

DIFFERENTIAL PRESSURE SWITCHES DPI Series

Electronic differential pressure switch(es) and transmitter

The DPI series electronic pressure measuring devices are engineered for building automation in the HVAC/R industry. The most technologically advanced and versatile electronic differential pressure switches on the market, combining up to two relay outputs and 0–10 V output options.

The DPI includes the following field selectable features:

- Configurable switching point:
 - Open on rise or fall in pressure
 - Hysteresis of set-point
- Measurement units (Pa, kPa, mmWC, inWC, mbar)
- Measurement ranges (4 ranges per model)
- Output signal (0–10 V, NO/NC)
- Span and zero point calibration

DPI options include:

- Display
- Up to 2 relays, which can be configured separately
- Autozero calibration

The versatility of the DPI series electronic pressure measuring devices ensure the right product for the current application specifications is always available.



SIMILAR PRODUCTS

- PS series mechanical differential pressure switches
- DPT-R8 series 8-range differential pressure transmitters
- DPT-MOD series differential pressure transmitters with Modbus configuration

APPLICATIONS

DPI series devices are commonly used in HVAC/R systems for:

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

MODEL SUMMARY

| DPI | DPI±500 | DPI2500 | | |
|--|---------------------------------|----------------------------|-----------------|--------------|
| Measurement ranges (Pa) (field selectable via menu) | ±100 Pa / ±250 / ±300 / ±500 Pa | 100 / 250 / 1000 / 2500 Pa | | |
| Description | Model | Product code | Model | Product code |
| Electronic differential pressure switch & transmitter | | | | |
| -with display and one relay | DPI±500-1R-D | 118.001.001 | DPI2500-1R-D | 118.002.001 |
| -with display, one relay and autozero | DPI±500-1R-AZ-D | 118.001.002 | DPI2500-1R-AZ-D | 118.002.002 |
| -with display and two relays | DPI±500-2R-D | 118.001.003 | DPI2500-2R-D | 118.002.003 |
| -with display, autozero and two relays | DPI±500-2R-AZ-D | 118.001.004 | DPI2500-2R-AZ-D | 118.002.004 |

DIFFERENTIAL PRESSURE SWITCHES

DPI Series

SPECIFICATIONS

Performance

Accuracy:

±0.7 % (±1.5 % initial)
 %/FS from highest pressure range including:
 general accuracy, temperature drift, linearity, hysteresis,
 and repetition error.

Long term stability:

Typical 1 year
 With autozero: ±1 Pa
 Without autozero: ±8 Pa

Overpressure:

Proof pressure: 25 kPa
 Burst pressure: 30 kPa

Zero point calibration:

Automatic with autozero (-AZ) circuit or
 Manual via menu

Response time:

0.5–10 s, selectable via menu

Technical Specifications

Media compatibility:

Dry air or non-aggressive gases

Measuring units:

Pa, kPa, mmWC, inWC, mbar selectable via menu

Measuring element:

Piezoresistive

Environment:

Operating Temperature:
 Without autozero : -10...50 °C
 With autozero: -5...50 °C
 Storage temperature: -20...70 °C
 Humidity: 0 to 95 % rH, non condensing

Physical

Dimensions:

Case: 89 x 86.5 x 37.1 mm

Weight:

150 g

Mounting:

Case: 2 each 4.3 mm holes
 Lid: 2 each 4.3 mm holes

Materials:

Case: ABS
 Lid: PC

Duct connectors: ABS
 Tubing: PVC

Protection standard:

IP54

Touch sensitive buttons on the lid:

Menu, Back, OK, down arrow, up arrow

Display:

3 1/2 digit LCD backlit display
 Size: 46.0 W x 14.5 H mm

Electrical connections:

n/out:

Terminal block (24 V, GND, 0–10 V)
 Wire: 12–24 AWG (0.2–1.5 mm²)

Relay 1:

Terminal block (NC, COM, NO)
 Wire: 12–24 AWG (0.2–1.5 mm²)

Relay 2:

Terminal block (NC, COM, NO)
 Wire: 12–24 AWG (0.2–1.5 mm²)

Cable entries:

Strain relief: M16 & M20
 Knockout : 16 mm
 Knockout : 20 mm

Pressure fittings:

5.2 mm barbed brass
 + High pressure
 – Low pressure

Electrical

Circuit: 3-wire (24 V, GND, 0–10 V)

Input:

Without autozero: 21–35 VDC/ 24 VAC, ±10 %
 With autozero: 24 VAC or VDC, ±10 %

Output:

Analogue: 0–10 V
 Relay 1: 250 VAC / 30 VDC / 6 A
 Relay 2: 250 VAC / 30 VDC / 6 A

Resistance minimum: 1 kΩ

Current consumption:

35 mA + relays (7 mA each) + AZ circuit (20 mA)
 + 0–10 V output (10 mA)

Conformance

Meets requirements for CE marking:
 EMC Directive 2004/108/EC
 RoHS Directive 2002/95/EC
 LVD Directive: 2006/95/EC

AZ-calibration is a function in the form of an automatic zeroing circuit built into the PCB board. The AZ-calibration electronically adjusts the transmitter zero at predetermined time intervals (every 10 minutes). The AZ-calibration eliminates all output signal drift due to thermal, electronic or mechanical effects, as well as the need for technicians to remove high and low pressure tubes when performing initial or periodic transmitter zero point calibration.

The AZ adjustment takes 4 seconds. To avoid conflict with the BAS system, the output and display values will freeze to the latest measured

value, after which the device returns to its normal measuring mode. Transmitters equipped with the AZ-calibration are virtually maintenance free*.

*When the AZ-calibration option is not selected, the product is provided with a manual pushbutton autozero. To maintain proper functionality and accuracy of the transmitter, it is recommended that the manual pushbutton autozero point calibration is performed annually, at a minimum.

How to generate a model?

| Example: | Product series | | | |
|----------|----------------|--|---|----|
| | DPI±500-2R-D | DPI | Differential pressure indicator | |
| | | Highest available measurement range | | |
| | | ±500 | ±500 Pa | |
| | | 2500 | 0–2500 Pa | |
| | | Number of relays | | |
| | | -1R | One relay | |
| | | -2R | Two relays | |
| | | Zero point calibration | | |
| | | -AZ | With optional autozero calibration function | |
| | | | Standard with push button manual autozero | |
| | | Display | | |
| | | -D | With Display | |
| Model | DPI | ±500 | -2R | -D |