



Certificate of Compliance

Certificate: 80033934

Master Contract: 166720

Project: 80033934

Date Issued: 2020-05-28

Issued To: WIKA Alexander Wiegand SE & Co. KG
Alexander-Wiegand-Str 30
Klingenberg, Bayern, 63911
Germany

Attention: Harald Gollas



Issued by: *Bhas Nanavati*
Bhas Nanavati

PRODUCTS

Class 2258 04 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity - For Hazardous Location

Class I, Division 1, Groups A, B, C, D; T6...T4 (*Intrinsically Safe*)

Class I, Division 2, Groups A, B, C, D; T6...T4 (*Non-Incendive*)

Ex ia IIC T6...T4 Ga

Temperature Transmitter models T15.H-AI*, and T15.R-AI* with alphanumeric suffixes denoting mechanical or electrical variations.

Temperature Code : T4 @ Ta =80 °C max., T5 @ Ta =70 °C max., T6 @ Ta =55 °C max.

Minimum temperature: -40 °C.

Entity parameters: Vmax = 30 Vdc, Imax = 130 mA, Pi = 800 mW, Ci = 18.4 nF, Li = 20 µH.

Intrinsically safe when installed per WIKA Drawing 14365544.

Temperature Transmitter models T16.H-AI*, and T16.R-AI* with alphanumeric suffixes denoting mechanical or electrical variations.

Temperature Code : T4 @ Ta =80 °C, T5 @ Ta =70 °C, T6 @ Ta =55 °C.

Minimum temperature: -40 °C

Entity parameters: Vmax = 30 Vdc, Imax = 130 mA, Pi = 800 mW, Ci = 7.8 nF, Li = 20 µH.

Intrinsically safe when installed per WIKA Drawing 14365542.

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Complete technical specifications, models series T15.*-AI*

Parameters	Transmitter models
	T15.*-AI*
	gas application
Terminals	+ / -
Voltage U_i	DC 30 V
Current I_i	130 mA
Power P_i	800 mW
Effective internal capacitance C_i	18.4 nF
Effective internal inductance L_i	20 μ H

Sensor circuit

Parameters	Transmitter models	
	T15.*-AI*	
Level of protection	Ex ia IIC/IIB/IIA	
Terminals	1 - 4	
Voltage U_o	DC 30 V	
Current I_o	8.2 mA	
Power P_o	62 mW	
Max. external capacitance C_o	IIC	30 nF ⁽¹⁾
	IIB	0.520 μ F ⁽¹⁾
	IIA	1.70 μ F ⁽¹⁾
Max. external inductance L_o	IIC	1 mH
	IIB	1 mH
	IIA	1 mH
Characteristics	Linear	

Remarks: U_o : maximum voltage of any wire versus the other three wires

I_o : maximum output current for worst case connection of the internal current limiting resistors

P_o : $U_o \times I_o$ divided by 4 (linear characteristic)

The IS supply and signal circuit and the IS sensor circuit are considered as galvanically connected to each other.

⁽¹⁾ Internal L and C is already taken into account

Complete technical specifications, models series T16.*-AI*
Intrinsically safe supply and signal circuit (4 -20 mA current loop)

Parameters	Transmitter models
	T16.*-AI*
	gas application
Terminals	+ / -
Voltage U_i	DC 30 V
Current I_i	130 mA
Power P_i	800 mW
Effective internal capacitance C_i	7.8 nF
Effective internal inductance L_i	20 μ H

Sensor circuit

Parameters		Transmitter models
		T16.*-AI*
Level of protection		Ex ia IIC/IIB/IIA
Terminals		1 - 2
Voltage U_o		DC 6.6 V
Current I_o		4 mA
Power P_o		10 mW
Max. external capacitance $C_o^{(1)}$	IIC	21 μ F
	IIB	495 μ F
	IIA	995 μ F
Max. external inductance $L_o^{(1)}$	IIC	95 mH
	IIB	95 mH
	IIA	95 mH
Characteristics		Linear

Remarks: U_o : maximum voltage of any wire versus the other three wires

I_o : maximum output current for worst case connection of the internal current limiting resistors

P_o : $U_o \times I_o$ divided by 4 (linear characteristic)

Due to separation requirements of the applied standards, IS supply- and signal-circuit and the IS sensor circuit shall be considered as being galvanically connected to each other. The functional separation is ensured.

⁽¹⁾ Internal L and C is already taken into account



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Ambient temperature range T15.*-AI*, T16.*-AI*

Application	Ambient temperature range	Temperature class	Power P_i
Gas/ Group II	$-40\text{ }^{\circ}\text{C} \leq T_a \leq +80\text{ }^{\circ}\text{C}$	T4	800 mW
	$-40\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$	T5	800 mW
	$-40\text{ }^{\circ}\text{C} \leq T_a \leq +55\text{ }^{\circ}\text{C}$	T6	800 mW

Conditions of Acceptability:

1. These models are designated for installation inside a suitable enclosure providing degree of protection at least IP20 for EPL Ga or Gb application.
The enclosure may be located in EPL Ga area (zone 0), EPL Gb area (zone 1), or optionally in the safe area.
2. 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.
3. During the installation internal wiring, clearances, creepage distances and separations have to be considered according to CAN/CSA C22.2 No. 60079-11.

