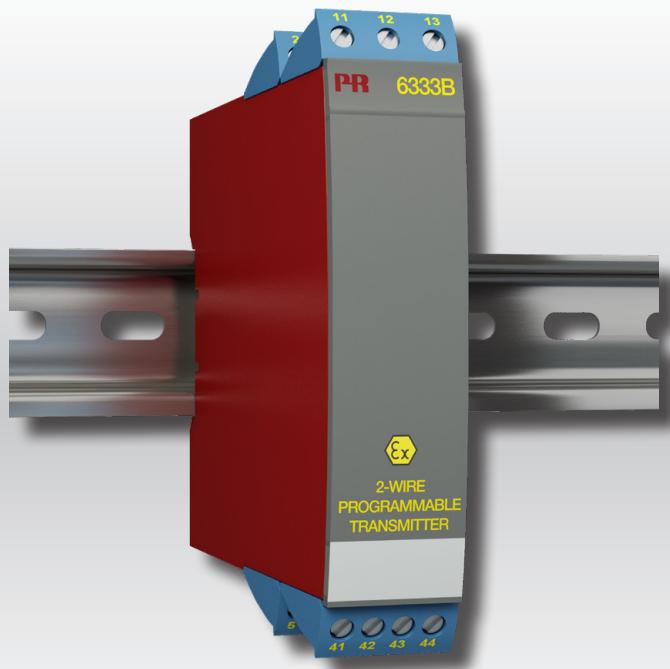


PERFORMANCE
MADE
SMARTER

Product manual

6333

2-wire programmable transmitter



TEMPERATURE | I.S. INTERFACES | COMMUNICATION INTERFACES | MULTIFUNCTIONAL | ISOLATION | DISPLAY

No. 6333V109-UK
From serial no.: 241694124

PR
electronics

6 Product Pillars

to meet your every need

Individually outstanding, unrivalled in combination

With our innovative, patented technologies, we make signal conditioning smarter and simpler. Our portfolio is composed of six product areas, where we offer a wide range of analog and digital devices covering over a thousand applications in industrial and factory automation. All our products comply with or surpass the highest industry standards, ensuring reliability in even the harshest of environments and have a 5-year warranty for greater peace of mind.



Our range of temperature transmitters and sensors provides the highest level of signal integrity from the measurement point to your control system. You can convert industrial process temperature signals to analog, bus or digital communications using a highly reliable point-to-point solution with a fast response time, automatic self-calibration, sensor error detection, low drift, and top EMC performance in any environment.



We deliver the safest signals by validating our products against the toughest safety standards. Through our commitment to innovation, we have made pioneering achievements in developing I.S. interfaces with SIL 2 Full Assessment that are both efficient and cost-effective. Our comprehensive range of analog and digital intrinsically safe isolation barriers offers multifunctional inputs and outputs, making PR an easy-to-implement site standard. Our backplanes further simplify large installations and provide seamless integration to standard DCS systems.



We provide inexpensive, easy-to-use, future-ready communication interfaces that can access your PR installed base of products. All the interfaces are detachable, have a built-in display for readout of process values and diagnostics, and can be configured via push-buttons. Product specific functionality includes communication via Modbus and Bluetooth and remote access using our PR Process Supervisor (PPS) application, available for iOS and Android.



Our unique range of single devices covering multiple applications is easily deployable as your site standard. Having one variant that applies to a broad range of applications can reduce your installation time and training, and greatly simplify spare parts management at your facilities. Our devices are designed for long-term signal accuracy, low power consumption, immunity to electrical noise and simple programming.



Our compact, fast, high-quality 6 mm isolators are based on microprocessor technology to provide exceptional performance and EMC-immunity for dedicated applications at a very low total cost of ownership. They can be stacked both vertically and horizontally with no air gap separation between units required.



Our display range is characterized by its flexibility and stability. The devices meet nearly every demand for display readout of process signals and have universal input and power supply capabilities. They provide a real-time measurement of your process value no matter the industry and are engineered to provide a user-friendly and reliable relay of information, even in demanding environments.

2-wire programmable transmitter

6333

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2-wire programmable transmitter 6333

- RTD or Ohm input
- High measurement accuracy
- 3-wire connection
- Programmable sensor error value
- 1- or 2-channel version

Application

- Linearized temperature measurement with Pt100... Pt1000 or Ni100...Ni1000 sensor.
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors.

Technical characteristics

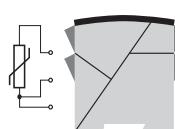
- Within a few seconds the user can program PR6333 to measure temperatures within all RTD ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 3-wire connection.
- A limit can be programmed on the output signal.

Mounting / installation

- Mounted vertically or horizontally on a DIN rail. Using the 2-channel version up to 84 channels per metre can be mounted.
- The 6333A can be mounted in zone 2 and zone 22 / Class I, Division 2, Groups A, B, C, D.
- The 6333B can be mounted in zone 0, 1, 2 and zone 21, 22 including M1 / Class I, Division 1, Groups A, B, C, D.

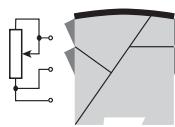
Applications

RTD to 4...20 mA



2-wire installation
in control room

Resistance
to 4...20 mA



2-wire installation
in control room

Order

Type	Version	Galvanic isolation	Channels		
6333	Zone 2, 22 / Div. 2 Zone 0, 1, 2, 21, 22, M1 / DIV. 1, DIV. 2	: A : B	None : 1	Single Double	: A : B

Electrical specifications

Environmental conditions:

Specification range	-40°C to +85°C
Storage temperature	-40°C to +85°C
Calibration temperature.	20...28°C
Humidity.	< 95% RH (non-cond.)
Protection degree	IP20

Mechanical specifications:

Dimensions (H x W x D)	109 x 23.5 x 104 mm
Weight (1 / 2 channels)	145 / 185 g
DIN rail type.	DIN EN/IEC 60715 - 35 mm
Wire size.	0.13...2.08 mm ² / AWG 26...14 stranded wire
Screw terminal torque.	0.5 Nm

Common specifications:

Supply voltage, DC	
6333A.	8...35 VDC
6333B.	8...30 VDC
Max. required power, 1 / 2 channels, 6333A	0.8 W / 1.6 W
Max. required power, 1 / 2 channels, 6333B	0.7 W / 1.4 W
Internal power dissipation, 6333A	0.19...0.8 W
Internal power dissipation, 6333B	0.19...0.7 W
Voltage drop	8 VDC
Warm-up time.	5 min.
Communications interface	Loop Link
Signal / noise ratio.	Min. 60 dB
Response time (programmable)	0.33...60 s
Signal dynamics, input	19 bit
Signal dynamics, output	16 bit
Effect of supply voltage variation.	< 0.005% of span / VDC
Accuracy, the greater of general and basic values:	

General values		
Input type	Absolute accuracy	Temperature coefficient
All	≤ ±0.1% of span	≤ ±0.01% of span / °C

Basic values		
Input type	Basic accuracy	Temperature coefficient
RTD	≤ ±0.3°C	≤ ±0.01°C/°C
Lin. R	≤ ±0.2 Ω	≤ ±20 mΩ / °C

EMC - immunity influence.	< ±0.5% of span
-----------------------------------	-----------------

Electrical specifications, inputs:

Max. offset 50% of selec. max. value

RTD and linear resistance inputs:

RTD type	Min. value	Max. value	Min. span	Standard
Pt100	-200°C	+850°C	25°C	IEC 60751
Ni100	-60°C	+250°C	25°C	DIN 43760
Lin. R	0 Ω	10000 Ω	30 Ω	----

Cable resistance per wire (max.) 10 Ω

Sensor current > 0.2 mA, < 0.4 mA

Effect of sensor cable resistance (3-wire) < 0.002 Ω/Ω

Sensor error detection Yes

Outputs:**Current outputs:**

Signal range 4...20 mA

Min. signal range 16 mA

Updating time 135 ms

Load resistance $\leq (V_{\text{supply}} - 8) / 0.023 [\Omega]$

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

Observed authority requirements:

EMC 2014/30/EU

ATEX 2014/34/EU

RoHS 2011/65/EU

EAC TR-CU 020/2011

EAC Ex TR-CU 012/2011

I.S. / Ex approvals:

6333A:

ATEX DEKRA 20ATEX0106X

6333B:

ATEX DEKRA 20ATEX0105X

FM FM17US0013X

6333A & 6333B:

IECEx DEK 20.0062X

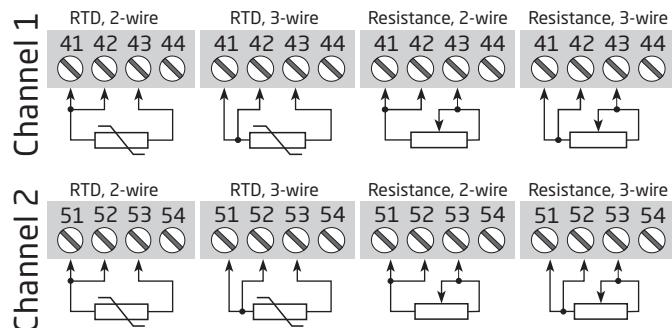
CSA 1125003

INMETRO DEKRA 23.0010X

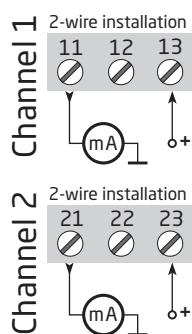
EAC Ex EAEU KZ 7500361.01.01.08756

Connections

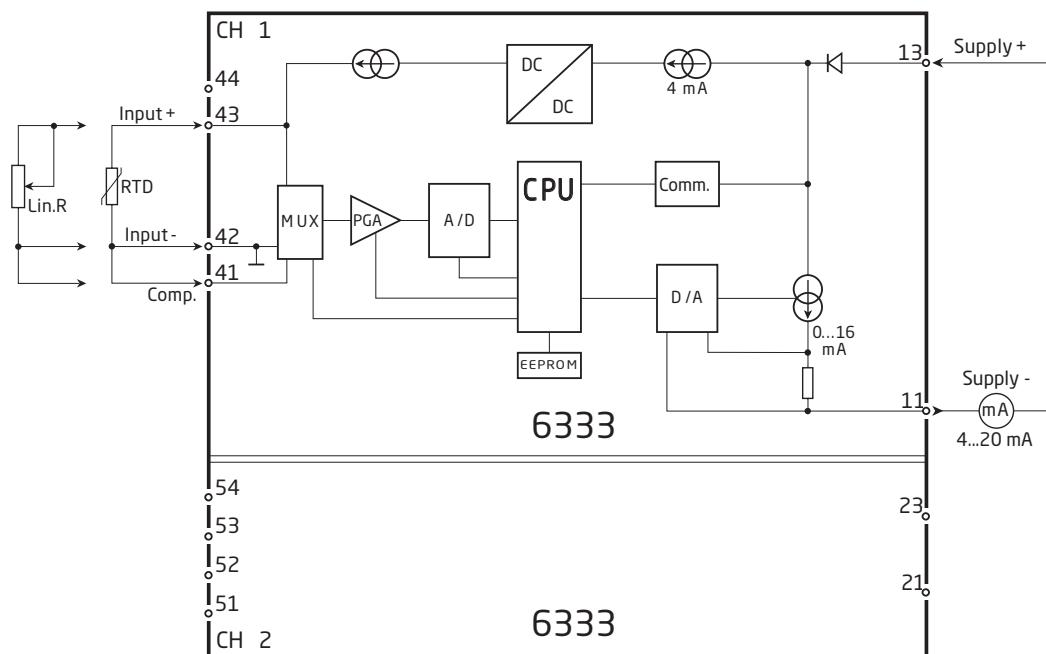
Inputs:



Outputs:

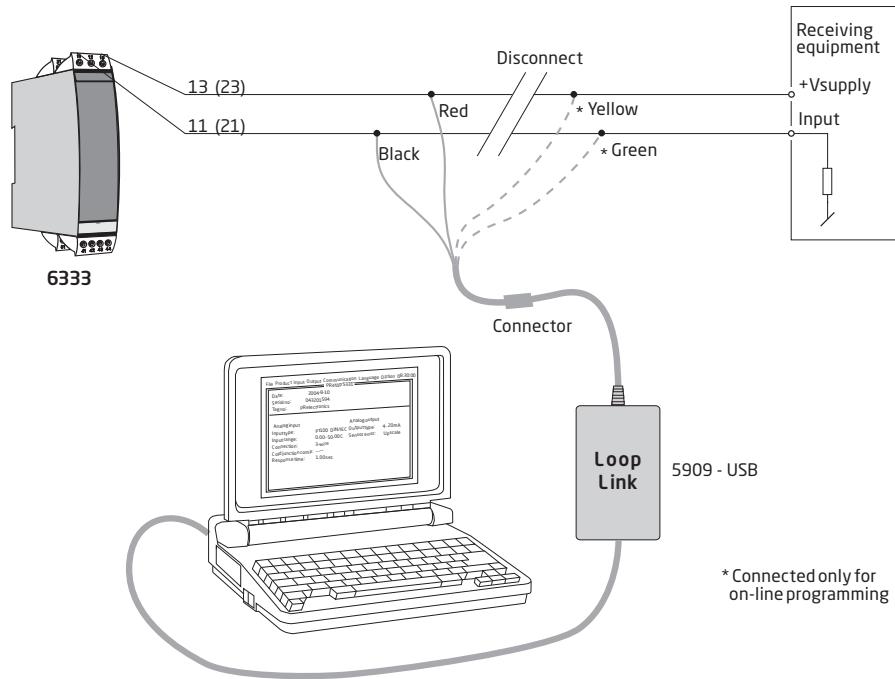


Block diagram



Programming

- Loop Link is a communications interface that is needed for programming 6333.
- For programming please refer to the drawing below and the help functions in PReset.
- When communicating with non-installed devices, connectors 11, 12, 13 (channel 1) and 21, 22, 23 (channel 2) can be dismantled in the safe area to connect the terminals of the communications interface to the pins.
- Loop Link is not approved for communication with devices installed in hazardous (Ex) areas.



ATEX-installation drawing 6333QA02-V3R0

For safe installation of 6333A 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.

Certificate DEKRA 20ATEX0106 X

Marking  II 3 G Ex nA [ic] IIC T6 ... T4 Gc
 II 3 G Ex ec [ic] IIC T6 ... T4 Gc
 II 3 G Ex ic IIC T6 ... T4 Gc
 II 3 D Ex ic IIIC Dc

Standards EN 60079-0: 2018, EN 60079-11: 2012,
 EN 60079-15: 2010, EN 60079-7:2015+A1: 2018

Terminal 41,42,43 51,52,53	Terminal 11,12,13 21,22,23	Terminal 11,12,13 21,22,23	Terminal 11,12,13 21,22,23
Ex ic IIC,Ex ic IIIC	Ex ic IIC,Ex ic IIIC	Ex ic IIC,Ex ic IIIC	Ex nA, Ex ec
Uo: 5 V Io: 4 mA Po: 20 mW Lo: 900 mH Co: 1000 μ F	Ui = 35 V Ii = 110 mA Ci = 6.2 nF Li = 10 μ H	Ui = 24 V Ii = 260 mA Ci = 6.2 nF Li = 10 μ H	Umax \leq 35 VDC or Umax \leq 24 VDC

Ex ic IIC, Ex ic IIIC Temperature Class	Ambient temperature range	
	Ui=35 V	Ui=24 V
T6	-40°C to +54°C	-40°C to +63°C
T5	-40°C to +69°C	-40°C to +78°C
T4	-40°C to +85°C	-40°C to +85°C

Ex ec, Ex nA Temperature Class	Ambient temperature range	
	Vmax=35 V	Vmax=24 V
T6	-40°C to +43°C	-40°C to +55°C
T5	-40°C to +85°C	-40°C to +85°C
T4	-40°C to +85°C	-40°C to +85°C

Installation notes

If the enclosure is made of non-metallic plastic materials, electrostatic charges on the transmitter enclosure shall be avoided.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Gc and applied in type of protection Ex ic, the transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP20 according to EN 60529, and that is suitable for the application and correctly installed.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Dc, the transmitter shall be mounted in a separately certified enclosure that provides a degree of protection of at least IP5X according to EN 60079-0, and that is suitable for the application and correctly installed. The surface temperature of the outer enclosure is +20 K above the ambient temperature, determined without a dust layer.

Ambient temperature range: -40°C to +85°C.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Gc and applied in type of protection Ex nA or Ex ec, the transmitter shall be mounted in a separately certified enclosure that provides a degree of protection of at least IP54 according to EN 60079-0, and that is suitable for the application and correctly installed.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Gc and applied in type of protection Ex nA or Ex ec, the equipment shall only be used in an area of not more than pollution degree 2, as defined in EN 60664-1.

ATEX-installation drawing 6333QA01-V3R0



For safe installation of 6333Bxx 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 DEKRA 20ATEX 0105X

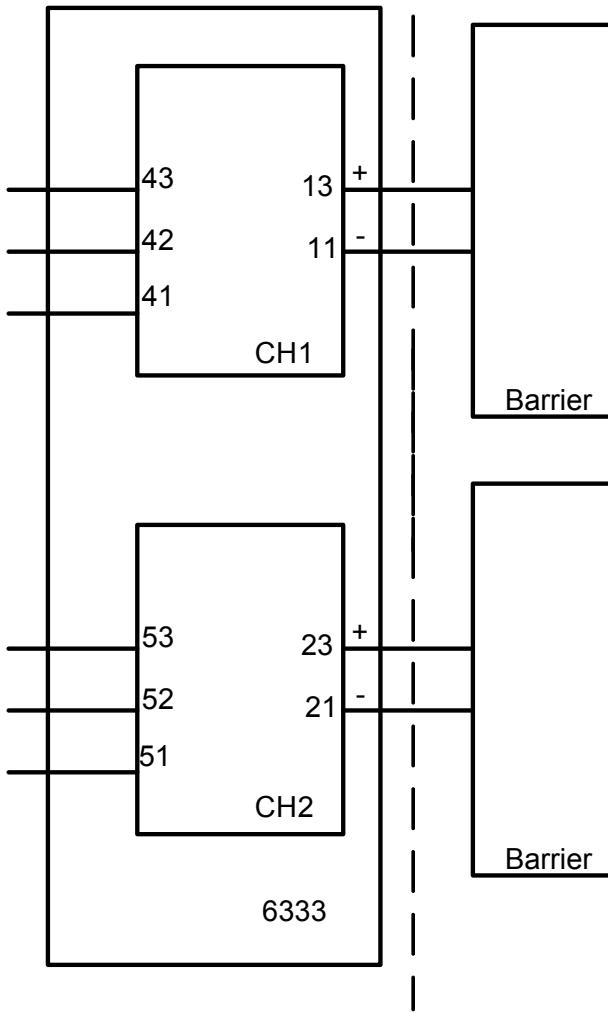
Marking  II 1 G Ex ia IIC T6...T4 Ga
II 2 D Ex ia IIIC Db
I M1 Ex ia I Ma

