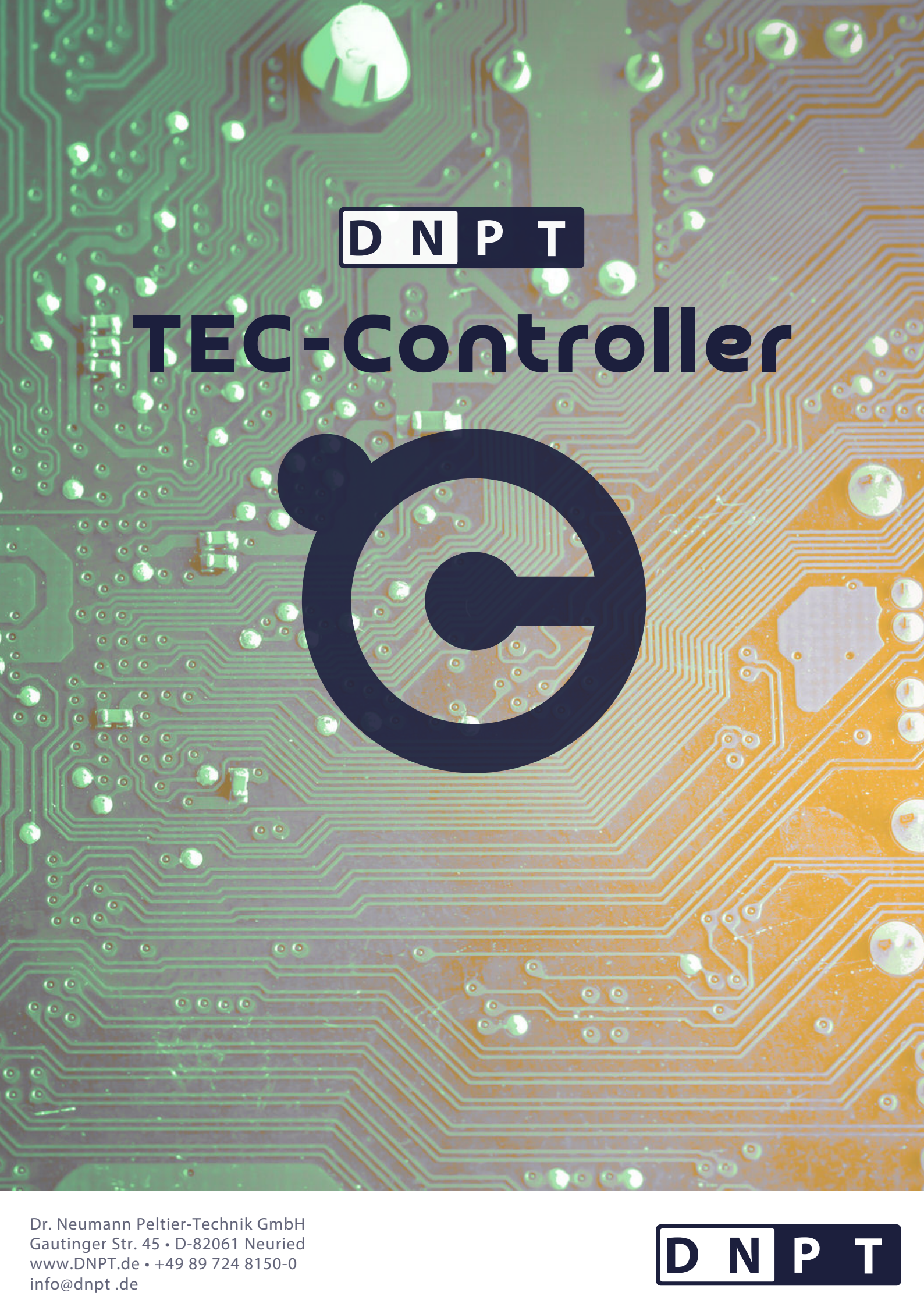
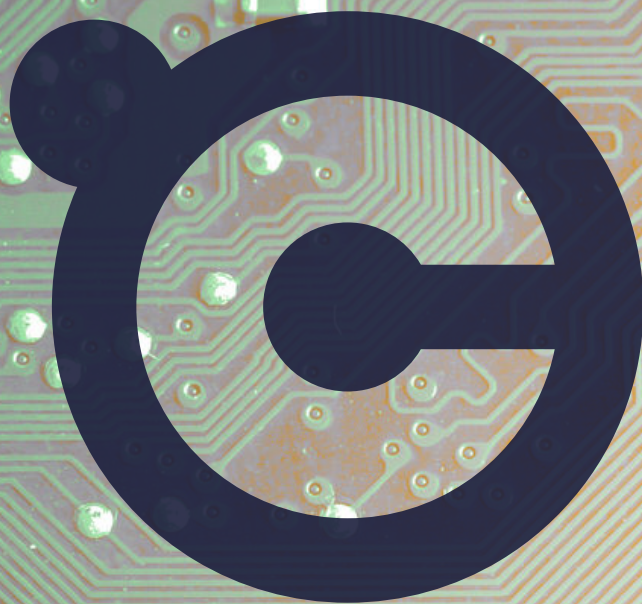




