

**DATASHEET - EASY512-DC-R****Control relay, 24 V DC, 8DI(2AI), 4DO relays, display**
**EATON**  
 Powering Business Worldwide™

**Part no.** EASY512-DC-R  
**Catalog No.** 274108

**EL-Nummer (Norway)** 4519757
**Delivery program**

|                                |  |        |  |
|--------------------------------|--|--------|--|
| Basic function                 |  |        | easy500  |
| Description                    |  |        | Stand alone<br>customized laser inscription or delivery with user program possible with EASY-COMBINATION-* product (article No. 2010781) |
| <b>Inputs</b>                  |  |        |  |
| Digital                        |  |        | 8  |
| of which can be used as analog |  |        | 2  |
| <b>Outputs</b>                 |  |        |  |
| Quantity of outputs            |  |        | Relays: 4  |
| Outputs                        |  | Number | 4  |
| <b>Additional features</b>     |  |        |  |
| Display & keypad               |  |        | #  |
| Supply voltage                 |  |        | 24 V DC  |
| Software                       |  |        | EASY-SOFT-BASIC/-PRO   |
| Connection type                |  |        | screw terminal   |

**Technical data****General**

|                        |  |    |  |
|------------------------|--|----|--|
| Standards              |  |    | EN 55011, EN 55022, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27                                |
| Approvals              |  |    | CSA<br>UL<br>EAC   |
| Dimensions (W x H x D) |  | mm | 71.5 x 90 x 58 (4 PE)  |
| Weight                 |  | kg | 0.2  |
| Mounting               |  |    | Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories) |

**Terminal capacities**

|                        |  |                 |                       |
|------------------------|--|-----------------|-----------------------|
| Solid                  |  | mm <sup>2</sup> | 0.2/4 (AWG 22 - 12)   |
| Flexible with ferrule  |  | mm <sup>2</sup> | 0.2/2.5 (AWG 22 - 12) |
| Standard screwdriver   |  | mm              | 0.8 x 3.5             |
| Max. tightening torque |  | Nm              | 0.6                   |

**Climatic environmental conditions**

|                               |   |     |   |
|-------------------------------|---|-----|---|
| Operating ambient temperature |   | °C  | In accordance with IEC 60068-2-1, -25 - +55                 |
| Condensation                  |   |     | Take appropriate measures to prevent condensation           |
| LCD display (clearly legible) |   | °C  | 0 - 55  |
| Storage                       | θ | °C  | -40 - +70   |
| relative humidity             |   | %   | in accordance with IEC 60068-2-30, IEC 60068-2-78<br>5 - 95 |
| Air pressure (operation)      |   | hPa | 795 - 1080  |

**Ambient conditions, mechanical**

|  |             |         |  |
|--|-------------|---------|--|
| Protection type (IEC/EN 60529, EN50178, VBG 4)                             |             |         | IP20   |
| Vibrations   |             | Hz      | In accordance with IEC 60068-2-6<br>constant amplitude 0.15 mm: 10 - 57<br>constant acceleration 2 g: 57 - 150 |
| Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms |             | Impacts | 18   |
| Drop to IEC/EN 60068-2-31  | Drop height | mm      | 50   |
| Free fall, packaged (IEC/EN 60068-2-32)                                    |             | m       | 1  |
| Mounting position  |             |         | Vertical or horizontal   |

**Electromagnetic compatibility (EMC)**

|                                       |  |  |       |
|---------------------------------------|--|--|-------|
| Overvoltage category/pollution degree |  |  | III/2 |
|---------------------------------------|--|--|-------|

|   |  |     |   |
|---|--|-----|---|
| Electrostatic discharge (ESD)                                 |  |     |   |
| applied standard  |  |     | according to IEC EN 61000-4-2   |
| Air discharge   |  | kV  | 8   |
| Contact discharge   |  | kV  | 6   |
| Electromagnetic fields (RFI) to IEC EN 61000-4-3              |  | V/m | 10  |
| Radio interference suppression                                |  |     | EN 55011 Class B, EN 55022 Class B                                    |
| Burst   |  | kV  | according to IEC/EN 61000-4-4<br>Supply cables: 2<br>Signal cables: 2 |
| power pulses (Surge)  |  |     | according to IEC/EN 61000-4-5<br>1 kV (supply cables, symmetrical)    |
| Immunity to line-conducted interference to (IEC/EN 61000-4-6) |  | V   | 10  |

