AXP640

40G AdvancedTCA Shelf

Embedded Computing for Business-Critical Continuity™

This six-slot, 40G ATCA shelf is ideal for both traditional telecom and enterprise environments

- 6-slot, 7U, 19" form factor
- AC & DC power input options
- All redundant field replaceable units (FRUs) included
- Integrated Telco Alarm functionality
- Front & rear cable management
- CP-TA B.4 compliant thermal performance
- Up to 350 Watts/blade power distribution
- RoHS (6 of 6) compliant
- Designed for NEBS/ETSI compliance (DC variants only)

The Emerson Network Power AXP640 AdvancedTCA® shelf is specifically designed to address carrier-grade requirements desired by the telecommunications industry as well as high availability enterprise environments. Application examples include wireless infrastructure, packetized voice, wireline data, video distribution and cable network head-end devices. Highly integrated and verified hardware and software components, reduced development costs and accelerating time-to-market allow customers to focus their development resources on critical, differentiating features that provide a competitive advantage.

The heart of the AdvancedTCA (ATCA®) shelf is the 40G backplane. This allows for 40Gbps communication across the PICMG® 3.1 fabric interface. Using this technology, it is possible to upgrade to 40GbE capable switch and payload blades in the future without replacing the shelf infrastructure. ATCA 40G technology is becoming increasingly important as dataplane applications start migrating to ATCA based platforms.

Equally important are the thermal characteristics of the AXP640 shelf. It is designed to exceed the CP-TA B.4 and newly defined PICMG thermal profile, the highest level possible. This superior thermal performance is achieved with a front-to-back cooling architecture and therefore is ideal both traditional telecommunications and enterprise environments. As processor technology advances, thermal (heat dissipation) performance is one of the industry's largest challenges – no other ATCA shelf on the market has better thermal characteristics than the AXP640.

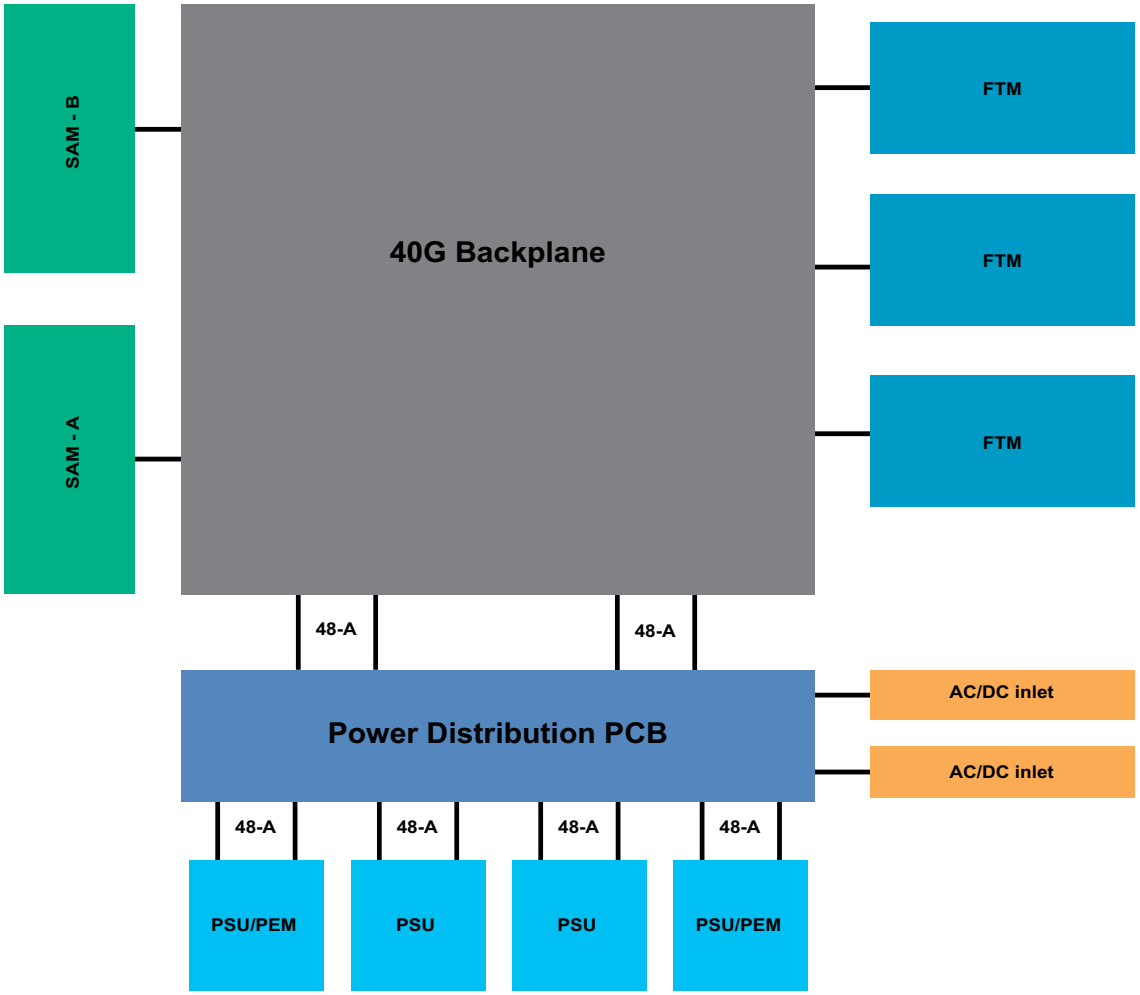
The power infrastructure of the AXP640 is designed to support AC and DC power inputs and provides up to 350 Watts/slot.