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Class 2258 03 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non-Incendive Equipment –
For Hazardous Locations

Class I, Division 2, Groups A, B, C, D; T6...T4
Ex ic IIC T6...T4 Gc

Temperature Transmitter Models T15.*-AC*, and T16.*-AC*, with alphanumeric suffixes denoting mechanical or electrical variations. Intrinsically Safe and Non-incendive Field Wiring when installed per WIKA Drawing 14365544 (T15) or 14365542 (T16).

Temperature Code : T6 @ $-40^{\circ}\text{C} \leq T_a \leq 55^{\circ}\text{C}$, T5 @ $-40^{\circ}\text{C} \leq T_a \leq 70^{\circ}\text{C}$, T4 @ $-40^{\circ}\text{C} \leq T_a \leq 80^{\circ}\text{C}$.

Complete technical specifications, models series T15.*-AC*

Intrinsically safe supply and signal circuit (4 -20 mA current loop)

Parameters	Transmitter models
	T15.*-AC*
	gas application
Terminals	+ / -
Voltage U_i	DC 30 V
Current I_i	130 mA
Power P_i	800 mW
Effective internal capacitance C_i	18.4 nF
Effective internal inductance L_i	20 μH

Sensor circuit

Parameters	Transmitter models	
	T15.*-AC*	
Level of protection	Ex ic IIC/IIB/IIA	
Terminals	1 - 4	
Voltage U_o	DC 30 V	
Current I_o	8.2 mA	
Power P_o	62 mW	
Max. external capacitance C_o	IIC	180 nF ⁽¹⁾
	IIB	1.37 μF ⁽¹⁾
	IIA	5.40 μF ⁽¹⁾
Max. external inductance L_o	IIC	2 mH
	IIB	2 mH
	IIA	2 mH
Characteristics	Linear	

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Remarks: U_o : maximum voltage of any wire versus the other three wires
 I_o : maximum output current for worst case connection of the internal current limiting resistors
 P_o : $U_o \times I_o$ divided by 4 (linear characteristic)
The supply and signal circuit and the sensor circuit are considered as galvanically connected to each other.
⁽¹⁾ Internal L and C is already taken into account

Complete technical specifications, models series T16.*-AC*
Intrinsically safe supply and signal circuit (4 -20 mA current loop)

Parameters	Transmitter models
	T16.*-AC*
	gas application
Terminals	+ / -
Voltage U_i	DC 30 V
Current I_i	130 mA
Power P_i	800 mW
Effective internal capacitance C_i	7.8 nF
Effective internal inductance L_i	20 μ H

Sensor circuit

Parameters		Transmitter models
		T16.*-AC*
Level of protection		Ex ic IIC/IIB/IIA
Terminals		1 - 2
Voltage U_o		DC 6.6 V
Current I_o		4 mA
Power P_o		10 mW
Max. external capacitance $C_o^{(1)}$	IIC	280 μ F
	IIB	995 μ F
	IIA	995 μ F
Max. external inductance $L_o^{(1)}$	IIC	95 mH
	IIB	95 mH
	IIA	95 mH
Characteristics		Linear



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Remarks: U_o : maximum voltage of any wire versus the other three wires

I_o : maximum output current for worst case connection of the internal current limiting resistors

P_o : $U_o \times I_o$ divided by 4 (linear characteristic)

Due to separation requirements of the applied standards, IS supply- and signal-circuit and the IS sensor circuit shall be considered as being galvanically connected to each other. The functional separation is ensured.

⁽¹⁾ Internal L and C is already taken into account

Conditions of Acceptability:

1. These models are designated for installation inside a suitable enclosure providing degree of protection at least IP20 for EPL Gc application.
The enclosure may be located in EPL Gc area (zone 2), or optionally in the safe area.
2. 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.
3. During the installation internal wiring, clearances, creepage distances and separations have to be considered according to CAN/CSA C22.2 No. 60079-11.



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Class 2258 02 - PROCESS CONTROL EQUIPMENT - For Hazardous Locations

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

Ex ec IIC T6...T4 Gc

Temperature Transmitter Models T15.*- AE*, T16.*- AE*, with alphanumeric suffixes denoting mechanical or electrical variations. Input rated 35 V dc max, 21.5 mA.

Temperature Code: T6 @ $-40^{\circ}\text{C} \leq T_a \leq 55^{\circ}\text{C}$, T5 @ $-40^{\circ}\text{C} \leq T_a \leq 70^{\circ}\text{C}$, T4 @ $-40^{\circ}\text{C} \leq T_a \leq 80^{\circ}\text{C}$.

