

Isolation amplifier - MACX MCR-EX-SL-NAM-R



2865434

<https://www.phoenixcontact.com/pc/products/2865434>

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Ex i NAMUR signal conditioner. For operating proximity sensors and switches in a potentially explosive area. The signals are transmitted by a relay output (changeover contact) to a safe area. Line fault detection (LFD), 3-way isolation, SIL 2.

Your advantages

- Power supply and error indication possible via DIN rail connector
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- Up to SIL 2 according to EN 61508
- Line fault detection (LFD), can be activated/deactivated, error indicated by flashing red LED with de-excitation of output relay
- 3-way electrical isolation
- LED indicators for supply voltage, switching state, and malfunction according to NAMUR NE 44
- Signal output relay (changeover contact)
- Input for NAMUR proximity sensors (EN 60947-5-6), floating contacts or contacts with resistance circuit, [Ex ia] IIC
- Direction of operation can be selected (operating or closed circuit current behavior)

Commercial Data

Item number	2865434
Packing unit	1 pc
Minimum order quantity	1 pc
Product Key	CK3141
Catalog Page	Page 154 (C-5-2019)
GTIN	4046356160445
Weight per Piece (including packing)	176.166 g
Weight per Piece (excluding packing)	133 g
Customs tariff number	85365019
Country of origin	DE

Technical Data

Notes

Utilization restriction

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

Product type	Isolating switch transf.
Application	Digital IN
No. of channels	1
Type	Ex i signal conditioners with SIL functional safety
Configuration	DIP switches

Electrical properties

No. of channels	1
Electrical isolation	3-way isolation
Electrical isolation between input and output	yes
Maximum power dissipation for nominal condition	< 650 mW

Electrical isolation Input/output

Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
Overvoltage category	II
Degree of pollution	2

Electrical isolation Input/output/supply, DIN rail connector

Rated insulation voltage	300 V _{rms}
Test voltage	2.5 kV AC (50 Hz, 60 s)
Overvoltage category	II
Degree of pollution	2
Insulation	Safe isolation in accordance with IEC/EN 61010-1

Electrical isolation Output/input, supply, TBUS

Rated insulation voltage	300 V _{rms}
Test voltage	2.5 kV AC (50 Hz, 60 s)
Overvoltage category	III
Degree of pollution	2
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)
Overvoltage category	II
Degree of pollution	2

Supply

Isolation amplifier - MACX MCR-EX-SL-NAM-R



2865434

<https://www.phoenixcontact.com/pc/products/2865434>

Nominal supply voltage	24 V DC -20 % ... +25 %
Supply voltage range	19.2 V DC ... 30 V DC (24 V DC, -20 % ... +25 %)
Max. current consumption	21 mA (24 V DC)
Power dissipation	< 650 mW
Power consumption	< 650 mW

Input data

Signal

Description of the input	Intrinsically safe
Number of inputs	1
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
Non-load voltage	8 V DC

Output data

Switching: Relay

Contact type	1 changeover contact
Contact material	AgSnO ₂ , hard gold-plated
Maximum switching voltage	250 V AC (2 A) 120 V DC (0.2 A) 30 V DC (2 A)
Maximum switching capacity	500 VA
Recommended minimum load	5 V / 10 mA
Switching frequency	≤ 20 Hz (without load)

Signal:

Number of outputs	1
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Connection data

Connection method	Screw connection
Stripping length	7 mm
Screw thread	M3
Conductor cross section solid	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
Torque	0.5 Nm ... 0.6 Nm

Isolation amplifier - MACX MCR-EX-SL-NAM-R



2865434

<https://www.phoenixcontact.com/pc/products/2865434>

Ex data

Safety data

Max. internal inductance L_i	negligible
Max. internal capacitance C_i	11 nF
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
	125 V DC
IIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	300 mH / 3.6 μ F
IIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	100 mH / 500 nF
	50 mH / 570 nF
	5 mH / 590 nF
	1 mH / 590 nF
	10 μ H / 590 nF
IIB/IIIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	1000 mH / 26 μ F
IIB/IIA/IIIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	100 mH / 1 μ F
	5 mH / 1 μ F
	1 mH / 1 μ F
	10 μ H / 1 μ F
IIA/I (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	1000 mH / 210 μ F

