

# Signal isolator - MACX MCR-EX-SL-RPSS-2I-2I



2865382

<https://www.phoenixcontact.com/il/products/2865382>

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Ex i measuring transducer repeater power supply, 2-channel; HART-transparent. Supplies Ex i 2-conductor measuring transducers and transmits the 4...20 mA signal from the Ex area to the safe area. 5-way electrical isolation, screw connection, up to SIL 3, PL.

## Your advantages

- 2-channel
- 4 mA ... 20 mA input, intrinsically safe, [Ex ia], powered
- Output 4 mA ... 20 mA, active
- HART-compatible
- Error indication according to NAMUR NE 43
- Up to SIL 3 according to IEC/EN 61508
- 5-way electrical isolation
- Power supply possible via DIN rail connector
- Installation in Ex zone 2 permitted
- Plug-in connection terminal blocks, screw connection technology, with integrated sockets for HART communicators
- Housing width: 12.5 mm
- Minimal power dissipation
- High transmission accuracy

## Commercial Data

Item number	2865382
Packing unit	1 pc
Minimum order quantity	1 pc
Product Key	CK3111
Catalog Page	Page 144 (C-5-2019)
GTIN	4046356160407
Weight per Piece (including packing)	247.3 g
Weight per Piece (excluding packing)	163.8 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
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### Product properties

Product type	Repeater power supplies
Application	Analog IN
No. of channels	2
Type	Ex i signal conditioners with SIL and PL Functional Safety

#### Insulation characteristics

Overvoltage category	II
Pollution degree	2

### Electrical properties

No. of channels	2
Electrical isolation	5-way isolation
Electrical isolation between input and output	yes
Signal transmission behavior	In = Out
Step response (10-90%)	< 1.3 ms (for 4 mA ... 20 mA step)
Maximum temperature coefficient	< 0.01 %/K
Maximum transmission error	< 0.1 % (of final value)
Transmission error, typical	< 0.05 % (of final value)

#### Electrical isolation Input/output, power supply

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

#### Electrical isolation Input/output

Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
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#### Electrical isolation Input/power supply

Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
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#### Electrical isolation Output 1/output 2/ power supply

Test voltage	1.5 kV AC (50 Hz, 60 s)
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### 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	< 100 mA (24 V / 20 mA)
Power dissipation	< 1.4 W (at 24 V DC / 20 mA)

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## Input data

### Signal

Description of the input	Intrinsically safe
Number of inputs	2
Current input signal	4 mA ... 20 mA
Transmitter supply voltage	> 16 V (20 mA)
Underload/overload signal range	0 mA ... 24 mA

## Output data

### Signal: Current

Output description	Current output
Number of outputs	2
Current output signal	4 mA ... 20 mA (active)
Load/output load current output	$\leq 450 \Omega$ (20 mA) $\leq 375 \Omega$ (24 mA)
Output behavior in the event of an error	< 3.6 mA (In the event of cable break at the input (as per NE 43)) > 22.5 mA (In the event of cable short circuit at the input (as per NE 43))
Underload/overload signal range	0 mA ... 24 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
Tightening torque	0.5 Nm ... 0.6 Nm

### Test socket

Max. diameter	2.3 mm
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## Ex data

### Safety data

Max. output voltage $U_o$	25.2 V
Max. output current $I_o$	93 mA
Max. output power $P_o$	587 mW
Safety-related maximum voltage $U_m$	253 V AC 125 V DC
IIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	2 mH / 107 nF
IIC (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	2 mH / 49 nF 1 mH / 63 nF

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	500 µH / 80 nF
	200 µH / 107 nF
IIB (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	4 mH / 820 nF
IIB (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	4 mH / 370 nF
	1 mH / 430 nF
	500 µH / 510 nF
	200 µH / 660 nF
	100 µH / 820 nF

## Interfaces

### Data communication (bypass)

HART function	Yes
Protocols supported	HART-transparent

## LED signaling

Status display	Green LED (supply voltage)
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## Dimensions

Width	12.5 mm
Height	112.5 mm
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)	-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)

