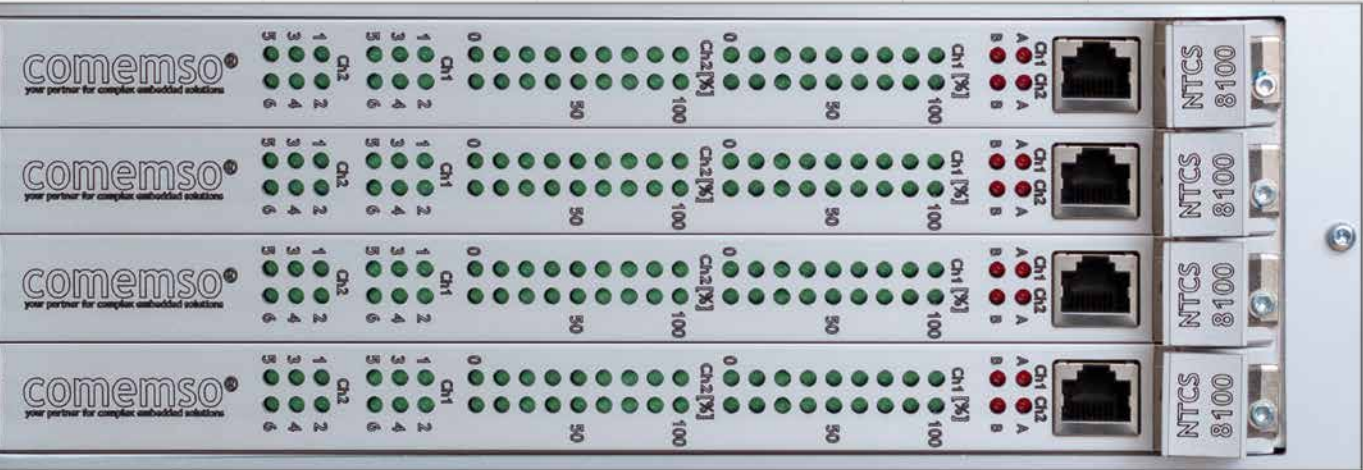


# NTC/PTC- SIMULATION NTCS-8100

2-channel version



# MORE SAFETY AND CONTROL FOR YOUR DEVELOPMENT.

Efficiency, reliability and safety of modern lithium ion batteries for electric vehicle drives strongly depend on the Battery Management System (BMS) as their electronic control unit. As an overheated battery is a high safety risk, monitoring and controlling of the temperature has become very important. For development, validation and test of the control algorithms of the BMS, a high-precision temperature simulation in the voltage area of the battery is required. This is achieved by the comemso NTCS-8100 board.

## All features of the NTCS-8100 NTC/PTC simulator.

### Programming and fault simulation for more efficient development.

The NTC/PTC simulation board is a device to simulate characteristic curves of NTC/PTC resistors at a value range of 0Ohm .. 8.1MOhm at a resolution of 1Ohm. The NTCS-8100 board consists of two separately adjustable resistor channels, each consisting of a resistor cascade. The resistance value as well as the temperature value can be provided for resistor adjustment by comemso. If required, the NTC/PTC characteristic curve can be aligned and programmed into the NTC-S.

Additionally, the NTC-S board offers extensive fault

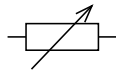
simulation per channel. With the fault injection it is possible to simulate short circuit or cable break at the simulated temperature sensor and also to feed in different external voltages, e.g. CL30, CL31.

