

M300/M400/ M700/M800**Transmitters**

Reliable Measurement

Intelligent Diagnostics

Versatile and Tailorable

Easy Handling

ISM

Intelligent Transmitter Series

Tailor the Measurement to Your Needs

METTLER TOLEDO

METTLER TOLEDO

Commitment to Innovation and Quality

METTLER TOLEDO Group

Our company specializes in providing precision instrument equipment and related services to industrial customers. In 2010, METTLER TOLEDO generated revenues of US\$ 2 billion. The company's stock has been publicly traded on the New York Stock Exchange since 1997.

Worldwide presence

We have a worldwide distributor network and a workforce of more than 11,000 employees. We support our customers in industry by providing comprehensive solutions for each step of their manufacturing processes – from receipt of materials throughout all manufacturing stages, through to final packaging control, logistics and shipping.

METTLER TOLEDO instruments are used in research and development, manufacturing process control and for quality control. The pharmaceutical, biotech, chemical, food and beverage, and cosmetic industries are among the principal users.

Process Analytics Division

Within the METTLER TOLEDO Group, the Process Analytics Division concentrates on in-line analytical system solutions for industrial manufacturing processes. The Division consists of two business units, Ingold and Thornton, both internationally recognized leaders

in their respective markets and technologies.

Innovation and quality

METTLER TOLEDO Process Analytics enjoys an excellent reputation as an innovator, demonstrated by R&D expenditure above the industry average. Our innovative transmitter portfolio exemplifies our commitment to continuous improvement in order to meet customer requirements. Among our recent developments, transmitter compatibility with traditional analog and advanced digital sensors paves the way for future oriented production facilities.

Intelligent Sensor Management

Our unique Intelligent Sensor Management® (ISM) technology is improving production processes in factories and plants across the world. ISM greatly simplifies sensor handling and enhances process reliability, leading to reduced maintenance and fewer unplanned shutdowns.





Biopharmaceutical Industry

Continuous monitoring of critical process parameters is central to maintaining optimal growth conditions during the manufacture of biopharmaceuticals. Transmitters with ISM technology contribute to batch-to-batch consistency by providing simple and reliable determination of whether a sensor can be safely used for the next production run.



Chemical Industry

Due to their profound influence on product quality, process performance and safety, control of parameters such as pH, ORP, conductivity and oxygen is vital in today's chemical industry. METTLER TOLEDO's transmitters with ISM technology offer the ultimate in sensor "health" monitoring, allowing continuous, uncompromised measurement availability.

Food and Beverage Industry

Consistent product quality and superior plant efficiency are success factors in the highly competitive F&B environment. Being able to predict when sensor maintenance will need to be conducted and therefore prevent unscheduled downtime is of extreme value. This is precisely one function of METTLER TOLEDO's ISM concept which is integrated into ISM transmitters.

Petrochemical Industry

Not only in process control, but also in maintaining equipment integrity and preventing corrosion, in-line analysis has proven to be of utmost importance in petroleum processing. Our ISM transmitters with intelligent diagnostics are invaluable for predicting maintenance requirements.

Powerful Players

Select Your Access to the Process

METTLER TOLEDO provides tailorable transmitter solutions to meet the requirements of a wide range of applications. The transmitter series cover pH/ORP, oxygen, dissolved carbon dioxide and conductivity measurements. They are compatible with traditional analog and digital sensors with Intelligent Sensor Management (ISM).



	M300 (p. 6–7)	M400 (p. 8–9)	M400 2-wire (p. 10–11)	M700 (p. 12–13)	M800 (p. 14–15)
Channels	1 or 2	1	1	1 or 2	2 or 4
Parameters	pH/ORP, pH/pNa, DO, Cond(2-e/4-e)	pH/ORP, pH/pNa, ISFET, CO ₂ , DO, GPO, Cond	pH/ORP, pH/pNa, DO, GPO, Cond(2-e/4-e)	pH/ORP, ISFET, CO ₂ , DO, GPO, Cond	pH/ORP, ISFET, CO ₂ , DO, GPO, Cond(2-e/4-e)
Approvals	UL	ATEX Zone2, FM C11 Div2	NEPSI Ex, ATEX Zone 1, FM C11 Div1*	ATEX Zone 1, FM C11 Div2, CSA C11, Div1	FM C11 Div2*
Panel Cutout	¼-DIN, ½-DIN	½-DIN	½-DIN	144 × 194 mm	½-DIN
Mixed Mode	—	•	•	•	—
Communication	—	—	HART®	Profibus PA, FOUNDATION fieldbus™	—
Plug & Measure	•	•	•	•	•
Advanced ISM Functionality	—	•	•	•	•
iMonitor	—	—	—	—	•
EasyClean Compatibility	•	•	•	•	•

* pending



Multi-parameter

As only one model of transmitter is required for different parameters, the benefits of multi-parameter functionality are clear: greater flexibility, less complexity, and less training and inventory.



