

Translation of the original instructions
Contamination indicator with analogue output signal
PiS 3129/PiS 3139

Material No. of Instruction Manual
70308049



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2 General safety instructions

2.1 Safety instructions for installation and operating personnel

This Instruction Manual contains important safety instructions which must be heeded at all times during installation, normal operation and maintenance.

Non-observance can result in the following risks to persons and the environment as well as in damage to the machine or system:

- ⇒ Failure of critical functions of the machine or system or of its component parts.
- ⇒ Danger to persons from electrical or mechanical effects as well as from chemical reactions.
- ⇒ Danger to the environment owing to the leakage of hazardous substances.

Before installation/start-up:

- Read the Instruction Manual carefully.
- Make sure that installation and operating personnel are adequately trained.
- Make sure that the contents of the Instruction Manual are fully understood by the responsible persons.
- Define areas of responsibility and competence.
- Prepare a maintenance schedule.

During operation of the system:

- Keep the Instruction Manual handy at the place where the system is used.
- Heed the safety instructions. Always operate the machine/system in accordance with its ratings.

If in doubt:




- Consult the manufacturer.

2.2 Warning structure

Where possible, warnings are structured according to the following system:

| Signal word | |
|----------------------|--|
| Possibly with symbol | Nature and source of the danger <ul style="list-style-type: none">⇒ Potential consequences of non-observance.• Action to avert the danger. |

2.3 Warning symbols used

| |
|---|
|  DANGER! |
| Immediate danger! ⇒ Non-observance will result in serious or fatal injury. |
|  WARNING! |
| Potentially dangerous situation! ⇒ Non-observance can result in serious or fatal injury. |
|  CAUTION! |
| Potentially dangerous situation! ⇒ Non-observance can result in minor or moderate injuries. |
| CAUTION! (without a symbol) |
| Potentially dangerous situation! ⇒ Non-observance can result in property damage. |

2.4 Other symbols used

| | |
|---|---|
|  | Danger from high voltage |
|  | Danger information about explosion protection |
|  | Information about environmental protection |
|  | Wear protective clothing! |
|  | Wear goggles! |
|  | Wear a respirator! |
|  | Hand symbol: Indicates general information and recommendations |
|  | Bullet: Indicates the order in which actions are to be carried out |
|  | Arrow: Indicates responses to actions |

3 Glossary

Differential pressure:

Difference between the pressure on the dirty side and the clean side of a filter.

Clean side:

The area downstream of a cartridge after the medium has been cleaned.

Dirty side:

The area upstream of a cartridge before the medium is cleaned.

+UB:

Supply voltage for the electrical indicator.

IA:

Analogue output current.

R load:

Load resistance.

Signal damping:

If an abrupt change in pressure occurs, the signal change is not passed on to the analogue output immediately. The analogue output signal rises or falls after a defined time.

4 General information



4.1 Manufacturer

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4.2 Information about the Instruction Manual

FG Mat. No.: 70308049
Date: 06.07.17
Version: 02

5 Intended application

| |
|--|
|  DANGER! |
| PROHIBITED: <ul style="list-style-type: none">• Use for other purposes without prior consultation with the manufacturer.• Use in potentially explosive atmospheres, unless explicitly mentioned in the contract documentation. |
|  CAUTION! |
| This contamination indicator is only allowed to be used in accordance with the operating conditions specified in the contract documentation and in the Instruction Manual. All forms of use which deviate from or exceed the limits of use described above are considered to be contrary to the intended purpose. The manufacturer shall not be liable for any damage resulting from such use. |

Standard design for liquid group 2 according to pressure equipment-directive 2014/68/EU article 4 (3) and article 13.

