

M200 Transmitter Series for pH/ORP, Oxygen, Ozone and Conductivity

Convenient and reliable for basic process applications

Technical Data



Short description

The M200 multi-parameter transmitter line covers pH, ORP, dissolved oxygen, ozone and conductivity measurements. Plug and Measure provides compatibility and reliable operation for ISM sensors as well as the complete digital easySense line.

The convenient and comfortable operation is performed thanks to the large display, plain text interface, quick access menu, easily accessible wiring terminals and quick setup guide. With the Transmitter Configuration Tool (TCT) provided for the M200 commissioning as well as maintenance becomes substantially easier.

Features

- Plug and Measure functionality
- Multi-parameter unit
- 4-wire installation
- Input for digital sensor signals (easySense™ or ISM sensors)
- 0/4...20mA current outputs, galvanically isolated
- 2 configurable relays
- Up to IP 65 rated, depending on the transmitter version
- Password protection against accidental parameter changes
- Large, backlit display with 4 text lines
- Quick setup mode
- 1-channel or 2-channel versions (½ DIN and ¼ DIN)
- 8 languages: English, German, French, Italian, Spanish, Portuguese, Russian and Japanese
- AC/DC power supply

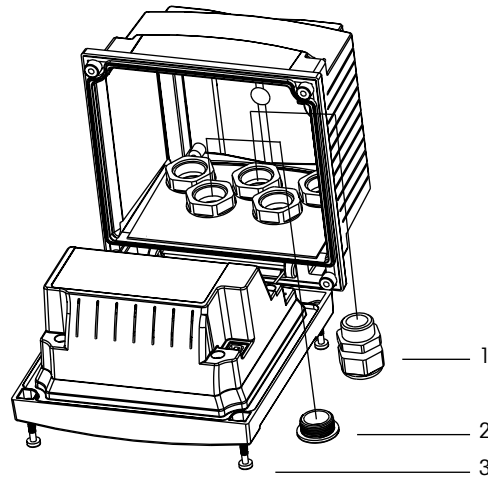


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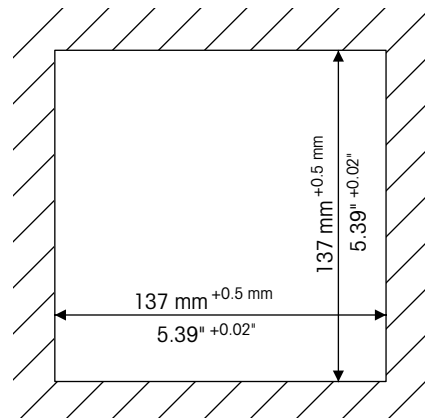
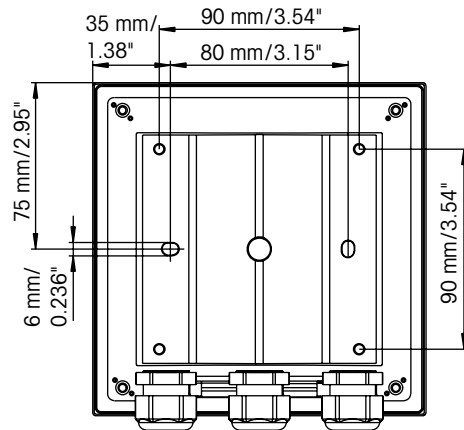
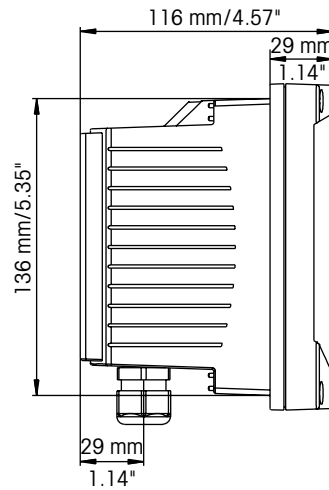
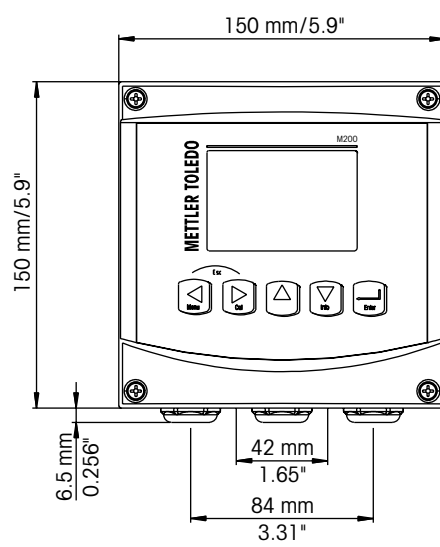
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Assembly

