

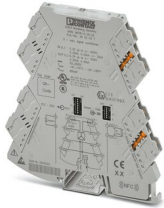
# Signal conditioner - MINI MCR-2-UI-UI



2902037

<https://www.phoenixcontact.com/pc/products/2902037>

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3-way signal conditioner with plug-in connection technology and calibrated measuring range changeover for the electrical isolation of unipolar and bipolar analog signals. Input/output configurable via DIP switch. Screw connection technology, standard configuration.

## Product Description

The 3-way signal conditioner with plug-in connection technology and calibrated measuring range changeover can be configured using DIP switches and is used for the electrical isolation, conversion, amplification, and filtering of unipolar and bipolar standard and normalized signals. On the input side, the standard analog signals 0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V, 0 ... 5 V, 1 ... 5 V or -10 ... 10 V, and signals 2 ... 10 V, 0 ... 20 V, 4 ... 20 V, 0 ... 24 V, 0 ... 30 V, -5 ... 5 V, -20 ... 20 V, -24 ... 24 V, -30 ... 30 V and -20 ... 20 mA are available. On the output side, 0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V, 0 ... 5 V, 1 ... 5 V, -10 ... 10 V and -5 ... 5 V are possible. There is no need for adjustment following a measuring range changeover. The measuring transducer supports fault monitoring and NFC communication.

# Signal conditioner - MINI MCR-2-UI-UI



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## Commercial Data

Item number	2902037
Packing unit	1 pc
Minimum order quantity	1 pc
Note	Made to Order (non-returnable)
Product Key	CK1411
Catalog Page	Page 72 (C-5-2019)
GTIN	4046356649728
Weight per Piece (including packing)	123.2 g
Weight per Piece (excluding packing)	103.9 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	Signal conditioner
No. of channels	1
Type	Signal conditioner
Configuration	DIP switches

#### 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
Limit frequency (3 dB)	30 Hz (via DIP switch)
	5 kHz (via DIP switch)
Protective circuit	Transient protection
Step response (10-90%)	< 8.5 ms (with 30 Hz filter)
Maximum temperature coefficient	0.01 %/K
Temperature coefficient, typical	0.01 %/K
Maximum transmission error	≤ 0.1 % (of final value)
	≤ 0.15 % (of final value, at IN: 4 ... 20 mA / OUT: -10 V ... 10 V)

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

Rated insulation voltage	300 V <sub>rms</sub>
Test voltage	3 kV AC (50 Hz, 60 s)
Insulation	Reinforced insulation according to IEC/EN 61010-1

#### Supply

Nominal supply voltage	24 V DC
Supply voltage range	9.6 V DC ... 30 V DC (The DIN rail bus connector (ME 6,2 TBUS-2 1,5/5-ST-3,81 GN, Item No. 2869728) can be used to bridge the supply voltage. It can be snapped onto a 35 mm DIN rail according to EN 60715))
Typical current consumption	25 mA (Current output, at 24 V DC incl. load)
	54 mA (Current output, at 12 V DC incl. load)
Power consumption	≤ 800 mW (at I <sub>OUT</sub> = 20 mA, 9.6 V DC, 600 Ω load)

### Input data

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Signal: Voltage/current input

Number of inputs	1
Configurable/programmable	Yes
Voltage input signal	0 V ... 5 V (via DIP switch) 1 V ... 5 V (via DIP switch) -5 V ... 5 V (via DIP switch) 0 V ... 10 V (via DIP switch) 2 V ... 10 V (via DIP switch) -10 V ... 10 V (via DIP switch) 0 V ... 20 V (via DIP switch) 4 V ... 20 V (via DIP switch) -20 V ... 20 V (via DIP switch) 0 V ... 24 V (via DIP switch) 4.8 V ... 24 V (via DIP switch) -24 V ... 24 V (via DIP switch) 0 V ... 30 V (via DIP switch) 6 V ... 30 V (via DIP switch) -30 V ... 30 V (via DIP switch)
Max. voltage input signal	33 V
Current input signal	0 mA ... 20 mA (via DIP switch) 4 mA ... 20 mA (via DIP switch) -20 mA ... 20 mA (via DIP switch)
Max. current input signal	24 mA
Input resistance of voltage input	> 1000 kΩ
Input resistance current input	approx. 63 Ω (+0.7 V for test diode)

