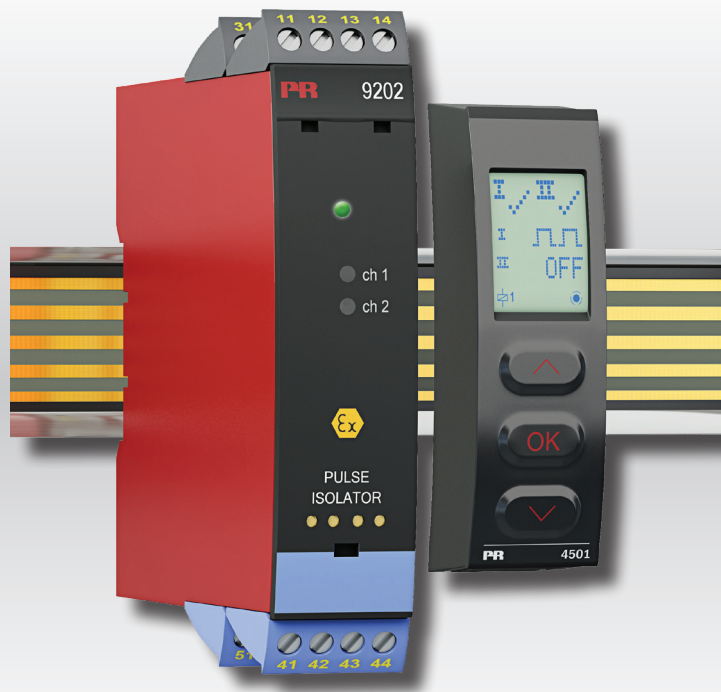


# Product manual

## 9202

### *Pulse isolator*



Segurança  
**INMETRO**



CCOE



TEMPERATURE | I.S. INTERFACES | COMMUNICATION INTERFACES | MULTIFUNCTIONAL | ISOLATION | DISPLAY

# 6 Product Pillars

## *to meet your every need*

### Individually outstanding, unrivalled in combination

With our innovative, patented technologies, we make signal conditioning smarter and simpler. Our portfolio is composed of six product areas, where we offer a wide range of analog and digital devices covering over a thousand applications in industrial and factory automation. All our products comply with or surpass the highest industry standards, ensuring reliability in even the harshest of environments and have a 5-year warranty for greater peace of mind.



Temperature

Our range of temperature transmitters and sensors provides the highest level of signal integrity from the measurement point to your control system. You can convert industrial process temperature signals to analog, bus or digital communications using a highly reliable point-to-point solution with a fast response time, automatic self-calibration, sensor error detection, low drift, and top EMC performance in any environment.



I.S. Interface

We deliver the safest signals by validating our products against the toughest safety standards. Through our commitment to innovation, we have made pioneering achievements in developing I.S. interfaces with SIL 2 Full Assessment that are both efficient and cost-effective. Our comprehensive range of analog and digital intrinsically safe isolation barriers offers multifunctional inputs and outputs, making PR an easy-to-implement site standard. Our backplanes further simplify large installations and provide seamless integration to standard DCS systems.



Communication

We provide inexpensive, easy-to-use, future-ready communication interfaces that can access your PR installed base of products. All the interfaces are detachable, have a built-in display for readout of process values and diagnostics, and can be configured via push-buttons. Product specific functionality includes communication via Modbus and Bluetooth and remote access using our PR Process Supervisor (PPS) application, available for iOS and Android.



Multifunction

Our unique range of single devices covering multiple applications is easily deployable as your site standard. Having one variant that applies to a broad range of applications can reduce your installation time and training, and greatly simplify spare parts management at your facilities. Our devices are designed for long-term signal accuracy, low power consumption, immunity to electrical noise and simple programming.



Isolation

Our compact, fast, high-quality 6 mm isolators are based on microprocessor technology to provide exceptional performance and EMC-immunity for dedicated applications at a very low total cost of ownership. They can be stacked both vertically and horizontally with no air gap separation between units required.



Display

Our display range is characterized by its flexibility and stability. The devices meet nearly every demand for display readout of process signals, and have universal input and power supply capabilities. They provide a real-time measurement of your process value no matter the industry, and are engineered to provide a user-friendly and reliable relay of information, even in demanding environments.

# Pulse isolator

## 9202

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## Warning



The following operations should only be carried out on a disconnected device and under ESD-safe conditions:

- General mounting, wire connection and disconnection.
- Troubleshooting the device.

**Repair of the device and replacement of circuit breakers must be done by PR electronics A/S only.**

## Warning



Do not open the front plate of the device as this will cause damage to the connector for the display / programming front PR 45xx.

This device contains no DIP-switches or jumpers.

## Symbol identification



**Triangle with an exclamation mark:** Read the manual before installation and commissioning of the device in order to avoid incidents that could lead to personal injury or mechanical damage, arning/ demand. Potentially lethal situations.



**The CE mark** proves the compliance of the device with the essential requirements of the directives.



**The double insulation symbol** shows that the device is protected by double or reinforced insulation.



**Ex** devices have been approved acc. to the ATEX directive for use in connection with installations in explosive areas. See installation drawings in appendix.

## Safety instructions

### Definitions

**Hazardous voltages** have been defined as the ranges: 75 to 1500 Volt DC, and 50 to 1000 Volt AC.

**Technicians** are qualified persons educated or trained to mount, operate, and also trouble-shoot technically correct and in accordance with safety regulations.

**Operators**, being familiar with the contents of this manual, adjust and operate the knobs or potentiometers during normal operation.

### Receipt and unpacking

Unpack the device without damaging it and check whether the device type corresponds to the one ordered. The packing should always follow the device until this has been permanently mounted.

### Environment

Avoid direct sun light, dust, high temperatures, mechanical vibrations and shock, and rain and heavy moisture. If necessary, heating in excess of the stated limits for ambient temperatures should be avoided by way of ventilation.

The device must be installed in pollution degree 2 or better.

The device is designed to be safe at least under an altitude up to 2 000 m.

## Mounting

Only technicians, who are familiar with the technical terms, warnings, and instructions in the manual and who are able to follow these, should connect the device. Should there be any doubt as to the correct handling of the device, please contact your local distributor or, alternatively,

**PR electronics A/S**  
**[www.prelectronics.com](http://www.prelectronics.com)**

The use of stranded wires is not permitted for mains wiring except when wires are fitted with cable ends.

Descriptions of input / output and supply connections are shown in the block diagram and on the side label.

The device is provided with field wiring terminals and shall be supplied from a Power Supply having double / reinforced insulation. A power switch shall be easily accessible and close to the device. The power switch shall be marked as the disconnecting unit for the device.

For installation on Power Rail 9400 the power is supplied by Power Control Unit 9410.

Year of manufacture can be taken from the first two digits in the serial number.

## Calibration and Adjustment

During calibration and adjustment, the measuring and connection of external voltages must be carried out according to the specifications of this manual. The technician must use tools and instruments that are safe to use.

## Normal operation

Operators are only allowed to adjust and operate devices that are safely fixed in panels, etc., thus avoiding the danger of personal injury and damage. This means there is no electrical shock hazard, and the device is easily accessible.

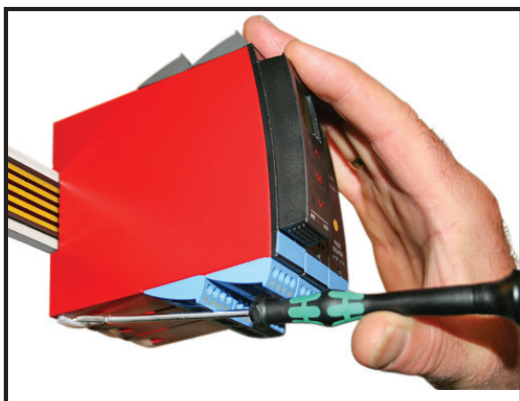
## Cleaning

When disconnected, the device may be cleaned with a cloth moistened with distilled water.

## Liability

To the extent the instructions in this manual are not strictly observed, the customer cannot advance a demand against PR electronics A/S that would otherwise exist according to the concluded sales agreement.

## How to demount system 9000



**Picture 1:**

By lifting the bottom lock, the device is detached from the DIN rail.

# Pulse isolator 9202

- Interface for NAMUR sensors and switches
- Extended self-diagnostics and detection of cable fault
- 1 or 2 channels
- Can be supplied separately or installed on power rail, PR type 9400
- SIL 2-certified via Full Assessment

## Advanced features

- Configuration and monitoring by way of detachable display front (PR 45xx).
- Selection of direct or inverted function for each channel via PR 45xx.
- Advanced monitoring of internal communication and stored data.
- Optional redundant supply via power rail and/or separate supply.
- SIL 2 functionality is optional and must be activated in a menu point.

