

DPI

Grundfos differential pressure sensor

Installation and operating instructions



English (GB) Installation and operating instructions

Original installation and operating instructions

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Warning

Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

1. Symbols used in this document



Warning

If these safety instructions are not observed, it may result in personal injury!

Caution

If these safety instructions are not observed, it may result in malfunction or damage to the equipment!

Note

Notes or instructions that make the job easier and ensure safe operation.

2. Delivery and handling

2.1 Delivery

Grundfos differential pressure sensor, type DPI, is supplied for direct mounting with 7/16"-20 UNF connection. Miscellaneous accessories are available on request.

2.2 Handling

Comply with local regulations and good practice for the handling of electronic equipment.

3. Applications

Grundfos differential pressure sensor, type DPI, is used for measuring differential pressure.

Caution

If the sensor is used in a manner not specified by the manufacturer, the protection provided may be damaged.



Do not use Grundfos DPI sensors in explosive environments zone-classified according to ATEX.

4. Identification

4.1 Nameplate

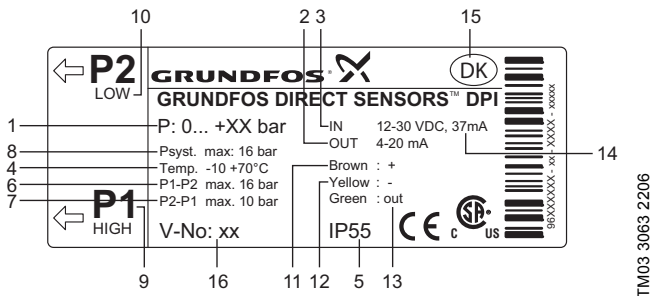


Fig. 1 Nameplate for DPI

TM03 3063 2206

Pos.	Description
1	Pressure range
2	Output signal
3	Supply voltage
4	Temperature range of medium
5	Enclosure class
6	Max. differential pressure, P1 → P2
7	Max. differential pressure, P2 → P1
8	Max. system pressure
9	Connection P1, high pressure (discharge side)
10	Connection P2, low pressure (suction side)
11	12 - 30 V supply voltage
12	GND (earth lead)
13	Signal lead
14	Max. current consumption
15	Country of origin
16	Version no.

Conversion of SI units into US units, see page 11.

5. Function

The sensor measures the differential pressure between the high pressure (P1) and the low pressure (P2). It may for example be the differential pressure between the flanges on the suction and discharge side of a pump.

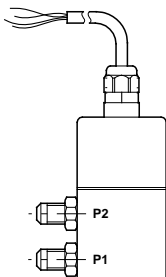


Fig. 2 DPI with position of P1 and P2

Connect the sensor to the pressure gauge tapings of the pump flanges or to other measuring points in the system by means of 7/16"-20 UNF copper capillary tubes.

The pressure measurement is carried out by a silicon chip covered with a special coating developed by Grundfos.

The sensor signal is sent to an external controller or to a motor controller.

The sensor is supplied with power from an external voltage supply or direct from the terminal box of the motor.

6. Installation

The sensor can be mounted direct on the side of the pump or on a wall by means of the mounting bracket supplied.

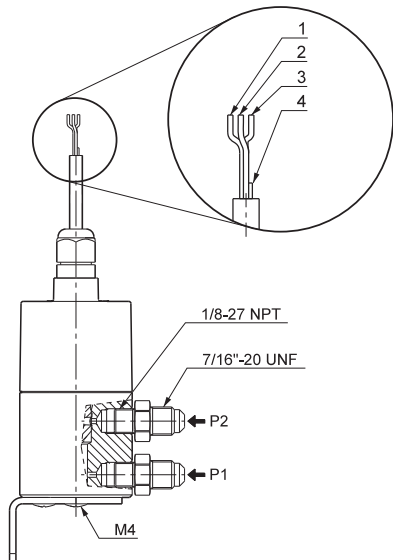


Fig. 3 Connections of the DPI

The DPI cable has four leads:

1	12 - 30 V supply voltage	Brown
2	GND (earth lead)	Yellow
3	Signal lead	Green
4	Test lead (can be cut off during mounting). This lead must not be connected to voltage supply.	White

