

PERFORMANCE  
MADE  
SMARTER

# Product manual

## 9202

### *Pulse isolator*



Segurança  
INMETRO



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

No. 9202V112-UK  
Product version: 9202-003

**PR**  
electronics

# 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 PR 4500 communication interfaces.

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.



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



**The UKCA mark** proves the compliance of the device with the essential requirements of the UK regulations.



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



**Ex devices** have been approved according to the ATEX directive / UKEX regulations for use in connection with installations in explosive areas.

## 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.

The device is designed for indoor use.

## 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

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

Stranded wire should be installed with an insulation stripping length of 5 mm or via a suitable insulated terminal such as a bootlace ferrule.

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

The device must be supplied from a Power Supply with electrical protection feature SELV or otherwise confirmed to have double or 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.

Label example

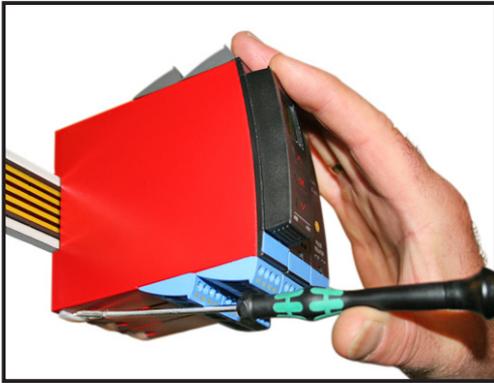
9202B2B  
SN: 123456789  
TAG: Tag1234

<b>PR</b> PR electronics A/S, Lerbakken 10, 8410 Roende pr@prelectronics.com, www.prelectronics.com Phone +45 8637 2077, Denmark.		LabelRevision	
41: Input ch1 42: Input ch1 43: Input ch1 44: Input ch1 51: Input ch2 52: Input ch2 53: Input ch2 54: Input ch2	SW. Sense Namur - SW. Supply Namur + SW. Sense Namur - SW. Supply Namur +	31: Supply - 32: Supply + 33: Status 34: Status 11: Output ch1 12: Output ch1 13: Output ch2 14: Output ch2	19.2 to 31.2 VDC max. 3 W Relay N.C. Relay 1 N.O. Relay 2 N.O.
<input type="checkbox"/> (I) <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) DEKRA 23JKEK0102X <input type="checkbox"/> (I) <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) KEMA 07ATEK0146X <input type="checkbox"/> (M) <input type="checkbox"/> (I) <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (M) <input type="checkbox"/> (a) <input type="checkbox"/> (I) DEKRA 21JKEK0178X <input type="checkbox"/> (M) <input type="checkbox"/> (I) <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (M) <input type="checkbox"/> (a) <input type="checkbox"/> (I) KEMA 07ATEK0146X Install: 9202QB1		<input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) DEKRA 23JKEK0102X <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) KEMA 07ATEK0146X <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) DEKRA 21JKEK0178X <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) KEMA 07ATEK0146X Install: 9202QB1	
FM Approved FM19CAG0228X FM19CAG0228X FM19CAG0228X Install: 9202QB1		Attention! Read manual before installation / operation. Lire manuel avant installation / operation.	
Segurancas <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) DEKRA 23JKEK0102X <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) KEMA 07ATEK0146X <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) DEKRA 21JKEK0178X <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) KEMA 07ATEK0146X Install: 9202QB1		Ex-ERIC <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) DEKRA 23JKEK0102X <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) KEMA 07ATEK0146X <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) DEKRA 21JKEK0178X <input type="checkbox"/> (E) <input type="checkbox"/> (a) <input type="checkbox"/> (G) <input type="checkbox"/> (C) <input type="checkbox"/> (B) <input type="checkbox"/> (I) <input type="checkbox"/> (A) KEMA 07ATEK0146X Install: 9202QB1	
UK CA CE 8505 0344		ClassNK APPROVED -20°C ≤ Ta ≤ +60°C	
PULSE ISOLATOR		9202	

## Marking

When this product has been installed as Ex ia or / and ec, use a permanent marker in the appropriate box to indicate the type of installation on the label.

# How to demount system 9000



Picture 1:

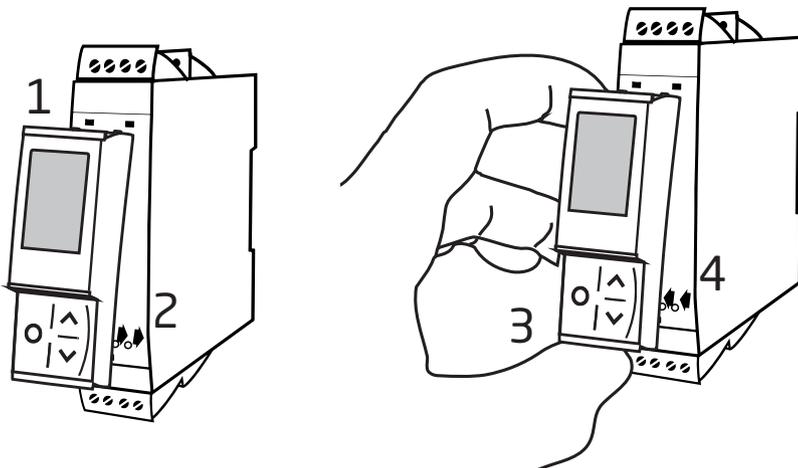
By lifting the bottom lock, the device is detached from the DIN rail.

## Mounting the PR 4500 communication interfaces

- 1: Insert the tabs of the PR 4500 into the slots at the top of the device.
- 2: Hinge the PR 4500 down until it snaps into place.

## Demounting of the PR 4500 communication interfaces

- 3: Push the release button on the bottom of the PR 4500 and hinge the PR 4500 out and up.
- 4: With the PR 4500 hinged up, remove from the slots at the top of the device.



# 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 4500).
- Selection of direct or inverted function for each channel via PR 4500.
- 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

- 9202Axxx can be mounted in the safe area and in zone 2 / Class 1, Division 2, Group A, B, C, D.
- 9202Bxxx can be mounted in the safe area and in zone 2 / Class 1, Division 2 and receive signals from zone 0, 1, 2 and zone 20, 21, 22 including M1 / Class I/II/III, Division 1, Group 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.
- Suitable for the use in systems up to Performance Level "d" according to ISO-13849.

## 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.

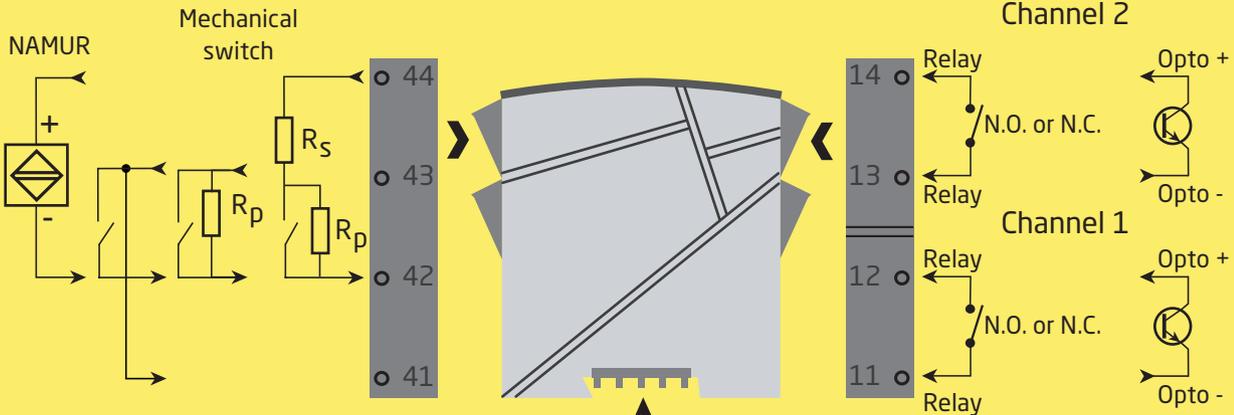
# Applications - 9202Axxx

Input signals:

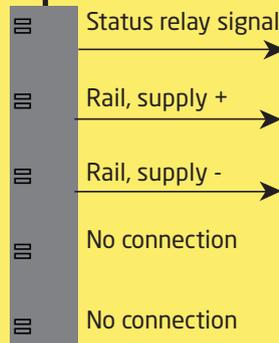
Output signals:

