

MACX MCR-SL-2NAM-T-SP - Isolation switch amplifier



2924281

<https://www.phoenixcontact.com/pc/products/2924281>

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NAMUR isolation switch amplifier for operating proximity sensors and switches. The signals are transmitted per channel to the control level via 1 transistor output (passive). number of channels: 2, Standard configuration, 3-way isolation, Line fault detection, Safety Integrity Level (SIL, IEC 61508): 2, Systematic Capability: 3, Push-in connection

Your advantages

- Power supply and error indication possible via DIN rail connector
- Up to SIL 2 in accordance with EN 61508
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- Line fault detection (LFD), can be activated/deactivated, error indicated by flashing red LED with disabling of transistor output
- Input for NAMUR proximity sensors (EN 60947-5-6), floating contacts or contacts with resistance circuit
- LED indicators for supply voltage, switching state, and malfunction in accordance with NAMUR NE 44
- 2-channel
- Transistor signal output (passive); up to 5 kHz
- 3-way electrical isolation
- Direction of operation can be selected (operating or closed circuit current behavior)

Commercial data

Item number	2924281
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	DK1113
GTIN	4046356491754
Weight per piece (including packing)	163.5 g
Weight per piece (excluding packing)	169.1 g
Customs tariff number	85365019
Country of origin	DE

Technical data

Product properties

Product type	Isolating switch amplifier
Product family	MACX Analog
Application	Digital IN
No. of channels	2
Configuration	DIP switches

System properties

Functionality

Configuration	DIP switches
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Electrical properties

Electrical isolation	3-way isolation
Electrical isolation between input and output	yes
Line monitoring	Line fault detection

Electrical isolation

Overvoltage category	II
Pollution degree	2

Electrical isolation Input/output IEC/EN 60079-7

Standards/regulations	IEC/EN 60079-7
Rated insulation voltage	265 V _{PP}

Electrical isolation Input/supply, DIN rail connector IEC/EN 60079-7

Standards/regulations	IEC/EN 60079-7
Rated insulation voltage	265 V _{PP}

Electrical isolation Input/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 Output 1/output 2 IEC/EN 61010-1

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

Supply

Nominal supply voltage	24 V DC -20 % ... +25 %
Supply voltage range	19.2 V DC ... 30 V DC
Max. current consumption	< 34 mA (24 V DC)

Power dissipation	≤ 1000 mW
Power consumption	0.85 W

Input data

Signal: NAMUR

Number of inputs	2
Available input sources	NAMUR proximity sensors (IEC/EN 60947-5-6) 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)
Short-circuit current	8 mA
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

Switching: Transistor

Output description	passive
Minimum switching voltage	3 V DC
Maximum switching voltage	30 V DC
Drop (ΔU)	< 1.4 V
Max. switching current	50 mA (short-circuit-proof)
Min. switching current	5 mA (short-circuit-proof)
Switching frequency	≤ 5 kHz

Signal

Number of outputs	2
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Connection data

Connection method	Push-in connection
Stripping length	10 mm
Conductor cross-section rigid	0.2 mm² ... 2.5 mm²
Conductor cross-section flexible	0.2 mm² ... 2.5 mm²
Conductor cross-section flexible (2 conductors with same cross section)	0.25 mm² ... 0.34 mm² (TWIN ferrule without plastic sleeve) 0.5 mm² ... 1.5 mm² (TWIN ferrule with plastic sleeve)
Conductor cross-section AWG	24 ... 14 24 ... 22 (TWIN ferrule without plastic sleeve) 20 ... 16 (TWIN ferrule with plastic sleeve)

Ex data

Ex installation (EPL)	Gc
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Div. 2

Interfaces

Data

No. of channels

0

Signaling

Status display

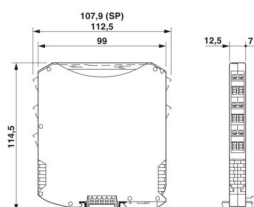
Green LED (supply voltage)

LED yellow (switching state)

Red LED (line errors)

Dimensions

Dimensional drawing



Width

12.5 mm

Height

107.9 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)

-40 °C ... 60 °C (Any mounting position)

-40 °C ... 70 °C (Derating)

Ambient temperature (storage/transport)

-40 °C ... 85 °C

Permissible humidity (operation)

