

# HMI for buses and coaches. *Attractive and rugged.*

[www.eao.com/hgvs-and-buses](http://www.eao.com/hgvs-and-buses)





Attractive and rugged.  
*For applications in buses and coaches.*

Technological developments and modern vehicle design are becoming an increasingly critical aspect of commercial vehicles. *HMIs need to keep pace with this trend*

When travelling aboard travel coaches, HMIs aimed at enabling traveller comfort are used intensively over a longer period – both during day and at night.

Attractive HMI design and ergonomically friendly operation are essential to allow both the driver and passengers to travel in comfort. This necessitates intuitive symbols and bright illumination for controlling functions such as lighting, air conditioning, heating and entertainment services inside and outside the vehicle whether in ambient light levels or night-time conditions.

The ability to intuitively control functions aboard buses, for example when using the toilet facilities or a coffee machine, helps to enhance traveller comfort.

Equally, the ability for drivers of transit buses used in towns and airports to unlock and open doors and lower the chassis to facilitate passenger access is of great importance.

#### **Electric revolution**

The electric revolution in environmental zones is putting local public authorities under pressure when it comes to transformation into zero-emissions cities. Clean and quiet electric buses enable them to make local public transport more attractive and to comply with very strict specifications in relation to emissions and noise prevention. To meet these challenges, bus manufacturers require multi-functional solutions that can be easily integrated into the existing 'look and feel', without having to develop expensive custom solutions.

#### **New version of the ECE UN-R107/08 norm**

From 2022, a new version of the ECE UN-R107/08 norm for (public) buses comes into effect, the objective of which is to make vehicle access easier for passengers with restricted mobility and wheelchair users. A tactile surface, acoustic and visual feedback and a minimum visual contrast level are some of the new requirements for HMIs.

#### **Individual expert advice**

The versatile range of EAO products can be tailored to the specific designs, colour schemes and other demands of individual customers. EAO is a partner who can be relied on to develop practical and efficient solutions that meet the unique needs of its customers in every respect.

EAO – Your Expert Partner for Human Machine Interfaces.



Typical HMI mounting locations on a bus (several positions per application shown).

## EAO HMIs for numerous bus and coach applications.

**EAO's innovative, intuitive and reliable HMIs are ideal for numerous bus and coach applications – both currently and in the future.**

### Typical product/application combinations

#### Exterior

1. Passenger door opener  
Series 56 and 57 pushbuttons
2. Passenger door opener for wheel chairs  
Series 56 and 57 pushbuttons
3. Hidden functions for the driver  
Series 82 pushbuttons

#### Driver's cab

4. Door opener for driver  
Series 14 pushbuttons
5. Gear selector switch (also for electric buses)  
Pushbuttons of Series 14, 51, 82 and 84
6. Auxiliary functions like seat heating and ventilation, Series 09 CAN keypads, LIN panel and universal switch

7. E-Stop to interrupt the drive of electric bus (another E-Stop is near the electrical engine)  
Series 84 E-Stop

#### Passenger area

8. Stop request  
Series 84 pushbuttons (for pole and wall mounting)
9. Passenger door opener for wheel chairs  
Series 56 and 57 pushbuttons
10. Door status information  
Series 14 indicator compact
11. Passenger information  
Series 56 and 57 indicators

Further information is available at [www.eao.com/on-road-applications](http://www.eao.com/on-road-applications)



### A bus without driver – The future begins

The bus of the future will have no driver and with that in mind it is important to offer robust, durable, innovative solutions that ensure passenger safety. EAO's components and HMI solutions are designed for this new market and we are very proud to be a part of this new adventure.

With its reliable product series, EAO is already active in the new market for autonomous buses.



A bus without driver – The future begins.

