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.

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

Ex barriers 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. Feature options such as mathematical functions and 2 wire transmitter interfaces.

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.

Backplane Flexible motherboard solutions for system 5000 modules. Our backplane range features flexible 8 and 16 module solutions with configuration via PReplan 8470 – a PC program with drop-down menus.

PR electronics

5331

2-Wire Programmable Transmitter

No.5331V106-IN (0324)
From ser. no. 010455001

FM APPROVED

ATEX Ex

C SP US

SIGNALS THE BEST

2-TRÅDS
PROGRAMMERBAR TRANSMITTER

PRetop 5331

Indholdsfortegnelse

Sikkerhedsinstruktion

- **Ex-installation:**

  For sikker installation af 5331B i eksplosionsfarligt område skal følgende overholdes. Installation må kun foretages af kvalificeret personale, der er bekendt med de nationale og internationale love, direktiver og standarder, der gælder for området.

OVERENSSTEMMELSESERKLÆRING

Som producent erklærer

PR electronics A/S
Lerbakken 10
DK-8410 Rønde

hermed at følgende produkt:

Type: 5331
Navn: 2-Tråds programmerbar transmitter

er i overensstemmelse med følgende direktiver og standarder:

EMC-direktivet 89/336/EEC og senere tilføjelser

Fra serienr.: 990303001 ff
EN 61 326
EN 50 081-1 og EN 50 081-2
EN 50 082-1 og EN 50 082-2

Denne erklæring er udgivet i overensstemmelse med EMC-direktivets paragraf 10, stk. 1. For specifikation af det acceptable EMC-niveau henvises til modulets elektriske specifikationer.

ATEX-direktivet 94/9/EC og senere tilføjelser

Fra serienr.: 990303001 ff
EN 50 014 og EN 50 020
Ex-certifikat: 99 ATEX 126962

Bemyndiget organ for CENELEC / ATEX: **UL International Demko A/S 0539**

Rønde, 4. jan. 2000

Peter Rasmussen
Producentens underskrift

2-TRÅDS PROGRAMMERBAR TRANSMITTER
PRetop 5331

- *Indgang for RTD, TC, Ohm eller mV*
- *Ekstrem målenøjagtighed*
- *Version med galvanisk isolation*
- *Programmerbar følerfejlsværdi*
- *Kan monteres i DIN form B følerhoved*

Anvendelse:

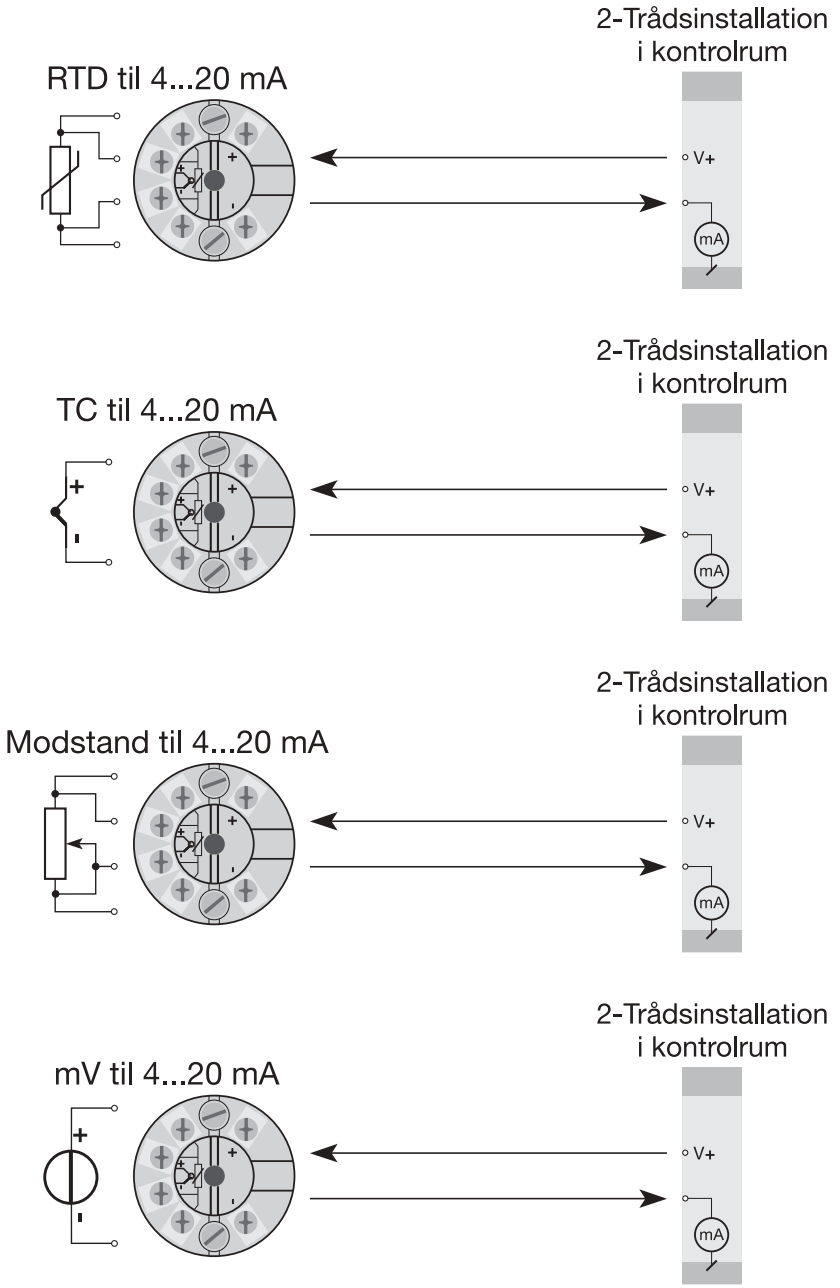
- Temperaturlineariseret måling med Pt100...Pt1000, Ni100...Ni1000 eller termo-elementføler.
- Omsætning af lineær modstandsændring til standard analogt strømsignal, f.eks. fra ventiler eller ohmske niveaustave.
- Forstærkning af bipolært mV-signal til et standard 4...20 mA strømsignal.

Teknisk karakteristik:

- PR5331 kan af brugeren i løbet af få sekunder programmeres til at måle inden for alle normerede temperaturområder.
- RTD og modstandsindgangen har kabelkompensering for 2-, 3- og 4-leder tilslutning.
- Der er løbende sikkerhedscheck af gemte data.

Montage / installation:

- Kan monteres i DIN form B følerhoved. I ikke-eksplosionsfarlige områder kan 5331 monteres på en DIN-skinne med et specielt beslag.
- **NB:** Som Ex-barriere for 5331B anbefaler vi 5104B, 5111B eller 5114B.



Bestillingsskema: 5331 ___ ___ ___

Type	Version	Omgivelses-temperatur	Galvanisk isolation
5331	Standard : A ATEX : B FM og ATEX : C CSA, FM og ATEX : D	-40°C...+85°C : 3	Ingen : A 1500 VAC : B

Elektriske specifikationer:

Specifikationsområde:

(@: -40°C til +85°C)

Fælles specifikationer:

Forsyningsspænding DC
- Standard, 5331A ..... 7,2...35 V
- ATEX, FM og CSA, 5331B, C og D ..... 7,2...28 VDC

Egetforbrug ..... 25 mW...0,8 W
Spændingsdrop ..... 7,2 VDC
Isolationsspænding, test / drift ..... 1,5 kVAC / 50 VAC
Opvarmningstid ..... 5 min.
Kommunikationsinterface ..... Loop Link 5905A
Signal- / støjforhold ..... Min. 60 dB
Reaktionstid (programmerbar) ..... 1...60 s
EEprom fejlcheck ..... < 3,5 s
Signaldynamik, indgang ..... 20 bit
Signaldynamik, udgang ..... 16 bit
Kalibreringstemperatur ..... 20...28°C

Nøjagtighed, størst af generelle og basisværdier:

Generelle værdier		
Indgangstype	Absolut nøjagtighed	Temperatur-koefficient
Alle	≤ ±0,05% af span	≤ ±0,01% af span / °C

Basisværdier		
Indgangstype	Basis nøjagtighed	Temperatur-koefficient
RTD	≤ ±0,2°C	≤ ±0,01°C/°C
Lin.R	≤ ±0,1 Ω	≤ ±10 mΩ/°C
Volt	≤ ±10 µV	≤ ±1 µV/°C
TC-type: E, J, K, L, N, T, U	≤ ±1°C	≤ ±0,05°C/°C
TC-type: B, R, S, W3, W5	≤ ±2°C	≤ ±0,2°C/°C

EMC-immunitetspåvirkning ..... < ±0,5% af span
Udvidet EMC-immunitet:
NAMUR NE 21, A kriterium, gniststøj ..... < ±1% af span

Virkning af forsyningsspændings-ændring ..... < 0,005% af span / VDC
Vibration ..... IEC 68-2-6 Test FC
Lloyd's specifikation nr. 1 ..... 4 g / 2...100 Hz
Max. ledningskvadrat ..... 1 x 1,5 mm^2
Luftfugtighed ..... < 95% RH (ikke kond.)
Mål ..... Ø 44 x 20,2 mm
Tæthedsgrad (hus / klemme) ..... IP68 / IP00
Vægt ..... 50 g

Elektriske specifikationer indgang:

RTD- og lineær modstandsindgang:

RTD-type	Min. værdi	Max. værdi	Min. span
Pt100	-200°C	+850°C	25°C
Ni100	-60°C	+250°C	25°C
Lin.R	0 Ω	5000 Ω	30 Ω

Max. nulpunktsforskydning (offset) ..... 50% af valgt max. værdi
Kabelmodstand pr. leder (max.) ..... 5 Ω
Følerstrøm ..... Nom. 0,2 mA

Virkning af følerkabelmodstand
(3- / 4-leder) ..... < 0,002 Ω/Ω
Følerfejlsdetektering ..... Ja

TC-indgang:

Type	Min. temperatur	Max. temperatur	Min. span	Norm
B	+400°C	+1820°C	200°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	100°C	IEC584
R	-50°C	+1760°C	200°C	IEC584
S	-50°C	+1760°C	200°C	IEC584
T	-200°C	+400°C	50°C	IEC584
U	-200°C	+600°C	75°C	DIN 43710
W3	0°C	+2300°C	200°C	ASTM E988-90
W5	0°C	+2300°C	200°C	ASTM E988-90

Max. nulpunktsforskydning (offset) ..... 50% af valgt max. værdi
Koldt loddestedskomp. (CJC) ..... < ±1,0°C
Følerfejlsdetektering ..... ja
Følerfejlsstrøm:
under detektering ..... nom. 33 mA
ellers ..... 0 mA

