TEMPERATURE MEASUREMENT MODULE FOR VEHICLE CLIMATE CONTROL

Flexible and precise temperature measurement with the mIO Polaris

TEMPERATURE PARAMETERS VIA CAN INTERFACE

- 2 SENSOR CHANNELS
- COMPATIBLE WITH ALL COMMON SENSORS
- CORRECT ACQUISITION AND OUTPUT OF MEASURED DATA VIA CAN INTERFACE
- QUICK RESPONSE THANKS TO CONTINUOUS MEASUREMENT
- ALARM FUNCTION WHEN TEMPERATURE RANGE IS EXCEEDED

ELECTRONICS FOR COMMERCIAL AND SPECIAL-PURPOSE VEHICLES

miunske
PLUS + POINTS
TEMPERATURE RANGES
PARAMETERIZABLE VIA
MIUNSKE-TOOLCHAIN

mIO POLARIS

vehicle climate control for commercial and special purpose vehicles

The temperature measurement module is a compact, robust solution for precise temperature monitoring in commercial vehicles, special-purpose vehicles, and mobile working machinery. It has been specifically designed for applications requiring reliable climate control as well as fast and stable sensor evaluation under demanding operating conditions.

Unlike many conventional solutions, in which temperature sensors must be connected directly to control units or only limited sensor support is available, this module offers a flexible and universal interface for integrating a wide variety of temperature sensors. This allows developers to continue using existing sensors while optimizing the system architecture.

sensor — measurement module — CAN-Bus — control unit

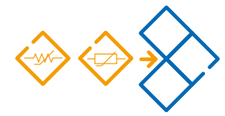
PRODUCT ADVANTAGES

- **flexible sensor integration |** One module for various sensor types and applications.
- **reduced development effort |** Easy integration into CAN-based vehicle networks.
- **fast system response |** Continuous measurement enables precise climate control.
- **alarm function |** Notification in case of deviations from the defined temperature range.
- **platform-compatible |** Suitable for use in various vehicle classes and electrical system architectures.

UNIVERSAL SENSOR COMPATIBILITY

The module supports a wide range of common temperature sensor types, enabling maximum flexibility in vehicle development. In addition to resistance sensors such as PT100 and PT1000, NTC sensors with various characteristic curves can also be handled. The sensor data is analyzed internally and provides standardized temperature values as a CAN message for further processing.

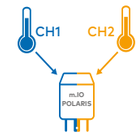
This makes the module suitable for both new vehicle platforms and retrofit or variant solutions where different sensor types are used.



Two independent measurement channels

The module features two separate sensor channels. This allows typical climate control applications to be implemented directly, for example:

- **interior temperature**
- **ambient temperature (outside)**
- **air duct temperature**
- **evaporator or heater register temperature**



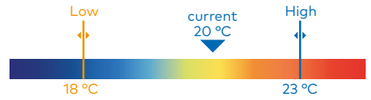
Continuous data acquisition on both channels enables a constant stream of measurement data to be transmitted on the CAN bus and improves the control performance of HVAC systems in commercial vehicles and construction machinery. In combination with an LTE module (e.g., Sontheim), real-time monitoring of refrigerated vehicles can be implemented.

PARAMETERIZABLE TEMPERATURE RANGES

For optimal adaptation to different application requirements, temperature ranges, hysteresis, and sensor characteristics can be parameterized via CAN Interface using the miunske-toolchain. This reduces development effort and product variant complexity, as a single hardware module can be used across different applications. If the temperature exceeds or falls below the defined range, a digital warning message is transmitted via CAN.

Advantages:

- **system flexibility**
- **reduced component complexity**
- **easy adaption to different vehicle concepts**



FAST CONTINUOUS DATA ACQUISITION

Thanks to continuous temperature measurement with a short scan interval, the module responds very quickly to temperature changes. This enables highly dynamic climate control as well as early detection of thermal changes. Compared to solutions with cyclic or delayed sensor scanning, significantly shorter response times are achieved, which can be precisely defined for the application via hysteresis.

This allows:

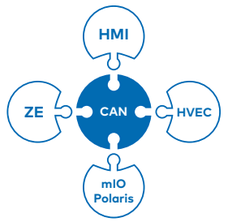
- **fast response of climate control**
- **precise temperature management**
- **early detection of thermal changes**

CAN COMMUNICATION FOR EASY INTEGRATION

The recorded temperature data and alarm signals indicating deviations from the defined temperature range are transmitted via a standardized CAN interface. This enables easy integration of the module into existing vehicle networks. The CAN output ensures stable and interference-resistant transmission of measurement data to higher-level control units.

Examples:

- **HVAC control units (Heating, Ventilation and Air Conditioning).**
- **central vehicle control systems**
- **telemetry or diagnostic systems**



MULTIVOLTAGE FOR 12V & 24V ONBOARD POWER SYSTEMS

The module supports both 12V and 24V electrical systems, making it suitable for a wide range of vehicle classes, from vans to construction equipment and specialized vehicles.

The temperature measurement module thus provides a powerful and flexible platform for reliable temperature measurement in modern vehicle architectures and offers an efficient alternative to sensor-integrated or proprietary measurement solutions.

CUSTOMIZATION IN SHORTEST TIME

The functions oft he mIO Polaris can be quickly and easily adapted to your requirements. There are two handling options:

1. independent parameterization via miunske-toolchain

stock up with neutral mIO Polaris

start parameterization via Can-Interface & miunske-toolchain

integrate the finished mIO Polaris into the vehicle

2. data transfer and plug & play-delivery

customer transmit relevant function parameters to miunske

miunske handles the software installation on the mIO Polaris

customer receives mIO POlaris for plug & play

TECHNICAL DATA

parameters	description
sensor channels:	2 independent temperature inputs
sensor types:	PT100, PT1000, NTC
measurement principle:	resistance-based temperature measurement
operating mode:	continuous temperature monitoring
communication:	CAN 2.0
parameterization:	temperature range, hysteresis and sensor characteristics via CAN Interface & miunkse-toolchain
nominal voltage:	12 V / 24 V multivoltage
design:	Mini Relay, 30mm x 30mm x 50mm
permissible ambient temperature:	-40°C up to 85°C

Further information on technical data can be found in our online catalog.

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