Channel 1

Channel 2

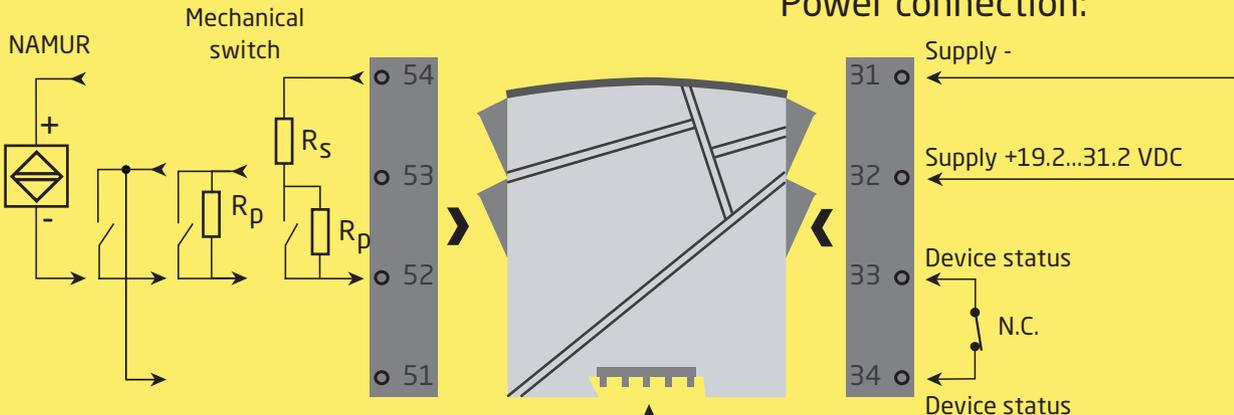


Power rail



Channel 2

Power connection:



Supply via power rail

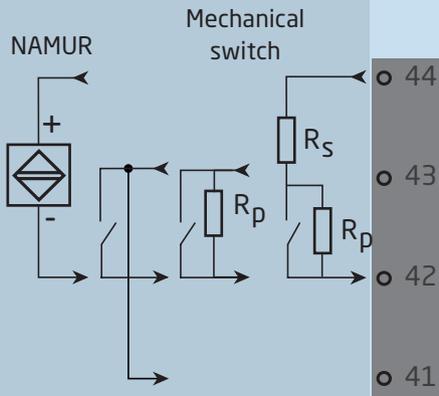
**Zone 2 & Cl. 1, Div. 2, gr. A-D or Safe Area**



# Applications - 9202Bxxx

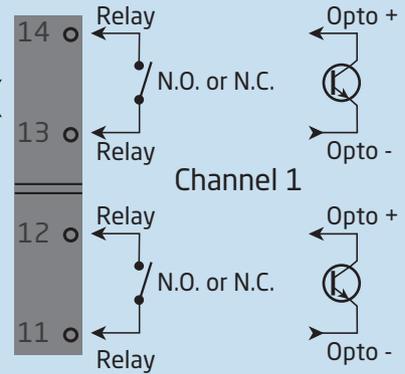
## Input signals:

### Channel 1

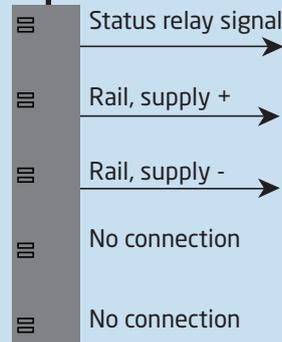


## Output signals:

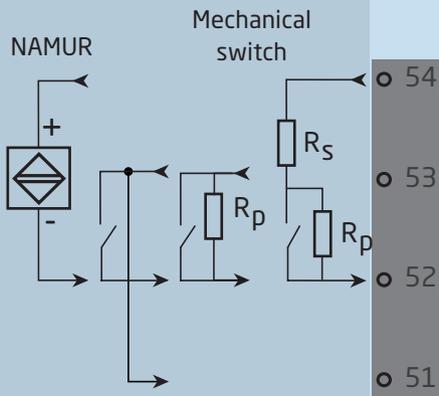
### Channel 2



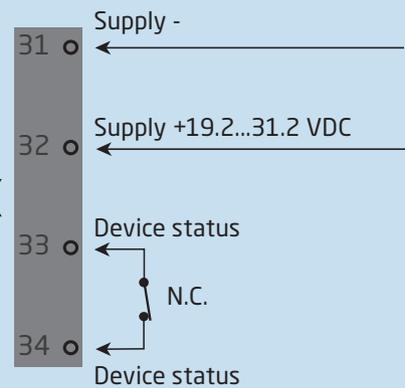
## Power rail



### 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**

## Order

Type	Associated apparatus	Version	Unit channels	I.S. / Ex approvals
9202	No : A	Opto : 1	Single : A	ATEX, IECEX, FM, : - INMETRO, CCC, EAC-Ex, UKEX
	Yes : B	Relay N.O. : 2	Double : B	UL 913, ATEX, IECEX, FM, : -U9 INMETRO, CCC, EAC-Ex, UKEX
		Relay N.C. : 3		KCs, ATEX, IECEX, FM, : -KCs INMETRO, CCC, EAC-Ex, UKEX

Example: 9202B2B

## Accessories

4510	= Display / programming front
4511	= Modbus communication enabler
4512	= Bluetooth communication enabler
9400	= Power rail
9404	= Module stop for rail
9410	= Power control unit
9421	= Power supply 24 V - Ex ec nC

## 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/ PR 4500 . . . . .	109 x 23.5 x 131 mm
Weight approx. . . . .	170 g
DIN rail type. . . . .	DIN EN 60715 - 35 mm
Wire size. . . . .	0.13...2.08 mm <sup>2</sup> / AWG 26...14 stranded wire
Stripping length . . . . .	5 mm
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
9202x1Ax	1 ch., opto	≤ 1.2 W	≤ 1.1 W
9202x1Bx	2 ch., opto	≤ 1.6 W	≤ 1.5 W
9202x2Ax	1 ch., relay N.O.	≤ 1.2 W	≤ 1.3 W
9202x2Bx	2 ch., relay N.O.	≤ 1.8 W	≤ 1.9 W
9202x3Ax	1 ch., relay N.C.	≤ 1.2 W	≤ 1.3 W
9202x3Bx	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 PR 4500, then add 40 mW to the max. power dissipation and 70 mW to the max. required power for each device with the PR 4500.

#### 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 . . . . . PR 4500

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 Ω

Rp . . . . . Nom. 15 kΩ

Frequency range . . . . . 0...5 kHz

Min. pulse length. . . . . > 0.1 ms

Input resistance . . . . . Nom. 1 kΩ

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 & UK SI 2016/1091
ATEX . . . . .	2014/34/EU & UK SI 2016/1107
LVD . . . . .	2014/35/EU & UK SI 2016/1101
RoHS . . . . .	2011/65/EU & UK SI 2012/3032

**Approvals**

DNV, Ships & Offshore. . . . .	TAA00000JD
ClassNK . . . . .	TA24034M
c UL us, UL 61010-1. . . . .	E314307
EAC . . . . .	TR-CU 020/2011
EAC LVD . . . . .	TR-CU 004/2011
EAC Ex . . . . .	TR-CU 012/2011

**I.S. / Ex**

ATEX . . . . .	KEMA 07ATEX0146X
IECEX . . . . .	IECEX KEM 06.0039X
UKEX . . . . .	DEKRA 21UKEX0179X / DEKRA 23UKEX0105X
c FM us. . . . .	FM19US0055X / FM19CA0028X
INMETRO . . . . .	DEKRA 23.0007X
c UL us, UL 913 (only 9202xxx-U9) . . . . .	E233311
KCs (only 9202xxx-KCs) . . . . .	21-AV4B0-0179X / 21-AV4B0-0180X / 21-AV4B0-0181X
CCC . . . . .	2020322309003424
EAC Ex . . . . .	EAEU KZ 7500361.01.01.08756

**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 PR 4500 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 PR 4500
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.

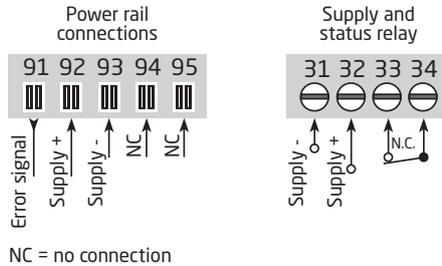
Hardware error can be reset in two ways. Either step through the menus (if the other channel is to stay in operation) or power cycle the device.