# EAO door opening pushbuttons for buses.



Door opening pushbutton  
Series 56

- Unique tactile feedback and raised symbols
- Long-term reliability, even when mounted on glass
- Wide product range and customer-specific solutions
- Simple integration thanks to mounting options
- Single and double side versions available as well as indicators
- Customisable cable lengths and connectors

Symbol examples



Further information is available at  
[www.eao.com/56](http://www.eao.com/56)



Universal Switch  
Series 56

- Intuitive operation thanks to visual and tactile feedback
- Large actuation surface and various front bezel colours, with Braille option
- Low mounting depth (27 mm incl. M8 standard connector)
- Long, reliable service life (>5 million cycles of operation)
- Standard, ISO 7000 or customer-specific laser symbols
- Separate lenses and switching units for flexible stocking

Symbol examples



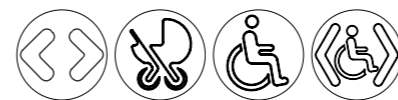
Further information is available at  
[www.eao.com/56-universal](http://www.eao.com/56-universal)



Door opening pushbutton  
Series 57

- User-friendly, extra-large Ø 74 mm operating area
- Raised symbols conform to TSI PRM & ADA
- Integrated finding tone aids visually impaired persons
- Two unique, individually illuminable feedback rings
- Protection degree front side IP69K/rear side IP67

Symbol examples



Further information is available at  
[www.eao.com/57](http://www.eao.com/57)

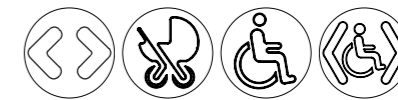


Door opening pushbutton glass mounting  
Series 57

In addition to the advantages of Series 57 door opening pushbuttons, this version offers:

- Glass mounting
- Suitable for 4–6 mm thick glass
- Simple, fast mounting process
- First choice to fully comply with EN 14752
- Available as double or single side version

Symbol examples



Further information is available at  
[www.eao.com/57](http://www.eao.com/57)



# Modular and reliable.



**CAN Keypad for Driver Cabs**  
Series 09

The innovative keypad is designed for E1 applications and developed according to IATF16949. With its CAN bus integration it is ideally suited for reliable use in trucks, buses and special vehicles. These control units can be flexibly combined together, either vertically or horizontally.

- RGB halo ring illumination for quick recognition of status
- Developed according to IATF16949
- Interchangeable ISO 7000 or customised symbols
- Intelligent HMI with CAN bus integration
- Innovative and ergonomic design sealed to IP5K4
- Clearly visible homogeneous symbol illumination
- Easy and quick installation with screw-in and clip-in mounting

Further information is available at [www.eao.com/09](http://www.eao.com/09)



**CAN RCC for Driver Cabs**  
Series 09

Designed for E1 applications, the rotary cursor controller has been developed according to IATF16949. With its CAN bus integration it is ideally suited for use in trucks, buses and special vehicles. Either vertically or horizontally, these control units can be flexibly combined together.

- RGB halo ring illumination for quick recognition of status
- Clearly visible homogeneous symbol illumination
- Developed according to IATF16949
- Innovative and ergonomic design sealed to IP5K4
- Easy and quick installation with screw-in and clip-in mounting
- Interchangeable ISO 7000 or customised symbols
- Intelligent HMI with CAN bus integration

Further information is available at [www.eao.com/09](http://www.eao.com/09)



**LIN Switch Panel**  
Series 09

Intelligent and reliable in vehicle interiors – The LIN Switch Panel has been developed for E1 applications and is ideally suited for use in vehicle or cab interiors. The panel contains nine switches with your choice of ISO 7000 or customer-specific symbols. The reliable LIN Switch Panel offers LIN bus integration which can be further multiplied and combined with other actuators and indicators. With its ergonomic and innovative design, superb haptics and high-quality surface finish, the LIN Switch Panel meets the requirements of numerous applications for interiors.