## Application

- The device can be mounted in the safe area and in zone 2 / cl. 1 div. 2 and receive signals from zone 0, 1, 2 and zone 20, 21, 22 including M1 / Class I/II/III, Div. 1, Gr. A-G.
- Pulse isolator for transmission of signals to the safe area from NAMUR sensors and mechanical switches installed in the hazardous area.
- Monitoring of error events and cable breakage via the individual status relay and/or a collective electronic signal via the power rail.
- The 9202 has been designed, developed and certified for use in SIL 2 applications according to the requirements of IEC 61508.

## Technical characteristics

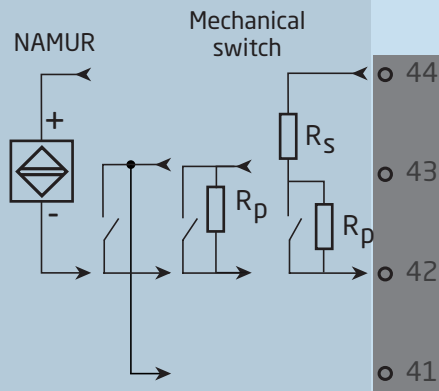
- 1 green and 2 yellow/red front LEDs indicate operation status and malfunction.
- 2.6 kVAC galvanic isolation between input, output and supply.



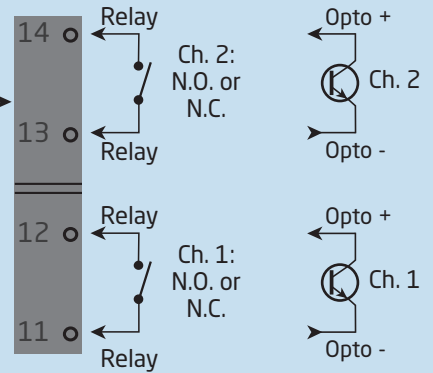
## Applications

### Input signals:

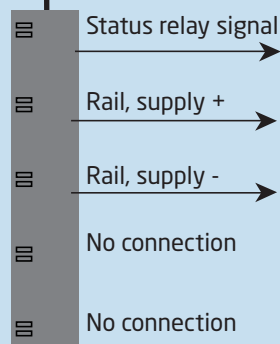
#### Channel 1



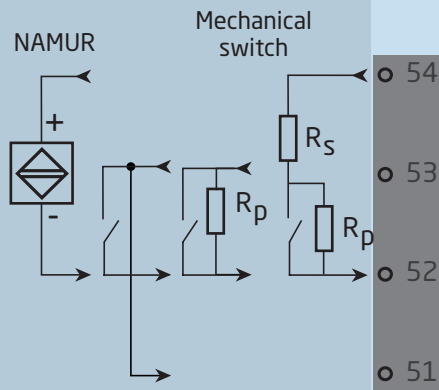
### Output signals:



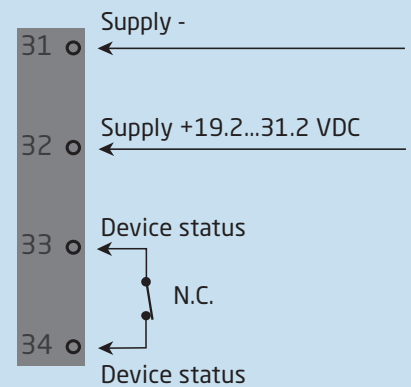
#### Power rail



#### Channel 2



### Power connection:



**Zone 0, 1, 2,  
20, 21, 22, M1 &  
Cl. I/II/III, Div. 1  
gr. A-G**

**Zone 2 & Cl. 1, Div. 2, gr. A-D  
or Safe Area**

## PR 45xx display / programming front



### Functionality

The simple and easily understandable menu structure and the explanatory help texts guide you effortlessly and automatically through the configuration steps, thus making the product very easy to use. Functions and configuration options are described in the section "Configuration / operating the function keys".

### Application

- Communications interface for modification of operational parameters in 9202.
- When mounted in the process, the display shows process values and device status.

### Technical characteristics

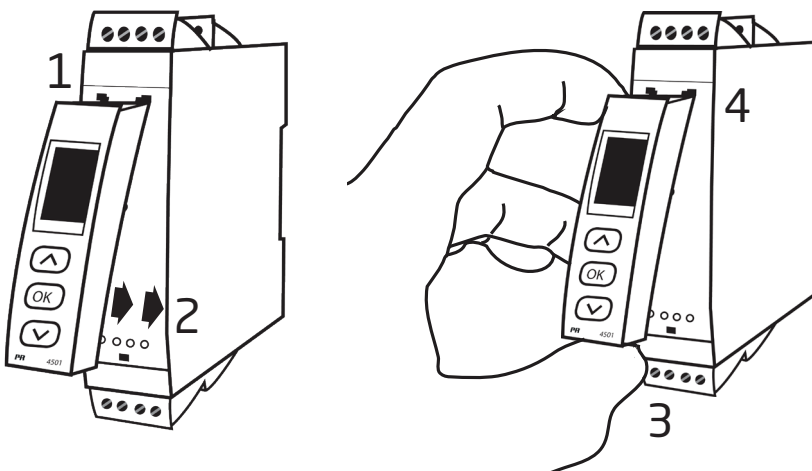
- LCD display with 4 lines:
  - Line 1 (H=5.57 mm) shows status for each channel (OK or error).
  - Line 2 (H=3.33 mm) shows output for channel 1 (ON / OFF).
  - Line 3 (H=3.33 mm) shows output for channel 2 (ON / OFF).
  - Line 4 shows whether the device is SIL-locked. Static dot = SIL-locked and flashing dot = not SIL-locked.
  - Line 4 also indicates status for relay 1 and relay 2.
- In order to protect the configuration against unauthorised changes, access to the menus can be blocked by a password.

## Mounting/demounting the PR 45xx

- 1: Insert the tabs of the PR 45xx into the holes at the top of the device.
- 2: Hinge the PR 45xx down until it snaps into place.

### Demounting of the PR 45xx

- 3: Push the release button on the bottom of the PR 45xx and hinge the the PR 45xx out and up.
- 4: With the PR 45xx hinged up, remove from holes at the top of the device.





## Order

Type	Version	Channels
9202B	Opto : 1	Single : A
	Relay N.O. : 2	Double : B
	Relay N.C. : 3	

**Example: 9202B2B**

## Accessories

<b>4501</b>	<b>= Display / programming front</b>
<b>4511</b>	<b>= Communication enabler</b>
<b>9400</b>	<b>= Power rail</b>
<b>9404</b>	<b>= Module stop for rail</b>
<b>9410</b>	<b>= Power control unit</b>
<b>9421</b>	<b>= Power supply 24 V - Ex nA nC</b>

## Technical data

### Environmental conditions:

Specifications range. . . . .	-20°C to +60°C
Storage temperature . . . . .	-20°C to +85°C
Calibration temperature. . . . .	20...28°C
Relative humidity . . . . .	< 95% RH (non-cond.)
Protection degree . . . . .	IP20
Installation in. . . . .	Pollution degree 2 & overvoltage category II.

### Mechanical specifications:

Dimensions (HxWxD) . . . . .	109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501 / 451x . . . . .	109 x 23.5 x 116 / 131 mm
Weight approx. . . . .	170 g
Weight incl. 4501 / 451x (approx.) . . . . .	185 g / 200 g
DIN rail type. . . . .	DIN EN 60715 - 35 mm
Wire size. . . . .	0.13...2.08 mm <sup>2</sup> / AWG 26...14 stranded wire
Screw terminal torque. . . . .	0.5 Nm
Vibration. . . . .	IEC 60068-2-6
2...13.2 Hz . . . . .	±1 mm
13.2...100 Hz. . . . .	±0.7 g

### Common electrical specifications:

Supply voltage . . . . .	19.2...31.2 VDC
Fuse . . . . .	400 mA SB / 250 VAC

Type	Description	Max. power dissipation	Max. required power
9202B1A	1 ch., opto	≤ 1.2 W	≤ 1.1 W
9202B1B	2 ch., opto	≤ 1.6 W	≤ 1.5 W
9202B2A	1 ch., relay N.O.	≤ 1.2 W	≤ 1.3 W
9202B2B	2 ch., relay N.O.	≤ 1.8 W	≤ 1.9 W
9202B3A	1 ch., relay N.C.	≤ 1.2 W	≤ 1.3 W
9202B3B	2 ch., relay N.C.	≤ 1.8 W	≤ 1.9 W

