DP2500 – DP0250

Differential Pressure Transmitter

Product Bulletin

The DP Low Differential Pressure Transmitter series is an accurate and cost competitive solution for measuring low pressures of air and non-aggressive gases in order to monitor and control pressures in building automation, HVAC and clean room systems.

The DP series accurately measures low differential pressure and converts the measurement into a standard proportional 0...10 V signal or 4…20mA.

The various pressure measurement range are filed selectable with jumpers.

- **8 measurement ranges in one device**
  Allow selection of best input range for application
- **2 rows x 12 characters digit display**
  Shows differential pressure
- **AutoZero option**
  Makes the DP transmitter maintenance free
- **Response time selectable**
  Allow to cover all the customer needs
- **Easy mounting**
  No expert required , reduce time and cost
- **IP54**
  It can be mounted and several environments
- **Span Point Adjustment (only for DP0250-R8-AZ-DS and DP0250-R8-AZS models)**
  The output's drift can be adjusted

Johnson Controls

Ordering Codes

Single Pack with Standard Accessories

DP2500

Codes	Description	Span Point	Auto Zero	Display	Selectable Range in Pa							
					-100...+100	0...100	0...250	0...500	0...1000	0...1500	0...2000	0...2500
DP2500-R8	Differential Pressure Sensor, with 8 Ranges - Single Pack	--	--	--	X	X	X	X	X	X	X	X
DP2500-R8-AZ	Differential Pressure Sensor, with 8 Ranges and AutoZero feature - Single Pack	--	X	--	X	X	X	X	X	X	X	X
DP2500-R8-D	Differential Pressure Sensor, with 8 Ranges and Display - Single Pack	--	--	X	X	X	X	X	X	X	X	X
DP2500-R8-AZ-D	Differential Pressure Sensor, with 8 Ranges, AutoZero feature and Display - Single Pack	--	X	X	X	X	X	X	X	X	X	X

DP0250

Codes	Description	Span Point	Auto Zero	Display	Selectable Range in Pa							
					0...25 Pa	0...50 Pa	0...100 Pa	0...250 Pa	-25...+25 Pa	-50...+50 Pa	-100...+100 Pa	-150...+150 Pa
DP0250-R8-AZ	Differential Pressure Sensor, with 8 Ranges and AutoZero feature - Single Pack	--	X	--	X	X	X	X	X	X	X	X
DP0250-R8-AZ-D	Differential Pressure Sensor, with 8 Ranges, AutoZero feature and Display - Single Pack	--	X	X	X	X	X	X	X	X	X	X
DP0250-R8-AZS	Differential Pressure Sensor, with 8 Ranges, AutoZero feature and Span point adjustment - Single Pack	X	X	--	X	X	X	X	X	X	X	X
DP0250-R8-AZ-DS	Differential Pressure Sensor, with 8 Ranges, AutoZero feature, Display and Span point adjustment - Single Pack	X	X	X	X	X	X	X	X	X	X	X

Standard accessories:

- 2 fixing screws
- 2 plastic tube connectors
- 2 m tube Ø 4 / 7 mm

Bulk Pack without Standard Accessories

DP2500

Codes	Description	Span Point	Auto Zero	Display	Selectable Range in Pa							
					-100...+100	0...100	0...250	0...500	0...1000	0...1500	0...2000	0...2500
DP2500-R8-01	Differential Pressure Sensor, with 8 Ranges - Bulk Pack - 46 pcs	--	--	--	X	X	X	X	X	X	X	X
DP2500-R8-AZ-01	Differential Pressure Sensor, with 8 Ranges and AutoZero feature - Bulk Pack - 46 pcs	--	X	--	X	X	X	X	X	X	X	X

DP0250

Code	Description	Span Point	Auto Zero	Display	Selectable Range in Pa							
					0...25 Pa	0...50 Pa	0...100 Pa	0...250 Pa	-25...+25 Pa	-50...+50 Pa	-100...+100 Pa	-150...+150 Pa
DP0250-R8-AZ-01	Differential Pressure Sensor, with 8 Ranges and AutoZero feature - Bulk Pack - 46 pcs	--	X	--	X	X	X	X	X	X	X	X

Application

This product converts the differential pressure between the + / - pressure ports to an analog output signal.

The DP differential pressure transmitter contains a micro-machine, single-crystal silicon, piezoresistive pressure sensor with strain gauges to change resistance as a function of applied pressure.

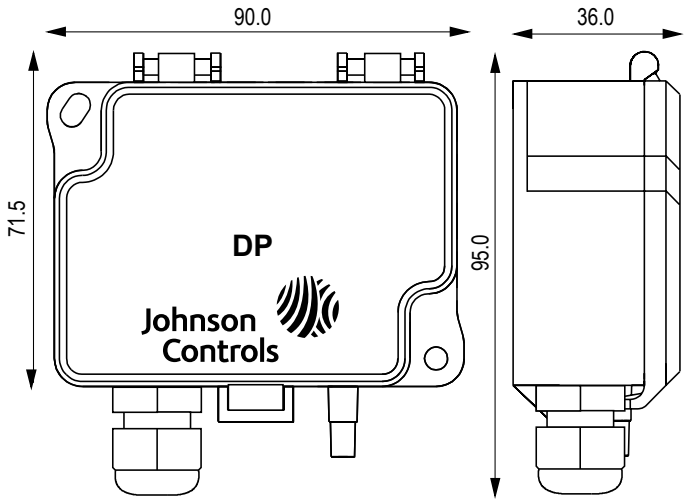
Installation

The installation of electrical wiring must conform to local codes and should be carried out by authorized personnel only. Users should ensure that all Johnson Controls products are used safely and without risk to health or property.

The DP series differential pressure transmitter are intended to provide input to equipment under normal operating conditions.

