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# Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

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3-way repeater power supply with plug-in connection technology. HART-transparent, input signal 0(4)...20 mA, output signal 0(4)...20 mA. The device can be used in both isolator and repeater power supply operation. Screw connection technology

## Product Description

The repeater power supply with plug-in connection technology supplies the transmitter in the field and electrically isolates the input signal from the output signal. HART data protocols can be transmitted bidirectionally. The device can be used in both isolator and repeater power supply operation. Electrically isolated 0 ... 20 mA or 4 ... 20 mA standard analog signals are available on the input and output sides with a maximum output load of 600 $\Omega$. The measuring transducer supports fault monitoring and NFC communication.

**RoHS**

Ex Zone 2    NFC COMPLETE line

## Key Commercial Data

| Packing unit | 1 pc |
|---|---|
| GTIN | 4 046356 651981 |
| GTIN | 4046356651981 |
| Weight per Piece (excluding packing) | 80.000 g |
| Custom tariff number | 85437090 |
| Country of origin | Germany |

## Technical data

### Note

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

### Dimensions

| Width | 6.2 mm |
|---|---|
| Height | 109.81 mm |
| Depth | 119.2 mm |

### Ambient conditions

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## Technical data

### Ambient conditions

| Ambient temperature (operation) | -40 °C ... 70 °C |
|---|---|
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Maximum altitude | $\leq$ 2000 m |
| Permissible humidity (operation) | 5 % ... 95 % (non-condensing) |
| Degree of protection | IP20 (not assessed by UL) |
| Noise immunity | EN 61000-6-2 When being exposed to interference, there may be minimal deviations. |

### Input data

| Description of the input | Current input (sensor circuit) |
|---|---|
| Number of inputs | 1 |
| Current input signal | 4 mA ... 20 mA (repeater power supply and isolator operation) |
| | 0 mA ... 20 mA (isolator operation) |
| Input resistance current input | approx. 68 Ω (+ 0.7 V for test diode) |
| Transmitter supply voltage | > 19.5 V |

### Output data

| Output name | Current output |
|---|---|
| Number of outputs | 1 |
| Current output signal | 4 mA ... 20 mA (repeater power supply and isolator operation) |
| | 0 mA ... 20 mA (isolator operation) |
| Max. output current | 24 mA |
| Load/output load current output | $\leq$ 600 Ω (at 20 mA) |
| Ripple | < 20 mV$_{PP}$ (at 600 Ω) |
| Transmission Behavior | 1:1 to input signal |

### Power 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, Order 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 (at 24 V DC and in isolator operation) |
| | 50 mA (at 24 V DC and in repeater power supply operation) |
| | 55 mA (at 12 V DC and in isolator operation) |
| | 110 mA (at 12 V DC and in repeater power supply operation) |
| Power consumption | $\leq$ 1400 mW (at I$_{OUT}$ = 20 mA, 9.6 V DC, 600 Ω load) |

### Connection data

| Connection method | Screw connection |
|---|---|
| Stripping length | 10 mm |

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## Technical data

### Connection data

| Screw thread | M3 |
|---|---|
| Conductor cross section solid | 0.2 mm² ... 1.5 mm² (with ferrule) |
| | 0.14 mm² ... 2.5 mm² (without ferrule) |
| Conductor cross section flexible | 0.14 mm² ... 2.5 mm² |
| Conductor cross section AWG | 24 ... 12 (flexible) |
| Torque | 0.5 Nm ... 0.6 Nm |

### General

| No. of channels | 1 |
|---|---|
| Maximum transmission error | 0.05 % (of final value in repeater power supply operation) |
| | 0.1 % (of final value in isolator operation) |
| Maximum temperature coefficient | 0.0075 %/K |
| Temperature coefficient, typical | 0.0075 %/K |
| Limit frequency (3 dB) | > 1.75 kHz (typ.) |
| Step response (10-90%) | < 200 µs (typ.) |
| Protective circuit | Transient protection |
| Electrical isolation | Reinforced insulation in accordance with IEC 61010-1 |
| Overvoltage category | II |
| Degree of pollution | 2 |
| Rated insulation voltage | 300 V (effective) |
| Test voltage, input/output/supply | 3 kV (50 Hz, 1 min.) |
| Electromagnetic compatibility | Conformance with EMC directive |
| Noise emission | EN 61000-6-4 |
| Noise immunity | EN 61000-6-2 When being exposed to interference, there may be minimal deviations. |
| Color | gray |
| Housing material | PBT |
| Mounting position | any |
| 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. |
| 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 |

### Data communication (bypass)

| Limit frequency (3 dB) | approx. 1.75 kHz |
|---|---|

### EMC data

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

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## Technical data

### EMC data

| Designation | Fast transients (burst) |
|---|---|
| Standards/regulations | EN 61000-4-4 |
| Designation | Conducted interferences |
| Standards/regulations | EN 61000-4-6 |

