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2-way loop-powered isolating amplifier (supplied on the output side), can be configured via DIP switches, with screw connection technology and standard configuration.

Product description

The 6.2 mm wide MINI MCR-SL-UI-I-LP... configurable 2-way isolating amplifier is used to electrically isolate, condition, and filter analog signals. The output loops that supply the loop-powered isolating amplifier enable the isolating amplifier to operate on an active analog input module. The modules are supplied via the current loop of the controller.

On the input side, standard analog signals and non-standard analog signals can be connected, starting from 2 mA or 50 mV up to 40 mA or 30 V. These are converted to a 4...20 mA signal.

The DIP switches accessible on the housing side enable the configuration of input signal ranges.

Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2902829       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Product key                          | DK1131        |
| GTIN                                 | 4046356682350 |
| Weight per piece (including packing) | 87.1 g        |
| Weight per piece (excluding packing) | 82 g          |
| Customs tariff number                | 85437090      |
| Country of origin                    | DE            |

# MINI MCR-SL-UI-I-LP-NC - Signal conditioner



2902829

<https://www.phoenixcontact.com/pc/products/2902829>

## Technical data

### Notes

#### Utilization restriction

|          |                                                                           |
|----------|---------------------------------------------------------------------------|
| EMC note | EMC: class A product, see manufacturer's declaration in the download area |
|----------|---------------------------------------------------------------------------|

### Product properties

|                 |                    |
|-----------------|--------------------|
| Product type    | Signal conditioner |
| Product family  | MINI Analog        |
| No. of channels | 1                  |
| Configuration   | DIP switches       |

#### Insulation characteristics

|                      |    |
|----------------------|----|
| Overvoltage category | II |
| Pollution degree     | 2  |

### Electrical properties

|                                                 |                              |
|-------------------------------------------------|------------------------------|
| Alignment span                                  | ± 2 %                        |
| Alignment zero                                  | ± 2 %                        |
| Electrical isolation                            | 2-way isolation              |
| Electrical isolation between input and output   | yes                          |
| Limit frequency (3 dB)                          | approx. 30 Hz                |
| Maximum power dissipation for nominal condition | 19 mW                        |
| Step response (10-90%)                          | approx. 16 ms                |
| Maximum temperature coefficient                 | 0.01 %/K                     |
| Temperature coefficient, typical                | 0.005 %/K                    |
| Maximum transmission error                      | < 0.1 % (of final value)     |
|                                                 | < 0.2 % (Without adjustment) |

#### Electrical isolation Input/output

|                          |                                                  |
|--------------------------|--------------------------------------------------|
| Rated insulation voltage | 50 V AC/DC                                       |
| Test voltage             | 1.5 kV AC (50 Hz, 60 s)                          |
| Insulation               | Basic insulation in accordance with IEC/EN 61010 |

#### Supply

|                      |                                            |
|----------------------|--------------------------------------------|
| Supply voltage range | loop-powered, no external supply necessary |
| Power consumption    | 28 mW (without signal)                     |

### Input data

#### Signal: Voltage/current

|                      |                  |
|----------------------|------------------|
| Number of inputs     | 1                |
| Voltage input signal | 0 mV ... 1000 mV |
|                      | 0 mV ... 750 mV  |

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|                      |
|----------------------|
| 0 mV ... 500 mV      |
| 0 mV ... 300 mV      |
| 0 mV ... 250 mV      |
| 0 mV ... 200 mV      |
| 0 mV ... 150 mV      |
| 0 mV ... 125 mV      |
| 0 mV ... 120 mV      |
| 0 mV ... 100 mV      |
| 0 mV ... 75 mV       |
| 0 mV ... 60 mV       |
| 0 mV ... 50 mV       |
| 0 V ... 10 V         |
| 0 V ... 7.5 V        |
| 0 V ... 5 V          |
| 0 V ... 3 V          |
| 0 V ... 2.5 V        |
| 0 V ... 2 V          |
| 0 V ... 1.5 V        |
| 0 V ... 1.25 V       |
| 0 V ... 1.2 V        |
| 0 V ... 30 V         |
| 0 V ... 25 V         |
| 0 V ... 20 V         |
| 0 V ... 12.5 V       |
| 0 V ... 12 V         |
| 0 V ... 15 V         |
| -1000 mV ... 1000 mV |
| -750 mV ... 750 mV   |
| -500 mV ... 500 mV   |
| -300 mV ... 300 mV   |
| -250 mV ... 250 mV   |
| -200 mV ... 200 mV   |
| -125 mV ... 125 mV   |
| -120 mV ... 120 mV   |
| -150 mV ... 150 mV   |
| -100 mV ... 100 mV   |
| -75 mV ... 75 mV     |
| -60 mV ... 60 mV     |
| -50 mV ... 50 mV     |
| -10 V ... 10 V       |
| -7.5 V ... 7.5 V     |
| -5 V ... 5 V         |
| -3 V ... 3 V         |
| -2.5 V ... 2.5 V     |

