

# Repeater power supply - MINI MCR-SL-RPSS-I-I



2864079

<https://www.phoenixcontact.com/us/products/2864079>

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MCR repeater power supply with HART transparency, input signal: 4 mA ... 20 mA, output signal: 4 mA ... 20 mA, with screw connection

## Product Description

The 6.2 mm wide MINI MCR-SL-RPSS-I-I... repeater power supply supplies the transmitter in the field in case of simultaneous galvanic 3-way separation between input, output and supply.

HART data protocols can be transmitted bidirectionally. The module can be used in both isolator and repeater power supply operation.

On the input and output side, the analog standard signals 0...20 mA or 4...20 mA are available, electrically isolated.

Voltage (20.4 V DC to 30 V DC) can be supplied through connection terminal blocks on the modules or in conjunction with the DIN rail connector.

## Your advantages

- Bidirectional HART transmission as an option
- Power supply possible via the foot element (TBUS)
- Can be used as an isolator with passive input
- Highly-compact repeater power supplies for electrical isolation, amplification, and filtering of standard analog signals
- Supply of 2-conductor and passive 3-conductor sensors
- 3-way isolation

## Commercial Data

|                                      |                    |
|--------------------------------------|--------------------|
| Item number                          | 2864079            |
| Packing unit                         | 1 pc               |
| Minimum order quantity               | 1 pc               |
| Sales Key                            | C01                |
| Product Key                          | CK1211             |
| Catalog Page                         | Page 99 (C-7-2015) |
| GTIN                                 | 4046356046428      |
| Weight per Piece (including packing) | 87.8 g             |
| Weight per Piece (excluding packing) | 87.8 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 |
|----------|---------------------------------------------------------------------------|

### Product properties

|                 |                         |
|-----------------|-------------------------|
| Product type    | Repeater power supplies |
| No. of channels | 1                       |

#### 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)                          | 175 Hz (typ.)            |
| Maximum power dissipation for nominal condition | 700 mW (24 V DC)         |
|                                                 | 400 mW (24 V DC)         |
| Protective circuit                              | Transient protection     |
| Signal transmission behavior                    | In = Out                 |
| Step response (10-90%)                          | < 2 ms                   |
| Maximum temperature coefficient                 | < 0.005 %/K              |
| Temperature coefficient, typical                | < 0.002 %/K              |
| Maximum transmission error                      | ≤ 0.2 % (of final value) |
| Transmission error, typical                     | ≤ 0.1 % (of final value) |

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

|                          |                                                  |
|--------------------------|--------------------------------------------------|
| 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

|                        |                                                                                                                                                                                                                 |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal supply voltage | 24 V DC                                                                                                                                                                                                         |
| Supply voltage range   | 20.4 V DC ... 30 V DC (The DIN rail 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 in accordance with EN 60715) |
| Power consumption      | < 900 mW (at 24 V DC and in repeater power supply operation)                                                                                                                                                    |
|                        | < 600 mW (at 24 V DC and in isolator operation)                                                                                                                                                                 |

### Input data

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Signal: Current

|                                |                                                                                                      |
|--------------------------------|------------------------------------------------------------------------------------------------------|
| Description of the input       | Sensor circuit                                                                                       |
| Number of inputs               | 1                                                                                                    |
| Current input signal           | 0 mA ... 20 mA (isolator operation)<br>4 mA ... 20 mA (repeater power supply and isolator operation) |
| Max. current input signal      | 28 mA                                                                                                |
| Input resistance current input | approx. 50 $\Omega$                                                                                  |
| Transmitter supply voltage     | 16.5 V                                                                                               |

## Output data

Signal: Current

|                                 |                                                                                                      |
|---------------------------------|------------------------------------------------------------------------------------------------------|
| Number of outputs               | 1                                                                                                    |
| Non-load voltage                | approx. 12.5 V                                                                                       |
| Current output signal           | 0 mA ... 20 mA (isolator operation)<br>4 mA ... 20 mA (repeater power supply and isolator operation) |
| Max. current output signal      | > 21 mA (22.5 mA, typical)                                                                           |
| Load/output load current output | $\leq 500 \Omega$ ( $I = 20$ mA)                                                                     |
| Ripple                          | < 20 mV <sub>rms</sub> (at 500 $\Omega$ )                                                            |

