

M300 Transmitter Series for pH, Oxygen and Conductivity

Easy to use and versatile

Technical Data



Short description

The M300 transmitter line for pH/ORP, oxygen, and conductivity measurements combines robustness with ease of use. Its versatility and solid measurement performance makes it the ideal choice for light industrial applications. The M300 transmitters are designed for comfortable operation: from the large display to the easily accessible wiring terminals to the plain text interface and quick setup menu. With its innovative USB port, the M300 is open to the future – for remote configuration, data logging or software upgrade.

With the ISM (Intelligent Sensor Management) version, configuration and commissioning become substantially easier.



Features

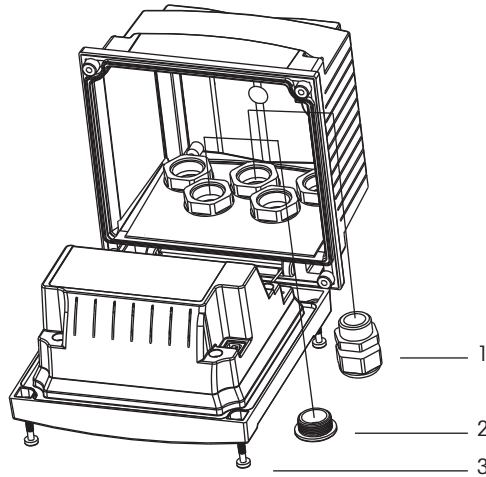
- ISM version features Plug and Measure functionality
- 4-wire installation
- 2 resp. 4, 0/4...20 mA current outputs, galvanically isolated
- 4 resp. 6, configurable relays
- IP 65 rated (Front only for ¼ DIN version)
- PID controller with pulse length, pulse frequency or analog control
- Password protection against accidental parameter changes
- Large, backlit display with 4 text lines
- Quick setup mode
- Single or dual channel
- 5 languages: english, german, french, italian, spanish
- AC/DC power supply
- Dual channel version: each channel is user-configurable

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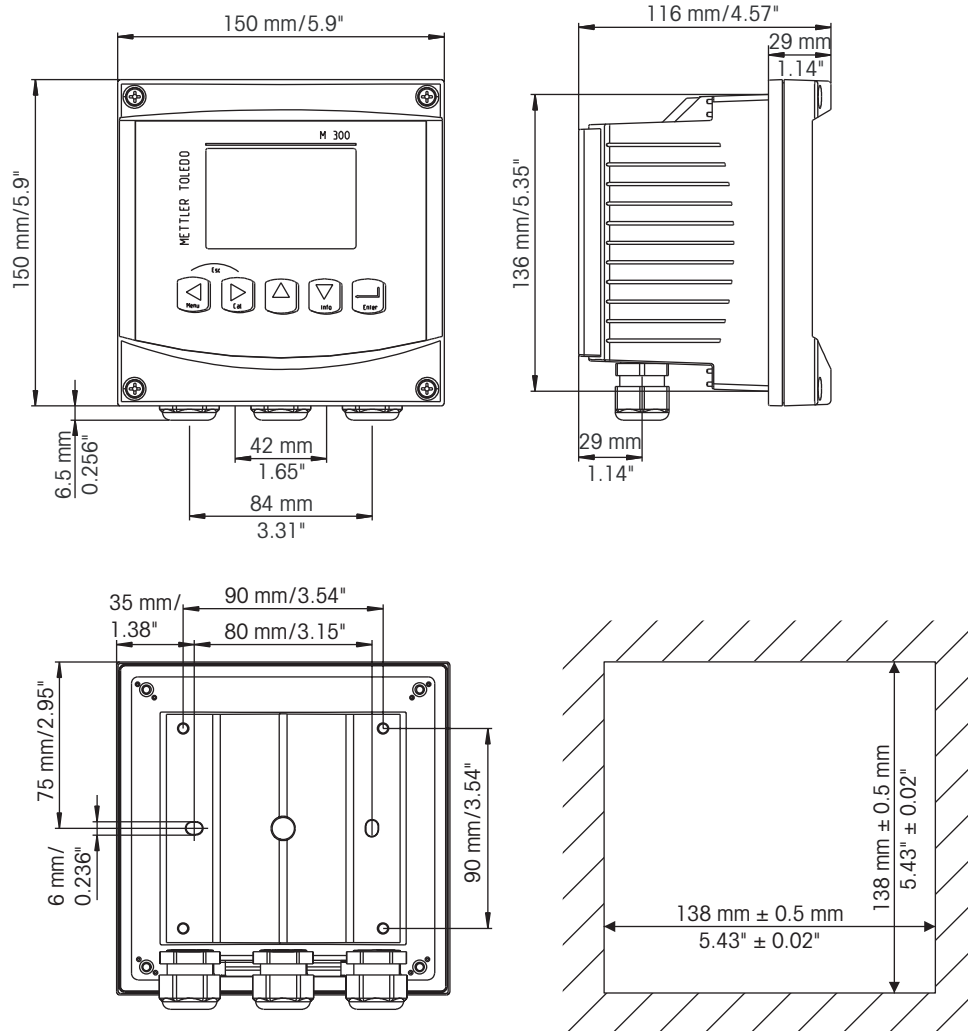
METTLER TOLEDO