D N P T

TEC-Controller



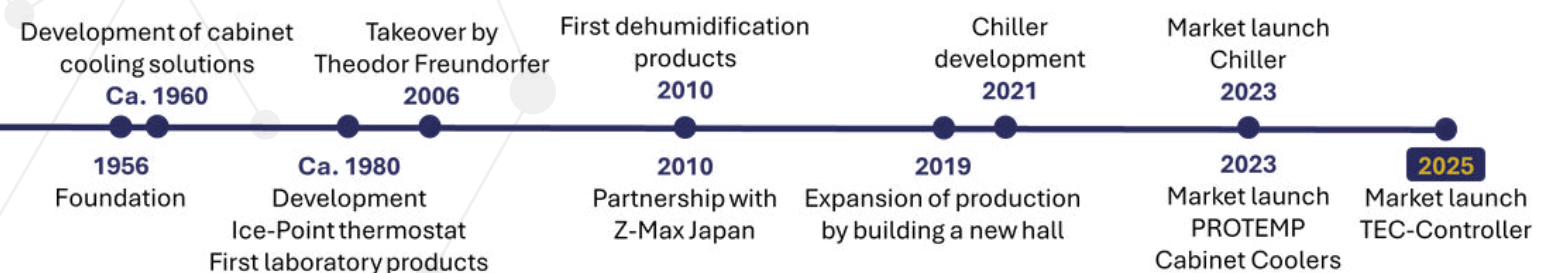
The company

Dr. Neumann Peltier-Technik GmbH: Your reliable partner for thermoelectric systems.

Since 1956, Dr. Neumann Peltier-Technik GmbH (DNPT) stands for high-quality industrial thermoelectric systems providing solutions for various applications.

As a medium-sized company, we meet every customer requirement efficiently and agilely, using our decades of experience to offer you the best possible solution.

Our aim is to optimize and implement your application in the best possible way as a technologically leading provider of thermoelectric systems in the industrial environment.



Founded as a pioneer of Peltier technology and manufacturer of efficient and compact thermoelectric enclosure coolers, the product range has been continuously diversified to meet a wide variety of requirements in industrial and laboratory environments.

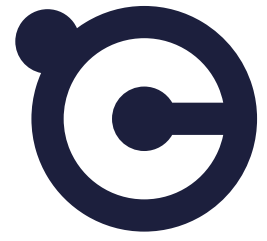
As early as the 1980s, high-precision ice point thermostats were launched as first laboratory products. Most recently the laboratory product range has been supplemented in 2023 by compact Peltier circulators, which are unrivaled in their power density and thus meet the highest requirements in the laboratory sector.

DNPT also supplies products in the industrial sector that ensure safe and continuous machine runtime in a wide range of application areas.

