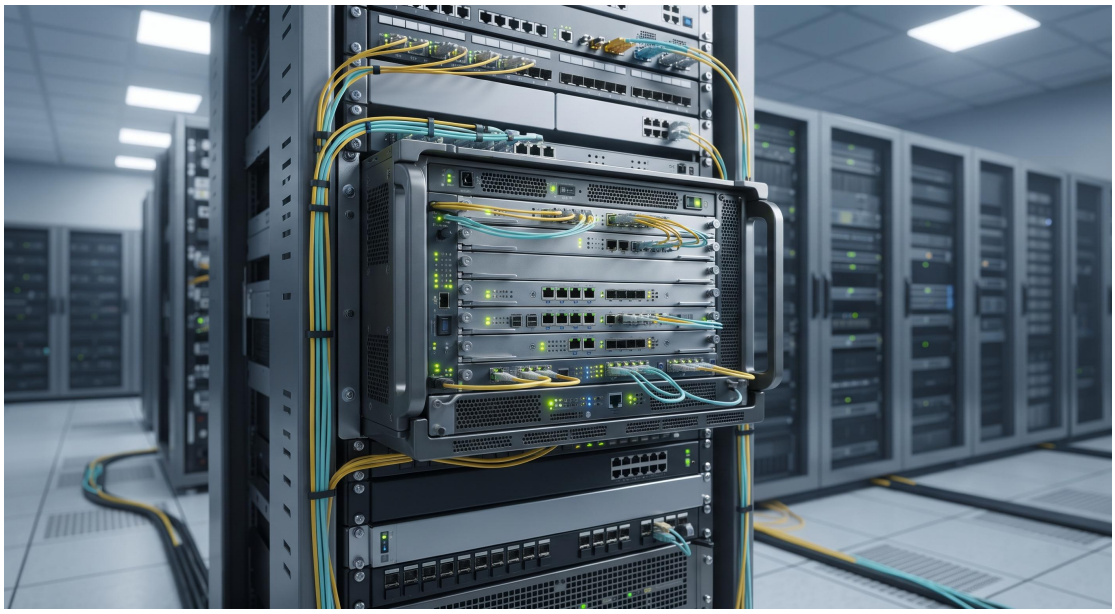
Nokia 7360 ISAM Shelf Environmental and Seismic Shock Withstanding Metrics - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

The Nokia 7360 Intelligent Services Access Manager (ISAM) FX shelf family is engineered to deliver carrier-grade broadband access services across a diverse spectrum of deployment environments, ranging from climate-controlled central offices to harsh outside-plant cabinets and remote aggregation sites. This datasheet provides a definitive technical reference for the environmental endurance and seismic shock withstanding capabilities of the 7360 ISAM FX shelf portfolio, encompassing the FX-4, FX-8, and FX-16 variants. The platform's mechanical architecture, thermal management subsystem, and regulatory compliance profile are validated against the most stringent international telecommunications standards, including NEBS Level 3, ETSI EN 300 019, and GR-63-CORE. These qualifications ensure that the 7360 ISAM FX shelf maintains operational integrity and service continuity under conditions of extreme temperature variation, humidity, vibration, and seismic event exposure.



HARDWARE ARCHITECTURE AND ENVIRONMENTAL DESIGN

The 7360 ISAM FX shelf is constructed around a modular, field-serviceable chassis architecture that prioritizes both thermal resilience and mechanical robustness. The shelf variants accommodate 4, 8, or 16 line termination slots alongside redundant network termination and power subsystems, with all configurations sharing a common design philosophy for environmental hardening. The chassis employs a push-pull airflow design with variable-speed fan control governed by thermal sensors distributed across line cards and controller modules. This thermal management approach optimizes cooling efficiency during high-load periods while reducing acoustic noise and power consumption under nominal conditions. The shelf's mechanical structure is engineered to withstand seismic disturbances without compromising electrical continuity or causing physical damage to installed cards and cabling.

Redundant power feeds (Branch A and Branch B) are terminated through secure, vibration-resistant connectors, and the chassis mounting hardware is designed to interface with seismic-qualified rack systems in accordance with GR-63-CORE Zone 4 requirements.