Mixed-mode input

The mixed-mode input accepts analog or ISM sensors. This feature offers a unique and smooth transition from analog to digital sensor technology and provides a future oriented investment in your facility.



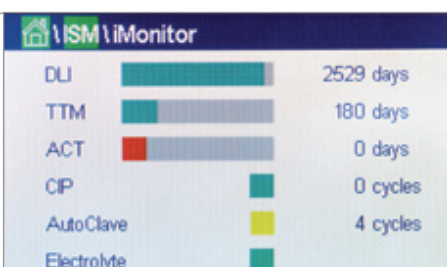
Plug and Measure™

The Plug and Measure feature significantly simplifies measurement point start up. Using iSense Asset Suite software, sensors can be accurately pre-calibrated in a workshop and stored for later use. When connected to the transmitter, calibration data are automatically uploaded and the system is ready to measure in an instant.



Advanced ISM functionality

ISM's predictive maintenance features provide you with sensor diagnostics data such as the Dynamic Lifetime Indicator, Adaptive Calibration Timer and Time To Maintenance. This information prevents unplanned shutdowns due to unforeseen sensor failure, resulting in increased process availability and reduced maintenance effort.



iMonitor

Using traffic light color coding, the unique iMonitor provides an at-a-glance overview of the "health" of all ISM sensors. iMonitor tells you when a sensor issue occurs and how to rectify it.

M300: Convenient and Easy to Use For Basic Process Applications

The M300 transmitter series combines robustness with ease of use. A wide model range with standard functionality makes instruments of this series the ideal choice for basic process applications. With the ISM option, configuration and commissioning become substantially easier.

The M300 is available as a single- or dual-channel unit. The dual-channel, multi-parameter solution offering a combination of pH/ORP, oxygen, and conductivity, makes the transmitter ideal for many applications.

A user-friendly Quick Setup routine, together with the harmonized menu structure for all parameters, facilitates navigation and ensures easy operation.

Simplified sensor handling with the Plug and Measure functionality of-

fers pre-calibration of ISM sensors in the lab and swift exchange in the field.

The PC-based configuration tool allows complete transmitter programming at a convenient location – even in an office.

Fast configuration



Quick Setup routine and unified menus across all parameters ensure fast configuration.

Simplified sensor handling



Plug and Measure feature offers pre-calibration of sensors and, in combination with the auto-recognition function, greatly simplifies sensor handling.

Wide model range



A choice of single- and dual-channel models in 1/4 DIN and 1/2 DIN sizes for analog sensors, or as a multi-parameter model for ISM sensors, means the right solution is available for a wide range of applications.



Measurement parameters

pH/ORP

Dissolved oxygen

Conductivity



Key technical data for the M300 transmitter series (single- and dual-channel)

ISM features	Plug and Measure
Power	AC (100–240 V) or DC (20–30 V)
Enclosure	IP 65
Approvals	UL (cULus) Type 4
Current outputs	4 × 0/4 to 20 mA (2 for single-channel model), galvanically isolated
Relays	6 (4 for single-channel model)
Digital inputs	2 (1 for single-channel model)
Multi-level password protection	yes
User interface	2 values + 2 lines, 24 characters, backlit display
Service interface	USB port



Visit for more information

www.mt.com/m300

M400: Versatile and Intelligent Advanced Process Control

Advanced predictive diagnostics technology is one of the main benefits of the M400 transmitter series. Along with its multi-parameter capabilities the M400 is the state-of-the-art transmitter for your most demanding applications.

The M400 is a single-channel, multi-parameter transmitter. The same unit can handle different parameters depending on the model chosen.

This transmitter series features advanced ISM functionality and provides real-time status information from the sensor for true predictive maintenance.

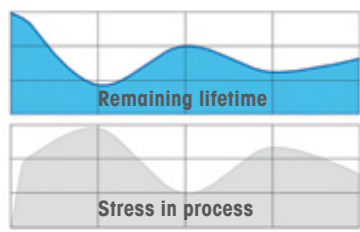
- The Dynamic Lifetime Indicator (DLI) tells you when the sensor will need to be replaced
- The Adaptive Calibration Timer (ACT) monitors the time to next calibration
- Time to Maintenance (TTM) indicates when maintenance will next be required

The M400's unique mixed-mode input allows the connection of analog or innovative ISM sensors, smoothing the transition from analog to digital sensor technology.

