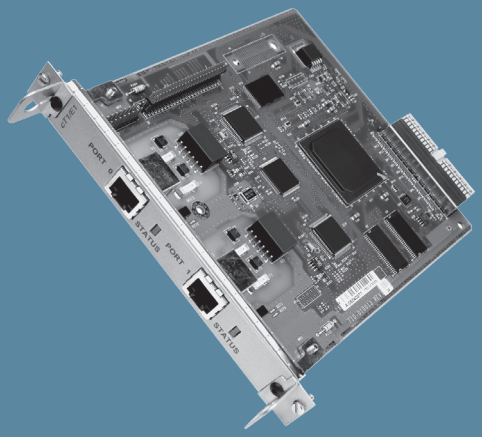

DUAL-PORT CHANNELIZED T1/E1 PHYSICAL INTERFACE MODULE

Product Overview

Juniper Networks Dual-port Channelized T1/E1 Physical Interface Module (PIM) is designed for use with the Juniper Networks J Series Services Routers including the J2320, J2350, J4350, and J6350. This PIM includes two physical channelized T1 or E1 ports with integrated channel service unit/data service unit (CSU/DSU).

Product Description

The Juniper Networks® Dual-port Channelized T1/E1 PIM provides the physical connection needed to channelized T1 or E1 network media types, receiving incoming packets from the network and transmitting outgoing packets to the network. The Dual-port Channelized T1/E1 PIM forwards packets for processing while performing framing and line-speed signaling.

Features and Benefits

Table 1: Dual-port Channelized T1/E1 PIM Features and Benefits

FEATURE	FEATURE DESCRIPTION	BENEFIT
Dual ports	Two channelized T1 or E1 ports.	Dual-port form factor allows for increased bandwidth capabilities while making most effective use of the J Series modular interface slots.
Fully integrated CSU/DSU	CSU and DSU functions are integrated in the PIM.	The Integrated CSU/DSU eliminates the need to deploy a separate external device saving valuable space and simplifying management.
Full, fractional and channelized T1/E1 capabilities	Software programmable to clear channel, fractional and channelized modes, in both T1 and E1 modes.	Enhanced flexibility means that one module can perform either full, fractional, or channelized T1 or E1 functions.

Specifications

Maximum Transmission Unit (MTU)

- 9 Kilobytes

Network Interface Specifications

T1 Mode

- Transmit bit rate: 1.544 Mbps
- Receive bit rate: 1.544 Mbps
- Line encoding: AMI, B8ZS
- Modes: Framed clear channel, fractional
- Channel: Channelized
- Framing: Superframe (D4/SF), extended superframe (ESF)

Specifications (continued)

Network Interface Specifications (continued)

E1 Mode

- Transmit bit rate: 2.048 Mbps
- Receive bit rate: 2.048 Mbps
- Line encoding: HDB3
- Modes: Framed clear channel, unframed clear
- Channel: Framed fractional, channelized
- Framing: G704, unframed

High-Level Data Link Control (HDLC)

- N x 64 Kbps or N x 56 Kbps, non-channelized data rates (T1:N=1 to 24, E1:N=1 to 31)
- CRC 16/32
- Shared Flag
- Idle flag/fill
- Counters: Runts, giants, frame check sequence (FCS) error, abort error, align error

Interface Connector

- RJ-45

System Timing

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

Dimensions (W x H x D)

- 5.45 x 0.63 x 6.5 in (13.8 x 1.6 x 16.5 cm)

Environmental

- Operating temperature: 0º to 40º C
- Storage temperature: -40º to 70º 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 2^20-1, with 14 zero suppression)
- PRBS 2^7-1
- PRBS 2^9-1 (as specified in ITU-T O.153)
- PRBS 2^11-1 (as specified in ITU-T O.153)/2047 pattern
- PRBS 2^15-1 (as specified in ITU-T O.151/O.153)
- PRBS 2^20-1 (as specified in ITU-T O.153)
- Programmable word or 32-bit programmable pattern

Network 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:

- Online – green on steadily, PIM is online and operational
- Status
  - Unlit: Off, PIM is not online
  - Green: On steadily, port is online with no alarms or failures and the physical layer is active
  - Red: Online, port is active with a local alarm; router has detected a failure and the physical layer is inactive
  - Amber or Yellow: Online, port is online with alarms for remote failures
  - Unlit: Offline, port is disabled

Standards and Compliance

Safety

- CAN/CSA-C22.2 No. 60950/UL 60950 Third Edition, Safety of Information Technology Equipment
- EN 60950 (2000) Third 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

E1 Standards

- ITU-T G.703
- ITU-T G.704
- ITU-T G.706
- ITU-T G.823
- ITU-T G.826
- CTR 12/13
- ACA TS016

Specifications (continued)

T1 Standards

- ANSI T1-102
- ANSI T1-107
- ANSI T1-403
- Telcordia GR-499-CORE
- ACCUNET TR 62411 (Accunet T1.5)

Juniper Networks Services and Support

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Ordering Information

PART NUMBER	DESCRIPTION
JX-2CT1E1-RJ45-S	Dual-port channelized T1/E1 PIM

Juniper Networks Junos® Operating System Release

The Dual-port T1/E1 PIM is supported in Junos OS 8.1 or later releases on J Series routers.

About Juniper Networks

Juniper Networks, Inc. is the leader in high-performance networking. Juniper offers a high-performance network infrastructure that creates a responsive and trusted environment for accelerating the deployment of services and applications over a single network. This fuels high-performance businesses. Additional information can be found at **www.juniper.net**.

Corporate and Sales Headquarters
Juniper Networks, Inc.
1194 North Mathilda Avenue
Sunnyvale, CA 94089 USA
Phone: 888.JUNIPER (888.586.4737)
or 408.745.2000
Fax: 408.745.2100
www.juniper.net

APAC Headquarters
Juniper Networks (Hong Kong)
26/F, Cityplaza One
1111 King's Road
Taikoo Shing, Hong Kong
Phone: 852.2332.3636
Fax: 852.2574.7803

EMEA Headquarters
Juniper Networks Ireland
Airside Business Park
Swords, County Dublin, Ireland
Phone: 35.31.8903.600
EMEA Sales: 00800.4586.4737
Fax: 35.31.8903.601

To purchase Juniper Networks solutions, please contact your Juniper Networks representative at 1-866-298-6428 or authorized reseller.

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