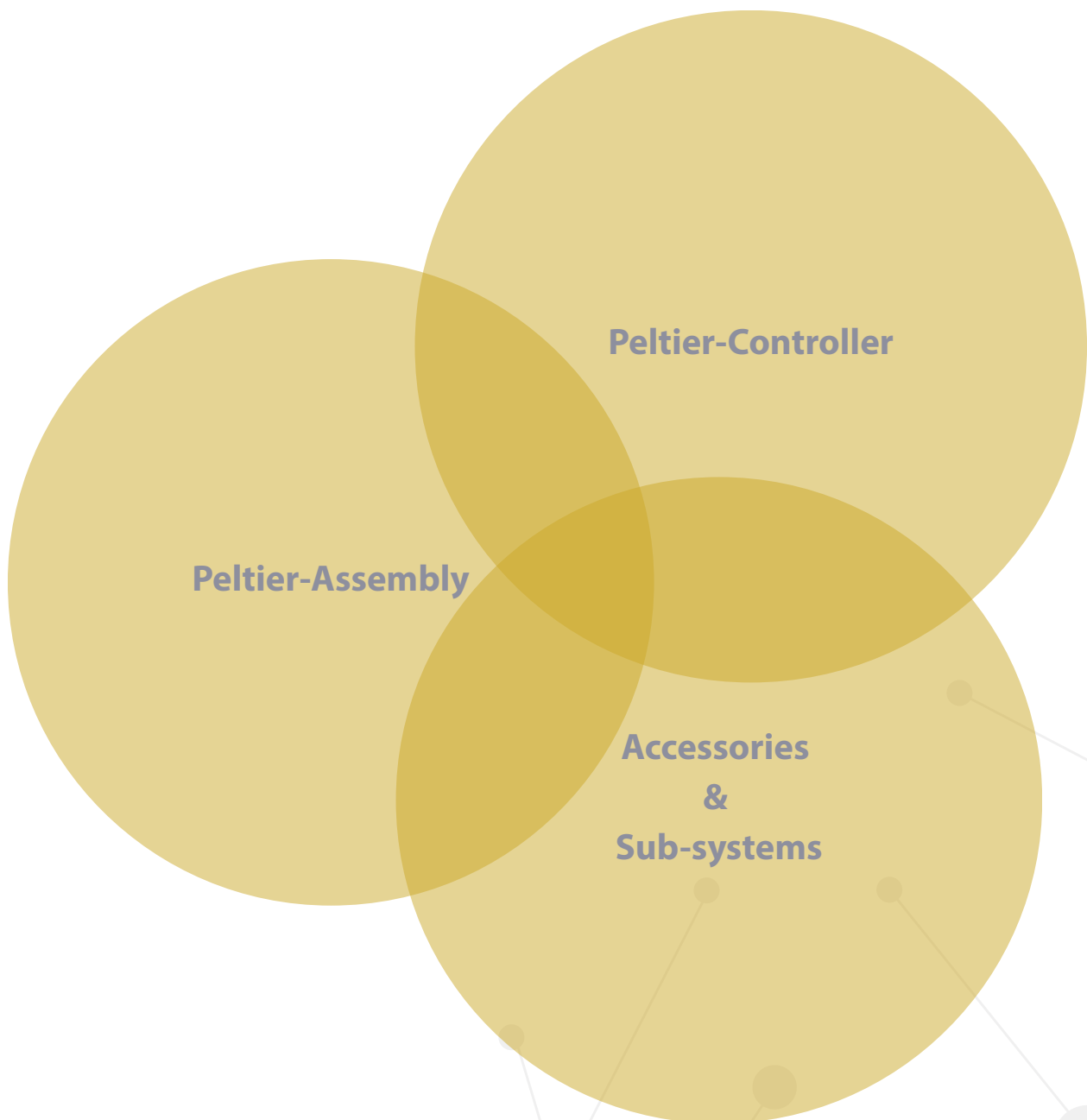
The portfolio of refrigerant-free, maintenance-free compact cooling solutions was completely revised in 2024 and since then has offered cost-efficient units that are highly adaptable to customer requirements with our PROTEMP unit series.

High-performance Peltier dehumidification solutions in a wide variety of designs were first introduced in 2010 and can be found in a variety of sectors such as laser systems or industrial switchgear.

As a distributor of high-quality Peltier modules with maximum service life and robustness, DNPT also supplies the basis for sophisticated temperature control systems and laboratory equipment.



OEM-development



From the idea to the finished product - we develop your Peltier system according to your individual requirements and needs.

As a manufacturer and supplier with extensive know-how in the assembly of Peltier systems, we can quickly provide reliable price estimates for your desired product. Arrange a non-binding consultation to evaluate your product.

TEC CTRL Tool-Box

Breadboards

PWR-CTRL

COMM-Serial

RS232, RS485/422, USB
Node TEC-Shell

HMI

**2,83"
COMM-DSPLY**

**TEC-CTRL
Keyboard**

Signal- & Voltage converters

CVTR-DC/DC

CVTR-PWM/A

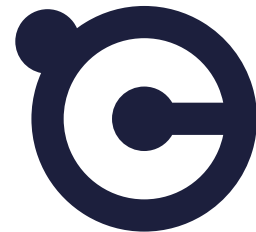
CVTR-D/A

COMM-PRO

Webserver
REST API

Dual-Node

PWR-CTRL



DNPT TEC controllers have different expansion stages and various accessories, which can be combined to generate a complete product using a modular design approach.

The PWR-CTRL system forms the heart of each system. This is available in several performance levels.

A PWR-CTRL module incorporates the actual PID Peltier controller as well as several peripheral controllers for fans or fluid pumps, for example.

The output current for the Peltier elements is enormously smoothed out and has a ripple $< 1\%$. This ensures maximum service life and maximum efficiency.

The integrated GPIOs allow the controller or its peripherals to be controlled in many ways.

The 24-bit dual ADC resolves two temperatures measured via Pt100 or Pt1000 with high precision. Four low-resolution NTC inputs are also available.

All temperature sensors can be flexibly configured for Peltier control, for controlling peripheral systems or for simple temperature monitoring.

