Connecting
man & machine.

CAN modules
Platform 2

griessbach

AN IDEAL SOLUTION TO MEET ANY REQUIREMENT

Our variable standard modules use the CAN-bus interface and are available in various versions scaled from 4 to 12 input fields. These modules are suitable for use in extreme conditions on mobile machines and commercial vehicles. The sturdy casing and frame enclosure give the control panel IP65-class protection from dust and moisture; the assembly simply clips into the correspondingly sized installation openings for a solid vibration-free installation. The modules themselves are freely configurable for lighting colour, baud rate, addressing, termination resistance and front panel decal design.

Our new generation of CAN modules reflects the increasing demands on operating safety in mobile machines. Apart from models with surrounding ring lighting for variation in status display, CAN modules also come with redundant circuitry for safety applications.

TYPES AND PARAMETERS

Keypad: 2x2 · 2x3 · 2x4 · 2x5 · 2x6

Dimensions:

	Installation opening			Outer dimensions	
CAN module	x	y	Springs	a	b
2 x 2	52.6 mm	53.0 mm	4	57.0 mm	57.0 mm
2 x 3	74.0 mm	53.0 mm	4	78.4 mm	57.0 mm
2 x 4	95.4 mm	53.0 mm	6	99.8 mm	57.0 mm
2 x 5	116.8 mm	53.0 mm	6	121.2 mm	57.0 mm
2 x 6	138.2 mm	53.0 mm	8	142.6 mm	57.0 mm

Assembly: Snap-in 1–4 mm material thickness

IP code: IP65 front, IP65 rear

Operating temperature: -30°C to +70°C

Storage temperature: -40°C to +85°C

Operating voltage: 12V/24V DC (10–32V)

Load dump: integrated
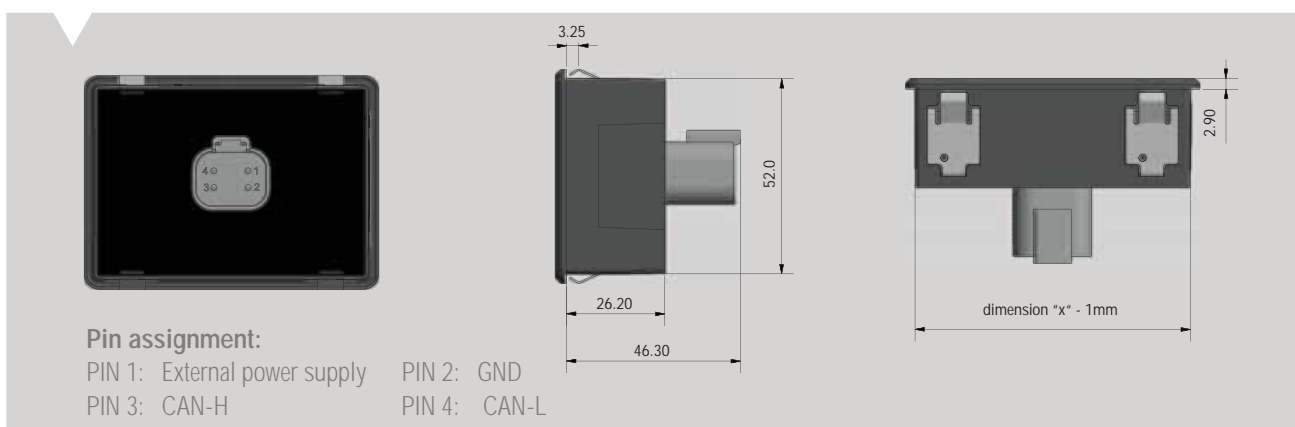
Interface: J1939, CanOpen

EMC compliance: EN13309 and EN-ISO14982

Configuration:
· Factory-preset addressing available
· Factory-preset termination resistance available
· Factory-preset baud rate available

Optional:
· Key grid
· Different lighting colour
· Activation force: 1.5 to 8.0 N available
· E1 approval
· Springs for various installation sheet-metal thicknesses
· Alternative protocols
· Alternative connectors
· Refer to the standard designs and bespoke options diagram for additional options.

