

CERTIFICATE OF CONFORMITY



1. **HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**
2. **Certificate No:** FM19CA0128X
3. **Equipment:** Model TD1 and TD2 Thermal Dispersion Switch
(Type Reference and Name)
4. **Name of Listing Company:** Magnetrol International Inc.
5. **Address of Listing Company:** 705 Enterprise Street
Aurora, IL 60504
USA
6. The examination and test results are recorded in confidential report number:

PR452809 dated 4th August 2020
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

CSA-C22.2 No. 0.4:2017, CSA-C22.2 No. 0.5:2016, CSA-C22.2 No. 25:R2014,
CSA-C22.2 No. 30:R2016, CSA-C22.2 No. 94:R2011, CSA-C22.2 No. 213:2017,
CSA-C22.2 No. 60529:2005, CAN/CSA-C22.2 No. 60079-0:2019,
CAN/CSA-C22.2 No. 60079-1:2016, CAN/CSA-C22.2 No. 60079-11:2014,
CAN/CSA-C22.2 No. 60079-26:2016, CAN/CSA-C22.2 No. 61010-1:2012,
8. 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.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
10. **Equipment Ratings:**

The TD1 and TD2 Thermal Dispersion Switches and associated T Series Thermal Probes are rated as Explosionproof for Class I, Division 1, Groups B, C and D; Dust-ignitionproof for Class II, Division 1, Groups E,

Certificate issued by:



J.E. Marquedant
VP, Manager, Electrical Systems

4 August 2020

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

SCHEDULE



Member of the FM Global Group

Canadian Certificate of Conformity No: FM19CA0128X

F and G; Class III, Division 1, T5; Nonincendive for Class I, II, III, Division 2, Groups A, B, C, D, E, F and G, T5; Flameproof with Flameproof + Intrinsically Safe sensor for Class I, Zone 0, 1, AEx db+ib / ib IIC T5...T4 Ga/Gb; Flameproof for Class I, Zone 0, 1 AEx db IIC T5...T4 Ga/Gb with a minimum probe thickness of 1 mm; Flameproof for Class I, Zone 1 AEx db IIC T5...T4 Gb and TD2 Transmitter as Flameproof with Intrinsically Safe Outputs for Class I, Zone 1, AEx db [ib] IIC T4 Gb hazardous locations, indoors and outdoors (Type 4X, IP66) with an ambient temperature rating of $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$.

11. The marking of the equipment shall include:

Group 1.

TD1-2D00-0ab. Integral Thermal Dispersion Switch with Tjk-mnpr-stu. Thermal Probe

TD2-cd0e-fgh. Integral Thermal Dispersion Switch with Tjk-mnpr-stu. Thermal Probe

XP for Class I, Division 1, Groups B, C, D; T5 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

DIP for Class II, Division 1, Groups E, F, G, Class III, Division 1; T5 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

NI for Class I, II, III Division 2, Groups A, B, C, D, E, F, G; T4 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

Class I, Zone 0, 1, Ex db+ib / db, Group IIC T5...T4 Ga/Gb $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$, Type 4X, IP66

Class I, Zone 1, Ex db IIC T5 ...T4 Gb $T_a = -40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$, Type 4X, IP66

Group 2.

TD1-2D00-0ab. Integral Thermal Dispersion Switch with Tjk-mnpr-stu. Thermal Probe

TD2-cd0e-fgh. Integral Thermal Dispersion Switch with Tjk-mnpr-stu. Thermal Probe

XP for Class I, Division 1, Groups B, C, D; T5 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

DIP for Class II, Division 1, Groups E, F, G, Class III, Division 1; T5 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

NI for Class I, II, III Division 2, Groups A, B, C, D, E, F, G; T4 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

Class I, Zone 1, Ex db IIC T5 ...T4 Gb $T_a = -40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$, Type 4X, IP66

Group 3.

