



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 CSA 23.0028X** Page 1 of 3 [Certificate history:](#)

Status: **Current** Issue No: 0

Date of Issue: 2023-06-23

Applicant: **METTLER-TOLEDO GmbH**
Process Analytics
Im Hackacker 15
8902 Urdorf
Switzerland

Equipment: **M400 2-Wire G2 Series Multi-parameter Transmitter**

Optional accessory:

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

Marking: Ex ia IIC T4 Ga
Ex ia IIIC T80°C Db
Ex ib [ia Ga] IIC T4 Gb
Ex ib [ia Da] IIIC T80°C Db
Ta = -20°C to 60°C
IP66

Approved for issue on behalf of the IECEx
Certification Body:

Dave Magee

Position:

Senior Director of Operations, Toronto

Signature:
(for printed version)

Date:
(for printed version)

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2. This certificate is not transferable and remains the property of the issuing body.
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Certificate issued by:

CSA Group
178 Rexdale Boulevard
Toronto, Ontario M9W 1R3
Canada





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Manufacturer: **METTLER-TOLEDO GmbH**
Process Analytics
Im Hackacker 15
8902 Urdorf
Switzerland

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

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 Report:

[CA/CSA/ExTR23.0025/00](#)

Quality Assessment Reports:

[CH/SEV/QAR12.0004/08](#)

[CN/NEP/QAR18.0003/03](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Intrinsically safe M400 2-Wire G2 Series Multi-parameter Transmitter (hereinafter, transmitter) is used in hazardous areas, collecting physical signals such as pH, electrical conductivity (resistivity), dissolved oxygen, process temperature etc., it converts those signals into a standard 4 - 20mA HART electrical signal. The transmitter is suitable for Zone 0, Zone 1 and Zone 21.

The transmitter is powered by 2-wire and can be connected to an analog sensor or digital sensor to deliver 4-20mA HART (including main and auxiliary 4-20mA) output signal, representing pH, conductivity (resistivity), dissolved oxygen and process temperature etc.. There are optional 0/4-20mA input, digital input signals, digital output signals for alarm and control.

The transmitter consists of aluminum alloy housing (back cover and front cover), with three PCBs installed inside and are protected by an additional plastic cover. On the front cover, there is one LCD display and four membrane buttons. 35 terminals are designed for external connection.

The transmitter has been tested in accordance with the test of enclosure section of IEC 60079-0:2017 and meets the requirements of IP66.

The M400 is available in different versions. Model designations of the "M400 2aH Type b c d" are as follows:

a = none: model for Zone 2 and Class I, Division 2

a = X: model for Zone 0 or 1 and Zone 21, Class I/II/III, Division 1

b = 2, 3 or any numbers: indicating firmware differences only for different sensors

c = none: supporting both analog and digital (ISM) sensors

c = ISM: supporting digital (ISM) sensors only

d = any alphanumeric code and strings that is only with adjustment on firmware compared with the above models

Refer to the Annexe for additional information.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. Install only as per installation instruction.
2. Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with a damp cloth.
3. All cable entry holes shall be fitted with either certified cable glands or blanking elements with degree of protection IP66 in compliance with the test of enclosure section of IEC 60079-0.
4. The display has not been tested for resistance to ultraviolet light. The display shall be protected from direct light (e.g. from sunlight or luminaires).
5. Resistance to impact was tested corresponding to the low risk of mechanical danger. The equipment has to be protected against strong impacts.
6. The enclosure is manufactured from aluminium alloy. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered when the transmitter is installed in Zone 0 locations for Group II level of protection Ga.

