

DIN Rail Terminal Block - Turnkey Hardware Integration & Safety Specification:

Tier-1 LFP Battery Energy Storage Ancillaries

DIN RAIL TERMINAL BLOCK - TURKNEY HARDWARE INTEGRATION & SAFETY
SPECIFICATION

PRODUCT IDENTIFICATION

The DIN Rail Terminal Block series represents the critical low-voltage signal and auxiliary power interconnection backbone for Tier-1 Battery Energy Storage Systems (BESS). Engineered for harsh outdoor cabinet environments, this component family ensures reliable communication between BMS, EMS, PCS, and thermal management subsystems. All variants comply with IEC 60947-7 series and UL 1059 standards.



INTERNAL BESS TOPOLOGY

Within a liquid-cooled outdoor energy storage cabinet (e.g., 215 kWh – 372 kWh per unit), the DIN Rail Terminal Blocks are deployed across three functional zones:

- CONTROL LOGIC ZONE: Aggregating BMS cell voltage/temperature sense wires, CAN/RS485 communication buses.
- AUXILIARY POWER ZONE: 24 Vdc / 48 Vdc distribution for fans, pumps, contactor coils, and EMS logic power.
- SAFETY INTERLOCK ZONE: Emergency stop loops, door interlock circuits, and fire suppression system status signals.

THERMAL PROTECTION MECHANISMS

Proprietary housing materials (V0-rated polyamide, -40 ° C to +115 ° C operational range) resist UV degradation and thermal cycling induced by adjacent liquid cooling pipelines. Integrated finger-safe design per BGV A3 prevents arc flash events during live maintenance.

OPERATIONAL ADVANTAGES

- TOOL-LESS WIRING: Lever-type spring clamp accepts solid/flexible conductors (0.2 mm² – 6 mm²) without retorquing.

- BRIDGING COMPATIBILITY: Central bridging shafts allow potential distribution across 100+ poles without jumper wires.
- TEST POINT ACCESS: 2 mm diameter test sockets integrated on each pole for handheld DMM verification without wire removal.
- MARKING SYSTEM: Laser-engravable marker tags support asset tracking (QR code ready).

SPECIFICATION MATRIX

Parameter	Specification
Rated cross-section	4 mm ² (AWG 12 – AWG 10)
Rated current (IEC)	32 A (ambient 40°C)
Rated voltage (IEC/UL)	800 Vdc / 600 Vdc
Wire range (solid)	0.2 – 6 mm ²
Wire range (stranded with ferrule)	0.25 – 4 mm ²
Strip length	10 mm ± 0.5 mm
Pollution degree	3 (IEC 60947-1)
Flammability rating	UL 94 V-0
Operating temperature	-40°C to +115°C
Mounting	NS 35/7.5 or NS 35/15 DIN rail

REGULATORY COMPLIANCE

- IEC 60947-7-1: Low-voltage switchgear and controlgear – Terminal blocks for copper conductors.
- UL 1059: Standard for Safety for Terminal Blocks (US market).
- CSA C22.2 No. 158: Canadian requirements.
- RoHS 3 (EU) & REACH SVHC compliance.
- GL (Germanischer Lloyd) vibration tested for stationary ESS (5g, 10-500 Hz).



RECOMMENDED DEPLOYMENT LAYOUT

For a 2-hour C&I storage system, allocate three separate DIN rails inside the high-voltage DC junction box:

- Rail 1 (Top): 24 Vdc distribution to 20x battery module BMS slave boards.

- Rail 2 (Middle): CAN bus termination and 120 Ω impedance matching blocks.
- Rail 3 (Bottom): Emergency stop safety chain (redundant series contacts).

Ensure 25 mm clearance above/below blocks for heat dissipation and insertion tool access. Torque spring clamps to 0.5 N·m maximum – no recalibration required.