

# CAN-BUS-TECHNOLOGY

ENGLISH

CAN-I/O modules

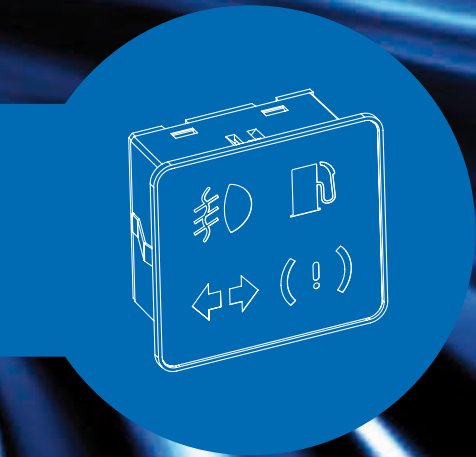
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CAN switch and display units

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CAN development tools

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## MODULES FOR CAN COMMUNICATION IN COMMERCIAL VEHICLES

Miunske pursues the strategy of „solution-based use of CAN products“. This means that the CAN I/O modules can be used in existing CAN networks or conceived as a stand-alone CAN system built exclusively from Miunske components.

With the CAN input/output modules IO Nano, IO1, IO2, IO3, IO4, IO5 and Gateway, Miunske provides a complete family for CAN technology in the commercial vehicle industry and is able to develop customer-specific products.

As a provider of systems for commercial vehicle electronics, we know that switching high currents is of crucial importance to our customers. All I/O modules with Miunske power outputs can permanently switch **currents up to 5A per output**. This means that the additional power relays required by other modules are not required here. All outputs are protected against overload, short-circuiting and excessive temperatures.

Miunske's components for commercial vehicle electronics are of robust design. Nevertheless, replacing parts is a part of day-to-day business in this industry. Therefore, Miunske's CAN modules can be replaced easily. Special knowledge is not necessary to change the hardware. The system operator

can program the replaced assemblies via a service interface (via the CAN connection) by using the CAN function parameters.

### IDEAL FOR RETROFITTING – IO1, IO2, IO3, IO4

The Miunske I/O modules IO1 to IO4 have been developed with a particular focus on „retrofitting“ and have been optimized so that you can expand existing CAN systems without issue, and also enable co-existence between conventional cabling and a local CAN system.

Therefore, the flat-pin plugs of these I/O modules are designed to **accommodate two „standard relay sockets“**.

A further benefit for use in existing architectures: **All inputs can be configured individually – both analogue and digital (pull-up/pull-down/analogue)** and programmed to receive the incoming input signal type. It is thus possible for component providers to use one system for different CAN architectures in different basic vehicles.



IO2 module suitable for two „standard relay sockets“

The IO2 and IO3 I/O modules have been developed with particular attention paid to the functional reliability of contacts, particularly in the case of cold signals. During the switching operation, the **input can drive increased current from 2 to 32 mA**. This counteracts contact corrosion. This in turn reduces demands on your budget and increases the lifetime of your system.



The standard IO1 – IO4 family

### INCREASED PERFORMANCE WITH THE IO5

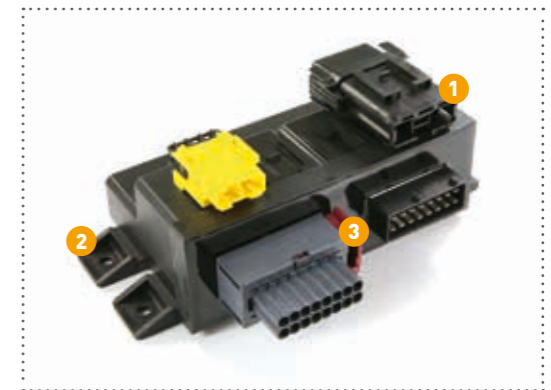
In developing the IO5, we are meeting our customers' requests for „even more“ functionality. The IO5 provides an even wider spectrum of application opportunities with a total of 12 inputs and outputs. Optionally, the 12 outputs can be separated into 6 high-side and 6 low-side outputs. Up to 6 outputs are metallurgically separated from mains power and thus enable you to control safety-relevant consumers with separate power supplies.



