NH Research

Short Form Catalog 2019

NH RESEARCH
enables electrification by accelerating innovation, validation, and functional testing of today's technologies.

WHO WE ARE

NH Research, Inc. (NHR) enables electrification by accelerating innovation, validation, and functional testing of today's technologies. Backed by over 50 years of experience in power conversion and power supply test systems, we provide world-class test instruments and systems.

Our solutions provide the performance, simplicity, and safety that engineers and researchers desire. Customers look to NHR for:

- Best in class performance
- Ease of use for instruments & systems
- Modular & scalable solutions
- Reduced testing time
- Improved safety
- Energy savings

OUR PRODUCTS

Our product portfolio ranges from basic instruments to complete turnkey systems and includes:

- Battery cyclers & battery emulation systems
- Grid simulators
- AC & DC electronic loads
- Power supply test systems
- AC & DC power supplies

SIMPLICITY & EFFICIENCY THROUGH AIR-COOLING & REGENERATION

All of NH Research's products are air-cooled, allowing them to be used virtually anywhere without requiring additional water-cooling connections.

Higher power systems use regeneration which improves efficiency by reducing utility consumption (operating costs), as well as lowering the amount of heat being exhausted into the surrounding environment.

OUR VALUE

NH Research enables our customers to get to market faster, safer, and more cost- effectively by providing world-class test solutions and support.

BI-DIRECTIONAL DC SOURCES

9200 SERIES

Modular Battery Cycling & Emulation Test System

Ideal for the testing and characterization of battery modules, power converters (APM/OBC), and battery emulation

- Module options to fit your voltage 40, 120, 240 & 600 VDC
- Up to three 12 kW modules/cabinet
- Scalable to 144 kW
- Regenerative discharge (load)
- High efficiency > 87%
- Battery cycling & emulation
- Built-in safety isolation relays

9300 SERIES

High Power Battery Test & Emulation Test System

Ideal for the testing and characterization of EV/ESS battery packs and battery emulation for powertrain and DC fast chargers

- Dual range 600 VDC & 1200 VDC
- Modular 100 kW per cabinet
- Scalable to 2.4 MW
- Regenerative discharge (load)
- High efficiency > 90%
- Battery emulation mode
- Built-in safety isolation relays

9410 SERIES

Bi-Directional DC Source

Ideal bi-directional source for DC bus power simulation (DC grid)

- Dual range 200 VDC & 400 VDC
- Three channels per system
- Scalable from 4 kW to 96 kW
- Regenerative discharge (load)
- High efficiency > 90%
- Mix AC & DC on separate channels
- Built-in safety isolation relays

