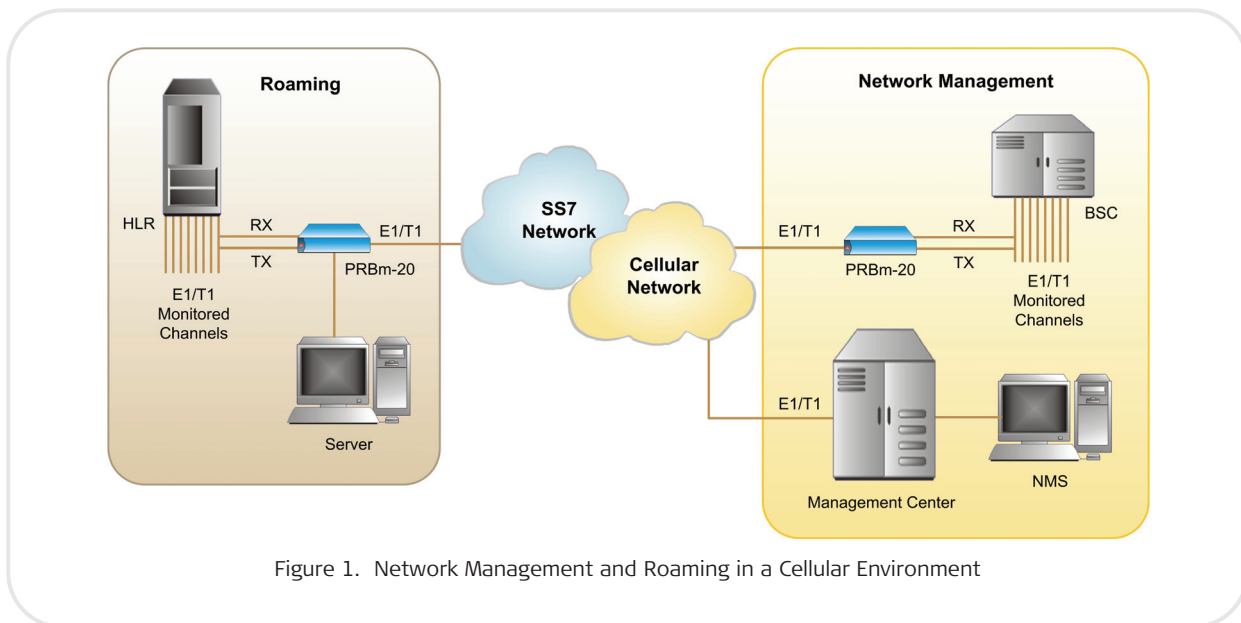


Figure 1. Network Management and Roaming in a Cellular Environment

Specifications

E1 UPLINK AND MONITORED CHANNELS

Number of Monitored Channels
4 or 8 (see *Ordering*)

Framing
G732N, with or without CRC-4
G732S, with or without CRC-4

Bit Rate
2.048 Mbps

Line Code
HDB3 or AMI

Signal Level
Receive:
Uplink and monitored channels: See *Table 1*

Transmit (uplink only):
±3V (±10%), balanced
±2.37V (±10%), unbalanced

Line Impedance
120Ω, balanced
75Ω, unbalanced

Connectors
Balanced uplink: RJ-45, 8-pin
Unbalanced uplink: RJ-45 (use adapter cable CBL-RJ45/2BNC/E1 to convert to a pair of BNC connectors)

Monitored channels:
Telco 50-pin, female

Timing
Internal: ±30 ppm
Loopback: ±130 ppm
Station: ±130 ppm

Compliance
AT&T TR-62411, AT&T Pub. 54016,
ANSI T1.403

Jitter Performance
As per ITU G.823, ETSI TBR-12 and TBR-13

Pulse Shape
As per ITU-T Rec. G.703

T1 UPLINK AND MONITORED CHANNELS

Number of Monitored Channels
4 or 8 (see *Ordering*)

Framing
D4
ESF (uplink only)

Bit Rate
1.544 Mbps

Line Code
AMI

Zero Suppression
Transparent, B7ZS, B8ZS

Signal Level
Receive, uplink:
0 to -10 dB without CSU
0 to -36 dB with CSU

Receive, monitored channels:
0 to -12 dB without CSU
0 to -19 dB with CSU

Transmit (uplink only):
0, -7.5, -15, -22.5 dB with CSU
±3V ±10% soft adjustable at 0 to
655 ft without CSU

