



2-WIRE PROGRAMMABLE TRANSMITTER TT519



2-WIRE PROGRAMMABLE TRANSMITTER TT519

CONTENTS

Application	2
Technical characteristics	2
Mounting / Installation.....	2
Applications.....	3
Order: TT519.....	4
Electrical specifications	4
Connections.....	8
Programming	9
Mechanical specifications	10
Mounting of sensor wires	10
Appendix	11
IECEX Installation Drawing	11
ATEX Installation Drawing.....	13
InNMETRO Instruções de Segurança	15

2-WIRE PROGRAMMABLE TRANSMITTER TT519

- TC input
- High measurement accuracy
- Galvanic isolation
- Programmable sensor error value
- For DIN form B sensor head mounting

Application

- Linearized temperature measurement with TC sensor.
- Amplification of bipolar mV signals to a 4...20 mA signal, optionally linearized according to a defined linearization function.

Technical characteristics

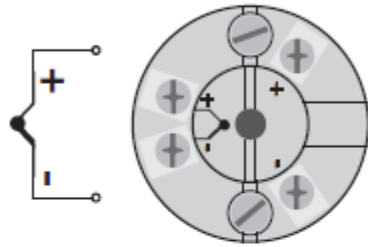
- Within a few seconds the user can program the TT519 to measure temperatures within all TC ranges defined by the norms.
- Cold junction compensation (CJC) with a built-in temperature sensor.
- Continuous check of vital stored data for safety reasons.

Mounting/installation

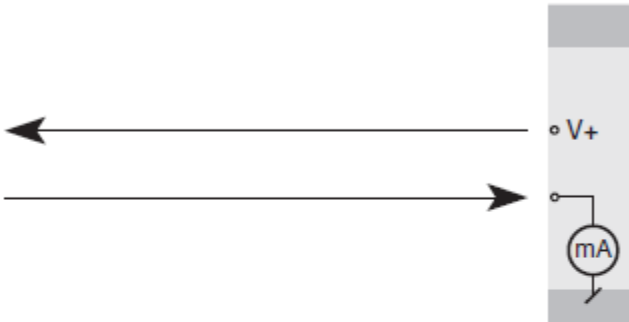
- For DIN form B sensor head mounting. In non-hazardous areas, the TT519 can be mounted on a DIN rail with the AC807 Minco DIN rail adapter.

APPLICATIONS

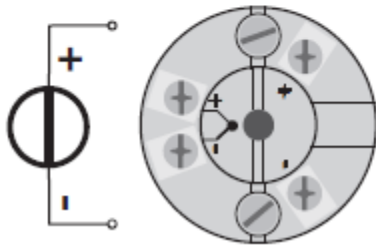
TC to 4...20 mA



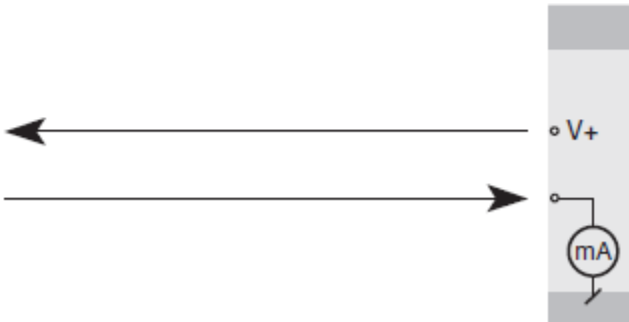
2-wire installation
in control room



mV to 4...20 mA



2-wire installation
in control room



Order TT519:

TT519E(0/100)C1Y ← EXAMPLE OF MODEL NUMBER	
TT519	SPECIFICATIONS DRAWING NUMBER.
E	SENSOR INPUT TYPE: E = TYPE E THERMOCOUPLE; J = TYPE J THERMOCOUPLE; K = TYPE K THERMOCOUPLE; T = TYPE T THERMOCOUPLE; B = TYPE B THERMOCOUPLE; N = TYPE N THERMOCOUPLE; R = TYPE R THERMOCOUPLE; S = TYPE S THERMOCOUPLE; V = VOLTAGE INPUT.
(0/100)	TEMPERATURE RANGE: 4 mA TEMPERATURE/20 mA TEMPERATURE.
C	RANGE SCALE: C = CELSIUS; F = FAHRENHEIT; MV = MILLIVOLTS.
1	CALIBRATION: 1 = NOMINAL CALIBRATION.
Y	SENSOR LEADS: Y = 2 LEADS.

