

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: FM19ATEX0205X**

4 **Equipment or protective system: Model TA2 Enhanced Thermal Transmitters
(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:

PR452812 dated 04th November 2020

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 60079-5:2015,
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:

Damien Mc Ardle
Certification Manager, FM Approvals Europe Ltd.

Issue date: 04th November 2020

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

SCHEDULE



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to EU-Type Examination Certificate No. FM19ATEX0205X



TA2-Aab0-c4e. Enhanced Thermal Transmitter

II 2 G Ex db IIC T6 Gb Ta = -40°C to 70°C

TA2-Aab0-c3e. Integral Enhanced Thermal Transmitters with Tfg-hiA-j Thermal Probe (Insertion).

TA2-Aab0-c3e. Integral Enhanced Thermal Transmitters with TFT-fghi-000 Thermal Probe (Inline).

TA2-Aab0-c4e Remote Housing with Tfg-hiA-j Thermal Probe (Insertion).

TA2-Aab0-c4e Remote Housing with TFT-fghi-000 Thermal Probe (Inline).

II 2 G Ex db qb IIC T4...T3 Gb Ta = -40°C to 70°C

Tfg-hiA-j Thermal Probe (Insertion).

TFT-fghi-000 Thermal Probe (Inline).

II 2 G Ex qb IIC T4...T3 Gb Ta = -40°C to 70°C

13 **Description of Equipment or Protective System:**

General - The Model TA2 Enhanced Thermal Transmitters provide measurement of the mass flow of air and other gases. The TA2 consists of a probe attached to an electronics enclosure (integral version) or with the probe attached to a smaller enclosure connected by conduit back to the electronics enclosure (remote version). An optional display module with keypad is available for the electronics enclosure which allows for user configuration and provides a visual display of mass flow, temperature and total flow. The flow element of the TA2 utilizes a heater and two resistance temperature detectors (RTDs). One RTD, used as a reference, measures the temperature of the process where the flow element is installed. The other (active) RTD measures the temperature of the heated sensor. The TA2 electronics varies the power to the heater to maintain a constant temperature difference between the reference and active RTDs. As the flow rate of the process increases, the heated sensor and active RTD are subjected to a cooling effect. The amount of power required to maintain a constant temperature difference between the reference and active RTDs is then translated into a mass flow measurement.

Construction - The integral version of the Model TA2 Enhanced Thermal Transmitters consists of a dual-compartment electronics enclosure with thread-on blank covers (a window cover is available for models with optional display) and a probe threaded into the enclosure base. The remote version consists of the same dual-compartment electronics enclosure modified with a wall-mount bracket and NPT adapter (for connection to conduit), a single-compartment remote enclosure with thread-on blank cover and a probe threaded into the remote enclosure base. The integral housing has a total free internal volume of 817 cm³ empty (free internal volume is less than 500 cm³ with components installed) while the remote housing has a free internal volume of 428 cm³ empty. The manufacturer specifies that the electronics enclosure and remote enclosure be located no more than 500 feet apart.

Ratings - The Model TA2 Enhance Thermal Transmitters operate at 24 Vdc or 100-264 Vac. The transmitters can provide any combination of outputs consisting of 4-20 mA, HART, Foundation Fieldbus, Pulse or temperature. The transmitters are rated for use in an ambient temperature range of -40°C ≤ Ta ≤ +80°C. The transmitter probes are rated for use in a process temperature range of -40°C to +200°C.

The Model TA2 Enhance Thermal Transmitter enclosure provides a degree of protection IP66.

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TA2-Aab0-c3e. Integral Enhanced Thermal Transmitters with Tfg-hiA-j Thermal Probe (Insertion).

- a = Signal output 0, 1, 2, or 4.
- b = Display 0 or B.
- c = Calibration 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9.
- d = Housing location/agency approval 3, 4, E or F.
- e = Enclosure type 0, 1, 2 or 3.
- f = Measurement E or M.
- g = Sensor type R, S or U.
- h = Materials A or B.
- i = Process connection 00, 01, 02, 03, 04, 05, 06, 11, 21, 22, 23, 24, 33, 34, 43, 44, BA, BB, CA, CB, DA or DB.
- j = Insertion length in tenth of inch increments if f = E or in cm increments if f = M (max 3 digits).

TA2-Aab0-c3e. Integral Enhanced Thermal Transmitters with TFT-fghi-000 Thermal Probe (Inline).

- a = Signal output 0, 1, 2, or 4.
- b = Display 0 or B.
- c = Calibration A, B, C, D, E, F, G, H, J or K.
- e = Enclosure type 0, 1, 2 or 3.
- f = Materials 1, A or B.
- g = Size 0, 1, 2, 3, 4, 5, 6, A, B, C, D, E, F or Z.
- h = Process connection 1, 2, 3, 4, A or B.
- i = Flow conditioner A or B.

TA2-Aab0-c4e Enhanced Thermal Transmitter.

- a = Signal output 0, 1, 2, or 4.
- b = Display 0 or B.
- c = Calibration 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9.
- e = Enclosure type 0, 1, 2 or 3.

TA2-Aab0-c4e Remote Housing with Tfg-hiA-j Thermal Probe (Insertion).

