

MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

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 documentation. Our general terms of use for downloads are valid.



Ex i solenoid driver for controlling Ex i solenoid valves in hazardous areas, logic input, off-load voltage 24.3 V, current limitation at 48 mA, line fault transparency, error message output, up to SIL 3 according to IEC 61508; screw connection.

Your advantages

- Input: logic
- Output: intrinsically safe [Ex ia]; off-load voltage > 24.3 V DC; current limitation > 48 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, screw connection technology
- Installation in zone 2 permitted
- Housing width: 12.5 mm

Commercial data

| | |
|--------------------------------------|---------------------|
| Item number | 2906155 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | C430 |
| Product key | CK3142 |
| Catalog page | Page 165 (C-5-2019) |
| GTIN | 4055626041490 |
| Weight per piece (including packing) | 182.4 g |
| Weight per piece (excluding packing) | 155.6 g |
| Customs tariff number | 85437090 |
| Country of origin | DE |

Technical data

Notes

Utilization restriction

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

Product properties

| | |
|-----------------|---|
| Product type | Solenoid driver |
| Product family | MACX Analog |
| No. of channels | 1 |
| Type | Ex i signal conditioners with SIL functional safety |

Data management status

| | |
|------------------|----|
| Article revision | 09 |
|------------------|----|

Electrical properties

Electrical isolation

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

Electrical isolation Output/input, error message output IEC/EN 60079-11

| | |
|--------------------------|-------------------------|
| Standards/regulations | IEC/EN 60079-11 |
| Rated insulation voltage | 375 V _{PP} |
| Test voltage | 2.5 kV AC (50 Hz, 60 s) |

Electrical isolation Output/input, error message output IEC/EN 61010-1

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

Electrical isolation Output/supply, DIN rail connector IEC/EN 60079-11

| | |
|--------------------------|-------------------------|
| Standards/regulations | IEC/EN 60079-11 |
| Rated insulation voltage | 375 V _{PP} |
| Test voltage | 2.5 kV AC (50 Hz, 60 s) |

Electrical isolation Output/supply, DIN rail connector IEC/EN 61010-1

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

Electrical isolation Input/error message output/supply

| | |
|--------------|-------------------------|
| Test voltage | 1.5 kV AC (50 Hz, 60 s) |
|--------------|-------------------------|

MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

Supply

| | |
|------------------------|-------------------------|
| Nominal supply voltage | 24 V DC -20 % ... +25 % |
| Supply voltage range | 19.2 V DC ... 30 V DC |
| Power dissipation | < 1.62 W |

Input data

Signal: Logic

| | |
|----------------------------|---|
| Number of inputs | 1 |
| Switching level "0" signal | 0 V DC ... 5 V DC (or open) |
| Switching level "1" signal | 15 V DC ... 30 V DC |
| Input current | < 12 mA |
| Input impedance | 3 M Ω (high-resistance in the event of a line fault at the output) |
| Immune to test pulses | Yes |

Output data

Signal: Error message output

| | |
|---------------------------|----------------------------|
| Contact switching type | N/O contact |
| Type of output signal | Transistor output, passive |
| Maximum switching voltage | 30 V DC |
| Max. switching current | 50 mA |
| Short-circuit-proof | yes |

Signal: Voltage

| | |
|----------------------|--|
| Output description | intrinsically safe |
| Number of outputs | 1 |
| Output voltage | ≥ 9.7 V DC (48 mA) |
| Output resistor | ≥ 297 Ω (Internal resistance R_i) |
| Current limitation | > 48 mA (with line fault detection) |
| Response time | < 30 ms |
| Non-load voltage | > 24.3 V DC |
| Short-circuit-proof | yes |
| Line fault detection | > 10 k Ω (Line break) < 50 Ω (Short circuit) Activated /deactivated via DIP switch |

Connection data

| | |
|----------------------------------|---|
| Connection method | Screw connection |
| Stripping length | 7 mm |
| Screw thread | M3 |
| Conductor cross section rigid | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross section flexible | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross section AWG | 24 ... 14 |
| Tightening torque | 0.5 Nm ... 0.6 Nm |

MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

Test socket

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

Ex data

| | |
|-----------------------|--------|
| Ex installation (EPL) | Gc |
| | Div. 2 |
| Ex i circuits (EPL) | Ga |
| | Da |
| | Ma |
| | Div. 1 |