Electrical specifications

Specifications Range:

-40°C to +85°C

Common specifications:

Supply voltage, DC	7.2...30 VDC
Internal consumption.....	25 mW...0.7 W
Voltage drop	7.2 VDC
Isolation voltage, test/operation	1.5 kVAC/50VAC
Warm-up time	5 min
Communications interface	Loop Link with AC205817
Signal /noise ratio	Min. 60 dB
Response time (programmable)	1...60 s
EEprom error check	< 3.5 s
Signal dynamics, input	18 bit
Signal dynamics, output	16 bit
Calibration temperature.....	20...28°C

Accuracy:

Calibration	Type	Accuracy	Temperature Coefficient
Nominal	Type E, J, K, T, N	<±1°C	<±0.05°C/°C
	Type B, R, S	<±2°C	<±0.2°C/°C
	Voltage	<±10µV	<±1µV/°C

EMC immunity influence < ± 0.5% of span

Extended EMC immunity:

NAMUR NE 21, A criterion, burst < ± 1% of span

Effect of supply voltage variation < 0.005% of span/VDC

Vibration IEC 60068-2-6:2007

 2...25 Hz.....±1.6 mm

 25...100 Hz.....±4 g

Max. wire size 1x1.5 mm² stranded wire

Screw terminal torque 0.4 Nm

Humidity < 95% RH (non-cond.)

Dimensions Ø 44 x 20.2 mm

Protection degree (enclosure / terminal) IP68 / IP00

Weight 50 g

Electrical specification, input:

Max. offset 50% of selec. max. value

TC input:

Type	Min temperature	Max temperature	Min span	Standard
B	+400°C	+1820°C	100°C	IEC584
E	-100°C	+1000°C	50°C	IEC584
J	-100°C	+1200°C	50°C	IEC584
K	-180°C	+1372°C	50°C	IEC584
L	-100°C	+900°C	50°C	DIN 43710
N	-180°C	+1300°C	50°C	IEC584
R	-50°C	+1760°C	100°C	IEC584
S	-50°C	+1760°C	100°C	IEC584
T	-200°C	+400°C	50°C	IEC584
U	-200°C	+600°C	50°C	DIN 43710
W3	0°C	+2300°C	100°C	ASTM E988-90
W5	0°C	+2300°C	100°C	ASTM E988-90
LR	-200°C	+800°C	50°C	GOST 3044-84

Cold junction compensation < ±1.0°C

Sensor error detection Yes

Sensor error current:

When detecting Nom. 33 µA

Else 0 mA

Voltage input:

Measurement range -12...150mV

Min. span 5 mV

Input resistance 10 MΩ

Output:**Current output:**

Signal range 4...20 mA

Min. signal range 16mA

Updating time 440 ms

Output signal at EEprom error ≤ 3.5 mA

Load resistance ≤ (Vsupply – 7.2)/0.023 [Ω]

Load stability ±0.01% of span/100 Ω

Sensor error detection:

Programmable 3.5...23 mA

Namur NE43 Upscale 23 mA

Namur NE43 Downscale 3.5 mA

Of span = Of the presently selected range

Approvals

EMC 2014/30/EU
CCOE..... P337392/1
RoHS 2011/65/EU
EAC..... TR-CU 020/2011

Marine approval:

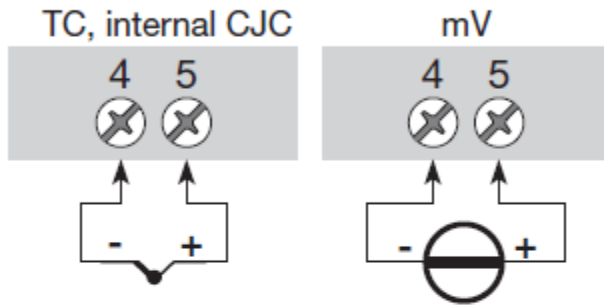
DNV-GL, Ships & Offshore..... Standard for Certification No. 2.4

Ex:

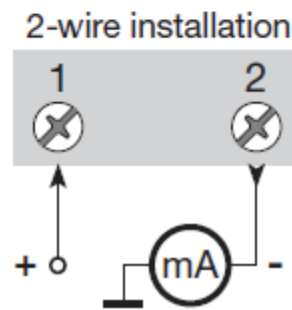
ATEX 2014/34/EU..... KEMA 06ATEX0062 X
IECEX..... DEK 13.0035X
INMETRO..... DEKRA 16.0013 X
CCOE..... P337392/2
EAC Ex TR-CU 012/2011..... RU C-DK.GB08.V.00410

CONNECTIONS

Input:

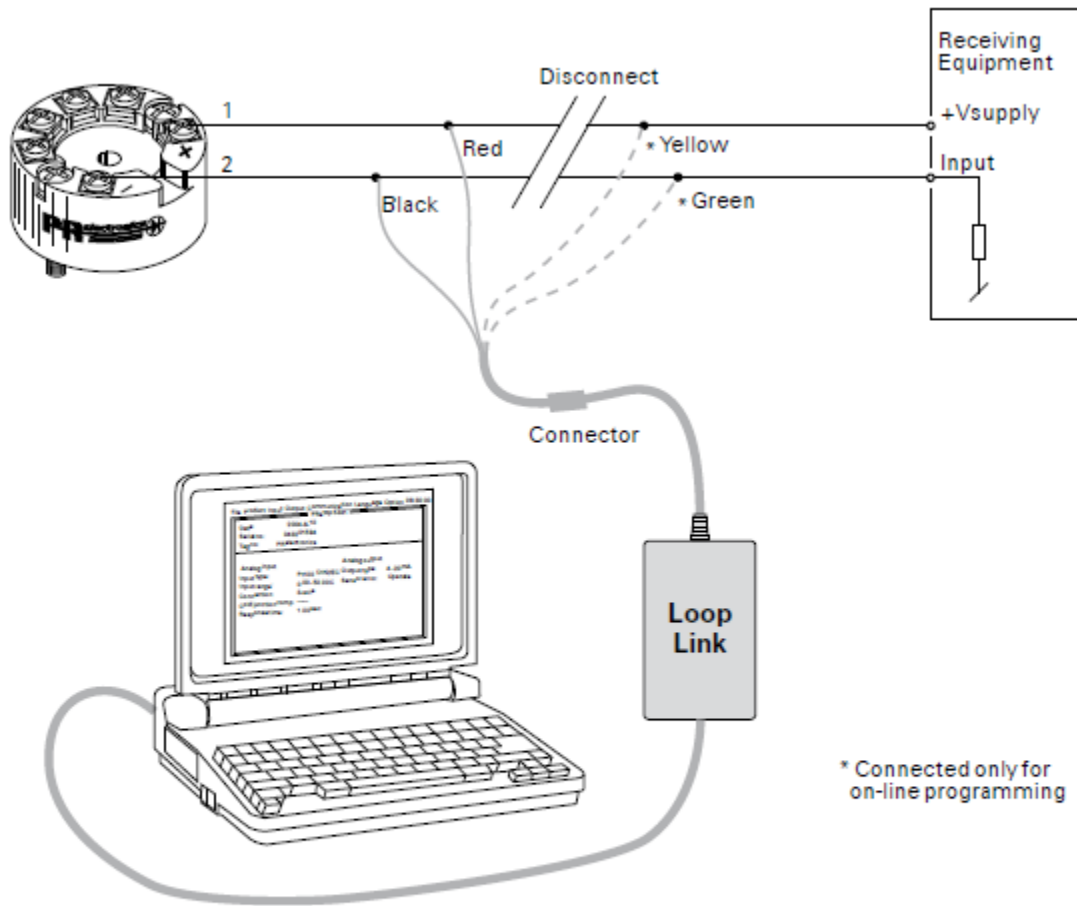


Output:

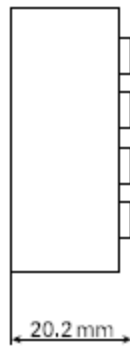
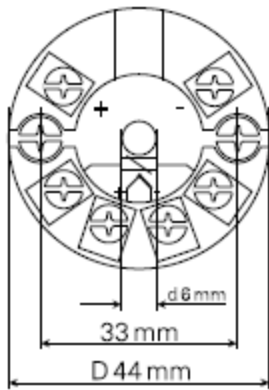


Programming

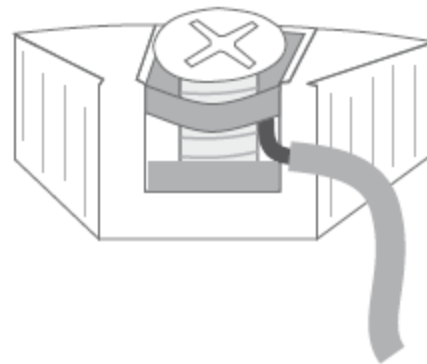
- Loop Link is a communication interface that is needed for programming the TT508, TT509, TT510, TT511, TT518, TT519, TT520 & TT521.
- Use Minco AC205817.
- For programming please refer to the drawing below.
- Loop link is not approved for communication with modules installed in hazardous (Ex) areas.



Mechanical specifications



Mounting of sensor wires



Wires must be mounted between the metal plates.

Appendix

IECEX Installation Drawing



For safe installation of the TT519 the following must be observed. The module shall only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this area.

Year of manufacture can be taken from the first two digits in the serial number.