The high-performance IO5 module

Parallel to the electronics of the IO5 module, Miunske has developed universal housing that is equipped **with a multi-mounting system** and allows the widest range of mounting types. The housing accommodating the IO5 is available in the following variants:

- With brackets made from metal or plastic
- For mounting on the EN 50022 top-hat rail
- For clipping onto existing housing
- You can also clip standard relay sockets and/or circuit breakers.
- There are various entry level heights for the PCB's.
- The housing cover can take the shape of a separate front panel (IP 53) or casting technology (IP 67).

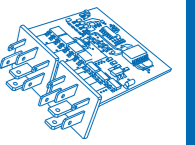


Example of assembled universal housing

- 1 With clip, for relay or switch holder
- 2 With metal or plastic bracket that can be screwed on
- 3 Connections for commercially-available vehicle plugs

### CAN advice

Miunske is happy to advise you on integrating CAN solutions in your projects. Get in touch with us!  
Phone: +49 (0) 359 38/98 00-0  
E-mail: design@miunske.com



## STAY SMALL AND FLEXIBLE WITH THE IO NANO

With this I/O module **that can be connected to a standard relay socket**, you can expand systems inexpensively by up to 2 inputs and outputs.

The integrated PLC realizes functions such as time-delayed switching, voltage monitoring, pulse width modulation, AD-conversion, etc.

The IO Nano is available in **various designs with high-side, low-side or analogue outputs**. Optionally it's **free programmable** for specific applications.



IO Nano – the smallest module in the product family

## GATEWAY

Miunske provides the Gateway, allowing you to use information from other CAN networks already in existence. This product provides manufacturers with the opportunity to provide interfaces for external applications on their machines, without allowing access to their own

network in the process. Furthermore, bodywork/special vehicle manufacturers have the opportunity to tap into application-specific information from closed CAN networks, such as from a drive train CAN.

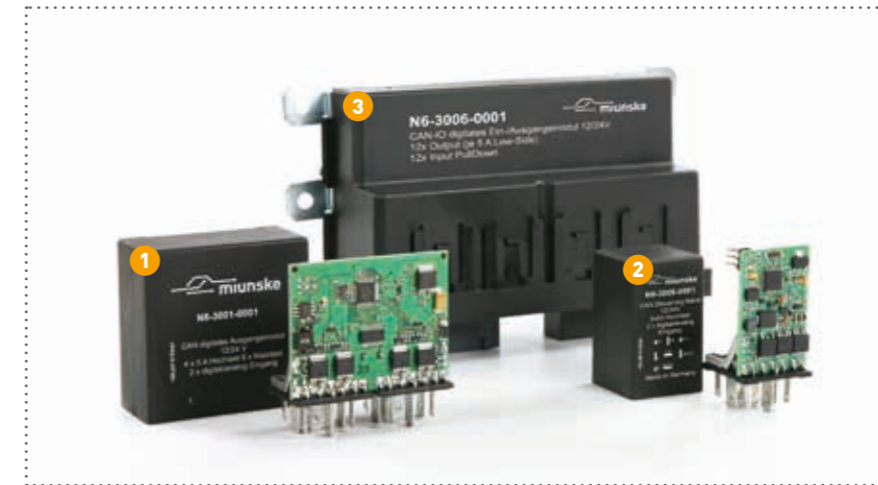
## TECHNOLOGY OVERVIEW

	I01	I02	I03	I04	I05	IO Nano	Gateway
Size [WxDxH] [mm]	60x30x60	60x30x60	60x60x60	60x30x60	150x60x88	30x30x50	30x30x60
Weight [g]	60	60	60	60	100, (700 sealed)	30	40
Can be connected to standard relay sockets	x	x	x	x		x	x
5 A voltage outputs	x	x		x	x	x	
Different signal types for all inputs can be individually parametrized		x	x				
Low contact current (2 – 32 mA)		x	x				
Metallically separated outputs					x*		
Inputs A/D	2	8	12*	2	12*	2	1
Outputs	10*	4		6	12	2	
Current-monitored outputs	x	x	x	x	x	x	
Protection class	IP53	IP53	IP53	IP53	IP53/IP67	IP53	
CAN interfaces	1 x ISO 11898						2
On-board power supply [V]	12 and 24 (9–36)						
Baud rate [KBit/s]	100, 125, 250, 500, 1,000						
Identifier [Bit]	11 or 29						

\* Please refer to the technical data sheet for detailed information.

Please refer to our product catalogue for order numbers (online version at [www.miunske.com](http://www.miunske.com)).