### Multiple application areas.

This device has been specially developed to simulate temperature sensors in the area of electric vehicle batteries and is therefore developed for the voltage range of up to 1kV. Beyond that the NTCS-8100 board can also be used in other technical areas, e.g. for the temperature simulation at building automation of modern heating systems.



up to 1 kV



0 .. 8 MOhm  
resolution 1 Ohm



NTC simulator rack\*

Galvanically-separated simulation of NTC / PTC resistance characteristic curves

Operation in high voltage area up to 1 kV

Communication via CAN bus  
at 500 kBd / 1 MBd, (RS232)

Value range of 0 Ohm .. 8.1 MOhm

Resolution 1 Ohm, accuracy +/- 1 %

2 separately adjustable channels per board

Adjustment value of resistor:  
directly or via temperature

Bar graph display on front panel

Fault injection

### Reliable high-speed CAN communication.

Communication with the NTCS board is via CAN bus. The two message types high-speed-mode and normal-mode provide a fast, highly-scalable adjustment of the NTC-S board. If requested, the NTCS-8100 can respond with the status parameters of the simulation (communication also possible via RS232).

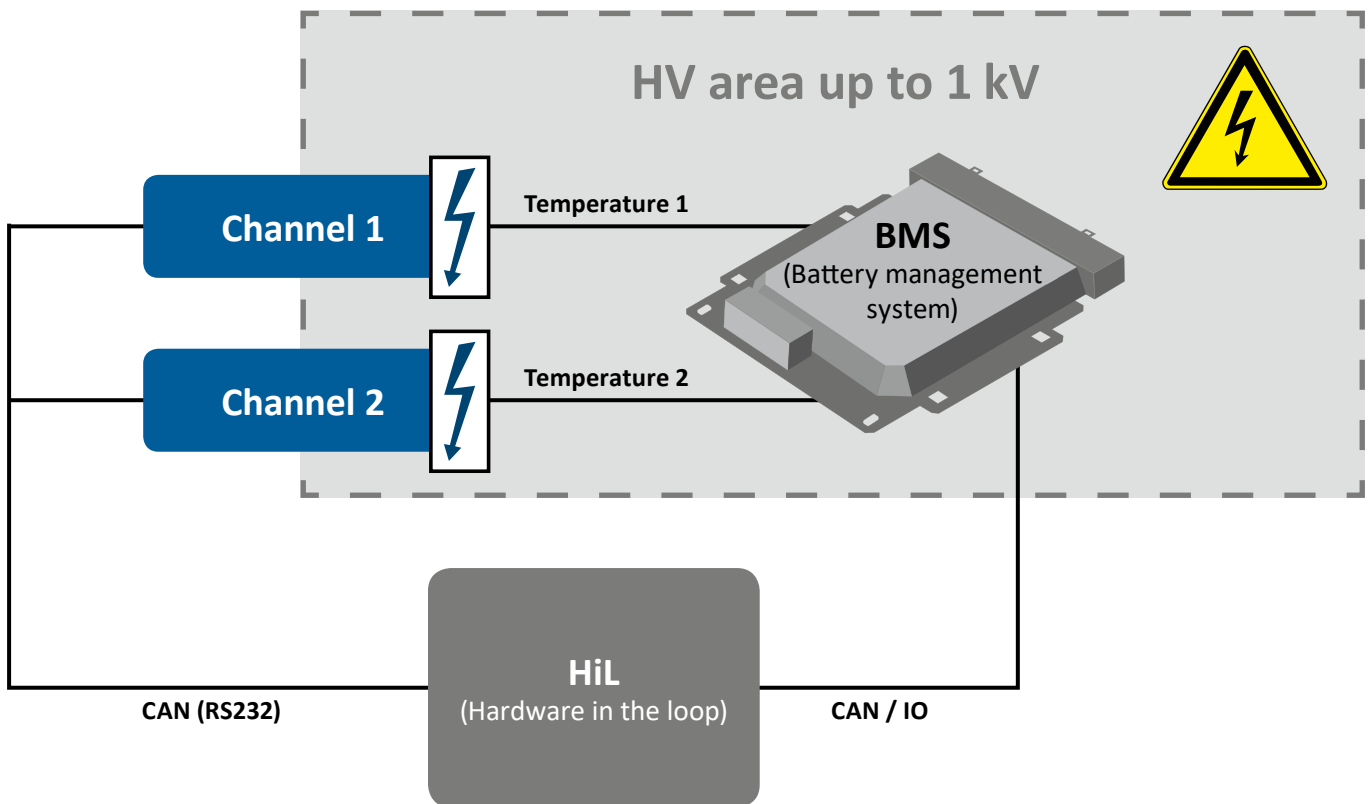
### Modular expandable rack.