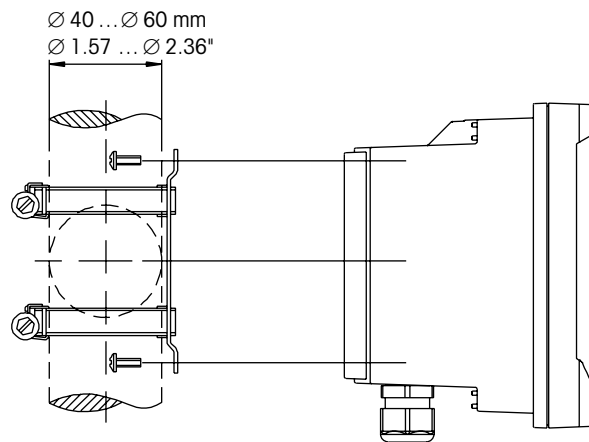


- 1 3 pieces M20 cable glands
- 2 2 pieces plastic plugs
- 3 4 pieces screws

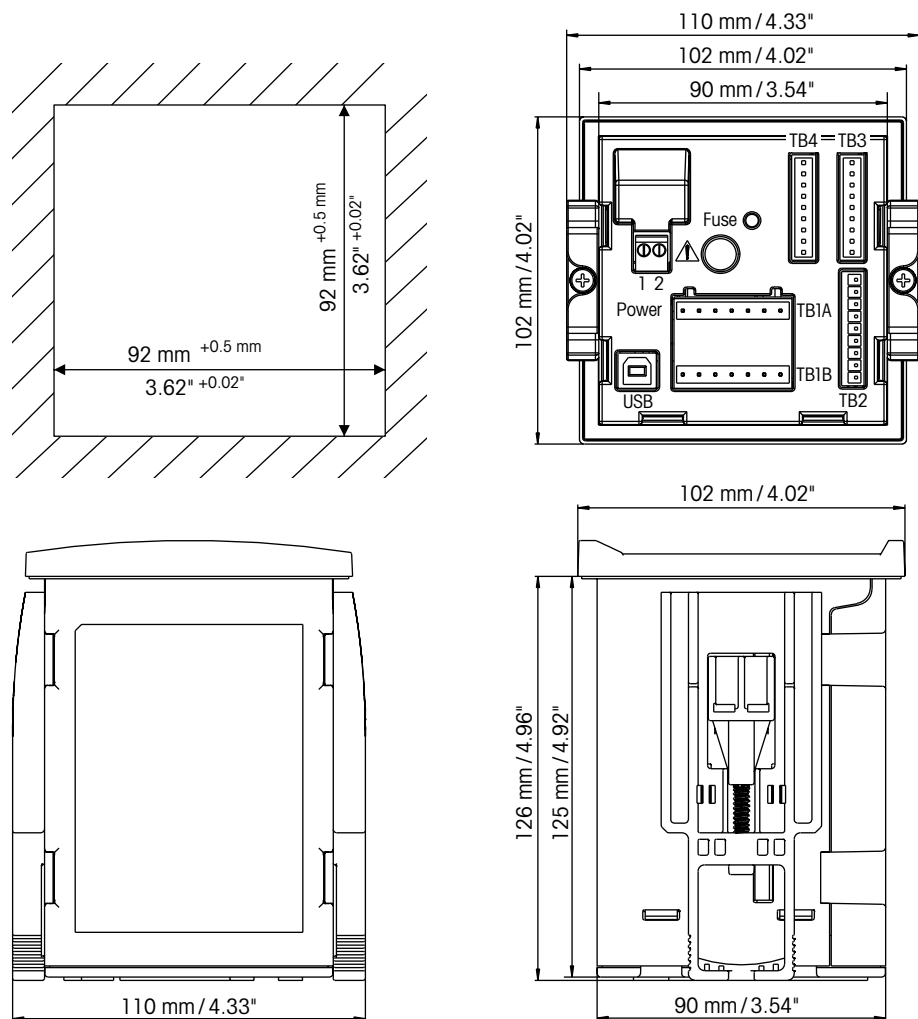
½ DIN version – Dimension drawings



½ DIN version pipe mounting



¼ DIN version – Dimension drawings



pH/ORP (incl. pH/pNa)

Measurement parameters	pH, mV and temperature
pH display range	-2.00 to +16.00 pH
pH resolution	Auto/0.001/0.01/0.1/1 (can be selected)
pH accuracy ¹⁾	±1 digit
mV range	-1500 to +1500 mV
mV resolution	Auto/0.001/0.01/0.1/1 mV (can be selected)
mV accuracy ¹⁾	±1 digit
Temperature measuring range	-30 to 130 °C (-22 to 266 °F)
Temperature resolution	Auto/0.001/0.01/0.1/1 (can be selected)
Temperature accuracy ¹⁾	±1 digit
Temperature compensation	Automatic/Manual
Max. sensor cable length	80 m (260 ft)
Calibration	<ul style="list-style-type: none"> • pH: 1-point (offset), 2-point (slope and offset) or process (offset) • ORP: 1-point (offset)

1) ISM input signal causes no additional error.

Amperometric oxygen

Measurement parameters	Dissolved oxygen (DO) saturation or concentration and temperature
Measuring current range	0 to 900 nA
