Multi-Tenant Housing Unit MDU Hardware Enclosure Vandal-Proof Security Standards - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

Multi-Tenant Housing Unit (MDU) environments present a uniquely hostile physical and environmental threat landscape for active network hardware. Unlike controlled datacenter or central office deployments, MDU enclosures are frequently installed in publicly accessible or semi-public spaces such as basements, parking garages, utility closets, and shared corridors. These locations expose critical broadband access equipment to accidental impact, deliberate vandalism, particulate ingress, moisture, and unauthorized physical access. This document establishes the authoritative technical specification for a carrier-grade, vandal-proof MDU hardware enclosure platform engineered to protect high-value optical and copper access electronics while maintaining full operational availability in the most demanding residential deployment scenarios.



HARDWARE ARCHITECTURE & SILICON

The MDU Vandal-Proof Enclosure platform is engineered around a rigid, single-piece cold-rolled steel chassis with a minimum thickness of 1.5 mm, hot-dip galvanized and finished with an anti-corrosion powder coating rated for 1,000 hours of salt spray exposure per ASTM B117. The structural design incorporates a recessed, blind-mounted hinge system and tamper-resistant Torx security fasteners to eliminate pry points. The enclosure door features a three-point locking mechanism with a hardened steel cam and a keyed or padlockable handle, delivering a minimum static pull-out resistance of 1,200 N. Internal mounting rails are isolated from the outer shell via vibration-damping grommets, protecting sensitive SFP+ optical transceivers and switching ASICs from mechanical shock and continuous low-frequency vibration. A conductive gasket around the door perimeter provides a continuous EMI/RFI seal,

maintaining shielding effectiveness of greater than 60 dB from 30 MHz to 1 GHz. Thermal management is achieved through a sealed, fanless convection cooling architecture, eliminating external moving parts that are vulnerable to tampering or particulate clogging. Integrated passive heat spreaders and an aluminum internal chassis frame conduct heat to the external fins, enabling a sustained operating temperature range of -40 degrees C to +65 degrees C without active airflow.

KEY FEATURES & ROUTING LOGIC

- Vandal-Proof Structural Integrity: 1.5 mm galvanized steel shell with IK10-rated impact resistance and a 1,200 N door pull-out rating.
- Environmental Sealing: IP66-rated ingress protection against dust and high-pressure water jets, suitable for wash-down and flood-prone basement installations.
- Tamper Detection and Alarm: Magnetic reed switch and accelerometer-based shock sensor provide real-time door-open and tamper events via dry-contact alarm relays and SNMP traps.
- Locking System: Three-point locking with hardened steel cams, Torx security screws, and a padlockable handle with a 6 mm shackle clearance.
- Thermal Architecture: Fanless convection cooling with external finned heat sinks, rated for -40 degrees C to +65 degrees C continuous operation.
- Optical Interface Protection: Recessed LC/APC and SC/APC adapter ports with

hinged dust covers, preventing direct impact and contamination.

- Cable Management: Internal fiber slack spools with a 30 mm minimum bend radius and segregated AC/DC conduit entries.

- Mounting Flexibility: Compatible with wall-mount, pole-mount, and 19-inch rack-mount configurations using a single universal bracket kit.

COMPLIANCE & STANDARDS

The MDU Vandal-Proof Hardware Enclosure is designed and verified to meet the following international standards. All compliance testing is conducted by accredited third-party laboratories and documented in the product compliance register.

- IEC 62262: IK10 degree of protection against mechanical impacts.

- IEC 60529: IP66 degree of protection against dust and water ingress.

- ASTM B117: 1,000-hour salt spray corrosion resistance.

- EN 50102: IK10 impact resistance for enclosures.

- FCC Part 15 Subpart B: Class A unintentional radiators.

- EN 55032: Electromagnetic compatibility for multimedia equipment.

- EN 55035: Immunity requirements for multimedia equipment.

- RoHS 2011/65/EU and WEEE 2012/19/EU: Hazardous substance and waste compliance.

- Telcordia GR-487-CORE: Generic requirements for electronic equipment cabinets.

- Telcordia GR-63-CORE: Network equipment building system (NEBS) physical protection.

- UL 60950-1 and UL 62368-1: Safety of information technology equipment.

TECHNICAL SPECIFICATIONS

Parameter	**Specification**
Form Factor	1RU or 2RU vandal-proof wall/pole/rack-mount enclosure
Enclosure Material	1.5 mm cold-rolled steel, hot-dip galvanized, powder-coated
Impact Rating	IK10 per IEC 62262
Ingress Protection	IP66 per IEC 60529
Corrosion Resistance	1,000 hours salt spray per ASTM B117
Door Locking	Three-point locking, hardened steel cams, Torx security screws, padlockable handle
Door Pull-Out Resistance	1,200 N minimum
EMI/RFI Shielding	Greater than 60 dB from 30 MHz to 1 GHz

Operating Temperature	-40 degrees C to +65 degrees C, fanless convection cooling
Storage Temperature	-40 degrees C to +75 degrees C
Relative Humidity	5% to 95% non-condensing
Power Supply	Single AC or dual DC hot-swappable redundant inputs
AC Input Voltage	100-240 VAC, 50/60 Hz
DC Input Voltage	-48 VDC nominal, -36 VDC to -72 VDC range
Power Consumption	60 W typical, 120 W maximum
Alarm Interfaces	2x dry-contact relay outputs, 1x RS-485, SNMP v2c/v3 traps
Tamper Detection	Magnetic reed switch and accelerometer-based shock sensor
Fiber Port Protection	Recessed LC/APC and SC/APC adapters with hinged dust covers
Cable Entry	Segregated AC/DC conduit entries with IP66 gland plates
Mounting Options	Wall-mount, pole-mount, 19-inch rack-mount with universal bracket
Dimensions (1RU)	483 mm W x 44.5 mm H x 300 mm D
Dimensions (2RU)	483 mm W x 89 mm H x 350 mm D

Weight (1RU)	6.8 kg empty, 9.2 kg fully loaded
Weight (2RU)	9.5 kg empty, 13.0 kg fully loaded
Compliance	IEC 62262, IEC 60529, ASTM B117, EN 50102, FCC Part 15B, EN 55032, EN 55035, RoHS, WEEE, Telcordia GR-487, Telcordia GR-63, UL 60950-1, UL 62368-1

ORDERING SKU INFORMATION

- MDU-VP-1000-AC: Standard 1RU vandal-proof enclosure, single AC power input, wall/pole mount kit included.

- MDU-VP-1000-DC: Standard 1RU vandal-proof enclosure, dual DC power inputs, wall/pole mount kit included.

- MDU-VP-2000-AC: 2RU vandal-proof enclosure with integrated fiber slack management, single AC power input.

- MDU-VP-2000-DC: 2RU vandal-proof enclosure with integrated fiber slack management, dual DC power inputs.

- MDU-VP-RMK: Universal 19-inch rack-mount conversion bracket kit.

- MDU-VP-ALM: External alarm and tamper notification module with dry-contact relay output.

- MDU-VP-SFP-KIT: Environmental sealing kit for SFP+ and QSFP transceiver ports, IP66 rated.