### Insulation resistance

|   |  |  |                                      |
|---|--|--|--------------------------------------|
| Clearance in air and creepage distances |  |  | EN 50178, UL 508, CSA C22.2, No. 142 |
| Insulation resistance                   |  |  | EN 50178                             |

### Repetition accuracy of timing relays

|                                       |  |     |     |
|---------------------------------------|--|-----|-----|
| Accuracy of timing relays (of values) |  | %   | ± 1 |
| Resolution                            |  |     |     |
| Range "S"                             |  | ms  | 10  |
| Range "M:S"                           |  | s   | 1   |
| Range "H:M"                           |  | min | 1   |

### Retentive memory

|                                      |  |  |                            |
|--------------------------------------|--|--|----------------------------|
| Write cycles of the retentive memory |  |  | 1000000 (10 <sup>6</sup> ) |
|--------------------------------------|--|--|----------------------------|

### Power supply

|                           |                |    |  |
|---------------------------|----------------|----|--|
| Rated operational voltage | U <sub>e</sub> | V  | 24 DC (-15/+20%)                         |
| Permissible range         | U <sub>e</sub> |    | 20.4 - 28.8 V DC                         |
| Residual ripple           |                | %  | ≤ 5                                      |
| Input current             |                |    | normally 80 mA at U <sub>e</sub>         |
| Voltage dips              |                | ms | ≤ In accordance with IEC 61131-2<br>≤ 10 |
| Fuse                      |                | A  | ≥ 1A (T)                                 |
| Power loss                | P              | W  | Normally 2                               |

### Digital inputs 24 V DC

|                                     |                |      |  |
|-------------------------------------|----------------|------|--|
| Number                              |                |      | 8  |
| Inputs can be used as analog inputs |                |      | 2 (I7,I8)  |
| Status Display                      |                |      | LCD-Display  |
| Potential isolation                 |                |      | from power supply: no<br>between digital inputs: no<br>from the outputs: yes<br>to interface/memory card: no |
| Rated operational voltage           | U <sub>e</sub> | V DC | 24   |
| Input voltage                       |                | V DC | Signal 0: ≤ 5 (I1 - I8)<br>Signal 1: ≥ 15 (I1 - I6), ≥ 8 (I7, I8)  |
| Input current at signal 1           |                | mA   | I1 - I6: 3.3 (at 24 V DC)<br>I7, I8: 2.2 (at 24 V DC)  |
| Deceleration time                   |                | ms   | 20 (0 -> 1/1 -> 0, Debounce ON)<br>normally 0.25 (0 -> 1, Debounce OFF, I1 - I8)                             |
| Cable length                        |                | m    | 100 (unshielded)   |
| Frequency counter                   |                |      |  |
| Number                              |                |      | 2 (I3, I4)   |
| Counter frequency                   |                | kHz  | ≤ 1  |
| Pulse shape                         |                |      | Square   |
| Pulse pause ratio                   |                |      | 1:1  |
| Cable length                        |                | m    | ≤ 20 (screened)  |
| Rapid counter inputs                |                |      |  |
| Number                              |                |      | 2 (I1, I2)   |
| Cable length                        |                | m    | ≤ 20 (screened)  |
| Counter frequency                   |                | kHz  | ≤ 1  |
| Pulse shape                         |                |      | Square   |
| Pulse pause ratio                   |                |      | 1:1  |

**Digital inputs 24 V AC**

|                                 |  |    |  |
|---------------------------------|--|----|--|
| Status Display                  |  |    | LCD-Display  |
| <b>Analog inputs</b>            |  |    |  |
| Number                          |  |    | 2 (I7, I8)   |
| Potential isolation             |  |    | from power supply: no<br>between digital inputs: no<br>from the outputs: yes<br>to interface/memory card: no |
| Input type                      |  |    | DC voltage   |
| Signal range                    |  |    | 0-10 V DC  |
| Resolution                      |  |    | 0.01 V analog<br>0.01 V digital<br>10 Bit (value 0 - 1023)   |
| Input impedance                 |  | kΩ | 11.2   |
| Accuracy of actual value        |  |    |  |
| two devices from series         |  | %  | ± 3  |
| Within a single device          |  | %  | ± 2, (I7, I8, I11, I12) ± 0.12 V   |
| Conversion time, analog/digital |  | ms | Input delay ON: 20; Input delay OFF: each cycle time   |
| Input current                   |  | mA | < 1  |
| Cable length                    |  | m  | ≤ 30, screened   |