- Flexible application due to configurable switch assignment
- Intelligent HMI with LIN bus integration developed according to IATF 16949
- Ergonomic and innovative design
- Illuminated ISO 7000 or customised symbols
- Quick and easy installation by clip-in or screw-in mounting

Further information is available at [www.eao.com/09-lin-panel](http://www.eao.com/09-lin-panel)



# Attractive and versatile.



## Universal Switch Series 09

Attractive and versatile for vehicle interiors – The Series 09 universal switch is ideally suited for use in vehicle interiors. The combination of different switch configurations caters for a large range of applications and numerous design variants. The Series 09 universal switch has been developed for E1 applications, includes an integrated connector recess and is ideally suited for use in vehicle interiors – in particular for various switching controls in passenger cars, electric vehicles, buses, trucks and special vehicles.

- Ergonomic, modular design with IP5K4 protection
- ISO 7000 or customised symbols
- Mountable in standard DIN radio slot (DIN ISO 7736)
- Wide range of applications due to multi-status indication
- Snap-in mounting and two tactile styles (firm or soft)
- Numerous and quick customisation options

Further information is available at [www.eao.com/09-universal-switch](http://www.eao.com/09-universal-switch)



## Illuminated pushbutton Series 14

Attractive, compact and reliable – Series 14 enjoys timeless top-quality design, with pushbuttons and indicators for flush or raised mounting. In addition to its high degree of protection (IP67), Series 14 also provides excellent tactile feedback.

- Compact design
- Low back panel depth
- Low-level switching capability
- 22.5mm and 30.5mm versions
- Solder and PCB plug-in terminals
- Up to 2 million switching cycles

Further information is available at [www.eao.com/14](http://www.eao.com/14)



## Indicator compact Series 14

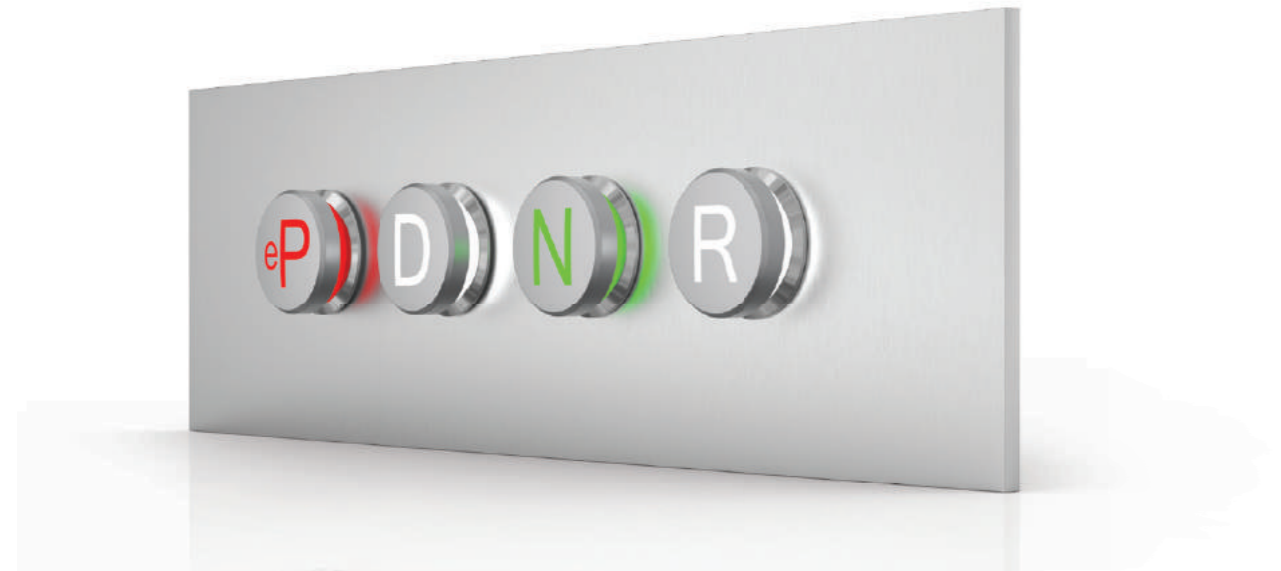
Compact, high-intensity illuminated, reliable LED indicator for safe status indication – It offers homogeneous LED illumination, an easy-to-mount PIT terminal, a very low back panel depth of just 9.5 mm and 180° all-round visibility – even from great distances.

