Series 09

Rugged. Modular. Reliable.

https://eao.com/09

09 Information about the Series

Rugged Keypads

Advantages

- Individual 4-segment and RGB halo ring illumination
- Designed for functional safety: ISO 26262 & ISO 13849
- Intelligent HMIs with CAN bus integration
- Robust, innovative, ergonomic design sealed up to IP6K9K protection
- Interchangeable ISO 7000 range of symbols or customised symbols

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

- Rugged Keypad

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

Front protection

- IP40
- IP65
- IP67

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

Rugged Keypads. Optimal for your application.

Series 09 variants

The Series 09 Rugged Keypads are available with 6 and 8 pushbuttons and also in a range of different variants. All these 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, developed according to ISO 26262 ASIL B and ISO 13849 PL d *
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 LED	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

* available at a later date.

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 LED	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

09 Overview of Modules

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

eao

Your Expert Partner for **Human Machine Interfaces**

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 vechicle 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)

09 Numbering structure

Part number structure Rugged Keypads Modules

Part No. module (12 digits)

09 – [ ][ ][ ] . [ ][ ][ ][ ]

Series number
09

Module number
00- Rugged Keypad
10- Rugged Rotary Cursor Controller *

Communication protocols
1- J1939
2- CANopen
3- CANopenSafety (Button-Stuck 10 Seconds)
4- CANopenSafety (Button-Stuck 5 Seconds)
5- CANopenSafety (Button-Stuck 3 Seconds)
6- CANopenSafety (Button-Stuck 1 Second)
7- I/O

Mounting type
1- Clip-in (1 mm panel)
2- Clip-in (2 mm panel)
3- Clip-in (3 mm panel)
4- Clip-in (4 mm panel)
5- Screw-in

Connector
1- DT04 - 6P
3- Würth Elektronik
WR-MPC3 16 pins
(for BASIC only)

Type of module
1- 6 Pushbuttons
2- 2 Pushbuttons + RCC *
(rotation + push + proportional Joystick)
3- 8 Pushbuttons

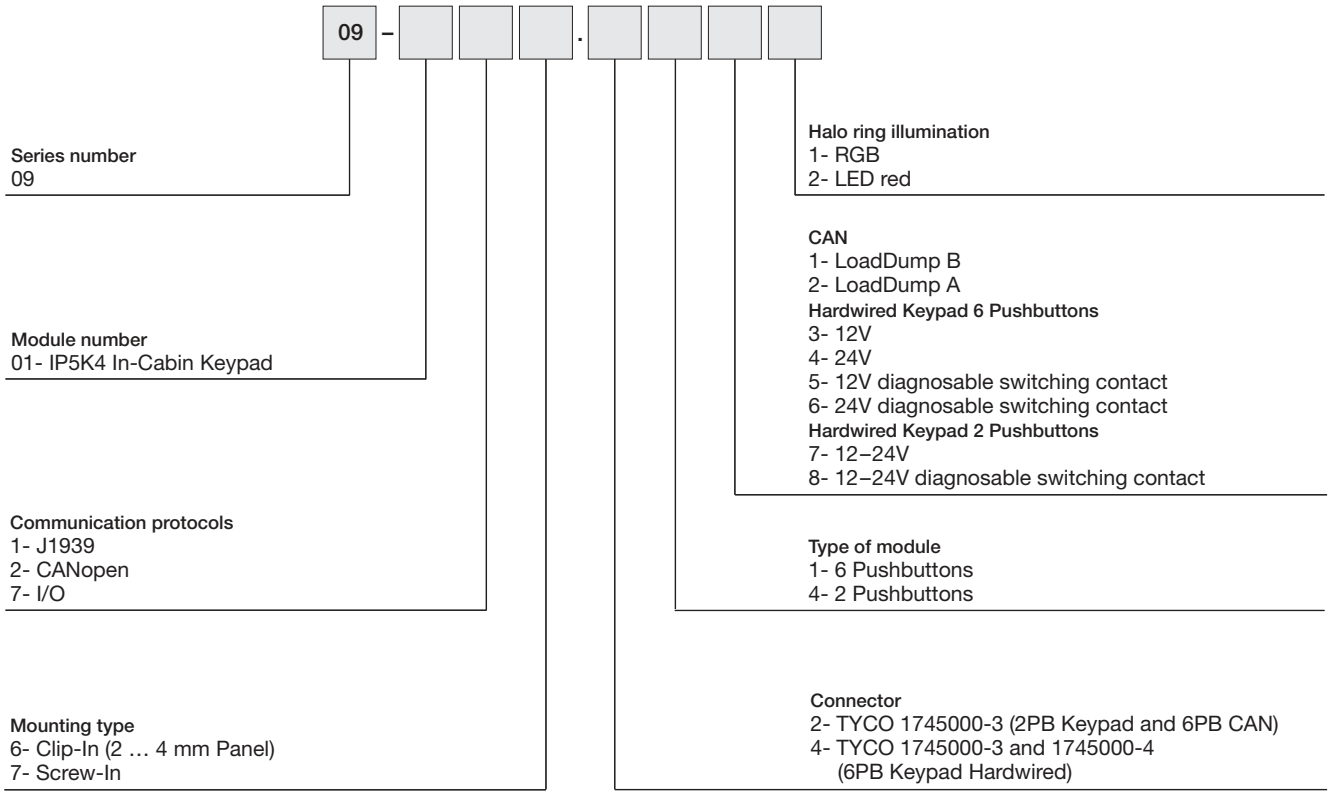
CAN
1- LoadDump B
2- LoadDump A
Hardwired
3- 12V
4- 24V
5- 12V diagnosable switching contact
6- 24V diagnosable switching contact

Halo ring illumination
1- RGB
2- LED red

* available at a later date

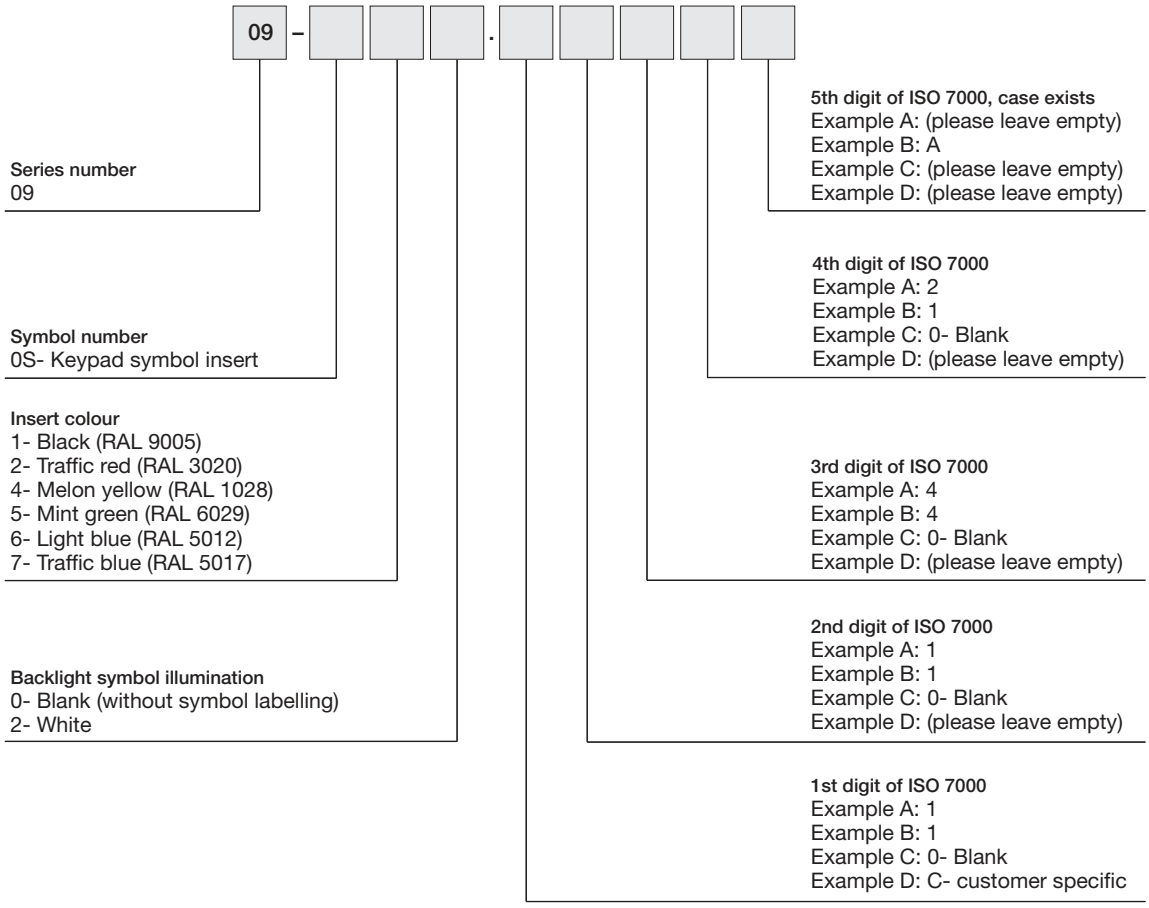
Part number structure In-Cabin Keypads Modules

Part No. module (12 digits)



09 Numbering structure

Part No. symbols



Keypad PREMIUM*

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 LED
  – Luminance: approx. 1 500 cd/m² (dimmable)
- Illumination functions: steady lighting, flashing, pulses, rotations, colour changes
  – Halo and symbol illumination can be configured individually

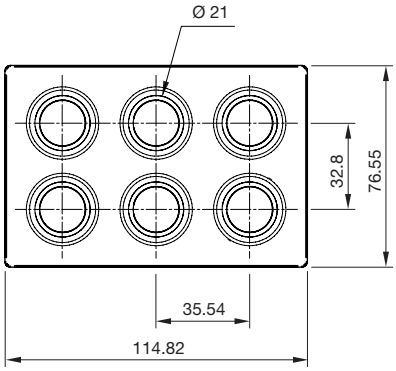
Symbols
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces
- CAN interface (ISO 11898)
- CANopen Safety (EN 50325-5)
- Baud rate 250 kBd and 500 kBd (software configurable)
- 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

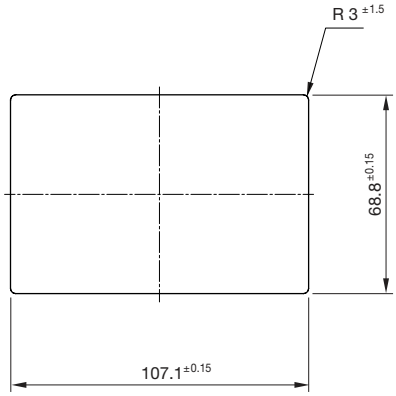
Ambient conditions
- Operating temperature –40 °C … +85 °C
- Storage temperature: –40 °C … +85 °C

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

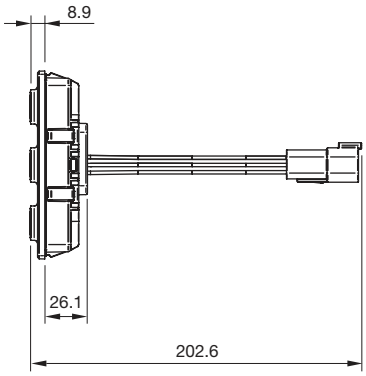
Dimensions
(All dimensions in mm)



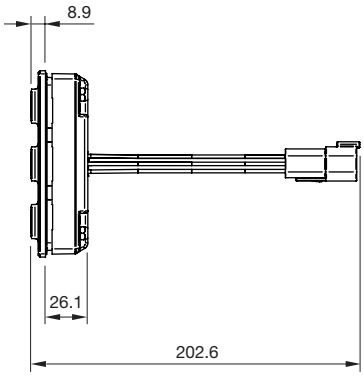
Mounting cut-out
(Front plate thickness 1.0 mm … 4.0 mm) *2



Mounting
Clip-in mounting



Screw-in mounting



*1 Availability of the PREMIUM variant for functional safety on request.

