

# 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

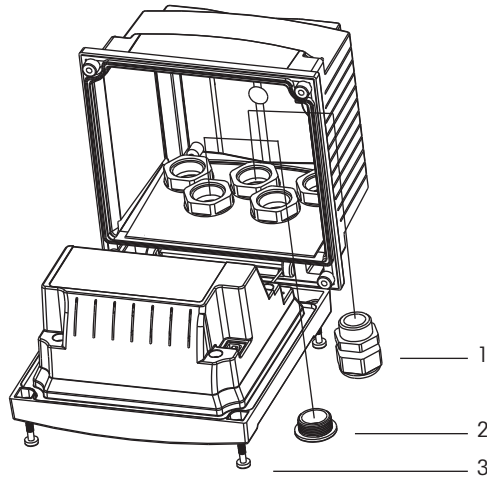
- ISM version features Plug and Measure functionality
- 4-wire installation
- 2 resp. 4, 0/4 ... 20 mA current outputs, galvanically isolated
- 4 resp. 6, configurable relays
- IP65 rated (Front only for ¼ DIN version)
- PID controller with pulse length, pulse frequency or analog control
- Password protection 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

## Contents

Dimensions and installation drawings	2
Specifications	4
Connector pin definitions	6
Ordering information	7

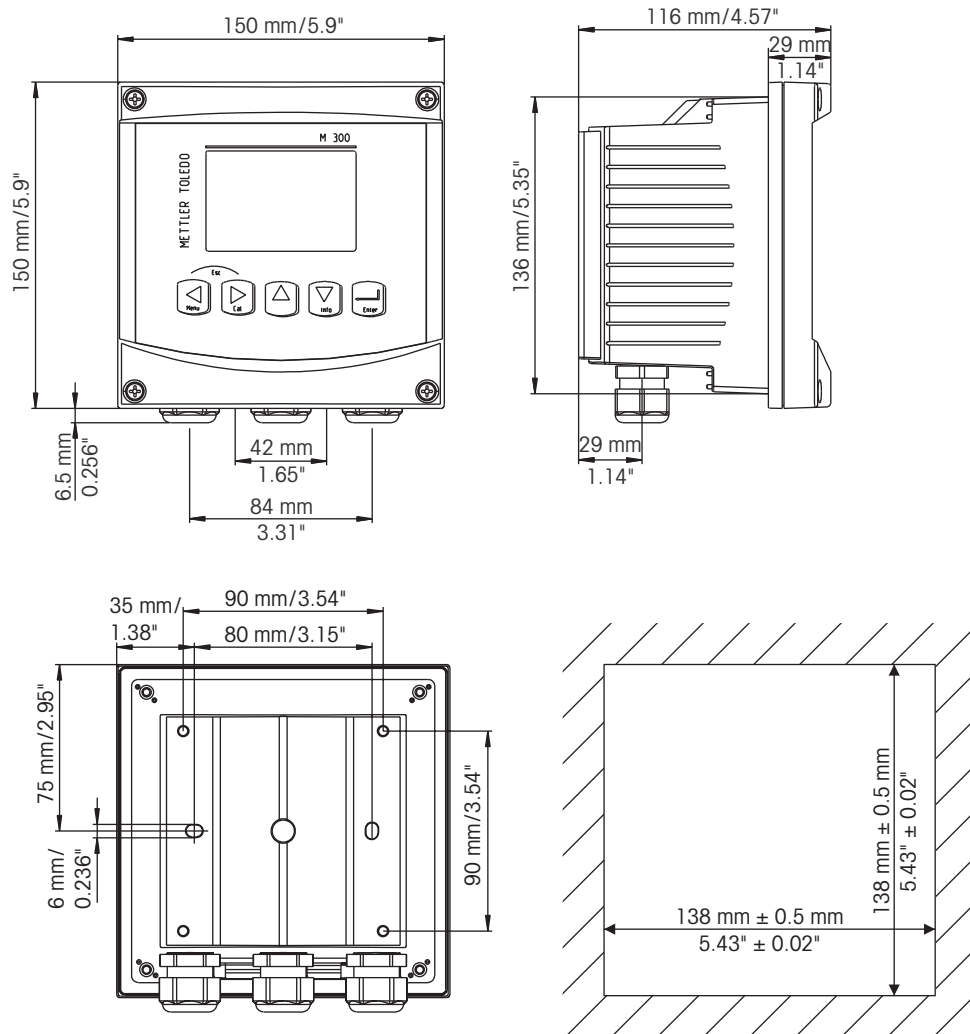
**METTLER TOLEDO**

½ DIN version – Assembly