10 % ... 95 % (non-condensing)

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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)	-40 °C ... 60 °C -40 °C ... 70 °C (Derating)
Rated insulation voltage	265 V AC/DC ($U_{\text{Isolation "ec"}}$: Supply, input / output)

Altitude range (≤ 3000 m)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-40 °C ... 54 °C -40 °C ... 63 °C (Derating)
Rated insulation voltage	190 V AC/DC ($U_{\text{Isolation "ec"}}$: Supply, input / output)

Altitude range (≤ 4000 m)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 48 °C -40 °C ... 56 °C (Derating)
Rated insulation voltage	60 V AC/DC ($U_{\text{Isolation "ec"}}$: Supply, input / output)

Altitude range (≤ 5000 m)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 42 °C -40 °C ... 49 °C (Derating)
Rated insulation voltage	60 V AC/DC ($U_{\text{Isolation "ec"}}$: Supply, input / output)

Approvals

CE

Certificate	CE-compliant
Note	and EN 61326

ATEX

Identification	Ex II 3 G Ex ec IIC T4 Gc
Certificate	IBExU 08 ATEX 1100 X

IECEx

Identification	Ex ec IIC T4 Gc
Certificate	IECEx IBE 08.0005X

CCC / China-Ex

Identification	Ex ec IIC T4 Gc
Certificate	2022122310115713

UL, USA/Canada

Identification	UL 508 Listed UL 61010 Listed Class I, Div. 2, Groups A, B, C, D T4
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	Class I, Zone 2, Group IIC T4
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Shipbuilding approval

Certificate	DNV GL TAA00000AG
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Safety Integrity Level (SIL, IEC 61508)

Identification	2
Certificate	IN-AT-AS-MRL-25-00008

Systematic Capability

Identification	3
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INMETRO

Identification	Ex ec IIC T4 Gc
Certificate	DNV 18.0141 X

Shipbuilding data

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

EMC data

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

Noise emission

Standards/regulations	EN 61000-6-4
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Electromagnetic HF field

Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
Evaluation criterion	A

Fast transients (burst)

Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4
Evaluation criterion	A

Conducted interference

Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Evaluation criterion	A

Standards and regulations

Electrical isolation	3-way isolation
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GB Standard

Standards/regulations	GB/T 3836.1
	GB/T 3836.3

Mounting

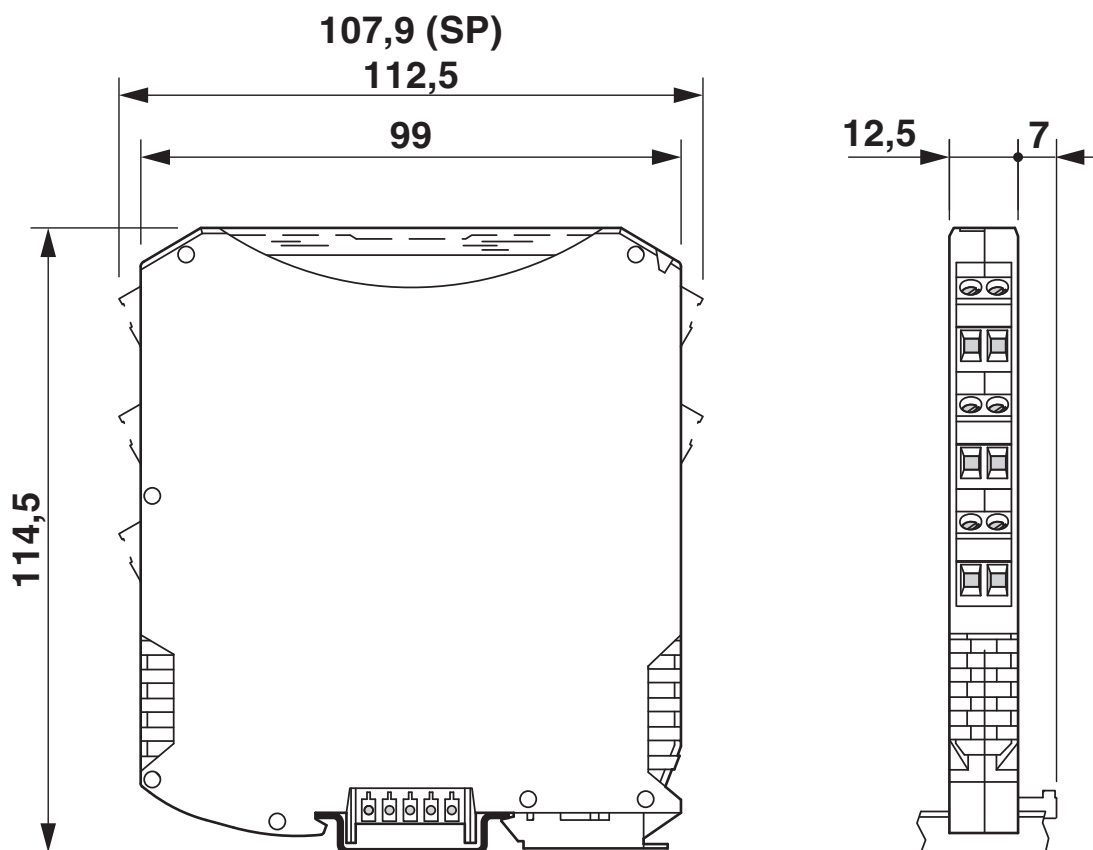
Mounting type	DIN rail mounting
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Drawings

