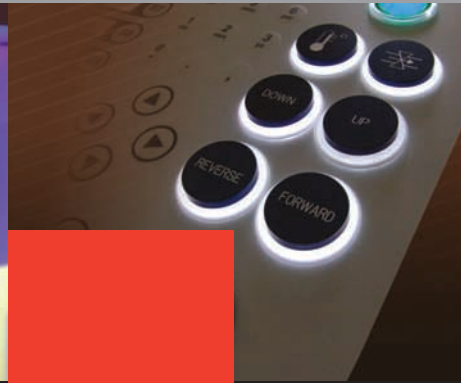
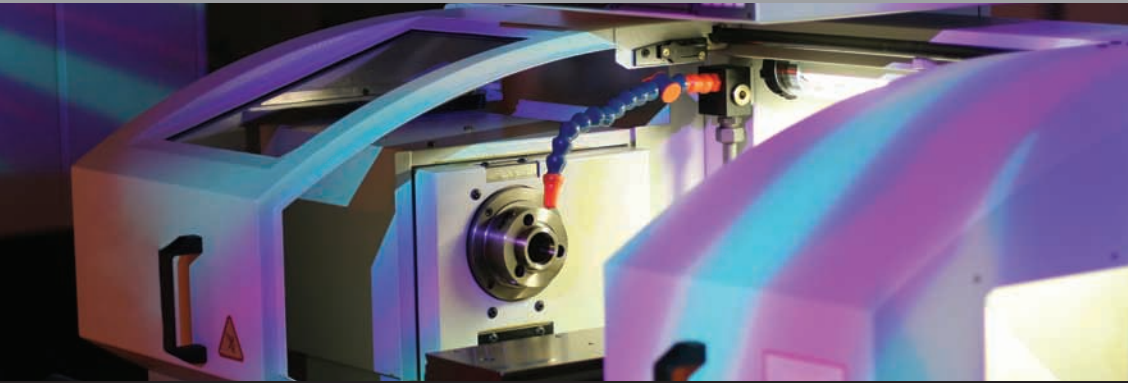


EAO – Your Expert Partner for
Human Machine Interfaces



Industrial Machinery

HMI Systems and Components

eao ■



HMI Design and Manufacture

Industrial Machinery and Process Control Equipment



Since inventing the first illuminated pushbutton in 1958 EAO has become a world-leading partner for human machine interfaces (HMI). It now supplies the broadest range of high-reliability HMI components and develops custom-made HMI systems for machinery and industrial automation equipment among other industries.

EAO has the proven experience to build HMI systems for basic and more advanced industrial machinery that assure accurate and safe operation for users on a factory or machine shop floor. These systems must meet environmental sealing requirements (IP 65 or greater) against moisture, cutting fluids, oil, and dirt, and some must withstand extreme temperature variations as well as shock, vibration, and high-duty cycle.

A well designed HMI system that satisfies these environmental conditions as well as the specific process and functional requirements is a key component in the overall sound design of the equipment itself. Creating the right HMI system requires working with an expert who can navigate through these demands and deliver an effective solution.

EAO will examine technical considerations, operating environments, ergonomics and commercial specifications to ensure users and technologies are working in complete harmony. This results in higher-quality, more functional and easier to use human machine interfaces.



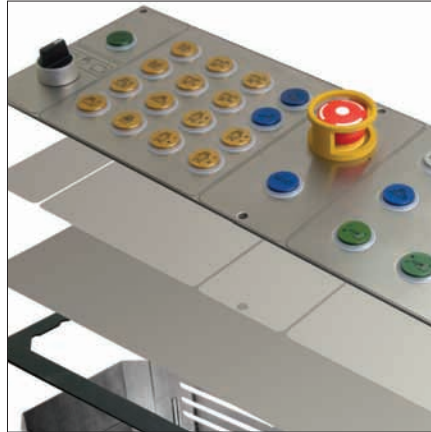
Component Manufacturing Expertise

With decades of components manufacturing experience, EAO offers customers unparalleled expertise for prototyping, tooling, moulding, plating, electrical design, automation, and precision-parts assembly.