½ DIN version – Assembly

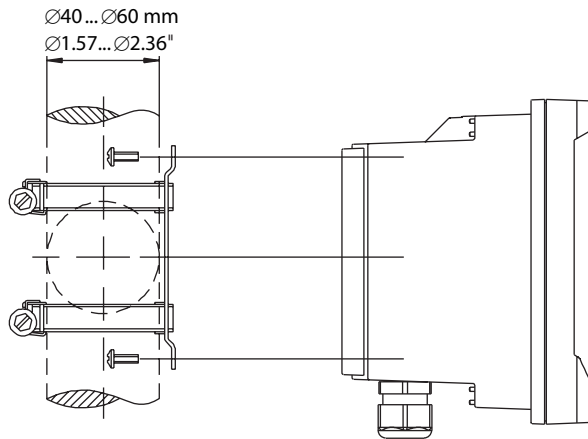


- 1 3 Pg 13.5 cable glands
- 2 2 plastic plugs
- 3 4 screws

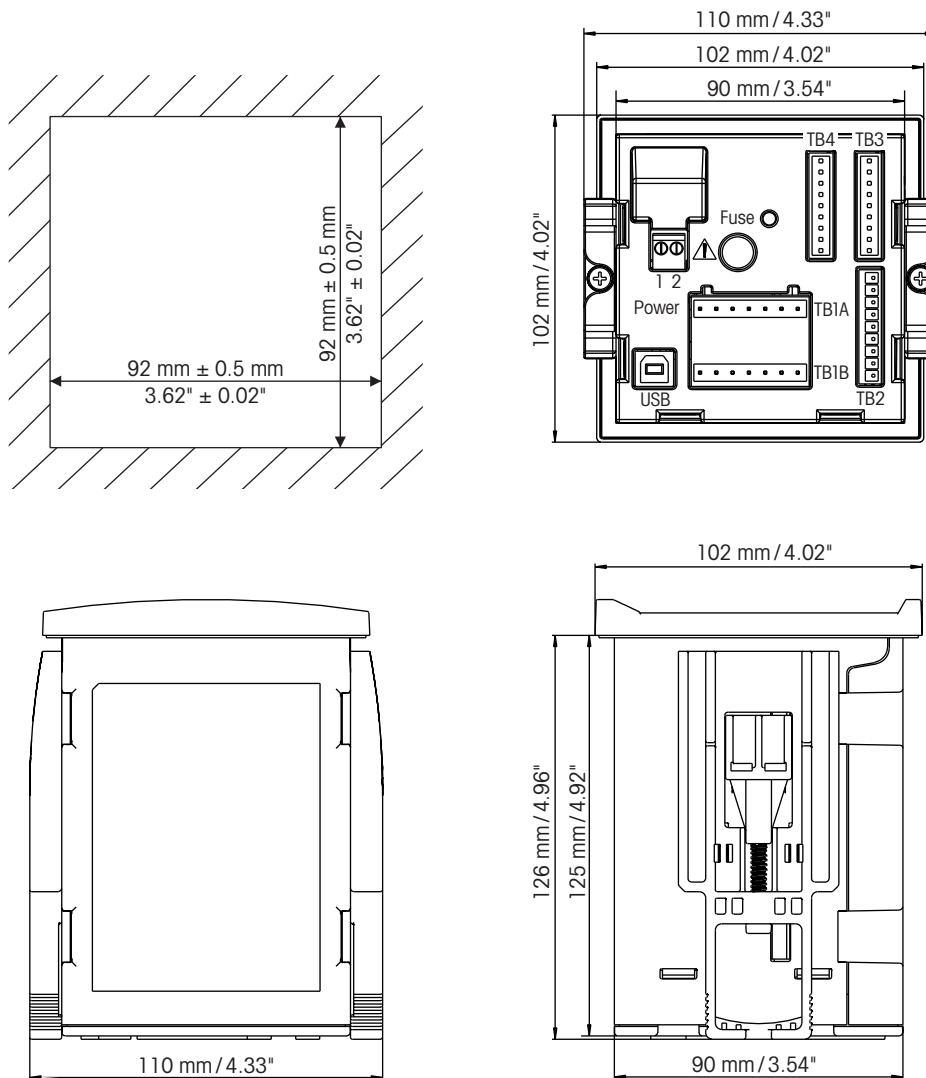
½ DIN version – Dimension drawings



½ DIN version – Pipe mounting



¼ DIN version – Dimension drawings



M300 pH transmitter

Measurement parameters	pH, mV, and temperature
pH, ORP input range	-1500 to 1500 mV
pH display range	-1 to 15 pH
Resolution	auto / 0.001 / 0.01 / 1 (can be selected)
Relative accuracy	± 0.03 pH; ± 2 mV
Temperature input	Pt 1000 (Pt 100 with adapter)
Temperature compensation	Automatic/manual
Temperature measuring range	-30 to 130 °C (-22 to 266 °F)
Temperature resolution	0.1 °C/°F
Temperature measurement error	±0.25 °C (±0.45 °F)
Calibration	1 or 2 point calibration, process calibration

M300 oxygen transmitter

Measurement parameters	D.O. saturation or concentration and temperature
Measuring current (Air)	25 to 130 nA at 25 °C (77 °F), 1 bar (14.5 psi)
D.O. concentration range	0.00 to 20.00 ppm (mg/l)
Measurement error	±0.5% of full scale reading
Measurement resolution	30 pA
Temperature input	NTC 22
Temperature compensation	Automatic