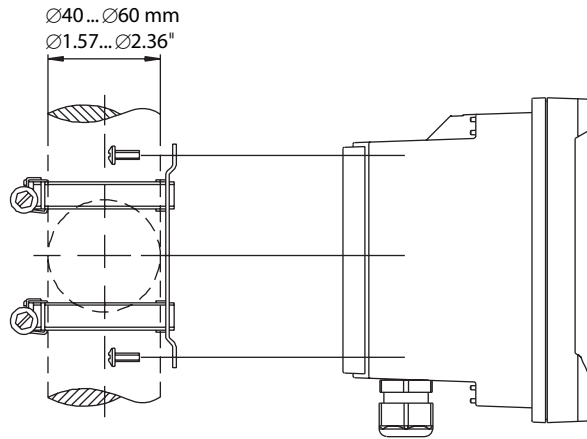


- 1 3 Pg13.5 cable glands
- 2 2 plastic plugs
- 3 4 screws

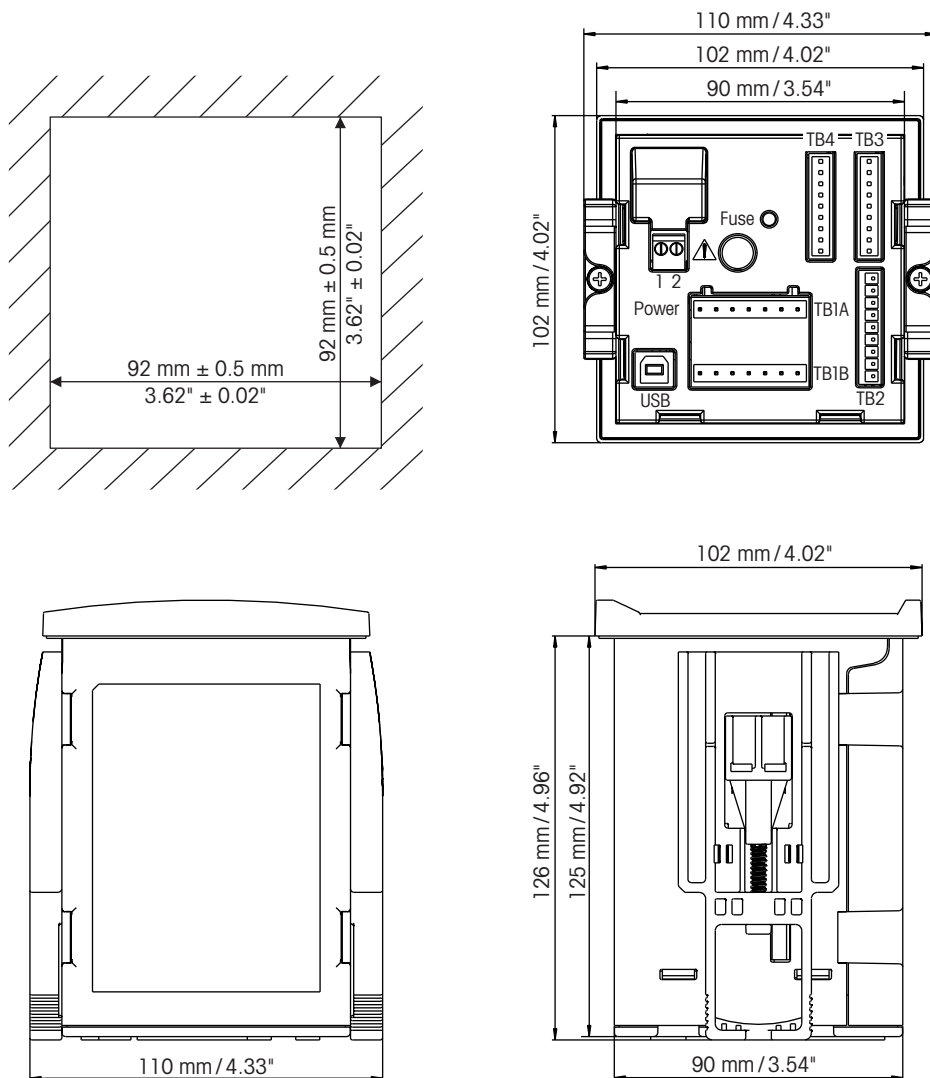
½ DIN version – Dimension drawings



**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	<b>2 electrode sensor display range:</b> 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 <b>4-electrode sensor display range:</b> 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 <sub>3</sub>	0–30% @ –20°C to 0–30% @ 0°C to 0–8% @ +50°C
H <sub>2</sub> SO <sub>4</sub>	0–26% @ –12°C to 0–26% @ +5°C to 0–9% @ +100°C
H <sub>3</sub> PO <sub>4</sub>	0–35% @ +5°C to 80°C
TDS ranges	NaCl, CaCO <sub>3</sub>