The operating temperature envelope of the 7360 ISAM FX shelf is configuration-dependent and reflects the platform's dual-role deployment capability. When installed in a fully populated Nokia 7360 ISAM rack containing multiple shelves, the inlet ambient temperature range is specified at -5°C to +45°C (23°F to 113°F). This range is appropriate for climate-controlled central office environments where forced-air cooling is available. When deployed as a standalone shelf in an outside-plant cabinet or remote location without supplemental cooling, the operating range extends to -40°C to +65°C (-40°F to +149°F), provided that industrial-temperature optics are employed and the configuration does not include a dust filter. Relative humidity tolerance is specified at 5% to 93% non-condensing across all operating conditions, with the platform incorporating over-temperature sensors and automatic shutdown mechanisms to protect against thermal runaway events.

KEY FEATURES

- Seismic Qualification: NEBS Level 3 compliance under GR-63-CORE ensures

the shelf withstands seismic shock and vibration profiles representative of the most demanding geographic regions, including Zone 4 earthquake zones.

- Extended Temperature Operation: Standalone shelf configurations support -40°C to +65°C operation, enabling deployment in outside-plant cabinets and uncontrolled remote sites without active climate control.

- Redundant Thermal Protection: Over-temperature sensors on line cards and controller modules trigger automatic shutdown before thermal damage can occur, preserving hardware integrity and preventing service-affecting failures.

- Vibration-Resistant Mechanical Design: Card ejector mechanisms, power terminal connections, and rack mounting hardware are engineered to maintain secure engagement under sustained vibration and seismic shock conditions.

- Humidity Tolerance: 5% to 93% non-condensing relative humidity range accommodates deployment in tropical, arid, and temperate climate zones without requiring external humidification or dehumidification equipment.

COMPLIANCE & STANDARDS

The 7360 ISAM FX shelf portfolio is validated against a comprehensive matrix of international environmental and safety standards. Storage conditions are qualified per ETS EN 300 019-1-1 Class 1.1 (weather-protected, partly temperature-controlled locations). Transport conditions are qualified per ETS EN 300 019-1-2 Class 2.3 (public transportation). Stationary use environmental

compliance is demonstrated per ETS EN 300 019-1-3 Class 3.1E for temperature-controlled locations when installed in fully populated racks, and Class 3.3 for non-temperature-controlled locations when deployed as standalone shelves. The platform conforms to GR-63-CORE for NEBS Level 3 physical protection requirements, encompassing seismic, thermal, and contamination resilience. Safety certification includes IEC 60950-1 and EN 60950-1, while electromagnetic compatibility is validated per ETS EN 300 386 for telecommunications center environments, GR-1089-CORE, FCC Part 15 Class A, and EN 55022. Electrical protection is provided per ITU-T K.20 (enhanced) and K.45 (basic). The platform is compliant with the European Directive 2011/65/EU on Restriction of Hazardous Substances (RoHS).

TECHNICAL SPECIFICATIONS

Parameter	**Specification**
Seismic Compliance	NEBS Level 3 per GR-63-CORE (Zone 4 qualified)
Operating Temperature (Rack)	-5°C to +45°C (23°F to 113°F) inlet ambient
Operating Temperature (Standalone)	-40°C to +65°C (-40°F to +149°F) inlet ambient, I-temp optics required
Storage Temperature	ETS EN 300 019-1-1 Class 1.1

Transport Vibration	ETS EN 300 019-1-2 Class 2.3
Relative Humidity	5% to 93% non-condensing
Thermal Protection	Over-temperature sensors and automatic shutdown
Safety Certification	IEC 60950-1 / EN 60950-1
EMC Compliance	ETS EN 300 386, GR-1089-CORE, FCC Part 15 Class A
Electrical Protection	ITU-T K.20 (enhanced) / K.45 (basic)
RoHS Compliance	European Directive 2011/65/EU

ORDERING SKU INFORMATION

The 7360 ISAM FX shelf is available in three primary configurations to match deployment scale and environmental requirements. The FX-4 shelf provides 4 line termination slots in a 5 RU chassis, suitable for small central offices and remote cabinet deployments requiring extended temperature tolerance. The FX-8 shelf offers 8 line termination slots in an 8 RU form factor, balancing density and environmental flexibility for medium-density central offices and enterprise Optical LAN applications. The FX-16 shelf delivers 16 line termination slots in a 14 RU chassis for high-density central office and metropolitan aggregation sites. All shelf variants accept the FANT-F and FANT-G network

termination controller cards and are compatible with the full portfolio of GPON, XGS-PON, TWDM-PON, and point-to-point line cards. Seismic-qualified rack mounting kits and cable management accessories are available as separate orderable items to support NEBS Level 3 installation compliance.