TD1-2D00-0ab. Integral Thermal Dispersion Switch with Tjk-Dnpr-stu. Thermal Probe

TD2-cd0e-fgh. Integral Thermal Dispersion Switch with Tjk-Dnpr-stu. Thermal Probe

XP for Class I, Division 1, Groups B, C, D; T5 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

DIP for Class II, Division 1, Groups E, F, G, Class III, Division 1; T5 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

NI for Class I, II, III Division 2, Groups A, B, C, D, E, F, G; T4 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

Class I, Zone 0, 1, Ex db IIC T5 ...T4 Ga/Gb $T_a = -40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$, Type 4X, IP66

Group 4.

TD2-ch0e-f7h. Integral Thermal Dispersion Switch with Tjk-mnpr-stu. Thermal Probe

NI for Class I, II, III Division 2, Groups A, B, C, D, E, F, G; T4 $-25^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

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

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA

T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmaprovals.com www.fmaprovals.com

SCHEDULE



Canadian Certificate of Conformity No: FM19CA0128X

Group 5.

TD2-cd0e-fgh. Thermal Dispersion Switch

XP for Class I, Division 1, Groups B, C, D; T5 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

DIP for Class II, Division 1, Groups E, F, G, Class III, Division 1; T5 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

NI for Class I, II, III Division 2, Groups A, B, C, D, E, F, G; T4 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

Class I, Zone 1, AEx db [ib] IIC T4 Gb $T_a = -40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$, Type 4X, IP66

Group 6.

TD1 and TD2 Thermal Probe:

Class I Division 1, Groups B, C, D; T4 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

Class II, Division 1, Groups E, F, G, Class III, Division 1; T4 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

Class I, II, III Division 2, Groups A, B, C, D, E, F, G; T4 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$; Type 4X, IP66

Class I, Zone 0, 1, Ex db+ib, Group IIC T5...T4 Ga/Gb $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$, Type 4X, IP66

Class I, Zone 1, Ex db IIC T5 ...T4 Gb $T_a = -40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$, Type 4X, IP66

Group 7.

Tjk-Dnpr-stu. Thermal Probe

Class I, Zone 0, 1, Ex db IIC T5 ...T4 Ga/Gb $T_a = -40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$, Type 4X, IP66

12. **Description of Equipment:**

General: Thermatel TD1/TD2 can easily be adjusted to detect flow (gases and liquids), level or liquid-liquid interface. The TD1 is a 28.8 Vdc line powered unit with integral electronics and a built-in DPDT relay. The TD2 is either Vdc or Vac line powered, has integral or remote electronics and offers additionally LED indication, time delay and mA output for diagnostics and trending.

The sensor consists of two RTD (Resistance Temperature Detector) elements. One is the reference and the second is heated to a temperature above the process temperature. The electronics detect the temperature difference between the two elements. The temperature difference is greatest in air, then decreases when cooling occurs due to a change in media. An increase in the flow rate further decreases the temperature difference. The set point is adjusted for the switch to alarm at the desired temperature difference. Once the set point is reached, the relay will change state.

The control electronics are mounted in a flameproof enclosure (aluminium alloy or stainless steel) and can include intrinsically safe signal circuits for the probe. In this case the probe uses two independent types of protection in order to achieve EPL Ga (flameproof enclosure + intrinsically safe protection type "ib"), in another case the probe contains a mechanical separation element as part of the equipment to seal off the electrical circuits of the equipment from the zone 0 area in order to achieve EPL Ga. The third probe version only uses the flameproof enclosure for EPL Gb. The probe can be fixed directly on the bushing or via an extension tube. The heat extension tube of the probe reduces the temperature of the process towards the electronics to a max 5°C increase. The device can be made with integrated electronics or remote electronic (TD2 only). In the case of the remote version two flameproof enclosures are used, one of them contains the control electronics while the other contains only a terminal block and is connected to the probe.

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

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA

T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmaprovals.com www.fmaprovals.com

SCHEDULE



Canadian Certificate of Conformity No: FM19CA0128X

The ambient temperature range of the apparatus is $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ with a temperature classification of T5...T4 depending on the maximum operating voltage. The Thermal Probe has an ambient temperature range of $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ with a temperature classification of T4.

Electrical Ratings:

The TD1 Transmitter shall be connected to a safety extra low-voltage circuit (SELV) with a $U_m \leq 28.8 \text{ V}$.

