

# PR



## 6337 HART 2-х проводной программируемый преобразователь

### Руководство по эксплуатации

Архангельск (8182)63-90-72  
Астана (7172)727-132  
Астрахань (8512)99-46-04  
Барнаул (3852)73-04-60  
Белгород (4722)40-23-64  
Брянск (4832)59-03-52  
Владивосток (423)249-28-31  
Волгоград (844)278-03-48  
Вологда (8172)26-41-59  
Воронеж (473)204-51-73  
Екатеринбург (343)384-55-89  
Иваново (4932)77-34-06  
Ижевск (3412)26-03-58  
Казань (843)206-01-48

Калининград (4012)72-03-81  
Калуга (4842)92-23-67  
Кемерово (3842)65-04-62  
Киров (8332)68-02-04  
Краснодар (861)203-40-90  
Красноярск (391)204-63-61  
Курск (4712)77-13-04  
Липецк (4742)52-20-81  
Магнитогорск (3519)55-03-13  
Москва (495)268-04-70  
Мурманск (8152)59-64-93  
Набережные Челны (8552)20-53-41  
Нижний Новгород (831)429-08-12  
Новокузнецк (3843)20-46-81

Новосибирск (383)227-86-73  
Омск (3812)21-46-40  
Орел (4862)44-53-42  
Оренбург (3532)37-68-04  
Пенза (8412)22-31-16  
Пермь (342)205-81-47  
Ростов-на-Дону (863)308-18-15  
Рязань (4912)46-61-64  
Самара (846)206-03-16  
Санкт-Петербург (812)309-46-40  
Саратов (845)249-38-78  
Севастополь (8692)22-31-93  
Симферополь (3652)67-13-56  
Смоленск (4812)29-41-54

Сочи (862)225-72-31  
Ставрополь (8652)20-65-13  
Сургут (3462)77-98-35  
Тверь (4822)63-31-35  
Томск (3822)98-41-53  
Тула (4872)74-02-29  
Тюмень (3452)66-21-18  
Ульяновск (8422)24-23-59  
Уфа (347)229-48-12  
Хабаровск (4212)92-98-04  
Челябинск (351)202-03-61  
Череповец (8202)49-02-64  
Ярославль (4852)69-52-93

- 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 devices for industrial automation. The product range includes Isolators, Displays, Ex Interfaces, Temperature Transmitters, and Universal Devices. 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 HART® TRANSMITTER

## PRETRANS 6337

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# EC DECLARATION OF CONFORMITY

As manufacturer

**PR electronics A/S**

hereby declares that the following product:

**Type: 6337**

**Name: 2-wire HART® 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 device.

The ATEX Directive 94/9/EC and later amendments

**EN 60079-0 : 2009, EN 60079-11 : 2007,**

**EN 60079-15 : 2010, EN 60079-26 : 2007**

**and EN 61241-11 : 2006**

**ATEX certificate: KEMA 10ATEX0006 X (6337A)**

**ATEX certificate: KEMA 09ATEX0148 (6337D)**

Notified body

**DEKRA Certification B.V. (0344)**



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Kim Rasmussen  
Manufacturer's signature

## PRETRANS 6337

### 2-WIRE HART® TRANSMITTER

- *RTD, TC, Ohm, or mV input*
- *2 analogue inputs and 5 device variables with status available*
- *HART® protocol revision selectable from HART® 5 or HART® 7*
- *Hardware assessed for use in SIL applications*
- *Mounting on a DIN rail in safe area or hazardous gas and dust area*

#### **Application**

- Linearised temperature measurement with TC and RTD sensors e.g Pt100 and Ni100.
- HART® communication and 4...20 mA analogue PV output for individual, difference or average temperature measurement of up to two RTD or TC input sensors.
- Conversion of linear resistance to a standard analogue current signal, e.g from valves or Ohmic level sensors.
- Amplification of bipolar mV signals to standard 4...20 mA current signals.
- Up to 63 transmitters (HART® 7) can be connected in a multidrop communication setup.