Dimensional drawing



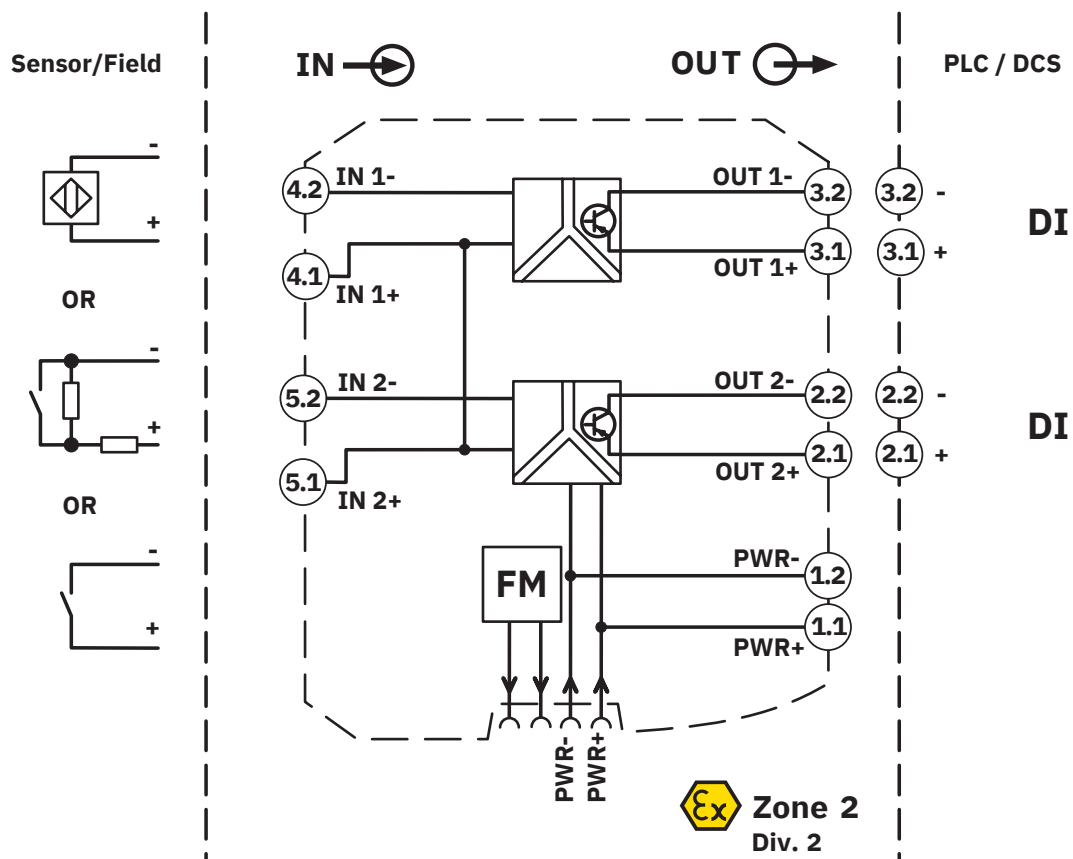
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Block diagram