- High-intensity illumination
- Compact, space-saving design
- 180° all-round visibility
- Easy mounting with reliable PIT terminal
- IP69K protection

Further information is available at [www.eao.com/14-compact](http://www.eao.com/14-compact)



# Robust and attractive.



## Illuminated pushbutton Series 82

EAO offers pushbuttons that are both resistant to vandalism and visually attractive in the form of the Series 82. With their robust stainless steel, brass or anodised aluminium housings, these innovatively designed switches are protected to IK10 impact resistance and IP67 sealing requirements. 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 ring illumination. The ring illumination is particularly striking and attractive.

- Vandal-resistant: Impact-resistant to IK10, front protection up to 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

Further information is available at [www.eao.com/82](http://www.eao.com/82)



## Illuminated pushbutton Series 84

Attractive, versatile and functional – EAO offers its Series 84 with a multitude of actuator options that make this sleek, contemporary, award-winning product range suitable for a wealth of applications. Visually appealing lenses and actuators in a variety of colours, front designs and materials also highlight the modern appearance of the Series 84.

- Attractive design and reliable operation
- IP67 front protection
- Actuators and lenses available in many colours and materials
- Strong, consistent illumination
- Available with solder, plug-in or print terminals or with flat ribbon cabling

Further information is available at [www.eao.com/84](http://www.eao.com/84)



## Emergency stop switch Series 84

EAO offers intuitive, reliable and robust safety switches: The Series 84 emergency stop and stop switches have a compact, attractive design with a very low back panel depth. LED illumination gives additional status information and can also be used to locate the switch, even in low ambient light conditions.

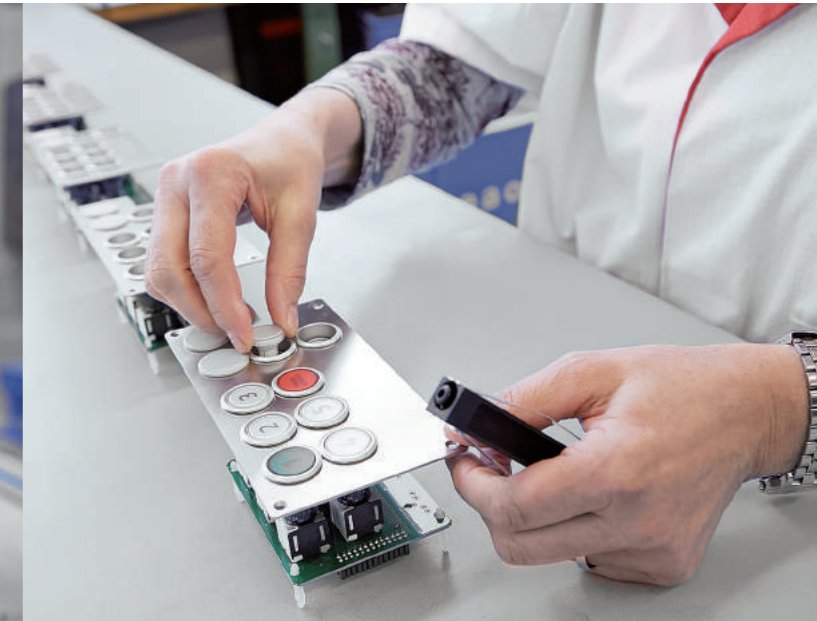
- Robust mono-block with a foolproof and fail-safe design
- Very low back panel depth
- Attractive, modern design and protection IP65, IP66, IP67
- Reliable and long service life
- Clearly visible illumination

Further information is available at [www.eao.com/84-e-stop](http://www.eao.com/84-e-stop)



Reliable assembly.  
*Short delivery times.*

Certified.  
*Your expert and partner.*



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. And so too is comprehensive production expertise, as exemplified by the following:

- PCB design
- SMT placement, assembly and inspection
- Cable and connector assembly

EAO also has long-standing experience in building HMI Components, which allows us to offer our customers truly expert consultation in the areas of machining, surface treatments, sheet metal forming, injection moulding, marking, PCB placement, and the integration of complete HMI solutions.

