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.

Features

– 4-wire installation
– Two 0/4…20 mA current outputs, galvanically isolated
– 4 freely configurable relays
– Manual control of relay contacts
– 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
– 2-channel version: each channel is user-configurable

Contents

Dimensions and installation drawings 2

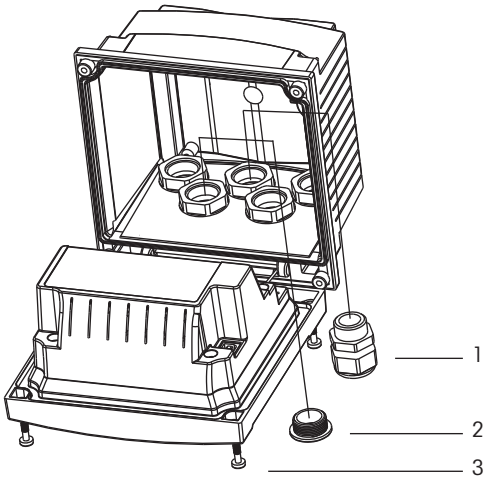
Specifications 4

Connector pin definitions 6

Ordering information 7

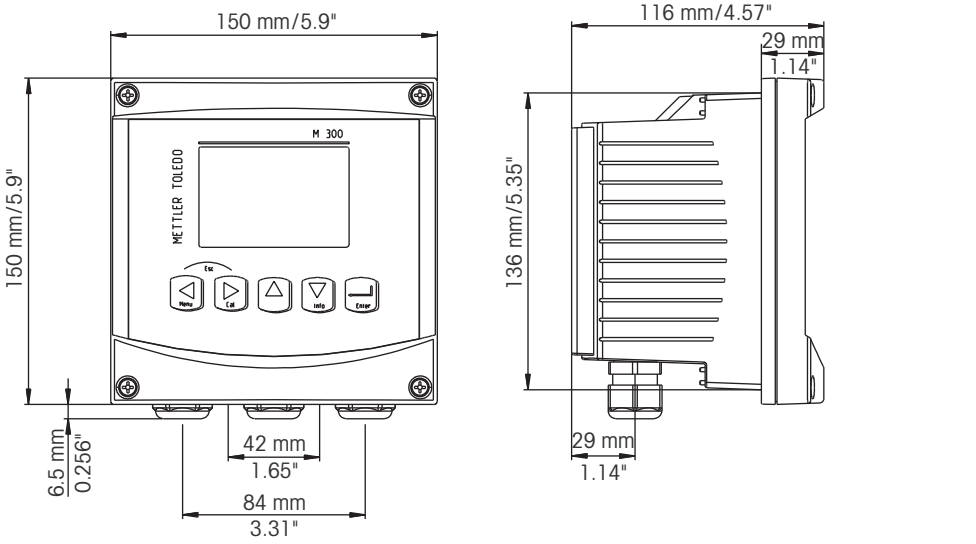
METTLER TOLEDO

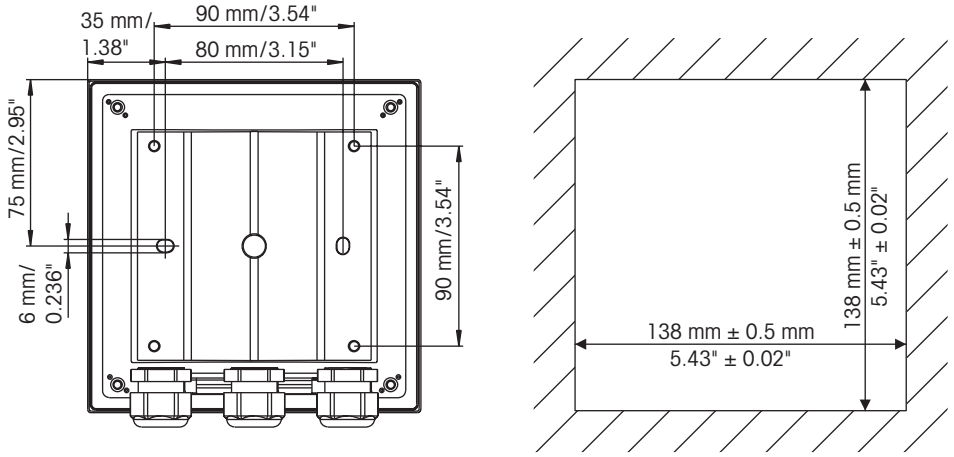
½ DIN version – Assembly



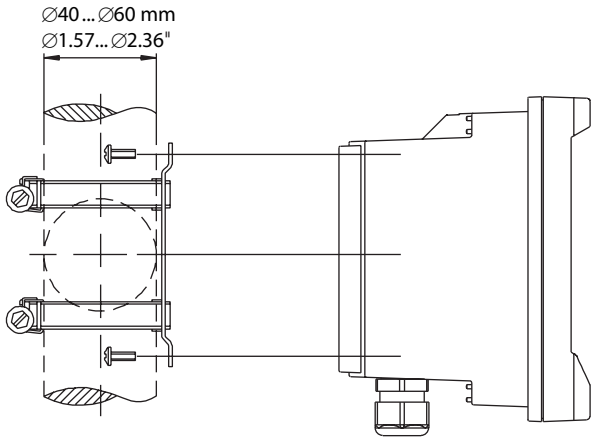
1 3 Pg 13.5 cable glands
2 2 plastic plugs
3 4 screws

½ DIN version – Dimension drawings

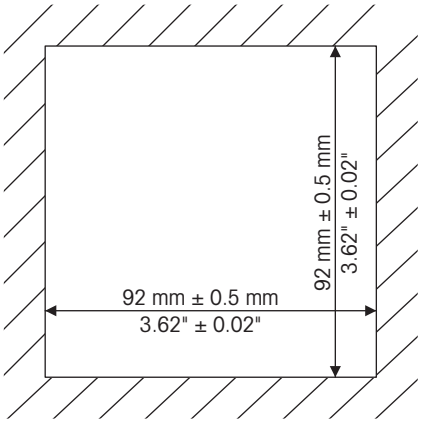


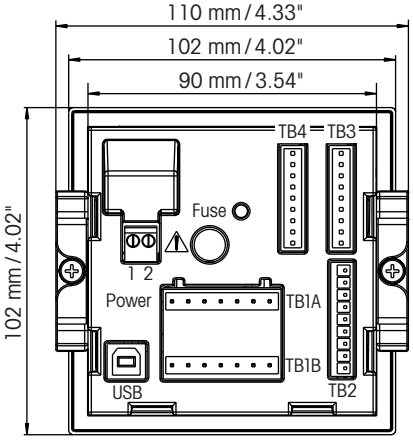


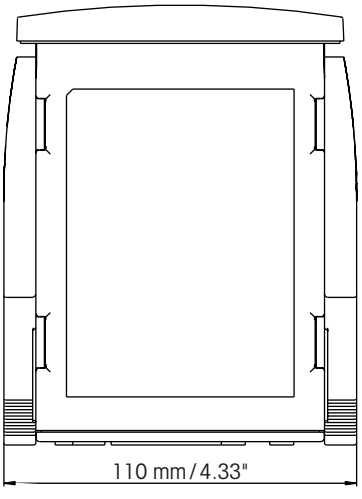
