Product manual
9202
Pulse isolator

No. 9202V106-UK
Product version: 9202-003
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.

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.

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.

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.

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.

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.

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. 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

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:

Channel 2

Power rail

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

<table>
<thead>
<tr>
<th>Type</th>
<th>Version</th>
<th>Channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>9202B</td>
<td>1</td>
<td>Single</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Double</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Example: 9202B2B

Accessories

4501 = Display / programming front
4511 = Communication enabler
9400 = Power rail
9404 = Module stop for rail
9410 = Power control unit
9421 = Power supply 24 V - Ex nA 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/ 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 mm² / 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

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Max. power dissipation</th>
<th>Max. required power</th>
</tr>
</thead>
<tbody>
<tr>
<td>9202B1A</td>
<td>1 ch., opto</td>
<td>≤ 1.2 W</td>
<td>≤ 1.1 W</td>
</tr>
<tr>
<td>9202B1B</td>
<td>2 ch., opto</td>
<td>≤ 1.6 W</td>
<td>≤ 1.5 W</td>
</tr>
<tr>
<td>9202B2A</td>
<td>1 ch., relay N.O.</td>
<td>≤ 1.2 W</td>
<td>≤ 1.3 W</td>
</tr>
<tr>
<td>9202B2B</td>
<td>2 ch., relay N.O.</td>
<td>≤ 1.8 W</td>
<td>≤ 1.9 W</td>
</tr>
<tr>
<td>9202B3A</td>
<td>1 ch., relay N.C.</td>
<td>≤ 1.2 W</td>
<td>≤ 1.3 W</td>
</tr>
<tr>
<td>9202B3B</td>
<td>2 ch., relay N.C.</td>
<td>≤ 1.8 W</td>
<td>≤ 1.9 W</td>
</tr>
</tbody>
</table>

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 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
- 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

<table>
<thead>
<tr>
<th>Device</th>
<th>Configuration, common for both channels</th>
<th>Cable fault detection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>9202</td>
<td>CA.BR = Yes or CA.SH = Yes</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td>Else:</td>
<td>ON</td>
</tr>
</tbody>
</table>

Cable fault detection

<table>
<thead>
<tr>
<th>Input</th>
<th>Event</th>
<th>Readout</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>Cable break</td>
<td>CA.BR</td>
<td>&lt; 0.1 mA</td>
</tr>
<tr>
<td>All</td>
<td>Short-circuited cable</td>
<td>CA.SH</td>
<td>&gt; 6.5 mA</td>
</tr>
</tbody>
</table>

Hardware / Software error

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

*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:

Channel 1
- NAMUR sensor, cable fault (1)
- Switch, cable fault (2)
- Switch, no cable fault (4)
- Switch, cable fault, disconnection (3)

Channel 2
- NAMUR sensor, cable fault (1)
- Switch, cable fault (2)
- Switch, no cable fault (4)
- Switch, cable fault, disconnection (3)

Outputs:

Channel 1
- Relay, N.C.
- Relay, N.O.
- Opto, NPN

Channel 2
- Relay, N.C.
- Relay, N.O.
- Opto, NPN

NC = no connection

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

\[ R_p = 15 \text{ kΩ} \]
\[ R_s = 750 \text{ Ω} \]
Block diagram

9202 - Product version 9202-003

Supply +
Supply -
Supply +24 VDC

Status relay N.C.
Status relay N.C.

Opto - or relay N.O.
or relay NC.
Opto - or relay N.O.
or relay NC.
Opto - or relay N.O.
or relay NC.
Opto - or relay N.O.
or relay NC.

* NC = no connection

(1)...(4) = See function description on page 11

R_p = 15 kΩ
R_s = 750 Ω

(3) (4) (1) (2)

- NC = no connection

(1)...(4) = See function description on page 11

$R_p = 15 \, k\Omega$
$R_s = 750 \, \Omega$

Supply +
Supply -
Supply +24 VDC

Status relay N.C.
Status relay N.C.

Opto - or relay N.O.
or relay NC.
Opto - or relay N.O.
or relay NC.
Opto - or relay N.O.
or relay NC.
Opto - or relay N.O.
or relay NC.

* NC = no connection

(1)...(4) = See function description on page 11

$R_p = 15 \, k\Omega$
$R_s = 750 \, \Omega$

Supply +
Supply -
Supply +24 VDC

Status relay N.C.
Status relay N.C.