## Technical characteristics

- HART® protocol revision can be changed by user configuration to either HART® 5 or HART® 7 protocol.
- The HART® 7 protocol offers:
  - Long Tag numbers of up to 32 characters.
  - Enhanced Burst Mode and Event notification with time stamping.
  - Device variable and status mapping to any dynamic variable PV, SV, TV or QV.
  - Process signal trend measurement with logs and summary data.
  - Automatic event notification with time stamps.
  - Command aggregation for higher communication efficiency.
- 6337 is designed according to strict safety requirements and is therefore suitable for applications in SIL installations.
- Continuous check of vital stored data.
- Meeting the NAMUR NE 21 recommendations, the 6337 HART transmitter ensures top measurement performance in harsh EMC environments. Additionally, the 6337 meets NAMUR NE 43 and NE 89 recommendations.

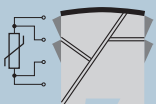
## Mounting / installation / programming

- DIN rail mounting with up to 84 channels per metre.
- Configuration via standard HART® communication interfaces or by PR 5909 Loop Link.
- NB: As Ex barrier for 6337D we recommend 5106B and 9106B.



## APPLICATIONS

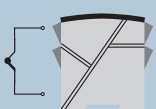
RTD to 4...20 mA



2-wire installation  
in control room



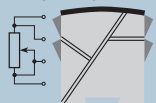
TC to 4...20 mA



2-wire installation  
in control room



Resistance  
to 4...20 mA



2-wire installation  
in control room



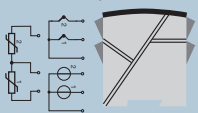
mV to 4...20 mA



2-wire installation  
in control room



Difference or average  
RTD, TC or mV



2-wire installation  
in control room



## Ordering codes for 6337

Type	Version	Galvanic isolation	Channels
6337	Standard : A	1500 VAC : 2	Single : A
	ATEX, CSA, FM & IECEx : D		Double : B

### Accessories

5909 = Loop Link USB interface and PRreset Software  
 5910 / 5910Ex = CJC connector for channel 1  
 5913 / 5913Ex = CJC connector for channel 2

### Technical data

#### Environmental conditions:

Specifications range..... -40°C to +60°C  
 Storage temperature ..... -40°C to +85°C  
 Calibration temperature..... 20...28°C  
 Relative humidity ..... < 95% RH (non-cond.)  
 Protection degree..... IP20

#### Mechanical specifications:

Dimensions (HxWxD)..... 109 x 23.5 x 104 mm  
 Weight approx., 1- / 2-ch. version ..... 150 / 200 g  
 DIN rail type..... DIN EN 60715 - 35mm  
 Wire size ..... 0.13...2.08 mm<sup>2</sup> / AWG  
 26...14 stranded wire  
 Screw terminal torque ..... 0.5 Nm

#### Common electrical specifications:

Supply voltage, DC:  
     Standard..... 8.0...35 V  
     ATEX, CSA, FM & IECEx ..... 8.0...30 V  
 Voltage drop ..... 8.0 V  
 Isolation voltage, test / operation..... 1.5 kVAC / 50 VAC  
 Isolation voltage, channel 1 / channel 2:  
     Standard..... 3.75 kVAC  
     ATEX, CSA, FM & IECEx ..... 1.5 kVAC



Signal / noise ratio ..... > 60 dB  
 Communications interface ..... Loop Link & HART®  
 Response time (programmable)..... 1...60 s  
 Accuracy, the greater of general and basic values:

<b>General values</b>		
Input type	Absolute accuracy	Temperature coefficient
All	$\leq \pm 0.05\%$ of span	$\leq \pm 0.005\%$ of span / °C

<b>Basic values</b>		
Input type	Basic accuracy	Temperature coefficient
Pt50 - Pt1000	$\leq \pm 0.1^\circ\text{C}$	$\leq \pm 0.005^\circ\text{C}/^\circ\text{C}$
Ni50 - Ni1000	$\leq \pm 0.2^\circ\text{C}$	$\leq \pm 0.005^\circ\text{C}/^\circ\text{C}$
Lin. R	$\leq \pm 0.1 \Omega$	$\leq \pm 5 \text{ mW} / ^\circ\text{C}$
Volt	$\leq \pm 10 \mu\text{V}$	$\leq \pm 0.5 \mu\text{V} / ^\circ\text{C}$
TC type: E, J, K, L, N, T, U	$\leq \pm 0.5^\circ\text{C}$	$\leq \pm 0.025^\circ\text{C} / ^\circ\text{C}$
TC type: B <sup>1</sup> , Lr, R, S, W3,W5	$\leq \pm 1^\circ\text{C}$	$\leq \pm 0.1^\circ\text{C} / ^\circ\text{C}$
TC type:B <sup>2</sup>	$\leq \pm 3^\circ\text{C}$	$\leq \pm 0.3^\circ\text{C} / ^\circ\text{C}$
TC type:B <sup>3</sup>	$\leq \pm 8^\circ\text{C}$	$\leq \pm 0.8^\circ\text{C} / ^\circ\text{C}$
TC type:B <sup>4</sup>	not specified	not specified

