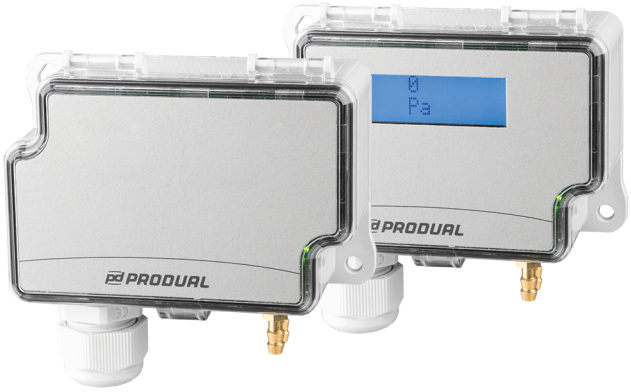
DPI-24 differential pressure switch



The DPI-24 differential pressure switch is a differential pressure indicator that combines the advantages of an electronic differential pressure switch for air (on-off relay) and a multi-functional differential pressure transmitter. It also includes a flow switch. The DPI-24 differential pressure switch provides eight pressure measurement ranges per model, and supports five pressure measurement units and six flow measurement units.

This technologically advanced and versatile 24 Vac/Vdc differential pressure switch can have one or two relay outputs. The switch can control the relays based on differential pressure or air flow. You can configure the relay operating direction, switching point and hysteresis.

In applications that control the relays using the air flow signal, you can use the FloXact™ measurement probe to measure the air volume flow in a ventilation duct or the flow rate on a centrifugal fan, and DPI-24 to calculate the flow and control the relays based on the calculations.

The DPI-24 differential pressure switch has one voltage output and one current output. The voltage output is freely scalable within its 0...10 V range. The current output is not scalable.

This differential pressure switch has a span point adjustment function for cleanroom applications and other high-accuracy applications that require annual calibration of differential pressure switches.

The following options are available:

- Two relays (-2R models)
- Automatic zeroing (-AZ models)
- Commissioning and configuration with the MyTool® smartphone application (-BT models)
- Display (-D models)

The -2R models have two relay outputs for switching relays on and off.

The -AZ models adjust the zero point automatically and do not require manual zeroing.

The -BT models support the MyTool Connect dongle and the MyTool® smartphone application for configuring settings.

The -D models have a display that shows pressure or flow measurement value and the relay status.

You can configure the device settings via the device menu (-D models) or using the MyTool Connect dongle and the MyTool® smartphone application (-BT models).

The DPI-24 differential pressure switches and transmitters are typically used in building automation systems for:

- fan, blower and filter monitoring
- staircase pressure monitoring and alarm
- pressure monitoring in cleanrooms
- boiler pressure monitoring and alarm

Technical specifications

Property	Value
Power supply	21...35 Vdc / 24 Vac ±10 %
Power supply (AZ-models)	24 Vac/Vdc ±10 %
Power consumption	all options included
Normal operation	< 80 mA
During automatic zeroing	< 120 mA
Pressure measurement	* factory setting
Range	
±500 models	±50 / ±100 / ±150 / ±250 / ±300 / *±500 / 0...100 / 0...250 Pa / custom selectable
-2500 models	-100...+100 / 0...100 / 0...250 / 0...500 / 0...1000 / 0...1500 / 0...2000 / *0...2500 Pa / custom selectable
-7000 models	0...1000 / 0...1500 / 0...2000 / 0...2500 / 0...3000 / 0...4000 / 0...5000 / *0...7000 Pa / custom selectable
Accuracy (including: general accuracy, linearity, hysteresis, long term stability, and repetition error)	
±500 models and -2500 models	≤125 Pa: ±1 % + ±2 Pa from reading (when the read value is between -125 and +125 Pa) > 125 Pa: ±1.5 % + ±1 Pa from reading
-7000 models	≤ 125 Pa: ±1.5 % + ±2 Pa from reading (when the read value is between -125 and +125 Pa) > 125 Pa: ±1.5 % + ±1 Pa from reading
Overpressure	
Proof pressure	25 kPa
Burst pressure	30 kPa
Response time	0.5...20 s, selectable via menu
Measuring element	Piezoresistive
Measurement units	Pressure: *Pa, kPa, mbar, inchWC, mmWC Flow: *m^3/s, m^3/hr, cfm, l/s, m/s, ft/min
Zeroing	manually by pushbutton or automatic zeroing (-AZ models)
Pressure fittings	
Type	barbed fitting, male
Size	Ø5.2 mm
Material	brass
Analogue outputs	The device has 1 voltage output, 1 current output and 1 or 2 relay outputs.
Voltage output	
Range	0...10 V, load > 1 kΩ (freely scalable within the range)
Accuracy	Vout: ±0.025 V at 25 °C