Temperature measuring range	-10 to 80 °C (14 to 176 °F)
Calibration	1-point (slope or offset calibration), process calibration (slope or offset calibration)

M300 conductivity transmitter

Measurement parameters	Conductivity, and temperature
Conductivity/resistivity ranges	2 electrode sensor: 0.02 to 2000 µS/cm (500 Ω × cm to 50 MΩ × cm) C = 0.01 0.002 to 200 µS/cm C = 0.1 0.02 to 2000 µS/cm C = 1 15 to 4000 µS/cm C = 3 15 to 12000 µS/cm C = 10 50 to 40000 µS/cm 4-electrode sensor: 0.01 to 650 mS/cm (1.54 Ω × cm to 0.1 MΩ × cm)
Temperature input	Pt 1000
Temperature measuring range	-40 to 200 °C (-40 to 392 °F)
Sensor maximum distance	60 m (196.9 ft), 15 m (50 ft) with 4-electrode sensor
Cond/Res accuracy	± 0.5% of reading or 0.25 Ω, whichever is greater, up to 18 MΩ × cm
Repeatability	± 0.25% of reading or 0.25 ohm, whichever is greater
Resolution	0.001 (four significant digits)
Temperature resolution	0.1 °C/°F (can be selected)
Temperature relative accuracy	± 0.25 °C (± 0.45 °F)
Temperature repeatability	± 0.13 °C (± 0.23 °F)
Chemical concentration curves	HCl (0.01–15%), H2SO4 (0–25%), NaOH (0.01–13%), H3PO4 (0–35%)