Safety data

| | |
|--|-----------------|
| Max. internal inductance L_i | negligible |
| Max. internal capacitance C_i | 11 nF |
| Max. output voltage U_o | 27.06 V |
| Max. output current I_o | 91.11 mA |
| Max. output power P_o | 616 mW |
| Safety-related maximum voltage U_m | 253 V AC |
| | 125 V DC |
| IIC: Max. external inductivity L_o / Max. external capacitance C_o | 3.5 mH / 78 nF |
| IIB/IIC: Max. external inductivity L_o / Max. external capacitance C_o | 15 mH / 686 nF |
| IIA/I: Max. external inductivity L_o / Max. external capacitance C_o | 32 mH / 2290 nF |

Signaling

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

Dimensions

| | |
|---------------------|--|
| Dimensional drawing | |
| Width | 12.5 mm |
| Height | 112.5 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 | V0 (Housing) |
| Housing material | PA 6.6-FR |

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 |
| Permissible humidity (operation) | 10 % ... 95 % (non-condensing) |

Altitude range (≤ 2000 m)

| | |
|---------------------------------|--|
| Altitude | ≤ 2000 m (The technical data refers to altitudes ≤2000 m above mean sea level. For altitudes >2000 m above mean sea level, refer to the data sheet.) |
| Ambient temperature (operation) | -20 °C ... 60 °C |
| Rated insulation voltage | 253 V AC (Power supply, input / output) |
| | 125 V DC (Power supply, input / output) |

Altitude range (≤ 3000 m)

| | |
|---------------------------------|---|
| Height range | > 2000 m ... 3000 m |
| Ambient temperature (operation) | -20 °C ... 54 °C |
| Rated insulation voltage | 190 V AC (Power supply, input / output) |
| | 110 V DC (Power supply, input / output) |

Altitude range (≤ 4000 m)

| | |
|---------------------------------|---|
| Height range | > 3000 m ... 4000 m |
| Ambient temperature (operation) | -20 °C ... 48 °C |
| Rated insulation voltage | 60 V AC/DC (Power supply, input / output) |

Altitude range (≤ 5000 m)

| | |
|---------------------------------|---|
| Height range | > 4000 m ... 5000 m |
| Ambient temperature (operation) | -20 °C ... 42 °C |
| Rated insulation voltage | 60 V AC/DC (Power supply, input / output) |

Approvals

CE

| | |
|-------------|--------------|
| Certificate | CE-compliant |
| Note | and EN 61326 |

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 X |
| Certificate | IBExU 13 ATEX1045X |

UKCA Ex (UKEX)

MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

| | |
|----------------|--------------------------------------|
| Identification | ⊕ 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 |
| | ⊕ I (M1) [Ex ia Ma] I |
| Certificate | CML 22UKEX3530X |

IECEX

| | |
|----------------|-------------------------|
| Identification | [Ex ia Ma] I |
| | [Ex ia Ga] IIC |
| | [Ex ia Da] IIIC |
| | Ex ec [ia Ga] IIC T4 Gc |
| Certificate | IECEX IBE 13.0014X |

CCC / China-Ex

| | |
|----------------|-------------------------|
| Identification | [Ex ia Ga] IIC |
| | [Ex iaD] |
| | Ex nA [ia Ga] IIC T4 Gc |
| Certificate | NEPSI GYJ20.1315X |

UL, USA/Canada

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

Shipbuilding approval

| | |
|-------------|-------------------|
| Certificate | DNV GL TAA000020C |
|-------------|-------------------|

Safety Integrity Level (SIL, IEC 61508)

| | |
|----------------|---|
| Identification | 3 |
|----------------|---|

INMETRO

| | |
|----------------|-------------------------|
| Identification | [Ex ia Ma] I |
| | [Ex ia Ga] IIC |
| | [Ex ia Da] IIIC |
| | Ex ec [ia Ga] IIC T4 Gc |
| Certificate | DNV 18.0145 X |

DNV GL data

| | |
|-------------|---|
| Temperature | B |
| Humidity | B |
| Vibration | A |
| EMC | A |
| Enclosure | Required protection according to the Rules shall be provided upon installation on board |

EMC data

| | |
|----------------|--|
| Noise immunity | EN 61000-6-2 |
| Note | When being exposed to interference, there may be minimal deviations. |

MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

| | |
|-------------------------------|--------------------------------|
| Electromagnetic compatibility | Conformance with EMC directive |
| Noise emission | EN 61000-6-4 |