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

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. 1 500 cd/m² dimmable
- Illumination functions: steady lighting, flashing, pulses, rotations, colour changes
  – Halo and symbol illumination can be configured individually

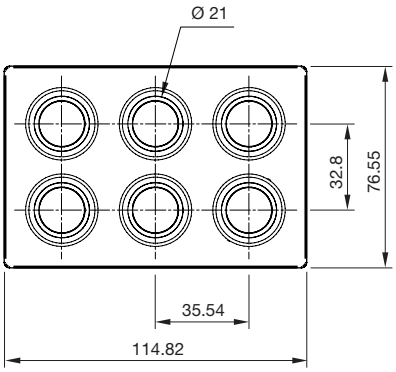
Symbols
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces
- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CAN J1939
- Baud rate 250 kBd and 500 kBd (software configurable)
- Connector Deutsch DT04-6P

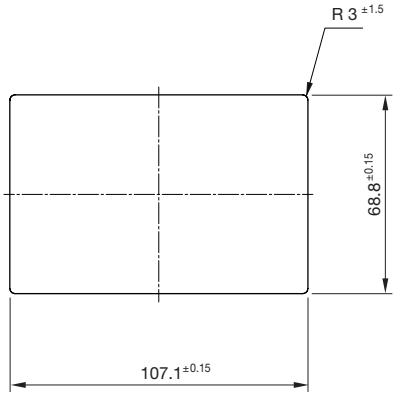
Ambient conditions
- Operating temperature: –40 °C … +85 °C
- Storage temperature: –40 °C … +85 °C

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

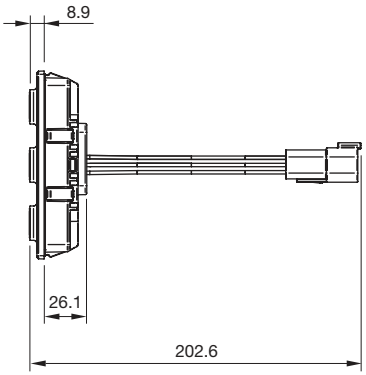
Dimensions
(All dimensions in mm)



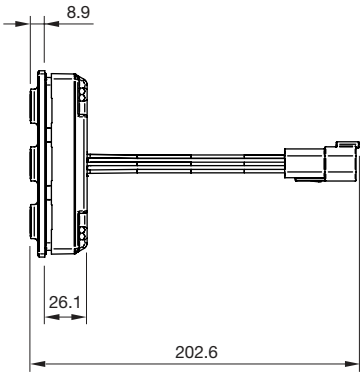
Mounting cut-out
(Front plate thickness 1.0 mm … 4.0 mm) *



Mounting
Clip-in mounting



Screw-in mounting



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

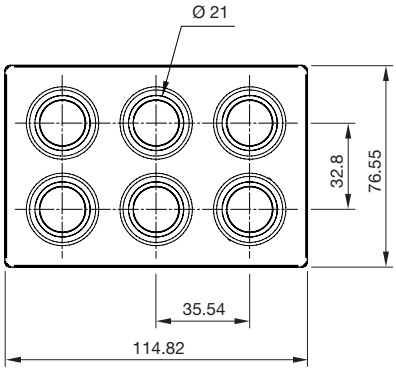
Symbols
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces
- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CAN J1939
- Baud rate 250 kBd and 500 kBd (software configurable)
- Connector Deutsch DT04-6P

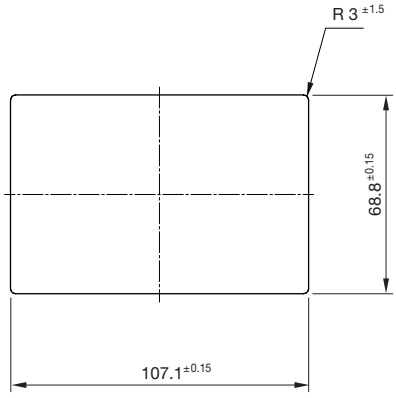
Ambient conditions
- Operating temperature: –40 °C … +85 °C
- Storage temperature: –40 °C … +85 °C

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

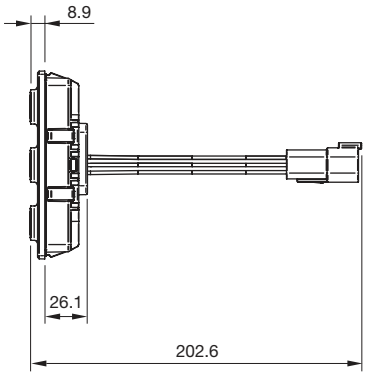
Dimensions
(All dimensions in mm)



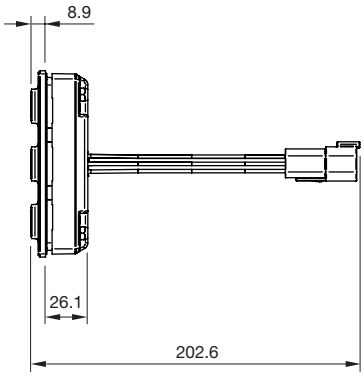
Mounting cut-out
(Front plate thickness 1.0 mm … 4.0 mm) *



Mounting
Clip-in mounting



Screw-in mounting



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

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

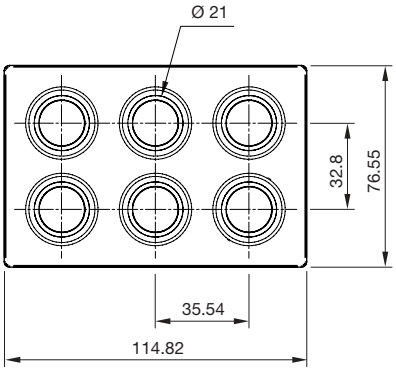
Symbols
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces
- Connector: Würth Elektronik WR-MPC3, 16 Pins

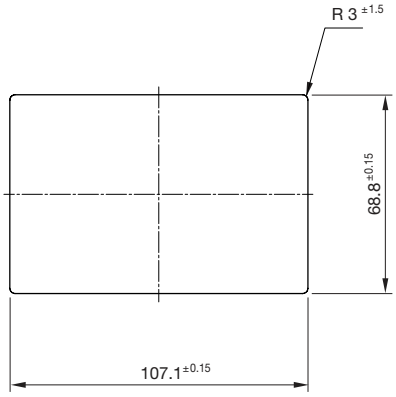
Ambient conditions
- Operating temperature: –40 °C … +85 °C
- Storage temperature: –40 °C … +85 °C

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)

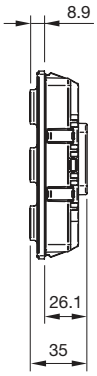
Dimensions
(All dimensions in mm)



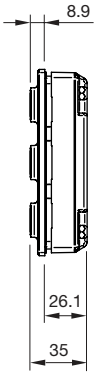
Mounting cut-out
(Front plate thickness 1.0 mm … 4.0 mm) *



Mounting
Clip-in mounting



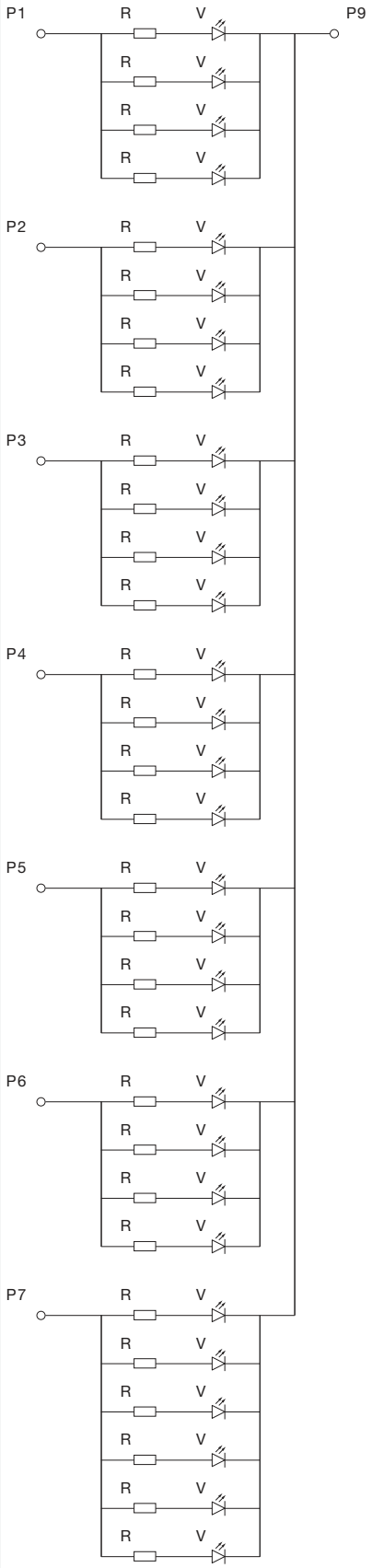
Screw-in mounting

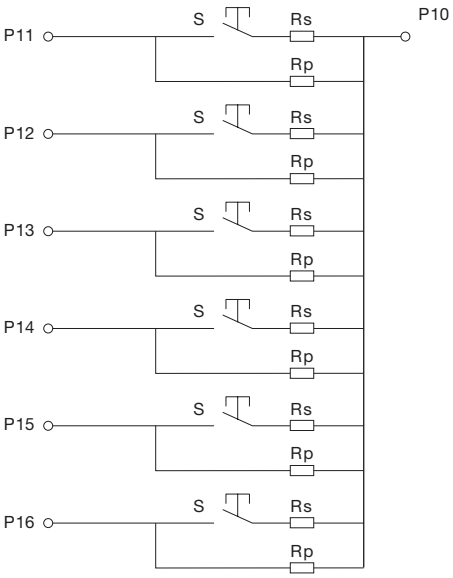


* For vibration-proof mounting, a front plate of at least 2 mm thickness is recommended.

Wiring diagram, connector

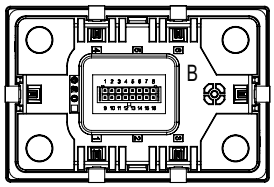
Wiring diagram

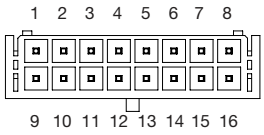




Rs = 0 Ω as standard
Rp = tbd

Connector





Connections WR-MPC3
Mating plug Molex 430251600
Matching contacts 43030-0007

Pin No.	Signal	Comment
Pin 1	Supply voltage haloring	12 VDC / 24 VDC
Pin 2	Supply voltage haloring	12 VDC / 24 VDC
Pin 3	Supply voltage haloring	12 VDC / 24 VDC
Pin 4	Supply voltage haloring	12 VDC / 24 VDC
Pin 5	Supply voltage haloring	12 VDC / 24 VDC
Pin 6	Supply voltage haloring	12 VDC / 24 VDC
Pin 7	Supply voltage symbol	12 VDC / 24 VDC
Pin 8	n. c.	
Pin 9	GND lighting	
Pin 10	Common potential buttons	
Pin 11	Signal button 1	max. current 30 mA
Pin 12	Signal button 2	max. current 30 mA
Pin 13	Signal button 3	max. current 30 mA
Pin 14	Signal button 4	max. current 30 mA
Pin 15	Signal button 5	max. current 30 mA
Pin 16	Signal button 6	max. current 30 mA

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

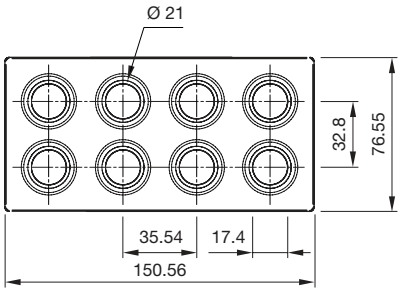
Symbols
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces
- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CAN J1939
- Baud rate 250 kBd and 500 kBd (software configurable)
- Connector Deutsch DT04-6P

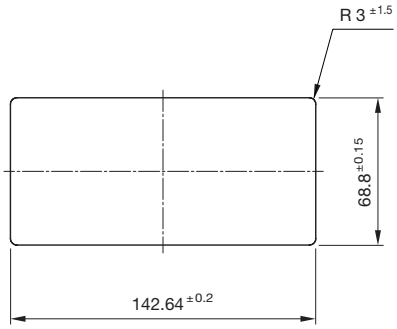
Ambient conditions
- Operating temperature: –40 °C … +85 °C
- Storage temperature: –40 °C … +85 °C

Protection degree
- IP6K9K according to ISO 20653 *1
- Up to IP6K9 (panel/screw-in version)
- Up to IP5K4 (panel/clip-in version)

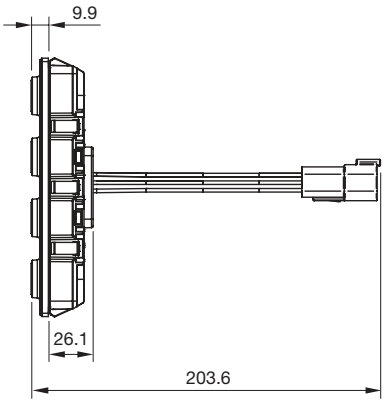
Dimensions
(All dimensions in mm)



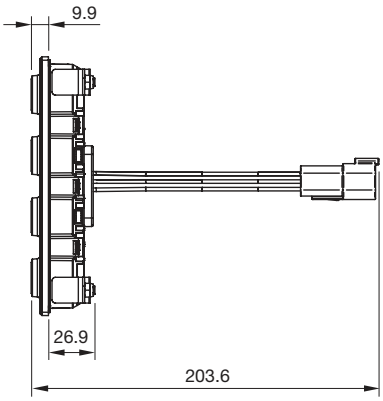
Mounting cut-out
(Front plate thickness 1.0 mm … 4.0 mm) *2



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.

