

M100 DR DIN Rail Transmitter for pH/ORP, pH/pNa, Oxygen and Conductivity

Compact Design for Simplified Installation

Technical Data



Short description

The M100 DR DIN rail transmitter is a 2-wire transmitter with HART® communication capability for analytical measurements. The M100 DR is a single-channel, multi-parameter transmitter compatible with ISM sensors for measuring pH/ORP, pH/pNa, oxygen and conductivity. Thanks to its compact design the M100 DR requires only a small installation space in the plant.

Featuring Plug and Measure functionality the M100 DR reduces maintenance efforts and allows simplified sensor installations up to 80 m (260 ft) from the transmitter, resulting in significant cost savings. The transmitter configuration and integration of sensor diagnostics into asset management tool is possible thanks to the integrated HART® protocol. The support of all major asset management tools ensures maximum compatibility and easy integration of sensor diagnostics.

Features

- DIN Rail mounting, suitable for 35 mm wide DIN rail systems
- Compact housing, 22.5 mm width
- Displayless
- Multi-parameter transmitter (pH/ORP, pH/pNa, oxygen, conductivity)
- 1 Analog output (4 to 20 mA with HART®)
- HART® communication as standard
- Configuration via HART handheld or other HART Asset Management tools
- ISM functionality
- Sensor diagnostics DLI, ACT and TTM via HART

