

MACX MCR-EX-AP-RPSS-I-I-SP - Power/input
isolating amplifier

1291193
<https://www.phoenixcontact.com/in/products/1291193>

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Ex i-Feed and input signal conditioner feeds 2-, 3- and 4-conductor measuring transducer and transmits 1:1 passive or active 0 mA / 4 mA ... 20 mA Ex i input signals as active non Ex i output signal. number of channels: 1, HART-transparent, Standard configuration, 3-way isolation, Safety Integrity Level (SIL, IEC 61508): 3, Push-in connection

Commercial data

Item number	1291193
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	DK121W
GTIN	4063151523664
Weight per piece (including packing)	194 g
Weight per piece (excluding packing)	160 g
Country of origin	DE

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1291193

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Technical data

Notes

Note on application	Accuracy, typically specified as a percentage of the measuring span (20 mA) 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	Output behavior = input signal

Product properties

Product type	Repeater power supply
Product family	MACX Analog
No. of channels	1

Electrical properties

Electrical isolation	3-way isolation
Signal transmission behavior	In = Out
Temperature coefficient, typical	$\leq 0.05\%$ (10 K)
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 1 / input 2 IEC/EN 60079-11

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

Electrical isolation Output/supply

Test voltage	350 V (50 Hz, 60 s)
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Electrical isolation Output 1/output 2

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

Test voltage	350 V (50 Hz, 60 s)
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Supply

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1291193

<https://www.phoenixcontact.com/in/products/1291193>

Nominal supply voltage	24 V DC
Supply voltage range	18 V ... 31.2 V
Power dissipation	2.2 W (R_L 250 Ω)
Power consumption	2.7 W (20 mA)

Input data

Signal: Repeater power supply operation

Description of the input	active and passive current input, intrinsically safe
Input signal	Current
Current input signal	0 mA ... 20 mA
	4 mA ... 20 mA (with HART)
	0 mA ... 24 mA (Function area)
Input resistance current input	$\leq 100 \Omega$ (for mA sources)
Input current	≤ 50 mA (for mA sources)
Short-circuit current	≤ 35 mA
Line fault detection	< 3.6 mA (Line break)
	> 20.5 mA (Short circuit)
Non-load voltage	≤ 26 V

Signal: Signal conditioner operation

Description of the input	Passive current input, intrinsically safe
Current input signal	0 mA ... 20 mA
	4 mA ... 20 mA (with HART)
	0 mA ... 24 mA (Function area)
Input resistance current input	$\leq 100 \Omega$ (for mA sources)
Input current	≤ 50 mA
Short-circuit current	≤ 35 mA
Line fault detection	< 3.6 mA (Line break)
	> 20.5 mA (Short circuit)
Non-load voltage	≤ 26 V

Output data

Signal: Error message output

Maximum switching voltage	30 V
Max. switching current	100 mA

Signal: Repeater power supply operation

Output description	Current output (active)
Current output signal	0 mA ... 20 mA
	4 mA ... 20 mA (with HART)
	0 mA ... 24 mA (Function area)
Load	0 Ω ... 600 Ω
	0 Ω ... 379 Ω (with internal 221 Ω resistance for HART)

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1291193

<https://www.phoenixcontact.com/in/products/1291193>

Output ripple (current)	$\leq 40 \mu\text{A}$ (effective)
Line fault detection	$< 3.6 \text{ mA}$ (Line break)

Signal: Signal conditioner operation

Output description	Signal conditioner operation
Current output signal	0 mA ... 20 mA
	4 mA ... 20 mA (with HART)
	0 mA ... 24 mA (Function area)
Load	0 Ω ... 600 Ω
	0 Ω ... 379 Ω (with internal 221 Ω resistance for HART)
Output ripple (current)	$\leq 40 \mu\text{A}$ (effective)

Connection data

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross section rigid	0.2 mm ² ... 1.5 mm ²
Conductor cross section flexible	0.2 mm ² ... 1.5 mm ²
Conductor cross section AWG	24 ... 16

Ex data

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

Safety data: Repeater power supply operation

Max. internal inductance L_i	negligible
Max. internal capacitance C_i	negligible
Max. output voltage U_o	27 V
Max. output current I_o	88 mA
Max. output power P_o	576 mW
Safety-related maximum voltage U_m	253 V AC
I/A (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	28 mH / 2330 nF
I/B/IIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	17 mH / 705 nF
I/C (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	2.3 mH / 90 nF
I (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	40 mH / 3750 nF
I/A (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	28 mH / 410 nF, 2 mH / 480 nF, 1 mH / 540 nF, 0.2 mH / 820 nF
I/B/IIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	17 mH / 290 nF, 2 mH / 320 nF, 0.5 mH / 460 nF, 0.2 mH / 600 nF
I/C (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	2 mH / 42 nF, 1 mH / 56 nF, 0.5 mH / 72 nF, 0.2 mH / 90 nF

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1291193

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I (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	40 mH / 480 nF, 20 mH / 660 nF, 0.5 mH / 810 nF, 0.1 mH / 1200 nF
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Safety data: Signal conditioner operation

