



UNITED KINGDOM CONFORMITY ASSESSMENT

1 **UK TYPE EXAMINATION CERTIFICATE**

2 Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

3 Certificate Number: **CSAE 23UKEX1096X** Issue: **0**
4 Product: **M400 2-Wire G2 Series Multi-parameter Transmitter**
5 Manufacturer: **METTLER-TOLEDO GmbH**
6 Address: **Process Analytics
Im Hackacker 15
8902 Urdorf
Switzerland**

7 This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 CSA Group Testing UK Limited, Approved Body number 0518, in accordance with Regulation 42 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations. The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 EN 60079-11:2012

Except in respect of those requirements listed at Section 16 of the schedule to this certificate. The above standards may not appear on the UKAS Scope of Accreditation, but have been added through flexible scope of accreditation, which is available on request.

10 If the sign 'X' is placed after the certificate number, it indicates that the product is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This UK TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of this product shall be in accordance with Regulation 41 and include the following:



II 1G
II 2D
II 2(1)G
II 2(1)D
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

Name: M Halliwell
Title: Director of Operations



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Certificate No. CSAE 23UKEX1096X

This certificate and its schedules may only be reproduced in its entirety and without change

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13 DESCRIPTION OF PRODUCT

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 EN IEC 60079-0:2018 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

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 =0.3μF
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 U _i =10V	I _o =13.5mA I _i =100mA	P _o =19.9mW P _i =500mW	L _o =1mH L _i =0mH	C _o =3.3μF C _i =0μF
L, M	One-wire Sensor	U _o =5.88V	I _o =21.3mA	P _o =31.3mW	L _o =1mH	C _o =2.8μF
J, K wrt I	Temperature Sensor	U _o =5.88V	I _o =5.4mA	P _o =8.0mW	L _o =5mH	C _o =2μF
B, C, D, H	Dissolved Oxygen Sensor	U _o =11.24V	I _o =2.3mA	P _o =6.3mW	L _o =1mH	C _o =0.84μF
A, B, E wrt G	Conductivity Sensor	U _o =5.88V	I _o =25.7mA	P _o =37.8mW	L _o =1mH	C _o =2.5μF
A, E wrt G	pH Sensor	U _o =5.88V	I _o =1.3mA	P _o =1.9mW	L _o =5mH	C _o =2.1μF

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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”.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Reports and Certificate History

Issue	Date	Report number	Comment
0	23 June 2023	R80119115A	The release of the prime certificate.

15 SPECIFIC CONDITIONS OF USE (denoted by X after the certificate number)

15.1 Install only as per installation instruction.

15.2 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.

15.3 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 EN IEC 60079-0.

15.4 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).

15.5 Resistance to impact was tested corresponding to the low risk of mechanical danger. The equipment has to be protected against strong impacts.

15.6 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 being installed in Zone 0 locations for Group II level of protection Ga.

16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS (REGULATIONS SCHEDULE 1)

In addition to the Essential Health and Safety Requirements covered by the standards listed in Section 9, all other requirements are demonstrated in the relevant reports.

17 PRODUCTION CONTROL

17.1 Holders of this certificate are required to comply with production control requirements defined in Schedule 3A, as applicable, and CSA Group Testing UK Regulations for Certificate Holders

17.2 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 EN 60079-11:2012 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 core

Alternatively, 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.



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17.3 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 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	ATEX Certificate
Digital isolators	Texas Instrument, Inc ISO7021FDR	CSANe 20ATEX2090U Issue 0
Digital isolators	Texas Instrument, Inc ISO7041FDBQR	CSANe 20ATEX2003U Issue 0

