[Charging & discharging]
The charging & discharging test solution for 48V mild hybrid systems

One box for both source and sink (load)

Arbitrary waveform can be output as a load!
The N7900 Series power supplies can act as both a source and a load. For example, the real load current fluctuation can be reproduced on the bench by using a waveform file captured by an oscilloscope. This helps to verify real characteristics which can’t be seen using a static electronic load.

Seamless source & measurement of charge & discharge transients!
Seamlessly transition between power supply and load behavior, with high-speed switching capability. Simulate going between acceleration (discharging) and braking (regenerative charging). Perfect for charge & discharge test of bidirectional DC-DC converters or batteries.

High accuracy measurement of high current is also available!
Take advantage of the built-in, high accuracy ammeter. “Existing DMMs can’t measure high current...” “It’s troublesome to develop a current measurement system by using a shunt resistor. The measured value is not guaranteed...” This solution resolves such issues.

“Want to simulate the real state of an engine-start or battery cut-off?”
“Want to simulate the real state when stepping off the accelerator, or when braking happens?”
“Want high accuracy current measurement?”
If so, we can support you!
Generating power transients
Arbitrary waveforms can be created for both source and load transients. Fast programming speeds enable micro- and milli-second automotive power waveforms.

Characterizing dynamic current profiles
18-bit current digitizer with sample rate up to 200 kSa/s enables seamless current measurement with 0.04% accuracy.

Simulation of battery deterioration
Programmable output resistance simulates battery deterioration behavior which helps to understand DC-DC characteristics when the battery is degraded.

One-box solution providing all necessary functions
Source, load, ammeter and switch - the all-in-one solution improves work efficiency and brings high ROI.

E-load operation also available
The power dissipater unit to use together is prepared. This separate user-configurable hardware accessory helps to develop a module system according to required power.

Continuous source / load characteristics
Full two-quadrant and glitch-free operation across quadrants underlines this “one-box source and sink” solution.

Characterizing input current
A special current measurement range that is 2.25x higher than the max output rating can capture large current surges when the DUT is powered on.

Bidirectional power up to 10 kW
Parallel up to 5 units to create the desired voltage and current combination. Refer to recommended model table below to understand the maximum voltage / current.

Recommended models

<table>
<thead>
<tr>
<th>Voltage System</th>
<th>1kW model</th>
<th>2kW model</th>
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</thead>
<tbody>
<tr>
<td>12V system</td>
<td>N7951A 20V, 50A</td>
<td>N7971A 20V, 100A</td>
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<tr>
<td></td>
<td>N7952A 40V, 25A</td>
<td>N7972A 40V, 50A</td>
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<tr>
<td>48V system</td>
<td>N7953A 60V, 16.7A</td>
<td>N7973A 60V, 33A</td>
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<tr>
<td></td>
<td>N7954A 80V, 12.5A</td>
<td>N7974A 80V, 25A</td>
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<tr>
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<td>N7976A 120V, 16.7A</td>
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<td>N7977A 160V, 12.5A</td>
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</tbody>
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Config example 1 (48V mild hybrid)
"Want sinking capability for DC-DC converter in 5 kW regenerative operation!"
N7973A + N7909A x4 parallel connection
As a battery simulator (e-load operation)

5kW 48V / 104A

Config example 2 (72V construction machinery)
"Want sourcing capability for DC-DC converter in 5 kW motor driving system!"
N7974A x3 parallel connection
As a battery simulator (source operation)

5kW 72V / 70A

Contact / Support
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