

# MINI MCR-SL-PT100-LP-NC - Temperature measuring transducer



2810308

<https://www.phoenixcontact.com/us/products/2810308>

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Configurable loop-powered temperature transducer for Pt 100 temperature sensors, configured via DIP switches, with screw connection, not preconfigured

## Your advantages

- 2-, 3-, 4-conductor Pt 100 sensors
- Highly-compact loop-powered temperature transducer for electrical isolation, conversion, amplification, and filtering of Pt 100 signals to create standard signals
- Does not require additional auxiliary voltage
- Error indication via diagnostic LED and analog signal
- 2-way isolation
- Input signals can be configured via DIP switches
- Supplied by an output loop
- Temperature measuring range of -150 °C ... 300 °C

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2810308       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | C403          |
| Product key                          | DK1135        |
| GTIN                                 | 4046356134668 |
| Weight per piece (including packing) | 95.8 g        |
| Weight per piece (excluding packing) | 68.4 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   | Temperature transmitter |
| Product family | MINI Analog             |
| Configuration  | DIP switches            |

### System properties

#### Functionality

|               |              |
|---------------|--------------|
| Configuration | DIP switches |
|---------------|--------------|

### Electrical properties

|   |   |
|---|---|
| Electrical isolation                            | 2-way isolation   |
| Electrical isolation between input and output   | yes   |
| Linearity error                                 | < 0.05 % (for full measuring range)                         |
| Maximum power dissipation for nominal condition | < 42 mW   |
| Step response (0–99%)                           | < 200 ms  |
| Maximum temperature coefficient                 | < 0.02 %/K  |
| Transmission error in the set measuring range   | $((90 \text{ K} / \text{set measuring range [K]} + 0.05)\%$ |
| Transmission error in the full measuring range  | $\leq 0.25 \%$  |

#### Electrical isolation

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

#### Electrical isolation Input/output/power supply IEC/EN 61010

|                          |                         |
|--------------------------|-------------------------|
| Standards/regulations    | IEC/EN 61010            |
| Rated insulation voltage | 30 V AC                 |
|                          | 50 V DC                 |
| Test voltage             | 1.5 kV AC (50 Hz, 60 s) |
| Insulation               | Basic insulation        |

#### Supply

|                          |                                   |
|--------------------------|-----------------------------------|
| Designation              | Loop-powered                      |
| Supply voltage range     | 12 V DC ... 30 V DC               |
| Max. current consumption | < 4.5 mA (without signal current) |
| Power consumption        | < 150 mW (without signal current) |

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## Input data

### Signal

|                  |   |
|------------------|---|
| Number of inputs | 1 |
|------------------|---|

### Measurement

|   |  |
|---|--|
| Configurable/programmable                     | Yes, unconfigured                      |
| Sensor types (RTD) that can be used           | Pt 100 (IEC 60751/EN 60751)            |
| Temperature measuring range                   | min. 50 K                              |
| Temperature measuring range: Pt 100           | -150 °C ... 300 °C (configurable)      |
| Sensor input current                          | 1 mA (constant)                        |
| Max. permissible overall conductor resistance | 10 Ω (Per cable)                       |
| Connection technology                         | 2-, 3-, 4-conductor                    |
| Error detection limit (short-circuit)         | < 30 Ω                                 |
| Error detection limit (underrange)            | 30 Ω ≤ (start span - 2.5% span)        |
| Error detection limit (overrange)             | (end span + 2.5% span) ≤ approx. 254 Ω |
| Error detection limit (wire break)            | > approx. 254 Ω                        |

## Output data

### Signal: Current

|                                 |  |
|---------------------------------|--|
| Number of outputs               | 1  |
| Configurable/programmable       | Yes, unconfigured                                    |
| Current output signal           | 4 mA ... 20 mA<br>20 mA ... 4 mA                     |
| Max. current output signal      | 23 mA (output limit)                                 |
| Load/output load current output | $(U_{\text{supply}} - 12 \text{ V}) / 22 \text{ mA}$ |
| Ripple                          | < 20 mV <sub>PP</sub> (at 500 Ω)                     |

## 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                                   |

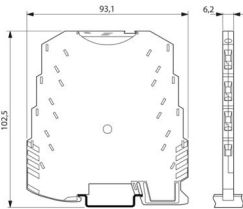
## Dimensions

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|                     |  |
|---------------------|--|
| 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)         | -20 °C ... 65 °C              |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C              |
| Altitude                                | ≤ 2000 m                      |
| Permissible humidity (operation)        | 5 % ... 95 % (non-condensing) |

## Approvals

### CE

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

### UKCA

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

### UL, USA/Canada

|                |                                       |
|----------------|---------------------------------------|
| Identification | UL 508 Recognized                     |
|                | Class I, Div. 2, Groups A, B, C, D T4 |

## 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

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|                       |              |
|-----------------------|--------------|
| 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 | 5 %                      |