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|                           |                                                              |
|---------------------------|--------------------------------------------------------------|
|                           | -2 V ... 2 V                                                 |
|                           | -1.25 V ... 1.25 V                                           |
|                           | -1.2 V ... 1.2 V                                             |
|                           | -1.5 V ... 1.5 V                                             |
|                           | -30 V ... 30 V                                               |
|                           | -25 V ... 25 V                                               |
|                           | -20 V ... 20 V                                               |
|                           | -12.5 V ... 12.5 V                                           |
|                           | -12 V ... 12 V                                               |
|                           | -15 V ... 15 V                                               |
|                           | 200 mV ... 1000 mV                                           |
|                           | 150 mV ... 750 mV                                            |
|                           | 100 mV ... 500 mV                                            |
|                           | 60 mV ... 300 mV                                             |
|                           | 50 mV ... 250 mV                                             |
|                           | 40 mV ... 200 mV                                             |
|                           | 25 mV ... 125 mV                                             |
|                           | 24 mV ... 120 mV                                             |
|                           | 30 mV ... 150 mV                                             |
|                           | 20 mV ... 100 mV                                             |
|                           | 15 mV ... 75 mV                                              |
|                           | 12 mV ... 60 mV                                              |
|                           | 10 mV ... 50 mV                                              |
|                           | 2 V ... 10 V (additional areas can be configured, see table) |
|                           | 1.5 V ... 7.5 V                                              |
|                           | 1 V ... 5 V                                                  |
|                           | 0.6 V ... 3 V                                                |
|                           | 0.5 V ... 2.5 V                                              |
|                           | 0.4 V ... 2 V                                                |
|                           | 0.25 V ... 1.25 V                                            |
|                           | 0.24 V ... 1.2 V                                             |
|                           | 0.3 V ... 1.5 V                                              |
|                           | 6 V ... 30 V                                                 |
|                           | 5 V ... 25 V                                                 |
|                           | 4 V ... 20 V                                                 |
|                           | 2.5 V ... 12.5 V                                             |
|                           | 2.4 V ... 12 V                                               |
|                           | 3 V ... 15 V                                                 |
| Max. voltage input signal | < 40 V                                                       |
| Current input signal      | 0 mA ... 40 mA                                               |
|                           | 0 mA ... 30 mA                                               |
|                           | 0 mA ... 20 mA                                               |
|                           | 0 mA ... 12 mA                                               |
|                           | 0 mA ... 10 mA                                               |

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|                                   |                                          |
|-----------------------------------|------------------------------------------|
|                                   | 0 mA ... 8 mA                            |
|                                   | 0 mA ... 7.5 mA                          |
|                                   | 0 mA ... 5 mA                            |
|                                   | 0 mA ... 6 mA                            |
|                                   | 0 mA ... 4 mA                            |
|                                   | 0 mA ... 3 mA                            |
|                                   | 0 mA ... 2.5 mA                          |
|                                   | 0 mA ... 2 mA                            |
|                                   | -40 mA ... 40 mA                         |
|                                   | -30 mA ... 30 mA                         |
|                                   | -20 mA ... 20 mA                         |
|                                   | -12 mA ... 12 mA                         |
|                                   | -10 mA ... 10 mA                         |
|                                   | -8 mA ... 8 mA                           |
|                                   | -7.5 mA ... 7.5 mA                       |
|                                   | -5 mA ... 5 mA                           |
|                                   | -6 mA ... 6 mA                           |
|                                   | -4 mA ... 4 mA                           |
|                                   | -3 mA ... 3 mA                           |
|                                   | -2.5 mA ... 2.5 mA                       |
|                                   | -2 mA ... 2 mA                           |
|                                   | 8 mA ... 40 mA                           |
|                                   | 6 mA ... 30 mA                           |
|                                   | 4 mA ... 20 mA                           |
|                                   | 2.4 mA ... 12 mA                         |
|                                   | 2 mA ... 10 mA                           |
|                                   | 1.6 mA ... 8 mA                          |
|                                   | 1.5 mA ... 7.5 mA                        |
|                                   | 1 mA ... 5 mA                            |
|                                   | 1.2 mA ... 6 mA                          |
|                                   | 0.8 mA ... 4 mA                          |
|                                   | 0.6 mA ... 3 mA                          |
|                                   | 0.5 mA ... 2.5 mA                        |
|                                   | 0.4 mA ... 2 mA                          |
| Max. current input signal         | < 50 mA (Dielectric strength up to 30 V) |
| Input resistance of voltage input | 100 kΩ (≤ 1 V)                           |
|                                   | 1 MΩ (≥ 1 V)                             |
| Input resistance current input    | ≤ 50 Ω                                   |

