



# SINGLE-PORT T1/E1 MINI-PHYSICAL INTERFACE MODULE (MINI-PIM)

## Product Overview

Single-port T1/E1 Mini-PIMs are for use with Juniper Networks SRX200 line, which consists of Juniper Networks SRX210 Services Gateway, SRX220 Services Gateway, and SRX240 Services Gateway. This Mini-PIM provides the physical connection to T1 or E1 network media types and also performs framing and line-speed signaling. They are supported on Juniper Networks Junos® operating system 9.5 and greater releases.

## Product Description

The Juniper Networks® single-port T1/E1 Mini-PIM provides the physical connection to T1 or E1 network media types, receiving incoming packets from the network and transmitting outgoing packets to the network. The single-port T1/E1 Mini-PIM forwards incoming data packets to the Routing Engine, and receives outgoing data packets coming from the Routing Engine. During this process, the Mini-PIM performs T1 or E1 framing and line-speed signaling.

## Features and Benefits

Single-port T1/E1 Mini-PIMs provide the following key features and benefits:

- Fully integrated channel service unit/data service unit (CSU/DSU), eliminating the need to deploy a separate external device, saving valuable space, and simplifying management
- Full and fractional T1/E1 capabilities (Channelized T1/E1 not supported)
- 56 Kbps and 64 Kbps operating modes
- ANSI T1.102, T1.107, T1.403 T1 support
- G.703, G.704, and G.706 E1 support
- Independent internal and external clocking option
- Loopback, bit error rate test (BERT), facilities data link (FDL) (T1 only), and long build-out diagnostics
- Multilink Frame Relay, Multilink Point-to-Point Protocol (MLPPP), Multi Link Multi Class (MCML) support
- Alarm reporting with a 24-hour history maintained
- Complete configuration and management via command-line interface (CLI) and Juniper Networks J-Web\*

\* Available in 2H 2010.

## Specifications

Table 1. Network Interface Specifications

SPECIFICATION	T1 SPECIFICATIONS	E1 SPECIFICATIONS
<b>Network interface specifications</b>		
Transmit bit rate	1.544 Mbps	2.048 Mbps
Receive bit rate	1.544 Mbps	2.048 Mbps
Line encoding	AMI/B8ZS	HDB3
Mode	Framed Clear Channel	Framed Clear Channel, Unframed Clear Channel
Fractional Framing	Superframe (D4/SF) Extended Superframe (ESF)	G704 without CRC4 Unframed
<b>HDLC features</b>		
N x 64 Kbps or N x 56 Kbps, nonchannelized data rates	(T1:N=1 to 24)	(E1:n=1 to 31)
CRC	16/32	16/32
Shared Flag	Supported	Supported
Idle flag/fill	Supported	Supported
Counters	Runts, Giants, FCS, Error, Abort Error, Align Error	Runts, Giants, FCS, Error, Abort Error, Align Error

### Data Interface

High-Level Data Link Control (HDLC) features:

- N x 64 Kbps or N x 56 Kbps, non-channelized data rates (T1:N=1 to 24; E1:n=1 to 31)
- Cyclic redundancy check (CRC) 16/32
- Shared flag
- Idle flag/fill
- Counters: runts, giants, frame check sequence (FCS) error, abort error, align error
- Interface connector: RJ-48

### System timing

- Internal (system clock)
- External (network recovered clocks)

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

- 3.75 x 0.8 x 5.9 in (9.5 x 2.0 x 14.5 cm)
- 0.18 lb

### Environmental

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

### Diagnostics

Loopbacks: 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 alarms:

- Alarm indication signal (AIS)
- Loss of frame (LOF)
- Loss of signal (LOS)
- Yellow (YLW)

## LEDs

Mini-PIM LEDs (indicate port status with the following three LED states):

- Alarm—LED color is yellow and on, if there is a local or remote alarm indicating that the device has detected a failure. LED is off there are no alarms or failures
- Loopback— If LED color is yellow and on, then a loopback or line state is detected. If LED is off, then the loopback is not active.
- Carrier Detection (CD)—if link is connected and up. LED color is green if link is up or off if link is down (carrier detection is not active).

## Standards and Compliance

### Safety

- CAN/CSA-C22.2 No. 60950-1 Information Technology Equipment
- UL 60950-1 Information Technology Equipment
- EN 60950-1 Information Technology Equipment
- IEC 60950-1 Information Technology Equipment

### EMC (Emissions)

- FCC Part 15 Class B
- EN 55022 Class B
- AS/NZS CISPR22 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 Conducted Immunity

### European Telecommunications Standardization Institute (ETSI)

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

### Telecom

- FCC Part 68/TIA-968
- IC CS-03
- AS/ACIF S016
- TBR 12/13
- Jate

### T1 Standards

- ANSI T1.102
- ANSI T1.107
- Telcordia GR253-CORE
- Telcordia GR-499-CORE
- AT&T Pub 54014

### E1 Standards

- ITU-T G.751
- ITU-T G.703

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## Ordering Information

PART NUMBER	DESCRIPTION
SRX-MP-1T1E1	1-port T1/E1 Mini-PIM

## About Juniper Networks

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