

MACX MCR-EX-SL-NAM-YO-SP - Isolation switch amplifier



2905724

<https://www.phoenixcontact.com/gb/products/2905724>

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Ex i NAMUR isolation amplifier. For operating Ex i proximity sensors and switches in hazardous areas. Passive transistor output (resistive, Yokogawa-compatible), line fault transparency, up to SIL 2 according to IEC 61508; Push-in connection

Your advantages

- Signal input: intrinsically safe [Ex ia]; for NAMUR proximity sensors (EN 60947-5-6) or switch contacts
- Signal output with resistive behavior (transistor), compatible with Yokogawa ProSafe DI card SDV 144
- Signal output with line fault transparency, line fault indication directly via the signal output
- Up to 5 kHz switching frequency
- Direction of operation can be selected
- Line fault detection (LFD) can be enabled and disabled
- SIL 2 according to IEC/EN 61508
- 3-way electrical isolation
- 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

Commercial data

| | |
|--------------------------------------|--------------------------------|
| Item number | 2905724 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Note | Made to order (non-returnable) |
| Sales key | DK1213 |
| Product key | DK1213 |
| GTIN | 4046356992374 |
| Weight per piece (including packing) | 167 g |
| Weight per piece (excluding packing) | 147.6 g |
| Customs tariff number | 85365019 |
| Country of origin | DE |

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Technical data

Product properties

| | |
|-----------------|----------------------------|
| Product type | Isolating switch amplifier |
| Product family | MACX Analog |
| No. of channels | 1 |
| Configuration | DIP switches |

Insulation characteristics: GB Standard

| | |
|----------------------|----|
| Overvoltage category | II |
| Pollution degree | 2 |

System properties

Functionality

| | |
|---------------|--------------|
| Configuration | DIP switches |
|---------------|--------------|

Electrical properties

| | |
|---|-----------------|
| Electrical isolation | 3-way isolation |
| Electrical isolation between input and output | yes |

Electrical isolation Input/output

| | |
|----------------------|---|
| Electrical isolation | 375 V (Peak value in accordance with IEC/EN 60079-11) |
|----------------------|---|

Electrical isolation Input/output/supply, DIN rail connector

| | |
|--------------------------|--|
| Rated insulation voltage | 300 V _{rms} |
| Test voltage | 2.5 kV AC (50 Hz, 60 s) |
| Insulation | Safe isolation in accordance with IEC/EN 61010-1 |

Electrical isolation Input/supply, DIN rail connector

| | |
|----------------------|---|
| Electrical isolation | 375 V (Peak value in accordance with IEC/EN 60079-11) |
|----------------------|---|

Supported controller: YOKOGAWA ProSafe-RS

| | |
|-------------------|--------|
| Suitable I/O card | SDV144 |
|-------------------|--------|

Supply

| | |
|------------------------|--|
| Nominal supply voltage | 24 V DC |
| Supply voltage range | 9.6 V DC ... 30 V DC (12 V DC ... 24 V DC (-20 % ... +25 %)) |
| Power dissipation | < 0.6 W |
| Power consumption | < 600 mW |

Input data

Signal: NAMUR

| | |
|--|--------------------|
| Description of the input | intrinsically safe |
| Number of inputs | 1 |
| NAMUR proximity sensors (IEC/EN 60947-5-6) | |

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| | |
|---|---|
| Available input sources | floating switch contacts |
| | Switch contacts with resistance circuit |
| Switching threshold "0" signal current | < 1.2 mA (blocking) |
| Switching threshold "1" signal, current | > 2.1 mA (conductive) |
| Switching hysteresis | < 0.2 mA |
| Line fault detection | < 0.05 mA ... 0.35 mA (Line break) |
| | < 100 Ω ... 360 Ω (Short circuit) |
| | Activated /deactivated via DIP switch |
| Open-circuit voltage | 8 V DC |

Output data

Signal

| | |
|-------------------|---|
| Number of outputs | 1 |
|-------------------|---|