Standards EN IEC 60079-0: 2018, EN 60079-11: 2012

Hazardous area
Zone 0, 1, 2, 21, 22

Non Hazardous Area

Terminal:
41,42,43
Uo: 30 VDC
Io: 8 mA
Po: 60 mW
Lo: 35 mH
Co: 60.8 nF



Terminal:
51,52,53
Uo: 30 VDC
Io: 8 mA
Po: 60 mW
Lo: 35 mH
Co: 60.8 nF

Terminal:
**11,13 and
21,23**
Ui: 30 VDC
Ii: 120 mA
Pi: 0.84 W or
Pi: 0.75 W
Li: 10 μ H
Ci: 6.2 nF

Temperature Class	Ambient temperature range	
	P _i : 0.84 W	P _i : 0.75 W
T6	-40°C to +40°C	-40°C to +45°C
T5	-40°C to +55°C	-40°C to +60°C
T4	-40°C to +85°C	-40°C to +85°C

Installation notes

If the enclosure is made of non-metallic plastic materials, electrostatic charges on the transmitter enclosure shall be avoided.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Ga, the transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP20 according to EN 60529, and that is suitable for the application and correctly installed.

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

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Db, the transmitter shall be mounted in a separately certified enclosure that provides a degree of protection of at least IP5X according to EN 60079-0, and that is suitable for the application and correctly installed.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Ma, the transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP54 according to EN 60529, and 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.

IECEx-installation drawing 6333QI02-V2R0

For safe installation of 6333A 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.

Certificate IECEx DEK 20.0062X

Marking Ex nA [ic] IIC T6 ... T4 Gc
Ex ec [ic] IIC T6 ... T4 Gc
Ex ic IIC T6 ... T4 Gc
Ex ic IIIC Dc

Standards IEC 60079-0: 2017, IEC 60079-11: 2011,
IEC 60079-15: 2010, IEC 60079-7: 2017

Terminal 41,42,43 51,52,53	Terminal 11,12,13 21,22,23	Terminal 11,12,13 21,22,23	Terminal 11,12,13 21,22,23
Ex ic IIC,Ex ic IIIC	Ex ic IIC,Ex ic IIIC	Ex ic IIC,Ex ic IIIC	Ex nA, Ex ec
Uo: 5 V Io: 4 mA Po: 20 mW Lo: 900 mH Co: 1000 μ F	Ui = 35 V Ii = 110 mA Ci = 6.2 nF Li = 10 μ H	Ui = 24 V Ii = 260 mA Ci = 6.2 nF Li = 10 μ H	Umax \leq 35 VDC or Umax \leq 24 VDC

Ex ic IIC, Ex ic IIIC Temperature Class	Ambient temperature range	
	Ui=35 V	Ui=24 V
T6	-40°C to +54°C	-40°C to +63°C
T5	-40°C to +69°C	-40°C to +78°C
T4	-40°C to +85°C	-40°C to +85°C

Ex ec, Ex nA Temperature Class	Ambient temperature range	
	Vmax=35 V	Vmax=24 V
T6	-40°C to +43°C	-40°C to +55°C
T5	-40°C to +85°C	-40°C to +85°C
T4	-40°C to +85°C	-40°C to +85°C

Installation notes

If the enclosure is made of non-metallic plastic materials, electrostatic charges on the transmitter enclosure shall be avoided.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Gc and applied in type of protection Ex ic, the transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP20 according to IEC 60529, and that is suitable for the application and correctly installed.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Dc, the transmitter shall be mounted in a separately certified enclosure that provides a degree of protection of at least IP5X according to IEC 60079-0, and that is suitable for the application and correctly installed. The surface temperature of the outer enclosure is +20 K above the ambient temperature, determined without a dust layer.

Ambient temperature range: -40°C to +85°C.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Gc and applied in type of protection Ex nA or Ex ec, the transmitter shall be mounted in a separately certified enclosure that provides a degree of protection of at least IP54 according to IEC 60079-0, and that is suitable for the application and correctly installed.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Gc and applied in type of protection Ex nA or Ex ec, the equipment shall only be used in an area of not more than pollution degree 2, as defined in IEC 60664-1.

IECEx-installation drawing 6333QI01-V2R0



For safe installation of 6333Bxx 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.

Certificate IECEx DEK 20.0062X

Marking Ex ia IIC T6...T4 Ga
 Ex ia IIIC Db
 Ex ia I Ma

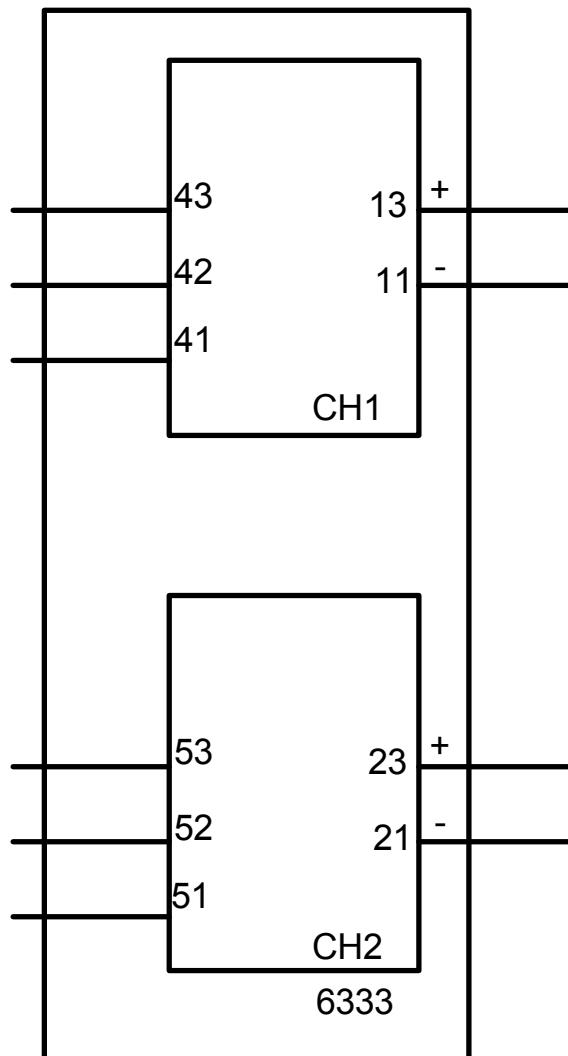
Standards IEC 60079-0: 2017, IEC 60079-11: 2011