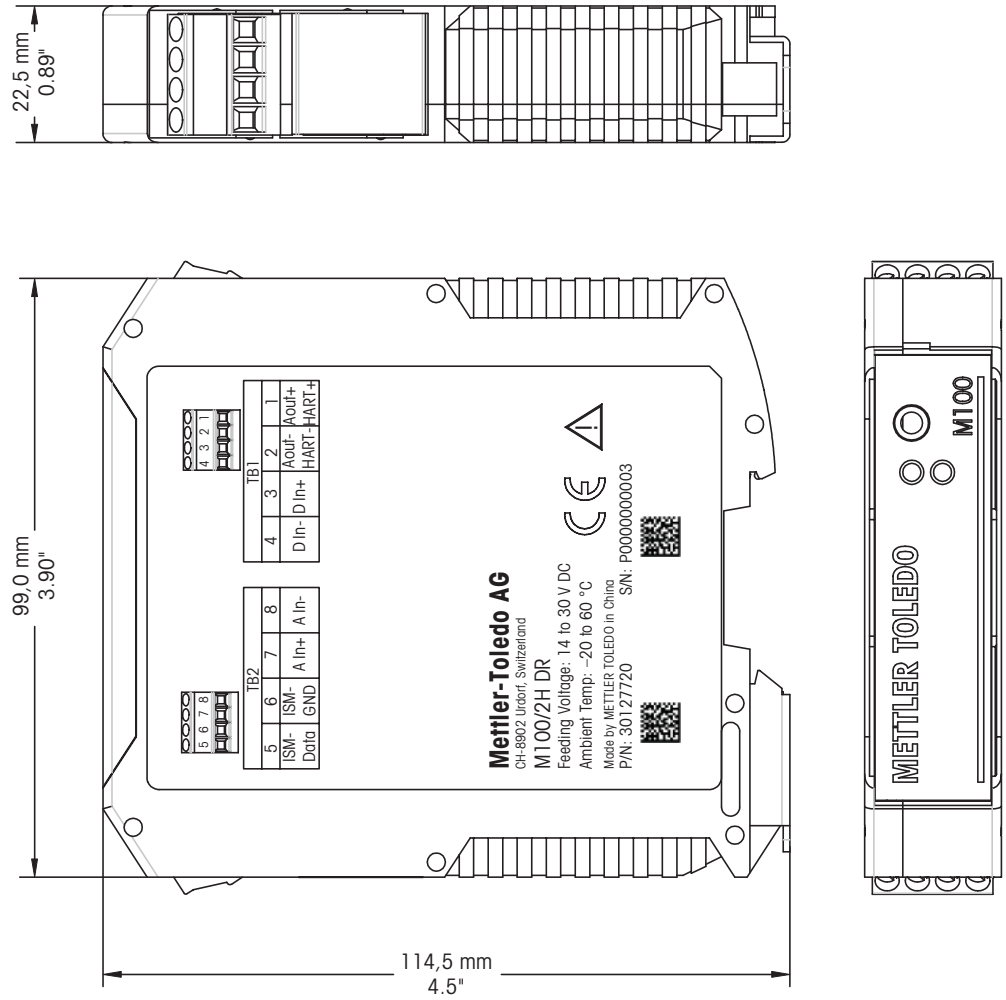


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Dimension drawings



pH/ORP (incl. pH/pNa)

| | |
|-----------------------------|--|
| Measurement parameters | pH, mV and temperature |
| pH measuring range | -2.00 to +20.00 pH |
| ORP input range | -1500 to +1500 mV |
| Temperature measuring range | -30 to 130 °C (-22 to 266 °F) |
| Max. sensor cable length | 80 m (260 ft) |
| Calibration | - Configuration tool: Process, 1-point and 2-point - iSense software: 1-point and 2-point |

Amperometric oxygen

| | |
|-----------------------------|--|
| Measurement parameters | Dissolved oxygen: Saturation or concentration and temperature |
| Oxygen measuring ranges | - Saturation: 0 to 500% air, 0 to 200% O ₂ - Concentration: 0 ppb (µg/L) to 50.00 ppm (mg/L) |
| Polarization voltage | -550 mV or -674 mV (configurable) |
| Temperature input | NTC 22 kΩ, Pt1000, Pt100 |
| Temperature compensation | Automatic |
| Temperature measuring range | -10 to +80 °C (+14 to +176 °F) |
| Max. sensor cable length | 80 m (260 ft) |
| Calibration | - Configuration tool: Process and 1-point - iSense software: 1-point |

Conductivity 4-e

| | |
|-------------------------------|--|
| Measurement parameters | Conductivity/resistivity and temperature |
| Conductivity ranges | 0.01 to 650 mS /cm (1.54 Ω x cm to 0.1 MΩ x cm) |
| Chemical concentration curves | NaCl: 0-26% @0°C to 0-28% @+100°C NaOH: 0-12% @0°C to 0-16% @+40°C to 0-6% @+100°C HCl: 0-18% @-20°C to 0-18% @0°C to 0-5% @+50°C HNO ₃ : 0-30% @-20°C to 0-30% @0°C to 0-8% @+50°C H ₂ SO ₄ : 0-26% @-12°C to 0-26% @+5°C to 0-9% @+100°C H ₃ PO ₄ : 0-35% @+5°C to +80°C |
| TDS ranges | NaCl, CaCO ₃ |
| Temperature input | Pt1000 |
| Temperature measuring range | -40 to +200 °C (-40 to +392 °F) |
| Max. sensor cable length | 80 m (260 ft) |
| Calibration | - Configuration tool: Process, 1-point and 2-point - iSense software: 1-point and 2-point |

General electrical specifications

| | |
|------------------------|---|
| Output | Analog output 4 to 20 mA with HART® |
| HART Communication | Digital communication via FSK modulation of the analog output, device identification, measured values, status and messages, parameters, calibration, ISM diagnostics (DLI, ACT and TTM) |
| Operation | Via configuration tool, Asset-Management-Tool or HART handheld terminal |
| Supply voltage | 14 to 30 V DC |
| Connection terminals | Spring cage terminals, appropriate for wire cross section 0.2 to 1.5 mm ² (AWG 16–24) |
| Galvanic isolation | Inputs, output and earth/ground are galvanically isolated up to 500 V |
| Analog output | Loop current 4 to 20 mA |
| Accuracy analog output | < ±0.05 mA over 4 to 20 mA |
| Analog input | 4 to 20 mA (for pressure compensation) |
| Digital input | For switching transmitter in Hold state Switching voltage (selectable): – Low: 0.0 to 1.0 V DC – High: 2.3 to 30.0 V DC |
| Alarm | For sensor disconnected, 22 mA |
| Real time clock | Fixed time and date format. The format cannot be changed. Power reserve: >5 days |

