

PERFORMANCE  
MADE  
SMARTER

# Manual do produto

## 5331

### *Transmissor programável 2 fios*



Segurança  
**INMETRO**



TEMPERATURA | INTERFACES INTRÍNSECAS | INTERFACE DE COMUNICAÇÃO | MULTIFUNCIONAL | ISOLAÇÃO | DISPLAY

No. 5331V117-BR  
De número de serial: 141365001

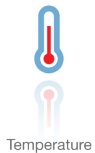
**PR**  
electronics

# 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.



Temperature

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.



I.S. Interface

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.



Communication

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.



Multifunction

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.



Isolation

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.



Display

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.

# Transmissor programável 2 fios 5331

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# Transmissor programável 2 fios 5331

- Entrada RTD, TC, Ohm, ou mV
- Precisão de medição extremamente alta
- 1,5 kVAC de isolamento galvânica
- Valor de erro de sensor programável
- Montagem do sensor tipo cabeçote para trilho DIN B

## Aplicação

- Medição de temperatura linearizada com Pt100...Pt1000, Ni100...Ni1000, ou sensor TC.
- Conversão de variação de resistência linear para um sinal de corrente analógico padrão, por exemplo válvulas ou sensor de nível Ohmico.
- Amplificação de sinal mV bipolar para o sinal de corrente padrão 4...20 mA.

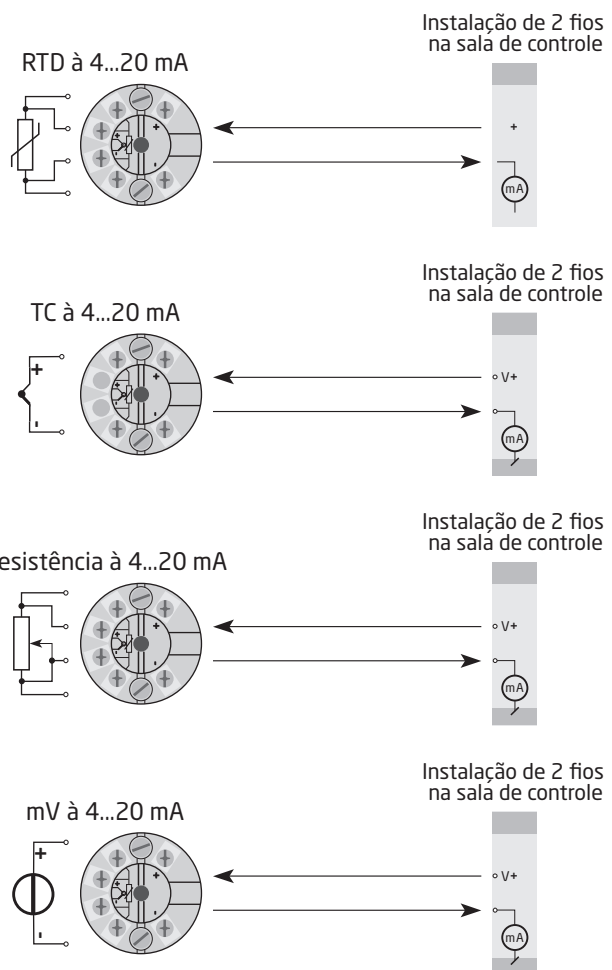
## Características técnicas

- Em poucos segundos o usuário pode programa o PR5331 para medição de temperaturas com todos os ranges definidos pelas normas.
- As entradas de RTD e resistência possuem cabo de compensação para 2-, 3- e 4-fios de conexão.
- Verificação contínua de dados armazenados vitais por razões de segurança.

## Montagem / instalação

- Para sensor tipo cabeçote de montagem em DIN B. Em áreas não perigosas o 5331 pode ser montado em trilho DIN com o acessório da PR tipo 8421.

## Aplicações



## Ordem

Tipo	Versão	Temperatura ambiente	Isolação galvânica
5331	Zona 2 / Div. 2 : A	-40°C...+85°C : 3	1500 VAC : B
	Zona 0, 1, 2, 20, 21, 22, M1 / Div. 1, Div. 2 : D		

## Especificações elétricas

### Condições ambientais:

Especificações de range . . . . .	-40°C a +85°C
Temperatura de calibração . . . . .	20...28°C
Umidade de relativa . . . . .	< 95% RH (non-cond.)
Grau de proteção (enclausurado / terminal) . . . . .	IP68 / IP00