## Connection data

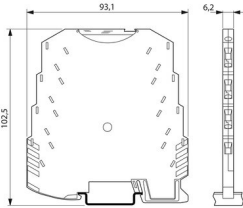
|                                  |                                             |
|----------------------------------|---------------------------------------------|
| Connection method                | Screw connection                            |
| Stripping length                 | 12 mm                                       |
| Screw thread                     | M3                                          |
| Conductor cross section solid    | 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                                   |

## Interfaces

Data communication (bypass)

|                        |                |
|------------------------|----------------|
| HART function          | Yes            |
| Limit frequency (3 dB) | approx. 2.5 Hz |

## Dimensions

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

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## 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                          |
| Ambient temperature (operation)         | -20 °C ... 60 °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 |
|-------------|--------------|

### UKCA

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

### UL, USA / Canada

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

### Shipbuilding approval

|             |                   |
|-------------|-------------------|
| Certificate | DNV GL TAA000020N |
|-------------|-------------------|

### DNV GL data

|             |                                                                                         |
|-------------|-----------------------------------------------------------------------------------------|
| Temperature | B                                                                                       |
| Humidity    | B                                                                                       |
| Vibration   | B                                                                                       |
| 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

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|                       |              |
|-----------------------|--------------|
| 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 | 3 %                      |

## Fast transients (burst)

|                                                        |                         |
|--------------------------------------------------------|-------------------------|
| Designation                                            | Fast transients (burst) |
| Standards/regulations                                  | EN 61000-4-4            |
| Typical deviation from the measuring range final value | 3 %                     |

## 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 | 3 %                     |

## Standards and regulations

|                      |                 |
|----------------------|-----------------|
| Electrical isolation | 3-way isolation |
|----------------------|-----------------|

## Mounting

|                       |                                                                                                                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mounting type         | DIN rail mounting                                                                                                                                                                        |
| Assembly instructions | The DIN rail 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 in accordance with EN 60715. |
| Mounting position     | any                                                                                                                                                                                      |

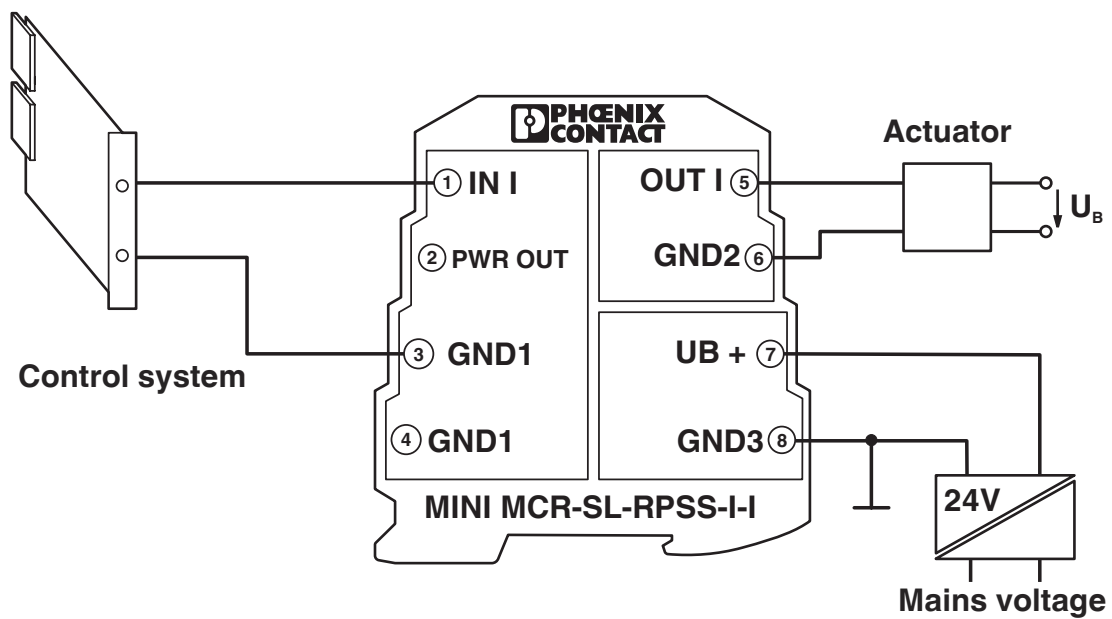
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## Drawings

