

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



2865955

<https://www.phoenixcontact.com/us/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 Ω 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
Note	Made to Order (non-returnable)
Sales Key	C01
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

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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
Application	Analog IN
No. of channels	1
Type	Signal conditioners with SIL functional safety

Insulation characteristics

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 Ω)
Signal transmission behavior	In = Out
Step response (10-90%)	< 200 μ s (for jump 4 mA ... 20 mA, load 600 Ω) < 600 μ s (for jump 0 mA ... 20 mA, load 600 Ω)
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 _{rms}
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 _{PP} (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 _{PP} (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

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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
Current output signal	4 mA ... 20 mA (active)

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	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 _{rms}
Output behavior in the event of an error	0 mA (Cable break in the input)
	$\geq$ 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 _{rms}
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 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
Tightening torque	0.5 Nm ... 0.6 Nm

Test socket

Max. diameter	2 mm
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Interfaces

Data communication (bypass)

HART function	Yes
Protocols supported	HART-transparent

LED signaling

Status display	Green LED (supply voltage)
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Dimensions

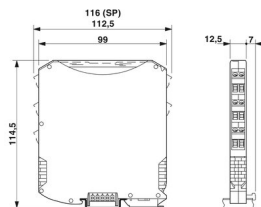
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Dimensional drawing



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)

Approval data

CE

Certificate	CE-compliant
Note	and EN 61326

ATEX

Identification	☐ II 3 G Ex ec IIC T4 Gc
Certificate	PxCIF08ATEX2865955X

UKCA Ex (UKEX)

Identification	☐ 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 nA IIC T4 Gc
Certificate	2022122304115127

UL, USA / Canada

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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

EAC Ex

Identification	☐ 2Ex nA IIC T4 Gc
Certificate	BY/112 02.01 TP012 103.01 00078

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	3-way isolation
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GB Standard

Standards/regulations	GB 3836.1
	GB 3836.8

Mounting

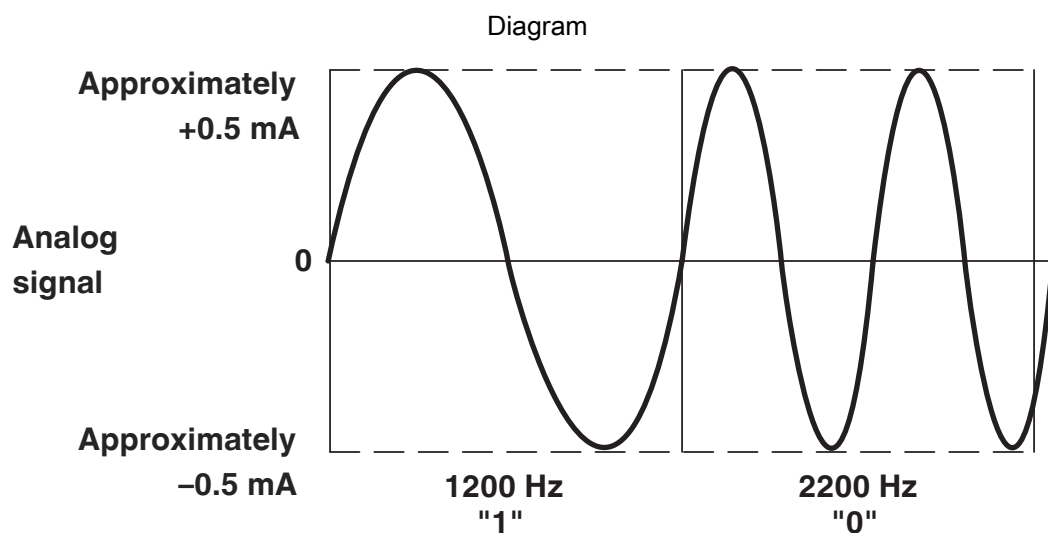
Mounting type	DIN rail mounting
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Power/input isolating amplifier - MACX MCR-SL-RPSSI-I

