

Series
45

Innovative and comprehensive.

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Series 45

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Modular, aesthetic and robust in use – EAO's new Series 45 unites an extremely broad range of machine operating functions with outstanding technical characteristics.

The machinery industry has constituted a key market for EAO of which the company's range of HMI Products and Systems has been correspondingly extensive. The new Series 45 once again sets new standards in terms of design, robustness, functionality, reliability and safety.

The innovative and comprehensive Series 45 from EAO offers safety in all functions and for every conceivable application in the mechanical engineering sector.

For EAO's partners in the mechanical engineering industry, this opens up unique new opportunities in the use of main operator panels, operator devices and handheld control units.

Series 45 from EAO unites an extremely broad range of machine operating functions with outstanding technical features. Penetration by dust and liquids is prevented even under the most adverse conditions. Resistant to aggressive cleaning agents, oils, lyes and other chemical substances, the actuators and indicators in the new Series 45 work perfectly each and every time.

Even high humidity and extreme fluctuations in temperature have no impact on functionality – even when control units are subjected to dust or water at high pressures (up to IP69K). Series 45 is therefore ideal for use in the most harsh conditions.

Their modular construction also ensures that these HMI Components all operate smoothly with each other. They are straightforward to install and can also be integrated easily into decentralised systems that are capable of performing every conceivable HMI function.

Functions of the comprehensive Series 45

- Indicator
- Buzzer
- Pushbutton
- Double pushbutton
- Illuminated pushbutton
- Emergency stop switch
- Stop switch
- Palm switch
- Mushroom-head pushbutton
- Keylock switch
- ID keylock switch
- Selector switch
- Potentiometer
- Toggle stick
- Toggle switch

Operating current of switching elements

Rated value	At AC-12	At AC-15	At DC-12	At DC-13
24V	10A	6A	10A	3A
48V	10A	6A	5A	1.5A
110V	10A	6A	2.5A	0.7A
230V	8A	6A	1A	0.3A
400V	8A	3A	0.3A	0.1A
500V	–	1.4A	0.3A	0.1A

Utilisation categories according to EN IEC 60947-5-1.

Operating voltage of illumination elements

- 6–24 VAC / DC
- 24–240 VAC / DC
- 110 VAC
- 230 VAC

EAO, the expert partner for Human Machine Interfaces (HMIs), offers a variety of innovative, intuitive and reliable products and services for the machinery industry.

Advantages.

- Comprehensive and modular Series
- Rugged in use (up to IP69K)
- Easy to assemble and use
- Modern design with many options
- Value Added Services

Attractive front appearance

Thanks to high-quality metal, attractive plastic versions and the flush design, the Series 45 is predestined for aesthetically designed panels. Simultaneously, the HMIs are protected up to IP69K depending on function.

Modern illumination

Many Series 45 functions can be illuminated. Only modern LED technology is used, which ensures both a long service life and low energy consumption.

Approvals

- UL
- CCC
- CSA
- CE

Worldwide certified

Comprehensive and worldwide valid certificates and approvals allow almost unlimited application possibilities of Series 45 – even under severe environmental conditions.

Long service life

Series 45's service life of up to 10 million switching cycles (depending on function) is crucial for machinery operating over long periods – preferably without maintenance. The reliable Series 45 is mechanically and electrically designed for this exact purpose. At the end of the service life, the modular system allows any single component to be easily replaced, saving time and money.



HMI Functions of Series 45.



Indicator

Series 45 indicators are particularly intuitive and reliable status indicators, making them the first choice in almost all machinery. Their full-face, harmonious and dazzle-free illumination with 29.45 mm or 38 mm lens caps, all-round visibility, the wide range of marking options and IP69K front protection mean these robust indicators can even be used in harsh industrial environments.

The indicators are available with full-face or front illumination and can be marked using marking plates or with legend plates. The premium metal or plastic design is available in a broad spectrum of colours and makes the indicators from the 45 Series as attractive as they are diverse. The bi-colour version is especially suited to allow one device to display two different states.

- Harmonious illumination
- Full-face or front illumination
- Bi-colour version available
- 6 to 230 VAC
- A wide range of marking options
- IP69K protection



Buzzer

The Series 45 buzzers impress both with their outstanding acoustic features and compact design. They can be operated over a wide voltage range and can generate a signal tone of up to 95 decibels (dB) at a frequency of 2.4 kHz.