ATEX Certificate

IECEX DEK 13.0035X

Marking

Ex ia IIC T4...T6 Ga

Ex ia IIIC Da

Ex ia I Ma

Standards

EN 60079-0 : 2011, EN60079-11 : 2011, IEC 60079-26 : 2006

Hazardous area

Zone 0, 1, 2, 20, 21, 22, M1

T4: $-40 \leq T_a \leq 85^\circ\text{C}$

T5: $-40 \leq T_a \leq 60^\circ\text{C}$

T6: $-40 \leq T_a \leq 45^\circ\text{C}$

Terminal: 3,4,5,6

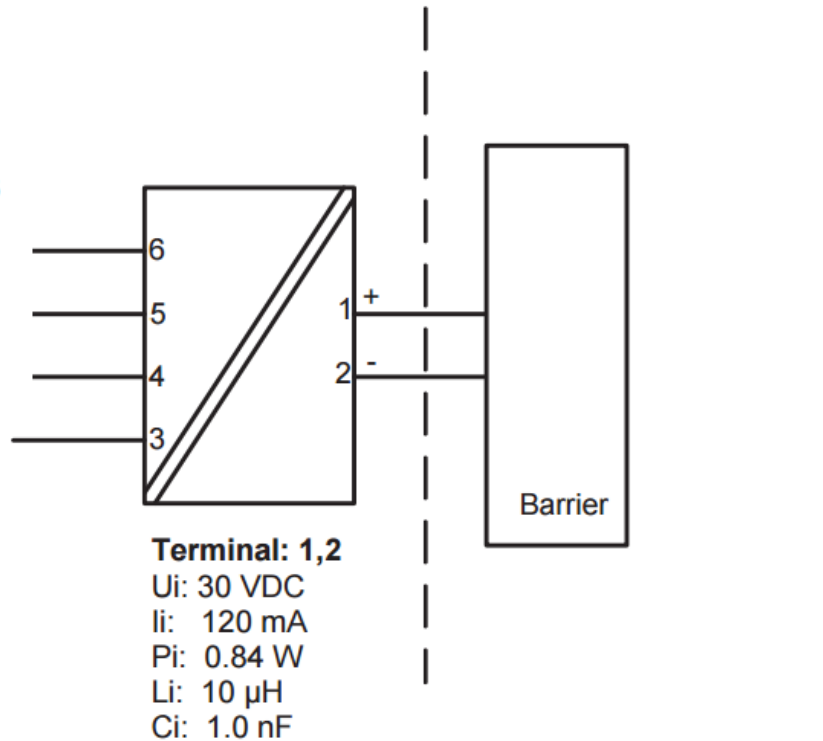
U_o: 9.6 VDC

I_o: 25 mA

P_o: 60 mW

L_o: 33 mH

C_o: 2.4 μF



Installation Notes:

The sensor circuit is not infallibly galvanic isolated from the input circuit. However, the galvanic isolation between the circuits is capable of withstanding a test voltage of 500Vac during 1 minute.

In a potentially explosive gas atmosphere, the transmitter shall be mounted in a metal form B enclosure in order to provide a degree of protection of at least IP20 according to IEC60529. If however the environment requires a higher degree of protection, this shall be taken into account

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Ga, Ma and Mb, and if the enclosure is made of aluminum, it must be installed such, that ignition sources due to impact and friction sparks are excluded.

For installation in a potentially explosive dust atmosphere, the following instructions apply:

For explosive dust atmospheres, the surface temperature of the outer enclosure is 20 K above the ambient temperature.

The transmitter shall be mounted in a metal enclosure form B according to DIN43729 that is providing a degree of protection of at least IP6X according to IEC60529, that is suitable for the application and correctly installed.

Cable entries and blanking elements shall be used that are suitable for the application and correctly installed.

For an ambient temperature $\geq 60^{\circ}\text{C}$, heat resistant cables shall be used with a rating of at least 20 K above the ambient temperature.

ATEX Installation Drawing



For safe installation of the TT519 the following must be observed. The module shall only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this area.

Year of manufacture can be taken from the first two digits in the serial number.

