



1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **CSANe 23ATEX1160X** Issue: **0**

4 Equipment: **Gxxx Series Mass Flow Sensor**

5 Applicant: **Micro Motion Incorporated**

6 Address: 7070 Winchester Cir
Boulder, Colorado 80301
United States

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

8 CSA Group Netherlands B.V., notified body number 2813 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

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, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN IEC 60079-0:2018 EN 60079-11:2012 EN 60079-26:2015

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

11 This EU-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

Type G*M***** with J-box Configuration 1**



II 1/2G
Ex ib IIC T* Ga/Gb
Ta = -35°C ≤ TA ≤ +80°C

Refer to section 13 for additional marking and information.



Signed: Michelle Halliwell

Title: Director of Operations

Project Number 80147613

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SCHEDULE

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13 DESCRIPTION OF EQUIPMENT

Type G***M***** with J-box Configuration 1 additional information

* T-code based on the max ambient and process temperatures:

T Rating	max Ambient (°C)	max Process (°C)
T6	47	47
T5	62	62
T4	80	97
T3	80	150

Process Temperature Range = $-35^{\circ}\text{C} \leq T_p \leq +150^{\circ}\text{C}$

IP rating: IP64

** Entity parameters:

- Drive coil circuit:
 $U_i = 15.45\text{ V}$; $I_i = 2.46\text{ A}$; $P_i = 2.73\text{ W}$; $C_i = 0\text{ F}$; $L_i = 18.8\text{ mH}$; $L_i/R_i = 75.96\text{ uH}/\Omega$
- Pick off coil circuit:
 $U_i = 21.13\text{ V}$; $I_i = 25\text{ mA}$; $P_i = 45\text{ mW}$; $C_i = 0\text{ F}$; $L_i = 18.8\text{ mH}$
- RTD circuit:
 $U_i = 21.13\text{ V}$; $I_i = 26.17\text{ mA}$; $P_i = 112.69\text{ mW}$; $C_i = 0\text{ F}$; $L_i = 0\text{ H}$

Type G***M***** with Type 800 Core Processor Configuration 2



II 1/2G

Ex ib IIC T* Ga/Gb

$T_a = -40^{\circ}\text{C} \leq T_A \leq +60^{\circ}\text{C}$

* T-code based on the max ambient and process temperatures:

T Rating	max Ambient (°C)	max Process (°C)
T5	60	62
T4	60	97
T3	60	150

Process Temperature Range = $-65^{\circ}\text{C} \leq T_p \leq +150^{\circ}\text{C}$

IP rating: IP6X

** Entity parameters:

- Drive coil circuit:
 $U_i = 15.45\text{ V}$; $I_i = 2.46\text{ A}$; $P_i = 2.73\text{ W}$; $C_i = 0\text{ F}$; $L_i = 18.8\text{ mH}$; $L_i/R_i = 75.96\text{ uH}/\Omega$
- Pick off coil circuit:
 $U_i = 21.13\text{ V}$; $I_i = 25\text{ mA}$; $P_i = 45\text{ mW}$; $C_i = 0\text{ F}$; $L_i = 18.8\text{ mH}$
- RTD circuit:
 $U_i = 21.13\text{ V}$; $I_i = 26.17\text{ mA}$; $P_i = 112.69\text{ mW}$; $C_i = 0\text{ F}$; $L_i = 0\text{ H}$

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Type G*M***** with integral Transmitters Configuration 3**



II 1GD, II 1/2G
Ex ia IIC T* Ga
Ex ib IIC T* Ga/Gb
Ex ia IIIC T*°C Da
Ta = -65°C ≤ TA ≤ +80°C

* T-code based on the max ambient and process temperatures:

T Rating	max ambient (°C)	max fluid (°C)
T6	47	47
T5	62	62
T4	80	97
T3	80	150

Process Temperature Range = -65°C ≤ TP ≤ +150°C

IP rating: IP64

** Entity parameters for "Ex ia" or "Ex ic":

- Drive coil circuit:
Ui = 15.45 V; Ii = 2.46 A; Pi = 2.73 W; Ci = 0 F ; Li = 18.8 mH; Li/Ri =75.96 uH/Ω
- Pick off coil circuit:
Ui = 21.13 V; Ii = 25 mA; Pi = 45 mW; Ci = 0 F ; Li = 18.8 mH
- RTD circuit:
Ui = 21.13 V; Ii = 26.17 mA; Pi = 112.69 mW; Ci = 0 F ; Li = 0 H