Application drawing

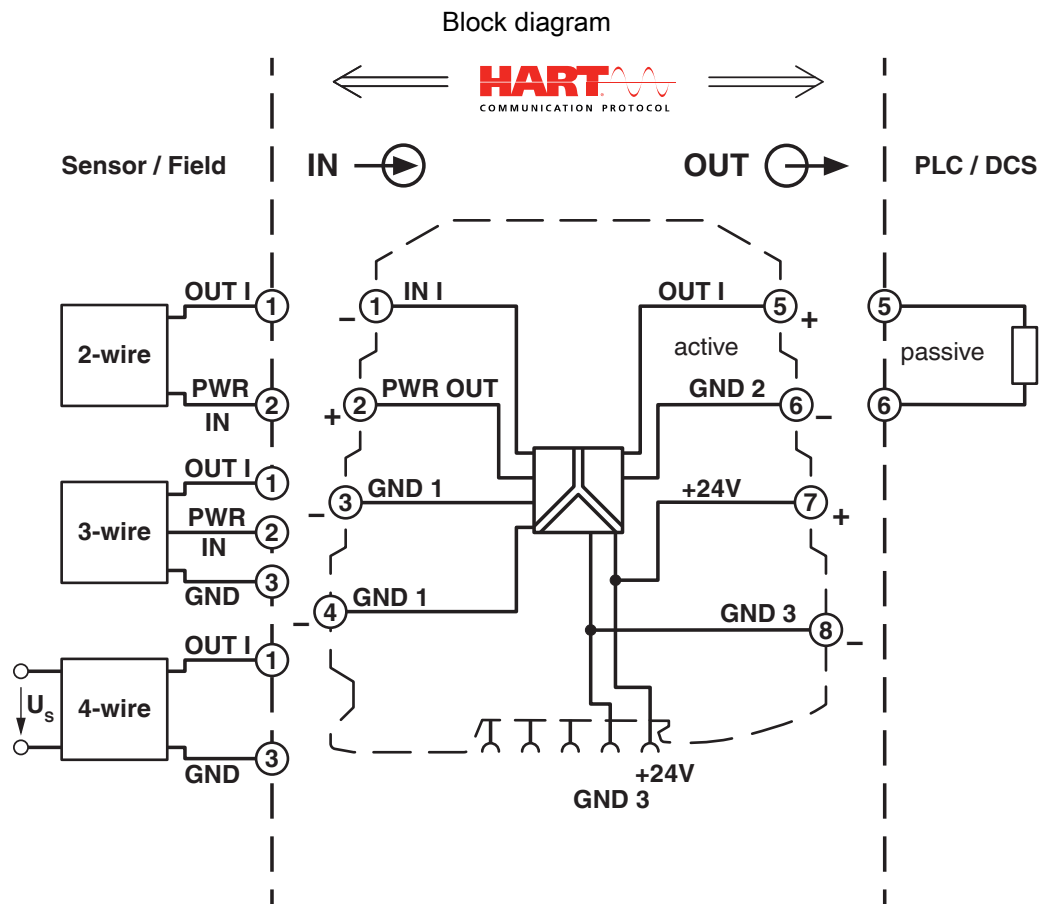


Isolator operation at the analog output module

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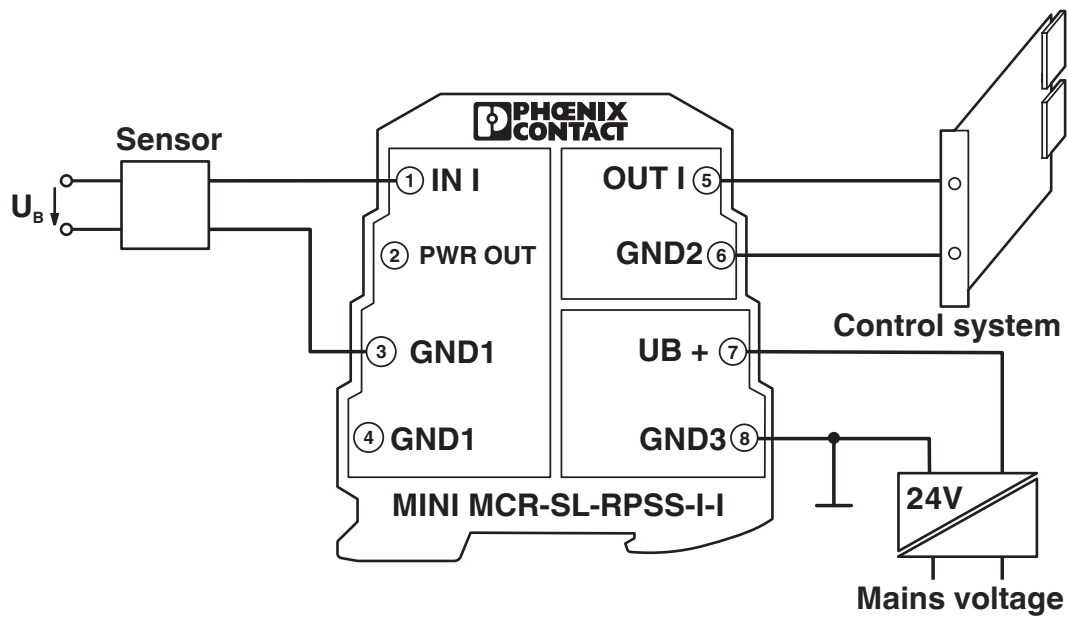