With EAO's expert engineers, designers, and toolmakers building world-class components, our customers are assured that they're getting innovative solutions for their critical applications.

Our components expertise includes:

- Superior quality and high reliability;
- Conforming to international and industry standards, such as CE, UL, CUL, VDE, RoHS, WEEE, and others;
- Broad portfolio of sizes and shapes suitable for any application;
- Strict quality assurance procedures;
- Global availability of inventory.



Industrial Design and Ergonomics

EAO works closely with each customer to design innovative HMI Systems that can be seamlessly integrated into their application.

Our design team has a thorough understanding of best design practices, ergonomics, and manufacturing standards – truly making them an extension of our customer's design team.

We apply a Human Factors approach to create a user-centred design that evaluates user needs, application definition, problem analysis, workflow analysis and design criteria. This approach results in a strategic and tactical design recommendation based on usability findings and standard design practices. Our goal is to guide successful OEM project developments that are centred on focused usability evaluations.



Proven Industrial Experience

EAO's components and custom HMI systems are specified by the world's leading equipment manufacturers and used in:

- CNC milling, lathing, forging, stamping and boring equipment;
- Food, drink and tobacco production and process control;
- Industrial lifting and handling robots;
- Pharmaceutical and chemical production and process control;
- Cooling and ventilation equipment;
- Textiles production including equipment for preparing, drying, spinning and weaving.

HMI Technology



Improving HMI Design Through Mixed Technology



EAO offers a mixed technology approach for developing HMI systems for industrial machinery. This typically uses a base set of electro-mechanical components or a more complex integration of keyboard, display, touchscreen and industrial PC, depending on the required functional sophistication and level of visualisation. The flexible approach to using technology offers customers a real competitive edge.

Typical interfaces designed by EAO include:

- Primary control panels using discrete switches for system start-up and shutdown, including emergency-stop functions;
- Handheld remote controls and tethered pendants with displays and short-travel keypads for data entry;
- Touch-screens and industrial PCs with serial bus interfaces for linking to core system.

EAO has extensive experience integrating software and communications connections required by many of the HMI systems designed for our customers.



Components

Comprehensive range of standard and specialised components. See page 7.



Touchscreens

Fully-featured touchscreens / industrial PCs integrated into within sealed, rugged enclosures.



Rapid Prototyping

Rapid solid modelling facilities using 3D printing and stereolithography. In-house facilities enable fast turnaround times.



Emergency-stops

Fail-safe emergency-stop and stop switches with or without illumination. Compact version for handheld controls.



Serial bus Interfaces

CAN-Bus, CANopen, CAN-J1939, ProfiBus, InterBus, DeviceNet; USB, Ethernet, RS-232, RS-422, RS-485;



Illumination & Legends

Laser engraving, metal inserts and membranes. Custom lighting techniques, e.g. back-lighting, halo, hidden legends.



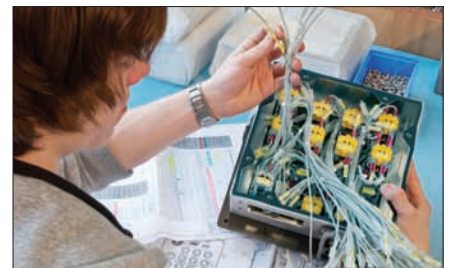
Keypads

Membrane and rubber short-travel keyboards/ keypads. Back-lighting and sealing up to IP67. Touch sensitive technology.



Wireless Controls

Wireless communication through WiFi, Bluetooth, ZigBee and UWB based on IEEE 802 standards.



Custom Assembly

Connections, cable crimping, harnessing and full/partial assembly.



Panels & Enclosures

Tough, light, ergonomically-moulded housings in plastic, fibreglass or metal. Impact, water and oil resistant to IP standards.



PCB Design

Surge protection and safety circuits, PCB design and manufacturing, SMT placement, assembly and inspection.



Approvals & Certificates

Manufacturing products in accordance with ISO 9001, UL, VDE, SEV, ASE, DEMCO, SEMCO, IRIS, TS 16469.