RoHS 6/6 COMPLIANT

AdvancedTCA®

EMERSON™ Network Power

Shelf Architecture



Shelf Overview

ENCLOSURE

- Six (6) slots for 8U blades (horizontal)
- Six (6) slots for 8U rear transition modules (RTMs) (horizontal)
- 40G backplane
- Front to rear cooling architecture
- ESD and earth grounding points

ENCLOSURE DIMENSIONS

- Height – 309.9 mm
- Width – 448.2 mm
- Depth – 492.3 mm
- Depth – 550.0 mm (with cable tray)

Note – Dimension figures do not include mounting ears and cable trays unless specifically noted

PRODUCT WEIGHT

- AXP640-DC2 – 51.2 lbs.
- AXP640-AC2-220VAC – 53.9 lbs.
- AXP640-AC2-110VAC – 61.4 lbs.

OPERATING ENVIRONMENT

- Operating temperature range (DC): -5 °C to 55 °C @ 90% non-condensing humidity
- Operating temperature range (AC): -5 °C to 50 °C @ 90% non-condensing humidity
- Storage temperature range: -40 °C to 70 °C @ 95% relative humidity

POWER REQUIREMENTS

- AXP640-DC2 maximum: 390 Watts
- AXP640-AC2-220VAC maximum: 447 Watts
- AXP640-AC2-110VAC maximum: 447 Watts

BACKPLANE

- Zone 1
  - Redundant, radial IPMI to all blade slots
  - Redundant, bussed -48 VDC to all blade slots
- Zone 2
  - Dual star configuration for the base interface (2 hub, 4 node blades)
  - Single star configuration for the fabric interface (1 hub, 5 node blades)*
  - Dual star configuration for the fabric interface (2 hub, 4 node blades)*
  - Update channel routing for all hub/node slots
  - Three redundant, bussed telecom clock signals to all hub/node slots
  - Update channel routing
- Zone 3
  - PICMG 3.0 defined open area, application specific

* All fabric interface configurations support 1G, 10G and 40G operation

SHELF MANAGEMENT

- N+1 redundancy architecture
- Two (2) shelf management & alarm module slots
- Embedded Telco Alarm functionality

POWER DISTRIBUTION

- 2N redundancy architecture
- AXP640-DC2 – Two (2) power entry module (PEM) slots
- AXP640-AC2-220VAC – Two (2) power supply unit (PSU) slots
- AXP640-AC2-110VAC – Four (4) PSU slots

COOLING

- N+1 redundancy architecture
- Front-to-back cooling architecture
- Three (3) bottom/rear fan tray module slots

RELEVANT STANDARDS

- PICMG 3.0 (form factor, IPMI, base interface, hot swap, RTM)
- PICMG 3.1, Options 1 and 9 (1G, 10G operation)
- PICMG 3.1 R2 (40G operation) – Future, pending specification release.
- CP-TA B.4