Spændingsindgang:

Måleområde ..... -12...800 mV
Min. måleområde (span) ..... 5 mV
Max. nulpunktsforskydning (offset) ..... 50% af valgt max. værdi
Indgangsmodstand ..... 10 MΩ

Udgang:

Strømudgang:

Signalområde ..... 4...20 mA
Min. signalområde ..... 16 mA
Opdateringstid ..... 440 ms
Udgangssignal ved EEpromfejl ..... ≤ 3,5 mA
Belastningsmodstand ..... ≤ ($V_{forsyn.}$ - 7,2) / 0,023 [Ω]
Belastningsstabilitet ..... < ±0,01% af span / 100 Ω

Følerfejlsdetektering:

Programmerbar ..... 3,5...23 mA
NAMUR NE43 Upscale ..... 23 mA
NAMUR NE43 Downscale ..... 3,5 mA

Ex-data:

U_i ..... : 28 VDC
I_i ..... : 120 mADC
P_i ..... : 0,84 W
L_i ..... : 10 µH
C_i ..... : 1 nF

EEx-godkendelse CENELEC:

DEMKO 99 ..... ATEX 126962
ATEX ..... 0539 ⟨Ex⟩ II 1 G
EEx ia IIC T1...T6
Max. omgivelsestemp. for T1...T4 ..... 85°C
Max. omgivelsestemp. for T5 og T6 ..... 60°C
Anvendes i zone ..... 0, 1 eller 2
FM ..... IS, CL. I, DIV. 1, GP. A-D
Entity, FM Control Drawing No. 5300Q502
CSA ..... Class I, Zone 0/1, Group IIC
Installation Drawing No. 533XQC03

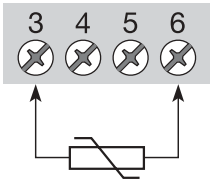
Overholdte myndighedskrav:	**Standard:**
EMC 89/336/EØF, Emission	EN 50 081-1, EN 50 081-2
Immunitet	EN 50 082-2, EN 50 082-1
Emission og immunitet	EN 61 326
ATEX 94/9/EF	EN 50 014 og EN 50 020
Factory Mutual, ASCN	3600, 3810, 3611, 3610
CSA, CAN / CSA	E79-15, E79-11

Af span = Af det aktuelt valgte område

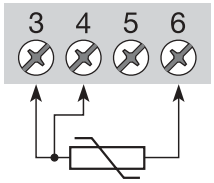
Tilslutninger:

Indgang:

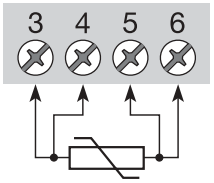
RTD, 2-leder



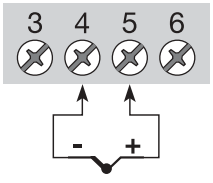
RTD, 3-leder



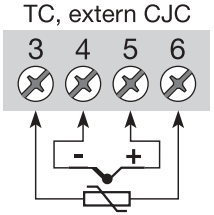
RTD, 4-leder



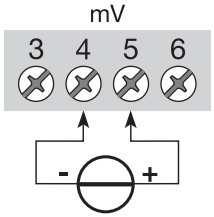
TC, intern CJC



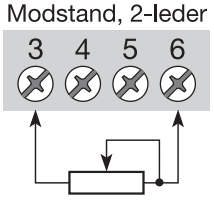
TC, extern CJC



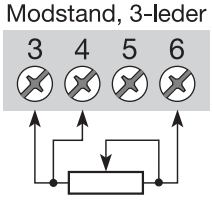
mV



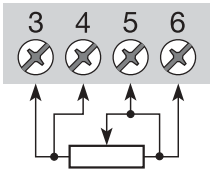
Modstand, 2-leder



Modstand, 3-leder

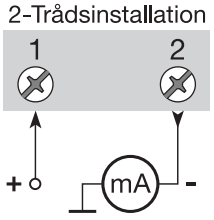


Modstand, 4-leder

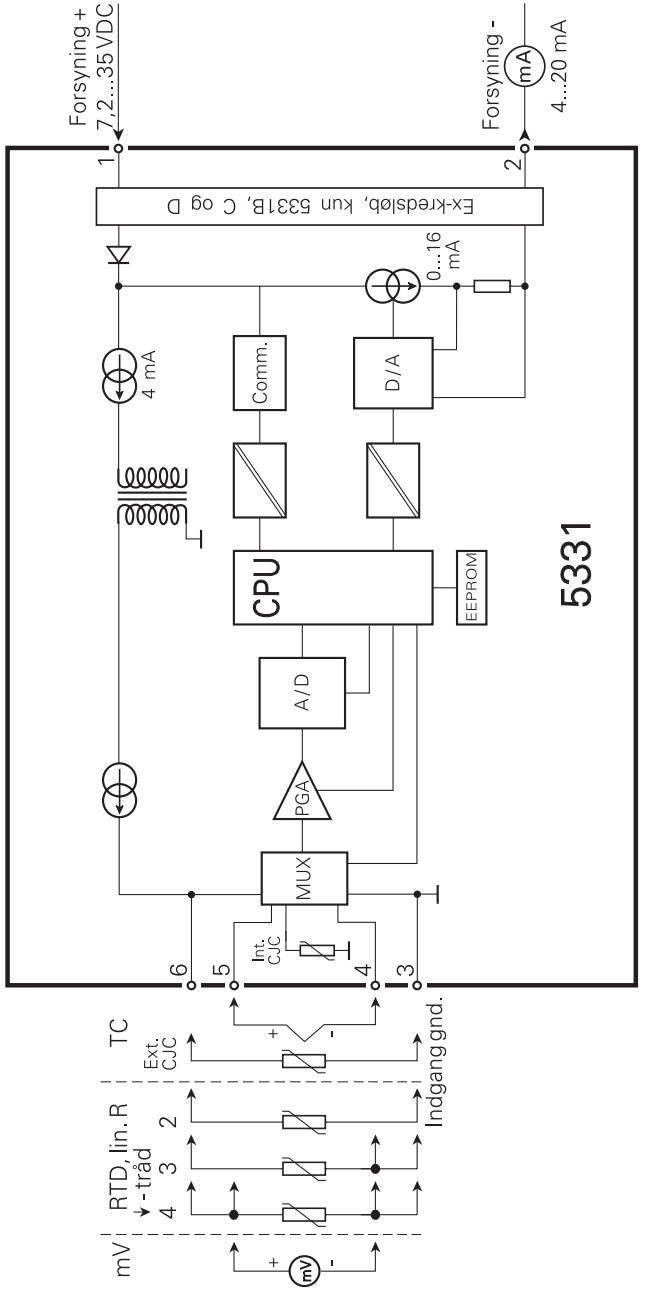


Udgang:

2-Trådsinstallation



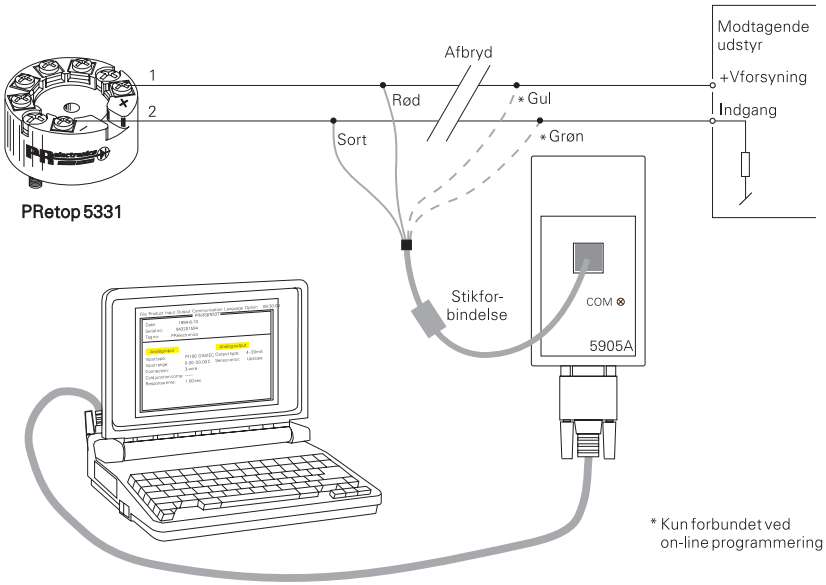
BLOKDIAGRAM:



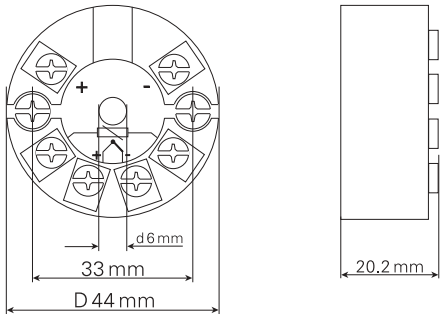
Programmering:

- Loop Link 5905A er et batteridrevet kommunikationsinterface, der er nødvendigt for programmering af PRetop 5331.
- Ved programmering henvises til tegningen nedenfor og hjælpefunktionen i PReset programmet.
- Loop link 5905A må ikke benyttes til kommunikation med moduler installeret i Ex-område

Bestilling: Loop Link 5905A.



Mekaniske specifikationer:



2-WIRE PROGRAMMABLE TRANSMITTER

PRetop 5331

CONTENTS

Safety instructions

- Ex installation:
  For a safe installation of 5331B in hazardous area the following must be observed. The module must only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this area.

DECLARATION OF CONFORMITY

As manufacturer

PR electronics A/S
Lerbakken 10
DK-8410 Rønde

hereby declares that the following product:

Type: 5331
Name: 2-Wire programmable transmitter

is in conformity with the following directives and standards:

EMC directive 89/336/EEC and later amendments

From serial no.: 990303001 ff
EN 61 326
EN 50 081-1, EN 50 081-2
EN 50 082-1, EN 50 082-2

This declaration is issued in compliance with article 10, subclause 1 of the EMC directive. 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

From serial no.: 990303001 ff
EN 50 014 and EN 50 020
Ex certificate: 99 ATEX 126962

Notified body for CENELEC/ATEX: UL International Demko A/S 0539

Rønde, 4 Jan. 2000

Peter Rasmussen
Manufacturer's signature

2-WIRE PROGRAMMABLE TRANSMITTER
PRetop 5331

- *RTD, TC, Ohm, or mV input*
- *Extremely high measurement accuracy*
- *Version with galvanic isolation*
- *Programmable sensor error value*
- *For DIN form B sensor head mounting*

Application:

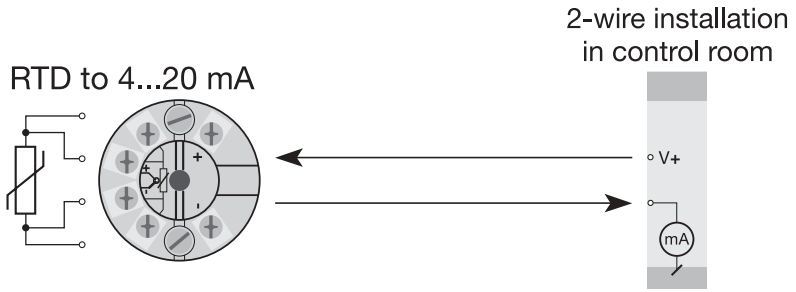
- Linearised temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor.
- Conversion of linear resistance variation to a standard analogue current signal, for instance from valves or Ohmic level sensors.
- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.

