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Your Expert Partner for **Human Machine Interfaces**

Series 09

Universal Switch.

www.eao.com/09



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Series 09
Universal Switch.

The Series 09 universal switch is ideally suited for use in vehicle interiors. *Combining different switches enables a wide range of applications and layouts to be implemented.*

The Series 09 universal switch has been specially designed for use in vehicle interiors, particularly for cars, electric vehicles, buses, trucks and special vehicles. It is suitable for various applications as well as safety-relevant functions.

The high-quality Series 09 switches facilitate an almost unlimited combination of switching functions for wide-ranging applications in vehicles. They have a modular, ergonomic design and an appealing, durable surface coating with fantastic haptics and tactile feedback. In addition, illuminated symbols are available in accordance with ISO 7000 or as per the customer's preferences. The Series 09 universal switch is the best choice for numerous applications and is unique on the market with its variety of possibilities.

Versatile product options and configuration possibilities
The Series 09 universal switch is available in a range of designs and with many configuration options, making it suitable for a wide range of applications. The basic versions include switches with white symbol illumination, and the option of no, one or three red LED status indicators. Red symbol illumination for use as a warning light switch is also available as a standard configuration. Versions without a mechanical function, which are available as insertable indicators or blind plug, complete the range.

Typical applications
- Menu/reset button
- Lock/unlock
- Headlight on/off
- Heated seats/air-conditioning/fan
- Transmission control
- SOS and hazard light switch
- Various driving functions

Suitable for safety-relevant applications
This universal switch is suitable for safety-relevant applications. Diagnostic capability resulting from resistance coding (Namur) enables, for example, cable breakages and switching states to be detected. There is also the option of two redundant switching signals.

Manufacturer expertise and IATF 16949
Series 09 products are produced in our Centre of Automotive Excellence in Germany. This means we can apply our many years of comprehensive experience as an original equipment manufacturer (OEM) in the automotive sector to applications in the heavy-duty and special vehicles markets. At the same time, EAO customers benefit from high-quality, durable products and services. The development and production process is geared toward automotive standards (IATF 16949, 100 % product traceability, 100 % EOL testing, etc.).

Not just an expert, also a partner to the automotive industry
As a global partner to major vehicle manufacturers and subcontractors, we impress our customers with the excellent quality of our products and services. Thanks to our long-standing commitment and our comprehensive consulting services, we have served the automotive industry for many decades now as an established global subcontractor in the area of switches, subassemblies, control units and indicator units.

Please note
Information on the availability of the fully validated and certified products is available at:
www.eao.com/09-universal-status

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Advantages.

- Ideal for safety-relevant applications
- Wide range of designs and application-specific configuration options
- Ergonomic, modular design with IP5K4 protection rating
- ISO 7000 or custom symbols
- Developed and manufactured in accordance with IATF 16949

Illumination

LED symbol illumination
- Colour: white with luminance: ~20 cd/m²
- Colour: red (for hazard warning light) with luminance: ~90 cd/m²

LED status indicator
- Colour: red
  Luminance: ~200 cd/m²

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

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

Approvals and conformities
- E1 (ECE R10, ECE R118)
- CE
- Developed and manufactured in accordance with IATF 16949

Further information is available at www.eao.com/09

Notes

Customers must ensure that the products are correctly installed to comply with product and functional safety requirements.



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Ideal for your vehicle interior applications.

Versatile product variants

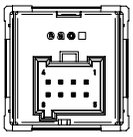
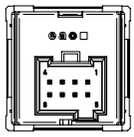
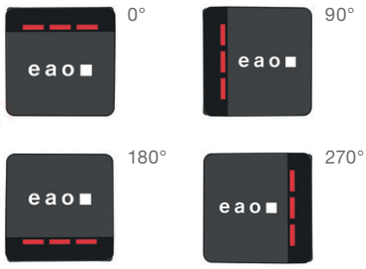
The Series 09 universal switch is available in two variants – STANDARD and DUAL CONTACT – and offers universal configuration options. The product variants and their configurations mean the Series 09 universal switch can be used for a wide range of applications – including safety-relevant functions such 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	✓	×	×

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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°			

Notes

× For this variant the option is not available

* For customized symbols, please send us the corresponding file

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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

