



1 TYPE EXAMINATION CERTIFICATE

2 Equipment or Protective systems intended for use in Potentially
Explosive Atmospheres - Directive 2014/34/EU

3 Type Examination Certificate No: FM08ATEX0051X

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

5 Name of Applicant: Badger Meter, Inc.

6 Address of Applicant: 4545 W. Brown Deer Road
Milwaukee, WI 53224
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 Europe Ltd. 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 confidential report number:

3033898EC dated 06th July 2009

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
and 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 to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

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



Magnetic Flowmeter

II 3 G Ex nA ia IIC T3 Gc Ta = -20°C to +50°C

Magnetic Flowmeter Detector

II 3 G Ex nA ia IIC T3 Gc Ta = -20°C to +50°C

Martin Crowe
Certification Manager, FM Approvals Europe Ltd.

Issue date: 4th April 2023

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

FM Approvals Europe Ltd. One Georges Quay Plaza, Dublin. Ireland. D02 E440
T: +353 (0) 1761 4200 E-mail: atex@fmaprovals.com www.fmaprovals.com

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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 -20°C 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.

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.

- 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.

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:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed 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 CE Marking, FM Approvals Europe Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Europe Ltd's ATEX 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 FM Approvals Europe Ltd. These drawings are maintained under project ID 3015930.

18 Certificate History

Details of the supplements to this certificate are described below:

Date	Description
07 th July 2009	Original Issue.
25 th October 2010 to 14 th December 2018	<u>Supplement 1 to Supplement 11:</u> See certificate dated 14 th December 2018 for details.
28 th February 2019	<u>Supplement 12:</u> Report Reference: RR217670 dated 19 th February 2019. Description of the Change: Update to Modbus board.
05 th April 2019	<u>Supplement 13:</u> Report Reference: RR217796 dated 02 nd April 2019. Description of the Change: Minor documentation changes. Certificate transferred from FM Approvals Ltd., notified body no. 1725, to FM Approvals Europe Ltd., notified body no. 2809.
08 th May 2019	<u>Supplement 14:</u> Report Reference: RR217944 dated 07 th May 2019. Description of the Change: New version of the product, with Modbus or without Modbus.
28 th June 2019	<u>Supplement 15:</u> Report Reference: RR219460 dated 27 th June 2019. Description of the Change: Minor documentation updates related to the previous Modbus addition.
23 rd August 2019	<u>Supplement 16:</u> Report Reference: RR220226 dated 22 nd August 2019. Description of the Change: Update to 24Vdc Power supply board component and additional minor document updates.
25 th February 2020	<u>Supplement 17:</u> Report Reference: RR222442 dated 20 th February 2020. Description of the Change: Update firmware on Document No. 98997.

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Date	Description
09 th April 2020	<u>Supplement 18:</u> Report Reference: RR223238 dated 08 th April 2020. Description of the Change: Updated Data Sheets and User Manuals to match report, correct power supply information for 85-240 VAC units.
31 st August 2020	<u>Supplement 19:</u> Report Reference: RR224940 dated 28 th August 2020. Description of the Change: Corrected spelling error on label drawings.
25 th March 2021	<u>Supplement 20:</u> Report Reference: RR226790 dated 25 th March 2021. Description of the Change: Updated assembly drawings, editorial corrections and component update.
24 th May 2021	<u>Supplement 21:</u> Report Reference: RR228262 dated 21 st May 2021. Description of the Change: Updated Fixation Stopper Cover Latch drawing 64835.
14 th October 2021	<u>Supplement 22:</u> Report Reference: RR227058 dated 12 th October 2021. Description of the Change: <ol style="list-style-type: none">1. Minor technical document revisions for additional UKCA certification and clarification of Specific Conditions of Use in instructions.2. Gap analysis EN 60079-0:2012 +A11:2013 to EN IEC 60079-0:2018.
31 st March 2022	<u>Supplement 23:</u> Report Reference: RR231859 dated 23 rd March 2022. Description of the Change: Minor editorial drawing revisions only: corrected manufacturer address, changed color of logo.
24 th October 2022	<u>Supplement 24:</u> Report Reference: RR233281 dated 21 st October 2022 Description of the Change: Minor design change not affecting compliance. Minor drawing changes not affecting compliance. Removed the Magnetic Flowmeter Amplifier.
4 th April 2023	<u>Supplement 25:</u> Report Reference: RR235877 dated 31 st March 2023 Description of the Change: Minor drawing changes not affecting compliance.