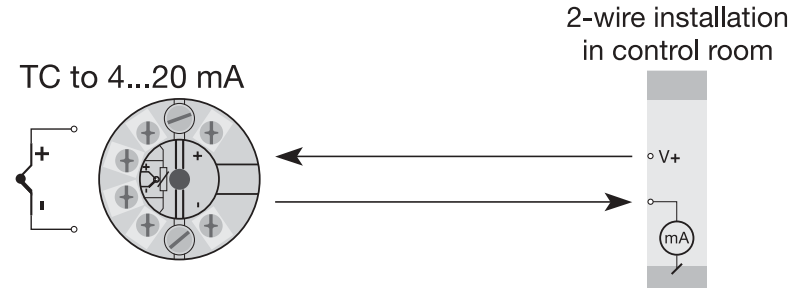
Technical characteristics:

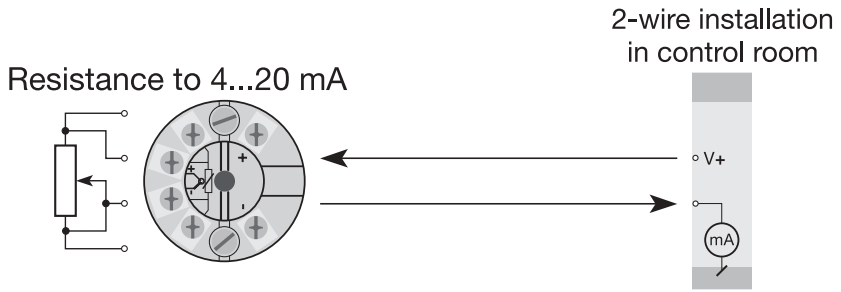
- Within a few seconds the user can program PR5331 to measure temperatures within all ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 2-, 3- and 4-wire connection.
- Continuous check of vital stored data for safety reasons.

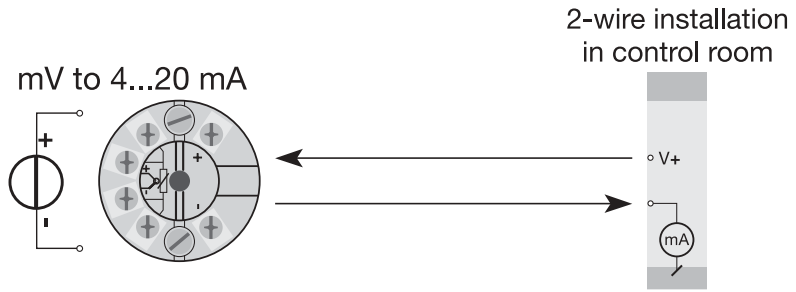
Mounting / installation:

- For DIN form B sensor head mounting. In non-hazardous areas the 5331 can be mounted on a DIN rail with a special fitting.
- **NB:** As Ex barrier for 5331B we recommend 5401B, 5111B, or 5114B.









Order: 5331 ___ ___ ___

Type	Version	Ambient temperature	Galvanic isolation
5331	Standard : A ATEX : B FM and ATEX : C CSA, FM and ATEX : D	-40°C...+85°C : 3	None : A 1500 VAC : B

Electrical specifications:

Specifications range:

(@: -40°C to +85°C)

Common specifications:

Supply voltage, DC
- Standard, 5331A ..... 7.2...35 V
- ATEX, FM and CSA, 5331B, C and D .. 7.2...28 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 5905A
Signal / noise ratio ..... Min. 60 dB
Response time (programmable)..... 1...60 s
EEprom error check ..... < 3.5 s
Signal dynamics, input..... 20 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
RTD	≤ ±0.2°C	≤ ±0.01°C/°C
Lin.R	≤ ±0.1 Ω	≤ ±10 mΩ/°C
Volt	≤ ±10 µV	≤ ±1 µV/°C
TC type: E, J, K, L, N, T, U	≤ ±1°C	≤ ±0.05°C/°C
TC type: B, R, S, W3, W5	≤ ±2°C	≤ ±0.2°C/°C

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 68-2-6 Test FC
Lloyd's specification no. 1 ..... 4 g / 2...100 Hz
Max. wire size..... 1 x 1.5 mm^2
Humidity ..... < 95% RH (non-cond.)
Dimensions..... Ø 44 x 20.2 mm
Tightness (enclosure / terminal)..... IP68 / IP00
Weight ..... 50 g

Electrical specifications, input:

RTD and linear resistance input:

RTD type	Min. value	Max. value	Min. span
Pt100	-200°C	+850°C	25°C
Ni100	-60°C	+250°C	25°C
Lin.R	0 Ω	5000 Ω	30 Ω

Max. offset ..... 50% of selec. max. value
Cable resistance per wire (max.)..... 5 Ω
Sensor current..... Nom. 0.2 mA
Effect of sensor cable resistance
(3- / 4-wire)..... < 0.002 Ω/Ω
Sensor error detection ..... Yes

TC input:

Type	Min. temperature	Max. temperature	Min. span	Norm
B	+400°C	+1820°C	200°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	100°C	IEC584
R	-50°C	+1760°C	200°C	IEC584
S	-50°C	+1760°C	200°C	IEC584
T	-200°C	+400°C	50°C	IEC584
U	-200°C	+600°C	75°C	DIN 43710
W3	0°C	+2300°C	200°C	ASTM E988-90
W5	0°C	+2300°C	200°C	ASTM E988-90

Max. offset ..... 50% of selec. max. value
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...800 mV
Min. span ..... 5 mV
Max. offset ..... 50% of selec. max. value
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 Downscale ..... 3.5 mA

Ex data:

U_i ..... : 28 VDC
I_i ..... : 120 mADC
P_i ..... : 0.84 W
L_i ..... : 10 µH
C_i ..... : 1 nF

EEx approval CENELEC:

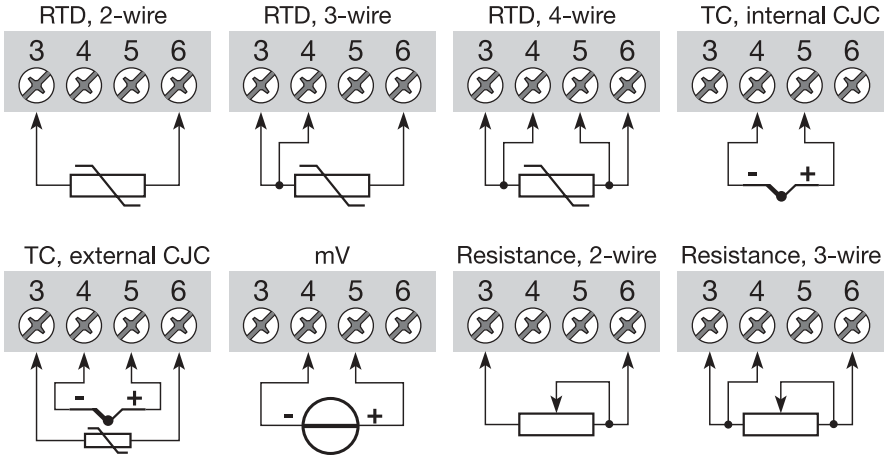
DEMKO 99 ..... ATEX 126962
ATEX ..... 0539 ⟨Ex⟩ II 1 G
EEx ia IIC T1...T6
Max. amb. temperature for T1...T4 ..... 85°C
Max. amb. temperature for T5 and T6 ..... 60°C
Applicable in zone ..... 0, 1 or 2
FM ..... IS, CL. I, DIV. 1, GP. A-D
Entity, FM Control Drawing No. 5300Q502
CSA ..... Class I, Zone 0/1, Group IIC
Installation Drawing No. 533XQC03

Observed authority requirements:	**Standard:**
EMC 89/336/EEC, Emission	EN 50 081-1, EN 50 081-2
Immunity	EN 50 082-2, EN 50 082-1
Emission and immunity	EN 61 326
ATEX 94/9/EC	EN 50 014 and EN 50 020
Factory Mutual, ASCN	3600, 3810, 3611, 3610
CSA, CAN / CSA	E79-15, E79-11

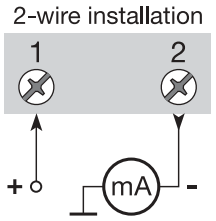
Of span = Of the presently selected range

Connections:

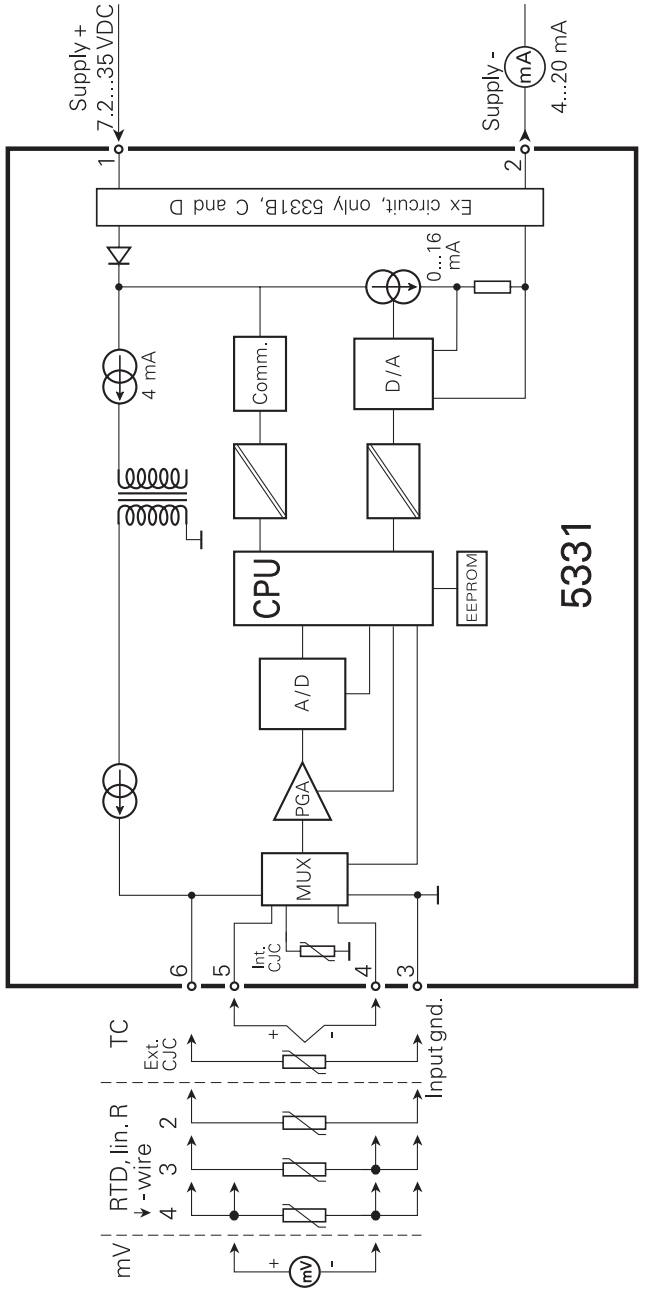
Input:



Output:



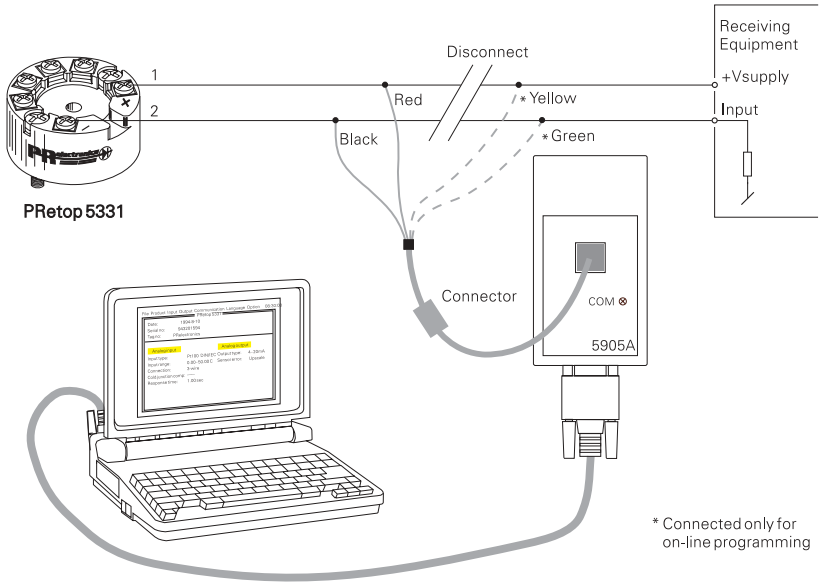
BLOCK DIAGRAM:



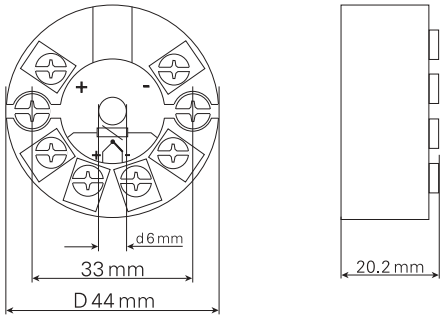
Programming:

- Loop Link 5905A is a battery-powered communications interface that is needed for programming PRetop 5331.
- For programming please refer to the drawing below and the help functions in PReset.
- Loop link 5905A is not approved for communication with modules installed in harzardous (Ex) areas

Order: Loop Link 5905A



Mechanical specifications:



TRANSMETTEUR 2-FILS UNIVERSEL (Pt100/TC)

PRetop 5331

SOMMAIRE

Consigne de sécurité

• Installation S.I. :

Pour l'installation de 5331B dans les zones dangereuses, conformez-vous aux consignes de sécurité suivantes : l'installation ne doit être réalisée que par du personnel qualifié connaissant la législation nationale et internationale ainsi que les directives et standards régissant ce domaine.

DECLARATION DE CONFORMITE

En tant que fabricant

PR electronics A/S
Lerbakken 10
DK-8410 Rønde

déclare que le produit suivant :

Type : 5331
Nom : Transmetteur 2-fils universel

correspond aux directives et normes suivantes :

La directive CEM (EMC) 89/336/EEC et les modifications subséquentes

A partir du no. de série : 990303001 sqq.
EN 61 326
EN 50 081-1, EN 50 081-2
EN 50 082-1, EN 50 082-2

Cette déclaration est délivrée en correspondance à l'article 10, alinéa 1 de la directive CEM. Pour une spécification du niveau de rendement acceptable CEM (EMC) renvoyer aux spécifications électriques du module.

La directive ATEX 94/9/EC et les modifications subséquentes

A partir du no. de série : 990303001 sqq.
EN 50 014 et EN 50 020
Certificat Ex : 99 ATEX 126962

Organisme notifié pour CENELEC/ATEX : **UL International Demko A/S 0539**

Rønde, le 4 janvier 2000

Peter Rasmussen
Signature du fabricant

TRANSMETTEUR 2-FILS UNIVERSEL (Pt100/TC) PRetop 5331

- *Entrée RTD, TC, Ohm ou mV*
- *Trés grande précision de mesure*
- *Isolation galvanique en option*
- *Sécurité programmable*
- *Pour tête de sonde DIN B*

Application :

- Mesure linéarisée de la température avec un capteur Pt100...Pt1000, Ni100...Ni1000 ou de thermocouples.
- Conversion d'une résistance linéaire en un signal courant standard analogique pour mesurer par exemple le niveau ou la position d'une vanne.
- Amplification d'un signal mV bipolaire en un signal courant standard de 4...20 mA.

Caractéristiques techniques :

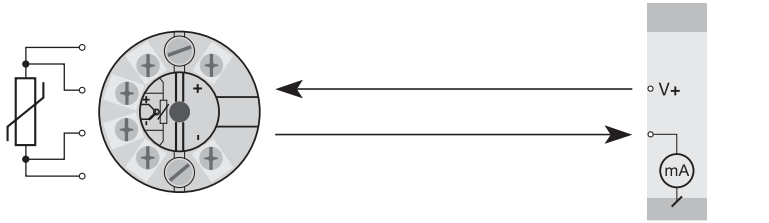
- Le PR5331 peut être programmé de manière simple et rapide.
- Compensation de ligne pour des entrées RTD et résistance avec un raccordement à 2, 3 et 4 fils.
- Vérification continue des données sauvegardées.

Montage / installation :

- Pour tête de sonde DIN B. En zone non-dangereuse le 5331 peut être monté sur rail DIN avec un support spécifique.
- **N.B. :** Comme barrière S.I. pour le 5331B nous recommandons le PR5104B, 5111B ou 5114B.

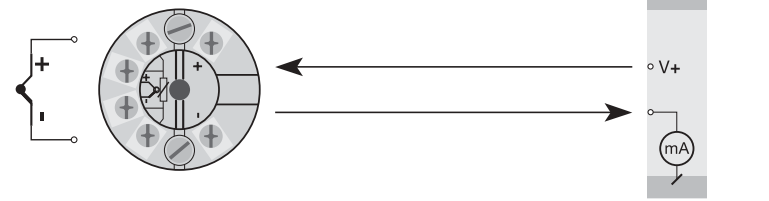
RTD en 4...20 mA

Installation 2-fils en salle de contrôle



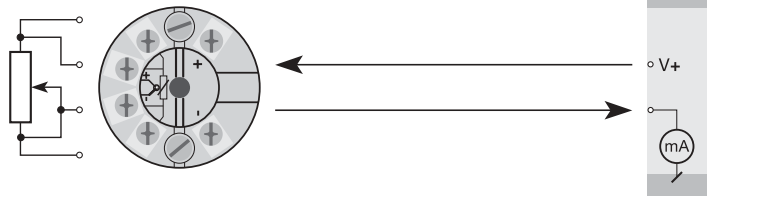
TC en 4...20 mA

Installation 2-fils en salle de contrôle



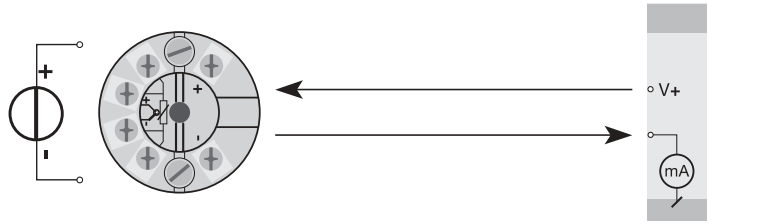
Résistance en 4...20 mA

Installation 2-fils en salle de contrôle



mV en 4...20 mA

Installation 2-fils en salle de contrôle



Référence : 5331 ___ ___ ___

Type	Version	Température ambiente	Isolation galvanique
5331	Standard : A ATEX : B FM et ATEX : C CSA, FM et ATEX : D	-40°C...+85°C : 3	Non : A 1500 Vca : B

Spécifications électriques :

Plage des spécifications :

(@ : -40°C à +85°C)

Spécifications communes :

Tension d'alimentation, cc
- Standard, 5331A ..... 7,2...35 V
- ATEX, FM et CSA, 5331B, C et D ..... 7,2...28 Vcc

Consommation interne ..... 25 mW...0,8 W
Chute de tension ..... 7,2 Vcc
Tension d'isolation, test / opération ..... 1,5 kVca / 50 Vca
Temps de chauffe ..... 5 min.
Kit de programmation ..... Loop Link 5905A
Rapport signal / bruit ..... Min. 60 dB
Temps de réponse (programmable) ..... 1...60 s
Vérification de l'EEprom ..... < 3,5 s
Dynamique du signal d'entrée ..... 20 bit
Dynamique du signal de sortie ..... 16 bit
Température d'étalonnage ..... 20...28°C

Précision, la plus grande des valeurs générales et de base :

Valeurs générales		
Type d'entrée	Précision absolue	Coefficient de température
Tous	≤ ±0,05% de l'EC	≤ ±0,01% de l'EC / °C