Shelf Layout

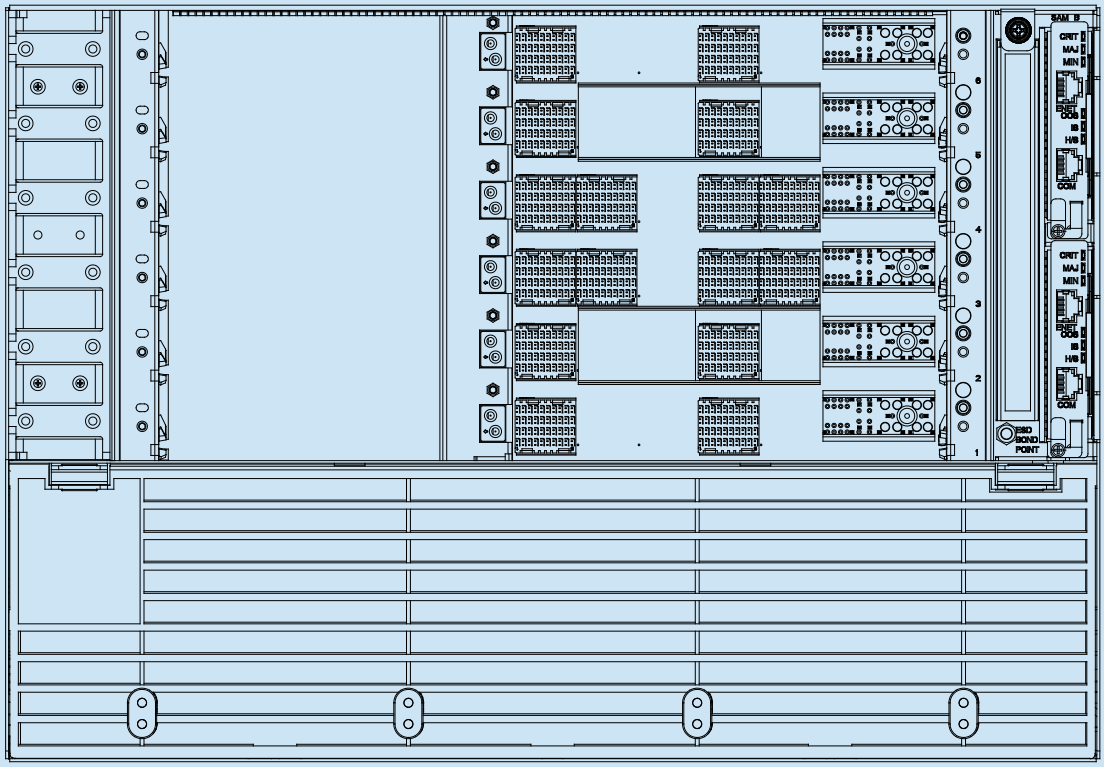
FRONT (TOP TO BOTTOM)

- Six (6) horizontal, 8U blade slots
- Front cable management system
- Two (2) vertical, Shelf Management Modules slots
- Four (4) power module slots (AC/DC)
- Air inlet area

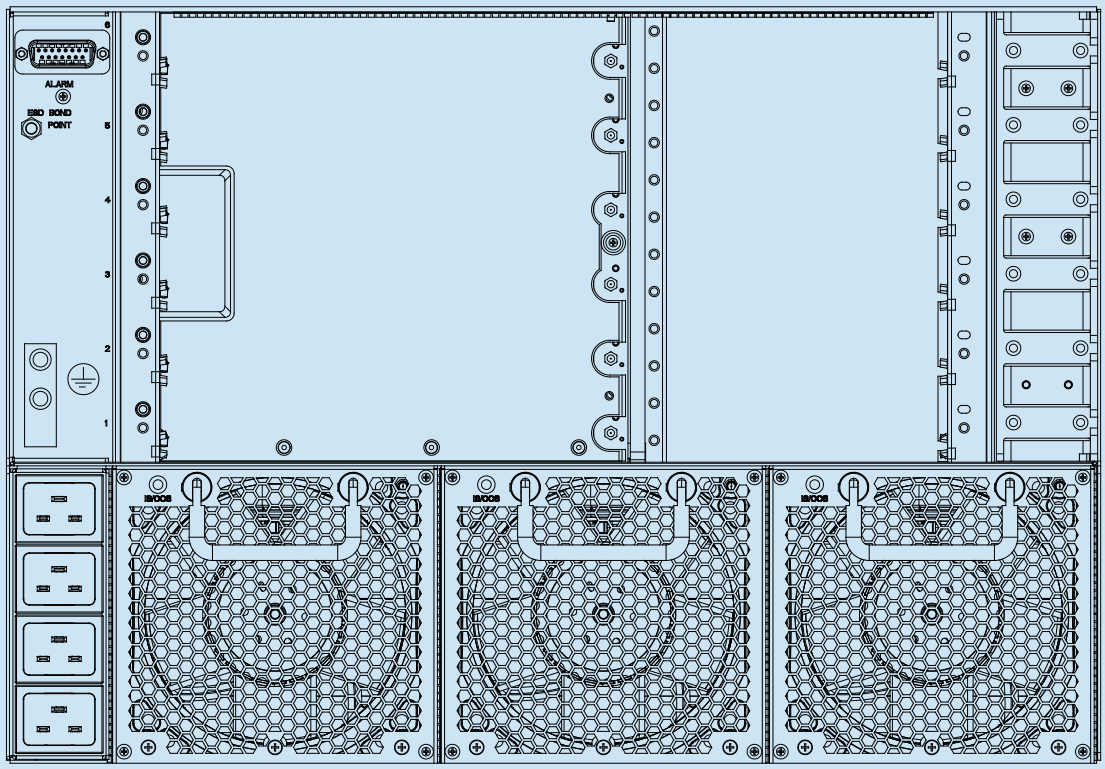
REAR (TOP TO BOTTOM)

