

## Solenoid driver - MACX MCR-EX-SL-SD-21-25-LFD-SP - 2905674

Please be informed that the data shown in this PDF Document is generated from our Online Catalog. Please find the complete data in the user's documentation. Our General Terms of Use for Downloads are valid (<http://phoenixcontact.com/download>)



Ex i solenoid driver for controlling Ex i solenoid valves in hazardous areas, logic input, off-load voltage 21.1 V, current limitation at 25.1 mA, line fault transparency, error message output, up to SIL 3 according to IEC 61508; Push-in connection.

### Your advantages

- ✓ Input: logic
- ✓ Output: intrinsically safe [Ex ia]; off-load voltage > 21.1 V DC; current limitation > 25.1 mA
- ✓ Line fault detection (can be enabled/disabled), via the signal circuit or via a separate error message output
- ✓ Transparent for test pulses
- ✓ Up to SIL 3 according to IEC/EN 61508
- ✓ Safe electrical isolation between output, input, supply, and error message output
- ✓ Power supply and error indication possible via DIN rail connector
- ✓ Plug-in connection terminals, push-in connection technology
- ✓ Installation in zone 2 permitted
- ✓ Housing width: 12.5 mm

**RoHS**

COMPLIANT

### Key Commercial Data

|              |                                                                                      |
|--------------|--------------------------------------------------------------------------------------|
| Packing unit | 1 pc                                                                                 |
| GTIN         |  |
| GTIN         | 4046356985345                                                                        |

### Technical data

#### Note

|                         |                                                                           |
|-------------------------|---------------------------------------------------------------------------|
| Utilization restriction | EMC: class A product, see manufacturer's declaration in the download area |
|-------------------------|---------------------------------------------------------------------------|

#### Dimensions

|        |          |
|--------|----------|
| Width  | 12.5 mm  |
| Height | 116.8 mm |
| Depth  | 113.7 mm |

# Solenoid driver - MACX MCR-EX-SL-SD-21-25-LFD-SP - 2905674

## Technical data

### Ambient conditions

|                                         |                                                                                   |
|-----------------------------------------|-----------------------------------------------------------------------------------|
| Ambient temperature (operation)         | -20 °C ... 60 °C (Any mounting position)                                          |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C                                                                  |
| Maximum altitude                        | ≤ 2000 m                                                                          |
| Permissible humidity (operation)        | 10 % ... 95 % (non-condensing)                                                    |
| Degree of protection                    | IP20 (not assessed by UL)                                                         |
| Noise immunity                          | EN 61000-6-2 When being exposed to interference, there may be minimal deviations. |

### Input data

|              |              |
|--------------|--------------|
| Signal input | Signal input |
|--------------|--------------|

### Output data

|                                              |                                               |
|----------------------------------------------|-----------------------------------------------|
| Output characteristic curve: Output resistor | ≥ 641 Ω (Internal resistance R <sub>i</sub> ) |
| Response time                                | < 30 ms                                       |

### Power supply

|                        |                                             |
|------------------------|---------------------------------------------|
| Nominal supply voltage | 24 V DC                                     |
| Supply voltage range   | 19.2 V DC ... 30 V DC (24 V DC -20%...+25%) |
| Power dissipation      | < 0.8 W                                     |

### Connection data

|                                  |                     |
|----------------------------------|---------------------|
| Connection method                | Push-in connection  |
| Stripping length                 | 8 mm                |
| Conductor cross section solid    | 0.2 mm² ... 1.5 mm² |
| Conductor cross section flexible | 0.2 mm² ... 1.5 mm² |
| Conductor cross section AWG      | 24 ... 16           |

### Connection data 2

|                 |             |
|-----------------|-------------|
| Connection name | Test socket |
| Max. diameter   | 2.3 mm      |

### General

|                               |                                                       |
|-------------------------------|-------------------------------------------------------|
| Status display                | Green LED (supply voltage)                            |
|                               | LED yellow (switching state)                          |
|                               | Red LED (line errors)                                 |
| Degree of pollution           | 2                                                     |
| Overvoltage category          | II                                                    |
| Electromagnetic compatibility | Conformance with EMC directive                        |
| Interference emission         | EN 61000-6-4                                          |
| Housing material              | PA 6.6-FR                                             |
| Color                         | gray                                                  |
| Designation                   | Output/input, error message output                    |
| Electrical isolation          | 375 V (Peak value in accordance with IEC/EN 60079-11) |
| Designation                   | Output/supply, DIN rail connector                     |