**Relay outputs**

|   |                |                   |   |
|---|----------------|-------------------|---|
| Number  |                |                   | 4   |
| Outputs in groups of  |                |                   | 1   |
| Parallel switching of outputs for increased output                        |                |                   | Not permissible   |
| Protection of an output relay   |                |                   | Miniature circuit-breaker B16 or fuse 8 A (slow)  |
| Potential isolation   |                |                   | from power supply: yes<br>From the inputs: yes<br>Safe isolation according to EN 50178: 300 V AC<br>Basic isolation: 600 V AC |
| Lifespan, mechanical  | Operations     | x 10 <sup>6</sup> | 10  |
| <b>Contacts</b>   |                |                   |   |
| Conventional thermal current (10 A UL)                                    |                | A                 | 8   |
| Recommended for load: 12 V AC/DC  |                | mA                | > 500   |
| Short-circuit-proof cos φ = 1, characteristic B16 at 600 A                |                | A                 | 16  |
| Short-circuit-proof cos φ = 0.5 to 0.7, characteristic B16 at 900 A       |                | A                 | 16  |
| Rated impulse withstand voltage U <sub>imp</sub> of contact coil          |                | kV                | 6   |
| Rated operational voltage   | U <sub>e</sub> | V AC              | 250   |
| Rated insulation voltage  | U <sub>i</sub> | V AC              | 250   |
| Safe isolation according to EN 50178                                      |                | V AC              | 300 between coil and contact<br>300 between two contacts  |
| <b>Making capacity</b>  |                |                   |   |
| AC-15, 250 V AC, 3 A (600 ops./h)   | Operations     |                   | 300000  |
| DC-13, L/R ≤ 150 ms, 24 V DC, 1 A (500 S/h)                               | Operations     |                   | 200000  |
| <b>Breaking capacity</b>  |                |                   |   |
| AC-15, 250 V AC, 3 A (600 Ops./h)   | Operations     |                   | 300000  |
| DC-13, L/R ≤ 150 ms, 24 V DC, 1 A (500 S/h)                               | Operations     |                   | 200000  |
| <b>Filament bulb load</b>   |                |                   |   |
| 1000 W at 230/240 V AC  | Operations     |                   | 25000   |
| 500 W at 115/120 V AC   | Operations     |                   | 25000   |
| <b>Fluorescent lamp load</b>  |                |                   |   |
| Fluorescent lamp load 10 x 58 W at 230/240 V AC                           |                |                   |   |
| With upstream electrical device   | Operations     |                   | 25000   |
| Uncompensated   | Operations     |                   | 25000   |
| Fluorescent lamp load 1 x 58 W at 230/240 V AC, conventional, compensated | Operations     |                   | 25000   |
| <b>Switching frequency</b>  |                |                   |   |
| Mechanical operations   |                | x 10 <sup>6</sup> | 10  |
| Switching frequency   |                | Hz                | 10  |
| Resistive load/lamp load  |                | Hz                | 2   |
| Inductive load  |                | Hz                | 0.5   |

|   |      |  |                        |
|---|------|--|------------------------|
| <b>UL/CSA</b>                                       |      |  |                        |
| Uninterrupted current at 240 V AC                   | A    |  | 10                     |
| Uninterrupted current at 24 V DC                    | A    |  | 8                      |
| <b>AC</b>   |      |  |                        |
| Control Circuit Rating Codes (utilization category) |      |  | B 300 Light Pilot Duty |
| Max. rated operational voltage                      | V AC |  | 300                    |
| max. thermal continuous current cos φ = 1 at B 300  | A    |  | 5                      |
| max. make/break cos φ ≠ capacity 1 at B 300         | VA   |  | 3600/360               |
| <b>DC</b>   |      |  |                        |
| Control Circuit Rating Codes (utilization category) |      |  | R 300 Light Pilot Duty |
| Max. rated operational voltage                      | V DC |  | 300                    |
| Max. thermal uninterrupted current at R 300         | A    |  | 1                      |
| Max. make/break capacity at R 300                   | VA   |  | 28/28                  |