Valeurs de base		
Type d'entrée	Précision de base	Coefficient de température
RTD	≤ ±0,2°C	≤ ±0,01°C/°C
R. Lin.	≤ ±0,1 Ω	≤ ±10 mΩ/°C
Volt	≤ ±10 µV	≤ ±1 µV/°C
Type TC : E, J, K, L, N, T, U	≤ ±1°C	≤ ±0,05°C/°C
Type TC : B, R, S, W3, W5	≤ ±2°C	≤ ±0,2°C/°C

Immunité CEM ..... < ±0,5% de l'EC
Immunité CEM améliorée :
NAMUR NE 21, critère A, burst ..... < ±1% de l'EC

Effet d'une variation de
la tension d'alimentation ..... < 0,005% de l'EC / Vcc
Vibration ..... IEC 68-2-6 Test FC
Lloyd, spécification no 1 ..... 4 g / 2...100 Hz
Taille max. des fils ..... 1 x 1,5 mm^2
Humidité ..... < 95% HR (sans cond.)
Dimensions ..... Ø 44 x 20,2 mm
Etanchéité (boitier / bornier) ..... IP68 / IP00
Poids ..... 50 g

Spécifications électriques, entrée :

Entrée RTD et entrée résistance linéaire :

Type RTD	Valeur min.	Valeur max.	Plage min.
Pt100	-200°C	+850°C	25°C
Ni100	-60°C	+250°C	25°C
R. Lin.	0 Ω	5000 Ω	30 Ω

Décalage max. ..... 50% de la valeur max. sélec.
Résistance de ligne max. par fils ..... 5 Ω
Courant de sonde ..... Nom. 0,2 mA
Effet de la résistance de ligne (3 / 4 fils) ..... < 0,002 Ω/Ω
Détection de rupture sonde ..... Oui

Entrée TC :

Type	Température min.	Température max.	Plage min.	Norme
B	+400°C	+1820°C	200°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	100°C	IEC584
R	-50°C	+1760°C	200°C	IEC584
S	-50°C	+1760°C	200°C	IEC584
T	-200°C	+400°C	50°C	IEC584
U	-200°C	+600°C	75°C	DIN 43710
W3	0°C	+2300°C	200°C	ASTM E988-90
W5	0°C	+2300°C	200°C	ASTM E988-90

Décalage max. ..... 50% de la valeur max. sélec.
Compensation de soudure froide ..... < ±1,0°C
Détection de rupture de sonde ..... Oui
Courant de sonde :
Pendant la détection ..... Nom. 33 mA
Si non ..... 0 mA

Entrée tension :

Gamme de mesure ..... -12...800 mV
Plage de mesure min. ..... 5 mV
Décalage max. ..... 50% de la valeur max. sélec.
Résistance d'entrée ..... 10 MΩ

Sortie :

Sortie courant :

Gamme de mesure ..... 4...20 mA
Plage de mesure min. ..... 16 mA
Temps de scrutation ..... 440 ms
Sortie en cas de corruption de l'EEprom .... ≤ 3,5 mA
Résistance de charge ..... ≤ ($V_{alim.}$ - 7,2) / 0,023 [Ω]
Stabilité de charge ..... < ±0,01% de l'EC / 100 Ω

Détection de rupture de sonde :

Programmable ..... 3,5...23 mA
NAMUR NE43 Haut d'échelle ..... 23 mA
NAMUR NE43 Bas d'échelle ..... 3,5 mA

Caractéristiques S.I. :

U_i ..... : 28 Vcc
I_i ..... : 120 mAcc
P_i ..... : 0,84 W
L_i ..... : 10 µH
C_i ..... : 1 nF

Approbation EEx CENELEC :

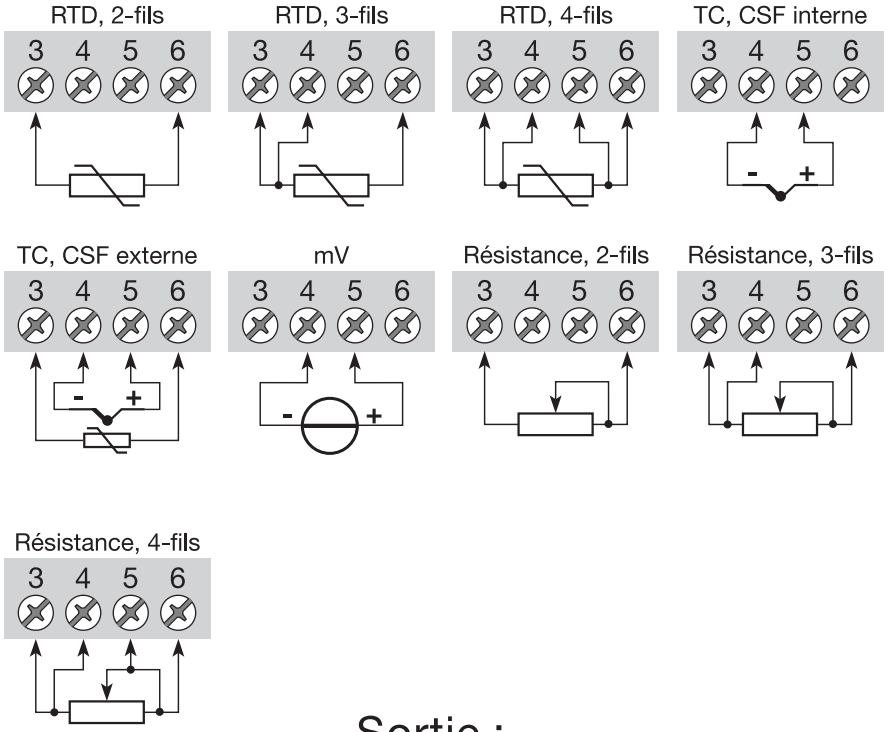
DEMKO 99 ..... ATEX 126962
ATEX ..... 0539 ⟨Ex⟩ II 1 G
EEx ia IIC T1...T6
Température amb. max. (T1...T4) ..... 85°C
Température amb. max. (T5 et T6) ..... 60°C
Zones d'application ..... 0, 1 ou 2
FM ..... IS, CL. I, DIV. 1, GP. A-D
Entity, FM Control Drawing No. 5300Q502
CSA ..... Class I, Zone 0/1, Group IIC
Installation Drawing No. 533XQC03

Agréments et homologations :	**Standard :**
EMC 89/336/CEE, Emission	EN 50 081-1, EN 50 081-2
Immunité	EN 50 082-2, EN 50 082-1
Emission et immunité	EN 61 326
ATEX 94/9/CE	EN 50 014 et EN 50 020
Factory Mutual, ASCN	3600, 3810, 3611, 3610
CSA, CAN / CSA	E79-15, E79-11

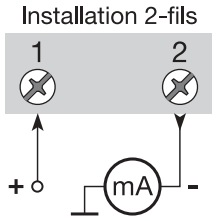
EC = Echelle configurée

Connexions :

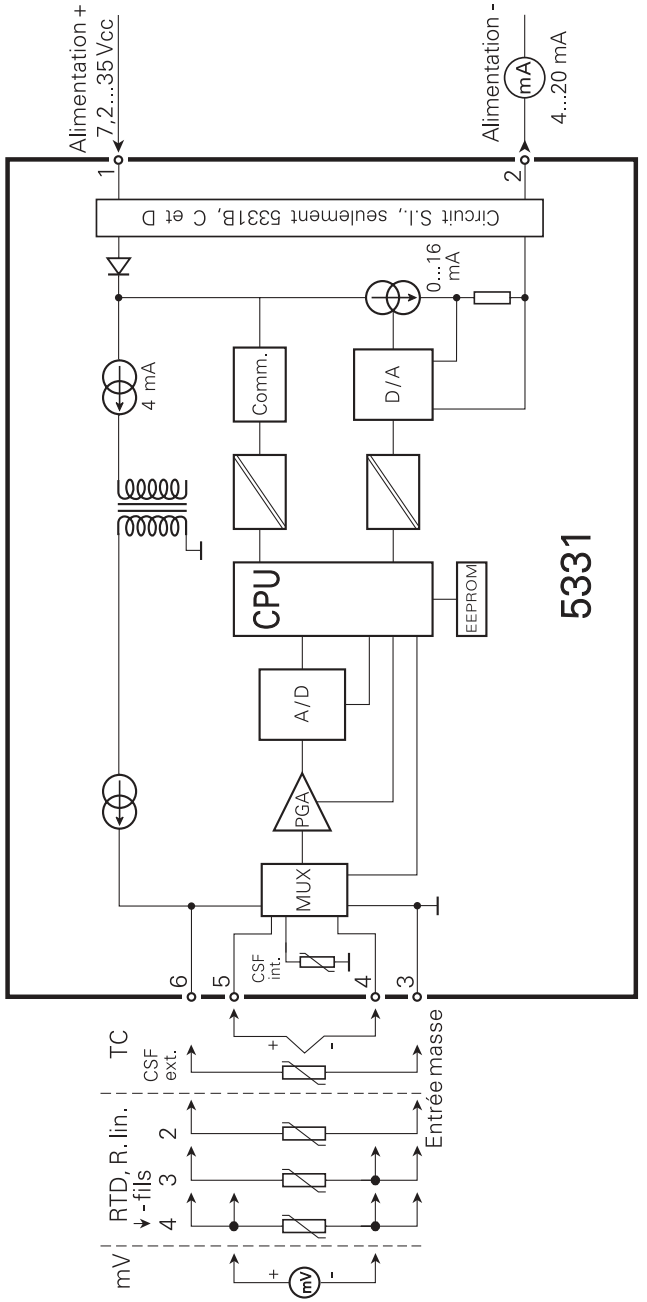
Entrée :



Sortie :



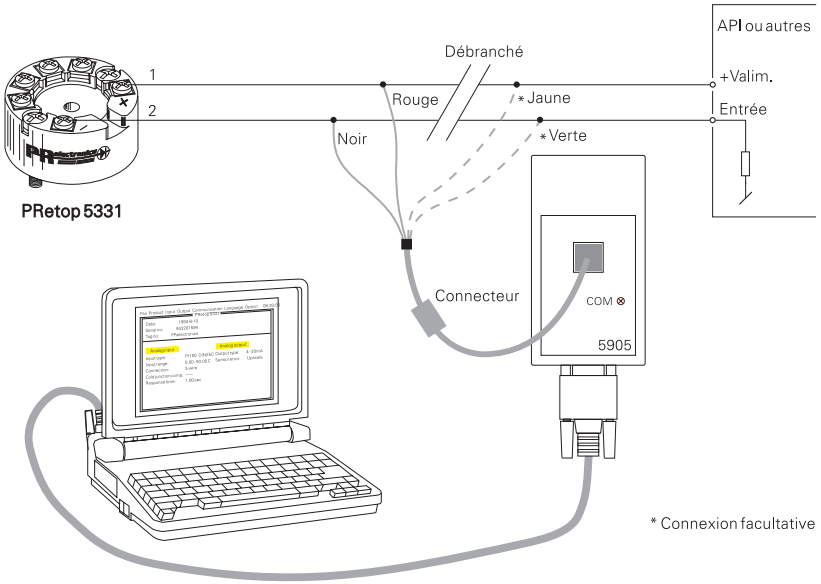
SCHEMA DE PRINCIPE :



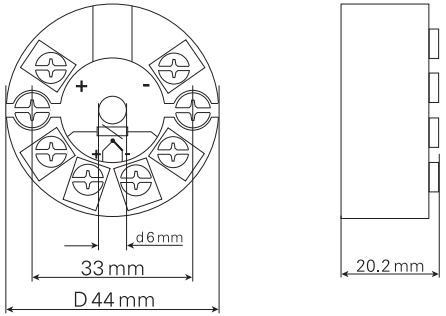
Programmation :

- Loop Link 5905A est un kit de programmation permettant de programmer le PRetop 5331.
- Pour le raccordement du Loop Link 5905A, veuillez vous reporter au schéma ci-dessous et à l'aide en ligne du logiciel PReset.
- Loop Link 5905A ne doit pas être utilisé pour communication avec des modules installés en zone dangereuse.