For simulation of multiple temperature sensors in battery packs or other applications, several NTC-S boards are installed in a 19 inch/6RU (Rack Unit)

aluminium rack case. In this case the external voltages for the fault injection can be applied over an additional connector. At the front panel of the board, the state of the fault simulation and the resistor value is shown via bar graph display.

\*CAN rack for controlling up to 32 resistor values per rack (20 resistors controlled in the picture).

## Example application: Temperature simulation for Battery Management Systems (BMS).

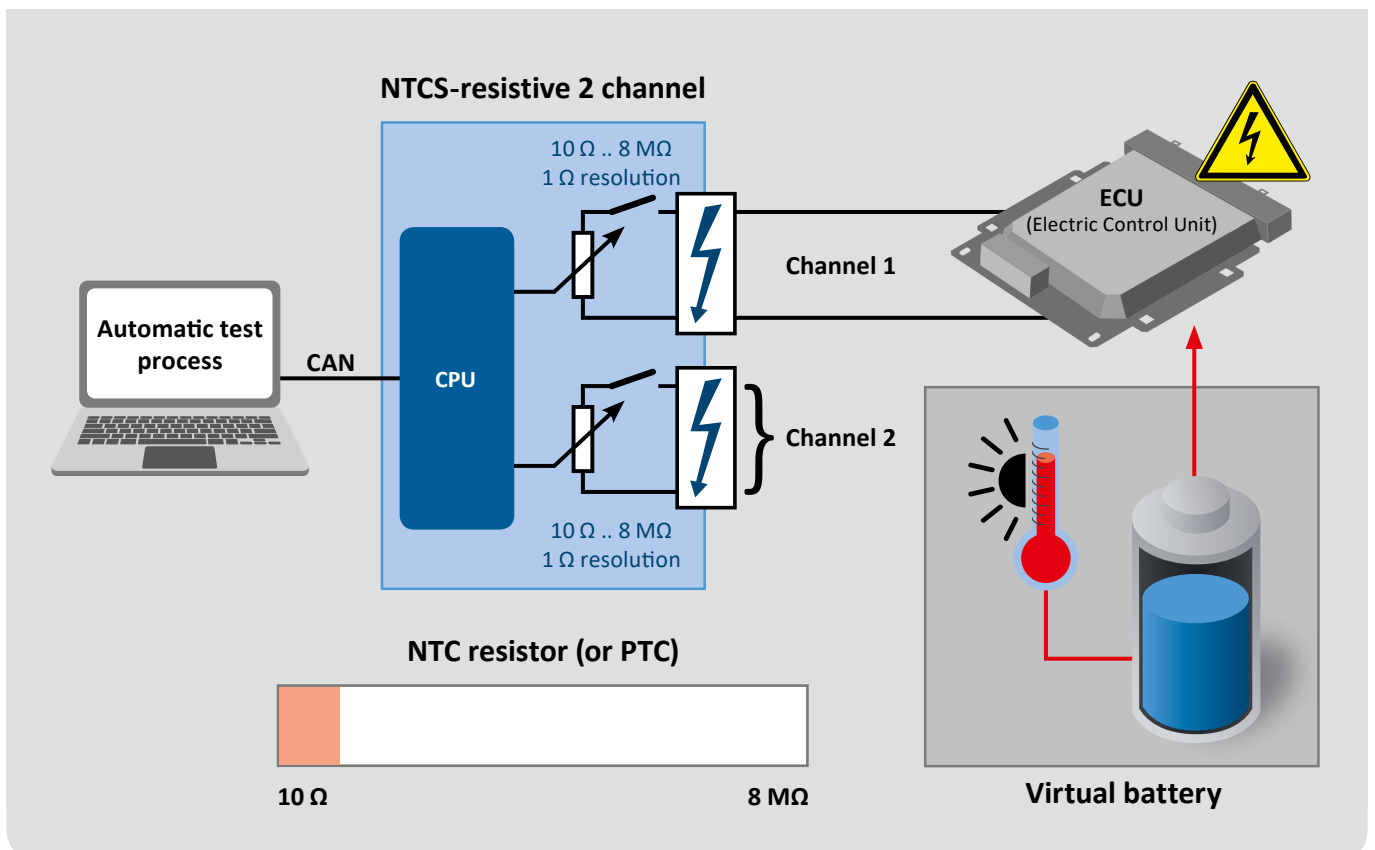
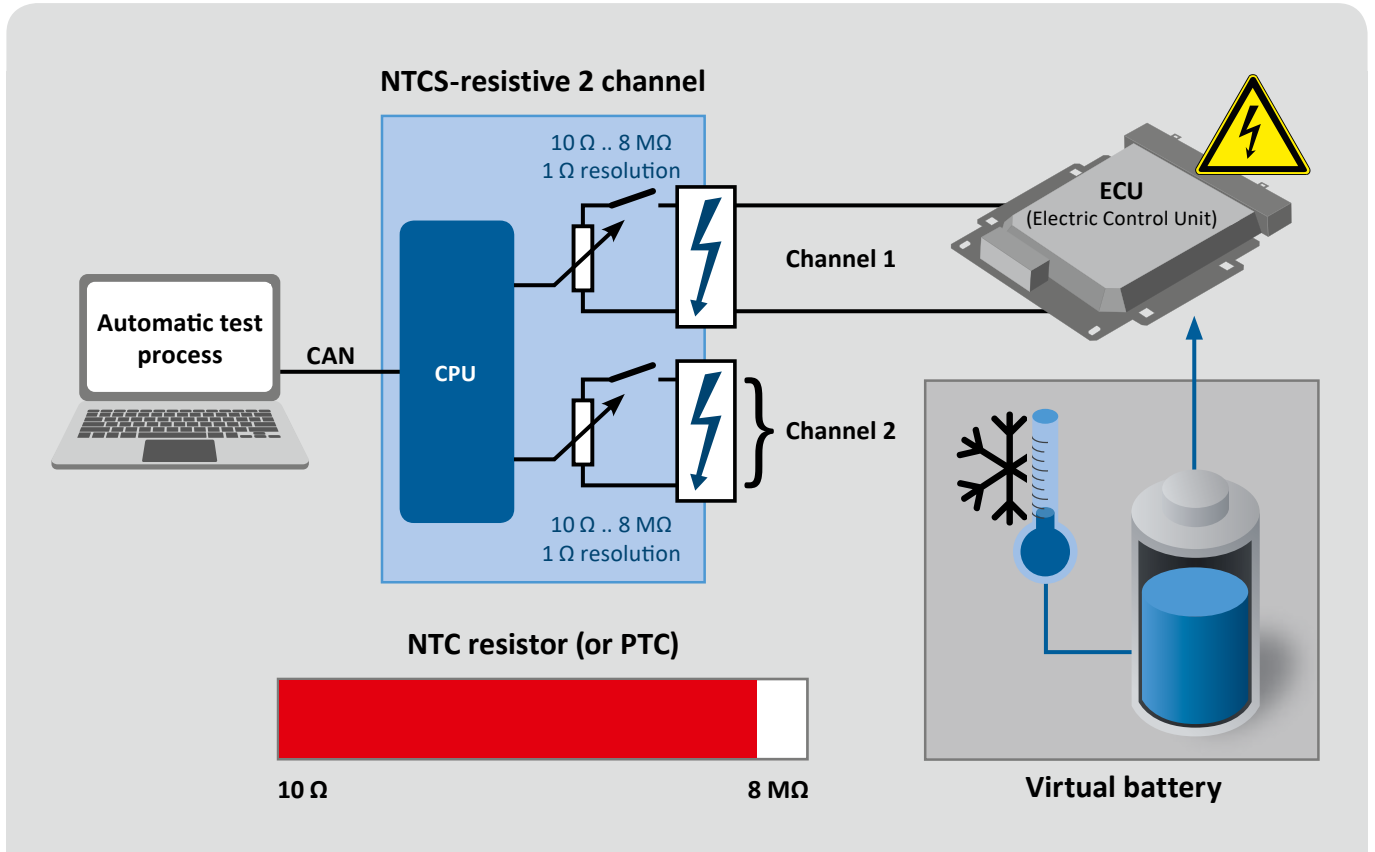