Standards and regulations

GB Standard

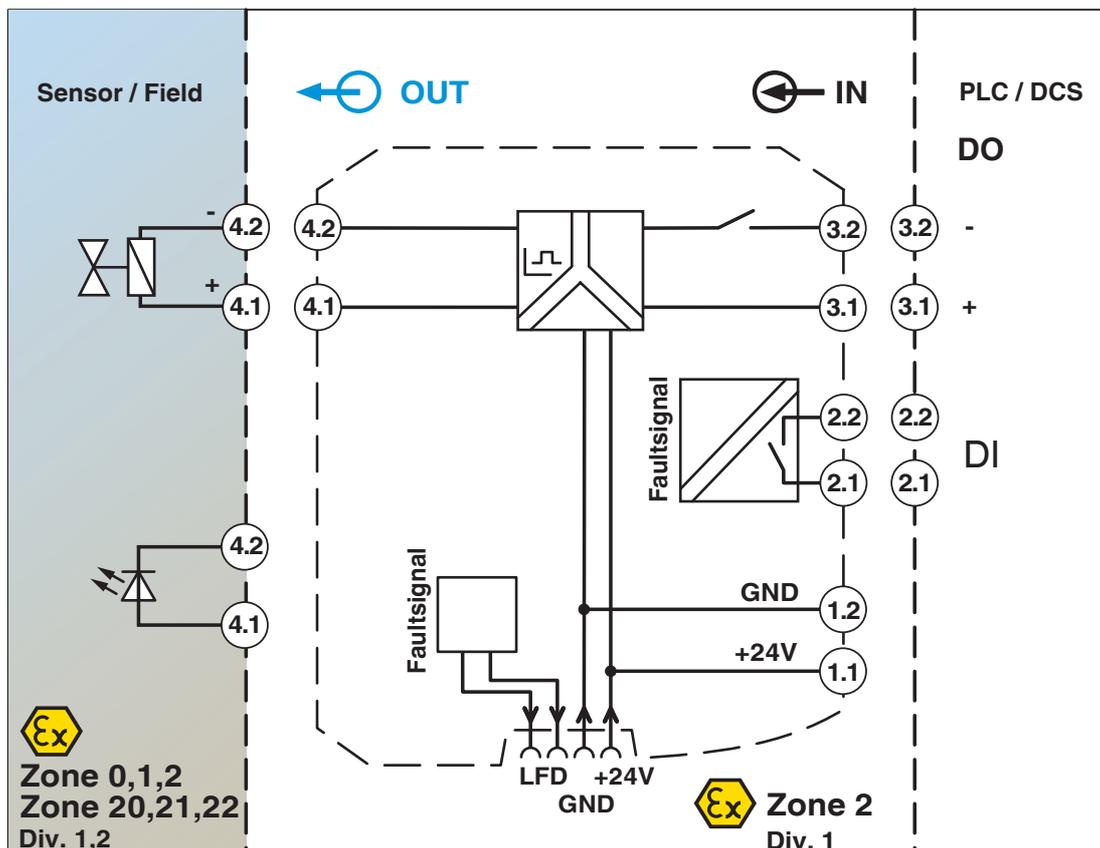
| | |
|-----------------------|------------|
| Standards/regulations | GB 3836.1 |
| | GB 3836.4 |
| | GB 3836.8 |
| | GB 3626.20 |
| | GB 12476.1 |
| | GB 12476.4 |

Mounting

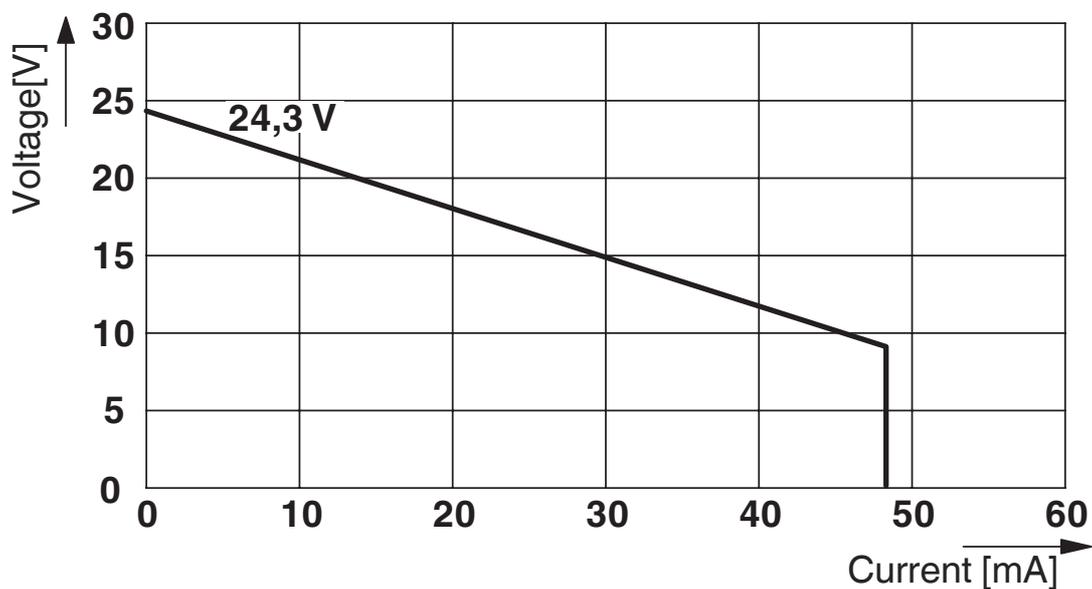
| | |
|---------------|-------------------|
| Mounting type | DIN rail mounting |
|---------------|-------------------|

