NTC/PTC-Simulation: NTCS-8100
Resistive, 2 Channel

2 x Temperature Sensor Emulation
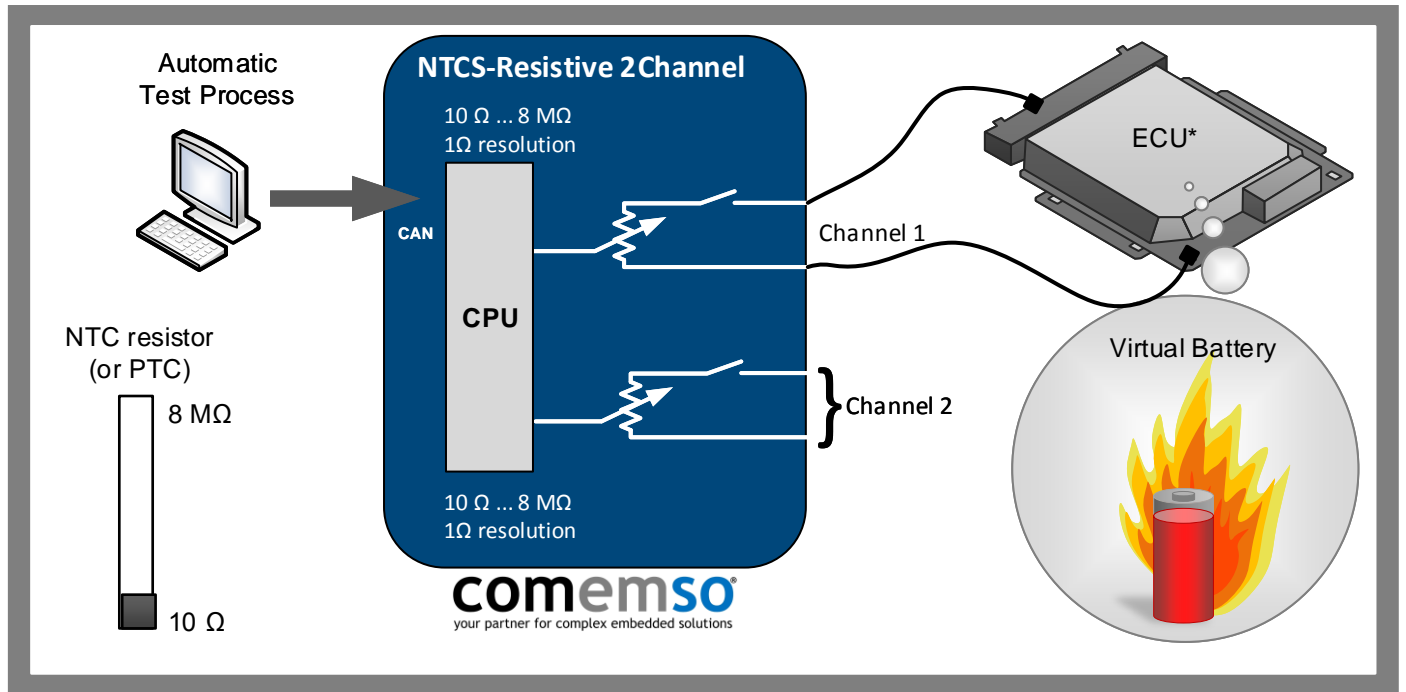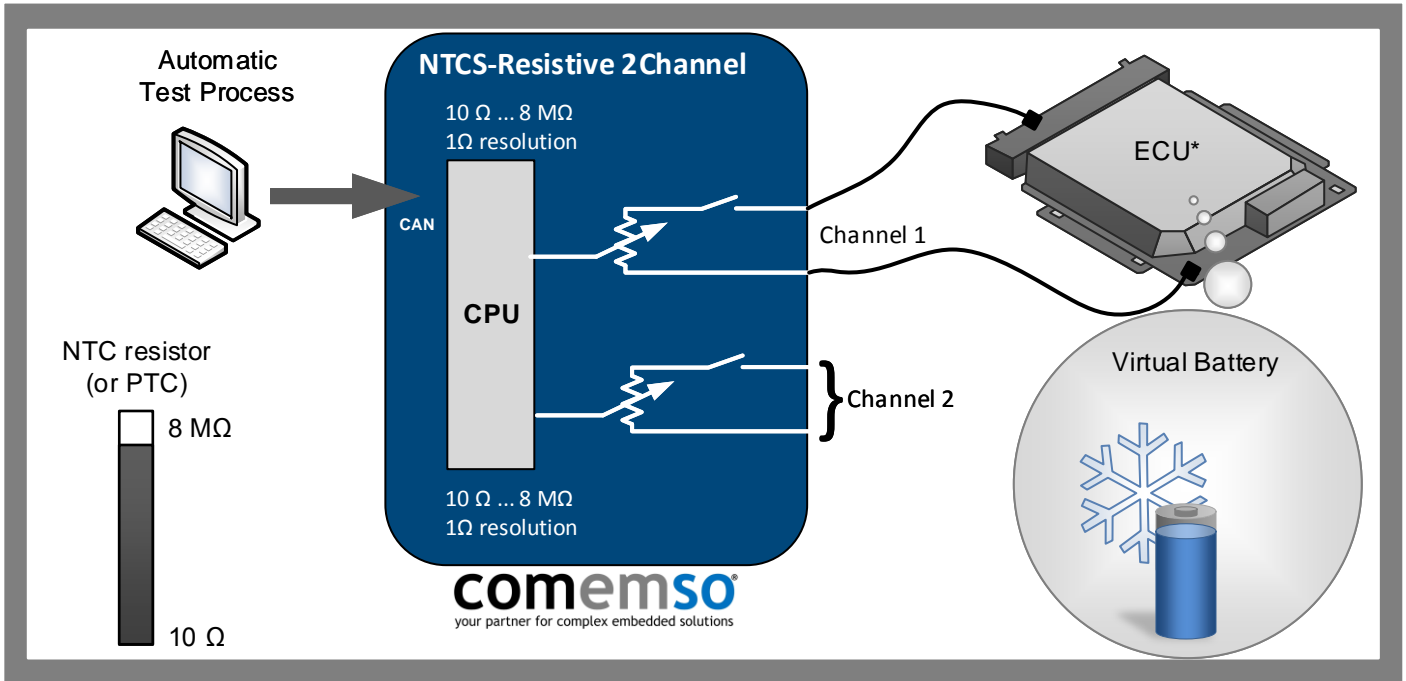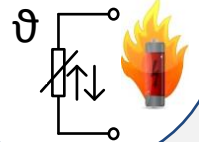
Automatic Test Process