## Output data

### Signal

|                           |                    |
|---------------------------|--------------------|
| Number of outputs         | 1                  |
| Configurable/programmable | Yes, preconfigured |

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|                                 |                                          |
|---------------------------------|------------------------------------------|
| Current output signal           | 4 mA ... 20 mA                           |
| Max. current output signal      | 35 mA (output limit)                     |
| Load/output load current output | < 1000 $\Omega$ (( $U_B$ - 8 V) / 22 mA) |
| Ripple                          | < 20 mV <sub>PP</sub> (at 500 $\Omega$ ) |

## Connection data

|                                  |                                             |
|----------------------------------|---------------------------------------------|
| Connection method                | Screw connection                            |
| Stripping length                 | 12 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      | 26 ... 12                                   |

## Dimensions

|                     |          |
|---------------------|----------|
| Dimensional drawing |          |
| Width               | 6.2 mm   |
| Height              | 93.1 mm  |
| Depth               | 101.2 mm |

## Material specifications

|                                                        |                  |
|--------------------------------------------------------|------------------|
| Color                                                  | green (RAL 6021) |
| Housing material                                       | PBT              |
| 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      |

## Environmental and real-life conditions

### Ambient conditions

|                                         |                               |
|-----------------------------------------|-------------------------------|
| Degree of protection                    | IP20                          |
| Ambient temperature (operation)         | -25 °C ... 70 °C              |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C              |
| Altitude                                | ≤ 2000 m                      |
| Permissible humidity (operation)        | 5 % ... 95 % (non-condensing) |

## Approvals

### CE

|             |              |
|-------------|--------------|
| Certificate | CE-compliant |
|-------------|--------------|

# MINI MCR-SL-UI-I-LP-NC - Signal conditioner



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## UKCA

|             |                |
|-------------|----------------|
| Certificate | UKCA-compliant |
|-------------|----------------|

## UL, USA/Canada

|                |                                       |
|----------------|---------------------------------------|
| Identification | UL 508 Listed                         |
|                | Class I, Div. 2, Groups A, B, C, D T5 |
|                | Class I, Zone 2, Group IIC            |

## Shipbuilding approval

|             |                   |
|-------------|-------------------|
| Certificate | DNV GL TAA00002R0 |
|-------------|-------------------|

## Shipbuilding data

|             |                                                                                         |
|-------------|-----------------------------------------------------------------------------------------|
| Temperature | B                                                                                       |
| Humidity    | B                                                                                       |
| Vibration   | B                                                                                       |
| EMC         | B                                                                                       |
| Enclosure   | Required protection according to the Rules shall be provided upon installation on board |

## EMC data

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

## Noise emission

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-6-4 |
|-----------------------|--------------|

## Electrostatic discharge

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-2 |
|-----------------------|--------------|

## Electrostatic discharge

|          |                                                                   |
|----------|-------------------------------------------------------------------|
| Comments | Safety measures must be taken to prevent electrostatic discharge. |
|----------|-------------------------------------------------------------------|

## Electromagnetic HF field

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Designation                                            | Electromagnetic RF field |
| Standards/regulations                                  | EN 61000-4-3             |
| Typical deviation from the measuring range final value | 0.5 %                    |

## Electromagnetic HF field

|          |             |
|----------|-------------|
| Comments | Criterion A |
|----------|-------------|

## Fast transients (burst)

|                                                        |                         |
|--------------------------------------------------------|-------------------------|
| Designation                                            | Fast transients (burst) |
| Standards/regulations                                  | EN 61000-4-4            |
| Typical deviation from the measuring range final value | 2 %                     |

## Fast transients (burst)

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| Comments | Criterion B |
|----------|-------------|
|----------|-------------|

Surge current load (surge)

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-5 |
|-----------------------|--------------|

