eao

Your Expert Partner for **Human Machine Interfaces**

Series 82

Robust and attractive.

www.eao.com/82

Series 82

Robust and attractive.

With Series 82, EAO offers the optimal pushbutton for vandal-resistant, stylish HMI controls *used in harsh industrial environments, public areas and access control.*

EAO, the expert partner for Human Machine Interfaces (HMIs), offers its visually attractive Series 82 range of pushbuttons that are resistant to vandalism and sealed for use in harsh environments.

With their robust stainless steel, brass or anodised aluminium housings, these innovatively designed switches are protected according to IK10 impact resistance and IP65/IP67 sealing requirements, which makes them ideally suited for exposed public use and industrial applications.

The switches are available with momentary or maintained action, and with or without LED illumination. Choose from single or bi-colour LED's and central dot or modern ring illumination.

Typical applications

- Ticketing and vending machines
- Machinery and factory equipment
- Food and beverage
- People movers
- Access control and security systems
- Audio and video equipment
- Medical equipment
- Heavy duty and special vehicles
- Buses and coaches

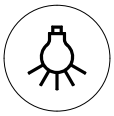
Laser Markings

Using a CO_2 laser, it is possible to engrave practically any symbol or text in any language onto the flat lens stainless steel versions of Series 82 products. Laser markings provide an attractive high contrast dark grey legend that is durable and resistant to fading.

Standard symbols

Various standard symbols are available.
Here are a number of examples:

On/Off	Standby	Info

Light	Bell	Door open
		

Advantages.

- Vandal-resistant: Impact resistant to IK10, front protection up to IP65/IP67
- Gold-plated silver contacts available for low voltages and currents
- Optional single or bi-colour LED illumination and laser markings
- Excellent tactile feedback
- Long service life: >1 million cycles of operation

Materials
- Stainless steel SUS 304/316L
- Aluminium (natural anodised), other colours on request

Mechanical characteristics
- Mechanical lifetime: >1 million cycles of operation
- Actuation force: 3.5 N to 7 N
- Terminals: Plug-in terminal 2.8 mm x 0.5 mm, screw terminal, M12 connector or cable connection

Operating data switching element*

Silver Contacts

	Minimum Values	Maximum Values
Voltage	17 VAC/DC	240 V
Current	50 mA AC/DC	3 A

Gold plated Silver Contacts

	Minimum Values	Maximum Values
Voltage	1 VAC/DC	24 V
Current	5 mA AC/DC	200 mA

* according to UL 508

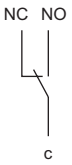
For specifications of the minimum switching capacity see details in the online catalogue.

Switching system
- Switching element: Snap-action switching element
- Contact arrangement: NO/NC contact (changeover)
- Switching action: Momentary or maintained
- Contact materials: Silver alloy or gold-plated silver alloy

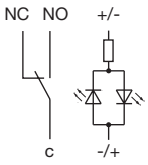
Switching element
- Contact resistance: ≤50 mΩ, according to IEC 60512-2 (standard version, in new state)
- Dielectric strength: 1500 VAC, according to IEC 60947-5

Wiring diagram

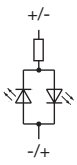
Pushbutton



Illuminated pushbutton



Indicator



Further information and the Online Product Configurator are available at www.eao.com/82

Series 82. Enhanced protection. Fast mounting.

It is common to expose pushbuttons and indicators to extremely harsh operating conditions. For example in the food and beverage industry, where alkaline cleaning agents and corrosion severely affect HMIs. In addition, external factors in the form of hard-to-remove dirt, fine dust, along with severe vibrations and blunt impacts commonly encountered in heavy-duty and special-vehicles applications also require HMIs to offer a very high level of resistance.

Series 82 offers product variants that fulfil these high requirements thanks to reliable, enhanced protection. These versatile pushbuttons which are overmoulded at the rear are available with an integrated M12 connector or with cable connections.

In addition to the overmoulded rear of the device and associated resistance to vibration and impact, both of these robust and attractively designed illuminated pushbutton variants also feature a housing made from SUS 316L stainless steel. In addition, a cleaning-agent-resistant Tritan light guide provides protection against wear and tear and ensures consistent clarity of both the dot and the ring illumination.

For the pushbuttons and indicators with lasered symbols, the integrated D shaped anti-twist protection in these robust Series 82 variants allows quick installation and easy alignment of the symbols in control panels and other HMIs.

