

Series 09

Rugged. Modular. Reliable.

<https://eao.com/09>



09 Information about the Series

Rugged Keypads and RCC

Advantages

- Robust and ergonomic design sealed up to IP6K9K protection
- Suitable for functional safety applications according to DIN EN ISO 13849
- Intelligent, reliable HMIs with CAN bus integration
- Programmable symbol and 4-segment RGB halo ring illumination for function feedback
- Maximum flexibility through modular design and application-specific configuration options

Typical application areas

- Roadmaking vehicles and roller compactors
- Loaders, dozers and excavators
- Cranes, dump trucks and crawler drills
- Fire-fighting and rescue vehicles
- Road sweepers, cleaning vehicles and refuse trucks
- Snow removers and groomers
- Agricultural vehicles and equipment

HMI Functions

- Keypad with 6 or 8 pushbuttons
- Rotary Pushbutton (RPB) with rotation function, 360°, 20 detents, infinitely variable
- Rotary Cursor Controller (RCC) with additional tilt function: X/Y, digital with micro switch

Degree of protection

- Up to IP6K9K
- IP20 (rear side) according to ISO 20653
- Up to IP6K9K (panel/screw-in version)
- Up to IP5K4 (panel/clip-in version)

Operating voltage

- 8-32 VDC

Standards

- E1 ECE R10/ECE R118
- CE

Joysticks

Advantages

- Mechanical and electrical customisation is possible
- Front protection to IP65 or IP67
- Standard joysticks available from stock
- Low back panel depth for hall effect and conductive plastic sensors

Typical application areas

- Commercial vehicles
- Special vehicles
- Marine, rail and electric vehicles
- Machinery
- Medical technology
- Numerous other applications

Functions

- Joystick
- Koordinatenschalter

Design

- Flush
- Raised

Degree of protection

- IP40 (rear side)
- IP65 (front side)
- IP67 (front side)

Operating voltage

- 5 VDC
- 8 ... 36 VDC
- 30 VDC
- 250 VAC
- 500 VAC

Terminal

- Screw terminal
- Soldering terminal
- Minitec plug
- Dubox plug
- Molex micro
- Cable



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09 Overview of Modules

Series 09 Rugged Variants. Optimal for your application.

The Series 09 Rugged Keypads are available with 6 and 8 pushbuttons and also in a range of different variants. These keypad variants and the rotary controllers (Rotary Cursor Controller/Rotary Pushbutton) have the flexibility of interchangeable legends, but come with a choice of different illumination features and connector types for example. Depending on the variant, the Rugged Keypads are also suitable for safety-relevant applications.

This wide choice allows designers to specify only the HMI features they actually need for their vehicle or machine application, therefore minimising hardware costs and optimising the scope of their software development – optimal for your application.

Variants	Halo ring illumination	Communication protocol	Switching element	IP protection	Connector	Switching function/s	Functional safety standard
PREMIUM 	4-segment RGB, freely configurable	CANopen Safety	Electro-mechanical switching element	IP6K7 frontside and rear-side	Deutsch DT04-6P	Pushbutton	CANOpen safety protocol and functional safety, certified according to DIN ISO 13849 PLd
SUPER 	4-segment RGB, freely configurable	CANopen, J1939	Electro-mechanical switching element	IP6K7 frontside and rear-side	Deutsch DT04-6P	Pushbutton	Suitable for functional safety applications according to EN ISO 13849
PLUS 	Red LED (other colours on request)	CANopen, J1939	Electro-mechanical switching element	IP6K7 frontside and rear-side	Deutsch DT04-6P	Pushbutton	Suitable for functional safety applications according to EN ISO 13849
BASIC 	Red or yellow LED (other colours on request)	N.A. (hardwired)	Electro-mechanical switching element	IP6K7 frontside	Würth Elektronik WR-MPC3, 16 pins	Pushbutton	Suitable for functional safety applications due to diagnosable switching function for applications according to ISO 26262 and EN ISO 13849





Variants	Halo ring illumination	Communication protocol	Switching element	IP protection	Connector	Switching function/s	Functional safety standard
SUPER 	4-segment RGB, freely configurable	CANopen, J1939	Electro-mechanical switching element	IP6K9K frontside and rear-side	Deutsch DT04-6P	Pushbutton	Suitable for functional safety applications according to EN ISO 13849
PLUS 	Red LED (other colours on request)	CANopen, J1939	Electro-mechanical switching element	IP6K9K frontside and rear-side	Deutsch DT04-6P	Pushbutton	Suitable for functional safety applications according to EN ISO 13849
BASIC 	Red or yellow LED (other colours on request)	N.A. (hardwired)	Electro-mechanical switching element	IP6K9K frontside	Würth Elektronik WR-MPC3, 20 pins	Pushbutton	Suitable for functional safety applications due to diagnosable switching function for applications according to ISO 26262 and EN ISO 13849
Product / Variant	Halo ring illumination	Communication protocol	Switching element	IP protection	Connector	Switching function/s	Functional safety standard
RCC SUPER 	4-segment RGB, freely configurable	CANopen, J1939	Electro-mechanical switching element	IP6K7 frontside and rear-side	Deutsch DT04-6P	Pushbutton: Push RCC: Rotate/ Push/Tilt	Pushbuttons suitable for functional safety applications according to EN ISO 13849
RCC PLUS 	Red LED (other colours on request)	CANopen, J1939	Elektro-mechanisches Schaltelement	IP6K7 Frontseite und Rückseite	Deutsch DT04-6P	Pushbutton: Push RCC: Rotate/ Push/Tilt	Pushbuttons suitable for functional safety applications according to EN ISO 13849
RPB SUPER 	4-segment RGB, freely configurable	CANopen, J1939	Electro-mechanical switching element	IP6K7 frontside and rear-side	Deutsch DT04-6P	Pushbutton: Push RPB: Rotate/ Push	Pushbuttons suitable for functional safety applications according to EN ISO 13849
RPB PLUS 	Red LED (other colours on request)	CANopen, J1939	Elektro-mechanisches Schaltelement	IP6K7 Frontseite und Rückseite	Deutsch DT04-6P	Pushbutton: Push RPB: Rotate/ Push	Pushbuttons suitable for functional safety applications according to EN ISO 13849

09 Overview of Modules

Customer-specific product diversity.

Series 09 In-Cabin Keypads with 6 pushbuttons are available in SUPER, PLUS and BASIC variants. These differ in terms of illumination options and the communication interface. The hard-wired BASIC product variant is available, as an additional option, in a 2-pushbutton version.

With this wide range of variants, customers can choose between a CAN bus connection or hard-wired version depending on their application, and they can further customise their keypad thanks to a variety of illumination options and interchangeable custom or ISO 7000 symbols – for optimal integration of the HMI in the vehicle interior.

Product	Variant	Symbol illumination	Halo-ring illumination	Communication protocol	IP protection class	Plug	Switching action	Safety
Keypad 6PB 	SUPER	White LED	RGB, freely configurable	CANopen, J1939	IP5K4	TYCO 1745000-3	Pushbutton	Diagnostic switching action for ASIL QM (B) in accordance with ISO 26262
Keypad 6PB 	PLUS	White LED	Red LED (other colours on request)	CANopen, J1939	IP5K4	TYCO 1745000-3	Pushbutton	Diagnostic switching action for ASIL QM (B) in accordance with ISO 26262
Keypad 6PB 	BASIC	White LED	Red LED	n/a (hard-wired)	IP5K4	TYCO 1745000-3/ 1745000-4	Pushbutton	Diagnostic switching action for ASIL QM (B) in accordance with ISO 26262 (with NAMUR)
Keypad 2PB 	BASIC	White LED	Red LED	n/a (hard-wired)	IP5K4	TYCO 1745000-3	Pushbutton	Diagnostic switching action for ASIL QM (B) in accordance with ISO 26262 (with NAMUR)

Rotary Cursor Controller and Rotary Push Button

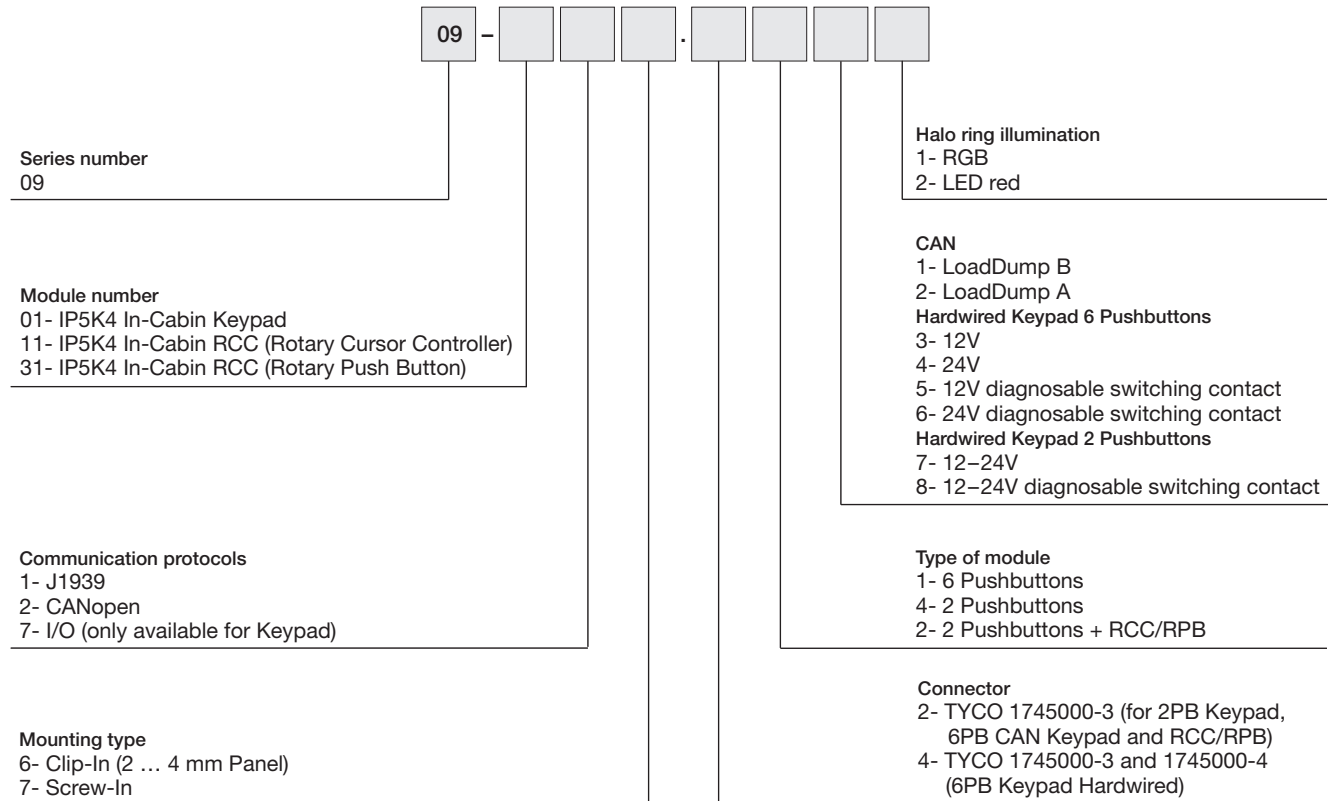
Depending on the intended use, the Series 09 Rotary Push-buttons are divided into two product lines. While the RPB (Rotary pushbutton) product offers the functions of rotary selection and pushbutton selection, the RCC (Rotary Cursor Controller) is also equipped with a tilting function in the X/Y direction.

This enables full control over the cursor, which is ideal for use as a display controller or for navigation in user menus. Both the RPB and RCC are available in the SUPER version with RGB illumination and the PLUS version with Red illumination.

Product	Variant	Symbol illumination	Halo-ring illumination	Communication protocol	Switching element	IP protection class	Plug	Switching function
 <p>RCC 2PB</p>	SUPER	White LED	RGB	CANopen, J1939	Electrical mechanical switching element	IP5K4	TYCO 1745000-3/ 1745000-4	Pushbutton: Push RCC: Rotate/ Push/Tilt
 <p>RCC 2PB</p>	PLUS	White LED	Red LED (other colours on request)	CANopen, J1939	Electrical mechanical switching element	IP5K4	TYCO 1745000-3/ 1745000-4	Pushbutton: Push RCC: Rotate/ Push/Tilt
 <p>RPB 2PB</p>	SUPER	White LED	RGB	CANopen, J1939	Electrical mechanical switching element	IP5K4	TYCO 1745000-3/ 1745000-4	Pushbutton: Push RPB: Rotate/ Push
 <p>RPB 2PB</p>	PLUS	White LED	Red LED (other colours on request)	CANopen, J1939	Electrical mechanical switching element	IP5K4	TYCO 1745000-3/ 1745000-4	Pushbutton: Push RPB: Rotate/ Push

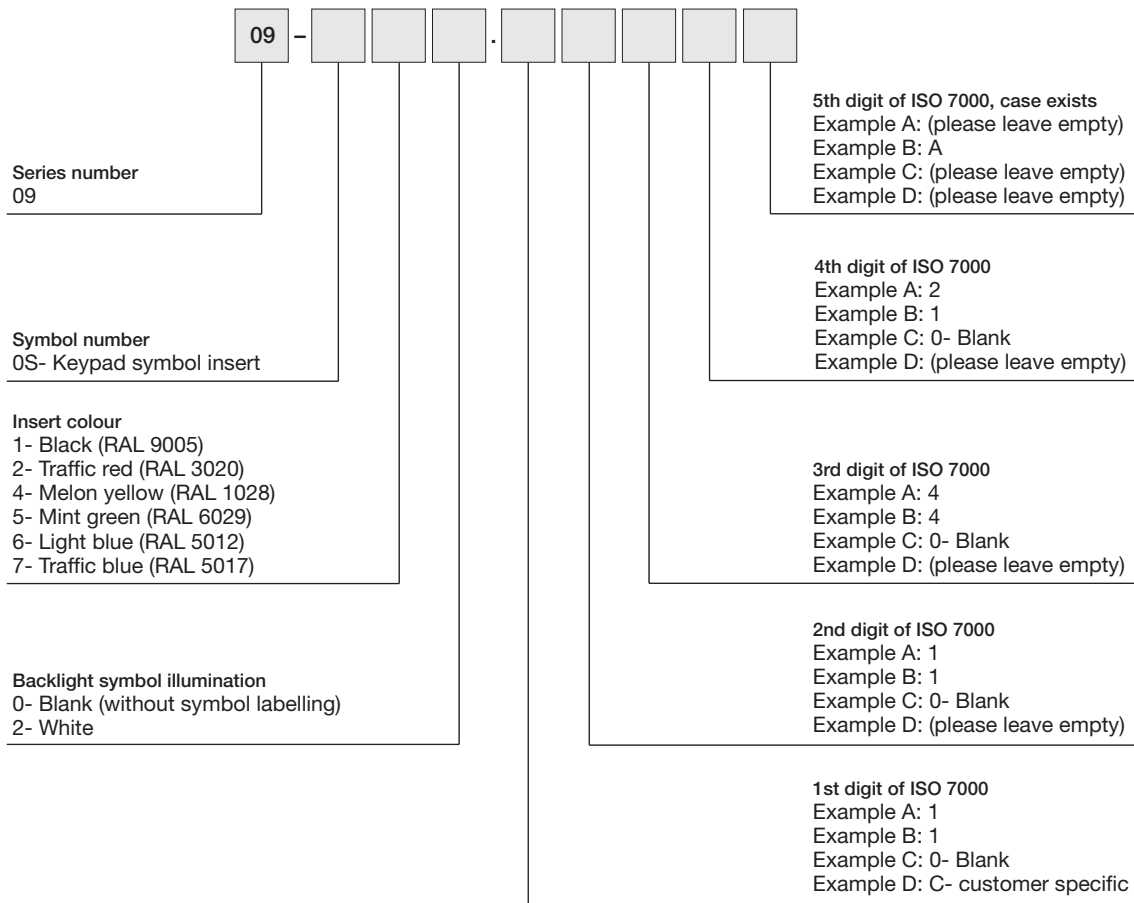
Part number structure In-Cabin Keypads Modules

Part No. module (12 digits)



09 Numbering structure

Part No. symbols



Keypad PREMIUM



Functional Safety

- Developed and certified according to the safety requirements of DIN EN ISO 13849-1:2023
- Performance Level d (PLd)
- MTTFd (in operating years): 183 (Loaddump B)
- PFH: <21 FIT (Loaddump B)
- DC: >90 %

Mechanical characteristics

- Actuation force: approx. 6.5 N
- Overload: 250 N
- Mechanical lifetime: up to 2 million cycles of operation
- Impact resistance: IK07 according to IEC 62262

Electrical characteristics

- Operating voltage range 8–32 VDC

Illumination

- Halo ring and symbol illumination can be configured independently
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m² (dimnable)
- LED halo ring illumination with four freely configurable segments
 - Multi-colour: RGB LED
 - Luminance: approx. 1 500 cd/m² (dimnable)
- Illumination functions: steady lighting, flashing, pulses, rotations, colour changes
 - Halo and symbol illumination can be configured individually

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces

- CAN interface (ISO 11898)
- CANopen Safety (EN 50325-5)
- Baud rate 125, 250, 500, 1000 kBit/s (software configurable) *1
- Connector Deutsch DT04-6P
- Designed in accordance with the safety requirements of vehicles as per ISO 26262 ASIL B and EN ISO 13849 PL d

Ambient conditions

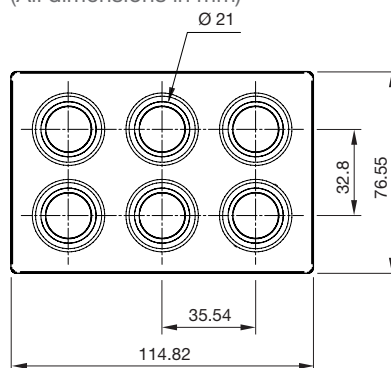
- Operating temperature –40 °C ... +85 °C
- Storage temperature: –40 °C ... +85 °C

Protection degree

- IP6K7 according to ISO 20653
- Up to IP6K7 (panel/ screw-in version)
- Up to IP5K4 (panel/ clip-in version)

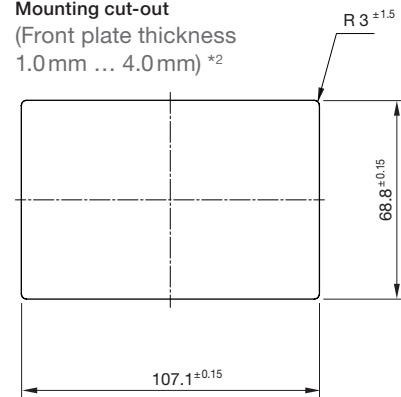
Dimensions

(All dimensions in mm)



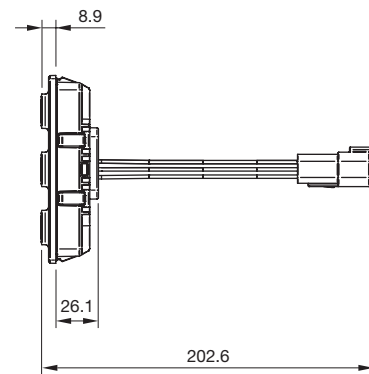
Mounting cut-out

(Front plate thickness 1.0 mm ... 4.0 mm) *2

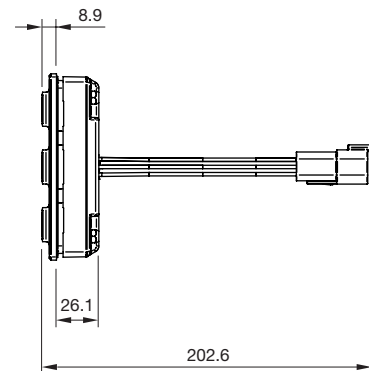


Mounting

Clip-in mounting



Screw-in mounting



*1 In development

*2 For vibration-proof mounting, a front plate of at least 2 mm thickness is recommended.

09 Rugged Keypad Modules

Keypad SUPER



Mechanical characteristics

- Actuation force: approx. 6.5 N
- Overload: 250 N
- Mechanical lifetime: up to 2 million cycles of operation
- Impact resistance: IK07 according to IEC 62262

Electrical characteristics

- Operating voltage range: 8–32 VDC

Illumination

- Halo ring and symbol illumination can be configured independently
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m², dimmable
- LED halo ring illumination with four freely configurable segments
 - Multi-colour: RGB
 - Luminance: approx. 1500 cd/m², dimmable
- Illumination functions: steady lighting, flashing, pulses, rotations, colour changes
 - Halo and symbol illumination can be configured individually

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces

- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CAN J1939

- Baud rate 125, 250, 500, 1000 kBit/s (software configurable) *1
- Connector Deutsch DT04-6P

Ambient conditions

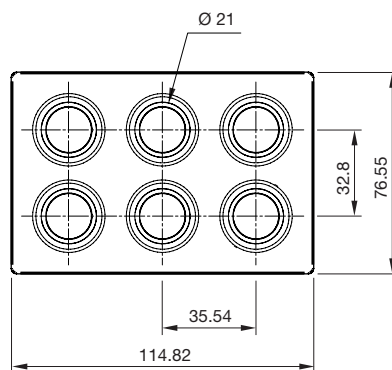
- Operating temperature: –40 °C ... +85 °C
- Storage temperature: –40 °C ... +85 °C

Protection degree

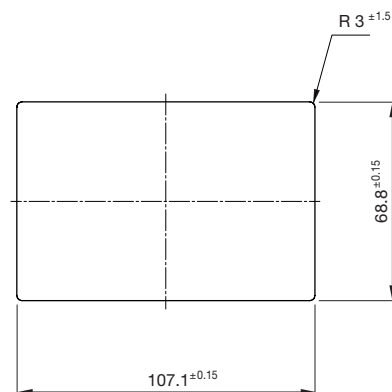
- IP6K7 according to ISO 20653
- Up to IP6K7 (panel/screw-in version)
- Up to IP5K4 (panel/clip-in version)

Dimensions

(All dimensions in mm)

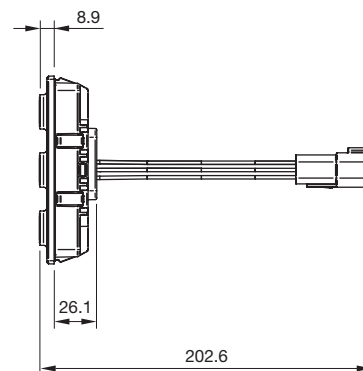


Mounting cut-out
(Front plate thickness 1.0 mm ... 4.0 mm) *2

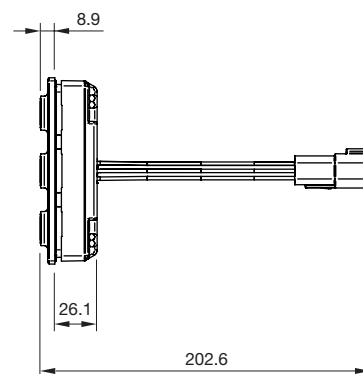


Mounting

Clip-in mounting



Screw-in mounting



*1 In development

*2 For vibration-proof mounting, a front plate of at least 2 mm thickness is recommended.