- Six (6) horizontal, 8U RTM slots
- Rear cable management system
- Telco Alarm interface (DB-15)
- Four (4) AC input receptacles
- Three (3) fan tray module slots
- Two (2) sets of DC input lugs

FRONT VIEW



REAR VIEW



Shelf Management

The purpose of shelf management, as defined by the PICMG 3.0 standard, is to assure proper operation of AdvancedTCA blades and other components within the shelf. The shelf management module continually monitors all low-level, hardware functionality (inventory, sensor, status data, etc.) and reports status to the system manager. It also provides control access to these attributes. Management access to this information is provided via local console and Ethernet interfaces as well as the Service Availability™ Forum (SA Forum) defined HPI interface. Each blade and major shelf component has an Intelligent Platform Management Controller (IPMC) that is responsible for providing this information to the shelf management module. The AXP640 shelf provides redundant shelf management functionality utilizing an active/standby architecture. In addition, the Telco Alarm functionality is integrated into the same module to maximize critical real estate within the shelf and is also redundant. Visual indicators, as well as physical interfaces, are provided for direct front panel access.

PANEL ACCESS & INTERFACES

- One (1) RS-232 console, RJ-45
- One (1) 10/100BaseT Ethernet, RJ-45

TELCO ALARM STATUS INDICATORS

- Critical/major/minor

SHELF MANAGER LED STATUS INDICATORS

- In service (IS)
- Out of service (OOS)
- Hot swap (H/S)

Fan Tray Module

The AXP640 shelf provides fault-tolerant cooling to all Front/RTM slots as well as the shelf management and power entry module slots. The AXP640 utilizes an N+1 cooling architecture and is implemented using three lower/rear fan tray modules.

GENERAL CHARACTERISTICS

- CP-TA B.4 compliant cooling architecture
- Front-to-back cooling architecture
- Front blade cooling capacity: 40 cubic feet per minute (CFM) at 55 °C
- RTM cooling capacity: 5 CFM at 55 °C
- Automatic fan speed control

LED STATUS INDICATORS

- Combined in-service, out-of-service (IS/OOS) LED (Green/Red)

Power Entry Module (PEM)

Power conditioning for the DC variant of the AXP640 shelf is provided by a pair of redundant PEMs. They provide power to the backplane on the redundant -48 VDC power rails for blades, RTMs and other shelf components.

GENERAL CHARACTERISTICS

- Input voltage range (-40 VDC to -72 VDC)
- 60 Amp, single feed PEM with breaker switch
- Power distribution capable of delivering up to 350 Watts/slot
- EMI conductive filtering
- Breaker trip detection
- Transient voltage suppression

LED STATUS INDICATORS

- Combined in-service, out-of-service (IS/OOS) LED (Green/Red)

Power Supply Unit (PSU)

Power conditioning for the AC variants of the AXP640 shelf is provided by two or four AC PSUs. Standard AC receptacles are provided for simply installation, the PSU output provides DC power to the backplane on the redundant -48 VDC power rails for blades, RTMs and other shelf components. For 220 VAC environments, qty=2, AC PSUs are installed; for 110 VAC environments qty=4, AC PSUs are installed.