Communication via RS232, RS485/422 or USB 2.0 is possible via a plug-on board (COMM-Serial). Each COMM-Serial has a micro SD card slot. The measurement data is logged on the SD card. If the controller is synchronized with a PC, logging takes place with its system time as a time stamp.

The controller can be operated stand-alone without HMI or with a 2.83" four-quadrant LCD display. Each quadrant can be flexibly named and configured with system-relevant data. Using a configured GPIO, the setpoint temperature can be adjusted via a membrane keypad, for example, and control can be started.

The COMM-PRO board extends the functional scope of the PWR-CTRL with a web server, touch functionality, a REST API and much more. Further information can be found in the COMM-PRO chapter.

The signal and voltage converters are further accessories. A separate chapter provides an overview of the functions.

PWR-CTRL Overview



Gefördert durch
Bayerisches Staatsministerium für
Wirtschaft, Landesentwicklung und Energie



Innovation-project
XS-Controller

24 V • 6,25 A
150 W

Best in Class

Stand Alone

**On Board connector to
Peltier-systems**

**Temperature sta-
bility & -precision
better than 0,01 K**

Präzise & Stabil

**On Board connector
for Peltier and
peripherals**

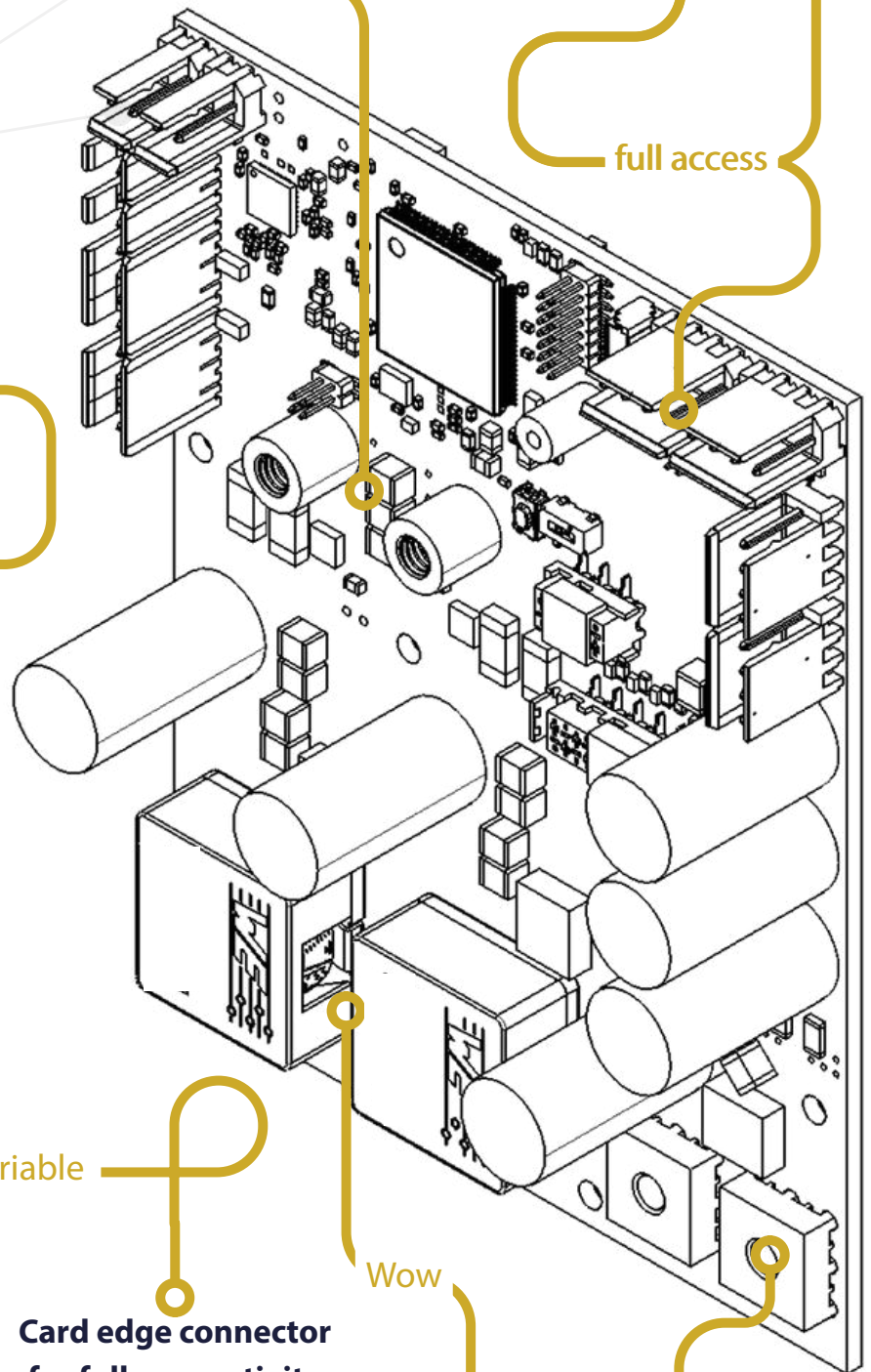