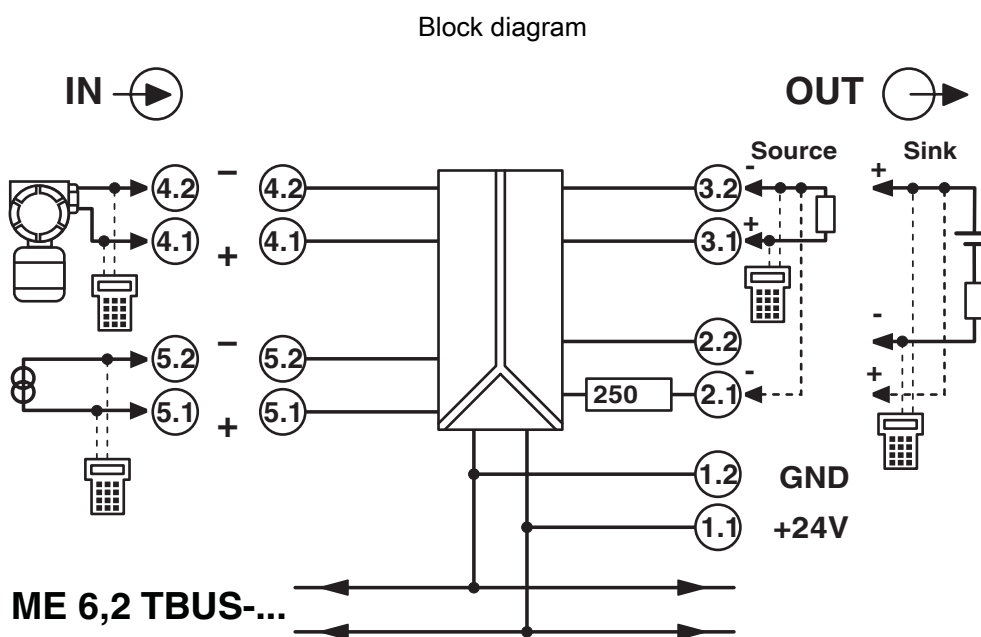
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Drawings