GENERAL CHARACTERISTICS

- Input voltage range (180 – 264 VAC or 90 – 140 VAC) auto detect
- Input current 16 Amp maximum
- Frequency 43 to 63 Hz
- Power factor 0.97 (typical)
- Power distribution capable of delivering up to 350 Watts/slot
- Inputs fused at 25 Amp
- Transient voltage suppression

LED STATUS INDICATORS

- In service (IS)
- Out of service (OOS)

Ordering Information

Marketing Number	Description
Shelf Products	
AXP640-DC2	ATCA shelf - 6 slot, 19", 7U, 40G, PP SHMM - Redundant DC PEM - Silver
AXP640-DC2-B	ATCA shelf - 6 slot, 19", 7U, 40G, PP SHMM - Redundant DC PEM - Black
AXP640-AC2-220VAC	ATCA shelf - 6 slot, 19", 7U, 40G, PP SHMM - Two AC PSU (220 Vac) - Silver
AXP640-AC2-220VAC-B	ATCA shelf - 6 slot, 19", 7U, 40G, PP SHMM - Two AC PSU (220 Vac) - Black
AXP640-AC2-1100VAC	ATCA shelf - 6 slot, 19", 7U, 40G, PP SHMM - Four AC PSU (110 Vac) - Silver
AXP640-AC2-1100VAC-B	ATCA shelf - 6 slot, 19", 7U, 40G, PP SHMM - Four AC PSU (110 Vac) - Black
Accessory & FRU Products	
AXP-F-FILL-PANEL	Blank filler panel, AXP1620, AXP1440, AXP1410, C2000 - Front - Silver
AXP-R-FILL-PANEL	Blank filler panel, AXP1620, AXP1440, AXP1410, C2000 - Rear - Silver
PEM640	DC power entry module for AXP640
PSU640	AC power supply unit for AXP640
FTM640	Fan tray module for AXP640 - Silver
FTM640-B	Fan tray module for AXP640 - Black
SAM640	Shelf manager module for AXP640 - Silver
SAM640-B	Shelf manager module for AXP640 - Black
RAF640-SET	Replaceable air filters (set of two) for AXP640
BEZEL640-B	Front bezel for the AXP640 - Black

Regulatory Compliance

Item	Description
Designed to comply with NEBS (DC variants only)	Telcordia GR-63-CORE, NEBS Physical Protection, Level 3
	Telcordia GR-1089-CORE, Electromagnetic Compatibility and Electrical Safety — Generic Criteria for Network Telecommunications Equipment. Level 3, Equipment Type 2
Designed to comply with ETSI (DC variants only)	ETSI Storage, ETS 300 019-2-1, Class 1.2 equipment, Weatherprotected, not Temperature Controlled Storage Locations
	ETSI Transportation, ETS 300 019-1-2, Class 2.3 equipment, Public Transportation
	ETSI Operation, ETS 300 019-1-3, Class 3.1(E) equipment, Partly Temperature Controlled Locations
	ETSI EN 300-132-2 Environmental Engineering (EE); Power supply interface at the input to telecommunications equipment; Part 2: Operated by direct current (dc)
	ETS-300-753, Equipment Engineering (EE); Acoustic noise emitted by telecommunications equipment
EMC	ETSI EN 300 386 Electromagnetic compatibility and Radio spectrum Matters (ERM); telecommunication network equipment; ElectroMagnetic Compatibility (EMC) requirements, Telecommunication equipment room (attended)
	FCC 47 CFR Part 15 Subpart B (US), Class A
	ECISPR 22, Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment
	AS/NZS CISPR 22 (Australia/New Zealand), Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment
	VCCI Class A (Japan), Voluntary Control Council for Interference by Information Technology Equipment
	Industry Canada ICES-003 Class A
Safety	Compliance to UL/CSA 60950-1, EN 60950-1 and IEC 60950-1 CB Scheme. Marked with U.S. NRTL, Canadian Safety and CE Mark.
RoHS/WEEE compliance	DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)
	DIRECTIVE 2002/96/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on waste electrical and electronic equipment (WEEE)
CE Conformity	Directive 2004/108/EC, Directive 2006/95/EC

SOLUTION SERVICES

Emerson Network Power provides a portfolio of solution services optimized to meet your needs throughout the product lifecycle. Design services help speed time-to-market. Deployment services include global 24x7 technical support. Renewal services enable product longevity and technology refresh.

Emerson Network Power.
The global leader in enabling *Business-Critical Continuity™*.

- AC Power
- Connectivity
- DC Power
- **Embedded Computing**
- Embedded Power
- Infrastructure Management & Monitoring
- Outside Plant
- Power Switching & Controls
- Precision Cooling
- Racks & Integrated Cabinets
- Services
- Surge Protection

Emerson Network Power

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