Note	With connection of power sources
Input voltage U_i	30 V
Input current I_i	100 mA
Input power P_i	limited internally
Max. internal inductance L_i	negligible
Max. internal capacitance C_i	negligible
Max. output voltage U_o	4.1 V
Safety-related maximum voltage U_m	253 V AC

Interfaces

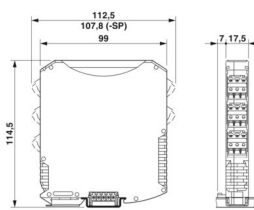
Data communication (bypass)

Protocols supported	HART-transparent
Frequency measuring range	0.5 kHz ... 10 kHz (bidirectional HART transmission)

Signaling

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

Dimensional drawing	
Width	17.5 mm
Height	107.8 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

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)
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1291193

<https://www.phoenixcontact.com/in/products/1291193>

	IP30 (Housing)
Ambient temperature (operation)	-20 °C ... 70 °C (Stand-alone device: any mounting position)
	-20 °C ... 55 °C (Group assembly: vertical DIN rail without circulating air)
	-20 °C ... 65 °C (Group assembly: vertical DIN rail with circulating air)
	-20 °C ... 60 °C (Group assembly: horizontal DIN rail without circulating air)
	-20 °C ... 65 °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 nC [ia Ga] IIC T4 Gc
	⚡ I (M1) [Ex ia Ma] I

IECEx

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

Safety Integrity Level (SIL, IEC 61508)

Identification	3
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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	3-way isolation
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Mounting

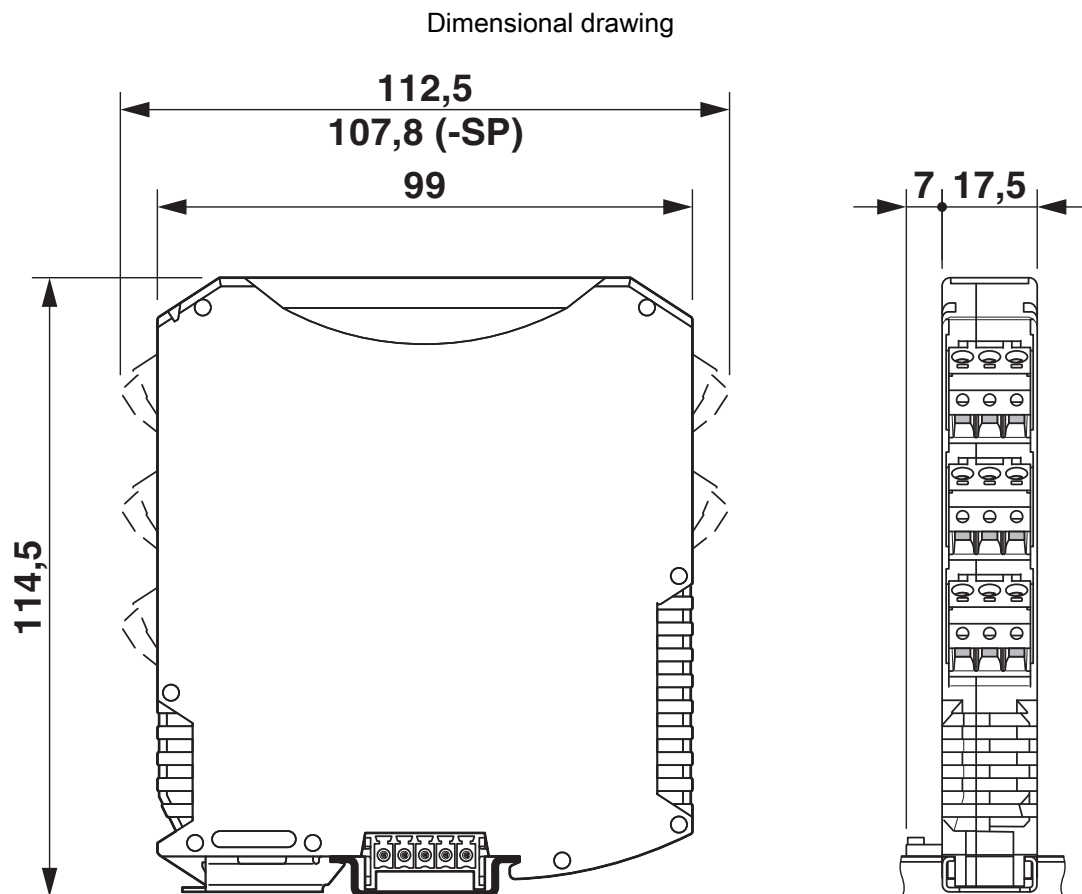
Mounting type	NS 35/15, NS 35/7,5
Mounting position	vertical, horizontal

