



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx FMG 14.0028X

Issue No: 3

Certificate history:

Issue No. 3 (2018-12-21)

Issue No. 2 (2016-12-05)

Issue No. 1 (2016-08-10)

Issue No. 0 (2015-10-30)

Status: **Current**

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Date of Issue: **2018-12-21**

Applicant: **Magnetrol International Inc.**
705 Enterprise Street
Aurora, IL 60504
United States of America

Equipment: **Jupiter JM4 Magnetostrictive Level Transmitter**

Optional accessory:

Type of Protection: **Ex ia, Ex nA, Ex tb, Ex db**

Marking:

Ex ia IIC T4 Ga Ta = -40C to +70C

Ex db IIB+H2 T6...T1 Ga/Gb Ta = -40C to +70C

Ex nA IIC T4 Gc Ta = -15C to +70C

Ex tb III C T85C ... T120C Db Ta = -15C to +70C

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

J. E. Marquedant

Position:

VP, Manager, Electrical Systems

*Signature:
(for printed version)*

Date:

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 the [Official IECEx Website](#).

Certificate issued by:

FM Approvals LLC
1151 Boston-Providence Turnpike
Norwood, MA 02062
United States of America





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Manufacturer: **Magentrol International Inc.**
705 Enerprise Street
Aurora, IL 60504
United States of America

Additional Manufacturing location(s):

Orion Instruments
2105 Oak Villa Boulevard
Baton Rouge, LA 70851
United States of America

Magentrol International NV-Flameproof Construction only
Heikensstraat 6
Zelee 92040
Belgium

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 apparatus 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 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-15 : 2010 Edition:4	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
IEC 60079-26 : 2014-10 Edition:3.0	Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

*This Certificate **does not** indicate compliance with electrical 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:

[US/FMG/ExTR14.0028/00](#)
[US/FMG/ExTR14.0028/03](#)

[US/FMG/ExTR14.0028/01](#)

[US/FMG/ExTR14.0028/02](#)

Quality Assessment Report:

[CA/CSA/QAR06.0004/11](#)

[NL/DEK/QAR11.0031/05](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Refer to Attachment.

SPECIFIC CONDITIONS OF USE: YES as shown below:

Refer to Attachment



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Addition of rating Ex db IIB +H2 T6...T1 Ga/Gb and updating of IEC 60079-0 standard and associated documentation.

Annex:

[Annex-IECEX-FMG 14-0028X_3.pdf](#)

Product Description:

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 precise location where the magnetic field of the MLI float intersects the wire. A timer precisely 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 an advanced 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 aluminum 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 eases installation 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 and Parameters:

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

Entity Parameters:

$U_i = 28.6V$, $I_i = 140mA$, $P_i = 1W$, $C_i = 4.4nF$, $L_i = 2.7\mu H$

a = Safety Option: 0, 1 or 2.

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

c = Area Classification: A, B, C, D, 0, 1 or 3. (If c = 3, B or D, b = A or 0 only)

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: F, G, 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.

FISCO Parameters:

$U_i = 17.5V$, $I_i = 380mA$, $P_i = 5.32W$, $C_i = 440pF$, $L_i = 2.7\mu H$

a = Safety Option: 0, 1 or 2.

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

c = Area Classification: A, B, C, D, 0, 1 or 3. (If c = 3, B or D, b = A or 0 only)

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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: F, G, 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).

Conditions of Certification for JM4-51 and JM4-52 Series Models.

- 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. When equipment is used in explosive dust atmospheres, the end user shall take precautions so that the thermal effects of the process temperature shall limit the equipment enclosure and probe surface temperatures to not exceed the required installation location temperature and shall be between 85°C and 120°C.*
- 5. For Installation with ambient temperature of 70°C, refer to the manufacturer's instructions for guidance on proper selection of conductors.*
- 6. Provisions shall be made to provide transient overvoltage protection to a level not to exceed 119Vdc.*
- 7. For the Ex db rated Jupiter JM4, consult the manufacturer for dimensional information on the flameproof joints for repair.*
- 8. All Unused device openings must be closed using a suitably certified plug.*
- 9. Temperature codes for the ratings Ex db IIB+H2, are defined by the following table:*

<u>Maximum Process Temperature(PT)</u>	<u>Temperature Class</u>
From 0°C to 70°C	T6
From 71°C to 90°C	T5
From 91°C to 125°C	T4
From 126°C to 190°C	T3
From 191°C to 290°C	T2
From 291°C to 440°C	T1