TC B<sup>1</sup> accuracy specification range..... > 400°C  
 TC B<sup>2</sup> accuracy specification range..... > 160°C < 400°C  
 TC B<sup>3</sup> accuracy specification range ..... > 85°C < 160°C  
 TC B<sup>4</sup> accuracy specification range ..... < 85°C

TC cold junction compensation ..... <  $\pm 1.0^\circ\text{C}$   
 Max. offset on input signal..... 50% of selec. max. value

EMC immunity influence .....	< $\pm 0.1\%$ of span
Extended EMC immunity:	
NAMUR NE 21, A criterion, burst .....	< $\pm 1\%$ of span

## Input specifications:

### RTD input types:

Pt50, Pt100, Pt200, Pt500, Pt1000, Ni50, Ni100, Ni120, Ni1000

Cable resistance per wire (max.)..... 5  $\Omega$

(up to 50  $\Omega$  per wire is possible with reduced measurement accuracy)

Sensor current..... Nom. 0.2 mA

RTD type	Min. value	Max. values	Min. span	Standard
Pt100	-200°C	+850°C	10°C	IEC 60751
Ni100	-60°C	+250°C	10°C	DIN 43760
Lin. R	0 $\Omega$	7000 $\Omega$	25 $\Omega$	-----

### TC input types:

Type	Min. temperature	Max. temperature	Min. span	Standard
B	0°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	-200°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

Cold junction compensation (CJC):

Constant, internal or external via a Pt100 or Ni100 sensor

### mV input:

Voltage input range ..... -800...+800 mV

Min. span..... 2.5 mV

Input resistance..... 10 M $\Omega$

## Output specifications and HART®:

Signal range .....	4...20 mA
Min. signal range.....	16 mA
Updating time.....	440 ms
Load resistance.....	$\leq (V_{\text{supply}} - 8) / 0.023 [\Omega]$
Sensor error detection, programmable.....	3.5...23mA
NAMUR NE43 Upscale .....	23 mA
NAMUR NE43 Downscale.....	3.5 mA
HART® protocol revisions .....	HART® 5 and HART® 7

## Switching HART® protocol revision

It is possible to change the HART® protocol revision by using the PReset software and a PR 5909 Loop Link interface or a HART® compatible modem. Other HART® configuration tools like a handheld terminal can also be used.

### Switching protocol from HART®-7 to HART® 5:

#### **Procedure when using the PR PReset Software:**

Enter the 6337 PReset tab "HART" and open the folder "Methods".

Click "Device Password / Write Protection / Protocol..." and select "Change protocol to HART 5" in the pop-up window - acknowledge by pressing OK.

**Please note that this action will change the 6337 into a 6335 device.**

### Switching from HART®-5 to HART®-7:

**Please note that this is only possible if the transmitter is label marked as "6337"!**

Enter the 6335 PReset tab "OPTIONS" and click "Protect".

Write protection must be set ON and select **Change Password**.

Type in the **New Password "HARTREV7"** and **Re-enter "HARTREV7"**. Press OK.

Switch **Write protection OFF** and write enable the device by typing in the

**Password "-CHANGE-**" in the top menu - acknowledge by pressing OK.

The above action will reset the password to the default active password ("\*\*\*\*\*") and restart the device in the updated HART 7 mode with write protection disabled.

**Please note** that the configuration changed flags and configuration changed counter are **not** updated by this command.