Advantages

- Easy and flexible mounting thanks to M12 connector and cable options
- Low back panel depth with 90°-offset version.
- Housing made of SUS 316L stainless steel
- Cleaning-agent-resistant Tritan light guide
- Overmoulded on the rear with IP67 protection and high resistance to vibration and impact

The overmoulded rear, IP67 protection and vibration-resistant connection options enable an extremely resistant HMI connection, making this option ideal for use in challenging environments.

Overmoulded and with M12 connector.

These switches utilise a robust M12 connector. This connection method saves customers time when it comes to mounting as well as enabling a highly resilient HMI connection. The rear of the device is also IP67-compliant thanks to the overmoulding of the switch and connector, ensuring that the HMI has complete and reliable protection. The overmoulded version also offers very high resistance to vibrations and impact.

The optional enhanced protection is available for selected 22 mm diameter illuminated pushbuttons with a maximum switching voltage of 35 VDC. Overall, this version of the Series 82 illuminated pushbutton is ideal for extremely harsh operating conditions that require reliable complete protection with no compromises.

Typical applications

- Food and beverage industry
- Machinery and production facilities
- Marine applications

Overmoulded and with cable connection.

Series 82 pushbuttons with cable connections are also overmoulded, meaning extended rear protection with IP67 protection and excellent resistance to vibration and impact. These pushbuttons are equipped with a 200 mm cable that is available in a straight version or with a 90° offset from the product, depending on the application or customer requirement. This offers advantages in terms of flexibility in mounting, with the 90°-offset cable exit point also enabling use with low-depth back panels.

The products can be optimised for the different application and mounting scenarios by selecting the appropriate connector. The cable version with M12 connector is intended for use in machinery and is impressively robust and easy to mount while the cable version with tin-plated cable also offers R118 certification, making this product version ideal for applications in heavy-duty or special-purpose vehicles.

Typical applications

- Food and beverage industry
- Machinery and production facilities
- Heavy-duty and special vehicles
- Passenger transportation systems and busses
- Access control and security systems
- Ticketing machines and vending machines

Series 82. With illuminated symbols.

Vivid and robust LED status indication.

Many HMI applications require status feedback to ensure that they function reliably or can be operated conveniently. For example, the user must be able to know at all times whether the machine or device is switched on or off. Such feedback is just as important in the food and beverage industry as it is with measurement machinery or medical devices. In harsh operating conditions such as those found in heavy duty or special vehicles, visual HMI feedback is very often useful and sometimes even indispensable. Illuminated symbols for pushbuttons also provide quick and easily understood visual recognition of operational status.

Illuminated symbols meet these requirements with vivid LED illumination. Whether for status indication or easy location, the red, green, blue, white or red/green LEDs with standard symbols (others on request) provide high-contrast, high-visibility illumination.

Combined with its modern Series 82 design, the added benefit of attractive symbol illumination enhances both the visual appeal and functionality of any application along with a high degree of front protection (IP65/IP67) and a long service life.

In all, symbol illumination is ideal for a variety of applications that impose strict requirements – in terms of design and functionality.

Advantages

- High-contrast, vivid illuminated symbols
- Robust, attractive and modern design
- High IP65/IP67 protection and long service life
- Single or bi-colour LEDs available
- Standard symbols available (others on request)

Illuminated symbols (others on request)

On/Off	Standby	Info

Bell	Door open	SOS

Properties and illuminations.

Electrical characteristics

- Rated insulation voltage 250 VAC
- Conventional thermal current: I_{TH} 5 A, according to CB
- Electrical life: > 50 000 cycles (full load)
- Switching capacity: AC-15 (cos φ 0.3) and DC-13 (according to IEC 60947-5-1)

	24 V	110 V	220 V
AC-15	1.0 A	1.0 A	0.5 A
DC-13	0.7 A	0.2 A	0.1 A

Ambient conditions

- Temperature
  – Storage temperature –40 °C … +80 °C
  – Operating temperature –30 °C … +70 °C
- Operating humidity: 45 % … 85 % RH (no condensation)
- Front protection: IP65, IP67, according IEC 60529
- Impact resistance: IK10, according to IEC 62262
- Approvals: CE, CB, UL, C UL, CCC

Please note

All specifications refer to the standard versions.

LED illumination

- Red
- Green
- Yellow
- Blue
- White
- Red / green bi-colour

LED, series resistor and polarity protection are built in.