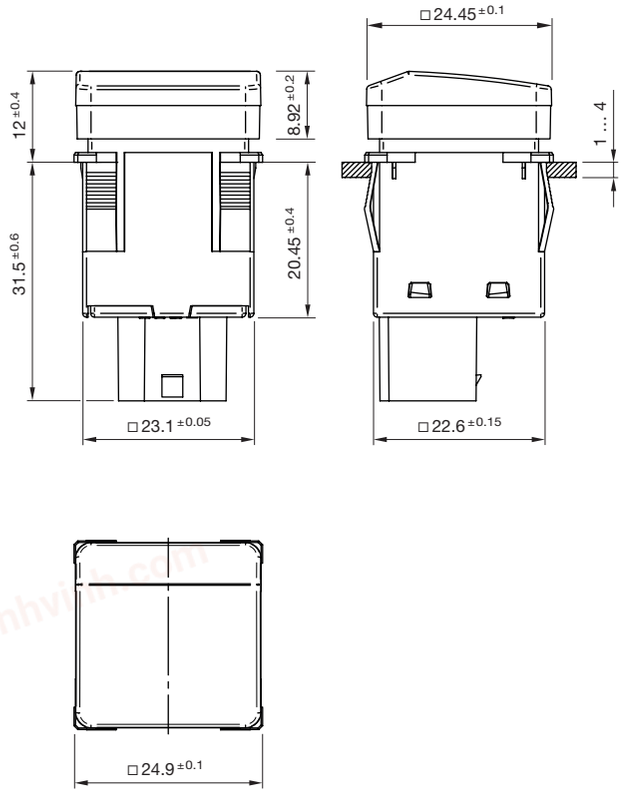
Ambient conditions
- Operating temperature
  –40 °C … +85 °C
- Storage temperature
  –40 °C … +85 °C

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

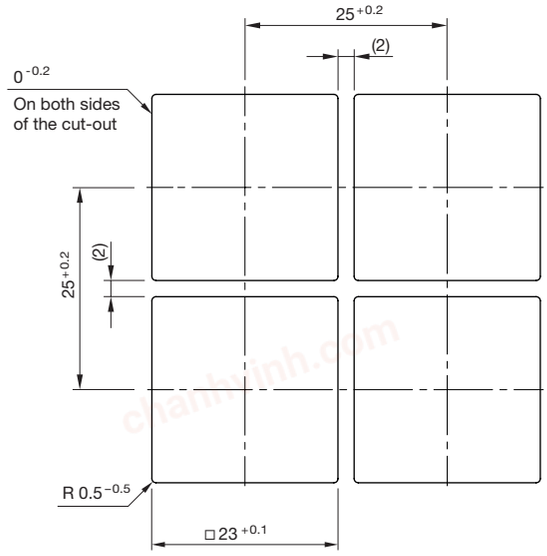


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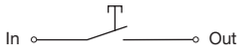
Dimensions
(All dimensions in mm)



Mounting cut-outs
(All dimensions in mm)



Wiring diagram
Standard (NO)



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.

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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

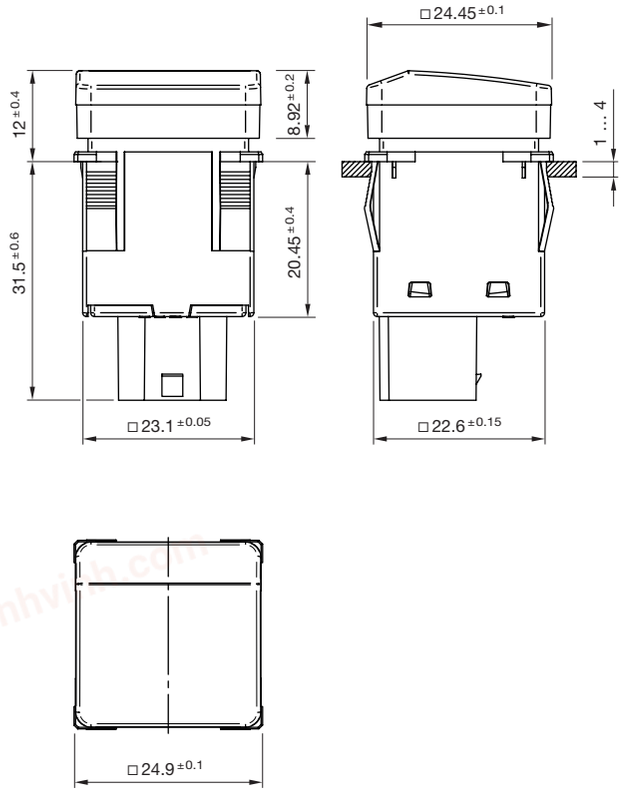
Ambient conditions
- Operating temperature –40 °C … +85 °C
- Storage temperature –40 °C … +85 °C

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

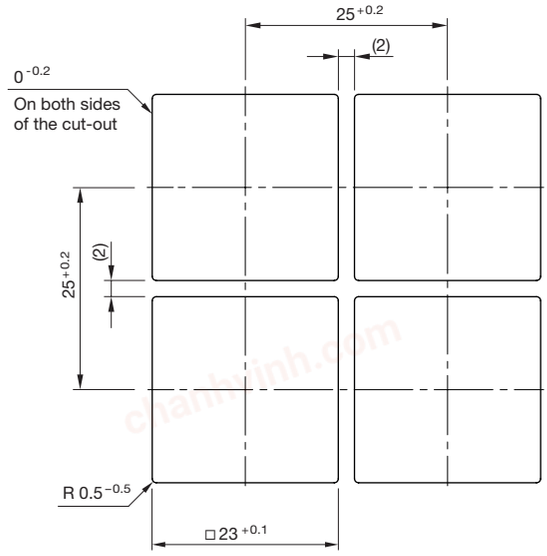


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Dimensions
(All dimensions in mm)

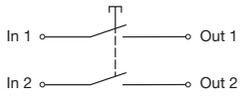


Mounting cut-outs
(All dimensions in mm)

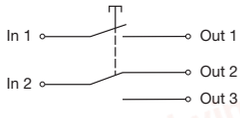


Wiring diagram

Dual Contact (NO/NO)



Dual Contact (NO/NC-NO)



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.