Electrical specifications for ½ DIN and ¼ DIN versions

Power supply	100 to 240 V AC, or 20 to 30 V DC, 10 VA
Frequency for AC	50 to 60 Hz
Number of outputs (analog)	2 (4 for 2-channel version)
Current output	0/4 to 20 mA, 22 mA alarm
Measurement Error through analog outputs	< ± 0.05 mA over 1 to 20 mA range < ± 0.10 mA over 0 to 1 mA range
Analog output configuration	Linear, Bi-Linear, Logarithmic, Autoranging
Load	max. 500 Ω
Display	Backlit LCD, 4 lines
Keypad	5 Tactile feedback keys
Languages	5 (english, german, french, italian, and spanish)
PID process controller	Pulse length, pulse frequency or analog control
Hold input	Yes
Alarm contact	Yes (alarm delay 0 to 999 s)
Connection terminal	Detachable screw terminals
Relays	– 2-SPDT mechanical rated at 250 VAC, 3 Amps, – 2-SPST mechanical rated at 250 VAC, 3 Amps (2-channel version only) – 2-Reed rated at 250 VAC or DC, 0.5 Amp switching
Digital Input	1 (2 for 2-channel version)
Port	USB, Type B connector
Alarm Relay delay	0 – 999 s
Mains fuse	1.0A slow Blow type FC
Max. cable length ISM	80 m

Environmental specifications for ½ DIN and ¼ DIN versions

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%
Emissions	According to EN55011 Class A
UL Electrical Environment	Installation (overvoltage) Category II
Material	ABS/polycarbonate

Mechanical specifications for ½ DIN version

Dimensions	
Housing – (H × W × D)*	144 × 144 × 116 mm
Front bezel – (H × W)*	150 × 150 mm
Max. D – panel mounted	87 mm
Weight	0.95 kg (2 lb)
Insulation/Rating	NEMA 4X, IP 65

* H = Height, W = Width, D = Depth

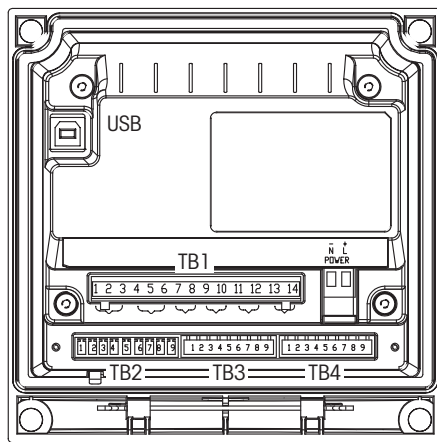
Mechanical specifications for ¼ DIN version

Dimensions	
Housing – (H×W×D)*	96×96×140 mm
Front bezel – (H×W)*	102×102 mm
Max. Depth	125 mm (excludes plug-in connectors)
Weight	0.6 kg (1.5 lb)
Material	ABS/polycarbonate
Insulation/Rating	NEMA 4X, IP 65 (front)/IP 20 (housing)

