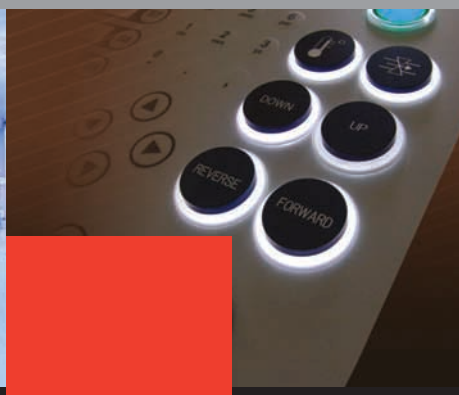
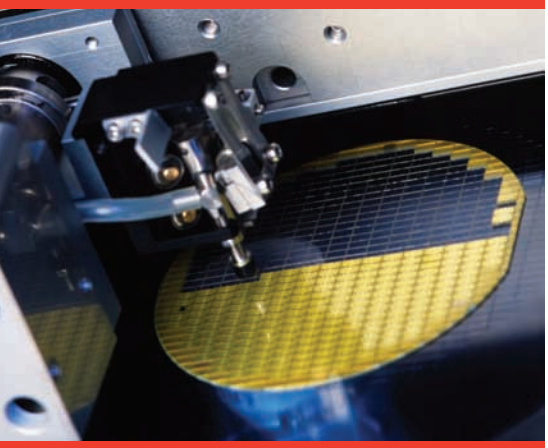
EAO – Your Expert Partner for
Human Machine Interfaces



Semiconductor and Electronics Production

HMI Systems and Components

eao



HMI Design and Manufacture

Semiconductor and Electronics Production 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 gained in-depth knowledge of semiconductor and electronics manufacturing, plus a complete understanding of functional and regulatory requirements included in Semiconductor Equipment and Materials International (SEMI®), S2-93 safety guidelines, SECS (SEMI Equipment Communications Standard), GEM (General Equipment Model), and other related standards.

A well designed HMI system that satisfies these standards 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.

Not all products shown in the images throughout this brochure are produced by EAO.

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 used in the principal areas of semi-conductor production:

- Wafer fabrication equipment;
- Pick-and-place assembly equipment;
- Test equipment.

And in other areas of electronics production including:

- Printing machines;
- Optical inspection;
- PCB testing and analysing equipment;
- Electronics packaging equipment;
- Solder stations/machinery.

HMI-Technologie

Improving HMI Design Through Mixed Technology

EAO offers a mixed technology approach for developing HMI systems for semiconductor and electronics production. 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

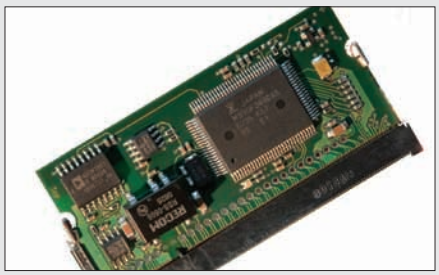
Fully-featured touchscreens / industrial PCs integrated into within sealed, rugged enclosures.

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. SEMI S2-93/12.4c compliant guards.



Serial bus Interfaces

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

Illumination & Legends

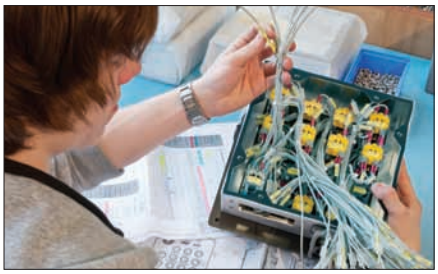
Laser engraving, metal inserts and membranes. Custom lighting techniques, e.g. back-lighting, halo, hidden legends.

Keypads

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

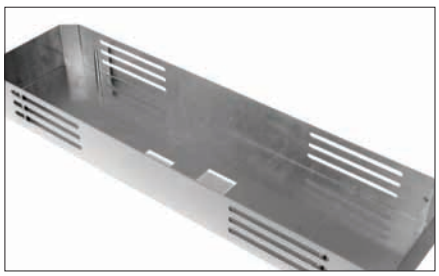
Wireless Controls

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



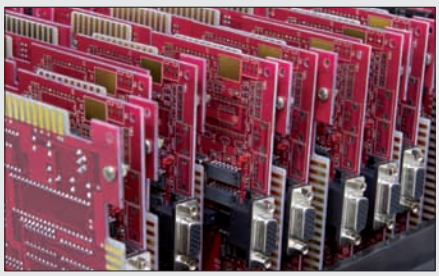
Custom Assembly

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



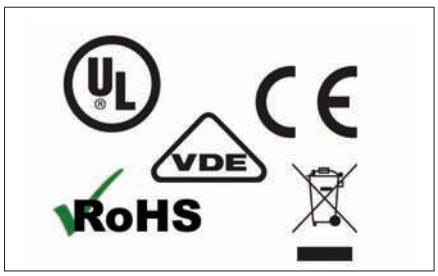
Panels & Enclosures

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

Semiconductor and electronics production is one of the most demanding manufacturing environments. 1500 diverse processing steps are typical for chip manufacturing from start to finish. Many are carried out with microscopic precision in an environment that's 100,000 times cleaner than a typical operating theatre. It is therefore critical that HMIs are well designed, efficient and safe for users.

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;
- Adherence to relevant semiconductor equipment design standards for panel layout, colour schemes, and component selection;
- Considering the equipment life-cycle and operating environment including any requirements for IP, NEMA, IEC, ADA, ANSI and OSHA compliant interfaces;
- Providing interconnection and communication with other systems and controllers in the manufacturing environment.

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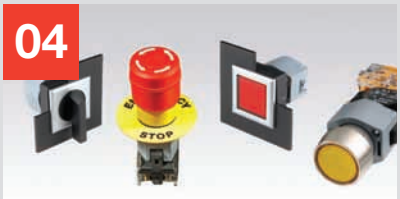

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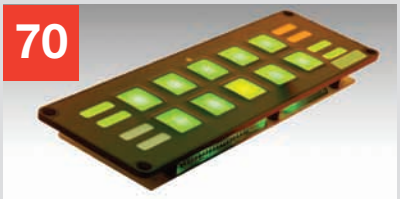

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Configurable HMI Panel

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 ∅			■	■			
22.5mm ∅	■	■	■	■		■	■
30.5mm ∅	■	■					
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

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

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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