\*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

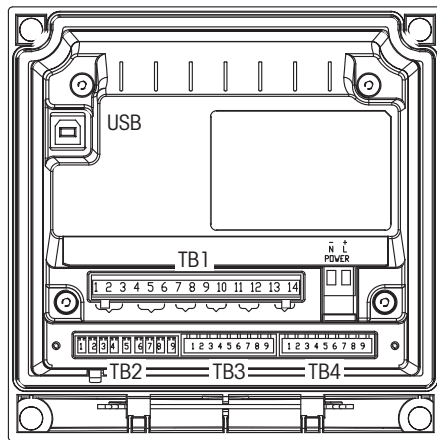
Mechanical specifications for ¼ DIN version

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

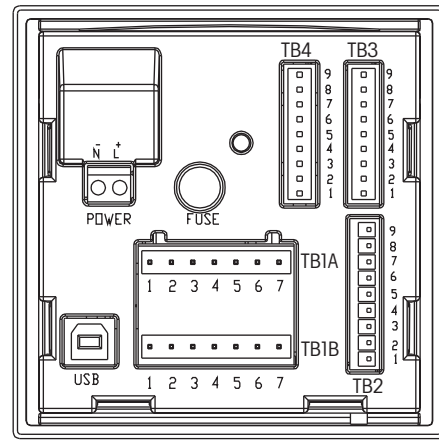
Connector pin definitions for ½ DIN and ¼ DIN versions

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 ret/GND	6 GND/NTC	6 RTD ret/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

## METTLER TOLEDO Market Organizations

### Sales and Service:

#### Australia

Mettler-Toledo Ltd.  
220 Turner Street  
Port Melbourne  
AUS-3207 Melbourne/VIC  
Phone +61 1300 659 761  
Fax +61 3 9645 3935  
e-mail info.mtaus@mt.com

#### Austria

Mettler-Toledo Ges.m.b.H.  
Südstrandstraße 17  
A-1230 Wien  
Phone +43 1 604 19 80  
Fax +43 1 604 28 80  
e-mail infoprocess.mtat@mt.com

#### Brazil

Mettler-Toledo Ind. e Com. Ltda.  
Alameda Araguaia, 451  
Alphaville  
BR-06455-000 Barueri/SP  
Phone +55 11 4166 7444  
Fax +55 11 4166 7401  
e-mail mettler@mettler.com.br  
service@mettler.com.br

#### China

Mettler-Toledo Instruments  
(Shanghai) Co. Ltd.  
589 Gui Ping Road  
Cao He Jing  
CN-200233 Shanghai  
Phone +86 21 64 85 04 35  
Fax +86 21 64 85 33 51  
e-mail mtcs@public.sta.net.cn

#### Croatia

Mettler-Toledo d.o.o.  
Mandlova 3  
HR-10000 Zagreb  
Phone +385 1 292 06 33  
Fax +385 1 295 81 40  
e-mail mf.zagreb@mt.com

#### Czech Republic

Mettler-Toledo s.r.o.  
Trebohosticka 2283/2  
CZ-100 00 Praha 10  
Phone +420 2 72 123 150  
Fax +420 2 72 123 170  
e-mail sales.mtcz@mt.com

#### Denmark

Mettler-Toledo A/S  
Naverland 8  
DK-2600 Glostrup  
Phone +45 43 27 08 00  
Fax +45 43 27 08 28  
e-mail info.mtdk@mt.com

#### France

Mettler-Toledo  
Analyse Industrielle S.A.S.  
30, Boulevard de Douaumont  
F-75017 Paris  
Phone +33 1 47 37 06 00  
Fax +33 1 47 37 46 26  
e-mail mtpro-f@mt.com

#### Germany

Mettler-Toledo GmbH  
Prozeßanalytik  
Ockerweg 3  
D-35396 Gießen  
Phone +49 641 507 333  
Fax +49 641 507 397  
e-mail prozess@mt.com

#### Great Britain

Mettler-Toledo LTD  
64 Boston Road, Beaumont Leys  
GB-Leicester LE4 1AW  
Phone +44 116 235 7070  
Fax +44 116 236 5500  
e-mail enquire.mtuk@mt.com

#### Hungary

Mettler-Toledo Kereskedelmi KFT  
Teve u. 41  
HU-1139 Budapest  
Phone +36 1 288 40 40  
Fax +36 1 288 40 50  
e-mail mthu@axelero.hu

#### India

Mettler-Toledo India Private Limited  
Amar Hill, Saki Vihar Road  
Powai  
IN-400 072 Mumbai  
Phone +91 22 2857 0808  
Fax +91 22 2857 5071  
e-mail sales.mtin@mt.com