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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/pc/products/2924281>



UL Listed

Approval ID: E330267



cUL Listed

Approval ID: E330267



CCC

Approval ID: 2022122310115713

DNV

Approval ID: TAA00000AG

TUEV Austria FS

Approval ID: IN-AT-AS-MRL-25-0008



cUL Listed

Approval ID: E199827



UL Listed

Approval ID: FILE E 199827

INMETRO

Approval ID: DNV 18.0141 X



IECEx

Approval ID: IECEx IBE 08.0005X



ATEX

Approval ID: IBExU 08 ATEX 1100

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Classifications

ECLASS

ECLASS-13.0	27210121
ECLASS-15.0	27210121

ETIM

ETIM 9.0	EC001485
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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: n/a)
	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: n/a)
SCIP	85228004-b55b-4a9a-afbe-5bcf39ffabfc

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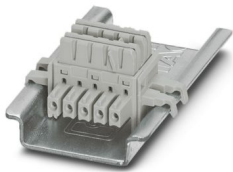
<https://www.phoenixcontact.com/pc/products/2924281>

Accessories

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

2695439

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



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

ME 6,2 TBUS-PR-ADAPTER - DIN rail bus connector

1136500

<https://www.phoenixcontact.com/pc/products/1136500>



Power rail adapter (ME 6,2 TBUS-PR-ADAPTER), 2-pos., enables MINI and MACX Analog modules to be adapted for supply via universal power rail UPR-03 and UPR-05.

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MCR-DP - Separating plate

1430594

<https://www.phoenixcontact.com/pc/products/1430594>



The partition plate is used to maintain Ex i isolating distances when Ex i and non-Ex i devices are mounted side by side on a DIN rail.

TC-2D37SUB-ADIO32-2EX-P-UNI - Module carrier

2904684

<https://www.phoenixcontact.com/pc/products/2904684>



Universal Termination Carrier for connecting 16 two-channel MACX Analog Ex i signal conditioners to digital or analog I/O cards, via two D-SUB connectors, 37-pos. (1:1 connection)

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MPS-IH WH - Insulating sleeve

0201663

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

Insulating sleeve, color: white



MPS-IH RD - Insulating sleeve

0201676

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

Insulating sleeve, color: red



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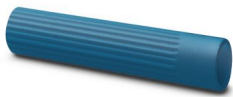
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MPS-IH BU - Insulating sleeve

0201689

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

Insulating sleeve, color: blue



MPS-IH YE - Insulating sleeve

0201692

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

Insulating sleeve, color: yellow



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MPS-IH GN - Insulating sleeve

0201702

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

Insulating sleeve, color: green



MPS-IH GY - Insulating sleeve

0201728

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

Insulating sleeve, color: gray



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MPS-IH BK - Insulating sleeve

0201731

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

Insulating sleeve, color: black



MPS-MT - Test plug

0201744

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

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



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UC-EMLP (11X9) - Plastic label

0819291

<https://www.phoenixcontact.com/pc/products/0819291>

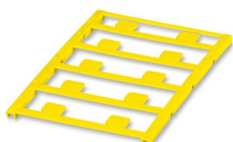


Plastic label, Sheet, white, unmarked, can be labeled with: BLUEMARK E. CARD, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, Number of individual labels: 10, text field height: 9 mm, text field width: 11 mm

UC-EMLP (11X9) YE - Plastic label

0822602

<https://www.phoenixcontact.com/pc/products/0822602>



Plastic label, Sheet, yellow, unmarked, can be labeled with: BLUEMARK E. CARD, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, Number of individual labels: 10, text field height: 9 mm, text field width: 11 mm

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UC-EMLP (11X9) CUS - Plastic label

0824547

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

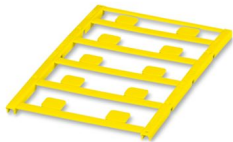


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UC-EMLP (11X9) YE CUS - Plastic label

0824548

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



Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, text field height: 9 mm, text field width: 11 mm

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UC-EMLP (11X9) SR - Plastic label

0828094

<https://www.phoenixcontact.com/pc/products/0828094>



Plastic label, Sheet, silver, unmarked, can be labeled with: BLUEMARK E. CARD, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, Number of individual labels: 10, text field height: 9 mm, text field width: 11 mm

