

# 9210 Series Single Channel DC Test System

**NHR**  
NH Research, Inc.

## Automated Characterization, Cycling, & Emulation of Batteries

### Features

- 3 Modular voltage options 40, 120, & 600V
- Parallels with other 9200 & 9210 systems
- High-resolution waveform capture up to 1.2M Sample/Sec
- Precision voltage, current, power, & energy measurements
- Cycle batteries (charge/discharge) & drive cycles
- Fast dynamic patterns - 1000 step sequence
- State of the art battery emulation mode
- Built-in controller with touch-compatible interface
- Ethernet (LAN)

### Advantages

- Battery emulation using OCV & series resistance
- Designed for testing & emulating all battery chemistries
  - Automatic energy integration (full & 1/2 cycle)
  - Multiple safety layers to protect UUT
- Software tools to shorten test development time
  - PC-based Softpanel GUI with charting
  - Supplied LabVIEW & IVI-C/IVI-COM drivers
  - Optional: Enerchron® test sequencer

### Benefits

- Modular - full function tester per channel design
- Parallels for high power testing (up to 252kW)
- Safely simulate and emulate “Real World” conditions
  - Sub-mS voltage, current, & mode transition times
  - Emulate over/under charged batteries
  - Safely emulate BMS & battery failures
- Small footprint for easy movement



# Model 9210 Individual Power Module Specifications

	Model 9210-4904			Model 9210-4912			Model 9210-4960		
<b>Programming Capability</b>									
Operating States	Charge (Source), Discharge (Load), Standby, Battery								
Charge/Discharge Modes	Constant-Voltage(CV), Current (CC), Power (CP), Resistance (CR)								
Charging Envelope	0 - 40 V, 8 kW, 600 A			0-120 V, 8 kW, 200 A			0-600 V, 8 kW, 40 A		
Discharging Envelope	1 - 40 V, 12 kW, 600 A			4-120 V, 12 kW, 200 A			10-600 V, 12 kW, 40 A		
<b>Programming</b>	Range	Accuracy <sup>1</sup>	Resolution <sup>1</sup>	Range	Accuracy <sup>1</sup>	Resolution <sup>1</sup>	Range	Accuracy <sup>1</sup>	Resolution <sup>1</sup>
Voltage	0-40 V	0.1% + 0.1%	0.005%	0-120 V	0.1% + 0.1%	0.005%	0-600 V	0.1% + 0.1%	0.005%
Current	±600 A	0.2% + 0.2%	0.005%	±200 A	0.2% + 0.2%	0.005%	±40 A	0.2% + 0.2%	0.005%
Power	±8/-12 kW	0.4% + 0.4%	0.005%	±8/-12 kW	0.4% + 0.4%	0.005%	±8/-12 kW	0.4% + 0.4%	0.005%
Resistance	0 - 34 Ω	2%	0.005%	0 - 100 Ω	2%	0.005%	0 - 500 Ω	2%	0.005%
Slew Rate									
Voltage	0.011 V/s – 80 V/ms			0.033 V/s – 240 V/ms			0.165 V/s – 600 V/ms		
Current	0.17 A/s – 3000 A/ms			0.055 A/s – 1000 A/ms			0.011 A/s – 40 A/ms		
Resistance	0.01 Ω/s – 34 Ω/ms			0.028 Ω/s – 100 Ω/m			0.14 Ω/s – 500 Ω/ms		
Power	2 W/s – 8 kW/s			2 W/s – 8 kW/s			2 W/s – 8 kW/s		
<b>Test Measurement (4-Wire)</b>	Range	Accuracy <sup>1</sup>	Resolution <sup>1</sup>	Range	Accuracy <sup>1</sup>	Resolution <sup>1</sup>	Range	Accuracy <sup>1</sup>	Resolution <sup>1</sup>
Voltage, DC Average	0 -40 V	0.05% + 0.05%	0.005%	0 -120 V	0.05% + 0.05%	0.005%	0 -600 V	0.05% + 0.05%	0.005%
Current, DC Average, Amp-Hr	0 - 600 A	0.1% + 0.1%	0.005%	0 -200 A	0.1% + 0.1%	0.005%	0 - 40 A	0.1% + 0.1%	0.005%
Power, Ah, kWh	± 12 kW	0.2% + 0.2%	0.005%	± 12 kW	0.2% + 0.2%	0.005%	± 12 kW	0.3% + 0.2%	0.005%
Time	1ms - 1 Yr	0.1%	0.005%	1ms - 1 Yr	0.1%	0.005%	1ms - 1 Yr	0.1%	0.005%
<b>Physical</b>									
Test Channel Connectors	Buss Bars			Anderson EBC A32			Anderson SBS75X		
Cabinet2 Dimensions	43.5" H x 28" W x 31" D (including casters)								
Cabinet Weight	500 Lbs								
Operating Temperature	0 - 35°C full power								
Input Power <sup>2</sup> per Module	3 Ø, 50 - 60 Hz, 200VAC/30A, 208VAC/30A, 220VAC/29A, 380VAC/17A, 400VAC/16A, or 480VAC/13A								

<sup>1</sup> All Accuracies are % of Set + % of Range, All Resolutions are % of Range unless otherwise indicated, <sup>2</sup> Input Voltage set at placement of order



Model 9210-4904



Model 9210-4904 w/ Door Open



Compare to 9200 Height (Right)



9200 Series