Pin assignment:
PIN 1: External power supply
PIN 2: GND
PIN 3: CAN-H
PIN 4: CAN-L

3.25
52.0
26.20
46.30
2.90
dimension "x" - 1mm

These CAN modules are ideal for machine operation due to their robustness and tactile feedback.

FUNCTIONAL SAFETY
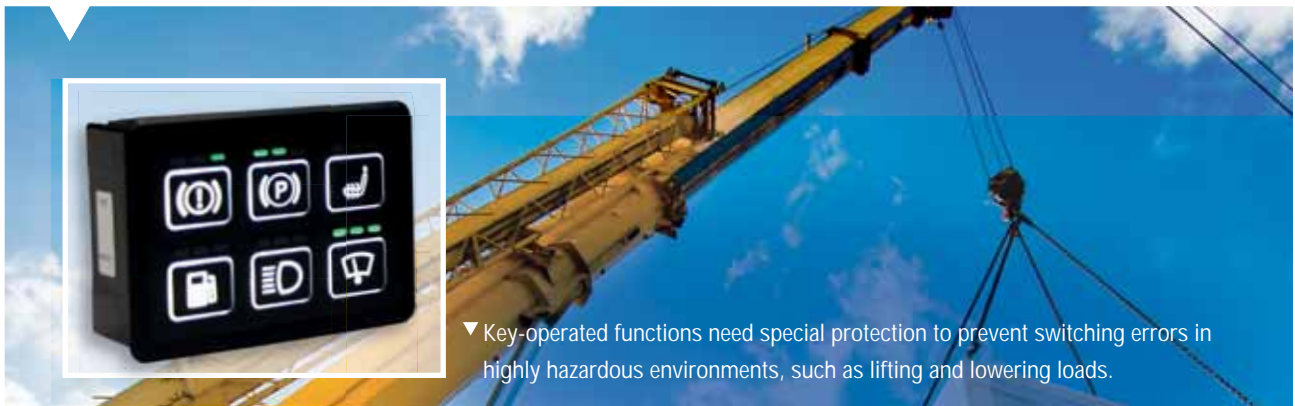
▼ Key-operated functions need special protection to prevent switching errors in highly hazardous environments, such as lifting and lowering loads.

EN ISO 13849 requires machine manufacturers to determine potential hazards for safety functions in control systems to meet increasing demands on functional safety. The respective control system needs to be designed to the Performance Level corresponding to the danger level determined. With this in mind, we have developed versions for functional safety compliance. This has involved developing a Category 2 switching architecture with a test channel in a confined space. Our solution includes one major component of diagnostic functionality – a redundant switching function design from the key to the device's own assessment system, which starts a plausibility test on the functional request when a key is pressed. These and other internal diagnostic functions contribute to satisfying the required coverage in the overall assembly.

Our newly developed concept expands the range of application, while also reducing the design complexity that machine manufacturers need to deal with in ensuring functional safety in their control systems.

ARCHITECTURE FOR REALIZING THE FUNCTIONAL SAFETY PARAMETER:

Category		B	1	2	2	3	3	4
DCavg		n/a	n/a	n/a	medium	low	medium	high
MTTFd for each channel	low	a	–	a	b	b	c	–
	medium	b	–	b	c	c	d	–
	high	–	c	c	d	d	d	e
CCF		n/a		≥ 65 points				

