

CERTIFICATE OF CONFORMITY



1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**

2. **Certificate No:** FM19US0154X

3. **Equipment:** Models T15 and T16
(Type Reference and Name) Temperature Transmitters

4. **Name of Listing Company:** WIKA Alexander Wiegand SE & Co. KG

5. **Address of Listing Company:** Alexander-Wiegand-Str 30
Klingenberg, D-63911
Germany

6. The examination and test results are recorded in confidential report number:

PR454648 dated 24th January 2020

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

FM Class 3600:2018, FM Class 3610:2018, FM Class 3611:2018, FM Class 3615:2018,
FM Class 3810:2018, ANSI/UL-60079-0:2019, ANSI/UL-60079-7:2017, ANSI/ISA 60079-11:2014
ANSI/ISA 60079-15:2012, ANSI/UL 61010-1:2012, ANSI/ISA-12.12.01:2015

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:**

Intrinsically Safe for use in Class I, Division 1, Groups A, B, C and D; Temperature Classes T6 Tamb = -40°C to +55°C; T5 Tamb = -40°C to +70°C; T4 Tamb = -40°C to +85°C; when Installed per control drawing 14365542 or 14365544;

Certificate issued by:

J. E. Marquedant
VP, Manager - Electrical Systems

24 January 2020

Date

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

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FM Approvals LLC, 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
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Nonincendive with nonincendive field wiring for use in Class I, Division 2, Groups A, B, C and D;
Temperature Classes T6 Tamb = -40°C to +55°C; T5 Tamb = -40°C to +70°C; T4 Tamb = -40°C to +85°C;
when Installed per control drawing 14365542 or 14365544;

Intrinsically Safe for use in Class I, Zone 0, Group IIC; Temperature Classes T6 Tamb = -40°C to +55°C;
T5 Tamb = -40°C to +70°C; T4 Tamb = -40°C to +85°C; when Installed per control drawing 14365542 or
14365544;

Intrinsically Safe for use in Class I, Zone 1, Group IIC; Temperature Classes T6 Tamb = -40°C to +55°C;
T5 Tamb = -40°C to +70°C; T4 Tamb = -40°C to +85°C; with Intrinsically Safe connection to Class I, Zone 0
Group IIC; when Installed per control drawing 14365542 or 14365544;

Class I, Zone 2, Group IIC; Temperature Classes T6 Tamb = -40°C to +55°C; T5 Tamb = -40°C to +70°C;
T4 Tamb = -40°C to +85°C; when Installed per control drawing 14365542 or 14365544;

11. The marking of the equipment shall include:

Model T15.H-AI*-...***

Class I, Division 1, (I.S.), Groups A, B, C, D T6...T4
Class I, Zone 0 or 1, AEx ia IIC T6 ... T4 Ga
Class I, Division 2, (N.I.), Groups A, B, C, D T6...T4
T6 Ta = -40°C to +55°C; T5 Ta = -40°C to +70°C; T4 Ta = -40°C to +85°C
Install Per Control Drawing 14365544

Model T15.R-AI*-...***

Class I, Division 1, (I.S.), Groups A, B, C, D T6...T4
Class I, Zone 1, AEx ia [ia Ga] IIC T6...T4 Gb
Class I, Division 2, (N.I.), Groups A, B, C, D T6...T4
T6 Ta = -40°C to +55°C; T5 Ta = -40°C to +70°C; T4 Ta = -40°C to +85°C
Install Per Control Drawing 14365544

Model T16.H-AI*-...***

Class I, Division 1, (I.S.), Groups A, B, C, D T6...T4
Class I, Zone 0 or 1, AEx ia IIC T6 ... T4 Ga
Class I, Division 2, (N.I.), Groups A, B, C, D T6...T4
T6 Ta = -40°C to +55°C; T5 Ta = -40°C to +70°C; T4 Ta = -40°C to +85°C
Install Per Control Drawing 14365542

Model T16.R-AI*-...***

Class I, Division 1, (I.S.), Groups A, B, C, D T6...T4
Class I, Zone 1, AEx ia [ia Ga] IIC T6...T4 Gb
Class I, Division 2, (N.I.), Groups A, B, C, D T6...T4
T6 Ta = -40°C to +55°C; T5 Ta = -40°C to +70°C; T4 Ta = -40°C to +85°C
Install Per Control Drawing 14365542

Model T15.*-AE*-...***

Class I, Division 2, Groups A, B, C, D T6...T4
Class I, Zone 2, AEx ec IIC T6...T4 Gc
T6 Ta = -40°C to +55°C; T5 Ta = -40°C to +70°C; T4 Ta = -40°C to +85°C
Install Per Control Drawing 14365544