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Blueprint Report

Badger Meter Inc (1000000081)

Class No 3610

Original Project I.D. 3015930

Certificate I.D. FM08ATEX0051X

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>
64835	E	Fixation Stopper - Cover Latch	RR228262
64840	E	M-Series Mag Meter Screws	3051329
64877	K	Master Assembly drawing	RR231859
64888	E	PCB DSP/Coil Driver	PR451587
64890	D	PCB Interconnect	RR233281
64891	D	PCB Assembly	RR219460
64905	L	Master Assembly Drawing	RR231859
64982	H	M3000 SERIES METER ASSEMBLY	RR217796
64986	Q	M3000 Data Plate-Printed	RR233281
65603 BOM	3,4,3,3	M3000 BOM - ATEX	RR201766
65603	K	M3000 Zone 1 Enclosure - ATEX	RR233281
65605 BOM	3,3,3,3	M3000 BOM - ATEX	RR201766
65605	H	M3000 Series Junction Box Assembly-ATEX	RR233281
65699 BOM	1-72,101-172(1)	M3000 Series Meter Assembly BOM	RR201766
65699	C	Detector Zone 2	RR201766
65748	G	24 V PCB Power Supply	RR233281
65763	P	M3000 Series 24VDC Data Plate-Printed	RR233281
68997	J	PCBA, DSP/COIL DRIVER, MOD. MAG AMP W/ MODBUS	RR226790
69001 BOM	1	BOM M Series Mag Meter Modbus 001-072, 101-172	RR217944
69001	A	M3000 Series Modbus Meter Assy	RR217944
69009 BOM	1	BOM M Series Mag Meter -001 to -072 and -101 to -172	RR217944
69009	A	M3000 Series Modbus Meter Assy ATEX	RR217944
69017 BOM	1	BOM Mount Assy Modbus -001, -002, -005 and -006.	RR217944
69017	A	M3000 Series Amplifier Modbus FM	RR217944
69021 BOM	1	BOM M3000 Mount Assy Modbus -001, -002, -003 and -004	RR217944
69021	D	M3000 SERIES AMPLIFIER MODBUS ATEX	RR233281
69203	A	PCB_24V Power Supply	RR220226
B-64881	A	Ground Braid	3051329
C-64757	A	Back Plate	FM08ATEX0051X
C-64874	A	Feed Thru	FM08ATEX0051X
C-64884	B	PCB Assembly EFBIE	RR207683
C-64885	C	PCB Assembly	11-Apr-14
C-64886	D	PCB Analog Board EFB 6&7	RR207683
C-64887	F	PCB Amplifier Board	11-Apr-14
C-64945	G	PCB Power Supply	6-Nov-13
C-64947	C	Display	25-Oct-12
C-64961	C	Master Assembly drawing	RR208816
C-64977	G	8770 Cable - Coil	RR217796
C-64978	F	9155 Cable - Electrode	RR217796
C-65515	A	Marker Pin	FM08ATEX0051X
C-67690	A	Slow Blow Fuse Label	3051329
MAG-DS-00493-EN	12	Product Data Sheet	RR235877
MAG-UM-03748-EN	3	M3000 User Manual - ATEX	RR233281
MS-300-1	B	M SERIES MAG METER RUBBER, LINER	RR208816
PS-325	A	Process Spec	3051329