

# MACX MCR-SL-RPSSI-I - Power/input isolating amplifier



2865955

<https://www.phoenixcontact.com/in/products/2865955>

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Repeater power supply and input signal conditioner, HART-transparent. Transmits supplied or active 0/4 ... 20 mA signals to a load (active or passive). 3-way electrical isolation, SIL 2 in accordance with IEC 61508.

## Your advantages

- Power supply 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
- 3-way electrical isolation
- Terminal point with 250  $\Omega$  resistor to increase HART impedance for low-resistance systems
- Plug-in screw or spring-cage connection technology (Push-in technology), with integrated sockets for HART communicators
- Bidirectional transmission of digital HART communication signals
- Output: 0/4 mA ... 20 mA (active or passive)
- Input: 0/4 mA ... 20 mA (powered or not powered)

## Commercial Data

Item number	2865955
Packing unit	1 pc
Minimum order quantity	1 pc
Sales Key	CK1
Product Key	CK1111
Catalog Page	Page 120 (C-5-2019)
GTIN	4046356448314
Weight per Piece (including packing)	173.2 g
Weight per Piece (excluding packing)	126 g
Customs tariff number	85437090
Country of origin	DE

# MACX MCR-SL-RPSSI-I - Power/input isolating amplifier



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## 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
Product family	MACX Analog
Application	Analog IN
No. of channels	1
Type	Signal conditioners with SIL functional safety

#### Insulation characteristics: GB Standard

Overvoltage category	II
Pollution degree	2

### Electrical properties

No. of channels	1
Electrical isolation	3-way isolation
Electrical isolation between input and output	yes
Maximum power dissipation for nominal condition	0.65 W (20 mA, 250 $\Omega$ )
Signal transmission behavior	In = Out
Step response (10-90%)	< 200 $\mu$ s (for jump 4 mA ... 20 mA, load 600 $\Omega$ ) < 600 $\mu$ s (for jump 0 mA ... 20 mA, load 600 $\Omega$ )
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 <sub>PP</sub> (Peak value in accordance with IEC/EN 60079-11) 265 V AC/DC (Peak value in accordance with IEC/EN 60079-11)
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#### Electrical isolation Input/power supply

Electrical isolation	375 V <sub>PP</sub> (Peak value in accordance with IEC/EN 60079-11) 265 V AC/DC (Peak value in accordance with IEC/EN 60079-11)
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#### Electrical isolation Output/supply

Electrical isolation	265 V AC/DC (Peak value in accordance with IEC/EN 60079-7)
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## Supply

Designation	Repeater power supply operation
Nominal supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (24 V DC, -20 % ... +25 %)
Max. current consumption	< 76 mA (24 V DC / 20 mA / 1000 Ω) < 55 mA (24 V DC / 20 mA / 250 Ω)
Power dissipation	< 1.1 W (24 V DC / 20 mA / 1000 Ω) < 0.95 W (24 V DC / 20 mA / 250 Ω) < 1.2 W (24 V DC / 20 mA / 0 Ω)
Power consumption	< 1.8 W (20 mA / 1000 Ω) < 1.3 W (20 mA / 250 Ω)

## Supply

Designation	Signal conditioner operation
Nominal supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (24 V DC, -20 % ... +25 %)
Max. current consumption	< 44 mA (24 V DC / 20 mA / 1000 Ω) < 27 mA (24 V DC / 20 mA / 250 Ω)
Power dissipation	< 0.75 W (24 V DC / 20 mA / 1000 Ω) < 0.65 W (24 V DC / 20 mA / 250 Ω) < 0.95 W (24 V DC / 20 mA / 0 Ω)

## Input data

### Signal: Repeater power supply operation

Description of the input	Active current input
Number of inputs	1
Input signal	Current
Current input signal	4 mA ... 20 mA
Current limitation	25 mA
Transmitter supply voltage	> 21.5 V (20 mA) > 20.8 V (24 mA)
Underload/overload signal range	0 mA ... 24 mA (Extended transmission range for diagnostics)