### Technical data

Value range:	0 Ohm ... 8.1 Mohm
Resolution:	1 Ohm
Accuracy:	+/- 0.1%, 25 ppm/°C
Loadability:	1W, 125mW > 130kOhm
Reaction time:	< 3 ms
Voltage range:	0 .. 1kV
Supply:	12V, max. 1A

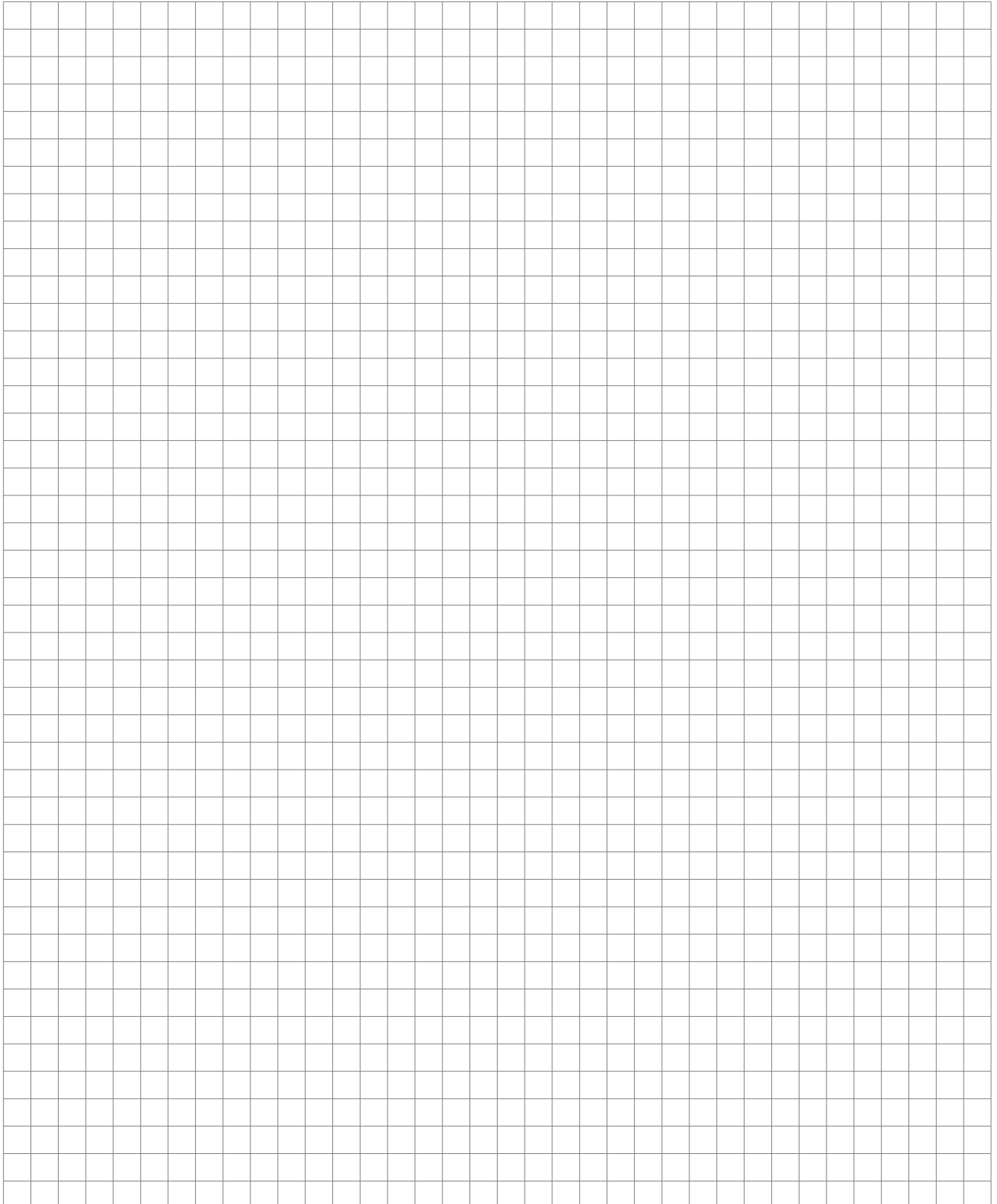
Electrical isolation:	1kV
Temperature range:	-10°C to +60°C
Communication:	CAN bus, (RS232)
Baud rate:	500kBd/1MBd
Channels per card:	2 channels
Additional fault simulation	