## Output data

Signal: Voltage/current

Output name	Voltage output / current output
Number of outputs	1
Configurable/programmable	Yes
Voltage output signal	0 V ... 5 V (via DIP switch) 1 V ... 5 V (via DIP switch) -5 V ... 5 V (via DIP switch) 0 V ... 10 V (via DIP switch) 2 V ... 10 V (via DIP switch) -10 V ... 10 V (via DIP switch)
Non-load voltage	< 17 V
Current output signal	0 mA ... 20 mA (via DIP switch) 4 mA ... 20 mA (via DIP switch)
Max. current output signal	22 mA
Short-circuit current	< 32 mA
Load/output load voltage output	≥ 10 kΩ

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Load/output load current output	≤ 600 Ω (at 20 mA)
Ripple	< 20 mV <sub>PP</sub> (at 600 Ω)
	< 20 mV <sub>PP</sub> (at 600 Ω)

## Connection data

Connection method	Screw connection
Stripping length	10 mm
Screw thread	M3
Conductor cross section solid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (with ferrule)
	0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> (without ferrule)
Conductor cross section flexible	0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section AWG	24 ... 12 (flexible)
Torque	0.5 Nm ... 0.6 Nm

## LED signaling

Status display	Green LED (supply voltage)
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## Dimensions

Width	6.2 mm
Height	109.81 mm
Depth	119.2 mm

## Material specifications

Fire protection for rail vehicles (DIN EN 45545-2) R22	HL 1 - HL 2
Fire protection for rail vehicles (DIN EN 45545-2) R23	HL 1 - HL 2
Fire protection for rail vehicles (DIN EN 45545-2) R24	HL 1 - HL 2
Housing material	PBT

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20 (not assessed by UL)
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Altitude	≤ 2000 m
Permissible humidity (operation)	5 % ... 95 % (non-condensing)

## Approval data

### CE

Certificate	CE-compliant
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### ATEX

Identification	□ II 3 G Ex ec ic IIC T4 Gc
Certificate	BVS 19 ATEX E 047 X

### UKCA Ex (UKEX)

# Signal conditioner - MINI MCR-2-UI-UI



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Identification	<input type="checkbox"/> II 3 G Ex ec ic IIC T4 Gc
Certificate	PxCIF21UKEX2902000X

## IECEX

Identification	Ex ec ic IIC T4 Gc
Certificate	IECEX BVS 19.0041X

## CCC / China-Ex

Identification	Ex nA ic IIC T4 Gc
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## UL, USA / Canada

Identification	UL 508 Listed
	Class I, Div. 2, Groups A, B, C, D T6
	Class I, Zone 2, Group IIC T6

## Shipbuilding approval

Certificate	DNV GL TAA00002UA
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## EAC Ex

Identification	<input type="checkbox"/> 2Ex ec ic IIC T4 Gc
Certificate	BY/112 02.01 TP012 103.01 00079

## 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.

## Electrostatic discharge

Standards/regulations	EN 61000-4-2
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## Electrostatic discharge

Comments	Safety measures must be taken to prevent electrostatic discharge.
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## Electromagnetic HF field

Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3

## Fast transients (burst)

Designation	Fast transients (burst)
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# Signal conditioner - MINI MCR-2-UI-UI



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Standards/regulations	EN 61000-4-4
Surge current load (surge)	
Standards/regulations	EN 61000-4-5
Conducted interference	
Designation	Conducted interferences
Standards/regulations	EN 61000-4-6

## Standards and regulations

Electrical isolation	3-way isolation
GB Standard	
Standards/regulations	GB 3836.1
	GB 3836.4
	GB 3836.8

## Mounting

Mounting type	DIN rail mounting
Assembly instructions	The T connector can be used to bridge the supply voltage. It can be snapped onto a 35 mm DIN rail according to EN 60715.
Mounting position	any