### Signal: Signal conditioner operation

Description of the input	Passive current input
Current input signal	0 mA ... 20 mA 4 mA ... 20 mA
Voltage drop	< 3.5 V (in input isolating amplifier operation)
Underload/overload signal range	0 mA ... 24 mA (Extended transmission range for diagnostics)

## Output data

### Signal: Repeater power supply operation

Output description	Current output (active and passive)
Number of outputs	1

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Current output signal	4 mA ... 20 mA (active)
	4 mA ... 20 mA (14 ... 26 V ext. source voltage)
Load/output load current output	< 1000 Ω (20 mA)
	< 825 Ω (24 mA)
Output ripple	< 20 mV <sub>rms</sub>
Output behavior in the event of an error	0 mA (Cable break in the input)
	≥ 22.5 mA (Cable short-circuit in the input)
Underload/overload signal range	0 mA ... 24 mA (Extended transmission range for diagnostics)

## Signal: Signal conditioner operation

Output description	Current output (active and passive)
Current output signal	0 mA ... 20 mA (active)
	4 mA ... 20 mA (active)
	0 mA ... 20 mA (14 ... 26 V ext. source voltage)
	4 mA ... 20 mA (14 ... 26 V ext. source voltage)
Load/output load current output	< 1000 Ω (20 mA)
	< 825 Ω (24 mA)
Output ripple	< 20 mV <sub>rms</sub>
Output behavior in the event of an error	0 mA (Cable break in the input)
	0 mA (Cable short-circuit in the input)
Underload/overload signal range	0 mA ... 24 mA (Extended transmission range for diagnostics)

## Connection data

Connection method	Screw connection
Stripping length	7 mm
Screw thread	M3
Conductor cross section rigid	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 mm
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## Ex data

Ex installation (EPL)	Gc
	Div. 2

## Interfaces

### Data communication (bypass)

HART function	Yes
Protocols supported	HART-transparent

## Signaling

Status display	Green LED (supply voltage)
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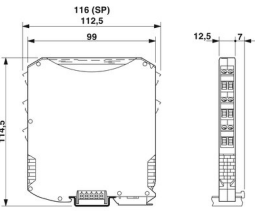
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## Dimensions

Dimensional drawing	
Width	12.5 mm
Height	112.5 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)
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
Permissible humidity (operation)	10 % ... 95 % (non-condensing)

### 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)	-20 °C ... 60 °C
Rated insulation voltage	375 V <sub>PP</sub> (Power supply, input / output)

### Altitude range (≤ 3000 m)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-20 °C ... 54 °C
Rated insulation voltage	190 V AC (Power supply, input / output) 110 V DC (Power supply, input / output)

### Altitude range (≤ 4000 m)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-20 °C ... 48 °C
Rated insulation voltage	60 V AC/DC (Power supply, input / output)

### Altitude range (≤ 5000 m)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-20 °C ... 42 °C

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Rated insulation voltage	60 V AC/DC (Power supply, input / output)
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## Approvals

### CE

Certificate	CE-compliant
Note	and EN 61326

### ATEX

Identification	<input type="checkbox"/> II 3 G Ex ec IIC T4 Gc
Certificate	PxCIF08ATEX2865955X

### UKCA Ex (UKEX)

Identification	<input type="checkbox"/> II 3 G Ex nA IIC T4 Gc X
Certificate	PxCIF21UKEX2865955X

### IECEX

Identification	Ex ec IIC T4 Gc
Certificate	IECEX BVS 08.0016X

### CCC / China-Ex

Identification	Ex ec IIC T4 Gc
Certificate	2022122304115127

### UL, USA/Canada

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

### Shipbuilding approval

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

Identification	2
Certificate	BVS PB 03/08-2

### INMETRO

Identification	Ex ec IIC T4 Gc
Certificate	DNV 18.0136 X

### EAC Ex

Identification	<input type="checkbox"/> 2Ex nA IIC T4 Gc
Certificate	BY/112 02.01 TP012 103.01 00078