## Simulation of temperature sensor emulation.



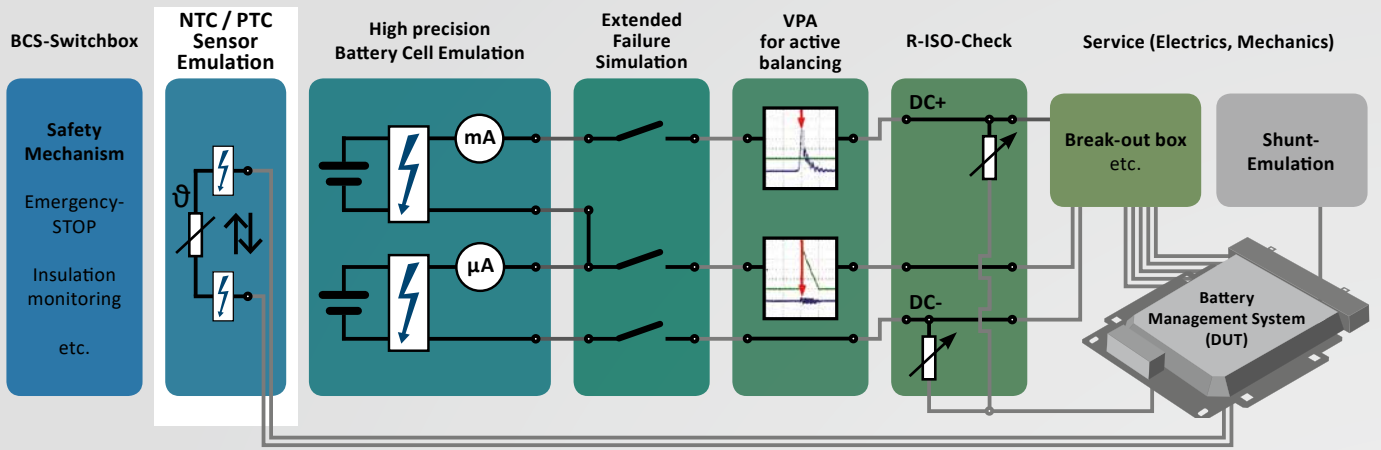
## Space for your notes.

For details and individual configurations, please contact: [sales@comemso.de](mailto:sales@comemso.de)

A large grid of graph paper, consisting of 20 columns and 30 rows of small squares, intended for taking notes.

For the development, validation and testing of the thermal control algorithms of the BMS.





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