full access

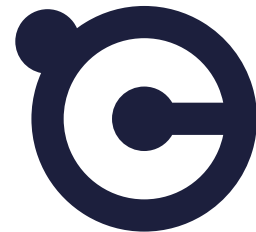
variable

**Card edge connector
for full connectivity**

Wow

48 V • 22 A
~ 1 kW





**Attachable
communication boards**

space-saving

fit for future

Expandable with COMM-PRO

- Webserver
- REST API
- Multinode

unbelievable

**48V • 32 A
~1,5 kW**

**Eingangsspannungsbereich
12 ... 48 V-DC**

wide ranging

controllable

**PID-Control mit
Autotuning and
full manual
control**

PWR-CTRL

Overview

General

Type	PWR-CTRL XS	PWR-CTRL M	PWR-CTRL L
Input voltage range	12-36 V-DC	12-48 V-DC	

Peltier-driver

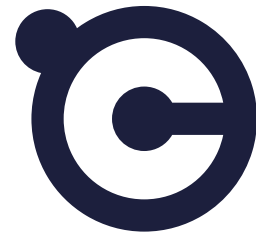
Output voltage	$\pm V_{in} - 0,6 V$ limited @ $\pm 24 V$	$\pm V_{in} - 0,6 V$	
Output current	$\pm 6,25 A$	$\pm 22 A$ (Baseplate Cooled)	$\pm 32 A$ (Baseplate Cooled)
Efficiency	> 95 %@ 80% Load		

Peripheral-drivers

Output voltage	Input voltage - 0,3 V, maximum 40 V Scalable to 12 resp. 24V with CVTR-DC/DC
Output current	max. 3 A per driver
PWM-Output	Each driver adjustable: 1 kHz oder 25 kHz
Speedometer inputs	for each driver with adjustable limits

Temperature inputs

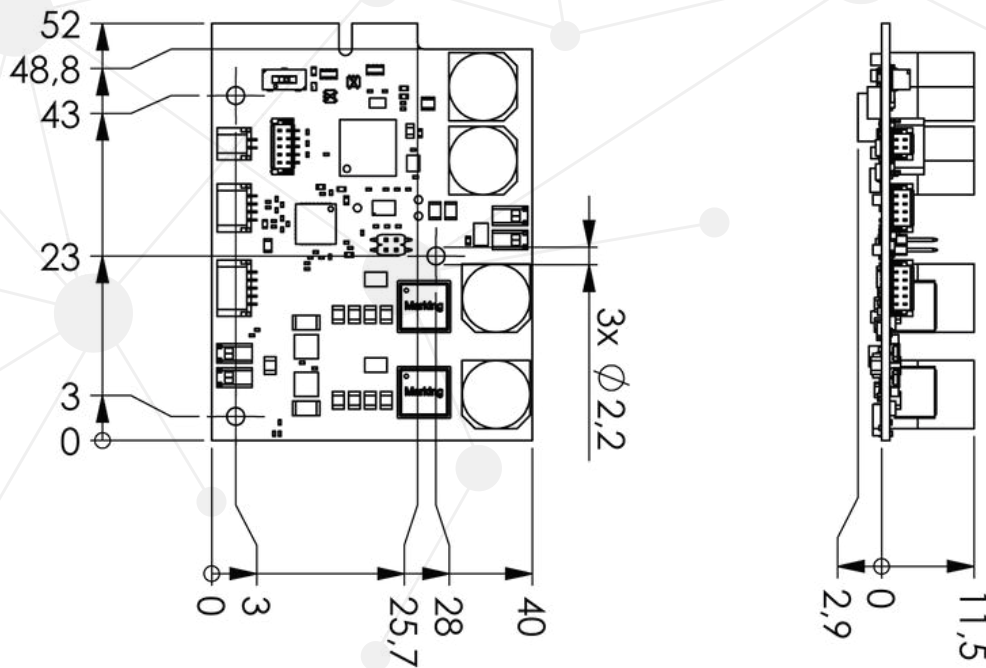
2x High Resolution (0,0001 °C)	Selectable for each channel: Pt100 or Pt1000 2-, 3-, 4-wire measurement
4x Low Resolution (0,1 °C)	Selectable for each channel: NTC (10k recommended)