MODULAR & SCALABLE SOLUTIONS

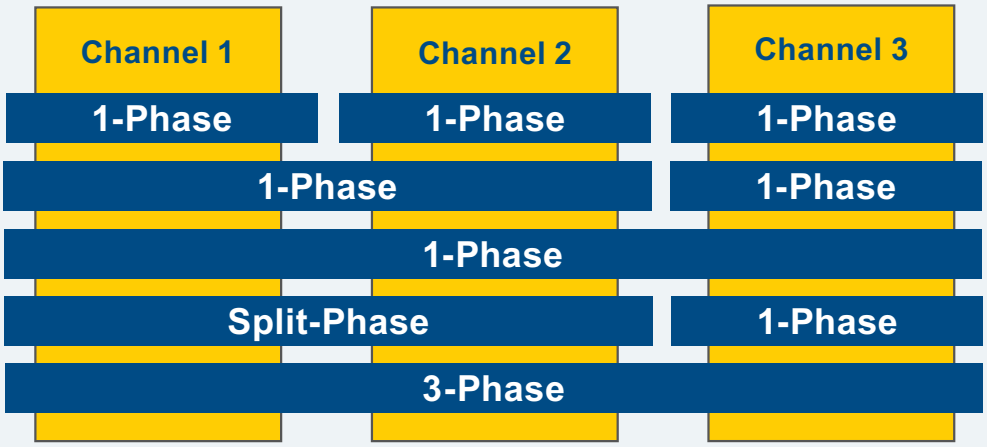
9410 SERIES

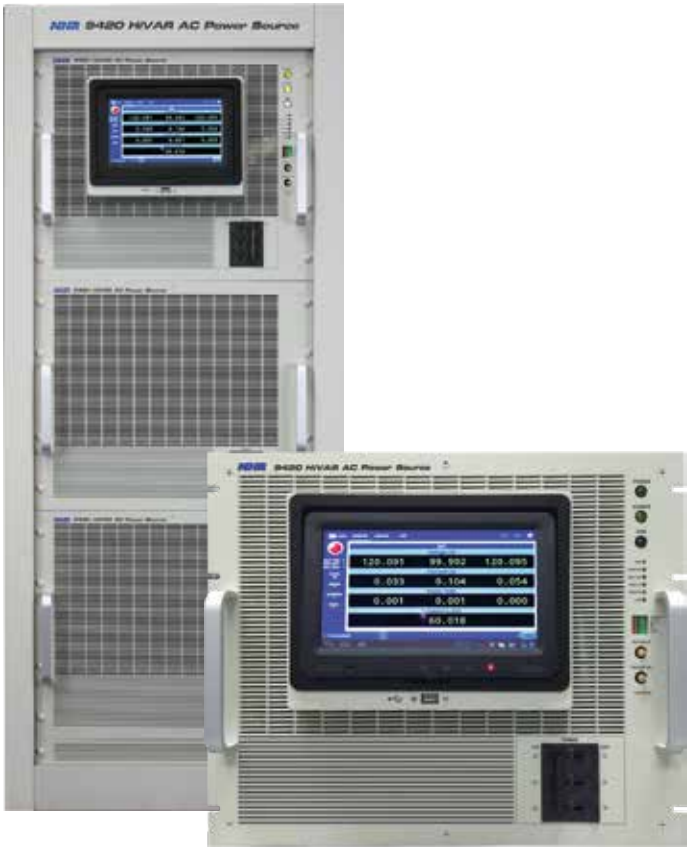
Regenerative AC Grid Simulator

Ideal for UL1741, IEEE1547, V2G, and similar grid-tied inverter testing, PV inverter testing

- Dual range 175 VAC l-n & 350 VAC l-n @ 30-880 Hz
- Three channels for 3-ϕ, split-ϕ, or up to three 1-ϕ outputs
- Scalable from 4 kW to 96 kW
- Regenerative discharge (load)
- High efficiency > 90%
- Mix AC & DC on separate output channels
- Built-in safety isolation relays

MULTIPLE CONFIGURATION POSSIBILITIES





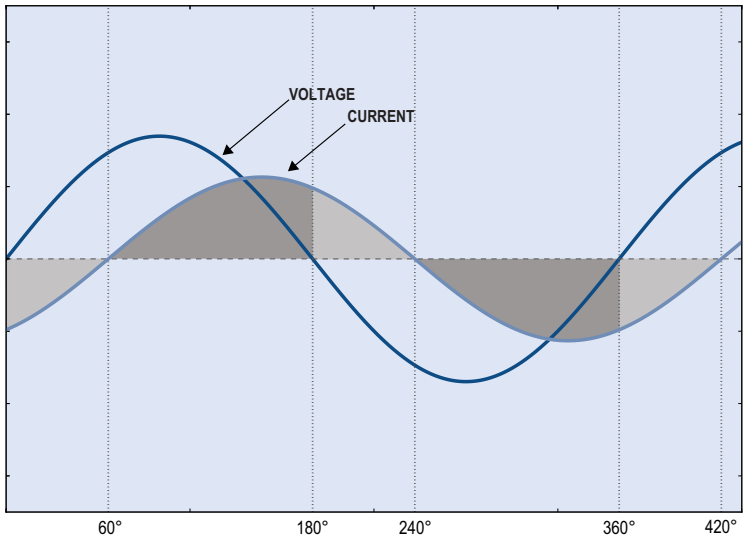
9420 SERIES

AC Power Source

Ideal for ATE including use in aviation, aerospace, defense, manufacturing test, research, and development, power line disturbance, regulatory testing

- Dual range 175 VAC l-n & 350 VAC l-n @ 30-880 Hz
- Three channels for 3-ϕ, split-ϕ, or up to three 1-ϕ outputs
- Scalable from 4 kW to 96 kW
- Ultra-low current Energy Star measurement ranges
- DC output & bi-directional DC operating option
- Mix AC & DC on separate output channels
- Built-in safety isolation relays

BI-DIRECTIONAL POWER FLOWS



MODEL 9430

Regenerative 4-Quadrant AC Load

Regenerative AC load that simulates any inductive, capacitive, or resistive load inverter, UPS, switch, and fuse testing

- 8 sizes: 4 to 96 kW
- Single, split or three-phase programmable
- 10 to 350 VAC, 30 to 880 Hz
- DC operation 10 to 400 VDC
- Reactive power capability 2.6 x real power
- High efficiency >90%
- Power factor range: -1 to +1
- Crest factor range: 1.414 to 4.000