## Approval data

### CE

Certificate	CE-compliant
Note	and EN 61326

### ATEX

	<input type="checkbox"/> II (1) G [Ex ia Ga] IIC
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Identification	<input type="checkbox"/> II (1) D [Ex ia Da] IIIC
	<input type="checkbox"/> II 3(1) G Ex nA [ia Ga] IIC T4 Gc
Certificate	BVS 13 ATEX E 001 X

## IECEX

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA [ia Ga] IIC T4 Gc
Certificate	IECEX BVS 13.0007X

## CCC / China-Ex

Identification	[Ex ia Ga] IIC
	[Ex iaD]
	Ex nA [ia Ga] IIC T4 Gc
Certificate	NEPSI GYJ20.1307X

## UL, USA / Canada

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

## UL, USA / Canada

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

## KC-s

Identification	[Ex ia] IIC/IIB
Certificate	17-KA4BO-0401X

## Shipbuilding approval

Certificate	DNV GL TAA000020C
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## Safety Integrity Level (SIL, IEC 61508)

Identification	3
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## Performance Level (ISO 13849)

Identification	d
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## EAC Ex

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

## INMETRO

Identification	[Ex ia Ga] IIC/IIB
	[Ex ia Da] IIIC
	Ex nA [ia Ga] IIC/IIB T4 Gc
Certificate	DNV 18.0140 X

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## 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

Electromagnetic compatibility	Conformance with EMC directive
Noise emission	EN 61000-6-4
Noise immunity	EN 61000-6-2
Note	When being exposed to interference, there may be minimal deviations.

## Standards and regulations

Electrical isolation	5-way isolation
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## GB Standard

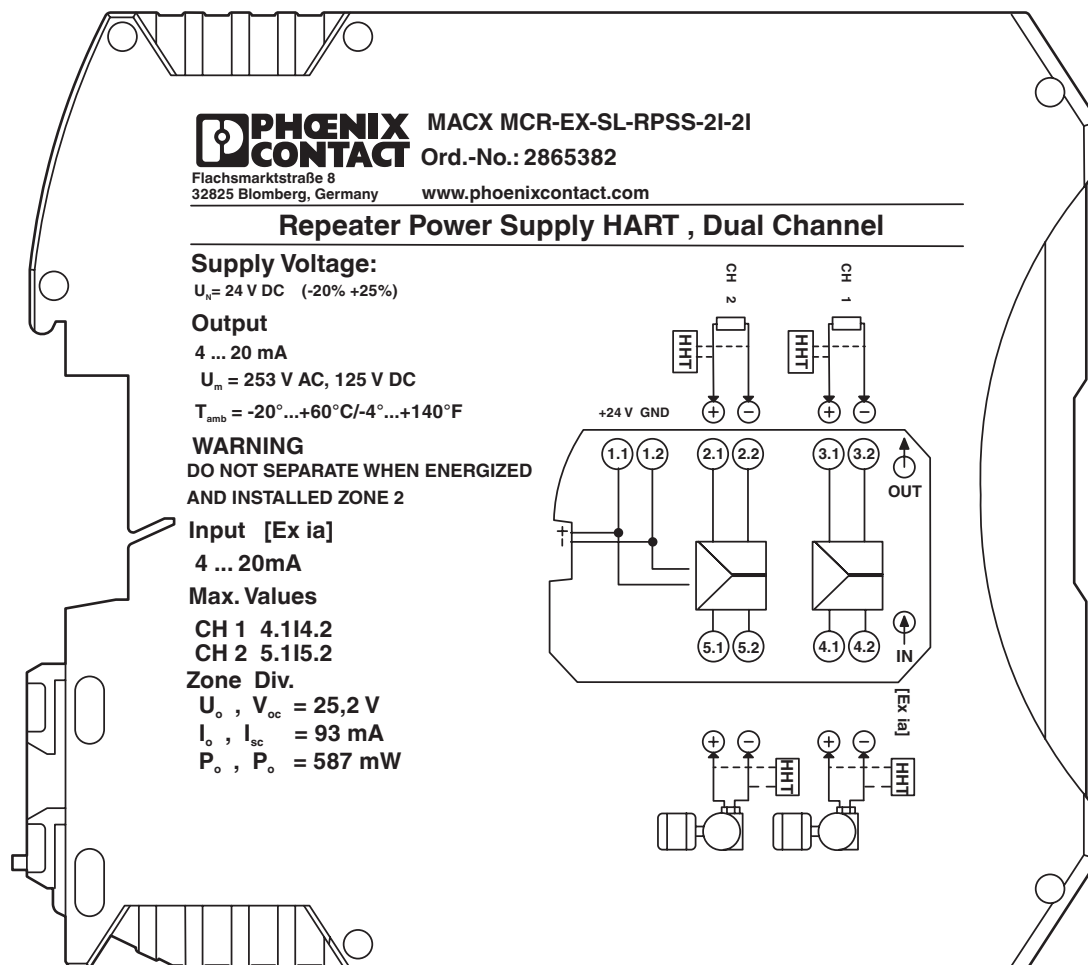
Standards/regulations	GB 3626.20
	GB 3836.1
	GB 3836.4
	GB 3836.8
	GB 12476.1
	GB 12476.4