Our adherence to international standards in combination with comprehensive product testing has made EAO into an established and reliable partner when it comes to planning, developing and implementing your optimal HMI solutions.

We use our in-house laboratories to subject our HMI products to various batteries of tests and assessments under the most realistic conditions. EAO utilises a comprehensive quality management system which covers all business areas.

We are certified in accordance with the following standards:

- Quality Management System DIN EN ISO 9001
- Quality Management System ISO/TS 16949 (Automotive)
- Environmental Management System ISO 14001
- Industry-specific standards and regulations

**Reliability. Continuity. Durability**

In order to meet customers' demands in terms of reliability, continuity and durability, our products and systems are subjected to permanent quality monitoring. Among other things, this includes:

- Tests with special software (e.g. LAB View)
- Use of cutting-edge environmental test chambers
- Checking of adherence to different degrees of protection
- Testing the durability of individual components
- Optical and X-ray analyses
- Finite element method

Our products possess the key international approvals, and meet all standards and guidelines such as: CE, UL or E1 or example.







## Experts. *In mixed technology solutions.*

**EAO develops impressive, customised HMI Systems that feature innovative technology, intuitive operation and reliability.**

As experts in various mixed technology solutions, we provide our customers with expertise – from the initial idea right through to the manufacturing stage – and generate real benefit on their behalf.

### **System solutions**

When manufacturing HMI Systems (HMIS) that meet the entire spectrum of market requirements, quality is key. Thanks to EAO's high-quality product range, and to the variety and flexibility of our components and systems, we have in place the ideal requirements for an effective HMIS.

### **Savings in cost and time**

Global experience in supply chains, our expertise in process optimisation and the EAO risk management system guarantee accurate planning and a reduction in the number of interfaces. EAO's customers thereby benefit from considerable savings in cost and time. Our customers around the world also appreciate our global expertise when it comes to functional and ergonomic user requirements as well as market-specific and country-specific standards, certifications and approvals.

### **Global service**

We use our globally active planning and production centres to provide advice and support during all project phases. This is a fundamental part of our system of total quality management.

The EAO network of sales companies and production sites in Europe, North America and Asia provides our customers with access to top-quality consultation, design and logistics services. From planning and prototyping through to assembly, we offer all the services necessary for the production of process-specific system solutions.

### **Sustainability as standard**

Sustainability is of course also a part of our consultation services – as are warehousing, project documentation, on-site training, and other services (such as refurbishment).

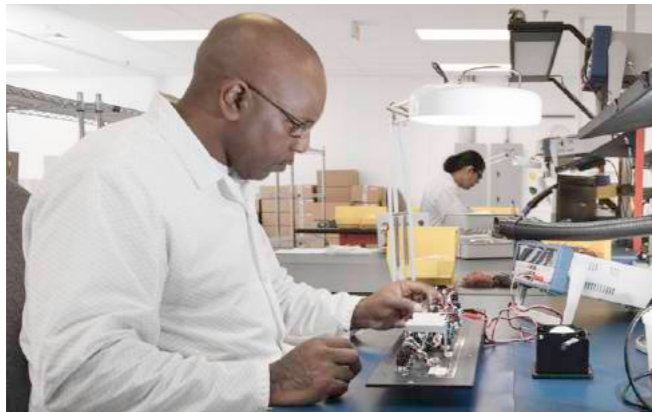
# EAO manufacturing companies.

With four value-adding partners in Europe, Asia and North America, 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 – as well as comprehensive production expertise.

Our products possess the key international approvals, and meet all standards and guidelines such as: KBA, IRIS, TSI PRM, UIC, CE, RoHS, REACH, ENEC, CB, UL/UR, ISO, CSA, VDE, CCC, CQC, EAC, DNV and many more.