DO display ranges	<ul style="list-style-type: none"> • Saturation: 0 to 500 % air, 0 to 200 % O₂ sat • Concentration: 0.0 ppb (µg/L) to 50.00 ppm (mg/L)
DO accuracy	±1 digit
DO Resolution	Auto/0.001/0.01/0.1/1 (can be selected)
Polarization voltage	-674 mV
Temperature measuring range	-10 to +80 °C (+14 to +176 °F)
Temperature resolution	Auto/0.001/0.01/0.1/1 (can be selected)
Temperature accuracy	±1 digit
Temperature repeatability	±1 digit
Temperature compensation	Automatic
Max. sensor cable length	80 m (260 ft)
Calibration	1-point (slope and offset) or process (slope and offset)

Dissolved ozone

Measurement parameters	Concentration and temperature
Display range for current	0 to -900 nA
Ozone measuring range	Concentration 0.1 ppb (µg/L) to 5.00 ppm (mg/L) O ₃
Ozone accuracy	±1 digit
Resolution current	±1 digit
Temperature compensation	Automatic
Temperature measuring range	-30 to +150 °C (-22 to +302 °F)
Temperature resolution	Auto/0.001/0.01/0.1/1 (can be selected)
Temperature accuracy	±1 digit
Max. sensor cable length	80 m
Calibration	1-point (offset) or process (slope or offset)