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

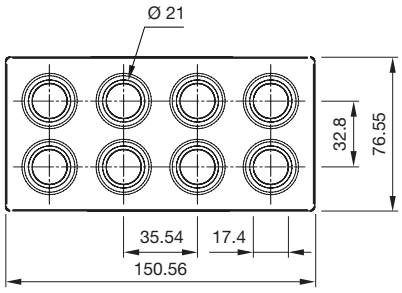
Symbols
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces
- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CAN J1939
- Baud rate 250 kBd and 500 kBd (software configurable)
- Connector Deutsch DT04-6P

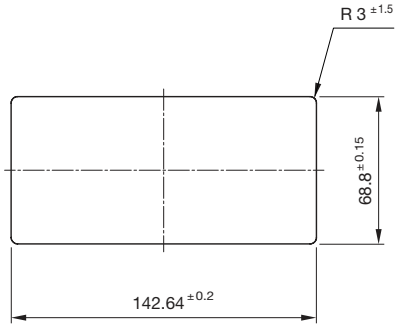
Ambient conditions
- Operating temperature: –40 °C … +85 °C
- Storage temperature: –40 °C … +85 °C

Protection degree
- IP6K9K according to ISO 20653 *1
- Up to IP6K7 (panel/screw-in version) *1
- Up to IP5K4 (panel/clip-in version)

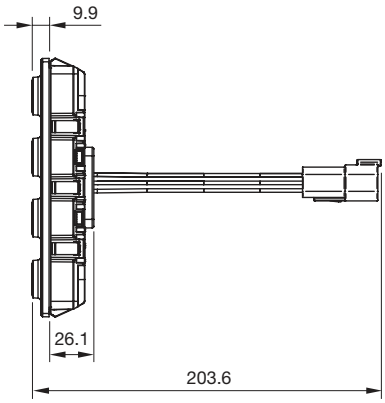
Dimensions
(All dimensions in mm)



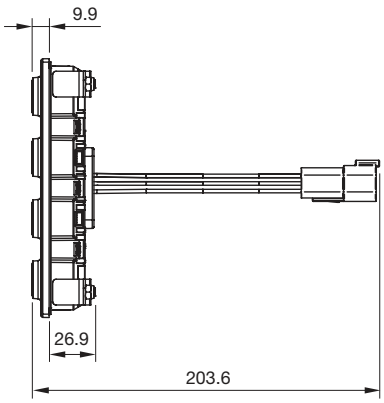
Mounting cut-out
(Front plate thickness 1.0 mm … 4.0 mm) *2



Mounting
Clip-in mounting



Screw-in mounting



*1 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.

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

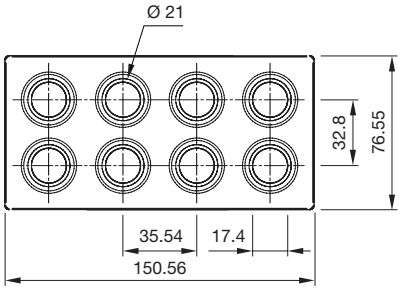
Symbols
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

Interfaces
- Connector: Würth Elektronik WR-MPC3, 20 Pins

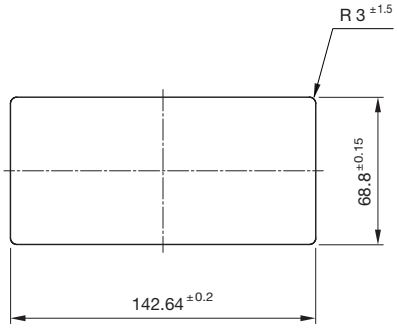
Ambient conditions
- Operating temperature: –40 °C … +85 °C
- Storage temperature: –40 °C … +85 °C

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)

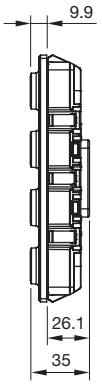
Dimensions
(All dimensions in mm)



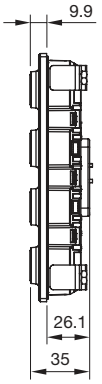
Mounting cut-out
(Front plate thickness 1.0 mm … 4.0 mm) *



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.

6-pushbutton Keypad SUPER

Mechanical characteristics
- Actuating force: approx. 6 N
- Overload force: 250 N
- Lifecycle: up to 250 000 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 (dimmable)
- LED halo-ring illumination
  – Colour: multi-colour RGB
  – Luminance: approx. 500 cd/m² (dimmable*)

*depending on the respective colour

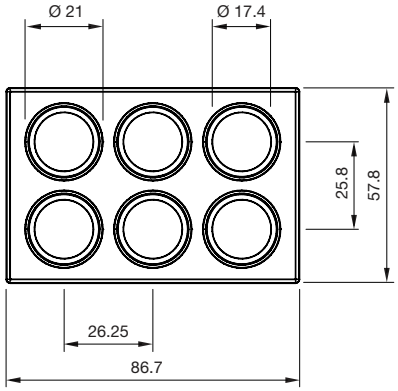
Symbols
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

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

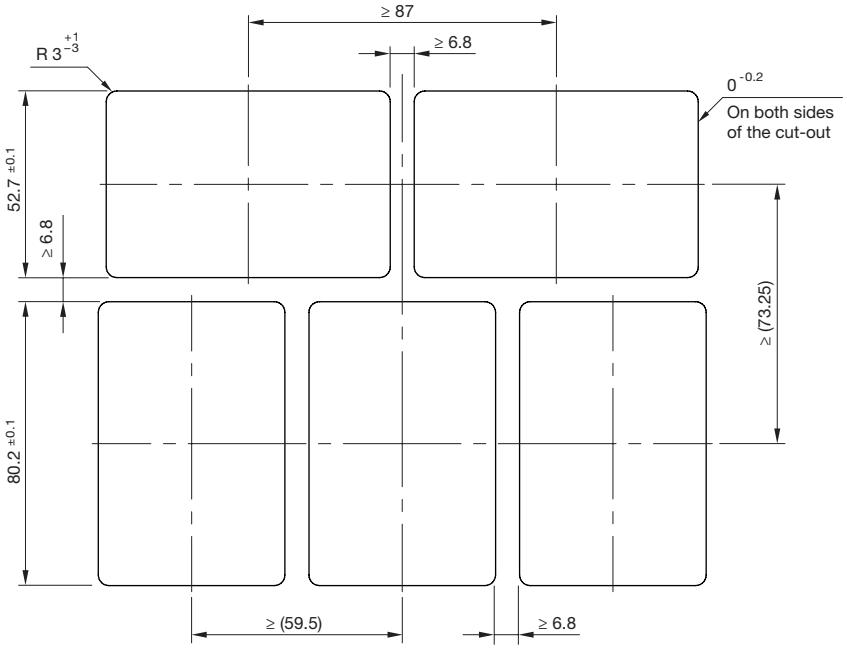
Protection degree
- IP5K4 in accordance with ISO 20653 (front side in installed state)
- IP20 in accordance with ISO 20653 (rear side)

Ambient conditions
- Operating temperature –40 °C … +85 °C
- Storage temperature –40 °C … +85 °C

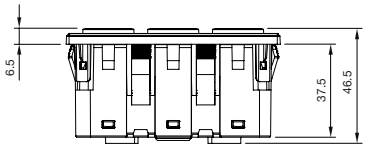
Dimensions
(All dimensions in mm)



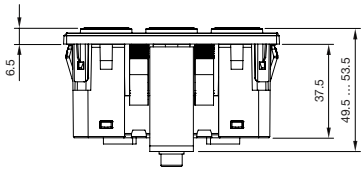
Mounting cut-out
(Panel thickness 1.0 mm … 4.0 mm)



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

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

Mechanical characteristics
- Actuating force: approx. 6 N
- Overload force: 250 N
- Lifecycle: up to 250 000 cycles of operation
- Impact resistance: IEC 62262 IK07

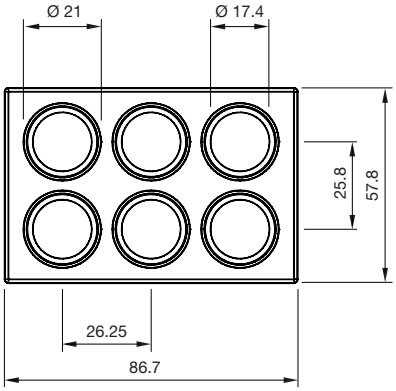
Electrical characteristics
- Operating voltage range 8-32 VDC LoadDump A or B

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 (dimmable)
- LED halo-ring illumination
  – Colour: red (other colours on request)
  – Luminance: approx. 500 cd/m² (dimmable)

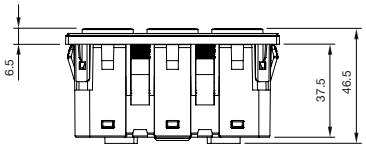
Symbols
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

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

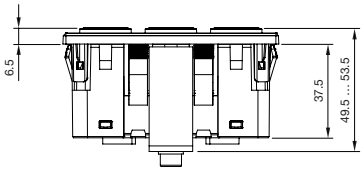
Dimensions
(All dimensions in mm)



Mounting
Clip-in mounting

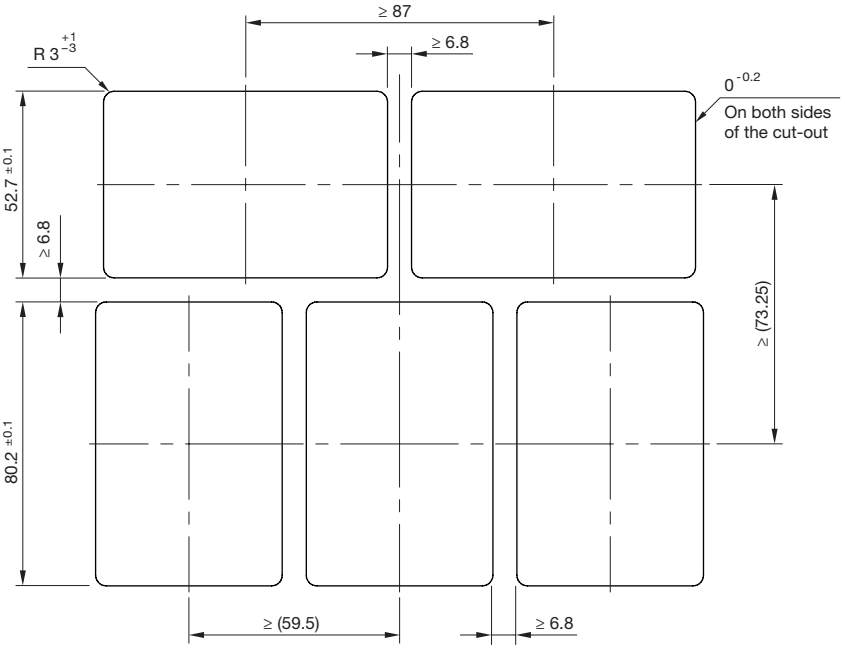


Screw-in mounting



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)



6-pushbutton Keypad BASIC

Mechanical characteristics
- Actuating force: approx. 6 N
- Overload force: 250 N
- Lifecycle: up to 250 000 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 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 (dimmable)
- LED halo-ring illumination
  – Colour: red (other colours on request)
  – Luminance: approx. 500 cd/m² (dimmable)

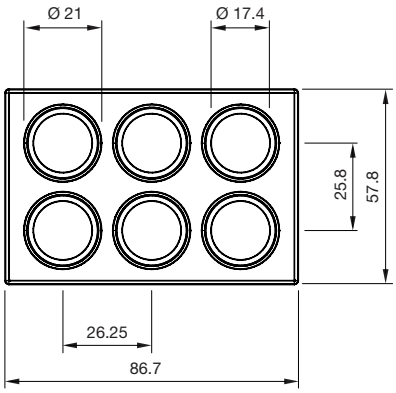
Symbols
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