½ DIN version – Pipe mounting

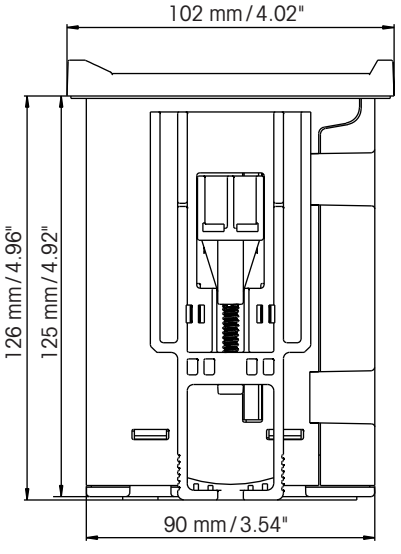


¼ DIN version – Dimension drawings









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	0.01 pH; 1 mV
Relative accuracy	± 0.03 pH; ±2 mV
Temperature input	Pt1000 (Pt100 with adapter)
Temperature compensation	Automatic/manual
Temperature measuring range	–30 to 150 °C (–22 to 302 °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. saturation range	0 to 500%
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) 4-electrode sensor: 0.01 to 650 mS/cm (1.54 Ω × cm to 0.1 MΩ × cm)
Temperature input	Pt1000
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	± 0.1% of reading for resistance
Resolution	0.001 (four significant digits)
Temperature resolution	0.1 °C/°F
Temperature relative accuracy	± 0.25 °C (± 0.45 °F)
Temperature repeatability	± 0.13 °C (± 0.23 °F)