Keypad PLUS



Mechanical characteristics

- Actuation force: approx. 6.5 N
- Overload: 250 N
- Mechanical lifetime: up to 2 million cycles of operation
- Impact resistance: IK07 according to IEC 62262

Electrical characteristics

- Operating voltage range: 8–32 VDC

Illumination

- Halo ring and symbol illumination can be configured independently
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m², (dimnable)
- LED halo ring illumination
 - Colour: red
 - (other colours on request)
 - Luminance: approx. 750 cd/m² (dimnable)
- Illumination functions: lighting, flashing, pulses
 - Halo and symbol illumination can be configured individually

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces

- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CAN J1939
- Baud rate 125, 250, 500, 1000 kBit/s (software configurable) *1
- Connector Deutsch DT04-6P

Ambient conditions

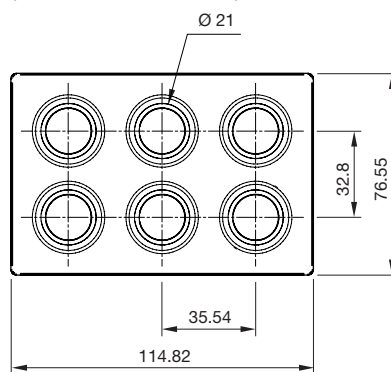
- Operating temperature: –40°C ... +85°C
- Storage temperature: –40°C ... +85°C

Protection degree

- IP6K7 according to ISO 20653
- Up to IP6K7 (panel/screw-in version)
- Up to IP5K4 (panel/clip-in version)

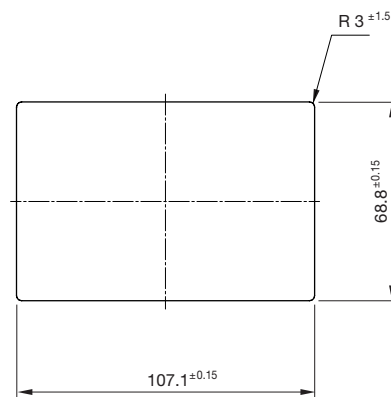
Dimensions

(All dimensions in mm)



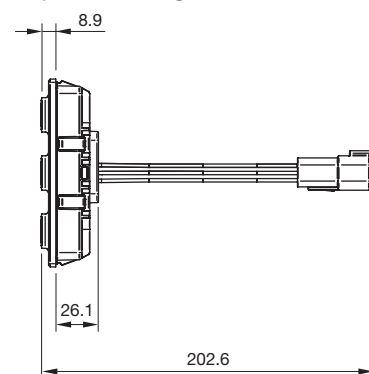
Mounting cut-out

(Front plate thickness 1.0 mm ... 4.0 mm) *2

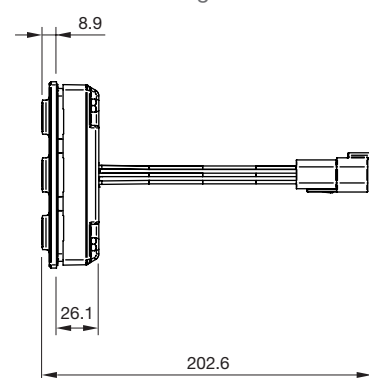


Mounting

Clip-in mounting



Screw-in mounting



*1 In development

*2 For vibration-proof mounting, a front plate of at least 2 mm thickness is recommended.

09 Rugged Keypad Modules

Keypad BASIC



Mechanical characteristics

- Actuation force: approx. 6.5 N
- Overload: 250 N
- Mechanical lifetime: up to 2 million cycles of operation
- Impact resistance: IK07 according to IEC 62262

Electrical characteristics

- 8–18 VDC or 18–32 VDC for operating voltage of the illumination for use in 12 V or 24 V applications. Optionally available with switch contacts with diagnostic capability

Illumination

- Halo ring and symbol illumination can be configured independently
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m², (dimnable)
- LED halo ring illumination
 - Colour: red or yellow (other colours on request)
 - Luminance: approx. 750 cd/m²
- Illumination functions
 - Halo and symbol illumination can be configured individually

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces

- Connector: Würth Elektronik WR-MPC3, 16 Pins

Ambient conditions

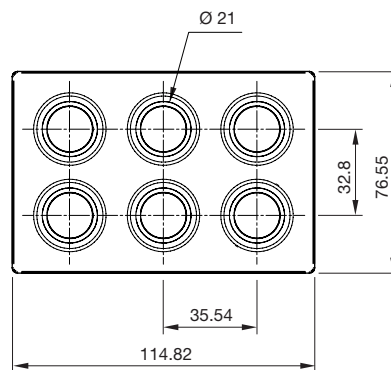
- Operating temperature: –40 °C ... +85 °C
- Storage temperature: –40 °C ... +85 °C

Protection degree

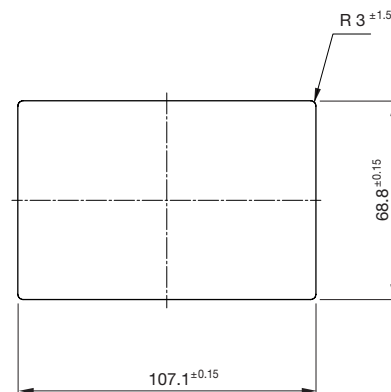
- IP6K7 (front side)
- IP20 (rear side) according to ISO 20653
- Up to IP6K7 (panel/screw-in version)
- Up to IP5K4 (panel/clip-in version)

Dimensions

(All dimensions in mm)

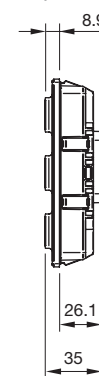


Mounting cut-out
(Front plate thickness 1.0 mm ... 4.0 mm) *

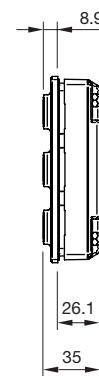


Mounting

Clip-in mounting



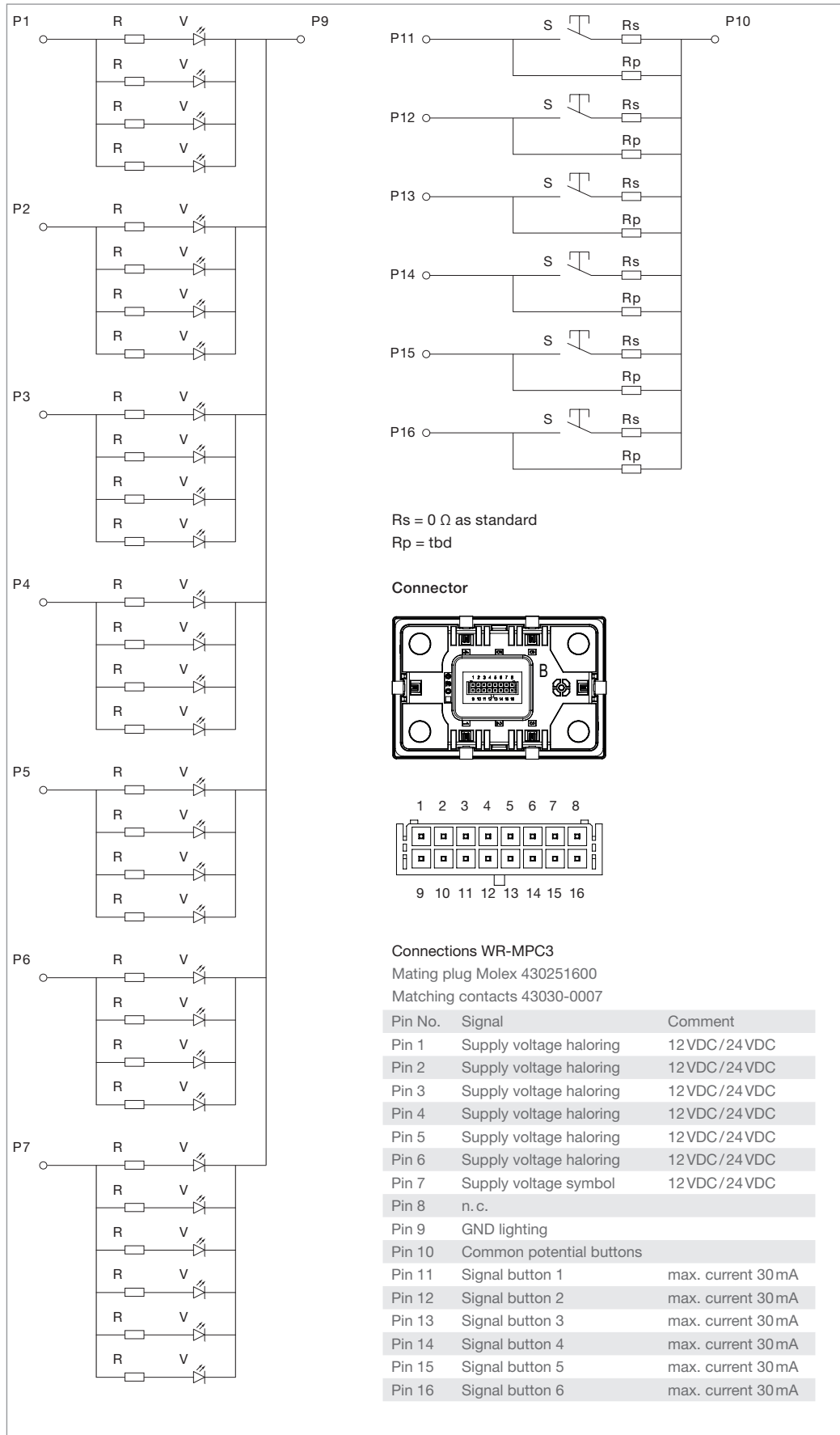
Screw-in mounting



* For vibration-proof mounting, a front plate of at least 2 mm thickness is recommended.

Wiring diagram, connector

Wiring diagram



09 Rugged Keypad Modules

Keypad PREMIUM



Functional Safety

- Developed and certified according to the safety requirements of DIN EN ISO 13849-1:2023
- Performance Level d (PLd)
- MTTFd (in operating years): 91
- PFH: <32 FIT
- DC: >90 %

Mechanical characteristics

- Actuation force: approx. 11 N
- Overload: 250 N
- Mechanical lifetime: up to 2 million cycles of operation
- Impact resistance: IK07 according to IEC 62262

Electrical characteristics

- Operating voltage range 8–32VDC

Illumination

- Halo ring and symbol illumination can be configured independently
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20cd/m² (dimnable)
- LED halo ring illumination with four freely configurable segments
 - Multi-colour: RGB LED
 - Luminance: approx. 1500cd/m² (dimnable)
- Illumination functions: steady lighting, flashing, pulses, rotations, colour changes
 - Halo and symbol illumination can be configured individually

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces

- CAN interface (ISO 11898)
- CANopen Safety (EN 50325-5)
- Baud rate 125, 250, 500, 1000 kBit/s (software configurable) *1
- Connector Deutsch DT04-6P
- Designed in accordance with safety requirements of vehicles as per ISO 26262 ASIL B and EN ISO 13849 PL d

Ambient conditions

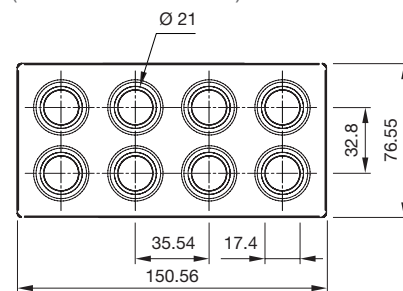
- Operating temperature: –40 °C ... +85 °C
- Storage temperature: –40 °C ... +85 °C

Protection degree

- IP6K9K according to ISO 20653 *2
- Up to IP6K9 (panel/screw-in version)
- Up to IP5K4 (panel/clip-in version)

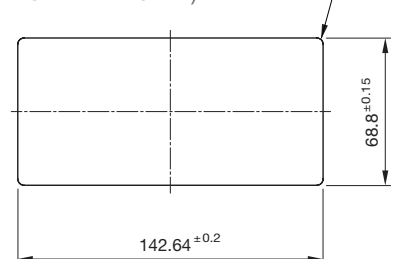
Dimensions

(All dimensions in mm)



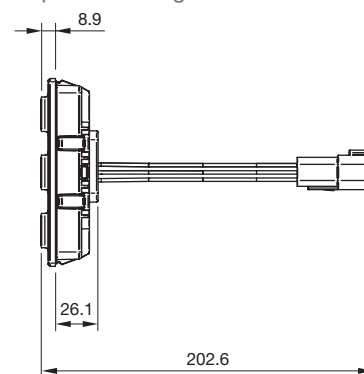
Mounting cut-out

(Front plate thickness 1.0 mm ... 4.0 mm) *3

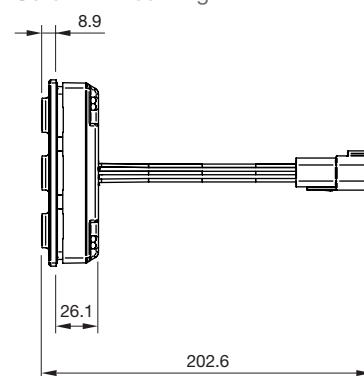


Mounting

Clip-in mounting



Screw-in mounting



*1 in development

*2 Under extreme conditions, the symbol inserts may detach. These can be easily reinserted in the keypad. For further information, please refer to the operating instructions.

*3 For vibration-proof mounting, a front plate of at least 2 mm thickness is recommended.

Keypad SUPER



Mechanical characteristics

- Actuation force: approx. 11 N
- Overload: 250 N
- Mechanical lifetime: up to 2 million cycles of operation
- Impact resistance: IK07 according to IEC 62262

Electrical characteristics

- Operating voltage range: 8–32 VDC

Illumination

- Halo ring and symbol illumination can be configured independently
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m² (dimnable)
- LED halo ring illumination with four freely configurable segments
 - Multi-colour: RGB
 - Luminance: approx. 1500 cd/m² (dimnable)
- Illumination functions: steady lighting, flashing, pulses, rotations, colour changes
 - Halo and symbol illumination can be configured individually

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces

- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CAN J1939
- Baud rate 125, 250, 500, 1000 kBit/s (software configurable) *1
- Connector Deutsch DT04-6P

Ambient conditions

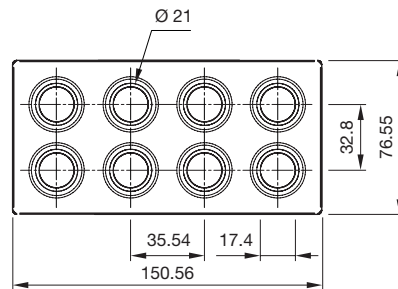
- Operating temperature: –40°C ... +85°C
- Storage temperature: –40°C ... +85°C

Protection degree

- IP6K9K according to ISO 20653 *2
- Up to IP6K9 (panel/screw-in version)
- Up to IP5K4 (panel/clip-in version)

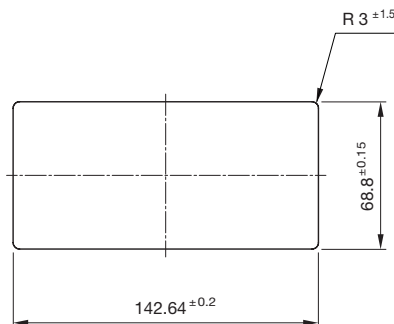
Dimensions

(All dimensions in mm)



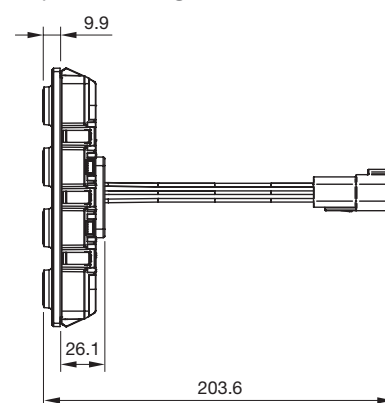
Mounting cut-out

(Front plate thickness 1.0 mm ... 4.0 mm) *3

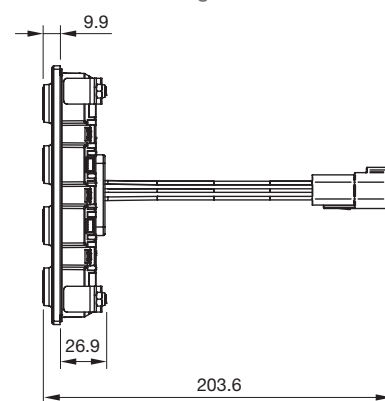


Mounting

Clip-in mounting



Screw-in mounting



*1 in development

*1 Under extreme conditions, the symbol inserts may detach. These can be easily reinserted in the keypad. For further information, please refer to the operating instructions.

*2 For vibration-proof mounting, a front plate of at least 2 mm thickness is recommended.

09 Rugged Keypad Modules

Keypad PLUS



Mechanical characteristics

- Actuation force: approx. 11 N
- Overload: 250 N
- Mechanical lifetime: up to 2 million cycles of operation
- Impact resistance: IK07 according to IEC 62262

Electrical characteristics

- Operating voltage range: 8–32 VDC

Illumination

- Halo ring and symbol illumination can be configured independently
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m², (dimnable)
- LED halo ring illumination
 - Colour: red (other colours on request)
 - Luminance: approx. 750 cd/m² (dimnable)
- Illumination functions: lighting, flashing, pulses
 - Halo and symbol illumination can be configured individually

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces

- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CAN J1939
- Baud rate 125, 250, 500, 1000 kBit/s (software configurable) *1
- Connector Deutsch DT04-6P

Ambient conditions

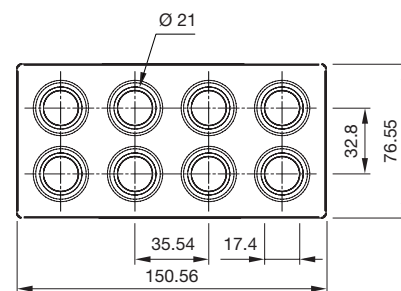
- Operating temperature: –40 °C ... +85 °C
- Storage temperature: –40 °C ... +85 °C

Protection degree

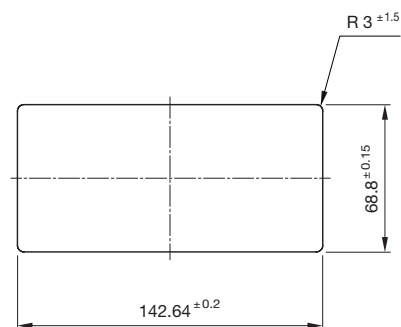
- IP6K9K according to ISO 20653 *2
- Up to IP6K7 (panel/screw-in version) *2
- Up to IP5K4 (panel/clip-in version)

Dimensions

(All dimensions in mm)

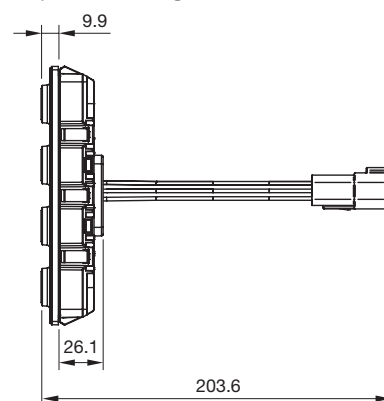


Mounting cut-out
(Front plate thickness 1.0 mm ... 4.0 mm) *3

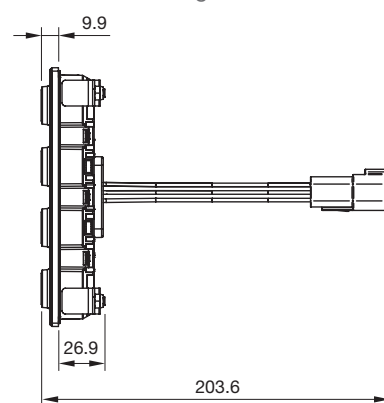


Mounting

Clip-in mounting



Screw-in mounting



*1 In development

*2 Under extreme conditions, the symbol inserts may detach. These can be easily reinserted in the keypad. For further information, please refer to the operating instructions.

*3 For vibration-proof mounting, a front plate of at least 2 mm thickness is recommended.

