

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

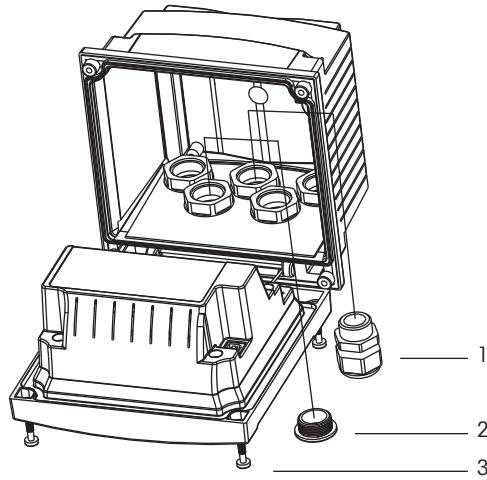
- ISM version features Plug and Measure functionality
- 4-wire installation
- 2 resp. 4, 0/4 ... 20 mA current outputs, galvanically isolated
- 4 resp. 6, configurable relays
- IP65 rated (Front only for ¼ DIN version)
- PID controller with pulse length, pulse frequency or analog control
- Password protection against accidental parameter changes
- Large, backlit display with 4 text lines
- Quick setup mode
- Single or dual channel
- 8 languages: english, german, french, italian, spanish, portuguese, russian and japanese
- AC/DC power supply
- Dual channel version: each channel is user-configurable

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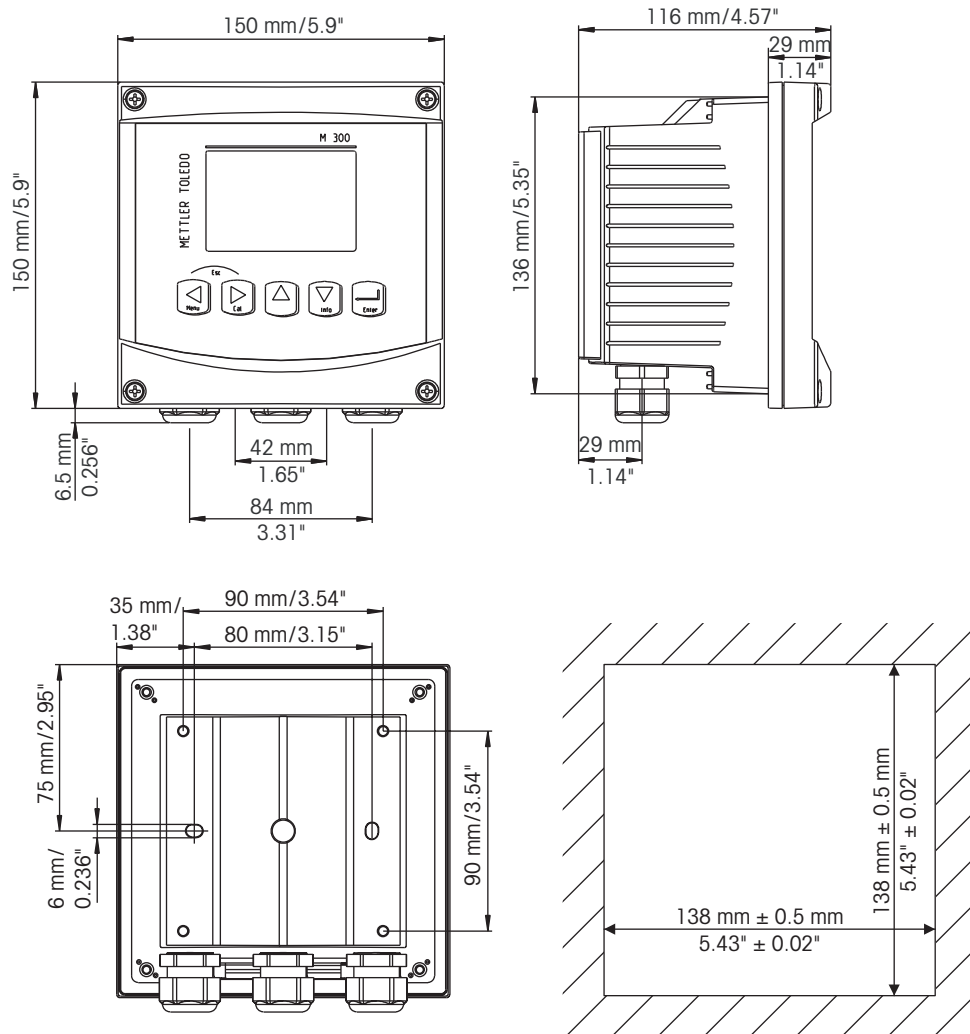
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½ DIN version – Assembly