Plug and Measure functionality means measurement point start up is fast and error free.

Predictive maintenance

DLI, TTM, ACT



With tools such as the DLI, TTM and ACT, ISM technology on the M400 offers true predictive maintenance, resulting in fewer unscheduled shutdowns.

Future oriented investment



The mixed-mode input support a fluid transition from conventional analog to advanced, digital ISM technology.

Easy handling of measuring loops



Fast commissioning and easy handling of measuring systems thanks to ISM's sensor calibration in the lab and Plug and Measure features.



Measurement parameters

pH/ORP

Dissolved oxygen

Gas phase oxygen

Conductivity

Dissolved carbon dioxide



ISM



Key technical data for the M400 transmitter series

ISM features	Plug and Measure, advanced diagnostics tools
Power	AC (100–240 V) or DC (20–30 V)
Enclosure	IP 65
Approvals	Type 1, Type 2, Type 3: ATEX Zone2, cFMus CI1 Div2 Type 1 Cond Ind: ATEX Zone2*, FMus CI1 Div2*
Current outputs	4×0/4 to 20 mA, galvanically isolated
Relays	6
Digital inputs	2
Analog inputs	1 (for pressure compensation in combination with ISM O ₂ sensor)
Multi-level password protection	yes
User interface	2 values + 2 lines, 24 characters, backlit display
Service interface	USB port

* pending



Visit for more information

www.mt.com/m400

M400 2-Wire: Reliable and Intelligent For Hazardous Area Applications

The M400 2-wire, single-channel, multi-parameter transmitter provides highest reliability and process safety in hazardous area environments. Advanced sensor diagnostics tools available over HART® result in reduced operating costs and help improve productivity.

With its rugged design and approvals for hazardous area use, the M400 2-wire transmitter series provides operating assurance even in the most challenging environments. In combination with METTLER TOLEDO's advanced ISM technology, this means the M400 2-wire unit offers greater process reliability and safety in the chemical and pharmaceutical industries.

Measurement data and sensor diagnostics tools such as the Dynamic Lifetime Indicator, Adaptive Calibration Timer and Time To Maintenance can be output to control systems over HART or the transmitter's second analog output.

This smart communication capability means system integration with the M400 is easily achieved, enabling more efficient maintenance

and preventing unplanned shutdowns due to unforeseen sensor failure.

ISM's Plug and Measure feature minimizes the risk of installation troubles and simplifies sensor handling.

The unique mixed-mode input allows the connection of analog or innovative ISM sensors.

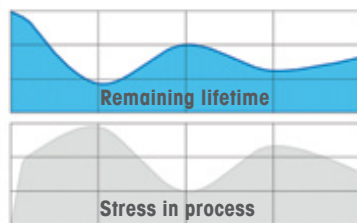
Outstanding reliability and safety



Thanks to the rugged design and approvals for use in hazardous areas the M400 2-wire transmitter is the best choice for operational reliability and process safety.

Predictive maintenance

DLI, TTM, ACT



ISM technology enables predictive maintenance and avoids unscheduled plant shutdowns. Advanced sensor diagnostics tools are available over HART or via the transmitter's second analog output.

Easy handling of measuring loops



The M400 provides fast commissioning and easy handling of the measuring loop thanks to ISM's Plug and Measure feature and sensor diagnostics.



Measurement parameters

pH/ORP

Dissolved oxygen

Gas phase oxygen

Conductivity



ISM
HART
COMMUNICATION PROTOCOL



IECE_x



Key technical data for the M400 2-wire transmitter series

ISM features	Plug and Measure, advanced diagnostics tools
Supply voltage	14–30 VDC
Housing material	Die cast aluminum
Enclosure	IP 66, NEMA 4X
Approvals	NEPSI Ex, ATEX/IECE _x Zone1, cFMus CI1 Div1*
Current outputs	2 × 4 to 20 mA (loop powered), galvanically isolated
Digital outputs	2 × open collectors
Analog inputs	1 × 4 to 20 mA (for pressure compensation)
Digital inputs	2, galvanically isolated
Communication	HART
Multi-level password protection	yes
User interface	2 values + 2 lines, 24 characters, backlit display

* pending



Visit for more information

www.mt.com/m400-2wire

M700: Modular and Adaptive Seamless Integration

Flexible use of plug-in modules means the M700 transmitter allows combined measurements from analog and digital ISM sensors, as well as later expansion or modifications. Fieldbus communication capabilities ensure seamless integration of measurement data and sensor diagnostics into process control systems.

Up to three plug-in modules for process measurement and communication can be connected in the M700's robust stainless steel housing. Thanks to this flexible concept the M700 can be easily adapted to new application requirements.

