



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEX NEP 18.0007X** Page 1 of 4 [Certificate history:](#)
Issue 0 (2018-08-25)

Status: **Current** Issue No: 1

Date of Issue: 2019-10-28

Applicant: **Metter-Toledo Instruments (Shanghai) Co., Ltd.**
No. 589, Guiping Road, Shanghai, 200233
China

Equipment: **M400 multi-parameter transmitter typed M400*****

Optional accessory:

Type of Protection: **Intrinsic safety "ia" "ib"**

Marking: Ex ib[ia Ga] II C T4 Gb
Ex ia II C T4 Ga
Ex ib[ia Da] III C T80°C Db IP66
Ex ia III C T80°C Da IP66
Ambient temperature:
(-20~+60)°C for gas atmosphere
(-20~+57)°C for dust atmosphere

Approved for issue on behalf of the IECEx
Certification Body:

Xu Jianping

Position:

Managing Director

Signature:
(for printed version)

Date:

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Certificate issued by:

**Shanghai Inspection and Testing Institute of Instruments
and Automatic Systems Co., Ltd. (SITI/IAS)/
National Supervision and Inspection Center for Explosion
Protection and Safety of Instrumentation (NEPSI)
103 Cao Bao Road
Shanghai 200233
China**



SITI/IAS
Worldwide Access



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Manufacturer: **Mettler-Toledo Instruments (Shanghai) Co., Ltd.**
No.589, GuiPing Road, Shanghai, 200233
China

Additional manufacturing locations: **Mettler-Toledo Thornton Inc.**
900 Middlesex Turnpike, Building 8
01821 Billerica
United States of America

Mettler-Toledo AG
Process Analytics
Im Hackacker 15
8902 Urdorf
Switzerland

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

[CN/NEP/ExTR18.0007/00](#) [CN/NEP/ExTR18.0007/01](#)

Quality Assessment Reports:

[CH/SEV/QAR12.0004/06](#) [CN/NEP/QAR18.0003/01](#) [NL/DEK/QAR12.0038/06](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Intrinsically safety multi-parameter transmitter is used to collect physical signals such as pH, electrical conductivity (resistivity), dissolved oxygen transmitters, temperature etc., and convert those into a standard 4 - 20mA electrical signal, or FF/PA communication signal. It is powered by 2-wire and can be connected to analog sensor or digital sensor to delivers 4-20mA output signal or FF/PA communication signal, representing pH, conductivity (resistivity), inductive conductivity, dissolved oxygen and 4-20mA auxiliary signals (such as temperature) etc.. There are optional 0/4-20mA input voltage signal, digital input signals, digital output signals for alarm and control. By the modular-structure, the transmitter can not only accurately measure physical parameters, but also provide certain amounts derived parameters from these measurements.

Intrinsically safety multi-parameter transmitter consists of aluminium alloy made housing (back cover and front cover), with three PCBs installed inside. All boards are protected by an additional middle cover. On the front cover, there are one LCD display and five membrane buttons. 32 Terminals for HART or 22 terminals for FF/PA are designed for external connection. The function and safe parameters are listed as following. On the back cover, there are five cable inlets. Only cable gland and blanking plug, complying with IEC 60079-0 and IEC 60079-11 could be used.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. When installation in explosive dust atmosphere.

1.1 Cable gland or blanking plug to IEC 60079-0:2017 and IEC 60079-11:2011 with marking Ex ia III C IP66 should be adopted.

1.2 The overlay switch of multi-parameter transmitter shall be protected from light.

1.3 Avoid high risk of mechanical danger on the overlay switch.

2. Observe the warning: potential electrostatic charging hazard- see instructions, avoid ignition hazard due to impact or friction for Ga application.



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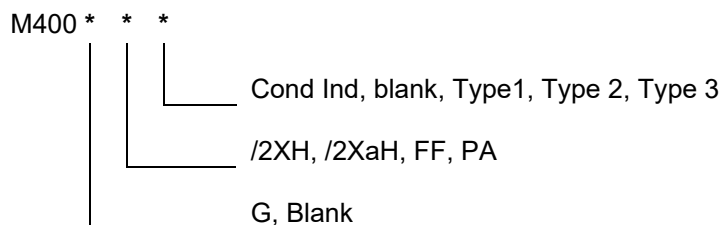
DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

1. Extend type code for software configuration.
2. BOM and PCB change, not affecting the type of protection.
3. Release new nameplate drawing.
4. This new issue of the certificate is issued also to show that the ExCB responsible for the QAR has now been changed.

