

High-current Connector - Official Commercial BESS Technical Overview & Datasheet

HIGH-CURRENT CONNECTOR FOR BESS APPLICATIONS

EXECUTIVE SUMMARY

The High-current Connector series represents a paradigm shift in DC power transmission reliability for grid-scale and commercial Battery Energy Storage Systems (BESS). Engineered for sustained performance under extreme charge/discharge cycles, this connector family eliminates common failure points (hotspots, contact fatigue, ingress contamination) through a patented multi-laminate contact technology and IP68-rated environmental sealing. Designed to interface seamlessly with Tier-1 LFP battery racks, liquid-cooled cabinets, and high-voltage PCS units, the connector ensures $<0.2 \text{ m}\Omega$ contact resistance over 10,000 mating cycles.



SYSTEM ARCHITECTURE & SAFETY

The connector integrates a touch-proof, reverse-polarity-proof mechanical housing with a secondary locking lever to prevent accidental disconnection under vibration. Primary current-carrying components utilize oxygen-free copper with silver plating, achieving a current rating of up to 500A DC at 1500V DC (IEC 62852 compliant). A built-in RADSOK®-inspired louver band provides uniform radial force, eliminating micro-welding and fretting corrosion. Thermoplastic housings are UL94 V-0 rated, with a wide operating temperature range of -40°C to +125°C.

KEY FEATURES

- Ultra-low Contact Resistance: ≤ 0.2 mOhm initial, ≤ 0.3 mOhm after 10,000 cycles, minimizing joule losses.

- High Ingress Protection: IP68 (mated, 1m / 72h) and IP2X (unmated, touch-proof).
- Tool-less Cable Termination: Compatible with 35mm² to 150mm² copper/aluminium lugs via a torque-indicating screw clamp.
- Visual Mating Confirmation: Orange/green indicator window for positive locking feedback.
- UV & Salt Fog Resistant: Passes 1000h salt spray (ISO 9227) and UV F1 rating for outdoor DC bus interconnects.

COMPLIANCE & STANDARDS

- IEC 62852 (Ed.2): DC connectors for photovoltaic and storage systems.
- UL 4128: Standard for energy storage system connectors.
- RoHS 3 (2015/863/EU): Fully compliant, no restricted substances.
- ISO 6988: Sulfur dioxide corrosion resistance.
- Fire Rating: Glow wire test at 960°C per IEC 60695-2-11.

TECHNICAL SPECIFICATIONS

Rated Current: 200A / 300A / 500A variants (ambient $\leq 85^{\circ}\text{C}$, 25°C derating curve available).

Rated Voltage: 1500V DC (max).

Test Voltage: 5kV DC (60s).

Short-circuit Current (1s): 8kA (500A version).

Contact Base Material: Oxygen-free copper (Cu-ETP).

Plating: Ag (3µm min) over Ni (1µm).

Insulation Resistance: >1000 MΩ at 1000V DC.

Mating Cycles Durability: 10,000 mechanical / 5,000 electrical under load.

Cable Size Range: 35–150 mm² (AWG 2–300 MCM).

Operating Temperature: -40°C to +125°C (derating above 85°C).

Flammability Rating: UL94 V-0.

Ingress Protection: IP68 (mated), IP2X (unmated).

Connector Color Coding: Orange (positive) / Black (negative) / Green-yellow (PE).

Parameter	Specification
Rated Current (Max)	500A DC (ambient 85°C)
Rated Voltage (Max)	1500V DC (IEC 62852)
Contact Resistance (Initial)	≤0.2 mOhm
Ingress Protection	IP68 (mated) / IP2X (unmated)
Mating Cycles Durability	10,000 mechanical
Operating Temperature Range	-40°C to +125°C
Cable Cross-section	35–150 mm ² (copper / aluminium)

INDUSTRIAL DEPLOYMENT

Typical applications include DC busbars inside containerized ESS, battery rack interconnects for 1000V–1500V systems, high-power PCS DC inputs, and string combiner boxes for PV-storage-charging hubs. For installations in aggressive environments (coastal, desert, chemical plants), a pre-filled silicone grease option is available. All connectors undergo 100% hipot and contact resistance testing prior to shipment. Recommended torque for cable lug: 12–14 Nm depending on cable cross-section.

