IP65 Enclosure - Official Commercial BESS Technical Overview & Datasheet

IP65 ENCLOSURE: PRODUCT OVERVIEW & OFFICIAL DATASHEET

EXECUTIVE SUMMARY

The transition to distributed energy storage demands hardware that transcends traditional indoor boundaries. The IP65-rated Energy Storage System (ESS) represents a paradigm shift in commercial and industrial (C&I) deployment, offering a fully weather-proofed, self-contained unit engineered for outdoor operation in harsh environments. By achieving Ingress Protection Level 65, this platform eliminates the need for costly separate equipment shelters, reduces civil works, and accelerates project timelines. This document details the system architecture, safety mechanisms, and verified performance ledger of our Tier-1 LFP-based, liquid-cooled IP65 storage solution.

SYSTEM ARCHITECTURE & SAFETY

The core of the IP65 platform lies in its hermetically sealed enclosure design. Every interface—from high-voltage DC busbars to low-voltage communication ports—is protected against dust ingress (6: dust-tight) and low-pressure water jets from any direction (5: water jets). This is achieved through a combination of automotive-grade gasketing, sealed gland plates, and a proprietary pressure equalization valve that prevents internal condensation without compromising the seal rating.

KEY FEATURES

- True Outdoor Deployment: Direct pad installation without protective canopies. Rated for operation from -30°C to +55°C (derated above 45°C).

- Corrosion Resistance: C5-M marine-grade coating standard (optional C5-H for

high humidity/high salinity).

- Integrated Thermal Management: The liquid cooling loop is fully internalized; heat exchangers are IP65-rated, using a glycol-water mixture with no exposed fans.

- Smart Sealing Monitoring: Continuous enclosure integrity verification via internal pressure sensors; alerts dispatched via EMS if seal is breached.

- High-Voltage DC Safety: Internal separation between battery compartment (IP65) and power electronics bay (IP65) with a 3-layer fire barrier.

COMPLIANCE & STANDARDS

Certified to global ingress protection, electrical safety, and grid interconnection standards:

- IEC 60529: Degree of protection provided by enclosures (IP65 verified).

- UL 9540A: Thermal runaway fire testing (passed for no external ignition).

- IEC 62619: Safety requirements for secondary lithium cells and batteries.

- UN 38.3: Transport safety.

- IEC 62477-1: Safety of power electronic converter systems.

TECHNICAL SPECIFICATIONS

Parameter	**Specification**

Ingress Protection (Enclosure)	IP65 (IEC 60529) - Dust-tight & Protected against water jets
N	o
2	1
C	o
S	m
C	e
T	i
O	p
-	3
C	o
C	5
E	n
A	l
D	i
1	4
W	e
~	2
R	o
≥	
B	M
M	o

W	a
1	0

OPERATIONAL ADVANTAGES

Compared to standard indoor or NEMA 3R cabinets, the IP65 platform reduces total installed cost by 22% and deployment time by 35% by eliminating the need for climate-controlled electrical rooms. The sealed architecture also drastically reduces maintenance intervals — filter cleaning is eliminated, and component lifespan is extended due to zero particulate ingress.