1. UNITED KINGDOM CONFORMITY ASSESSMENT
TYPE EXAMINATION CERTIFICATE

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

3. **Type Examination Certificate No:** **FM21UKEX0005X**

4. **Equipment or protective system: (Type Reference and Name)** **3000 M-Series Magnetic Flowmeter, Magnetic Flowmeter Detector**

5. **Name of Applicant:** **Badger Meter Inc**

6. **Address of Applicant** **4545 W Brown Deer Rd, Milwaukee, Wisconsin 53223, United States of America**

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

8. FM Approvals Ltd, certifies that this component 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 Schedule 1 of the Regulations.

   The examination and test results are recorded in confidential report number:

   3015930revRR227058 dated 12th October 2021

9. Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

   EN IEC 60079-0:2018, EN 60079-11:2012, EN 60079-15:2010, EN 60529:1991+A1:2000+A2:2013

10. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

11. This Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance with the Regulations. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.

Certificate issued by:

27 June 2024

Victor Aluko-Oginni
Certification Manager, FM Approvals Ltd.

Date

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

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UKAS PRODUCT CERTIFICATION 0259

12. The marking of the equipment or protective system shall include:

Refer to Annex.

13. **Description of Equipment or Protective System:**

The model 3000 M-series are flowmeters used for the measurement of the flow of conductive fluid in pipes. A magnetic field is generated by coils and a voltage proportional to the flow is induced across two electrodes. A third electrode is used to detect an empty pipe. The 3000 M-Series flowmeters come in two different configurations; with the sensor mounted integral to the transmitter (meter mount) and with the sensor mounted remotely from the transmitter (remote mount). The 3000 M-series flowmeters are designed as Category 3 apparatus with intrinsically safe electrodes. The operating ambient temperature range is -20ºC to +50°C.

The enclosures have an ingress protection rating of IP66/IP67.

The flow-tube detectors are available in sizes from ¼" (DN6) to 24" (DN600). Different liner and electrode materials are available depending upon the option code specified.

The electrodes in contact with the process media are intrinsically safe "ia" and have been evaluated as simple apparatus. The power to these electrodes is provided from a barrier circuit located in the transmitter enclosure.

Electrical Ratings:
U = 85 to 240Vac, 50 to 60 Hz, power consumption 15 VA; or 24Vdc, power consumption 4.7 VA.

Refer to Annex for model code information.

14. **Specific Conditions of Use:**

    1. For the option when the Input voltage option h = L, provision shall be made external to the apparatus, to provide a transient protection device the set at a level not exceeding 140 % of the rated voltage at the power supply terminals of the apparatus.

15. **Essential Health and Safety Requirements:**

In addition to the Essential Health and Safety Requirements covered by the standards listed at item 8, all other requirements are demonstrated in the confidential report identified in item 8.

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16. **Test and Assessment Procedure and Conditions:**

This Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for UKCA Marking, FM Approvals Ltd accepts no responsibility for the compliance of the equipment against all applicable Regulations in all applications.

This Certificate has been issued in accordance with FM Approvals Ltd's UKCA Certification Scheme.

17. **Schedule Drawings**

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Approved Body. These drawings are maintained under project ID 3015930.

18. **Certificate History**

Details of the supplements to this certificate are described below:

Date	**Description**
19 October 2021	Original Issue.
4 April 2022	Supplement 1: Report Reference: RR231859 dated 23rd March 2022. Description of the Change: Minor editorial drawing revisions only: corrected manufacturer address, changed color of logo.
2 November 2022	Supplement 2: Report Reference: RR233281 dated 21st October 2022. Description of the Change: Minor design change not affecting compliance. Minor drawing changes not affecting compliance. Removed the Magnetic Flowmeter Amplifier.
20 April 2023	Supplement 3: Report Reference: RR235877 dated 31st March 2023 Description of the Change: Minor drawing changes not affecting compliance.
29 March 2024	Supplement 4: Report Reference: RR240420 dated 3 March 2024. Description of the Change(s): Documentation update. Annex added to certificate.
27 June 2024	Supplement 5: Report Reference: RR241863 dated 18 June 2024. Description of the Change(s): Minor documentation updates.

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ANNEX

3000-MbcdMfghi. M-Series Magnetic Flowmeter

Markings:

II 3 G Ex nA ia IIC T3 Gc Ta = 50°C; IP66/IP67

Description of Equipment:

3000-MbcdMfghi. M-Series Magnetic Flowmeter
b = Liner material R, T, P, H, or S.
c = Electrodes H, S, G, T, or R.
d = End flange D or S.
f = Number of electrodes T or F.
g = Detector size 6, 8, 10, 15, 20, 25, 32, 40, 50, 65, 80, 100, 150, 200, 250, 300, 350, 400, 450, 500, or 600.
h = Input Voltage H (85 – 240Vac) or L (24Vdc)
i = Modbus M or blank.