Drawings

Block diagram



Diagram



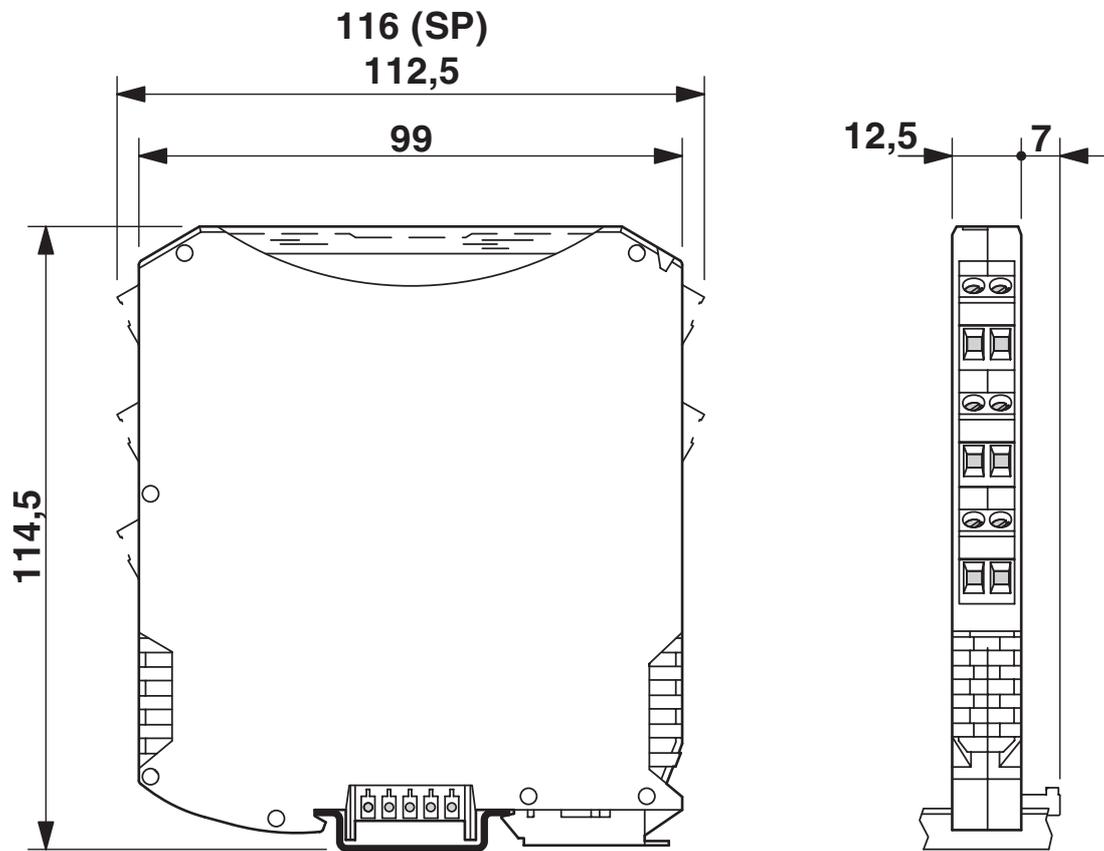
MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

Dimensional drawing



2906155

<https://www.phoenixcontact.com/us/products/2906155>

Approvals

🔗 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2906155>



CCC

Approval ID: 2020322 316001582

Functional Safety

Approval ID: BVS Pb 11/13



DNV GL

Approval ID: TAA000020C



EAC Ex

Approval ID: RU C-DE.AB72.B.00093



ATEX

Approval ID: IBExU 13 ATEX 1045



IECEX

Approval ID: IECEX IBE 13.0014X

INMETRO

Approval ID: DNV 18.0145 X

MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-11.0 | 27210120 |
| ECLASS-12.0 | 27210120 |
| ECLASS-13.0 | 27210120 |