ATEX Certificate KEMA 06ATEX 0062 X

Marking



II 1 G EX ia IIC T4...T6 Ga
II 1 D Ex ia IIIC Da
II M1 Ex ia I Ma

Standards

EN 60079-0 : 2012, EN60079-11 : 2012, EN 60079-26 : 2007,
EN 60079-15 : 2010

Hazardous area

Zone 0, 1, 2, 20, 21, 22

T4: $-40 \leq Ta \leq 85^{\circ}\text{C}$

T6: $-40 \leq Ta \leq 60^{\circ}\text{C}$

Terminal: 3,4,5,6

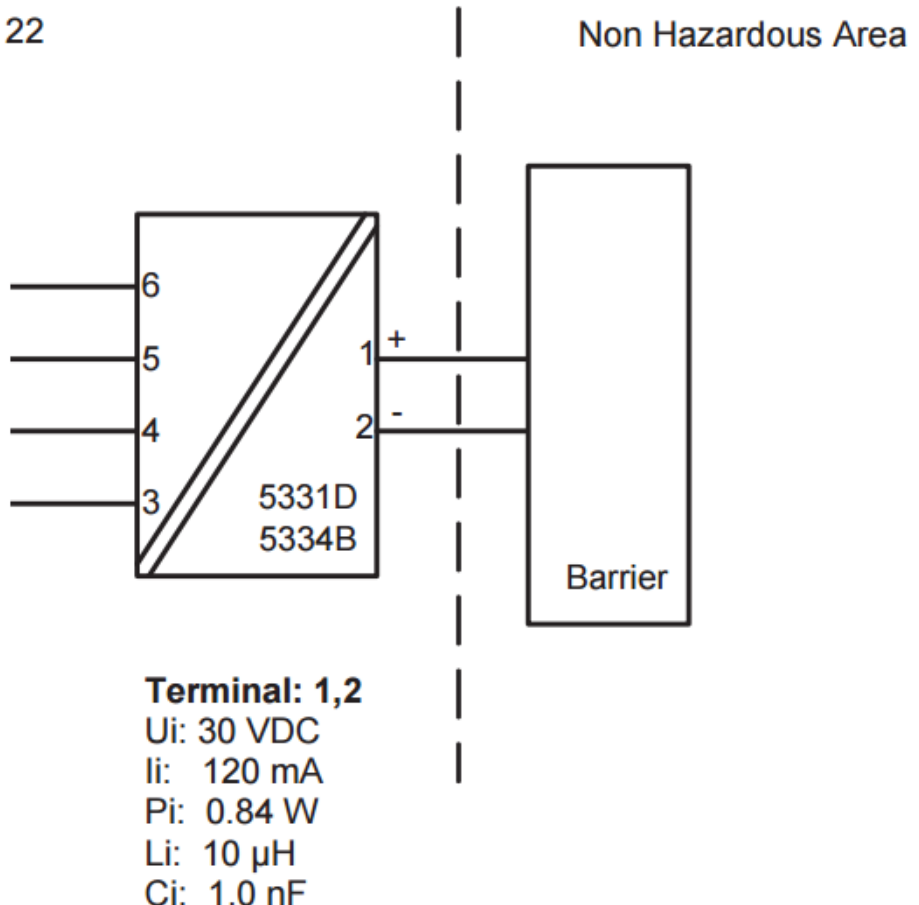
Uo: 9.6 VDC

Io: 25 mA

Po: 60 mW

Lo: 33 mH

Co: 2.4 μ F



Terminal: 1,2

Ui: 30 VDC

Ii: 120 mA

Pi: 0.84 W

Li: 10 μ H

Ci: 1.0 nF

Installation notes:

The sensor circuit is not infallibly galvanic isolated from the input circuit. However, the galvanic isolation between the circuits is capable of withstanding a test voltage of 500Vac during 1 minute.

In a potentially explosive gas atmosphere, the transmitter shall be mounted in an enclosure in order to provide a degree of protection of at least IP20 according to EN60529.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment of category 1 G, 1 M, or 2 M, and if the enclosure is made of aluminum, it must be installed such, that even in the event of rare incidents, ignition sources due to impact and friction, sparks are excluded: if the enclosure is made of non-metallic materials, electrostatic charging shall be avoided.

For installation in a potentially explosive dust atmosphere, the following instructions apply:

The transmitter shall be mounted in a metal enclosure form B according to DIN43729 that is providing a degree of protection of at least IP6X according to EN60529, that is suitable for the application and correctly installed.

Cable entries and blanking elements shall be used that are suitable for the application and correctly installed.

For an ambient temperature $\geq 60^{\circ}\text{C}$, heat resistance cable shall be used with a rating of at least 20 K above the ambient temperature

The surface temperature of the enclosure is equal to the ambient temperature plus 20 K, for a dust layer with a thickness up to 5 mm.

Desenho de Instalação InNMETRO



Para instalação segura do TT519 o seguinte deve ser observado. O modo deve apenas ser instalado por pessoas qualificadas que são familiarizadas com as leis nacionais e internacionais, diretrizes e padrões que se aplicam a esta área.

Ano de fabricação pode ser pego dos dois primeiros dígitos do número de série.