### Especificações mecânicas:

Dimensões . . . . .	Ø 44 x 20,2 mm
Peso . . . . .	50 g
Tamanho máximo do fio . . . . .	1 x 1,5 mm² fio flexíve
Torque de terminal de parafuso . . . . .	0,4 Nm
Vibração . . . . .	IEC 60068-2-6
2...25 Hz. . . . .	±1,6 mm
25...100 Hz . . . . .	±4 g

### Especificações elétricas comuns:

Tensão de alimentação, DC:	
5331A3B. . . . .	7,2...35 VDC
5331D3B . . . . .	7,2...30 VDC
Dissipação de potência	
5331A3B . . . . .	25 mW...0,8 W
5331D3B . . . . .	25 mW...0,7 W
Queda de tensão. . . . .	7,2 VDC
Tensão de isolação, teste / operação . . . . .	1,5 kVAC / 50 VAC
Tempo de aquecimento . . . . .	5 min.
Programação . . . . .	Loop Link
Sinal / ruído . . . . .	Min. 60 dB
Tempo de resposta (programável). . . . .	1...60 s
Verificação de erro EEprom. . . . .	< 3,5 s
Dinâmicas de sinal, entrada . . . . .	20 bit
Dinâmicas de sinal, saída . . . . .	16 bit
Efeito de variação de tensão de alimentação . . . . .	< 0,005% de span / VDC

Precisão, a melhor para valores gerais e básicos:

Valores gerais		
Tipo de entrada	Precisão absoluta	Coefficiente de temperatura
Todas	≤ ±0,05% de span	≤ ±0,01% de span / °C

Valores básicos		
Tipo de entrada	Precisão básica	Coefficiente de temperatura
RTD	$\leq \pm 0,2^{\circ}\text{C}$	$\leq \pm 0,01^{\circ}\text{C}/^{\circ}\text{C}$
R lin.	$\leq \pm 0,1 \Omega$	$\leq \pm 10 \text{ m}\Omega / ^{\circ}\text{C}$
Volt	$\leq \pm 10 \mu\text{V}$	$\leq \pm 1 \mu\text{V} / ^{\circ}\text{C}$
Tipo TC: E, J, K, L, N, T, U	$\leq \pm 1^{\circ}\text{C}$	$\leq \pm 0,05^{\circ}\text{C} / ^{\circ}\text{C}$
Tipo TC: B, R, S, W3, W5, Lr	$\leq \pm 2^{\circ}\text{C}$	$\leq \pm 0,2^{\circ}\text{C} / ^{\circ}\text{C}$

Influência de imunidade EMC. . . . .	$< \pm 0,5\%$ de span
Imunidade EMC extendida: NAMUR NE 21, critério A, explosão . . . . .	$< \pm 1\%$ de span

### Especificações elétricas, entradas:

#### Entrada RTD e resistência linear:

Tipo RTD	Valor mín.	Valor máx.	Span mín.	Padrão
Pt100...Pt1000	-200°C	+850°C	25°C	IEC 60751
Ni100...Ni1000	-60°C	+250°C	25°C	DIN 43760
Resist. lin.	0 $\Omega$	5000 $\Omega$	30 $\Omega$	-----

Compensação máx. . . . . 50% do valor máx. selecionado

Resistência do cabo por fio (max.) . . . . . 5  $\Omega$

Corrente do sensor. . . . . Nom. 0,2 mA

Efeito de resistência de cabo do sensor (3- / 4-fios). . . . .  $< 0,002 \Omega / \Omega$

Deteção de erro de sensor . . . . . Sim

#### Entrada TC:

Tipo	Temperatura mín.	Temperatura máx.	Span mín.	Padrão
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
Lr	-200°C	+800°C	50°C	GOST 3044-84
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

Compensação máx. . . . . 50% do valor máx. selecionado

Compensação de junta fria . . . . .  $< \pm 1,0^{\circ}\text{C}$

Deteção de erro de sensor . . . . . Sim

Erro de corrente do sensor:

Quando detectado. . . . . Nom. 33  $\mu\text{A}$

Snão . . . . . 0  $\mu\text{A}$

**Entrada de tensão:**

Range de medição . . . . .	-12...800 mV
Span mín. . . . .	5 mV
Compensação máx. . . . .	50% do valor máx. selecionado
Resistência de entrada . . . . .	10 MΩ

**Saída de corrente:**

Range de sinal . . . . .	4...20 mA
Range de sinal mín. . . . .	16 mA
Tempo de atualização . . . . .	440 ms
Sinal de saída em erro EEprom. . . . .	≤ 3,5 mA
Resistência de carga. . . . .	≤ (Valimentação- 7,2) / 0,023 [Ω]
Estabilidade de carga . . . . .	< ±0,01% de span / 100 Ω