This all-purpose device also offers a compact design with a screw connection and is available in plastic or metal variants.

- All-purpose
- Signal tone of up to 95 dB
- Compact design
- Plastic and metal variants available
- All standard voltages accommodated



Pushbutton

The pushbuttons from Series 45 are suitable for all applications in the construction of machinery and control equipment. These actuators are intuitive to operate, provide good tactile feedback, have a long service life of up to 10 million switching cycles and are robust in use thanks to their high front protection (up to IP69K).

A large choice of actuation surfaces and colours together with a wide range of minimum and maximum switch ratings make the pushbuttons from Series 45 ideal for use in a broad variety of applications.

- Long service life
- IP69K protection
- Good tactile feedback
- Plastic or metal front
- Wide range of colours



Double pushbutton

The aesthetic and robust Series 45 double pushbuttons offer additional potential for applications with the second, separate button. They are a cost effective and space saving solution that provides two separate pushbuttons in a single actuator body. Double pushbuttons are simple to mount and they are ideal for machinery control functions such as Stop/Start.

There are both red/green and black/white buttons along with choice of flush to the bezel and raised button profiles. Choose from plastic, or metal front bezel construction and optional illumination and add up to three contacts per pushbutton.

- Compact construction – two switches in one
- Range of colours and marking options
- IP69K protection
- Optional illumination
- Plastic or metal versions
- Up to 3 contacts for each pushbutton



Illuminated pushbutton

Series 45 pushbuttons offer bright uniform LED illumination, they are intuitive to operate, provide clear tactile feedback and have a long mechanical service life of up to 3 million switching cycles. Their robust design with attractive metal or plastic construction prevents dust and liquid ingress to ensure reliable operation even in the most extreme industrial applications.

A large choice of actuation surfaces and illumination colours together with a broad spectrum – from minimum to maximum switch ratings - make the illuminated pushbuttons from Series 45 ideal for use in an enormous range of applications.

- Robust metal or plastic construction with IP69K protection
- Fast and simple assembly without the use of special tools
- Attractive design with uniform LED illumination
- Long mechanical service life of up to 3 million switching cycles
- Modular construction with many standard and customer-specific options



Emergency stop switch

Series 45 emergency stop switches offer reliable protection for both man and machine in the event of application malfunctions – on a factory conveyor belt, for instance. Thanks to intuitive operation and IP69K rated features, these switches perform safely and securely as often required in harsh, industrial environments.

Series 45 emergency stop switches are foolproof and perform reliably over a wide range of switched currents. In addition, the actuators are resistant to impact, vibration and shock and can be optionally illuminated. They enjoy an extremely long service life of up to 300 000 switching cycles and are internationally approved.

- Reliable switching
- Optional illumination
- Robust, lasting construction
- IP69K protection
- Key, twist or pull to release options
- Different actuator shapes and sizes



Stop switch

Unlike emergency stop switches, stop switches from Series 45 do not need to be foolproof. Also available with illumination, they are used primarily as on/off switches for safe switching in mechanical engineering applications.

The wide range of minimum and maximum switch ratings combined with resistance to impact, vibration and shock (up to IP69K) and long service life of up to 300 000 switching cycles enable the stop switches from Series 45 to be used in all applications.

- Up to 6 switching elements
- Long service life
- Suitable for harsh environments
- IP69K protection



Palm switch

Thanks to its extra-large operating area, the clearly visible palm switch is ideal for use in harsh environments when sudden, uncoordinated movements must suffice to trigger a certain command. The device can either be operated with a flat hand, work gloves, or with an elbow.

The palm switch is shipped pre-installed in an enclosure. The choice of switching elements provides the customer with considerable flexibility in terms of configuring their device. The cable is connected on the upper or lower front side of the housing via a metric M20 threaded connection (the screw joint and switching elements are not included in the shipment). The palm switch is available in four standard versions: either with a red lens, maintained action and a pull-to-release mechanism for the stop function, or with a black lens for momentary action.