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Model T16.*-AE*-...***

Class I, Division 2, Groups A, B, C, D T6...T4

Class I, Zone 2, AEx ec IIC T6...T4 Gc

T6 Ta = -40°C to +55°C; T5 Ta = -40°C to +70°C; T4 Ta = -40°C to +85°C

Install Per Control Drawing 14365542

Model T15.*-AN*-...***

Class I, Division 2, Groups A, B, C, D T6...T4

Class I, Zone 2, AEx nA IIC T6...T4 Gc

T6 Ta = -40°C to +55°C; T5 Ta = -40°C to +70°C; T4 Ta = -40°C to +85°C

Install Per Control Drawing 14365544

Model T16.*-AN*-...***

Class I, Division 2, Groups A, B, C, D T6...T4

Class I, Zone 2, AEx nA IIC T6...T4 Gc

T6 Ta = -40°C to +55°C; T5 Ta = -40°C to +70°C; T4 Ta = -40°C to +85°C

Install Per Control Drawing 14365542

Model T15.*-AC*-...***

Class I, Division 2, Groups A, B, C, D T6...T4

Class I, Zone 2, AEx ic IIC T6...T4 Gc

T6 Ta = -40°C to +55°C; T5 Ta = -40°C to +70°C; T4 Ta = -40°C to +85°C

Install Per Control Drawing 14365544

Model T16.*-AC*-...***

Class I, Division 2, Groups A, B, C, D T6...T4

Class I, Zone 2, AEx ic IIC T6...T4 Gc

T6 Ta = -40°C to +55°C; T5 Ta = -40°C to +70°C; T4 Ta = -40°C to +85°C

Install Per Control Drawing 14365542

12. Description of Equipment:

General - The Model T15 and T16 Transmitters convert temperature into electrical signals. The Model T15 Temperature Transmitter converts a resistance value into a proportional 4-20mA signal, and the Model T16 Temperature Transmitter converts a thermoelectric voltage into a 4-20mA signal.

Construction - The electronics for the Model T15 and T16 temperature transmitter are provided in a polymeric head mount enclosure or a rail mount enclosure. The head mount enclosure is circular, approximately 1.73" in diameters and 0.89" in depth. The rail mount enclosure is rectangular, approximately 3.9" in height, 0.69" in width and 4.47" in depth.

The head mount and rail mount housings for both the Model T15 and Model T16 Temperature transmitters are required to be installed in a final enclosure.

Electrical Ratings – Model T15 and T16 Transmitter's electrical ratings are detailed below.

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Model T15.a-bcdef-ghijk. Temperature Transmitter.

a= Type of Enclosure: H or R.
b = Explosion Protection: A.
c = Equipment Protection: I, C, N or E.
d = Explosion Protection 1: F.
e = Explosion Protection 2: F.
f = Other approvals / certificates (no Ex approvals): Z or G
g = Permissible ambient temperature: Z
h = Configuration: GK, KK
i = Configuration sensor: 1 or 2.
j = Input configuration: 2, 3 or 4.
k = Unit: C or F.

Intrinsically Safe Entity Parameters

+/- Power Terminals

Ui = 30Vdc, Ii = 130mA, Pi = 800mW, Ci = 18.4nF, Li = 20μH.

Sensor Terminals:

Group A/B, IIC: Uo = 30V, Io = 8.2mA, Po = 62mW, Co = 30nF, Lo = 1mH.

Group C, IIB: Uo = 30V, Io = 8.2mA, Po = 62mW, Co = 520nF, Lo = 1mH.

Group D, IIA: Uo = 30V, Io = 8.2mA, Po = 62mW, Co = 1.7μF, Lo = 1mH.

Nonincendive Field Wiring Parameters:

Ui = 30Vdc, Ii = 130mA, Pi = 800mW, Ci = 18.4nF, Li = 20μH.

Nonincendive Field Wiring Parameters (Sensor Terminals):

Group A/B, IIC: Uo = 30V, Io = 8.2mA, Po = 62mW, Co = 180nF, Lo = 2mH.

Group C, IIB: Uo = 30V, Io = 8.2mA, Po = 62mW, Co = 1.37μF, Lo = 2mH.

Group D, IIA: Uo = 30V, Io = 8.2mA, Po = 62mW, Co = 5.40μF, Lo = 2mH.

