electronics

5331

2-Draht Universal-Messumformer

Nr. 5331V113-DE
Ab Seriennr. 141365001

Revision Notes

The following list provides notes concerning revisions of this document.

Rev. ID	Date	Notes
113	13/45	IECEx and INMETRO approvals added

2-DRAHT
UNIVERSALMESSUMFORMER

PRetop 5331

Inhaltsverzeichnis

2-DRAHT UNIVERSALMESSUMFORMER
PRetop 5331

- *Eingang für WTH, TE, Ω oder mV*
- *Extreme Messgenauigkeit*
- *1,5 kVAC mit galvanische Trennung*
- *Programmierbare Sensorfehlanzeige*
- *Für Einbau in Anschlusskopf DIN Form B*

Verwendung

- Linearisierte Temperaturmessung mit Pt100...Pt1000, Ni100...Ni1000 oder Thermoelementsensor.
- Umwandlung von linearer Widerstandsänderung in ein analoges Standard-Stromsignal, z.B. von Ventilen oder Niveau-Messwertgeber.
- Verstärkung von bipolaren mV-Signalen zu einem Standard 4...20 mA Stromsignal.

Technische Merkmale

- PR5331 kann vom Benutzer innerhalb von wenigen Sekunden zur Messung in allen genormten Temperaturbereiche programmiert werden.
- Der WTH- und Widerstandseingang haben Leitungskompensation bei 2-, 3- oder 4-Leiter-Anschluss.
- Die gespeicherten Daten werden laufend kontrolliert.

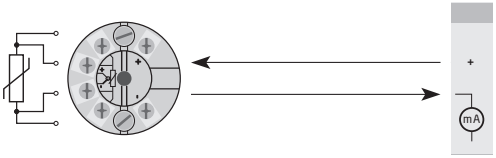
Montage / Installation

- Für DIN Form B Sensorkopf Montage. Im sicheren Bereich kann der 5331 auf einer DIN-Schiene mittels der PR-Armatur Typ 8421 montiert werden.
- **NB:** Als Ex-Sicherheitsbarriere für 5331D empfehlen wir 5104B, 5114B oder 5116B.

ANWENDUNGEN

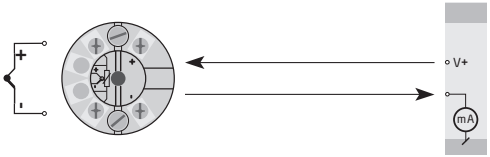
WTH in 4...20 mA

2-Draht-Installation
im Kontrollraum



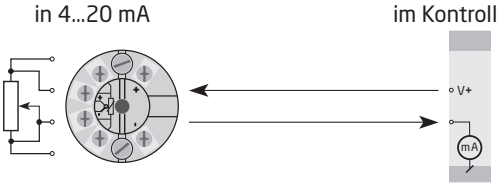
TE in 4...20 mA

2-Draht-Installation
im Kontrollraum



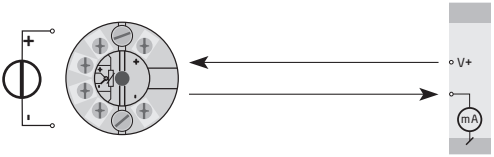
Widerstand
in 4...20 mA

2-Draht-Installation
im Kontrollraum



mV in 4...20 mA

2-Draht-Installation
im Kontrollraum



Bestellangaben: 5331

Typ	Version	Umgebungs-temperatur	Galvanische Trennung
5331	Standard : A CSA, FM, ATEX, IECEx & INMETRO : D	-40°C...+85°C : 3	1500 VAC : B

Elektrische Daten

Spezifikationsbereich:

-40°C bis +85°C

Allgemeine Daten:

Versorgungsspannung, DC
- Standard ..... 7,2...35 V
- CSA, FM, ATEX, IECEx & INMETRO ..... 7,2...30 VDC

Eigenverbrauch ..... 25 mW...0,8 W
Spannungsabfall ..... 7,2 VDC
Isolationsspannung, Test / Betrieb ..... 1,5 kVAC / 50 VAC
Aufwärmzeit ..... 5 Min.
Kommunikationsschnittstelle ..... Loop Link
Signal- / Rauschverhältnis ..... Min. 60 dB
Ansprechzeit (programmierbar) ..... 1...60 s
EEprom Fehlerkontrolle ..... < 3,5 s
Signaldynamik, Eingang ..... 20 bit
Signaldynamik, Ausgang ..... 16 bit
Kalibrierungstemperatur ..... 20...28 °C