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**Germany**  
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08209 Auerbach, Germany

Overall surface area in m <sup>2</sup>	15000
Production and storage space in m <sup>2</sup>	11000
Employees	320
Corporate certifications	ISO 9001 ISO 14001 ISO/TS 22163 (IRIS)

**Awards**

- Core capabilities**
- Manufacturing of complete HMI control units and HMI Systems
  - Customer-specific HMI solutions
  - Complex front plate mounting
  - Internal product validation and approval
  - Various marking technologies
  - Complete mounting sets
  - Cable and plug mounting
  - Specialised packaging
  - 3D prototyping

2000
1200
30
ISO 9001

Frost and Sullivan ML100 recipient

- Industrial design, user experience, ergonomics
- Complete customer specific HMI Systems
- Production and supply chain management
  - Complex front plate mounting
  - Marking technologies
  - Complete system mounting set and kits
  - Cable and harness
- 3D prototyping
- Quality assurance and testing with LabVIEW
- Support of Buy America programs

2000
1300
60
ISO 9001

- Manufacturing of complete HMI control units
- Panel production
- Various marking technologies
- Complete mounting sets
- Cable and plug mounting
- Specialised packaging

3000
2500
110
IATF 16949
ISO 14001

- Manufacturing of complete HMI control units and HMI Systems
- Complex ergonomic interfaces
- Software and interface design (LIN, CAN)
- Internal product validation and approval
- Production and supply chain management (from individual units to mass production)
- 3D prototyping
- Cable and plug mounting

The highest performance.  
*Experts with passion.*

Partnerships.  
*Connected through design.*



EAO's cutting-edge production plants, our many years of experience and our dedicated, expert employees are the cornerstone of our reliable HMI Components and Systems for the automotive industry.

Our passion for the interaction between humans and vehicles allows us to develop innovative, intuitive, ergonomic and high-quality products that are reliable and safe in operation.

Our adherence to international standards in combination with comprehensive product testing has made EAO into an established and reliable partner when it comes to planning, developing and implementing your optimal HMI solutions.

We use our in-house laboratories to subject our HMI products to various batteries of tests and assessments under the most realistic conditions.

EAO Automotive utilises a comprehensive quality management system which covers all business areas and processes. In addition to full outgoing goods inspections, EAO guarantees complete product traceability.

EAO Automotive is certified in accordance with

- IATF 16949 (automotive)
- ISO 14001 (environmental management)

Thanks to our great level of commitment, the technical expertise and our impressive consulting services, we are a reliable partner to the automotive industry.

For many years now, EAO has served the automotive industry as an established expert supplier of modular HMI Components and Systems as well as control and indicator units.

Thanks to our close customer relationships and many years of experience in all aspects of creating HMI solutions, EAO is one of the leading development partners for numerous vehicle manufacturers and system suppliers.

Here are a few highlights from our list of references:



Expert manufacturers.  
EAO creates possibilities. Since 1947.

