

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:** FM14ATEX0060X

4 **Equipment or protective system:** Jupiter JM4 Magnetostrictive Level Transmitter
(Type Reference and Name)

5 **Name of Applicant:** Magnetrol International Inc.

6 **Address of Applicant:** 705 Enterprise Street
Aurora, IL 60504 USA

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 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:

3051963 dated 30th October 2015

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 60079-0:2012 + A11:2013, EN 60079-15:2010 and EN 60529:1991+ A1:2000

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:



II 3 G Ex nA IIC T4 Gc Ta = -15°C to +70°C, IP67

Nicholas Ludlam
Deputy Certification Manager, FM Approvals Ltd.

Issue date: 24th August, 2016

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

FM Approvals Ltd. 1 Windsor Dials, Windsor, Berkshire, UK. SL4 1RS
T: +44 (0) 1753 750 000 F: +44 (0) 1753 868 700 E-mail: atex@fmaprovals.com www.fmaprovals.com

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Description of Equipment or Protective System:

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The Jupiter Model JM4 is a continuous level transmitter for liquid level control, utilizing the engineering principle of magnetostriction and the effect of a magnetic field on the magnetostrictive wire as the basis for operation of the instrument. The primary components are the probe assembly, containing the wire and Preamp PC Board assembly, and the electronics assembly containing all other PC Boards. The Jupiter JM4 Transmitter is available as the Model JM4-51 normal mode (Entity input version) or JM4-52 Fieldbus mode (FISCO input version) and only differs in the Digital PC Board and Wiring PC Board.

A low energy pulse which is generated by the Preamp travels the length of the magnetostrictive wire. A return signal is generated from the location where the magnetic field of the MLI float intersects the wire. A timer measures the elapsed time between the generation of the pulse and the return of the mechanical or acoustic signal. This is detected by the acoustic sensor located in the end of the probe. The software is set up to interpret the time-of-flight data and to display and transmit the process variable data resulting from the measurement.

The Jupiter Model JM4 is a level transmitter with Fieldbus digital communication. The Jupiter Model JM4 uses a nominal input voltage of 24VDC and it provides Fieldbus digital communication. With the FISCO concept the input voltage is limited to 17.5V. A digital display and keypad are optional.

The Jupiter Model JM4 is housed in a dual compartment (die-cast aluminium or investment cast 316SS) enclosure with separate wiring and electronics compartments. The wiring compartment at the top of the transmitter isolates the power/signal conductors from the electronics compartment beneath it by way of an environmentally sealed feed-through. A quick disconnect probe coupling and allows probes to be installed without concern for their orientation to the transmitter head. Probe mounting can be provided integrally, directly to the electronics housing, or can be remotely mounted up to 12 feet from the electronics housing.

Model Code Structure:

JM4-51ab-cde / 2fg-hij-klm-n-o. Jupiter JM4 Magnetostrictive Level Transmitter / JM4 Probe.

a = Safety Option: 0, 1 or 2.

b = Accessories/Mounting: A, B, C, 0, 1 or 2.

c = Area Classification: C

d = Housing Material: 1 or 2.

e = Conduit Connection: 0, 1, 2 or 3.

f = Measurement System: A or C.

g = Probe Configuration: 1, 2, 8, E, F, H, K, L, M, R, S or T.

h = Process Connection: 00, 01, 11, 22, 41, 42, 43, 44, 45, 46, 47, 53, 54, 55, 56, 57, 63, 64, 65, 66, 67, CA, CB, CC, DA, DB, DD, DE, EA, EB, ED, EE, FA, FB, FD, FE, FF or FG.

i = Material of Construction: A, B, C, D, F, L, P or 1.

j = Probe Options: N or V.

k = Installation Considerations: 0, 1, 2, 3, 4, 5, C, E, F, G, H, J or N.

l = Construction Code: 0, K, L, M or N.

m = Level/Interface Measurement: 1, 2 or 3.

n = Float: 00, 11, 12, 13, 21, 22, 23, 31, 32, 41, 42, 51, 52, 61, 62, 99, AA, AB, AC, BA, BB, CA, CB, DA, DB, DC, FA, FB, FC, MA, MB, NA, NB, PA, PB, QA, QB, RA or RB

o = Probe Length: (3 digit max) in: inches (f = A) or centimeters (f = C).