### DNV GL data

Temperature	B
Humidity	B
Vibration	A

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

## EMC data

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

## Standards and regulations

Electrical isolation	3-way isolation
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### GB Standard

Standards/regulations	GB 3836.1
	GB 3836.3

## Mounting

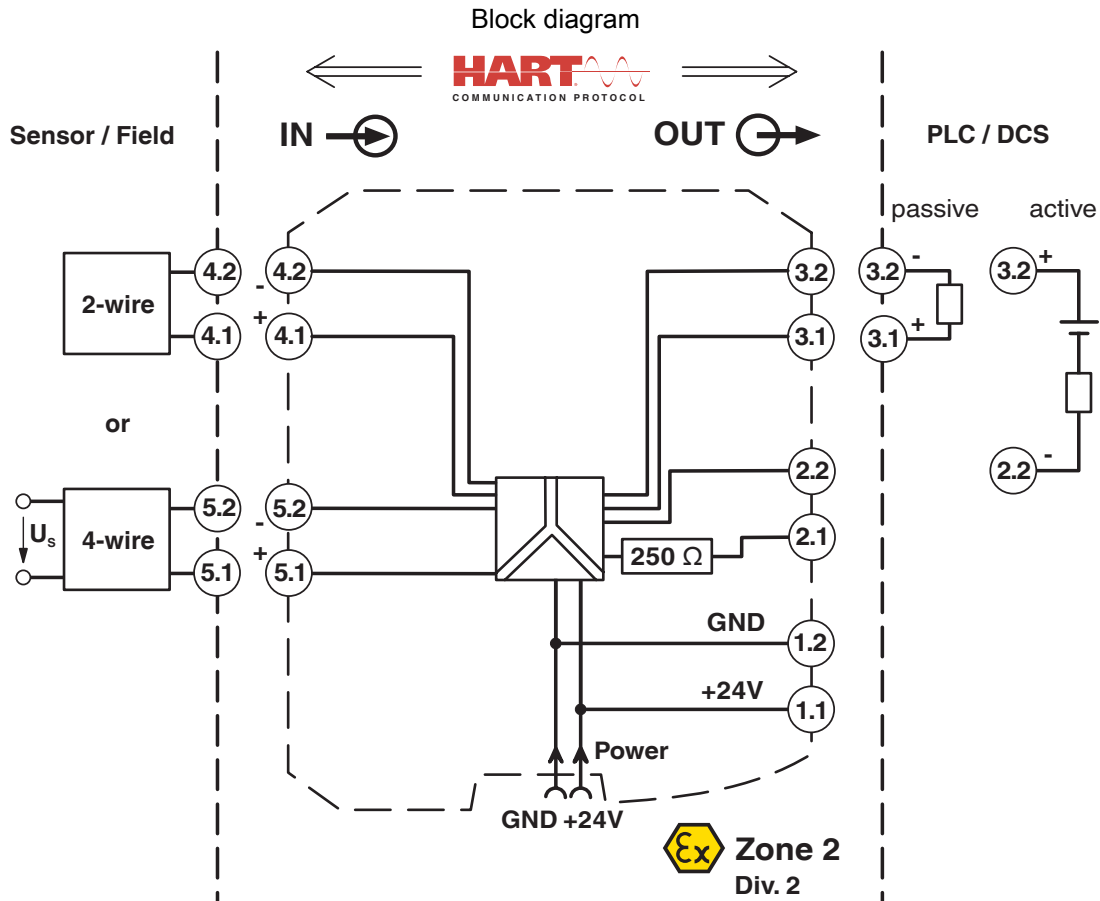
Mounting type	DIN rail mounting
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## Drawings



