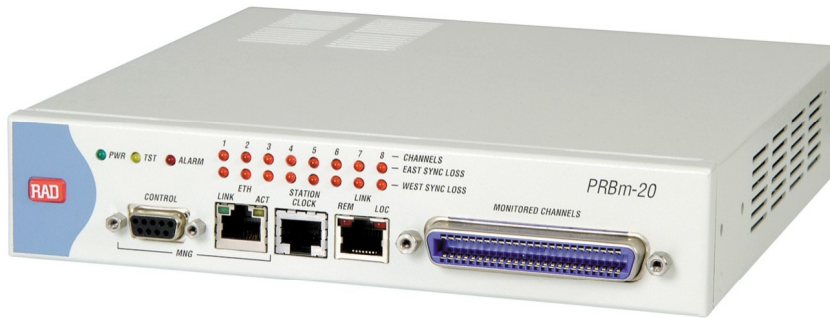


# PRBm-20



## E1/T1 Monitoring Probe



### FEATURES

- Standalone signal monitoring probe, providing 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
- Reduces monitoring solution costs
- Can be integrated into any existing system
- Improves network performance
- SNMP agent
- Management:
  - Out-of-band via V.24 supervisory port
  - Inband via dedicated timeslot
- Local and remote loopbacks on the uplink
- ETSI rack installation ready

### DESCRIPTION

- 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.

- 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 network 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 Network 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.)

# PRBm-20

## E1/T1 Monitoring Probe

- The T1 interface complies with AT&T TR-62411, ANSI T1.403 and AT&T Pub. 54016. The T1 interface 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 E1 line interface is jumper-selectable for 120 $\Omega$  balanced interface or 75 $\Omega$  unbalanced interface. The T1 links have a 100 $\Omega$  balanced interface.
- Diagnostic capabilities include local and remote loopbacks on the E1/T1 uplink.
- PRBm-20 can operate in 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.

## APPLICATIONS

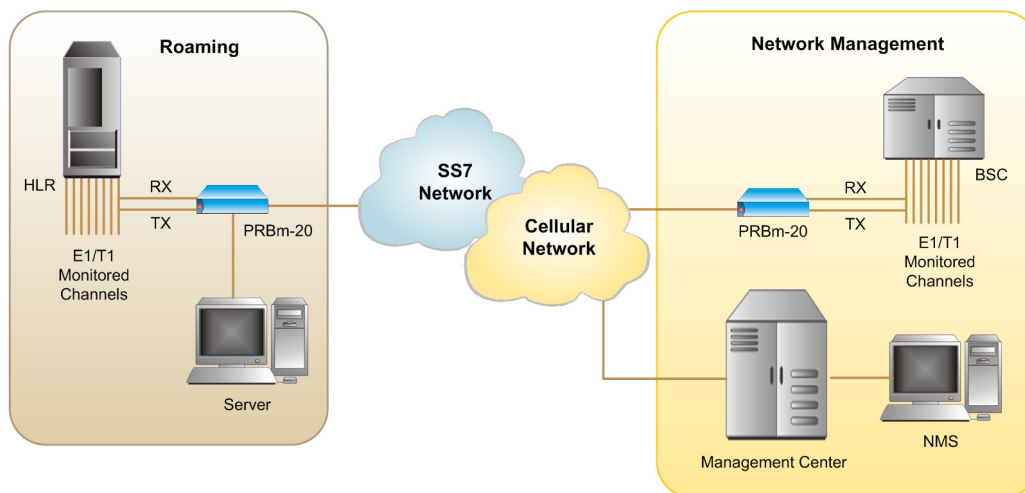


Figure 1. Network Management and Roaming in a Cellular Environment

## E1/T1 Monitoring Probe

### 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**
  - Uplink:  
Balanced: RJ-45, 8-pin  
Unbalanced: 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**  
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**  
Per ITU-T Rec. G.703

#### 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

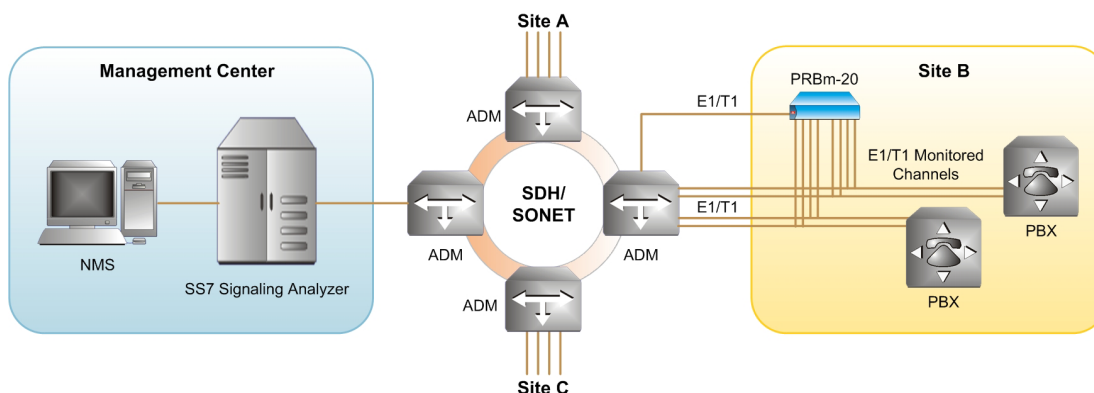


Figure 2. Carrier Network Management

# PRBm-20

## E1/T1 Monitoring Probe

### 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: no parity, odd or even 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: 44 mm (1.7 in)  
Width: 215 mm (8.5 in)  
Depth: 213 mm (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

- \* Specify number of monitored channels:  
**4** for 4 channels  
**8** for 8 channels
- ~ Specify power supply:  
**AC** for 100 to 240 VAC  
**48** for -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

@ Specify rack mount kit type:

- P1** for mounting one unit
- P2** for mounting two units

Table 1. Receive Signal Level

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



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