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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: Heavy Duty & Special Vehicles, Machinery, Transportation, Automotive

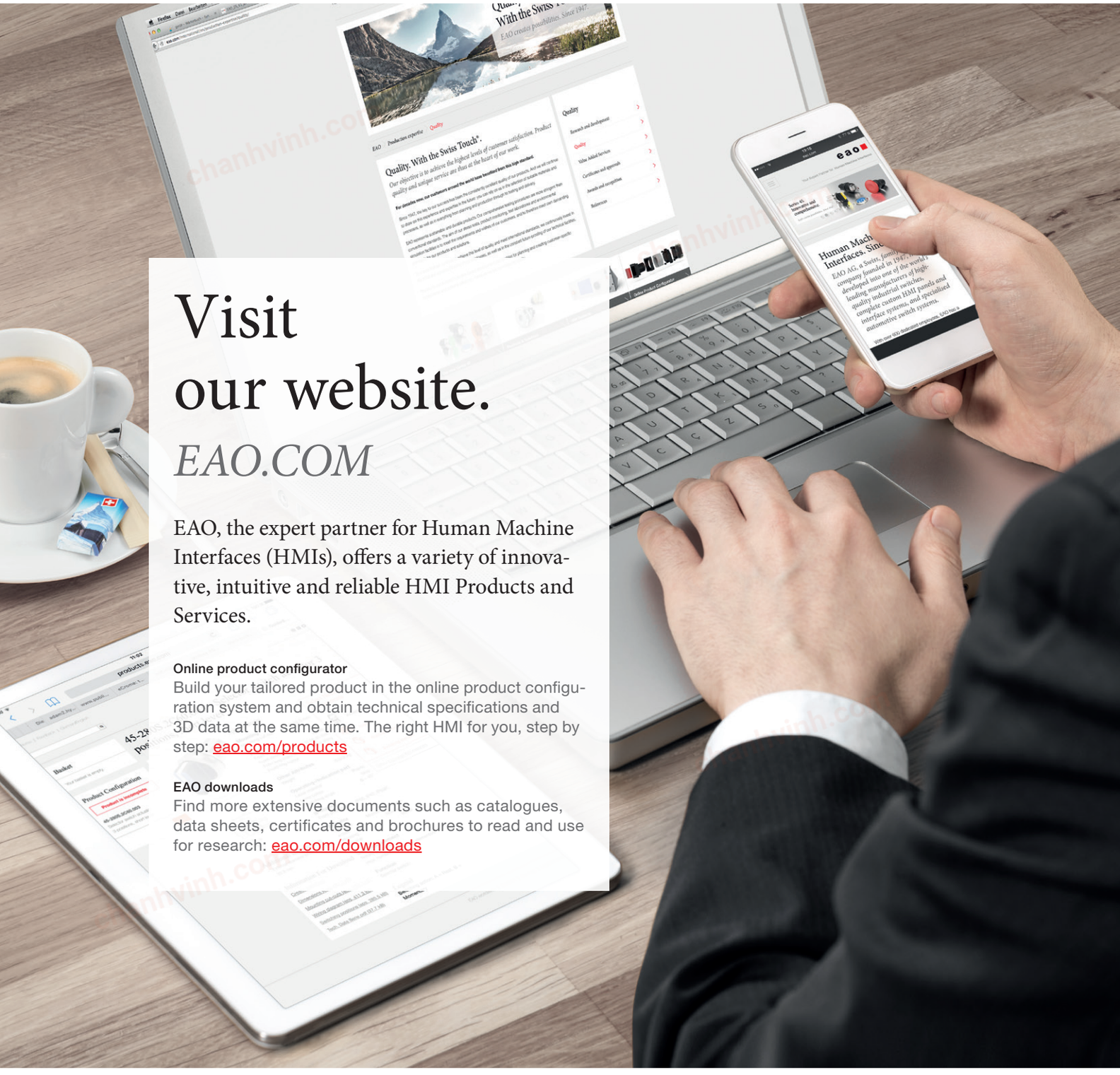
EAO AG, a Swiss, family-owned company founded in 1947, has developed into one of the world's leading manufacturers of high-quality switches, keyboards, sophisticated control elements, and complete HMI control units and HMI Systems.

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 customising 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.

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Brochure



Series 09
Brochure



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EAO reserves the right to change specifications without further notice.

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