**Approvals:**

EMC 2004/108/EC ..... EN 61326-1  
GOST R

**Ex / I.S.:**

6337A:

ATEX 94/9/EC..... KEMA 10ATEX0006 X  
IECEX ..... KEM 10.0084 X

6337D:

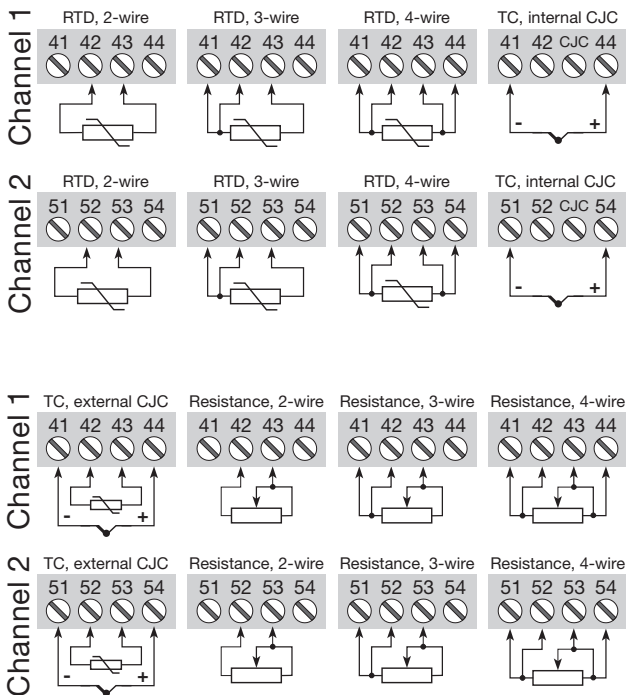
ATEX 94/9/EC..... KEMA 09ATEX0148 X  
IECEX ..... KEM 10.0083 X  
FM certificate ..... 2D5A7  
CSA certificate . ..... 1125003  
GOST Ex

**Functional Safety:**

Hardware assessed for use in SIL applications

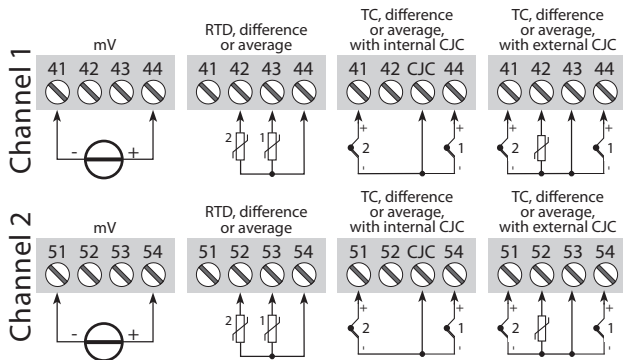
# CONNECTIONS

Inputs:

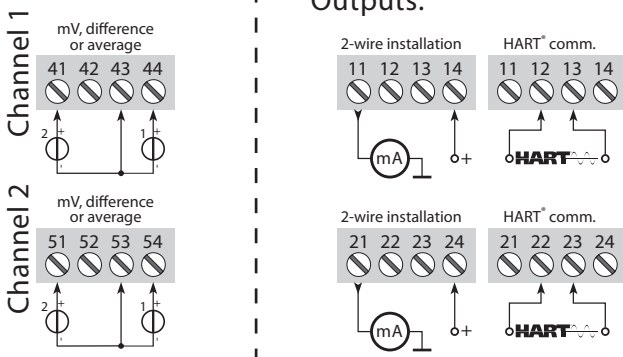


# CONNECTIONS

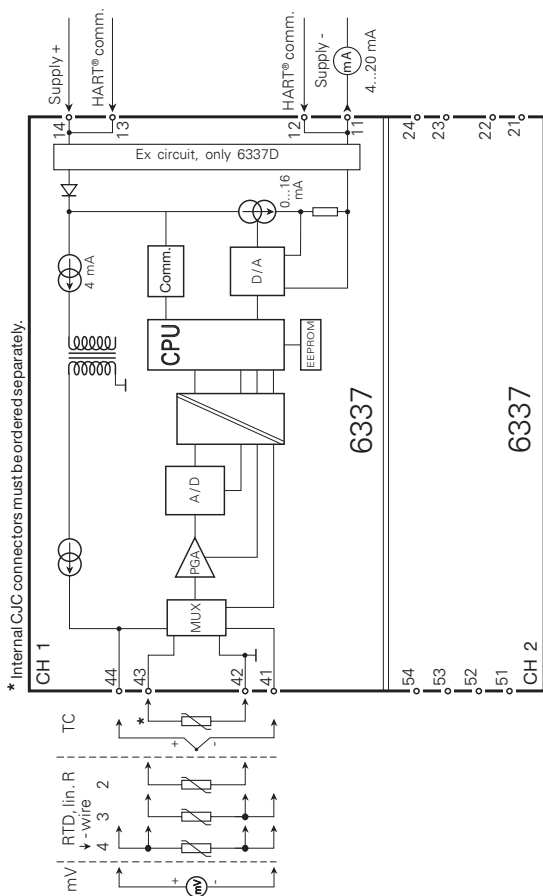
## Inputs:



## Outputs:



# BLOCK DIAGRAM



# PROGRAMMING

**PRetrans 6337 can be configured in the following 3 ways:**

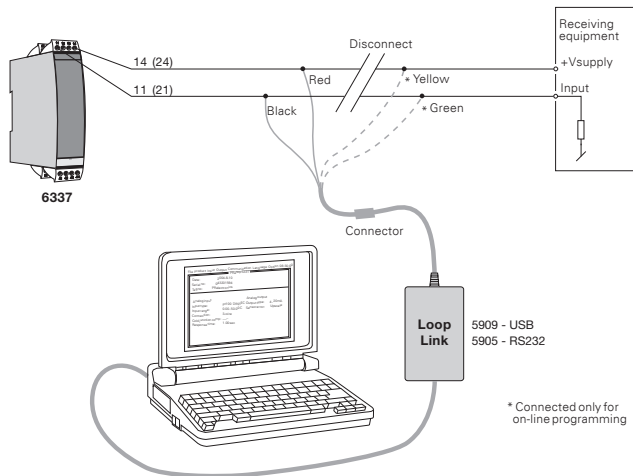
1. With PR electronics A/S' communications interface Loop Link and PReset PC configuration software.
2. With a HART® modem and PReset PC configuration software.
3. With a HART® communicator with PR electronics A/S' DDL driver.

## 1: Loop Link

For programming please refer to the drawing below and the help functions in PReset.

When communicating with non-installed devices, connectors 11, 12, 13, 14 (channel 1) and 21, 22, 23, 24 (channel 2) can be dismantled in the safe area to connect the terminals of the communications interface to the pins.

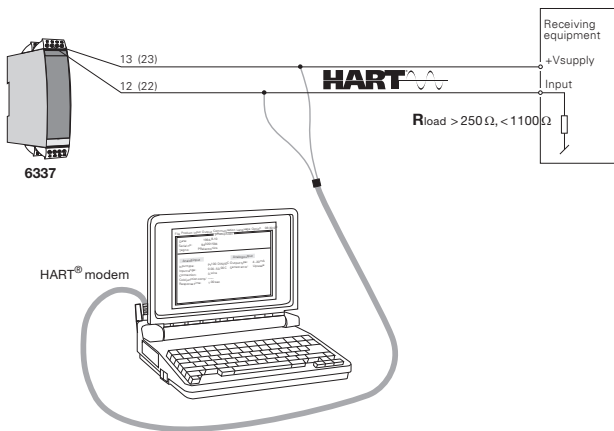
Loop Link is not approved for communication with devices installed in hazardous (Ex) area.





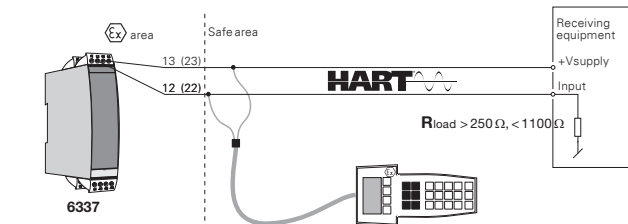
## 2: HART® modem

For programming please refer to the drawing below and the help functions in PReset.



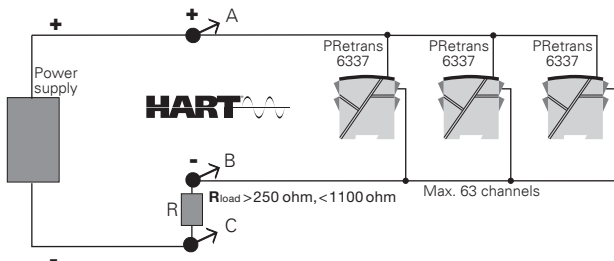
## 3: HART® communicator

For programming please refer to the drawing below. To get access to product-specific commands, the HART® communicator must be loaded with the PR electronics A/S DDL driver. This can be ordered either at the HART® Communication Foundation or PR electronics A/S.