Keypad BASIC



Mechanical characteristics

- Actuation force: approx. 11 N
- Overload: 250 N
- Mechanical lifetime: up to 2 million cycles of operation
- Impact resistance: IK07 according to IEC 62262

Electrical characteristics

- 8–18 VDC or 18–32 VDC for operating voltage of the illumination for use in 12 V or 24 V applications. Optionally available with switch contacts with diagnostic capability

Illumination

- Halo ring and symbol illumination can be configured independently
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m², (dimnable)
- LED halo ring illumination
 - Colour: red or yellow (other colours on request)
 - Luminance: approx. 750 cd/m²
- Illumination functions
 - Halo and symbol illumination can be configured individually

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces

- Connector: Würth Elektronik WR-MPC3, 20 Pins

Ambient conditions

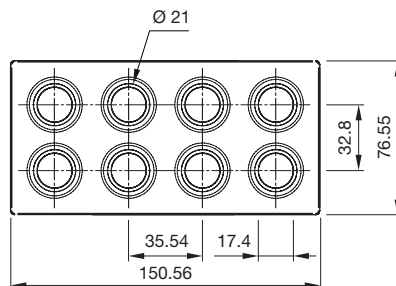
- Operating temperature: –40°C ... +85°C
- Storage temperature: –40°C ... +85°C

Protection degree

- IP6K9K (front side)
- IP20 (rear side) according to ISO 20653 *1
- Up to IP6K9K (panel/screw-in version)
- Up to IP5K4 (panel/clip-in version)

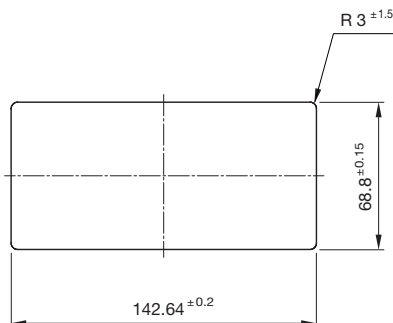
Dimensions

(All dimensions in mm)



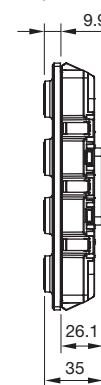
Mounting cut-out

(Front plate thickness 1.0 mm ... 4.0 mm) *

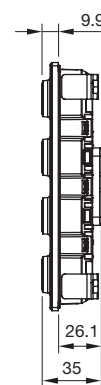


Mounting

Clip-in mounting



Screw-in mounting



*1 Under extreme conditions, the symbol inserts may detach. These can be easily reinserted in the keypad. For further information, please refer to the operating instructions.

*2 For vibration-proof mounting, a front plate of at least 2 mm thickness is recommended.

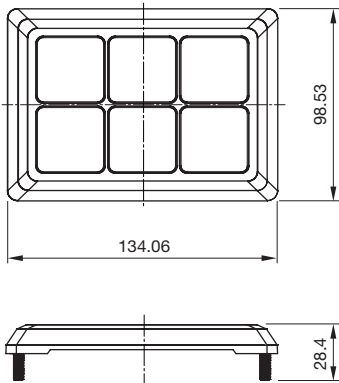
09 Rugged Keypad Modules

Accessories

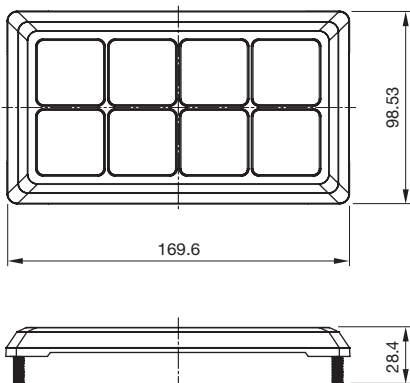
Protective shroud

Part No.	
09-0A00.0100	Protective shroud for Rugged Keypad 6PB
09-0A00.0300	Protective shroud for Rugged Keypad 8PB

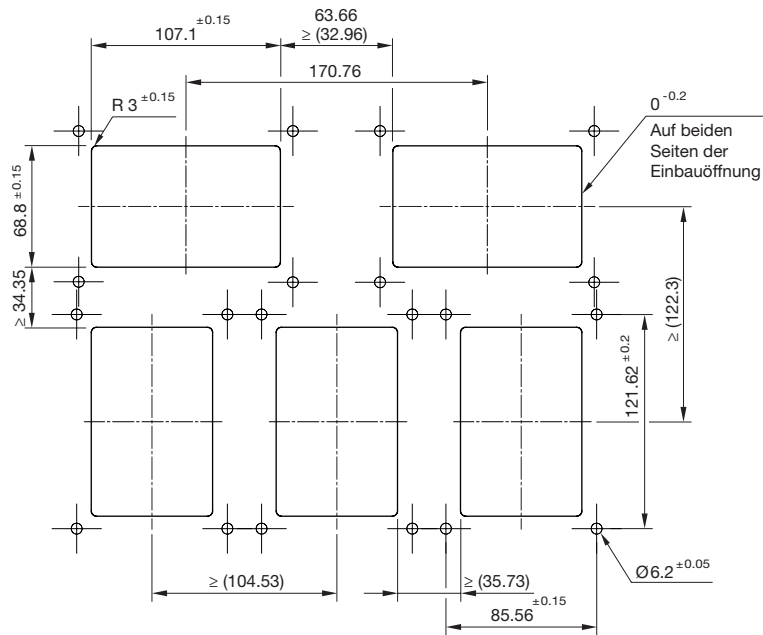
Dimensions Keypad 6PB
(All dimensions in mm)



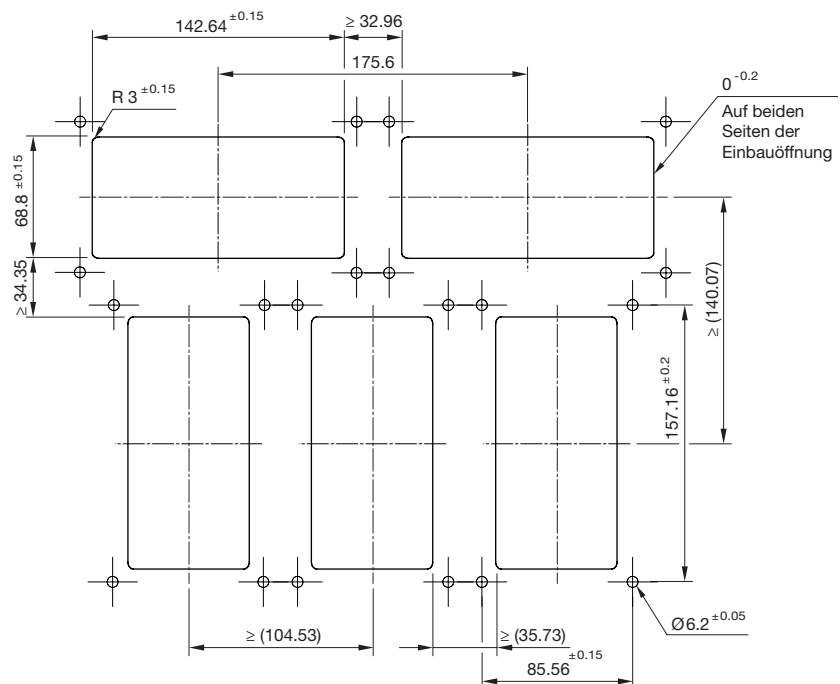
Dimensions Keypad 8 PB
(All dimensions in mm)



Mounting cut-out Keypad 6PB



Mounting cut-out Keypads 8 PB



Rotary Cursor Controller SUPER



Mechanical characteristics

- Actuation force: approx. 11 N
- Overload: 250 N
- Mechanical lifetime:
 - Pushbuttons: up to 2 million cycles of operation
 - Rotary Switch: up to 500 000 cycles
- Impact resistance:
 - IK07 according to IEC 62262

Rotary pushbutton

- Rotation function: 360°, 20 detents, incremental
- Tilt angle: X/Y, digital with micro-switch

Electrical characteristics

- Operating voltage range: 8–32 VDC
- LoadDump A or B

Illumination

- Halo ring and symbol illumination can be configured independently
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m² (dimnable)
- LED halo ring illumination with four freely configurable segments
 - Multi-colour: RGB
 - Luminance: approx. 1 500 cd/m² (dimnable, depending on colour)
- Illumination functions: steady lighting, flashing, pulses, rotations, colour changes

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces

- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CAN J1939
- Baud rate 125, 250, 500, 1000 kBit/s (software configurable) *1
- Connector Deutsch DT04-6P

Ambient conditions

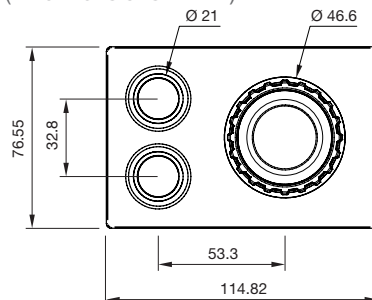
- Operating temperature: –40°C ... +85°C
- Storage temperature: –40°C ... +85°C

Protection degree

- IP6K7 according to ISO 20653
- Up to IP6K (panel/screw-in version)
- Up to IP5K4 (panel/clip-in version)

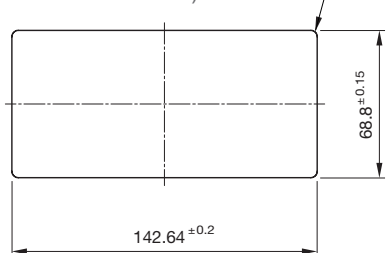
Dimensions

(All dimensions in mm)



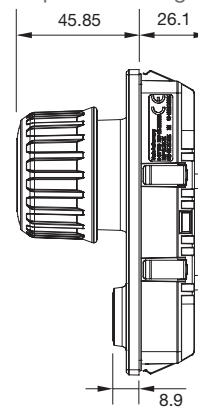
Mounting cut-out

(Front plate thickness 1.0 mm ... 4.0 mm) *2

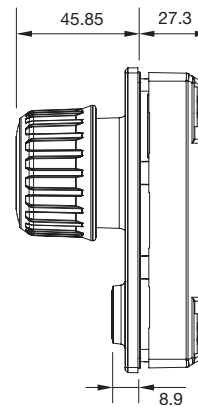


Mounting

Clip-in mounting



Screw-in mounting



*1 in development

*2 For vibration-proof mounting, a front plate of at least 2 mm material thickness and the use of the screw mounting variant is recommended.

09 Rugged Keypad Modules

Rotary Cursor Controller PLUS



Mechanical characteristics

- Actuation force: approx. 11 N
- Overload: 250 N
- Mechanical lifetime:
 - Pushbuttons: up to 2 million cycles of operation
 - Rotary Switch: up to 500 000 cycles
- Impact resistance:
 - IK07 according to IEC 62262

Rotary pushbutton

- Rotation function: 360°, 20 detents, incremental
- Tilt angle: X/Y, digital with micro-switch

Electrical characteristics

- Operating voltage range: 8–32 VDC
- LoadDump A or B

Illumination

- Halo ring and symbol illumination can be configured independently
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m², (dimnable)
- LED halo ring illumination
 - Colour: red
 - (other colours on request)
 - Luminance: approx. 1 500 cd/m² (dimnable, depending on colour)
- Illumination functions steady lighting, flashing, pulses, rotations, colour changes

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces

- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CAN J1939
- Baud rate 125, 250, 500, 1000 kBit/s (software configurable) *1
- Connector Deutsch DT04-6P

Ambient conditions

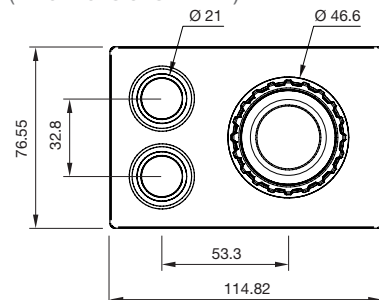
- Operating temperature:
 - 40°C ... +85°C
- Storage temperature:
 - 40°C ... +85°C

Protection degree

- IP6K7 according to ISO 20653
- Up to IP6K7 (panel/screw-in version)
- Up to IP5K4 (panel/clip-in version)

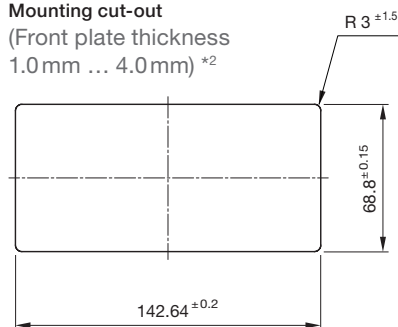
Dimensions

(All dimensions in mm)

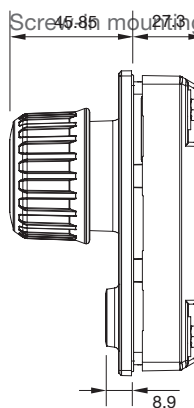
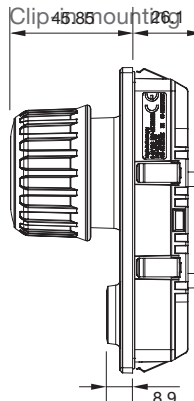


Mounting cut-out

(Front plate thickness 1.0 mm ... 4.0 mm) *2



Mounting



*1 in development

*2 For vibration-proof mounting, a front plate of at least 2 mm material thickness and the use of the screw mounting variant is recommended.

Rotary Pushbutton SUPER



Mechanical characteristics

- Actuation force: approx. 11 N
- Overload: 250 N
- Mechanical lifetime:
 - Pushbuttons: up to 2 million cycles of operation
 - Rotary Switch: up to 500 000 cycles
- Impact resistance: IK07 according to IEC 62262

Rotary pushbutton

- Rotation function: 360°, 20 detents, incremental

Electrical characteristics

- Operating voltage range: 8–32 VDC
- LoadDump A or B

Illumination

- Halo ring and symbol illumination can be configured independently
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m² (dimnable)
- LED halo ring illumination with four freely configurable segments
 - Multi-colour: RGB
 - Luminance: approx. 1 500 cd/m² (dimnable, depending on colour)
- Illumination functions: steady lighting, flashing, pulses, rotations, colour changes

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces

- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CAN J1939
- Baud rate 125, 250, 500, 1000 kBit/s (software configurable) *1
- Connector Deutsch DT04-6P

Ambient conditions

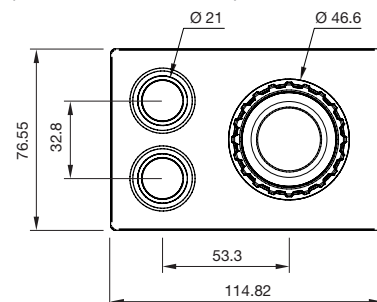
- Operating temperature: –40°C ... +85°C
- Storage temperature: –40°C ... +85°C

Protection degree

- IP6K7 according to ISO 20653
- Up to IP6K7 (panel/screw-in version)
- Up to IP5K4 (panel/clip-in version)

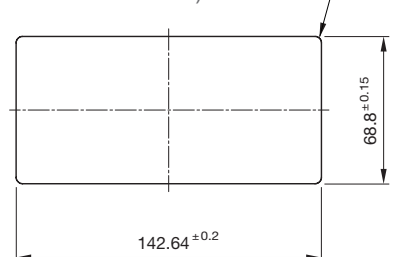
Dimensions

(All dimensions in mm)



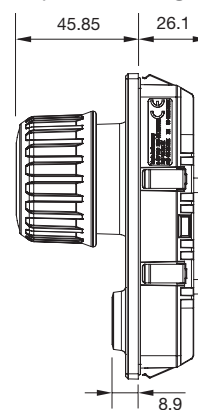
Mounting cut-out

(Front plate thickness 1.0 mm ... 4.0 mm) *2

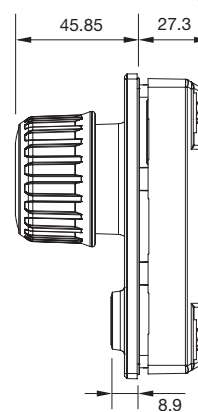


Mounting

Clip-in mounting



Screw-in mounting



*1 in development

*2 For vibration-proof mounting, a front plate of at least 2 mm material thickness and the use of the screw mounting variant is recommended.

09 Rugged Keypad Modules

Rotary Pushbutton PLUS



Mechanical characteristics

- Actuation force: approx. 11 N
- Overload: 250 N
- Mechanical lifetime:
 - Pushbuttons: up to 2 million cycles of operation
 - Rotary Switch: up to 500 000 cycles
- Impact resistance: IK07 according to IEC 62262

Rotary pushbutton

- Rotation function: 360°, 20 detents, incremental

Electrical characteristics

- Operating voltage range: 8–32 VDC
- LoadDump A or B

Illumination

- Halo ring and symbol illumination can be configured independently
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m², (dimnable)
- LED halo ring illumination
 - Colour: red
 - (other colours on request)
 - Luminance: approx. 1 500 cd/m² (dimnable, depending on colour)
- Illumination functions steady lighting, flashing, pulses, rotations, colour changes

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces

- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CAN J1939
- Baud rate 125, 250, 500, 1000 kBit/s (software configurable) *1
- Connector Deutsch DT04-6P

Ambient conditions

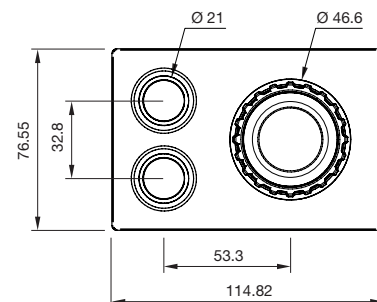
- Operating temperature: -40°C ... +85°C
- Storage temperature: -40°C ... +85°C

Protection degree

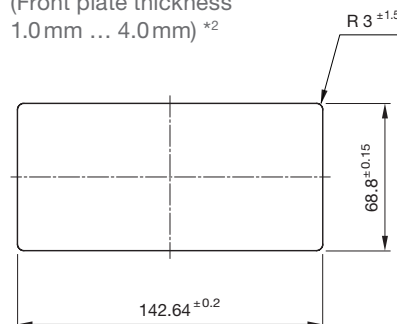
- IP6K7 according to ISO 20653
- Up to IP6K7 (panel/screw-in version) *2
- Up to IP5K4 (panel/clip-in version)

Dimensions

(All dimensions in mm)

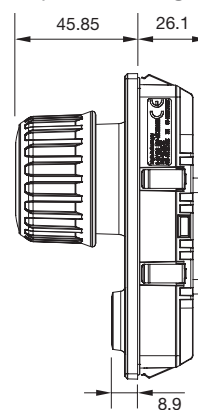


Mounting cut-out
(Front plate thickness 1.0 mm ... 4.0 mm) *2

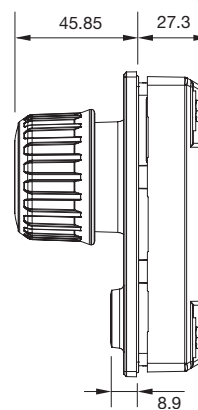


Mounting

Clip-in mounting



Screw-in mounting



*1 In development

*2 For vibration-proof mounting, a front plate of at least 2 mm material thickness and the use of the screw mounting variant is recommended.

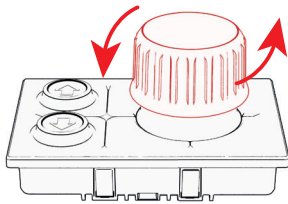
The Series 09 Rotary Cursor Controller and Rotary Pushbutton Modules are designed for use in special vehicles, trucks and buses. They cover the functions of a rotary control, a pushbutton and, in the case of the Rotary Cursor Controller, also a digital joystick. The modules are ideal for control and selection within a vehicle display or navigation in a user menu.

The joystick function of the Rotary Cursor Controller is implemented with a three-dimensional tilt function. The tilt function in the X/Y direction has been designed with integrated protection against unintentional contact and actuation, so that safe operation is possible even under difficult conditions, for example under strong movement.

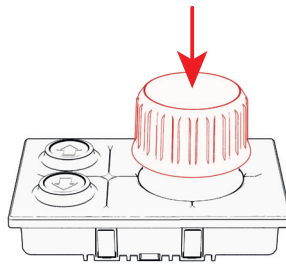
The two additional pushbuttons supplement the functionalities of the RCC and RPB and can be configured with individual HALO ring and symbol illumination and symbols depending on the product variant.

With this high level of safety, our Series 09 rugged modules stand not only for intuitive, but also for reliable operation in the vehicle interior.

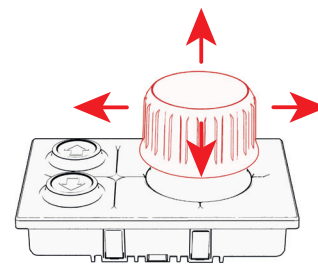
Functions



“Rotate” function.

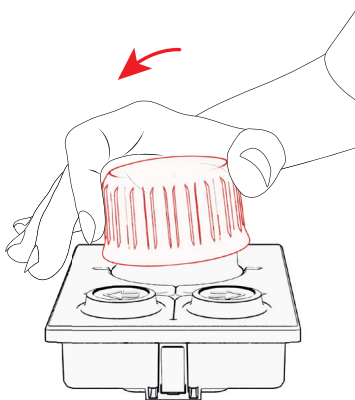


“Push” function.



“Joystick” function.

Operation



Intuitive operation with two or three fingers.



Protection against unintentional actuation through lateral contact.

