

1290533
<https://www.phoenixcontact.com/in/products/1290533>

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Ex i-Frequency transducer, the frequencies measured at the Ex i inputs (0.001 Hz ... 20 kHz) are output as 0 mA / 4 mA ... 20 mA non Ex i signals. number of channels: 2, Standard configuration, 5-way isolation, Push-in connection

Commercial data

Item number	1290533
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	DK121W
GTIN	4063151522704
Weight per piece (including packing)	201.2 g
Weight per piece (excluding packing)	160 g
Country of origin	DE

MACX MCR-EX-AP-2F-2I-SP - Frequency measuring transducer



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Technical data

Notes

Note on application	Accuracy, typically specified as a percentage of the basic measuring range at U_N , 23°C
Notes on operation	Installation conditions influence the ambient temperature. Please refer to the "Control cabinet installation instructions".
Notes on operation	Use suitable cables and cable glands for applications below - 20°C.

Product properties

Product type	Frequency value transformer
Product family	MACX Analog
No. of channels	2
Configuration	Software

System properties

Functionality

Configuration	Software
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Electrical properties

Electrical isolation	5-way isolation
Temperature coefficient, typical	$\leq 0.05 \%$
Reverse polarity protection	yes

Electrical isolation Input/output IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V _{PP}

Electrical isolation Input/power supply IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V _{PP}

Electrical isolation Input/error message output IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V _{PP}

Electrical isolation Input/configuration interface IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V _{PP}

Electrical isolation Output 1/output 2

Test voltage	350 V (50 Hz, 60 s)
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Electrical isolation Output/supply

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1290533

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Test voltage	350 V (50 Hz, 60 s)
Electrical isolation Output/configuration interface	
Test voltage	350 V (50 Hz, 60 s)
Electrical isolation Output/supply/error message output	
Test voltage	350 V (50 Hz, 60 s)
Supply	
Nominal supply voltage	24 V DC
Supply voltage range	18 V ... 31.2 V
Power dissipation	≤ 1.5 W
Power consumption	1.8 W

Input data

Measurement: Frequency

Description of the input	Intrinsically safe
Available input sources	in accordance with IEC/EN 60947-5-6 NAMUR
Pulse time	25 µs
Frequency measuring range	0.001 Hz ... 20000 Hz
Line fault detection	< 0.05 mA ... 0.35 mA (Line break)
	< 100 Ω ... 360 Ω (Short circuit)

Output data

Signal: Error message output

Maximum switching voltage	30 V
Max. switching current	100 mA

Signal: Current

Current output signal	0 mA ... 20 mA (configurable)
	4 mA ... 20 mA (configurable)
	0 mA ... 20.5 mA (Function area)
Output current with short-circuit	3.8 mA (Default setting, adjustable)
Output current with wire break	20.5 mA (Default setting, adjustable)
Load	0 Ω ... 600 Ω
Line fault detection	< 0.05 mA ... 0.35 mA (Line break)
	< 100 Ω ... 360 Ω (Short circuit)

Connection data

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross section rigid	0.2 mm² ... 1.5 mm²
Conductor cross section flexible	0.2 mm² ... 1.5 mm²
Conductor cross section AWG	24 ... 16

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1290533

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Ex data

Ex installation (EPL)	Gc
Ex i circuits (EPL)	Ga
	Da
	Ma

Safety data

Max. internal inductance L_i	negligible
Max. internal capacitance C_i	negligible
Max. output voltage U_o	10.5 V
Max. output current I_o	23.4 mA
Max. output power P_o	61.4 mW
Safety-related maximum voltage U_m	253 V AC
I/A (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	450 mH / 75 μ F
I/B/IIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	230 mH / 16.8 μ F
I/C (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	63 mH / 2.41 μ F
I (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	600 mH / 95 μ F
I/A (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	100 mH / 2.9 μ F, 10 mH / 4.5 μ F, 1 mH / 7.3 μ F, 0.1 mH / 14 μ F
I/B/IIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	100 mH / 1.9 μ F, 20 mH / 2.7 μ F, 2 mH / 4.5 μ F, 0.5 mH / 6.4 μ F
I/C (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	20 mH / 0.49 μ F, 5 mH / 0.67 μ F, 1 mH / 0.96 μ F, 0.2 mH / 1.4 μ F
I (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	100 mH / 4 μ F, 10 mH / 5.7 μ F, 2 mH / 7.8 μ F, 0.1 mH / 17 μ F