## CONNECTION OF TRANSMITTERS IN MULTIDROP MODE

- The HART<sup>®</sup> communicator or a PC modem can be connected across AB or BC.



- The outputs of max. 63 transmitters can be connected in parallel for a digital HART<sup>®</sup> communication on 2-wires.
- Before it is connected, each transmitter must be configured with a unique number from 1 to 63. If 2 transmitters are configured with the same number, both will be excluded. The transmitters must be programmed for multidrop mode (with a fixed output signal of 4 mA). Maximum current in the loop is therefore 252 mA.
- The communication is either by means of a HART<sup>®</sup> communicator or a HART<sup>®</sup> modem.
- The PReset PC configuration software can configure the individual transmitter for multidrop mode and provide it with a unique polling address.

# APPENDIX

**ATEX INSTALLATION DRAWING - 6337A**

**IECEX INSTALLATION DRAWING - 6337A**

**ATEX INSTALLATION DRAWING - 6337D**

**IECEX INSTALLATION DRAWING - 6337D**

**FM INSTALLATION DRAWING NO. 6335QF01**

**CSA INSTALLATION DRAWING NO. 6335QC02**

## ATEX Installation drawing

For safe installation of 6335A, 6336A or 6337A 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 0006X

Marking

II 3 G Ex nA [ic] IIC T6 Gc  
II 3 G Ex ic IIC T6 Gc  
II 3 D Ex ic IIC Dc



Standards      EN 60079-0 : 2009, EN 60079-11:2007,  
EN 60079-15: 2010, EN 61241-11:2006

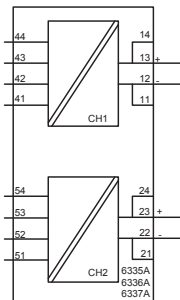
T6: -40°C to 60 °C

Hazardous Area Zone 2 or Zone 22

**Terminal:**  
**41,42,43,44 /**  
**51,52,53,54**

Ex nA [ic]

U<sub>o</sub>: 9,6 VDC  
I<sub>o</sub>: 28 mA  
P<sub>o</sub>: 67 mW  
L<sub>o</sub>: 35 mH  
C<sub>o</sub>: 3.5µF



**Terminal:**  
**11,12,13,14**  
**21,22,23,24**

Ex nA

U ≤ 35 VDC  
I = 4 - 20 mA

Ex ic

U<sub>i</sub>: 35 VDC  
L<sub>i</sub>: 10 µH  
C<sub>i</sub>: 2.0 nF

**Special conditions for safe use.**

Type of protection Ex ic IIC Gc:

The transmitter shall be installed in an enclosure that provides a degree of protection of at least IP54 according to EN60529.

Type of protection Ex ic IIIC Dc:

The transmitter shall be installed in an enclosure providing a degree of protection of at least IP6X according to EN60529. The surface temperature of the enclosure is equal to the ambient temperature +20 K, for a dust layer with a maximum thickness of 5 mm.

## IECEx Installation drawing

For safe installation of 6335A, 6336A or 6337A 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.

IECEx Certificate IECEx KEM.10.0084X

Marking  
 Ex nA [ic] IIC T6 Gc  
 Ex ic IIC T6 Gc  
 Ex ic IIIC Dc

Standards IEC60079-11:2006, IEC60079-0: 2007,  
 IEC60079-26:2006, IEC60079-15:2010, IEC61241-11:2005

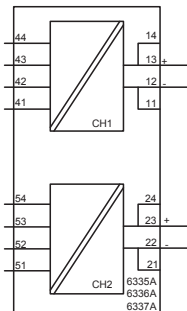
T6: -40°C to 60 °C

Hazardous Area Zone 2 or Zone 22

**Terminal:**  
**41,42,43,44 /**  
**51,52,53,54**

Ex nA [ic]

U<sub>o</sub>: 9.6 VDC  
 I<sub>o</sub>: 28 mA  
 P<sub>o</sub>: 67 mW  
 L<sub>o</sub>: 35 mH  
 C<sub>o</sub>: 3.5µF



**Terminal:**  
**11,12,13,14**  
**21,22,23,24**

Ex nA

U ≤ 35 VDC  
 I = 4 - 20 mA

Ex ic

U<sub>i</sub> : 35 VDC  
 L<sub>i</sub> : 10 µH  
 C<sub>i</sub> : 2.0 nF

**Installation notes.**

Type of protection Ex ic IIC Gc or Ex nA IIC Gc

The transmitter shall be installed in an enclosure that provides a degree of protection of at least IP54 according to IEC60529.