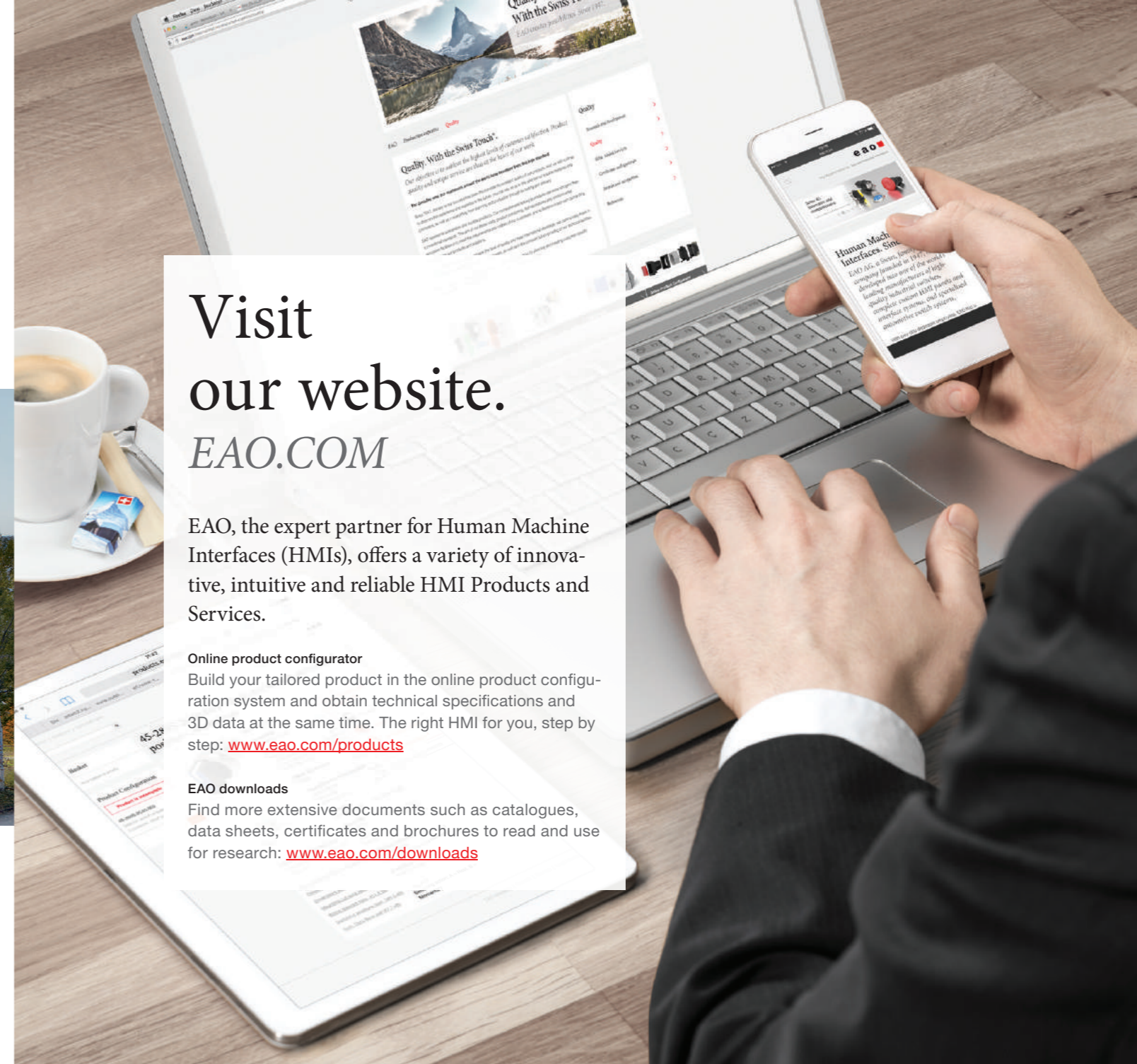


**Founding year:** 1947  
**Number of employees:** 600  
**Headquarters:** Olten, Switzerland  
**Manufacturing Companies:** Switzerland, Germany, North America, China  
**Sales Companies:** 10  
**Distribution countries:** 50  
**Core markets:** Transportation, Automotive, Heavy Duty & Special Vehicles,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

EAO AG, a Swiss, family-owned company founded in 1947, has developed into one of the world's leading manufacturers of high-quality 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.



## 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



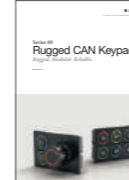
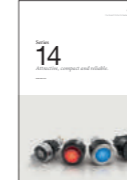



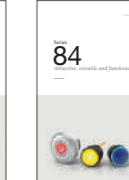
Build your tailored product in the online product configuration system and obtain technical specifications and 3D data at the same time. The right HMI for you, step by step: [www.eao.com/products](http://www.eao.com/products)

### EAO downloads

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

### Related documents

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

- |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |
| Image<br>Brochure   | HD & SV<br>Brochure   | Series 09<br>Brochure   | Series 14<br>Brochure   | Series 56<br>Brochure   | Series 57<br>Brochure   | Series 82<br>Brochure   | Series 84<br>Brochure   |

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