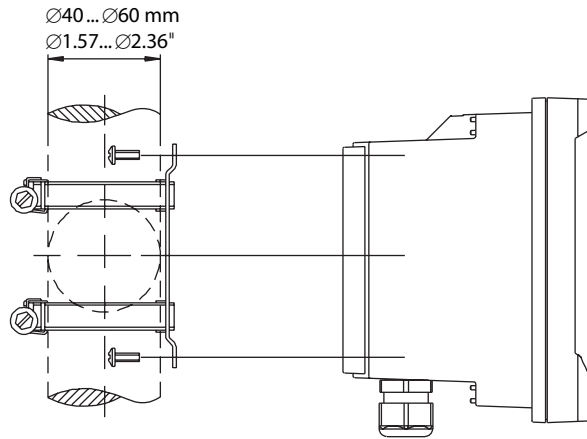


- 1 3 Pg13.5 cable glands
- 2 2 plastic plugs
- 3 4 screws

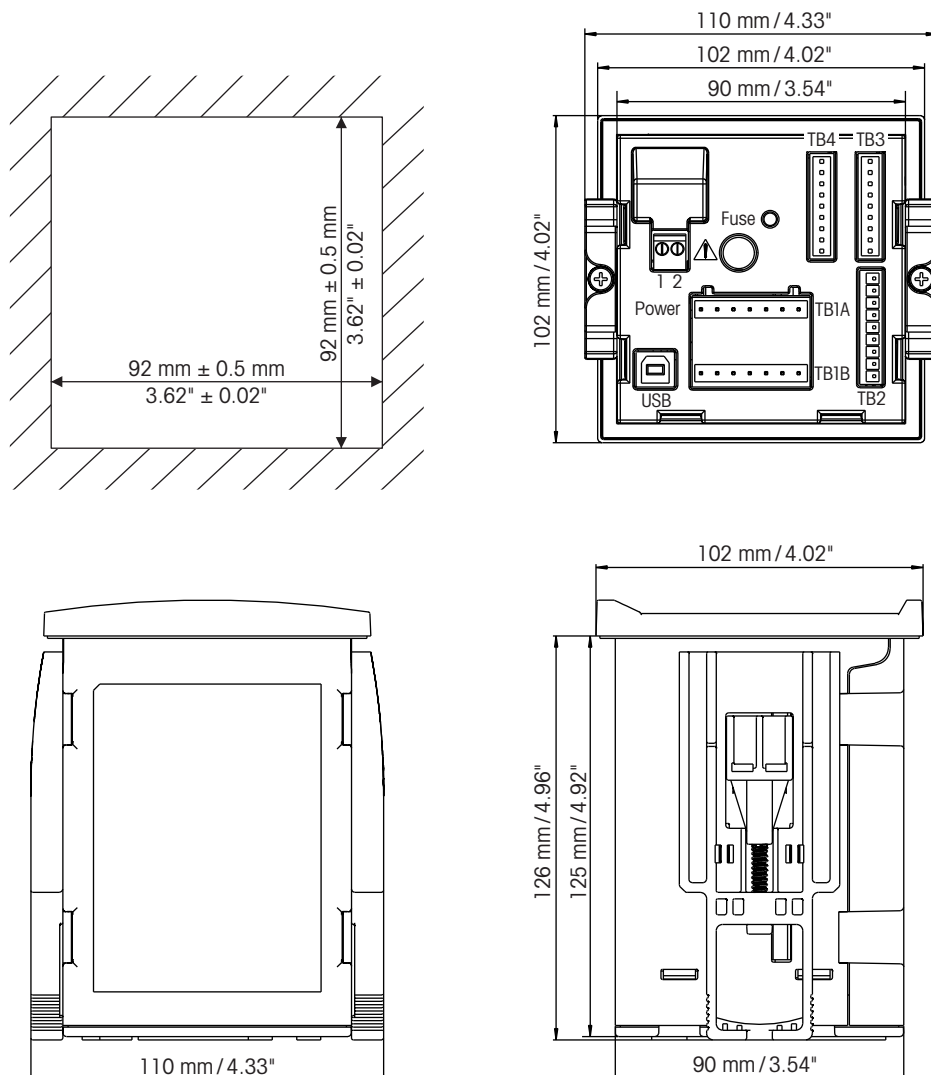
½ DIN version – Dimension drawings



½ DIN version – Pipe mounting



¼ DIN version – Dimension drawings



Specifications

M300 transmitter series

pH

Measurement parameters	pH, mV, and temperature
pH, ORP input range*	-1500 to 1500 mV
pH display range	-2 to 16 pH
pH resolution	Auto/0.01/0.1/1 (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	Auto/0.001/0.01/0.1/1 °C (°F) (can be selected)
Temperature accuracy**	±0.25 °C (±0.45 °F)
Sensor maximum distance	Analogue: 10 to 20 m (33 to 65 ft) depending on sensor ISM: 80 m (260 ft)
Calibration	1 or 2 point calibration, process calibration

*not required on ISM sensors, **for analogue input signal (ISM signal causes no additional error)

Dissolved Oxygen

Measurement parameters	D.O. saturation or concentration and temperature
Measuring current range	0 to 900 nA
DO concentration range	0.00 to 50.00 ppm (mg/l)
DO accuracy	±0.5 % of full scale reading
DO resolution	Auto/0.001/0.01/0.1/1 (can be selected)
Polarization voltage	-674 mV (for analog sensors)
Temperature input*	NTC 22
Temperature compensation	Automatic
Temperature measuring range	-10 to 80 °C (14 to 176 °F)
Temperature resolution	Auto/0.001/0.01/0.1/1 °C (°F) (can be selected)
Temperature accuracy**	±0.25 °C (±0.45 °F)
Sensor maximum distance	Analogue: 20 m (65 ft); ISM: 80 m (260 ft)
Calibration	1-point (slope or offset calibration), process calibration (slope or offset calibration)

