



# T1 MINI-PIM

## Product Overview

The Juniper Networks optional single-port T1 Mini-Physical Interface Modules (Mini-PIMs) for the Juniper Networks SSG20 Secure Services Gateway complement the five on-board 10/100 Ethernet interfaces with expanded WAN connectivity.

## Product Description

The T1 Mini-PIMs include one physical T1 port with an integrated channel service unit/data service unit (CSU/DSU). The combination of a T1 modem and an integrated CSU/DSU eliminates the need to deploy several separate external devices, reducing capital expenditures, saving valuable space, and simplifying management.

## Features and Benefits:

- Fully integrated CSU/DSU
- Full and fractional T1 capabilities
- 56K and 64K modes support
- ANSI T1.102, T1.107, T1.403 T1 support
- Independent clock
- Loopback, bit error rate test (BERT), facilities data link (FDL), and long build out diagnostics
- Complete configuration and management by command-line interface (CLI), Web user interface, or Juniper Networks<sup>®</sup> Network and Security Manager (NSM)

## Specifications

### Network Interface Specifications

Transmit bit rate: 1.544 Mbps  
 Receive bit rate: 1.544 Mbps  
 Line encoding: AMI, B8ZS  
 Modes: Framed Clear Channel, Fractional  
 Framing: Superframe (D4/SF), Extended Superframe (ESF)

### High-Level Data Link Control (HDLC)

- N x 64 Kbps or N x 56 Kbps, non channelized data rates (T1:N=1 to 24)
- CRC 16/32
- Shared flag
- Idle flag/fill
- Counters: Runts, giants, frame check sequence (FCS), error, abort error, align error

## Specifications (continued)

### Interface Connector

- RJ-48

### System Timing

- External (network recovered clocks)

### Dimensions (W x H x D) and Weight

- 5.9 x 3.75 x 0.8 in (14.5 x 9.5 x 2 cm)
- 0.18 lb (81.6 g)

### Environmental

- Operating temperature: 0 to 40° C
- Storage temperature: -40 to 70° C
- Relative humidity: 5 to 90% noncondensing

### Loopback Diagnostics

- Local, remote, payload
- Test patterns (BERT)
- All ones
- All zeros
- Alternating ones and zeros (AA/55)
- 1:3 or 1 in 4 pattern
- 1:7 or 1 in 8 pattern
- 3:24 - 3 bits set in every 24 bits
- QRSS20 (Modified PRBS 2<sup>20</sup>-1, with 14 zero suppression)
- PRBS 2<sup>7</sup>-1
- PRBS 2<sup>9</sup>-1 (as specified in ITU-T O.153)
- PRBS 2<sup>11</sup>-1 (as specified in ITU-T O.153)/2047 pattern
- PRBS 2<sup>15</sup>-1 (as specified in ITU-T O.151/O.153)
- PRBS 2<sup>20</sup>-1 (as specified in ITU-T O.153)
- Programmable word or 32-bit programmable pattern
- Network (T1) alarms
- Loss of signal (LOS), loss of framing (LOF), alarm indication signal (AIS), yellow alarm (YLW)

### Error Counters

- Controlled slipped seconds (CSS or CS)
- Line errored seconds (LES)
- Errored seconds (ES)
- Bursty errored seconds (BES)
- Severely errored seconds (SES)
- Severely errored framing seconds (SEFS)
- Loss of signal seconds (LOS)
- Loss of framing seconds (LOFS)
- UAS unavailable seconds (UAS)

### LEDs

PIM LEDs indicate port status with the following LED states:

- Alarm – solid yellow
- Loopback – solid yellow when loopback enabled
- CD (Carrier Detect) – solid green when line is synchronized

## Standards and Compliance

### Safety

- CAN/CSA-C22.2 No. 60950-1-03/UL 60950-1 Third Edition, Safety of Information Technology Equipment
- EN 60950-1:2001+A11, Safety of Information Technology Equipment
- IEC 60950-1:2001 First Edition, Safety of Information Technology Equipment

### EMC (Emissions)

- FCC Part 15 Class B
- EN 55022 Class B
- AS/NZS 3548 Class B
- VCCI Class B

### Immunity

- EN-61000-4-2 ESD
- EN-61000-4-3 Radiated Immunity
- EN-61000-4-4 EFT
- EN-61000-4-5 Surge
- EN-61000-4-6 Low Frequency Common Immunity

### European Telecommunications Standardization Institute (ETSI)

- ETSI EN-300386-2: Telecommunication Network Equipment Electromagnetic Compatibility Requirements

### Telecom

- FCC Part 68/TIA-968
- IC CS-03

### T1 Standards

- ANSI T1.102
- ANSI T1.107
- ANSI T1.403

## Performance-Enabling Services and Support

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## Ordering Information

PRODUCT NUMBER	DESCRIPTION
JXM-1T1-S	1-port T1 Mini-Physical Interface Module

The T1 Mini-PIM is supported in ScreenOS 5.4 or later releases on the SSG20.

## About Juniper Networks

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