Numéro de référence : Loop Link 5905A.



Dimensions mécaniques :



2-DRAHT UNIVERSALMESSUMFORMER

PRetop 5331

Inhaltsverzeichnis

Sicherheitsinstruktion

- **Ex-Installation:**
  Für sichere Installation von 5331B in explosionsgefährdeter Umgebung muss folgendes beobachtet werden. Die Installation muss nur von qualifizierten Personen, die mit den nationalen und internationalen Gesetze, Direktiven und Standards des Gebiets bekannt sind, vorgenommen werden.

KONFORMITÄTSERKLÄRUNG

Als Hersteller bescheinigt

PR electronics A/S
Lerbakken 10
DK-8410 Rønde

hiermit für das folgende Produkt:

Typ: 5331
Name: 2-Draht Universal Messumformer

die Konformität mit folgenden Richtlinien und Normen:

EMV Richtlinien 89/336/EEC und nachfolgende Änderungen

Ab der Serien-Nr.: 990303001 ff.
EN 61 326
EN 50 081-1, EN 50 081-2
EN 50 082-1, EN 50 082-2

Diese Erklärung ist in Übereinstimmung mit Artikel 10, Unterklausel 1 der EMV Richtlinie ausgestellt. Zur Spezifikation des zulässigen Erfüllungsgrades, siehe die Elektrische Daten des Moduls.

Die ATEX Richtlinien 94/9/EC und nachfolgende Änderungen

Ab der Serien-Nr.: 990303001 ff.
EN 50 014 und EN 50 020
Ex Zertifikat: 99 ATEX 126962

Zulassungsstelle für CENELEC/ATEX: **UL International Demko A/S 0539**

Rønde, 4. Jan. 2000

Peter Rasmussen
Unterschrift des Herstellers

2-DRAHT UNIVERSALMESSUMFORMER
PRetop 5331

- *Eingang für WTH, TE, Ω oder mV*
- *Extreme Messgenauigkeit*
- *Version mit galvanischer Trennung*
- *Programmierbare Sensorfehlanzeige*
- *Für Einbau in Anschlusskopf DIN Form B*

Verwendung:

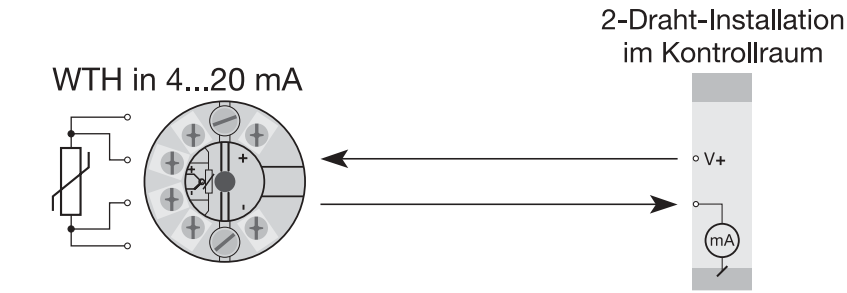
- Linearisierte Temperaturmessung mit Pt100...Pt1000, Ni100...Ni1000 oder Thermoelementsensor.
- Umwandlung von linearer Widerstandsänderung in ein analoges Standard-Stromsignal, z.B. von Ventilen oder Niveau-Messwertgeber.
- Verstärkung von bipolaren mV-Signalen zu einem Standard 4...20 mA Stromsignal.

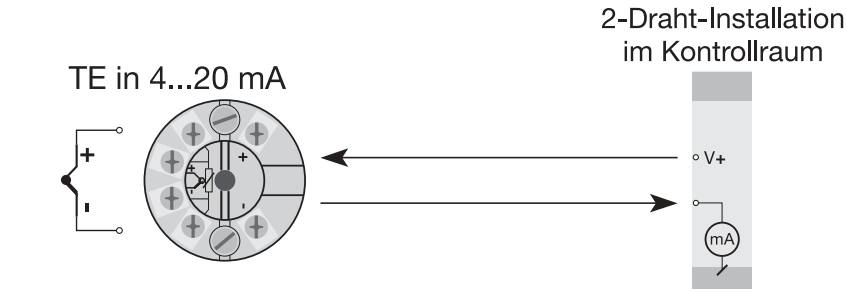
Technische Merkmale:

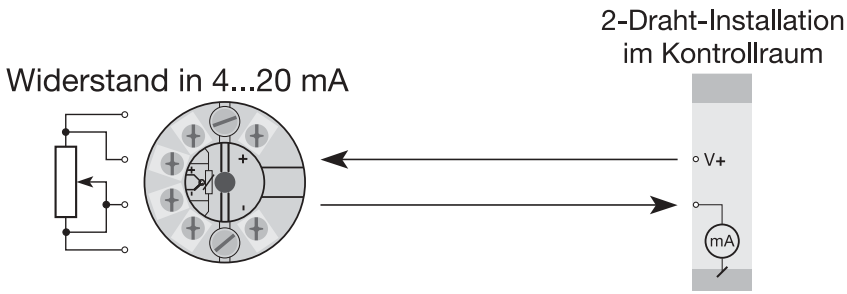
- PR5331 kann vom Benutzer innerhalb von wenigen Sekunden zur Messung in allen genormten Temperaturbereiche programmiert werden.
- Der WTH- und Widerstandseingang haben Leitungskompensation bei 2-, 3- oder 4-Leiter-Anschluss.
- Die gespeicherten Daten werden laufend kontrolliert.

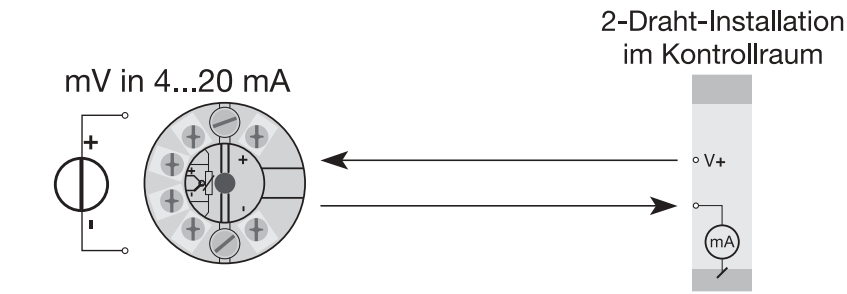
Montage / Installation:

- Für DIN Form B Sensorkopf Montage. Im sicheren Bereich kann der 5331 auf einer DIN-Schiene mittels einer spezieller Armatur montiert werden.
- **NB:** Als Ex-Sicherheitsbarriere für 5331B empfehlen wir 5104B, 5111B oder 5114B.









Bestellangaben: 5331 ___ ___ ___

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

Elektrische Daten:

Spezifikationsbereich:

(@: -40°C bis +85°C)

Allgemeine Daten:

Versorgungsspannung, DC
- Standard, 5331A ..... 7,2...35 V
- ATEX, FM und CSA, 5331B, C und D.. 7,2...28 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 5905A
Signal- / Rauschverhältnis ..... Min. 60 dB
Ansprechzeit (programmierbar)..... 1...60 s
EEprom Fehlerkontrolle.....< 3,5 s
Signalauflösung, Eingang..... 20 bit
Signalauflösung, 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	≤ ±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 68-2-6 Test FC
Lloyd's Spezifikation Nr. 1..... 4 g / 2...100 Hz
Max. Leitungsquerschnitt..... 1 x 1,5 mm^2
Luftfeuchtigkeit..... < 95% RH (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
Pt100	-200°C	+850°C	25°C
Ni100	-60°C	+250°C	25°C
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	200°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	100°C	IEC584
R	-50°C	+1760°C	200°C	IEC584
S	-50°C	+1760°C	200°C	IEC584
T	-200°C	+400°C	50°C	IEC584
U	-200°C	+600°C	75°C	DIN 43710
W3	0°C	+2300°C	200°C	ASTM E988-90
W5	0°C	+2300°C	200°C	ASTM E988-90

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

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

Ex-Daten:
U_i..... : 28 VDC
I_i ..... : 120 mADC
P_i ..... : 0,84 W
L_i ..... : 10 µH
C_i ..... : 1 nF