**Supply voltage U<sub>Aux</sub>**

|            |   |   |   |
|------------|---|---|---|
| Power loss | P | W | 2 |
|------------|---|---|---|

**Design verification as per IEC/EN 61439**

|  |                   |    |  |
|--|-------------------|----|--|
| <b>Technical data for design verification</b>  |                   |    |  |
| Rated operational current for specified heat dissipation   | I <sub>n</sub>    | A  | 0  |
| Heat dissipation per pole, current-dependent   | P <sub>vid</sub>  | W  | 0  |
| Equipment heat dissipation, current-dependent  | P <sub>vid</sub>  | W  | 0  |
| Static heat dissipation, non-current-dependent   | P <sub>vs</sub>   | W  | 2  |
| Heat dissipation capacity  | P <sub>diss</sub> | W  | 0  |
| Operating ambient temperature min.   |                   | °C | -25  |
| Operating ambient temperature max.   |                   | °C | 55   |
| <b>IEC/EN 61439 design verification</b>  |                   |    |  |
| <b>10.2 Strength of materials and parts</b>  |                   |    |  |
| 10.2.2 Corrosion resistance  |                   |    |  |
|  |                   |    | Meets the product standard's requirements.   |
| 10.2.3.1 Verification of thermal stability of enclosures   |                   |    |  |
|  |                   |    | Meets the product standard's requirements.   |
| 10.2.3.2 Verification of resistance of insulating materials to normal heat   |                   |    |  |
|  |                   |    | Meets the product standard's requirements.   |
| 10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects |                   |    |  |
|  |                   |    | Meets the product standard's requirements.   |
| 10.2.4 Resistance to ultra-violet (UV) radiation   |                   |    |  |
|  |                   |    | Meets the product standard's requirements.   |
| 10.2.5 Lifting   |                   |    |  |
|  |                   |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.2.6 Mechanical impact   |                   |    |  |
|  |                   |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.2.7 Inscriptions  |                   |    |  |
|  |                   |    | Meets the product standard's requirements.   |
| 10.3 Degree of protection of ASSEMBLIES  |                   |    |  |
|  |                   |    | Meets the product standard's requirements.   |
| 10.4 Clearances and creepage distances   |                   |    |  |
|  |                   |    | Meets the product standard's requirements.   |
| 10.5 Protection against electric shock   |                   |    |  |
|  |                   |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.6 Incorporation of switching devices and components   |                   |    |  |
|  |                   |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.7 Internal electrical circuits and connections  |                   |    |  |
|  |                   |    | Is the panel builder's responsibility.   |
| 10.8 Connections for external conductors   |                   |    |  |
|  |                   |    | Is the panel builder's responsibility.   |
| 10.9 Insulation properties   |                   |    |  |
| 10.9.2 Power-frequency electric strength   |                   |    |  |
|  |                   |    | Is the panel builder's responsibility.   |
| 10.9.3 Impulse withstand voltage   |                   |    |  |
|  |                   |    | Is the panel builder's responsibility.   |
| 10.9.4 Testing of enclosures made of insulating material   |                   |    |  |
|  |                   |    | Is the panel builder's responsibility.   |
| 10.10 Temperature rise   |                   |    |  |
|  |                   |    | The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices. |
| 10.11 Short-circuit rating   |                   |    |  |
|  |                   |    | Is the panel builder's responsibility.   |
| 10.12 Electromagnetic compatibility  |                   |    |  |
|  |                   |    | Is the panel builder's responsibility.   |
| 10.13 Mechanical function  |                   |    |  |
|  |                   |    | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.                         |

**Technical data ETIM 7.0**

|  |
|--|
| PLC's (EG000024) / Logic module (EC001417)   |
| Electric engineering, automation, process control engineering / Control / Programmable logic control (SPS) / Logic module (ecl@ss10.0.1-27-24-22-16 [AKE539014]) |

