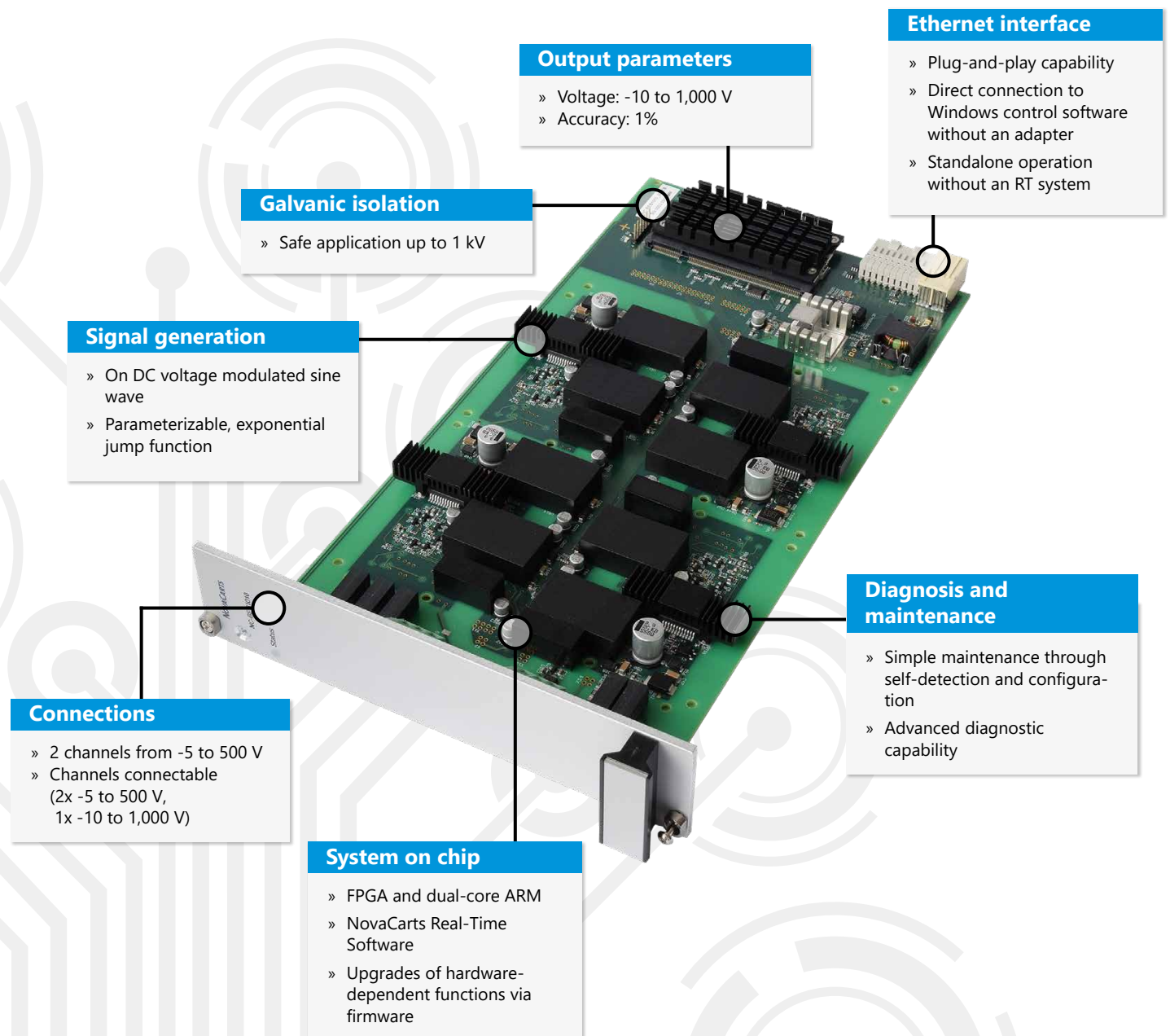# NovaCarts High Voltage Source Board

This component simulates the voltage occurring in the intermediate circuit of hybrid vehicles, thereby allowing control device tests during the charging process that takes place during the connection of the preloading contactor or the unloading of the circuits. The board also models sinusoidal fluctuations, as might occur while charging from the power grid. It allows to replicate a highly dynamic circuit voltage of between -10 and 1,000 V. Jumps over the entire voltage range can be modelled down to a few milliseconds.

The board simulates charging and discharging processes with programmable time constants of between a few milliseconds and multiples of 100 ms. Sinusoidal voltages with frequencies of between a few Hertz and 500 Hz can be added to the intermediate circuit voltage, thereby enabling the board to act as two independent sources with a voltage of between -5 and 500 V.

Output parameters
» Voltage: -10 to 1,000 V
» Accuracy: 1%

Ethernet interface
» Plug-and-play capability
» Direct connection to Windows control software without an adapter
» Standalone operation without an RT system

Galvanic isolation
» Safe application up to 1 kV

Signal generation
» On DC voltage modulated sine wave
» Parameterizable, exponential jump function

Diagnosis and maintenance
» Simple maintenance through self-detection and configuration
» Advanced diagnostic capability

Connections
» 2 channels from -5 to 500 V
» Channels connectable (2x -5 to 500 V, 1x -10 to 1,000 V)

System on chip
» FPGA and dual-core ARM
» NovaCarts Real-Time Software
» Upgrades of hardware-dependent functions via firmware

Data Sheet

Module name: **NC-BEB1010**

Data sheet version: **1V5**

Features

Voltage source	2 channels with 500 V, can be connected in series or 1x 1,000 V
Supply voltage	24 V (control system)
	48 V (cell emulation)
Operating temperature	0 to +55 °C
Storage temperature	-20 to +70 °C
Humidity	10 to 90 % (no condensation)
Dimensions	Height: 4 U, Width: 8 U
Connection to RT-System	Ethernet

Specifications

Output voltage	-10 to 1,000 V or -5 to 500 V
Accuracy	+/- 1 %
Resolution	16 bit
Output current	40 mA at >200 V or >400 V at 1,000 V mode; 20 mA at <200 V or <400 V at 1,000 V mode
Ascent time 0-1,000 V	<1 ms
Drop time 1,000-0 V	<2 ms
Sinus modelable	10 to 500 Hz
Exponential jump function	1 to 200 ms
Galvanic isolation	
Group to group	1,000 V
Channel to system	1,000 V