Connection data

| | |
|----------------------------------|---|
| Connection method | Push-in connection |
| Stripping length | 8 mm |
| Conductor cross-section rigid | 0.2 mm ² ... 1.5 mm ² |
| Conductor cross-section flexible | 0.2 mm ² ... 1.5 mm ² |
| Conductor cross-section AWG | 24 ... 16 |

Test socket

| | |
|---------------|--------|
| Max. diameter | 2.3 mm |
|---------------|--------|

Ex data

Safety data

| | |
|---|---|
| Max. internal inductance L_i | negligible |
| Max. internal capacitance C_i | negligible |
| Max. output voltage U_o | 9.6 V |
| Max. output current I_o | 10 mA |
| Max. output power P_o | 25 mW |
| Safety-related maximum voltage U_m | 253 V AC/DC |
| IIA (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 1000 mH / 210 μF |
| IIB/IIIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 1000 mH / 26 μF |
| IIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 300 mH / 3.6 μF |
| IIB/IIA/IIIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o | 100 mH / 1 μF, 5 mH / 1 μF, 1 mH / 1 μF, 10 μH / 1 μF |
| IIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o | 100 mH / 510 nF, 50 mH / 580 nF, 5 mH / 600 nF, 1 mH / 600 nF, 10 μH / 600 nF |

Interfaces

Data

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| | |
|-----------------|---|
| No. of channels | 0 |
|-----------------|---|

Signaling

| | |
|----------------|------------------------------|
| Status display | Green LED (supply voltage) |
| | LED yellow (switching state) |
| | Red LED (line errors) |

Dimensions

| | |
|---------------------|--|
| Dimensional drawing | |
| Width | 12.5 mm |
| Height | 116 mm |
| Depth | 113.7 mm |
| Depth NS 35/7,5 | 114.5 mm (Snapped onto DIN rail NS 35/7,5 in accordance with EN 60715) |

Material specifications

| | |
|--|-----------------|
| Color | gray (RAL 7042) |
| Flammability rating according to UL 94 (Housing) | V0 (Housing) |
| Housing material | PA 6.6-FR |

Characteristics

Safety data

| | |
|------------------------------|---|
| Safety Integrity Level (SIL) | 2 |
|------------------------------|---|

Safety data

| | |
|------------------------------|---|
| Safety Integrity Level (SIL) | 2 |
|------------------------------|---|

Environmental and real-life conditions

Ambient conditions

| | |
|---|--|
| Degree of protection | IP20 (not assessed by UL) |
| Ambient temperature (operation) | -20 °C ... 60 °C (Any mounting position) |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C |
| Altitude | ≤ 2000 m |
| Permissible humidity (operation) | 10 % ... 95 % (non-condensing) |

Approvals

CE

| | |
|-------------|--------------|
| Certificate | CE-compliant |
|-------------|--------------|

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| | |
|------|--------------|
| Note | and EN 61326 |
|------|--------------|

ATEX

| | |
|----------------|----------------------------|
| Identification | ⊕ II (1) G [Ex ia Ga] IIC |
| | ⊕ II (1) D [Ex ia Da] IIIC |
| | ⊕ II 3G Ex nA IIC T4 Gc X |
| Certificate | IBExU 12 ATEX 1169 |

IECEX

| | |
|----------------|--------------------|
| Identification | [Ex ia Ga] IIC |
| | [Ex ia Da] IIIC |
| | Ex nA IIC T4 Gc |
| Certificate | IECEX IBE 12.0018X |

CCC / China-Ex

| | |
|----------------|-------------------------|
| Identification | [Ex ia Ga] IIC |
| | [Ex iaD] |
| | Ex nA [ia Ga] IIC T4 Gc |
| Certificate | NEPSI GYJ20.1314X |

UL, USA/Canada

| | |
|----------------|----------------------|
| Identification | UL 61010 Listed |
| Certificate | ⓈⓂⓂ C.D.-No 83104549 |

Safety Integrity Level (SIL, IEC 61508)

| | |
|----------------|---|
| Identification | 2 |
|----------------|---|

EAC Ex

| | |
|----------------|-------------------------|
| Identification | ERC [Ex ia Ga] IIC |
| | ERC [Ex ia Da] IIIC |
| Certificate | RU C-DE.AB72.B.00093/19 |