Power: TD1: 28.8 Vdc, 3.5 W at 24 Vdc;

TD2: 19.2 – 28.8 Vdc, 4 W, or 100 - 264 Vac, 50-60 Hz, 5 W

Signal Output: TD1: 8 A DPDT relay @ 30 Vdc

TD2: 8 A DPDT relay @ 30 Vdc/250 Vac or

1 A DPDT relay @ 28 Vdc and

4 – 20 mA (not for all models)

Group 1.

TD1-2D00-0ab. Integral Thermal Dispersion Switch with Tjk-mnpr-stu. Thermal Probe

a = Agency Approval 3, C or G.

b = Enclosure type/connection 0 or 1, 2 or 3.

j = Measurement system E or M.

k = Sensor tip style A, B, C, D, H, L or M.

m = Material A, D, K, M, N, B, F, C or G.

n = Process connector size 0, 1, 2, 3, 4, B, C, D, T or V.

p = Process connection type 0, 1, 2, 3, 4, 5, 7, 8, A, B, C, D, E, G, J, N, P, S, T or V.

r = Sensitivity 0 or 1.

stu = Probe Length (3 digits) up to 130 inch or 330 cm.

TD2-cd0e-fgh. Integral Thermal Dispersion Switch with Tjk-mnpr-stu. Thermal Probe

c = Power 7 or 8.

d = Relay Output D or H.

e = Enclosure Cover 0 or 1.

f = Location 0 or 1.

g = Agency Approval 3, C or G.

h = Enclosure type/connection 0, 1, 2, 3.

j = Measurement system E or M.

k = Sensor tip style A, B, C, D, H, L or M.

m = Material A, D, K, M, N, B, F, C or G.

n = Process connector size 0, 1, 2, 3, 4, B, C, D, T or V.

p = Process connection type 0, 1, 2, 3, 4, 5, 7, 8, A, B, C, D, E, G, J, N, P, S, T or V.

r = Sensitivity 0 or 1.

stu = Probe Length (3 digits) up to 130 inch or 330 cm.

Group 2.

TD1-2D00-0ab. Integral Thermal Dispersion Switch with Tjk-mnpr-stu. Thermal Probe

a = Approval Requirements 3 or G.

b = Enclosure type/connection 0 or 1

j = Measurement system E or M.

k = Sensor tip style C or D.

m = Material A, D, K, M, N, B, F, C or G.

n = Process connector size 0, 1, 2, 3, 4, B, C, D, T or V.

p = Process connection type 0, 1, 2, 3, 4, 5, 7, 8, A, B, C, D, E, G, J, N, P, S, T or V.

r = Sensitivity 0 or 1.

stu = Probe Length (3 digits) up to 130 inch or 330 cm.

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

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA

T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmaprovals.com www.fmaprovals.com

SCHEDULE



Member of the FM Global Group

Canadian Certificate of Conformity No: FM19CA0128X

TD2-cd0e-fgh. Integral Thermal Dispersion Switch with Tjk-mnpr-stu. Thermal Probe

c = Power 7 or 8.
d = Relay Output D or H.
e = Enclosure Cover 0 or 1.
f = Location 0 or 1.
g = Approval Requirements 3 or G.
h = Enclosure type/connection 0, 1, 2, 3.
j = Measurement system E or M.
k = Sensor tip style C or D.
m = Material A, D, K, M, N, B, F, C or G.
n = Process connector size 0, 1, 2, 3, 4, B, C, D, T or V.
p = Process connection type 0, 1, 2, 3, 4, 5, 7, 8, A, B, C, D, E, G, J, N, P, S, T or V.
r = Sensitivity 0 or 1.
stu = Probe Length (3 digits) up to 130 inch or 330 cm.

Group 3.

TD1-2D00-0ab. Integral Thermal Dispersion Switch with Tjk-Dnpr-stu. Thermal Probe

a = Approval Requirements 3 or G.
b = Enclosure type/connection 0 or 1.
j = Measurement system E or M.
k = Sensor tip style C or D.
n = Process connector size 0, 1, 2, 3, 4, B, C, D, T or V.
p = Process connection type 0, 1, 2, 3, 4, 5, 7, 8, A, B, C, D, E, G, J, N, P, S, T or V.
r = Sensitivity 0 or 1.
stu = Probe Length (3 digits) up to 130 inch or 330 cm.