Single LED

Voltage	Tolerance	Current
6 VAC / DC	±10 %	7 mA
12 VAC / DC	±10 %	7 mA
24 VAC / DC	±10 %	7 mA
110 VAC	±10 %	2 mA
230 VAC	±10 %	1.5 mA

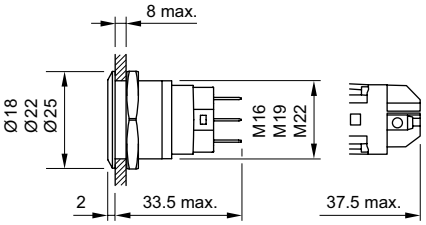
Bi-colour LED

Voltage	Tolerance	Current
24 VDC	±10 %	7 mA / 7 mA

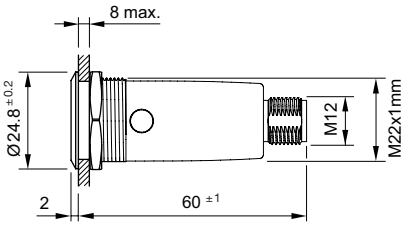
Dimensions, mounting and terminals.

Dimensions

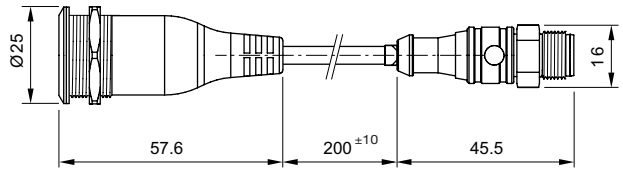
Plug-in terminal | Screw terminal

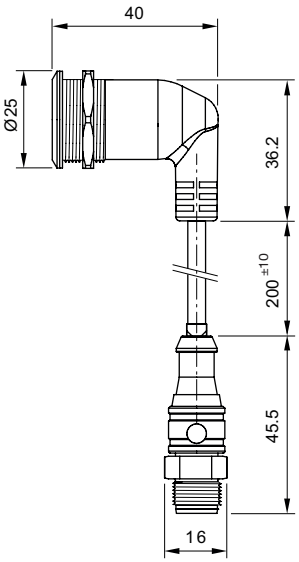


Terminal M12

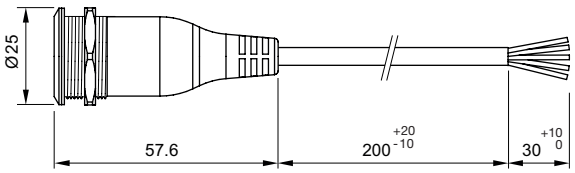


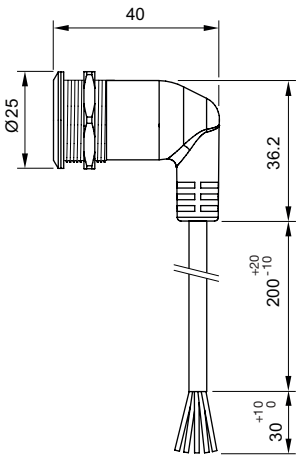
Cable connection with connector M12





Cable connection

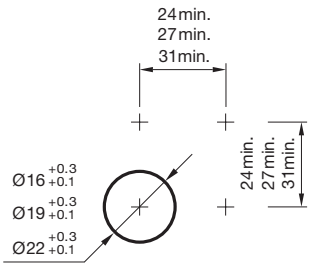




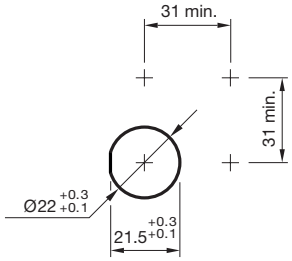
Mounting cut-outs

Standard version

Ø 16 mm, Ø 19 mm, Ø 22 mm



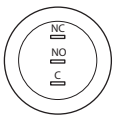
Cable connection, cable connection with connector M12