# Solenoid driver - MACX MCR-EX-SL-SD-21-25-LFD-SP - 2905674

## Technical data

### General

|                      |                                                       |
|----------------------|-------------------------------------------------------|
| Electrical isolation | 375 V (Peak value in accordance with IEC/EN 60079-11) |
| Designation          | Input/error message output/supply                     |
| Conformance          | CE-compliant, additionally EN 61326                   |
| ATEX                 | # II (1) G [Ex ia Ga] IIC                             |
|                      | # II (1) D [Ex ia Da] IIIC                            |
|                      | # II 3(1) G Ex nA [ia Ga] IIC T4 Gc X                 |
| IECEX                | [Ex ia Ga] IIC                                        |
|                      | [Ex ia Da] IIIC                                       |
|                      | Ex nA [ia Ga] IIC T4 Gc                               |
| UL, USA/Canada       | UL 61010 Listed                                       |
| SIL                  | 3                                                     |

### Safety data

|                                      |             |
|--------------------------------------|-------------|
| Max. internal inductance $L_i$       | negligible  |
| Max. internal capacitance $C_i$      | 11 nF       |
| Max. output voltage $U_o$            | 23.98 V     |
| Max. output current $I_o$            | 37.4 mA     |
| Max. output power $P_o$              | 224 mW      |
| Group                                | IIC         |
| Max. external inductivity $L_o$      | 22 mH       |
| Max. external capacitance $C_o$      | 110 nF      |
| Group                                | IIB         |
| Max. external inductivity $L_o$      | 100 mH      |
| Max. external capacitance $C_o$      | 910 nF      |
| Group                                | IIA         |
| Max. external inductivity $L_o$      | 200 mH      |
| Max. external capacitance $C_o$      | 3330 nF     |
| Safety-related maximum voltage $U_m$ | 253 V AC/DC |

### Standards and Regulations

|                               |                                       |
|-------------------------------|---------------------------------------|
| Electromagnetic compatibility | Conformance with EMC directive        |
| Noise emission                | EN 61000-6-4                          |
| Conformance                   | CE-compliant, additionally EN 61326   |
| ATEX                          | # II (1) G [Ex ia Ga] IIC             |
|                               | # II (1) D [Ex ia Da] IIIC            |
|                               | # II 3(1) G Ex nA [ia Ga] IIC T4 Gc X |
| IECEX                         | [Ex ia Ga] IIC                        |
|                               | [Ex ia Da] IIIC                       |
|                               | Ex nA [ia Ga] IIC T4 Gc               |
| UL, USA/Canada                | UL 61010 Listed                       |
| DNV GL-Temperature            | B                                     |

## Solenoid driver - MACX MCR-EX-SL-SD-21-25-LFD-SP - 2905674

### Technical data

#### Standards and Regulations

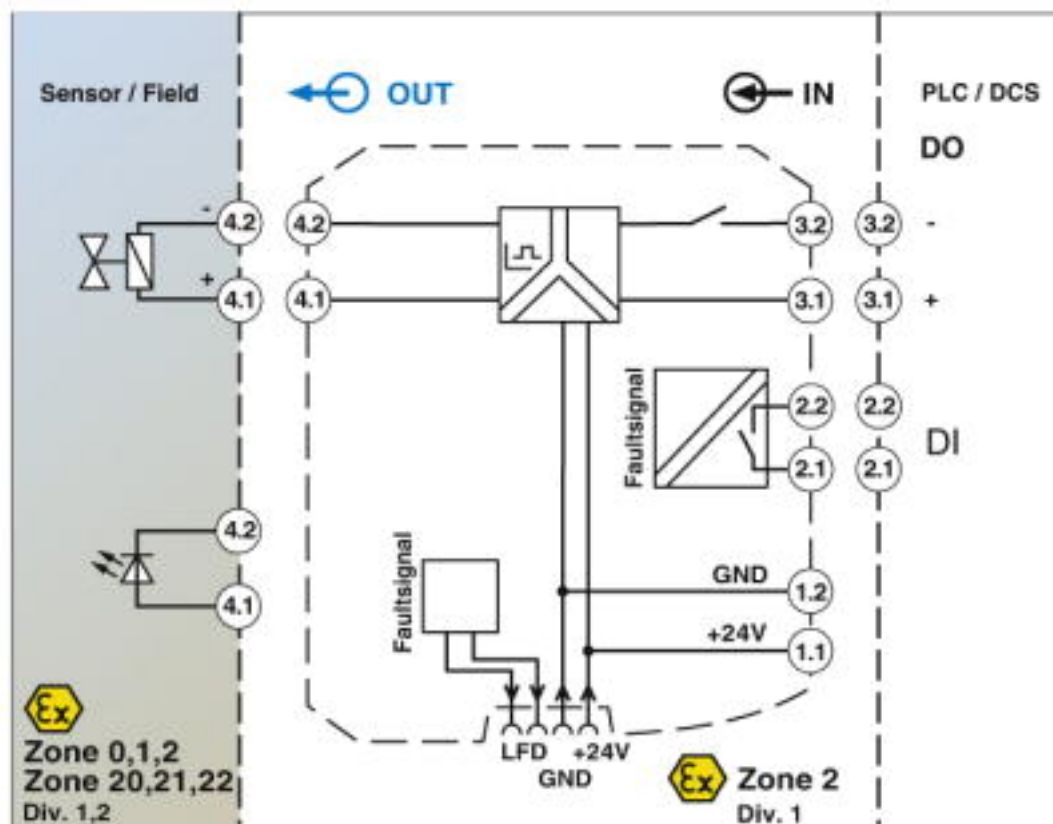
|                  |                                                                                         |
|------------------|-----------------------------------------------------------------------------------------|
| DNV GL-Humidity  | B                                                                                       |
| DNV GL-Vibration | A                                                                                       |
| DNV GL-EMC       | A                                                                                       |
| DNV GL-Enclosure | Required protection according to the Rules shall be provided upon installation on board |
| Group            | IIC                                                                                     |
|                  | IIB                                                                                     |
|                  | IIA                                                                                     |