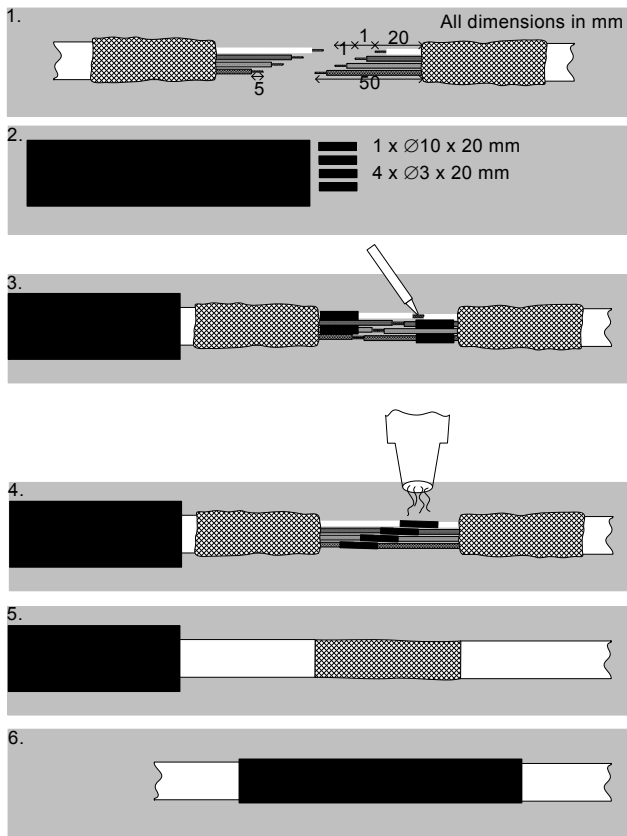


The DPI must be supplied with power via a PELV supply (EN 60335-1) where GND is connected to protective earthing. Furthermore, connect the mounting bracket and/or one or both of the capillary tubes to earth.

6.1 Extension of cable

The DPI kit 2 enables the extension of the sensor cable to up to > 30 m. If extension of the cable is required, always follow the guidelines below to ensure optimum connection between sensor and controller. The six steps below refer to fig. 4 on page 8:

1. Remove the outer insulation 50 mm from each cable end. Pull the outer screen away from the cable ends.
Shorten and strip the individual conductors as shown.
2. Cut 1 $\varnothing 10$ shrink-on sleeve and 4 $\varnothing 3$ shrink-on sleeves in lengths of 20 mm.
3. Place the shrink-on sleeves as shown in fig. 4. Solder together conductor ends of the same colour.
4. Place the small shrink-on sleeves over the centre of each solder. Heat up the shrink-on sleeves from the centre and outwards using a heat gun in order to achieve the best result.
5. Hold the conductors close together and pull the outer screens over the joint, one screen at a time.
6. Place the big shrink-on sleeve over the centre of the joint and shrink it using the heat gun from the centre and outwards.



TM04 0571 0808

Fig. 4 How to join the cables

6.2 Connection of amplifier

If the cable is more than 30 m long, use an amplifier to ensure correct signal values.

Connect the amplifier according to the diagram below:

Fischer EN10-3

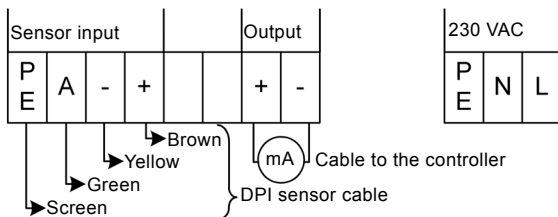


Fig. 5 Wiring diagram for amplifier

TM04 0570 0808

7. Technical data

7.1 Electrical data

Voltage supply to the sensor: PELV (protective extra low voltage) (EN 60335-1)	12 - 30 VDC
Load:	24 V: max. 500 ohm 16 V: max. 200 ohm 12 V: max. 100 ohm
Output signal, 3-wire:	4 - 20 mA
Enclosure class:	IP 55 (according to EN 60529)

7.2 Temperatures

Temperature at sensor:	-10 °C to +70 °C temporarily (max. 10 min.) up to 80 °C
Ambient temperature:	-10 °C to +70 °C
Storage temperature:	-40 °C to +80 °C

7.3 Miscellaneous

Cable length:	0.9 m
Cable length for DPI kit 2:	5 m
Max. air humidity:	95 %
Pressure range DPI:	0.... 0.6, 1.0, 1.6, 2.5, 4.0, 6.0, 10 bar
Pressure range DPI kit 2:	0.... 1.2, 2.5, 4.0, 6.0, 10 bar

Conversion of SI units into US units, see page 11.