Application Engineering

Providing Efficient, Safe Control Over Complex Processes



Industrial machinery may need to operate in densely concentrated, contaminated environments where air-borne dust and moisture, noise, heat and poor light are common hazards. Given these conditions, it's critical to make the interaction between operator and machine safe, intuitive and error free.

EAO achieves this by:

- Analysing all aspects of the operational/functional/environmental and user requirements of a complete system;
- Designing interfaces using the most appropriate mixed technology of electro-mechanical components, touch-screens, displays, keyboards or whatever the project requires;
- Considering the equipment life-cycle and operating environment including any requirements for IP, NEMA, IEC, ADA, ANSI and OSHA compliant interfaces; protection against corrosive gas, acids and other caustic agents may be necessary;
- Providing interconnection and communication with other systems and controllers in the manufacturing environment;
- Modular construction and customisation — components can be varied depending on end customer, or updated for future equipment.



EAO Series	04	14	51	61	70	71	84
Range							
Pushbutton	■	■	■	■	■	■	■
Indicator	■	■	■	■	■	■	■
Selector Switch	■	■	■	■		■	
Key Switch	■	■	■	■		■	
Emergency-Stop	■			■			■
Stop switch	■		■				
Buzzer		■					
Lever switch	■						
Mounting							
Flush	■	■	■	■	■	■	■
Raised	■	■	■	■			■
Mounting hole							
16mm Ø			■	■			
22.5mm Ø	■	■	■	■		■	■
30.5mm Ø	■	■					
square, rectangular	■		■	■	■	■	
Switch rating max.							
42 VAC/100mA					■		■
240 VAC/1.5 A							■
250 VAC/3 A						■	
250 VAC/5 A		■	■	■			
500 VAC/10A	■						
Terminals							
Solder		■	■				
Solder/Plug-in		■	■	■			■
Plug-in	■						
Screw	■			■			
Ribbon cable							■
PCB		■	■		■	■	■
PCB-Terminal available		■	■	■			
Push-in terminal (PIT)	■						
Front Protection degree							
IP 40		■					
IP 65	■	■	■	■	■	■	■
IP 67		■			■		■
IP 67 (with protective cap)	■						
IP 68 (with protective cap)							■
Configurable HMI Panel							
<p>The EAO Configurable HMI Panel allows customers to quickly, easily, and inexpensively bring industrial PC control to their equipment. It incorporates durable membrane buttons, an integrated LCD display, a resistive touchscreen, and a variety of discrete pushbutton and electromechanical controls. The layout can be fully customised. View the datasheet 'EAO Configurable HMI Panel' at eao.com/download</p>							

For more information on these products and many more, consult the EAO catalogue or contact your local sales office (see overleaf).

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■ Headquarters:

EAO AG
Tannwaldstrasse 88
4601 Olten, Switzerland
www.eao.com

■ Subsidiaries:

Austria
Phone +49 201 85 87 0
Fax +49 201 85 87 210
sales.ede@eao.com

Belgium
Phone +32 3 777 82 36
Fax +32 3 777 84 19
sales.ebl@eao.com

China
Phone +852 27 86 91 41
Fax +852 27 86 95 61
sales.ehk@eao.com

France
Phone +33 1 64 43 37 37
Fax +33 1 64 43 37 48
sales.es@eao.com

Germany
Phone +49 201 85 87 0
Fax +49 201 85 87 210
sales.ede@eao.com

Italy
Phone +39 035 481 0189
Fax +39 035 481 3786
sales.eit@eao.com

Japan
Phone +81 3 5444 5411
Fax +81 3 5444 0345
sales.esj@eao.com

Netherlands
Phone +31 78 653 17 00
Fax +31 78 653 17 99
sales.enl@eao.com

Sweden
Phone +46 8 683 86 60
Fax +46 8 724 29 12
sales.esw@eao.com

Switzerland
Phone +41 62 388 95 00
Fax +41 62 388 95 55
sales.ech@eao.com

United Kingdom
Phone +44 1444 236 000
Fax +44 1444 236 641
sales.euk@eao.com

USA
Phone +1 203 877 4577
Fax +1 203 877 3694
sales.eus@eao.com

Other Countries
Phone +41 62 286 92 16
Fax +41 62 296 21 62