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

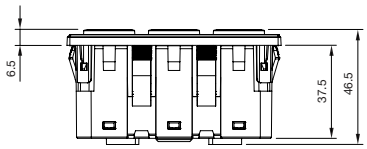
Protection degree
- IP5K4 in accordance with ISO 20653 (front side in installed state)
- IP20 in accordance with ISO 20653 (rear side)

Ambient conditions
- Operating temperature
  –40 °C … +85 °C
- Storage temperature
  –40 °C … +85 °C

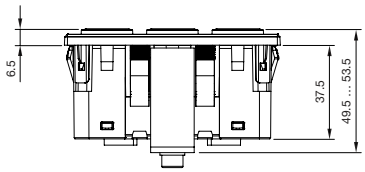
Dimensions
(All dimensions in mm)



Mounting
Clip-in mounting

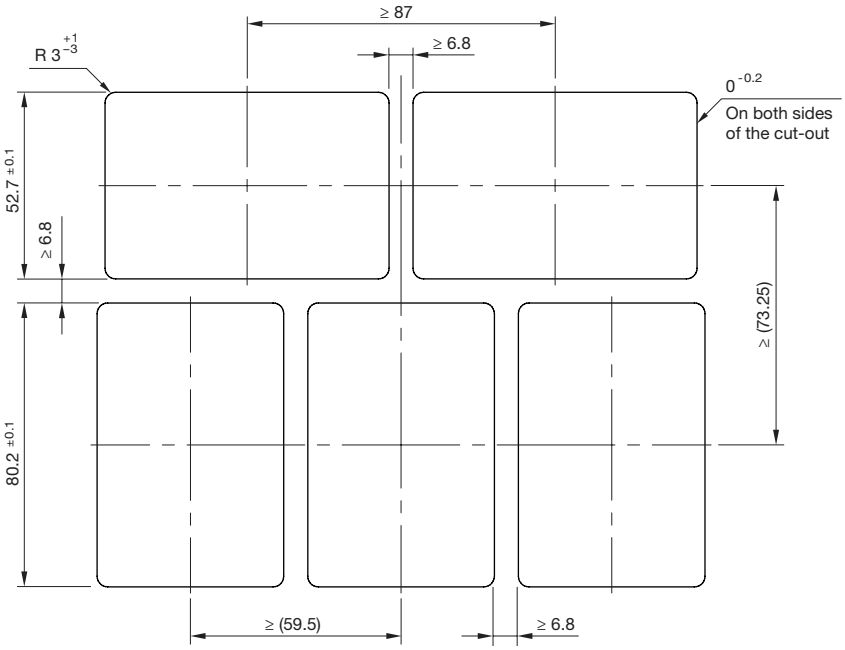


Screw-in mounting



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

2-pushbutton Keypad BASIC

Mechanical characteristics
- Actuating force: approx. 6 N
- Overload force: 250 N
- Lifecycle: up to 250 000 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 (dimmable)

- LED halo-ring illumination
  - Colour: red (other colours on request)
  - Luminance: approx. 500 cd/m² (dimmable)

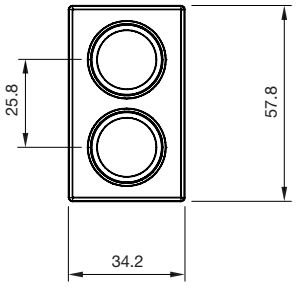
Symbols
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

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

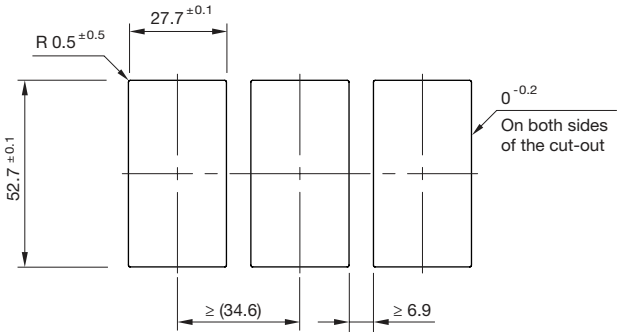
Protection degree
- IP5K4 in accordance with ISO 20653 (front side in installed state)
- IP20 in accordance with ISO 20653 (rear side)

Ambient conditions
- Operating temperature
  –40 °C … +85 °C
- Storage temperature
  –40 °C … +85 °C

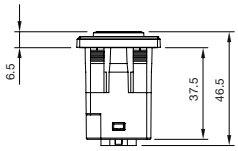
Dimensions
(All dimensions in mm)



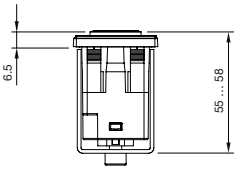
Mounting cut-out
(Panel thickness 1.0 mm … 4.0 mm)



Mounting
Clip-in mounting



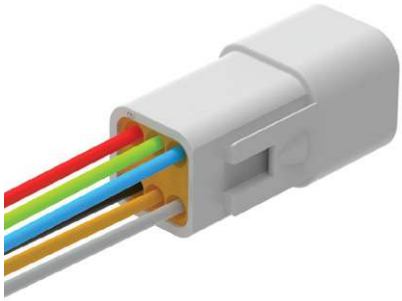
Screw-in mounting

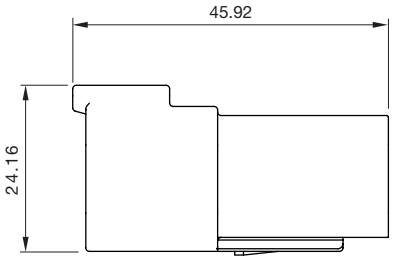


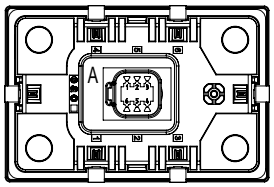
The keypad can be mounted into front plate thicknesses between 1 and 4 mm. A front plate of at least 2 mm thickness is recommended. Non-compliance with these specifications may lead to damage to the locking tongue.

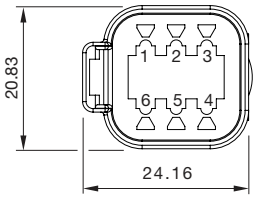
Accessories

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 – 32 VDC

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.

Protective shroud

EAO offers protective shrouds as accessories for the Series 09 Rugged Keypads. These ensure that the 6 or 8 pushbuttons are protected against unintentional actuation, thus preventing safety-critical operating errors.

09 Universal Switch

Product variants

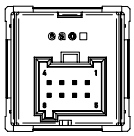
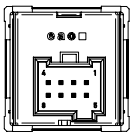
Versatile product variants

The Series 09 universal switch is available in two variants – STANDARD and DUAL CONTACT – 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	
				NO-NO	NO/ NC-NO
Electrical properties		12 V	✓	✓	✓
		24 V	✓	✓	✓
		12 V Namur R_s=120 Ω / Rp = 1 KΩ	✓	✓	✓
		24 V Namur R_s=120 Ω / Rp = 1 KΩ	✓	✓	✓
Haptics		Firm haptics (short travel)	✓	×	✓
		Soft haptics (long travel)	✓	✓	×
		Without haptics	✓	×	×
Symbol illumination	 White Red Without	White	✓	✓	✓
		Red	✓	✓	✓
		Without symbol illumination	✓	×	×
Status indicator	 Without One LED Three LEDs	Without status indicator	✓	✓	✓
		One red status indicator	✓	✓	✓
		Three red status indicators	✓	×	×

Features		Product options	Variants		
			STANDARD	DUAL CONTACT	
				NO-NO	NO/ NC-NO
TYCO Connector	 	Tyco 8P-1745000-3 (black)	✓	✓	✓
		Tyco 8P-1745000-4 (grey)	✓	✓	✓
		Without connector	✓	×	×
Symbol	ISO 7000  Customized	ISO 7000- XXXX			
		Customized symbol*			
Symbol direction	 0°  90°  180°  270°	0°			
		90°			
		180°			
		270°			

Notes

× For this variant the option is not available

* For customized symbols, please send us the corresponding file

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. 20 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 ± 2K)

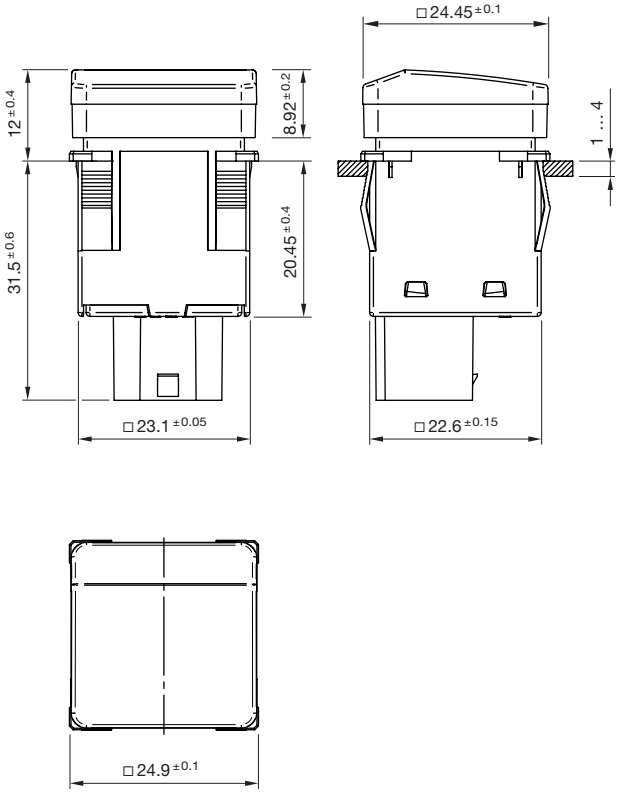
Symbols
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

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

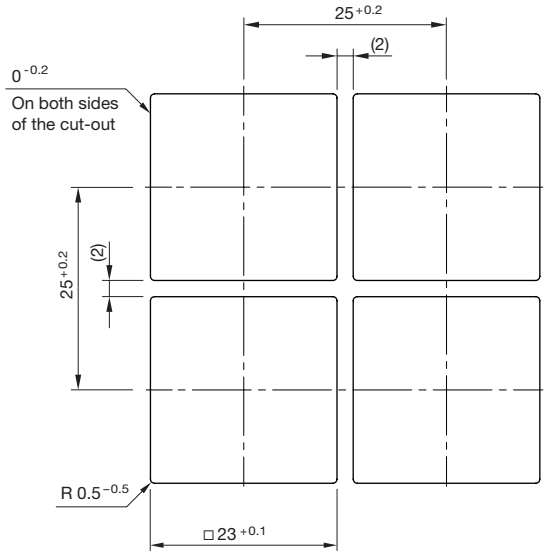
Ambient conditions
- Operating temperature
  –40 °C … +85 °C
- Storage temperature
  –40 °C … +85 °C

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-universal-switch.