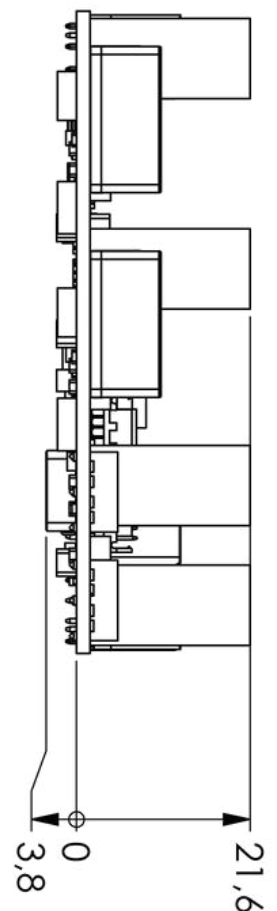
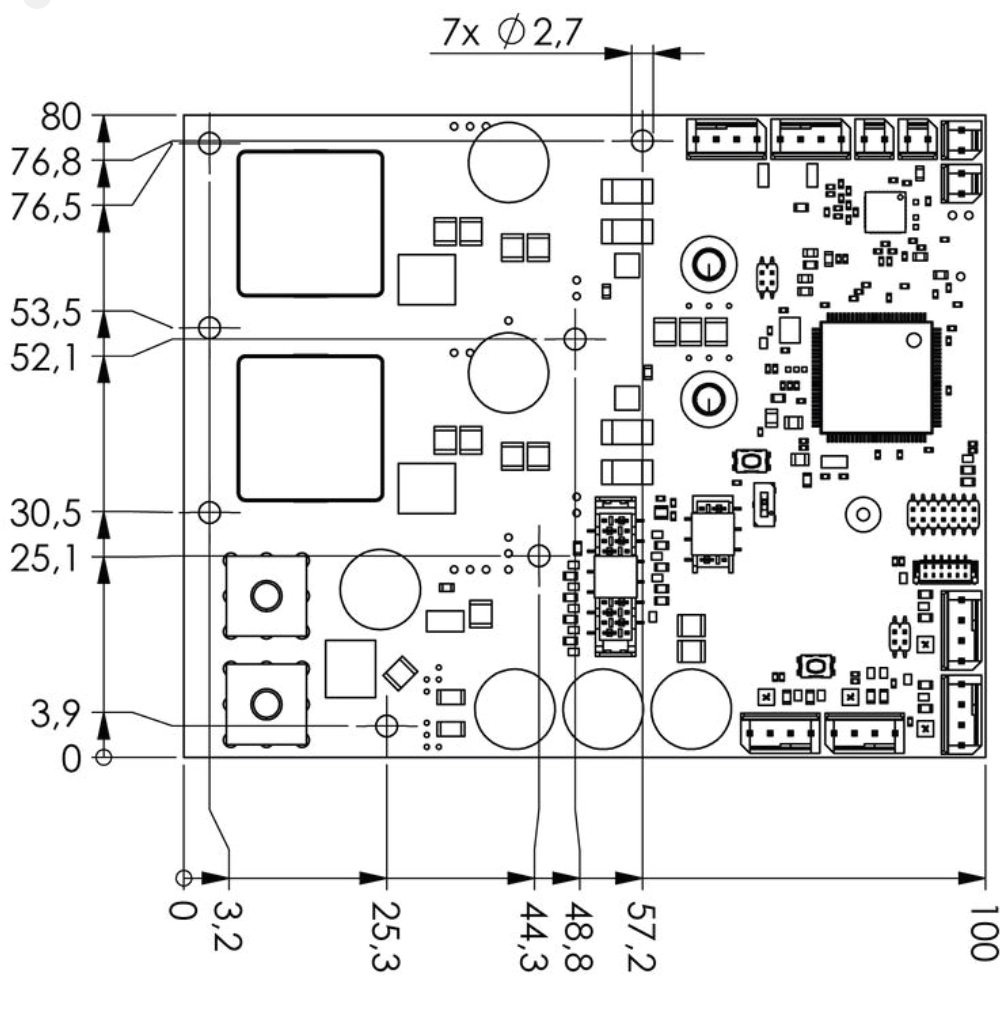
Main-features