Interfaces

Data

No. of channels	0
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LED 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

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2865434

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Depth	113.7 mm
	114.5 mm (Snapped onto DIN rail NS 35/7,5 in accordance with EN 60715)

Material specifications

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)	-40 °C ... 60 °C (Any mounting position)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	5 % ... 95 % (non-condensing)

Approval data

CE

Certificate	CE-compliant
Note	and EN 61326

CE

Identification	<input type="checkbox"/> II (1) G [Ex ia Ga] IIC
	<input type="checkbox"/> II (1) D [Ex ia Da] IIIC
	<input type="checkbox"/> II 3(1) G Ex ec nC [ia Ga] IIC T4 Gc
	<input type="checkbox"/> I (M1) [Ex ia Ma] I
Certificate	IBExU 07 ATEX 1069 X

CE

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec nC [ia Ga] IIC T4 Gc
	[Ex ia Ma] I
Certificate	IECEX IBE 08.0001X

CE

Identification	[Ex ia Ga] IIC
	[Ex iaD]
	Ex nA nC [ia Ga] IIC T4 Gc
Certificate	NEPSI GYJ20.1311X

CE

Identification	UL 61010 Listed
	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Div. 2, Groups IIC, IIB, IIA T4

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2865434

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	Associated apparatus for use in Class I, Division 1, Groups A,B,C,D
	Associated apparatus for use in Class II, Div.1 Groups E,F,D
	Associated apparatus for use in Class III, Division 1
	Associated apparatus for use in Class I, Zone 0,1,2, Groups IIC,IIB,IIA
Certificate	<input type="checkbox"/> , C.D.-No 83104549

CE

Identification	Class I Div 2; IS for Class I, II, III Div 1
	UL 61010 Listed
Certificate	<input type="checkbox"/> , C.D.-No 83104549

CE

Identification	[Ex ia] IIC/IIB
Certificate	17-KA4BO-0408X

CE

Certificate	DNV GL TAA00000AG
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CE

Identification	2
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CE

Identification	<input type="checkbox"/> [Ex ia Ga] IIC
	<input type="checkbox"/> [Ex ia Da] IIIC
Certificate	RU C-DE.AB72.B.00093/19

CE

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec nC [ia Ga] IIC T4 Gc
	[Ex ia Ma] I
Certificate	DNV 18.0114 X

DNV GL 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 emission	EN 61000-6-4
Noise immunity	EN 61000-6-2
	EN 61326

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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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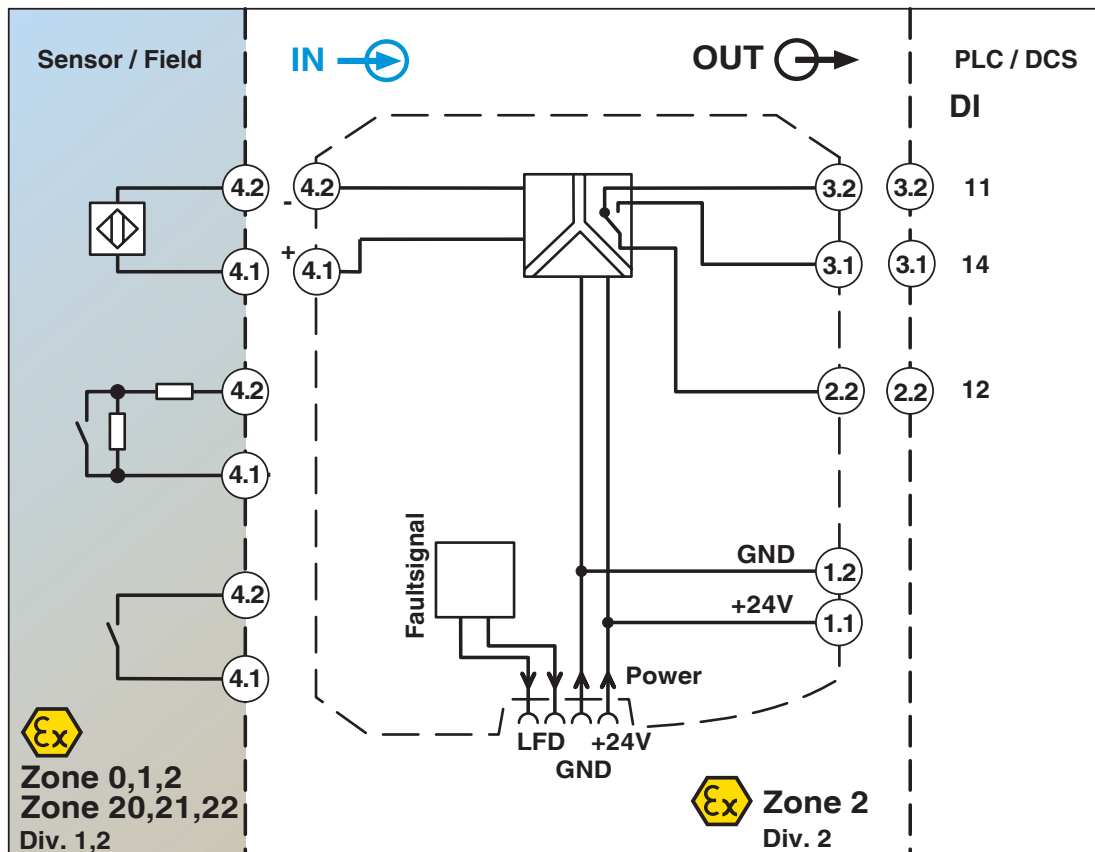