#### Italy

Mettler-Toledo S.p.A.  
Via Vialba 42  
I-20026 Novate Milanese  
Phone +39 02 333 321  
Fax +39 02 356 2973  
e-mail customercare.italia@mt.com

#### Japan

Mettler-Toledo K.K.  
Process Division  
6F Ikenohata Nisshoku Bldg.  
2-9-7, Ikenohata  
Taito-ku  
JP-110-0008 Tokyo  
Tel. +81 3 5815 5606  
Fax +81 3 5815 5626  
e-mail helpdesk.ing.jp@mt.com

#### Malaysia

Mettler-Toledo (M) Sdn Bhd  
Bangunan Electrocon Holding, U 1-01  
Lot 8 Jalan Astaka U8/84  
Seksyen U8, Bukit Jelutong  
MY-40150 Shah Alam Selangor  
Phone +60 3 78 44 58 88  
Fax +60 3 78 45 87 73  
e-mail  
MT-MY.CustomerSupport@mt.com

#### Mexico

Mettler-Toledo S.A. de C.V.  
Ejercito Nacional #340  
Col. Chapultepec Morales  
Del. Miguel Hidalgo  
MX-11570 México D.F.  
Tel. +52 55 1946 0900  
e-mail ventas.lab@mt.com

#### Poland

Mettler-Toledo (Poland) Sp.z.o.o.  
ul. Poleczki 21  
PL-02-822 Warszawa  
Phone +48 22 545 06 80  
Fax +48 22 545 06 88  
e-mail polska@mt.com

#### Russia

Mettler-Toledo Vostok ZAO  
Sretenskij Bulvar 6/1  
Office 6  
RU-101000 Moscow  
Phone +7 495 621 56 66  
Fax +7 495 621 63 53  
e-mail inforus@mt.com

#### Singapore

Mettler-Toledo (S) Pte. Ltd.  
Block 28  
Ayer Rajah Crescent #05-01  
SG-139959 Singapore  
Phone +65 6890 00 11  
Fax +65 6890 00 12  
+65 6890 00 13  
e-mail precision@mt.com

#### Slovakia

Mettler-Toledo s.r.o.  
Hattalova 12/A  
SK-831 03 Bratislava  
Phone +421 2 4444 12 20-2  
Fax +421 2 4444 12 23  
e-mail predaj@mt.com

#### Slovenia

Mettler-Toledo d.o.o.  
Pot heroja Trtnika 26  
SI-1261 Ljubljana-Dobrunje  
Phone +386 1 530 80 50  
Fax +386 1 562 17 89  
e-mail keith.racman@mt.com

#### South Korea

Mettler-Toledo (Korea) Ltd.  
Yeil Building 1 & 2 F  
124-5, YangJe-Dong  
SeCho-Ku  
KR-137-130 Seoul  
Phone +82 2 3498 3500  
Fax +82 2 3498 3555  
e-mail Sales\_MTKR@mt.com

#### Spain

Mettler-Toledo S.A.E.  
C/Miguel Hernández, 69-71  
ES-08908 L'Hospitalet de Llobregat  
(Barcelona)  
Phone +34 902 32 00 23  
Fax +34 902 32 00 24  
e-mail mtemkt@mt.com

#### Sweden

Mettler-Toledo AB  
Virkesvägen 10  
Box 92161  
SE-12008 Stockholm  
Phone +46 8 702 50 00  
Fax +46 8 642 45 62  
e-mail sales.mts@mt.com

#### Switzerland

Mettler-Toledo (Schweiz) GmbH  
Im Langacher  
Postfach  
CH-8606 Greifensee  
Phone +41 44 944 45 45  
Fax +41 44 944 45 10  
e-mail salesola.ch@mt.com

#### Thailand

Mettler-Toledo (Thailand) Ltd.  
272 Soi Soonvijai 4  
Rama 9 Rd., Bangkapi  
Huay Kwang  
TH-10320 Bangkok  
Phone +66 2 723 03 00  
Fax +66 2 719 64 79  
e-mail  
MT-TH.ProcessSupport@mt.com

#### USA/Canada

Mettler-Toledo Ingold, Inc.  
36 Middlesex Turnpike  
Bedford, MA 01730, USA  
Phone +1 781 301 8800  
Freephone +1 800 352 8763  
Fax +1 781 271 0681  
e-mail mtprou@mt.com



Management System  
certified according to  
ISO 9001 / ISO 14001



Subject to technical changes.  
02/2010. © Mettler-Toledo AG  
Printed in Switzerland. 52 121 312

Mettler-Toledo AG, Process Analytics  
Im Hackacker 15, CH-8902 Urdorf, Switzerland  
Phone +41 44 729 62 11, Fax +41 44 729 66 36

[www.mt.com/pro](http://www.mt.com/pro)