Genauigkeit, höherer Wert von allgemeinen und Grundwerten:

Allgemeine Werte		
Eingangsart	Absolute Genauigkeit	Temperatur-koeffizient
Alle	≤ ±0,05% d. Messsp.	≤ ±0,01% d. Messsp./°C

Grundwerte		
Eingangsart	Grund-Genauigkeit	Temperatur-koeffizient
WTH	≤ ±0,2°C	≤ ±0,01°C/°C
Lin. R	≤ ±0,1 Ω	≤ ±10 mΩ / °C
Volt	≤ ±10 µV	≤ ±1 µV / °C
TE-Typ: E, J, K, L, N, T, U	≤ ±1°C	≤ ±0,05°C / °C
TE-Typ: B, R, S, W3, W5, LR	≤ ±2°C	≤ ±0,2°C / °C

EMV-Immunitätswirkung ..... < ±0,5% d. Messsp.
Erweiterte EMV-Immunität:
NAMUR NE 21, A Kriterium, Burst ..... < ±1% d. Messsp.

Einfluss von Änderung der
Versorgungsspannung ..... < 0,005% d. Messsp. / VDC
Vibration ..... IEC 60068-2-6 Test FC
2...25 Hz ..... ±1,6 mm
25...100 Hz ..... ±4 g
Max. Leitungsquerschnitt ..... 1 x 1,5 mm^2 Litzendraht
Klemmschraubenanzugsmoment ..... 0,4 Nm
Luftfeuchtigkeit ..... < 95% RF (nicht kond.)
Maß ..... Ø 44 x 20,2 mm
Schutzart (Gehäuse / Anschluss) ..... IP68 / IP00
Gewicht ..... 50 g

Elektrische Daten, Eingang:

WTH- und Linearer Widerstandseingang:

WTH-Typ	Min. Wert	Max. Wert	Min. Spanne	Norm
Pt100	-200°C	+850°C	25°C	IEC 60751
Ni100	-60°C	+250°C	25°C	DIN 43760
Lin. R	0 Ω	5000 Ω	30 Ω	-----

Max. Nullpunktverschiebung (Offset) ..... 50% des gewählten Maximalwertes
Leitungswiderstand pro Leiter (max.) ..... 5 Ω
Sensorstrom ..... Nom. 0,2 mA
Wirkung des Fühlerkabelwiederstandes
(3- / 4-Leiter) ..... < 0,002 Ω/ Ω
Fühlerfehlererkennung ..... Ja

TE-Eingang:

Typ	Min. Temperatur	Max. Temperatur	Min. Spanne	Norm
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

Max. Nullpunktverschiebung (Offset) ..... 50% des gewählten Maximalwertes
Vergleichstellenkompensation (CJC)..... < ±1,0°C
Fühlerfehlererkennung..... Ja
Fühlerfehlerstrom:
Bei Erkennung ..... Nom. 33 μA
Sonst ..... 0 μA

Spannungseingang:

Messbereich ..... -12...800 mV
Min. Messbereich (Spanne) ..... 5 mV
Max. Nullpunktverschiebung (Offset) ..... 50% des gewählten Maximalwertes
Eingangswiederstand ..... 10 MΩ

Ausgang:

Stromausgang:

Signalbereich ..... 4...20 mA
Min. Signalbereich..... 16 mA
Aktualisierungszeit..... 440 ms
Ausgangssignal bei EEpromfehler ..... ≤ 3,5 mA
Belastungswiederstand ..... ≤ ($U_{Versorg.}$ - 7,2) / 0,023 [Ω]
Belastungsstabilität..... < ±0,01% d. Messsp. / 100 Ω

Sensorfehlanzeige:

Programmierbar ..... 3,5...23 mA
NAMUR NE43 aufsteuernd..... 23 mA
NAMUR NE43 zusteuernd..... 3,5 mA

d. Messspanne = der gewählten Messspanne

Zulassungen:

EMV 2004/108/EG ..... EN 61326-1
GOST R

Marine-Zulassung:

Det Norske Veritas, Ships & Offshore ..... Stand. f. Certific. No. 2.4

Ex / I.S.:

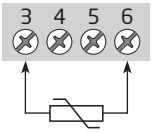
ATEX 94/9/EG
- 5331A ..... KEMA 10ATEX0002 X
- 5331D ..... KEMA 06ATEX0062 X

FM-Zertifikat 2D5A7
CSA-Zertifikat 1125003
IECEx ..... DEK 13.0035X
INMETRO ..... DEKRA 13.0001 X
GOST Ex

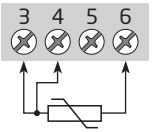
ANSCHLÜSSE

Eingang:

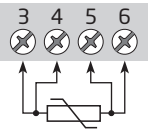
WTH, 2-Leiter



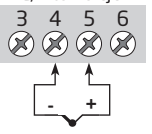
WTH, 3-Leiter



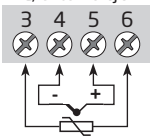
WTH, 4-Leiter



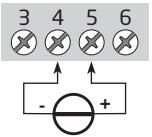
TE, interne CJC



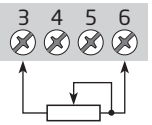
TE, externe CJC



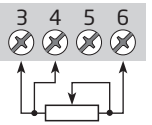
mV



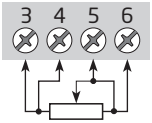
Widerst., 2-Leiter



Widerst., 3-Leiter

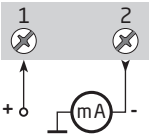


Widerst., 4-Leiter

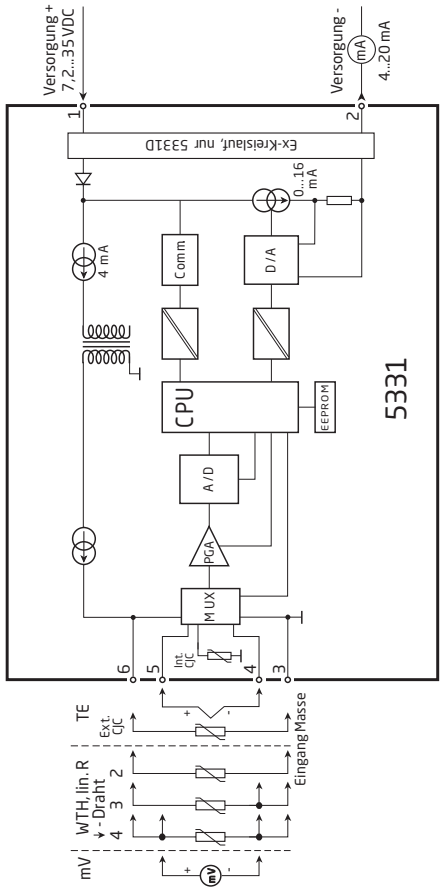


Ausgang:

2-Draht-Installation



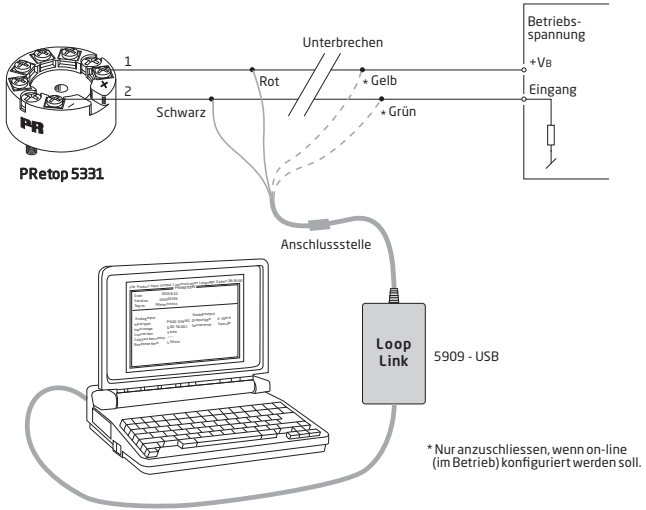
BLOCKDIAGRAMM



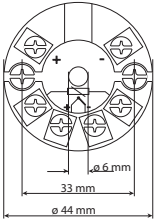
PROGRAMMIERUNG

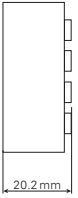
- Loop Link ist eine batteriegespeiste Schnittstelle zur Programmierung des PRetop 5331.
- Bezüglich Programmierung verweisen wir auf die nachfolgende Zeichnung und die "Hilfe"-Funktion im PReset-Programm.
- Loop Link darf nicht zur kommunikation mit Modulen, die in Ex-gefährdeten Bereichen installiert sind, benutz werden.