## Fast transients (burst)

|  |                         |
|--|-------------------------|
| Designation  | Fast transients (burst) |
| Standards/regulations                                  | EN 61000-4-4            |
| Typical deviation from the measuring range final value | 5 %                     |

## 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 | 5 %                     |

## Standards and regulations

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

## Mounting

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

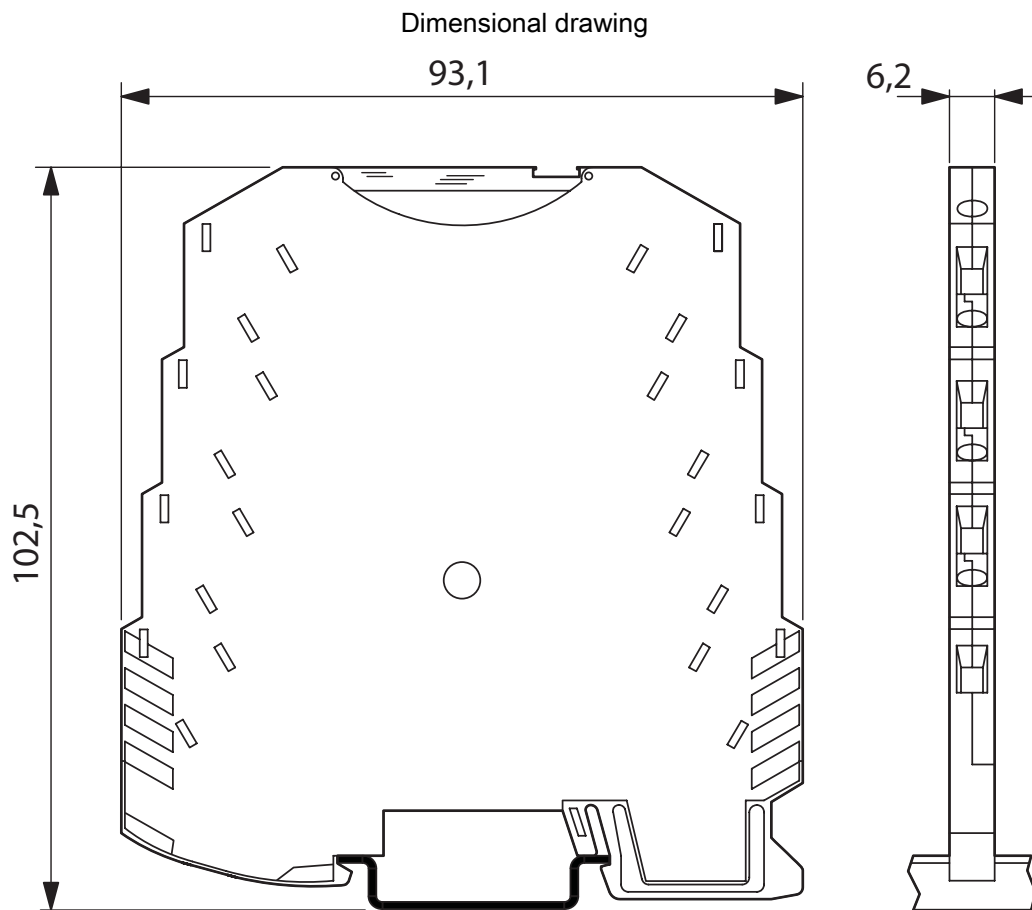
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## Drawings



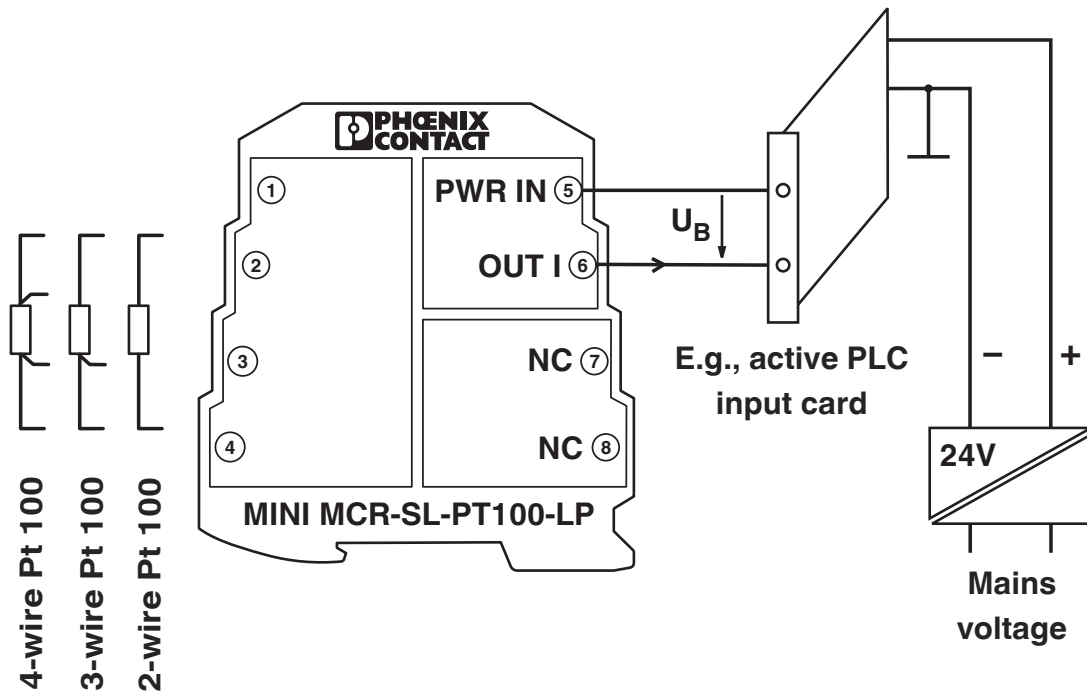
# MINI MCR-SL-PT100-LP-NC - Temperature measuring transducer