Terminals

Plug-in terminal

Pushbutton

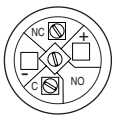


Illuminated pushbutton

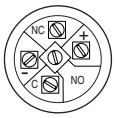
Indicator

Screw terminal

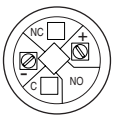
Pushbutton



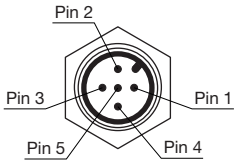
Illuminated pushbutton



Indicator

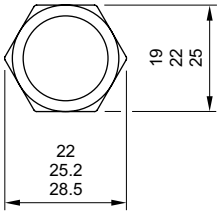


Connector M12, cable connection with connector M12

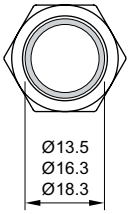


Front view

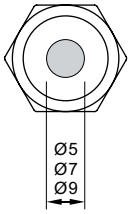
Non-illuminated



Ring illuminated



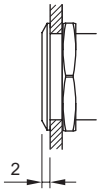
Central dot illuminated



Front ring | Lens | Illumination

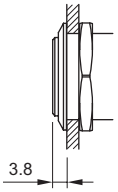
flat / flush

ring/dot



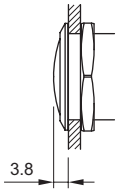
flat / raised

ring



flat / convex

ring



raised / convex

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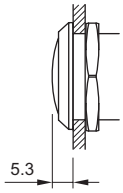


Reliable assembly. Short delivery times.

Thanks to our international production sites and our global delivery and support centres, we offer you efficient, sustainable logistics and can optimise your supply chain.

With four value-creating partners in Europe, Asia and North America, as well as other strong partnerships around the world, we are able to offer the following:

- Qualified vendors worldwide
- Consistent multi-location processes
- Integrated quality measures throughout the supply chain

To us, speedy assembly, short delivery times and secure processing are all part of good customer service.

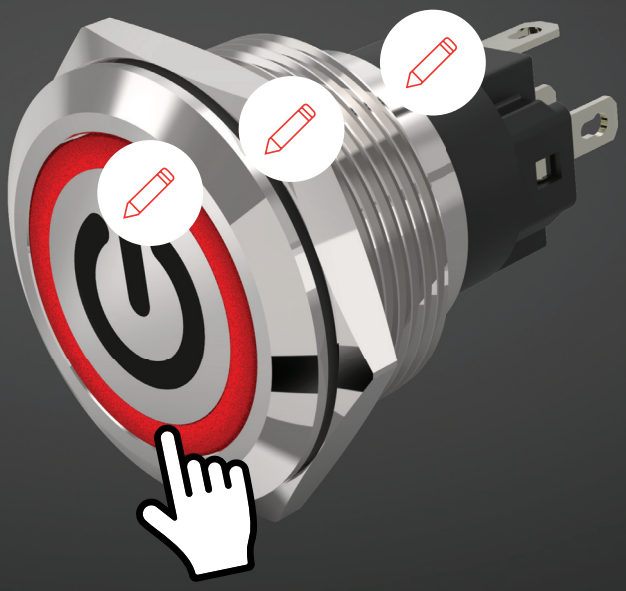
Part number system (standard version)

Series	–	Diameter		Material		Bezel/Lens		Connection/ SE Contacts		.	Switching action		Illumination		LED colour		LED voltage		.	Laser Engraving	
82		4	16 mm	1	Stainless steel	5	flush/ flat	1	Plug-in/ Silver		0	Indicator	0	no LED	0	no LED	0	no LED		B001	On/Off
		5	19 mm	5	Aluminium natural anodized	6	flush/ raised flat	2	Srew/ Silver		1	Momentary	1	Ring	1	red	2	6 VAC/ DC		B002	Stand By
		6	22 mm			7	flush/ convex	3	Plug-in/ Gold plated		2	Maintained	2	Dot	2	blue	3	12 VAC/ DC		B003	Light
								4	Screw/ Gold plated				A	Symbol illumination	3	green	4	24 VAC/ DC		B004	Information
								5	Cable without connector, 180°/silver						4	yellow	5	110 VAC		B005	Bell
															5	white	6	230 VAC		B006	Door open
								7	M12 connector, integrated, silver						A	red/ green bi-colour				BXXX	Any other symbol
								A	Cable with M12 connector, 180°/ silver												
								C	Cable without connector, 90°/silver												
								G	Cable with M12 connector, 90°/ silver												

Please note

The overview of the part number system does not conclusively show the product portfolio of Series 82 and not all combinations can be realised.