**Deteção de erro de sensor:**

Programável. . . . .	3.5...23 mA
NAMUR NE43 Acima de escala . . . . .	23 mA
NAMUR NE43 Abaixo de escala . . . . .	3,5 mA

De span = De range presentemente selecionado

**Determinações das autoridades observados:**

EMC. . . . .	2014/30/UE
RoHS . . . . .	2011/65/UE
ATEX . . . . .	2014/34/UE
EAC . . . . .	TR-CU 020/2011
EAC Ex . . . . .	TR-CU 012/2011

**Aprovação marinha:**

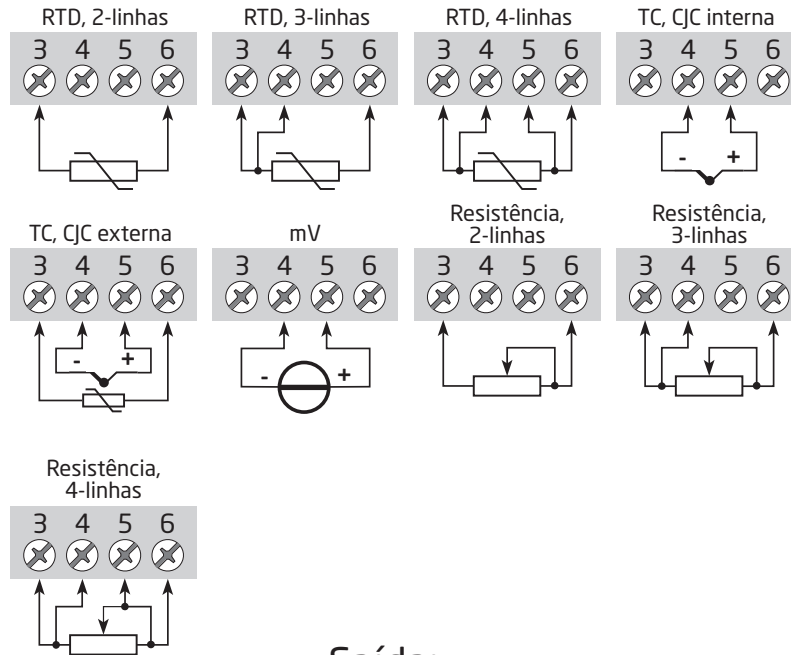
DNV-GL, Ships & Offshore . . . . .	TAA0000101
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**Aprovações I.S. / Ex:**

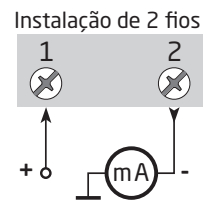
5331A:	
ATEX . . . . .	KEMA 10ATEX0002 X
5331D:	
ATEX . . . . .	KEMA 06ATEX0062 X
FM . . . . .	FM17US0013X
5331A & 5331D:	
IECEX. . . . .	DEK 13.0035 X
CSA. . . . .	1125003
INMETRO . . . . .	DEKRA 16.0013 X
EAC Ex. . . . .	RU C-DK.HA65.B.00355/19

## Conexões

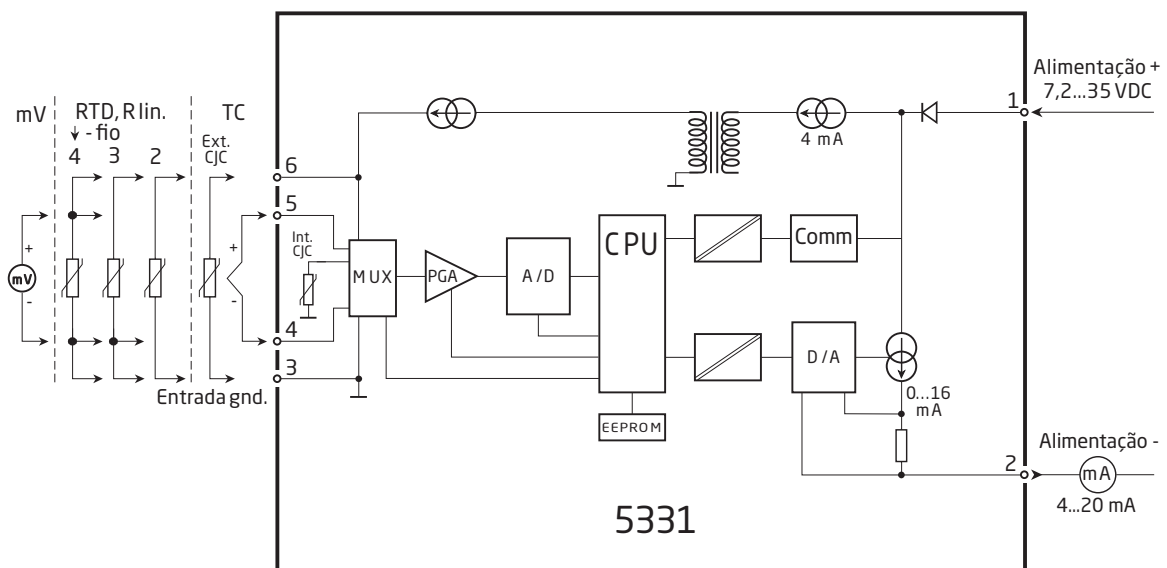
### Entrada:



### Saída:



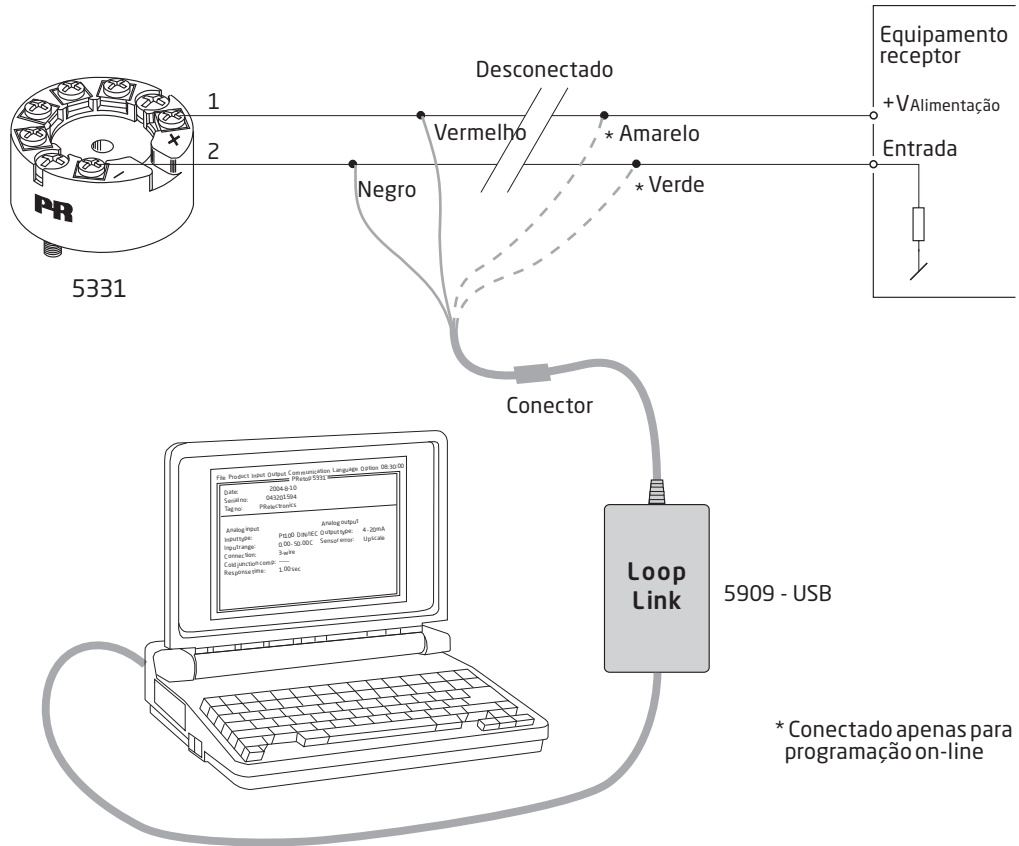
## Diagrama de bloco



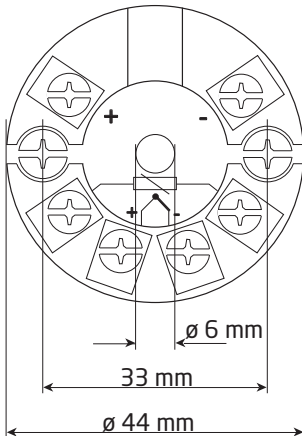


## Programação

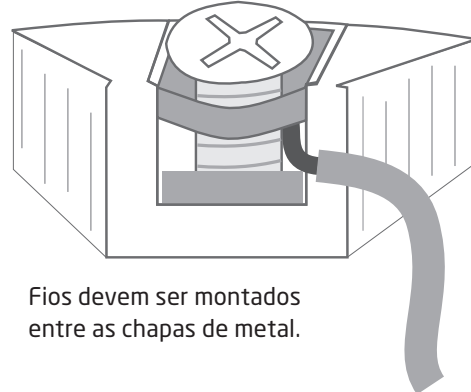
- Loop Link é uma interface de comunicações que é necessário para programar o 5331.
- Para programar favor consultar o desenho a seguir e as funções de ajuda no PRreset.
- Loop Link não é aprovado para comunicação com módulos instalados em áreas perigosas (Ex).



### Especificações mecânicas



### Montagem dos fios do sensor



## ATEX Installation drawing

For safe installation of 5331A3B or 5334A3B 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 10ATEX 0002 X

Marking



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

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

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

**Terminal: 3,4,5,6**  
Ex nA [ic]

Uo: 9.6 V  
Io: 25 mA  
Po: 60 mW  
Lo: 33 mH  
Co: 2.4  $\mu\text{F}$

**Terminal: 1,2**  
Ex nA

Umax  $\leq$  35 VDC

**Terminal: 1,2**  
Ex ic

Ui = 35 VDC  
Ii = 110 mA  
Li = 10  $\mu\text{H}$   
Ci = 1.0 nF

### Special conditions for safe use.

For type of protection Ex nA, the transmitter shall be mounted in a metal enclosure providing a degree of protection of at least IP54 according to EN60529.

For use in the presence of combustible dusts the transmitter shall be mounted in an enclosure providing a degree of protection of at least IP6X in accordance with EN60529, the surface temperature of the outer enclosure is 20 K above the ambient temperature.

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 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.

ATEX Certificate      KEMA 06ATEX 0062 X

Marking