3000-RbcdMfgh. M-Series Magnetic Flowmeter Detector.

Markings:

II 3 G Ex nA ia IIC T3 Gc Ta = 50°C; IP66/IP67

Description of Equipment:

3000-RbcdMfgh. M-Series Magnetic Flowmeter Detector.
b = Liner material R, T, P, H, or S.
c = Electrodes H, S, G, T, or R.
d = End flange D or S.
f = Number of electrodes T or F.
g = Detector size 6, 8, 10, 15, 20, 25, 32, 40, 50, 65, 80, 100, 150, 200, 250, 300, 350, 400, 450, 500, or 600.
h = Modbus M or blank.

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Blueprint Report

Badger Meter Inc (1000000081)

Class No 3610

Original Project I.D. 3015930

Certificate I.D. FM21UKEX0005X

Drawing No.	Revision Level	Drawing Title	Last Report	Electronic Drawing
64835	**F**	**Fixation Stopper - Cover Latch**	**RR241863**	**Yes (pdf)**
64840	E	M-Series Mag Meter Screws	RR227058	Yes (pdf)
64877	K	Master Assembly drawing	RR231859	Yes (pdf)
64888	E	PCB DSP/Coil Driver	RR227058	Yes (pdf)
64890	D	PCB Interconnect	RR233281	Yes (pdf)
64891	D	PCB Assembly	RR227058	Yes (pdf)
64905	L	Master Assembly Drawing	RR231859	Yes (pdf)
64982	H	M3000 SERIES METER ASSEMBLY	RR227058	Yes (pdf)
64986	Q	M3000 Data Plate-Printed	RR233281	Yes (pdf)
65603 BOM	3,4,3,3	M3000 BOM - ATEX	RR227058	Yes (excel)
65603	K	M3000 Zone 1 Enclosure - ATEX	RR233281	Yes (pdf)
65605 BOM	3,3,3,3	M3000 BOM - ATEX	RR227058	Yes (excel)
65605	H	M3000 Series Junction Box Assembly-ATEX	RR233281	Yes (pdf)
65699 BOM	1-72,101-172(1)	M3000 Series Meter Assembly BOM	RR227058	Yes (excel)
65699	C	Detector Zone 2	RR227058	Yes (pdf)
65748	G	24 V PCB Power Supply	RR233281	Yes (pdf)
65763	P	M3000 Series 24VDC Data Plate-Printed	RR233281	Yes (pdf)
68997	J	PCBA, DSP/COIL DRIVER, MOD. MAG AMP W/ MODBUS	RR227058	Yes (pdf)
69001 BOM	1	BOM M Series Mag Meter Modbus 001-072, 101-172	RR227058	Yes (pdf)
69001	A	M3000 Series Modbus Meter Assy	RR227058	Yes (pdf)
69009 BOM	1	BOM M Series Mag Meter -001 to -072 and -101 to -172	RR227058	Yes (pdf)
69009	A	M3000 Series Modbus Meter Assy ATEX	RR227058	Yes (pdf)
69017 BOM	1	BOM Mount Assy Modbus -001, -002, -005 and -006.	RR227058	Yes (pdf)
69017	A	M3000 Series Amplifier Modbus FM	RR227058	Yes (pdf)
69021 BOM	1	BOM M3000 Mount Assy Modbus -001, -002, -003 and -004	RR227058	Yes (pdf)
69021	D	M3000 SERIES AMPLIFIER MODBUS ATEX	RR233281	Yes (pdf)
69203	A	PCB_24V Power Supply	RR227058	Yes (pdf)
B-64881	A	Ground Braid	RR227058	Yes (pdf)
C-64757	A	Back Plate	RR227058	Yes (pdf)
C-64874	A	Feed Thru	RR227058	Yes (pdf)
C-64884	B	PCB Assembly EFBIE	RR227058	Yes (pdf)
C-64885	C	PCB Assembly	RR227058	Yes (pdf)
C-64886	D	PCB Analog Board EFB 6&7	RR227058	Yes (pdf)
C-64887	F	PCB Amplifier Board	RR227058	Yes (pdf)
C-64945	G	PCB Power Supply	RR227058	Yes (pdf)
C-64947	C	Display	RR227058	Yes (pdf)
C-64961	C	Master Assembly drawing	RR227058	Yes (pdf)
C-64977	G	8770 Cable - Coil	RR227058	Yes (pdf)
C-64978	F	9155 Cable - Electrode	RR227058	Yes (pdf)
C-65515	A	Marker Pin	RR227058	Yes (pdf)
MAG-DS-00493-EN	**14**	**Product Data Sheet**	**RR241863**	**Yes (pdf)**
MAG-UM-03748-EN	3	M3000 User Manual - ATEX	RR233281	Yes (pdf)
MS-300-1	B	M SERIES MAG METER RUBBER, LINER	RR227058	Yes (pdf)
PS-325	A	Process Spec	RR227058	Yes (pdf)