Annex:

[Annex to IECEx NEP 18.0007X_1.pdf](#)

1. Equipment model:



2. Safe parameters for M400 multi-parameter transmitter are listed in following Tables.

Table 1 HART transmitter (M400*/2XH*, M400*/2XaH*)

| Level of protection | | Terminals | Function | Safe parameters | | | | | |
|--|--|----------------|-------------------------------|--|---|--|--|--|--|
| Ex ia II C T4 Ga Ex ia III C T80°C Da IP66 | Ex ib[ia Ga] II C T4 Gb Ex ib[ia Da] III C T80°C Db IP66 | | | U _i | I _i | P _i | L _i | C _i | |
| ia | ib | 10, 11 | Aout1 | U _i =30V | I _i =100mA | P _i =0.8W | L _i ≈0 | C _i =15nF | |
| ia | ib | 12, 13 | Aout2 | U _i =30V | I _i =100mA | P _i =0.8W | L _i ≈0 | C _i =15nF | |
| ia | ib | 1, 2; 3, 4; | Digital Input; | U _i =30V | I _i =100mA | P _i =0.8W | L _i ≈0 | C _i ≈0 | |
| ia | ib | 6, 7; 8, 9; | OC Output; | U _i =30V | I _i =100mA | P _i =0.8W | L _i ≈0 | C _i ≈0 | |
| ia | ib | P, Q | Analog Input | U _i =30V | I _i =100mA | P _i =0.8W | L _i ≈0 | C _i =15nF | |
| ia | ia | N, O | RS485 Sensor | U _i =30V U _o =5.88V | I _i =100mA I _o =54mA | P _i =0.8W P _o =80mW | L _i ≈0 L _o =1mH | C _i =0.7μF C _o =1.9μF | |
| ia | ia | A, E, G | pH Sensor | U _o =5.88V | I _o =1.3mA | P _o =1.9mW | L _o =5mH | C _o =2.1μF | |
| ia | ia | B, A, E, G | Conductivity Sensor | U _o =5.88V | I _o =29mA | P _o =43mW | L _o =1mH | C _o =2.5μF | |
| ia | ia | K, J, I | Temperature Sensor | U _o =5.88V | I _o =5.4mA | P _o =8mW | L _o =5mH | C _o =2μF | |
| ia | ia | H, B, D | Dissolved oxygen sensor | U _o =5.88V | I _o =29mA | P _o =43mW | L _o =1mH | C _o =2.5μF | |
| ia | ia | L | One-wire Sensor | U _o =5.88V | I _o =22mA | P _o =32mW | L _o =1mH | C _o =2.8μF | |

Table 2 HART transmitter (M400/2XH* Cond Ind, M400/2XaH*Cond Ind)

Level of protection

| Ex ia IIC T4 Ga Ex ia IIIC T80°C Da IP66 | Ex ib[ia Ga] IIC T4 Gb Ex ib[ia Da] IIIC T80°C Db IP66 | Terminals | Function | Safe parameters | | | | | |
|--|--|----------------|-------------------------------------|-----------------|--------------|-------------|-----------------|-----------------|--|
| ia | ib | 10, 11 | Aout1 | $U_i=30V$ | $I_i=100mA$ | $P_i=0.8W$ | $L_i \approx 0$ | $C_i=15nF$ | |
| ia | ib | 12, 13 | Aout2 | $U_i=30V$ | $I_i=100mA$ | $P_i=0.8W$ | $L_i \approx 0$ | $C_i=15nF$ | |
| ia | ib | 1, 2; 3, 4; | Digital Input; | $U_i=30V$ | $I_i=100mA$ | $P_i=0.8W$ | $L_i \approx 0$ | $C_i \approx 0$ | |
| ia | ib | 6, 7; 8, 9; | OC Output; | $U_i=30V$ | $I_i=100mA$ | $P_i=0.8W$ | $L_i \approx 0$ | $C_i \approx 0$ | |
| ia | ia | D, E,F,G,H | Inductive Conductivity Sensor | $U_o=5.36V$ | $I_o=17.2mA$ | $P_o=23mW$ | $L_o=1mH$ | $C_o=3.2\mu F$ | |
| ia | ia | K, J, I | Temperature Sensor | $U_o=5.88V$ | $I_o=4.9mA$ | $P_o=6.6mW$ | $L_o=5mH$ | $C_o=2\mu F$ | |