# Function description

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

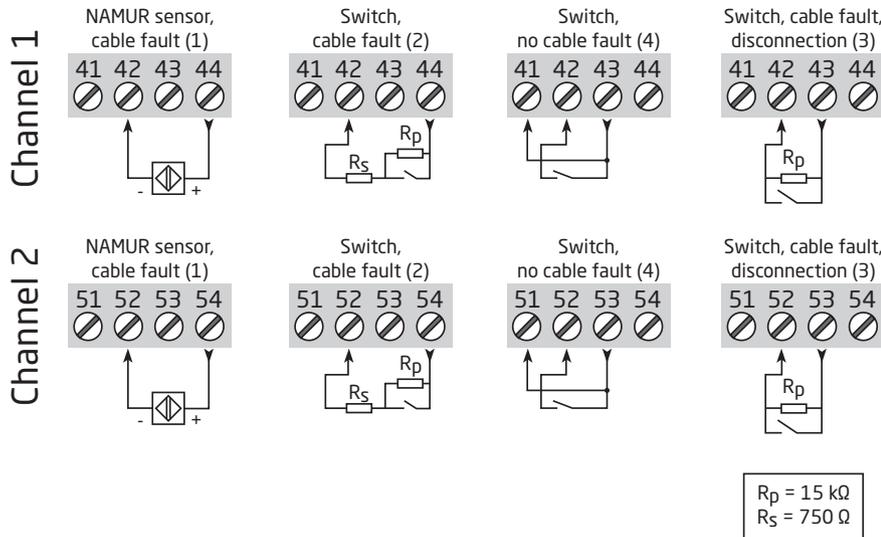
- (1) NAMUR sensor with cable error detection in case of cable disconnection or short-circuit.
- (2) Mechanical contact with cable error detection in case of cable disconnection or short-circuit, when  $R_s$  and  $R_p$  are mounted on the contact.
- (3) Mechanical contact with cable error detection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

## Connections

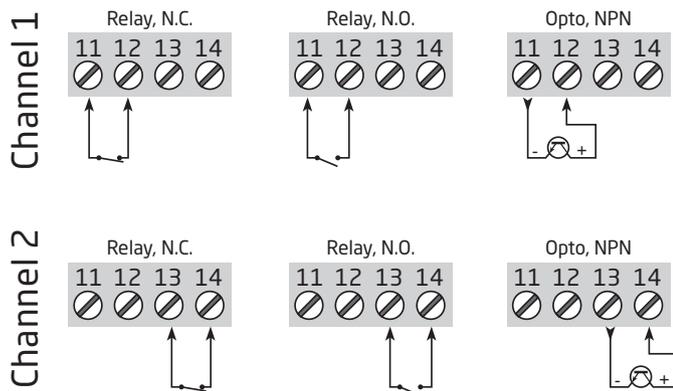


### Inputs:

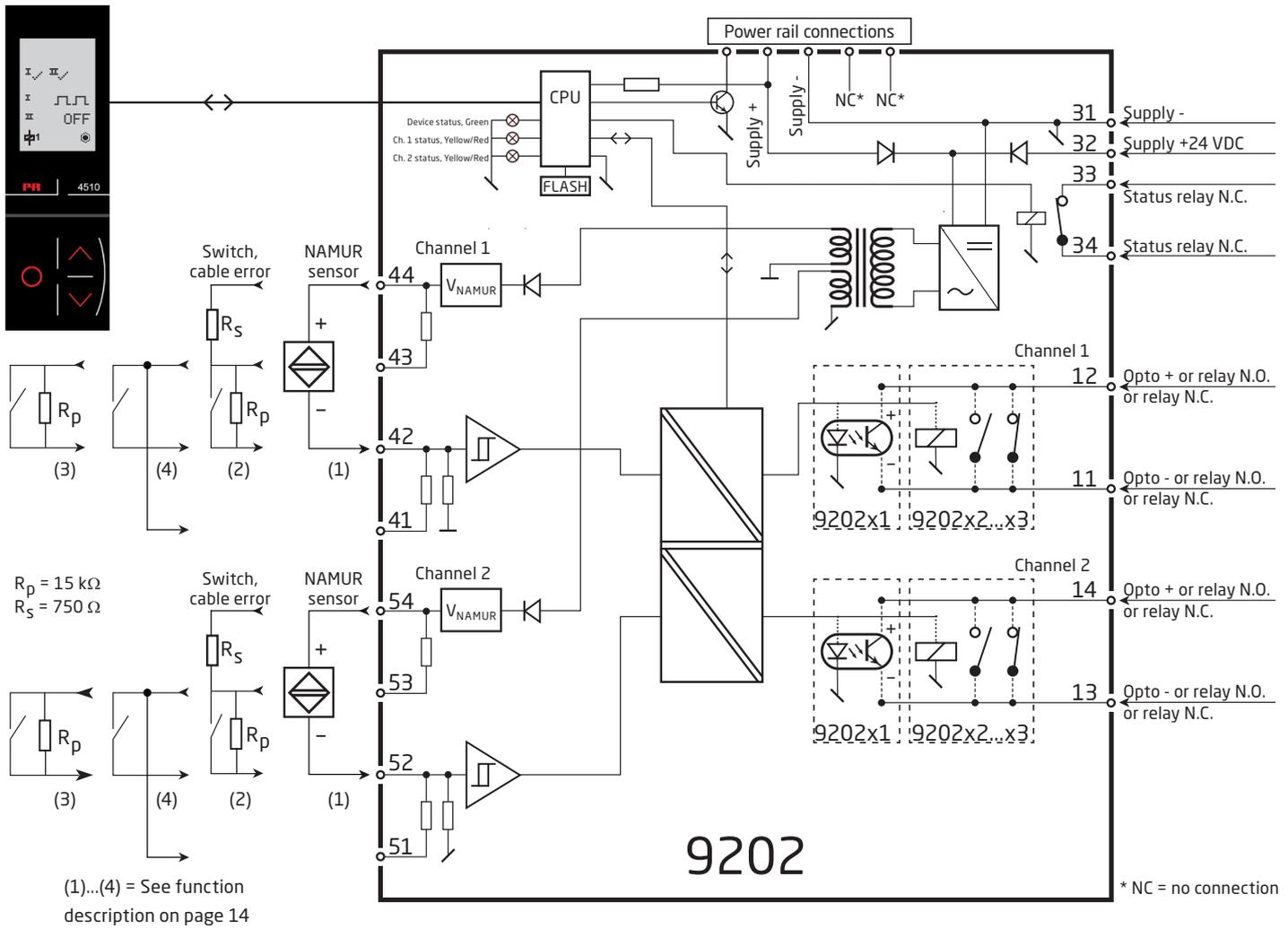
(1)...(4) = See function description on page 12



### 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 unauthorized modifications to the configuration. If the configured password is not known, please contact PR electronics support - [www.prelectronics.com/contact](http://www.prelectronics.com/contact).

## Cable fault information via display front PR 4500

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 alphanumeric. 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.

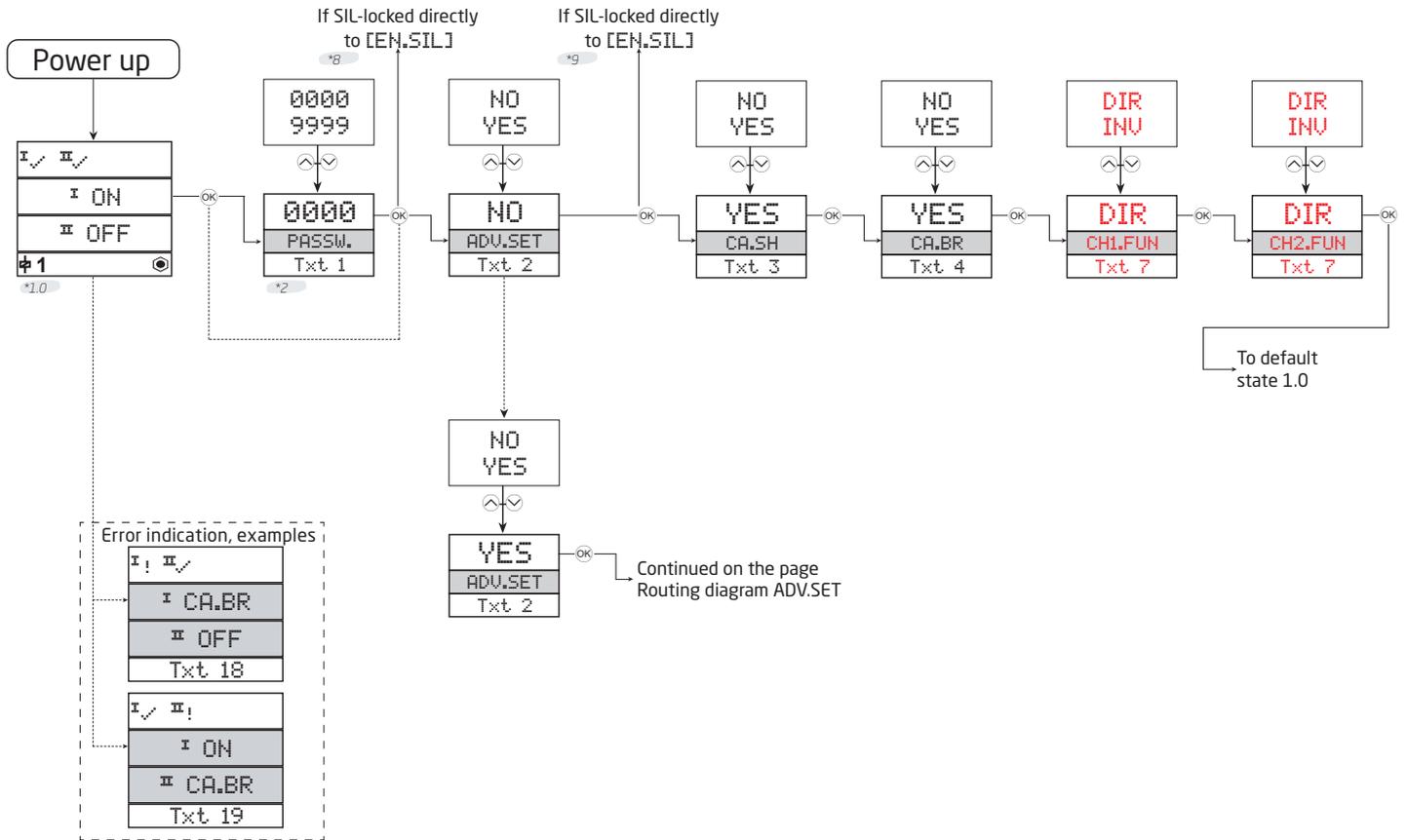
**Safety Integrity Level (SIL):** See Safety Manual for details.