Signaling

Status display	Green LED (supply voltage)
	Red LED (line errors)

Dimensions

Dimensional drawing	
Width	17.5 mm
Height	107.8 mm
Depth	113.7 mm

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

Flammability rating according to UL 94	V0
Housing material	PA 6.6

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20 (Terminal blocks) IP30 (Housing)
Ambient temperature (operation)	-40 °C ... 70 °C (Stand-alone device: any mounting position) -40 °C ... 50 °C (Group assembly: vertical DIN rail without circulating air) -40 °C ... 65 °C (Group assembly: vertical DIN rail with circulating air) -40 °C ... 65 °C (Group assembly: horizontal DIN rail without circulating air) -40 °C ... 70 °C (Group assembly: horizontal DIN rail with circulating air)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Altitude	≤ 2000 m
Permissible humidity (operation)	≤ 95 % (non-condensing)

Approvals

ATEX

Identification	⚡ II (1) G [Ex ia Ga] IIC ⚡ II (1) D [Ex ia Da] IIIC ⚡ II 3 (1) G Ex nA [ia Ga] IIC T4 Gc ⚡ I (M1) [Ex ia Ma] I
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IECEx

Identification	[Ex ia Ga] IIC [Ex ia Da] IIIC Ex nA nC [ia Ga] IIC T4 Gc [Ex ia Ma] I
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EMC data

Electromagnetic compatibility	Tested in accordance with the following standards and regulations: EN 61326-1 For industrial use, NAMUR NE 21
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Standards and regulations

Electrical isolation	5-way isolation
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Mounting

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Mounting type	NS 35/15, NS 35/7,5
Mounting position	vertical, horizontal

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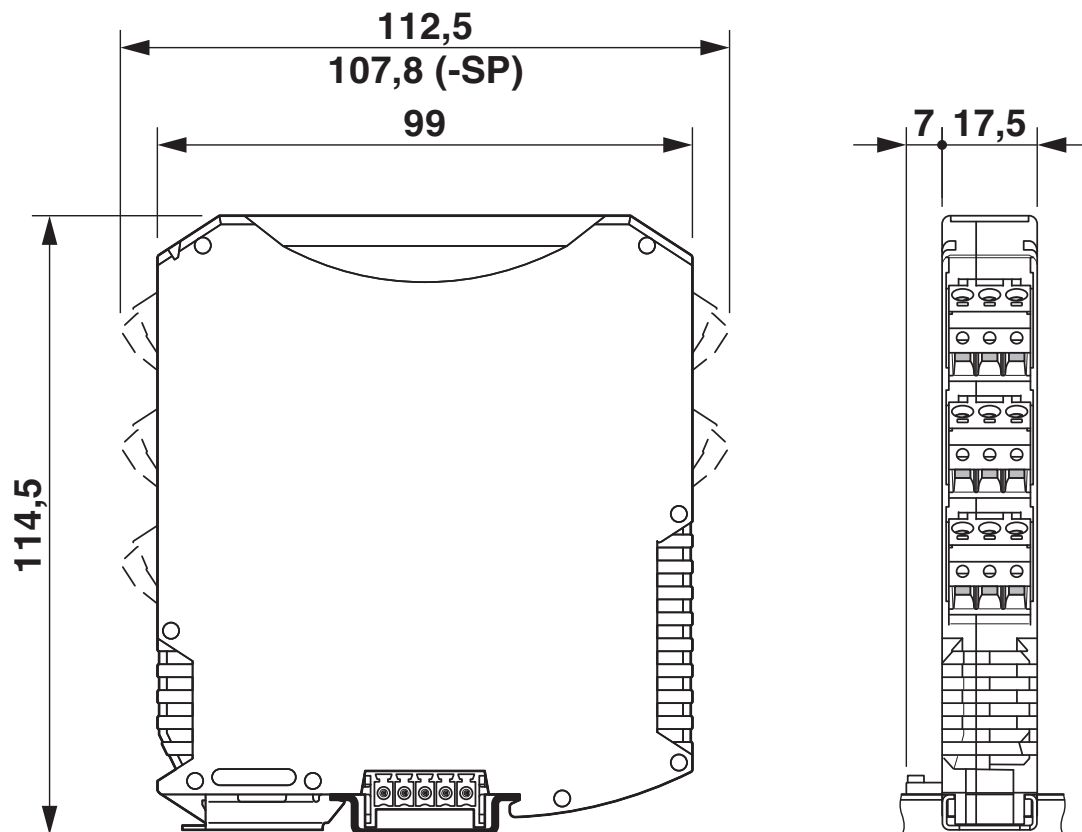