Opto - or relay N.O.
or relay NC.
Opto - or relay N.O.
or relay NC.
Opto - or relay N.O.
or relay NC.
Opto - or relay N.O.
or relay NC.

* NC = no connection

(1)...(4) = See function description on page 11

$R_p = 15 \, k\Omega$
$R_s = 750 \, \Omega$
### List of LED and error signal indications

<table>
<thead>
<tr>
<th>Condition</th>
<th>Green LED</th>
<th>Ch. 1: Yellow / Red</th>
<th>Ch. 2: Yellow / Red</th>
<th>Status relay, N.C.</th>
<th>Power rail signal status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device OK</td>
<td>Flashing</td>
<td>OFF</td>
<td>OFF</td>
<td>Energized</td>
<td>OFF</td>
</tr>
<tr>
<td>No supply</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>De-energized</td>
<td>ON</td>
</tr>
<tr>
<td>Device defective</td>
<td>OFF</td>
<td>Red</td>
<td>Red</td>
<td>De-energized</td>
<td>ON</td>
</tr>
<tr>
<td>Channel 1, relay energised</td>
<td>Flashing</td>
<td>Yellow</td>
<td>Energized</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>Channel 1, relay de-energised at cable fault</td>
<td>Flashing</td>
<td>Red flashing</td>
<td>De-energized</td>
<td>ON (if activated)</td>
<td></td>
</tr>
<tr>
<td>Channel 1, relay de-energised</td>
<td>Flashing</td>
<td>OFF</td>
<td>Energized</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>Channel 2, relay energised</td>
<td>Flashing</td>
<td>Yellow</td>
<td>Energized</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>Channel 2, relay de-energised at cable fault</td>
<td>Flashing</td>
<td>Red flashing</td>
<td>De-energized</td>
<td>ON (if activated)</td>
<td></td>
</tr>
<tr>
<td>Channel 2, relay de-energised</td>
<td>Flashing</td>
<td>OFF</td>
<td>Energized</td>
<td>OFF</td>
<td></td>
</tr>
</tbody>
</table>
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.

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.

**Routing diagram ADV.SET**

- 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.
- Only if password-protected.

- Error indication, examples:

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

---

1. Increase value / choose next parameter
2. Decrease value / choose previous parameter
3. Save the chosen value and proceed to the next menu
4. Hold = Back to previous menu / return to menu 1.0 without saving.
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/IIIA  
                  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


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

Status Relay. terminal (33,34)
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

Zone 2 Installation

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

Non Hazardous area
or Zone 2

-20 ≤ Ta ≤ 60°C

U₀: 10.6 VDC
I₀: 12 mADC
P₀: 32 mW
Lo/Ro: 1150 μH/Ω

<table>
<thead>
<tr>
<th></th>
<th>IIC</th>
<th>IIB</th>
<th>IIA</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>C₀</td>
<td>2.0 μF</td>
<td>6.0 μF</td>
<td>18 μF</td>
<td>90 μF</td>
</tr>
<tr>
<td>L₀</td>
<td>260 mΗ</td>
<td>780 mΗ</td>
<td>1000 mΗ</td>
<td>1000 mΗ</td>
</tr>
</tbody>
</table>

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

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

Uₘ: 253 V max. 400 Hz

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

Relay output: Non Hazardous location
Voltage max. 250 VAC / 30 VDC
Power max. 500 VA / 60 W
Current max. 2 AAC / 2 ADC

Zone 2 installation
Voltage max. 32 VAC / 30 VDC
Power max. 64 VA / 60 W
Current max. 2 AAC / 2 ADC
9202Axx Installation:

Non Hazardous area or Zone 2  
-20 ≤ Ta ≤ 60°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 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.
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.

IECEx Certificate
KEM 06.0039 X

Marking 9202Bxx
[Ex ia Ga] IIC/IIB/IIA
Ex nA nC IIC T4 Gc
[Ex ia Da] IIIIC
[Ex ia Ma] I

Marking 9202Axx
Ex nA nC IIC T4 Gc

Standards

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.
9202Bxx Installation:

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

Non Hazardous area
or Zone 2

\[-20 \leq T_a \leq 60^\circ C\]

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

\[U_o: 10.6 \text{ VDC}\]
\[I_o: 12 \text{ mADC}\]
\[P_o: 32 \text{ mW}\]
\[L_o/R_o: 1150 \mu \text{H/}\Omega\]