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

Standards

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

Hazardous area

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

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

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

**Terminal: 3,4,5,6**

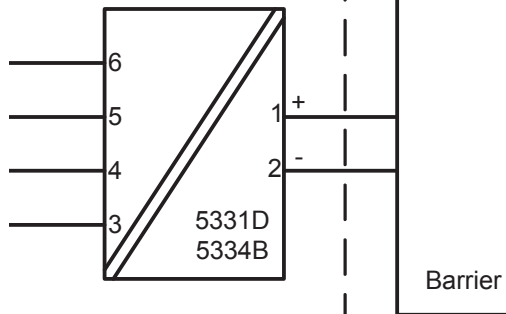
Uo: 9.6 VDC

Io: 25 mA

Po: 60 mW

Lo: 33 mH

Co: 2.4µF



**Terminal: 1,2**

Ui: 30 VDC

Ii: 120 mA

Pi: 0.84 W

Li: 10 µH

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 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 resistant cables 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

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

### Terminal: 3,4,5,6

Uo: 9.6 V  
Io: 25 mA  
Po: 60 mW  
Lo: 33 mH  
Co: 2.4  $\mu\text{F}$

### Terminal: 1,2

Ex nA  
  
Umax =35 VDC

### Terminal: 1,2

Ex ic  
  
Ui = 35 VDC  
Ii = 110mA  
Li = 10  $\mu\text{H}$   
Ci = 1.0 nF

### Installation note:

For installation in a potentially 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  $\geq 60^\circ\text{C}$ , 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 atmosphere, 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.

## 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

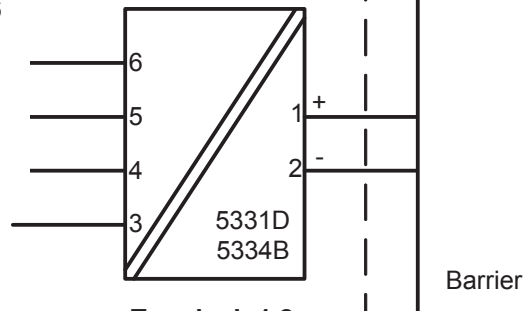
Hazardous area  
Zone 0, 1, 2, 20, 21, 22, M1

Non Hazardous Area

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**

Uo: 9.6 VDC  
Io: 25 mA  
Po: 60 mW  
Lo: 33 mH  
Co: 2.4  $\mu\text{F}$



**Terminal: 1,2**

Ui: 30 VDC  
Ii: 120 mA  
Pi: 0.84 W  
Li: 10  $\mu\text{H}$   
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 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.