### Standards and Regulations

| Electromagnetic compatibility | Conformance with EMC directive |
|---|---|
| Noise emission | EN 61000-6-4 |
| Standards/regulations | EN 61000-4-2 |
| Designation | Electromagnetic RF field |
| Standards/regulations | EN 61000-4-3 |
| | EN 61000-4-4 |
| | EN 61000-4-5 |
| Designation | Conducted interferences |
| Standards/regulations | EN 61000-4-6 |
| Electrical isolation | Reinforced insulation in accordance with IEC 61010-1 |

### Conformance/approvals

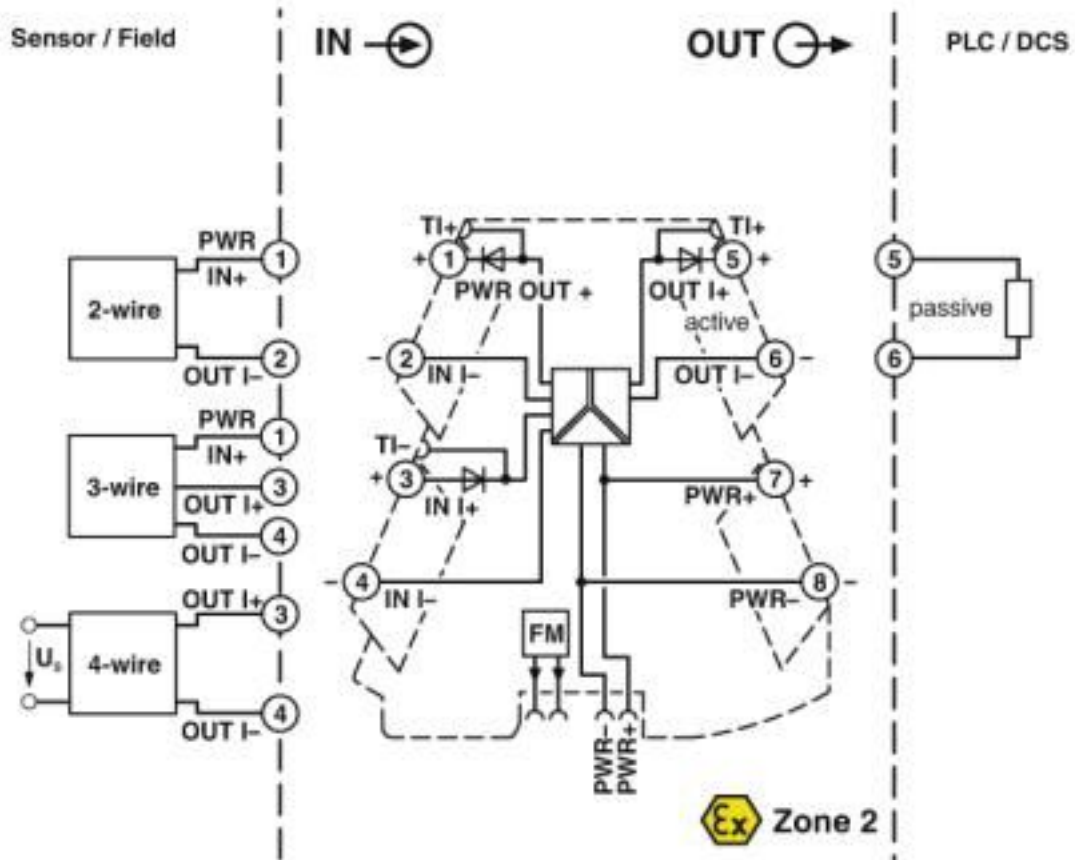| Designation | CE |
|---|---|
| Identification | CE-compliant |
| Designation | ATEX |
| Identification | # II 3 G Ex ec IIC T4 Gc |
| Certificate | BVS 19 ATEX E 047 X |
| Designation | IECEx |
| Identification | Ex ec IIC T4 Gc |
| Certificate | IECEx BVS 19.0041X |
| Designation | UL, USA/Canada |
| Identification | UL 508 Listed |
| | Class I, Div. 2, Groups A, B, C, D T5 |
| | Class I, Zone 2, Group IIC T5 |
| Designation | Shipbuilding approval |
| Identification | C, EMC2 |
| Certificate | DNV GL 14445-15HH |