## DIFFERENT TYPES OF CAN MODULES



- 1 I01 – 4 module
- 2 IO Nano module
- 3 I05 module

## DEVELOPMENT TOOLS



Screenshot of Miunske user software

Miunske provides its developed PC configuration tool with graphical user interface for programming and parametrizing all CAN products. This software enables the user, in connection with the associated

interface, to program his or her own CAN modules and keyboards. Upon request, Miunske also provides the service of setting up the software of all CAN products with a specific user interface.

### KEYBOARD – UNIQUENESS THROUGH SOFTWARE

Thanks to the Miunske software tool chain, CAN switch and display units receive their own unmistakable impression. Their functions and interfaces can also be configured freely. The user can thus choose the color values for symbols and background illumination from all RGB shades according to the respective corporate design. The unique, high-contrast and homogeneous illumination ensures a good overview in the cockpit and improved elegance.



Interface hardware for parametrizing and programming CAN products

The parametrizing software is available for the respective interface as freeware.



## CAN SWITCH AND DISPLAY UNITS

The driver's area of vehicles – whether commercial vehicles or specialist vehicles – today seems to resemble more the cockpit of an airplane or a control room than a driver's cabin. The demands placed on ergonomics, usability, comprehensibility and also design are thus ever increasing. Miunske's switch and display elements – we refer to them as CAN keyboards – fulfill the requirements of modern commercial vehicles.

### PLACE-SAVING AND SUITABLE FOR RETROFITTING

Miunske CAN keyboards are available with 4, 6 or 12 buttons. They can be **built in horizontally or vertically**. The installation dimensions are based on the dimensions of conventional rocker switches **and thus fit into existing recesses**. Each element can be **configured as either a display or switch element**.

Two switch or display elements are accommodated on the surface of a conventional rocker switch, since the state display is integrated into the switch element in order to save space. Furthermore, the option of **multiple functions per display element** can improve the functionality of the cockpit many times over.

### KEYBOARD HARMONIZED WITH THE INTERIOR

Usability and design have played a major role in development. Result: The cockpit design guidelines can be implemented thanks to the use of multi-color LED's, providing a **free choice of RGB color values**. You can choose the color for the foil to fit in with this.

The elements are **illuminated evenly and in high contrast**. The brightness is adjusted to the surrounding light thanks to an **integrated light sensor**.

### SPECIAL SOLUTIONS

**Free configuration choice** and **modular construction** enable simple and inexpensive integration of special solutions to meet customers' requests.



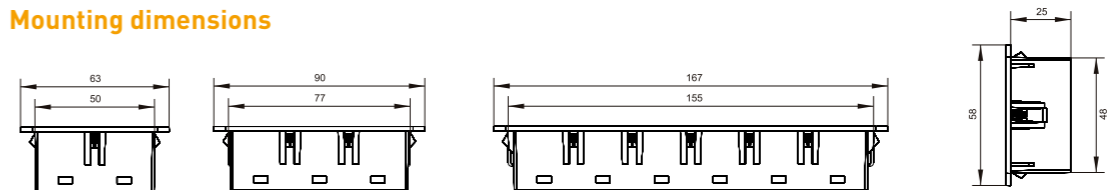
1 12 button CAN keyboard 2 6 button CAN keyboard 3 4 button CAN keyboard

### TECHNOLOGY OVERVIEW

	4 button field	6 button field	12 button field
Size [WxDxH] [mm]	63x58x28	90x58x28	168x58x28
Weight [g]	80	90	110
Protection class (front side)	IP65	IP65	IP65
Pull-down digital switching inputs	1		
CAN interfaces	1x ISO 11898		
On-board power supply [V]	12 and 24 (9-36)		
quiescent current consumption a 12 V [mA]	≤ 10		
Baud rate [KBit/s]	100, 125, 250, 500, 800, 1,000		
Accessories	Sontheim CAN-Fox, CAN-USB interface		

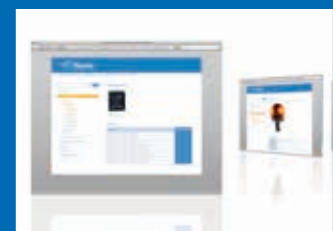
You can find out order numbers in our catalogue (online version at [www.miunske.com](http://www.miunske.com)).

### Mounting dimensions



### Products online and offline

You can find the entire Miunske **product catalogue** on the Internet at [www.miunske.com](http://www.miunske.com). We would also be pleased to send you the printed version. To request your copy, call our service team on: Tel.: +49 (0) 3 59 38/98 00-0.



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