Signal transmission analog and digital at the same time

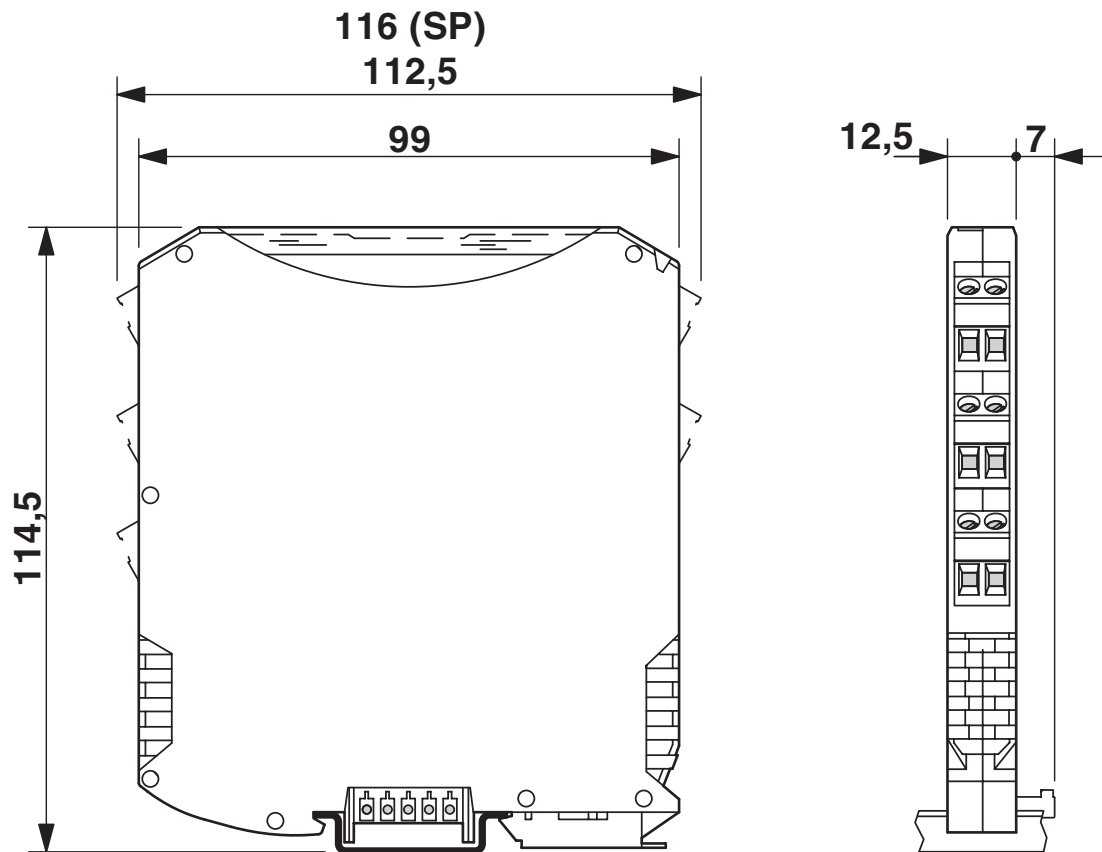


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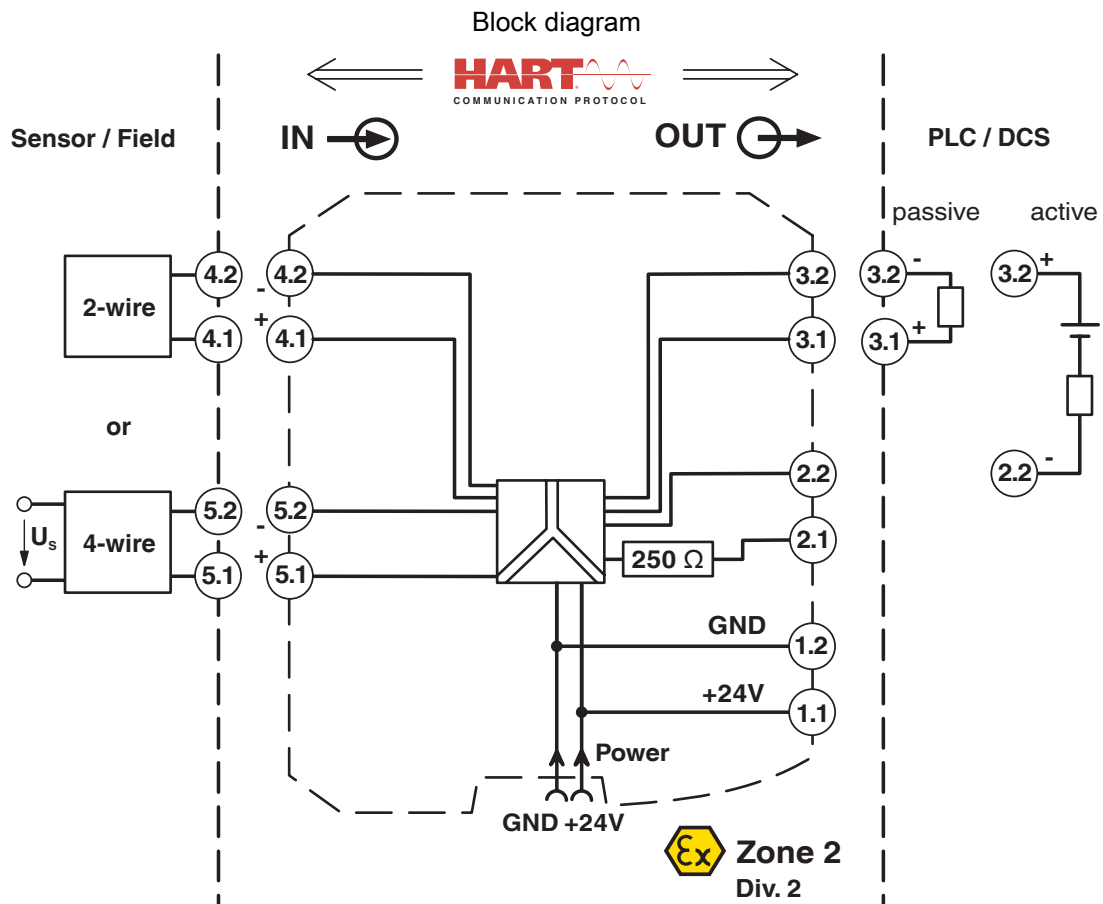
Dimensional drawing



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Approvals



DNV GL

Approval ID: TAA000020C



UL Listed

Approval ID: FILE E 330267



cUL Listed

Approval ID: FILE E 330267

Functional Safety

Approval ID: BVS Pb 03/08



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

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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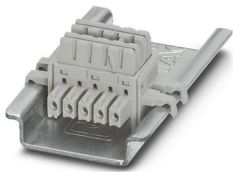
Accessories

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/us/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



Cable adapter

Cable adapter - GW HART USB MODEM - 1003824

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

Power and error message module

Power and error message module - MACX MCR-PTB-SP - 2924184

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



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

Module carrier

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

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

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



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

Module carrier

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

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

Insulating sleeve

Insulating sleeve - MPS-IH WH - 0201663

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

Insulating sleeve, color: white



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

Insulating sleeve

Insulating sleeve - MPS-IH RD - 0201676

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

Insulating sleeve, color: red

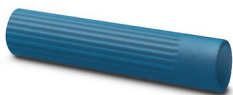


Insulating sleeve

Insulating sleeve - MPS-IH BU - 0201689

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

Insulating sleeve, color: blue



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Insulating sleeve

Insulating sleeve - MPS-IH YE - 0201692

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

Insulating sleeve, color: yellow



Insulating sleeve

Insulating sleeve - MPS-IH GN - 0201702

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

Insulating sleeve, color: green



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Insulating sleeve

Insulating sleeve - MPS-IH GY - 0201728

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

Insulating sleeve, color: gray



Insulating sleeve

Insulating sleeve - MPS-IH BK - 0201731

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

Insulating sleeve, color: black



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Test plugs

Test plugs - MPS-MT - 0201744

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

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



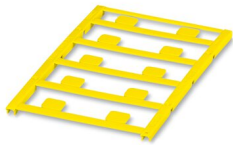
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<https://www.phoenixcontact.com/us/products/2865955>

Plastic label

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

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



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Plastic label

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

<https://www.phoenixcontact.com/us/products/0824547>



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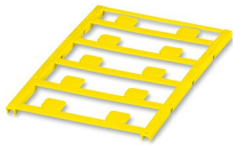
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Plastic label

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

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

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Plastic label

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

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

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Plastic label

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

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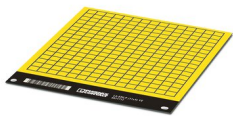
<https://www.phoenixcontact.com/us/products/2865955>

Device marker

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

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