IP67 Waterproof Connector - Official Commercial BESS Technical Overview & Datasheet

IP67 WATERPROOF CONNECTOR: OFFICIAL COMMERCIAL BESS TECHNICAL OVERVIEW & DATASHEET

EXECUTIVE SUMMARY

Designed for the rigorous demands of utility-scale and commercial & industrial (C&I) battery energy storage systems (BESS), this document provides a comprehensive technical overview of the IP67-rated waterproof connector platform. Engineered as a critical interface for power and signal transmission, this connector series guarantees unparalleled ingress protection, robust mechanical durability, and long-term operational reliability in outdoor and harsh environments. By ensuring a dust-tight and watertight seal against temporary immersion, this connector family delivers a key enabling technology for safe, high-availability energy storage deployments.

SYSTEM ARCHITECTURE & SAFETY

The connector architecture is designed for seamless integration into the high-voltage DC busbars and AC power cabling of modern BESS. Its core design philosophy centers on providing a reliable, environmentally sealed interface that maintains electrical integrity while mitigating risks of short circuits and corrosion.

- High-Voltage DC Interface: Supports voltages up to 1500V DC, suitable for direct integration with BESS racks and Power Conversion Systems (PCS).
- Touch-Proof Design: Features a touch-proof and mis-mating proof design to enhance installer safety. The connectors are engineered to prevent accidental contact with live contacts under normal operating conditions.
- Cable Termination: Offers both crimp and screw termination options for

flexible field installation, accommodating a wide range of conductor sizes.

KEY FEATURES

- IP67 Ingress Protection (Dust-Tight and Watertight): Absolute protection against ingress of dust and temporary immersion in water up to 1 meter for 30 minutes, ensuring high reliability and long service life in outdoor settings.
- Robust UV and Salt Spray Resistance: The connector housing is made of high-performance engineering plastics that are resistant to ultraviolet (UV) radiation and salt spray corrosion, making them ideal for coastal and extreme climate installations.
- Secure Locking Mechanism: A robust, audible locking mechanism ensures a secure connection that prevents accidental disconnection due to shock or vibration, critical for mobile or high-vibration applications.
- Wide Operating Temperature Range: Engineered for extreme conditions, the connector reliably operates within a temperature range of -40°C to +85°C, suitable for desert and arctic climates.
- High Mechanical Durability: Rated for over 100 mating cycles without degradation, supporting repeated maintenance and expansion operations.

COMPLIANCE & STANDARDS

The IP67 Waterproof Connector family is designed and type-tested to comply with the most stringent international standards for electrical connectors and BESS components.

- UL 4128 / UL 1977: Compliant with safety requirements for component connectors for use in data, signal, control, and power applications, providing a robust safety foundation.
- IEC 61984: Tested in accordance with this standard for connector safety and performance requirements, ensuring reliable electrical performance.
- IEC 60529 (IP Code): Certified to IP67, providing international recognition of the connector's high level of ingress protection.
- RoHS & REACH Compliance: All materials used are compliant with RoHS and REACH environmental regulations, reflecting our commitment to sustainability.

TECHNICAL SPECIFICATIONS

Please refer to the detailed technical specifications below for precise engineering data necessary for system design and integration.

Parameter	**Specification**
Connector Type	IP67 Circular / Rectilinear (Model Dependent)

Rated Current (Max)	Up to 300A (depending on contact size and cable gauge)
Rated Voltage (Max)	1500V DC
Number of Contacts	1-3 Power + 2-4 Signal (configurable)
Ingress Protection	IP67 (IEC 60529)
Operating Temperature Range	-40°C to +85°C
Housing Material	High-Impact, UV-Resistant Thermoplastic (UL94 V-0)
Contact Plating	Silver / Gold (optional) over Copper Alloy
Mating Cycles	> 100 cycles (Maintenance Grade)

INDUSTRIAL DEPLOYMENT

The IP67 connector is the preferred choice for critical connections in a variety of energy storage and renewable energy applications, including:

- Battery Energy Storage Systems (BESS): Connecting battery racks to PCS, and PCS to the grid or AC load, ensuring safe and reliable high-current power transfer.
- Solar PV Arrays: Serving as a reliable external cabling interconnect in

large-scale solar farms, where exposure to weather is constant.

- Electric Vehicle (EV) Charging Infrastructure: Used in the power distribution network of high-power EV charging stations, providing a durable and secure connection.

- Energy Storage in Mobile Applications: Suitable for marine, transportation, and heavy machinery applications where vibration and moisture resistance are paramount.