

# PR



## 5 3 3 4

**2-Wire Programmable  
Transmitter**

No. 5334V107-UK  
From ser. no. 100043177



**SIGNALS THE BEST**

- DK** ▶ PR electronics A/S tilbyder et bredt program af analoge og digitale signalbehandlingsmoduler til industriel automation. Programmet består af Isolatorer, Displays, Ex-barrierer, Temperaturtransmittere, Universaltransmittere mfl. Vi har modulerne, du kan stole på i selv barske miljøer med elektrisk støj, vibrationer og temperaturudsving, og alle produkter opfylder de strengeste internationale standarder. Vores motto »Signals the Best« er indbegrebet af denne filosofi – og din garanti for kvalitet.
- UK** ▶ PR electronics A/S offers a wide range of analogue and digital signal conditioning modules for industrial automation. The product range includes Isolators, Displays, Ex Interfaces, Temperature Transmitters, and Universal Modules. You can trust our products in the most extreme environments with electrical noise, vibrations and temperature fluctuations, and all products comply with the most exacting international standards. »Signals the Best« is the epitome of our philosophy – and your guarantee for quality.
- FR** ▶ PR electronics A/S offre une large gamme de produits pour le traitement des signaux analogiques et numériques dans tous les domaines industriels. La gamme de produits s'étend des transmetteurs de température aux afficheurs, des isolateurs aux interfaces SI, jusqu'aux modules universels. Vous pouvez compter sur nos produits même dans les conditions d'utilisation sévères, p.ex. bruit électrique, vibrations et fluctuations de température. Tous nos produits sont conformes aux normes internationales les plus strictes. Notre devise »SIGNALS the BEST« c'est notre ligne de conduite - et pour vous l'assurance de la meilleure qualité.
- DE** ▶ PR electronics A/S verfügt über ein breites Produktprogramm an analogen und digitalen Signalverarbeitungsmodulen für die industrielle Automatisierung. Dieses Programm umfasst Displays, Temperaturtransmitter, Ex- und galvanische Signaltrenner, und Universalgeräte. Sie können unsere Geräte auch unter extremen Einsatzbedingungen wie elektrisches Rauschen, Erschütterungen und Temperaturschwingungen vertrauen, und alle Produkte von PR electronics werden in Übereinstimmung mit den strengsten internationalen Normen produziert. »Signals the Best« ist Ihre Garantie für Qualität!

# 2-WIRE PROGRAMMABLE TRANSMITTER

## PRETOP 5334

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# EC DECLARATION OF CONFORMITY

As manufacturer

**PR electronics A/S  
Lerbakken 10  
DK-8410 Rønde**

hereby declares that the following product:

**Type: 5334  
Name: 2-Wire programmable transmitter**

is in conformity with the following directives and standards:

The EMC Directive 2004/108/EC and later amendments  
**EN 61326-1 : 2006**

For specification of the acceptable EMC performance level, refer to the electrical specifications for the module.

The ATEX Directive 94/9/EC and later amendments

**EN 60079-0 : 2006, EN 60079-11 : 2007,  
EN 60079-15 : 2005 and EN 60079-26 : 2007  
EN 61241-0 : 2006 and EN 61241-11 : 2006  
ATEX certificate: KEMA 10ATEX0002 X (5334A)  
ATEX certificate: KEMA 06ATEX0062 X (5334B)**

No changes are required to enable compliance with the replacement standards:  
**EN 60079-0 : 2009 and EN 60079-11 : 2012**

Notified body

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P.O. Box 5185, 6802 ED Arnhem  
The Netherlands**

Rønde, 4 July 2012



Kim Rasmussen  
Manufacturer's signature

# 2-WIRE PROGRAMMABLE TRANSMITTER PRETOP 5334

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

## Application

- Linearised temperature measurement with TC sensor.
- Amplification of bipolar mV signals to a 4...20 mA signal, optionally linearised according to a defined linearisation function.