#### Environmental Product Compliance

|            |                                                                                                     |
|------------|-----------------------------------------------------------------------------------------------------|
| REACH SVHC | Lead 7439-92-1                                                                                      |
| China RoHS | Environmentally Friendly Use Period = 50 years                                                      |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

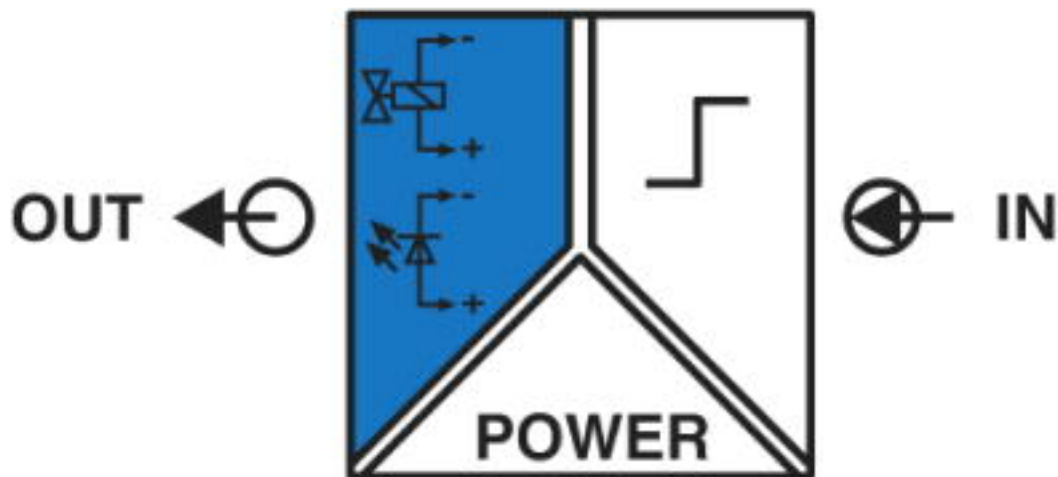
### Drawings

Block diagram



## Solenoid driver - MACX MCR-EX-SL-SD-21-25-LFD-SP - 2905674

Pictogram



### Classifications

#### eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 27243101 |
| eCl@ss 4.0    | 27210100 |
| eCl@ss 4.1    | 27210100 |
| eCl@ss 5.0    | 27210100 |
| eCl@ss 5.1    | 27210100 |
| eCl@ss 6.0    | 27243100 |
| eCl@ss 7.0    | 27243101 |
| eCl@ss 8.0    | 27243101 |
| eCl@ss 9.0    | 27243101 |

#### ETIM

|          |          |
|----------|----------|
| ETIM 5.0 | EC002538 |
| ETIM 6.0 | EC002538 |
| ETIM 7.0 | EC002538 |

#### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 13.2 | 32151802 |
| UNSPSC 18.0 | 32151802 |
| UNSPSC 19.0 | 32151802 |
| UNSPSC 20.0 | 32151802 |
| UNSPSC 21.0 | 32151802 |