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Drawings

Dimensional drawing

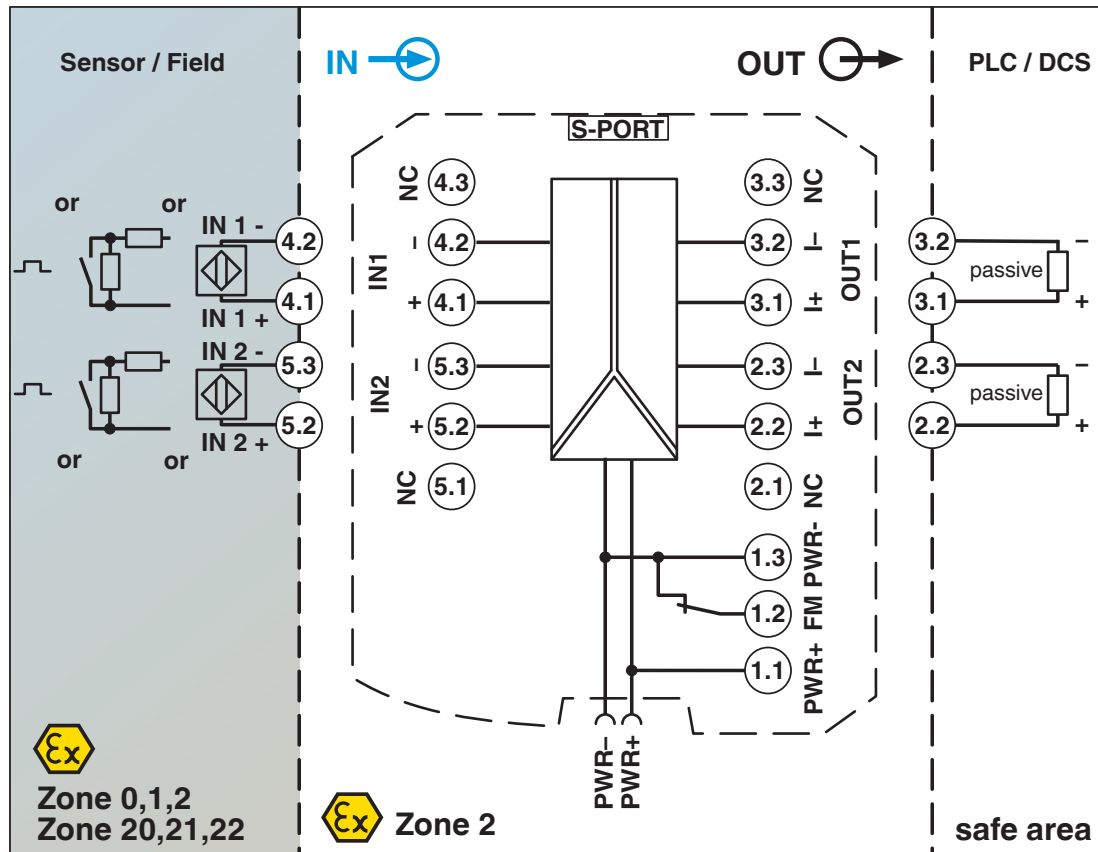


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Block diagram




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Approvals

 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/in/products/1290533>



IECEx

Approval ID: IECEx BVS 21.0018X



ATEX

Approval ID: BVS 21 ATEX E 016X

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Classifications

ECLASS

ECLASS-11.0	27210128
ECLASS-12.0	27210128
ECLASS-13.0	27210128

ETIM

ETIM 9.0	EC002918
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Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	6(c), 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	dc3f33d0-e324-4014-be83-fa9f7e0e6421

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Accessories

IFS-USB-PROG-ADAPTER - Programming adapter

2811271

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Programming adapter with USB interface, for programming with software. The USB driver is included in the software solutions for the products to be programmed, such as measuring transducers or motor managers.