Bestellangabe: Loop Link

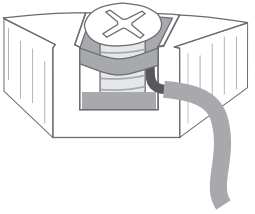


Abmessungen





Montage von Fühlerleitungen



Die Leitungen müssen zwischen den Metallplatten

APPENDIX

ATEX Installation Drawing - 5331A

ATEX Installation Drawing - 5331D

IECEx installation drawing - 5331A

IECEx installation drawing - 5331D

FM Installation Drawing - 5331D

CSA Installation Drawing - 5331D

INMETRO Instruções de Segurança - 5331A

INMETRO Instruções de Segurança - 5331D

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ATEX Installationszeichnung

Für die sichere Installation von 5331A3B oder 5334A3B ist Folgendes zu beachten: Das Gerät darf nur von qualifiziertem Personal eingebaut werden, das mit den nationalen und internationalen Gesetzen, Richtlinien und Standards auf diesem Gebiet vertraut ist.
Das Baujahr kann aus den ersten beiden Ziffern der Seriennummer ersehen werden.

ATEX-Zertifikat KEMA 10ATEX 0002 X

Markierung  II 3 G Ex nA [ic] IIC T4 … T6 Gc
II 3 G Ex ic IIC T4…T6 Gc
II 3 D Ex ic IIIC Dc

Richtlinien EN 60079-0 : 2012, EN 60079-11 : 2012, EN 60079-15 : 2010

T4: -40 ≤ Ta ≤ 85ºC T6: -40 ≤ Ta ≤ 60ºC	**Klemme: 3,4,5,6** Ex nA [ic]	**Klemme: 1,2** Ex nA	**Klemme: 1,2** Ex ic
	Uo: 9,6 V Io: 25 mA Po: 60 mW Lo: 33 mH Co: 2,4 µF	Umax. ≤ 35 VDC	Ui = 35 VDC Ii = 110 mA Li = 10 µH Ci = 1,0 nF

Sonderbedingungen für sichere Anwendung:

Für Zündschutzart Ex nA muss der Messumformer in einem Gehäuse, welcher einen Schutzgrad von mindestens IP 54 gemäß EN 60529 besitzt, eingebaut werden.

Für Anwendung in die Präsenz von entflammbaren Staub, muss der Messumformer in einem Gehäuse, welcher einen Schutzgrad von mindestens IP 6X gemäß EN 60529 besitzt, eingebaut werden. Die Oberflächentemperatur des Gehäuses ist 20 K über der Umgebungstemperatur.

Bei einer Umgebungstemperatur ≥60°C müssen hitzebeständige Leitungen eingesetzt werden, welche für eine mindestens 20 K höhere Umgebungstemperatur zugelassen sind.

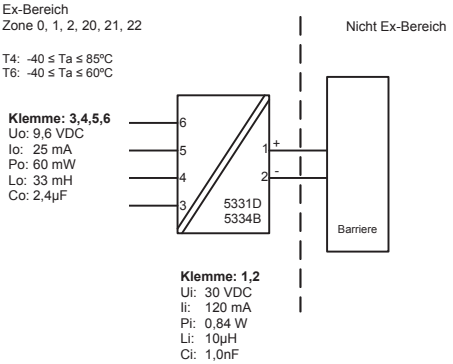
ATEX Installationszeichnung

Für die sichere Installation von 5331D oder 5334B ist Folgendes zu beachten: Das Gerät darf nur von qualifiziertem Personal eingebaut werden, das mit den nationalen und internationalen Gesetzen, Richtlinien und Standards auf diesem Gebiet vertraut ist.
Das Baujahr kann aus den ersten beiden Ziffern der Seriennummer ersehen werden.