### Approvals

#### Approvals

## Solenoid driver - MACX MCR-EX-SL-SD-21-25-LFD-SP - 2905674

### Approvals

Approvals

Functional Safety / EAC / DNV GL

Ex Approvals

IECEX / ATEX

### Approval details

|                   |                                                                                    |                                                                                   |            |
|-------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------|
| Functional Safety |                                                                                    | BVS Pb 11/13                                                                      |            |
| EAC               |   | RU*DE.*08.B.01608/19                                                              |            |
| DNV GL            |  | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a> | TAA000020C |

### Accessories

Accessories

Device marking

Plastic label - UC-EMLP (11X9) - 0819291



Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

Plastic label - UC-EMLP (11X9) YE - 0822602



Plastic label, Sheet, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

## Solenoid driver - MACX MCR-EX-SL-SD-21-25-LFD-SP - 2905674

### Accessories

#### Plastic label - UC-EMLP (11X9) SR - 0828094



Plastic label, Sheet, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

---

#### Plastic label - US-EMLP (11X9) - 0828789



Plastic label, Card, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

---

#### Plastic label - US-EMLP (11X9) YE - 0828871



Plastic label, Card, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

---

#### Plastic label - US-EMLP (11X9) SR - 0828872



Plastic label, Card, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

---

#### Device marker - LS-EMLP (11X9) WH - 0831678



Device marker, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

## Solenoid driver - MACX MCR-EX-SL-SD-21-25-LFD-SP - 2905674

### Accessories

Device marker - LS-EMLP (11X9) YE - 0831732



Device marker, Sheet, yellow, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

Device marker - LS-EMLP (11X9) SR - 0831705



Device marker, Sheet, silver, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

### DIN rail connector

DIN rail bus connectors - ME 6,2 TBUS-2 1,5/5-ST-3,81 GN - 2869728



DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.

### Insulating sleeve

Insulating sleeve - MPS-IH BK - 0201731



Insulating sleeve, color: black

Insulating sleeve - MPS-IH GY - 0201728



Insulating sleeve, color: gray

## Solenoid driver - MACX MCR-EX-SL-SD-21-25-LFD-SP - 2905674

### Accessories

Insulating sleeve - MPS-IH GN - 0201702

Insulating sleeve, color: green



---

Insulating sleeve - MPS-IH YE - 0201692

Insulating sleeve, color: yellow



---

Insulating sleeve - MPS-IH BU - 0201689

Insulating sleeve, color: blue



---

Insulating sleeve - MPS-IH RD - 0201676

Insulating sleeve, color: red



---

Insulating sleeve - MPS-IH WH - 0201663

Insulating sleeve, color: white



---

Labeled device marker

## Solenoid driver - MACX MCR-EX-SL-SD-21-25-LFD-SP - 2905674

### Accessories

Plastic label - UC-EMLP (11X9) CUS - 0824547



Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm

Plastic label - UC-EMLP (11X9) YE CUS - 0824548



Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm

Plastic label - UC-EMLP (11X9) SR CUS - 0828098



Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

### Module carrier

Module carrier - TC-D37SUB-ADIO16-EX-P-UNI - 2924854



Universal termination carrier for connecting 16 MACX Analog Ex i signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection)

Module carrier - TC-D37SUB-AIO16-EX-PS-UNI - 2902932



Universal termination carrier for connecting 16 MACX Analog Ex i signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection), with HART multiplexer connection

### Power module

## Solenoid driver - MACX MCR-EX-SL-SD-21-25-LFD-SP - 2905674

### Accessories

Power and error message module - MACX MCR-PTB - 2865625



Power and fault signaling module with screw connection, including corresponding ME 17,5 TBUS 1,5/ 5-ST-3,81 GY DIN rail connector

---

Power and error message module - MACX MCR-PTB-SP - 2924184



Power and fault signaling module with Push-in connection, including corresponding ME 17,5 TBUS 1,5/ 5-ST-3,81 GY DIN rail connector

---

Test plug terminal block

Test plugs - MPS-MT - 0201744



Test plugs, with solder connection up to 1 mm<sup>2</sup> conductor cross section, color: gray

---

Phoenix Contact 2020 © - all rights reserved  
<http://www.phoenixcontact.com>

PHOENIX CONTACT GmbH & Co. KG  
Flachsmarktstr. 8  
32825 Blomberg  
Germany  
Tel. +49 5235 300  
Fax +49 5235 3 41200  
<http://www.phoenixcontact.com>