

1 EU-TYPE EXAMINATION CERTIFICATE



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

3 EU-Type Examination Certificate No: FM14ATEX0041X

4 Equipment or protective system: 706 Eclipse Guided Wave Level Transmitter
(Type Reference and Name)

5 Name of Applicant: Magnetrol International Inc.

6 Address of Applicant: 705 Enterprise Street
Aurora, IL 60504
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, notified body number 2809 in accordance with Article 17 of Directive 2014/34/EU of 26 February 2014, 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:

3051920 dated 6th April 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/IEC 60079-0:2018, EN 60079-1:2014, EN 60079-11:2012, EN 60079-31:2014 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 EU-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 1 G Ex ia IIC T4 Ga Ta = -40°C to +70°C, IP67
II 2/1 G Ex db/ia [ia IIC Ga] IIB + H₂ T6 ...T1 Ga/Gb Ta = -40°C to +70°C, IP67
II 1/2 D Ex ia/tb [ia Da] IIIC T85°C ...T450°C Da/Db Ta = -15°C to +70°C, IP67



Digitally signed by
Richard Zammitt
DN: cn=Richard Zammitt,
o, ou=FM Approvals
Europe Limited,
email=richard.zammitt@
maprovals.com, c=IE

Richard Zammitt
Certification Manager, FM Approvals Europe Ltd.

Issue date: 19th March 2020

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

SCHEDULE

to EU-Type Examination Certificate No. FM14ATEX0041X

13 Description of Equipment or Protective System:

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 aluminum 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 enclosure has an ingress protection rating of IP67.

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

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 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).

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

SCHEDULE

to EU-Type Examination Certificate No. FM14ATEX0041X

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

FISCO Parameters:

$U_i = 17.5V$, $I_i = 380mA$, $P_i = 5.32W$, $C_i = 0.5nF$, $L_i = 2.7\mu H$

a = Safety option 1 or 2.

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

c = Classification: 3, A, B 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)

706-52ab-cde. Eclipse Level Transmitter with Model 705 adapter.

FISCO Parameters:

$U_i = 17.5V$, $I_i = 380mA$, $P_i = 5.32W$, $C_i = 0.5nF$, $L_i = 2.7\mu H$

a = Safety option 0.

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

c = Classification: A, B, C, D, 1 or 2.

d = Housing Material: A, B, 1 or 2.

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

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.
2. To maintain the T6...T1 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 119Vdc.
7. Flameproof joints are not intended to be repaired.

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

SCHEDULE

to EU-Type Examination Certificate No. FM14ATEX0041X

8. Temperature codes for the ratings Ex db/ia [ia IIC] IIB+H₂ and Ex ia/tb [ia] IIC 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

9. Provisions shall be made to provide transient over-voltage 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 EU-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 the Notified Body.

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

SCHEDULE

to EU-Type Examination Certificate No. FM14ATEX0041X

18 Certificate History

Details of the supplements to this certificate are described below:

Date	Description
04 th June 2015	Original Issue.
19 th October 2016	<u>Supplement 1:</u> Report Reference: RR205631 dated 17 th October 2016 Description of the Change: Model number breakdown.
03 rd November 2016	<u>Supplement 1 issue 2</u> Reason for re-issue – correction of certificate number on schedule pages, typographical error, no technical changes to original issue.
06 th December 2016	<u>Supplement 2:</u> Report Reference: – RR206918 dated 05 th December 2016. Description of the Change: Minor product revisions and updating of associated documentation.
18 th July 2019	<u>Supplement 3:</u> Report Reference: – RR218207 dated 08 th July 2019. Description of the Change: Conducted GAP analysis for EN/IEC 60079-0: 2018 and EN 60079-1: 2014, no testing required to qualify changes, documentation changes required to comply to the new standards. Certificate transferred from FM Approvals Ltd. notified body number 1725, to FM Approvals Europe Ltd., notified body number 2809.
06 th September 2019	<u>Supplement 4:</u> Report Reference: –PR453174 dated 04 th September 2019. Description of the Change: Update to Product Manual.
19 th December 2019	<u>Supplement 5:</u> Report Reference: – PR452105 dated 18 th December 2019. Description of the Change: Addition of the B suffix to variable c = Classification, B = ATEX / IEC Flameproof Classification, and documentation update for the addition of epoxy material options used in the construction for the feed-through assembly.
19 th March 2020	<u>Supplement 6:</u> Report Reference: – RR222479 dated 19 th March 2020. Description of the Change: Addition of Eclipse Level Transmitter with Model 705 adapter.

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

Blueprint Report

Magnetrol International Inc (1000000020)

Class No 3610

Original Project I.D. 3051920

Certificate I.D. FM14ATEX0041X

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>
094-6067	L	Eclipse 4X Digital Board	RR206918
094-6068	H	Analog Board Eclipse 706	3051920
094-6070	B	Display Board Eclipse 706	3051920
094-6072	D	Digital Board Foundation Fieldbus	RR206918
094-6073	D	Wiring Board Eclipse 706	RR206918
094-6075	E	Foundation Fieldbus Wiring Board Eclipse 706	RR206918
099-5072	J	System Drawing Model 706 Transmitter	3051920
099-6546	AB4	Model 706 2 Wire Transmitter Explosion Proof / IS	PR452105
099-6547	Q3	Model 706 2 Wire Transmitter I.S.	PR452105
099-6550	R	Foundation Fieldbus Model 706	RR222479
57-606	13	Installation and Operating Manual for Eclipse Model 706	PR452105