

Commercial & Industrial Battery System

High-voltage sodium-ion energy storage engineered for commercial & industrial applications

The **Syntropic Power PillarX Commercial & Industrial Energy Storage System** is a high-voltage sodium-ion battery system engineered for commercial and industrial sites that need 2 to 15+ hours of storage duration. PillarX is built from **PillarPack modules (16 cells in series, NaCrO₂ (NCO) chemistry)** configured 27 modules in series to form a ~263 kWh string that operates just below the 1,500 VDC system limit – directly compatible with standard commercial PCS equipment. Strings parallel on a common DC bus to scale system energy into the multi-megawatt-hour range. Like every Syntropic system, PillarX uses inherently safe chemistry and passive SelfTherm™ thermal management, so no active cooling or HVAC is required.

KEY FEATURES:

- 263 kWh per string – scalable to multi-MWh
- High-voltage architecture – up to 1,500 VDC class
- 2–15+ hour configurable duration
- 1C pulse capability (20 min)
- Long cycle life – designed for ≥ 20,000 cycles
- Inherently safe sodium-ion chemistry
- Wide operating range: –40°C to 60°C
- Passive SelfTherm™ thermal management – no HVAC



ELECTRICAL SPECIFICATIONS	
PARAMETER	VALUE
System Nominal Voltage	1,252.8 V DC (27S)
System Voltage Range	864 – 1,468.8 V DC
Rated Energy (per string)	~263 kWh
System Energy (scalable)	263 kWh – 2.6+ MWh
Rated Capacity	210 Ah per string
Configuration	27× PillarPack 16S1P (432 cells)

CHARGE & DISCHARGE PERFORMANCE	
PARAMETER	VALUE
Std. Charge/ Discharge	0.5C
Pulse Discharge	1C (20 min)
Continuous Current	105 A per string (0.5C)
Round-Trip Efficiency	≥ 97.9% (0.5C, DC)

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 3R / Type 12

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
Configuration	27S PillarPack, 432 cells
Module Weight	~92 kg each
String Weight (modules)	~2,484 kg
Cabinet Weight	~2,800 kg (preliminary)
Dimensions (H x W x D)	Pending mechanical design
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

SYSTEM INTEGRATION NOTES:

- **High-voltage DC architecture:** The 27-module series string delivers 1,252.8 V nominal output, with an 864–1,468.8 V operating range that remains below the 1,500 VDC system limit for direct compatibility with standard commercial and industrial PCS.
- **Scalable energy:** Parallel 27S strings on a common DC bus scale system energy from ~263 kWh to multi-MWh configurations, with no DC/DC conversion required between strings.