6 Functional description

- ⇒ The mechanical lower part (4) is influenced by two pressures:
Pressure upstream of the cartridge
Pressure downstream of the cartridge
- ⇒ The pressure upstream of the cartridge (1) acts on one end of the piston and the pressure downstream of the cartridge (2) on the other.
- ⇒ The piston is pretensioned at one end by a spring.
- ⇒ The piston is deflected against the spring by the differential pressure.
- ⇒ An electrical analogue signal is generated by the piston position.
- ⇒ The output signals can be evaluated using a suitable device in accordance with the technical data.
- ⇒ The analogue signal is output on the electrical indicator (3).

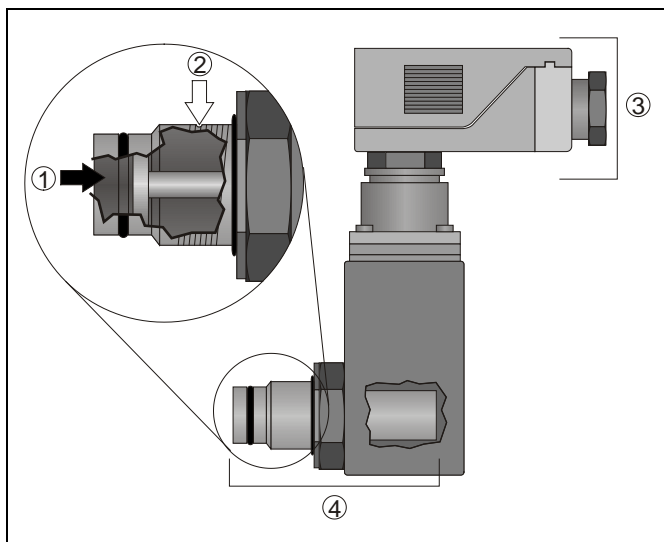


Fig. 1: Functional principle

Piston in normal position

- ⇒ Output signal has minimum value ($4 \text{ mA} \pm 0.2 \text{ mA}$).
- ⇒ 75% and 100% digital outputs are open (1).

Piston actuated

- ⇒ 75% output signal ($16 \text{ mA} \pm 0.2 \text{ mA}$).
- ⇒ 75% digital output closes (0).
- ⇒ 100% digital output remains open (1).
- ⇒ 100 % output signal ($20 \text{ mA} \pm 0.2 \text{ mA}$).
- ⇒ 75% digital output remains closed (0).
- ⇒ 100% digital output closes (0).

7 Technical data

7.1 Mechanical lower part

| | PiS 3129 | PiS 3139 |
|-----------------------|----------------------|-----------------|
| Connection thread | G 1/2 | M20 x 1.5 |
| Rated pressure | 160 bar | 450 bar |
| Material | Aluminium (anodised) | Stainless steel |
| Seals | FPM (Viton) | FPM (Viton) |
| Max. assembly torque | 80 Nm | 90 Nm |
| Operating temperature | -10°C to 100°C | -10°C to 100°C |