* H = Height, W = Width, D = Depth

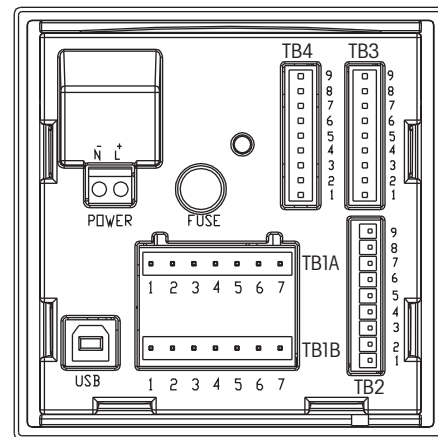
Connector pin definitions for ½ DIN and ¼ DIN versions

½ DIN housing (Wall mount)



TB1	
Pin	
1	NO1
2	COM1
3	NC1
4	NO2
5	COM2
6	NC2
7	COM5 (2-channel version only)
8	NC5 (2-channel version only)
9	COM6 (2-channel version only)
10	NO6 (2-channel version only)
11	NO3
12	COM3
13	NO4
14	COM4

¼ DIN housing (Panel mount)



TB1A	
Pin	
1	NO2
2	COM2
3	NC2
4	NO6 (2-channel version only)
5	COM6 (2-channel version only)
6	NO4
7	COM4

TB1B	
Pin	
1	NO1
2	COM1
3	NC1
4	NC5 (2-channel version only)
5	COM5 (2-channel version only)
6	NO3
7	COM3

Connector pin definitions for ½ DIN and ¼ DIN versions

½ DIN housing (Wall mount)

TB2	
Pin	
1	AO1+
2	AO1-/AO2-
3	AO2+
4	AO3+ (2-channel version only)
5	AO3-/AO4- (2-channel version only)
6	AO4+ (2-channel version only)
7	DI1+
8	DI1-/DI2-
9	DI2+ (2-channel version only)

¼ DIN housing (Panel mount)

TB2	
Pin	
1	AO1+
2	AO1-/AO2-
3	AO2+
4	AO3+ (2-channel version only)
5	AO3-/AO4- (2-channel version only)
6	AO4+ (2-channel version only)
7	DI1+
8	DI1-/DI2-
9	DI2+ (2-channel version only)

TB3/TB4 pin definitions for ½ DIN and ¼ DIN versions. TB4 for 2-channel version only

Conventional sensors

M300 pH transmitter

Pin	
1	Glass
2	not used
3	Reference
4	Solution GND/Shield
5	not used
6	RTD ref/GND
7	RTD sense
8	RTD
9	+5V

M300 oxygen transmitter

Pin	
1	not used
2	Anode
3	not used
4	Shield/GND
5	Cathode
6	GND/NTC
7	not used
8	NTC
9	+5V

M300 conductivity transmitter

Pin	
1	Cnd inner1
2	Cnd outer1
3	Cnd inner2
4	Cnd outer2/shield
5	not used
6	RTD ref/GND
7	RTD sense
8	RTD
9	+5V

ISM Sensors

M300 Multiparameter ISM

Pin	
1	Not used
2	Not used
3	1-wire
4	GND (5 VDC)
5	Not used
6	Not used
7	Not used
8	Not used
9	Not used

Ordering information

Order no.

½ DIN version

M300 1-channel pH/ORP	52 121 289
M300 1-channel DO	52 121 290
M300 1-channel Conductivity	52 121 291
M300 2-channel multi-parameter	52 121 293
M300 1-channel multi-parameter ISM	52 121 355
M300 2-channel multi-parameter ISM	52 121 357

¼ DIN version

M300 1-channel pH/ORP	52 121 286
M300 1-channel DO	52 121 287
M300 1-channel Conductivity	52 121 288
M300 2-channel multi-parameter	52 121 292
M300 1-channel multi-parameter ISM	52 121 354
M300 2-channel multi-parameter ISM	52 121 356

M300 accessories

Pipe mount kit (½ DIN only)	52 500 212
Panel mount kit (½ DIN only)	52 500 213
Protective hood (½ DIN only)	52 500 214

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Management System
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07/08 - Printed in Switzerland. 52 121 312

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