09 In-Cabin Keypad Modules

6-pushbutton Keypad SUPER



Mechanical characteristics

- Actuating force: approx. 6 N
- Overload force: 250 N
- Lifecycle: up to 1 million cycles of operation
- Impact resistance: IEC 62262 IK07

Electrical characteristics

- Operating voltage range 8-32 VDC LoadDump A or B

Illumination

- Halo-ring and symbol illumination can be configured independently of one another
Halo-ring effects: flashing, pulsing, colour change
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m² (dimnable)
- LED halo-ring illumination
 - Colour: multi-colour RGB
 - Luminance: approx. 500 cd/m² (dimnable*)

*depending on the respective colour

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Connections/interfaces

- CAN interface (ISO 11898)
- CAN protocols: CANOpen (CiA 401), CAN J1939
- Baud rate 125, 250, 500, 1000 kBit/s (configurable through software)
- Integrated plug recess, compatible with TE 8P-1745000-3

Protection degree

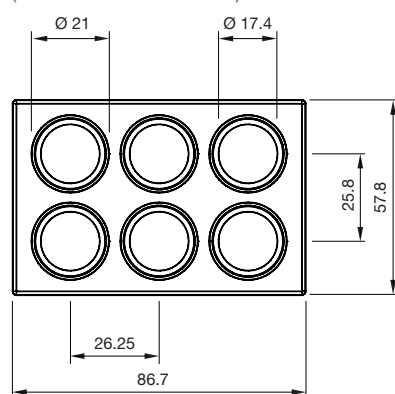
- IP5K4 in accordance with ISO 20653 (front side in installed state)
- IP20 in accordance with ISO 20653 (rear side)

Ambient conditions

- Operating temperature -40°C ... +85°C
- Storage temperature -40°C ... +85°C

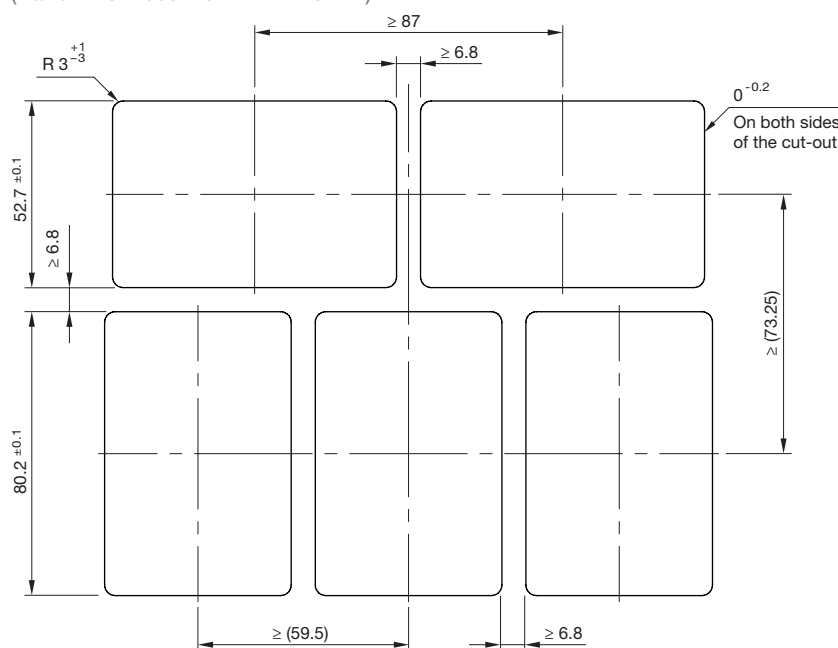
Dimensions

(All dimensions in mm)



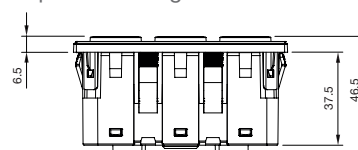
Mounting cut-out

(Panel thickness 1.0 mm ... 4.0 mm)

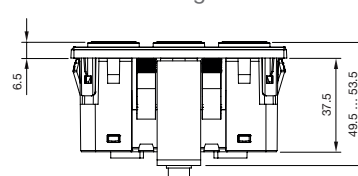


Mounting

Clip-in mounting



Screw-in mounting



The keypad can be mounted into front plate thicknesses between 1 and 4 mm. A front plate of at least 2 mm thickness is recommended. Non-compliance with these specifications may lead to damage to the locking tongue.

6-pushbutton Keypad PLUS



Mechanical characteristics

- Actuating force: approx. 6 N
- Overload force: 250 N
- Lifecycle: up to 1 million cycles of operation
- Impact resistance: IEC 62262 IK07

Electrical characteristics

- Operating voltage range 8-32 VDC
- LoadDump A or B

Illumination

- Halo-ring and symbol illumination can be configured independently of one another
- Halo-ring effects: flashing, pulsing, colour change
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m² (dimnable)
- LED halo-ring illumination
 - Colour: red (other colours on request)
 - Luminance: approx. 500 cd/m² (dimnable)

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Connections/interfaces

- CAN interface (ISO 11898)
- CAN protocols: CANOpen (CiA 401), CAN J1939
- Baud rate 125, 250, 500, 1000 kBit/s (configurable through software)
- Integrated plug recess, compatible with TE 8P-1745000-3

Protection degree

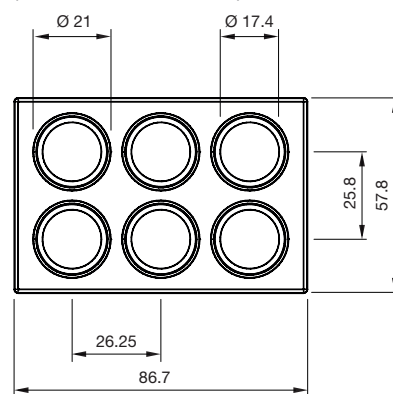
- IP5K4 in accordance with ISO 20653 (front side in installed state)
- IP20 in accordance with ISO 20653 (rear side)

Ambient conditions

- Operating temperature -40°C ... +85°C
- Storage temperature -40°C ... +85°C

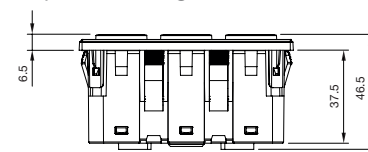
Dimensions

(All dimensions in mm)

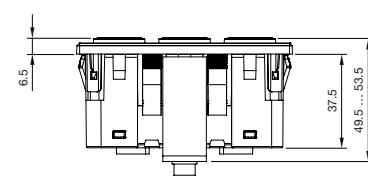


Mounting

Clip-in mounting



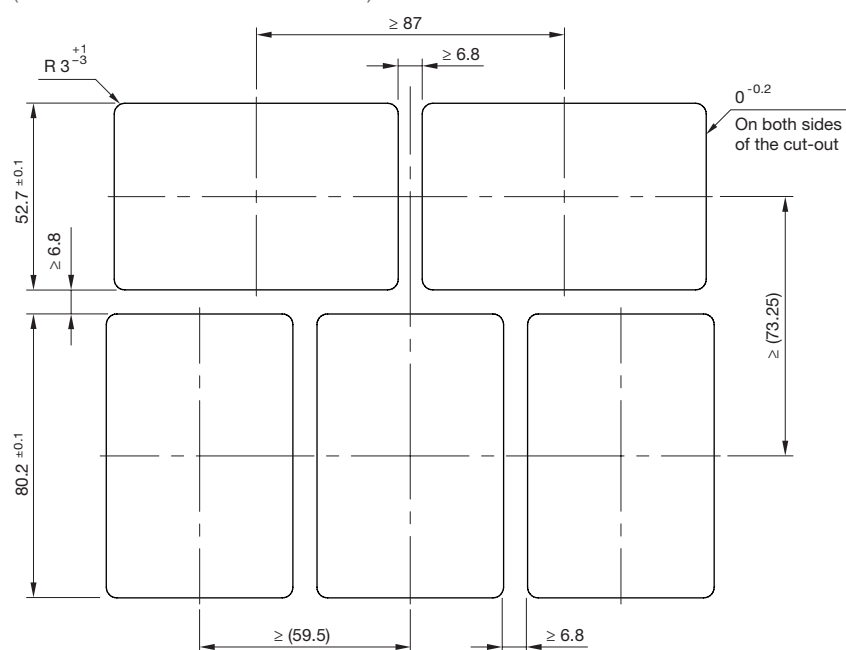
Screw-in mounting



The keypad can be mounted into front plate thicknesses between 1 and 4 mm. A front plate of at least 2 mm thickness is recommended. Non-compliance with these specifications may lead to damage to the locking tongue.

Mounting cut-out

(Panel thickness 1.0 mm ... 4.0 mm)



09 In-Cabin Keypad Modules

6-pushbutton Keypad BASIC



Mechanical characteristics

- Actuating force: approx. 6 N
- Overload force: 250 N
- Lifecycle: up to 1 million cycles of operation
- Impact resistance: IEC 62262 IK07

Electrical characteristics

- Operating voltage range: 8 – 18 VDC or 18 – 32 VDC
Operating voltage of illumination for use in 12 V or 24 V applications.
Available with the option of diagnostic switching contacts
- Max. power: 1 W (without NAMUR)
0.25 W (with NAMUR)
- Max. current: 30 mA
- Min. current: 2 mA
- Max. voltage: 32 V
- Contact resistance (unactuated): > 2 M Ω (without NAMUR)
1 k Ω \pm 4 % (with NAMUR)
- Contact resistance (actuated): < 10 Ω (without NAMUR)
110 Ω \pm 10 Ω (with NAMUR)

Illumination

- Halo-ring and symbol illumination can be configured independently of one another
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m² (dimnable)
- LED halo-ring illumination
 - Colour: red (other colours on request)
 - Luminance: approx. 500 cd/m² (dimnable)

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Connections/interfaces

- Integrated plug recess, compatible with TE 8P-1745000-3/8P-1745000-4, 8-pin

Protection degree

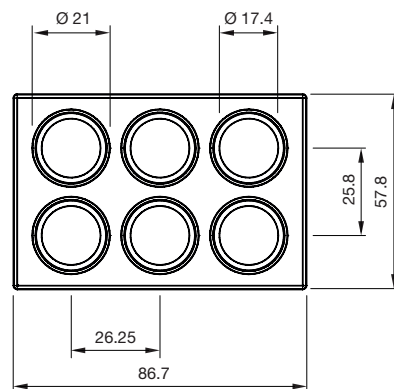
- IP5K4 in accordance with ISO 20653 (front side in installed state)
- IP20 in accordance with ISO 20653 (rear side)

Ambient conditions

- Operating temperature –40°C ... +85°C
- Storage temperature –40°C ... +85°C

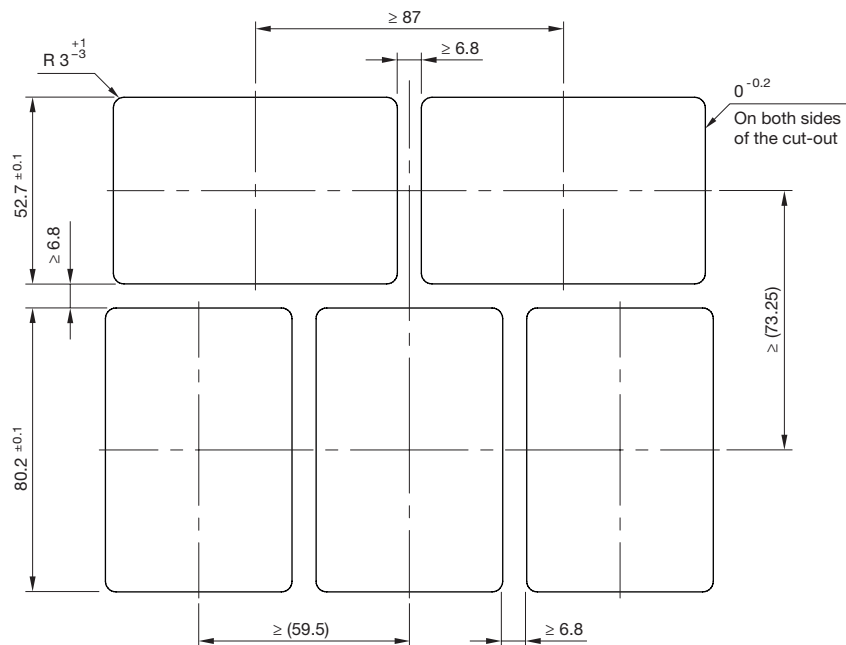
Dimensions

(All dimensions in mm)



Mounting cut-out

(Panel thickness 1.0 mm ... 4.0 mm)

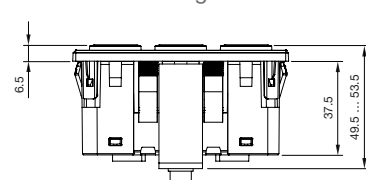


Mounting

Clip-in mounting



Screw-in mounting



The keypad can be mounted into front plate thicknesses between 1 and 4 mm. A front plate of at least 2 mm thickness is recommended. Non-compliance with these specifications may lead to damage to the locking tongue.

2-pushbutton Keypad BASIC



Mechanical characteristics

- Actuating force: approx. 6 N
- Overload force: 250 N
- Lifecycle: up to 1 million cycles of operation
- Impact resistance: IEC 62262 IK07

Electrical characteristics

- Operating voltage range 8 – 32 VDC
Available with the option of diagnostic switching contacts (NAMUR)
- Max. power:
1 W (without NAMUR)
0.25 W (with NAMUR)
- Max. current:
30 mA
- Min. current:
2 mA
- Max. voltage:
32 V
- Contact resistance (unactuated):
> 2 MΩ (without NAMUR)
1 kΩ ± 4 % (with NAMUR)
- Contact resistance (actuated):
< 10 Ω (without NAMUR)
110 Ω ± 10 Ω (with NAMUR)

Illumination

- Halo-ring and symbol illumination can be configured independently of one another
- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m² (dimnable)
- LED halo-ring illumination
 - Colour: red (other colours on request)
 - Luminance: approx. 500 cd/m² (dimnable)

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Connections/interfaces

- Integrated plug recess, compatible with TE 8P-1745000-3/8P-1745000-4, 8-pin

Protection degree

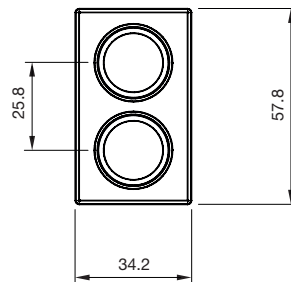
- IP5K4 in accordance with ISO 20653 (front side in installed state)
- IP20 in accordance with ISO 20653 (rear side)

Ambient conditions

- Operating temperature
–40°C ... +85°C
- Storage temperature
–40°C ... +85°C

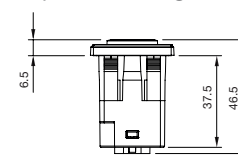
Dimensions

(All dimensions in mm)

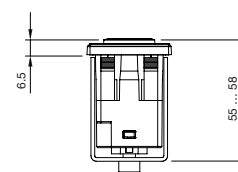


Mounting

Clip-in mounting



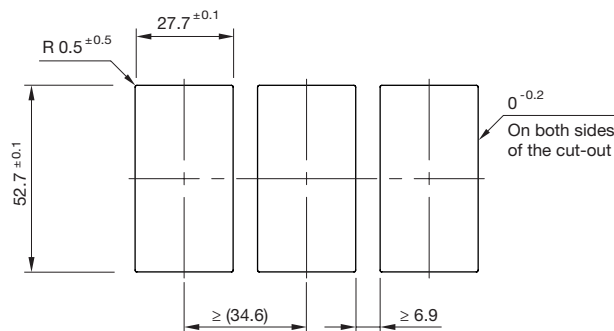
Screw-in mounting



The keypad can be mounted into front plate thicknesses between 1 and 4 mm. A front plate of at least 2 mm thickness is recommended. Non-compliance with these specifications may lead to damage to the locking tongue.

Mounting cut-out

(Panel thickness 1.0 mm ... 4.0 mm)



09 In-Cabin Keypad Modules

In-Cabin Rotary Cursor Controller SUPER



Mechanical characteristics

- Actuating force:
 - Buttons approx. 6.5 N
 - Rotary Switch approx. 12 N
- Overload force: 250 N
- Mechanical lifetime:
 - Buttons 1 million cycles of operation (B10)
 - Rotary Switch 500 000 cycles
- Impact resistance: IEC 62262 IK07

Rotary pushbutton

- Rotation function: 360°, 20 detents, continuous rotation
- Tilt function: X/Y, digital with micro switch

Electrical characteristics

- Operating voltage 8-32 VDC
- LoadDump A or B

Illumination (Buttons)

- Halo-ring and symbol illumination can be configured independently of one another
- Halo-ring effects: flashing, pulsing,

- colour change
 - LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m² (dimnable)
 - LED halo-ring illumination
 - Colour: multi-colour RGB
 - Luminance: approx. 500 cd/m² (dimnable*)
- *depending on the respective colour

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Connections/interfaces

- CAN interface (ISO 11898)
- CAN protocols: CANOpen (CiA 401),

CAN J1939

- Baud rate 125, 250, 500, 1000 kBit/s (configurable through software)
- Integrated plug recess, compatible with TE 8P-1745000-3

Protection degree

- IP5K4 in accordance with ISO 20653 (front side in installed state)
- IP20 in accordance with ISO 20653 (rear side)

Ambient conditions

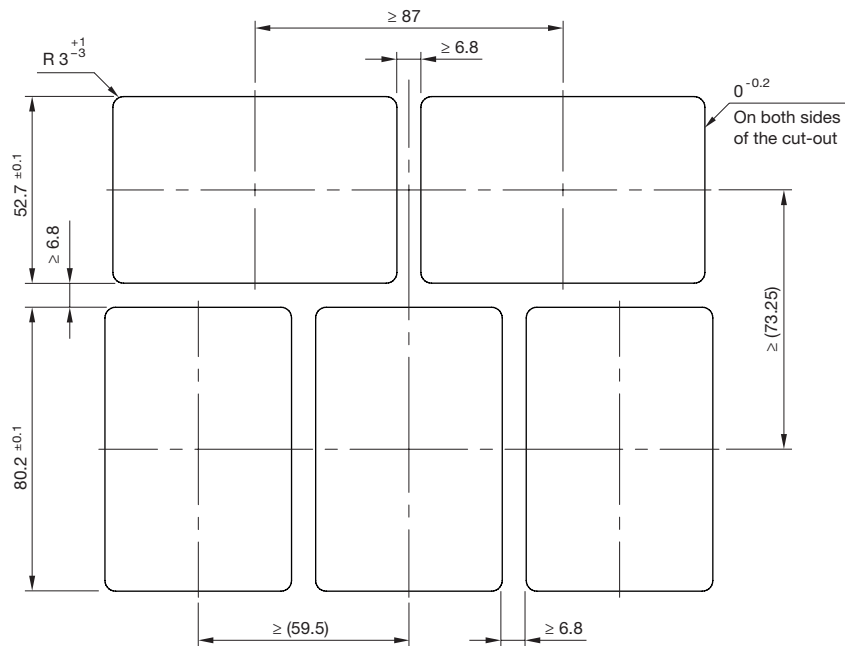
- Operating temperature
 - 40°C ... +85°C
- Storage temperature
 - 40°C ... +85°C

Standards and certifications

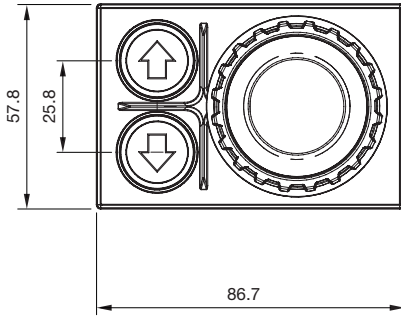
- CE

Mounting cut-out

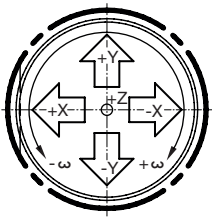
(Panel thickness 1.0 mm ... 4.0 mm)



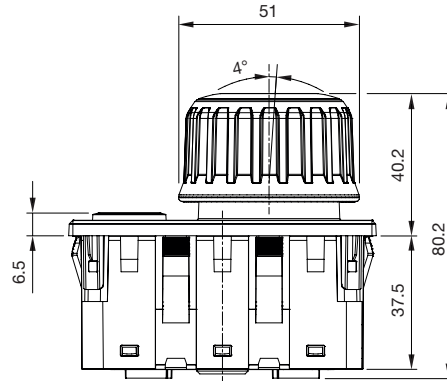
Dimensions
(All dimensions in mm)



Orientation

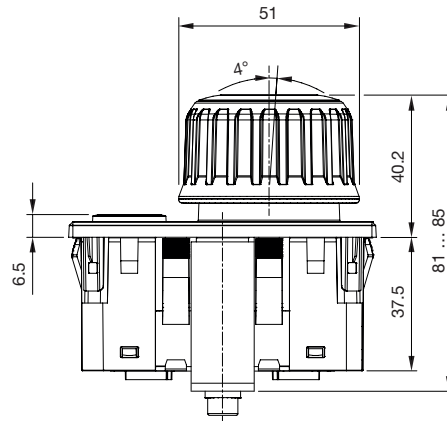


Mounting
Clip-in mounting



The RCC can be mounted into front plate thicknesses between 1–4 mm. A front plate of at least 2 mm thickness is recommended. Non-compliance with these specifications may lead to damage to the locking tongue.

