Series 09
Rugged CAN Keypads
Rugged. Modular. Reliable.

www.eao.com
Series 09 Rugged CAN Keypads

Designed for E1 applications with functional safety and CAN bus integration – The robust control units with flexible illumination are ideally suited for use in heavy duty and special vehicle applications.

Series 09 Rugged CAN Keypads offer high reliability: The modules are designed for E1 applications and functional safety in accordance with ISO 26262 ASIL B and EN ISO 13849 PLD as well as an intelligent control with CAN bus integration. The robust, modular design with sealing levels of up to IP67 and the ability to customise and interchange the keypad legends make these high-quality devices ideally suited for harsh use in heavy duty and special vehicles.

High reliability and functional safety are crucial to controlling safety-related applications in vehicles and machines – whether in construction machinery, construction vehicles, agricultural machinery or in special and commercial vehicles of various types. Harsh environments and low back panel depth require a robust and compact product design. The actuators and indicators must also be precisely configured, both mechanically and electronically, to suit the respective application. The high-quality Rugged CAN Keypad and Rugged CAN Rotary Cursor Controller meet these requirements with cutting-edge system integration.

Robust, innovative design
Robust and innovative construction is a feature of the Rugged CAN Keypad design. The up to IP67 protected actuators and indicators work reliably at operating temperatures from –40 °C to +85 °C. The low back panel depth and robust clip-in or screw-in mounting allow easy, flexible installation, either vertically or horizontally. These high-quality devices also offer excellent tactile feedback, and are clearly visible in daylight and at night thanks to the powerful RGB LED halo and LED symbol illumination. Attractive and configurable 4-segment halo button illumination is integrated as standard. The customisable illumination provides the operator with excellent visual feedback, and is combined with a unique, contemporary design.

Durability
The Series 09 CAN Modules are produced in our automotive competence centre located in Germany. This allows us to apply years of comprehensive experience as an original equipment manufacturer (OEM) in the automotive industry to the heavy duty and special vehicle markets. At the same time, this offers EAO customers high quality, durable, and intuitive products and services. The development and production process is aligned and executed according to automotive standards that include qualified suppliers and functional safety. This requirement ensures EAO customers high quality products and solutions.

Functional safety and CAN bus integration
The Rugged CAN Keypads feature a high reliability and are designed for functional safety in accordance with the EN ISO 13849 PLD and ISO 26262 ASIL B standards. Put simply, functional safety means that the system monitors whether the safety-related function is working properly. If a function error occurs, the system promptly informs the operator. Thanks to the CAN bus integration, the devices are intelligently and easily integrated into a CAN system – the devices are fitted with a Deutsch DT Series connector.

More than an expert. A partner of the automotive industry.
As a global partner to major automotive manufacturers and suppliers, we provide our customers with high-quality, products and services. Through many decades of commitment and consultation with the automotive industry, EAO is an established global supplier of operator control panels, sub-assemblies, switches, buttons and indicators.

Please note
Functional safety with CANopen Safety and ASIL B according to ISO 26262 and PLD according to DIN EN ISO 13849 are available from 2020 onwards.

Advantages.

Typical applications
• Special vehicles including fire-fighting vehicles, road sweepers, cleaning vehicles, refuse trucks, snow removers and groomers
• Heavy duty vehicles including construction and agricultural equipment

HMI functions
• Rugged CAN Keypad
• Rugged CAN Rotary Cursor Controller

Mechanical characteristics
• Actuating force: 5-13N
• Overload: 250N

– Rugged CAN Keypad: up to 1 million switching cycles
– Rugged CAN Rotary Cursor Controller: up to 10 million switching cycles

Electrical characteristics
• Operating voltage range: 8-32VDC

Illumination
• LED symbol illumination
  – Colour: white LED
  – Luminance: 20 cd/m²
• LED halo ring illumination
  – Colour: RGB
  – Luminance: 1500 cd/m²

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

Connections/interfaces
• CAN interface (ISO 11898)
• CAN protocols: CANopen (CiA 401), CANopen Safety (EN 50325-5), CAN J1939
• Baud rate 250 kbp (software configurable)

Further information is available under www.eao.com/09
Features and benefits.