- Extra-large operating area
- Also suitable for emergency stop functions
- Maintained or momentary action available
- Quick to install and easy to use
- Robust IP69K front protection



Mushroom-head pushbutton

Mushroom-head pushbuttons of Series 45 are used throughout the world – also in harsh industrial environments. These versatile pushbuttons are offered in 30mm, 40mm, and 60mm diameter actuators, illuminated and non-illuminated versions, plastic and metal options, a variety of colours, and momentary or maintained actions. Their unique design provides for easy operation, even with gloves.

Additionally, IP69K protection offers reliability in aggressive applications and proper switching in all conditions. Modular construction of this product Series accommodates up to six contact elements which supports flexibility to meet the demands of all customer needs. Despite this, the pushbuttons also provide good tactile feedback and a long service life of up to 10 million switching cycles. A wealth of potential configurations make the mushroom-head pushbuttons from Series 45 suitable for a very wide range of applications

- Large, distinctive operating area
- Easy operation – even with gloves
- Many configuration options
- Optional illumination
- Long service life (up to 10 million switching cycles)
- Rugged in use (IP69K)



Keylock switch

The safe and robust Series 45 keylock switches are ideal for reliably preventing inadvertent or unauthorised operation of machinery even in harsh industrial environments. They have a mechanical service life of up to 1 million switching cycles and enable switching of operating voltages from 5 to 500 V.

A switching angle of 45° or 90°, two or three switching positions, momentary or maintained action and various key removal positions open up a wide range of possible applications. An anti-rotation device and innovative snap-on design guarantee fast, intuitive assembly without the need for special tools.

- Safe and robust construction (up to IP69K)
- Reliable switching from 5 to 500 V
- Front protected against oil and dirt
- Long mechanical service life of up to 1 million switching cycles
- Wide range of possible combinations of switching angles and positions and further options
- Fast and intuitive assembly without special tools



ID keylock switch

Thanks to innovative Radio Frequency Identification (RFID) technology and an aesthetically pleasing design, EAO's new Series 45 ID keylock switches are ideal for implementing electronic access control systems in industrial environments with ease. The switches offer a low profile design to match other functions in the Series 45 range.

These intuitive actuators can authenticate up to four users or groups. The pre-programmed ID keys can each enable one digital output. All the user needs to do is insert the blue, red, yellow or green ID key – corresponding to his authorisation level – and this provides them with the pre-defined functions of the four 45° switching positions. The key can be pulled out at any time, which will disable the function immediately.

- Intuitive and ease of use
- Authentication of up to four users or groups
- Robust in use
- Modular construction and quick mounting
- Aesthetic design, matching Series 45
- Innovative RFID technology



Selector switch

Thanks to their many options and high degree of IP69K protection, Series 45 selector switches offer intuitive HMI control for applications often found within harsh industrial environments.

Their modern, ergonomic and modular design, combined with a choice of two, three or four switching positions, optional illumination, and momentary and maintained actions to provide the flexibility needed for a wide range of applications.

- Modern, ergonomic design with many options
- Two, three or four switching positions
- Metal or plastic construction
- Optional illumination
- Distinctive haptics
- Rugged in use (IP69K)



Potentiometer

Mechanically turning the user-friendly potentiometers from Series 45 makes it possible for the resistance of machinery to be adjusted steplessly over a rotational range of 280 degrees. The devices are available as plastic or metal variants and with a resistance of 1, 4.7, 10, 47, 100 or 470 k Ω .

In addition, the potentiometers from Series 45 are extremely robust thanks to their high front protection (IP69K).

- IP69K protection
- Long service life
- Easy mounting
- Rotational range of 280°
- Resistance from 1 k to 470 k Ω



Toggle stick

The toggle sticks from Series 45 are attractively designed, and provide smooth tactile feedback that makes them ideal for the intuitive and precise operation of coordinate-controlled machine functions.

With a service life of up to 250 000 switching cycles in each direction and front protection of IP65/IP67, the actuators are extremely robust and reliable. These toggle sticks are particularly attractive thanks to their metal or plastic construction. Furthermore, an anti-rotation device and innovative snap-on design guarantee intuitive and fast assembly without special tools.

- Intuitive and precise switching
- Robust and reliable in use (IP65/IP67)
- Intuitive and fast assembly without special tools
- Smooth tactile feedback
- Wide range of possible combinations
- Aesthetic design



Toggle switch

Toggle switches offer the user a clear visual indication of the switch position and are easy to use for intuitive control of equipment functions. The rugged construction and IP69K protection make the Series 45 ideal for universal use, even in harsh industrial environments.

