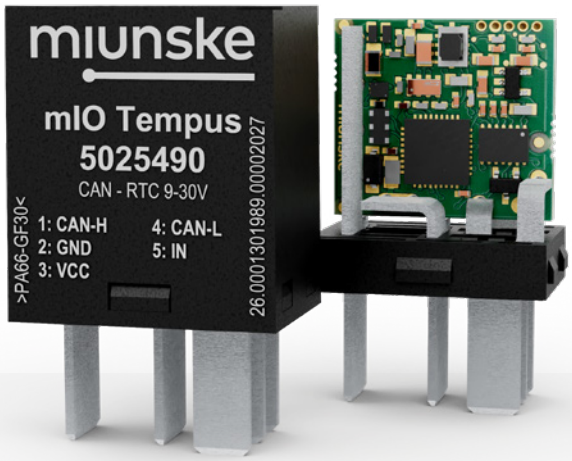
miunske®

REAL TIME CLOCK FOR CAN SYSTEMS

with additional features as hour meter and alarm monitoring

SWISS PRECISION



- PRECISE TIME INFORMATION
- HOUR METER FOR SERVICE INTERVALS
- PARAMETERIZABLE VIA MIUNSKE-TOOLCHAIN

ELECTRONICS FOR COMMERCIAL AND SPECIAL-PURPOSE VEHICLES

miunske
PLUS + POINTS

FEATURES
PARAMETERIZABLE VIA
MIUNSKE-TOOLCHAIN

mIO TEMPUS

Time-based functions in mobile applications

Providing precise system time is a fundamental requirement of modern mobile applications. In large, complex machinery, this function is typically handled by central control units equipped with an integrated real-time clock. In smaller or cost-optimized vehicle platforms, implementing a reliable and cost-efficient time base remains a challenge.

The m**IO Tempus real-time clock is a compact, integrable solution** for providing time information within the vehicle network. It provides time and date information, as well as **high-precision** event timestamps (e.g., for fault logging), over the CAN bus. In addition, **alarm functions, wake-up timers, and an hour meter**—such as for tracking service intervals—can also be implemented. An integrated backup battery ensures **continuous timekeeping even in the event of a power supply interruption**.

The plug-in module is housed in a compact automotive micro-relay housing and can be easily integrated into existing vehicle architectures. The time settings and additional functions are configured using the free miunske-toolchain via CAN bus.

PRODUCT ADVANTAGES

The module provides a **reliable and highly accurate time base** for mobile applications and enables **precise real-time capture and analysis of events.**

- **provision of time, date, and time stamps**
- **high time accuracy** of ±0.09 s/day (at 25°C), corresponding to approximately ±32 s per year
- **configuration of additional functions** such as hour meter, wake-up timer, and alarm functions via the free miunske-toolchain over the CAN bus
- **cost-efficient alternative** to complex control units
- **compact design in** an automotive micro-relay housing for minimal installation space requirements

REAL TIME CLOCK (RTC) WITH CAN INTERFACE

The RTC in the mIO Tempus is based on a **surface-mount real-time clock module with an integrated CMOS circuit and a quartz crystal.** It is characterized by **high time accuracy** and very **low power consumption.**

- **provision of year, month, day, weekday, hours, minutes, and seconds**
- **configurable output of time and date information via CAN**
- **multivoltage operation (12 V / 24 V)**

PARAMETERIZABLE ADDITIONAL FUNCTIONS

1. Hour Meter

The “Operating Hours Counter” feature is used to record the actual operating time of a vehicle or mobile machine, regardless of the kilometers driven. This enables maintenance planning tailored to actual needs, as service intervals are based on real usage. This improves operational reliability, reduces unplanned downtime, and extends the service life of components. It also provides transparency regarding operating times, which is beneficial for fleet management as well as billing and documentation purposes. The mIO Tempus supports this functionality for both new developments and retrofit applications.

- **minute-accurate operating time recording** upon activation of the digital input
- **precise billing of operating hours** enabled by RTC accuracy of ±32 s per year
- **signaling of predefined time intervals** and configuration of future intervals via CAN
- **tamper protection** via external write protection

toolchain
by miunske

Download at:
miunske.com/en/download

2. Alarm Function

An integrated alarm function is essential for detecting critical conditions in vehicles and mobile machinery at an early stage and responding appropriately. By triggering via a digital input, relevant events can be captured immediately. Both the exact start time and the duration of the event are precisely determined and transmitted via CAN. This transparent and time-accurate data acquisition enables rapid fault analysis, improves operational safety, and supports efficient maintenance and documentation.

- **activation via digital input**
- **output of start time and event duration via CAN**
- **time stamping with additional information**

3. Wake-up Function

A wake-up function enables predefined processes in vehicles and mobile working machines to be automatically triggered at the exact required time. When a CAN-configurable trigger time is reached, a CAN message is transmitted, serving as a targeted system trigger. This enables time-controlled activation of functions, synchronization of processes, and efficient system preparation. This increases automation, improves operational readiness, and ensures smooth operation—even without manual intervention.

INTELLIGENT ENERGY MANAGEMENT

Intelligent energy management reduces energy consumption and ensures system availability. The mIO Tempus enables precise time measurement with minimal power consumption. It can trigger a wake-up signal via CAN to reliably start time-controlled functions. In this way, RTC supports energy-efficient control device networks and reduces power consumption.

- transition into **deep sleep** during CAN bus inactivity
- **Wake-up via CAN bus** or digital signal

TECHNICAL DATA:

Parameter:	Description
RTC:	SMD real-time clock module, Swiss quality made by swatch®
Accuracy:	±0.09 s/day at 25°C = 32 s/year
Longevity:	Backup time: ≤ 15 years
Communication:	CAN 2.0
Parameterization:	time, date, operating hours counter, alarm and wake-up function via CAN Adapter & miunske-toolchain
Nominal voltage:	12 V / 24 V multivoltage
Design:	Micro Relay, 23 mm x 15.5 mm x 26 mm
Permissible ambient temperature:	-40 °C bis +85 °C

CUSTOMIZATION IN SHORTEST TIME

The functions oft he mIO Tempus 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 Tempus

start parameterization via Can-Interface & miunske-toolchain

integrate the finished mIO Tempus 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 Tempus

customer receives mIO tempus for plug & play

Further information about technical specifications can be found in our online catalog.

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Stand: 04/2026