## Technical characteristics

- Within a few seconds the user can program PR5334 to measure temperatures within all TC ranges defined by the norms.
- Cold junction compensation (CJC) with a built-in temperature sensor.
- Continuous check of vital stored data for safety reasons.

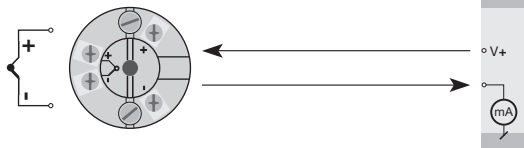
## Mounting / installation

- For DIN form B sensor head mounting. In non-hazardous areas the 5334 can be mounted on a DIN rail with the PR fitting type 8421.
- **NB:** As Ex barrier for 5334B we recommend 5401B, 5114B, or 5116B.

## APPLICATIONS

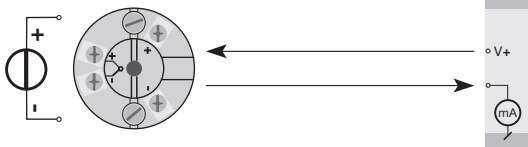
TC to 4...20 mA

2-wire installation  
in control room



mV to 4...20 mA

2-wire installation  
in control room



Order: 5334

Type	Version	Ambient temperature	Galvanic isolation
5334	Standard : A ATEX Ex : B	-40°C...+85°C : 3	1500 VAC : B

## Electrical specifications

### Specifications range:

-40°C to +85°C

### Common specifications:

Supply voltage, DC

Standard..... 7.2...35 V

ATEX Ex..... 7.2...30 VDC

Internal consumption ..... 25 mW...0.8 W

Voltage drop ..... 7.2 VDC

Isolation voltage, test / operation ..... 1.5 kVAC / 50 VAC

Warm-up time..... 5 min.

Communications interface ..... Loop Link

Signal / noise ratio ..... Min. 60 dB

Response time (programmable)..... 1...60 s

EEPROM error check ..... < 3.5 s

Signal dynamics, input..... 18 bit

Signal dynamics, output..... 16 bit

Calibration temperature..... 20...28°C

Accuracy, the greater of general and basic values:

General values		
Input type	Absolute accuracy	Temperature coefficient
All	≤ ±0.05% of span	≤ ±0.01% of span / °C

Basic values		
Input type	Basic accuracy	Temperature coefficient
Volt	$\leq \pm 10 \mu\text{V}$	$\leq \pm 1 \mu\text{V} / ^\circ\text{C}$
TC type: E, J, K, L, N, T, U	$\leq \pm 1^\circ\text{C}$	$\leq \pm 0.05^\circ\text{C} / ^\circ\text{C}$
TC type: B, R, S, W3, W5, LR	$\leq \pm 2^\circ\text{C}$	$\leq \pm 0.2^\circ\text{C} / ^\circ\text{C}$

EMC immunity influence .....	$< \pm 0.5\%$ of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst .....	$< \pm 1\%$ of span

Effect of supply voltage variation.....	$< 0.005\%$ of span / VDC
Vibration .....	IEC 60068-2-6 Test FC
Lloyd's specification no. 1.....	4 g / 2...100 Hz
Max. wire size.....	1 x 1.5 mm <sup>2</sup> stranded wire
Screw terminal torque.....	0.4 Nm
Humidity .....	$< 95\%$ RH (non-cond.)
Dimensions.....	$\varnothing 44 \times 20.2$ mm
Protection degree (enclosure / terminal).....	IP68 / IP00
Weight .....	50 g

#### Electrical specifications, input:

Max. offset..... 50% of selec. max. value

#### TC input:

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



Cold junction compensation .....	< ±1.0°C
Sensor error detection .....	Yes
Sensor error current:	
When detecting .....	Nom. 33 mA
Else .....	0 mA

#### Voltage input:

Measurement range .....	-12...150 mV
Min. span .....	5 mV
Input resistance .....	10 MΩ