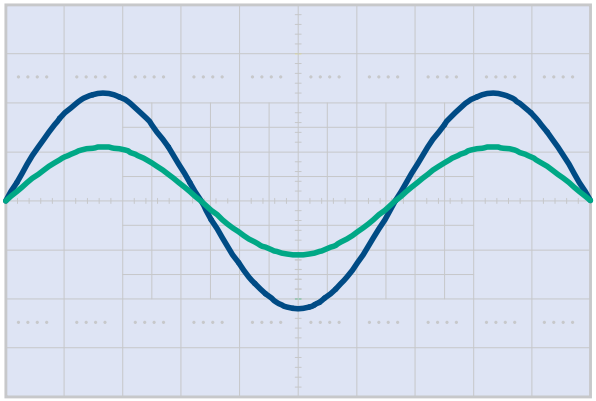
4600 SERIES

AC Electronic Load

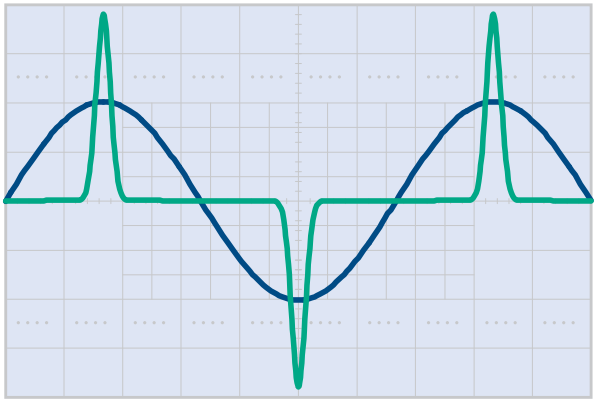
AC air-cooled load for UUT reliability testing, UPS testing, vehicle to grid (V2G) testing

- 6 sizes: 3 to 36 kW, 30 – 360 A, 50 – 350 V
- Single & 3-phase configurations
- 100-step macro for per cycle loading changes
- User-defined waveforms
- CC, CR, CV, CP, SC, UPF, & CNL emulation modes
- PC control using LabVIEW & IVI drivers

UTILITY POWER FACTOR



HIGH CREST FACTOR



9300 SERIES

High-Voltage Battery Test System

Battery cycling, battery emulation, powertrain testing, DC fast charging

- Dual range 600 VDC & 1200 VDC
- Modular 100 kW per cabinet
- Scalable to 2.4 MW
- Regenerative discharge (load)
- High efficiency > 90%
- Built-in safety isolation relays
- CAN, BMS, DAQ options

9200 SERIES

Battery Test System

Battery module and pack test system, battery emulation, power cycling testing & life cycle testing

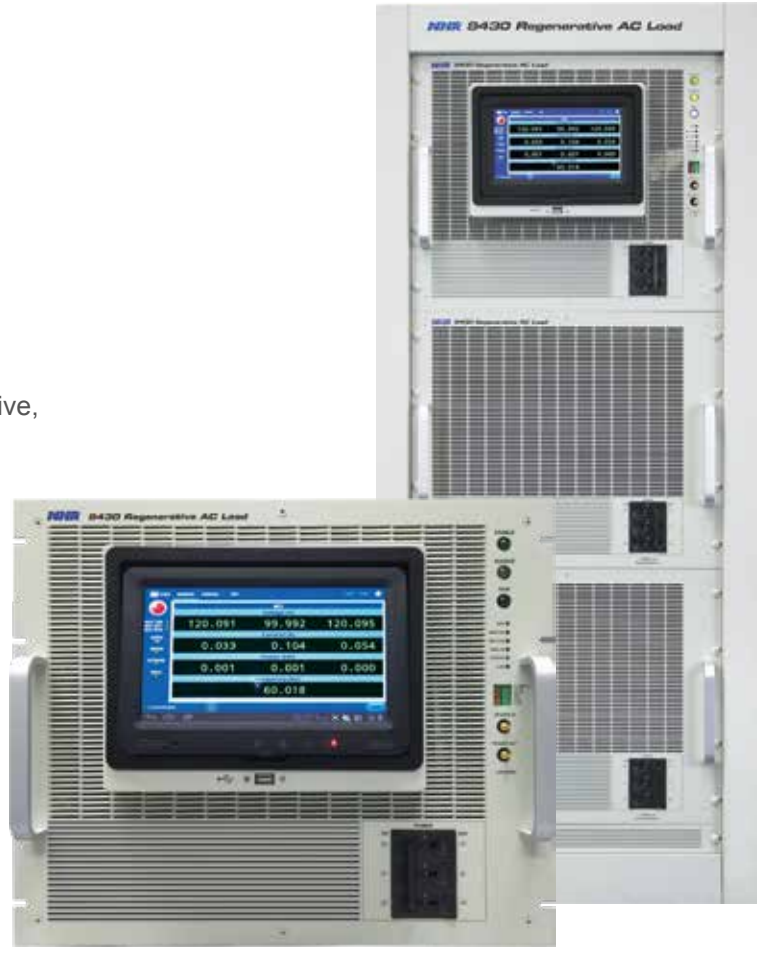
- Module options to fit your voltage
  40, 120, 240 & 600 VDC
- Up to three 12 kW Modules / cabinet
- Scalable to 144 kW
- Regenerative discharge (load)
- High efficiency > 87%
- Built-in safety isolation relays
- CAN, BMS, DAQ options