*Max. required power is the maximum power needed at terminals 31 and 32.*

*Max. power dissipation is the maximum power dissipated by the device.*

*If the 9202 is used with the 45xx, then add 40 mW to the max. power dissipation and 70 mW to the max. required power for each device with the 45xx.*

**Isolation - test / working:**

Inputs / outputs / supply . . . . .	2.6 kVAC / 300 VAC reinforced isolation
Output 1 to output 2 . . . . .	1.5 kVAC / 150 VAC reinforced isolation
Status relay to supply . . . . .	1.5 kVAC / 150 VAC reinforced isolation
Programming . . . . .	Communication enabler 4511 / Programming front 4501
Response time for cable fault . . . . .	< 200 ms

**Auxiliary supplies:**

NAMUR supply . . . . .	8 VDC / 8 mA
------------------------	--------------

**Inputs:****Sensor types:**

NAMUR according to. . . . .	EN 60947-5-6
Mechanical switch with series (Rs) and parallel (Rp) resistance:	
Rs. . . . .	Nom. 750 $\Omega$
Rp . . . . .	Nom. 15 k $\Omega$
Frequency range . . . . .	0...5 kHz
Min. pulse length. . . . .	> 0.1 ms
Input resistance . . . . .	Nom. 1 k $\Omega$
Trig level, signal . . . . .	< 1.2 mA, > 2.1 mA
Trig level, cable fault . . . . .	< 0.1 mA, > 6.5 mA

**Outputs:****Relay outputs in safe area:**

Max. switch frequency . . . . .	20 Hz
Max. voltage . . . . .	250 VAC / 30 VDC
Max. current. . . . .	2 A AC / 2 A DC
Max. power . . . . .	500 VA / 60W

**Status relay in safe area:**

Max. voltage . . . . .	125 VAC / 110 VDC
Max. current. . . . .	0.5 A AC / 0.3 A DC
Max. power . . . . .	62.5 VA / 32 W

**Opto, NPN outputs:**

Max. switch frequency . . . . .	5 kHz
Min. pulse length. . . . .	> 0,1 ms
Max. load, current / voltage. . . . .	80 mA / 30 VDC
Voltage drop at 80 mA . . . . .	< 2.5 VDC

**Observed authority requirements:**

EMC. . . . .	2014/30/EU
LVD. . . . .	2014/35/EU
ATEX . . . . .	2014/34/EU
RoHS. . . . .	2011/65/EU

**Approvals:**

DNV-GL, Ships & Offshore . . . . .	Standard for Certification No. 2.4
ClassNK . . . . .	TA18527M
c UL us, Standard for Safety . . . . .	UL 61010-1
EAC . . . . .	TR-CU 020/2011

**I.S. / Ex:**

ATEX . . . . .	KEMA 07ATEX0146 X
IECEx. . . . .	IECEx KEM 06.0039X
c FM us. . . . .	3034430-C
INMETRO . . . . .	DEKRA 16.0005 X
CCOE . . . . .	P337349/5
EAC Ex TR-CU 012/2011. . . . .	RU C-DK.GB08.V.00410

**Functional Safety:**

SIL2 Certified & Fully Assessed acc. to IEC 61508

# Configuration of cable fault check

## Diagnostics


Cable fault check, independent detection and visualisation for each channel:		
Device:	Configuration, common for both channels	Cable fault detection:
9202	CA.BR = Yes or CA.SH = Yes	OFF
	Else:	ON

## Cable fault detection

Cable fault detection (CA.BR, CA.SH):			
Input	Event	Readout	Limit
All	Cable break	CA.BR	< 0.1 mA
All	Short-circuited cable	CA.SH	> 6.5 mA

## Hardware / Software error

Readout at hardware error		
Error search	Readout	Cause
Communications test 45xx and 9202	NO.CO	Connection error
EEprom error - check configuration	FL.ER	Configuration error or crc mismatch, recovery configuration is loaded
Hardware error	DE.ER	Invalid recovery configuration in device
Hardware error	FC.ER	Invalid code checksum in 45xx
EEprom error - check configuration	CO.ER	Invalid configuration (CRC or data)
Hardware error	CA.ER	Factory calibration error
Hardware error	HW.ER	HW setup - configuration mismatch
Hardware error	OC.ER	Main output controller communication error
Hardware error	MS.ER	Main internal supply out of bounds
Hardware error	MI.ER	Main initialisation selftest failed
Hardware error	MC.ER	Main flash or ram selftest failed

! All error indications in the display flash once per second. The help text explains the error.  
In case of cable fault the backlight also flashes. This can be reset by pressing the  key.

Errors affecting both channels are shown as error on channel 1 - and the line showing channel 2 is blank.

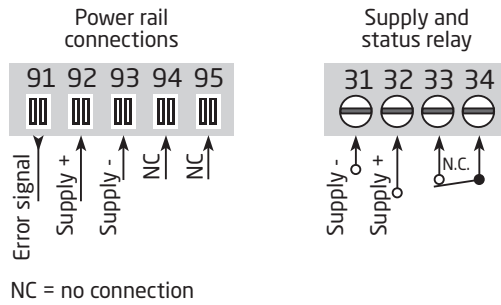
Hardware error can be reset in two ways. Either step through the menus (if the other channel is to stay in operation) or power cycle the device.

## Function description

Examples of connections in connection drawing and block diagram (1)...(4)

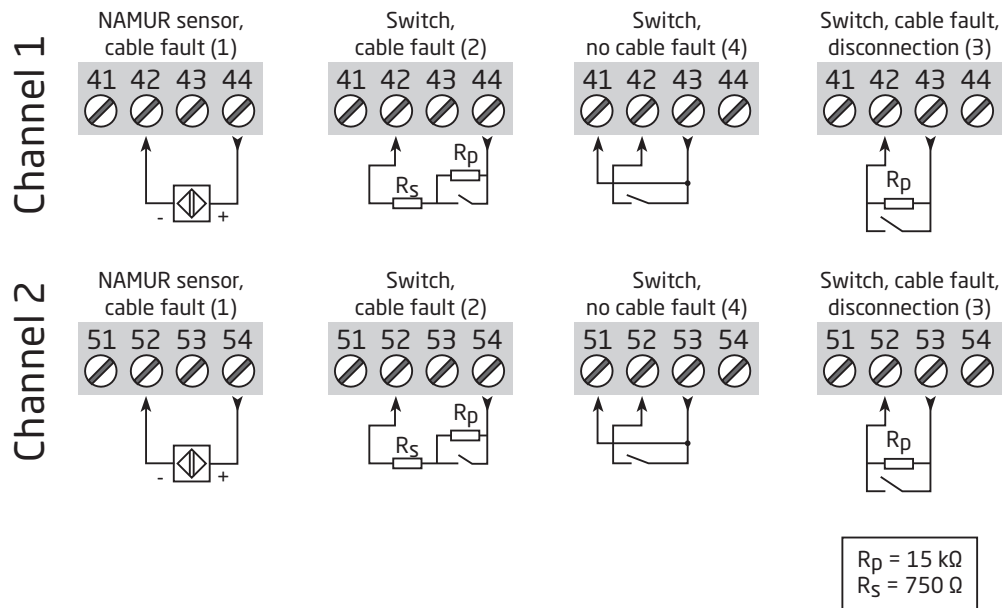
- (1) NAMUR sensor with cable error detection in case of cable disconnection or short-circuit.
- (2) Mechanical contact with cable error detection in case of cable disconnection or short-circuit, when Rs and Rp are mounted on the contact.
- (3) Mechanical contact with cable error detection in case of cable disconnection, when Rp is mounted on the contact.
- (4) Mechanical contact without cable error detection.

