

Series

**82**

*Robust and attractive.*

[www.eao.com/82](http://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
  - Elevators and people movers
  - Access control and security systems
  - Audio and video equipment
  - Medical equipment
  - Heavy duty and special vehicles
  - Buses and coaches
  - Marine applications

**Laser Markings**

Using a CO2 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
- Stainless steel chrome coloured
- Brass gold coloured (on request)
- Aluminium (natural anodised), other colours on request

### Mechanical characteristics

- Mechanical lifetime: > 1 million cycles of operation
- Actuation force: 4 N to 7 N
- Terminals: Plug-in terminal 2.8 mm x 0.5 mm or screw terminal

### 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 DIN EN 60947-5-4, methods of assessing the performance of low-voltage contacts.

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

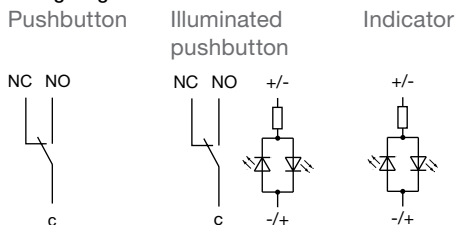
### Switching system

- 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:  $\leq 50 \text{ m}\Omega$ , according to IEC 60512-2
- Isolation resistance:  $> 1000 \text{ M}\Omega$ , according to IEC 60512-3
- Dielectric strength: 1500 VAC, according to IEC 60947-5

### Wiring diagram



Further information and the Online Product Configurator are available at [www.eao.com/82](http://www.eao.com/82)



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

## *Series 82. Overmoulded and with M12 connector.*



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### Enhanced protection. Fast mounting.

It is common to expose actuators and indicators to extremely harsh operating conditions. For example in the food and beverage industry, where alkaline cleaning agents and corrosion severely affect HMI. 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.

The overmoulded version of the Series 82 is capable of meeting these strict requirements offering reliable enhanced protection. These attractively designed illuminated pushbuttons feature a housing made from SUS 316L stainless steel and a Tritan light guide resistant to cleaning agents. These design features provide protection against wear and ensure consistent clarity of both the dot and the ring illumination.

The 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 voltage of 24 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
- Heavy duty & special vehicles
- Buses and coaches
- Marine applications

#### Advantages

- Complete IP67 protection for illuminated pushbuttons
- Tritan light guide resistant to cleaning agents
- Housing made of SUS 316L stainless steel
- High resistance to vibration and impact
- M12 connector for fast and resilient mounting
- 24 VDC illuminated versions available with red, green, white or blue LEDs

## 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 ( $\cos \varphi$  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  $-40^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$
  - Operating temperature  $-30^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$
- Operating humidity: 45 % to 85 % RH (no condensation)
- Front protection:  
IP65, IP67, according to IEC 60529
- Impact resistance:  
IK10, according to IEC 62262
- Approvals: CE, CB, UL, C UL, CCC

### 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	$\pm 10\%$	7 mA
12 VAC/DC	$\pm 10\%$	7 mA
24 VAC/DC	$\pm 10\%$	7 mA
110 VAC	$\pm 10\%$	2 mA
230 VAC	$\pm 10\%$	1.5 mA

### Bi-colour LED

Voltage	Tolerance	Current
24 VDC	$\pm 10\%$	7 mA/7 mA

### Please note

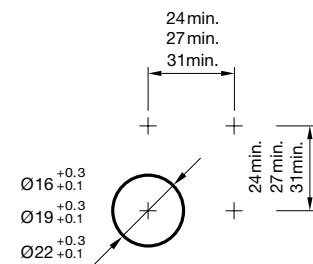
All specifications refer to the standard versions.



## Dimensions, mounting and terminals.

### Mounting cut-outs

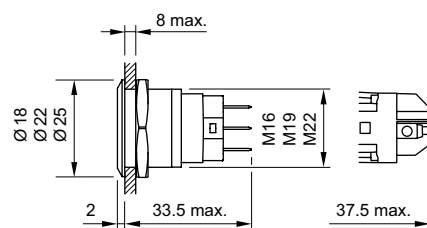
Ø 16 mm, Ø 19 mm, Ø 22 mm



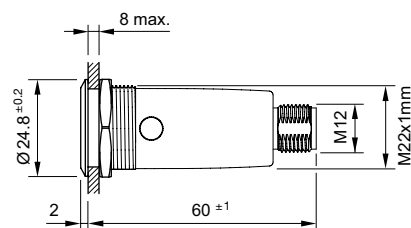
### Dimensions

Side view

Plug-in terminal | Screw terminal

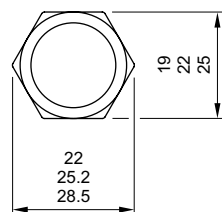


### Terminal M12

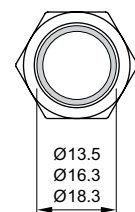


### Front view

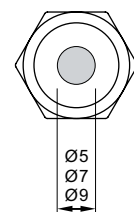
Non-illuminated



Ring illuminated

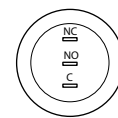


Central dot illuminated

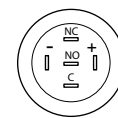


### Plug-in terminal

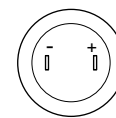
Pushbutton



Illuminated pushbutton

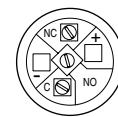


Indicator lamps

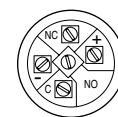


### Screw terminal

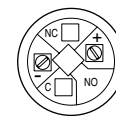
Pushbutton



Illuminated pushbutton



Indicator



### Front ring | Lens | Illumination

flat/flush

flat/raised

flat/convex

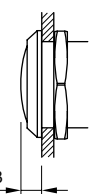
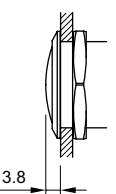
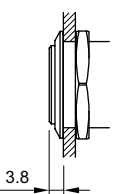
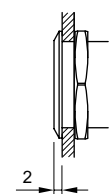
raised/convex

ring/dot

ring

ring

—



## 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.

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

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	2	Chrome colour	6	flush/raised flat	2	Srew/Silver	1	Momentary	1	Ring	1	red	2	6VAC/DC	B002	Stand By
	6	22 mm	5	Aluminium natural anodized	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
													4	yellow	5	110 VAC	B005	Bell
													5	white	6	230VAC	B006	Door open
													A	red/green bi-colour			BXXX	Any other symbol

### Part numbers of the overmoulded version with M12 connector

Diameter, front material, front design	Switching element, contact material	Connector	Switch function	Illumination	Part No.
22 mm diameter, stainless steel 316L, flush with flat lens	1 NO/1 NC change over switch, silver contacts	M12/5 pins	Momentary	No LED	82-6657.1000
				Red LED, 24 VDC	82-6657.1114
				Blue LED, 24 VDC	82-6657.1124
				Green LED, 24 VDC	82-6657.1134
				White LED, 24 VDC	82-6657.1154
			Maintained	No LED	82-6657.2000
				Red LED, 24 VDC	82-6657.2114
				Blue LED, 24 VDC	82-6657.2124
				Green LED, 24 VDC	82-6657.2134
				White LED, 24 VDC	82-6657.2154



## *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](http://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](http://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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