INMETRO

| | |
|----------------|-----------------|
| Identification | [Ex ia Ga] IIC |
| | [Ex ia Da] IIIC |
| | Ex nA IIC T4 Gc |
| Certificate | DNV 18.0144 X |

EMC data

| | |
|-------------------------------|--------------------------------|
| Electromagnetic compatibility | Conformance with EMC directive |
| Noise immunity | EN 61000-6-2 |

Noise emission

| | |
|-----------------------|--------------|
| Standards/regulations | EN 61000-6-4 |
|-----------------------|--------------|

Standards and regulations

| | |
|----------------------|-----------------|
| Electrical isolation | 3-way isolation |
|----------------------|-----------------|

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GB Standard

| | |
|-----------------------|------------|
| Standards/regulations | GB 3626.20 |
| | GB 3836.1 |
| | GB 3836.4 |
| | GB 3836.8 |
| | GB 12476.1 |
| | GB 12476.4 |

Mounting

| | |
|---------------|-------------------|
| Mounting type | DIN rail mounting |
|---------------|-------------------|

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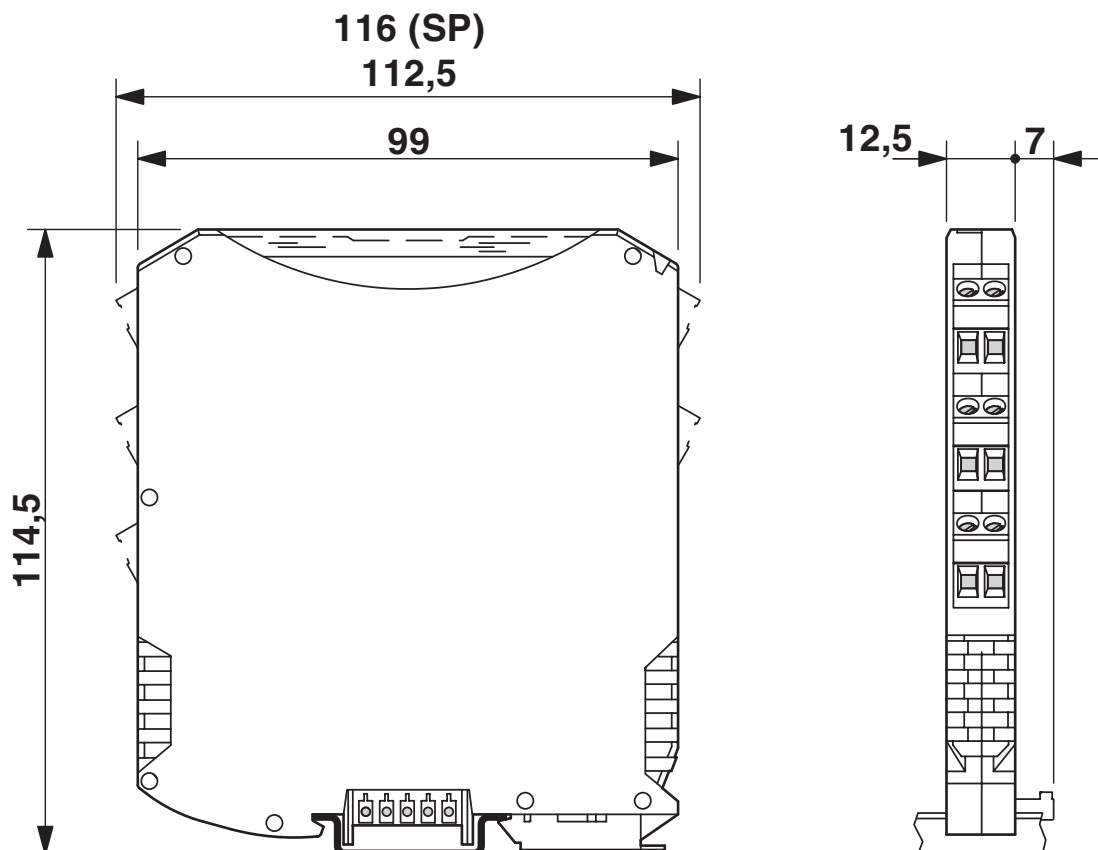


