



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 FMG 14.0018X**

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Certificate history:

Status: **Current**

Issue No: 5

[Issue 4 \(2019-09-04\)](#)

[Issue 3 \(2019-07-08\)](#)

[Issue 2 \(2016-12-05\)](#)

[Issue 1 \(2016-10-17\)](#)

[Issue 0 \(2015-04-06\)](#)

Date of Issue: 2019-12-18

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

Equipment: **Guided Wave Radar Transmitter Eclipse 706**

Optional accessory:

Type of Protection: **Type "i", Type "n", Type "d" and Type "t"**

Marking:

- Ex ia IIC T4 Ga Ta = -40°C to +70°C
- Ex d/ia [ia IIC Ga] IIB + H2 T6...T1 Gb/Ga Ta = -40°C to +70°C
- Ex nA [ia Ga] IIC T4 Gc Ta = -15°C to +70°C
- Ex ia tb [ia Da] IIIC T85°C...T450°C Db Ta = -15°C to +70°C
- Ex ia IIIC T85°C...T450°C Da Ta = -15°C to +70°C
- IP67

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 www.iecex.com or use of this QR Code.



Certificate issued by:

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



Member of the FM Global Group



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

Additional manufacturing locations: **Magnetrol International NV-Protection types Ex i, Ex db and Ex tb only**
Heikensstraat 6
9240 Zele
Belgium

Orion Instruments Inc.
2105 Oak Villa Boulevard
Baton Rouge, Louisiana 70815
United States of America

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

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

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

IEC 60079-15:2010 Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
Edition:4

IEC 60079-26:2006 Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga
Edition:2

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

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 Reports:

US/FMG/ExTR14.0017/00
US/FMG/ExTR14.0017/03

US/FMG/ExTR14.0017/01
US/FMG/ExTR14.0017/04

US/FMG/ExTR14.0017/02
US/FMG/ExTR14.0017/05

Quality Assessment Reports:

CA/CSA/QAR06.0004/11

NL/DEK/QAR11.0031/05



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Refer to attachment

SPECIFIC CONDITIONS OF USE: YES as shown below:

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.
2. To maintain the T1...T6 temperature code, care shall be taken to ensure the "Enclosure Temperature" does not exceed 75°C.
3. The risk of electrostatic discharge shall be minimized at installation, following the directions given in the instructions.
4. Contact the original manufacturer for information in the dimensions of the flameproof joints
5. For installation with ambient temperature of 70°C, refer to the manufacturer's instruction for guidance on proper selection of conductors.
6. Provisions shall be made to provide transient overvoltage protection to a level not to exceed 199 Vdc.
7. Temperature codes for the ratings Ex d/ia [ia IIC] IIB + H₂ and Ex ia/tb [ia] III C are defined by the following Table:

Process temperature(PT)	Temperature Code-TCG (GAS)	Temperature Code-TCD (Dust)
Up to 75°C	T6	TCD= PT+10K=85°C
From 75°C to 90°C	T5	TCD= PT+10K=100°C
From 90°C to 120°C	T4	TCD= PT+15K=135°C
From 125°C to 185°C	T3	TCD= PT+15K=200°C
From 185°C to 285°C	T2	TCD= PT+15K=300°C
From 285°C to 435°C	T1	TCD= PT+15K=450°C



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Addition of the B suffix to variable c = Classification, B = ATEX / IEC Flameproof Classification, and documentation update for the addition of epoxy material options Epoxies Etc. Resin: 20-3060 RFR Catalyst: 190 and Loctite Stycast 2651 - 40 FR with Catalyst 9 used in the construction for the feed-through assembly.

Annex:

[Annex-to-IECEx-FMG 14-0018X_05.pdf](#)

Product Description:

The Model 706 is an Eclipse Wave Radar Level Transmitter, for liquid and bulk solids level control, utilizing guided wave radar (GWR) technology. Guided Wave Radar functions according to the principal of Time Domain Reflectometry (TDR). A pulse of electromagnetic energy travels down the probe and is reflected by the liquid (or bulk solid) surface. The time of pulse travel, down the probe and back to the electronics unit, is used to determine the distance to the process surface. That distance is used to compute process level, and control the transmitter output.