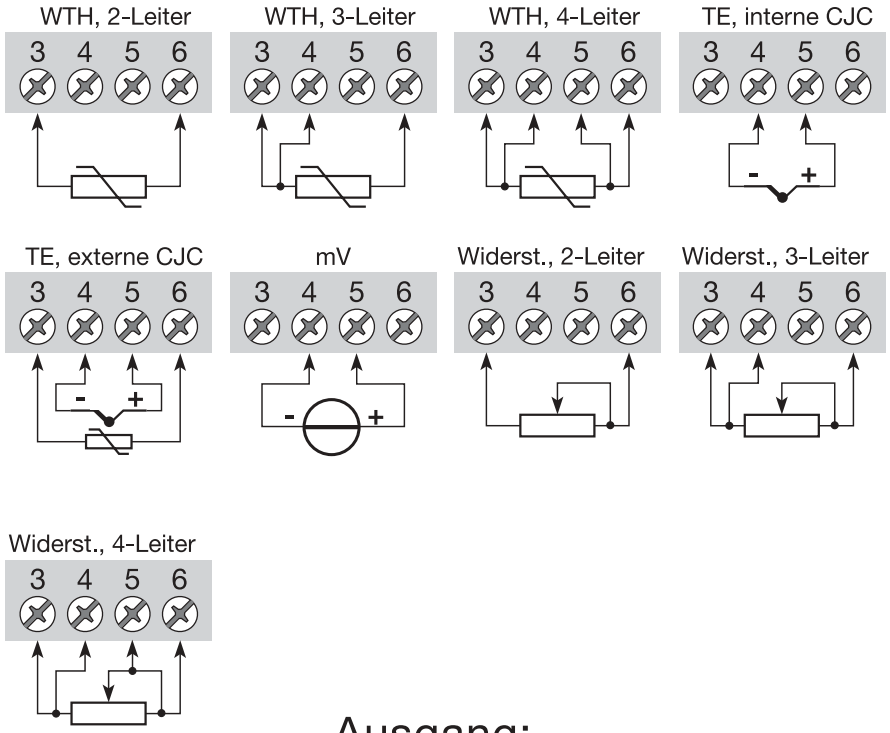
EEx-Zulassung CENELEC:
DEMKO 99 ..... ATEX 126962
ATEX ..... 0539 ⟨Ex⟩ II 1 G
EEx ia IIC T1...T6
Max. Umgebungstemp. für T1...T4..... 85°C
Max. Umgebungstemp. für T5 und T6..... 60°C
Anwendungsbereich in zone..... 0, 1 oder 2
FM ..... IS, CL. I, DIV. 1, GP. A-D
Entity, FM Control Drawing No. 5300Q502
CSA..... Class I, Zone 0/1, Group IIC
Installation Drawing No. 533XQC03

Eingehaltene Behördenvorschriften:	**Norm:**
EMV 89/336/EWG, Emission.....	EN 50 081-1, EN 50 081-2
Immunität.....	EN 50 082-2, EN 50 082-1
Emission und Immunität.....	EN 61 326
ATEX 94/9/EG.....	EN 50 014 und EN 50 020
Factory Mutual, ASCN	3600, 3810, 3611, 3610
CSA, CAN / CSA.....	E79-15, E79-11

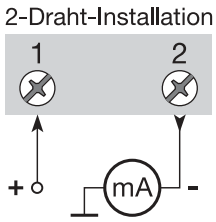
d. Messspanne = der gewählten Messspanne

Anschlüsse:

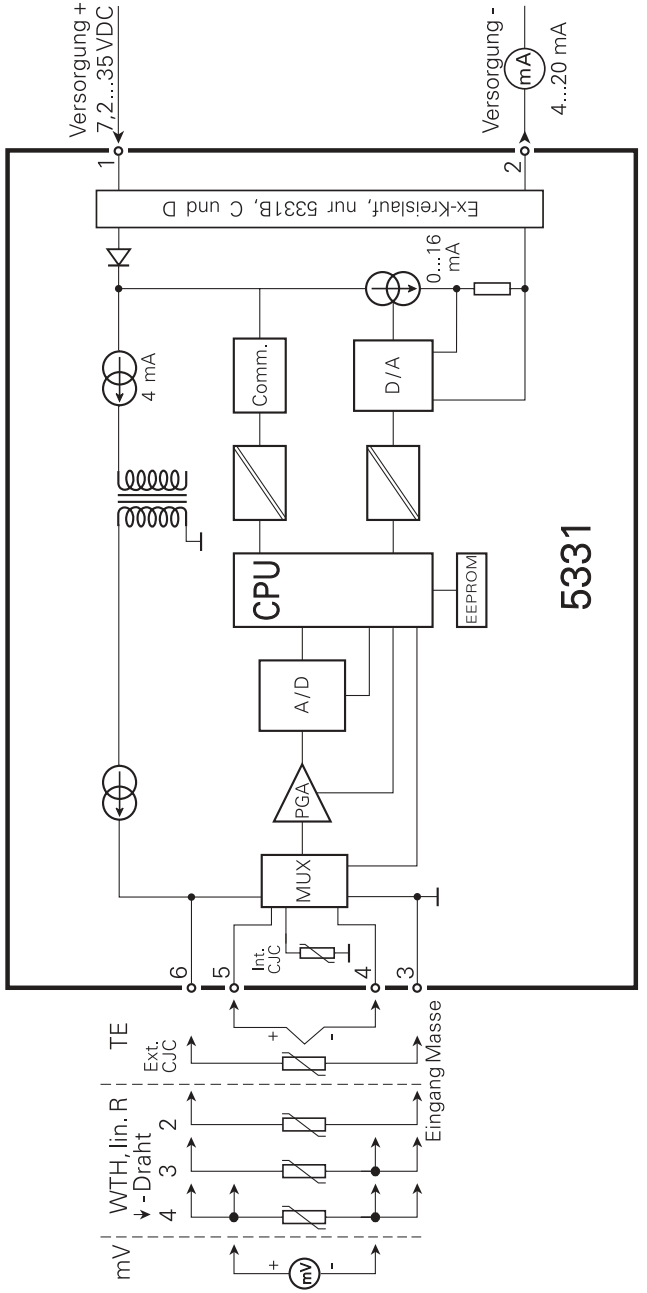
Eingang:



Ausgang:



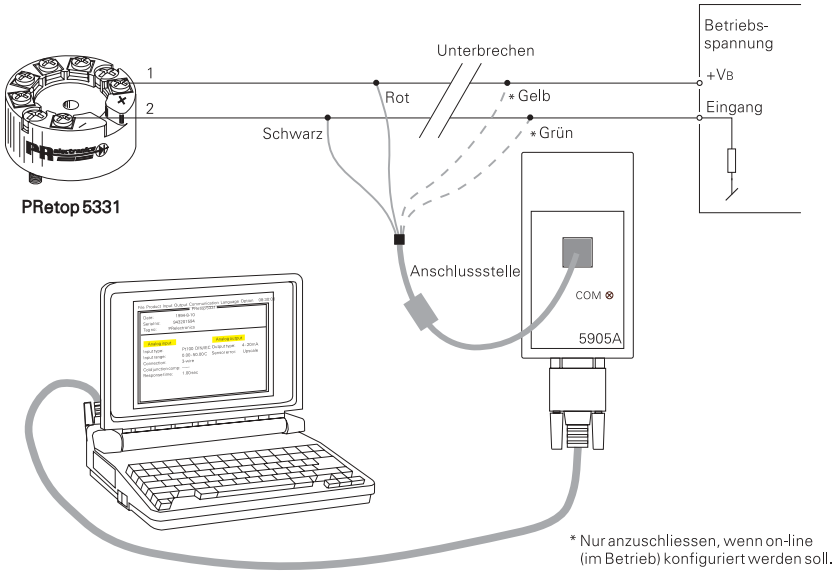
BLOCKDIAGRAMM:



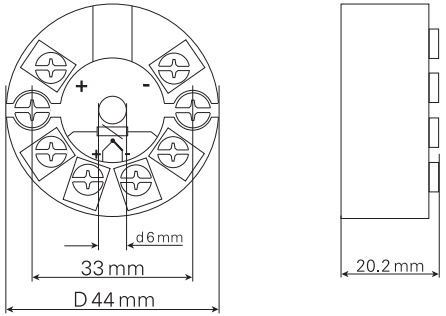
Programmierung:

- Loop Link 5905A 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 5905A darf nicht zur kommunikation mit Modulen, die in Ex-gefährdeten Bereichen installiert sind, benutz werden.

Bestellangabe: Loop Link 5905A.



Abmessungen:



APPENDIX

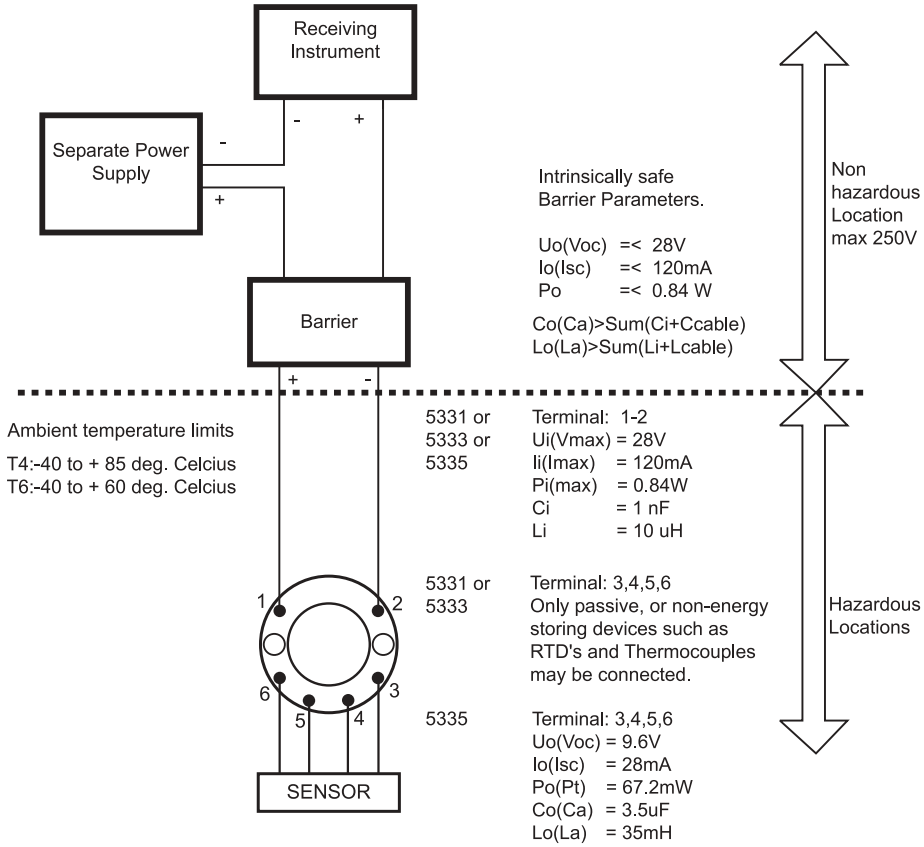
FM Control Drawing No. 5300Q502

CSA Installation Drawing No. 533XQC03

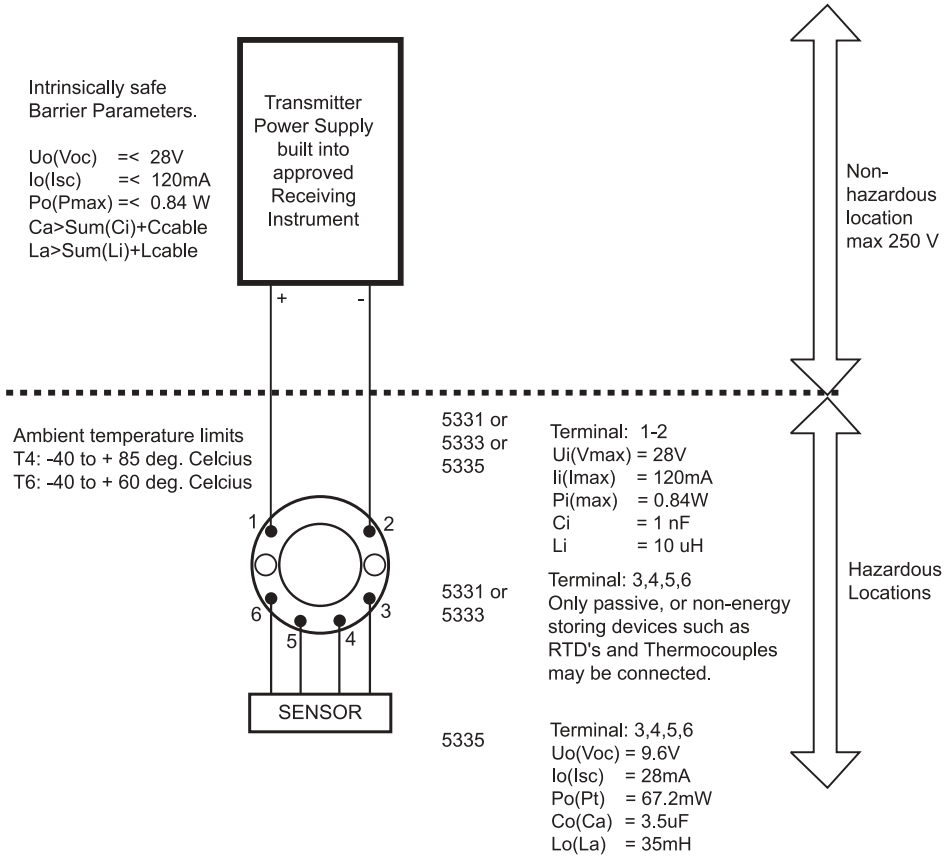
Pretop 53xx FM Control Drawing.

5331C, 5331D, 5333C, 5333D, 5335C and 5335D transmitters are approved as intrinsically safe in Zone 0 Group IIC or Class I,Division1,Group A,B,C,D when installed according to 53xx FM Control Drawing.

1. Connections with separate power supply and receiver.
Output: Standard 4 - 20mA loop



2. Connection with power supply and barrier built into receiver.
Output: Standard 4 - 20mA loop



3. The entity concept.

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(Vmax) and current I_i(Imax), and maximum power P_i(Pmax), which the device can receive and remain intrinsically safe, must be equal to or greater than the voltage (U_o or Voc or V_t) and current (I_o or Isc 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 safe 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 safe device and the interconnecting wiring must be less than the inductance (L_a) which can be safely connected to the barrier.

The maximum entity parameters U_i, I_i, P_i, C_i, and L_i for the Pretop 53xx Transmitters are listed on pages 1 and 2 of this document.

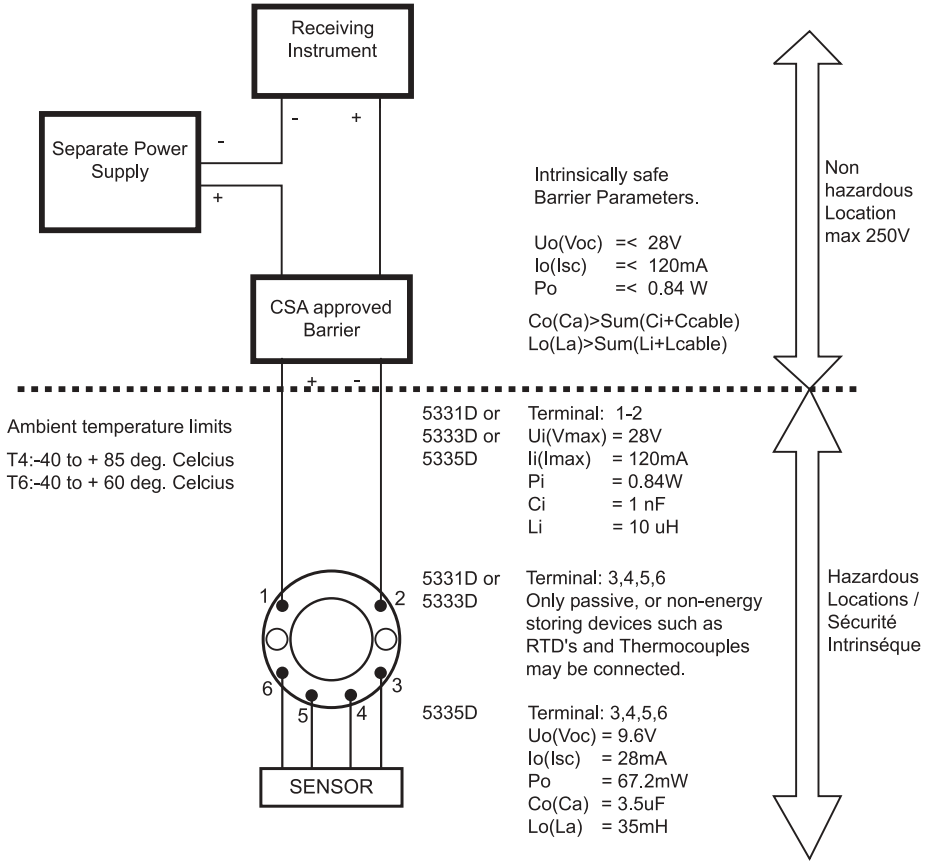
The entity parameters U_o,Voc or V_t and Io,Isc or I_t, and C_a and L_a for barriers are provided by the barrier manufacturer.

CSA Intrinsic Safety Installation Drawing.

5331D, 5333D and 5335D transmitters are approved as intrinsically safe in Zone 0 Group IIC or Class I,Division1,Group A,B,C,D when installed according to Installation Drawing.

1. Connections with separate power supply and receiver.

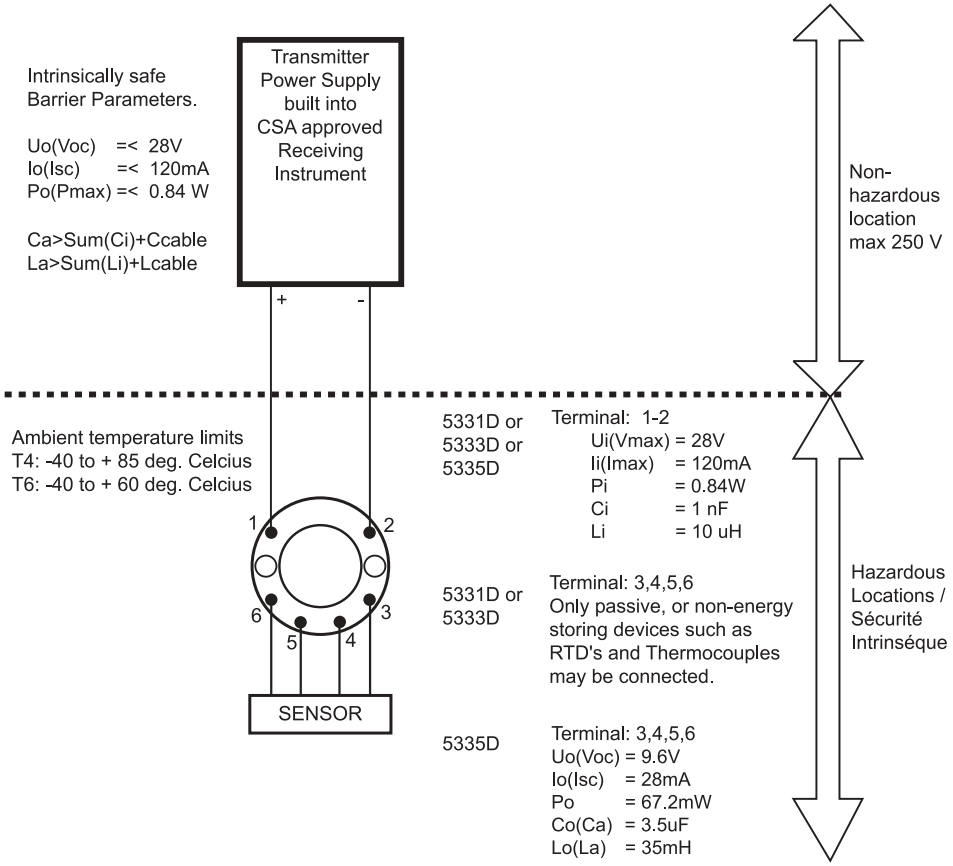
Output: Standard 4 - 20mA loop



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).

2. Connection with power supply and barrier built into receiver

Output: Standard 4 - 20mA loop



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).

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5 YEARS PRODUCT GUARANTEE

DS CERTIFIED | Quality System DS/EN ISO 9001 | under DANAK Reg.nr. 5002 | under RVA Reg.No. 41

CE

DK ▸ PR electronics A/S tilbyder et bredt program af analoge og digitale signalbehandlingsmoduler til industriel automation. Vores kompetenceområder omfatter: Isolation, Displays, Ex-barrierer, Temperatur samt Backplanes. Alle produkter opfylder de strengeste internationale standarder, og størstedelen integrerer den patenterede STREAM-SHIELD teknologi, der sikrer driftsikkerhed i selv de værste omgivelser. 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. Our areas of competence include: Isolation, Displays, Ex barriers, Temperature, and Backplanes. All products comply with the most exacting international standards and the majority feature our patented STREAM-SHIELD technology ensuring reliability in even the worst of conditions. »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. Nos compétences s’étendent des transmetteurs de température aux afficheurs, des isolateurs aux barrières SI, jusqu’aux platines de montage. Tous nos produits sont conformes aux normes internationales les plus strictes et la majorité d’entre eux répondent même à la technologie brevetée STREAM-SHEILD qui garantie un fonctionnement fiable sous les conditions les plus défavorables. 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 Signalverarbeitungsmodule für die industrielle Automatisierung. Unsere Kompetenzbereiche umfassen: Displays, Temperaturtransmitter, Ex- und galvanische Signaltrenner. Alle Produkte von PR electronics werden in Übereinstimmung mit den strengsten internationalen Normen produziert. Für die Mehrzahl aller Produkte garantiert die patentierte STEAM-SHIELD Technologie höchste Zuverlässigkeit auch unter schwierigsten Einsatzbedingungen. »Signals the Best« ist Ihre Garantie für Qualität!