The Gxxx series sensor are used only in combination with a variety of separately assessed Emerson transmitters for flow measurement within pressurized liquid and gas applications. The Gxxx series sensors are provided in various physical sizes to accommodate the process media, pressure, and the range of intended flow, which consist of 6 different sensor line sizes/models:

- G025M Micro Motion G-Series Coriolis Meter, 1/4 Inch line size, Rated MWP 1450 PSI
- G050M Micro Motion G-Series Coriolis Meter, 1/2 Inch line size, Rated MWP 1450 PSI
- G100M Micro Motion G-Series Coriolis Meter, 1 Inch line size, Rated MWP 1450 PSI
- G150M Micro Motion G-Series Coriolis Meter, 1.5 Inch line size, Rated MWP 1450 PSI
- G200M Micro Motion G-Series Coriolis Meter, 2 Inch line size, Rated MWP 1450 PSI
- G300M Micro Motion G-Series Coriolis Meter, 3 Inch line size, Rated MWP 1450 PSI

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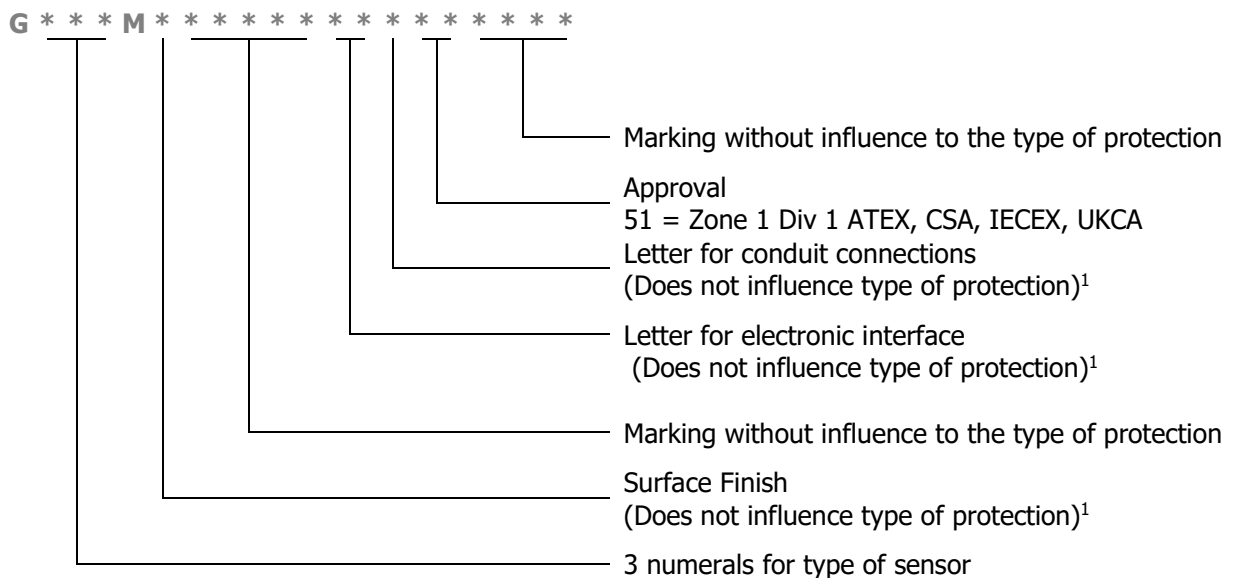


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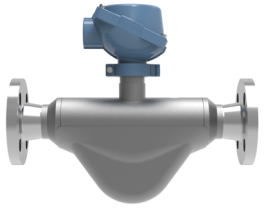

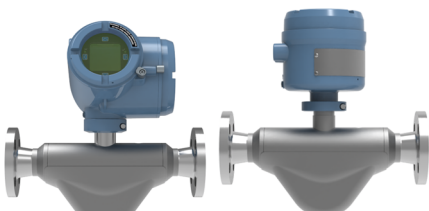
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Below shows the denomination letters and numerals variations of the Gxxx series sensors.