These two position toggle switches offer excellent tactile feedback and are available with momentary, or maintained action and with plastic or metal bodies and bezels. Series 45 toggle switches offer a long service life and an ease of use.

- All-purpose
- IP69K protection
- Ease of use
- Plastic or metal versions
- Long service life
- Clear indication of switch position



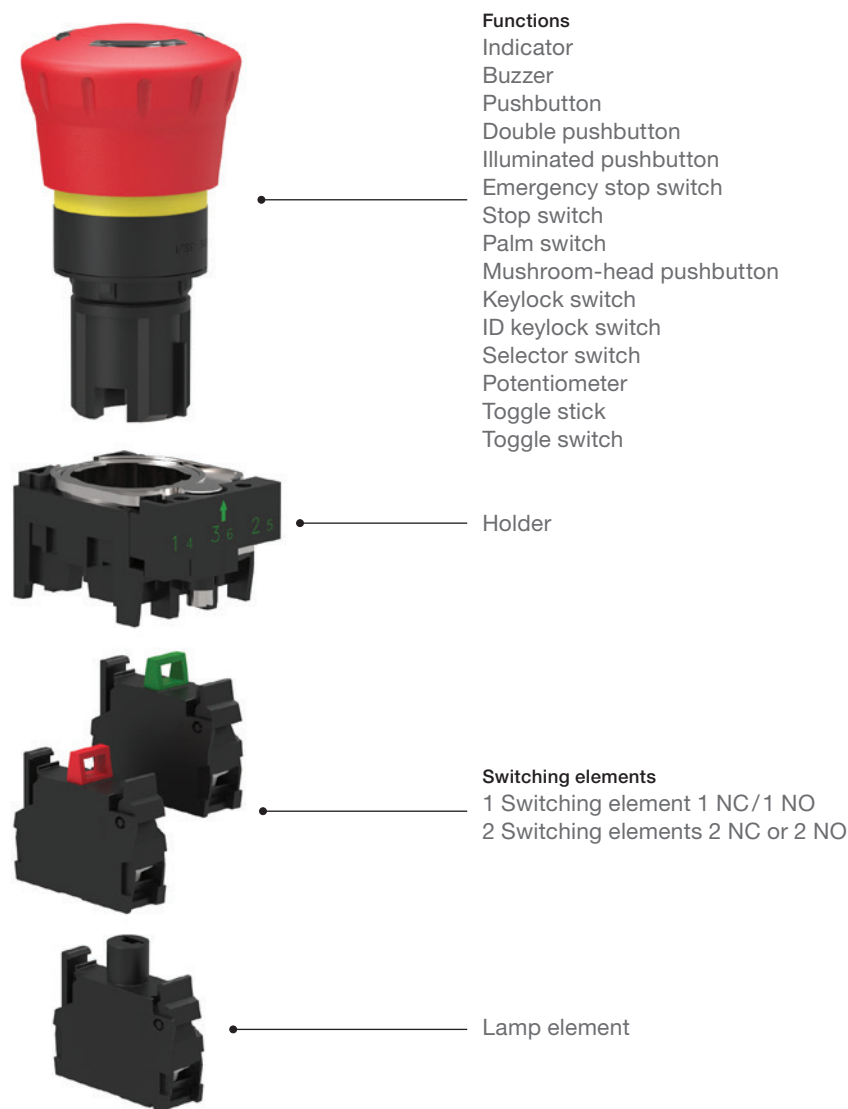
Enclosures

The Series 45 enclosures can be flexibly configured to meet specific needs – with 1, 2, 3, 4 or 6 mounting cut-outs of industry standard 22.3mm diameter and available in metal or plastic versions.

The all-purpose accessories are available in yellow or grey and with or without recesses for marking plates. They are also suitable for emergency stop switches with protective shrouds.

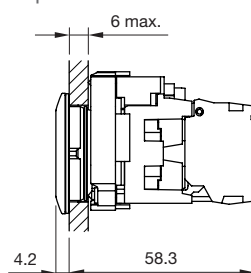
- With 1, 2, 3, 4 or 6 mounting cut-outs (diameter 22.3mm)
- Metal and plastic versions
- Available in yellow and grey
- Also suitable for emergency stop switches with protective shrouds
- Available with and without recesses for marking plates

Product structure of Series 45.