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Application drawing



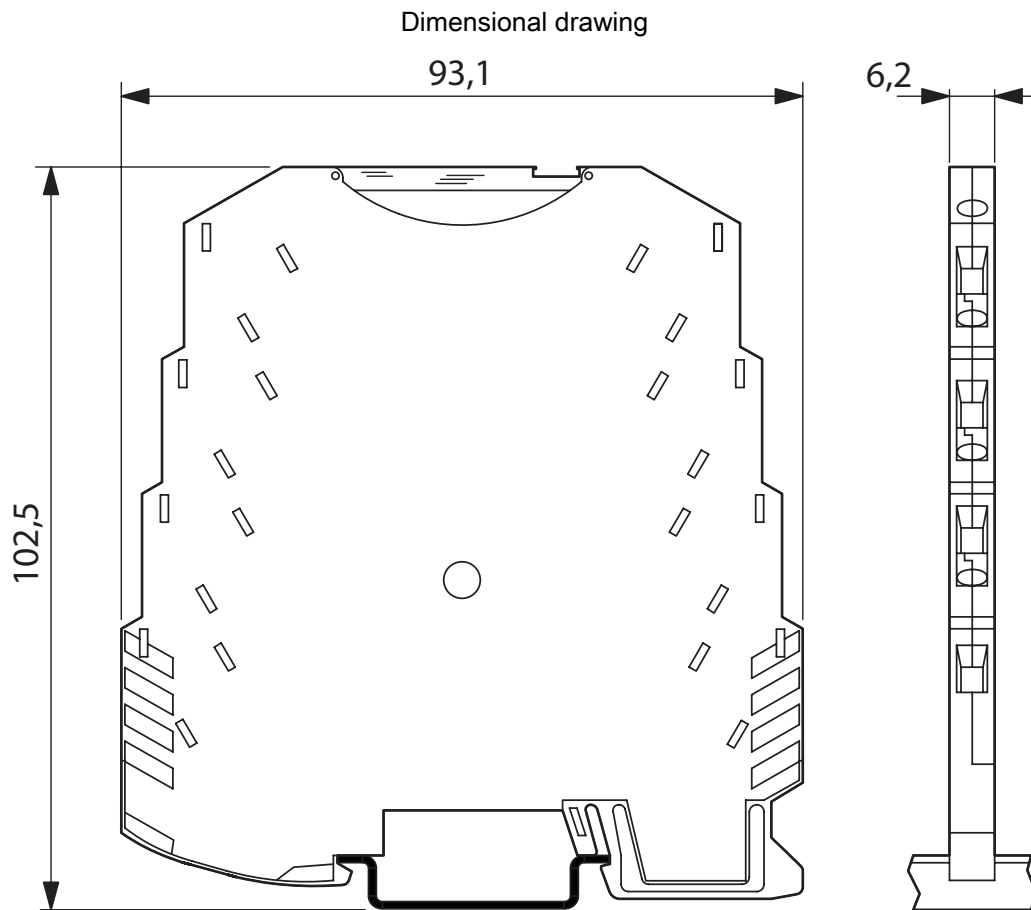
Isolator operation with an active sensor