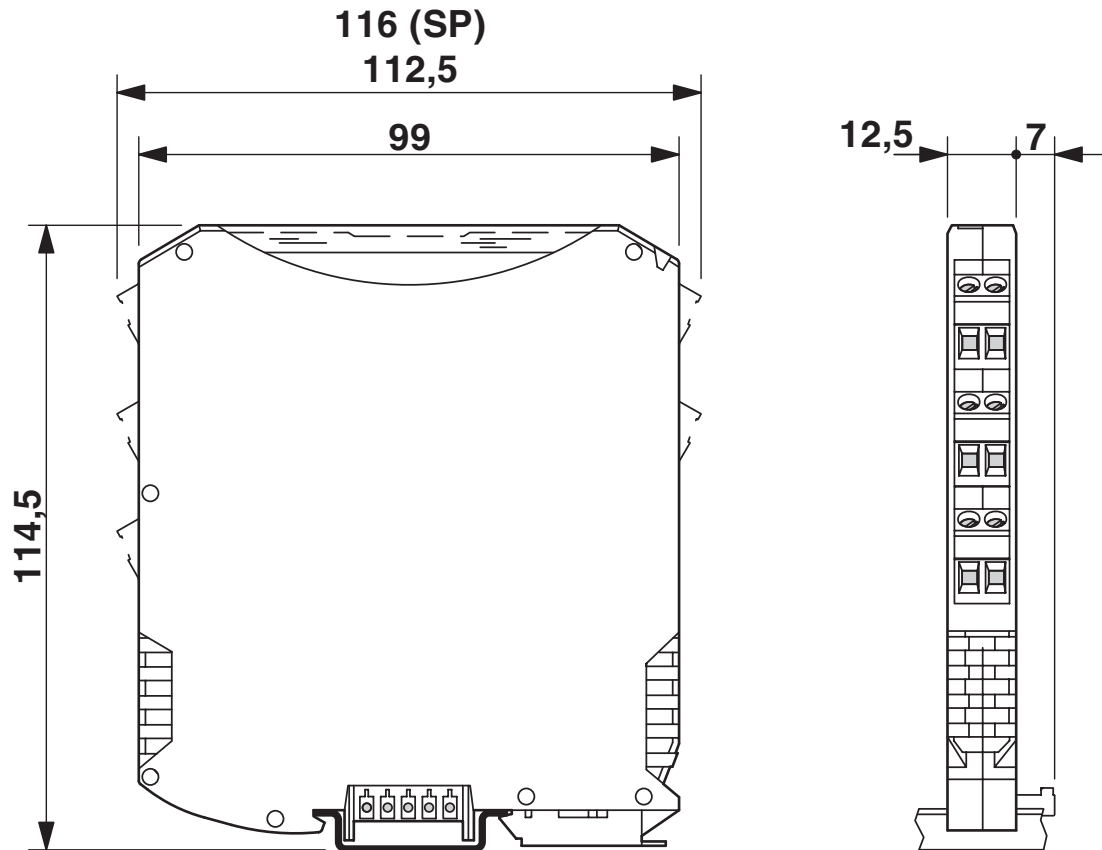


# MACX MCR-SL-RPSSI-I - Power/input isolating amplifier

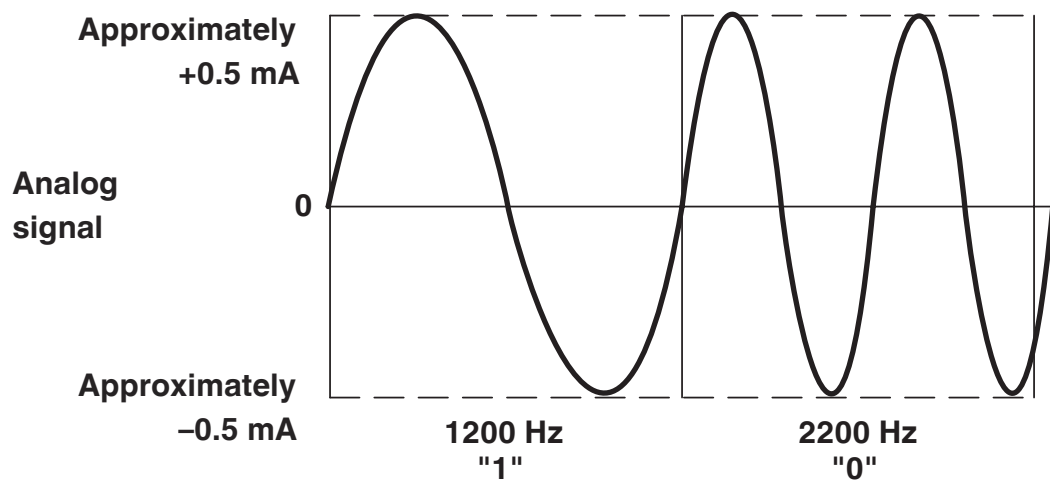
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Dimensional drawing