## FM Installation Drawing

### Model 5331D, 5332D, 5333D and 5343B

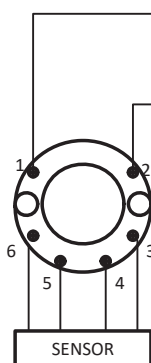
#### Hazardous (Classified) Location

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

Ambient temperature limits  
T4: -40 to +85 deg. Celcius  
T6: -40 to +60 deg. Celcius

Terminal 1, 2  
Vmax or Ui: 30 V  
Imax or Ii: 120 mA  
Pmax or Pi: 0.84 W  
Ci: 1 nF  
Li: 10 uH

Terminal 3, 4, 5, 6  
Vt or Uo: 9.6 V  
It or Io: 28 mA  
Pt or Po: 67.2 mW  
Ca or Co: 3.5 uF  
La or Lo: 35 mH



#### Non Hazardous Location

Associated Apparatus  
or Barrier  
with  
entity Parameters:

$UM \leq 250V$   
 $Voc \text{ or } Uo \leq Vmax \text{ or } Ui$   
 $Isc \text{ or } Io \leq Imax \text{ or } Ii$   
 $Po \leq Pi$   
 $Ca \text{ or } Co \geq Ci + Ccable$   
 $La \text{ or } Lo \geq Li + Lcable$

This device must not be connected  
to any associated apparatus which  
uses or generates more than 250  
VRMS

### Model 5335D, 5337D

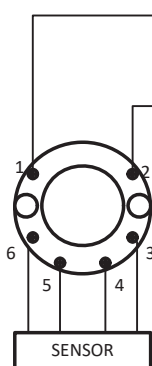
#### Hazardous (Classified) Location

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

Ambient temperature limits  
T4: -40 to +85 deg. Celcius  
T6: -40 to +60 deg. Celcius

Terminal 1, 2  
Vmax or Ui: 30 V  
Imax or Ii: 120 mA  
Pmax or Pi: 0.84 W  
Ci: 1 nF  
Li: 10 uH

Terminal 3, 4, 5, 6  
Vt or Uo: 9.6 V  
It or Io: 28 mA  
Pt or Po: 67.2 mW  
Ca or Co: 3.5 uF  
La or Lo: 35 mH



#### Non Hazardous Location

Associated Apparatus  
or Barrier  
with  
entity Parameters:

$UM \leq 250V$   
 $Voc \text{ or } Uo \leq Vmax \text{ or } Ui$   
 $Isc \text{ or } Io \leq Imax \text{ or } Ii$   
 $Po \leq Pi$   
 $Ca \text{ or } Co \geq Ci + Ccable$   
 $La \text{ or } Lo \geq Li + Lcable$

This device must not be connected  
to any associated apparatus which  
uses or generates more than 250  
VRMS



### 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  $U_i(V_{MAX})$  and current  $I_i(I_{MAX})$ , and maximum power  $P_i(P_{MAX})$ , which the device can receive and remain intrinsically safe, must be equal to or greater than the voltage ( $U_o$  or  $V_{OC}$  or  $V_t$ ) and current ( $I_o$  or  $I_{SC}$  or  $I_t$ ) and the power  $P_o$  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  $U_o, V_{OC}$  or  $V_t$  and  $I_o, I_{SC}$  or  $I_t$ , and  $C_a$  and  $L_a$  for barriers are provided by the barrier manufacturer.

### NI Field Circuit Parameters

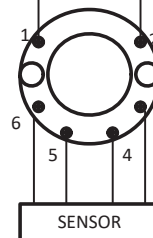
### Model 5331D, 5332D, 5333D, 5335D, 5337D and 5343B

#### Hazardous (Classified) Location

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

Ambient temperature limits  
T4: -40 to +85 deg. Celcius  
T6: -40 to +60 deg. Celcius

Terminal 1, 2  
 $V_{max}$  : 35 V  
 $C_i$ : 1.0 nF  
 $L_i$ : 10 uH



#### Non Hazardous Location

Associated Apparatus  
or Barrier

This device must not be connected  
to any associated apparatus which  
uses or generates more than 250  
VRMS

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For safe installation of the 5331A and 5332A 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 T4..T6  
Class I Zone 2 Ex/AEx nA[ic] IIC T4..T6  
Class I Zone 2 Ex/AEx nA IIC T4..T6  
NIFW Class I Division 2, Group A,B,C,D