## Mounting

Mounting type	DIN rail mounting
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## Drawings

### Schematic diagram



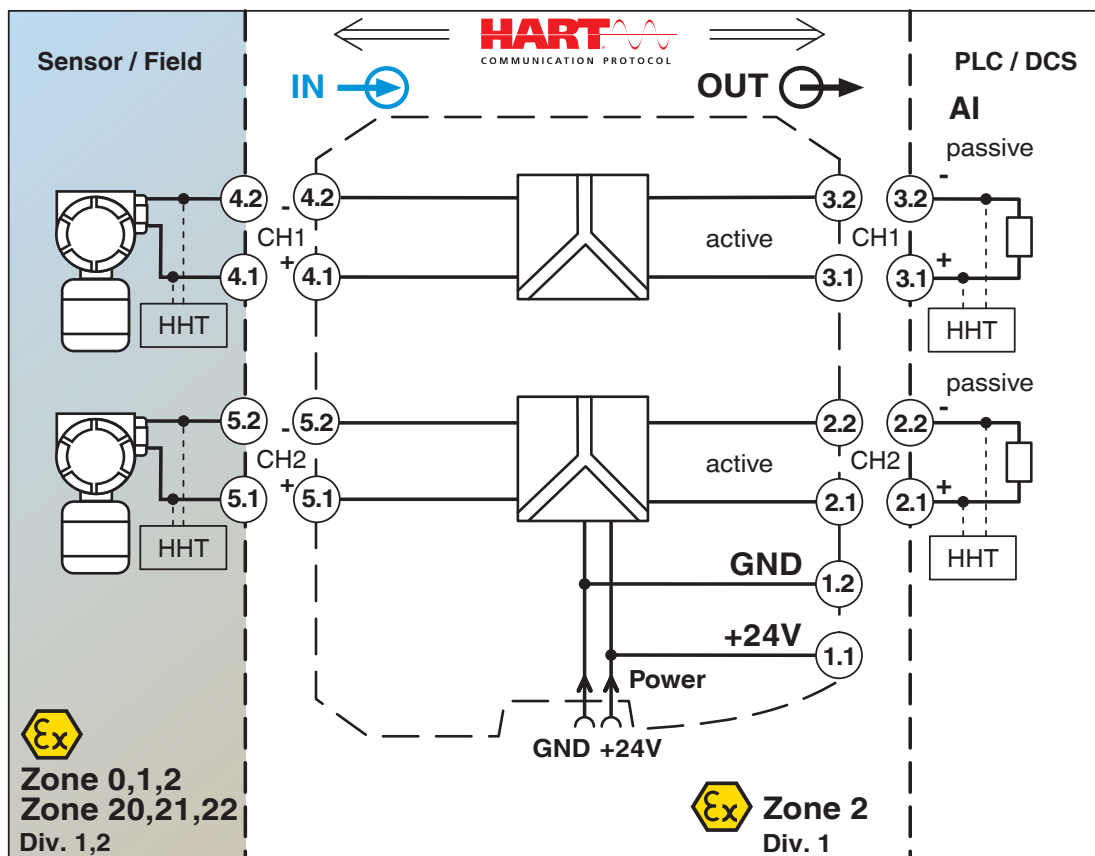
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Block diagram