7.2 Terminal assignment of the electrical indicator

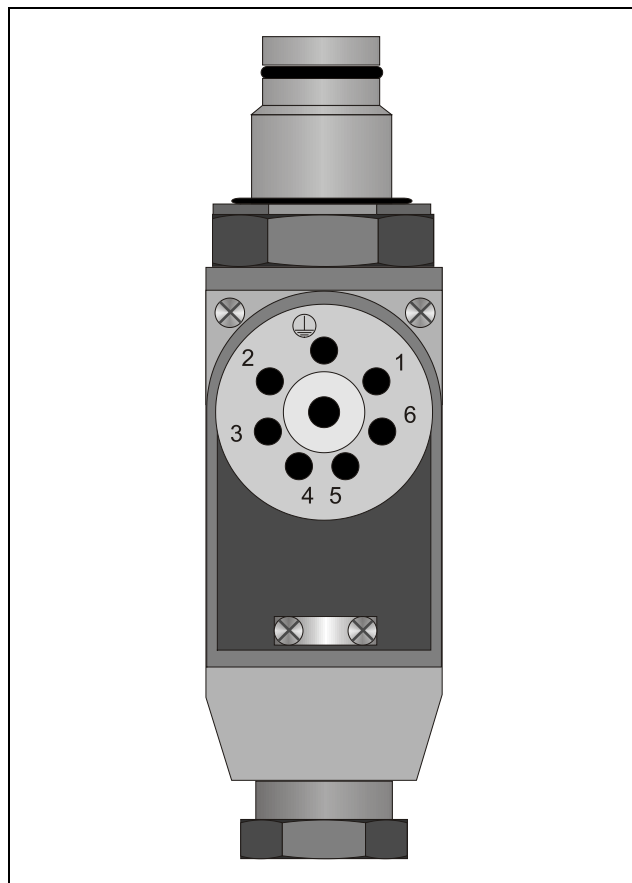


Fig. 2: Terminal assignment

| Connector contact | Electrical switching part | Plug connector |
|-------------------|---------------------------|-----------------------|
| PE connection | | Not used |
| 1 | +24 V DC | 20 ... 24 ... 30 V DC |
| 2 | Ground | 0 V |
| 3 | 75% signal | Warning |
| 4 | | Not assigned |
| 5 | 4 to 20 mA output | Analogue signal |
| 6 | 100% signal | Alarm |

7.3 Electrical indicator

7.3.1 General

| | |
|-------------------------------|------------------------------------|
| Supply voltage +UB: | 20 to 30 V DC |
| Quiescent current draw: | max. 25 mA |
| Supply voltage input: ... | Protected against reverse polarity |
| Plug connector: | 7-pole, DIN EN 175201-804 |
| Protection class: | IP65 |
| Ambient temperature: | -25°C to 85°C |
| Housing material: | PA 6 |

7.3.2 Switching pressures

| | |
|-------------------------------|--------------------|
| 100% switching pressure | 5.00 bar \pm 10% |
| 75% switching pressure: | 3.75 bar \pm 10% |

7.3.3 Switching outputs

| | |
|---|--|
| 100% and 75% signals | PNP |
| Output at I min: | +UB |
| Contact type (75%, 100%) of analogue output current IA: | Normally closed (switched to high impedance) |
| Switching current: | max. 200 mA |
| Output protection: | Short-circuit resistant |

7.3.4 Analogue output

| | |
|--|-------------------------|
| I min ... I max signal: | 4 to 20 mA \pm 0.2 mA |
| Corresponding differential pressure: | 1 to 5 bar |
| R load: | max. 500 Ω |
| Signal damping if maximum pressure changes abruptly: | Approx. 2 s |
| Signal damping if minimum pressure changes abruptly: | Approx. 20 s |

8 Transport and storage

Transport



- Always transport in the original packaging
- Avoid vibrations

Storage


- Always store in the original packaging
- Always store in a dry, frost-free room




9 Installation

|  DANGER! | |
|--|--|
|  | Electric shock! ⇒ Risk of serious or fatal injury. <ul style="list-style-type: none">• Installation and commissioning must always be carried out by a suitably qualified person. |

9.1 Mounting the mechanical lower part

| | |
|---|---------------------------|
|  | Do not use damaged parts. |
|---|---------------------------|

- Make sure that the threaded hole is compatible with the thread of the electrical indicator.

| | |
|---|---|
|  | The electrical indicator can be detached from the mechanical lower part for easier mounting. The two parts are calibrated and therefore cannot be exchanged! |
|---|---|

- Loosen the stud bolt (1).
- Detach and remove the mechanical lower part.