Online Product Configurator

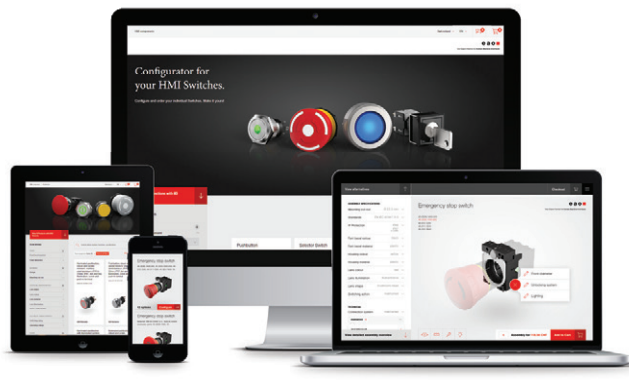


Configure your Series 82 products.
Quick and easy to your HMI Device.

Visit us at hmi.eao.com

- Intuitive use
- Numerous product combinations and variants
- Responsive user interface
- Photorealistic 3D representations
- 3D CAD data and datasheets
- 24 h ordering – fast delivery

Configure and order your Series 82 Switches.
Make it yours!



hmi.eao.com

eao

Your Expert Partner for **Human Machine Interfaces**

Diversity and individuality in HMI Components.

EAO develops and manufactures one of the world's largest ranges of industrial HMI products.

A variety of mounting depths, designs and combinations of options make our products hugely versatile. But what makes every EAO component really stand out are the cutting-edge materials, innovative technologies, and complete user-friendly interfaces. We also modify our standard components individually in accordance with our customers' needs.

Design experts of EAO can simplify your search for the perfect products by analysing their exact application requirements and, based on their needs, determine the characteristics of the required components.

Because EAO offers one of the most comprehensive ranges of products, it is easy for everyone to select the right fit, according to:
- Electrical ratings – the right specifications for the task
- Actuation preferences – the most appropriate switch type
- Physical configuration and mounting needs – style and placement
- Special requirements – illumination and symbols
- International and market approvals

HMI functions
Some of the HMI functions that EAO offers are:
- Pushbuttons
- Illuminated pushbuttons
- Mushroom-head pushbuttons
- Selector switches
- Keylock switches and key-insert switches
- Indicators
- Buzzers
- Potentiometer
- E-Stops and stop switches
- Door opening pushbuttons
- And many more

HMI features
EAO's engineers analyse the application requirements of our customers. This ensures that our HMI Components always perform to the correct standard for:
- Front protection
- Switch rating
- Mounting cut-out
- Terminal selection
- Certification
- Design
- Ergonomics
- Materials

Value Added Services
EAO makes it simple for designers to find the perfect equipment by analysing customers' exact application requirements and making the following adaptations to suit their needs:
- Marking
- Illumination
- Enhanced mechanical design
- Enhanced electronic design
- Software
- Cables and connections
- Assembled products/kits

Expert manufacturers. EAO creates possibilities since 1947.

Founding year: 1947
Number of employees: 600
Headquarters: Olten, Switzerland
Manufacturing Companies: Switzerland, Germany, North America, China
Sales Companies: 10
Distribution countries: 50
Core markets: Transportation, Automotive, Heavy Duty & Special Vehicles, Machinery

EAO AG, a Swiss, family-owned company founded in 1947, has developed into one of the world's leading manufacturers of high-quality industrial switches, complete custom HMI panels and interface systems, and specialised automotive switch systems.

Efficient and modern development processes, effective global supply chains and skilled project and consultation management represent additional services that we offer our customers and business partners around the world.

Your solution-focused expert and partner
We do much more than just manufacture individual control elements. As a solution-focused partner, we provide the option of technically and mechanically customizing existing HMI Components in line with our customers' individual requirements. From simple control elements through to sophisticated HMI Systems, from serial production through to installation – we offer the entire range of HMI services and inspire the confidence of our customers.

Visit our website.

EAO.COM

EAO, the expert partner for Human Machine Interfaces (HMIs), offers a variety of innovative, intuitive and reliable HMI Products and Services.

Online product configurator
Build your tailored product in the online product configuration system and obtain technical specifications and 3D data at the same time. The right HMI for you, step by step: eao.com/products

EAO downloads
Find more extensive documents such as catalogues, data sheets, certificates and brochures to read and use for research: eao.com/downloads

Related documents
Find out more about our innovative, intuitive and reliable HMI Products and Solutions.

Series 14
Brochure

Series 45
Brochure

Series 61
Brochure

Series 84
Brochure

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Your centre of excellence.

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