# Signal isolator - MACX MCR-EX-SL-RPSS-2I-2I



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## Approvals



**DNV GL**

Approval ID: TAA000020C



**UL Listed**

Approval ID: FILE E 330267



**CCC**

Approval ID: 2020322 316001580



**cUL Listed**

Approval ID: FILE E 330267

**Functional Safety**

Approval ID: BVS Pb 04/13



**EAC Ex**

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



**IECEX**

Approval ID: IECEX BVS 13.0007X



**cUL Listed**

Approval ID: FILE E 199827



**UL Listed**

Approval ID: FILE E 199827



**ATEX**

Approval ID: BVS 13 ATEX E 001 X

**INMETRO**

Approval ID: DNV 18.0140 X

**KC-s**

Approval ID: 17-KA4BO-0401X

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cULus Listed

cULus Listed

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## Classifications

### ECLASS

ECLASS-9.0	27210120
ECLASS-10.0.1	27210120
ECLASS-11.0	27210120

### ETIM

ETIM 8.0	EC002653
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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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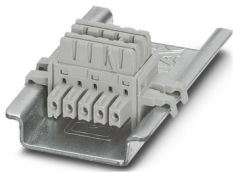
## Accessories

### 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/il/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



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### Module carrier

Module carrier - TC-2D37SUB-ADIO32-2EX-P-UNI - 2904684

<https://www.phoenixcontact.com/il/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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<https://www.phoenixcontact.com/il/products/2865382>

## Cable adapter

Cable adapter - GW HART USB MODEM - 1003824

<https://www.phoenixcontact.com/il/products/1003824>



USB HART modem cable for communication between a PC and HART devices, cable length: 1m.

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## Power and error message module

Power and error message module - MACX MCR-PTB - 2865625

<https://www.phoenixcontact.com/il/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/il/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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## Power supply unit

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

<https://www.phoenixcontact.com/il/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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## Insulating sleeve

Insulating sleeve - MPS-IH WH - 0201663

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

Insulating sleeve, color: white



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## Insulating sleeve

Insulating sleeve - MPS-IH RD - 0201676

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

Insulating sleeve, color: red





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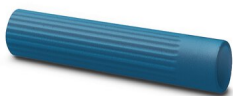
<https://www.phoenixcontact.com/il/products/2865382>

## Insulating sleeve

Insulating sleeve - MPS-IH BU - 0201689

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

Insulating sleeve, color: blue



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## Insulating sleeve

Insulating sleeve - MPS-IH YE - 0201692

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

Insulating sleeve, color: yellow



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## Insulating sleeve

Insulating sleeve - MPS-IH GN - 0201702

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

Insulating sleeve, color: green



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## Insulating sleeve

Insulating sleeve - MPS-IH GY - 0201728

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

Insulating sleeve, color: gray



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<https://www.phoenixcontact.com/il/products/2865382>

## Insulating sleeve

Insulating sleeve - MPS-IH BK - 0201731

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

Insulating sleeve, color: black



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## Test plugs

Test plugs - MPS-MT - 0201744

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

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



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<https://www.phoenixcontact.com/il/products/2865382>

## Plastic label

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

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



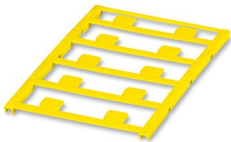
Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

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## Plastic label

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

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

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## Plastic label

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

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



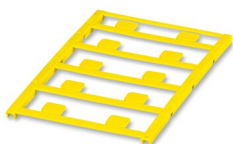
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## Plastic label

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

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



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## Plastic label

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

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

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## Plastic label

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

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

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## Plastic label

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

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



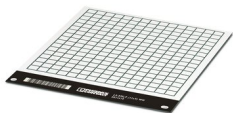
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## Device marker

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

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



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## Device marker

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

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



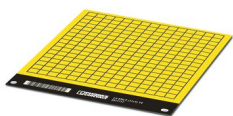
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## Device marker

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

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