

# Output signal conditioner - MACX MCR-EX-IDS-I-I - 2908060

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 output signal conditioner, HART. Isolates and transmits 0/4...20 mA signals with intrinsic safety to a load in the Ex area. Galvanic 3-way electrical isolation, line fault detection (can be switched off via DIP switch), SIL 2 (SC3) in accordance with IEC 61508, screw connection.



## Key Commercial Data

|                                      |                     |
|--------------------------------------|---------------------|
| Packing unit                         | 1 pc                |
| GTIN                                 |                     |
| GTIN                                 | 4055626274584       |
| Weight per Piece (excluding packing) | 160.000 g           |
| Weight per piece (including packing) | 170.000 g           |
| Custom tariff number                 | 85437090            |
| Country of origin                    | Germany             |
| Sales Key                            | J1 - MSR Technology |

## Technical data

### Dimensions

|        |          |
|--------|----------|
| Width  | 12.5 mm  |
| Height | 112.5 mm |
| Depth  | 114.5 mm |

### Ambient conditions

|   |   |
|---|---|
| Ambient temperature (operation)         | -40 °C ... 70 °C (Any mounting position)  |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C  |
| Permissible humidity (operation)        | 5 % ... 95 % (non-condensing)   |
| Degree of protection                    | IP20  |
| Noise immunity                          | EN 61000-6-2 When being exposed to interference, there may be minimal deviations. |

### Input data

|                      |   |
|----------------------|---|
| Current input signal | 0 mA ... 20 mA (Function (short-circuit detection off)) |
|----------------------|---|

# Output signal conditioner - MACX MCR-EX-IDS-I-I - 2908060

## Technical data

### Input data

|                      |  |
|----------------------|--|
|                      | 0.2 mA ... 20 mA (Function (short-circuit detection on)) |
|                      | 4 mA ... 20 mA (Safety)                                  |
|                      | 0 mA ... 24 mA (Underload/overload range)                |
| Input impedance      | > 1 MΩ (If there is a line fault)                        |
| Line fault detection | Response threshold of input current >0.2 mA              |
| Voltage drop         | < 2.4 V (at 20 mA)                                       |

### Output data

|                       |  |
|-----------------------|--|
| Signal output         | Current output intrinsically safe                        |
| Current output signal | 0 mA ... 20 mA (Function (short-circuit detection off))  |
|                       | 0.2 mA ... 20 mA (Function (short-circuit detection on)) |
|                       | 4 mA ... 20 mA (Safety)                                  |
|                       | 0 mA ... 24 mA (Underload/overload range)                |
| Transmission Behavior | 1:1 to input signal                                      |
| Output ripple         | < 20 mV <sub>rms</sub>                                   |
| Non-load voltage      | ≤ 27 V   |

### Power supply

|                          |   |
|--------------------------|---|
| Nominal supply voltage   | 24 V DC                                     |
| Supply voltage range     | 19.2 V DC ... 30 V DC (24 V DC -20%...+25%) |
| Max. current consumption | < 45 mA (at 24 V DC / 20 mA)                |
| Power dissipation        | < 0.8 W (at 24 V DC / 20 mA)                |
| Power consumption        | ≤ 1.1 W (at 24 V DC / 20 mA)                |

### Connection data

|                                  |   |
|----------------------------------|---|
| Connection method                | Screw connection                            |
| Stripping length                 | 7 mm  |
| Screw thread                     | M3  |
| Conductor cross section solid    | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section flexible | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section AWG      | 24 ... 14                                   |
| Torque                           | 0.5 Nm ... 0.6 Nm                           |

### Connection data 2

|                 |                     |
|-----------------|---------------------|
| Connection name | COMBICON connection |
| Max. diameter   | 2 mm                |

### General

|                                  |                                    |
|----------------------------------|------------------------------------|
| Maximum transmission error       | 0.1 % (of final value)             |
| Transmission error, typical      | ≤ 0.05 % (of final value)          |
| Maximum temperature coefficient  | 0.01 %/K                           |
| Temperature coefficient, typical | ≤ 0.005 %/K                        |
| Step response (10-90%)           | < 140 μs (for 4 mA ... 20 mA step) |