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Drawings

Block diagram



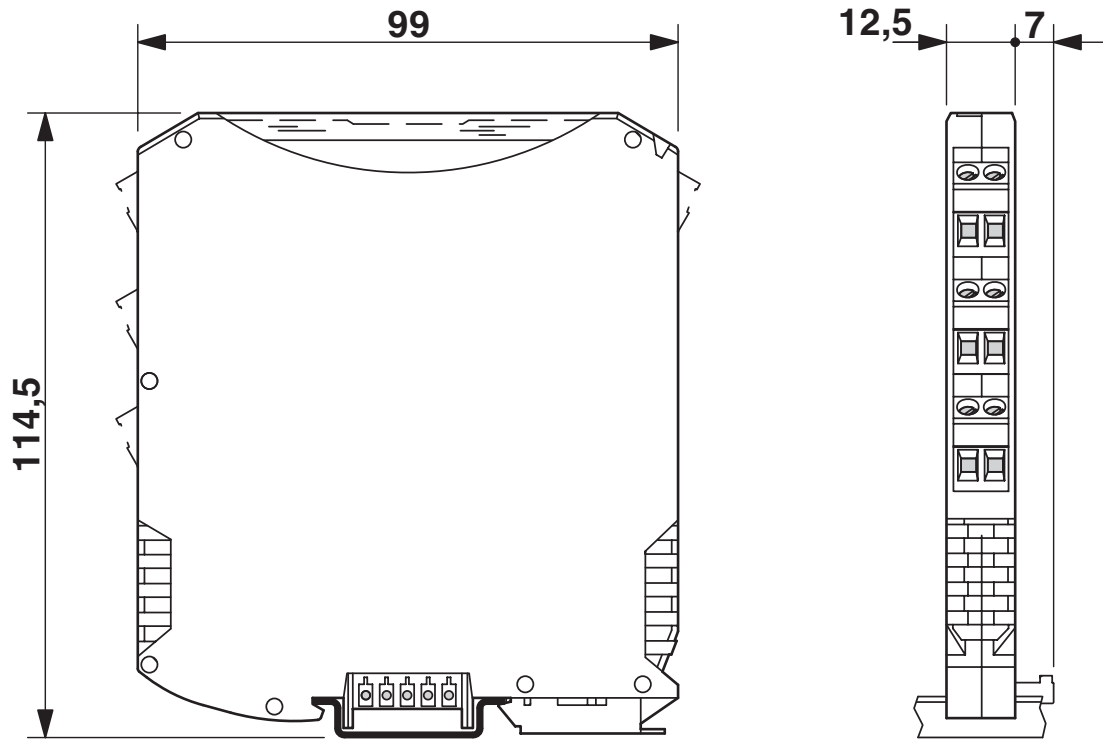
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Dimensional drawing