ATEX-Zertifikat KEMA 06ATEX 0062 X

Markierung
II 1 G Ex ia IIC T4...T6 Ga
II 1 D Ex ia IIIC Da
II 1 M Ex ia I Ma

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



Installationsvorschriften

Die galvanische Trennung zwischen dem Sensorkreis und dem Eingangskreis ist nicht unfehlbar. Allerdings ist die galvanische Trennung zwischen den Kreisen so ausgelegt, dass diese eine Testspannung von 500 VAC für eine Minute aushält.

Für Anwendung in einer potentiellen explosiven Atmosphäre - basierend auf entflammbares Gas - muss der Messumformer in einem Gehäuse, welcher einen Schutzgrad von mindestens IP20 gemäß EN 60529 besitzt, eingebaut werden.

Für Applikationen in explosiver Atmosphäre, wo Kategorie 1 G, 1 M oder 2 M Geräte vorgeschrieben sind, und wenn das Gehäuse aus Aluminium ist, ist das Gehäuse so zu montieren, dass Zündquellen (Stöße und Reibungsfunken) selbst bei selten auftretenden Störungen vermieden werden; wenn das Gehäuse aus nichtmetallischen Bestandteile ist, muss die elektrostatische Ladung der Gehäuse vermieden werden.

Für Anwendung in einer potentiellen explosiven Atmosphäre - basierend auf entflammbaren Staub - ist Folgendes zu beachten:

Der Messumformer muss in einem Metallkopf Form B gemäß DIN 43729 montiert werden. Das Gehäuse muss einen Schutzgrad von mindestens IP 6X gemäß EN 60529 besitzen und für den dementsprechenden Einsatz zugelassen werden.

Es dürfen nur Kabeleinführungen und Abdeckungen eingesetzt werden, welche für die jeweilige Anwendung zugelassen sind.

Bei einer Umgebungstemperatur ≥60°C müssen hitzebeständige Leitungen eingesetzt werden, welche für eine mindestens 20 K höhere Umgebungstemperatur zugelassen sind.

Die Umgebungstemperatur der Gehäuse entspricht der Umgebungstemperatur plus 20K für eine Staubschicht mit einer Dicke von bis zu 5 mm.

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IECEx Installation drawing

For safe installation of 5331A or 5334A 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 13.0035X
Marking	Ex nA [ic] IIC T4..T6 Gc Ex ic IIC T4..T6 Gc Ex ic IIIC Dc
Standards	IEC 60079-0 : 2011, IEC 60079-11 : 2011, IEC 60079-15 : 2010

T4: -40 ≤ Ta ≤ 85ºC T6: -40 ≤ Ta ≤ 60ºC	**Terminal: 3,4,5,6** Uo: 9.6 V Io: 25 mA Po: 60 mW Lo: 33 mH Co: 2.4 µF	**Terminal: 1,2** Ex nA Umax =35 VDC	**Terminal: 1,2** Ex ic Ui = 35 VDC Ii = 110mA Li = 10 µH Ci = 1.0 nF

Installation note:

For installation in a potentialy explosive gas atmosphere, the following instructions apply:
For nA installation the transmitter must be installed in an metal enclosure, e.g. a form B enclosure providing a degree of protection of at least IP54 according to IEC60529 or in an enclosure with type of protection Ex n or Ex e.

For ic installation the transmitter must be installed in enclosure providing a degree of protection of at least IP20 according to IEC60529 and that is suitable for the application.

Cable entry devices and blanking elements shall fulfill the same requirements
For an ambient temperature ≥ 60ºC, heat resistant cables shall be used with a rating of at least 20 K above the ambient temperature.

For installation in a potentially explosive dust atmposphere, the following instructions apply:
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.
The transmitter must be mounted in a enclosure according to DIN 43729 that provides a degree of protection of at least IP6X according to IEC60529, and that is suitable for the application. Cable entry devices and blanking elements shall fulfill the same requirements.

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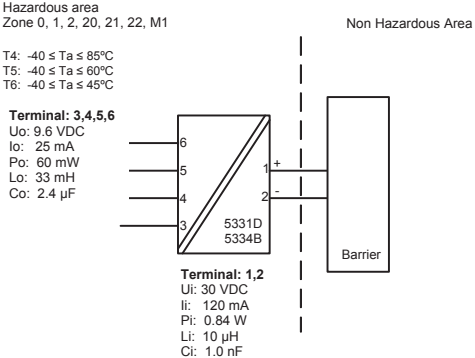
IECEx Installation drawing

For safe installation of 5331D or 5334B 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 13.0035X
Marking	Ex ia IIC T4…T6 Ga Ex ia IIIC Da Ex ia I Ma
Standards	IEC 60079-0 : 2011, IEC 60079-11 : 2011, IEC 60079-26:2006



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 ≥ 60ºC, heat resistant cables shall be used with a rating of at least 20 K above the ambient temperature.