# Output signal conditioner - MACX MCR-EX-IDS-I-I - 2908060

## Technical data

### General

|                               |   |
|-------------------------------|---|
| Status display                | Green LED (supply voltage)                            |
| 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                   | Input/output  |
|                               | Input/power supply                                    |
|                               | Output/supply   |
|                               | Output/input  |
| Electrical isolation          | 375 V (Peak value in accordance with IEC/EN 60079-11) |
| Designation                   | Output/supply   |
| Electrical isolation          | 375 V (Peak value in accordance with IEC/EN 60079-11) |

### Data communication (bypass)

|                     |      |
|---------------------|------|
| HART function       | Yes  |
| Protocols supported | HART |

### Safety data

|                                 |                |
|---------------------------------|----------------|
| Max. internal inductance $L_i$  | negligible     |
| Max. internal capacitance $C_i$ | negligible     |
| Max. output voltage $U_o$       | 25.2 V         |
| Max. output current $I_o$       | 93 mA          |
| Max. output power $P_o$         | 586 mW         |
| Group                           | IIC            |
| Max. external inductivity $L_o$ | 2 mH           |
| Max. external capacitance $C_o$ | 104 nF         |
| Additional text                 | simple circuit |
| Group                           | IIC            |
| Max. external inductivity $L_o$ | 2 mH           |
| Max. external capacitance $C_o$ | 46 nF          |
| Additional text                 | mixed circuit  |
| Group                           | IIC            |
| Max. external inductivity $L_o$ | 1 mH           |
| Max. external capacitance $C_o$ | 60 nF          |
| Additional text                 | mixed circuit  |
| Group                           | IIC            |
| Max. external inductivity $L_o$ | 500 $\mu$ H    |
| Max. external capacitance $C_o$ | 77 nF          |
| Additional text                 | mixed circuit  |

# Output signal conditioner - MACX MCR-EX-IDS-I-I - 2908060

## Technical data

### Safety data

|   |                     |
|---|---------------------|
| Group   | IIC                 |
| Max. external inductivity L <sub>o</sub>      | 200 µH              |
| Max. external capacitance C <sub>o</sub>      | 104 nF              |
| Additional text                               | mixed circuit       |
| Group   | IIB                 |
| Max. external inductivity L <sub>o</sub>      | 4 mH                |
| Max. external capacitance C <sub>o</sub>      | 817 nF              |
| Additional text                               | simple circuit      |
| Group   | IIB                 |
| Max. external inductivity L <sub>o</sub>      | 4 mH                |
| Max. external capacitance C <sub>o</sub>      | 367 nF              |
| Additional text                               | mixed circuit       |
| Group   | IIB                 |
| Max. external inductivity L <sub>o</sub>      | 1 mH                |
| Max. external capacitance C <sub>o</sub>      | 427 nF              |
| Additional text                               | mixed circuit       |
| Group   | IIB                 |
| Max. external inductivity L <sub>o</sub>      | 500 µH              |
| Max. external capacitance C <sub>o</sub>      | 507 nF              |
| Additional text                               | mixed circuit       |
| Group   | IIB                 |
| Max. external inductivity L <sub>o</sub>      | 200 µH              |
| Max. external capacitance C <sub>o</sub>      | 657 nF              |
| Additional text                               | mixed circuit       |
| Group   | IIB                 |
| Max. external inductivity L <sub>o</sub>      | 100 µH              |
| Max. external capacitance C <sub>o</sub>      | 817 nF              |
| Additional text                               | mixed circuit       |
| Safety-related maximum voltage U <sub>m</sub> | 253 V AC (125 V DC) |

### Standards and Regulations

|                               |                                     |
|-------------------------------|-------------------------------------|
| Electromagnetic compatibility | Conformance with EMC directive      |
| Noise emission                | EN 61000-6-4                        |
| Conformance                   | CE-compliant, additionally EN 61326 |
| Group                         | IIC                                 |
|                               | IIC                                 |
|                               | IIC                                 |
|                               | IIC                                 |
|                               | IIC                                 |
|                               | IIB                                 |