Universal Switch DUAL CONTACT

Product options
- NO/NO or NO/NC-NO (optionally available as diagnosis-capable version with Namur contact)
- 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) NO/NO approx. 6.5 N (firm (short travel) haptics) NO/NC-NO
- 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. 20 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 ±2K)

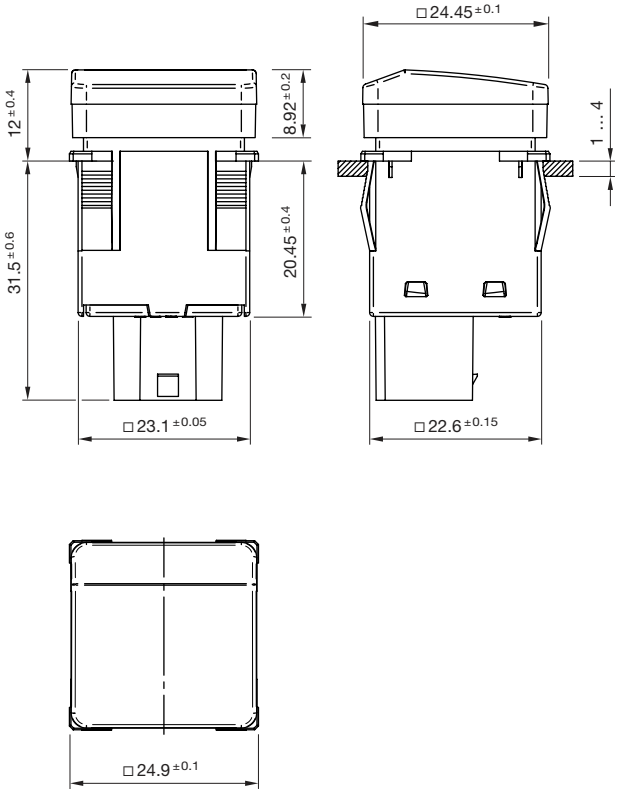
Symbols
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request

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

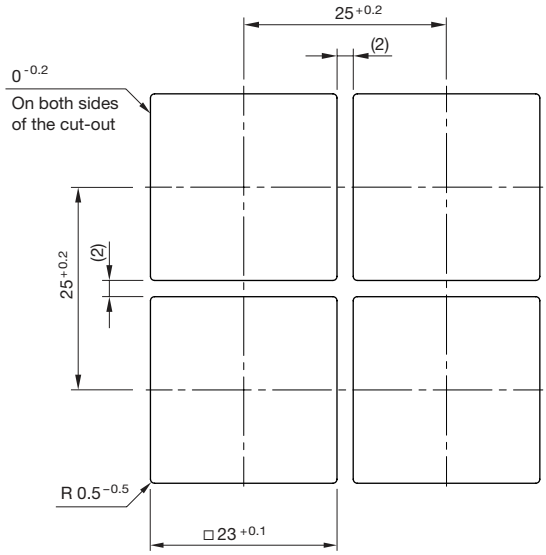
Ambient conditions
- Operating temperature –40 °C … +85 °C
- Storage temperature –40 °C … +85 °C

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)



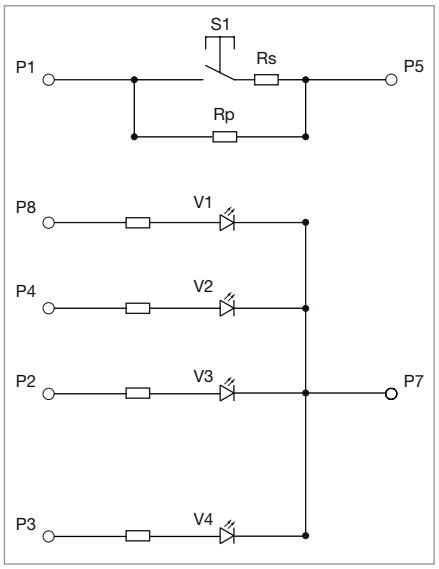
The switch can be mounted in front panel thicknesses between 2 and 4 mm. To guarantee stability and density, a plastic front panel with a material thickness of 3 mm is recommended.

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

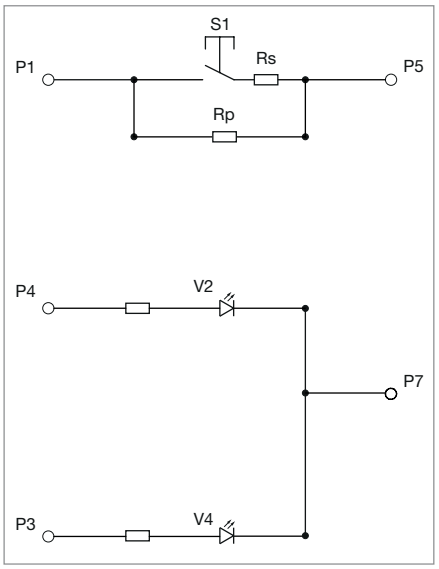
09 Universal Switch

Wiring diagram

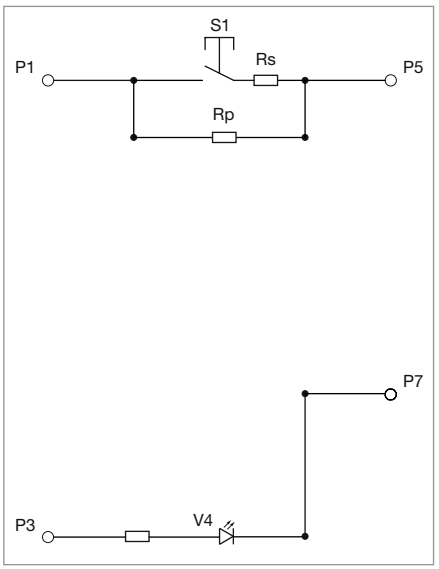
Standard (single contact) NO



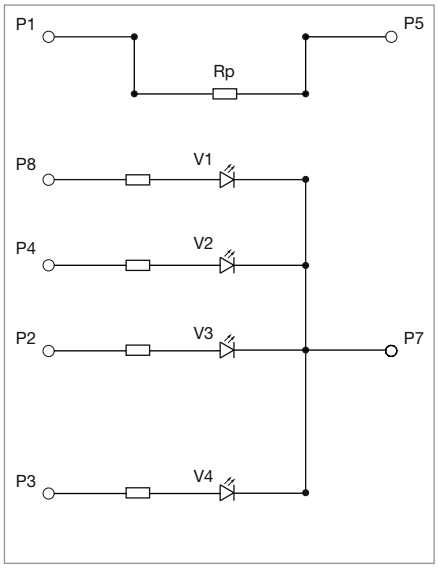
Three indicators,
backlight and switching element
with NAMUR circuit



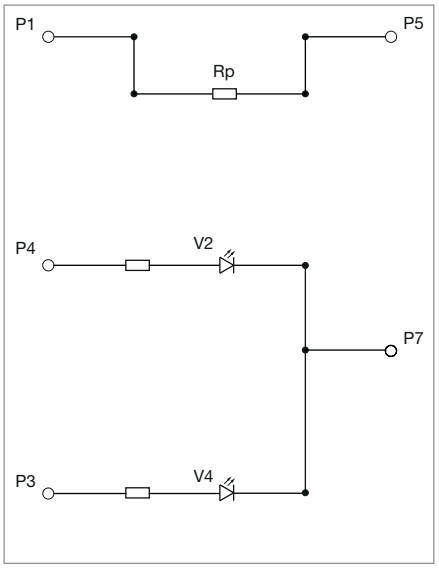
One indicator,
backlight and switching element
with NAMUR circuit



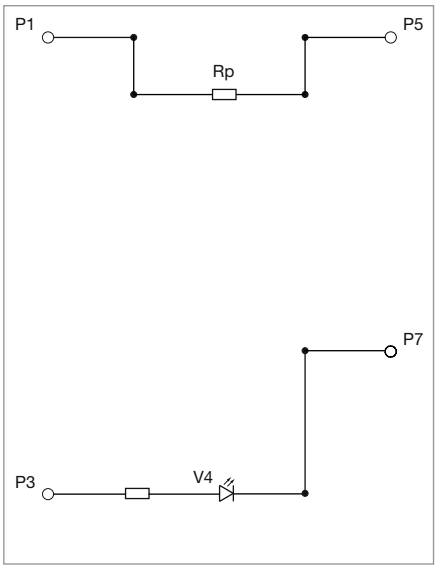
Backlight and switching element
with NAMUR circuit



Three indicators,
backlight with coding resistor



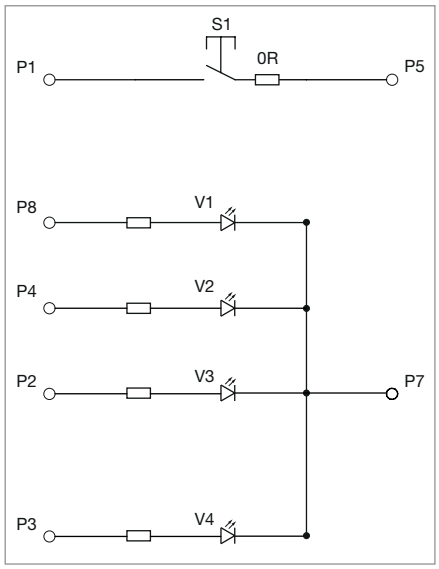
One indicator,
backlight with coding resistor



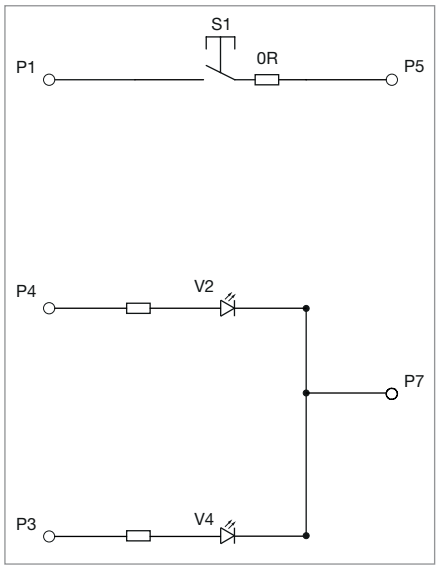
Backlight with coding resistor

Wiring diagram

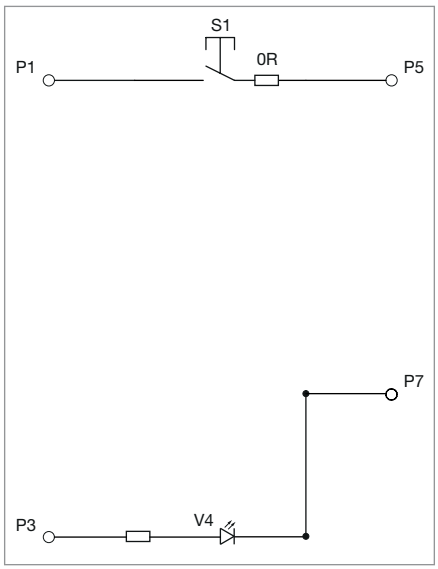
Standard (single contact) NO



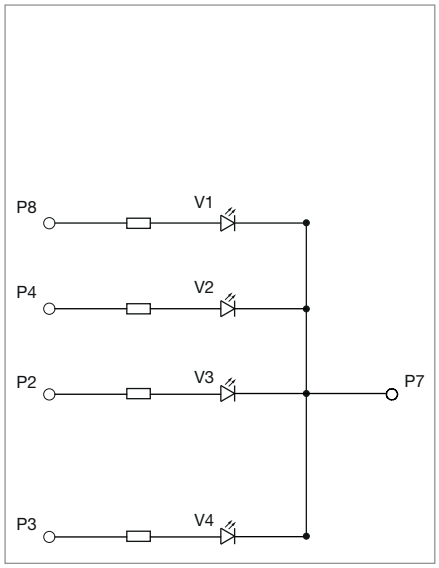
Three indicators,
backlight and switching element standard



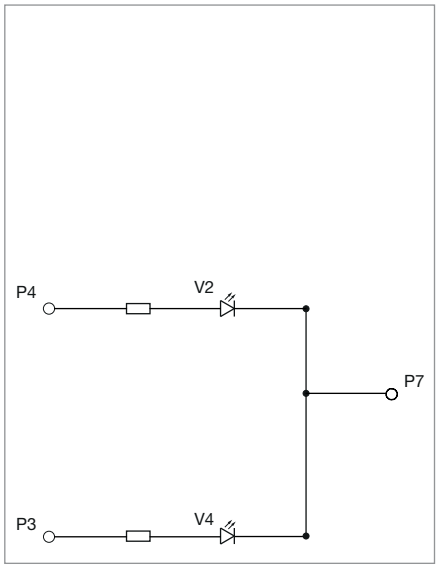
One indicator,
backlight and switching element standard



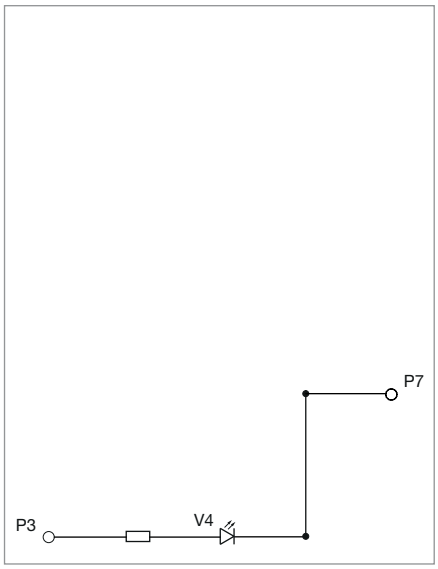
Backlight and switching element standard