# 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.

\*2 Only if password-protected.

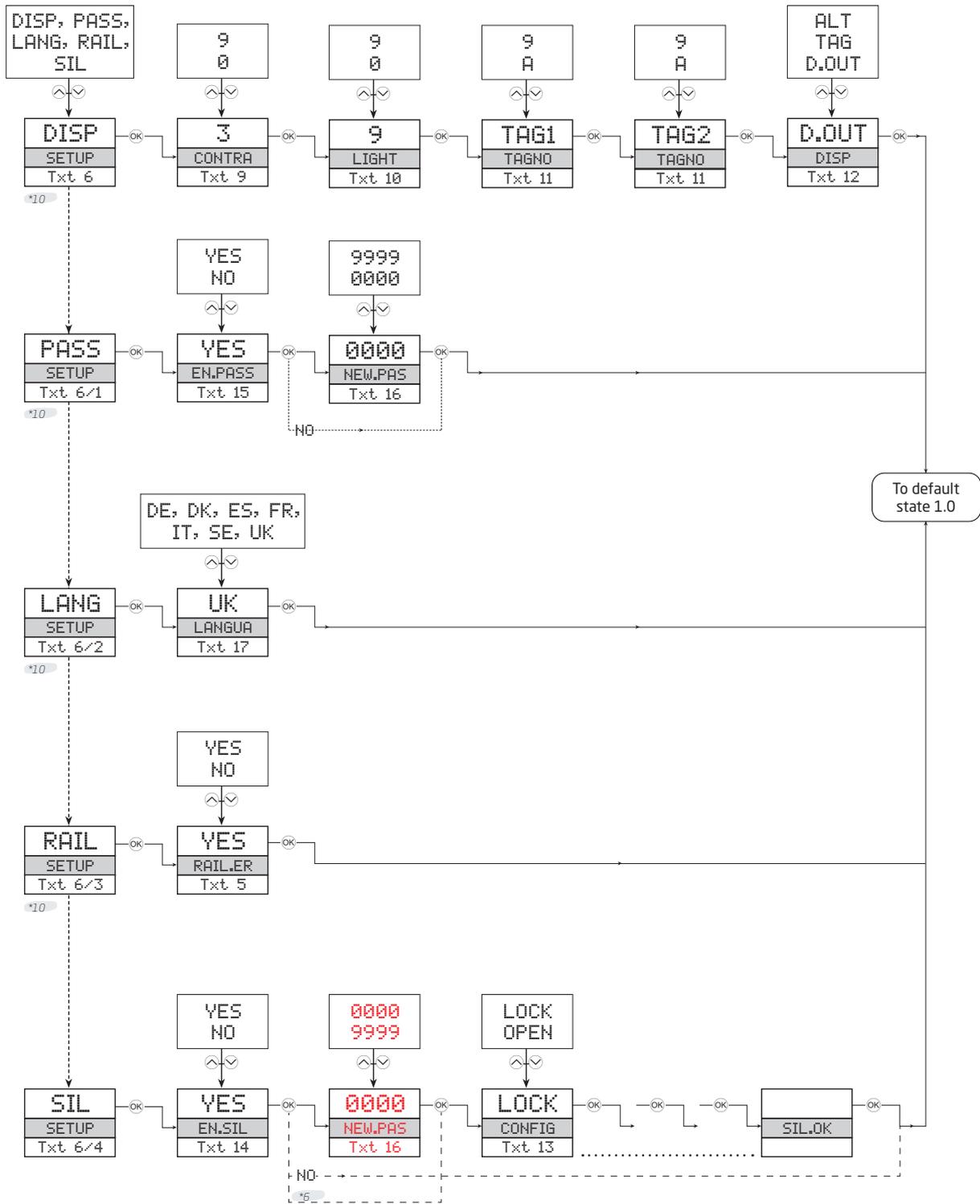
Line 1 symbols:  
 ✓ = OK. Flashing ! = error.  
 Line 2 and 3 symbols:  
 Input frequency > 1 Hz =  $\square$   $\square$   $\square$   
 Line 4 symbols:  
 Static dot = SIL-locked  
 Flashing dot = Not SIL-locked

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

\*8 Branching to SIL from this point valid for:  
 All 4501 devices.  
 4511 devices with serial no. lower than 211001001.  
 4512 devices with serial no. lower than 211065001.

\*9 Branching to SIL from this point valid for:  
 4511 devices with serial no from 211001001.  
 4512 devices with serial no from 211065001.

# Routing diagram, advanced settings (ADV.SET)



\*6 If password has been set.

\*10 Not available on PR 4500 if SIL-locked.  
 Only for 4512 devices with serial no. from 211065001 and  
 for 4511 devices with serial no. from 211001001.

## Help text overview

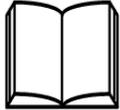
- [01] Set correct password [ PASS ]
- [02] Enter advanced setup [ ADV.SET ]
- [03] Enable cable short circuit error indication [ CA.SH ]
- [04] Enable cable breakage error indication? [ CA.BR ]
- [05] Enable rail status signal output? [ RAIL.ER ]
- [06] Enter language setup [ SETUP ]
- [6/1] Enter password 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 ]

## 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 ia Da] IIIC [Ex ia Ma] I
<b>Marking 9202Bxx, 9202Axx</b>	Ex ec nC IIC T4 Gc
<b>Standards</b>	IEC60079-0: 2017, IEC60079-11:2011, IEC60079-15 :2017, IEC60079-7:2015+A1:2017

### Supply terminal (31,32)

Voltage: 19.2 – 31.2 VDC

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

		Zone 2 Installation
Voltage max:	125 VAC / 110 VDC	32VAC / 32VDC
Power max:	62.5 VA / 32 W	16VA / 32W
Current max:	0.5 A AC / 0.3ADC	0.5A AC / 1ADC

### 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 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.

Max. screw terminal torque 0.5 Nm.

Stranded wire should be installed with an insulation stripping length of 5 mm or via a suitable insulated terminal such as a bootlace ferrule.

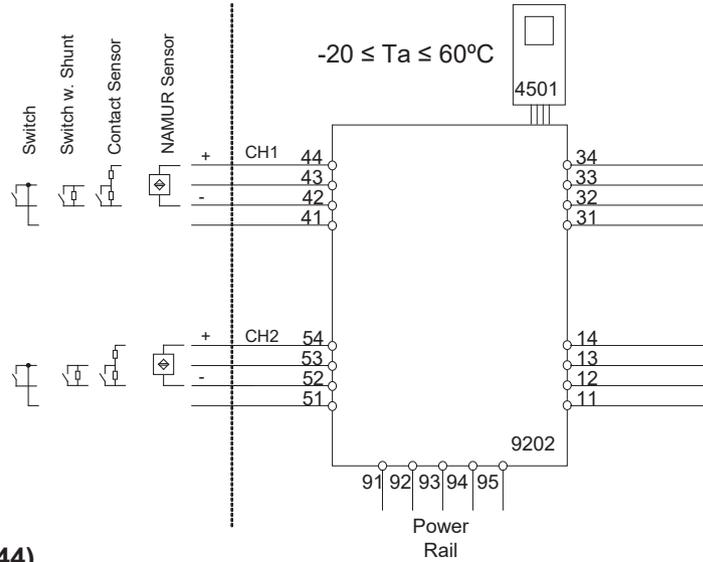
Revision date:	Version Revision	Prepared by:	Page:
2022-02-14	V6 R0	MMA	1/3

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**9202Bxx Installation:**

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

Non Hazardous area  
or Zone 2



**Ex input:**

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

$U_o$ : 10.6 VDC  
 $I_o$ : 12 mADC  
 $P_o$ : 32 mW  
 $L_o/R_o$ : 1150  $\mu$ H/ $\Omega$

$U_m$ : 253 V max. 400 Hz

**Supply / Output:**

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

	IIC	IIB	IIA	I
$C_o$	2.0 $\mu$ F	6.0 $\mu$ F	18 $\mu$ F	90 $\mu$ F
$L_o$	260 mH	780 mH	1000 mH	1000 mH

**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)**

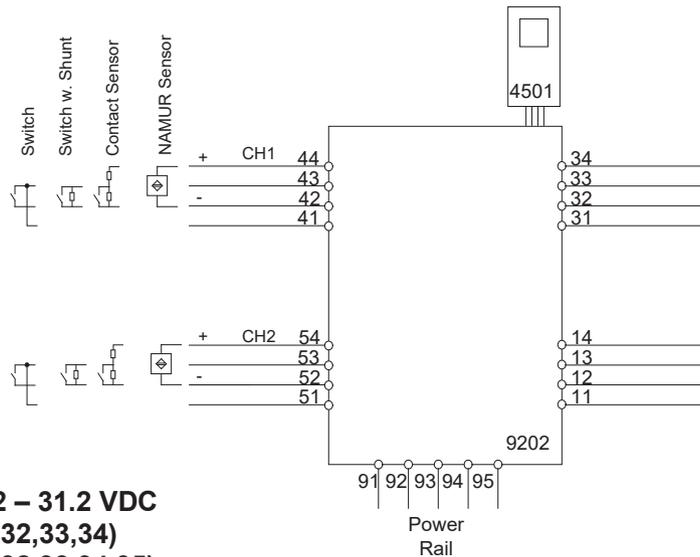
<b>Relay output:</b>	<b>Non Hazardous location</b>	<b>Zone 2 installation</b>
Voltage max.	250 VAC / 30 VDC	32 V AC / 30 VDC
Power max.	500 VA / 60 W	64 VA / 60 W
Current max.	2 AAC / 2 ADC	2 AAC / 2 ADC

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**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 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.