Surge current load (surge)

|          |             |
|----------|-------------|
| Comments | Criterion B |
|----------|-------------|

Conducted interference

|                                                        |                         |
|--------------------------------------------------------|-------------------------|
| Designation                                            | Conducted interferences |
| Standards/regulations                                  | EN 61000-4-6            |
| Typical deviation from the measuring range final value | 0.5 %                   |

Conducted interference

|          |             |
|----------|-------------|
| Comments | Criterion A |
|----------|-------------|

## Standards and regulations

|                      |                 |
|----------------------|-----------------|
| Electrical isolation | 2-way isolation |
|----------------------|-----------------|

## Mounting

|                   |                   |
|-------------------|-------------------|
| Mounting type     | DIN rail mounting |
| Mounting position | any               |



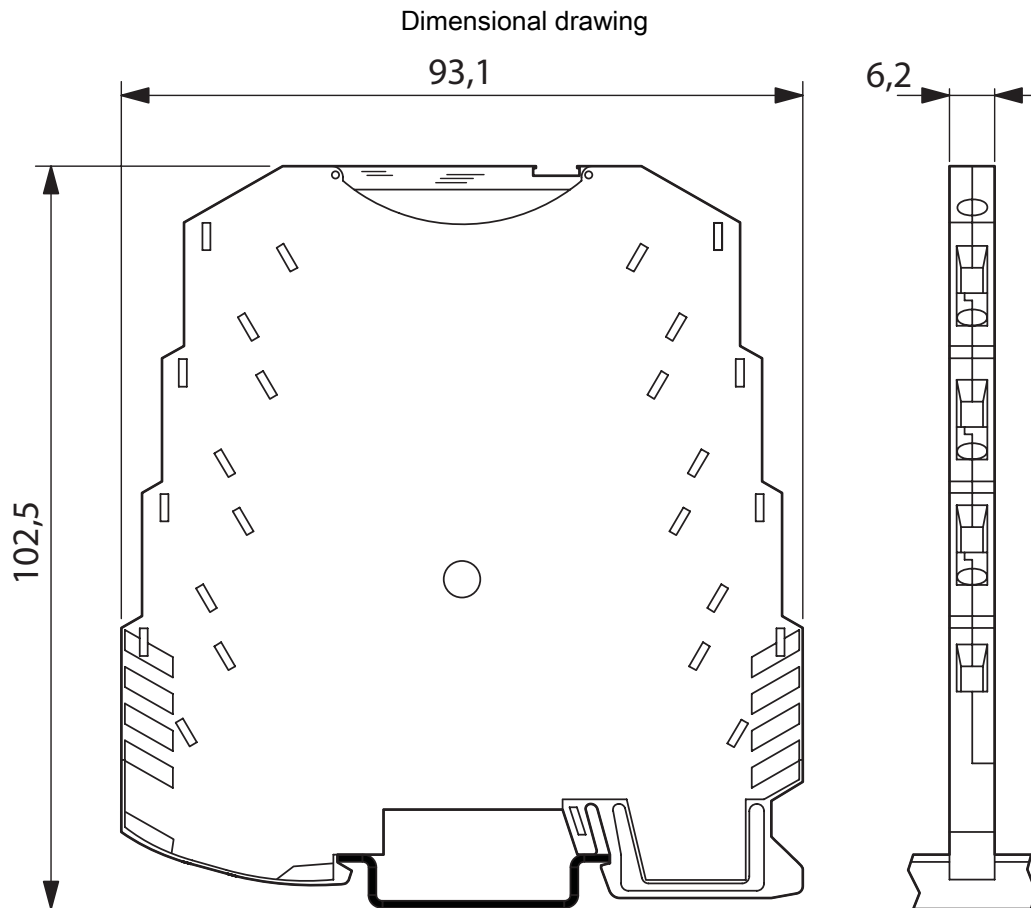
# MINI MCR-SL-UI-I-LP-NC - Signal conditioner