NTCS-Resistive 2 Channel

10 Ω ... 8 MΩ
1Ω resolution

CAN

CPU

Channel 1

Channel 2

10 Ω ... 8 MΩ
1Ω resolution

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your partner for complex embedded solutions

ECU*

Virtual Battery

NTC resistor
(or PTC)

8 MΩ

10 Ω

Automatic Test Process

NTCS-Resistive 2 Channel

10 Ω ... 8 MΩ
1Ω resolution

CAN

CPU

Channel 1

Channel 2

10 Ω ... 8 MΩ
1Ω resolution

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your partner for complex embedded solutions

ECU*

Virtual Battery

NTC resistor
(or PTC)

8 MΩ

10 Ω

* Electric Control Unit

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NTC/PTC-Simulation: NTCS-8100
Features

Galvanic separated simulation of NTC / PTC resistance characteristic curves

Operation in high voltage area up to 1kV

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

Value range of 0 Ohm..8.1 MOhm

Resolution 1 Ohm, Accuracy +/-1%

2 separate adjustable channels per board

Adjustment value of resistor: directly or via temperature

Bar graph display on front panel

Fault injection

NTC simulator rack[1]

up to 1kV

0...8 MOhm
resolution 1Ohm

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 gets very important. For development, validation and test of the control algorithms at the BMS, a high precision temperature simulation at the voltage area of the battery is required. This is realized by the comemso NTCS-8100 board.

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 0 Ohm..8.1 MOhm at a resolution of 1 Ohm. The NTCS-8100 board consists of two separate adjustable resistor channels, each made of a resistor cascade. Resistance value as well as the temperature value can also 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 an 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. KL30, KL31.

Multiple application fields

This device is especially developed to simulate temperature sensors in the area of electric vehicle batteries and is therefore developed for the voltage area of up to 1kV. But the NTCS-8100 board also applies at other fields of technics, e.g. for the temperature simulation at building automation of modern heating systems.

Reliable high-speed-CAN-communication

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

Modular expandable rack

For simulation of multiple temperature sensors in battery packs or other applications, several NTC-S boards are included 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.