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## ATEX / UKEX 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**  
**UKEX Certificate, 9202B**  
**UKEX Certificate, 9202A, 9202B**

KEMA 07 ATEX 0146X  
 DEKRA 23UKEX0105X  
 DEKRA 21UKEX0179X

**Marking 9202Bxx**



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

**Marking 9202Bxx ,9202Axx**

II 3G Ex ec nC IIC T4 Gc

**Standards**

EN 60079-0 : 2018, EN 60079-11 : 2012,  
 EN 60079-15 : 2019, EN60079-7:2015+A1:2018

**Supply terminal (31,32)**

Voltage: 19.2 – 31.2 VDC

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

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

**Zone 2 Installation**

32 VAC / 32 VDC  
 16 VA / 32 W  
 0.5 AAC / 1 ADC

**Special Conditions of Use**

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.

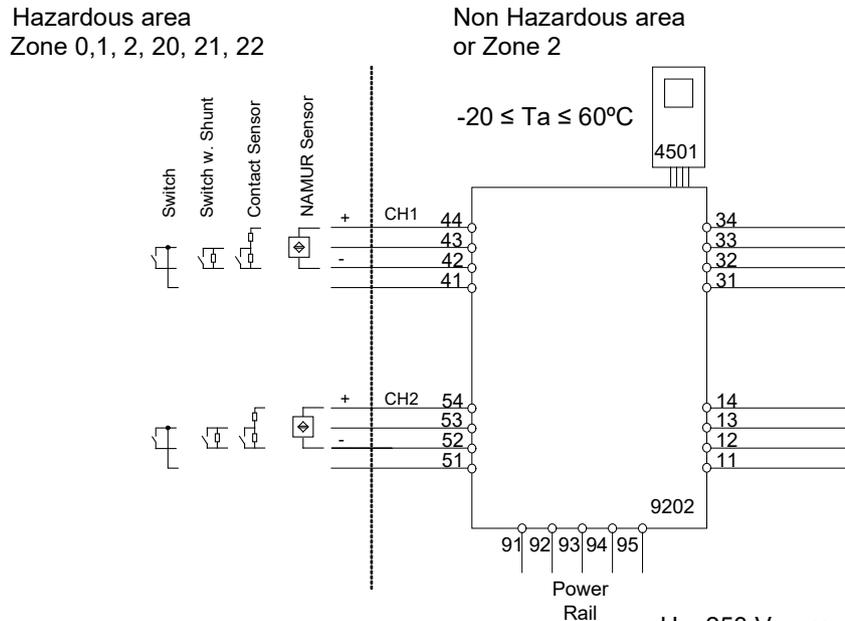
For installation in Zone 2, the module shall be installed in an enclosure in type of protection Ex e, providing a degree of protection of at least IP54. Cable entry devices and blanking elements shall fulfill the same requirements.

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, DEKRA 21UKEX0169 X) is allowed.

Max. screw terminal torque 0.5 Nm.

Stranded wire should be installed with an insulation stripping length of 5 mm or via a suitable insulated terminal such as a bootlace ferrule.

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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)**

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

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

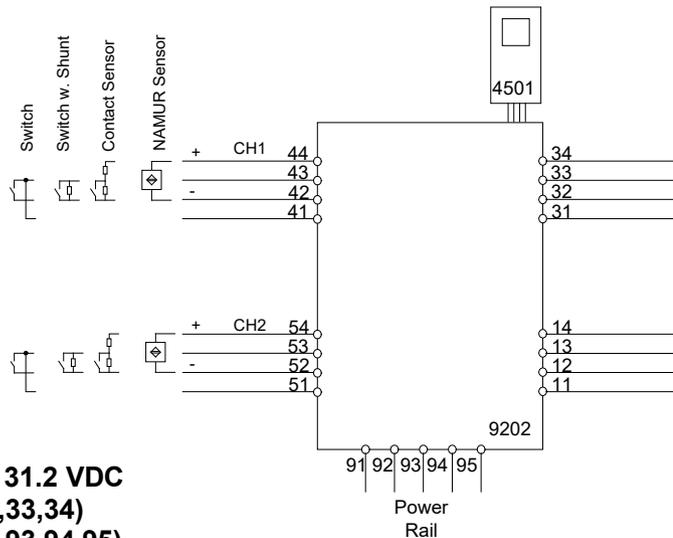
<b>Relay output:</b>	<b>Non Hazardous location</b>	<b>Zone 2 installation</b>
Voltage max.	250 VAC / 30 VDC	32 VAC / 30 VDC
Power max.	500 VA / 60 W	64 VA / 60 W
Current max.	2 AAC / 2 ADC	2 AAC / 2ADC

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**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

	Non Hazardous location	Zone 2 installation
<b>Terminal CH1(11,12) CH2(13,14)</b>		
<b>Relay output:</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

For installation in Zone 2, the module shall be installed in an enclosure in type of protection 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, DEKRA 21UKEX0169 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.

## 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.

### Hazardous Classified Location

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 Group IIC, [Ex ia Ga] IIC Gc

### Unclassified Location or

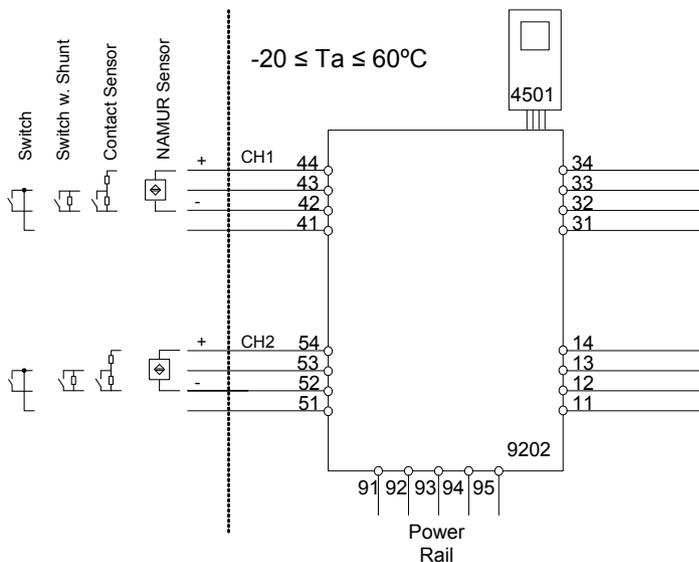
**Hazardous Classified Location**  
Class I, Division 2, Group A,B,C,D T4  
or Class I Zone 2 Group IIC T4 Gc

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)**



$U_m:$  253 V max. 400 Hz

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

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

Voltage 19.2 – 31.2 VDC  
Power max. 3 W

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

	<b>Non Hazardous location:</b>	<b>Division 2 or Zone 2 installation:</b>
Voltage max.	125 VAC / 110 VDC	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:**

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

**Installation notes:**

In Class I, Division 2 installations, the subject equipment shall be mounted within a too-secured enclosure which is capable of accepting one or more of the Class I, Division 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70), or the Canadian Electrical Code (C22.1).

In Class I, Zone 2 installations, the subject equipment shall be mounted within a tool secured enclosure which is capable of accepting one or more of the Class I, Zone 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70), or the Canadian Electrical Code (C22.1). Where installed in outdoor or potentially wet locations, the enclosure shall, at a minimum, meet the requirements of IP54.

In Class I, Zone 2 installations, the installer shall ensure protection of supply terminals against transient voltages exceeding 140% of the rated supply voltage.

Install in environments rated Pollution Degree 2 or better; overvoltage category I or II.

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.

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

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.

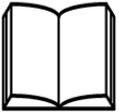
**Warning:** Do not mount or remove modules from the Power Rail when an explosive gas mixture is present.

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## UL Installation drawing



For safe installation of the Process Control Equipment (Associated Apparatus) 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.