Screw-in mounting



09 In-Cabin Keypad Modules

In-Cabin Rotary Cursor Controller PLUS



Mechanical characteristics

- Actuating force:
 - Buttons approx. 6.5 N
 - Rotary Switch approx. 12 N
- Overload force: 250 N
- Mechanical lifetime:
 - Buttons 1 million cycles of operation (B10)
 - Rotary Switch 500 000 cycles
- Impact resistance: IEC 62262 IK07

Rotary push-button

- Rotation function: 360°, 20 detents, continuous rotation
- Tilt function: X/Y, digital with micro switch

Electrical characteristics

- Operating voltage 8-32 VDC
- LoadDump A or B

Illumination (Buttons)

- Halo-ring and symbol illumination can be configured independently of one another
- Halo-ring effects: flashing, pulsing,

- colour change
 - LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m² (dimnable)
 - LED halo-ring illumination
 - Colour: red (other colours on request)
 - Luminance: approx. 500 cd/m² (dimnable*)
- *depending on the respective colour

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Connections/interfaces

- CAN interface (ISO 11898)
- CAN protocols: CANOpen (CiA 401),

CAN J1939

- Baud rate 125, 250, 500, 1000 kBit/s (configurable through software)
- Integrated plug recess, compatible with TE 8P-1745000-3

Protection degree

- IP5K4 in accordance with ISO 20653 (front side in installed state)
- IP20 in accordance with ISO 20653 (rear side)

Ambient conditions

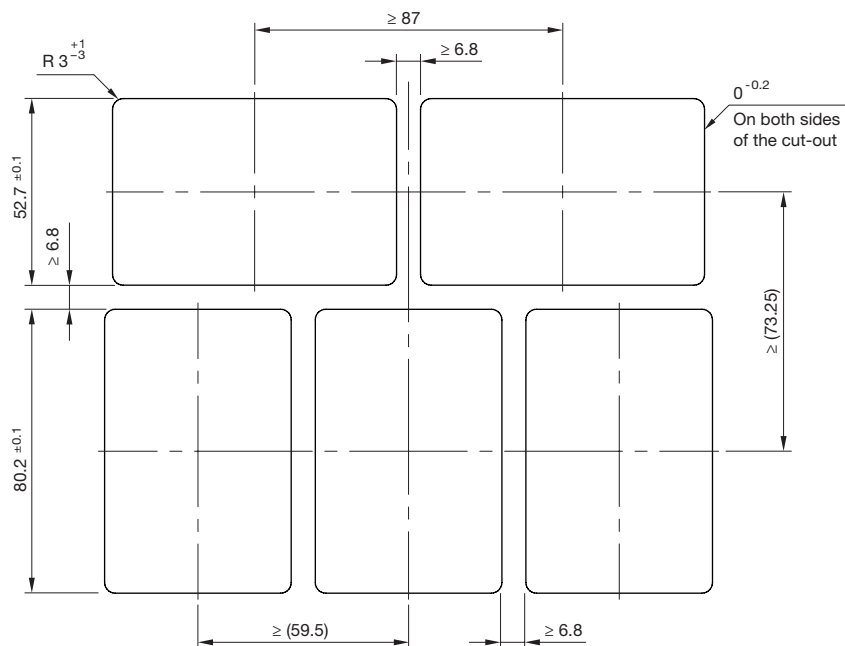
- Operating temperature -40°C ... +85°C
- Storage temperature -40°C ... +85°C

Standards and certifications

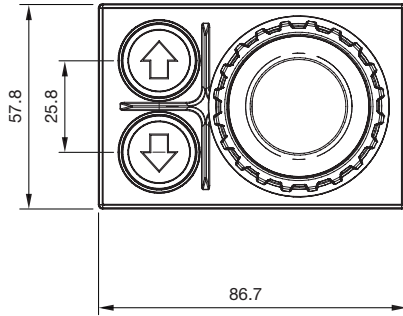
- CE

Mounting cut-out

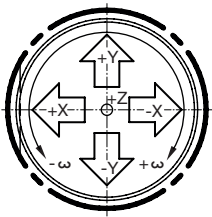
(Panel thickness 1.0 mm ... 4.0 mm)



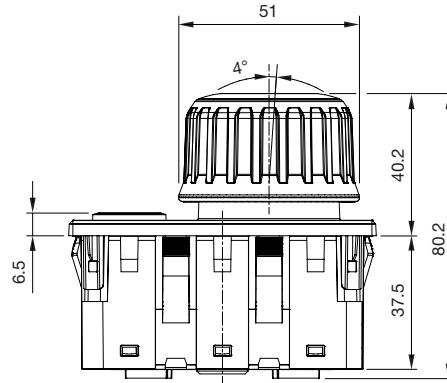
Dimensions
(All dimensions in mm)



Orientation

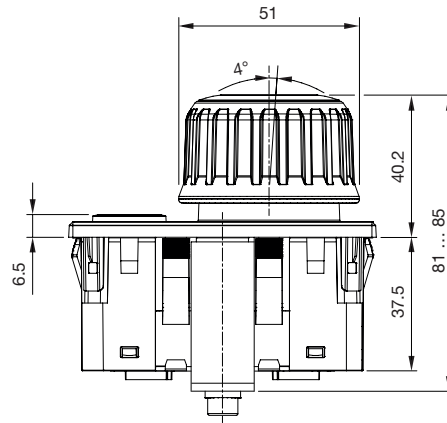


Mounting
Clip-in mounting



The RCC can be mounted into front plate thicknesses between 1–4 mm. A front plate of at least 2 mm thickness is recommended. Non-compliance with these specifications may lead to damage to the locking tongue.

Screw-in mounting



09 In-Cabin Keypad Modules

In-Cabin Rotary Push Button SUPER



Mechanical characteristics

- Actuating force:
 - Buttons approx. 6.5 N
 - Rotary Switch approx. 12 N
- Overload force: 250 N
- Mechanical lifetime:
 - Buttons 1 million cycles of operation (B10)
 - Rotary Switch 500 000 cycles
- Impact resistance: IEC 62262 IK07

Rotary pushbutton

- Rotation function: 360°, 20 detents, continuous rotation

Electrical characteristics

- Operating voltage 8-32 VDC
LoadDump A or B

Illumination (Buttons)

- Halo-ring and symbol illumination can be configured independently of one another
Halo-ring effects: flashing, pulsing, colour change

- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m² (dimnable)
 - LED halo-ring illumination
 - Colour: multi-colour RGB
 - Luminance: approx. 500 cd/m² (dimnable*)
- *depending on the respective colour
- Baud rate 125, 250, 500, 1000 kBit/s (configurable through software)
 - Integrated plug recess, compatible with TE 8P-1745000-3

Protection degree

- IP5K4 in accordance with ISO 20653 (front side in installed state)
- IP20 in accordance with ISO 20653 (rear side)

Ambient conditions

- Operating temperature -40°C ... +85°C
- Storage temperature -40°C ... +85°C

Standards and certifications

- CE

Symbols

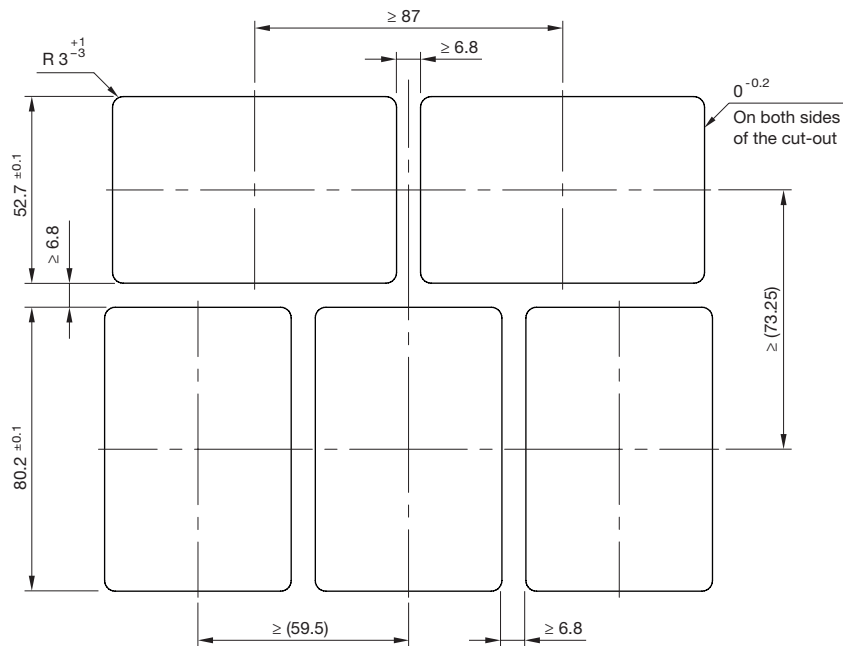
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Connections/interfaces

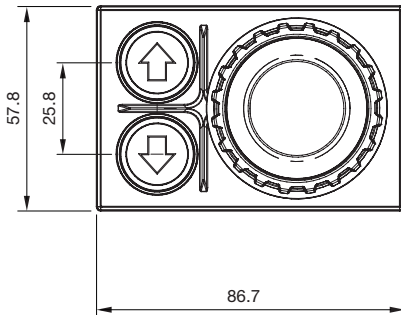
- CAN interface (ISO 11898)
- CAN protocols: CANOpen (CiA 401), CAN J1939

Mounting cut-out

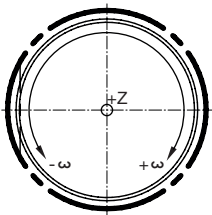
(Panel thickness 1.0 mm ... 4.0 mm)



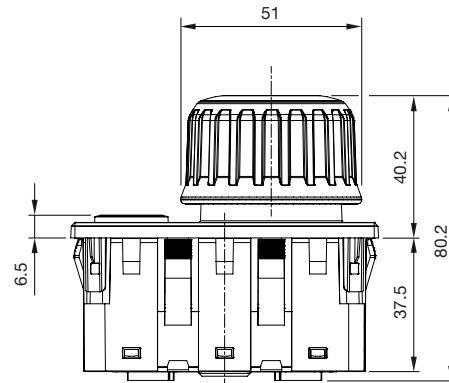
Dimensions
(All dimensions in mm)



Orientation

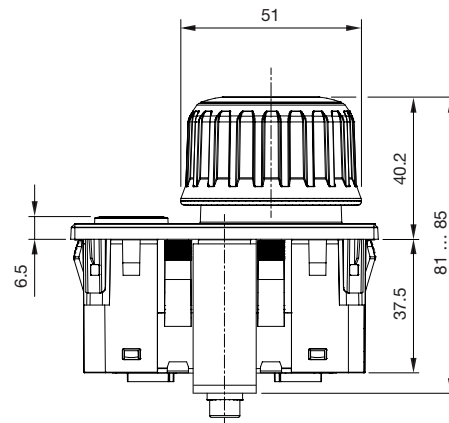


Mounting
Clip-in mounting



The RPB can be mounted into front plate thicknesses between 1–4 mm. A front plate of at least 2 mm thickness is recommended. Non-compliance with these specifications may lead to damage to the locking tongue.

Screw-in mounting



09 In-Cabin Keypad Modules

In-Cabin Rotary Push Button PLUS



Mechanical characteristics

- Actuating force:
 - Buttons approx. 6.5 N
 - Rotary Switch approx. 12 N
- Overload force: 250 N
- Mechanical lifetime:
 - Buttons 1 million cycles of operation (B10)
 - Rotary Switch 500 000 cycles
- Impact resistance: IEC 62262 IK07

Rotary pushbutton

- Rotation function: 360°, 20 detents, continuous rotation

Electrical characteristics

- Operating voltage 8-32 VDC
LoadDump A or B

Illumination (Buttons)

- Halo-ring and symbol illumination can be configured independently of one another
- Halo-ring effects: flashing, pulsing, colour change

- LED symbol illumination
 - Colour: white
 - Luminance: approx. 20 cd/m² (dimnable)
 - LED halo-ring illumination
 - Colour: red (other colours on request)
 - Luminance: approx. 500 cd/m² (dimnable*)
- *depending on the respective colour
- Baud rate 125, 250, 500, 1000 kBit/s (configurable through software)
 - Integrated plug recess, compatible with TE 8P-1745000-3

Protection degree

- IP5K4 in accordance with ISO 20653 (front side in installed state)
- IP20 in accordance with ISO 20653 (rear side)

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Connections/interfaces

- CAN interface (ISO 11898)
- CAN protocols: CANOpen (CiA 401), CAN J1939

Ambient conditions

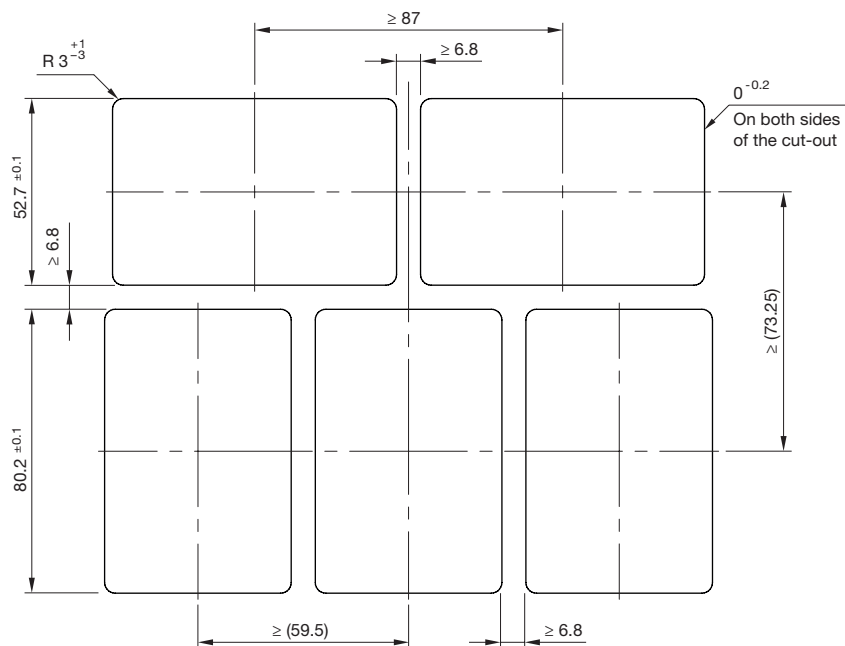
- Operating temperature -40°C ... +85°C
- Storage temperature -40°C ... +85°C

Standards and certifications

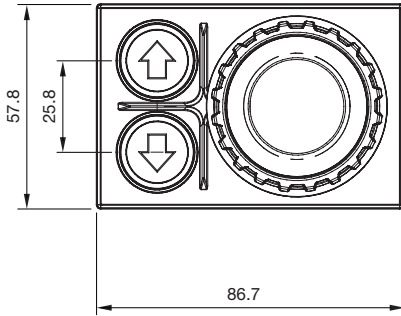
- CE

Mounting cut-out

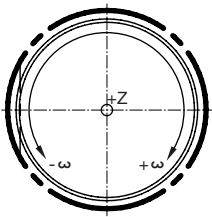
(Panel thickness 1.0 mm ... 4.0 mm)



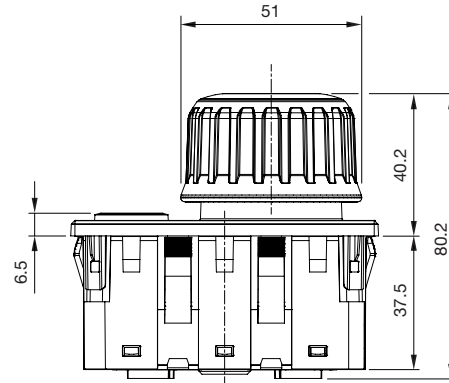
Dimensions
(All dimensions in mm)



Orientation

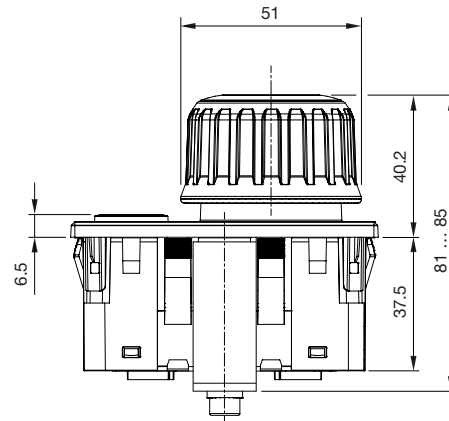


Mounting
Clip-in mounting



The RPB can be mounted into front plate thicknesses between 1–4 mm. A front plate of at least 2 mm thickness is recommended. Non-compliance with these specifications may lead to damage to the locking tongue.

Screw-in mounting





Rugged Keypads with 8 pushbuttons. *EAO Series 09.*

Ideally suited for operation in outdoor applications, also under extreme conditions.

- Robust, ergonomic and innovative design sealed up to IP6K9K protection
- Suitable for functional safety applications according to EN ISO 13849
- Intelligent HMIs with CAN bus integration
- Programmable 4-segment RGB halo ring illumination
- Interchangeable ISO 7000 or customised symbols



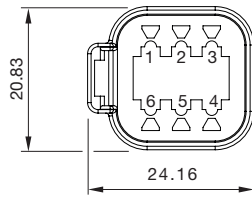
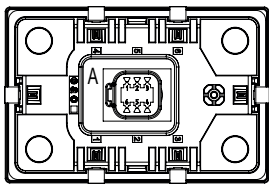
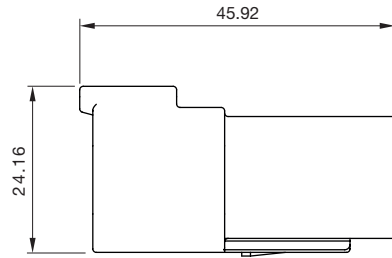
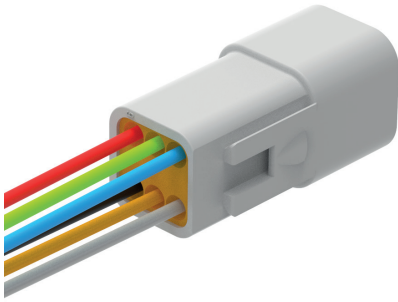
www.eao.com/09

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Your Expert Partner for Human Machine Interfaces

Accessories

Deutsch DT Series connector (DT04-6P)



Connector 6 – DT (DT04-6P)

Mating plug Deutsch DT06-6S
 Matching contacts e.g. 1062-16-0122
 Matching wedge W6-S

Pin Nr.	Signal	Wire colour	Comment
Pin 1	GND	Black	
Pin 2	CAN High	Yellow	
Pin 3	WakeUp_Out	Grey	
Pin 4	WakeUp_In	Blue	
Pin 5	CAN Low	Green	
Pin 6	Vcc		8 – 32VDC

All dimensions in mm.

Symbol inserts



The interchangeable symbol inserts are available with ISO 7000 or customer-specific symbols. In addition to the standard colour black, symbol inserts are also available in a variety of other colours.

Tool for legends



The symbol insert tool with trendy design enables userfriendly fitting and removal of symbol inserts of the pushbuttons.



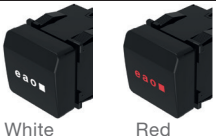

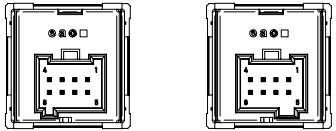
09 Universal Switch

Product variants

Versatile product variants

The Series 09 universal switch is available in variants STANDARD, DUAL CONTACT and LIN – and offers universal configuration options. The product variants and their configurations mean the Series 09 universal switch can be used for a wide range of applications – including safety-relevant functions such as hazard light button or transmission control.

This configurability offers many possibilities for the type and number of switching contacts, vehicle voltage, and the option of diagnostic capability. Definitions of haptic feedback, two different connector codings, and a complete selection of ISO 7000 symbols – or custom symbols – complete the comprehensive options to choose from.

Product options, Series 09 universal switch						
Features		Product options	Variants			
			STANDARD	DUAL CONTACT		LIN
				NO-NO	NO/NC-NO	
Electrical properties		12V	✓	✓	✓	✓
		24V	✓	✓	✓	✗
		12V Namur $R_s=120\Omega/R_p=1K\Omega$	✓	✓	✓	✗
		24V Namur $R_s=120\Omega/R_p=1K\Omega$	✓	✓	✓	✗
Haptics		Firm haptics (short travel)	✓	✗	✓	✓
		Soft haptics (long travel)	✓	✓	✓	✓
Symbol illumination	 White Red	White	✓	✓	✓	✓
		Red	✓	✓	✓	✓
Status indicator	 Without One LED Three LEDs	Without status indicator	✓	✓	✓	✓
		One red status indicator	✓	✓	✓	✓
		Three red status indicators	✓	✗	✗	✓
TYCO Connector		Tyco 8P-1745000-3 (black)	✓	✓	✓	✓
		Tyco 8P-1745000-4 (grey)	✓	✓	✓	✓

Features		Product options		Variants		
				STANDARD	DUAL CONTACT	
			NO-NO	NO/ NC-NO		
Symbol	ISO		ISO 7000- XXXX			
	7000	Customized	Customized symbol			
Symbol direction		0°		90°	0°	
					90°	
		180°		270°	180°	
					270°	

Notes

 For this variant the option is not available

Customer-specific adaptations

In addition to the standard variants shown in this brochure, the Series 09 Universal Switch offers extensive options for customised adaptations.

Whether it's individual symbol design, specific illumination features, application-specific technical specifications or design adjustments for a seamless integration in your cockpit design – we work with you to develop the ideal solution for your application.