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## Drawings



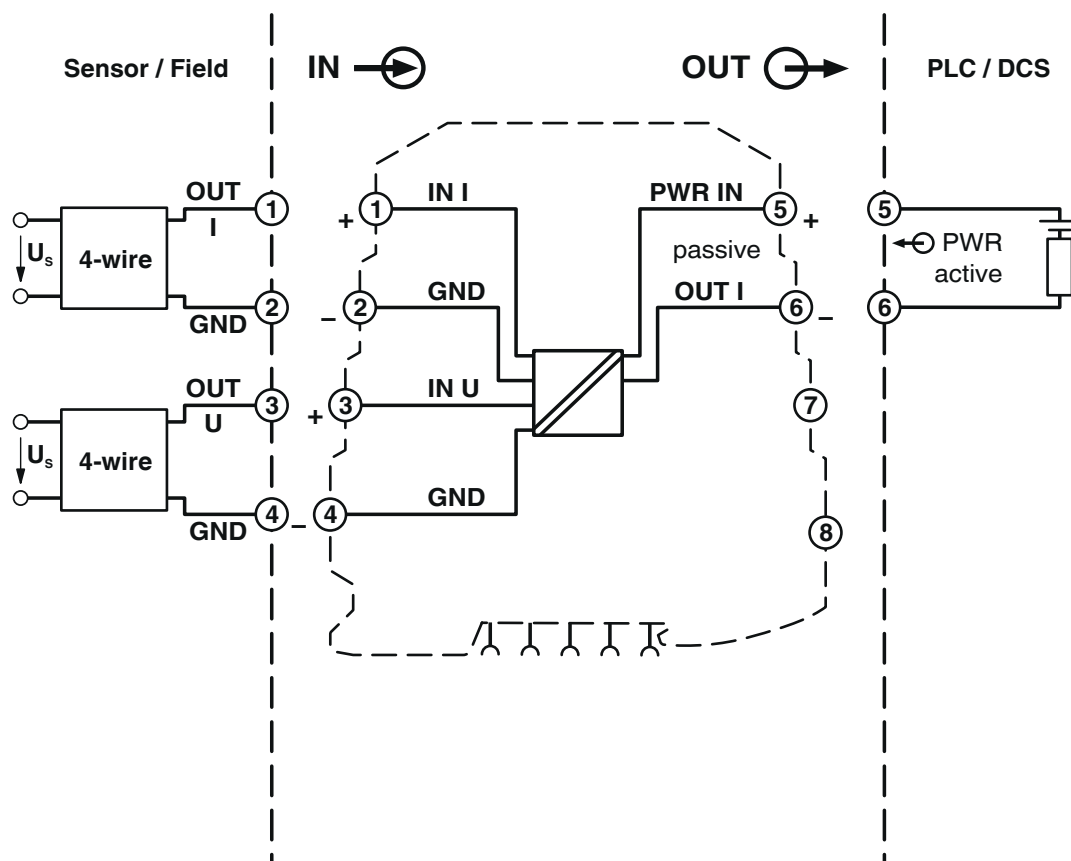
# MINI MCR-SL-UI-I-LP-NC - Signal conditioner



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Block diagram



# MINI MCR-SL-UI-I-LP-NC - Signal conditioner



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<https://www.phoenixcontact.com/pc/products/2902829>

## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/pc/products/2902829>



**UL Listed**

Approval ID: E238705



**cUL Listed**

Approval ID: E238705

**DNV**

Approval ID: TAA00002R0



**cUL Listed**

Approval ID: E199827



**UL Listed**

Approval ID: FILE E 199827

# MINI MCR-SL-UI-I-LP-NC - Signal conditioner

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27210120 |
| ECLASS-15.0 | 27210120 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC002653 |
|----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 39121000 |
|-------------|----------|

## 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: n/a)                       |
| SCIP                                | 9b7e34f5-2359-47ab-b662-8b1d0d1c1f2b |

# MINI MCR-SL-UI-I-LP-NC - Signal conditioner



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## Accessories

### TC-D37SUB-AIO16-M-PS-UNI - Module carrier

2902934

<https://www.phoenixcontact.com/pc/products/2902934>



Universal termination carrier for connecting 16 MINI Analog signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection), with HART multiplexer connection

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

2902933

<https://www.phoenixcontact.com/pc/products/2902933>



Universal termination carrier for connecting 16 MINI Analog signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection)

# MINI MCR-SL-UI-I-LP-NC - Signal conditioner

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## MINI MCR DKL - Transparent cover

2308111

<https://www.phoenixcontact.com/pc/products/2308111>



Fold up transparent cover for MINI MCR modules with additional labeling option using insert strips and flat Zack marker strip 6.2 mm

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## MINI MCR-DKL-LABEL - Marking label

2810272

<https://www.phoenixcontact.com/pc/products/2810272>



Label for extended marking of MINI MCR modules in connection with the MINI MCR-DKL

# MINI MCR-SL-UI-I-LP-NC - Signal conditioner

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## SZS 0,6X3,5 - Screwdriver

1205053

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