For Installation in DIV2/Zone2 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

9202A1A-U9 and 9202B1A-U9: One channel Opto output  
 9202A1B-U9 and 9202B1B-U9: Two channel Opto output  
 9202A2A-U9 and 9202B2A-U9: One channel N.O. Relay output  
 9202A2B-U9 and 9202B2B-U9: Two channel N.O. Relay output  
 9202A3A-U9 and 9202B3A-U9: One channel N.C. Relay output  
 9202A3B-U9 and 9202B3B-U9: Two channel N.C. Relay output

9202abc-U9 where  
 a: A or B See below  
 b: 1=Opto, 2=N.O. Relay, 3= N.C. Relay  
 c: A= One Channel, B= Two Channel

### Marking:



Proc. Cont. Eq. for Use in Haz. Loc.  
 Install in CL I DIV2 GP A-D T4 provide  
 IS circuits to CL I-III DIV 1 GP A-G  
 or CL I Zn2 Gp IIC T4 provides IS  
 E233311 circuits for CL I Zn0 Gp IIC/Zn20 Gp IIC  
 Um=253V [Exia] Installation Drawing: 9202QU01

The 9202Bxx is galvanically isolating associated apparatus intended for installation in non-hazardous locations or Class I, Division 2, Groups A – D hazardous locations with intrinsically safe connections to Class I, II and III hazardous locations.



Proc. Cont. Eq. for Use in Haz. Loc.  
 Install in CL I DIV2 GP A-D T4  
 or CL I Zn2 Gp IIC T4  
 E233311 Installation Drawing: 9202QU01

The 9202Axx equipment is intended for installation in non-hazardous locations or Class I, Division 2, Groups A – D or Zone 2 Group IIC hazardous locations.

### Standards:

- UL 121201 NONINCENDIVE ELECTRICAL EQUIPMENT FOR USE IN CLASS I AND II, DIVISION 2 AND CLASS III, DIVISIONS 1 AND 2 HAZARDOUS (CLASSIFIED) LOCATIONS Edition 9 - Revision Date 2018/08/31
- CSA C22.2 NO. 213 NONINCENDIVE ELECTRICAL EQUIPMENT FOR USE IN CLASS I AND II, DIVISION 2 AND CLASS III, DIVISIONS 1 AND 2 HAZARDOUS (CLASSIFIED) LOCATIONS- Edition 3 - Issue Date 2017/09/01
- UL 913 STANDARD FOR INTRINSICALLY SAFE APPARATUS AND ASSOCIATED APPARATUS FOR USE IN CLASS I, II, III, DIVISION 1, HAZARDOUS (CLASSIFIED) LOCATIONS- Edition 8 - Revision Date 2015/10/16
- CSA C22.2 NO. 60079-0 EXPLOSIVE ATMOSPHERES — PART 0: EQUIPMENT — GENERAL REQUIREMENTS- Edition 3 - Issue Date 2015/10/01
- CSA C22.2 NO. 60079-11:14 EXPLOSIVE ATMOSPHERES — PART 11: EQUIPMENT PROTECTION BY INTRINSIC SAFETY "I"- Edition 2 - Issue Date 2014/02/01

Revision date:  
2019-11-26

Version Revision  
V1 R0

Prepared by:  
PB

Page:  
1/5

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**Installation notes 9202Axx and 9202Bxx**

The module must be installed in a tool-secured enclosure suitable for the application in accordance with the National Electrical Code (ANSI/NFPA 70) for installation in the United States, the Canadian Electrical Code for installations in Canada, or other local codes, as applicable.

The module is galvanically isolated and does not require grounding.

Terminal 41, 42, 43, 44 are internally connected to CH1.

Terminal 51, 52, 53, 54 are internally connected to CH2.

Install in pollution degree 2, overvoltage category II in accordance with IEC 60664-1.

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

**Warning:** Substitution of components may impair intrinsic safety.

**Avertissement :** La substitution des composants peut nuire à la sécurité intrinsèque'.

There are no serviceable parts in the equipment and no component substitution is permitted

**Warning:** To prevent ignition of the explosive atmospheres, disconnect power before servicing and do not separate connectors, install or remove module from Power Rail when energized and an explosive gas mixture is present.

**Avertissement :** Pour éviter l'inflammation d'atmosphères explosibles, déconnectez l'alimentation avant les opérations d'entretien. Ne montez pas ou n'enlevez pas les connecteurs quand le module est sous tension et en présence d'un mélange de gaz. Ne montez pas ou n'enlevez pas les modules du rail d'alimentation en présence d'un mélange de gaz.

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**Installation notes 9202Bxx:**

Associated Equipment /Appareillage Associé [Ex ia]

The Ex output current of this associated apparatus is limited by a resistor such that the output voltage-current plot is a straight line drawn between open-circuit voltage and short-circuit current.

Selected intrinsically safe equipment must be third party listed as intrinsically safe for the application, and have intrinsically safe entity parameters conforming with Table 1 below.

**TABLE 1:**

<u>I.S. Equipment</u>		<u>Associated Apparatus</u>
V max (or Ui)	≥	Voc or Vt (or Uo)
I max (or Ii)	≥	Isc or It (or Io)
P max, Pi	≥	Po
Ci + Ccable	≤	Ca (or Co)
Li + Lcable	≤	La (or Lo)

The module may also be connected to a simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(D) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.

Capacitance and inductance of the field wiring from the intrinsically safe equipment to the associated apparatus shall be calculated and must be included in the system calculations as shown in Table 1. Cable capacitance, Ccable, plus intrinsically safe equipment capacitance, Ci must be less than the marked capacitance, Ca (or Co), shown on any associated apparatus used. The same applies for inductance (Lcable, Li and La or Lo, respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used: Ccable = 60 pF/ft., Lcable = 0.2 μH/ft.

Where multiple circuits extend from the same piece of associated apparatus, they must be installed in separate cables or in one cable having suitable insulation. Refer to Article 504.30(B) of the National Electrical Code (ANSI/NFPA 70) and Instrument Society of America Recommended Practice ISA RP12.06 for installing intrinsically safe equipment.

Intrinsically safe circuits must be wired and separated in accordance with Article 504.20 of the National Electrical Code (ANSI/NFPA 70) or other local codes, as applicable.

The module has not been evaluated for use in combination with another associated apparatus.

For installations in which both the Ci and Li of the intrinsically safe apparatus exceeds 1% of the Ca (or Co) and La (or Lo) parameters of the associated apparatus (excluding the cable), then 50% of Ca (or Co) and La (or Lo) parameters are applicable and shall not be exceeded. The reduced capacitance shall not be greater than 1 μF for Groups C and/or D, and 600 nF for Groups A and B. The values of Ca (or Co) and La (or Lo) determined by this method shall not be exceeded by the sum of all of Ci plus cable capacitances and the sum of all of the Li plus cable inductances in the circuit respectively.

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**9202Bxx Installation:**
**Hazardous Classified Location**

 Class I/II/III, Division 1, Group A,B,C,D,E,F,G  
 Zone 0,1, 2 Group IIC, IIB, IIA or  
 Zone 20, 21

**Unclassified Location or  
Hazardous Classified Location**

 Class I, Division 2, Group ABCD T4  
 Class I Zone 2 Group IIC T4

**Supply terminal (31,32)**

Voltage: 19.2 – 31.2 VDC

**Status relay, terminal (33,34)**

 Class I Division 2 or  
 Zone 2 installation:

 Voltage max: 32 Vac/ 32 Vdc  
 Current max: 0.5 Aac / 0.3Adc

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

 $U_m$ : 253 V max. 400 Hz

**9202B1x**

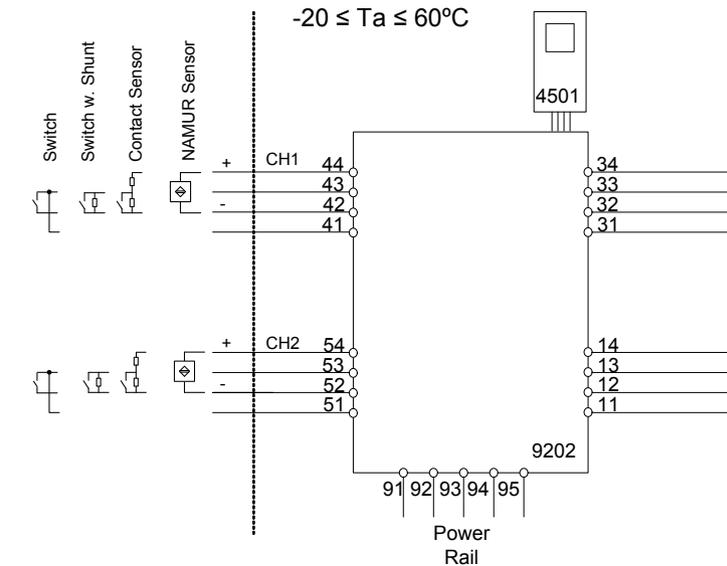
Terminal CH1(11,12) CH2(13,14)

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

**9202B2x and 9202B3x**
**Relay output:**

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

 Class I, Division 2  
 Zone 2 installation

 Voltage max. 32 V AC / 30 VDC  
 Power max. 64 VA / 60 W  
 Current max. 2 AAC / 2 ADC