Complete technical specifications, models series T15.*-AE*

Supply and signal circuit (4 -20 mA current loop)

Parameters	Transmitter models
	T15.*- AE
	gas application
Terminals	+ / -
Voltage U	DC 35 V
Current I	21, 5 mA

Sensor circuit

Parameters	Transmitter models
	T15.*- AE
Level of protection	Ex ec IIC/IIB/IIA
Terminals	1 - 4
Power P _o	3.34 V x 0.1 mA 0,334 mW DC 3.34 V (maximum voltage limited by V9) 0.1 mA (maximum current limited by D10)

Complete technical specifications, models series T16.*-AE

Supply and signal circuit (4 -20 mA current loop)

Parameters	Transmitter models
	T16.*- AE
	gas application
Terminals	+ / -
Voltage U	DC 35 V
Current I	21, 5 mA

Sensor circuit

Parameters	Transmitter models
	T16.*- AE
Level of protection	Ex ec IIC/IIB/IIA
Terminals	1 - 2



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Power P_o	2.575 V x 0.1 mA 0,256 mW DC 2.575 V (maximum voltage limited by V17, 2,424V...2,575V) 0.1 mA (maximum current limited by D1)
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Conditions of Acceptability:

1. The power supplied to the transmitter must be from a limited-energy electrical circuit in accordance with CAN/CSA C22.2 No. 61010-1, or LPS according to CAN/CSA C22.2 No. 60950-1, and Class 2 as defined in the Canadian Electrical Code C22.1, Section 16-200.
2. This is OPEN type equipment that must be installed within a suitable end-use enclosure that requires a tool to access, and is appropriately certified (e.g. Ex ec, Ex nA, or equivalent protection for EPL "Gc"), providing a minimum ingress protection level of IP54. The suitability of the enclosure is subject to investigation by the local Authority Having Jurisdiction at the time of installation.
3. Wiring to or from this equipment, which enters or leaves the system enclosure, must utilize wiring methods suitable for Class I, Division 2 and/or Class I, Zone 2 Hazardous Locations, as appropriate for the installation.
4. 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.
5. The equipment shall only be used in an area of at least Pollution Degree 2, with maximum Overvoltage Category II as defined in IEC 60664-1.



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APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 0-10 (R2015)	General requirements — Canadian Electrical Code, Part II
CAN/CSA-C22.2 No. 61010-1-12 + Amd 1 - 18	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use — Part 1: General Requirements
CAN/CSA C22.2 No. 60079-0:19	Explosive atmospheres – Part 0: Equipment – General requirements
CAN/CSA-C22.2 No. 60079-7:16	Explosive atmospheres – Part 7: Equipment protection by increased safety “e”
CAN/CSA-C22.2 No. 60079-11:14 (R2018)	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i”



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MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark, without any adjacent indicators, indicating that products have been manufactured to the requirements of Canadian Standards.

The products listed are eligible to bear the CSA Mark shown for Canada.

The following markings shall appear on a CSA accepted adhesive-type nameplate, manufactured by 3M, designated 7818EH. The markings are printed using a thermal transfer ribbon. The material is rated for indoor and outdoor use on PTB and polyamide surfaces to a maximum temperature of 80 °C. The rating is acceptable, but this fact limits the permissible ambient temperature to 80 °C.

- Manufacturer's name: "WIKA Alexander Wiegand SE & Co. KG", or "Wika", or CSA Master Contract Number "166720", adjacent to the CSA Mark in lieu of manufacturer's name.
- Model designation: As specified in the PRODUCTS section, above.
- Electrical ratings: As specified in the PRODUCTS section, above.
- Ambient temperature rating: As specified in the PRODUCTS section, above.
- Manufacturing date in MMY format, or serial number, traceable to year and month of manufacture.
- The CSA Mark, as shown on the Certificate of Conformity.
- The designation "CSA 20CA80033934X".
- Method of Protection markings (Ex -- markings): As specified in the PRODUCTS section, above.
- Temperature code: As specified in the PRODUCTS section, above.
- The following optional additional markings may be used: Hazardous Location designation, as specified in the PRODUCTS section, above. The word "Class" may be abbreviated "CL", the word "Division" may be abbreviated "DIV", and the word "Groups" may be abbreviated "GRP" or "GP".
- For models T15.*-AI*, and T15.*-AC* the following words, or equivalent:
 - Install per WIKA drawing 14365544.
- For models T16.*-AI*, and T16.*-AC*, the following words, or equivalent:
 - Install per WIKA drawing 14365542.
- For models T-15.*-AE*, and T16.*-AE*, the following warnings, or equivalent, in both English and French languages:
 - "WARNING – DO NOT CONNECT OR DISCONNECT WHEN ENERGIZED", and "AVERTISSEMENT - NE PAS CONNECTER OU DÉBRANCHER LORSQU'IL EST ÉNERGÉTIQUE"



Supplement to Certificate of Compliance

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*The products listed, including the latest revision described below,
are eligible to be marked in accordance with the referenced Certificate.*

Product Certification History

Project	Date	Description
80033934	2020-05-28	Original Certification of WIKA Temperature Transmitter models T15 and T16.