PROFIBUS® PA, FOUNDATION fieldbus™ and extended output mod-

ules fully integrate the M700 into all major control systems. Augmented data storage is possible with the SMARTMEDIA™ card capability which allows transfer of data to a personal computer.

The polished stainless steel version is designed for hygienic applications in the pharmaceutical, biotechnology and food and beverage

sectors. A second version in a coated stainless steel enclosure is designed for applications in harsh environments, such as in the chemical, and pulp and paper industries.

Seamless integration of sensor diagnostics



M700 transmitters with ISM technology allow seamless integration of on-line sensor diagnostics into process control systems over Profibus PA and FOUNDATION fieldbus.

Cost savings through modularity



Dual-channel measurement reduces total costs per measuring loop, for example in fermentation processes (pH/DO) or a redundant measurement in chemical processes (pH/pH).

Application oriented design



Different versions with polished and coated stainless steel enclosure designs cover different application environments.



Measurement parameters

pH/ORP

Dissolved oxygen

Gas phase oxygen

Conductivity

Dissolved carbon dioxide

ISM

PROFI
PROCESS FIELD BUS

Fieldbus
FOUNDATION

CSA

Ex

FM
APPROVED

Key technical data for the M700 transmitter series

ISM features	Plug and Measure, advanced diagnostics tools
Power	AC (100–240 V) or AC/DC (24V – 15 %, + 10 %)
Housing material	Stainless steel (polished or coated)
Enclosure	IP 65
Approvals	ATEX Zone1, FM Cl1 Div2, CSA Cl1 Div1
Current outputs	2 × 0/4 to 20 mA, galvanically isolated
Relays	4
Analog inputs	1 × 0/4 to 20 mA (for pressure compensation)
Digital inputs	2, galvanically isolated
Communication	Profibus PA, FOUNDATION fieldbus
Multi-level password protection	yes
User interface	Monochrome graphic backlit display, resolution 240 × 160 pixels



Visit for more information

www.mt.com/m700

M800: Powerful and Flexible

Touch the Future

For the highest installation flexibility, operational safety and complete control at your fingertips look no further than the M800 multi-parameter, multi-channel transmitter platform. Intuitive touchscreen operation saves time, and predictive maintenance ensures reliability and reduced maintenance.

The advantages of the M800 multi-parameter, multi-channel transmitter are clear: high flexibility, less complexity, and reduced training and inventory.

Models for two and four channels lower the cost per measurement point by providing multiple measurements from a single transmitter.

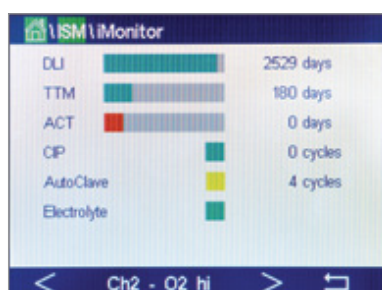
The large, button-free front panel and simple menu structure simplify use and result in time savings in all transmitter configuration and sensor maintenance tasks.

iMonitor is an “at a glance” sensor diagnostics ISM utility. It anticipates maintenance requirements based on real-time sensor performance information and tells you how to

bring a sensor back to peak efficiency before measurement is affected.

With the M800 the same transmitter platform can be confidently deployed across a diverse range of applications.

Intelligent diagnostics utility



With its unique iMonitor diagnostics utility, the M800 predicts sensor maintenance and details corrective actions – before issues arise.

Intuitive touchscreen control



Touchscreen display provides simple, convenient operation, and any menu function can be reached in only three touches. Traffic light color coding means process or sensor issues are visible from a distance.

Safer operation



Using one transmitter platform across all measurement points reduces training for operators and engineers, and lowers the risk of human error.



Measurement parameters

pH/ORP

Dissolved oxygen

Gas phase oxygen

Conductivity

Dissolved carbon dioxide



ISM

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PENDING

Key technical data for the M800 transmitter series

ISM features	Plug and Measure, advanced diagnostics tools, iMonitor
Power	AC (100–240 V) or DC (20–30 V)
Enclosure	IP 66
Approvals	FM Cl1 Div2*
Current outputs	8 × 0/4 to 20 mA, galvanically isolated
Relays	8
Analog inputs	1 × 4 to 20 mA, galvanically isolated (for pressure compensation)
Digital inputs	6 (5 for dual-channel model)
Multi-level password protection	yes
User interface	Color touchscreen, 5.7", 320 × 240 pixels, 256 colors
Service interface	USB port

* pending



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www.mt.com/m800

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Intelligent Sensor Management

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