Conductivity 2-e/4-e

Measurement parameters	Conductivity/resistivity and temperature
Conductivity ranges	C = 0.01 0.002 to 200 $\mu\text{S/cm}$ ($5000\Omega \times \text{cm}$ to $500\text{M}\Omega \times \text{cm}$)
2-electrode sensor	C = 0.1 0.02 to 2000 $\mu\text{S/cm}$ ($500\Omega \times \text{cm}$ to $50\text{M}\Omega \times \text{cm}$)
	C = 1 15 to 4000 $\mu\text{S/cm}$
	C = 3 15 to 12,000 $\mu\text{S/cm}$
	C = 10 10 to 40,000 $\mu\text{S/cm}$ ($25\Omega \times \text{cm}$ to $100\text{k}\Omega \times \text{cm}$)
	Conductivity ranges
4-electrode sensor	
Display range for 2-e sensor	0 to 40,000 mS/cm ($25\Omega \times \text{cm}$ to $100\text{M}\Omega \times \text{cm}$)
Display range for 4-e sensor	0.01 to 650 mS/cm ($1.54\Omega \times \text{cm}$ to $0.1\text{M}\Omega \times \text{cm}$)
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 and CaCO ₃
Cond/Res accuracy ¹⁾	± 1 digit
Cond/Res repeatability ¹⁾	± 1 digit
Cond/Res resolution	Auto/0.001/0.01/0.1/1 (can be selected)
Temperature measuring range	–40 to +200 °C (–40 to +392 °F)
Temperature resolution	Auto/0.001/0.01/0.1/1 (can be selected)
Temperature accuracy	± 1 digit
Max. sensor cable length	<ul style="list-style-type: none"> • 2-e sensors: 90 m (300 ft) • 4-e sensors: 80 m (260 ft)
Calibration	1-point (offset), 2-point (slope and offset) or process (slope)

1) ISM input signal causes no additional error.

Electrical specifications

Supply voltage	<ul style="list-style-type: none"> • 100 to 240 V AC, 50 to 60 Hz, 10 VA • 20 to 30 V DC, 10 VA
Connection terminal	Detachable screw terminals, appropriate for wire cross section 0.2 to 1.5 mm ² (AWG 16–24)
Mains fuse	1.0 A slow blow, type FC
Number of analog outputs	<ul style="list-style-type: none"> • 4 for 2-channel version • 2 for 1-channel version
Analog output signals	0 / 4 ... 20 mA, 22 mA alarm, galvanically isolated from input and from earth / ground
Measurement error through analog outputs	<p>< ±0.05 mA over 1 to 22 mA range</p> <p>< ±0.10 mA over 0 to 1 mA range</p>
Analog output configuration	Linear
Load	Max. 500 Ω
Hold input/Alarm contact	Yes/Yes
Alarm output delay	0 to 999 s
Relays	2 SPDT, mechanical, rated at 250 V AC, 3 Amps
Digital input	<ul style="list-style-type: none"> • 2 for 2-channel version • 1 for 1-channel version <p>Galvanically isolated from output and ground / earth</p>
Display	Backlit LCD, 4 lines
Keypad	5 tactile feedback keys
Languages	8 (English, German, French, Italian, Spanish, Portuguese, Russian and Japanese)
Digital communication	USB, Type B connector

Environmental specifications

Storage temperature	–40 to +70 °C (–40 to +158 °F)
Ambient temperature operating range	–10 to +50 °C (+14 to +122 °F)
Relative humidity	0 to 95 % non-condensing
EMC	Compliant with EN 61326-1: 2013 (Industrial environment) Emission: Class B, Immunity: Class A
UL	Installation (overvoltage) Category II
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

½ DIN version

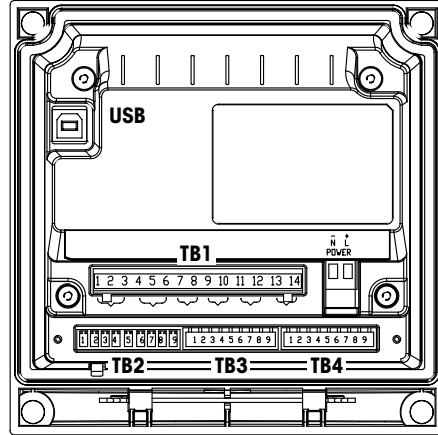
Dimensions	Housing – Height × Width × Depth	144 × 144 × 116 mm (5.7 × 5.7 × 4.6")
	Front bezel – Height × Width	150 × 150 mm (5.9 × 5.9")
	Max. depth – panel mounted	87 mm (excludes plug-in connectors)
Weight		0.95 kg (2 lb)
Material		ABS / Polycarbonate
Enclosure rating		IP 65