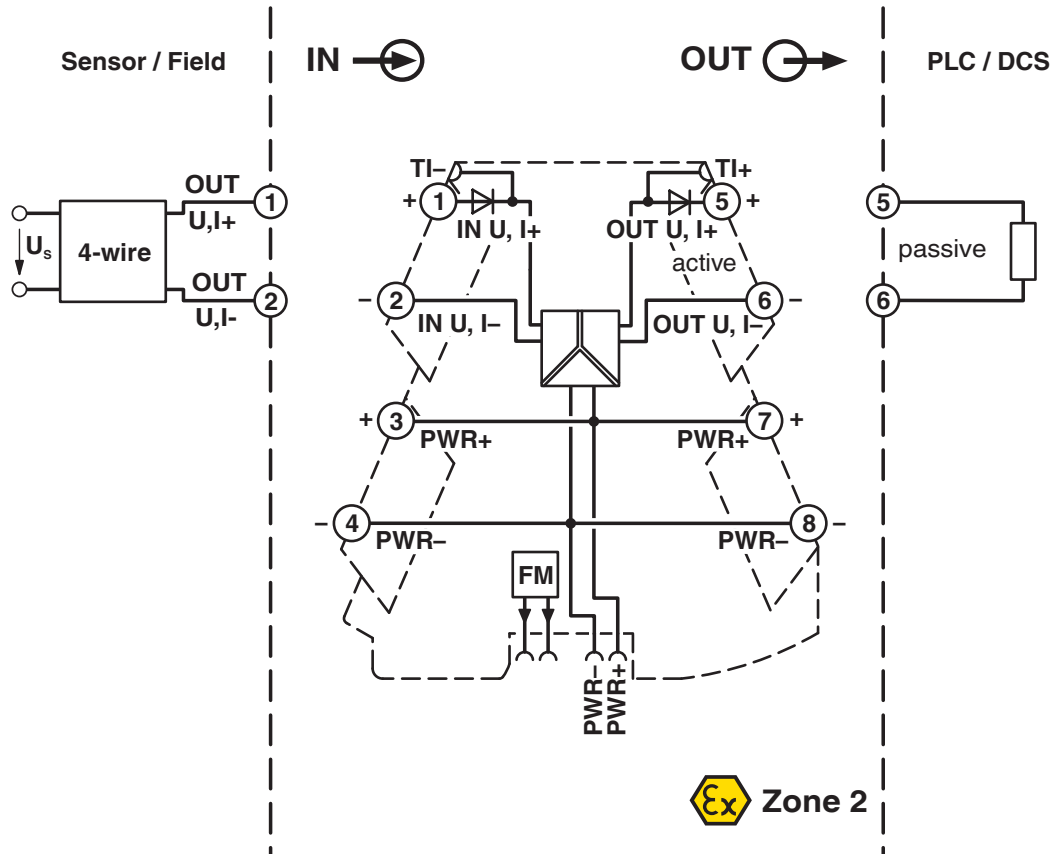
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## Drawings

Block diagram





# Signal conditioner - MINI MCR-2-UI-UI



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## Approvals



**DNV GL**

Approval ID: TAA00002UA



**UL Listed**

Approval ID: FILE E 238705

Nominal Voltage  $U_N$

Nominal Current  $I_N$

Cross Section AWG

Cross Section  $\text{mm}^2$

-

-



**CCC**

Approval ID: 2021322310003859



**cUL Listed**

Approval ID: FILE E 238705

Nominal Voltage  $U_N$

Nominal Current  $I_N$

Cross Section AWG

Cross Section  $\text{mm}^2$

-

-



**EAC Ex**

Approval ID: RU C-DE.AB72.B.02066



**IECEX**

Approval ID: IECEX BVS 19.0041X



**cUL Listed**

Approval ID: FILE E 196811

Nominal Voltage  $U_N$

Nominal Current  $I_N$

Cross Section AWG

Cross Section  $\text{mm}^2$

-

-



**UL Listed**

Approval ID: FILE E 196811

Nominal Voltage  $U_N$

Nominal Current  $I_N$

Cross Section AWG

Cross Section  $\text{mm}^2$

-

-



**ATEX**

Approval ID: BVS 19 ATEX E 047 X

# Signal conditioner - MINI MCR-2-UI-UI



2902037

<https://www.phoenixcontact.com/pc/products/2902037>



**ATEX**

Approval ID: 2902037\_Ex-n

**cULus Listed**

**cULus Listed**

# Signal conditioner - MINI MCR-2-UI-UI



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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	
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# Signal conditioner - MINI MCR-2-UI-UI



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<https://www.phoenixcontact.com/pc/products/2902037>

## 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"

# Signal conditioner - MINI MCR-2-UI-UI

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<https://www.phoenixcontact.com/pc/products/2902037>