MACX MCR-PTB - Power and error message module

2865625

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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-EX-AP-2F-2I-SP - Frequency measuring transducer



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

2924184

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

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

2904614

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

MACX MCR-EX-AP-2F-2I-SP - Frequency measuring transducer



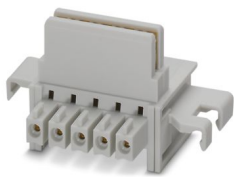
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ME 17,5 TBUS 1,5/ 5-ST-3,81 GY - DIN rail bus connectors

1090049

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DIN rail connector, color: gray, nominal current: 8 A (parallel contacts), rated voltage (III/2): 125 V, number of positions: 5, product range: TBUS5-17,5..., pitch: 3.81 mm, mounting: DIN rail mounting, locking: without, mounting method: without, type of packaging: packed in cardboard, Item with gold-plated contacts, bus connectors for connecting with electronics housings, 5 parallel contacts

ME-TBUS-A MC 1,5-2 - DIN rail bus connectors

1351974

<https://www.phoenixcontact.com/in/products/1351974>



DIN rail connector adapter (2-pos.) for connection of MACX MCR-EX-AP ... devices on the right side to the MACX MCR-PTB(-SP) power module with DIN rail connector ME 17,5 TBUS 1,5/5-ST-3,81 GY for bridging the supply voltage.

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ME-TBUS-A IMC1,5-2 - DIN rail bus connectors

1351982

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DIN rail connector adapter (2-pos.) for connection of MACX MCR-EX-AP... devices on the left side to the MACX MCR-PTB(-SP) power module with DIN rail connector ME 17,5 TBUS 1,5/5-ST-3,81 GY for bridging the supply voltage.

MCR-DP - Separating plate

1430594

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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.

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1290533

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MPS-IH WH - Insulating sleeve

0201663

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Insulating sleeve, color: white



MPS-IH RD - Insulating sleeve

0201676

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Insulating sleeve, color: red



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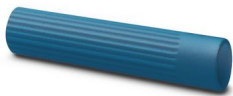
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MPS-IH BU - Insulating sleeve

0201689

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Insulating sleeve, color: blue



MPS-IH YE - Insulating sleeve

0201692

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Insulating sleeve, color: yellow



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MPS-IH GN - Insulating sleeve

0201702

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Insulating sleeve, color: green



MPS-IH GY - Insulating sleeve

0201728

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Insulating sleeve, color: gray



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MPS-IH BK - Insulating sleeve

0201731

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Insulating sleeve, color: black



MPS-MT - Test plug

0201744

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

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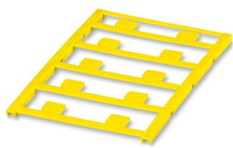


Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, Number of individual labels: 10, text field height: 9 mm, text field width: 11 mm

UC-EMLP (11X9) YE - Plastic label

0822602

<https://www.phoenixcontact.com/in/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, 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/in/products/0824547>

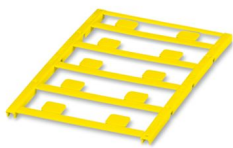


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UC-EMLP (11X9) YE CUS - Plastic label

0824548

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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

MACX MCR-EX-AP-2F-2I-SP - Frequency measuring transducer



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UC-EMLP (11X9) SR - Plastic label

0828094

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

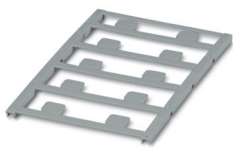


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UC-EMLP (11X9) SR CUS - Plastic label

0828098

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



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US-EMLP (11X9) YE - Plastic label

0828871

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



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US-EMLP (11X9) SR - Plastic label

0828872

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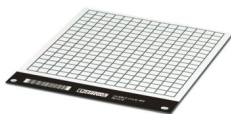


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LS-EMLP (11X9) WH - Device marker

0831678

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Device marker, Sheet, white, unlabeled, 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

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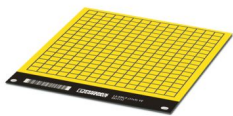


LS-EMLP (11X9) YE - Device marker

0831732

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

Device marker, Sheet, yellow, unlabeled, 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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SZS 0,6X3,5 - Screwdriver

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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

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