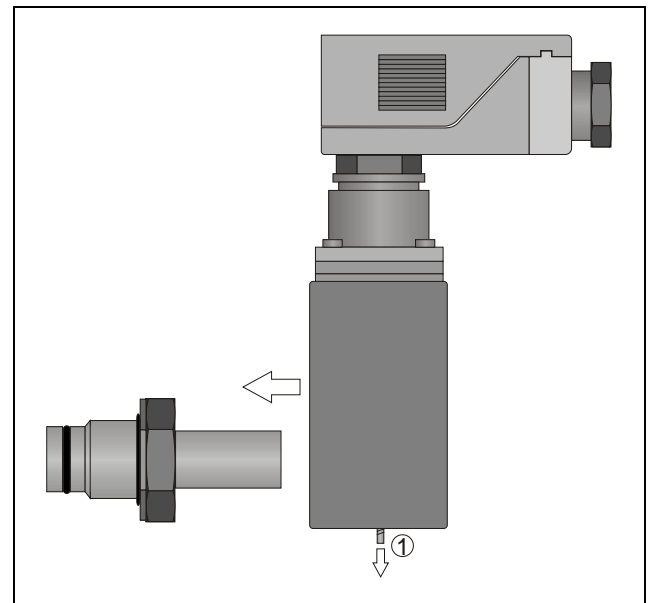





Fig. 3: Detaching the electrical indicator from the mechanical lower part

- Provide the mechanical lower part with a suitable seal.
- Screw the mechanical lower part and the seal into the threaded hole.
- Note the maximum torque (section 7.1).
- Mount the electrical indicator in reverse order.

| | |
|---|--|
|  | The electrical indicator must be seated flat on the hexagon nut. |
|---|--|

| | |
|---|--|
|  | Screw in the stud bolt until the electrical indicator can no longer be rotated easily or lifted off. |
|---|--|

9.2 Connecting the electrical indicator

| | |
|---|---|
| ⚠ DANGER! | |
|  | Electric shock! ⇒ Risk of serious or fatal injury. • Installation and commissioning must always be carried out by a suitably qualified person. |

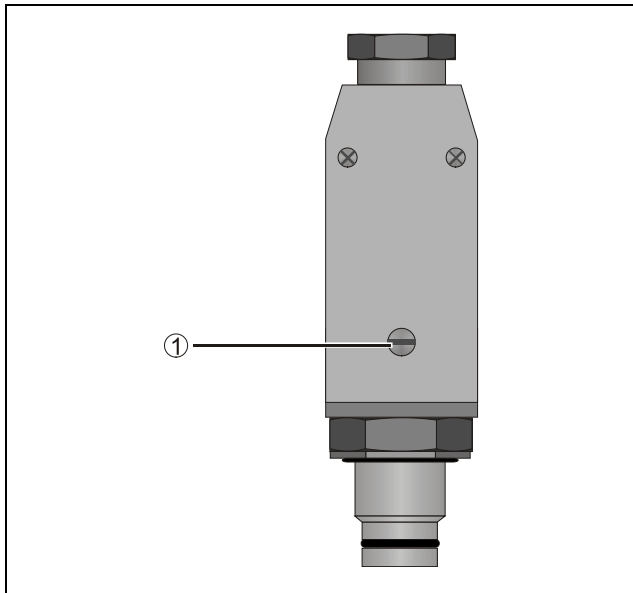


Fig. 4: Loosening the connector cap

- Loosen the slotted screw (1) on the connector.
- Withdraw the connector.