Hazardous area
Zone 0, 1, 2, 21, 22

Non Hazardous Area

Terminal:
41,42,43
Uo: 30 VDC
Io: 8 mA
Po: 60 mW
Lo: 35 mH
Co: 60.8 nF

Terminal:
51,52,53
Uo: 30 VDC
Io: 8 mA
Po: 60 mW
Lo: 35 mH
Co: 60.8 nF



Terminal:
**11,13 and
21,23**
Ui: 30 VDC
li: 120 mA
Pi: 0.84 W or
Pi: 0.75 W
Li: 10 μ H
Ci: 6.2 nF

Temperature Class	Ambient temperature range	
	P _i : 0.84 W	P _i : 0.75 W
T6	-40°C to +40°C	-40°C to +45°C
T5	-40°C to +55°C	-40°C to +60°C
T4	-40°C to +85°C	-40°C to +85°C

Installation notes

If the enclosure is made of non-metallic plastic materials, electrostatic charges on the transmitter enclosure shall be avoided.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Ga, the transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP20 according to IEC 60529, and that is suitable for the application and correctly installed.

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

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Db, the transmitter shall be mounted in a separately certified enclosure that provides a degree of protection of at least IP5X according to IEC 60079-0, and that is suitable for the application and correctly installed. The surface temperature of the outer enclosure is +20 K above the ambient temperature, determined without a dust layer.

Ambient temperature range: -40°C to +85°C.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Ma, the transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP54 according to IEC 60529, and that is suitable for the application and correctly installed.

Ambient temperature range: -40°C to +85°C.

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.

CSA Installation drawing 6333QC02-V2R0

For safe installation of the single channel 6333A1A or the two channel 6333A1B 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.

Marking

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

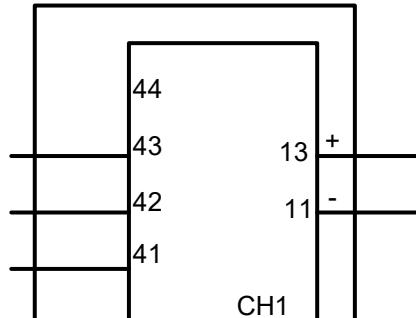
Ex nA[ic] IIC T6...T4

Class I Zone 2 AEx nA[ic] IIC T6...T4

T4: -40°C to 85 °C
T6: -40°C to 60 °C

Hazardous Area
CL I, Div 2, GP ABCD
CL I, Zone 2, IIC

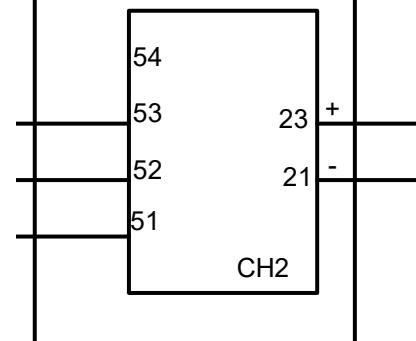
Terminal: 41,42,43,44
Uo: 5 VDC
Io: 4 mA
Po: 20 mW
Lo: 900 mH
Co: 1000 μ F



Terminal:
11-13

Functional Ratings:
U nominal \leq 35 VDC;
I nominal \leq 3.5 - 23 mA

Terminal:
51,52,53,54
Uo: 5 VDC
Io: 4 mA
Po: 20 mW
Lo: 900 mH
Co: 1000 μ F



Terminal:
21-23

Functional Ratings:
U nominal \leq 35 VDC;
I nominal \leq 3.5 - 23 mA

NI Installation instructions

The transmitter must be installed in an enclosure providing a degree of protection of at least IP54 according to IEC60529 that is suitable for the application and is correctly installed. Cable entry devices and blanking elements shall fulfill the same requirements. If the enclosure is made of non-metallic materials or of painted metal, electrostatic charging shall be avoided.

Use supply wires with a rating of at least 5 K above the ambient temperature.
Supply from a Class 2 Power Supply with Transient protection or equivalent.

WARNING: Substitution of components may impair suitability for Class I, Division 2

AVERTISSEMENT: la substitution de composants peut nuire à l'aptitude à la Classe I, Division 2.

WARNING: Do not disconnect equipment unless power has been switched off or the area is known to be safe.

AVERTISSEMENT: Ne débranchez pas l'équipement sauf si l'alimentation a été coupée ou si la zone est connue pour être sûre.

Non Incendive field wiring installation

The non incendive field Wiring Circuit concept allows interconnection of Nonincendive Field wiring Apparatus with Associated Nonincendive Field Wiring Apparatus or Assosicated Intrinsically Safe Apparatus or Associated Apparatus not specially examined in combination as a syatem using any of the wiring methods permitted for unclassified locations,

$V_{oc} < V_{max}$, $C_a \geq C_i + C_{cable}$, $L_a \geq L_i + L_{cable}$.

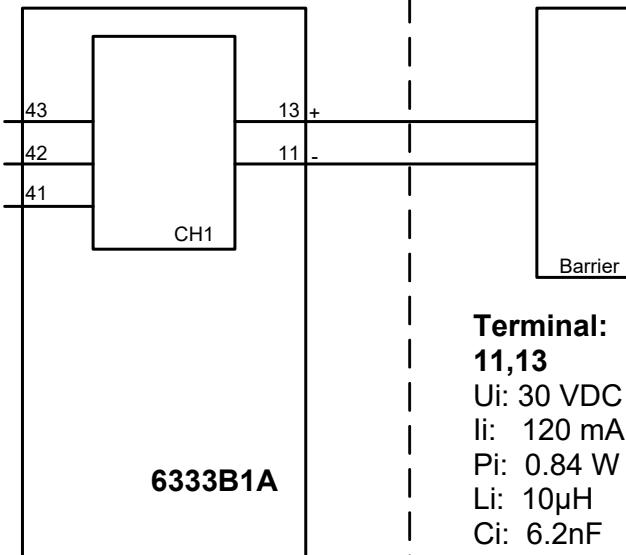
CSA Installation drawing 6333QC01-V1R0

Hazardous (Classified) Location
IS,Class I, Division 1, Group A,B,C,D T4..T6
Ex ia IIC T4..T6 Ga
Class I, Zone 0, AEx ia IIC T4..T6 Ga

Non Hazardous Location

T6: $-40 \leq T_a \leq 60^\circ\text{C}$
T4: $-40 \leq T_a \leq 85^\circ\text{C}$

Terminal: 41,42,43
Connect to passive
or non-energy
storing devices
such as RTD's
Resistors and
Thermocouples
only.