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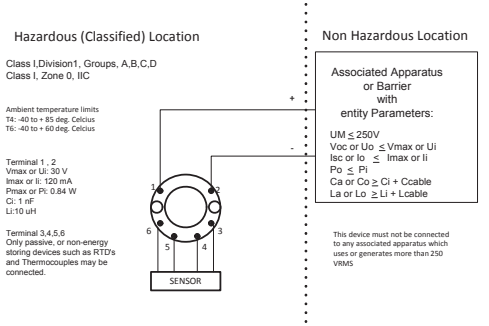
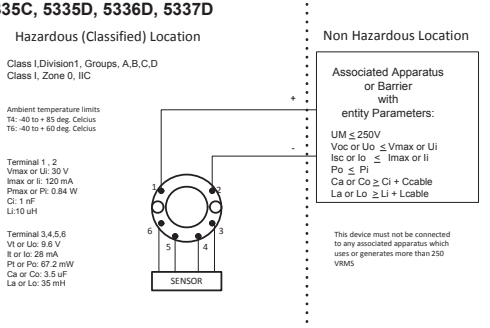
FM Installation Drawing 5300Q502 Rev AH

Model 5331C,5331D, 5333C, 5333D and 5343B



Model 5335C, 5335D, 5336D, 5337D



The entity concept

The Transmitter must be installed according to National Electrical Code (ANSI-NFPA 70) and shall be installed with the enclosure, mounting, and spacing segregation requirement of the ultimate application.

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 Ii(I_{MAX}), and maximum power Pi(Pmax), which the device can receive and remain intrinsically safe, must be equal to or greater than the voltage (Uo or V_{OC} or V_t) and current (Io or I_{SC} or I_t) and the power Po which can be delivered by the barrier.

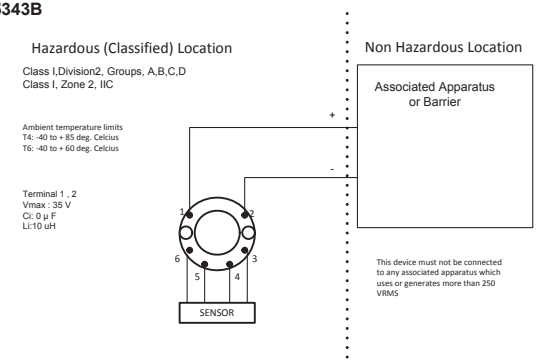
The sum of the maximum unprotected capacitance (C_i) for each intrinsically device and the interconnecting wiring must be less than the capacitance (C_a) which can be safely connected to the barrier.

The sum of the maximum unprotected inductance (L_i) for each intrinsically device and the interconnecting wiring must be less than the inductance (L_a) which can be safely connected to the barrier.

The entity parameters Uo,V_{OC} or V_t and Io,I_{SC} or I_t, and C_a and L_a for barriers are provided by the barrier manufacturer.

NI Field Circuit Parameters

Model 5331C, 5331D, 5333C, 5333D, 5335C, 5335D, 5336D, 5337D and 5343B



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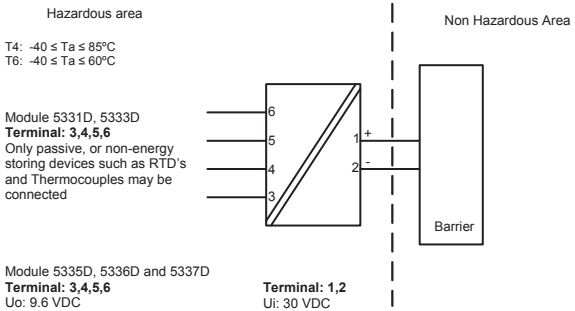
CSA Installation drawing 533XQC03



CLASS 2258 04 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe Entity - For Hazardous Locations
Class I, Division 1, Groups A, B, C and D
Ex ia IIC, Ga

CLASS 2258 84 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe Entity - For Hazardous Locations - Certified to US Standards
Class I, Division 1, Groups A, B, C and D
Class I, Zone 0, AEx ia IIC, Ga

Warning:
Substitution of components may impair intrinsic safety.