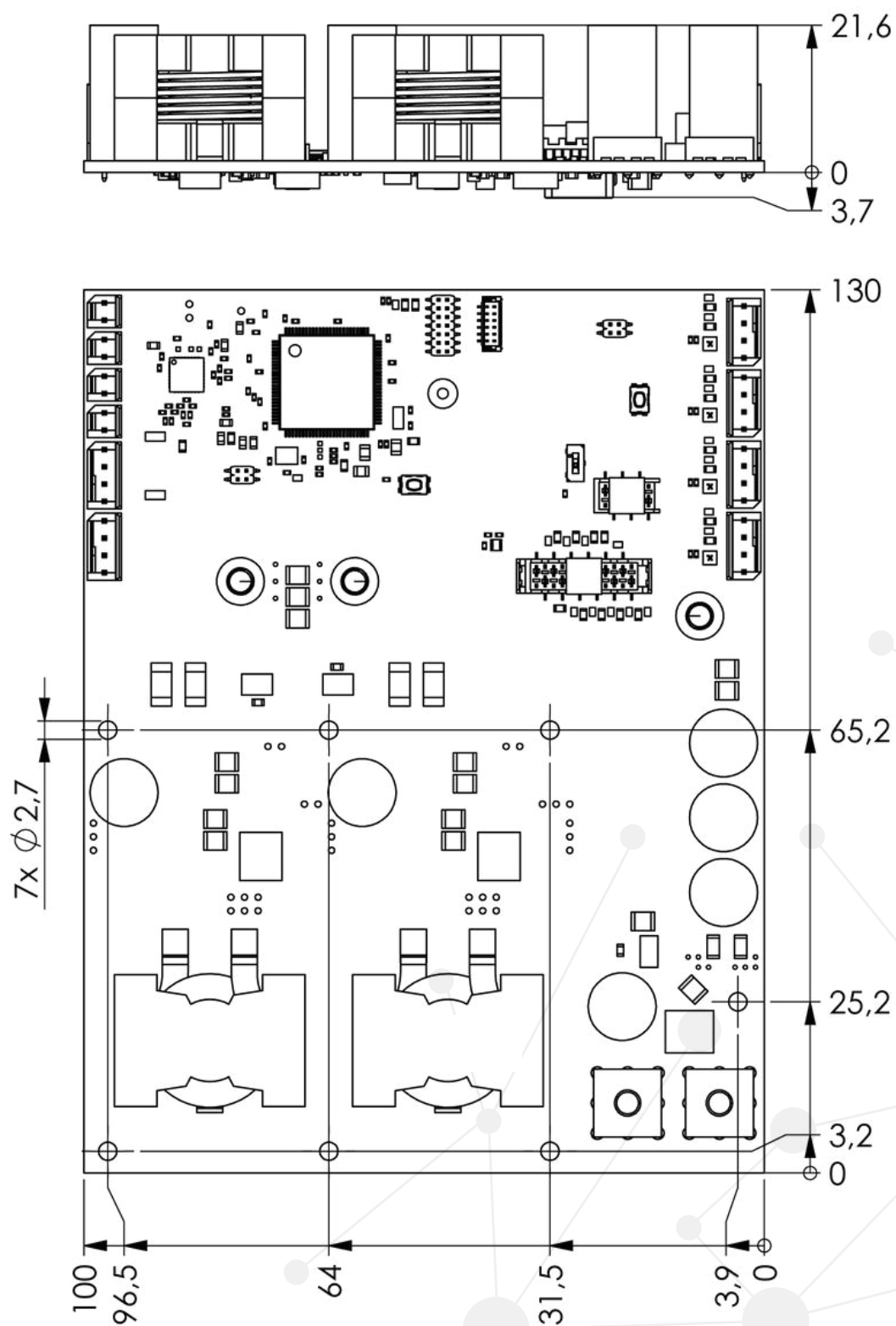
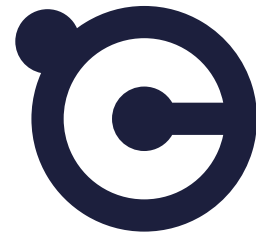
Type	PWR-CTRL XS	PWR-CTRL M	PWR-CTRL L
Temperature precision and stability	better 0,01 K		
Autotuning	Multiple modes selectable, individually for each application		
dimensions (LxWxH)	40 x 52 x 14,4 mm ³	80 x 100 x 25,4 mm ³	100 x 130 x 25,3 mm ³
On board communication	UART, LVDS (to COMM-PRO), I ² C (For sensors and extensions)		
Communication via COMM-Serial	RS232, RS485 full-duplex/ half-duplex, RS422, USB All COMM-Serial are equipped with micro SD-Card slots for logging functionality		
Communication via COMM-PRO	Webserver, REST API, WiFi (prepared), Bluetooth (prepared)		
HMI via COMM-Serial	COMM-DSPLY 2,83" with membrane keyboard TEC-CTRL-FT (4 buttons) or OEM-membrane keyboard configurable via GPIO		

Dimensions



Gefördert durch
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Wirtschaft, Landesentwicklung und Energie





COMM-PRO

The COMM-PRO module is connected to one or more PWR-CTRL devices (nodes) via a bus line and supplied with power. The single-board computer has a Linux operating system.

The nodes can be configured, updated and controlled according to your requirements via the embedded web server. All connected nodes are listed and can be easily connected.