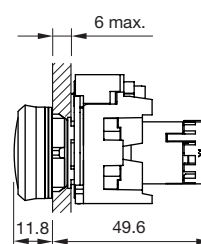


Dimensions and mounting cut-outs.

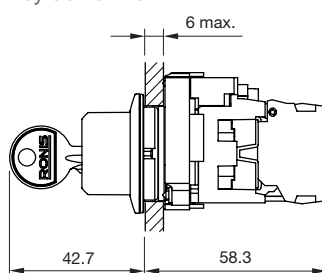
Dimensions flush design
Indicator/pushbutton



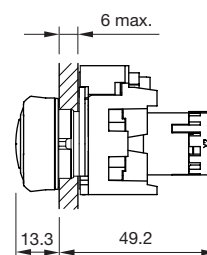
Duo Indicator



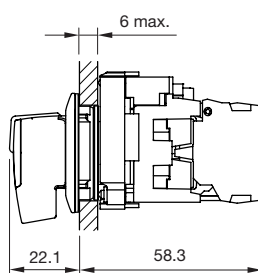
Keylock switch



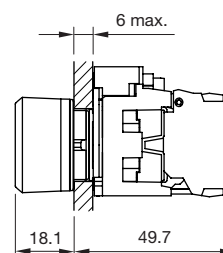
Buzzer



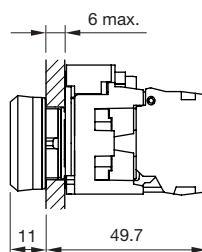
Selector switch



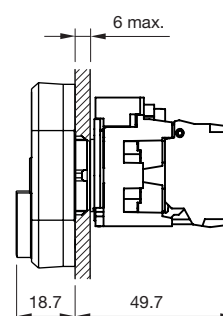
Pushbutton/illuminated pushbutton



Dimensions raised design
Indicator

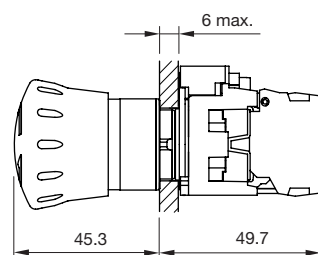


Double pushbutton

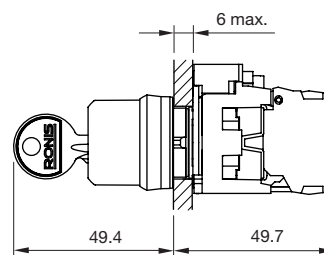


All dimensions in mm.

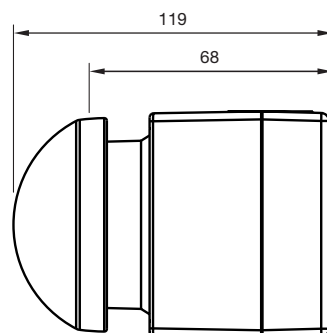
Emergency stop switch



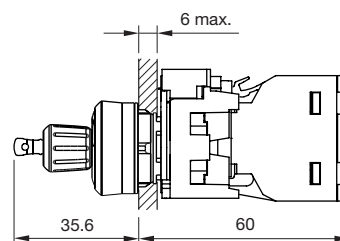
Keylock switch



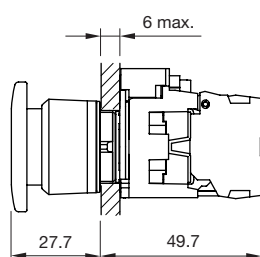
Palm switch



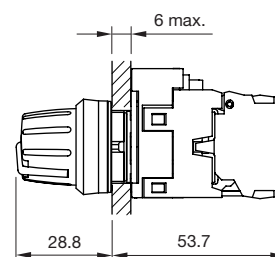
ID keylock switch



Mushroom-head pushbutton

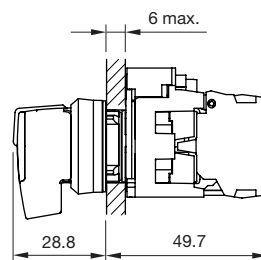


Selector switch round lever

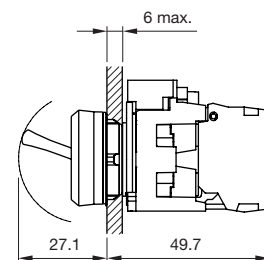


All dimensions in mm.