Three indicators, backlight standard



One indicator, backlight standard

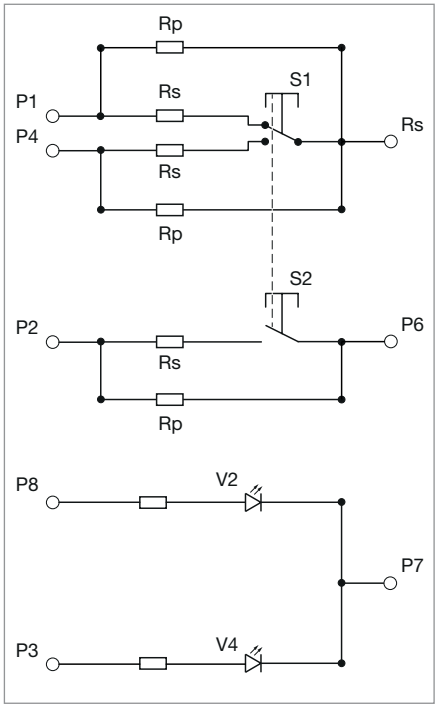


Backlight standard

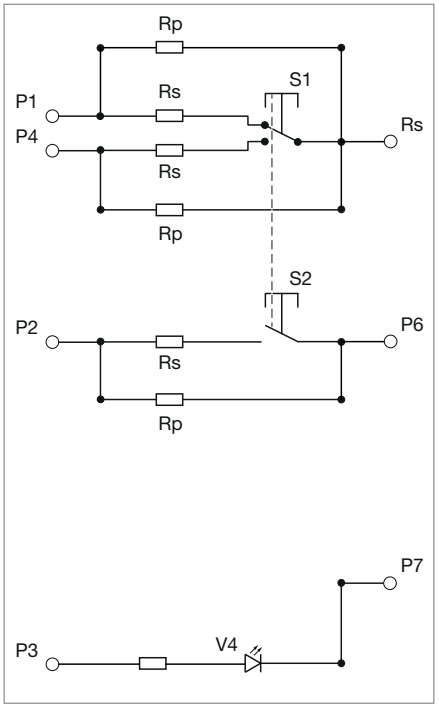
09 Universal Switch

Wiring diagram

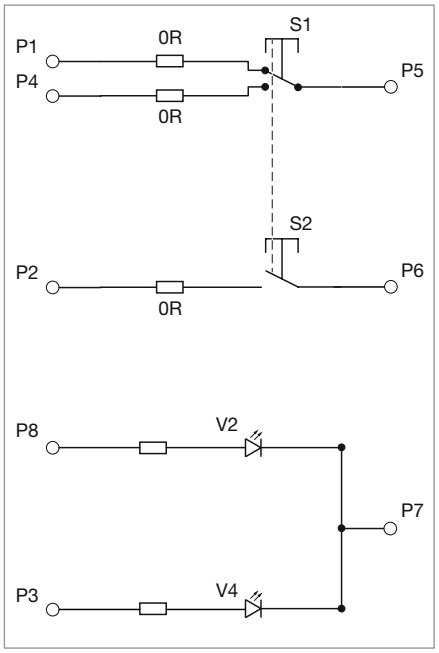
Dual contact NO/NC-NO



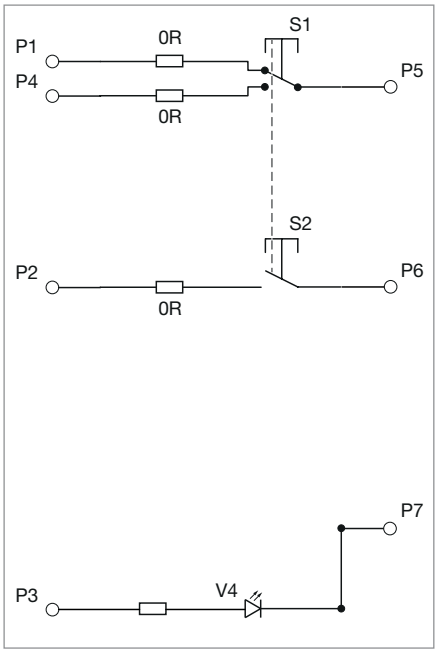
One indicator,
backlight and switching elements
with NAMUR circuit



Backlight and switching elements
with NAMUR circuit



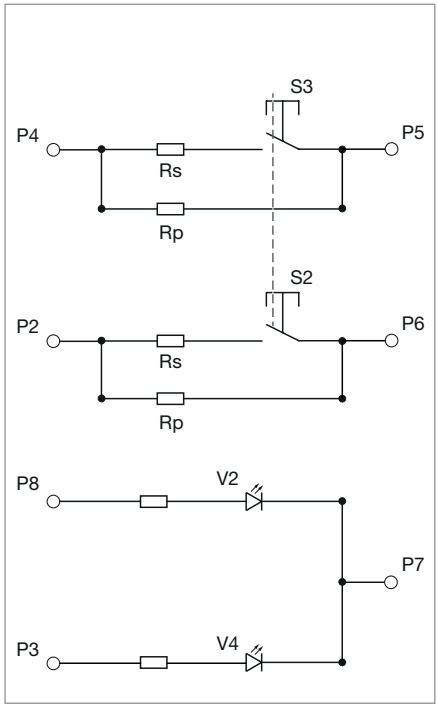
One indicator,
backlight and switching elements
without NAMUR circuit



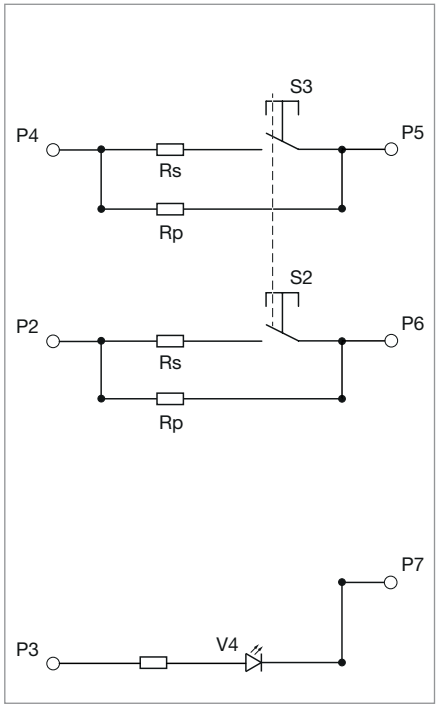
Backlight and switching elements
without NAMUR circuit

Wiring diagram

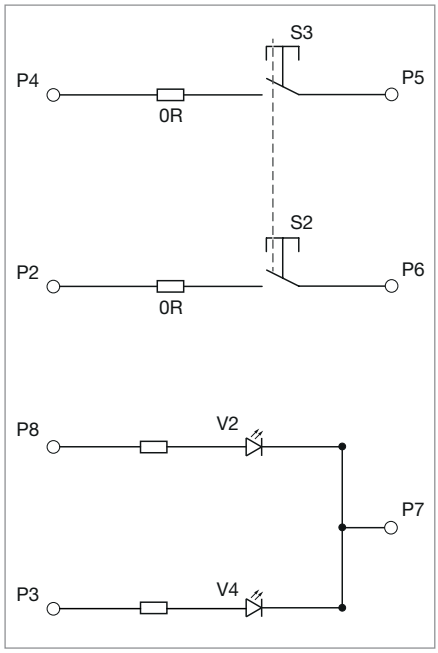
Dual contact NO/NO



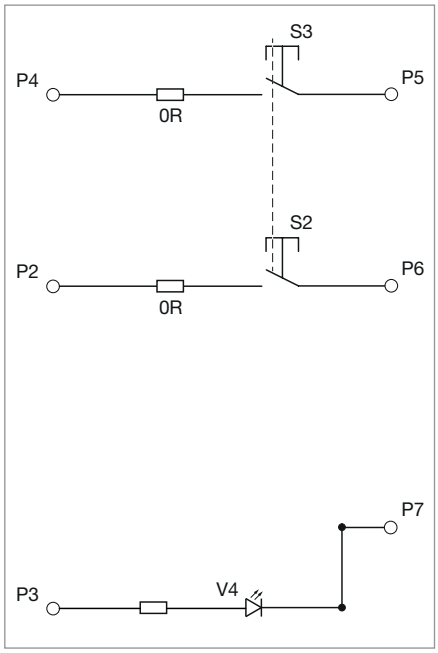
One indicator,
backlight and switching elements
with NAMUR circuit



Backlight and switching elements
with NAMUR circuit

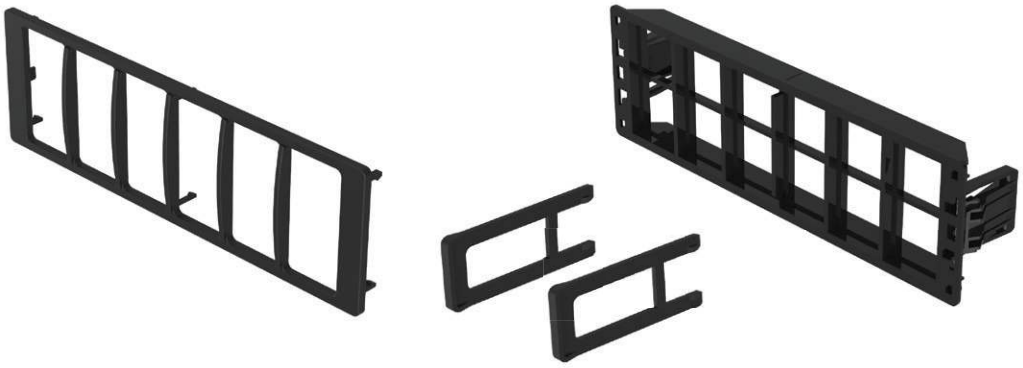


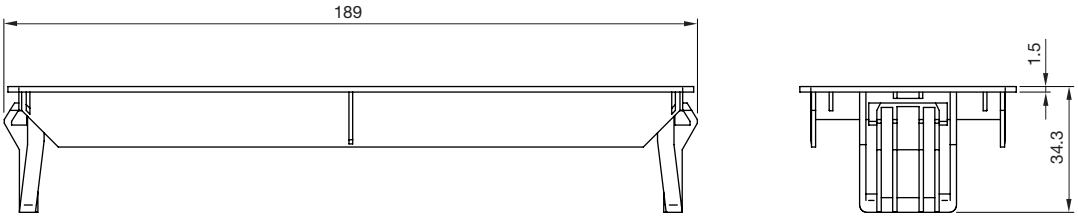
One indicator,
backlight and switching elements
without NAMUR circuit

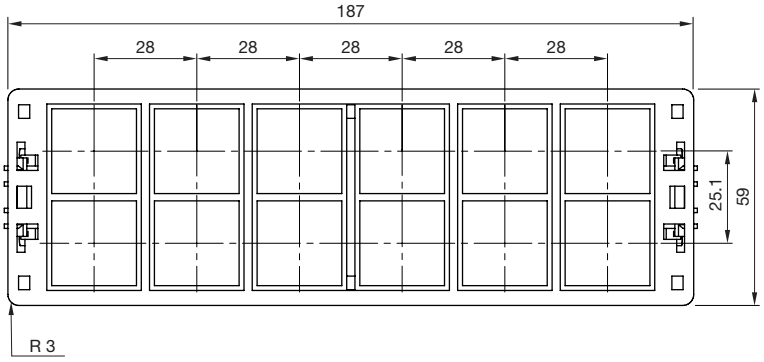


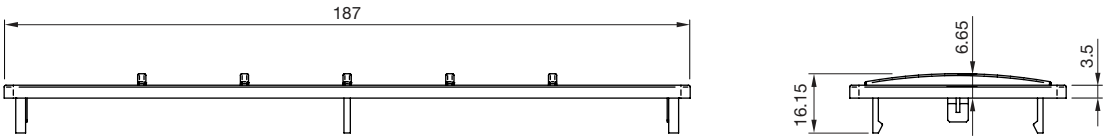
Backlight and switching elements
without NAMUR circuit