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1291193

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Drawings

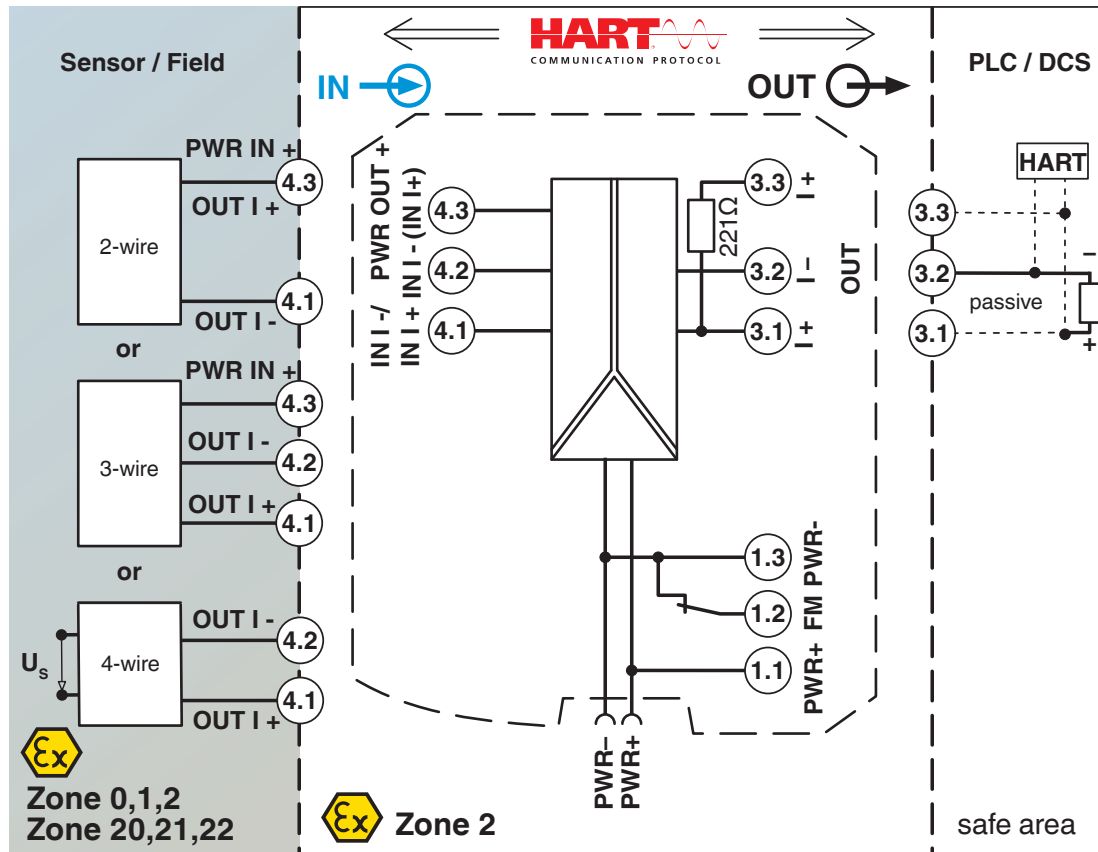


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Block diagram



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Approvals

 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/in/products/1291193>

Functional Safety

Approval ID: 22/05-248 R029 V1R0



IECEx

Approval ID: IECEx BVS 21.0019X



ATEX

Approval ID: BVS 21 ATEX E 017X

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Classifications

ECLASS

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

ETIM

ETIM 9.0	EC002653
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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	b28b4445-7985-49e4-858c-6d4f0542c357

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Accessories

GW HART USB MODEM - Cable adapter

1003824

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



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

MACX MCR-PTB - Power and error message module

2865625

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

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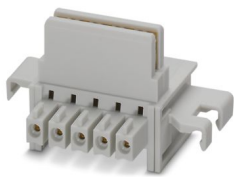
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ME 17,5 TBUS 1,5/ 5-ST-3,81 GY - DIN rail bus connectors

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

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

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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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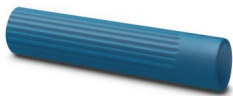
<https://www.phoenixcontact.com/in/products/1291193>

MPS-IH BU - Insulating sleeve

0201689

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

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

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

Insulating sleeve, color: green



MPS-IH GY - Insulating sleeve

0201728

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

Insulating sleeve, color: gray



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MPS-IH BK - Insulating sleeve

0201731

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

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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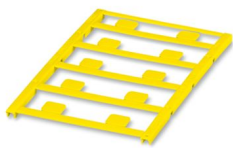


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UC-EMLP (11X9) YE - Plastic label

0822602

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



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UC-EMLP (11X9) CUS - Plastic label

0824547

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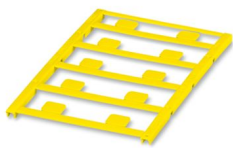


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UC-EMLP (11X9) YE CUS - Plastic label

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

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UC-EMLP (11X9) SR - Plastic label

0828094

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Plastic label, Sheet, silver, 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) 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

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US-EMLP (11X9) YE - Plastic label

0828871

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US-EMLP (11X9) SR - Plastic label

0828872

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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, Number of individual labels: 135, text field height: 9 mm, text field width: 11 mm

LS-EMLP (11X9) WH - Device marker

0831678

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



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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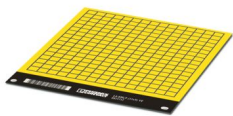


LS-EMLP (11X9) YE - Device marker

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

1205053

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

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