9430 SERIES

Regenerative 4-Quadrant AC Load

Regenerative AC load that simulates any inductive, capacitive, or resistive load

- 8 sizes: 4 to 96 kW
- Single, split, or three-phase programmable
- DC operation 10 to 400 VDC
- High efficiency >90%



4700 SERIES

DC Load up to 120 V

High current DC electronic load for battery testing, EV subsystem testing (OBC, V2G, APM), super-cap testing, and rectifier testing; ideal for fast transients, ultra-low voltage loading (down to 0.01 VDC), and configuring for ATE test systems

- 8 sizes: 1 to 36 kW @ 120 V
- Multiple high accuracy ranges
- 4 voltage ranges: 6.6, 20, 66 &120 V
- 2 current ranges (model dependent)
- Built-in measurement system that can eliminate additional equipment
- High accuracy 1 kW low power range
- PC / LAN control using LabVIEW & IVI drivers
- Optional touch panel user interface

4312 SERIES

Modular DC Load up to 120 V

Modular DC load for ATE systems
Modular DC load for charger testing, LED driver testing and solar panel testing

- 3 sizes: 150, 300, & 600 W @ 120 V with advanced measurement capability built-in
- Up to 16 loads in a single, 8 3/4″ / 5U Model 4300 chassis
- Mix & match loads for maximum configuration flexibility
- Isolated digital inputs & outputs for test fixture support
- PC / LAN control with LabVIEW & IVI drivers

4760 SERIES

DC Load up to 120 V

High voltage DC load for fuel cell testing, power conversion testing, telecom rectifier testing, vehicle to grid (V2G) testing