Property	Value
Current output	
Range	4...20 mA, load 20...500 Ω
Accuracy	Iout: typical ±0.04 mA at 25 °C, load 100 Ω max. ±0.1 mA at 25 °C, load 20...500 Ω
Relay outputs	
Relay 1	30 Vdc, 6 A, spring-loaded terminal block (NC, COM, NO)
Relay 2 (-2R models)	30 Vdc, 6 A, spring-loaded terminal block (NC, COM, NO)
Display (-D models)	46.0 x 14.5 mm 2-line display. Shows measured pressure or flow value, and relay ON status for each relay.
Wiring terminals	
Type	spring-loaded terminals
Wire	0.2...1.5 mm^2 (24...16 AWG), stripping length 5 mm
Commissioning tool (-BT models)	MyTool Connect dongle andMyTool® application
Appliance class (IEC 60664-1)	III
Operating conditions	
Ambient temperature	-10...50 °C
Ambient temperature (-AZ models)	-5...50 °C
Ambient humidity	0...95 %rH (non-condensing)
Storage conditions	
Temperature	-40...70 °C
Humidity	0...95 %rH (non-condensing)
Housing	
Protection class	IP54, cable downwards
Cable gland	M20
Materials	ABS and PC plastic (housing), PVC (tubing)
Mounting	2 x Ø4.3 mm screw holes, one slotted
Dimensions (w x h x d)	102 x 96 x 36 mm
Weight	150 g
Warranty	5 years
CE UKCA	Refer to the EU Declaration of Conformity or the UK Declaration of Conformity for compliance information. You can find the declarations on this product's page at www.produal.com.
Company certificates	
Quality management	ISO 9001
Environmental management	ISO 14001

Wiring

WARNING: Device wiring and commissioning can only be carried out by qualified professionals. Always make the device wirings in de-energised electricity network.

WARNING: This product is appliance class III product according to IEC 60664-1. The product may only be connected to SELV (separated extra low voltage) electricity network.

WARNING: The relay port is not protected internally against overload. The wiring of the relay port must be either protected with an external fuse with maximum current rating of 1 A slow blow or the power consumption of the connected external circuitry must be inherently limited to less than 15 W in both normal operation and failure condition.

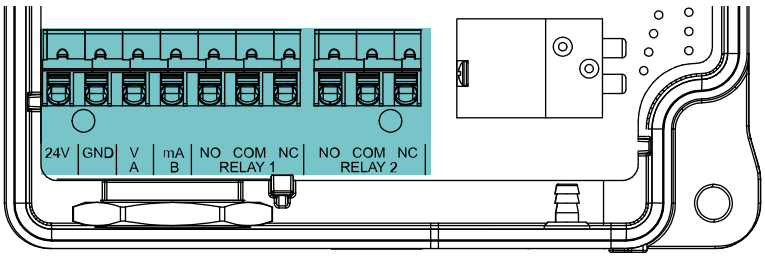
WARNING: The relay port may be connected only to SELV (separated extra low voltage) circuitry.

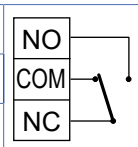
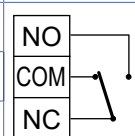
CAUTION: Use single stranded wires or use wire end sleeves if multi stranded wires are used.

Important: For CE and UKCA compliance, a properly grounded shielding cable is required.

1. Open the cover.
2. Unscrew the strain relief on the cable gland.
3. Route the cables for power input, measurement signal output, and relay outputs through the strain relief and the cable gland.
4. Connect the wires to the terminal block according to the table below.

   Insert a small flat-head screwdriver into the top slot of the spring-loaded terminal and push gently to open the terminal.