*not required on ISM sensors, **for analogue input signal (ISM signal causes no additional error)

Conductivity

Measurement parameters	Conductivity, and temperature	
Conductivity/resistivity ranges	2 electrode sensor display range: 0 to 40,000 mS/cm (25 Ω × cm to 100 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 display range: 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	Analogue 2-e: 61 m (200 ft); analogue 4-e: 15 m (50 ft) ISM 2-e: 90 m (300 ft); ISM 4-e: 80 m (260 ft)	
Cond/Res accuracy**	±0.5 % of reading or 0.25 Ω, whichever is greater	
Cond/Res repeatability	±0.25 % of reading or 0.25 Ω, whichever is greater	
Cond/Res resolution	Auto/0.001/0.01/0.1/1 (can be selected)	
Temperature resolution	Auto/0.001/0.01/0.1/1 °C (°F) (can be selected)	
Temperature accuracy**	±0.25 °C (±0.45 °F)	
Temperature repeatability**	±0.13 °C (±0.23 °F)	
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

*not required on ISM sensors, **for analogue input signal (ISM signal causes no additional error)

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, galvanically isolated up to 60 V from input and from earth/ground
Measurement Error through analog outputs	< ±0.05 mA over 1 to 22 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	8 (english, german, french, italian, spanish, portuguese, russian, and japanese)
PID process controller	1 (pulse length, pulse frequency or analog control)
Cycle time	Ca. 1 sec.
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) with switching limits 0.00 VDC to 1.00 VDC inactive 2.30 VDC to 30.00 VDC active
Digital communication	USB, Type B connector
Alarm Relay delay	0 – 999 s
Mains fuse	1.0 A 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. depth – panel mounted	87 mm
Weight	0.95 kg (2 lb)
Insulation/Rating	IP65

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

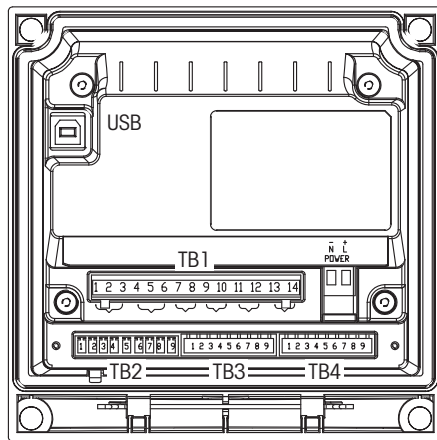
Mechanical specifications for ¼ DIN version

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	IP 65 (front)/IP 20 (housing)

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

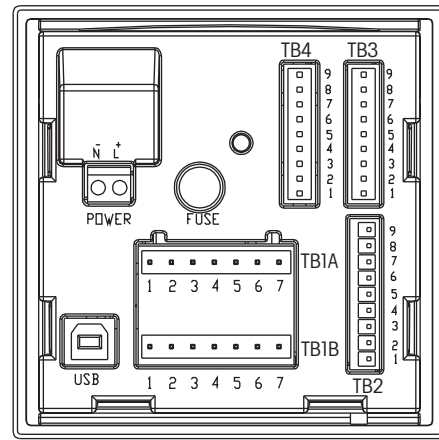
Connector pin definitions for ½ DIN and ¼ DIN versions

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)		¼ DIN housing (Panel mount)	
TB2		TB2	
Pin		Pin	
1	AO1+	1	AO1+
2	AO1-/AO2-	2	AO1-/AO2-
3	AO2+	3	AO2+
4	AO3+ (2-channel version only)	4	AO3+ (2-channel version only)
5	AO3-/AO4- (2-channel version only)	5	AO3-/AO4- (2-channel version only)
6	AO4+ (2-channel version only)	6	AO4+ (2-channel version only)
7	DI1+	7	DI1+
8	DI1-/DI2-	8	DI1-/DI2-
9	DI2+ (2-channel version only)	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			ISM sensors
M300 pH transmitter	M300 Oxygen transmitter	M300 Conductivity transmitter	M300 Multi-parameter ISM
Pin	Pin	Pin	Pin
1 Glass	1 not used	1 Cnd inner1	1 not used
2 not used	2 Anode	2 Cnd outer1	2 not used
3 Reference	3 not used	3 Cnd inner2	3 1-wire
4 Solution GND/Shield	4 Shield/GND	4 Cnd outer2/shield	4 GND (5 VDC)
5 not used	5 Cathode	5 not used	5 not used
6 RTD ref/GND	6 GND/NTC	6 RTD ref/GND	6 not used
7 RTD sense	7 not used	7 RTD sense	7 not used
8 RTD	8 NTC	8 RTD	8 not used
9 +5V	9 +5V	9 +5V	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
Terminal blocks for M300, M400	52 121 504

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Management System
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