Diagram



Signal transmission analog and digital at the same time

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## Approvals



**DNV GL**

Approval ID: TAA000020C



**UL Listed**

Approval ID: FILE E 330267



**cUL Listed**

Approval ID: FILE E 330267



**CCC**

Approval ID: 2022122304115127



**EAC Ex**

Approval ID: TP012 103.01 00078



**ATEX**

Approval ID: PxCIF08ATEX2865955X



**cUL Listed**

Approval ID: FILE E 199827



**UL Listed**

Approval ID: FILE E 199827

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## Classifications

### ECLASS

ECLASS-11.0	27210120
ECLASS-12.0	27210120
ECLASS-13.0	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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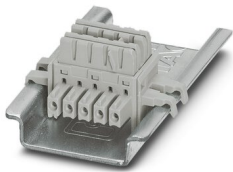
## Accessories

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

2695439

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

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



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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: 1m.



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

2924854

<https://www.phoenixcontact.com/in/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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## TC-D37SUB-AIO16-EX-PS-UNI - Module carrier

2902932

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

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## 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

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## 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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## MPS-IH WH - Insulating sleeve

0201663

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

Insulating sleeve, color: white





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## MPS-IH RD - Insulating sleeve

0201676

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

Insulating sleeve, color: red



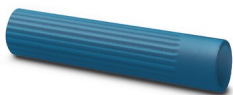
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## MPS-IH BU - Insulating sleeve

0201689

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

Insulating sleeve, color: blue



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## MPS-IH YE - Insulating sleeve

0201692

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

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



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## MPS-IH GY - Insulating sleeve

0201728

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

Insulating sleeve, color: gray



## MPS-IH BK - Insulating sleeve

0201731

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

Insulating sleeve, color: black



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## MPS-MT - Test plugs

0201744

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



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

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

0819291

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

# MACX MCR-SL-RPSSI-I - Power/input isolating amplifier



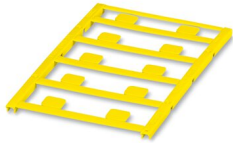
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<https://www.phoenixcontact.com/in/products/2865955>

## 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, lettering field size: 11 x 9 mm, Number of individual labels: 10

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

0824547

<https://www.phoenixcontact.com/in/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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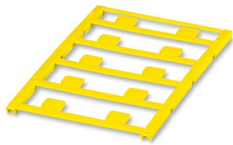
<https://www.phoenixcontact.com/in/products/2865955>

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

0824548

<https://www.phoenixcontact.com/in/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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## UC-EMLP (11X9) SR - Plastic label

0828094

<https://www.phoenixcontact.com/in/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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## 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, lettering field size: 11 x 9 mm, Number of individual labels: 10



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

0828789

<https://www.phoenixcontact.com/in/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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## US-EMLP (11X9) YE - Plastic label

0828871

<https://www.phoenixcontact.com/in/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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## 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, lettering field size: 11 x 9 mm, Number of individual labels: 135



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## 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: without print, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255



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

0831705

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

Device marker, Sheet, silver, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER: without print, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255



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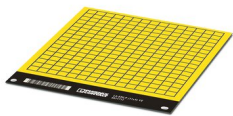
<https://www.phoenixcontact.com/in/products/2865955>

## 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: without print, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255



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