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

0828098

<https://www.phoenixcontact.com/pc/products/0828098>



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

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US-EMLP (11X9) - Plastic label

0828789

<https://www.phoenixcontact.com/pc/products/0828789>



Plastic label, Card, white, unmarked, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, THERMOMARK PRIME 2.0, mounting type: adhesive, Number of individual labels: 135, text field height: 9 mm, text field width: 11 mm

US-EMLP (11X9) YE - Plastic label

0828871

<https://www.phoenixcontact.com/pc/products/0828871>



Plastic label, Card, yellow, unmarked, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, THERMOMARK PRIME 2.0, mounting type: adhesive, Number of individual labels: 135, text field height: 9 mm, text field width: 11 mm

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US-EMLP (11X9) SR - Plastic label

0828872

<https://www.phoenixcontact.com/pc/products/0828872>

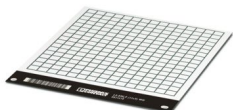


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LS-EMLP (11X9) WH - Device marker

0831678

<https://www.phoenixcontact.com/pc/products/0831678>



Device marker, Sheet, white, unmarked, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, Number of individual labels: 255, text field height: 9 mm, text field width: 11 mm

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LS-EMLP (11X9) SR - Device marker

0831705

<https://www.phoenixcontact.com/pc/products/0831705>

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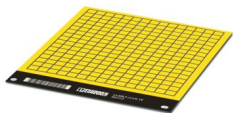


LS-EMLP (11X9) YE - Device marker

0831732

<https://www.phoenixcontact.com/pc/products/0831732>

Device marker, Sheet, yellow, unmarked, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, Number of individual labels: 255, text field height: 9 mm, text field width: 11 mm



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MACX MCR-PTB - Power and error message module

2865625

<https://www.phoenixcontact.com/pc/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/pc/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

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

2904614

<https://www.phoenixcontact.com/pc/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

D-UKK 3/5 - End cover

2770024

<https://www.phoenixcontact.com/pc/products/2770024>



End cover, depth: 52 mm, width: 2.5 mm, height: 56 mm, color: gray

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D-UKK 3/5 BU - End cover

2770105

<https://www.phoenixcontact.com/pc/products/2770105>

End cover, depth: 62 mm, width: 2.5 mm, height: 56 mm, color: blue



UKK 5-2R/NAMUR - Component terminal block

2941662

<https://www.phoenixcontact.com/pc/products/2941662>



Component terminal block, connection method: Screw connection, 1st and 2nd level, Rated cross section: 4 mm², cross section: 0.2 mm² - 4 mm², mounting type: NS 35/7,5, NS 35/15, NS 32, color: gray

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SZS 0,6X3,5 - Screwdriver

1205053

<https://www.phoenixcontact.com/pc/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

FA MCR-FMR-22K-680-IP20-PT - Resistor network

1642714

<https://www.phoenixcontact.com/pc/products/1642714>



Resistor network 22 k Ω parallel, 680 Ω in series for monitoring floating contacts and proximity switches. Line fault monitoring via isolation amplifiers or digital inputs in accordance with NAMUR IEC/EN 60947-5-6.

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FA MCR-FMR-10K-1K-IP20-PT - Resistor network

1642715

<https://www.phoenixcontact.com/pc/products/1642715>



Resistor network 10 k Ω parallel, 1 k Ω in series for monitoring floating contacts and proximity switches. Line fault monitoring via isolation amplifiers or digital inputs in accordance with NAMUR IEC/EN 60947-5-6.

FA MCR-FMR-10K-1.5K-IP20-PT - Resistor network

1642716

<https://www.phoenixcontact.com/pc/products/1642716>



Resistor network 10 k Ω parallel, 1.5 k Ω in series for monitoring floating contacts and proximity switches. Line fault monitoring via isolation amplifiers or digital inputs in accordance with NAMUR IEC/EN 60947-5-6.

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FA MCR-FMR-22K-620-IP20-PT - Resistor network

1642820

<https://www.phoenixcontact.com/pc/products/1642820>



Resistor network 22 k Ω parallel, 620 Ω in series for monitoring floating contacts and proximity switches. Line fault monitoring via isolation amplifiers or digital inputs in accordance with NAMUR IEC/EN 60947-5-6.

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