09 Universal Switch

Universal Switch STANDARD



Product options

- 12 V or 24 V (optionally available as diagnosis-capable version with Namur contact)

Mechanical characteristics

- Actuation force:
approx. 4.5 N (soft (long travel) haptics)
approx. 6.5 N (firm (short travel) haptics)
- Overload: 250 N
- Mechanical lifetime: up to 250 000 cycles of operation

Electrical characteristics

- Operating voltage range:
8–18 VDC (12 V product option)
18–32 VDC (24 V product option)
- Max. current: 50 mA
- Min. current: 1 mA
- Max. power: 1 VA (without Namur)
0.25 VA (with Namur)
- Max. switching voltage: 32 VDC
- Contact resistance:
< 10 Ω (without Namur)
106 Ω–118 Ω (with Namur)

Illumination

- LED symbol illumination
 - Colour white, luminance:
approx. 25 cd/m²
(conditions: 28 VDC or 14 VDC, 23 °C ± 2 K)
 - Colour red (for hazard warning light), luminance: approx. 90 cd/m²
(conditions: 28 VDC or 14 VDC, 23 °C ± 2 K)
- LED status indicator
 - Colour red, luminance:
approx. 200 cd/m²
(28 VDC or 14 VDC and 23 °C ± 2 K)

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Connections/interfaces

- Integrated plug recess, suitable for TE 8P-1745000-3 or 8P-1745000-4, 8-pin

Ambient conditions

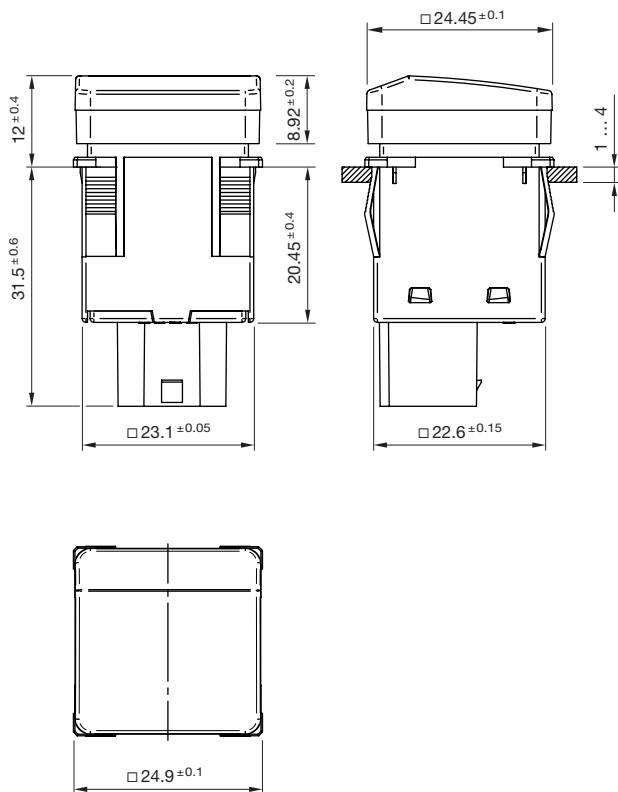
- Operating temperature
–40 °C ... +85 °C
- Storage temperature
–40 °C ... +85 °C

Protection degree

- up to IP5K4 front side (built into a panel)
- IP20 rear side

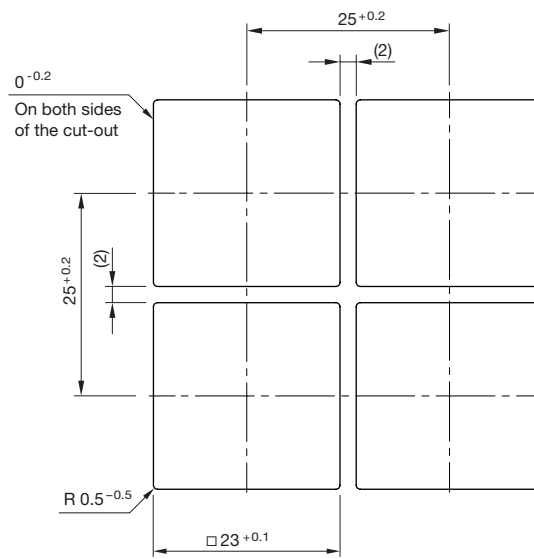
Dimensions

(All dimensions in mm)



Mounting cut-outs

(All dimensions in mm)



The switch can be mounted in front panel thicknesses between 2 and 4 mm. To guarantee stability and density, a plastic front panel with a material thickness of 3 mm is recommended.

Further information is provided in the corresponding operating instructions at www.eao.com/09.



09 Universal Switch

Universal Switch DUAL CONTACT



Product options

- NO/NO or NO/NC-NO (optionally available as diagnosis-capable version with Namur contact)
- 12V or 24V (optionally available as diagnosis-capable version with Namur contact)

Mechanical characteristics

- Actuation force:
approx. 4.5N (soft (long travel) haptics) NO/NO
approx. 6.5N (firm (short travel) haptics) NO/NC-NO
- Overload: 250N
- Mechanical lifetime: up to 250000 cycles of operation

Electrical characteristics

- Operating voltage range:
8–18VDC (12V product option)
18–32VDC (24V product option)
- Max. current: 50mA
- Min. current: 1mA
- Max. power: 1VA (without Namur)
0.25VA (with Namur)
- Max. switching voltage: 32VDC
- Contact resistance:
< 10Ω (without Namur)
106Ω–118Ω (with Namur)

Illumination

- LED symbol illumination
 - Colour white, luminance:
approx. 25 cd/m²
(conditions: 28VDC or 14VDC, 23°C ±2K)
 - Colour red (for hazard warning light), luminance: approx. 90 cd/m²
(conditions: 28VDC or 14VDC, 23°C ±2K)
- LED status indicator
 - Colour red, luminance:
approx. 200 cd/m²
(28VDC or 14VDC and 23°C ±2K)

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Connections/interfaces

- Integrated plug recess, suitable for TE 8P-1745000-3 or 8P-1745000-4, 8-pin

Ambient conditions

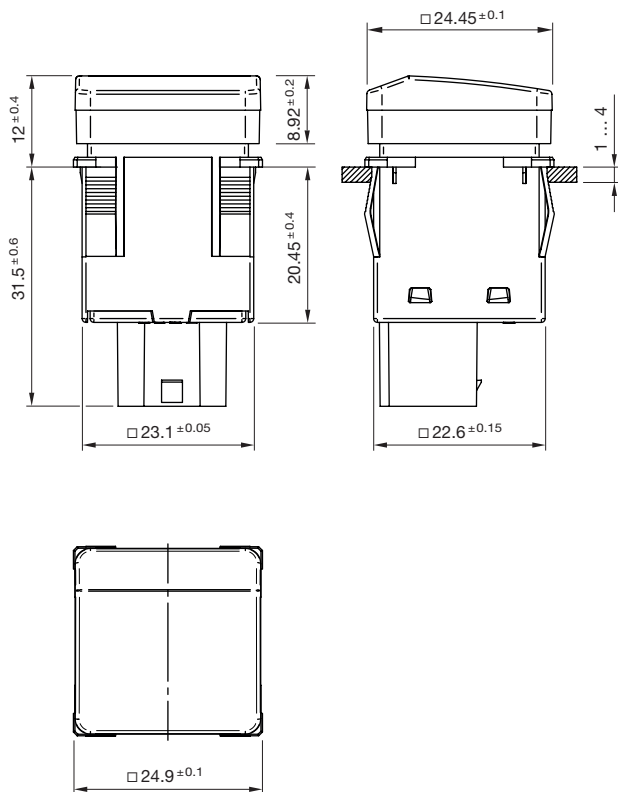
- Operating temperature
–40°C ... +85°C
- Storage temperature
–40°C ... +85°C

Protection degree

- up to IP5K4 front side (built into a panel)
- IP20 rear side

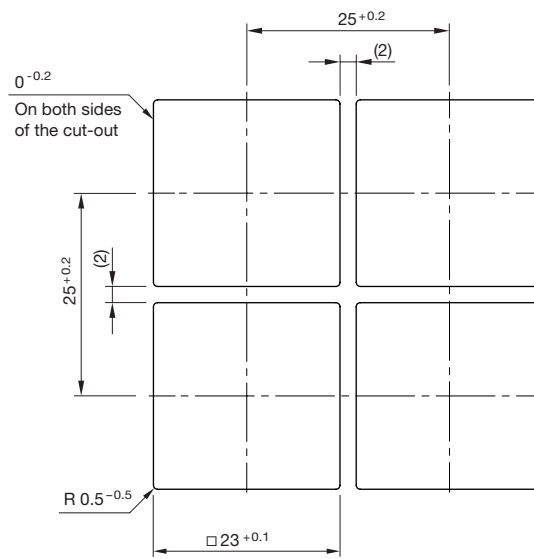
Dimensions

(All dimensions in mm)



Mounting cut-outs

(All dimensions in mm)



The switch can be mounted in front panel thicknesses between 2 and 4 mm. To guarantee stability and density, a plastic front panel with a material thickness of 3 mm is recommended.

Further information is provided in the corresponding operating instructions at www.eao.com/09.



09 Universal Switch

Universal Switch LIN



Product options

- 12 V

Mechanical characteristics

- Actuation force:
 - approx. 4.5 N (soft (long travel) haptics)
 - approx. 6.5 N (firm (short travel) haptics)
- Overload: 250 N
- Mechanical lifetime: up to 250 000 cycles of operation

Electrical characteristics

- Operating voltage range: 8–18 VDC
- Max. current: 80 mA
- Min. current: 8 mA
- Max. power: 1.5 VA
- Max. switching voltage: 32 VDC
- Idle state: $20 \mu\text{A}$ at 12 VDC

Illumination

- LED symbol illumination
 - Colour white, luminance: approx. 25 cd/m^2 (conditions: 14 VDC, $23^\circ\text{C} \pm 2\text{K}$)
 - Colour red (for hazard warning light), luminance: approx. 90 cd/m^2 (conditions: 14 VDC, $23^\circ\text{C} \pm 2\text{K}$)
- LED status indicator
 - Colour red, luminance: approx. 200 cd/m^2 (14 VDC and $23^\circ\text{C} \pm 2\text{K}$)
 - Luminance: approx. 500 cd/m^2 (dimnable)*

Symbols

- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Connections/interfaces

- Integrated plug recess, suitable for TE 8P-1745000-3 or 8P-1745000-4, 8-pin

LIN-BUS Interface

- LIN signal looped through optionally (1 in/out) or (1 in, 2 out)
- 3-wire-BUS: LIN, GND, Ubatt
Speed: 19.2 kbit/sek
Up to 16 participants in the network

Ambient conditions

- Operating temperature $-40^\circ\text{C} \dots +85^\circ\text{C}$
- Storage temperature $-40^\circ\text{C} \dots +85^\circ\text{C}$

Protection degree

- up to IP5K4 front side (built into a panel)
- IP20 rear side

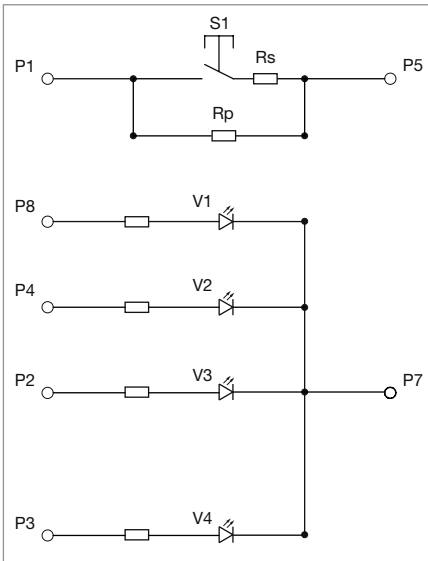
Approvals and conformities

- E1 ECE R10/R118 on request
- CE

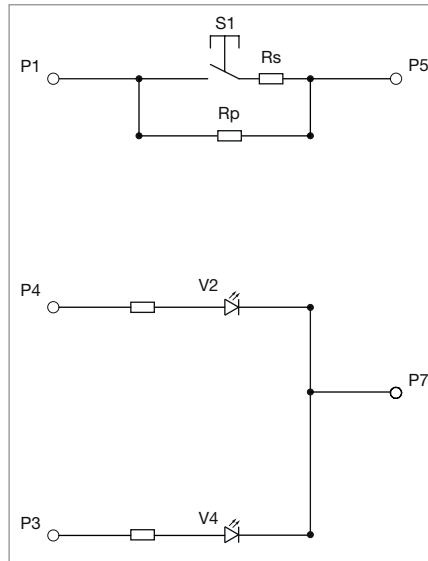
09 Universal Switch

Wiring diagram

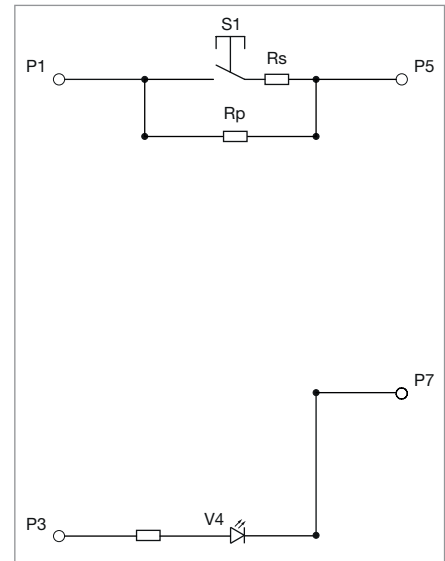
Standard (single contact) NO



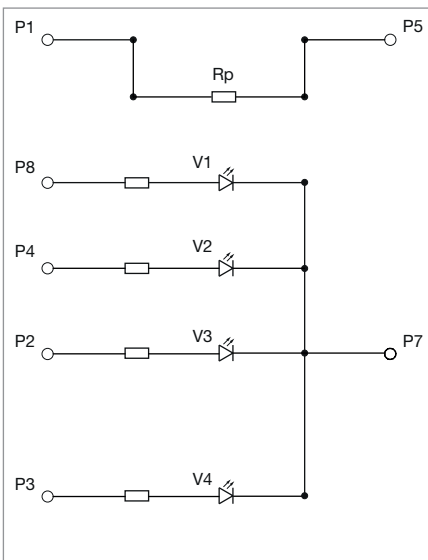
Three indicators,
backlight and switching element
with NAMUR circuit



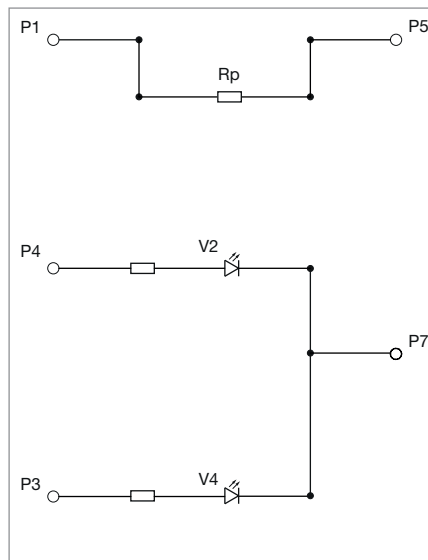
One indicator,
backlight and switching element
with NAMUR circuit



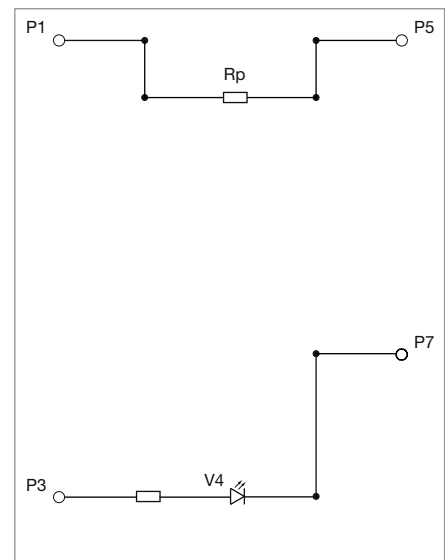
Backlight and switching element
with NAMUR circuit



Three indicators,
backlight with coding resistor



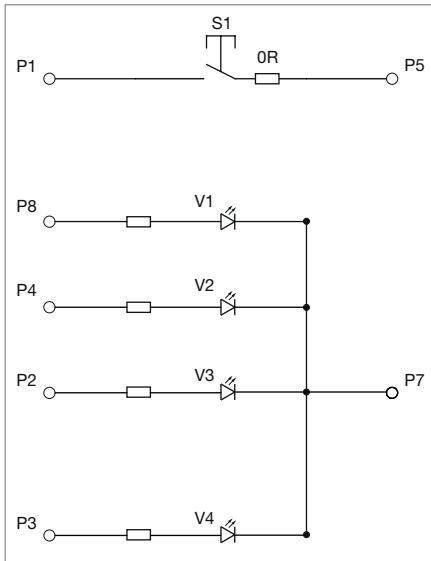
One indicator,
backlight with coding resistor



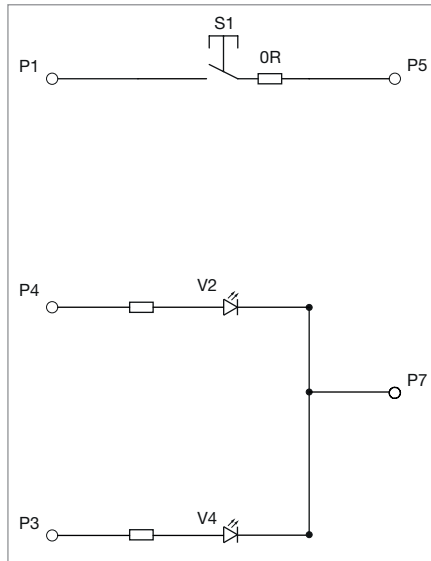
Backlight with coding resistor

Wiring diagram

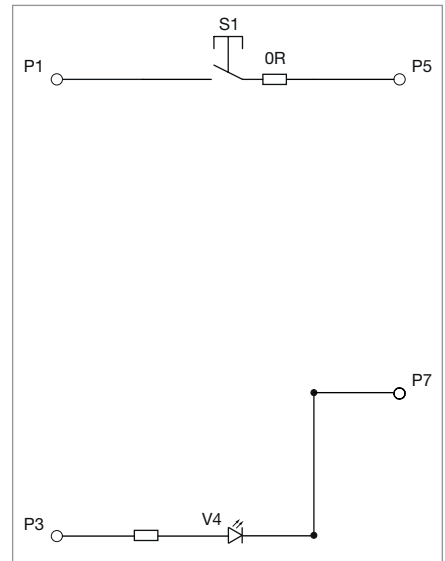
Standard (single contact) NO



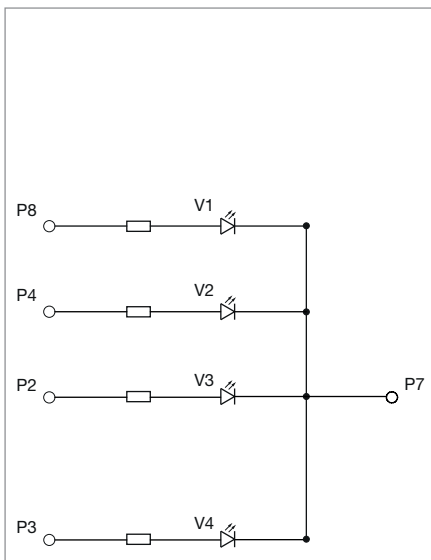
Three indicators,
backlight and switching element standard



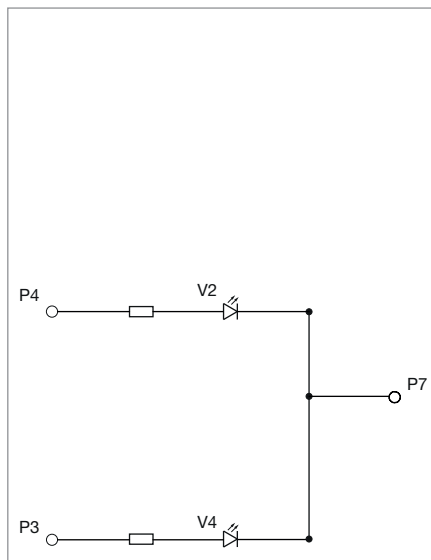
One indicator,
backlight and switching element standard



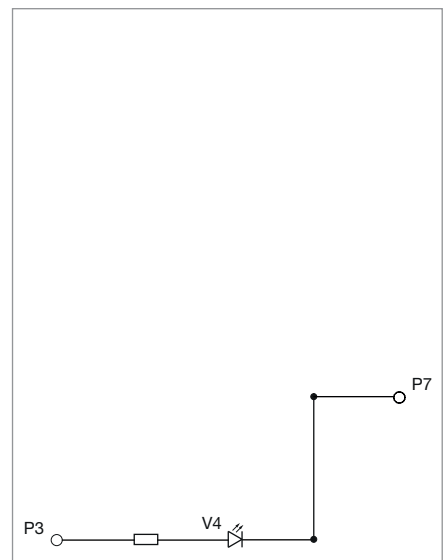
Backlight and switching element standard



Three indicators, backlight standard



One indicator, backlight standard

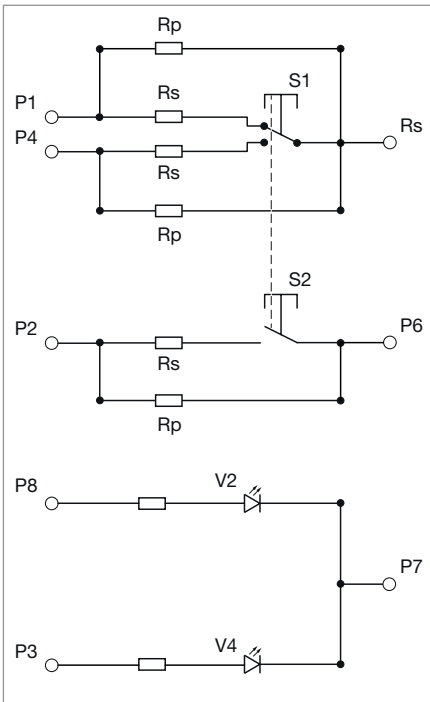


Backlight standard

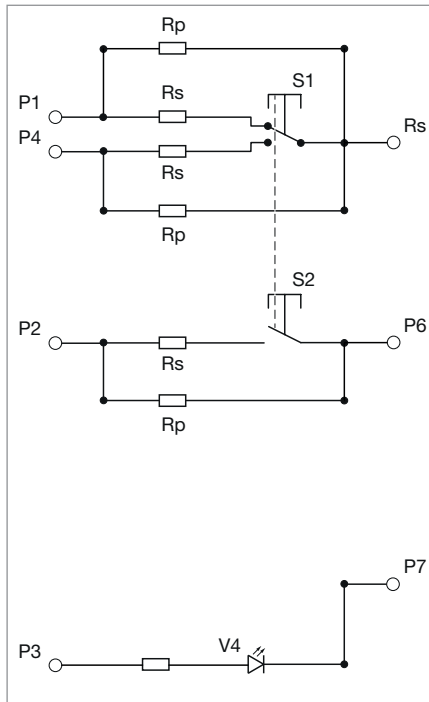
09 Universal Switch

Wiring diagram

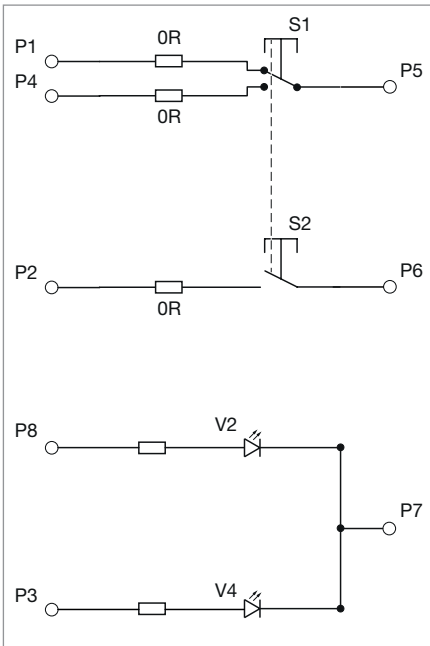
Dual contact NO/NC-NO



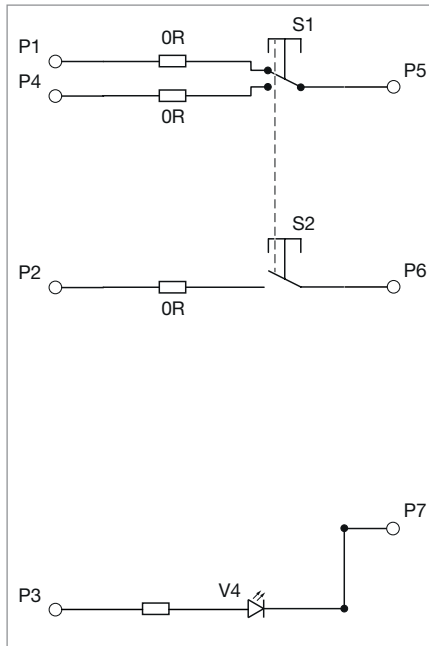
One indicator, backlight and switching elements with NAMUR circuit