(1) CAN rack for controlling up to 32 resistor values per rack (20 resistors controlled in the picture)
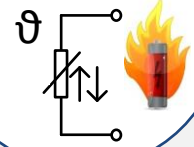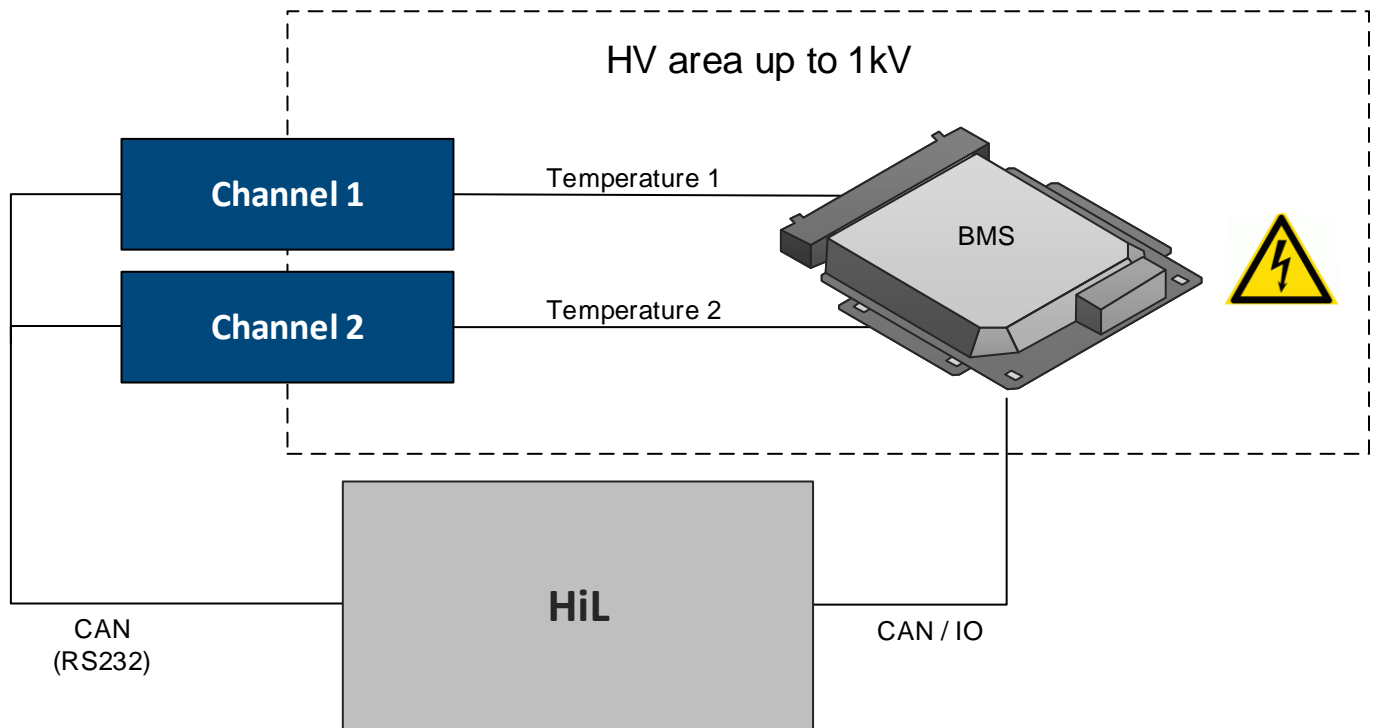
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NTC/PTC-Simulation: NTCS-8100
Technical Data

Example Application: Temperature simulation for Battery Management Systems (BMS)

HV area up to 1kV

Channel 1 — Temperature 1 — BMS

Channel 2 — Temperature 2

HiL

CAN (RS232)

CAN / IO

Technical data

Value range:	0 Ohm … 8.1 Mohm	Electrical isolation:	1 kV
Resolution:	1 Ohm	Temperature range:	-10°C bis +60°C
Accuracy:	+/- 0,1%, 25 ppm/°C	Communication:	CAN bus, (RS232)
Loadability:	1W, 125 mW > 130 kOhm	Baud rate:	500kBd / 1MBd
Reaction time:	< 3 ms	Channels per card:	2
Voltage range:	0 … 1kV	Additional fault simulation	
Supply:	12V, max. 1A		

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