The transmitters must be installed in a suitable enclosure to meet installation codes stipulated in the Canadian Electrical Code (CEC) or for US the National Electrical Code (NEC).

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Desenho de Instalação INMETRO

Para instalação segura do 5331A ou 5334A 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 13.0001 X

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

Padrões ABNT NBR IEC 60079-0 : 2008, ABNT NBR IEC 60079-11 : 2009, IEC 60079-15 : 2010, ABNT NBR IEC 60079-26 : 2008

T4: -40 ≤ Ta ≤ 85ºC T6: -40 ≤ Ta ≤ 60ºC	**Terminal: 3,4,5,6** Uo: 9,6 V Io: 25 mA Po: 60 mW Lo: 33 mH Co: 2,4 µF	**Terminal: 1,2** Ex nA Umax =35 VDC	**Terminal: 1,2** Ex ic Ui = 35 VDC Ii = 110 mA Li = 10 µH Ci = 1,0 nF

Notas para instalação

Para a instalação em uma atmosfera de gás potencialmente explosivo, se aplicam as instruções a seguir:

Para a instalação nA o transmissor deve ser instalado em um gabinete de metal, por exemplo, gabinete em forma B que forneça um grau de proteção de pelo menos IP54 de acordo com IEC60529 ou em um caixa com tipo de proteção Ex n ou Ex e.
Para a instalação iC o transmissor deve ser instalado em um invólucro proporcionando um grau de proteção de IP20, pelo menos, de acordo com a norma IEC60529 que é adequado para a aplicação.
Dispositivos de entrada de cabos e elementos de supressão devem cumprir os mesmos requisitos.
Para uma temperatura ambiente ≥ 60 ° C, os cabos resistentes ao calor precisam ser utilizados com uma classificação de pelo menos 20 K acima da temperatura ambiente.

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

A temperatura da superfície do invólucro é igual à temperatura ambiente mais 20 K, para uma camada de pó , com uma espessura superior a 5 mm.
O transmissor deve ser montado em um invólucro de acordo com a norma DIN 43729 , que proporciona um grau de proteção de, pelo menos, IP6X de acordo com a norma IEC60529, e que seja apropriado para a aplicação.
Dispositivos de entrada de cabos e elementos de supressão devem cumprir as mesmas exigências.

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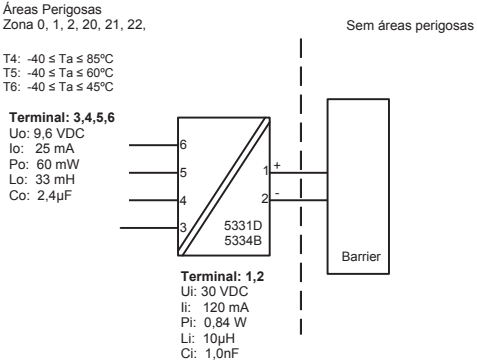
Desenho de Instalação INMETRO

Para instalação segura do 5331D ou 5334B 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 13.0001 X

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

Padrões ABNT NBR IEC 60079-0 : 2008 ABNT NBR IEC 60079-11 : 2009 IEC 60079-15 : 2010
ABNT NBR IEC 60079-26 : 2008



Notas de 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 enclousure 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 >= 60ºC, 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.

Displays Programmable displays with a wide selection of inputs and outputs for display of temperature, volume and weight, etc. Feature linearisation, scaling, and difference measurement functions for programming via PReset software.

Ex interfaces Interfaces for analogue and digital signals as well as HART® signals between sensors / I/P converters / frequency signals and control systems in Ex zone 0, 1 & 2 and for some devices in zone 20, 21 & 22.

Isolation Galvanic isolators for analogue and digital signals as well as HART® signals. A wide product range with both loop-powered and universal isolators featuring linearisation, inversion, and scaling of output signals.

Temperature A wide selection of transmitters for DIN form B mounting and DIN rail devices with analogue and digital bus communication ranging from application-specific to universal transmitters.

Universal PC or front programmable devices with universal options for input, output and supply. This range offers a number of advanced features such as process calibration, linearisation and auto-diagnosis.

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