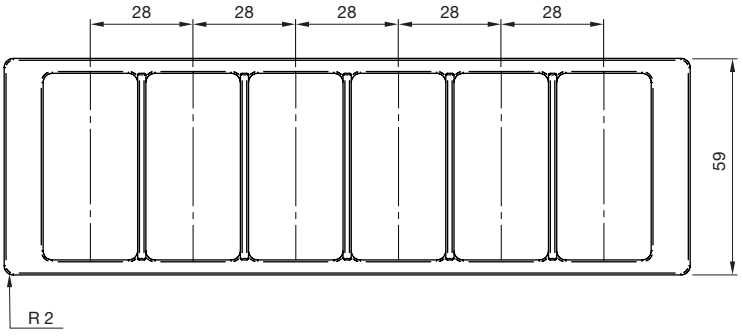
Radio slot frame

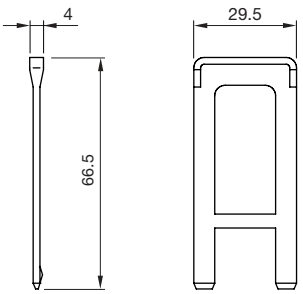












Joystick, 1 axis with square flange

Part No.
09-01.18214.0107

Mechanical characteristics
- Mounting
  from front of panel, 4 screws
  (Ø3.5 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

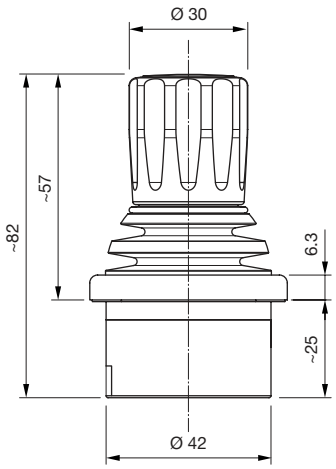
Technology
- Hall effect sensors

Connections
- Minitek plug (8-pole)

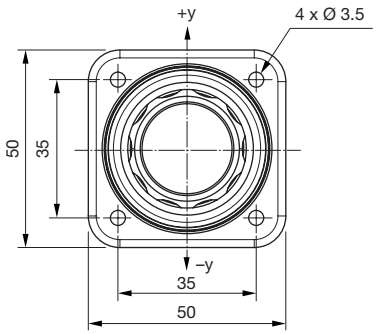
Ambient conditions
- Operating temperature
  –30 °C to +80 °C
- Storage temperature
  –40 °C to +85 °C

Degree of protection
- IP65 front protection
- IP40 rear protection

Dimensions

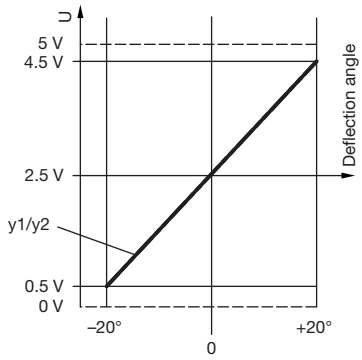


View from above



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
  (Ø3.5 mm)
- 3 axes
- Soft cross guidance
- Gate shape square
- Deflection angle XY: ±20° / Z: ±30°
- 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

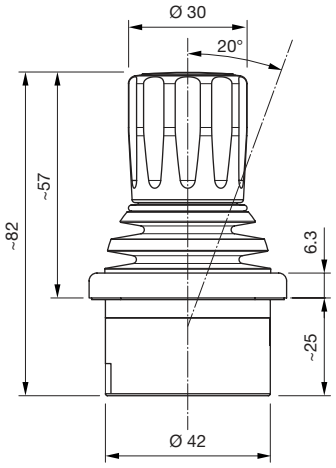
Technology
- Hall effect sensors

Connections
- Minitek plug (8-pole)

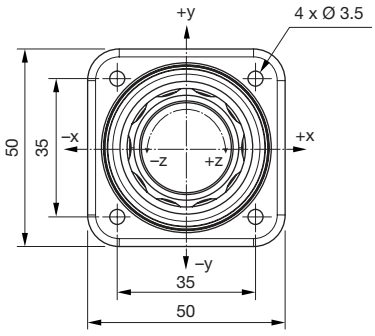
Ambient conditions
- Operating temperature
  –30 °C to +80 °C
- Storage temperature
  –40 °C to +85 °C

Degree of protection
- IP65 front protection
- IP40 rear protection

Dimensions



View from above



Gate

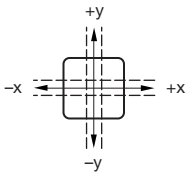


Diagram X-, Y-axis

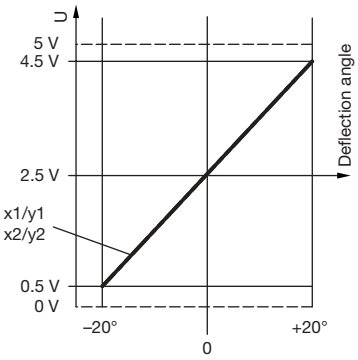
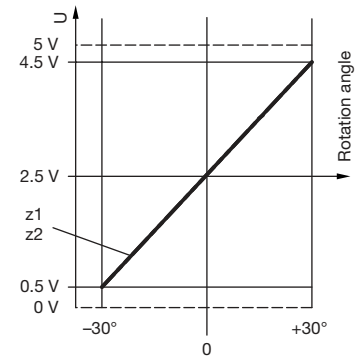


Diagram Z-axis



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 = 0.5 V/average = 2.5 V/+x1/y1 = 4.5 V) (–x2/y2 = 4.5 V/average = 2.5 V/+x2/y2 = 0.5 V)
- Redundancy
  all axes

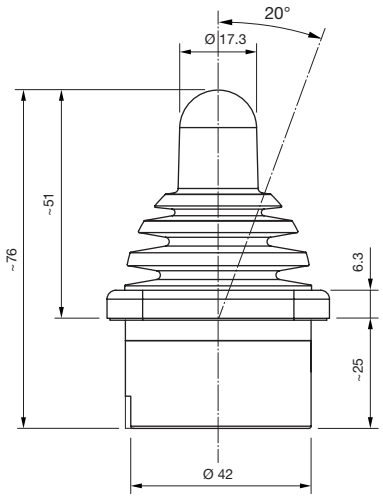
Technology
- Hall effect sensors

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

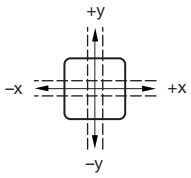
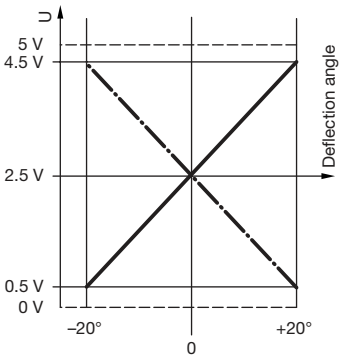
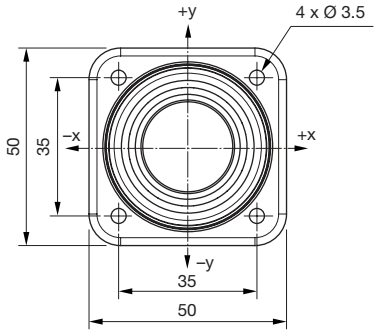


Diagram X-, Y-axis



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 0.16 Nm
- Operating torque
  X/Y-axis 0.5 Nm
- Max. allowable torque
  X/Y-axis 18 Nm

Electrical characteristics
- Operating voltage
  max. 30 VDC
- Output signal
  proportional with centre tab at ±1.75°, switch point at ±2.3° (see diagram X-, Y-axis)

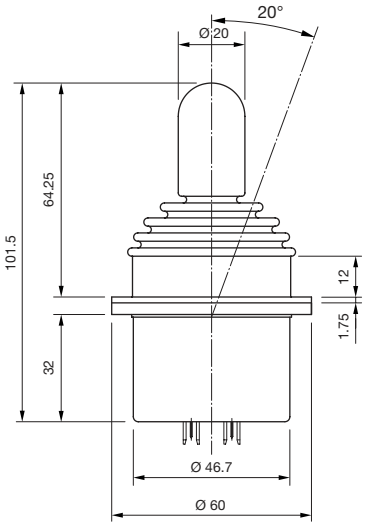
Technology
- Conductive plastic with digital steps/ control segment 1-0-1

Connections
- Dubox plug (6- and 8-pole)

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

Degree of protection
- IP67 front protection
- IP40 rear protection

Dimensions



Gate

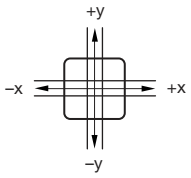
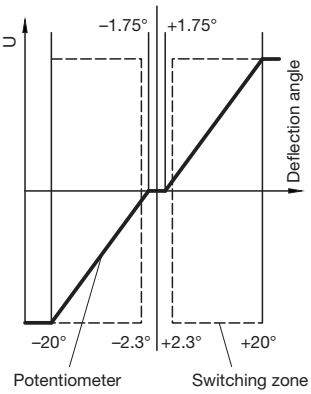
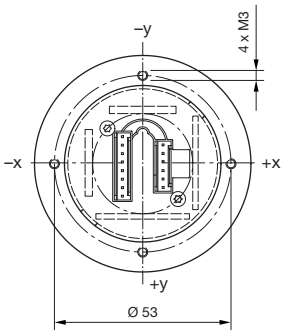


Diagram X-, Y-axis



Bottom view



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

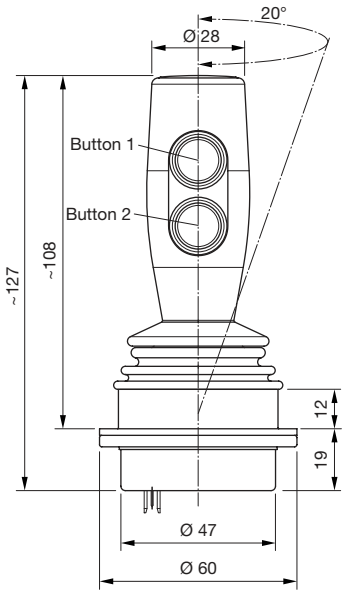
Connections
- Dubox plug (4-pole)

Interfaces
- CANopen/J1939 interface

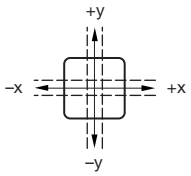
Ambient conditions
- Operating temperature
  –30 °C to +80 °C
- Storage temperature
  –40 °C to +85 °C

Degree of protection
- IP64 front protection
- IP40 rear protection

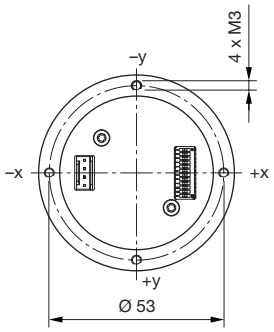
Dimensions



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

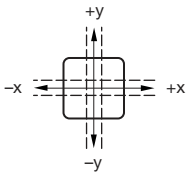
Connections
- PVC cable, 4 x 0.34 mm²
  Molex Micro-Fit (4-pole)

Interfaces
- CANopen/J1939 interface

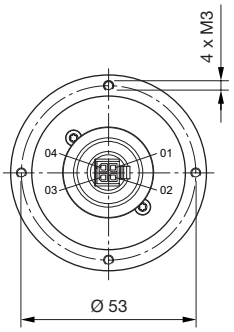
Ambient conditions
- Operating temperature
  −30 °C to +80 °C
- Storage temperature
  −40 °C to +85 °C

Degree of protection
- IP65 front protection
- IP40 rear protection

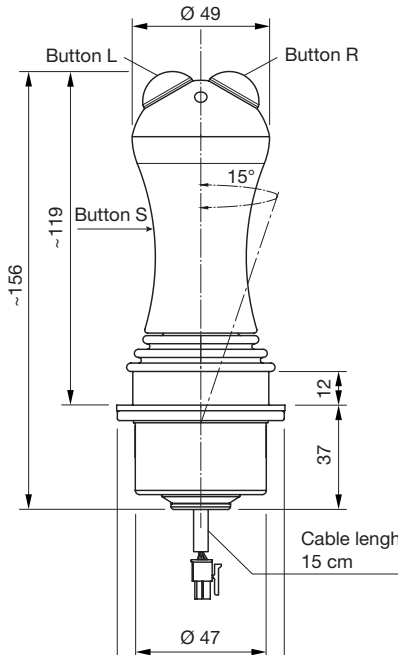
Gate



Bottom view



Dimensions



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. 5 VDC/5 mA
- Output signal
  switching point at ±3.33°

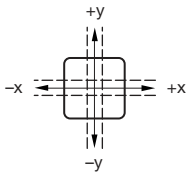
Technology
- Digital grid/switching segment 3-1-3

Connections
- Dubox plug (2 and 8-pole)

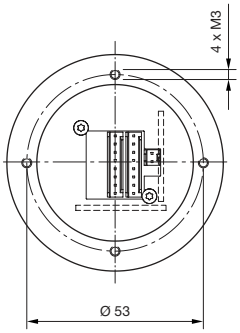
Ambient conditions
- Operating temperature
  –30 °C to +80 °C
- Storage temperature
  –40 °C to +85 °C