**Hazardous Area**

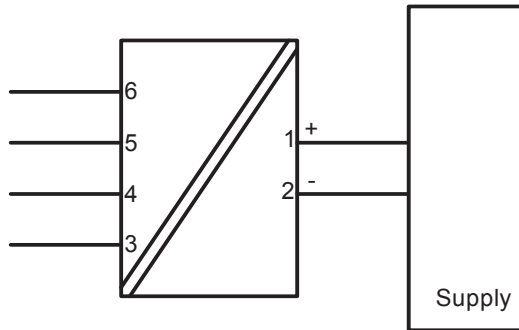
CL I, Div 2, GP ABCD  
CL I, Zone 2, IIC

T4: -40°C to 85 °C  
T6: -40°C to 60 °C

**Terminal:**

**3,4,5,6**

Uo: 9.6 VDC  
Io: 25 mA  
Po: 60 mW  
Lo: 33 mH  
Co: 2.4µF



**Terminal:**

**1-2**

Functional Ratings:  
U nominal ≤ 35 VDC;  
I nominal ≤ 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.

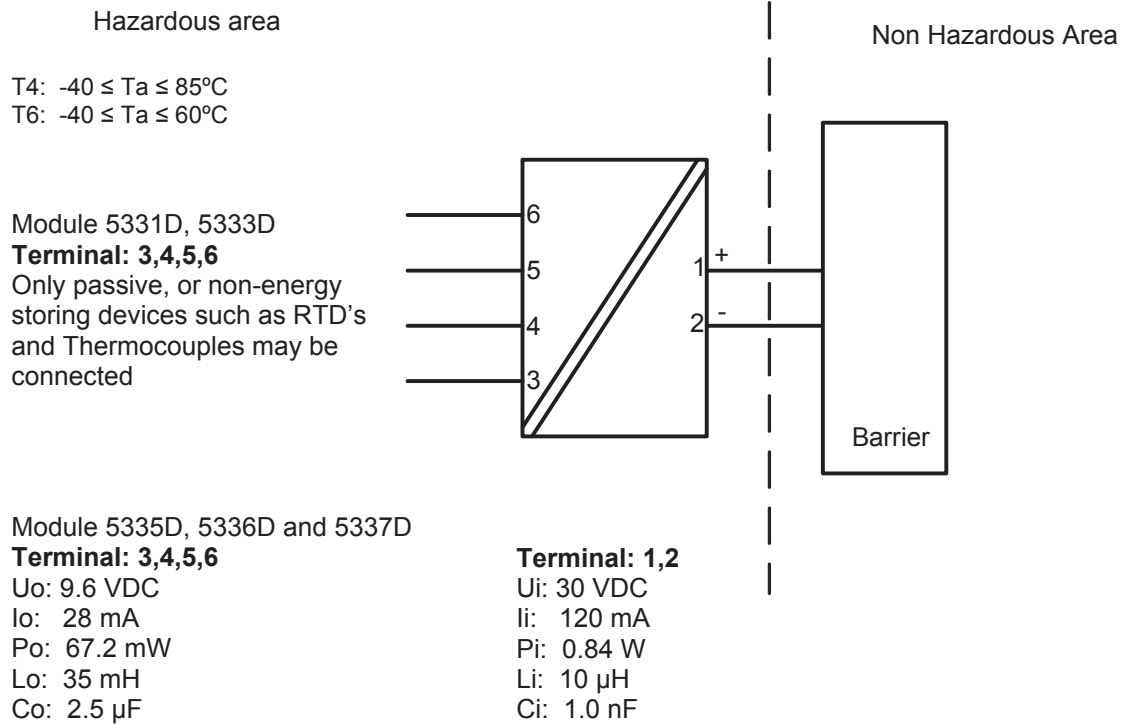
AVERTISSEMENT: Ne débranchez pas l'équipement sauf si l'alimentation a été coupée ou si la zone est connue pour être sûre.

**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 Associated Intrinsically Safe Apparatus or Associated Apparatus not specially examined in combination as a system 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 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).

## Desenho de Instalação INMETRO



Para instalação segura do 5331A ou 5334A 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 16.0013 X

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

Normas ABNT NBR IEC 60079-0 : 2013; ABNT NBR IEC 60079-11 : 2013  
ABNT NBR IEC60079-15 : 2012

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

**Terminais:****3,4,5,6**

Uo: 9,6 V

Io: 25 mA

Po: 60 mW

Lo: 33 mH

Co: 2,4  $\mu\text{F}$ **Terminais: 1,2**

Ex nA

 $U \leq 35 \text{ VDC}$ **Terminais: 1,2**

Ex ic

 $U_i = 35 \text{ VDC}$  $I_i = 110 \text{ mA}$  $L_i = 10 \mu\text{H}$  $C_i = 1,0 \text{ nF}$ 

### Notas para instalação

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

Para a instalação nA o transmissor deve ser instalado em um invólucro de metal, por exemplo, gabinete em forma B que forneça um grau de proteção de pelo menos IP54 de acordo com ABNT NBR IEC60529 ou em um invólucro com tipo de proteção Ex n ou Ex e.