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Application drawing



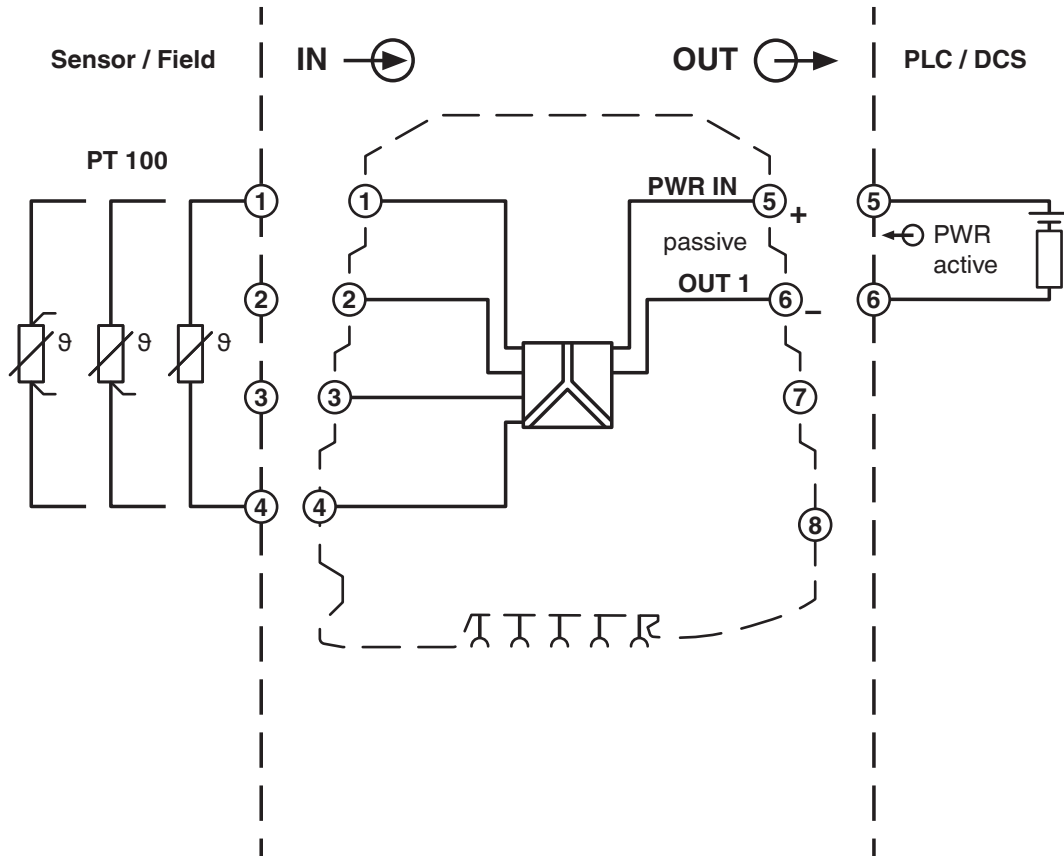
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Block diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2810308>



**cUL Recognized**  
Approval ID: E238705



**UL Recognized**  
Approval ID: E238705



**cUL Listed**  
Approval ID: E199827



**UL Listed**  
Approval ID: E199827

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27210129 |
| ECLASS-15.0 | 27210129 |

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | EC002919 |
|-----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 41112100 |
|-------------|----------|

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## Environmental product compliance

### EU RoHS

|   |              |
|---|--------------|
| Fulfills EU RoHS substance requirements | Yes          |
| Exemption                               | 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: 7439-92-1)                 |
| SCIP                                | e7ecc08a-a54a-4900-8c5b-00b097a60e41 |

### EF3.1 Climate Change

|         |               |
|---------|---------------|
| CO2e kg | 5.937 kg CO2e |
|---------|---------------|

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