Type of protection Ex ia IIIC Da:

The transmitter shall be installed in an enclosure that provides a degree of protection of at least IP6X according to IEC60529. The surface temperature of the enclosure is equal to the ambient temperature +20 K, for a dust layer with a maximum thickness of 5 mm.

## ATEX Installation drawing



For safe installation of 6335D, 6336D or 6337D 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 09ATEX 0148

Marking



II 1 G Ex ia IIC T6..T5 Ga  
II 1D Ex ia IIIC Da

Standards EN60079-0:2009, EN60079-11:2007, EN60079-26:2007, EN61241-11:2006

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

T5:  $-40 \leq T_a \leq 60^\circ\text{C}$

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

**Terminal:**

**41,42,43,44**

Uo: 9.6 VDC

Io: 28 mA

Po: 67 mW

Lo: 35 mH

Co: 3.5µF

**Terminal:**

**51,52,53,54**

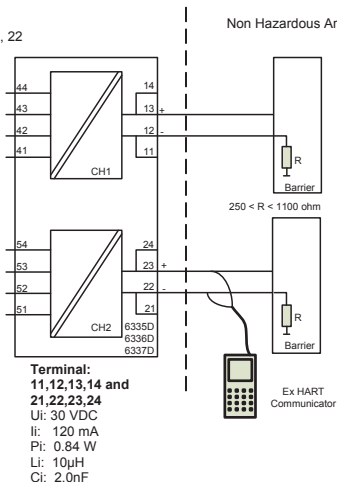
Uo: 9.6 VDC

Io: 28 mA

Po: 67 mW

Lo: 35 mH

Co: 3.5µF





**Installation notes**

The sensor circuit is not infallibly galvanic isolated from the supply output circuit. However, the galvanic isolation between the circuits is capable of withstanding a test voltage of 500Vac during 1 minute.

Type of protection Ex ia IIC Ga:

The transmitter shall be installed in an enclosure that provides a degree of protection of at least IP20 according to EN60529.

Type of protection Ex ia IIIC Da:

The transmitter shall be installed in an enclosure that provides a degree of protection of at least IP6X according to EN60529. The surface temperature of the enclosure is equal to the ambient temperature +20 K, for a dust layer with a maximum thickness of 5 mm.

## IECEx Installation drawing



For safe installation of 6335D, 6336D or 6337D 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.

IECEx Certificate	IECEx KEM.10.0084X
Marking	Ex ia IIC T6..T5 Ga Ex ia IIIC Da
Standards:	IEC60079-11:2006, IEC60079-0: 2007, IEC60079-26:2006, IEC61241-11:2005

Hazardous area

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

T5:  $-40 \leq T_a \leq 60^\circ\text{C}$

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

Non Hazardous Area

**Terminal:**

**41,42,43,44**

Uo: 9.6 VDC

Io: 28 mA

Po: 67 mW

Lo: 35 mH

Co: 3.5 $\mu$ F

**Terminal:**

**51,52,53,54**

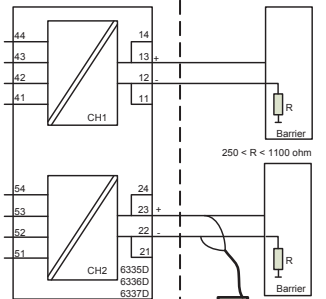
Uo: 9.6 VDC

Io: 28 mA

Po: 67 mW

Lo: 35 mH

Co: 3.5 $\mu$ F



**Terminal:**

**11,12,13,14 and**

**21,22,23,24**

Ui: 30 VDC

Ii: 120 mA

Pi: 0.84 W

Li: 10 $\mu$ H

Ci: 2.0nF

**Installation notes**

The sensor circuit is not infallibly galvanic isolated from the supply output circuit. However, the galvanic isolation between the circuits is capable of withstanding a test voltage of 500Vac during 1 minute.

For installation in dust the following instructions apply:

The transmitter shall be mounted in a metal enclosure that is providing a degree of protection of at least IP6X according to IEC 60529. The surface temperature of the enclosure is equal to the ambient temperature +20 K, for a dust layer with a maximum thickness of 5 mm.