Terminal:
11,13
Ui: 30 VDC
Ii: 120 mA
Pi: 0.84 W
Li: 10 μH
Ci: 6.2nF

$$\text{Co}(\text{Ca}) > \sum(\text{Ci} + \text{Ccable})$$
$$\text{Lo}(\text{La}) > \sum (\text{Li} + \text{Lcable})$$

Installation notes

The Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The Canadian Electrical Code (CEC).

Substitution of components may impair intrinsic safety.

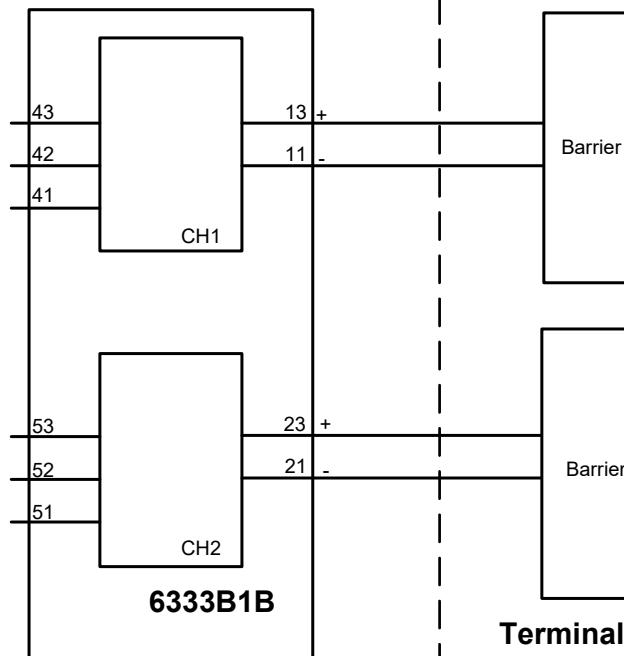
Hazardous (Classified) Location
 IS,Class I, Division 1, Group A,B,C,D T4..T6
 Ex ia IIC T4..T6 Ga
 Class I, Zone 0, AEx ia IIC T4..T6 Ga

Non Hazardous Location

T6: $-40 \leq T_a \leq 60^\circ\text{C}$
 T4: $-40 \leq T_a \leq 85^\circ\text{C}$

**Terminal: 41,42,43
 51,52,53**

Connect to passive or
 non-energy storing
 devices such as
 RTD's Resistors and
 Thermocouples only.



**Terminal:
 11, 13 and
 21, 23**

Ui: 30 VDC
 li: 120 mA
 Pi: 0.84 W
 Li: 10 μH
 Ci: 6.2nF

$$\text{Co(Ca)} > \sum(C_i + C_{\text{cable}})$$

$$\text{Lo(La)} > \sum(L_i + L_{\text{cable}})$$

Installation notes

The Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The Canadian Electrical Code (CEC).

Channel 1 and Channel 2 are separate channels and therefore separate shielded cables shall be used for each channel.

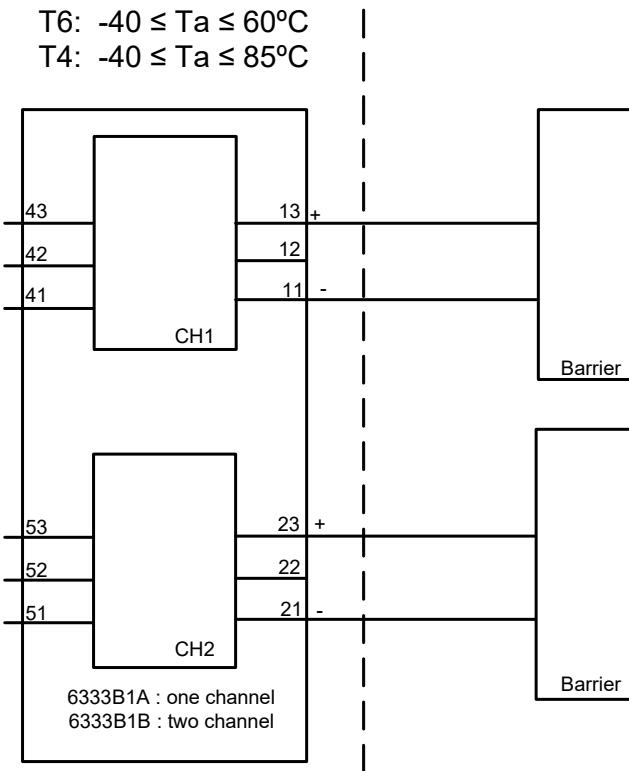
Substitution of components may impair intrinsic safety.