- **Sealing protection**: Robust, resistant to weather and harsh environments, IP67 seals out dust, water, mud, salt, sand, oil
- **Symbols**: Interchangeable inserts with laser etch LED backlit ISO 7000 range of symbols or customised symbols
- **Mounting option**: Flexible vertical and horizontal installation as well as user-friendly clip-in and screw-in mounting
- **Illumination**: Modern, trendy, innovative RGB 4-segment halo ring illumination in unlimited variety of colours and visual effects
- **Modularity**: Control units can be combined into array of modules
- **Safety level**: Designed for functional safety*: ISO 26362 and ISO 13849
- **Communication protocols**: Intelligent HMI with J1939, CANopen and CANopen Safety* integration
- **Design**: Smart, optimally ergonomic design with low panel depth mounting
- **Feedback**: Tactile and audible product feedback with haptic design

* Functional safety with CANopen Safety and ASIL B according to ISO 26262 and PLD according to DIN EN ISO 13849 are available from 2020 onwards.
### Approvals and conformities.

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### Electrical specifications

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* Available as of 2020.
Rugged CAN Keypad.

**Mechanical characteristics**
- Actuation force: 5 – 13 N
- Overload: 250 N

**Electrical characteristics**
- Operating voltage range: 8 – 32 VDC

**Illumination**
- LED symbol illumination
  - Colour: white
  - Luminance: 20 cd/m²
- LED halo ring illumination
  - Multi-colour: RGB
  - Luminance: 1 500 cd/m²

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

**Connections/interfaces**
- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CANopen Safety* (EN 50325-5), CAN J1939
- Baud rate 250 kBd (software configurable)

**Ambient conditions**
- Operating temperature: –40°C ... +85°C
- Storage temperature: –40°C ... +85°C


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Rugged CAN Rotary Cursor Controller.

**Protection degree**
- IP67 protection (front and rear side)
- IP67 protection (panel/screw-in)
- IP54 protection (panel/clip-in)

**Mounting**
- Clip-in mounting
- Screw-in mounting

**Dimensions** (All dimensions in mm)
- Mounting cut-out (Panel thickness 1.0 mm ... 4.0 mm)
  - Ø 21
  - 114.82
  - 35.54
  - 567.19

**Function variants (any combination possible)**
- Jogstick function
- Proportional Hall effect sensor output signal
- X/y guidance is optional with
  - strong/rigid cross guidance
  - soft cross guidance
  - no cross guidance
- Rotary function
- With rotary function
- 20 maintained positions
- Continuous rotation with no stop position
- Push function
- With/without push function
- Momentary action with click-dome

**Connectivity**
- CAN interface (ISO 11898)
- CAN protocols: CANopen (CiA 401), CANopen Safety* (EN 50325-5), CAN J1939
- Baud rate 250 kBd (software configurable)

**Ambient conditions**
- Operating temperature: –40°C ... +85°C
- Storage temperature: –40°C ... +85°C


**Protection degree**
- IP67 protection (front and rear side)
- IP67 protection (panel/screw-in)
- IP54 protection (panel/clip-in)

**Dimensions** (All dimensions in mm)
- Mounting cut-out (Panel thickness 1.0 mm ... 4.0 mm)
  - Ø 21
  - Ø 42
  - 234.7

**Illumination**
- LED halo illumination (on pushbuttons and Rotary Cursor Controller)
  - Multi-colour: RGB
  - Luminance: 1 500 cd/m²

**Symbols** (on pushbuttons, Rotary Cursor Controller without symbol)
- Symbols in accordance with ISO 7000
- Customer-specific symbols on request
Deutsch DT Series connector (DT04-6P).

<table>
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<th>Pin</th>
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<tr>
<td>3</td>
<td>WakeUp_Out</td>
</tr>
<tr>
<td>4</td>
<td>WakeUp_In</td>
</tr>
<tr>
<td>5</td>
<td>CAN low</td>
</tr>
<tr>
<td>6</td>
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Mates with Deutsch DT06-6S-****

All dimensions in mm.

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Series 84 Brochure
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