Para a instalação Ex ic o transmissor deve ser instalado em um invólucro proporcionando um grau de proteção IP20 de acordo com a norma ABNT NBR IEC60529. E o invólucro deve, pelo menos, ser adequado para a aplicação e corretamente instalado.

Dispositivos de entrada de cabos e elementos de supressão devem cumprir os mesmos requisitos.

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.

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

O transmissor deve ser montado em invólucro de metal forma B de acordo com DIN43729 que está fornecendo pelo menos um grau de proteção IP6X de acordo com ABNT NBR IEC60529.

O invólucro deve ser adequado para aplicação e instalado corretamente.

As entradas dos cabos e os elementos de obturação que podem ser utilizados devem ser adequados à aplicação pretendida e corretamente instalados.

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

## Desenho de Instalação INMETRO



Para instalação segura do 5331D ou 5334B 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 16.0013 X

Marcas

Ex ia IIC T6...T4 Ga

Ex ia IIIC Da

Ex ia I Ma

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**

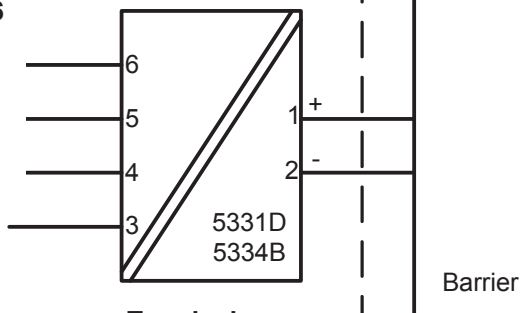
Uo: 9,6 VDC

Io: 25 mA

Po: 60 mW

Lo: 33 mH

Co: 2,4µF



**Terminais:**

**1,2**

Ui: 30 VDC

Ii: 120 mA

Pi: 0,84 W

Li: 10µH

Ci: 1,0nF

**Notas de instalação**

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

Em uma atmosfera de gás potencialmente explosiva, o transmissor deve ser montado em um invólucro a fim de garantir um grau de proteção de no mínimo IP20 de acordo com a ABNT NBR IEC60529. Se contudo, o ambiente necessitar de um nível de proteção maior, isso deve ser levado em consideração.

Se o transmissor é instalado em uma atmosfera explosiva exigindo o uso de equipamento de proteção de nível Ga e se o invólucro é feito de alumínio, ele deve ser instalado de modo que, mesmo em caso remoto de avaria, fontes de ignição devido ao impacto e fricção, faíscas são eliminadas.

Se o invólucro é feito de materiais não metálicos, cargas eletroestáticas devem ser evitadas.

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

O transmissor deve ser montado em invólucro de metal forma B de acordo com DIN43729 que está fornecendo um grau de proteção de pelo menos IP6X de acordo com ABNT NBR IEC60529. O invólucro deve ser adequado para aplicação pretendida e instalado corretamente.

As entradas dos cabos e os elementos de obturação que podem ser utilizados devem ser adequados à aplicação pretendida 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 invólucro é igual à temperatura ambiente mais 20 K, por uma camada de pó, com espessura de até 5 mm.

## História do documento

A lista a seguir fornece notas sobre as revisões deste documento.

<b>ID de rev.</b>	<b>Data</b>	<b>Notas Rev.</b>
113	1345	Aprovações IECEx e INMETRO adicionadas.
114	1510	Aprovação de PESO/CCOE adicionada.
115	1707	Aprovação GOST substituída pela aprovação da EAC. Desenho de instalação FM atualizado. Desenho de instalação INMETRO atualizado.
116	1848	Desenho de instalação FM atualizado.
117	2004	Aprovação CSA para 5331A recebida. Desenho de instalação atualizado. Aprovação PESO/CCOE descontinuada. Desenho de instalação INMETRO atualizado.

Todos os clientes poderão declarar uma reclamação através do telefone 0XX19-3429-7890 ou email [suporte@tsie.com.br](mailto:suporte@tsie.com.br) ou pelo site: <http://technosupply.com.br/suporte-tecnico>

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