

IOM-120-I 16 Ports Channelized T1/E1 Line Card

The IOM-120-I line card supports 16 T1 or E1 interfaces. Designed for high flexibility and simplicity, each of the 16 T1 or E1 interfaces can be individually configured for unframed (clear channel) or framed (channelized) operating modes supporting 24 or 31 DS0s respectively. The IOM-120-I supports a wide range of pseudo-wire services including ATM/IMA.

The IOM-120-I can be used in the AXN1600 and AXN800 Pseudo-Wire Gateways™. It is hot swappable and has no slot assignment restrictions. The IOM-120-I line card requires a corresponding interface module (IM) with 16 T1/E1 physical interfaces per card (please see ordering options).

IOM-120-I Key Features:

- 16 T1 or E1 interfaces (software selectable)
- Per T1/E1 interface – unframed or framed / channelized down to DS0
- PWE3 encapsulations:
 - T1/E1 structured (CESoPSN)
 - T1/E1 structured with CAS (CESoPSN)
 - T1/E1 unstructured (SAToP)
 - Frame Relay
 - HDLC
 - ATM, including IMA
- IP Forwarding
 - HDLC, FR, PPP
- IP Service Interworking (IP-IWF)
 - HDLC, FR, PPP
- Enables any PWE3 or IP service on any physical or logical (nxDS0) interface
- Supports up to 496 concurrent Pseudo-Wire connections per card
- Supports 1/0 grooming – Removes the need for DACS
- Supports ATM VP/VC re-numbering – Removes the need for ATM switch
- Per T1/E1 interface alarm processing and performance monitoring
 - 24-hour history retained, 15-minute intervals on all errors
- Per T1/E1 interface diagnostics and loopback control
 - Terminal and facility loopback with built-in pattern generator and analyzer
- Remote management through Axerra's CLI and AXNvision™ NMS

HARDWARE SPECIFICATIONS

Platform Support

- AXN1600 and AXN800

Number of Interfaces: 16

- T1 or E1 according to software selection

T1

- **Bit Rate:** 1.544 Mbps +/- 32 ppm
- **Standards Compliance**
ANSI T1.403, Telcordia TR-62411
- **Framing:** Unframed, D4, ESF
- **Line Code:** AMI
- **Zero Suppression:** B8ZS
- **Line Impedance:** 100 Ω Balanced RJ-45
- **Signal Level**
Receive:
CSU 0 to -30dB
w/o CSU 0 to -12 dB
Transmit: DSU 0dB
w/o 2.7V soft-adjustable at 0 to 655 ft.
- **Jitter and Wander Performance**
Telcordia TR-62411, G.824
- **Connector:** RJ-45

E1

- **Bit Rate:** 2.048 Mbps +/- 50 ppm
- **Standards Compliance**
ITU G.703, G.704, G.706, G.732
- **Framing**
Unframed, FAS, FAS with CRC4,
MFAS with CAS, MFAS with CAS and
CRC4
- **Line Code:** AMI
- **Zero Suppression:** HDB3
- **Line Impedance**
120 Ω Balanced RJ-45
75 Ω Unbalanced BNC
- **Signal Level**
Receive:
LTU 0 to -30dB
w/o LTU 0 to -12 dB
Transmit:
3V (±10%)
- **Jitter and Wander Performance**
ITU G.823
- **Connector:** RJ-45 or BNC

Indicators

Line Card

- Power
Off – No power
Green – Operational
Orange – Transient mode
- Active
Off – No power
Green – Operational
Orange – Unassigned or transient mode
- Alarm
Off – No alarm
Orange – Minor alarm or transient mode
Red – Major alarm

SOFTWARE SPECIFICATIONS

Pseudo-Wire Services

TDM - CES

- Framed (CESoPSN – RFC 5086)
 - n x DS0 (1 ≤ n ≤ 31)
 - Framed unchannelized T1/E1
 - Trunk emulation: T1/E1 alarms propagation
- Unframed (SAToP – RFC 4553)

HDLC

- Port mode

Frame Relay

- Port mode
- 1:1 mode (per DLCI)

ATM

- VP and VC modes
- Cell (AAL0) and Frame (AAL5) modes
- Configurable cell concatenation
- ATM IMA

Layer-3 Forwarding Services

- IPoFR (RFC 1490)
- IPoC-HDLC
- IPoPPP

IP Service Interworking

Supported Layer-2 circuits

- FR
- HDLC
- PPP

GENERAL SPECIFICATIONS

QoS Management

- Layer 3 Marking – DSCP (DiffServ)
- Layer 2 Marking – VLAN 802.1Q/P

Timing

- Adaptive clock recovery (ACR)
- System clock
- Loopback timing (clock source is determined from T1/E1 interface)

Diagnostics

- Terminal (Local) loopback
- Facility (Remote) loopback

Performance Monitoring

- T1 / E1
 - 5 x 24 hour
 - 96 x 15 minute interval
 - ES, SES, UAS

Alarms

- T1
 - Alarm Indications Signal (AIS)
 - Remote Alarm Indication (RAI)
 - Loss of Signal (LOS)
 - Loss of Framing (LOF)
- E1
 - Alarm Indications Signal (AIS)
 - Remote Alarm Indication (RAI)
 - Loss of Signal (LOS)
 - Loss of Framing (LOF)
 - Loss of Multiframing (LOM)
- Remote Loss of Frame Indication (RAIM)

Physical Dimensions

- **Interface Module**
 - Inches: 10.52 (h) x 4.53 (d) x 0.79 (w)
 - Cm: 26.7 (h) x 11.5 (d) x 2.0 (w)
 - Weight: 0.4 lb (0.18 Kg)
- **Line Card**
 - Inches: 10.52 (h) x 9.84 (d) x 0.79 (w)
 - Cm: 26.7 (h) x 25.0 (d) x 2.0 (w)
 - Weight: 1.06 lb (0.48 Kg)

Environmental

- Operating temp: 0–50°C / 32–122°F
- Humidity: 5%–95% non-condensing
- Earthquake: Complies with EN-300 019

Regulatory¹

- **Safety**
 - UL 60950-1
 - CE Mark: EN 60950-1
- **EMC**
 - FCC part 15 Class A
 - EN 300 386-2 Class A
 - VCCI Class A

¹ Please contact Axerra Networks for current list of approvals

Port Density Summary

AXN Model	T1/E1 Interfaces/ Chassis	T1/E1 Interfaces/Rack (44U)
AXN1600N	192	768
AXN1600E	192	768
AXN800	64	704

Ordering Information

Order Code	Description
IOM-0120-I-B	16 ports channelized T1/E1 MULTISERVICE IOM bundle
IOM-0120-I	16 ports channelized T1/E1 MULTISERVICE IOM line card
IMIO-0100	16 ports T1-100 ohm/E1-120 ohm (balanced) IOM Interface Module (adapter cable [CAB-1002] to RJ-45/BNC patch panel is available).
CAB-1001	Splitter cable: IOM-120 T1/E1 interface module to 16 RJ-45 connectors
CAB-1002	Adapter cable to connect the IOM-120 T1/E1 interface module to RJ-45/BNC patch panel
CAB-1006	Splitter cable: IOM-120 T1/E1 interface module to loose edges
PAN-32RJ	T1/E1 100/120 ohm 19' rack mountable patch panel. Supports 32 RJ-45 connectors.
PAN-16BNC	E1 75 ohm 19' rack mountable patch panel. Supports 16 BNC connectors.