STANDARD DESIGNS AND BESPOKE OPTIONS

Model series	Redundant		Ring lighting	
Characteristics	Standard	Optional	Standard	Optional
Signal lighting	Three segments	Bars | segments	Ring lighting	Ring or segments depending on light-well design
Signal lighting colour	Three green	LED colour on customer request	Switchable between red | amber | green	LED colour on customer request
Symbol lighting colour [day | night]	White	LED colour on customer request	RGB-LEDs	RGB-LEDs
Operating force	5.5 N	/	5.5 N	1.5 N to 8.0 N
Keys	All keys are redundant	Individual key redundancy on customer request	Not redundant	Not redundant
Connection	4 Pin Deutsch DT connector	M12/JST and other connectors on customer request	4 Pin Deutsch DT connector	M12/JST and other connectors on customer request
Protocols	J1939, CanOpen	ISOBUS, CanOpen Safety and other protocols as options on customer request	J1939, CanOpen	ISOBUS, CanOpen Safety and other protocols as options on customer request
Installation space seal	/	√	/	√
Key grid	/	√	/	√

LIGHTING OPTIONS

▼ Quick and simple adaption of lighting to machine functi-
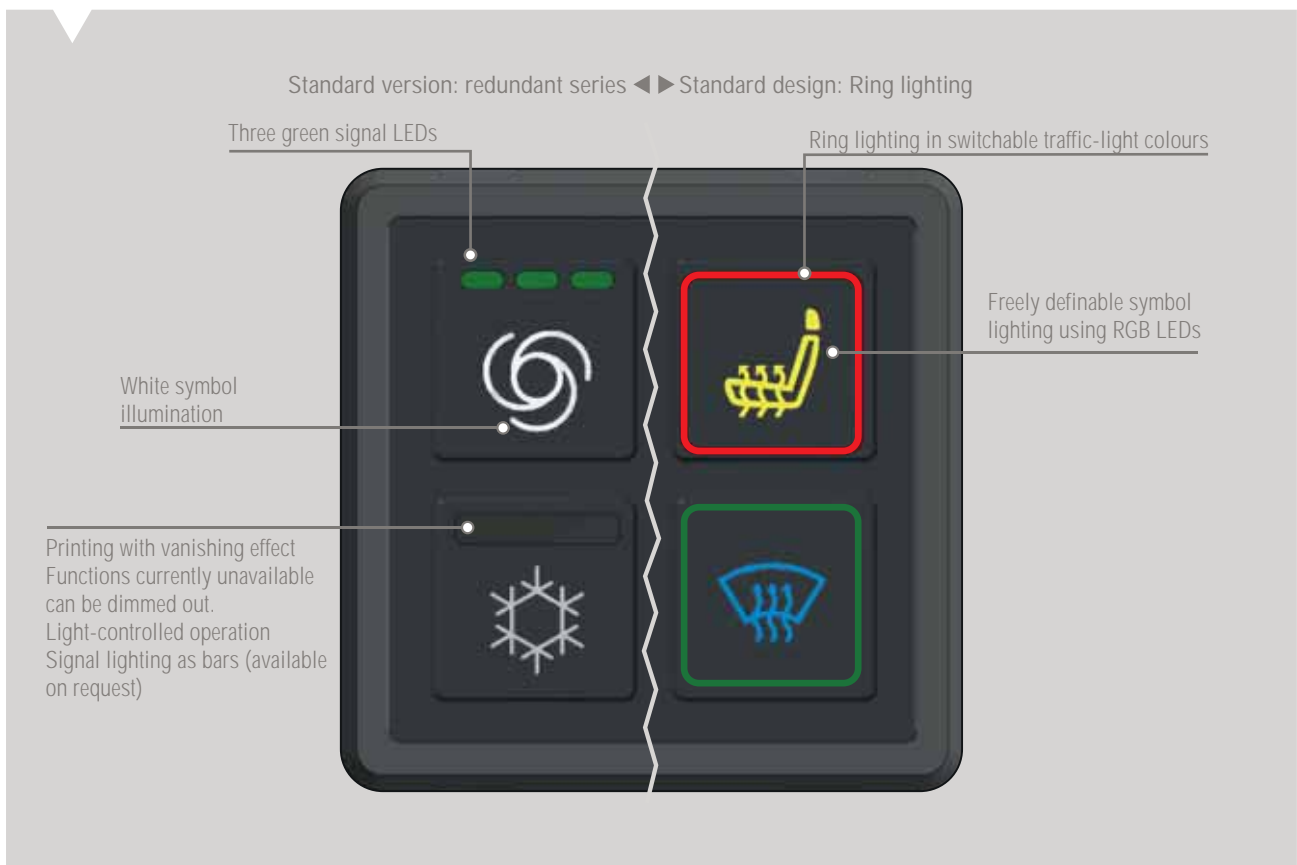on; light-controlled machine operation solution.