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Approvals



DNV GL

Approval ID: TAA00000AG



UL Listed

Approval ID: FILE E 330267



CCC

Approval ID: 2020322 316001513



cUL Listed

Approval ID: FILE E 330267

Functional Safety

Approval ID: 07-06-39 R005 V2R2



EAC Ex

Approval ID: TR TS_S_103.01.00078



IECEX

Approval ID: IECEX IBE 08.0001X



cUL Listed

Approval ID: FILE E 199827



UL Listed

Approval ID: FILE E 199827



ATEX

Approval ID: IBExU07ATEX1069

INMETRO

Approval ID: DNV 18.0114 X

KC-s

Approval ID: 17-KA4BO-0408X

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cULus Listed

cULus Listed

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Classifications

ECLASS

ECLASS-9.0	27210121
ECLASS-10.0.1	27210121
ECLASS-11.0	27210121

ETIM

ETIM 8.0	EC001485
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UNSPSC

UNSPSC 21.0	39121000
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Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads"

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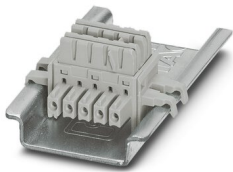
Accessories

DIN rail bus connectors

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

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

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



Power and error message module

Power and error message module - MACX MCR-PTB - 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



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Power and error message module

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

Power supply unit

Power supply unit - QUINT4-SYS-PS/1AC/24DC/2.5/SC - 2904614

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



Primary-switched power supply unit, QUINT POWER, Screw connection, DIN rail mounting, input: 1-phase, output: 24 V DC / 2.5 A

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Module carrier

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

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

Module carrier

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

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

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End cover

End cover - D-UKK 3/5 - 2770024

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



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

End cover

End cover - D-UKK 3/5 BU - 2770105

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



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

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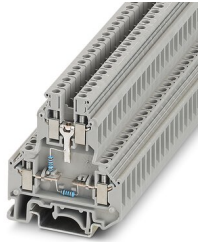
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Component terminal block

Component terminal block - UKK 5-2R/NAMUR - 2941662

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



Double-level terminal block, with preassembled resistors

Insulating sleeve

Insulating sleeve - MPS-IH WH - 0201663

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



Insulating sleeve, color: white

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<https://www.phoenixcontact.com/pc/products/2865434>

Insulating sleeve

Insulating sleeve - MPS-IH RD - 0201676

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

Insulating sleeve, color: red

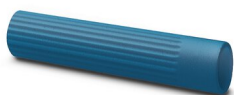


Insulating sleeve

Insulating sleeve - MPS-IH BU - 0201689

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

Insulating sleeve, color: blue



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Insulating sleeve

Insulating sleeve - MPS-IH YE - 0201692

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

Insulating sleeve, color: yellow



Insulating sleeve

Insulating sleeve - MPS-IH GN - 0201702

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

Insulating sleeve, color: green



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Insulating sleeve

Insulating sleeve - MPS-IH GY - 0201728

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

Insulating sleeve, color: gray



Insulating sleeve

Insulating sleeve - MPS-IH BK - 0201731

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

Insulating sleeve, color: black



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Test plugs

Test plugs - MPS-MT - 0201744

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



Test plugs, with solder connection up to 1 mm² conductor cross section, color: gray

Plastic label

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

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

Isolation amplifier - MACX MCR-EX-SL-NAM-R

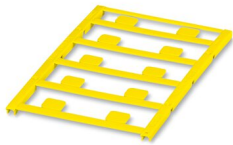
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<https://www.phoenixcontact.com/pc/products/2865434>

Plastic label

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

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

Plastic label

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

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

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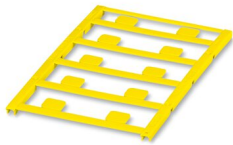
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Plastic label

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

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



Plastic label

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

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



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Plastic label

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

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

Plastic label

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

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

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Plastic label

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

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

Plastic label

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

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

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Device marker

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

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



Device marker

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

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



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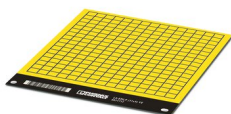
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Device marker

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

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



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