Below are examples of different Gxxx sensor configurations: (detailed in Installation Instruction EB-2009779)

	Configure 1	Configure 2	Configure 3
General Description	G Sensor with Junction box (IECEX BVS09.0022U and BVS09ATEXE071U)	G Sensor with Type 800 Core Processor (IECEXBVS05.0010U and BVS05ATEXE111U)	G sensor with Certified MMI Transmitters with/without IS output (transmitters maintains separate ATEX, IECEX, and UKCA equipment certifications)
Example of integral mount configuration			

This sensor is mounted in series with process piping, having inlet and outlet ports available in various configurations to match the application. The process gas or liquid flows through two parallel tubes of very specific length, diameter, and "C" shaped geometry. These flow tubes are welded to a process connection manifold. The exterior surface of each tube is fitted with electromagnetic pulse coils at specific locations along its length to transmit (Drive) a signal, then receive (Pick Off) a signal. The physical distance between coils is tightly controlled. The process media carries the signal from the transmitter to the receiver, with a delay inversely proportional to the velocity of the media within the tube, and

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amplitude dependent on density. A temperature sensor is also fitted to the inlet end of the tube, as the temperature of the process influences its density, and the ability of the media to conduct the signal.

The flow tubes and electronics are housed within a welded stainless-steel enclosure, with no user access and no maintenance access. Certain sensor models fitted with an optional rupture disk to prevent over pressurization of the outer enclosure in the event of tube leak. The only electrical connection to the sensor assembly is through an Emerson proprietary circular 9 wire hermetically sealed feedthrough. The Feedthrough is a cylindrical SS Body with Fused Glass insert that isolates/insulates the 9 Intrinsically Safe (IS) pass-through signal pins from the sensor for connection to a mating plug located in the separately certified J-Box, integral core or transmitter assemblies. This Feedthrough is used to not only pass IS signals between the Sensor and the Transmitter but additionally, in the event of a flow tube rupture, provides the mechanical secondary seal (i.e., Dual Seal) preventing the process from ending up in the conduit or control room.

The sensor enclosure is supported by the process piping in the application. The enclosure is designed with a mounting feature to attach an integrally mounted flow transmitter, or it can be fitted with a junction box (certified under IECExBVS09.0022U and BVS09ATEXE071U) in place of the transmitter and cabled to a remotely mounted flow transmitter. Another option features the transmitter "core" subassembly (certified under IECExBVS05.0010U, BVS05ATEXE111U, and CSA report 1685886) mounted within the junction box, cabled to a remotely mounted transmitter. Each of the various transmitters or cores that can be connected to the sensors is separately assessed and documented in CSA Report 80042838, CSA report 80095027, CSA report 80042175, and CSA report 1685886. The transmitters also maintain separate ATEX, IECEx, and UKCA certification.

The Gxxx Sensors are designed to connect to certified Micro Motion Transmitters with/without IS output per CSA Attestation Report 80042838 and CSA-D-IS Installation Instructions EB-20075559. The Gxxx Sensor's IS entity parameters are detailed in ATEX/UKEX/IECEx Instructions EB-20097797. The Installation Instructions and Conditions of Safe Use are controlled through the transmitter certifications. The user should refer to the IS Installation Instructions EB-20075559 that defines the combinations of these sensors with various transmitters.

The G series sensors have been separately evaluated against the requirements of IEC 60529 and it meets IP66/67.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Reports and Certificate History

Issue	Date	Report number	Comment
0	22 September 2023	R80147612A	The release of the prime certificate.

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

15.1 EPL Ga (Zone 0) is permitted inside the sensor flow tube. The sensors may be employed only for those media, for which the wetted parts are known to be suitable.

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- 15.2 Core Processor shall be remotely mounted from Sensor with Process Temperatures below -40°C or with Process Temperatures above $+60^{\circ}\text{C}$.
- 15.3 Transmitters shall be remotely mounted from Sensor with Process Temperature below the marked Transmitter Minimum Ambient or with Process Temperatures above the marked Transmitter Maximum Ambient.
- 15.4 The degree of protection (IP) on the external side of the sensor feed-through shall be maintained during the field installation.
- 16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)**
The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.
- 17 **CONDITIONS OF MANUFACTURE**
- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of CSA Group Netherlands B.V. certificates.
- 17.2 Holders of EU-Type Examination Certificates are required to comply with the conformity to type requirements defined in Article 13 of Directive 2014/34/EU.