- a = Signal output 0, 1, 2, or 4.
- b = Display 0 or B.
- c = Calibration A, B, C, D, E, F, G, H, J or K.
- e = Enclosure type 0, 1, 2 or 3.
- f = Measurement E or M.
- g = Sensor type R, S or U.
- h = Materials A or B.
- i = Process connection 00, 01, 02, 03, 04, 05, 06, 11, 21, 22, 23, 24, 33, 34, 43, 44, BA, BB, CA, CB, DA or DB.
- j = Insertion length in tenth of inch increments if f = E or in cm increments if f = M (max 3 digits).

TA2-Aab0-c4e Remote Housing with TFT-fghi-000 Thermal Probe (Inline).

- a = Signal output 0, 1, 2, or 4.
- b = Display 0 or B.
- c = Calibration A, B, C, D, E, F, G, H, J or K.
- e = Enclosure type 0, 1, 2 or 3.
- f = Materials 1, A or B.
- g = Size 0, 1, 2, 3, 4, 5, 6, A, B, C, D, E, F or Z.
- h = Process connection 1, 2, 3, 4, A or B.
- i = Flow conditioner A or B.

Tfg-hiA-j Thermal Probe (Insertion).

- f = Measurement E or M.
- g = Sensor type R, S or U.

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h = Materials A or B.

i = Process connection 00, 01, 02, 03, 04, 05, 06, 11, 21, 22, 23, 24, 33, 34, 43, 44, BA, BB, CA, CB, DA or DB.

j = Insertion length in tenth of inch increments if f = E or in cm increments if f = M (max 3 digits).

TFT-fghi-000 Thermal Probe (Inline).

f = Materials 1, A or B.

g = Size 0, 1, 2, 3, 4, 5, 6, A, B, C, D, E, F or Z.

h = Process connection 1, 2, 3, 4, A or B.

i = Flow conditioner A or B.

14 Specific Conditions of Use:

Integral Enhanced Transmitter/Remote Housing with Thermal Probe:

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 applicable 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 instructions.
4. Contact the original manufacturer for information in the dimensions of flameproof joints.
5. For Installation with ambient temperature of 70°C, refer to the manufacturer's instructions for guidance on proper selection of conductors.
6. The T4...T3 temperature code is based on the max process temp listed below:

T-Code	Maximum process temperature
T4	+135°C
T3	+200°C

Enhanced Thermal Transmitter

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 applicable 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 instructions.
4. Contact the original manufacturer for information in the dimensions of flameproof joints.
5. For Installation with ambient temperature of 70°C, refer to the manufacturer's instructions for guidance on proper selection of conductors.

Probe:

1. The Thermal Probe is only for use with the TA2 Thermal Transmitter.
2. The T4...T3 temperature code is based on the max process temp listed below:

T-Code	Maximum process temperature
T4	+135°C
T3	+200°C

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 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.

18 Certificate History

Details of the supplements to this certificate are described below:

Date	Description
04 th November 2020	Original Issue.

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Blueprint Report

Magnetrol International Inc (1000000020)

Class No 3615

Original Project I.D. 3038312

Certificate I.D. FM19ATEX0205X

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>
009-6229	F	Transformer TA2-A Power-Loop EFD20-12P	PR452812
009-6230	D	Transformer E-TA2 Wiring Board EFD20-10P	PR452812
009-9351	G	Fabrication Enhanced TA2 Wiring Board	PR452812
009-9352	G	Fabrication Enhanced TA2 Display/Keypad Board	PR452812
009-9354	H	Fabrication Enhanced TA2-A AC SMPS Board	PR452812
009-9367	H	Fabrication Enhanced TA2 Loop Board	PR452812
030-3611	T	Model TA2-A Processor Board	PR452812
030-3612	Q	Model TA2-A Power/Loop Board	PR452812
030-3613	J	Model TA2-A Wiring Board	PR452812
030-3614	G	Model TA2-A Display/Keypad Board	PR452812
030-3615	J	Model TA2-A AC SMPS Board	PR452812
099-3928	5	Work Instruction 099-3928-001 For Sand Filling Probes for Potting TA2-, TEA-, TEB-, TEC-, TED-, TEM-, TER-, TFT-, TMA-, TMB-, TMC, TMD-, TMM-, TMR	PR452812
094-1845	M	Schematic Model TA2-A Processor Board	PR452812
094-1846	J	Schematic Model TA2-A Power/Loop Board General Purpose	PR452812
094-1847	E	Schematic Model TA2-A Wiring Board	PR452812
094-1848	D	Schematic Enhanced TA2-A Display/Keypad Board	PR452812
094-1849	F	Schematic Model TA2-A AC SMPS Board	PR452812
094-1850	D	Schematic Enhanced TA2 Remote Board	PR452812
094-1851	B	TA2-AXXX, Schematic Fieldbus Processor Board	PR452812
094-1852	A	TA2-AXXX, Schematic Power/Fieldbus Board	PR452812
094-1853	C	TA2-AXXX, Schematic Fieldbus Wiring Board	PR452812
099-6513	K	Model TA2-A Transmitter Thermal Integral Explosion Proof	PR452812
099-7198	D	TA2 Assembly	PR452812
54-631	Oct. 15, 2020	631.3 Thermatel Enhanced Model TA2 IO_PROOF2	PR452812
9351 Gerber	E	Fabrication Enhanced TA2 Wiring Board Gerber Files	PR452812
9352 Gerber	B	Fabrication Enhanced TA2 Display/Keypad Board Gerber Files	PR452812
9354 Gerber	D	Fabrication Enhanced TA2-A AC SMPS Board Gerber Files	PR452812
9367 Gerber	E	Fabrication Enhanced TA2 Loop Board Gerber Files	PR452812