The Model 706 is an advanced two-wire transmitter. It uses a nominal input voltage of 24VDC and it provides an analog 4-20mA signal with HART or Fieldbus digital communication. With the FISCO and FNICO concepts, the input voltage is limited to 17.5 V. A digital display and keypad are optional. The Model 706 is available with HART Communication as the Model 706-51 and with Fieldbus Communication as the Model 706-52.

The Model 706 is housed in a dual compartment (die-cast aluminium or investment cast 316SS) enclosure with separate wiring and electronics compartments. The Model 706 housing is a new design that has been designed for approval as explosion-proof.

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 relevant parameters:

706-51ab-cde / 7fg-hijk-lmn-op-q. Eclipse Level Transmitter / Eclipse Level Probe.

Entity Parameters:

$U_i = 28.4V$, $I_i = 120mA$, $P_i = 0.84W$, $C_i = 4.4nF$, $L_i = 2.7\mu H$

a = Safety option 1 or 2.

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

c = Classification 3, A, B, C or D.

d = Housing 1 or 2.

e = Conduit connection 0, 1, 2 or 3.

f = Measurement system A or C.

g = Configuration/style D, F, G, J, K, L, M, N, P, S, T, V, Y, Z, 1, 2, 3, 4, 5, 6 or 7.

h = Process connection size 1, 2, 3, 4, 5, 6, B, C, D, E or F.

i = Process connection type 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, G, H, J, K, L, M, N, T or U
(h = 1 or 2 with f = D, J or S; h = 9 with f = K).

j = Construction codes 0, K, L, M, N or P.

k = Flange option 0, 1 or 2.

l = Material of construction A, B, C, F, P, Q, R, S or T (k = F only with f = F).

m = Spacer material 0, 1, 2, 3, 4 or 5 (l = 3 only with f = D).

n = O-ring/seal material 0, 2, 8, A, B, D or N (m = B only with f = G or T).

o = Probe size/flushing connection 0, 1 or 2.

p = Special option 0, 1 or 2.

q = Insertion length (3 digits max) in:

inches (English units e = A, rigid probes f = D, F, G, J, K, L, M, N, P, S, T, V, Y, Z).

feet (English units e = A, flexible probes f = 1, 2, 3, 4, 5, 6 or 7).

centimeters (metric units e = C, rigid probes f = D, F, G, J, K, L, M, N, P, S, T, V, Y, Z).

meters (metric units e = C, flexible probes f = 1, 2, 3, 4, 5, 6 or 7).

706-52ab-cde / 7fg-hijk-lmn-op-q. Eclipse Level Transmitter / Eclipse Level Probe.

FISCO Parameters:

Ui = 17.5V, Ii = 380mA, Pi = 5.32W, Ci = 0.5nF, Li = 2.7μH

a = Safety option 1 or 2.

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

c = Classification: 3, A, B, C or D.

d = Housing Material: 1 or 2.

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

f = Measurement: A or C.

g = Configuration/Style: D, F, G, J, K, L, M, N, P, S, T, V, Y, Z, 1, 2, 3, 4, 5, 6, or 7.

h = Process connection size: 1, 2, 3, 4, 5, 6, B, C, D, E or F.

i = Process connection type: 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, G, H, J, K, L, M, N, T or U (h = 1 or 2 only with f = F, J, 1, 2, 5 or 7; h = 1, 2, 3, 4, A or B only with f = D, P, S, T or V; h = 5, 6, 7, 8, K, L, M or N only with f = D, J or S; h = 9 only with K).

j = Construction codes: 0, K, L, M, N or P.

k = Flange option: 0, 1, or 2.

l = Material of construction: A, B, C, F, P, Q, R or S (k = F only with f = F).

m = Spacer Material: 0, 1, 2, 3, 4 or 5 (l = 3 only with f = D).

n = O-ring / seal material: 0, 2, 8, A, B, D or N (m = B only with f = G or T).

o = Probe size/Flushing Connection: 0, 1 or 2.

p = Special Option: 0, 1, or 2.

q = Probe Length:

inches (English units e = A, rigid probes f = D, F, G, J, K, L, M, N, P, S, T, V, Y, Z)

feet (English units e = A, flexible probes f = 1, 2, 3, 4, 5, 6 or 7)

centimeters (metric units e = C rigid probes f = D, F, G, J, K, L, M, N, P, S, T, V, Y, Z).

meters (metric units e = C flexible probes f = 1, 2, 3, 4, 5, 6 or 7)