# Repeater power supply - MINI MCR-SL-RPSS-I-I

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<https://www.phoenixcontact.com/us/products/2864079>

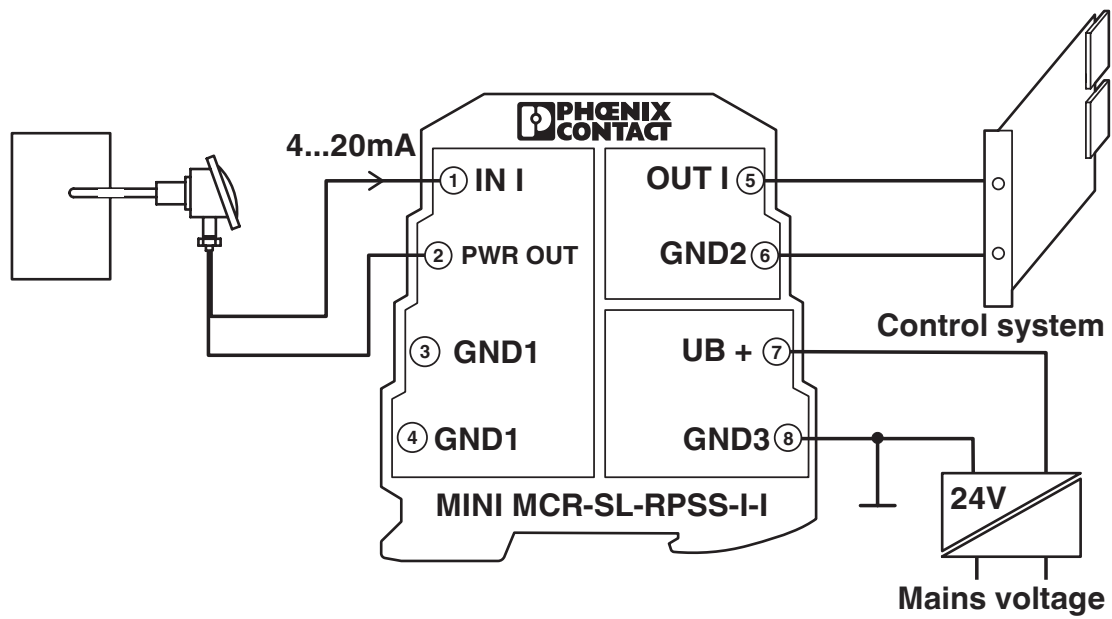


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Application drawing



Repeater power supply operation with a passive sensor

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## Approvals



**UL Listed**

Approval ID: FILE E 238705



**cUL Listed**

Approval ID: FILE E 238705



**cUL Recognized**

Approval ID: FILE E 199827



**UL Recognized**

Approval ID: FILE E 199827

**cULus Listed**

**cULus Recognized**

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## Classifications

### ECLASS

|               |          |
|---------------|----------|
| ECLASS-9.0    | 27210120 |
| ECLASS-10.0.1 | 27210120 |
| ECLASS-11.0   | 27210120 |

### ETIM

|          |          |
|----------|----------|
| ETIM 8.0 | EC002653 |
|----------|----------|

### 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

### 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 terminal block

Power terminal block - MINI MCR-SL-PTB - 2864134

<https://www.phoenixcontact.com/us/products/2864134>



MCR power terminal block for supplying several MINI Analog modules via the DIN rail connector, with screw connection, maximum current consumption of up to 2 A

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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>



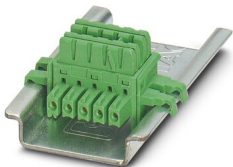
Primary-switched power supply unit, QUINT POWER, Screw connection, DIN rail mounting, input: 1-phase, output: 24 V DC / 2.5 A

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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/us/products/2869728>



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

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## Transparent cover

Transparent cover - MINI MCR DKL - 2308111

<https://www.phoenixcontact.com/us/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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## Marking label

Marking label - MINI MCR-DKL-LABEL - 2810272

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



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

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