New lighting options allow variation in how switching functions and machine conditions are shown. Segment lighting or more contemporary ring lighting may be installed depending on application.

Ring lighting with a switchable traffic-light colour scheme issues warnings or alarm signals directly on the appropriate key. Backlighting on the keys comprises RGB LEDs with freely selectable colours for colour-coding keys to function groups.
The series with redundant keys uses **segment lighting**. This entails three green signal LEDs for status display and symbol lighting in white by default. Functional lighting for specific functions such as seat heating levels is therefore also supported.

In the interest of intuitive operation, new lighting options also allow lighting to be dimmed out using a vanishing effect for switching functions not currently available. A front panel decal design with a colour scheme as well as pictograms and symbols printed on to customer specification ensures clear markings in a uniform corporate design.

OPTIONS FOR KEY LIGHTING

Standard version: redundant series ◀ ▶ Standard design: Ring lighting

Three green signal LEDs

Ring lighting in switchable traffic-light colours

White symbol illumination

Freely definable symbol lighting using RGB LEDs

Printing with vanishing effect
Functions currently unavailable can be dimmed out.
Light-controlled operation
Signal lighting as bars (available on request)

EXTRAS

PERFECT NIGHT DESIGN AND UNIFORM LIGHTING

» Modules retain their brightness and uniform illumination without dazzle in bright sunlight and in the dark.

» The key panels are dimmable to adapt to surrounding conditions.

ROBUST DESIGN AND EASY INSTALLATION

» Robust die-cast casing protects the electronics inside while allowing easy, foolproof installation. Module dimensions are based on standard frames in vehicle electronics. This means that they fit vertically or horizontally into existing structures inside and outside the cockpit.

» Easy snap-in installation using metal springs keeps the module securely seated over a long period.

» Robust industry-standard Deutsch DT connectors cast into the underside with the entire assembly maintain a reliable connection to the assembly. The solid die-cast assembly also prevents dust, dirt and moisture ingress to the rear in compliance with IP 65.

Simple snap-in installation

Solid die-cast assemblies
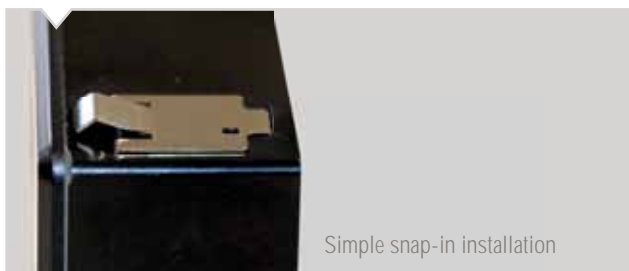
BESPOKE DESIGN OPTIONS

» Keypads are available with four to twelve key panels.

» The key panels are lit using hardware either with multicolour or unicolour LEDs.

» In the interest of intuitive operation, lighting can be dimmed out using a vanishing effect for switching functions not currently available.

» A front panel decal design with a colour scheme as well as pictograms and symbols printed on to customer specification ensures clear markings in a uniform corporate design.

» More design options are available on request under certain conditions; these include alternative assembly versions, light wells and so on.

Bespoke design

HAPTIC FINGERTIP GUIDANCE

» For the haptic support of the operator, a key grid can be installed or embossings can be used, which clearly seperates the individual keys.

Keypad grid for haptic guidance

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