8. Service

If the sensor is defective, replace the sensor.

9. Disposal

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

10. Conversion tables

Pressure

SI unit [bar]	US unit [psi]
0.6	8.7
1	14.5
1.6	23.2
2.5	36.3
4	58
6	87
10	145
16	232

Temperature

SI unit [°C]	US unit [°F]
-10	14
0	32
10	50
20	68
30	86
40	104
50	122
60	140
70	158
80	176

Declaration of conformity

GB: EU declaration of conformity

We, Grundfos, declare under our sole responsibility that the product DPI, to which the declaration below relates, is in conformity with the Council Directives listed below on the approximation of the laws of the EU member states.

CZ: Prohlášení o shodě EU

My firma Grundfos prohlašujeme na svou plnou odpovědnost, že výrobek DPI, na který se toto prohlášení vztahuje, je v souladu s níže uvedenými ustanoveními směrnice Rady pro sblížení právních předpisů členských států Evropského společenství.

DE: EU-Konformitätserklärung

Wir, Grundfos, erklären in alleiniger Verantwortung, dass das Produkt DPI, auf das sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EU-Mitgliedsstaaten übereinstimmt.

DK: EU-overensstemmelseserklæring

Vi, Grundfos, erklærer under ansvar at produktet DPI som erklæringen nedenfor omhandler, er i overensstemmelse med Rådets direktiver der er nævnt nedenfor, om indbyrdes tilnærmelse til EU-medlemsstaternes lovgivning.

ES: Declaración de conformidad de la UE

Grundfos declara, bajo su exclusiva responsabilidad, que el producto DPI al que hace referencia la siguiente declaración cumple lo establecido por las siguientes Directivas del Consejo sobre la aproximación de las legislaciones de los Estados miembros de la UE.

FR: Déclaration de conformité UE

Nous, Grundfos, déclarons sous notre seule responsabilité, que le produit DPI, auquel se réfère cette déclaration, est conforme aux Directives du Conseil concernant le rapprochement des législations des États membres UE relatives aux normes énoncées ci-dessous.

GR: Δήλωση συμμόρφωσης ΕΕ

Εμείς, η Grundfos, δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι το προϊόν DPI, στο οποίο αναφέρεται η παρακάτω δήλωση, συμμορφώνεται με τις παρακάτω Οδηγίες του Συμβουλίου περί προσέγγισης των νομοθεσιών των κρατών μελών της ΕΕ.

HU: EU megfeleléségi nyilatkozat

Mi, a Grundfos vállalat, teljes felelősséggel kijelentjük, hogy a(z) DPI termék, amelyre az alábbi nyilatkozat vonatkozik, megfelel az Európai Unió tagállamainak jogi irányelveit összehangoló tanács alábbi előírásainak.

IT: Dichiarazione di conformità UE

Grundfos dichiara sotto la sua esclusiva responsabilità che il prodotto DPI, al quale si riferisce questa dichiarazione, è conforme alle seguenti direttive del Consiglio riguardanti il riavvicinamento delle legislazioni degli Stati membri UE.

PL: Deklaracja zgodności UE

My, Grundfos, oświadczamy z pełną odpowiedzialnością, że nasz produkt DPI, którego deklaracja niniejsza dotyczy, jest zgodny z następującymi dyrektywami Rady w sprawie zbliżenia przepisów prawnych państw członkowskich.

RU: Декларация о соответствии нормам ЕС

Мы, компания Grundfos, со всей ответственностью заявляем, что изделие DPI, к которому относится нижеприведенная декларация, соответствует нижеприведенным Директивам Совета Евросоюза о тождественности законов стран-членов ЕС.

- Low Voltage Directive (2014/35/EU).
Standard used: EN 61010-1:2010
 - EMC Directive (2014/30/EU).
Standard used: EN 61326-1:2006 and EN 61326-2-3:2013
-

This EU declaration of conformity is only valid when published as part of the Grundfos safety instructions (publication number 96607940).

Bjerringbro, 14th April 2016



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