TD2-cd0e-fgh. Integral Thermal Dispersion Switch with Tjk-Dnpr-stu. Thermal Probe

c = Power 7 or 8.
d = Relay Output D or H.
e = Enclosure Cover 0 or 1.
f = Location 0 or 1.
g = Agency Approval 3, 7, C, or G.
h = Enclosure type/connection 4 or 5.
j = Measurement system E or M.
k = Sensor tip style A, B, C, D, H, L or M.
n = Process connector size 0, 1, 2, 3, 4, B, C, D, T or V.
p = Process connection type 0, 1, 2, 3, 4, 5, 7, 8, A, B, C, D, E, G, J, N, P, S, T or V.
r = Sensitivity 0 or 1.
stu = Probe Length (3 digits) up to 130 inch or 330 cm.

Group 4.

TD2-cd0e-f7h. Integral Thermal Dispersion Switch with Tjk-mnpr-stu. Thermal Probe

c = Power 7 or 8.
d = Relay Output D or H.
e = Enclosure Cover 0 or 1.
f = Location 0 or 1.
h = Enclosure type/connection 4 or 5.
j = Measurement system E or M.
k = Sensor tip style A, B, C, D, H, L or M.
m = Material A, D, K, M, N, B, F, C or G.
n = Process connector size 0, 1, 2, 3, 4, B, C, D, T or V.
p = Process connection type 0, 1, 2, 3, 4, 5, 7, 8, A, B, C, D, E, G, J, N, P, S, T or V.

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

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA

T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmaprovals.com www.fmaprovals.com

SCHEDULE



Canadian Certificate of Conformity No: FM19CA0128X

r = Sensitivity 0 or 1.
stu = Probe Length (3 digits) up to 130 inch or 330 cm.

Group 5.

TD2-cd0e-fgh. Thermal Dispersion Switch

c = Power 7 or 8.
d = Relay Output D or H.
e = Enclosure Cover 0 or 1.
f = Location 0 or 1.
g = Agency Approval 3, C, or G.
h = Enclosure type/connection 0, 1, 2, 3.

Group 6.

Tjk-mnpr-stu. Thermal Probe

j = Measurement system E or M.
k = Sensor tip style A, B, C, D, H, L or M.
m = Material A, D, K, M, N, B, F, C or G.
n = Process connector size 0, 1, 2, 3, 4, B, C, D, T or V.
p = Process connection type 0, 1, 2, 3, 4, 5, 7, 8, A, B, C, D, E, G, J, N, P, S, T or V.
r = Sensitivity 0 or 1.
stu = Probe Length (3 digits) up to 130 inch or 330 cm.

Group 7.

Tjk-Dnpr-stu. Thermal Probe

j = Measurement system E or M.
k = Sensor tip style A, B, C, D, H, L or M.
n = Process connector size 0, 1, 2, 3, 4, B, C, D, T or V.
p = Process connection type 0, 1, 2, 3, 4, 5, 7, 8, A, B, C, D, E, G, J, N, P, S, T or V.
r = Sensitivity 0 or 1.
stu = Probe Length (3 digits) up to 130 inch or 330 cm.

13. 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 T5 to 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 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. For Relay Output Option D the device shall be installed using Class I, Division 1 wiring methods when used in Class I, Division 2 applications.*
- 7. For Relay Output Option D the device shall be installed using Class I, Division 1 wiring methods when used in Class I, Division 2 applications.*

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

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmaprovals.com www.fmaprovals.com

SCHEDULE



Canadian Certificate of Conformity No: FM19CA0128X

Tjk-mnpr-stu. Thermal Probe:

Tjk-Dnpr-stu. Thermal Probe:

1. The Thermal Probe is only for use with the TD1 and TD2 Thermal Dispersion Switch.
2. To maintain the T5 to 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 instructions.
4. Contact the original manufacturer for information in the dimensions of flameproof joints.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
4 th August 2020	Original Issue.

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

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmaprovals.com www.fmaprovals.com