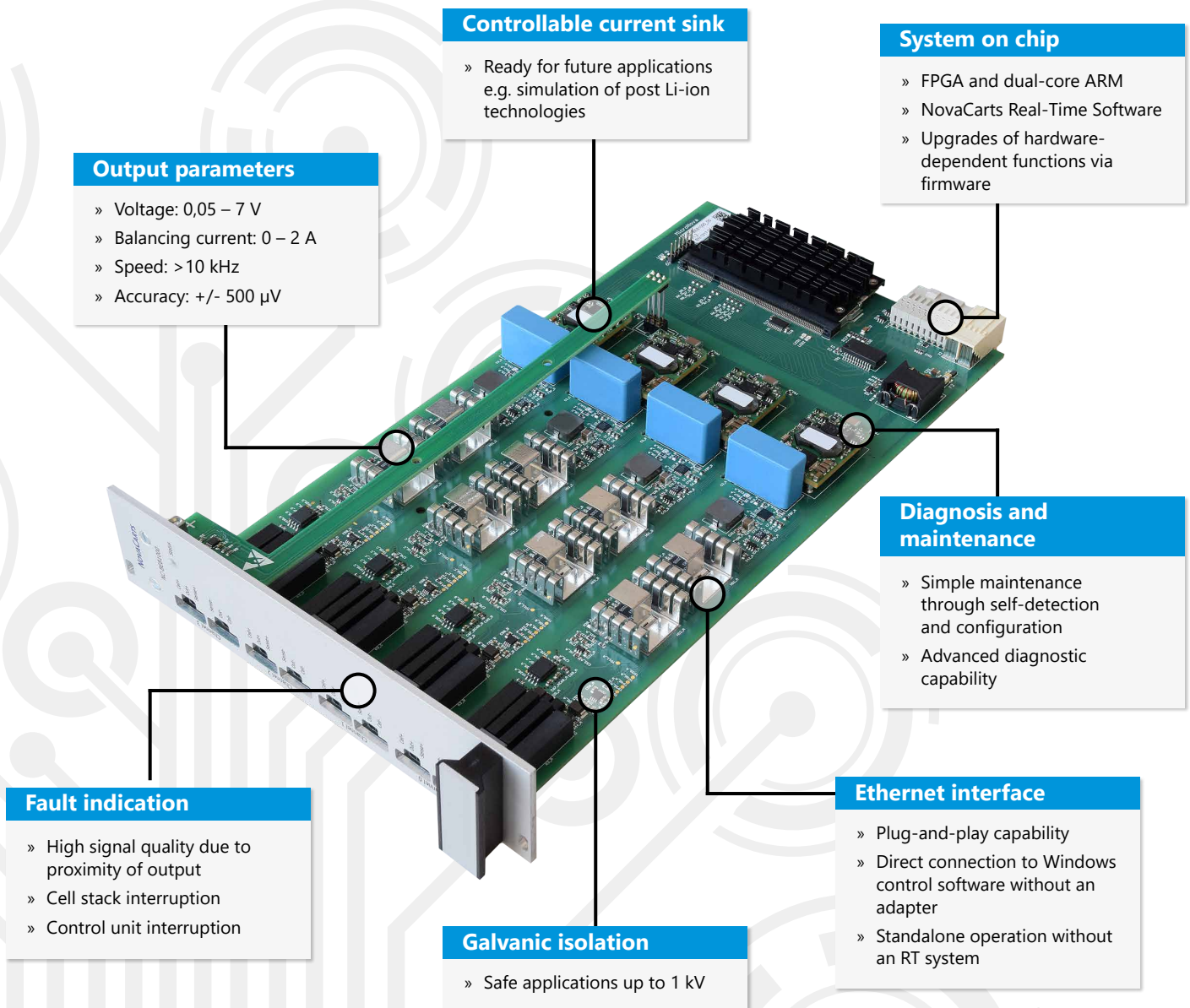# NovaCarts Cell Simulation Board

The board has been especially developed for validating battery management and charging systems. It simulates the electronic behavior of battery cells with an unprecedented degree of precision and speed. Since the cell simulation board is completely flexibly programmable, sophisticated algorithms – such as those used for electrochemical battery models – can be implemented directly on the board.

Due to its great computing power and the short microsecond-based cycles involved, the cell simulation card is ideally suited for the development of future battery management functions, such as cell balanc-ing mechanisms. Furthermore, the card is already able to simulate starter batteries as well as new lithium-technology-based battery types (e.g. lithium solid-state batteries).

Controllable current sink

» Ready for future applications e.g. simulation of post Li-ion technologies

System on chip

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

Output parameters

» Voltage: 0,05 – 7 V
» Balancing current: 0 – 2 A
» Speed: >10 kHz
» Accuracy: +/- 500 µV

Diagnosis and maintenance

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

Fault indication

» High signal quality due to proximity of output
» Cell stack interruption
» Control unit interruption

Ethernet interface

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

Galvanic isolation

» Safe applications up to 1 kV

Data Sheet

Module name: **NC-BEB1000**

Data sheet version: **2V0**

Features

Cell emulation	4 channels
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: 4U, Width: 8U
Connection to RT system	Ethernet

Specifications

Output voltage	0.05 – 7 V
Accuracy	+/- 500 µV
Resolution	16 bit
Output current	0 – 2 A – Maximum continuous power sink 6 W
Accuracy	+/- 0,5 %
Resolution	16 bit
Fail insertion	Distribution between cell and cell controller Distribution cell stack
Galvanic isolation	
Channel to channel	1,000 V
Channel to system	1,000 V