Electrical specifications for ½ DIN and ¼ DIN versions

Power supply	100 to 240 V AC, or 20 to 30 V DC
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
Accuracy	±0.05 mA over 1 ~ 22 mA range
Measurement Error through analog outputs	< 0.5% of full scale
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)
Ambient temperature	–10 to 50 °C (14 to 122 °F)
Relative humidity	0 to 95% non-condensing
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

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

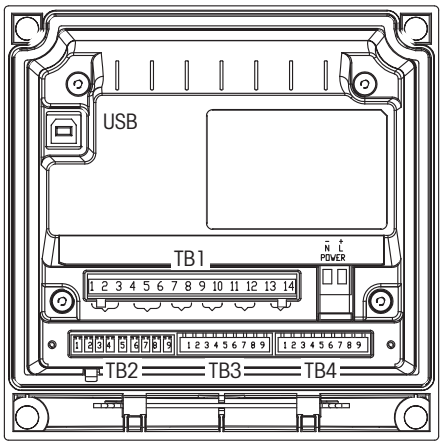
Mechanical specifications for ¼ DIN version

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)

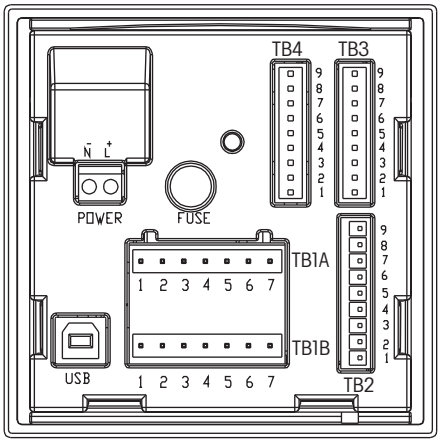
* H = Height, W = Width, D = Depth

Connector pin definitions for ½ DIN and ¼ DIN versions

½ DIN housing (Wall mount)



¼ DIN housing (Panel 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

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

M300 pH transmitter
(TB4 for 2-channel version only)

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

M300 oxygen transmitter
(TB4 for 2-channel version only)

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

M300 conductivity transmitter
(TB4 for 2-channel version only)

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

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
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 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
Pt100 adapter for pH (½ DIN and ¼ DIN)	52 500 215
Configuration software (½ DIN and ¼ DIN)	52 500 216

METTLER TOLEDO Market Organizations

Sales and Service:

Australia
Mettler-Toledo Ltd.
220 Turner Street
Port Melbourne
AUS-3207 Melbourne/VIC
Phone +61 31300 659 761
Fax +61 3 9645 3935
e-mail mtausprocess@mt.com

Austria
Mettler-Toledo Ges.m.b.H.
Südrandstraße 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 74 00
Fax +55 11 4166 74 01
e-mail sales@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 mt.zagreb@mt.com

Czech Republic
Mettler-Toledo spol 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 Sarl
30, Boulevard de Douaumont
BP 949
F-75829 Paris Cedex 17
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
4F Izumikan Sanbancho Bldg.
3-8 Sanbancho
Chiyoda-ku
JP-102-0075 Tokyo
Phone +81 3 3222 7103
Fax +81 3 3222 7118
e-mail helpdesk.ing.jp@mt.com

Malaysia
Mettler-Toledo (M) Sdn Bhd
Bangunan Electroscon Holding
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.
Pino No. 350, Col. Sta.
MA. Insurgentes, Col Atlampa
MX- 06430 México D.F.
Phone +52 55 55 47 57 00
Fax +52 55 55 41 22 28
e-mail mt.mexico@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 92 11
Fax +7 495 621 63 53
+7 495 621 78 68
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.
Bulharska 61
SK-82104 Bratislava
Phone +421 244 44 12 20
Fax +421 244 44 12 23
e-mail predaj@mt.com

Slovenia
Mettler-Toledo d.o.o.
Peske 12
SI-1236 Trzin
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 93 223 76 00
Fax +34 93 223 76 01
e-mail bcn.centralita@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.CustomerSupport@mt.com

USA/Canada
Mettler-Toledo Ingold, Inc.
36 Middlesex Turnpike
Bedford, MA 01730, USA
Phone +1 781 301 8800
Toll free +1 800 352 8763
Fax +1 781 271 0681
e-mail mtprous@mt.com
ingold@mt.com

ISO 9001 certified
ISO 14001 certified
CE

Management System
certified according to
ISO 9001 / ISO 14001

Subject to technical changes.
© Mettler-Toledo AG, Process Analytics
01/07 Printed in Switzerland. 52 121 312

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

www.mt.com/pro