# Output signal conditioner - MACX MCR-EX-IDS-I-I - 2908060

## Technical data

### Conformance/approvals

|                 |   |
|-----------------|---|
| Designation     | CE  |
| Identification  | CE-compliant  |
| Additional text | and EN 61326  |
| Designation     | ATEX  |
| Identification  | # I (M1) [Ex ia Ma] I   |
|                 | # II (1) G [Ex ia Ga] IIC   |
|                 | # II (1) D [Ex ia Da] IIIC  |
|                 | # II 3(1) G Ex ec [ia Ga] IIC T4 Gc   |
| Certificate     | BVS 20 ATEX E 004 X   |
| Designation     | IECEX   |
| Identification  | [Ex ia Ma] I  |
|                 | [Ex ia Ga] IIC  |
|                 | [Ex ia Da] IIIC   |
|                 | Ex ec [ia Ga] IIC T4 Gc   |
| Certificate     | IECEX BVS 20.0003X  |
| Designation     | UL, USA/Canada  |
| Identification  | UL 61010 Listed   |
|                 | Class I Div 2; IS for Class I, II, III Div 1  |
| Certificate     | #, C.D.-No 83104549   |
| Designation     | Shipbuilding approval   |
| Certificate     | DNV GL TAA00000AG   |
| Designation     | Safety Integrity Level (SIL, IEC 61508)   |
| Identification  | 2   |
| Designation     | Systematic Capability   |
| Identification  | 3   |
| Temperature     | B   |
| Humidity        | B   |
| Vibration       | A   |
| EMC             | B   |
| Enclosure       | Required protection according to the Rules shall be provided upon installation on board |

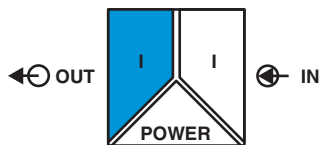
### Environmental Product Compliance

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

## Drawings

# Output signal conditioner - MACX MCR-EX-IDS-I-I - 2908060

Pictogram



Block diagram



## Classifications

### eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 27210120 |
| eCl@ss 11.0   | 27210120 |
| eCl@ss 4.0    | 27210100 |
| eCl@ss 4.1    | 27210100 |
| eCl@ss 5.0    | 27210100 |
| eCl@ss 5.1    | 27210100 |
| eCl@ss 6.0    | 27210100 |
| eCl@ss 7.0    | 27210120 |
| eCl@ss 8.0    | 27210120 |
| eCl@ss 9.0    | 27210120 |

### ETIM

|          |          |
|----------|----------|
| ETIM 4.0 | EC002653 |
| ETIM 5.0 | EC002653 |
| ETIM 6.0 | EC002653 |
| ETIM 7.0 | EC002653 |

## Approvals

### Approvals

#### Approvals

DNV GL / Functional Safety

#### Ex Approvals

IECEX / ATEX

# Output signal conditioner - MACX MCR-EX-IDS-I-I - 2908060

## Approvals

### Approval details

|        |  |   |            |
|--------|--|---|------------|
| DNV GL |  | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a> | TAA00000AG |
|--------|--|---|------------|

|                   |            |
|-------------------|------------|
| Functional Safety | ZP/C002/20 |
|-------------------|------------|

## 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

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

## Output signal conditioner - MACX MCR-EX-IDS-I-I - 2908060

### Accessories

#### 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

---

#### 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



# Output signal conditioner - MACX MCR-EX-IDS-I-I - 2908060

## Accessories

DIN rail bus connectors - ME 6,2 TBUS-2 1,5/5-ST-3,81 GY - 2695439



DIN rail connector (TBUS), 5-pos., for bridging the supply voltage, can be snapped onto NS 35/... DIN rails according to EN 60715

---

## Insulating sleeve

Insulating sleeve - MPS-IH BK - 0201731

Insulating sleeve, color: black



---

Insulating sleeve - MPS-IH GY - 0201728

Insulating sleeve, color: gray



---

Insulating sleeve - MPS-IH GN - 0201702

Insulating sleeve, color: green



---

Insulating sleeve - MPS-IH YE - 0201692

Insulating sleeve, color: yellow



## Output signal conditioner - MACX MCR-EX-IDS-I-I - 2908060

### Accessories

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

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



## Output signal conditioner - MACX MCR-EX-IDS-I-I - 2908060

### Accessories

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

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

## Output signal conditioner - MACX MCR-EX-IDS-I-I - 2908060

### Accessories

Test plugs - MPS-MT - 0201744



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