## Connections

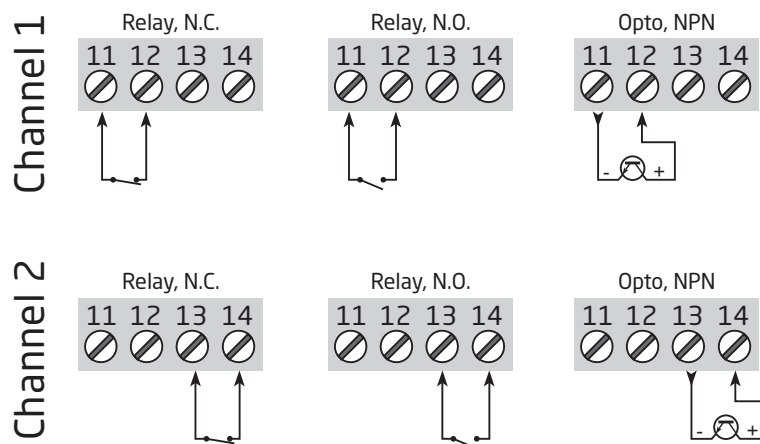


## Inputs:

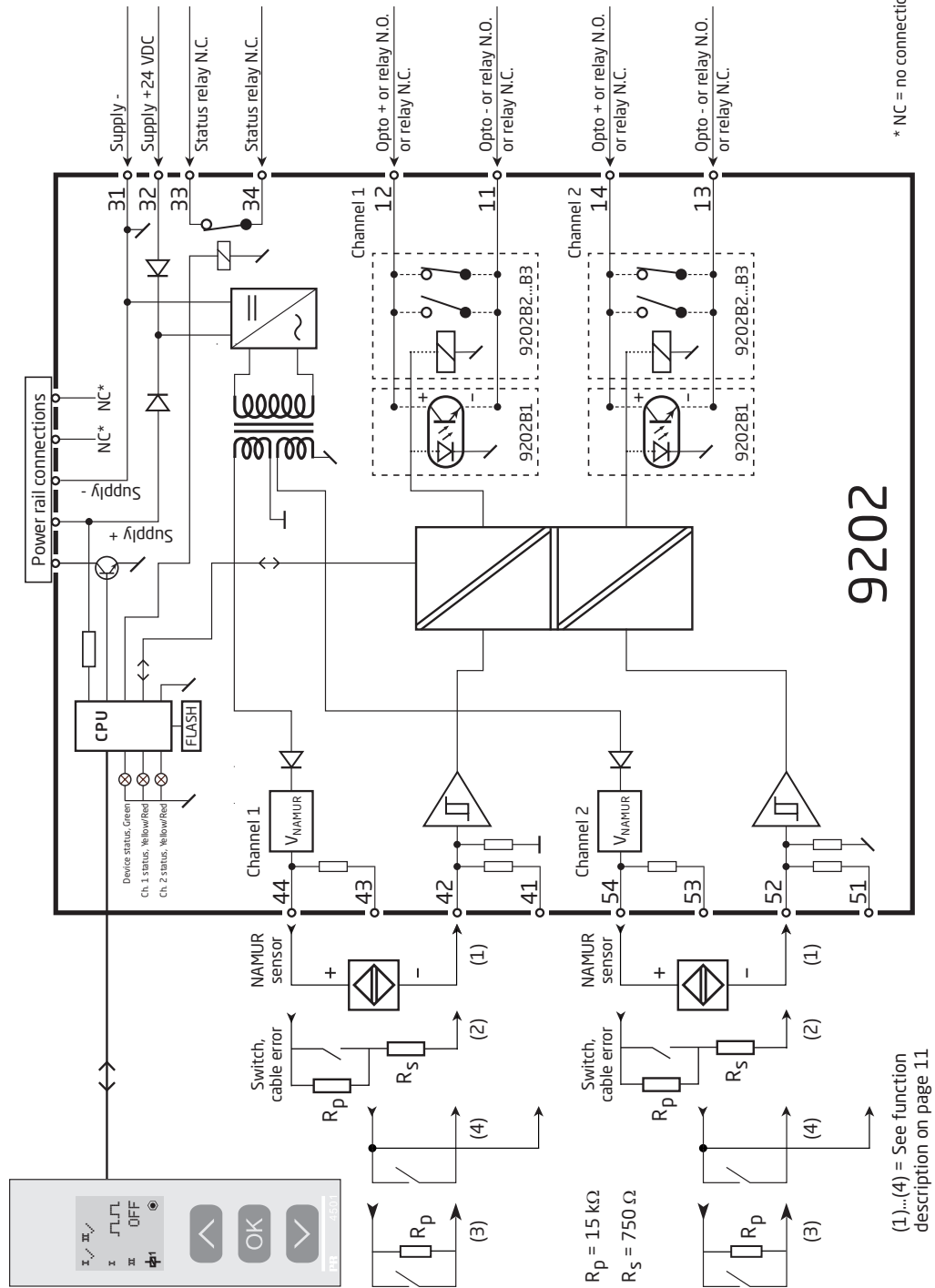
(1)...(4) = See function description on page 12



## Outputs:



# Block diagram



## Signal error and cable fault indications without display front

List of LED and error signal indications					
Condition	Green LED	Ch. 1: Yellow / Red	Ch. 2: Yellow / Red	Status relay, N.C.	Power rail signal status
Device OK	Flashing			Energized	OFF
No supply	OFF	OFF	OFF	De-energized	ON
Device defective	OFF	Red	Red	De-energized	ON
Channel 1, relay energised	Flashing	Yellow		Energized	OFF
Channel 1, relay de-energised at cable fault	Flashing	Red flashing		De-energized	ON (if activated)
Channel 1, relay de-energised	Flashing	OFF		Energized	OFF
Channel 2, relay energised	Flashing		Yellow	Energized	OFF
Channel 2, relay de-energised at cable fault	Flashing		Red flashing	De-energized	ON (if activated)
Channel 2, relay de-energised	Flashing		OFF	Energized	OFF




# Configuration / operating the function keys


Documentation for routing diagram.

## In general

When configuring the 9202, you will be guided through all parameters and you can choose the settings which fit the application. For each menu there is a scrolling help text which is automatically shown in line 3 on the display.

Configuration is carried out by use of the 3 function keys:

-  will increase the numerical value or choose the next parameter
-  will decrease the numerical value or choose the previous parameter
-  will save the chosen value and proceed to the next menu


When configuration is completed, the display will return to the default state 1.0. Pressing and holding  will return to the previous menu or return to the default state (1.0) without saving the changed values or parameters.

If no key is activated for 1 minute, the display will return to the default state (1.0) without saving the changed values or parameters.

## Further explanations

**Password protection:** Programming access can be blocked by assigning a password. The password is saved in the device in order to ensure a high degree of protection against unauthorised modifications to the configuration. Default password 2008 allows access to all configuration menus.

## Cable fault information via display front 45xx

Cable fault (see limits in the table) is displayed as CA.BR (cable break) or CA.SH (cable short-circuited). Cable fault is shown independently for each channel but the configuration is common for both channels. In case of cable fault the backlight flashes. This can be reset by pressing the  key. When the cable fault has been remedied, the module will return to normal operation.

## Advanced functions

The unit gives access to a number of advanced functions which can be reached by answering "Yes" to the point "ADV.SET".

**Display setup:** Here you can adjust the brightness contrast and the backlight. Setup of TAG numbers with 5 alphanumerics. Selection of functional readout in line 2 and 3 of the display - choose between readout of digital output or tag no. When selecting "ALT" the readout toggles digital output and tag no.

**Password:** Here you can choose a password between 0000 and 9999 in order to protect the unit against unauthorised modifications to the configuration. The unit is delivered default without password.

**Language:** In the menu "LANG" you can choose between 7 different language versions of help texts that will appear in the menu. You can choose between UK, DE, FR, IT, ES, SE and DK.

**Power rail:** In the menu "RAIL" you can choose if errors in the module are transmitted to the central surveillance in the PR 9410 power control unit.