Backlight and switching elements with NAMUR circuit



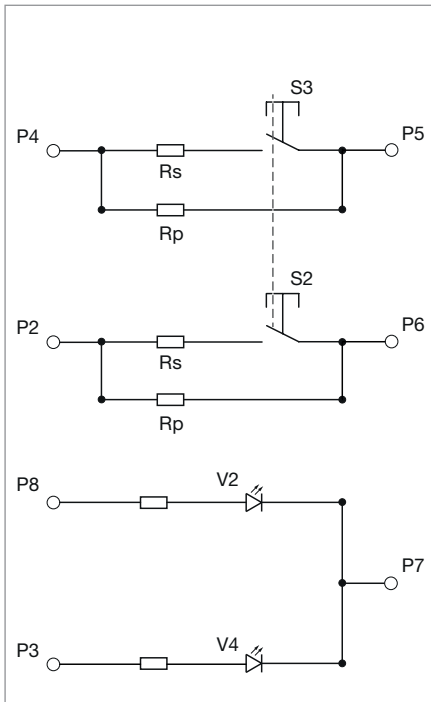
One indicator, backlight and switching elements without NAMUR circuit



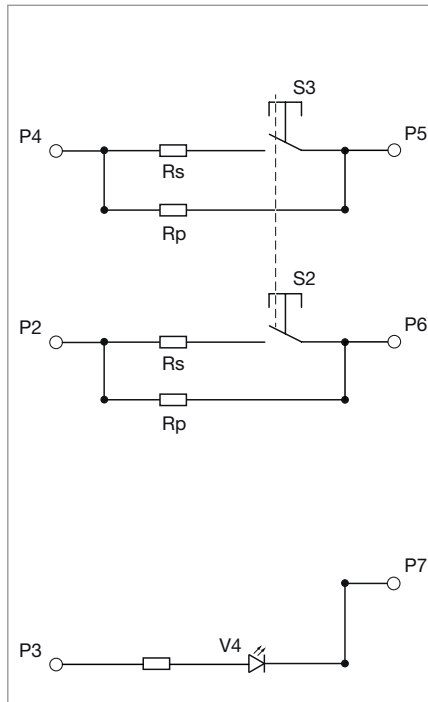
Backlight and switching elements without NAMUR circuit

Wiring diagram

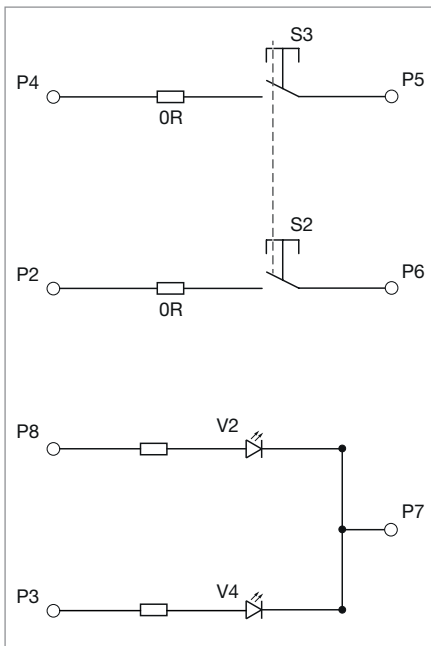
Dual contact NO/NO



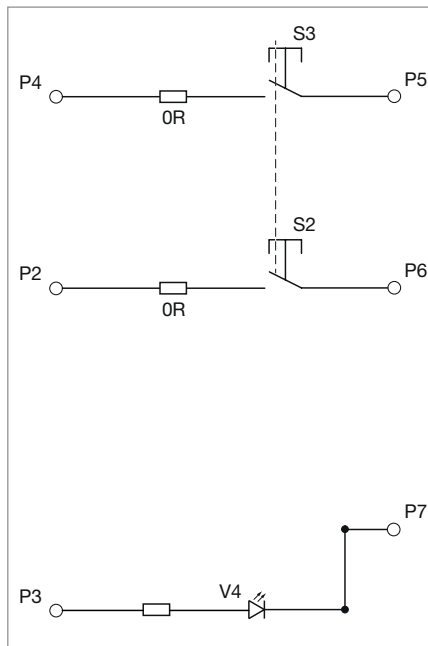
One indicator,
backlight and switching elements
with NAMUR circuit



Backlight and switching elements
with NAMUR circuit



One indicator,
backlight and switching elements
without NAMUR circuit



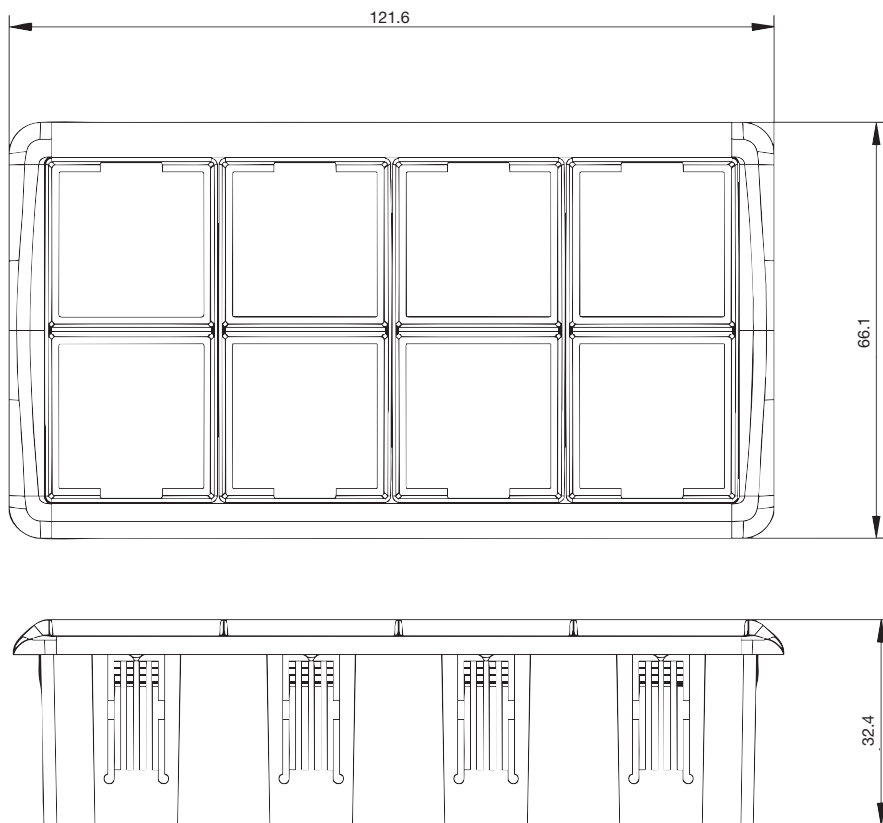
Backlight and switching elements
without NAMUR circuit

09 Universal Switch

Mounting Frame



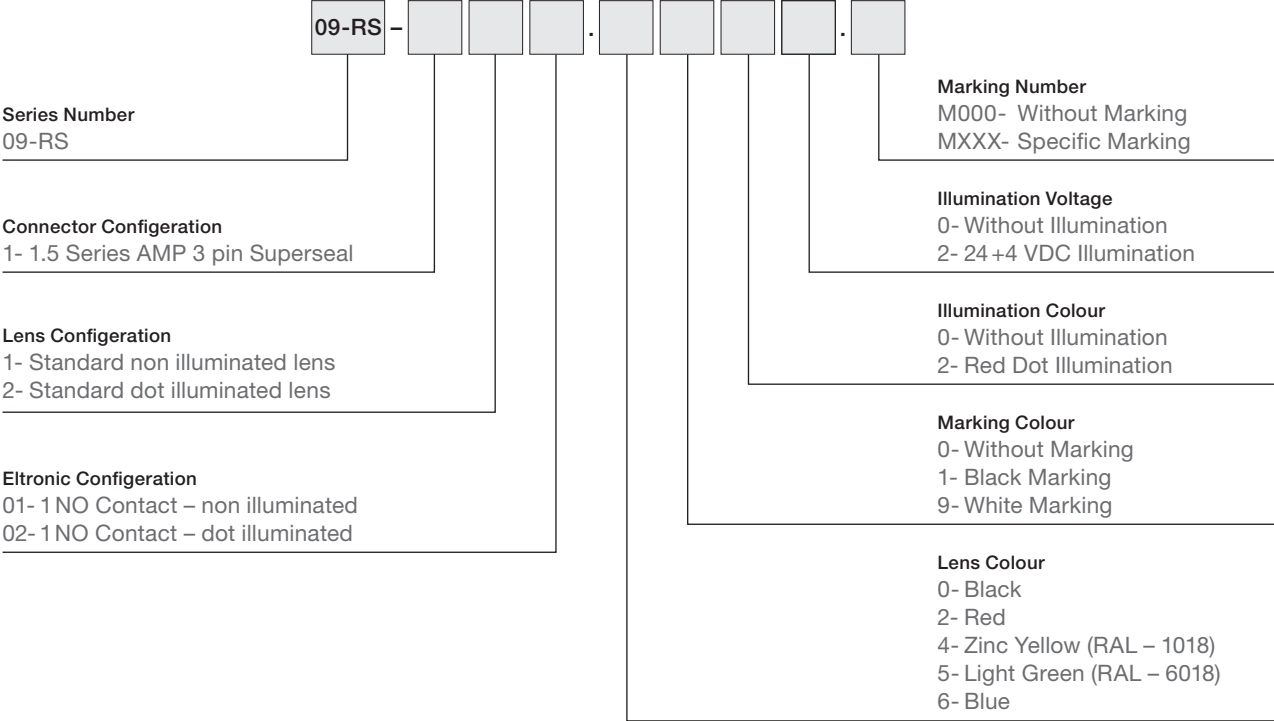
Dimensions



All dimensions in mm.

Part number structure Rugged Outdoor Switch

Part No. module



09 Rugged Outdoor Switch

Rugged Outdoor Switch



Product options

- 12V – 48V non illuminated or 24+4V illuminated, 1 NO magnetic reed switch
- Lens colours: Black, red, yellow, green, blue
- Marking: without, black, white
- With or without dot illumination

Mechanical characteristics

- Actuation force: approx. 25N
- Mechanical lifetime: up to 1 million cycles of operation
- Momentary action

Electrical characteristics

- Operating voltage range:
 - 12–48VDC (non illuminated)
 - 24 + 4VDC (illuminated)
- Max. current:
 - 0.5A (non illuminated)
 - 0.2A (illuminated)
- Max. power: 10W-VA
- Max. switching voltage:
 - 48 VDC (non illuminated)
 - 24 + 4VDC (illuminated)

Illumination

- LED dot illumination, colour red

Symbols

- Customer-specific symbols on request

Connections/interfaces

- 1.5 Series Amp Superseal 3 Pin connector
- TE DEUTSCH

Ambient conditions

- Operating temperature
–20°C ... +100°C
- Storage temperature
–20°C ... +100°C

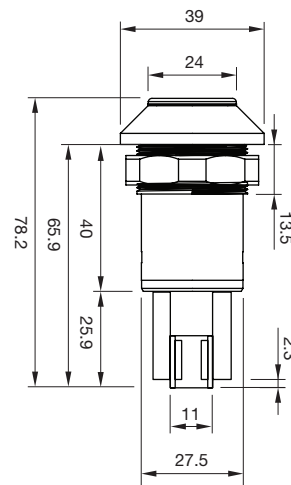
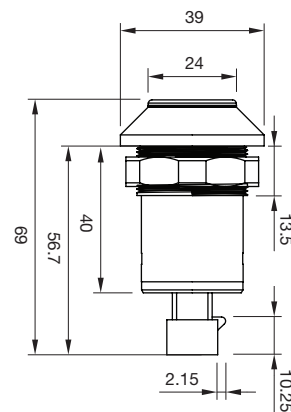
Protection degree

- up to IP67 (electronics, front lens and rear superseal connector)

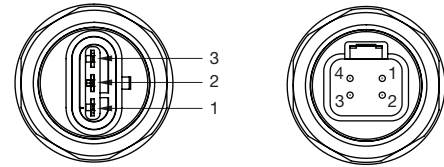
Approvals and conformities

- CE, RoHS, REACH
- ISO 10605:2023 Road Vehicles
Test for electrical disturbances from ESD

Dimensions (mm)

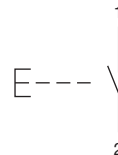


Component layout

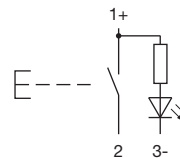


Wiring diagram

non illuminated



illuminated



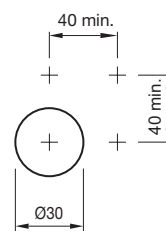
Legend

- 1 = Common +
- 2 = Switch Out
- 3 = LED - (non illuminated - blank)

Legend

- 1 = Common +
- 2 = Switch Out
- 3 = LED - (non illuminated - blank)
- 4 = blank









Mounting cut-outs (mm)



Rugged Outdoor Switch



Rugged Outdoor Switch, Front dimension Ø 39 mm

Front dimension	Lens colour	Symbol	Marking symbol colour	Type of illumination	Illuminative colour	Contacts	Connector	
Ø 39 mm	Black	No Symbol		non illuminated	none	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1101.0000.M000
	Black	Bell 	White	non illuminated	none	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1101.0900.M005
	Black	Arrow 	White	non illuminated	none	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1101.0900.M006
	Black	Dead man 	White	non illuminated	none	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1101.0900.M007
	Black	Pistol 	White	non illuminated	none	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1101.0900.M008
	Red	No Symbol		non illuminated	none	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1101.2000.M000
	Red	STOP 	White	non illuminated	none	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1101.2900.M004
	Zinc yellow	No Symbol		non illuminated	none	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1101.4000.M000
	Zinc yellow	PTO 	Black	non illuminated	none	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1101.4100.M001
	Light green	No Symbol		non illuminated	none	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1101.5000.M000
	Light green	Lower 	Black	non illuminated	none	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1101.5100.M003
	Blue	No Symbol		non illuminated	none	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1101.6000.M000
	Blue	Extend arm 	Black	non illuminated	none	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1101.6100.M002
	Black	No Symbol		illuminated	Red	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1203.0022.M000
	Red	No Symbol		illuminated	Red	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1203.2022.M000
	Zinc yellow	No Symbol		illuminated	Red	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1203.4022.M000
	Light green	No Symbol		illuminated	Red	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1203.5022.M000
	Blue	No Symbol		illuminated	Red	1 NO	1.5 Series Amp Superseal 3 Pin	09-RS.1203.6022.M000
	Red	No Symbol		non illuminated	none	1 NO	TE DEUTSCH	09-RS.2101.2000.M000
	Light green	No Symbol		non illuminated	none	1 NO	TE DEUTSCH	09-RS.2101.5000.M000

09 Joysticks

Joystick, 1 axis with square flange

Part No.
09-01.18214.0107

Mechanical characteristics

- Mounting
from front of panel, 4 screws
($\varnothing 3.5$ mm)
- 1 axis
- No cross guidance
- No gate shape
- 20° deflection angle
- Handle "Winter"
- Resetting
self-resetting (medium resetting force)
- Breakout torque
Y-axis 0.18 Nm
- Operating torque
Y-axis 0.42 Nm
- Max. allowable torque
Y-axis 18 Nm

Electrical characteristics

- Operating voltage
5 VDC
- Output signal
proportional ($-y = 0.5$ V/
Mid = 2.5 V / $+y = 4.5$ V)
- Redundancy
yes

Technology

- Hall effect sensors

Connections

- Minitek plug (8-pole)

Ambient conditions

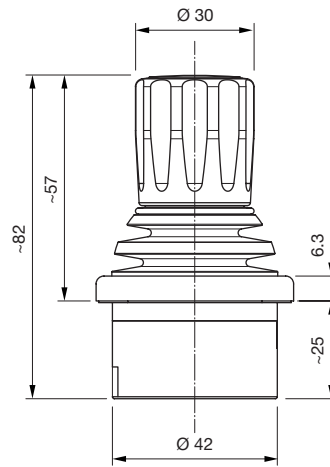
- Operating temperature
 -30°C to $+80^\circ\text{C}$
- Storage temperature
 -40°C to $+85^\circ\text{C}$

Degree of protection

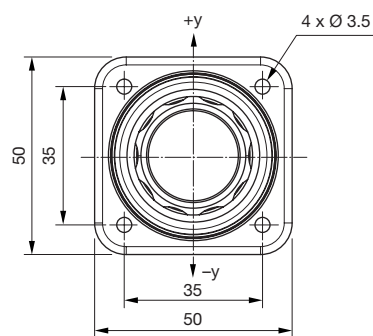
- IP65 front protection
- IP40 rear protection



Dimensions



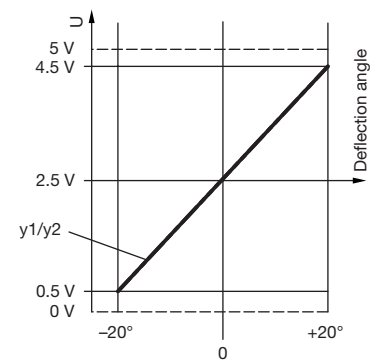
View from above



Gate



Diagram Y-axis



Joystick, 3 axes with square flange.

Part No.
09-01.32294.0109

Mechanical characteristics

- Mounting
from front of panel, four screws
($\varnothing 3.5$ mm)
- 3 axes
- Soft cross guidance
- Gate shape square
- Deflection angle XY: $\pm 20^\circ$ / Z: $\pm 30^\circ$
- Handle "Winter twist"
- Resetting
self-resetting (medium resetting force)
- Breakout torque
X/Y-axis 0.18 Nm / Z-axis 0.075 Nm
- Operating torque
X/Y-axis 0.42 Nm / Z-axis 0.18 Nm
- Max. allowable torque
X/Y-axis 18 Nm /
Z-axis 10 Nm

Electrical characteristics

- Operating voltage
5 VDC
- Output signal
proportional ($-x/y/z = 0.5$ V /
Mid = 2.5 V / $+x/y/z = 4.5$ V)
- Redundancy
all axes

Technology

- Hall effect sensors

Connections

- Minitek plug (8-pole)

Ambient conditions

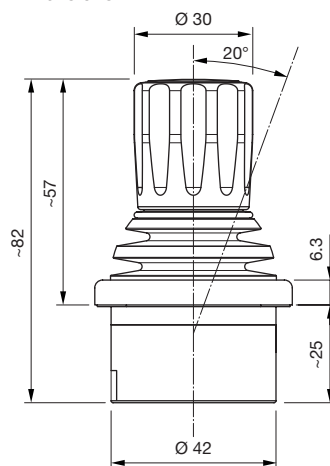
- Operating temperature
 -30°C to $+80^\circ\text{C}$
- Storage temperature
 -40°C to $+85^\circ\text{C}$

Degree of protection

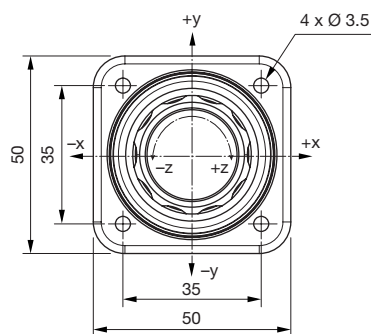
- IP65 front protection
- IP40 rear protection



Dimensions



View from above



Gate

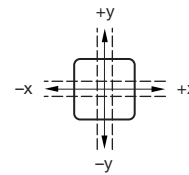


Diagram X-, Y-axis

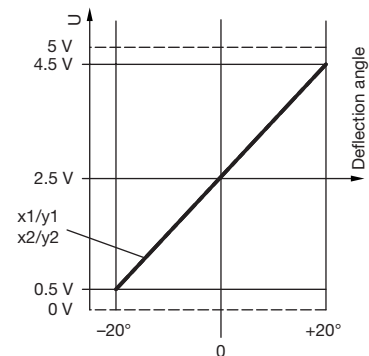
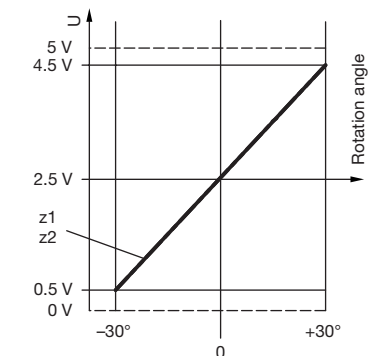


Diagram Z-axis



09 Joysticks

Joystick, small and beautiful

Part No.

