HPS-17000: 150 kW SiC-Based Power for EV Battery Test at Scale

Flexible and Scalable EV Battery Cycler

The need to quickly increase EV battery testing capacity is making validation labs harder to manage and forcing engineering teams to explore ways to sustainably scale up their test lab operations.

From few to dozens of test cells, managing power from the battery cyclers is one of the main challenges that impacts lab efficiency, CO_2 footprint, and operational expenses.

A software- and data-centric test strategy can help but requires flexible test equipment that can be synchronized, orchestrated, and operated effectively.

Battery cycler flexibility and openness is critical to achieve the scale needed in modern battery validation labs.

Customer Needs

01
Test existing 400 V and 800 V EV battery architectures, and future-proofing for higher voltage and test capacity needs

02
Define battery validation lab layouts that work for current and future needs

03
Maximize lab equipment utilization and integrate existing equipment

04
Monitor and manage full lab operation to optimize operational cost

NI HPS-17000

01
150kW battery cycler with low- and high-voltage modes of operation, up to 1500 V

02
Parallel cycler operation without physical proximity, providing flexibility to lab layout

03
High maintainability with modular design and swappable power bricks

04
NI's software-connected approach to automate configuration, execution, and reporting on test operations

HPS-17000: Advantage

Layout Flexibility: Microsecond synchronization with time-sensitive networking enables parallel operation of cyclers regardless of location in the lab.

Application Coverage: In addition to battery cycling, its sub-ms dynamic performance makes it suitable for battery test, inverter testing, and dynamometer applications.

Easier maintenance: Individual SiC-based power modules (PMSiC) can be replaced and stocked for higher uptime.

Standardization: Power- and application-specific breakout sections in the cabinet support lowering the cost of service across applications.

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Specifications

OUTPUT POWER, MAX	±150 kW	
RATED SUPPLY VOLTAGE	480 V rms, 3-PHASE DELTA (NO NEUTRAL)	400 V rms, 3-PHASE DELTA (NO NEUTRAL)
RATED INPUT CURRENT, FULL-LOAD AMPERES	230 A	270 A
RATED FREQUENCY	60 Hz	50 Hz - 60 Hz
SHORT-CIRCUIT CURRENT RATING SCCR (UL)	25 kA rms SYMMETRICAL @480 V MAX	
OUTPUT VOLTAGE, MAX	750 V DC (HIGH CURRENT MODE) 1500 V DC (HIGH VOLTAGE MODE)	
OUTPUT CURRENT, MAX	+/- 480 A (HIGH CURRENT MODE) +/- 240 A (HIGH VOLTAGE MODE)	
DIMENSIONS (L X W X H)	925.2 mm X 1408 mm X 2123.6 mm (36.4 in X 55.4 in X 83.6 in)	
WEIGHT	1650 kg (3638 lb) – CYCLER ONLY 1830 kg (4035 lb) – CYCLER WITH CRATE	
COOLING	FORCED AIR 900.0 mm (35.4 in) MIN CLEARANCE FRONT AND BACK	

System Integration on Your Terms

NI offers a variety of solution integration options customized to your application-specific requirements. You can use your own internal integration terms for full system control or leverage the expertise of our worldwide network of partners to obtain a turnkey system.

To learn how you can increase product quality and shorten test timelines, contact your account manager or NI at (888) 280-7645 or info@ni.com.