5334

2-Wire Programmable Transmitter

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

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.

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.

# 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 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

KEMA Quality B.V. (0344)
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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
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:

<table>
<thead>
<tr>
<th>Input type</th>
<th>Absolute accuracy</th>
<th>Temperature coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>≤ ±0.05% of span</td>
<td>≤ ±0.01% of span / °C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Version</th>
<th>Ambient temperature</th>
<th>Galvanic isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5334</td>
<td>Standard : A</td>
<td>-40°C...+85°C : 3</td>
<td>1500 VAC : B</td>
</tr>
<tr>
<td></td>
<td>ATEX Ex : B</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Basic values

<table>
<thead>
<tr>
<th>Input type</th>
<th>Basic accuracy</th>
<th>Temperature coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volt</td>
<td>≤ ±10 µV</td>
<td>≤ ±1 µV / °C</td>
</tr>
<tr>
<td>TC type: E, J, K, L, N, T, U</td>
<td>≤ ±1°C</td>
<td>≤ ±0.05°C / °C</td>
</tr>
<tr>
<td>TC type: B, R, S, W3, W5, LR</td>
<td>≤ ±2°C</td>
<td>≤ ±0.2°C / °C</td>
</tr>
</tbody>
</table>

**EMC immunity influence** .................................................. < ±0.5% of span
Extended EMC immunity:
NAMUR NE 21, A criterion, burst ......................... < ±1% of span

**Effect of supply voltage variation** ................... < 0.005% of span / VDC
**Vibration** .......................................................... IEC 60068-2-6 Test FC
Lloyd's specification no. 1 ........................... 4 g / 2...100 Hz
Max. wire size .................................................. 1 x 1.5 mm² stranded wire
Screw terminal torque ........................................... 0.4 Nm
Humidity .......................................................... < 95% RH (non-cond.)
Dimensions ......................................................... Ø 44 x 20.2 mm
Protection degree (enclosure / terminal) .... IP68 / IP00
Weight ............................................................... 50 g

### Electrical specifications, input:

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

### TC input:

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

Observed authority requirements:
EMC 2004/108/EC ..................................... EN 61326-1
ATEX 94/9/EC .......................................... EN 60079-0, EN 60079-11,
                                               EN 60079-15, EN 60079-26,
                                               EN 61241-0, EN 61241-11
CONNECTIONS

Input:
- TC, internal CJC
- mV

Output:
- 2-wire installation
- mA
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 PRReset.
- 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

<table>
<thead>
<tr>
<th>T4: -40 ≤ Ta ≤ 85°C</th>
<th>Terminal: 3,4,5,6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ex nA [nL]</td>
</tr>
<tr>
<td>Uo: 9.6 V</td>
<td></td>
</tr>
<tr>
<td>Io: 25 mA</td>
<td></td>
</tr>
<tr>
<td>Po: 60 mW</td>
<td></td>
</tr>
<tr>
<td>Lo: 33 mH</td>
<td></td>
</tr>
<tr>
<td>Co: 2.4 μF</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>T6: -40 ≤ Ta ≤ 60°C</th>
<th>Terminal: 1,2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ex nA</td>
</tr>
<tr>
<td>U ≤ 35 VDC</td>
<td></td>
</tr>
<tr>
<td>I = 4 - 20 mA</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terminal: 1,2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex nL or Ex ic</td>
</tr>
<tr>
<td>Ui = 35 VDC</td>
</tr>
<tr>
<td>Li = 10 μH</td>
</tr>
<tr>
<td>Ci = 1.0 nF</td>
</tr>
</tbody>
</table>

Special conditions for safe use

For use in a potentially explosive atmosphere of flammable gases, 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 EN60529. The surface temperature of the enclosure shall be determined after installation of the transmitter.

For an ambient temperature ≥ 60°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


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

Non Hazardous Area

T4: -40 ≤ Ta ≤ 85°C, T105 °C
T6: -40 ≤ Ta ≤ 60°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 $\geq 60^\circ$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.