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Certificate Annexe



Certificate Number: CSANe 23ATEX1160X
Equipment: Gxxx Series Mass Flow Sensor
Applicant: Micro Motion Incorporated

Issue 0

Drawing	Sheets	Rev.	Date (Stamp)	Title
MMI-20098113	1 to 1	AC	15 Sep 23	EBOM, MAIN G025
MMI-20098114	1 to 1	AC	11 Sep 23	PCB, MAIN G025
MMI-D-20098114	1 to 3	AC	11 Sep 23	PCA, MAIN G025
MMI-ES-20098114	1 to 1	AC	11 Sep 23	SCHEM, MAIN G025
MMI-20098295	1 to 1	AA	11 Sep 23	EBOM, PCA, MAIN G050
MMI-20098296	1 to 1	AC	11 Sep 23	PCB, MAIN G050
MMI-D-20098296	1 to 3	AC	11 Sep 23	PCA, MAIN G050
MMI-ES-20098296	1 to 1	AC	11 Sep 23	SCHEM, MAIN G050
MMI-20098115	1 to 1	AC	11 Sep 23	EBOM, MAIN G100
MMI-20098116	1 to 1	AC	11 Sep 23	PCB, MAIN G100
MMI-D-20098116	1 to 3	AC	15 Sep 23	PCA, MAIN G100
MMI-ES-20098116	1 to 1	AC	11 Sep 23	SCHEM, MAIN G100
MMI-20098117	1 to 1	AA	11 Sep 23	EBOM, PCA, MAIN G150
MMI-20098122	1 to 1	AB	11 Sep 23	PCB, MAIN G150
MMI-D-20098122	1 to 3	AB	11 Sep 23	PCA, MAIN G150
MMI-ES-20098122	1 to 1	AB	11 Sep 23	SCHEM, MAIN G150
MMI-20098118	1 to 1	AA	11 Sep 23	EBOM, PCA, MAIN G200
MMI-20098119	1 to 1	AB	11 Sep 23	PCB, MAIN G200
MMI-D-20098119	1 to 3	AB	11 Sep 23	PCA, MAIN G200
MMI-ES-20098119	1 to 1	AB	11 Sep 23	SCHEM, MAIN G200
MMI-20098120	1 to 1	AD	11 Sep 23	EBOM, PCA, MAIN G300
MMI-20098121	1 to 1	AD	11 Sep 23	PCB, MAIN G300
MMI-D-20098121	1 to 3	AD	11 Sep 23	PCA, MAIN G300
MMI-ES-20098121	1 to 1	AD	11 Sep 23	SCHEM, MAIN G300
EB-9000141	1 to 2	AB	11 Sep 23	APPROVAL, RTD
EB-20002371	1 to 1	BC	11 Sep 23	APPROVAL SPLINED FEEDTHROUGH
EB-20095041	1 to 1	AA	11 Sep 23	APPVL, COIL ASSY, XS
EB-20095096	1 to 1	AA	11 Sep 23	APPVL, COIL ASSY, XX
EB-20095098	1 to 1	AA	11 Sep 23	APPVL, COIL ASSY, XL
EB-4000150	1 to 1	HB	11 Sep 23	APPVL, 9 POS J-BOX
EB-20095125	1 to 2	AA	11 Sep 23	APPVL, GXXX SENSOR ASSY
EB-20096813	1 to 13	AA	11 Sep 23	SPEC, SAFETY DESCRIPTION, G-series
EB-20097798	1 to 3	AA	11 Sep 23	QUAD APPROVAL TAGS ATEX, CSA, IECEX, UKCA SENSOR
EB-20075559	1 to 11	AD	11 Sep 23	CSA, UKEx, IECEX & ATEX D-IS Installation Instructions
EB-20097797	1 to 12	AB	15 Sep 23	G Sensors ATEX/IECEX/UKEX Installation Instructions

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