Line Impedance
100Ω, balanced

Connectors
Uplink: RJ-45, 8-pin
Monitored channels: Telco 50-pin, female

Timing
Internal: ±30 ppm
Loopback: ±130 ppm
Station: ±130 ppm

Compliance
AT&T TR-62411, AT&T Pub. 54016,
ANSI T1.403

T1 Jitter Performance
As per AT&T TR-62411

Pulse Shape
As per ITU-T Rec. G.703

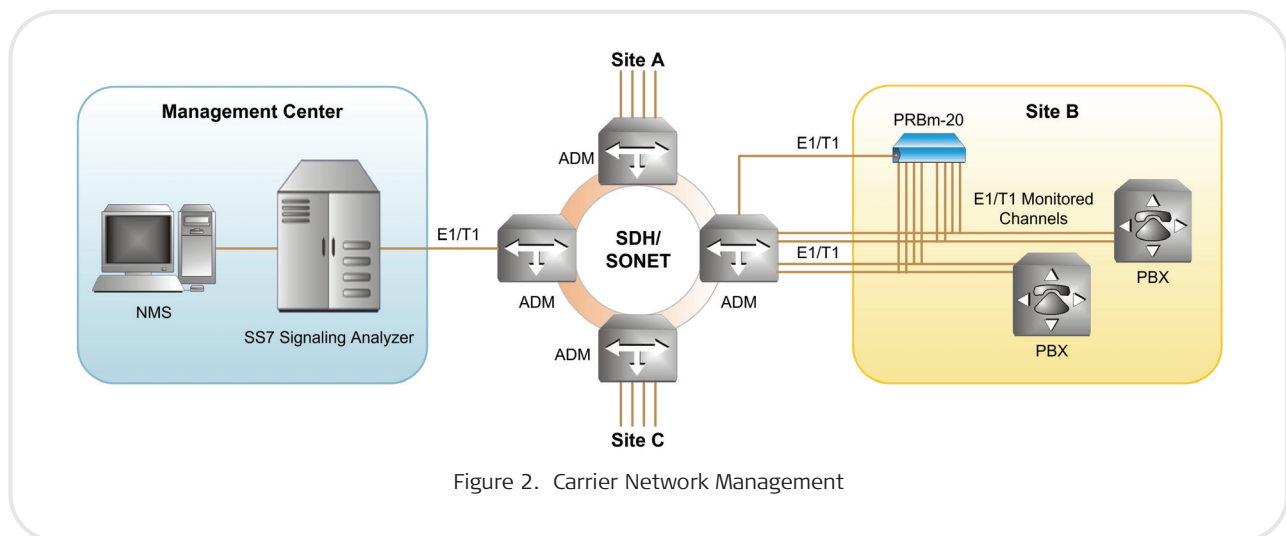


Figure 2. Carrier Network Management

PRBm-20

E1/T1 Monitoring Probe

STATION CLOCK PORT

Format

Framed/unframed 1s, G.703 compatible

Bit Rate

E1: 2.048 Mbps

T1: 1.544 Mbps

Line Code

E1: HDB3

T1: B8ZS

Connector

RJ-45, 8-pin

SUPERVISORY AND MANAGEMENT PORTS

CONTROL Port

Interface: V.24/RS-232

Connector: 9-pin D-type, female

Format: asynchronous

Data rate: 9.6 to 115.2 kbps

Character: odd, even, or no parity

Stop bits: 1, 1.5, or 2

ETH Port

Interface: 10/100BaseT

Connector: RJ-45 shielded

GENERAL

Indicators

General:

PWR (green), TST (yellow),

ALARM (red)

E1/T1 uplink:

LOC (red), REM (red)

Monitored channels:

EAST SYNC LOSS 1-4 or 1-8 (red)

WEST SYNC LOSS 1-4 or 1-8 (red)

ETH management port:

LINK (green), ACT (yellow)

Timeslot Allocation

User-defined mapping, any timeslot to any timeslot

Diagnostics

Local and remote loopbacks on the E1/T1 uplink

Power

100 to 240 VAC, 7W

-48 VDC (nominal), 7W

Physical

Height: 4.4 cm (1.7 in)

Width: 21.5 cm (8.5 in)

Depth: 21.3 cm (8.4 in)

Weight: 0.9 kg (2.0 lb)

Environment

Temperature: 0°–50°C (32°–122°F)

Humidity: Up to 90%, non-condensing

Ordering**PRBm-20/*/~**

E1/T1 Monitoring Probe

Legend

* Number of monitored channels:

4 4 channels

8 8 channels

~ Power supply:

AC 100 to 240 VAC

48 -48 VDC

SUPPLIED ACCESSORIES

AC power cord

AC/DC adaptor plug (when DC option is ordered)

OPTIONAL ACCESSORIES**CBL-TELCO50-OPEN/2M**

2m (6.6 ft) cable with 50-pin Telco connector at one end and open on other end

RM-35/@

Hardware kit for mounting one or two units in a 19-inch rack

Legend

@ Rack mount kit type:

P1 one unit

P2 two units

WM-35

Hardware for mounting one unit on the wall

Table 1. Receive Signal Level

Link Type	Interface Mode	Balanced Interface [db]	Unbalanced Interface [db]
E1 Uplink	LTU	0 to -36	disabled
T1 Uplink	DSU	0 to -10	0 to -6
Monitored Channels	LTU	0 to -19	0 to -10
Monitored Channels	DSU	0 to -12	0 to -6

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