



INNOVATIVE SOLUTIONS FOR THE POWER INDUSTRY

Regenerative Electric-Vehicle Acuation Node (RE-VAN)

RE-VAN is an outdoor rated device designed to simulate an Electric Vehicle (EV) to test dc fast chargers or ultra-fast chargers. RE-VAN is capable of EV communications using either CCS1 or CCS2 EV chargers.

The RE-VAN can emulate an end-to-end EV charging process up to the rated dc capacity of a charger, with or without using any battery storage system. RE-VAN is also available as rack-mounted for indoor setups.

Applications

- DC fast and ultra-fast charger testing, including:
 - Safety and functional testing (following IEC 61851)
 - Interoperability and conformance testing (CharIN-CCS, ISO 15118)
- Analysis of Vehicle-to-Grid Integration (VGI) and any impact on host systems (SAE J2894)
- Cybersecurity testing of EV chargers, using a third-party controller interface.



Why use a simulator?

Testing Limitations Using an EV

- Limited charging power due to available cars in market
- Fixed battery characteristics per EV
- Tests repeatability issues due to inability to set initial conditions
- Safety concerns with EVSE failure during tests.

How Can RE-VAN Help?

- High-power testing up to 500 kW, 1,000 V, 500 A dc
- Adjustable user-specific battery characteristics
- Adjustable test conditions offering easy repeatability
- Designed for testing chargers with additional safety features.



PICTURED: RE-VAN ultra-fast R-Series exterior and interior (containerized version)

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Features and Benefits

- High-power testing
- Built-in library of EVs with selectable initial condition
- Regenerative / minimizing losses during simulations
- Programmable and repeatable test procedures
- Provides interface for third-party controllers
- Compliant with ISO 15118 dc EV communication, with IEC 61851-23 for CCS2 coupler interface, and SAE J1772 for CCS1 coupler interface.



PICTURED: Outdoor lab setup for functionality testing DC fast and ultra fast charging stations using ultra-fast charger R-Series

Model	Fast Charger Tester B-Series	Fast Charger Tester R-Series	Ultra-Fast Charger Tester R-Series
Power range (charge)	25 kW - 100 kW	50 kW-250 kW	250 kW-500 kW
Maximum dc current (charge)	280 A	250 A	500 A
DC voltage range (charge)	350 V - 500 V	330 V - 1,000 V	730 V - 1,000 V
Tap box connection (for regenerative output, three-phase plus ground, four wires)	----	480 Vac / 600 A, 60 Hz	480 Vac / 600 A, 60 Hz
Container auxiliary power (split-phase plus ground, four wires)		120 / 240 Vac, 30 A, 60 Hz	
Regenerative or battery-based	Battery	Regenerative	Regenerative
Indoor / outdoor rated		Rack-mounted (indoor); containerized (outdoor)	

Item	Indoor-rated Lab Version B-Series	Indoor-rated Lab Version R-Series	Containerized Solutions
Dimensions (H x W x D)	<ul style="list-style-type: none"> • Battery setup: 4' x 8' x 4' • Control rack: One rack (19" 27-U) 	<ul style="list-style-type: none"> • Transformer: 5' x 4' x 3.6' • Power conversion system: 7' x 2' x 4' • AC/DC and control panel: 7' x 6' x 3' 	Standard sea container
Ambient operating temperature	+65 °F to +75 °F (18 °C to 24 °C)	+65 °F to +75 °F (18 °C to 24 °C)	-20 °F to +110 °F (-29 °C to +43 °C)

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