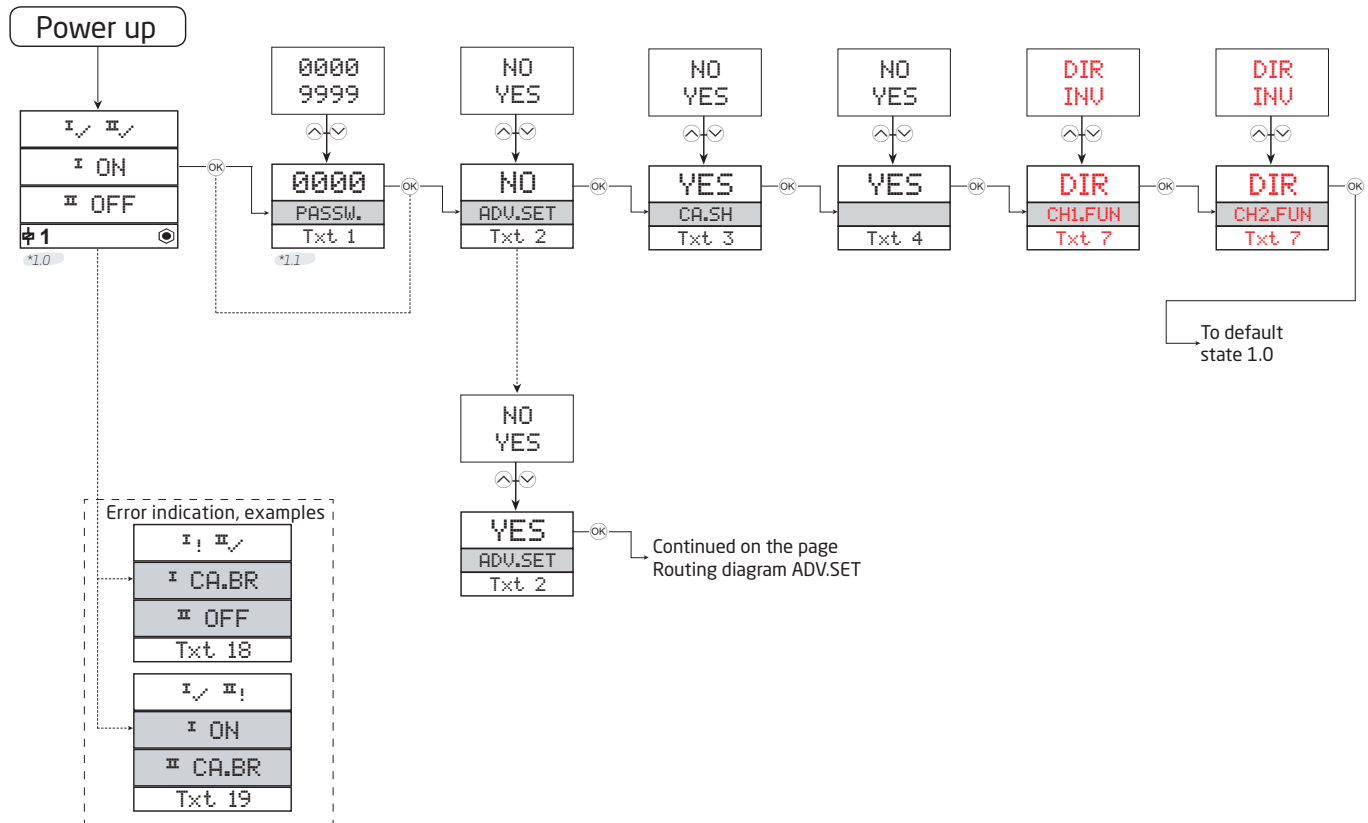
**Safety Integrity Level (SIL):** See Safety Manual for details.



## Routing diagram


If no key is activated for 1 minute, the display will return to the default state 1.0 without saving configuration changes.

- ⬆ Increase value / choose next parameter
  - ⬇ Decrease value / choose previous parameter
  - Ⓚ Save the chosen value and proceed to the next menu
- Hold Ⓚ Back to previous menu / return to menu 1.0 without saving.



- 1.0 Default state.
  - Line 1 shows status for channel 1 and channel 2.
  - Line 2 shows status for sensor 1.
  - Line 3 shows status for sensor 2.
  - Line 4 indicates whether the device is SIL-locked.

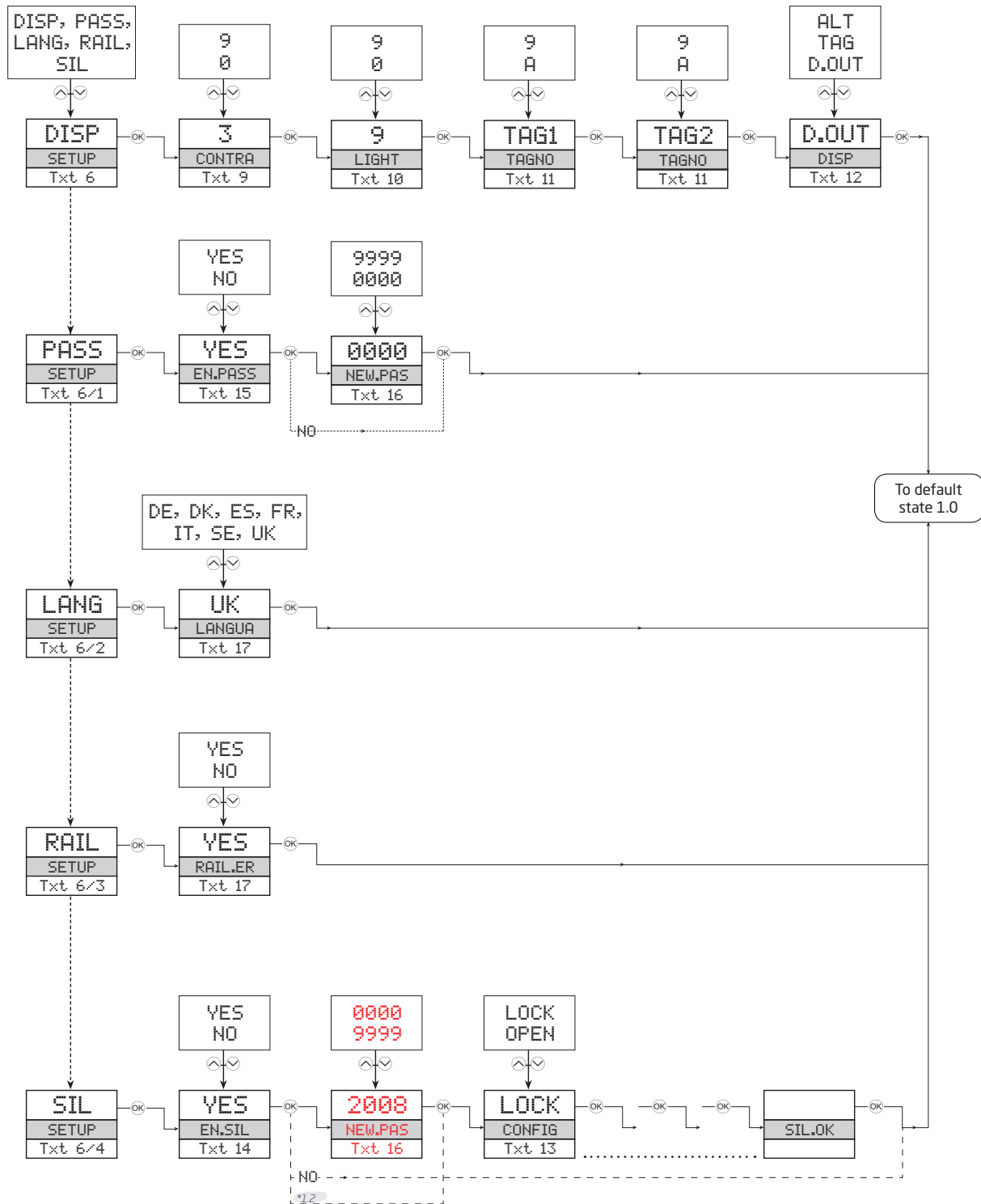
\*1.1 Only if password-protected.

Line 1 symbols:  
 $\pi \checkmark$  = OK. Flashing  $\pi!$  = error.  
 Line 2 and 3 symbols:  
 Input frequency > 1 Hz =  $\pi$    
 Line 4 symbols:  
 Static dot = SIL-locked  
 Flashing dot = Not SIL-locked

**Red text** signifies safety parameters in a SIL configuration. See safety manual for details



## Routing diagram, advanced settings (ADV.SET)



\*1.2 If password has been set.

## Help text overview

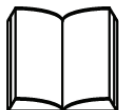
- [01] Set correct password [ PASS ]
- [02] Enter advanced setup [ ADV.SET ]
- [03] Enable cable short circuit error indication [ CA.SH ]
- [04] Enable cable breakage error indication? [ CA.BR ]
- [05] Enable rail status signal output? [ RAIL.ER ]
- [06] Enter language setup [ SETUP ]
- [6/1] Enter password setup [ SETUP ]
- [6/2] Enter display setup [ SETUP ]
- [6/3] Enter rail setup [ SETUP ]
- [6/4] Enter SIL setup [ SETUP ]
- [07] Select Direct channel function [ CH1.FUN ] [CH2.FUN ]  
Select Inverted channel function [ CH1.FUN ] [ CH2.FUN ]
- [09] Adjust LCD contrast [ CONTRA ]
- [10] Adjust LCD backlight [ LIGHT ]
- [11] Write a 5-character channel TAG [ 'TAGON ] [ "TAGON ]
- [12] Show Output state in display [ D.OUT ]  
Show TAG in display  
Alternate information shown in display
- [13] Configuration SIL status (Open / Locked) [ CONFIG ]
- [14] Enable SIL configuration lock [ EN.SIL ]
- [15] Enable Password protection [ EN.PASS ]
- [16] Set New password [ NEW.PAS ]
- [17] Select Language [ LANGUA ]
- [18] Cable short circuit [ ICA.SH ] [ IIOFF ]
- [19] Cable breakage [ ION ] [ IICA.BR ]

## ATEX Installation drawing



For safe installation of 9202 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.



For Installation in Zone 2 / Division 2 the following must be observed.