<table>
<thead>
<tr>
<th>IIC</th>
<th>IIB</th>
<th>IIA</th>
<th>I</th>
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<tr>
<td>C_o</td>
<td>2.0 \mu F</td>
<td>6.0 \mu F</td>
<td>18 \mu F</td>
</tr>
<tr>
<td>L_o</td>
<td>260 mH</td>
<td>780 mH</td>
<td>1000 mH</td>
</tr>
</tbody>
</table>

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
Voltage max. 250 VAC / 30 VDC
Power max. 500 VA / 60 W
Current max. 2 AAC / 2 ADC

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

\[U_m: 253 \text{ V max.} 400 \text{ Hz}\]
9202Ax Installation:

Non Hazardous area or Zone 2  
-20 ≤ Ta ≤ 60°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  

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/I/II, 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

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

Simple Apparatus or
Intrinsically safe apparatus
with entity parameters:

- Vmax (Ui) ≥ Vt (Uo)
- Imax (Ii) ≥ It (Io)
- Pi ≥ Pt (Po)
- Ca(Co) ≥ C cable + Ci
- La(Lo) ≥ L cable + Li

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

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

-20 ≤ Ta ≤ 60°C

Uo / Vt: 10.6 V
Io / Isc: 12 mA
Po/Pt: 32 mW
Lo/Ro La/Ra: 1150 μH/Ω

<table>
<thead>
<tr>
<th>Group</th>
<th>IIC</th>
<th>IIB</th>
<th>IIA</th>
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<tr>
<td>A, B</td>
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<td>D, G</td>
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<tr>
<td>C/C_a</td>
<td>2.0 μF</td>
<td>6.0 μF</td>
<td>18 μF</td>
</tr>
<tr>
<td>L_c/L_a</td>
<td>260 mH</td>
<td>780 mH</td>
<td>1000 mH</td>
</tr>
</tbody>
</table>

U_in: 253 V max. 400 Hz
Terminal (31,32)
Supply:
Voltage: 19.2 – 31.2 VDC
Power: max. 3 W

Terminal (33,34)
Status Relay: Non Hazardous location: Division 2 or Zone 2 installation:
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: NPN output:
Voltage max.: 30 VDC
Current max.: 80 mA

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 ºC 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.

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

Relé de estado. terminais (33,34) Instalação Zona 2
Voltagem máx.: 125 VAC / 110 VDC 32 VAC / 32 VDC
Potência máx.: 62,5 VA / 32 W 16 VA / 32 W
Corrente máx.: 0,5 A AC / 0,3 ADC 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 conectado 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.
**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 μH/Ω

- **Fonte / Saída:**
  (terminais 11,12,13,14)  
  (terminais 31,32,33,34)  
  (terminais 91,92,93,94,95)

- **Arranjo:**
  44  
  43  
  42  
  41  
  54  
  53  
  52  
  51

- **Co.**
  2,0 μF  
  6,0 μF  
  18 μF  
  90 μF

- **Lo.**
  260 mH  
  780 mH  
  1000 mH  
  1000 mH

- **Terminais CN1(11,12) CN2(13,14)**
  **Saída Digital:**
  Saída NPN:
  Voltagem máx.: 30 VDC  
  Corrente máx.: 80 mA

- **Terminais CN1(11,12) CN2(13,14)**
  **Saída relé:**
  **Área de não classificada ou Zona 2**
  Instalação ZONA 2
  Voltagem máx.: 250 VAC / 30 VDC  
  Potência máx.: 500 VA / 60 W  
  Corrente máx.: 2 AAC / 2 ADC

- **Um:** 253 V máx. 400 Hz
## Document history

The following list provides notes concerning revisions of this document.

<table>
<thead>
<tr>
<th>Rev. ID</th>
<th>Date</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>106</td>
<td>1907</td>
<td>Specifications for max. required power added  ATEX and IECEx installation drawings updated  New INMETRO certificate and installation drawing</td>
</tr>
</tbody>
</table>
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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.

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PR electronics is the leading technology company specialized in making industrial process control safer, more reliable and more efficient. Since 1974, we have been dedicated to perfecting our core competence of innovating high precision technology with low power consumption. This dedication continues to set new standards for products communicating, monitoring and connecting our customers’ process measurement points to their process control systems.

Our innovative, patented technologies are derived from our extensive R&D facilities and from having a great understanding of our customers’ needs and processes. We are guided by principles of simplicity, focus, courage and excellence, enabling some of the world’s greatest companies to achieve PERFORMANCE MADE SMARTER.