¼ DIN version

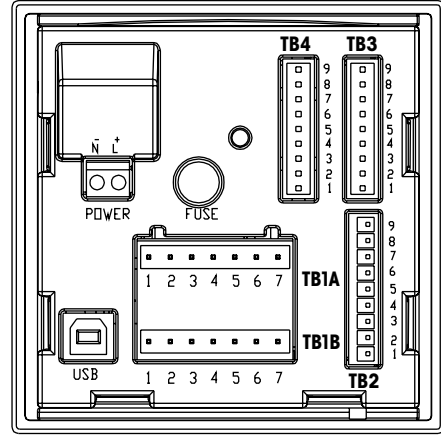
Dimensions	Housing – Height × Width × Depth	90 × 90 × 126 mm (3.54 × 3.54 × 4.96")
	Front bezel – Height × Width	102 × 102 mm (4.02 × 4.02")
	Max. depth – panel mounted	126 mm (excludes plug-in connectors)
Weight		0.6 kg (1.5 lb)
Material		ABS / Polycarbonate
Enclosure rating		IP 65 (front) / IP 20 (housing)

Terminal block (TB) definitions

½ DIN housing (wall mount)



¼ DIN housing (panel mount)



TB1, TB1A and TB1B terminal definition (1- and 2-channel versions)

TB1 – ½ DIN housing

Terminal	Description
1	NO1
2	COM1
3	NC1
4	NO2
5	COM2
6	NC2
7	–
8	–
9	–
10	–
11	–
12	–
13	–
14	–

TB1A – ¼ DIN housing

Terminal	Description
1	NO2
2	COM2
3	NC2
4	–
5	–
6	–
7	–

TB1B – ¼ DIN housing

Terminal	Description
1	NO1
2	COM1
3	NC1
4	–
5	–
6	–
7	–

TB2 terminal definition (1- and 2-channel versions)**½ DIN housing and ¼ DIN housing**

Terminal	Description 1-channel version	Description 2-channel version
1	A01+	A01+
2	A01-/A02-	A01-/A02-
3	A02+	A02+
4	–	A03+
5	–	A03-/A04-
6	–	A04+
7	DI1+	DI1+
8	DI1-	DI1-/DI2+
9	–	DI2+

TB3 terminal definition (1- and 2-channel versions)**½ DIN housing and ¼ DIN housing**

Terminal	Description 1-channel version	Description 2-channel version
1	–	–
2	–	–
3	1-wire	1-wire
4	GND (5 V DC)	GND (5 V DC)
5	–	–
6	GND (5 V DC)	GND (5 V DC)
7	RS 485-	RS 485-
8	RS 485+	RS 485+
9	5 V DC	5 V DC

TB4 terminal definition (2-channel version only)**½ DIN housing and ¼ DIN housing**

Terminal	Description 2-channel version
1	–
2	–
3	1-wire
4	GND (5 V DC)
5	–
6	GND (5 V DC)
7	RS 485-
8	RS 485+
9	5 V DC

Ordering information

Transmitter	Order no.
M200, ½ DIN, 1-channel multi-parameter	52 121 555
M200, ½ DIN, 2-channel multi-parameter	52 121 557
M200, ¼ DIN, 1-channel multi-parameter	52 121 554
M200, ¼ DIN, 2-channel multi-parameter	52 121 556

M200 parameter fit guide

	ISM sensors	easySense™ sensors
pH/ORP	•	pH 31, pH 32, pH 33, pH 34, ORP 41
pH/pNa	•	–
Conductivity 2-e	•	Cond 71, Cond 72, Cond 73
Conductivity 4-e	•	Cond 77
Amp. dissolved oxygen ppm/ppb/trace	•/–/–	O ₂ 21
Ozone	•	–

Accessories

Description	Order no.
Pipe mount kit for ½ DIN versions	52 500 212
Panel mount kit for ½ DIN versions	52 500 213
Protective hood for ½ DIN versions	52 500 214
Terminal blocks for M200, M300, M400	52 121 504

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