Table 3 FF/PA transmitter (M400*FF, M400*PA)

| Level of protection | | Terminal. | Function | Safe parameters | | | | | |
|---------------------|-------------------------|------------|--------------------|-----------------------|-----------------------|-----------------------|---------------------|-----------------------|--|
| Ex ia II C T4 Ga | Ex ib[ia Ga] II C T4 Gb | | | U _i | I _i | P _i | L _i | C _i | |
| IP66 | Db IP66 | | | | | | | | |
| ia | ib | 10, 11 | Power (FF/PA) | U _i =17.5V | I _i =380mA | P _i =5.32W | L _i ≈0 | C _i =3nF | |
| | | | FISCO field device | | | | | | |
| | | | Linear power | U _i =24V | I _i =200mA | P _i =1.2W | L _i ≈0 | C _i =3nF | |
| ia | ib | P, Q | Analog Input | U _i =24V | I _i =100mA | P _i =0.8W | L _i =0 | C _i =15nF | |
| ia | ia | N, O | RS485 Sensor | U _o =5.88V | I _o =54mA | P _o =79mW | L _o =1mH | C _o =1.9μF | |
| | | | | U _i =24V | I _i =100mA | P _i =0.8W | L _i =0 | C _i =0.7μF | |
| ia | ia | L, M | One-wire Sensor | U _o =5.88V | I _o =22mA | P _o =32mW | L _o =1mH | C _o =2.8μF | |
| ia | ia | I, J, K | Temperature Sensor | U _o =5.88V | I _o =5.4mA | P _o =8mW | L _o =5mH | C _o =2μF | |
| ia | ia | B, C, D, H | Disolved | U _o =5.88V | I _o =29mA | P _o =43mW | L _o =1mH | C _o =2.5μF | |
| | | | Oxygen Sensor | | | | | | |
| ia | ia | A, B, E, G | Conductivity | U _o =5.88V | I _o =29mA | P _o =43mW | L _o =1mH | C _o =2.5μF | |
| | | | Sensor | | | | | | |
| ia | ia | A, E, G | pH Sensor | U _o =5.88V | I _o =1.3mA | P _o =1.9mW | L _o =5mH | C _o =2.1μF | |

Table 4 FF/PA transmitter (M400* FF Cond Ind, M400*PA Cond Ind)

| Level of protection | | Terminal. | Function | Safe parameters | | | | | |
|---------------------|-------------------------|---------------|---------------------|-----------------------|------------------------|-----------------------|---------------------|-----------------------|--|
| Ex ia II C T4 Ga | Ex ib[ia Ga] II C T4 Gb | | | U _i | I _i | P _i | L _i | C _i | |
| IP66 | Db IP66 | | | | | | | | |
| ia | ib | 10, 11 | Power (FF/PA) | U _i =17.5V | I _i =380mA | P _i =5.32W | L _i ≈0 | C _i =3nF | |
| | | | FISCO field device | | | | | | |
| | | | Linear power | U _i =24V | I _i =200mA | P _i =1.2W | L _i ≈0 | C _i =3nF | |
| ia | ia | D, E, F, G, H | Inductive | U _o =5.36V | I _o =17.2mA | P _o =23mW | L _o =1mH | C _o =3.2μF | |
| | | | Conductivity Sensor | | | | | | |
| ia | ia | K, J, I | Temperature Sensor | U _o =5.88V | I _o =4.9mA | P _o =6.6mW | L _o =5mH | C _o =2μF | |