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

## FM Installation drawing

Hazardous (Classified ) Location  
 Class I, Division 1, Group A,B,C,D  
 Class I, Zone 0, IIC

T<sub>6</sub>: -40 ≤ T<sub>a</sub> ≤ 60°C

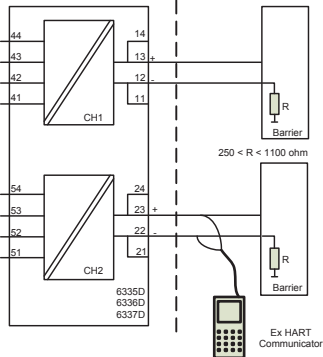
Non Hazardous Location

**Terminal:**

**41,42,43,44**  
 U<sub>o</sub>: 9.6 VDC  
 I<sub>o</sub>: 28 mA  
 P<sub>o</sub>: 67 mW  
 L<sub>o</sub>: 35 mH  
 C<sub>o</sub>: 3.5μF

**Terminal:**

**51,52,53,54**  
 U<sub>o</sub>: 9.6 VDC  
 I<sub>o</sub>: 28 mA  
 P<sub>o</sub>: 67 mW  
 L<sub>o</sub>: 35 mH  
 C<sub>o</sub>: 3.5μF



**Terminal:**

**11,12,13,14 and  
 21,22,23,24**  
 U<sub>i</sub>: 30 VDC  
 I<sub>i</sub>: 120 mA  
 P<sub>i</sub>: 0.84 W  
 L<sub>i</sub>: 10μH  
 C<sub>i</sub>: 2.0nF

**Installation notes.**

For installation in Class I the Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The National Electrical Code (ANSI-NFPA 70).

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<sub>i</sub>(V<sub>MAX</sub>) and current I<sub>i</sub>(I<sub>MAX</sub>), and maximum power P<sub>i</sub>(P<sub>max</sub>), which the device can receive and remain intrinsically safe, must be equal to or greater than the voltage (U<sub>o</sub> or V<sub>OC</sub> or V<sub>t</sub>) and current (I<sub>o</sub> or I<sub>SC</sub> or I<sub>t</sub>) and the power P<sub>o</sub> which can be delivered by the barrier. The sum of the maximum unprotected capacitance (C) for each intrinsically device and the interconnecting wiring must be less than the capacitance (C<sub>a</sub>) which can be safely connected to the barrier. The sum of the maximum unprotected inductance (L) for each intrinsically device and the interconnecting wiring must be less than the inductance (L<sub>a</sub>) which can be safely connected to the barrier. The entity parameters U<sub>o</sub>, V<sub>OC</sub> or V<sub>t</sub> and I<sub>o</sub>, I<sub>SC</sub> or I<sub>t</sub>, and C<sub>a</sub> and L<sub>a</sub> for barriers are provided by the barrier manufacturer.

## CSA Installation drawing

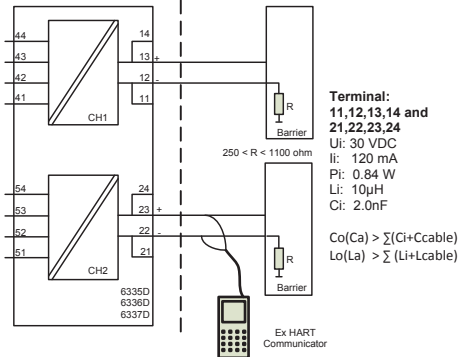
Hazardous (Classified) Location  
 Class I, Division 1, Group A,B,C,D  
 Class I, Zone 0, IIC

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

Non Hazardous Location

**Terminal:  
 41,42,43,44**  
 Uo: 9.6 VDC  
 Io: 28 mA  
 Po: 67 mW  
 Lo: 35 mH  
 Co: 3.5 $\mu$ F

**Terminal:  
 51,52,53,54**  
 Uo: 9.6 VDC  
 Io: 28 mA  
 Po: 67 mW  
 Lo: 35 mH  
 Co: 3.5 $\mu$ F



### Installation notes.

The Transmitter must be installed in a suitable enclosure to meet installation codes stipulated in The Canadian Electrical Code (CEC).

Channel 1 and Channel 2 are separate channels and therefore separate shielded cables shall be used for each channel.

Substitution of components may impair intrinsic safety.



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



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



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



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



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

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