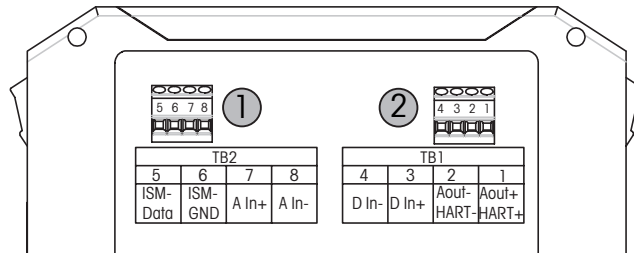
Environmental specifications

| | |
|-------------------------------------|---|
| Storage temperature | –40 to +70 °C (–40 to +158 °F) |
| Ambient temperature operating range | –20 to +60 °C (–4 to +140 °F) |
| Relative humidity | 0 to 95 % non-condensing |
| EMC | According to EN 61326-1 (general requirements) Emission: Class B, Immunity: Class A |
| CE mark | The measuring system is in conformity with the statutory requirements of the EC Directives. METTLER TOLEDO confirms successful testing of the device by affixing to it the CE mark. |

Mechanical specifications

| | |
|---------------------------|-------------|
| Dimensions | See page 2. |
| Suitable DIN rail systems | 35 mm wide |
| Weight | 0.5 kg |
| Material | PA-FR |
| Enclosure rating | IP 20 |

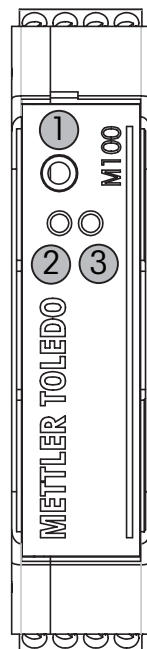
Connector terminal definition



- 1 Terminal block TB2
- 2 Terminal block TB1

| Terminal | | | Description |
|----------|---|--------------|--|
| TB2 | 5 | ISM-Data | Sensor input, see table "M100 DR parameter fit guide" on page 6. |
| | 6 | ISM-GND | |
| | 7 | Ain+ | Analog input 4 to 20 mA (for pressure compensation) |
| | 8 | Ain- | |
| TB1 | 4 | DI- | Digital input (for switching transmitter in Hold state) |
| | 3 | DI+ | |
| | 2 | Aout-, HART- | Power connection 14 to 30 V DC |
| | 1 | Aout+, HART+ | Analog output HART signal |

LED functionality



- 1 Port: Interface for service
e.g. firmware update
- 2 LED green
- 3 LED red

| LED Green | LED Red | Description |
|-----------|--------------------------------------|-------------------|
| X | – | Operation correct |
| X | X | Error |
| X | Blinking: 0.5 s: on 0.5 s: off | Warning |

Ordering information

Transmitter

| Description | Order no. |
|---------------------------------------|------------|
| M100/2H DR, 1-channel multi-parameter | 30 127 720 |

Accessories

| Description | Order no. |
|---------------------------|--------------------|
| iSense 2.0 full version | 30 130 614 |
| iSense 2.0 lite version | Available for free |
| iSense 2.0 mobile version | Available for free |
| iLink cable for iSense | 52 300 383 |

M100 DR parameter fit guide

| | M100/2H DR |
|-----------------------|---|
| | ISM |
| pH/ORP | • |
| pH/pNa | • |
| Conductivity 4-e | • |
| Amp. DO ppm/ppb/trace | • ¹⁾ /• ²⁾ /• ²⁾ |

1) INGOLD and THORNTON sensors
 2) INGOLD sensors

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