Certificado DEKRA 16.0013 X

Marcas Ex ia IIC T6...T4 Ga
Ex ia IIIC Da

Normas ABNT NBR IEC 60079-0 : 2013; ABNT NBR IEC 60079-11 : 2013

Áreas classificadas

Zona 0, 1, 2, 20, 21, 22,

T4: $-40 \leq T_a \leq 85^\circ\text{C}$

T5: $-40 \leq T_a \leq 60^\circ\text{C}$

T6: $-40 \leq T_a \leq 45^\circ\text{C}$

Terminais 3,4,5,6

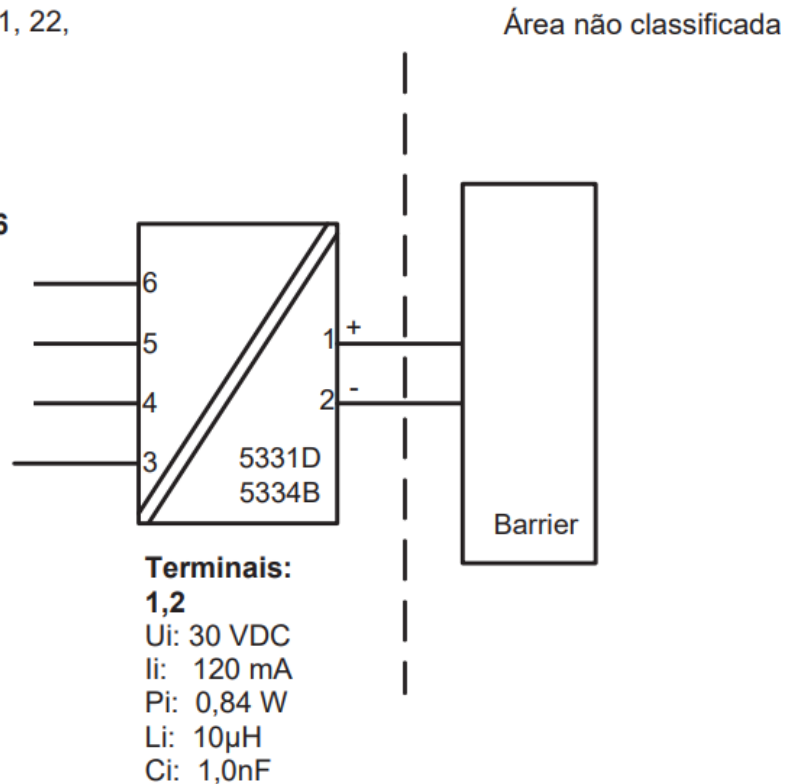
Uo: 9,6 VDC

Io: 25 mA

Po: 60 mW

Lo: 33 mH

Co: 2,4 μ F



Notas para instalação

O circuito do sensor não é isolado galvanicamente infalível do circuito de entrada. Contudo, a isolação galvânica entre os circuitos é capaz de resistir a um teste de tensão de 500Vac durante 1 minuto.

Em uma atmosfera de gás potencialmente explosiva, o transmissor deve ser montado em um enclosure a fim de garantir um grau de proteção de no mínimo IP20 de acordo com EN60529. Se contudo o ambiente requer um nível de proteção maior, isso deve ser levado em conta

Se o transmissor é instalado em uma atmosfera explosiva exigindo o uso de equipamento de categoria Ga e se o enclosure é feito de alumínio, ele deve ser instalado de modo que, mesmo em caso de avaria rara, fontes de ignição devido a impacto e fricção, faíscas são eliminadas; se o enclosure é feito de materiais não metálicos, cargas eletroestáticas devem ser evitadas.

Para instalação em atmosfera de poeira potencialmente explosiva, as instruções a seguir:

O transmissor deve ser montado em enclosure de metal forma B de acordo com DIN43729 que está fornecendo um grau de proteção de pelo menos IP6X de acordo com EN60529. Isso é adequado para aplicação e corretamente instalado.

As entradas dos cabos e os elementos de obturação que podem ser utilizados são adequados para a aplicação e corretamente instalados.

Para temperatura ambiente $\geq 60^{\circ}\text{C}$, fios de resistência ao calor devem ser usados com uma faixa de pelo menos 20K acima da temperatura ambiente.

A temperatura da superfície do enclosure é igual à temperatura ambiente mais de 20 K, por uma camada de pó, com uma espessura até 5 mm.