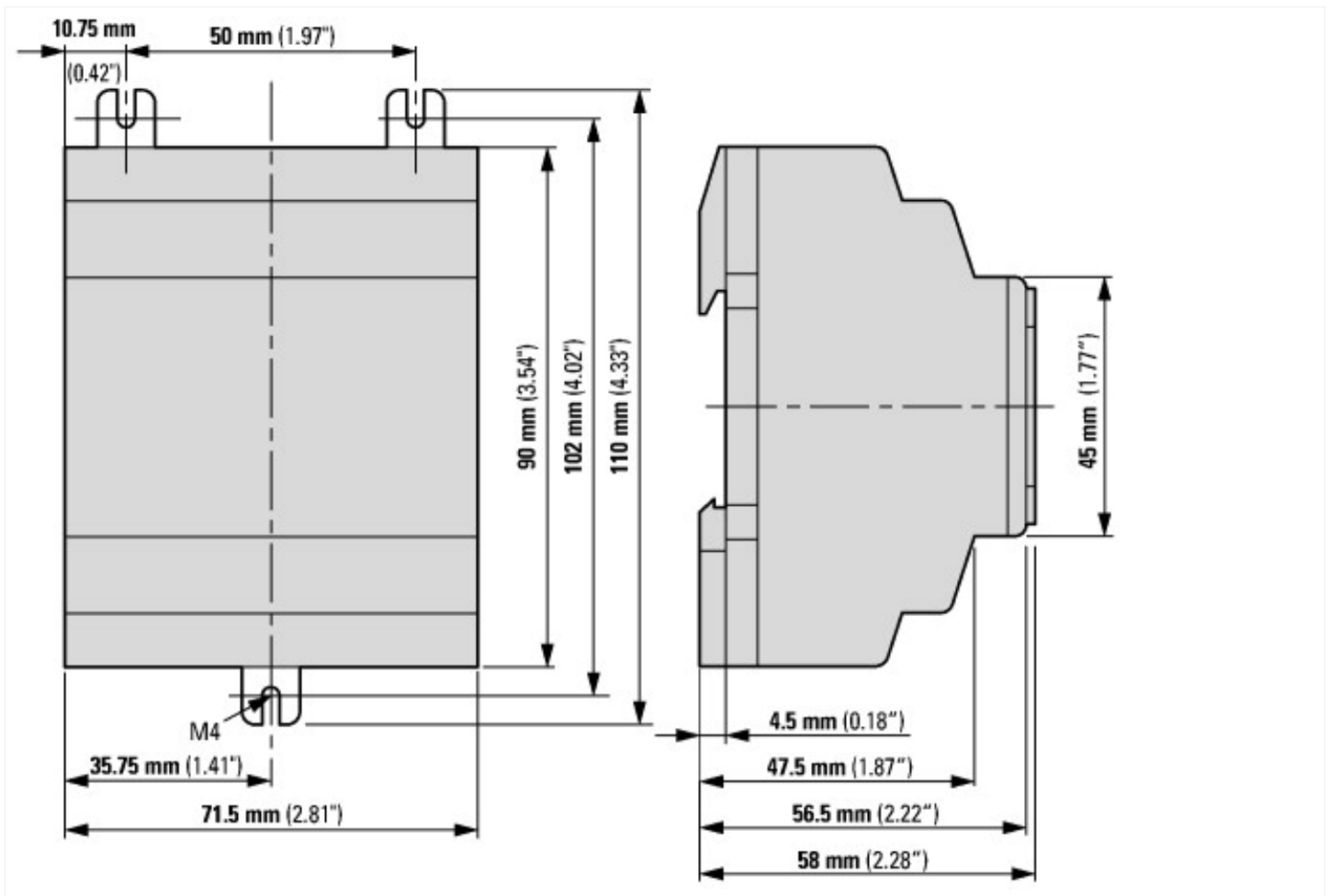
|   |   |             |
|---|---|-------------|
| Supply voltage AC 50 Hz                             | V | 0 - 0       |
| Supply voltage AC 60 Hz                             | V | 0 - 0       |
| Supply voltage DC                                   | V | 20.4 - 28.8 |
| Voltage type of supply voltage                      |   | DC          |
| Switching current                                   | A | 8           |
| Number of analogue inputs                           |   | 2           |
| Number of analogue outputs                          |   | 0           |
| Number of digital inputs                            |   | 8           |
| Number of digital outputs                           |   | 4           |
| With relay output                                   |   | Yes         |
| Number of HW-interfaces industrial Ethernet         |   | 0           |
| Number of interfaces PROFINET                       |   | 0           |
| Number of HW-interfaces RS-232                      |   | 0           |
| Number of HW-interfaces RS-422                      |   | 0           |
| Number of HW-interfaces RS-485                      |   | 0           |
| Number of HW-interfaces serial TTY                  |   | 0           |
| Number of HW-interfaces USB                         |   | 0           |
| Number of HW-interfaces parallel                    |   | 0           |
| Number of HW-interfaces Wireless                    |   | 0           |
| Number of HW-interfaces other                       |   | 1           |
| With optical interface                              |   | No          |
| Supporting protocol for TCP/IP                      |   | No          |
| Supporting protocol for PROFIBUS                    |   | No          |
| Supporting protocol for CAN                         |   | No          |
| Supporting protocol for INTERBUS                    |   | No          |
| Supporting protocol for ASI                         |   | No          |
| Supporting protocol for KNX                         |   | No          |
| Supporting protocol for MODBUS                      |   | No          |
| Supporting protocol for Data-Highway                |   | No          |
| Supporting protocol for DeviceNet                   |   | No          |
| Supporting protocol for SUCONET                     |   | No          |
| Supporting protocol for LON                         |   | No          |
| Supporting protocol for PROFINET IO                 |   | No          |
| Supporting protocol for PROFINET CBA                |   | No          |
| Supporting protocol for SERCOS                      |   | No          |
| Supporting protocol for Foundation Fieldbus         |   | No          |
| Supporting protocol for EtherNet/IP                 |   | No          |
| Supporting protocol for AS-Interface Safety at Work |   | No          |
| Supporting protocol for DeviceNet Safety            |   | No          |
| Supporting protocol for INTERBUS-Safety             |   | No          |
| Supporting protocol for PROFIsafe                   |   | No          |
| Supporting protocol for SafetyBUS p                 |   | No          |
| Supporting protocol for other bus systems           |   | No          |
| Radio standard Bluetooth                            |   | No          |
| Radio standard WLAN 802.11                          |   | No          |
| Radio standard GPRS                                 |   | No          |
| Radio standard GSM                                  |   | No          |
| Radio standard UMTS                                 |   | No          |
| IO link master                                      |   | No          |
| Redundancy  |   | No          |
| With display  |   | Yes         |
| Degree of protection (IP)                           |   | IP20        |
| Basic device  |   | Yes         |
| Expandable  |   | No          |
| Expansion device                                    |   | No          |