## Accessories

### Monitoring module

Monitoring module - MINI MCR-2-FM-RC - 2904504

<https://www.phoenixcontact.com/pc/products/2904504>



Fault monitoring module with plug-in connection technology for evaluating and reporting group errors from the FM system and for monitoring the supply voltages. Error message via N/C contact. Screw connection technology, standard configuration

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### Monitoring module

Monitoring module - MINI MCR-2-FM-RC-PT - 2904508

<https://www.phoenixcontact.com/pc/products/2904508>



Fault monitoring module with plug-in connection technology for evaluating and reporting group errors from the FM system and for monitoring the supply voltages. Error message via N/C contact. Push-in connection technology, standard configuration

# Signal conditioner - MINI MCR-2-UI-UI

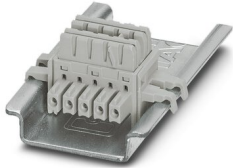
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## DIN rail bus connectors

DIN rail bus connectors - ME 6,2 TBUS-2 1,5/5-ST-3,81 GY - 2695439

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



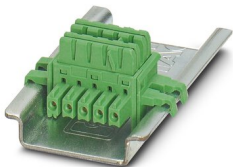
DIN rail connector (TBUS), 5-pos., for bridging the supply voltage, can be snapped onto NS 35/... DIN rails according to EN 60715

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## DIN rail bus connectors

DIN rail bus connectors - ME 6,2 TBUS-2 1,5/5-ST-3,81 GN - 2869728

<https://www.phoenixcontact.com/pc/products/2869728>



DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.

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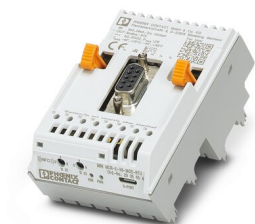
<https://www.phoenixcontact.com/pc/products/2902037>



## Communication module

Communication module - MINI MCR-2-V8-MOD-RTU - 2905634

<https://www.phoenixcontact.com/pc/products/2905634>



Eight MINI Analog Pro signal conditioners and measuring transducers can be quickly and easily integrated into a Modbus/RTU network via a communication adapter.

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## Communication module

Communication module - MINI MCR-2-V8-MOD-TCP - 2905635

<https://www.phoenixcontact.com/pc/products/2905635>



Eight MINI Analog Pro signal conditioners and measuring transducers can be quickly and easily integrated into a Modbus/TCP network via a communication adapter.

# Signal conditioner - MINI MCR-2-UI-UI

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## Communication module

Communication module - MINI MCR-2-V8-PB-DP - 2905636

<https://www.phoenixcontact.com/pc/products/2905636>



Eight MINI Analog Pro signal conditioners and measuring transducers can be quickly and easily integrated into a PROFIBUS DP network via a communication adapter.

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## Power terminal block

Power terminal block - MINI MCR-2-PTB - 2902066

<https://www.phoenixcontact.com/pc/products/2902066>



Power terminal with plug-in connection technology for delivering the supply voltage to the DIN rail connector. Monitoring of the supply voltages in combination with the fault monitoring module. Screw connection technology



# Signal conditioner - MINI MCR-2-UI-UI

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## Power terminal block

Power terminal block - MINI MCR-2-PTB-PT - 2902067

<https://www.phoenixcontact.com/pc/products/2902067>



Power terminal with plug-in connection technology for delivering the supply voltage to the DIN rail connector. Monitoring of the supply voltages in combination with the fault monitoring module. Push-in connection technology

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## Marker for end clamp

Marker for end clamp - UCT-EM (30X5) - 0801505

<https://www.phoenixcontact.com/pc/products/0801505>



Marker for end clamp, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: snap in, lettering field size: 30 x 5 mm, Number of individual labels: 24

# Signal conditioner - MINI MCR-2-UI-UI

2902037

<https://www.phoenixcontact.com/pc/products/2902037>

## Marker for end clamp

Marker for end clamp - UCT-EM (30X5) CUS - 0801589

<https://www.phoenixcontact.com/pc/products/0801589>



Marker for end clamp, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: snapped into marker carrier, lettering field size: 30 x 5 mm, Number of individual labels: 24