The 4501 programming module is to be used solely with PR electronics modules. It is important that the module is undamaged and has not been altered or modified in any way. Only 4501 modules free of dust and moisture shall be installed.

**ATEX Certificate** KEMA 07 ATEX 0146 X

**Marking 9202Bxx**



II (1) G [Ex ia Ga] IIC/IIB/IIA  
II 3G Ex nA nC IIC T4 Gc  
I (1) D [Ex ia Da] IIIC  
I (M1) [Ex ia Ma] I

**Marking 9202Axx**

II 3G Ex nA nC IIC T4 Gc

**Standards**

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

**Supply terminal (31,32)**

Voltage : 19.2 – 31.2 VDC

**Status Relay. terminal (33,34)**

Zone 2 Installation

Voltage max: 125 VAC / 110 VDC

32 VAC / 32 VDC

Power max: 62,5 VA / 32 W

16 VA / 32 W

Current max: 0.5 A AC / 0.3 ADC

0.5 A AC / 1 ADC

### Installation notes:

Install in pollution degree 2, overvoltage category II as defined in EN 60664-1

Do not separate connectors when energized and an explosive gas mixture is present.

Do not mount or remove modules from the Power Rail when an explosive gas mixture is present.

Disconnect power before servicing.

The wiring of unused terminals is not allowed.

In type of protection [Ex ia Da] the parameters for intrinsic safety for gas group IIB are applicable.

For installation in Zone 2, the module shall be installed in an enclosure in type of protection Ex n or Ex e, providing a degree of protection of at least IP54. Cable entry devices and blanking elements shall fulfill the same requirements.

For installation on Power Rail in Zone 2, only Power Rail type 9400 supplied by Power Control Unit type 9410 (Type Examination Certificate KEMA 07ATEX0152 X) is allowed.

Revision date:  
2016-04-07

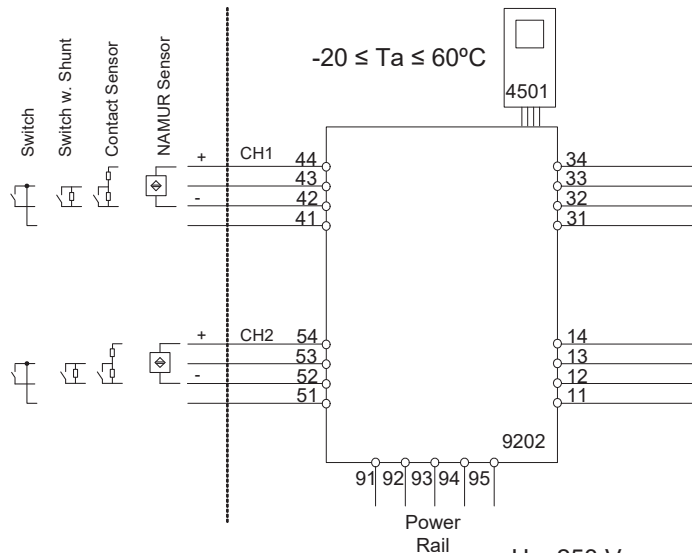
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Hazardous area  
Zone 0,1, 2, 20, 21, 22

Non Hazardous area  
or Zone 2



U<sub>o</sub>: 10.6 VDC  
I<sub>o</sub>: 12 mADC  
P<sub>o</sub>: 32 mW  
L<sub>o</sub>/R<sub>o</sub>: 1150 μH/Ω

U<sub>m</sub>: 253 V max. 400 Hz

**Supply / Output:**  
(terminal 11,12,13,14)  
(terminal 31,32,33,34)  
(terminal 91,92,93,94,95)

	IIC	IIB	IIA	I
C <sub>o</sub> .	2.0 μF	6.0 μF	18 μF	90 μF
L <sub>o</sub> .	260 mH	780 mH	1000 mH	1000 mH

**Ex input:**

**CH1 (terminal 41,42,43,44)**

**CH2 (terminal 51,52,53,54)**

**Terminal CH1(11,12) CH2(13,14)**

**Digital output:**

Voltage max

Current max

**NPN output:**

30 VDC

80 mA

**Terminal CH1(11,12) CH2(13,14)**

**Relay output:**

Voltage max.

Power max.

Current max.

**Non Hazardous location**

250 VAC / 30 VDC

500 VA / 60 W

2 AAC / 2 ADC

**Zone 2 installation**

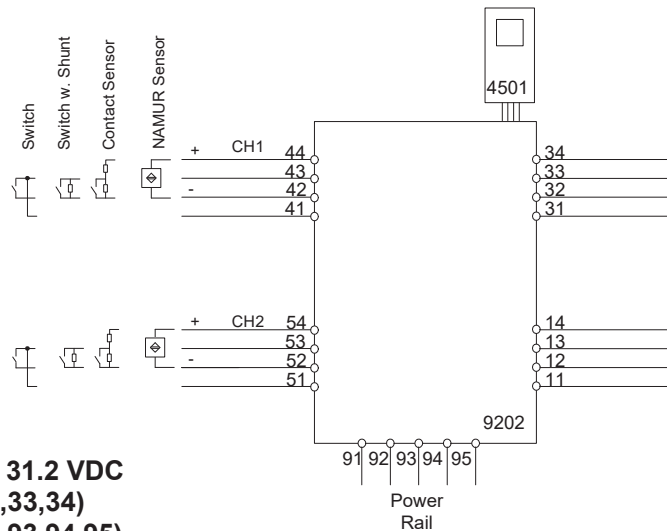
32 VAC / 30 VDC

64 VA / 60 W

2 AAC / 2 ADC

**9202Axx Installation:**

Non Hazardous area or Zone 2

 $-20 \leq T_a \leq 60^\circ\text{C}$ 

**Supply: 19.2 – 31.2 VDC**  
**(terminal 31,32,33,34)**  
**(terminal 91,92,93,94,95)**

**Input: Namur sensor, Contact Sensor, Switch**  
**CH1 (terminal 41,42,43,44)**  
**CH2 (terminal 51,52,53,54)**

**Output:****Terminal CH1(11,12) CH2(13,14)****Digital output: NPN output:**

Voltage max. 30 VDC

Current max. 80 mA

**Terminal CH1(11,12) CH2(13,14)****Relay output:**

Voltage max. 250 VAC / 30 VDC

Power max. 500 VA / 60 W

Current max. 2 AAC / 2 ADC

**Zone 2 installation**

32 V AC / 30 VDC

64 VA / 60 W

2 AAC / 2 ADC

For installation in Zone 2, the module shall be installed in an enclosure in type of protection Ex n or Ex e, providing a degree of protection of at least IP54. Cable entry devices and blanking elements shall fulfill the same requirements.

For installation on Power Rail in Zone 2, only Power Rail type 9400 supplied by Power Control Unit type 9410 (Type Examination Certificate KEMA 07ATEX0152 X) is allowed.

For Installation in Zone 2 / Division 2 the following must be observed.

The 4501 programming module is to be used solely with PR electronics modules. It is important that the module is undamaged and has not been altered or modified in any way. Only 4501 modules free of dust and moisture shall be installed.

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2016-04-07

Version Revision  
V5 R0

Prepared by:  
PB

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## IECEx Installation drawing



For safe installation of 9202 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.



For Installation in Zone 2 / Division 2 the following must be observed.  
The 4501 programming module is to be used solely with PR electronics modules. It is important that the module is undamaged and has not been altered or modified in any way. Only 4501 modules free of dust and moisture shall be installed.

<b>IECEx Certificate</b>	KEM 06.0039 X
<b>Marking 9202Bxx</b>	[Ex ia Ga] IIC/IIB/IIA Ex nA nC IIC T4 Gc [Ex ia Da] IIIC [Ex ia Ma] I
<b>Marking 9202Axx</b>	Ex nA nC IIC T4 Gc
<b>Standards</b>	IEC60079-15 :2005, IEC60079-11:2011, IEC60079-0: 2011

### Supply terminal (31,32)

Voltage: 19.2 – 31.2 VDC

### Status Relay. terminal (33,34)

### Zone 2 Installation

Voltage max:	125 VAC / 110 VDC	32 VAC / 32 VDC
Power max:	62.5 VA / 32 W	16 VA / 32 W
Current max:	0.5 AAC / 0.3A DC	0.5 AAC / 1 ADC

### Installation notes.

Install in pollution degree 2, overvoltage category II as defined in IEC60664-1

Do not separate connectors when energized and an explosive gas mixture is present.  
Do not mount or remove modules from the Power Rail when an explosive gas mixture is present.  
Disconnect power before servicing.  
The wiring of unused terminals is not allowed.

In type of protection [Ex ia Da] the parameters for intrinsic safety for gas group IIB are applicable.