**Ex input:**
**CH1 (terminal 41,42,43,44)**
**CH2 (terminal 51,52,53,54)**
 $U_o$ : 10.6 VDC  
 $I_o$ : 12 mADC  
 $P_o$ : 32 mW  
 $L_o/R_o$ : 1150  $\mu$ H/ $\Omega$ 

	IIC or A,B	IIB or C,E,F	IIA or D,G
<b>Ca or Co.</b>	2.0 $\mu$ F	6.0 $\mu$ F	18 $\mu$ F
<b>La or Lo.</b>	260 mH	780 mH	1000 mH

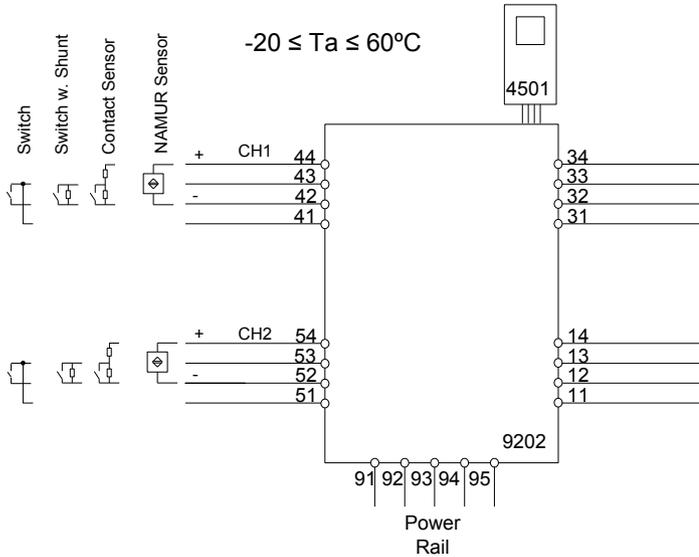
LERBAKKEN 10, 8410 RØNDE DENMARK

**9202Axx and 9202Bxx Installation:**

Non Hazardous area or  
Class I, Division 2, Group ABCD T4  
or Zone 2 Group IIC T4

**Supply terminal (31,32)**  
Voltage: 19.2 – 31.2 VDC

**Status relay, terminal (33,34)**  
**Class I Division 2 or Zone 2 installation:**  
Voltage max: 32 Vac/ 32 Vdc  
Current max: 0.5 Aac / 0.3Adc



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

**9202x1x**  
**Terminal CH1(11,12) CH2(13,14)**  
**Digital output: NPN output:**  
Voltage max. 30 VDC  
Current max. 80 mA

**9202x2x and 9202x3x**  
**Terminal CH1(11,12) CH2(13,14)**  
**Relay output: Class I Division 2 Zone 2 installation**  
Voltage max. 32 V AC / 30 VDC  
Power max. 64 VA / 60 W  
Current max. 2 AAC / 2 ADC

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## INMETRO Desenhos para Instalação



Para instalação segura do 9202B.. e 9202A.. 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 PR-electronics. 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 23.0007X**

**Marcas: 9202B..** [Ex ia Ga] IIC/IIB/IIA  
[Ex ia Da] IIIC  
[Ex ia Ma] I

**Marcas: 9202B.., 9202A..** Ex ec nC IIC T4 Gc

**Normas:** **ABNT NBR IEC 60079-0:2020 Versão Corrigida:2023**  
**ABNT NBR IEC 60079-7:2018 Versão Corrigida:2022**  
**ABNT NBR IEC 60079-11:2013 Versão Corrigida:2017**  
**ABNT NBR IEC 60079-15:2019**

### 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	Instalação Zona 2
Potência máx.:	62,5 VA / 32 W	32 VAC / 32 VDC
Corrente máx.:	0,5 A AC / 0,3 ADC	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 e', fornecendo no mínimo grau de proteção IP54

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

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**LERBAKKEN 10, 8410 RØNDE DENMARK**

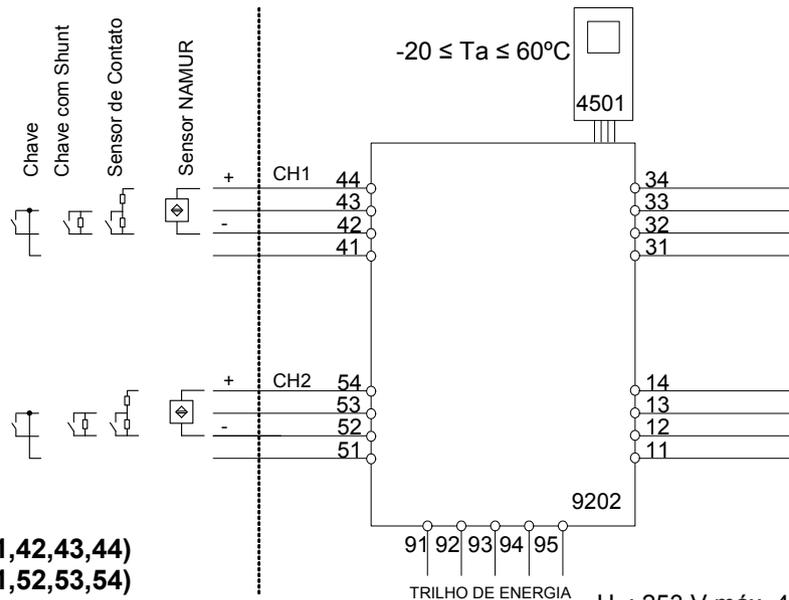
Para a instalação de trilho de energia na Zona 2, apenas o trilho de alimentação Rail 9400 fornecido pela Unidade de Controle de Potência 9410 é permitido.

Máx. torque terminal de parafuso 0,5 Nm. O fio trançado deve ser instalado com um comprimento de isolamento de 5 mm ou através de um terminal isolado adequado, como um terminal de cadaço.

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**Instalação 9202B..:**

 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  $\mu$ 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
Co.	2,0 $\mu$ F	6,0 $\mu$ F	18 $\mu$ F	90 $\mu$ F
Lo.	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

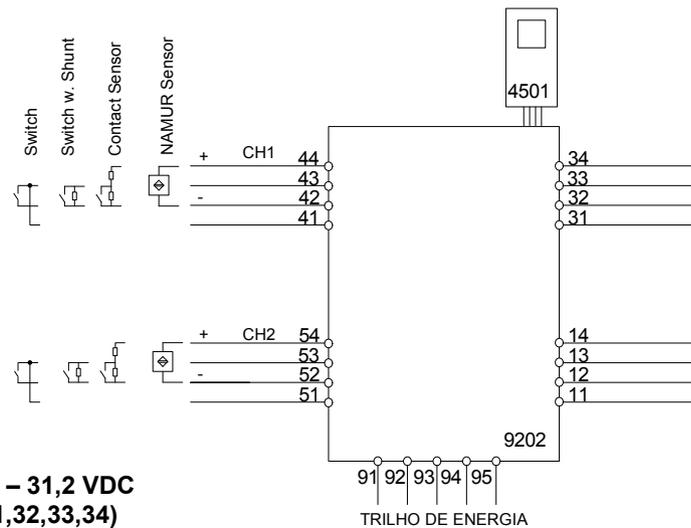
2 AAC / 2 ADC

LERBAKKEN 10, 8410 RØNDE DENMARK

**Instalação 9202A..:**

Área de não classificada ou Zona 2

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



**Supply 19,2 – 31,2 VDC**  
 (terminais 31,32,33,34)  
 (terminais 91,92,93,94,95)

**Entrada: Sensor de contato**  
**CN1 (terminais 41,42,43,44)**  
**CN2 (terminais 51,52,53,54)**

**Fonte / Saída:**

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

<b>Saída Digital:</b>	<b>Saída NPN:</b>
Voltagem máx.	30 VDC
Corrente máx.	80 mA

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

<b>Saída relê:</b>	<b>Área de não classificada</b>	<b>Instalação ZONA 2</b>
Voltagem máx.	250 VAC / 30 VDC	32 V AC / 30 VDC
Potência máx.	500 VA / 60 W	64 VA / 60 W
Corrente máx.	2 AAC / 2 ADC	2 AAC / 2 ADC

Para a instalação em Zona 2, o módulo deve ser instalado em um invólucro conformidade com o tipo de proteção '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.

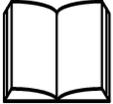
Máx. torque terminal de parafuso 0,5 Nm. O fio trançado deve ser instalado com um comprimento de isolamento de 5 mm ou através de um terminal isolado adequado, como um terminal de cadarço.

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## KC 설치 도면



9202의 안전한 설치를 위해 다음 사항을 준수해야 합니다. 이 모듈은 이 지역에 적용되는 국내 및 국제 법률, 지침 및 표준에 정통한 유자격자만 설치해야 합니다.  
제조연도는 일련번호의 처음 두 자리입니다.



구역 2 / 디비전 2에 설치하려면 다음 사항을 준수해야 합니다.  
4501 프로그래밍 모듈은 PR 제품의 모듈과 함께 사용해야 합니다. 모듈이 손상되지 않았고, 어떤 식으로든 변경 또는 수정되지 않는 것이 중요합니다. 먼지와 습기가 없는 상태에서 4501 모듈을 설치해야 합니다.