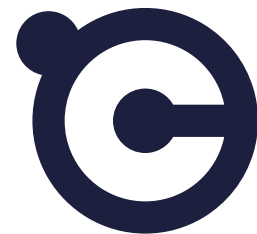
Furthermore, the measured values of up to two selected nodes are clearly visualized in graphs. With the real-time clock, measurement data, warning and error messages are logged 24/7 via the file system. The ring memory has a capacity of over a year.

In addition to the web server, our REST API is also located on the COMM PRO. This allows you to communicate with up to 16 nodes via the network.

With the COMM-PRO, you can operate up to two nodes via a 2.83" touch display.

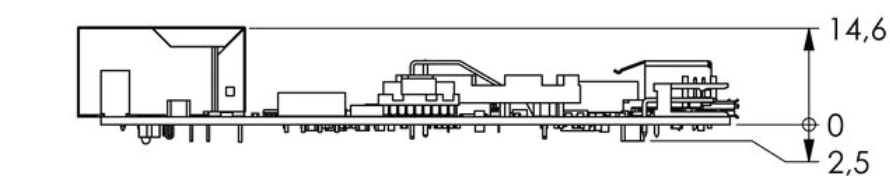
Haupt-Features

Communication	Webserver; REST API (LAN) WiFi& bluetooth hardware prepared
Webserver- functions	• Node-Assignment (up to 16 Nodes) • Visualization of measurements via Browser (max. 2 Nodes simultaneously) • Configuration and updating of nodes • Download data from the data- & error-log • Autotuning & Tuning-functionality
REST API Access	• Multinode-communication • Volle Kontrolle über Nodes
Dimensions (LxBxH)	100 x 100 x 17,1 mm ³
HMI Compatibility	COMM-DSPLY 2,83" Touch for 2 Nodes (selectable via Node-Assignment)



Webserver & REST API

online

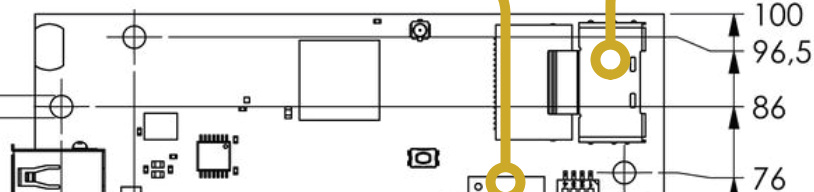


2 Nodes: 24/7/365 Datenloggig

huge

visible

4x Ø 3,4



TOUCH HMI

Multinode

up to 16 Nodes

98,5

95

91

80

25

6

0

9

0

**Real-Time-Clock
for Logging with
current timestamp**

up to date

Breadboards & Accessories

Breadboards

COMM-Serial-RS232	• Communication via RS232 • Node TEC-Shell API • Connector for I²C-Peripherals • SD-Card for Stand-Alone Logging • Connector for CVTR-DSPLY-2,83"-FT
COMM-Serial-RS485	• Communication via RS485/ RS422 • Switchable between 2-Wire/ 4-Wire • Node TEC-Shell API • Connector for I²C-Peripherals • SD-Card for Stand-Alone Logging • Connector for CVTR-DSPLY-2,83"-FT
COMM-Serial-USB	• Communication via USB 2.0 • USB-C Connector • Node TEC-Shell API • Connector for I²C-Peripherie • SD-Card for Stand-Alone Logging • Connector for CVTR-DSPLY-2,83"-FT

Converter Boards

CVTR-DC/DC	• Pin-compatible to peripheral connectors • For voltage adjustment of peripherals with increased supply voltage • Selectable output: 12/ 24 V-DC • Maximum current: 3 A • OEM-module or embedded
CVTR-PWM/A	• Pin-compatible to peripheral outputs • Converts the PWM control-signal to a 0-5V control-signal • On-Board-connector for DNPT-FLWmtr • OEM-module or embedded
CVTR-D/A	• Connection via I²C connector • Analogue output of the current temperature in 0-10 V or 4...20mA • OEM-module or embedded

Weiteres Zubehör

DSPLY-2.83"-FT	• Display with CVTR Modul for PWR-CTRL-modules • Connection via DSPLY-CBL-RJ45 and GPIO-CBL • Connector for TEC-CTRL membrane keyboard
DSPLY-2.83"-Touch	• Touchdisplay with glass cover and CVTR-module for COMM-PRO module • Connection via DSPLY-CBL-SAS
TEC-CTRL-FT	• Membrane Keyboard to connect to DSPLY-2.83"-FT
CBL	• Various cables in different lengths to connect peripherals and accessories
[OEM]	• OEM-membrane keyboard by your requirements for cost effective pricing • Every accessory and cable connector can be adapted specifically so it meets your specific requirement



D N P T



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