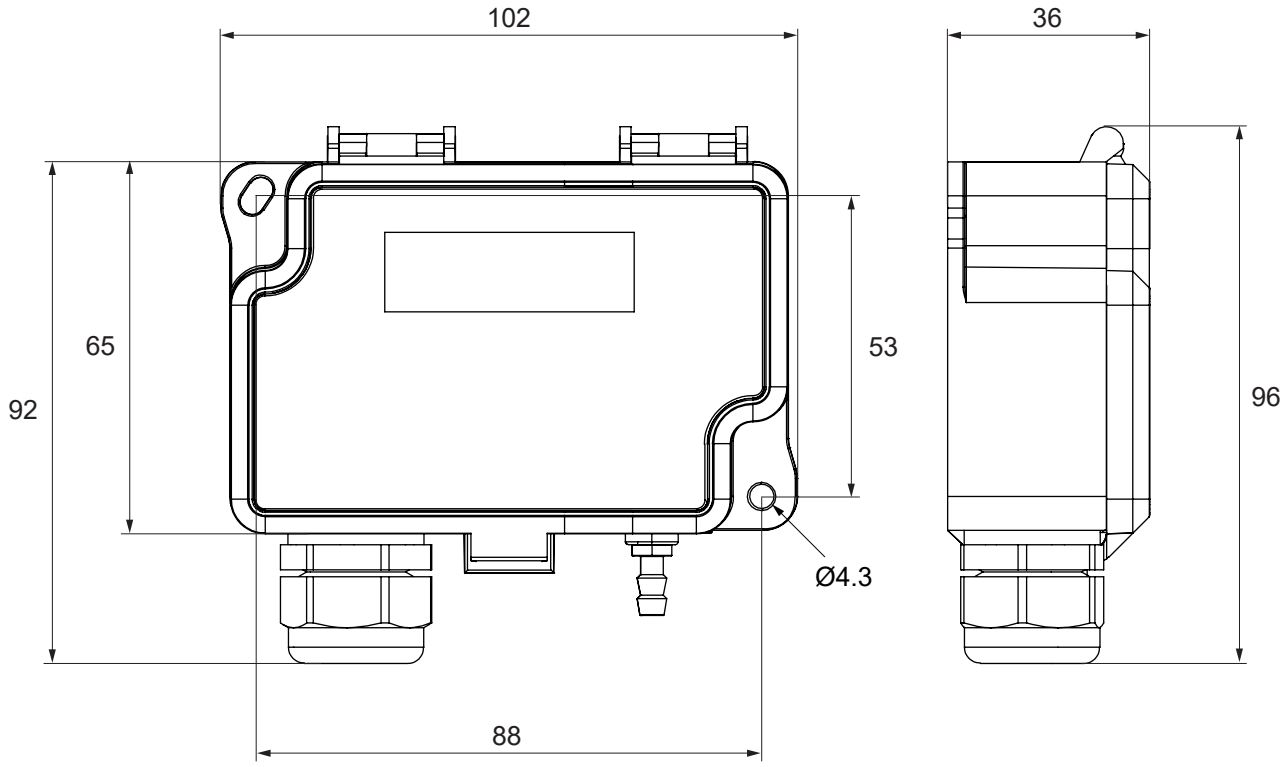


24V		24 Vac/dc power supply
GND		0 V
V		Voltage output: 0...10 V, load > 1 kΩ
mA		Current output: 4...20 mA, load 20...500 Ω
NO *COM* *NC*		Relay 1 output: 30 Vdc, 6 A
NO *COM* *NC*		Relay 2 output (-2R models): 30 Vdc, 6 A

5. Tighten the strain relief.

Dimensions

All dimensions are in millimeters (mm).



Ordering information

You can use the ordering guide below to generate ordering information for products you would like to order. For example, the ordering information for a differential pressure transmitter with 0...2500 Pa range, automatic zeroing, MyTool Connect connector, 1 relay and a display is as follows:

Product type: *DPI-24-BT-2500-R-AZ-D*
Product number: *113A210110*

			Type	0	1	2	3	4	5	6
0	Differential pressure transmitters for air			113A						0
1	Device type	Differential pressure switch	DPI-24		1					
		Differential pressure switch with a Bluetooth dongle connector	DPI-24-BT		2					
2	Range	± 500 Pa	-±500			0				
		0...2500 Pa	-2500			1				
		0...7000 Pa	-7000			2				
3	Relay	1 relay	-R				0			
		2 relays	-2R				1			
4	Zeroing	Manual zeroing						0		
		Automatic zeroing	-AZ					1		
5	Display	No display (only available for DPI-24-BT)							0	
		Display	-D						1	
6	Reserved									0