

Pillar48

Telecom Battery System



48V Sodium-ion backup power engineered for telecom and critical infrastructure

The **Syntropic Power Pillar48 48V Telecom Battery System** is a high-capacity sodium-ion energy storage system designed as a direct drop-in replacement for legacy lead-acid and nickel-cadmium battery banks in telecom cell tower huts and small commercial & industrial applications. The four-bay system integrates **18 air-cooled battery modules** across three 19-inch rack bays in a NEMA-rated double-wide freestanding enclosure, with a dedicated fourth bay for DC distribution and system controls. Delivering 175 kWh of backup energy with proven thermal stability, validated by RIT, showing no explosion or fire under defined abuse conditions.

KEY FEATURES:

- 175 kWh system energy capacity
- Native 48VDC – drop-in telecom compatible
- Long cycle life $\geq 20,000$ cycles
- Validated thermal stability – inherently safer chemistry
- Wide operating range: -40°C to 60°C
- No active cooling or HVAC required
- NEMA 4 / Type 12 / Type 3R rated enclosure
- BMS-less design – passive 16S cell balancing per module



ELECTRICAL SPECIFICATIONS

PARAMETER	VALUE
System Nominal Voltage	46.4 V DC
System Voltage Range	32 – 54.4 V DC
Rated Energy	175.4 kWh
Rated Capacity	3,780 Ah
Continuous Current	945 A (system)

CHARGE & DISCHARGE PERFORMANCE

PARAMETER	VALUE
Std. Charge/ Discharge	0.25C
Maximum Charge Rate	0.25C (0.5C pulse)
Max Discharge Current	100A per module
Pulse Discharge	1C
Round-Trip Efficiency	$\geq 97.9\%$

ENVIRONMENTAL SPECIFICATIONS	
PARAMETER	VALUE
Charge Temperature	-20°C to 60°C
Discharge Temperature	-40°C to 60°C
Storage Temperature	-40°C to 70°C
Cooling Method	Passive air-cooled (SelfTherm™)
Enclosure Rating	NEMA 4 / Type 12 / 3 R

CYCLE LIFE	
PARAMETER	VALUE
Cycle Life	≥20,000 cycles (design target)
Test Conditions	1C, 100% DoD, 25°C ± 2°C
Calendar Life	25-year design service life

PHYSICAL SPECIFICATIONS	
PARAMETER	VALUE
Dimensions (H x W x D)	84.1" x 78.0" x 24.1" (2,137 x 1,981 x 613 mm)
System Weight	~2,000 kg (4,409 lbs)
Mounting	Floor-mounted, free-standing
Cable Entry	Top and bottom

CERTIFICATIONS (TARGET)	
PARAMETER	VALUE
UL 9540A (Cell Level)	Passed
UN38.3 (Transport)	Passed
UL 1973 (Module)	In progress
UL 9540 (System)	In progress

TELECOM INTEGRATION NOTES:

- **46.4V DC nominal system voltage:** 32–54.4V operating range covers the full window of legacy VRLA lead-acid and Ni-Cd battery strings.
- **Drop-in 48V replacement:** Designed for existing 48V battery banks with no DC/DC converter required. Compatible with standard telecom rectifier float-charge profiles.
- **Lower thermal risk:** Sodium-ion chemistry presents lower thermal risk than traditional lithium-ion systems, reducing reliance on complex fire-suppression infrastructure and supporting installation in enclosed telecom huts and space-constrained environments.
- **Patent-pending BMS-less architecture:** Rectifier-controlled charging and sodium-ion chemistry reduce thermal runaway risk, eliminating the need for a traditional BMS. Each module includes 16S passive balancing, with optional voltage/temperature alarms via SNMP or dry contacts.