Annex:

[IECEX CSA 23.0028X Annexe Issue 0.pdf](#)

Annexe to: IECEx CSA 23.0028X

Applicant: METTLER-TOLEDO GmbH

Apparatus: M400 2-Wire G2 Series Multi-parameter Transmitter



Equipment continued

The entity parameters are listed in Table 1:

Table 1 Entity parameters of terminals

Terminal No.	Function	Entity parameters				
1, 2, 3, 4	ES485 Easy clean	$U_i=7.2V$	$I_i=20mA$	$P_i=0.15W$	$L_i=0$	$C_i=0.3\mu F$
5, 6	Digital Input 1	$U_i=30V$	$I_i=100mA$	$P_i=0.8W$	$L_i=0$	$C_i=0$
7, 8	Digital Input 2	$U_i=30V$	$I_i=100mA$	$P_i=0.8W$	$L_i=0$	$C_i=0$
9, 10	OC1 Output	$U_i=30V$	$I_i=100mA$	$P_i=0.8W$	$L_i=0$	$C_i=0$
11, 12	OC2 Output	$U_i=30V$	$I_i=100mA$	$P_i=0.8W$	$L_i=0$	$C_i=0$
13, 14	Aout1 (HART)	$U_i=30V$	$I_i=100mA$	$P_i=0.8W$	$L_i=0$	$C_i=15nF$
15, 16	Aout2	$U_i=30V$	$I_i=100mA$	$P_i=0.8W$	$L_i=0$	$C_i=15nF$
P, Q	Analog Input	$U_i=30V$	$I_i=100mA$	$P_i=0.8W$	$L_i=0$	$C_i=15nF$
N, O	RS485 Sensor	$U_o=5.88V$	$I_o=13.5mA$	$P_o=19.9mW$	$L_o=1mH$	$C_o=3.3\mu F$
		$U_i=10V$	$I_i=100mA$	$P_i=500mW$	$L_i=0mH$	$C_i=0\mu F$
L, M	One-wire Sensor	$U_o=5.88V$	$I_o=21.3mA$	$P_o=31.3mW$	$L_o=1mH$	$C_o=2.8\mu F$
J, K wrt I	Temperature Sensor	$U_o=5.88V$	$I_o=5.4mA$	$P_o=8.0mW$	$L_o=5mH$	$C_o=2\mu F$
B, C, D, H	Dissolved Oxygen Sensor	$U_o=11.24V$	$I_o=2.3mA$	$P_o=6.3mW$	$L_o=1mH$	$C_o=0.84\mu F$
A, B, E wrt G	Conductivity Sensor	$U_o=5.88V$	$I_o=25.7mA$	$P_o=37.8mW$	$L_o=1mH$	$C_o=2.5\mu F$
A, E wrt G	pH Sensor	$U_o=5.88V$	$I_o=1.3mA$	$P_o=1.9mW$	$L_o=5mH$	$C_o=2.1\mu F$

Note: Parameters for terminal "A" to "K" are for analog sensors, thus they are not applicable for product models named "M400 2aH Type b ISM d".

Conditions of Manufacture

- i. At the conclusion of manufacture, each complete sample of transformer shall be subjected to a routine dielectric strength test for a minimum of 60 s in accordance with IEC 60079-11:2011 clause 11.2 as follows:
 - 500 Vac shall be applied between primary to secondary winding
 - 500 Vac shall be applied between all windings and the coreAlternatively, 1.2 times the test voltage shall be applied for a minimum of 1 s. The maximum current shall not exceed 5 mA and there shall be no evidence of insulation breakdown.
- ii. The product incorporates previously certified Ex components listed as below. It is therefore the responsibility of Mettler-Toledo to continually monitor the status of the certifications associated with

Date: 23 June 2023

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Annexe to: IECEx CSA 23.0028X

Applicant: METTLER-TOLEDO GmbH

Apparatus: M400 2-Wire G2 Series Multi-parameter Transmitter



these devices. Mettler-Toledo shall inform CSA of any modifications to the device that may impinge upon the explosion safety design of the product.

Item	Manufacturers and Model Number	IECEx Certificate
Digital isolators	Texas Instrument, Inc ISO7021FDR	IECEx CSA 20.0012U Issue 0
Digital isolators	Texas Instrument, Inc ISO7041FDBQR	IECEx CSA 19.0040U Issue 0