#### Output:

##### Current output:

Signal range .....	4...20 mA
Min. signal range .....	16 mA
Updating time .....	440 ms
Output signal at EEPROM error .....	≤ 3.5 mA
Load resistance .....	≤ (V <sub>supply</sub> - 7.2) / 0.023 [Ω]
Load stability .....	< ±0.01% of span / 100 Ω

##### Sensor error detection:

Programmable .....	3.5...23 mA
Namur NE43 Upscale .....	23 mA
Namur NE43 Downscale .....	3.5 mA

Of span = Of the presently selected range

#### Ex approval - 5334A:

KEMA 10ATEX0002 X .....	II 3 GD Ex nA [nL] IIC T4...T6 or II 3 GD Ex nL IIC T4...T6 or II 3 GD Ex nA [ic] IIC T4...T6 or II 3 GD Ex ic IIC T4...T6
ATEX Installation Drawing No. ....	5331QA02

#### Ex / I.S. approval - 5334B:

KEMA 06ATEX0062 .....	II 1 G Ex ia IIC T4 or T6 II 1 D Ex iaD
Max. amb. temperature for T4 .....	85°C
Max. amb. temperature for T6 .....	60°C
ATEX, applicable in zone .....	0, 1, 2, 20, 21 or 22
ATEX Installation Drawing No. ....	5331QA01

#### Marine approval:

Det Norske Veritas, Ships & Offshore ..... Standard for Certification No. 2.4

**GOST R approval:**

VNIIM & VNIIFTRI, Cert. no. .... See [www.prelectronics.com](http://www.prelectronics.com)



**Observed authority requirements:**

EMC 2004/108/EC .....

ATEX 94/9/EC.....

**Standard:**

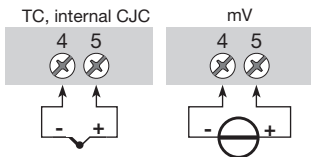
EN 61326-1

EN 60079-0, EN 60079-11,  
EN 60079-15, EN 60079-26,  
EN 61241-0, EN 61241-11

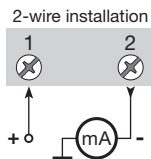


# CONNECTIONS

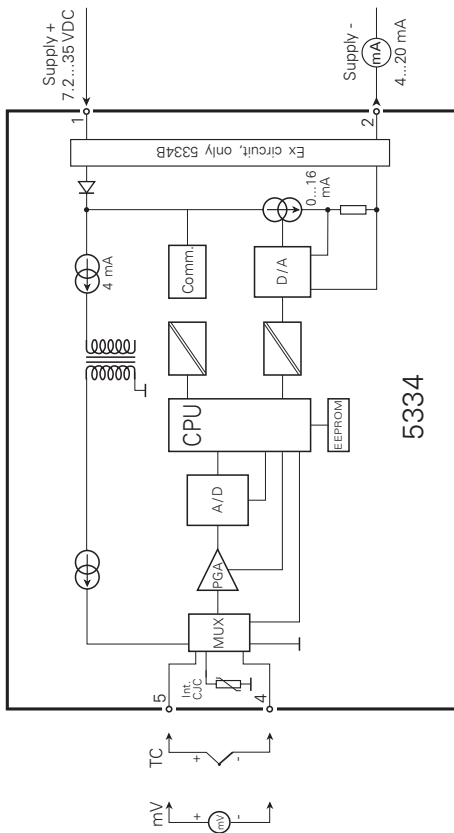
Input:



Output:



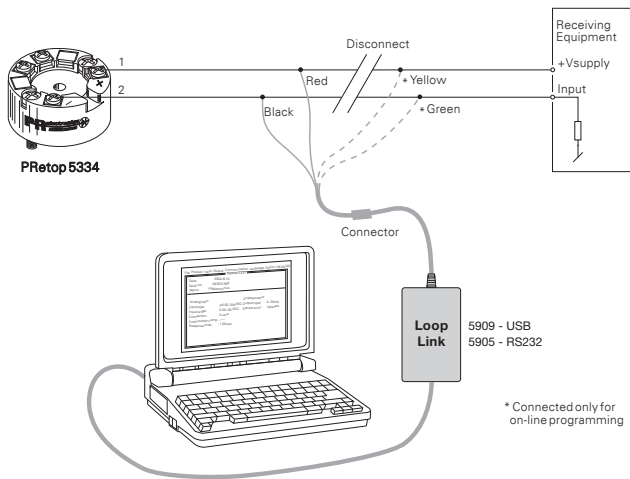
# BLOCK DIAGRAM



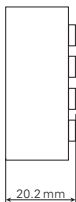
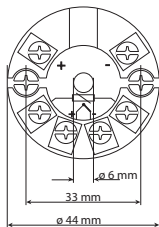
# PROGRAMMING

- Loop Link is a communications interface that is needed for programming PRetop 5334.
- For programming please refer to the drawing below and the help functions in PReset.
- Loop link is not approved for communication with modules installed in hazardous (Ex) areas.

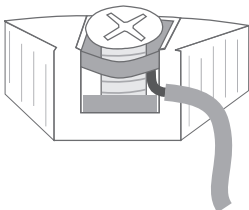
## Order: Loop Link



## Mechanical specifications



## Mounting of sensor wires



Wires must be mounted between the metal plates.

# APPENDIX

**ATEX INSTALLATION DRAWING - 5334A**


**ATEX INSTALLATION DRAWING - 5334B**

## 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 0002X

Marking  II 3 GD Ex nA [nL] IIC T6...T4  
 II 3 GD Ex nL IIC T6...T4  
  
 II 3 GD Ex nA [ic] IIC T6...T4  
 II 3 GD Ex ic IIC T6...T4

Standards              EN 60079-0 : 2006, EN 60079-11 : 2007, EN 60079-15 : 2005

T4: $-40 \leq T_a \leq 85^\circ\text{C}$ T6: $-40 \leq T_a \leq 60^\circ\text{C}$	<b>Terminal: 3,4,5,6</b> Ex nA [nL]  Uo: 9.6 V Io: 25 mA Po: 60 mW Lo: 33 mH Co: 2.4 $\mu\text{F}$	<b>Terminal: 1,2</b> Ex nA  U $\leq$ 35 VDC I = 4 - 20 mA	<b>Terminal: 1,2</b> Ex nL or Ex ic  Ui = 35 VDC Li = 10 $\mu\text{H}$ Ci = 1.0 nF
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### Special conditions for safe use

For use in a potentially explosive atmosphere of flammable gasses, vapours or mists, the transmitter shall be mounted in an enclosure providing a degree of protection of at least IP54 in accordance 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 o EN60529. The surface temperature of the enclosure shall be determined after installation of the transmitter.

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


**5331**

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

Marking  II 1 G Ex ia IIC T6..T4  
II 1 D Ex iaD

Standards            EN 60079-0 : 2006, EN 60079-11 : 2007, EN 60079-26 : 2007,  
EN 61241-0 : 2006, EN 61241-11 : 2006

**Hazardous area**

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

T4:  $-40 \leq T_a \leq 85^\circ\text{C}$ , T105 °C

T6:  $-40 \leq T_a \leq 60^\circ\text{C}$ , T80 °C

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

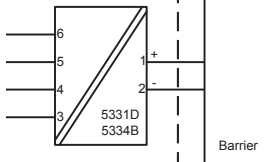
Uo: 9.6 VDC

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: 10µH

Ci: 1.0nF

**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 1G and if the enclosure is made of aluminium, it must be installed such, that even in the event of rare incidents, ignition sources due to impact and friction, sparks are excluded; if the enclosure is made of non-metallic materials, electrostatic charging shall be avoided.

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

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

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

For an ambient temperature  $\geq 60^{\circ}\text{C}$ , heat 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



**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 modules 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 modules with analogue and digital bus communication ranging from application-specific to universal transmitters.



**Universal** PC or front programmable modules 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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