Degree of protection
- IP65 front protection
- IP40 rear protection

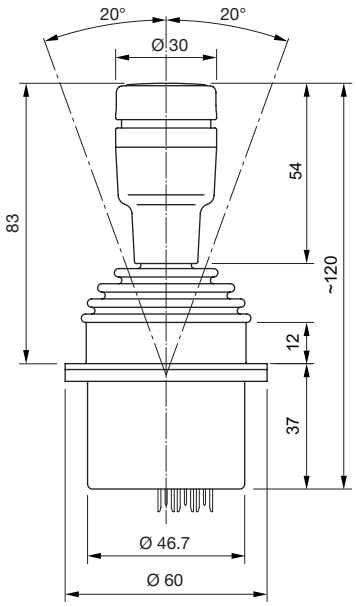
Gate



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. 30 VDC
- Output signal
  proportional without centre tab

Technology
- Conductive plastic

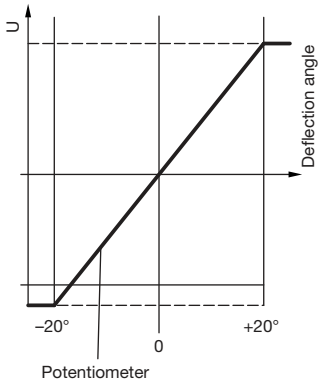
Connection
- Dubox plug (3-pole)

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

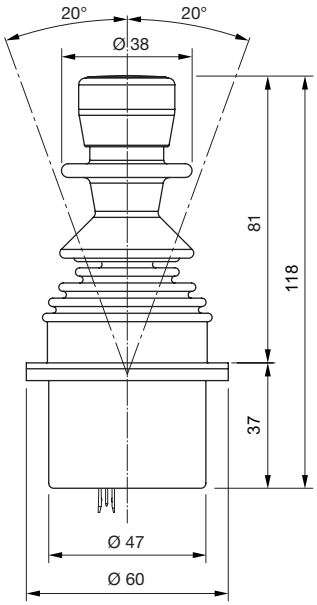
Degree of protection
- IP65 front protection
- IP40 rear protection

Gate

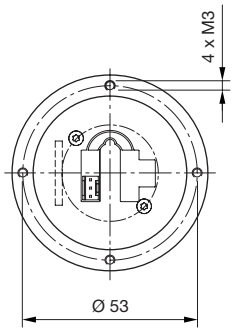
Diagram Y-axis



Dimensions



Bottom view



Joystick with handle and additional buttons.

Part No.
09-01.222Y2.0009
09-01.222Y3.0009

Mechanical characteristics
- Mounting
  from below, 4 x Ø 5.5 screws
- 1 or 2 axes
- Soft cross guidance
- Gate shape round
- 24° deflection angle
- Multifunction handlewith 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

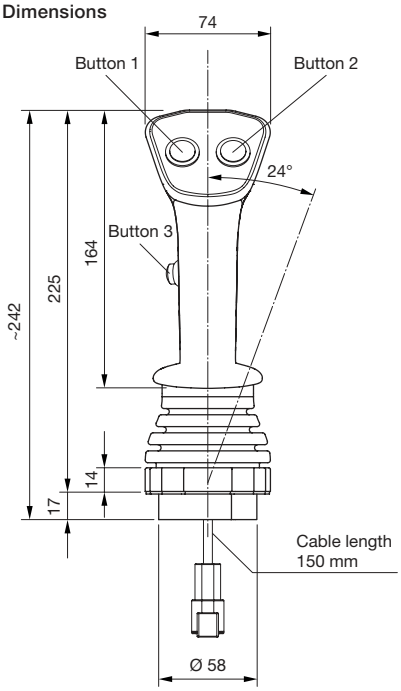
Technology
- Hall effect sensors

Connections
- Deutsch DTM04-4P (4-pole)

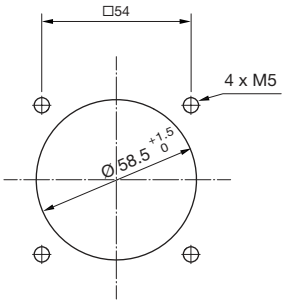
Ambient conditions
- Operating temperature
  –30 °C to +80 °C
- Storage temperature
  –40 °C to +85 °C

Protection degree
- IP65 front side

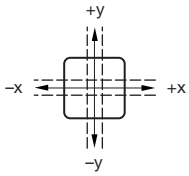
Dimensions



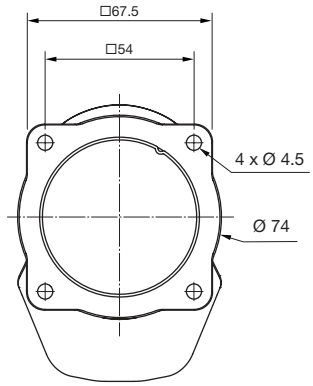
Mounting cut-out



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

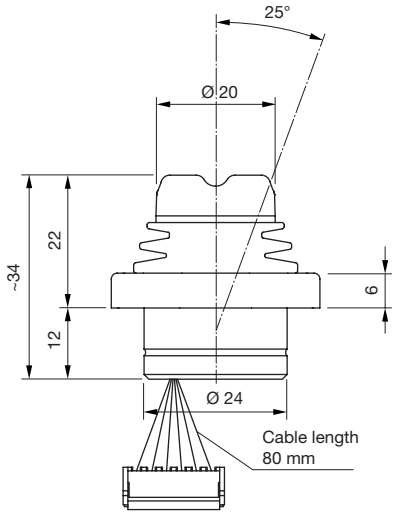
Technology
- Hall effect sensors

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

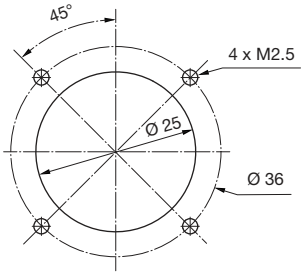
Ambient conditions
- Operating temperature
  –30 °C to +80 °C
- Storage temperature
  –40 °C to +85 °C

Protection degree
- IP65 front side

Dimensions



Mounting cut-out



Gate

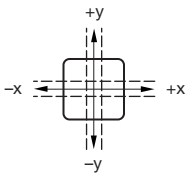
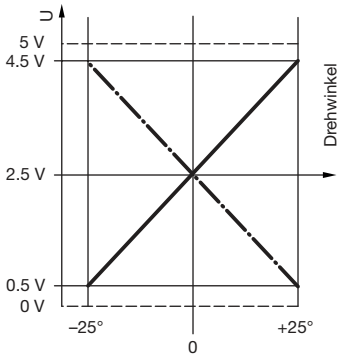
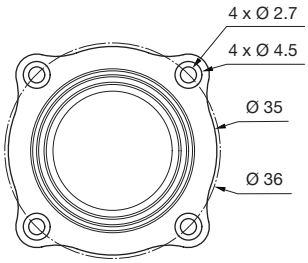


Diagram X-, Y-axis



View from bottom



All dimensions in mm.

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

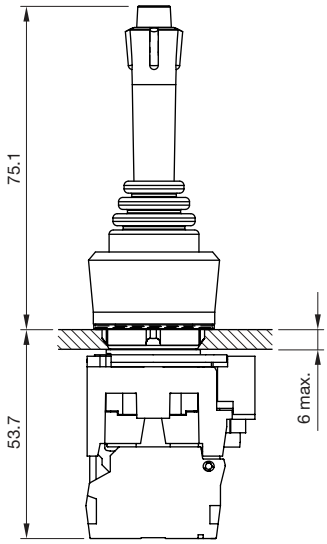
Electrical characteristics
- Operating voltage
  5 to 500 V
- Output signal
  AC15: 6A/24 V to 1.4A/500V
- Contact material
  silver

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

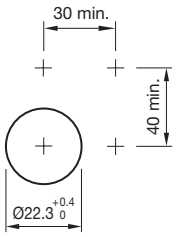
Degree of protection
- IP65, IP67 front protection
- IP20 or IP40 rear protection

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

Dimensions



Mounting cut-outs



All dimensions in mm.

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

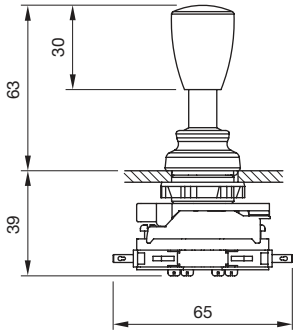
Electrical characteristics
- Operating voltage
  250 VAC
- Output signal
  5 A / 4 NC + 4 NO
- Contact material
  gold-plated silver alloy

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

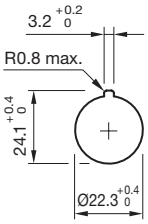
Degree of protection
- IP65 front protection
- IP20, IP40 rear protection

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

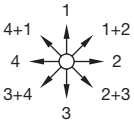
Dimensions



Mounting cut-outs



Wiring diagram



All dimensions in mm.

EAO Contact.
Your centre of excellence.

Headquarters

EAO Holding AG
Tannwaldstrasse 88
CH-4600 Olten
Telephone +41 62 286 92 00
info@eao.com

Manufacturing Companies

Switzerland
EAO AG
Tannwaldstrasse 88
CH-4600 Olten
Telephone +41 62 286 91 11
info@eao.com

EAO Systems AG
Tannwaldstrasse 88
CH-4600 Olten
Telephone +41 62 286 91 11
sales.esy@eao.com

China
EAO (Guangzhou) Ltd.
3/F, Block G4, South China
New Materials Innovation Park
31 Kefeng Road
Guangzhou Science City
CN-Guangzhou, PRC
Telephone +86 20 3229 0390
sales.ecn@eao.com

Germany
EAO Automotive GmbH & Co. KG
Richard-Wagner-Straße 3
DE-08209 Auerbach/Vogtland
Telephone +49 3744 8264 0
sales.esa@eao.com

North America
EAO Corporation
One Parrott Drive
Shelton
US-CT 06484
Telephone +1 203 951 4600
sales.eus@eao.com

Sales Companies

China
EAO (Guangzhou) Ltd.
3/F, Block G4, South China
New Materials Innovation Park
31 Kefeng Road
Guangzhou Science City
CN-Guangzhou, PRC
Telephone +86 20 3229 0390
sales.ecn@eao.com

EAO (Shanghai) Office
Rm.401, Lihpao Plaze,
NO.159 Shenwu Road,
Minhang District,
CN-Shanghai, 201106.
PRC
Telephone +86 21 6095 0717
sales.ecn@eao.com

France
EAO France SAS
27 rue Maurice Flandin
FR-69003 Lyon
Telefon +33 426 298 588
sales.efr@eao.com

Germany, Austria, Czech Republic, Poland, Slovakia
EAO GmbH
Langenberger Straße 570
DE-45277 Essen
Telephone +49 201 8587 0
sales.ede@eao.com

Hong Kong (Asia Pacific)
EAO (Far East) Ltd.
Unit A1, 1/F, Block A
Tin On Industrial Building
777 Cheung Sha Wan Road
Lai Chi Kok, Kln
HK-Hong Kong
Telephone +852 27 86 91 41
sales.ehk@eao.com

Italy
EAO Italia S.r.l.
Centro Direzionale Summit –
Palazzo C1
Via Brescia 26
IT-20063 Cernusco sul Naviglio (MI)
Telephone +39 029 247 0722
sales.eit@eao.com

Japan
EAO Japan Co. Ltd.
Net 1 Mita Bldg. 3F
3-1-4 Mita Minato-ku
JP-Tokyo 108-0073
Telephone +81 3 5444 5411
sales.ejp@eao.com

Netherlands, Belgium
EAO Benelux B.V.
Kamerlingh Onnesweg 46
NL-3316 GL Dordrecht
Telephone +31 78 653 17 00
sales.enl@eao.com

North America
EAO Corporation
One Parrott Drive
Shelton
US-CT 06484
Telephone +1 203 951 4600
sales.eus@eao.com

Switzerland
EAO Schweiz AG
Tannwaldstrasse 86
CH-4600 Olten
Telephone +41 62 286 95 00
sales.ech@eao.com

United Kingdom, Denmark, Finland, Ireland, Norway, Sweden
EAO Ltd.
Highland House
Albert Drive
Burgess Hill
GB-West Sussex RH15 9TN
Telephone +44 1444 236 000
sales.euk@eao.com

EAO_MC_09_Main-Catalogue_EN