09-01.22224.0128

Mechanical characteristics

- Mounting
from above, four screws (Ø 3.5 mm)
- 2 axes
- Light cross guidance
- Gate shape square
- 20° deflection angle
- Handle "Nupsi"
- Resetting
self-resetting (medium resetting force)
- Breakout torque
X/Y-axis 0.18 Nm
- Operating torque
X/Y-axis 0.42 Nm
- Max. allowable torque
X/Y-axis 10 Nm

Electrical characteristics

- Operating voltage
5 VDC
- Output signal
proportional ($-x1/y1 = 0.5V$ /average = 2.5V/ $+x1/y1 = 4.5V$) ($-x2/y2 = 4.5V$ /average = 2.5V/ $+x2/y2 = 0.5V$)
- Redundancy
all axes

Technology

- Hall effect sensors

Connections

- Minitek plug (8-pole)

Ambient conditions

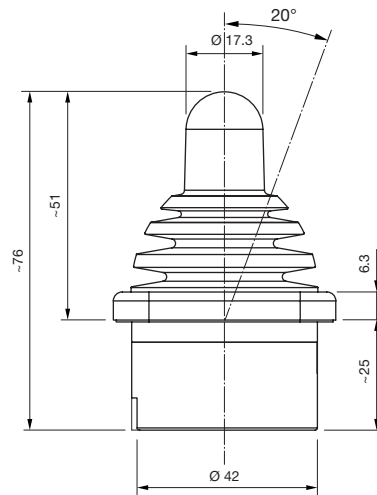
- Operating temperature
-30 °C to +80 °C
- Storage temperature
-40 °C to +85 °C

Degree of protection

- IP67 front protection
- IP40 rear protection



Dimensions



Gate

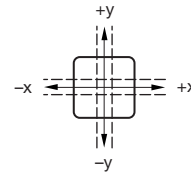
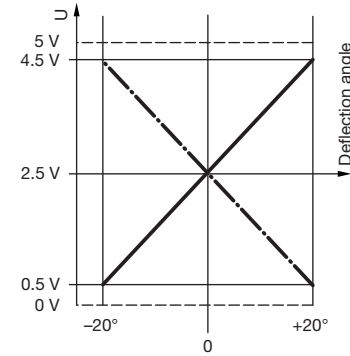
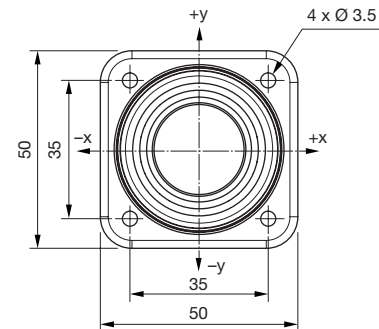


Diagram X-, Y-axis



View from above



Joystick, standard with round flange

Part No.
09-02.22244.1052

Mechanical characteristics

- Mounting
from rear of panel, 4 x M3 screws
- 2 axes
- Rigid cross guidance
- Gate shape square
- 20° deflection angle
- Handle "Standard"
- Resetting
self-resetting (medium resetting force)
- Breakout torque
X/Y-axis 0.16Nm
- Operating torque
X/Y-axis 0.5Nm
- Max. allowable torque
X/Y-axis 18Nm

Electrical characteristics

- Operating voltage
max. 30VDC
- Output signal
proportional with centre tab at $\pm 1.75^\circ$,
switch point at $\pm 2.3^\circ$ (see diagram
X-, Y-axis)

Technology

- Conductive plastic with digital steps/
control segment 1-0-1

Connections

- Dubox plug (6- and 8-pole)

Ambient conditions

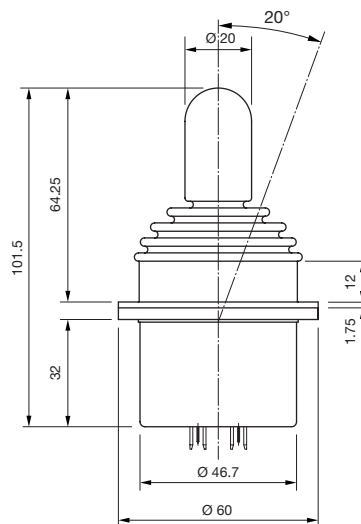
- Operating temperature
 -30°C to $+80^\circ\text{C}$
- Storage temperature
 -40°C to $+85^\circ\text{C}$

Degree of protection

- IP67 front protection
- IP40 rear protection



Dimensions



Gate

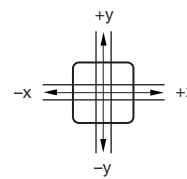
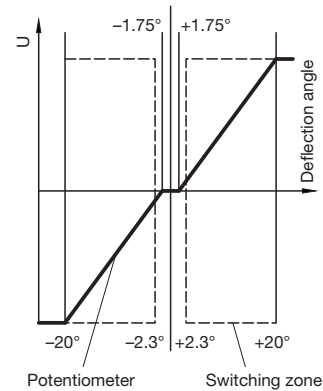
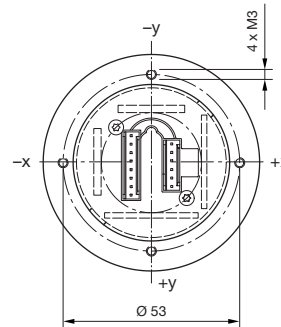


Diagram X-, Y-axis



Bottom view



09 Joysticks

Joystick, CAN with round flange

Part No.

09-03.23362.1051 (CANopen)

09-03.23363.1051 (J1939)

Mechanical characteristics

- Mounting
from rear of panel, 4 x M3 screws
- 2 axes
- Soft cross guidance
- Gate shape square
- 20° deflection angle
- Handle "Sleek"
with two integrated buttons (red)
- Resetting
self-resetting (strong resetting force)
- Breakout torque
X/Y-axis 0.19 Nm
- Operating torque
X/Y-axis 0.7 Nm
- Max. allowable torque
X/Y-axis 18 Nm

Electrical characteristics

- Operating voltage
8 to 36 VDC

Technology

- Hall effect sensors

Connections

- Dubox plug (4-pole)

Interfaces

- CANopen/J1939 interface

Ambient conditions

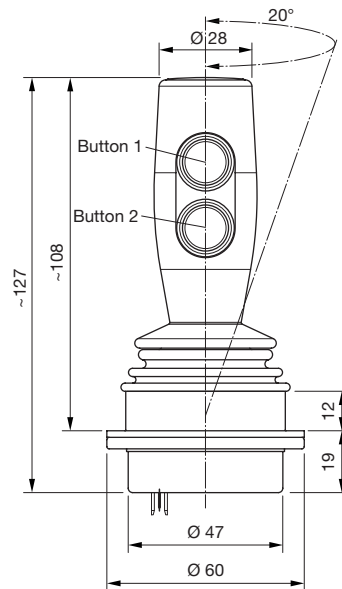
- Operating temperature
-30 °C to +80 °C
- Storage temperature
-40 °C to +85 °C

Degree of protection

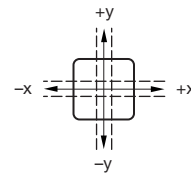
- IP64 front protection
- IP40 rear protection



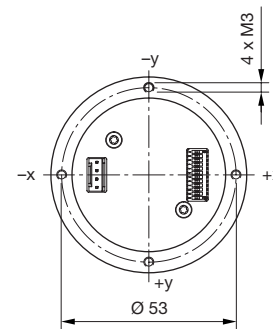
Dimensions



Gate



Bottom view



Joystick, CAN with 3 buttons and 1 cable

Applications

Especially well-suited to heavy duty and special vehicles.

Part No.

09-03.223A2.1114 (CANopen)
09-03.223A3.1114 (J1939)

Mechanical characteristics

- Mounting
from below, 4 x M3 screws
- 2 axes
- Light cross guidance
- Gate shape square
- 15° deflection angle
- Handle "Kermit" with 3 integrated buttons (black)
- Resetting
self-resetting (strong resetting force)
- Breakout torque
X/Y-axis 0.63 Nm
- Operating torque
X/Y-axis 1.16 Nm
- Max. allowable torque
X/Y-axis 18 Nm

Electrical characteristics

- Operating voltage 8 to 36 VDC

Technology

- Hall effect sensors

Connections

- PVC cable, 4 x 0.34 mm²
Molex Micro-Fit (4-pole)

Interfaces

- CANopen/J1939 interface

Ambient conditions

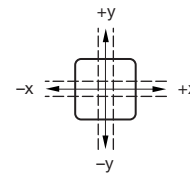
- Operating temperature
-30 °C to +80 °C
- Storage temperature
-40 °C to +85 °C

Degree of protection

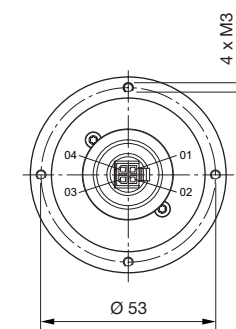
- IP65 front protection
- IP40 rear protection



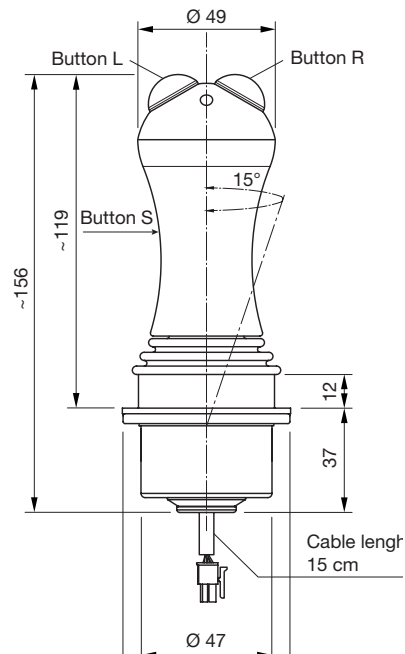
Gate



Bottom view



Dimensions



09 Joysticks

Joystick, 2 axes with 6 momentary positions each

Applications

Especially well-suited to wireless remote control systems.

Part No.

09-04.223E4.1112

Mechanical characteristics

- Mounting from below, 4 x M3 screws
- 2 axes
- Soft cross guidance
- Gate shape square
- 20° deflection angle
- 6 momentary positions per axis
- Handle "Goblet Top" with button
- Resetting self-resetting (strong resetting force)
- Breakout torque X/Y-axis 0.19 Nm
- Operating torque X/Y-axis 0.7 Nm
- Max. allowable torque X/Y-axis 18 Nm

Electrical characteristics

- Operating voltage max. 5VDC/5 mA
- Output signal switching point at $\pm 3.33^\circ$

Technology

- Digital grid/switching segment 3-1-3

Connections

- Dubox plug (2 and 8-pole)

Ambient conditions

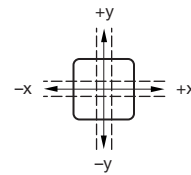
- Operating temperature -30°C to $+80^\circ\text{C}$
- Storage temperature -40°C to $+85^\circ\text{C}$

Degree of protection

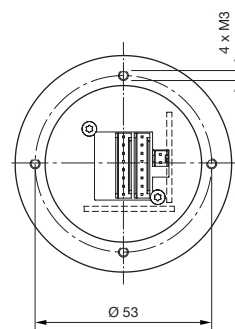
- IP65 front protection
- IP40 rear protection



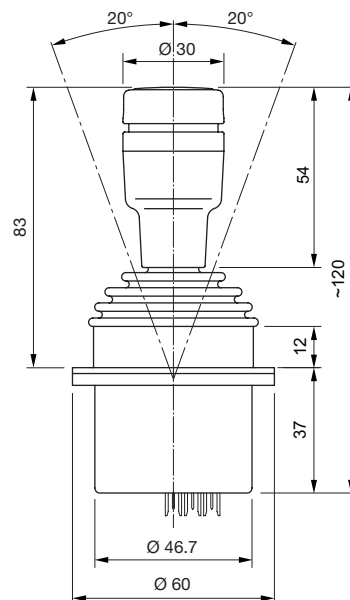
Gate



Bottom view



Dimensions



Joystick, drive lever with mechanical interlocking

Part No.
09-02.174C4.1113

Mechanical characteristics

- Mounting
from below, 4 x M3 screws
- 1 axis
- No cross guidance
- No gate shape
- 20° deflection angle
- Handle "Central Lock"
- Resetting
friction brake
- Unlocking force
22 N
- Breakout torque
0.456 Nm
- Operating torque
0.456 Nm
- Max. allowable torque
18 Nm

Electrical characteristics

- Operating voltage
max. 30VDC
- Output signal
proportional without centre tab

Technology

- Conductive plastic

Connection

- Dubox plug (3-pole)

Ambient conditions

- Operating temperature
-30 °C to +80 °C
- Storage temperature
-40 °C to +85 °C

Degree of protection

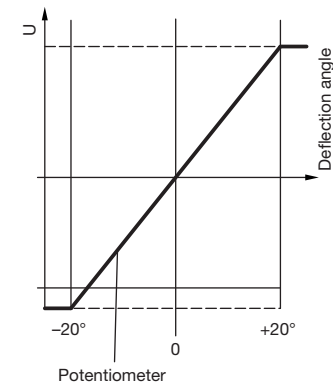
- IP65 front protection
- IP40 rear protection



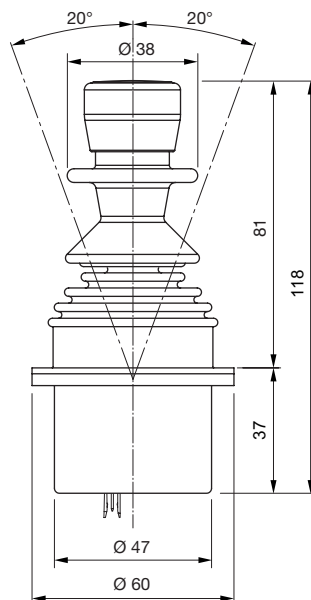
Gate



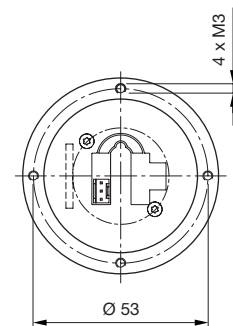
Diagram Y-axis



Dimensions



Bottom view



09 Joysticks

Joystick with handle and additional buttons.

Part No.

09-01.222Y2.0009

09-01.222Y3.0009

Mechanical characteristics

- Mounting
from below, 4 x \varnothing 5.5 screws
- 1 or 2 axes
- Soft cross guidance
- Gate shape round
- 24° deflection angle
- Multifunction handle with 3 buttons
- Resetting
self-resetting (strong resetting force)
- Breakout torque
0.5 Nm
- Max. allowable torque
60 Nm

Electrical characteristics

- Operating voltage
8 – 36 V
- Output signal
CANopen/J1939

Technology

- Hall effect sensors

Connections

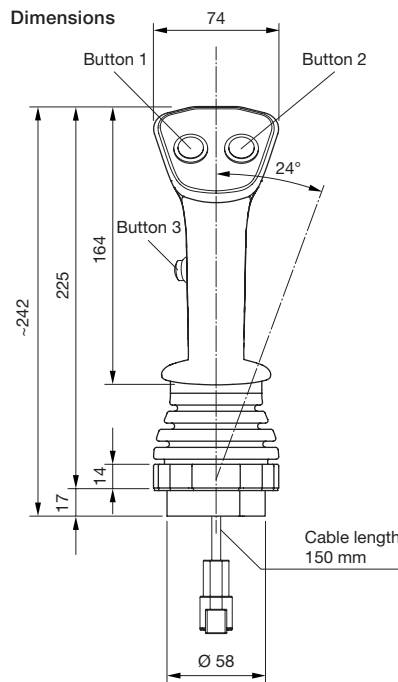
- Deutsch DTM04-4P (4-pole)

Ambient conditions

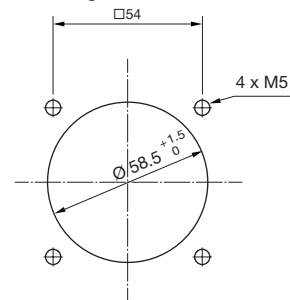
- Operating temperature
–30 °C to +80 °C
- Storage temperature
–40 °C to +85 °C

Protection degree

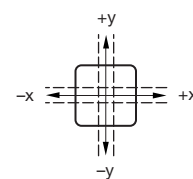
- IP65 front side



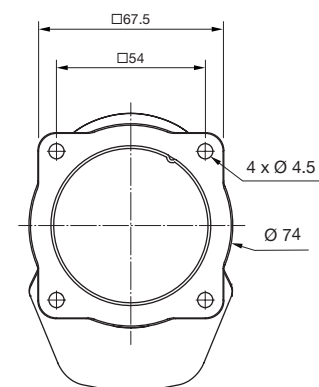
Mounting cut-out



Gate



View from bottom



All dimensions in mm.

Fingertip joystick

Part No.
09-03.22204.0010

Mechanical characteristics

- Mounting
from below, 4 x Ø 2.7 screws
- 1 or 2 axes
- Soft or rigid guidance
- Gate shape round
- 25° deflection angle
- Handle "thumb tower"
- Resetting
self-resetting (medium resetting force)
- Operating torque
0.026 Nm
- Max. allowable torque
4 Nm

Electrical characteristics

- Operating voltage
5VDC
- Output signal
0.5–4.5V linear, redundant

Technology

- Hall effect sensors

Connections

- Connector JST EHR (6-Pol)
length 80 mm

Ambient conditions

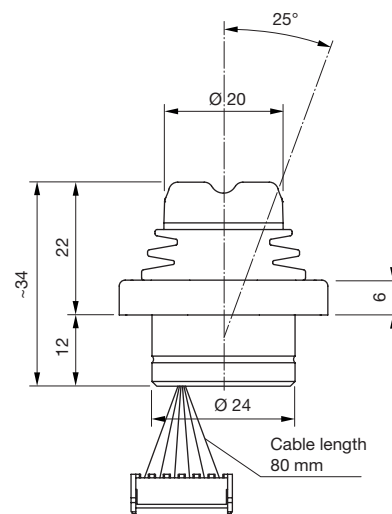
- Operating temperature
–30 °C to +80 °C
- Storage temperature
–40 °C to +85 °C

Protection degree

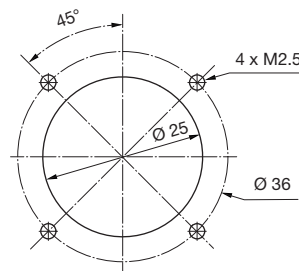
- IP65 front side



Dimensions



Mounting cut-out



Gate

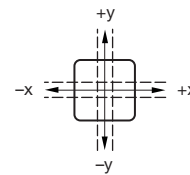
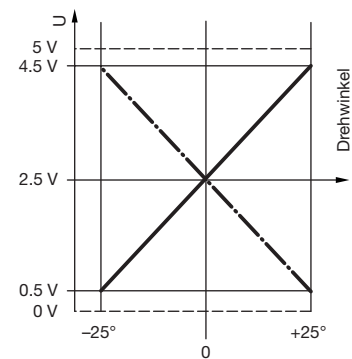
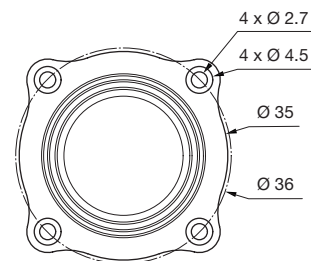


Diagram X-, Y-axis



View from bottom



All dimensions in mm.

09 Joysticks

Toggle stick, 4 directions with momentary position

Applications

The toggle stick (4 directions with momentary position, lock-able) is suitable for various applications.

Part No.

Please see Series 45

Mechanical characteristics

- Mounting
Ø 22.3mm, raised
- 2 axes
- Rigid cross guidance
- 35° deflection angle
- Mechanical service life
up to 250 000 switching cycles
- Connection
screw terminal

Electrical characteristics

- Operating voltage
5 to 500V
- Output signal
AC15: 6A/24V to 1.4A/500V
- Contact material
silver

Ambient conditions

- Operating temperature
-25 °C to +70 °C
- Storage temperature
-40 °C to +85 °C

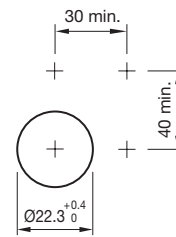
Degree of protection

- IP65, IP67 front protection
- IP20 or IP40 rear protection

Configure your product in a few steps
at eao.com/products.

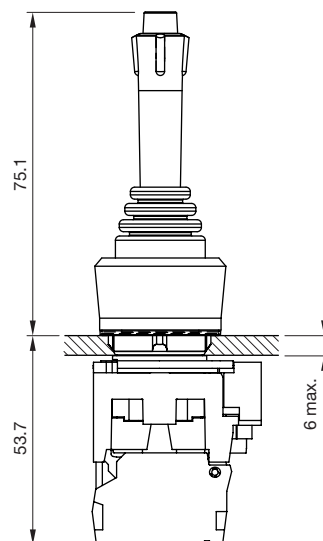


Mounting cut-outs



All dimensions in mm.

Dimensions



Lever switch, 8 positions

Applications

The lever switch (2, 4 or 8 positions) is suitable for various applications.

Part No.

44-800.2
44-800.4
44-800.8

Mechanical characteristics

- Mounting
Ø 22.3 mm, raised
- 2 axes
- Soft cross guidance, pulse
- 12° deflection angle
- Mechanical service life
up to 1.2 million switching cycles
- Connection
soldering terminal

Electrical characteristics

- Operating voltage
250 VAC
- Output signal
5A/4 NC + 4 NO
- Contact material
gold-plated silver alloy

Ambient conditions

- Operating temperature
-30°C to +80°C
- Storage temperature
-40°C to +85°C

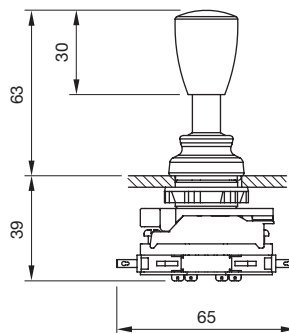
Degree of protection

- IP65 front protection
- IP20, IP40 rear protection

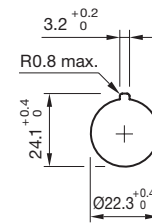
A choice of three lever switches can be found at eao.com/products.



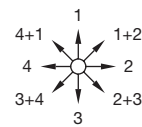
Dimensions



Mounting cut-outs



Wiring diagram



All dimensions in mm.

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