ETIM

| | |
|----------|----------|
| ETIM 9.0 | EC002653 |
|----------|----------|

UNSPSC

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

2906155

<https://www.phoenixcontact.com/us/products/2906155>

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) |
| SCIP | 284db9a3-e743-46bd-b499-0defa5d832bf |

MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

Accessories

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

2695439

<https://www.phoenixcontact.com/us/products/2695439>

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



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

2924854

<https://www.phoenixcontact.com/us/products/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)



MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

MPS-IH WH - Insulating sleeve

0201663

<https://www.phoenixcontact.com/us/products/0201663>

Insulating sleeve, color: white



MPS-IH RD - Insulating sleeve

0201676

<https://www.phoenixcontact.com/us/products/0201676>

Insulating sleeve, color: red



MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

MPS-IH BU - Insulating sleeve

0201689

<https://www.phoenixcontact.com/us/products/0201689>

Insulating sleeve, color: blue



MPS-IH YE - Insulating sleeve

0201692

<https://www.phoenixcontact.com/us/products/0201692>

Insulating sleeve, color: yellow



MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

MPS-IH GN - Insulating sleeve

0201702

<https://www.phoenixcontact.com/us/products/0201702>

Insulating sleeve, color: green



MPS-IH GY - Insulating sleeve

0201728

<https://www.phoenixcontact.com/us/products/0201728>

Insulating sleeve, color: gray



MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver

2906155

<https://www.phoenixcontact.com/us/products/2906155>



MPS-IH BK - Insulating sleeve

0201731

<https://www.phoenixcontact.com/us/products/0201731>

Insulating sleeve, color: black



MPS-MT - Test plug

0201744

<https://www.phoenixcontact.com/us/products/0201744>

Test plug, with solder connection up to 1 mm² conductor cross section, number of positions: 1, color: gray



MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

UC-EMLP (11X9) - Plastic label

0819291

<https://www.phoenixcontact.com/us/products/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

UC-EMLP (11X9) YE - Plastic label

0822602

<https://www.phoenixcontact.com/us/products/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

MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

UC-EMLP (11X9) CUS - Plastic label

0824547

<https://www.phoenixcontact.com/us/products/0824547>

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



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

0824548

<https://www.phoenixcontact.com/us/products/0824548>

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



MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

UC-EMLP (11X9) SR - Plastic label

0828094

<https://www.phoenixcontact.com/us/products/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

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

0828098

<https://www.phoenixcontact.com/us/products/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

MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

US-EMLP (11X9) - Plastic label

0828789

<https://www.phoenixcontact.com/us/products/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

US-EMLP (11X9) YE - Plastic label

0828871

<https://www.phoenixcontact.com/us/products/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

MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

US-EMLP (11X9) SR - Plastic label

0828872

<https://www.phoenixcontact.com/us/products/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

LS-EMLP (11X9) WH - Device marker

0831678

<https://www.phoenixcontact.com/us/products/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

MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

LS-EMLP (11X9) SR - Device marker

0831705

<https://www.phoenixcontact.com/us/products/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



LS-EMLP (11X9) YE - Device marker

0831732

<https://www.phoenixcontact.com/us/products/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



MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

MACX MCR-PTB - Power and error message module

2865625

<https://www.phoenixcontact.com/us/products/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

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

2924184

<https://www.phoenixcontact.com/us/products/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

MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver

2906155

<https://www.phoenixcontact.com/us/products/2906155>



QUINT4-SYS-PS/1AC/24DC/2.5/SC - Power supply unit

2904614

<https://www.phoenixcontact.com/us/products/2904614>



Primary-switched power supply, QUINT POWER, screw connection, DIN rail mounting, supply of devices possible via the TBUS DIN rail connector, protective coating, input: single-phase, output: 24 V DC/2.5 A

SZS 0,6X3,5 - Screwdriver

1205053

<https://www.phoenixcontact.com/us/products/1205053>



Actuation tool, for ST terminal blocks, insulated, also suitable for use as a bladed screwdriver, size: 0.6 x 3.5 x 100 mm, 2-component grip, with non-slip grip

Phoenix Contact 2024 © - all rights reserved
<https://www.phoenixcontact.com>

Phoenix Contact USA
586 Fulling Mill Road
Middletown, PA 17057, United States
(+717) 944-1300
info@phoenixcon.com