For installation in Zone 2, the module shall be installed in an enclosure in type of protection Ex n or Ex e, providing a degree of protection of at least IP54. Cable entry devices and blanking elements shall fulfill the same requirements.

For installation on Power Rail in Zone 2, only Power Rail type 9400 supplied by Power Control Unit type 9410 (Type Examination Certificate KEMA 07ATEX0152 X) is allowed.

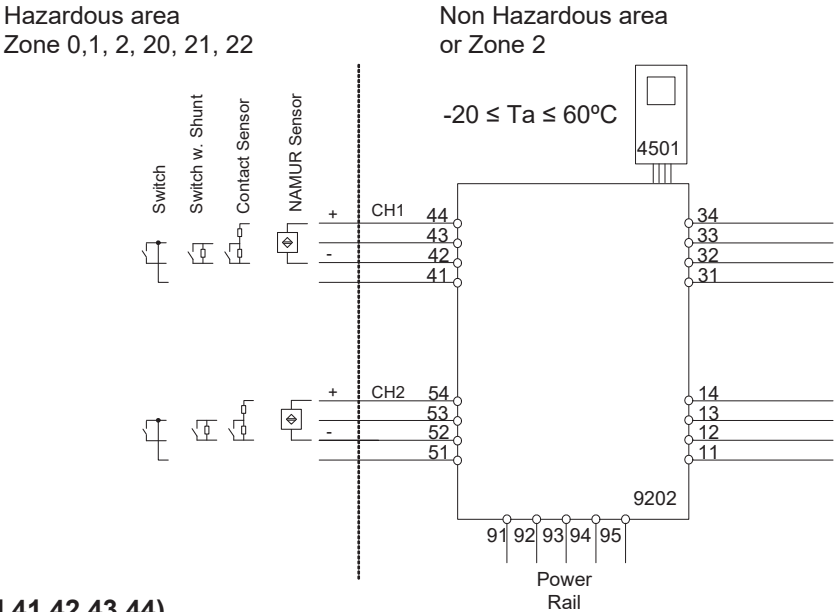
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9202Bxx Installation:



**Ex input:**  
**CH1 (terminal 41,42,43,44)**  
**CH2 (terminal 51,52,53,54)**

U<sub>o</sub>:10.6 VDC  
I<sub>o</sub>: 12 mADC  
P<sub>o</sub>: 32 mW  
L<sub>o</sub>/R<sub>o</sub>:1150  $\mu\text{H}/\Omega$

U<sub>m</sub>: 253 V max. 400 Hz

**Supply / Output:**  
**(terminal 11,12,13,14)**  
**(terminal 31,32,33,34)**  
**(terminal 91,92,93,94,95)**

	IIC	IIB	IIA	I
C <sub>o</sub> .	2.0 $\mu\text{F}$	6.0 $\mu\text{F}$	18 $\mu\text{F}$	90 $\mu\text{F}$
L <sub>o</sub> .	260 mH	780 mH	1000 mH	1000 mH

**Terminal CH1(11,12) CH2(13,14)**

<b>Digital output:</b>	<b>NPN output:</b>
Voltage max.	30 VDC
Current max.	80 mA

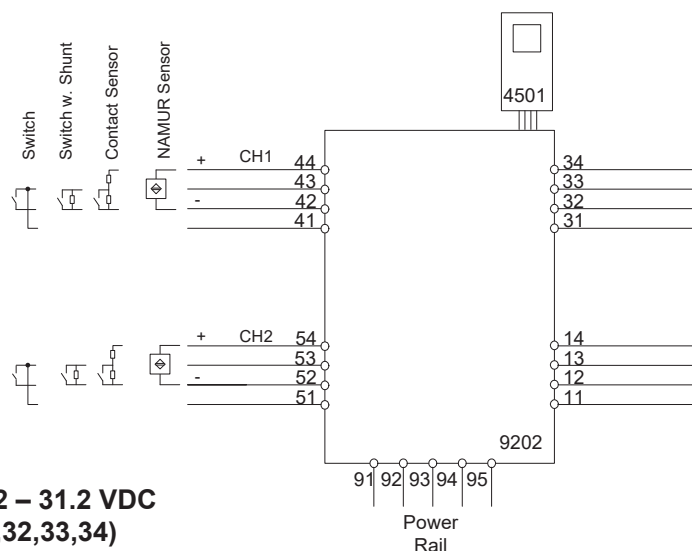
**Terminal CH1(11,12) CH2(13,14)**

<b>Relay output:</b>	<b>Non Hazardous location</b>	<b>Zone 2 installation</b>
Voltage max.	250 VAC / 30 VDC	32 V AC / 30 VDC
Power max.	500 VA / 60 W	64 VA / 60 W
Current max.	2 AAC / 2 ADC	2 AAC / 2 ADC

## 9202Axx Installation:

Non Hazardous area or Zone 2

$-20 \leq T_a \leq 60^\circ\text{C}$



**Supply: 19.2 – 31.2 VDC**  
**(terminal 31,32,33,34)**  
**(terminal 91,92,93,94,95)**

**Input: Namur sensor, Contact Sensor, Switch**  
**CH1 (terminal 41,42,43,44)**  
**CH2 (terminal 51,52,53,54)**

### Output:

**Terminal CH1(11,12) CH2(13,14)**

Digital output:	NPN output:
Voltage max.	30 VDC
Current max.	80 mA

**Terminal CH1(11,12) CH2(13,14)**

Relay output:	Non Hazardous location	Zone 2 installation
Voltage max.	250 VAC / 30 VDC	32 V AC / 30 VDC
Power max.	500 VA / 60 W	64 VA / 60 W
Current max.	2 AAC / 2 ADC	2 AAC / 2 ADC

For installation in Zone 2, the module shall be installed in an enclosure in type of protection Ex n or Ex e, providing a degree of protection of at least IP54. Cable entry devices and blanking elements shall fulfill the same requirements.

For installation on Power Rail in Zone 2, only Power Rail type 9400 supplied by Power Control Unit type 9410 (Type Examination Certificate IECEx 08.0052X) is allowed.

For Installation in Zone 2 / Division 2 the following must be observed.

The 4501 programming module is to be used solely with PR electronics modules. It is important that the module is undamaged and has not been altered or modified in any way. Only 4501 modules free of dust and moisture shall be installed.



# FM Installation drawing



For safe installation of 9202B 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.



For Installation in Zone 2 / Division 2 the following must be observed.  
The 4501 programming module is to be used solely with PR electronics modules. It is important that the module is undamaged and has not been altered or modified in any way. Only 4501 modules free of dust and moisture shall be installed.

c-FM-us Certificate 3034430

## Hazardous area

Class I/II/III, Division 1, Group A,B,C,D,E,F,G  
or Class I, Zone 0/1 Group IIC, [AEx ia] IIC or  
or Class I, Zone 0/1 Group IIC, [Ex ia] IIC

Simple Apparatus or  
Intrinsically safe apparatus  
with entity parameters:

$$V_{max}(U_i) \geq V_t(U_o)$$

$$I_{max}(I_i) \geq I_t(I_o)$$

$$P_i \geq P_t(P_o)$$

$$C_a(C_o) \geq C_{cable} + C_i$$

$$L_a(L_o) \geq L_{cable} + L_i$$

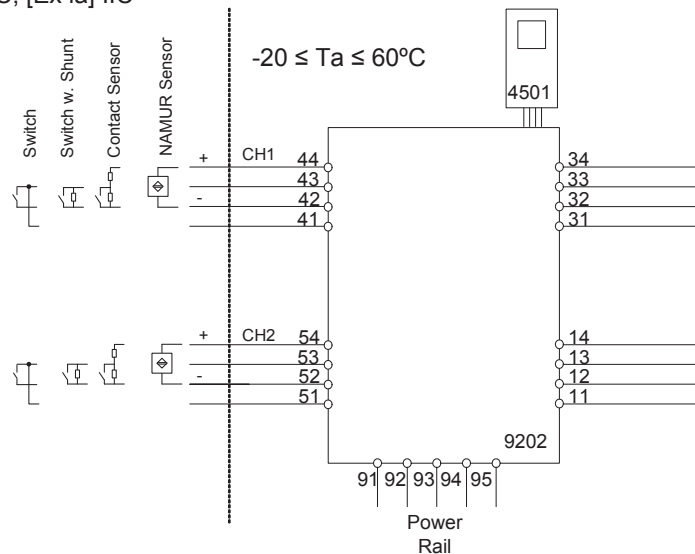
$U_o / V_t$ : 10.6 V  
 $I_o / I_{sc}$ : 12 mA  
 $P_o / P_t$ : 32 mW  
 $L_o / R_o \ L_a / R_a$ : 1150  $\mu$ H/ $\Omega$