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## Marker for end clamp

Marker for end clamp - UCT-EM (30X5) YE - 0830340

<https://www.phoenixcontact.com/pc/products/0830340>



Marker for end clamp, Sheet, yellow, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: snap in, lettering field size: 30 x 5 mm, Number of individual labels: 24

# Signal conditioner - MINI MCR-2-UI-UI

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<https://www.phoenixcontact.com/pc/products/2902037>

## Marker for end clamp

Marker for end clamp - UCT-EM (30X5) YE CUS - 0830348

<https://www.phoenixcontact.com/pc/products/0830348>



Marker for end clamp, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: snapped into marker carrier, lettering field size: 30 x 5 mm, Number of individual labels: 24

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## Marker strip

Marker strip - SK 5,0 WH:REEL - 0805221

<https://www.phoenixcontact.com/pc/products/0805221>



Marker strip, Roll, white, unlabeled, can be labeled with: THERMOMARK ROLL 2.0, THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, mounting type: adhesive, for terminal block width: 5 mm, lettering field size: continuous x 5 mm, Number of individual labels: 90000

# Signal conditioner - MINI MCR-2-UI-UI

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<https://www.phoenixcontact.com/pc/products/2902037>

## System adapter

System adapter - MINI MCR-2-V8-FLK 16 - 2901993

<https://www.phoenixcontact.com/pc/products/2901993>



Eight MINI Analog Pro signal conditioners and measuring transducers can be connected to a controller with minimal cabling effort and without any errors using system adapters and system cabling.

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## Power supply unit

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

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



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

# Signal conditioner - MINI MCR-2-UI-UI

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<https://www.phoenixcontact.com/pc/products/2902037>

## Plastic label

Plastic label - UC-EMLP (15X5) - 0819301

<https://www.phoenixcontact.com/pc/products/0819301>



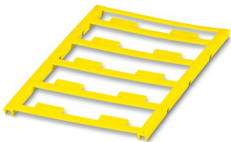
Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10

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## Plastic label

Plastic label - UC-EMLP (15X5) YE - 0822615

<https://www.phoenixcontact.com/pc/products/0822615>



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: 15 x 5 mm, Number of individual labels: 10

# Signal conditioner - MINI MCR-2-UI-UI

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## Plastic label

Plastic label - UC-EMLP (15X5) CUS - 0824550

<https://www.phoenixcontact.com/pc/products/0824550>

Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm



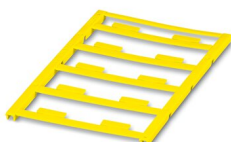
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## Plastic label

Plastic label - UC-EMLP (15X5) YE CUS - 0824551

<https://www.phoenixcontact.com/pc/products/0824551>

Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm



# Signal conditioner - MINI MCR-2-UI-UI

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## Plastic label

Plastic label - UC-EMLP (15X5) SR - 0828095

<https://www.phoenixcontact.com/pc/products/0828095>



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: 15 x 5 mm, Number of individual labels: 10

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## Plastic label

Plastic label - UC-EMLP (15X5) SR CUS - 0828099

<https://www.phoenixcontact.com/pc/products/0828099>



Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10

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## Plastic label

Plastic label - US-EMLP (15X5) - 0828790

<https://www.phoenixcontact.com/pc/products/0828790>



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: 15 x 5 mm, Number of individual labels: 189

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## Plastic label

Plastic label - US-EMLP (15X5) YE - 0828873

<https://www.phoenixcontact.com/pc/products/0828873>



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: 15 x 5 mm, Number of individual labels: 189



# Signal conditioner - MINI MCR-2-UI-UI

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## Plastic label

Plastic label - US-EMLP (15X5) SR - 0828874

<https://www.phoenixcontact.com/pc/products/0828874>



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: 15 x 5 mm, Number of individual labels: 189

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## Plastic label

Plastic label - US-EMLP (15X5) CUS - 0830076

<https://www.phoenixcontact.com/pc/products/0830076>



Plastic label, can be ordered: by card, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189

# Signal conditioner - MINI MCR-2-UI-UI



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## Plastic label

Plastic label - US-EMLP (15X5) YE CUS - 0830077

<https://www.phoenixcontact.com/pc/products/0830077>

Plastic label, can be ordered: by card, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189



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## Plastic label

Plastic label - US-EMLP (15X5) SR CUS - 0830078

<https://www.phoenixcontact.com/pc/products/0830078>

Plastic label, can be ordered: by card, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189



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