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 CSAE 23.0045X**

Certificate history:

Status: **Current**

Issue No: 0

Date of Issue: 2023-09-22

Applicant: **Micro Motion Incorporated**
7070 Winchester Circle
Bouder, CO 80301
USA
United States of America

Equipment: **Gxxx Series Mass Flow Sensor**

Optional accessory:

Type of Protection: **Intrinsically Safe, Increased Safety and Dust Protection by Enclosure**

Marking: **Refer to the annexe for the Marking**

Approved for issue on behalf of the IECEx Certification Body: **Michelle Halliwell**

Position: **Director Operations, UK & Industrial Europe**

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

CSA Group Testing UK Ltd
Unit 6, Hawarden Industrial Park
Hawarden, Deeside CH5 3US
United Kingdom

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Manufacturer:
Micro Motion Incorporated
7070 Winchester Circle
Bouder, CO 80301
USA
United States of America

Manufacturing locations:

Micro Motion Incorporated
7070 Winchester Circle
Bouder, CO 80301
USA
United States of America

F-R Tecnologías De Flujo, S.A. de C.V
Ave. Miguel de Cervantes 111,
Chihuahua, Chihuahua, 31136
Mexico

Emerson Process Management Flow Technologies Co., Ltd.
111, Xing Min South Road
Jiangning District, Nanjing
Jiangsu Province
211100
China

See following pages for more locations

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 Edition:7.0 — Explosive atmospheres - Part 0: Equipment - General requirements

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

IEC 60079-26:2021 Edition:4.0 — Explosive atmospheres - Part 26: Equipment with Separation Elements or combined Levels of Protection

IEC 60079-31:2022 Edition:3.0 — Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"

IEC 60079-7:2017 Edition:5.1 — Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

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:

GB/CSAE/ExTR23.0071/00

Quality Assessment Report:

NO/PRE/QAR16.0031/03

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

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

Refer to the Annexe for additional information

SPECIFIC CONDITIONS OF USE: YES as shown below:

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.
2. Core Processor shall be remotely mounted from Sensor with Process Temperatures below -40°C or with Process Temperatures above +60°C.
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.
4. The degree of protection (IP) on the external side of the sensor feed-through shall be maintained during the field installation.

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Additional manufacturing locations:

Flow Measurement Emerson SRL
Cluj Flow Technology Center
Str. Emerson, nr. 4
Parcul Industrial Tetarom 2
400641, Cluj-Napoca
Romania

Emerson Process Management Flow B.V.
Neonstraat 1
Ede 6718 WX
Netherlands

Annex:

IECEx CSAE 23.0045X Annexe Issue 0.pdf

Annexe to: **IECEx CSAE 23.0045X Issue 0**

Applicant: **Micro Motion Incorporated**

Apparatus: **Gxxx Series Mass Flow Sensor**

Marking

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

Ex ib IIC T* Ga/Gb
Ta = -35°C ≤ T_A ≤ +80°C

* 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°C ≤ T_P ≤ +150°C
IP rating: IP64
** Entity parameters:

- 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

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

Ex ib IIC T* Ga/Gb
Ta = -40°C ≤ T_A ≤ +60°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°C ≤ T_P ≤ +150°C
IP rating: IP6X
** Entity parameters:

- 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

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

Ex ia IIC T* Ga
Ex ib IIC T* Ga/Gb
Ex ia IIIC T*°C Da

Ex ic IIC T* Gc
Ex ic IIIC T*°C Dc

Ex ec IIC T* Gc
Ex tc IIIC T*°C Dc

Ta = -65°C ≤ T_A ≤ +80°C

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

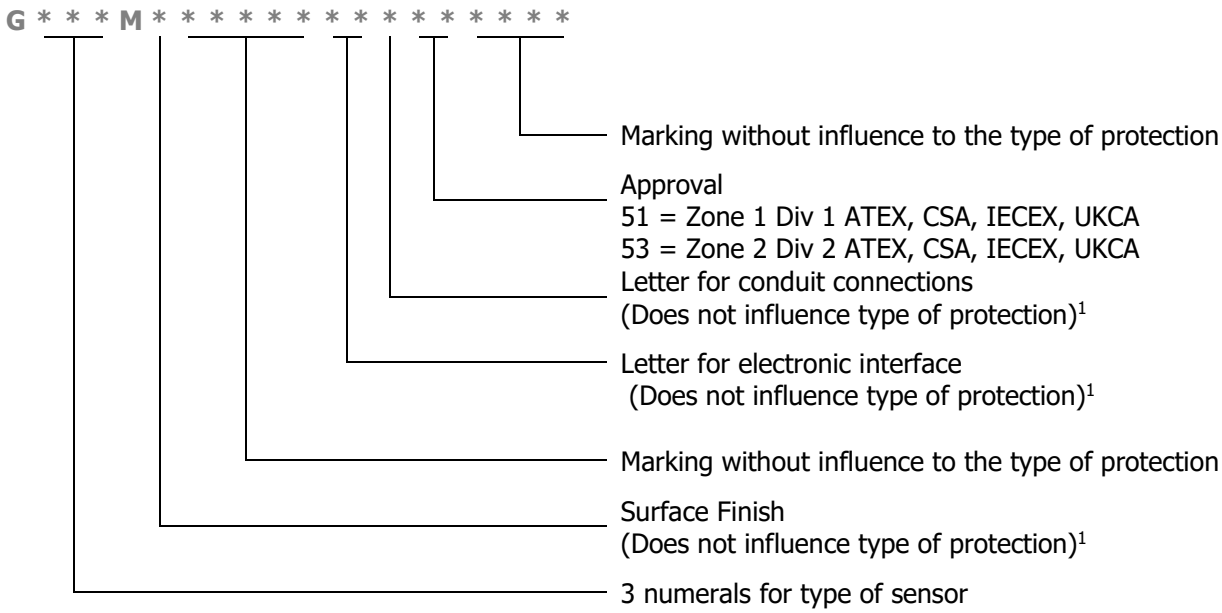
T Rating	max ambient (°C)	max fluid (°C)
T6	47	47
T5	62	62
T4	80	97
T3	80	150

Process Temperature Range = -65°C ≤ T_P ≤ +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

Equipment Continued

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



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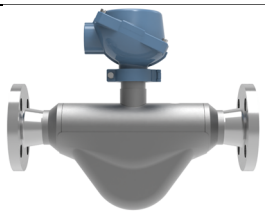
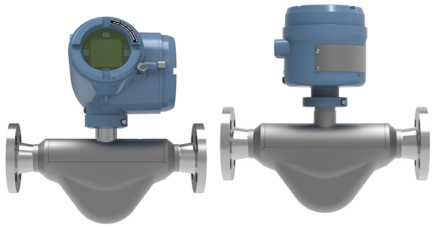
Below are examples of different Gxxx sensor configurations: (detailed in Installation Instruction EB-2009779)

	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 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

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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.

Conditions of Manufacture

1. Each apparatus shall be submitted to a routine dielectric strength test at 500 volts rms for 60 seconds or according to clause 7.1 of standard IEC 60079-7:2017.

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