FM Installation drawing 6333QF01-V1R0

Hazardous (Classified) Location

Class I, Division 1, Group A,B,C,D T4..T6
Class I, Zone 0, AEx ia IIC T4..T6

Non Hazardous Location



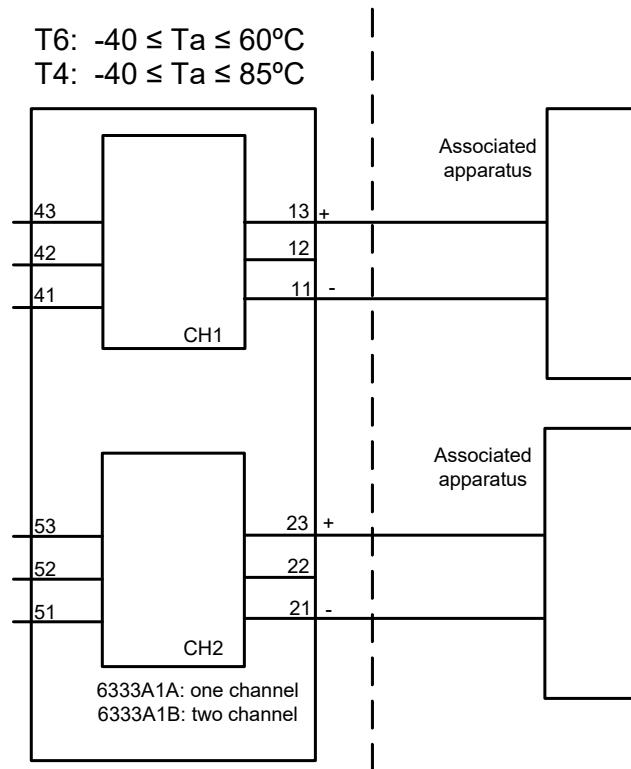
Installation notes

For installation in Class I the Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The National Electrical Code (ANSI-NFPA 70). Equipment that is FM-approved for intrinsic safety may be connected to barriers based on the Entity Concept. This concept permits interconnection of approved transmitters, meters and other devices in combinations, which have not been specifically examined by FM, provided that the agency's criteria are met. The combination is then intrinsically safe, if the entity concept is acceptable to the authority having jurisdiction over the installation.

The entity concept criteria are as follows: The intrinsically safe devices, other than barriers, must not be a source of power. The maximum voltage $Ui(V_{MAX})$ and current $li(I_{MAX})$, and maximum power $Pi(P_{max})$, which the device can receive and remain intrinsically safe, must be equal to or greater than the voltage (Uo or V_{OC} or Vt) and current (Io or ISC or It) and the power Po which can be delivered by the barrier. The sum of the maximum unprotected capacitance (Ci) for each intrinsically safe device and the interconnecting wiring must be less than the capacitance (Ca) which can be safely connected to the barrier. The sum of the maximum unprotected inductance (Li) for each intrinsically safe device and the interconnecting wiring must be less than the inductance (La) which can be safely connected to the barrier. The entity parameters Uo , V_{OC} or Vt and Io , ISC or It , and Ca and La for barriers are provided by the barrier manufacturer.

Hazardous (Classified) Location
Class I, Division 2, Group A,B,C,D T4..T6
Class I, Zone 2, IIC T4..T6

Non Hazardous Location



Installation notes

The Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The National Electrical Code (ANSI-NFPA 70).

To assure a Non-Incendive system the transmitter and associated apparatus must be wired in accordance with the associated apparatus manufacturers field wiring instructions and the circuit diagram shown above.

Desenho de Instalação INMETRO



Para instalação segura do 6333A.. o seguinte deve ser observado. O modelo 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.

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

Certificado DEKRA 23.0010 X

Marcas Ex ec [ic] IIC T6..T4 Gc
Ex ic IIC T6..T4 Gc
Ex ic IIIC Dc

Normas ABNT NBR IEC 60079-0:2020 Versão Corrigida:2023
ABNT NBR IEC 60079-7:2018 Versão Corrigida:2022
ABNT NBR IEC 60079-11:2013 Versão Corrigida:2017

Terminais 41,42,43 51,52,53	Terminais 11,12,13 21,22,23	Terminais 11,12,13 21,22,23	Terminais 11,12,13 21,22,23
Ex ic IIC,Ex ic IIIC	Ex ic IIC,Ex ic IIIC	Ex ic IIC,Ex ic IIIC	Ex ec
Uo: 5 V Io: 4 mA Po: 20 mW Lo: 900 mH Co: 1000 μ F	Ui = 35 V Ii = 110 mA Ci = 1 nF Li = 10 μ H	Ui = 24 V Ii = 260 mA Ci = 1 nF Li = 10 μ H	Umax \leq 35 Vdc or Umax \leq 24 Vdc

Ex ic IIC, Ex ic IIIC Classe de temperatura	Faixa de temperatura ambienta	
	Ui=35V	Ui=24V
T6	-40 °C to +54 °C	-40 °C to +63 °C
T5	-40 °C to +69 °C	-40 °C to +78 °C
T4	-40 °C to +85 °C	-40 °C to +85 °C

Ex ec Classe de temperatura	Faixa de temperatura ambienta	
	Umax=35V	Umax=24V
T6	-40 °C to +43 °C	-40 °C to +55 °C
T5	-40 °C to +85 °C	-40 °C to +85 °C
T4	-40 °C to +85 °C	-40 °C to +85 °C

Notas para instalação

Se o invólucro for feito de materiais plásticos não metálicos, devem ser evitadas cargas eletrostáticas no invólucro do transmissor.

Se o transmissor for instalado em uma atmosfera explosiva que exija o uso de nível de proteção de equipamento Gc e aplicado no tipo de proteção Ex ic, o transmissor deverá ser montado em um gabinete que forneça um grau de proteção de pelo menos IP20 de acordo com ABNT NBR IEC 60529, e adequado à aplicação e instalado corretamente.

Se o transmissor for instalado em uma atmosfera explosiva que exija o uso de nível de proteção de equipamento Dc, o transmissor deverá ser montado em um invólucro certificado separadamente que forneça um grau de proteção de pelo menos IP5X de acordo com a ABNT NBR IEC 60079-0, e que seja adequado para o aplicativo e instalado corretamente. A temperatura da superfície do invólucro externo é +20 K acima da temperatura ambiente, determinada sem camada de poeira.

Faixa de temperatura ambiente: -40 °C a +85 °C

Se o transmissor for instalado em uma atmosfera explosiva que exija o uso de nível de proteção de equipamento Gc e aplicado no tipo de proteção Ex ec, o transmissor deverá ser montado em um invólucro certificado separadamente que forneça um grau de proteção de pelo menos IP54 de acordo com conforme ABNT NBR IEC 60079-0, e que seja adequado à aplicação e instalado corretamente.

Se o transmissor for instalado em uma atmosfera explosiva que exija o uso de nível de proteção de equipamento Gc e aplicado no tipo de proteção Ex ec, o equipamento deverá ser usado somente em uma área com grau de poluição não superior a 2, conforme definido na IEC 60664-1.