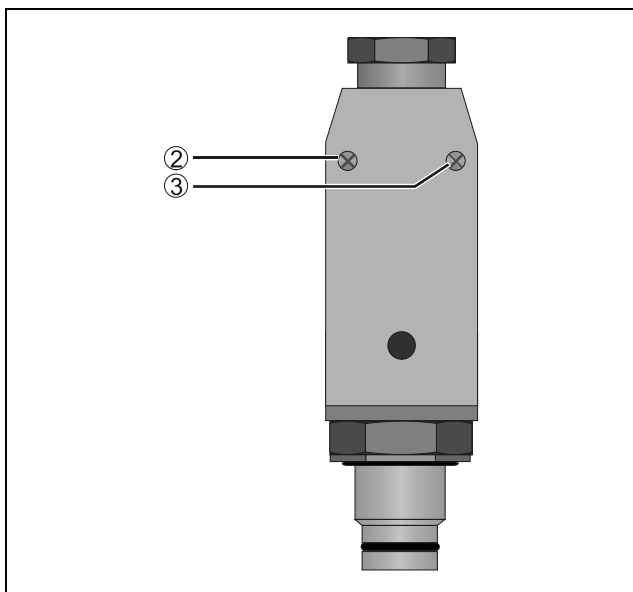



Fig. 5: Loosening the connector cap

- Loosen the cross-head screws (2 and 3) on the connector cap.
- Lift off the connector cap.
- Insert the lead into the connector housing and mount the strain relief.
- Connect the lead to the wiring box (section 7).
- Screw on the connector cap and fasten it with the cross-head screws.
- Plug the connector onto the electrical indicator and fasten it with the slotted screws.

9.3 Changing the outlet direction of the connector

| | |
|---|---|
|  | The outlet direction of the connector can be changed by pulling the connector insert out of the electrical indicator. |
|---|---|

- Withdraw the connector from the electrical indicator.

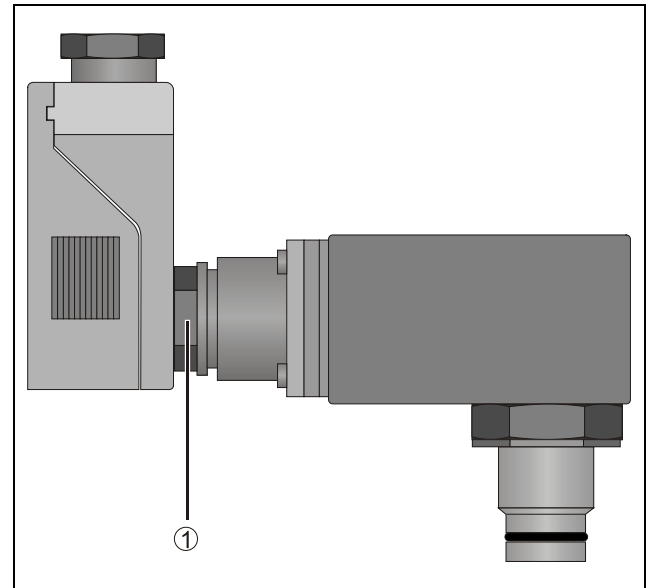


Fig. 6: Changing the outlet direction of the connector

- Loosen the hexagon nut (1).

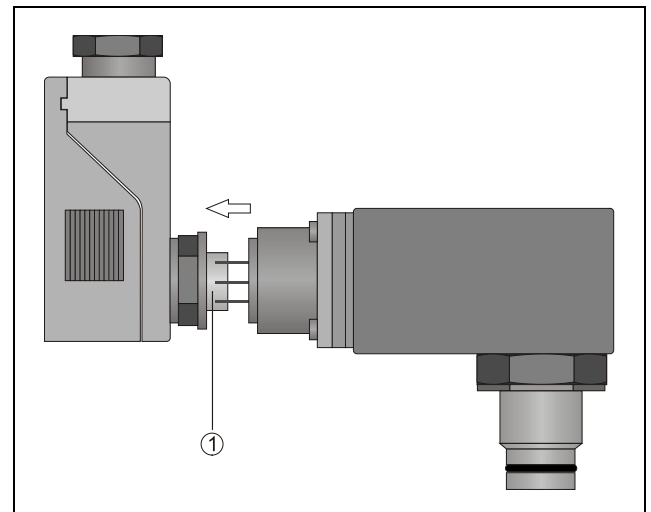


Fig. 7: Changing the outlet direction of the connector

- Pull out the connector insert (1) a short distance.