Group	IIC	IIB	IIA
Group	A,B	C,E,F	D,G
$C_o / C_a$	2.0 $\mu$ F	6.0 $\mu$ F	18 $\mu$ F
$L_o / L_a$	260 mH	780 mH	1000 mH

**Terminal CH1(44,42) CH2(54,52)**

## Non Hazardous area or

Class I, Division 2, Group A,B,C,D T4  
or Class I, Zone 2 Group IIC T4



$U_m$ : 253 V max. 400 Hz

**Supply / Output**  
(terminal 11,12,13,14)  
(terminal 31,32,33,34)  
(terminal 91,92,93,94,95)

Revision date:  
2011-11-20

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**Terminal (31,32)****Supply:**

Voltage	19.2 – 31.2 VDC
Power	max. 3 W

**Terminal (33,34)****Status Relay:**

Voltage max.	125 VAC / 110 VDC	<b>Division 2 or Zone 2 installation:</b> 32 VAC / 32VDC
Power max.	62.5 VA / 32 W	16 VA / 32 W
Current max.	0.5 AAC / 0.3 ADC	0.5 AAC / 1 ADC

**Terminal CH1(11,12) CH2(13,14)****Digital output:**

Voltage max.	30 VDC
Current max.	80 mA

**NPN output:****Terminal CH1(11,12) CH2(13,14)****Relay output:**

Voltage max.	250 VAC / 30VDC	<b>Division 2 or Zone 2 installation:</b> 32 VAC / 30VDC
Power max.	500 VA / 60W	64 VA / 60 W
Current max.	2 AAC / 2ADC	2 AAC / 2 ADC

**Installation notes:**

The installation and wiring shall be in accordance with the Canadian Electrical Code for Canada and National Electrical Code NFPA 70, Article 500 or 505 for installation in USA.

The module must be supplied from a Power Supply having double or reinforced insulation.

The use of stranded wires is not permitted for mains wiring except when wires are fitted with cable ends.

For installation on the 9400 Power Rail the power must be supplied from Power Control Module Unit 9410.

Install in pollution degree 2, overvoltage category II.

The module must be installed in an enclosure suitable for the environment for which it is used.

For installation in Zone 2 or Division 2, the module must be installed in a suitable outer enclosure according to the regulations in the CEC for Canada or NEC for USA.

The module is galvanically isolated and does not require grounding.

Use 60 / 75 °C copper conductors with wire size AWG: (26-14).

**Warning:** Substitution of components may impair intrinsic safety and / or suitability for Div. 2 / Zone 2.

**Warning:** To prevent ignition of explosive atmospheres, disconnect power before servicing and do not separate connectors when energized and an explosive gas mixture is present.

**Warning:** Do not mount or remove modules from the Power Rail when an explosive gas mixture is present.



## INMETRO Desenhos para Instalação

Para instalação segura do 9202B o manual seguinte deve ser observado. O módulo deve ser instalado somente por profissionais qualificados que estão familiarizados com as leis nacionais e internacionais, diretrizes e normas que se aplicam a esta área.

Ano de fabricação pode ser obtido a partir dos dois primeiros dígitos do número de série.



Para a instalação na Zona 2 o seguinte deve ser observado. O módulo de programação de 4501, deve ser utilizado apenas com os módulos PRelectronics. É importante que o módulo esteja intacto e não tenha sido alterado ou modificado de qualquer maneira. Apenas os módulos 4501 livres de poeira e umidade devem ser instalados.

**INMETRO Certificado ..... DEKRA 16.0005X**

### Marcasão

[Ex ia Ga] IIC/IIB/IIA  
Ex nA nC IIC T4 Gc  
[Ex ia Da] IIIC  
[Ex ia Ma] I

### Normas:

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

### Terminais de fonte de alimentação (31,32)

Voltagem: 19.2 – 31.2 VDC

### Relê de estado. terminais (33,34)

Voltagem máx.: 125 VAC / 110 VDC  
Potência máx.: 62,5 VA / 32 W  
Corrente máx.: 0,5 A AC / 0,3 ADC

### Instalação Zona 2

32 VAC / 32 VDC  
16 VA / 32 W  
0,5 A AC / 1 ADC

### Notas de instalação:

Instalação em grau de poluição 2, categoria de sobretensão II conforme definido no IEC 60664-1. Os circuitos não intrinsecamente seguros só pode ser connectado para sobretensão limitado ao categoria I/II como definido na IEC 60664-1

Não separe conectores quando energizado ou quando uma mistura de gás explosivo estiver presente.

Não monte ou remova módulos do trilho de alimentação quando uma mistura de gás explosivo estiver presente.

Desligue a alimentação antes da manutenção.

A fiação de terminais sem uso não é permitida.

A fonte de Loop e terminais de entrada de corrente para o mesmo canal não deve ser aplicada ao mesmo tempo.

Em tipo de proteção [Ex ia Da] os parâmetros para a segurança intrínseca para grupo de gás IIB são aplicáveis.

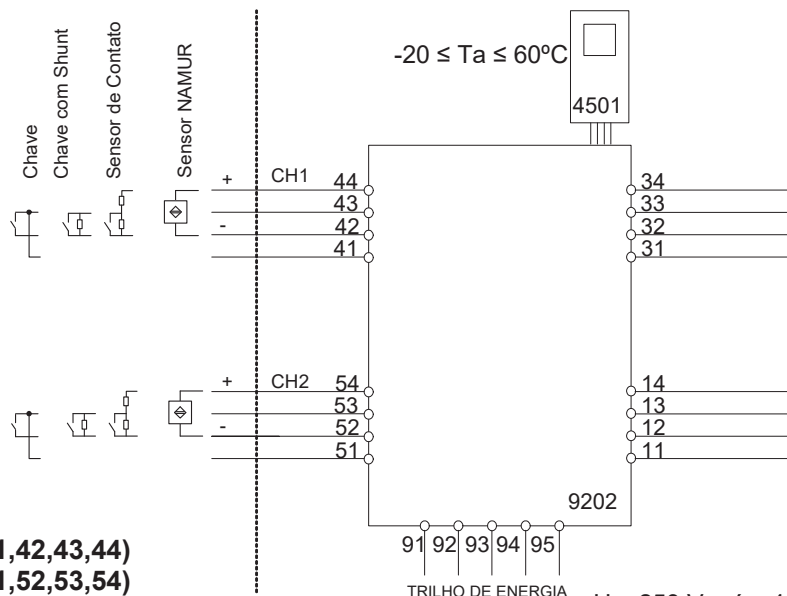
Para a instalação em Zona 2, o módulo deve ser instalado em um invólucro conformidade com o tipo de proteção 'Ex n' ou 'Ex e', fornecendo no mínimo grau de proteção IP54

Dispositivos de entrada de cabo e elementos de vedação devem cumprir com os mesmos requisitos.

Para a instalação de trilho de energia na Zona 2, apenas o trilho de alimentação Rail 9400 fornecido pela Unidade de Controle de Potência 9410 é permitido.

Área de classificada  
Zona 0,1, 2, 20, 21, 22

Área de não classificada  
ou Zona 2



**Entrada Ex:**

**CN1 (terminais 41,42,43,44)**

**CN2 (terminais 51,52,53,54)**

$U_o$ : 10,6 VDC

$I_o$ : 12 mADC

$P_o$ : 32 mW

$L_o/R_o$ : 1150  $\mu\text{H}/\Omega$

$U_m$ : 253 V máx. 400 Hz

**Fonte / Saída:**

**(terminais 11,12,13,14)**

**(terminais 31,32,33,34)**

**(terminais 91,92,93,94,95)**

	IIC	IIB	IIA	I
$C_o$	2,0 $\mu\text{F}$	6,0 $\mu\text{F}$	18 $\mu\text{F}$	90 $\mu\text{F}$
$L_o$	260 mH	780 mH	1000 mH	1000 mH

**Terminais CN1(11,12) CN2(13,14)**

**Saída Digital:**

Voltagem máx.

Corrente máx.

**Saída NPN:**

30 VDC

80 mA

**Terminais CN1(11,12) CN2(13,14)**

**Saída relê:**

Voltagem máx..

Potência máx..

Corrente máx..

**Área de não classificada**

250 VAC / 30 VDC

500 VA / 60 W

2 AAC / 2 ADC

**Instalação ZONA 2**

32 V AC / 30 VDC

64 VA / 60 W

2 AAC / 2 ADC

## Document history

The following list provides notes concerning revisions of this document.

Rev. ID	Date	Notes
106	1907	Specifications for max. required power added ATEX and IECEx installation drawings updated New INMETRO certificate and installation drawing

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