Terminal Block - Official Commercial BESS Technical Overview & Datasheet

TERMINAL BLOCK: HIGH-RELIABILITY DC INTERCONNECT FOR MODULAR BESS ARCHITECTURES

EXECUTIVE SUMMARY

The Terminal Block series represents a foundational interconnect component engineered specifically for high-current, high-vibration environments within containerized and cabinet-style Battery Energy Storage Systems (BESS). Designed to bridge battery rack outputs, PCS DC inputs, and auxiliary power distribution networks, these terminal blocks deliver low millivolt drop, IP20 to IP65 ingress protection variants, and tool-less locking mechanisms. All units undergo 100% factory dielectric testing and thermal cycling validation per IEC 60947-7-1 and UL 1059 standards.

SYSTEM ARCHITECTURE & SAFETY

The terminal block architecture employs a twin-screw pressure clamp or spring-cage termination system, accommodating copper or aluminum conductors from 16 mm^2 to 240 mm^2 (AWG 6 to 500 kcmil). A flame-retardant polyamide housing (V-0 rating per UL 94) provides electrical clearance and creepage distances compliant with overvoltage category III (pollution degree 3). Integrated touch-safe barriers and optional transparent protective covers eliminate accidental contact during O&M procedures.

KEY FEATURES

- High Short-Circuit Withstand: Rated up to 55 kA for 1 sec (DC) per IEC 61439-1, ensuring stability under fault conditions.

- Thermal Management: Open-back design dissipates joule heating; optional

silver-plated contact surfaces reduce resistance drift after 500+ thermal cycles.

- Modular Patching: Plug-in jumpers and bridging shafts enable rapid configuration of 2-, 3-, or 4-pole potential distributions without rewiring.

- Anti-Vibration Locking: Stainless steel spring washers and captive screws maintain torque integrity during transport and seismic events (certified to IBC 2021).

- Color-Coding & Marking: Gray (DC+), Blue (DC-), Green/Yellow (PE/Ground), and custom laser-marked labels per project schematics.

COMPLIANCE & STANDARDS

- IEC 60947-7-1 (Low-voltage switchgear – Terminal blocks)

- UL 1059 (Standard for Terminal Blocks)

- CSA C22.2 No. 158

- CE & UKCA (Low Voltage Directive 2014/35/EU)

- RoHS 3 (EU 2015/863)

- Fire safety: Glow-wire test at 960°C (IEC 60695-2-11)

TECHNICAL SPECIFICATIONS

Parameter	**Specification**
Rated operational voltage (Ue)	1500 Vdc (DC power) / 1000 Vac (aux

	control)
Rated current (In)	200 A to 630 A (depending on cross-section)
Conductor cross-section (flexible/rigid)	16 mm² – 240 mm² (AWG 6 – 500 kcmil)
Number of poles per block	1, 2, 3, or 4 (field configurable via jumpers)
Torque (main terminals)	12 Nm – 14 Nm (M10 screw)
Operating temperature range	-40°C to +85°C (derating above +70° C)
Flammability rating	UL 94 V-0 (polyamide 6.6)
Pollution degree / Overvoltage cat.	3 / III (IEC 60947-1)
Short-circuit withstand (Icw)	55 kA / 1 sec (DC)
Impulse withstand voltage (Uimp)	12 kV

INDUSTRIAL DEPLOYMENT

Terminal blocks are deployed across all turnkey BESS projects as the primary DC interface between battery modules (51.2 V nominal), high-voltage racks (800–1500 Vdc), and bidirectional PCS units. For liquid-cooled cabinets, the terminal block mounting rail integrates directly above coolant manifolds, maintaining

separation between power conductors and fluid lines. Field service engineers can replace individual poles in under two minutes using a standard torque screwdriver (preset to 12–14 Nm for main terminals).