### Environmental Product Compliance

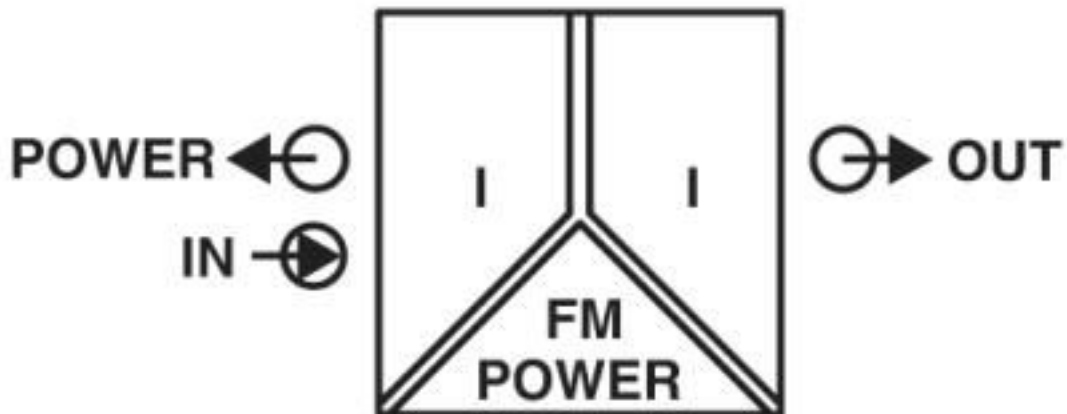| REACh SVHC | Lead 7439-92-1 |
|---|---|
| China RoHS | Environmentally Friendly Use Period = 50 years |
| | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

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# Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

Drawings

Block diagram



Pictogram

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## Classifications

### eCl@ss

| eCl@ss 4.0 | 27210100 |
|---|---|
| eCl@ss 4.1 | 27210100 |
| eCl@ss 5.0 | 27210100 |
| eCl@ss 5.1 | 27210100 |
| eCl@ss 6.0 | 27210100 |
| eCl@ss 7.0 | 27210120 |
| eCl@ss 8.0 | 27210120 |
| eCl@ss 9.0 | 27210120 |

### ETIM

| ETIM 4.0 | EC002653 |
|---|---|
| ETIM 5.0 | EC002653 |
| ETIM 6.0 | EC002653 |
| ETIM 7.0 | EC002653 |

### UNSPSC

| UNSPSC 6.01 | 30211506 |
|---|---|
| UNSPSC 7.0901 | 39121008 |
| UNSPSC 11 | 39121008 |
| UNSPSC 12.01 | 39121008 |
| UNSPSC 13.2 | 39121008 |
| UNSPSC 18.0 | 39121008 |
| UNSPSC 19.0 | 39121008 |
| UNSPSC 20.0 | 39121008 |
| UNSPSC 21.0 | 39121008 |

## Approvals

### Approvals

#### Approvals

GL / UL Listed / cUL Listed / cULus Listed

#### Ex Approvals

ATEX / UL Listed / cUL Listed / cULus Listed

#### Approval details

# Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

## Approvals

| GL | (GL) | https://approvalfinder.dnvgl.com/ | 14445-15 HH |
|---|---|---|---|

| UL Listed | (UL) LISTED | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | FILE E 238705 |
|---|---|---|---|

| cUL Listed | c(UL) LISTED | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | FILE E 238705 |
|---|---|---|---|

| cULus Listed | c(UL)us LISTED | | |
|---|---|---|---|

## Accessories

Accessories

Communication module

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

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

# Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

## Accessories

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

## Device marking

Marker for end clamp - UCT-EM (30X5) - 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: snapped into marker carrier, lettering field size: 30 x 5 mm, Number of individual labels: 24

Marker for end clamp - UCT-EM (30X5) YE - 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: snapped into marker carrier, lettering field size: 30 x 5 mm, Number of individual labels: 24

Plastic label - UC-EMLP (15X5) - 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

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

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# Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

## Accessories

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

Plastic label - US-EMLP (15X5) - 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

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

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

## DIN rail connector

DIN rail bus connectors - ME 6,2 TBUS-2 1,5/5-ST-3,81 GY - 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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# Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

## Accessories

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

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

## Evaluation unit

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

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

## Labeled device marker

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

Marker for end clamp - UCT-EM (30X5) YE CUS - 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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# Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

## Accessories

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

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

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

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

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

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

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

# Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

## Accessories

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

## Power module

Power terminal block - MINI MCR-2-PTB - 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

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

## Power supply

Power supply unit - MINI-SYS-PS-100-240AC/24DC/1.5 - 2866983

Primary-switched MINI POWER supply for DIN rail mounting, input: 1-phase, output: 24 V DC/1.5 A

Power supply unit - MINI-PS-100-240AC/24DC/1.5/EX - 2866653

Primary-switched power supply MINI POWER for DIN rail mounting, input: 1-phase, output: 24 V DC/1,5 A, for the potentially explosive area

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# Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

## Accessories

### Programming cable

Cable adapter - GW HART USB MODEM - 1003824

USB HART modem cable for communication between a PC and HART devices, cable length: 1m.

### System adapter

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

### Terminal marking

Marker strip - SK 5,0 WH:REEL - 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