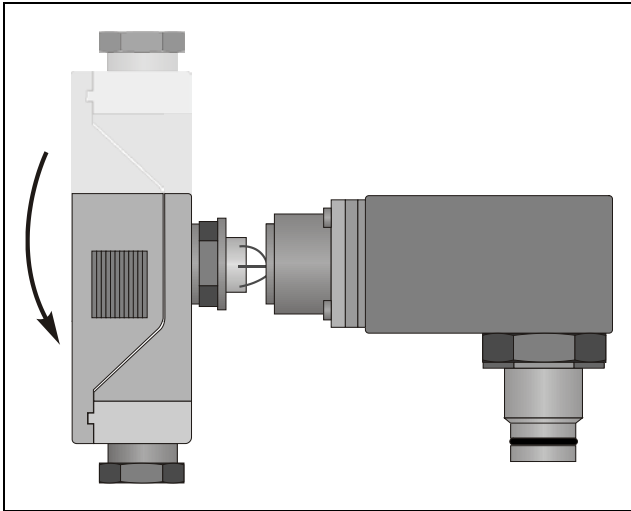


Fig. 8: Changing the outlet direction of the connector

- Turn the connector into the required position.
- Reinsert the connector insert into the slot.
- Be careful not to squeeze the litz wires.
- Tighten the connector insert with the hexagon nut.

10 Start-up

| ⚠ DANGER! | |
|-----------|--|
| | Electric shock! ⇒ Risk of serious or fatal injury. <ul style="list-style-type: none"> • Installation and commissioning must always be carried out by a suitably qualified person. |

- Check that the plug connector is tight.
- Check the connector bushing.
- Screw the connector and the mains connector tight with the lock nuts.
- Note the maximum output signal load (section 7).
- Connect the supply voltage +UB (section 7).

11 Troubleshooting

| Fault | Possible cause | Remedy |
|--|------------------------|--|
| No value appears on electrical indicator | Indicator has no power | Connect the supply voltage and check the indicator wiring and connection |
| Indicator shows 0 mA as output value | Indicator defective | Replace the indicator |


12 Maintenance

The PiS 3129/3139 requires no maintenance.

13 Disposal

| | |
|--|--|
| | Dispose of the device at the end of its life in a manner which does not pollute the environment. |
|--|--|

14 Spare parts

| Qty. | Part name/DIN designation | material no. | Benennung/DIN Bezeichnung |
|---|---------------------------|--------------|---------------------------|
| 1 | Seal kit | 70311950 | Dichtungssatz |
|  Please request a separate spare parts drawing and list of spare parts for special versions. | | | |

15 Declaration of conformity

EU – Konformitätserklärung
EU declaration of conformity
Déclaration de conformité UE



Der Hersteller
The manufacturer
Le producteur

Filtration Group GmbH
Schleifbachweg 45
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Telefon 07941 6466-0
Telefax 07941 6466-429

erklärt hiermit, dass das folgende Produkt
hereby declares that the following product
déclare par la présente que le produit suivant

Produktbezeichnung:
Product designation:
Désignation du produit :
Typenbezeichnung:
Type designation:
Désignation du type :

Differenzdruckanzeiger
Differential pressure indicator
Indicateurs de pression différentielle

PIS xxxx

Das Produkt entspricht allen Bestimmungen der Niederspannungsrichtlinie 2014/35/EU und der RoHS-Richtlinie 2011/65/EU.
The product conforms to all provisions of the Low Voltage Directive 2014/35/EU and RoHS-Directive 2011/65/EU.
Le produit répond à toutes les dispositions de la directive basse tension 2014/35/UE et de la RoHS-Directive 2011/65/UE .

Die Geräte werden gekennzeichnet mit:
The gauges are marked with:
Les appareils sont caractérisés par :



Unterzeichner:
Signatory:
Signataire :

Wolfgang Grüner, Director Industry Filtration Operations Components

Öhringen,

Datum/Date/Date

23.11.2016

Unterschrift/Signature/Signataire

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70308049.102.07/2017