Desenho de Instalação INMETRO



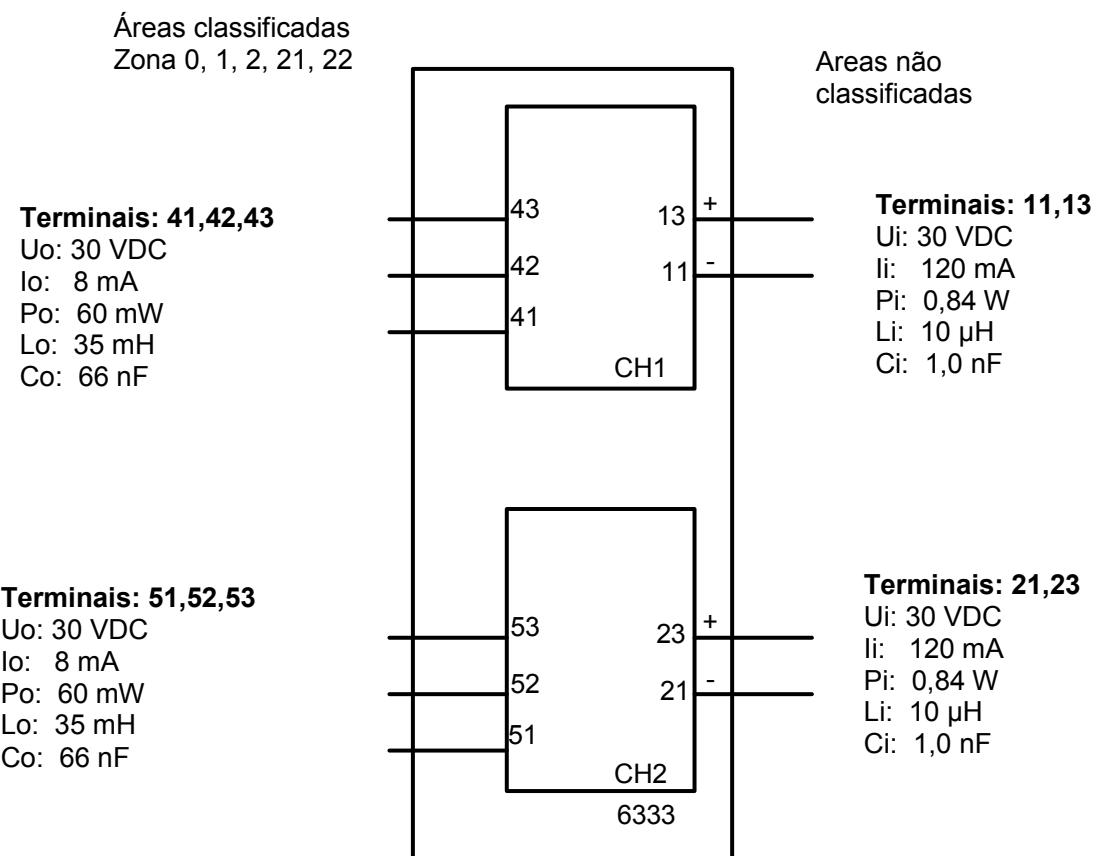
Para instalação segura do 6333B.. o seguinte deve ser observado. O modelo deve apenas ser instalado por pessoas qualificadas que são familiarizadas com as leis nacionais e internacionais, diretrizes e padrões que se aplicam a esta área.

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

Certificado DEKRA 23.0010 X

Marcas Ex ia IIC T6...T4 Ga
Ex ia IIIC Db
Ex ia I Ma

Normas **ABNT NBR IEC 60079-0:2020 Versão Corrigida:2023**
ABNT NBR IEC 60079-11:2013 Versão Corrigida:2017



Classe de temperatura	Faixa de temperatura ambienta	
	Pi: 0,84W	Pi: 0,75W
T6	-40 °C to +40 °C	-40 °C to +45 °C
T5	-40 °C to +55 °C	-40 °C to +60 °C
T4	-40 °C to +85 °C	-40 °C to +85 °C

Notas de Instalação.

Se o invólucro for feito de materiais plásticos não metálicos, devem ser evitadas cargas eletrostáticas no invólucro do transmissor.

Se o transmissor for instalado em uma atmosfera explosiva que exija o uso de nível de proteção de equipamento Ga, o transmissor deverá ser montado em um invólucro que forneça um grau de proteção de pelo menos IP20 de acordo com a ABNT NBR IEC 60529, e que seja adequado para a aplicação e corretamente instalado.

Se o transmissor for instalado em uma atmosfera explosiva que exija o uso de equipamento de nível de proteção Ga ou Ma, e se o invólucro for feito de alumínio, ele deverá ser instalado de forma que fontes de ignição devido a faíscas de impacto e fricção sejam excluídas.

Se o transmissor for instalado em uma atmosfera explosiva que exija o uso de nível de proteção de equipamento Db, o transmissor deverá ser montado em um invólucro certificado separadamente que forneça um grau de proteção de pelo menos IP5X de acordo com a ABNT NBR IEC 60079-0, e que seja adequado para o aplicativo e instalado corretamente. A temperatura da superfície do invólucro externo é +20 K acima da temperatura ambiente, determinada sem camada de poeira. Faixa de temperatura ambiente: -40 °C a +85 °C

Se o transmissor for instalado em uma atmosfera explosiva que exija o uso de nível de proteção de equipamento Ma, o transmissor deverá ser montado em um invólucro que forneça um grau de proteção de pelo menos IP54 de acordo com a ABNT NBR IEC 60529, e que seja adequado para a aplicação e corretamente instalado. Faixa de temperatura ambiente: -40 °C a +85 °C

Devem ser utilizadas entradas de cabos e elementos de obturação adequados à aplicação e instalados corretamente.

Para uma temperatura ambiente $\geq 60^{\circ}\text{C}$, devem ser utilizados cabos resistentes ao calor com uma classificação de pelo menos 20 K acima da temperatura ambiente.

Document history

The following list provides notes concerning revisions of this document.

Rev. ID	Date	Notes
104	1543	CSA, FM & IECEx approvals added.
105	2015	Specifications for max. required power added. New FM certificate.
106	2231	CSA approval for 6333A received. Installation drawing added. ATEX and IECEx approvals updated - Ex na changed to Ex ec. CSA installation drawing for 6333A updated.
107	2307	UKCA added.
108	2447	INMETRO approval added.
109	2605	New EAC Ex certificate. UKCA discontinued.

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