**KC 인증서:** 21-AV4BO-0179X  
**마킹 9202Bxx:** [Ex ia Ga] IIC/IIB/IIA

**KC 인증서:** 21-AV4BO-0180X  
**마킹 9202Bxx:** [Ex ia Da] IIIC

**KC 인증서:** 21-AV4BO-0181X  
**마킹 9202Axx:** Ex nA nC IIC T4 Gc

**표준** IEC60079-0:2017, IEC60079-11:2011,  
IEC60079-15:2017, IEC60079-7:2015+A1:2017

### 공급 단자(31,32)

전압: 19.2 – 31.2 VDC

### 상태 릴레이. 단자(33,34)

		구역 2 설치
최대 전압:	125 VAC / 110 VDC	32 VAC / 32 VDC
최대 출력:	62.5 VA / 32 W	16V A / 32 W
최대 전류:	0.5 AAC / 0.3 ADC	0.5 AAC / 1 ADC

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**s설치 참고 사항**

IEC60664-1에 정의된 대로 오염 등급 2, 과전압 범주 II에 설치하십시오.

전원이 공급되고 폭발성 가스 혼합물이 있는 경우, 커넥터를 분리하지 마십시오.

폭발성 가스 혼합물이 있는 경우, 파워 레일에 모듈을 장착하거나 제거하지 마십시오.

수리하기 전에 전원을 분리하십시오.

사용하지 않는 단자의 배선은 허용되지 않습니다.

보호 유형 [Ex ia Da]에서는 가스 그룹 IIB의 본질 안전 매개변수를 적용할 수 있습니다.

구역 2에 설치하는 경우, 모듈을 보호 유형 Ex n 또는 Ex e인 인클로저에 설치하고, 최소한 IP54의 보호 수준을 제공해야 합니다. 케이블 인입 장치와 밀폐 요소는 동일한 요구 사항을 충족해야 합니다.

구역 2의 파워 레일에 설치하는 경우, 전력 제어 장치 유형 9410(유형 시험 인증서 IECEx KEM 08.0025X)의 공급을 받는 파워 레일 유형 9400만 허용됩니다.

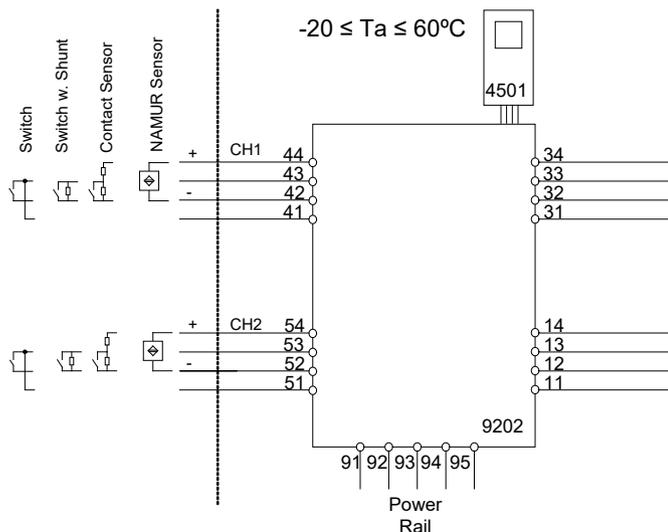
연선은 5mm의 절연 피복을 제거 후 사용을 하거나 부트레이스 페룰과 같은 적절한 절연 단자를 통해 설치해야 합니다 □

LERBAKKEN 10, 8410 RØNDE DENMARK

**9202Bxx 설치:**

위험 지역  
구역 0,1,2, 20, 21, 22

비위험 지역  
또는 구역 2



**Ex 입력:**

**CH1(단자 41,42,43,44)**

**CH2(단자 51,52,53,54)**

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

U<sub>m</sub>: 253 V 최대 400 Hz

**공급 / 출력:**

(단자 11,12,13,14)

(단자 31,32,33,34)

(단자 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

**단자 CH1 (11,12) CH2 (13,14)**

<b>디지털 출력:</b>	<b>NPN 출력:</b>
최대 전압	30 VDC
최대 전류	80 mA

**단자 CH1 (11,12) CH2 (13,14)**

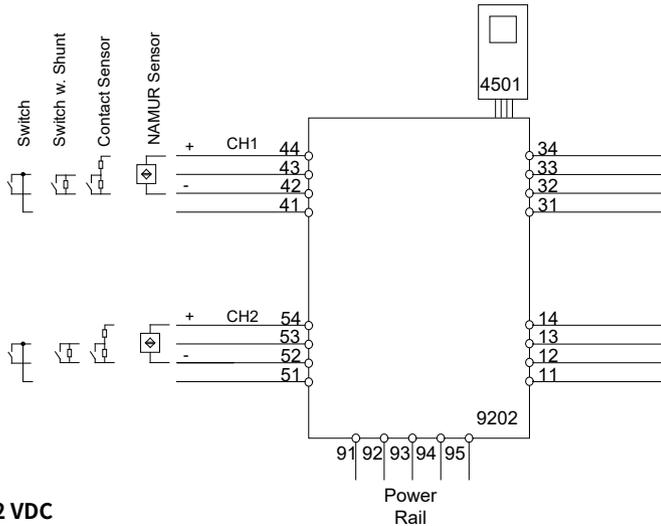
<b>릴레이 출력:</b>	<b>비위험 장소</b>	<b>구역 2 설치</b>
최대 전압	250 VAC / 30 VDC	32 VAC / 30 VDC
최대 출력	500 VA / 60 W	64 VA / 60 W
최대 전류	2 AAC / 2 ADC	2 AAC / 2 ADC

LERBAKKEN 10, 8410 RØNDE DENMARK

**9202Axx 설치:**

비위험 지역 또는 구역 2

-20 ≤ Ta ≤ 60°C



**공급: 19.2 – 31.2 VDC**

(단자 31,32,33,34)

(단자 91,92,93,94,95)

**입력: NAMUR 센서, 접촉 센서, 스위치**

**CH1(단자 41,42,43,44)**

**CH2(단자 51,52,53,54)**

**출력:**

**단자 CH1 (11,12) CH2 (13,14)**

**디지털 출력:**

**NPN 출력:**

최대 전압 30 VDC

최대 전류 80 mA

**단자 CH1 (11,12) CH2 (13,14)**

**릴레이 출력:**

**비위험 장소**

**구역 2 설치**

최대 전압 250 VAC / 30 VDC

32 VAC / 30 VDC

최대 출력 500 VA / 60 W

64 VA / 60 W

최대 전류 2 AAC / 2 ADC

2 AAC / 2 ADC

구역 2에 설치하는 경우, 모듈을 보호 유형 Ex n 또는 Ex e인 인클로저에 설치하고, 최소한 IP54의 보호 수준을 제공해야 합니다.

케이블 인입 장치와 밀폐 요소는 동일한 요구 사항을 충족해야 합니다.

구역 2의 파워 레일에 설치하는 경우, 전력 제어 장치 유형 9410(유형 시험 인증서 IECEx 08.0052X)의 공급을 받는 파워 레일 유형 9400만 허용됩니다.

구역 2 / 디비전 2에 설치하려면 다음 사항을 준수해야 합니다.

4501 프로그래밍 모듈은 PR 제품의 모듈과 함께 사용해야 합니다. 모듈이 손상되지 않았고, 어떤 식으로든 변경 또는 수정되지 않는 것이 중요합니다. 먼지와 습기가 없는 상태에서 4501 모듈을 설치해야 합니다.

## Document history

The following list provides notes concerning revisions of this document.

<b>Rev. ID</b>	<b>Date</b>	<b>Notes</b>
106	1907	Specifications for max. required power added. ATEX and IECEx installation drawings updated.
107	1941	New INMETRO certificate and installation drawing. 9202A-version included in manual. Variant with UL 913 approval added. CCOE approval discontinued.
108	2103	New FM certificate and installation drawing. CCC approval added. Routing diagram updated.
109	2314	ATEX and IECEx approvals updated - Ex nA changed to Ex ec. UKEX approval added.
110	2404	Variant with Korean KCs approval added. ATEX / UKEX installation drawing updated - UKEX certificate for 9202B added.
111	2421	INMETRO approval updated - Ex nA replaced by Ex ec. KC installation drawing updated.
112	2444	New EAC Ex certificate.

# We are near you, *all over the world*

**Our trusted red boxes are supported wherever you are**

All our devices are backed by expert service and a 5-year warranty. With each product you purchase, you receive personal technical support and guidance, day-to-day delivery, repair without charge within the warranty period and easily accessible documentation.

We are headquartered in Denmark, and have offices and authorized partners the world over. We are a local

business with a global reach. This means that we are always nearby and know your local markets well. We are committed to your satisfaction and provide **PERFORMANCE MADE SMARTER** all around the world.

For more information on our warranty program, or to meet with a sales representative in your region, visit [prelectronics.com](http://prelectronics.com).

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