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Drawings

Dimensional drawing



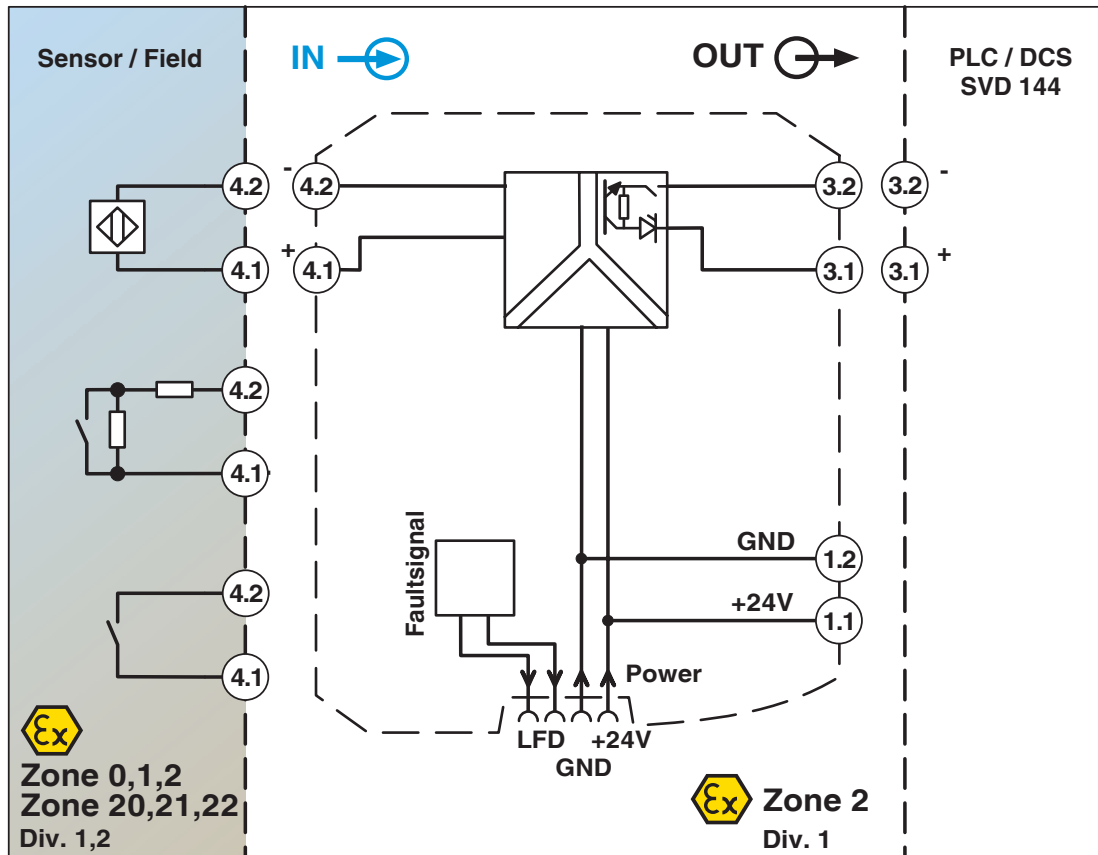
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Block diagram



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Classifications

UNSPSC

| | |
|-------------|----------|
| UNSPSC 21.0 | 39121000 |
|-------------|----------|

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Environmental product compliance

EU RoHS

| | |
|---|--------------|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 7(a), 7(c)-I |

China RoHS

| | |
|--|---|
| Environment friendly use period (EFUP) | EFUP-50 |
| | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

EU REACH SVHC

| | |
|-------------------------------------|----------------------|
| REACH candidate substance (CAS No.) | Lead(CAS: 7439-92-1) |
|-------------------------------------|----------------------|

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