|                                       |  |    |      |
|---------------------------------------|--|----|------|
| With timer                            |  |    | No   |
| Rail mounting possible                |  |    | Yes  |
| Wall mounting/direct mounting         |  |    | Yes  |
| Front build in possible               |  |    | No   |
| Rack-assembly possible                |  |    | No   |
| Suitable for safety functions         |  |    | No   |
| Category according to EN 954-1        |  |    | None |
| SIL according to IEC 61508            |  |    | None |
| Performance level acc. EN ISO 13849-1 |  |    | None |
| Appendant operation agent (Ex ia)     |  |    | No   |
| Appendant operation agent (Ex ib)     |  |    | No   |
| Explosion safety category for gas     |  |    | None |
| Explosion safety category for dust    |  |    | None |
| Width                                 |  | mm | 71.5 |
| Height                                |  | mm | 90   |
| Depth                                 |  | mm | 58   |

## Approvals

|                             |  |  |   |
|-----------------------------|--|--|---|
| Product Standards           |  |  | IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking |
| UL File No.                 |  |  | E135462   |
| UL Category Control No.     |  |  | NRAQ  |
| CSA File No.                |  |  | 012528  |
| CSA Class No.               |  |  | 2252-01 + 2258-02   |
| North America Certification |  |  | UL listed, CSA certified  |
| Degree of Protection        |  |  | IEC: IP20, UL/CSA Type: -   |

## Dimensions





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