JM4-52ab-cde / 2fg-hij-klm-n-o. Jupiter JM4 Magnetostrictive Level Transmitter / JM4 Probe.

a = Safety Option: 0, 1 or 2.

b = Accessories/Mounting: A, B, C, 0, 1 or 2.

c = Area Classification: C

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d = Housing Material: 1 or 2.
e = Conduit Connection: 0, 1, 2 or 3.
f = Measurement System: A or C.
g = Probe Configuration: 1, 2, 8, E, F, H, K, L, M, R, S or T.
h = Process Connection: 00, 01, 11, 22, 41, 42, 43, 44, 45, 46, 47, 53, 54, 55, 56, 57, 63, 64, 65, 66, 67, CA, CB, CC, DA, DB, DD, DE, EA, EB, ED, EE, FA, FB, FD, FE, FF or FG.
i = Material of Construction: A, B, C, D, F, L, P or 1.
j = Probe Options: N or V.
k = Installation Considerations: 0, 1, 2, 3, 4, 5, C, E, F, G, H, J or N.
l = Construction Code: 0, K, L, M or N.
m = Level/Interface Measurement: 1, 2 or 3.
n = Float: 00, 11, 12, 13, 21, 22, 23, 31, 32, 41, 42, 51, 52, 61, 62, 99, AA, AB, AC, BA, BB, CA, CB, DA, DB, DC, FA, FB, FC, MA, MB, NA, NB, PA, PB, QA, QB, RA or RB
o = Probe Length: (3 digit max) in: inches (f = A) or centimeters (f = C).

14 Specific Conditions of Use:

1. The enclosure contains aluminum and is considered to present a potential risk of ignition by impact or friction. Care must be taken during installation and use to prevent impact or friction.
2. To maintain the T4 temperature code care shall be taken to ensure the "Enclosure Temperature" does not exceed 70 °C
3. The risk of electrostatic discharge shall be minimized at installation, following the direction given in the instruction.
4. For Installation with ambient temperature of 70 °C, refer to the manufacturer's instructions for guidance on proper selection of conductors.
5. Provisions shall be made to provide transient overvoltage protection to a level not to exceed 119Vdc.

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.

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 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 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 Ltd.

18 Certificate History

Details of the supplements to this certificate are described below:

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| Date | Description |
|--------------------------------|---|
| 02 nd November 2015 | Original Issue. |
| 24 th August 2016 | <u>Supplement 1:</u> Report Reference: Project ID 3058192 dated 10 August 2016 Description of the Change: Update to Universal assembly potting: replaced with Glass to metal seal. |

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FM Approvals Ltd. 1 Windsor Dials, Windsor, Berkshire, UK. SL4 1RS
T: +44 (0) 1753 750 000 F: +44 (0) 1753 868 700 E-mail: atex@fmapprovals.com www.fmapprovals.com

Blueprint Report

Magnetrol International Inc (1000000020)

Class No 3610

Original Project I.D. 3051963

Certificate I.D. FM14ATEX0060X

| <u>Drawing No.</u> | <u>Revision Level</u> | <u>Drawing Title</u> | <u>Last Report</u> | <u>Electronic Drawing</u> |
|--------------------|-----------------------|---|--------------------|---------------------------|
| 009-9362 | C | Fabrication Digital Board, Model 706 | 3051963 | Yes (pdf) |
| 009-9365 | B | Fabrication Display Board, Model 706 | 3051963 | Yes (pdf) |
| 009-9368 | A | Fabrication Digital Board, Model 706 | 3051963 | Yes (pdf) |
| 009-9369 | A | Fabrication Wiring Board Model 706 | 3051963 | Yes (pdf) |
| 009-9375 | B | Foundation Fieldbus Fabrication Wiring Board | 3051963 | Yes (pdf) |
| 009-9378 | A | Fabrication Board, Juniper JM4 Analog | 3051963 | Yes (pdf) |
| 009-9379 | A | Fabrication Board, Juniper JM4 Preamp | 3051963 | Yes (pdf) |
| 094-6067 | L | Eclipse 4X Digital Board | 3051963 | Yes (pdf) |
| 094-6070 | B | Display Board Eclipse 706 | 3051963 | Yes (pdf) |
| 094-6072 | D | Digital Board Foundation Fieldbus | 3051963 | Yes (pdf) |
| 094-6073 | D | Wiring Board Eclipse 706 | 3051963 | Yes (pdf) |
| 094-6075 | C | Foundation Fieldbus Wiring Board Eclipse 706 | 3051963 | Yes (pdf) |
| 094-6076-001 | B | Schematic Jupiter 4X Analog Board | 3051963 | Yes (pdf) |
| 094-6077-001 | B | Schematic Jupiter 4X Preamp Board | 3051963 | Yes (pdf) |
| 094-6082-001 | C | Schematic Jupiter 4X Wiring Board | 3051963 | Yes (pdf) |
| 099-5074 | A | System Drawing Jupiter JM4 Transmitter | 3051963 | Yes (pdf) |
| 099-6553 | W | Jupiter JM4 Agency Drawing | 3058192 | Yes (pdf) |
| ORI-46-650 | May 2016 | Jupiter JM4 Installation and Operation Manual | 3058192 | Yes (pdf) |