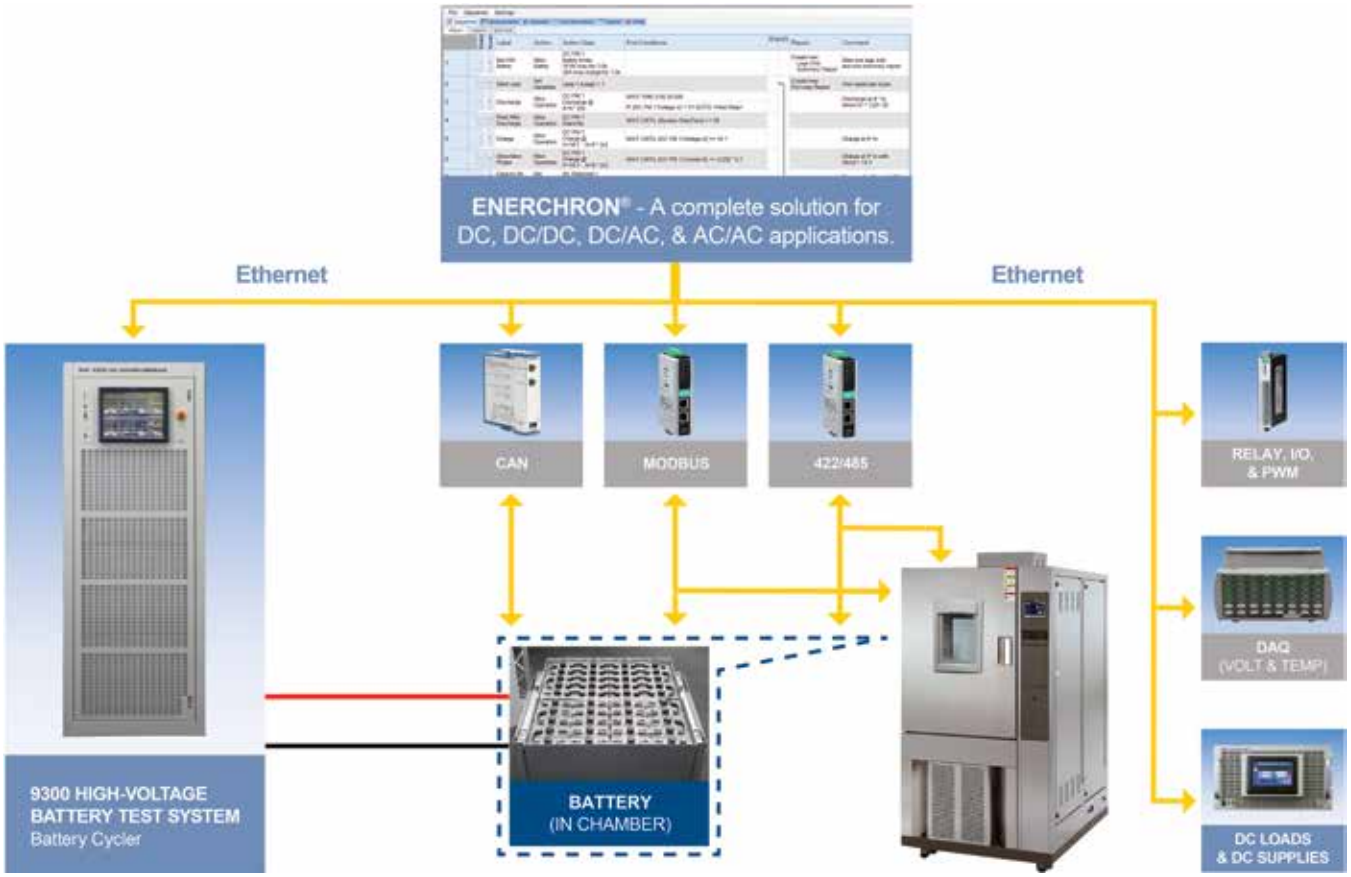
- 600 V, 1 kW / 50 A to 36 kW / 1800 A DC loads
- 3 voltage & 2 current ranges
- High accuracy 1 kW low power range
- Advanced built-in measurements
- Test fixture support
- Complex load profile playback
- Multiple hardware control options

4350 SERIES

Modular DC Load up to 500 V

Modular DC load for ATE, modular DC load for charger testing, LED driver testing and solar panel testing

- 3 sizes: 150, 300, & 600 W @ 500 V with advanced measurement capability built-in
- Up to 16 loads in a single, 8 3/4″ / 5U Model 4300 chassis
- Mix & match loads for maximum configuration flexibility
- Isolated digital inputs & outputs for test fixture support
- PC/LAN control with LabVIEW & IVI drivers



ENERCHRON® 2.0
TEST MANAGEMENT SOFTWARE

Test executive with advanced test creation, execution, and reporting capabilities for battery cycling and other energy product testing

- Powerful test sequence editor that is both flexible & intuitive
- Dramatically reduces test development time
  - Simple graphical sequence programing
  - Engineers remain focused on the UUT
- Variables are key
  - Save key data & perform calculations
  - Dynamically control the test
- Implementing drive / grid cycles is easy as 1-2-3
- Advanced reporting features

MODEL 5600

Universal Test System

Universal test system for testing power supplies with DC outputs

- Maximum configuration flexibility with multi-bay capacity
- Digital measurement system 2 waveform digitizers & 2×16, 100 MHz multiplexer
- Expandable input measurement channels
- Common interface panel

MODEL 5710

Engineering Characterization Test System

DC power supply test system for engineering characterization / design verification testing, power supplies testing, and defense avionics testing

- Tektronix MDO-series mixed signal oscilloscope
- Unlimited voltage, current & timing measurements relative to digital signals
- Library of design verification test routines reduces program development time
- Configuration flexibility

S600 SERIES

Power Supply Tester

Multi-channel test system for high-speed parallel testing of adapters, chargers, LED power drivers, DC converters, voltage regulator modules, point-of-load converters and AC-DC power supplies

- Maximum test throughput through parallel testing of multiple devices & outputs
- Ease of reconfiguration or expansion through front-loading, card-based instruments
- Built-in waveform digitizers on all instruments
- Space-saving design

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