Nominal Ratings:

+/- Power Terminals

35Vdc, 4mA -21.5mA

Sensor Terminals:

3.34Vdc, 0.1mA, 0.334mW

Model T16.a-bcdef-ghijk. Temperature Transmitter.

a= Type of Enclosure: H or R.
b = Explosion Protection: A.
c = Equipment Protection: I, C, N or E.
d = Explosion Protection 1: F.
e = Explosion Protection 2: F.
f = Other approvals / certificates (no Ex approvals): Z or G
g = Permissible ambient temperature: Z.
h = Configuration: GK or KK.
i = Configuration sensor: K, J, N, T, R, S, B, A, C, E or L.
j = Input configuration: T.
k = Unit: C or F.

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Intrinsically Safe Entity Parameters

+/- Power Terminals

$U_i = 30V$, $I_i = 130mA$, $P_i = 800mW$, $C_i = 7.8nF$, $L_i = 20\mu H$.

Sensor Terminals:

Group A/B, IIC: $U_o = 6.6V$, $I_o = 4mA$, $P_o = 10mW$, $C_o = 21\mu F$, $L_o = 95mH$.

Group C, IIB: $U_o = 6.6V$, $I_o = 4mA$, $P_o = 10mW$, $C_o = 495\mu F$, $L_o = 95mH$.

Group D IIA: $U_o = 6.6V$, $I_o = 4mA$, $P_o = 10mW$, $C_o = 995\mu F$, $L_o = 95mH$.

Nonincendive Field Wiring Parameters:

$U_i = 30V$, $I_i = 130mA$, $P_i = 800mW$, $C_i = 7.8nF$, $L_i = 20\mu H$.

Nonincendive Field Wiring Parameters for Sensor Terminals:

Group A/B, IIC: $U_o = 6.6V$, $I_o = 4mA$, $P_o = 10mW$, $C_o = 280\mu F$, $L_o = 95mH$.

Group C, IIB: $U_o = 6.6V$, $I_o = 4mA$, $P_o = 10mW$, $C_o = 495\mu F$, $L_o = 95mH$.

Group D IIA: $U_o = 6.6V$, $I_o = 4mA$, $P_o = 10mW$, $C_o = 995\mu F$, $L_o = 95mH$.

Nominal Ratings:

+/- Power Terminals

35Vdc, 4mA -21.5mA

Sensor Terminals:

2.575Vdc, 0.1mA, 0.256mW

Environmental Ratings:

The Model T15 and Model T16 Temperature Transmitters are specified for use in an ambient range of -40°C to +85°C. The head mount and rail mount housings for both the Model T15 and Model T16 Temperature transmitters are required to be installed in a final enclosure.

13. Specific Conditions of Use:

All Models

1. The influence of power dissipation of other devices placed beside the transmitter has to be taken into account with regard to temperature rise of the transmitter's ambient temperature.
2. For Installation in Division 2, the transmitter shall be mounted in a final enclosure meeting the requirements of ANSI/UL 121201.

Models T15.*-AC***.*...*, T16.*-AC***.*...*, T15.*-AI***.*...* and T16.*-AI***.*...*

1. The transmitters shall be mounted in an enclosure in accordance with ANSI/ISA 60079-11 suitable for the relevant installation area. The enclosure shall fulfil at least IP20.
2. During the installation internal wiring, clearances, creepage distances and separations have to be considered according to ANSI/ISA 60079-11.

Models T15.*-AN***.*...* and T16.*-AN***.*...*

1. The transmitters shall be mounted in an enclosure fulfilling at least IP54 in accordance with ANSI/UL 60079-0 and ANSI/ISA 60079-15.
2. During the installation clearances, creepage distances and separations shall be considered according to ANSI/ISA 60079-15.
3. The equipment shall only be used in an area of at least pollution degree 2, as defined in ANSI/UL 61010-1 resp. IEC 60664-1.
4. Maximum overvoltage category II in accordance with ANSI/UL 61010-1 resp.

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IEC 60664-1 is permitted for the circuits.

Models T15.*-AE*-...* and T16.*-AE***-...***

1. The transmitters shall be mounted in an enclosure fulfilling at least IP54 in accordance with ANSI/UL 60079-0 and ANSI/UL 60079-7.
2. During the installation clearances, creepage distances and separations shall be considered according to ANSI/UL 60079-7.
3. The equipment shall only be used in an area of at least pollution degree 2, as defined in ANSI/UL 61010-1 resp. IEC 60664-1.
4. Maximum overvoltage category II in accordance with ANSI/UL 61010-1 resp. IEC 60664-1 is permitted for the circuits.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

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
24 th January 2020	Original Issue.

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