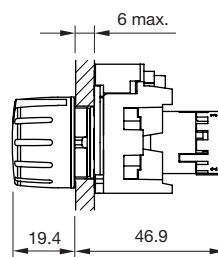
Selector switch long lever



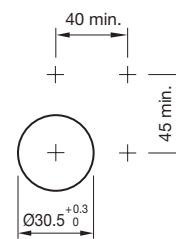
Toggle switch



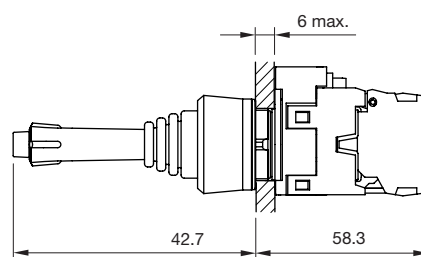
Potentiometer



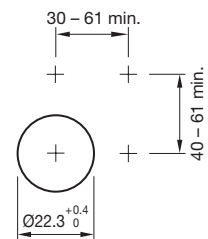
Mounting cut-outs flush design



Toggle stick



Mounting cut-outs raised design



All dimensions in mm.

Please find additional specifications in the product catalogue.

Adaptable. Your application – our strength.



Our comprehensive programme of standard components coupled with our ability to adapt and customise our products enable us to provide individually tailored solutions for a broad range of applications.

EAO products and solutions provide front protection against moisture, coolants, oil and dirt and are resistant to shock, vibration, dust and extreme fluctuations in temperature.

With long service life in mind, we develop reliable high-quality operating concepts for machines that comply with IP, NEMA, IEC, ADA, ANSI and OSHA specifications. Multifunctional utilisation and ease of modification make our products economical and suitable for use virtually everywhere.



Our HMI Components and Systems meet the specifications of the world's leading plant manufacturers in the realms of machinery and industrial automation technology and are used successfully in a wide range of industries.

Applications

- Food and beverages
- Semiconductor and electronics production
- Packaging systems
- CNC milling, lathing, grinding and boring equipment
- Tobacco production and process control
- Industrial lifting and handling automation
- Pharmaceutical and chemical production and process control
- Cooling and ventilation equipment
- Textile production, including equipment for preparing, drying, spinning and weaving
- Plus many other applications

You too can benefit from our impressive portfolio, which offers you the ideal solution for every conceivable HMI application.

HMI Functions and Features – At a glance.

	Series					
	14	45	61	71	82	84
Function						
Indicator	■	■	■	■	■	■
Buzzer	■	■	■			
Pushbutton	■	■	■	■	■	■
Double pushbutton		■				
Illuminated pushbutton	■	■	■	■	■	■
Emergency stop switch		■	■			■
Stop switch		■	■			■
Palm switch		■				
Mushroom-head pushbutton	■	■	■	■		■
Keylock switch	■	■	■	■		
ID keylock switch		■				
Selector switch	■	■	■	■		
Potentiometer		■	■			
Toggle stick		■				
Toggle switch		■				
Enclosure (accessory)		■				
Design						
Flush	■	■	■	■	■	■
Raised	■	■	■		■	■
Mounting cut-out						
16 mm			■		■	
19 mm					■	
22.3 mm	■	■				■
30.5 mm	■	■	■	■	■	■
Square/rectangular			■	■		
Terminal						
Soldering terminal	■		■			
Solder/Plug-in terminal	■		■		■	■
Screw terminal		■	■		■	
PCB	■		■	■		■
Spring-loaded terminal		■				
Front protection						
IP65	■	■	■	■	■	■
IP66		■				
IP67	■	■			■	■
IP69K		■				

Various combination options

Depending of application requirements, the broad range of Series 45 functions can be variously combined with other Series.

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

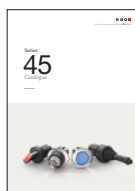
Find more extensive documents such as catalogues, data sheets, certificates and brochures to read and use for research: eao.com/downloads

Related documents

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



Machinery
Brochure



Series 45
Main catalogue



Series 61
Brochure



Series 71
Brochure



Series 82
Brochure



Series 84
Brochure

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