Where failure or malfunction of an DP series differential pressure transmitter could lead to an abnormal operating condition that could cause personal injury or damage to the equipment or other property, other devices (limit or safety controls) or systems (alarm or supervisory) intended to warn of, or protect against, failure or malfunction of the DP series must be incorporated into and maintained as part of the control system.

Dimensions



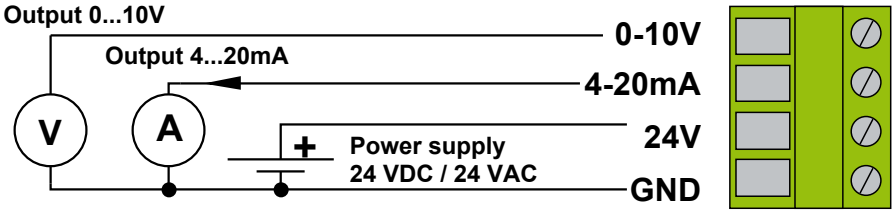
Wirings

Before connecting or disconnecting any wires, ensure that all power supplies have been switched off and all wires are potential-free to prevent equipment damage and avoid electrical shock.

Terminations are made on the terminal blocks in the base of the module, which accept up to 1.5 mm^2 wires.

Follow the wiring diagrams shown in the figure below.
All wiring to the module is at extra low (safe) voltage and must be separated from power line voltage wiring.
Do not run wiring close to transformers or high frequency generating equipment.

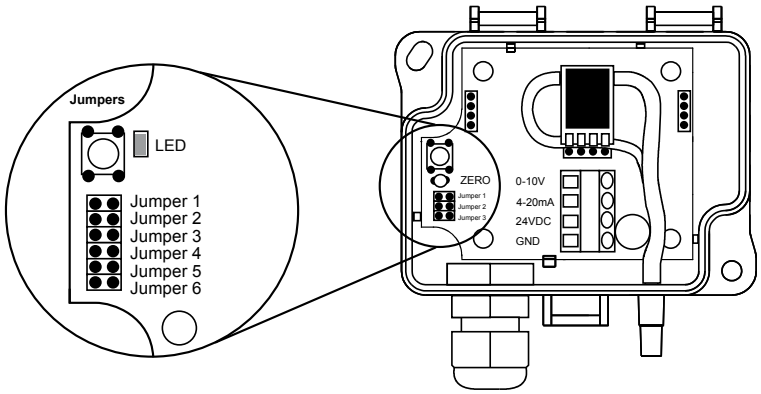
Complete and verify all wiring connections before applying power to the controller to which the module is connected.



Operation

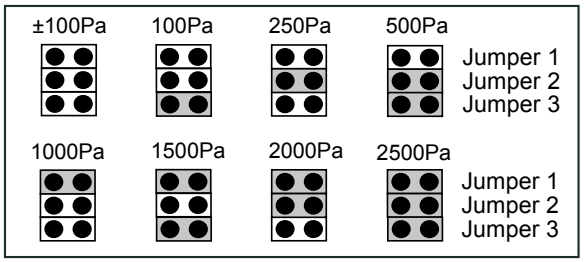
Selecting Pressure Range

To adjust the pressure range, set the jumpers as shown.

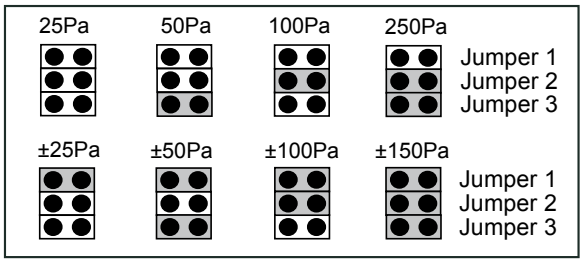


The pressure values on the sticker depends on the model

DP2500



DP0250



Zeroing

It is recommended to adjust the zero point every 12 months during normal operation.

How to do:

Note! Supply voltage must be connected one hour before the 0-point adjustment is carried out.

1) Loose both tubes from the pressure inlets + and –.

2) Push zero button >4 seconds and the red led turns ON.

3) Wait until LED turns off and then install tubes again to the pressure inlets.

AutoZero (-AZ) option

Optional auto zero function makes the DP transmitter maintenance free for periodical zero point adjustment. Element automatically adjusts the transmitters zero point from time to time, this eliminates the zero point long term drift of the piezoresistive sensing element.
Zero point adjustment is carried out every 10 minutes.
During zero point adjustment the output and display values will freeze to the latest measured value.
The automatic zero point adjustment takes 4 seconds.
During this time power consumption can be up to 1,7 W.

Span Point Adjustment

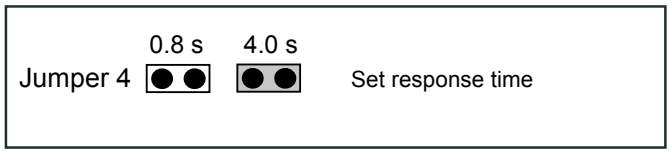
The span point can be adjusted ±5% by the span trimmer. This enables an end user to reach the best accuracy.

1. Connect the input pressure.
2. Read the actual pressure from a reference meter.
3. Adjust the DP display (or output signal) to showing the same as the value of reference meter.

Response time selection

DP2500 Series / DP0250 Series

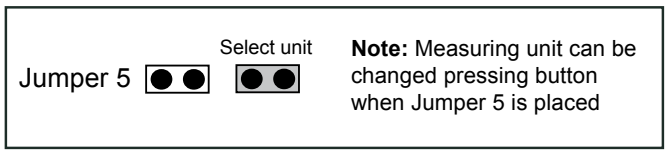
This model is equipped of a jumper for response time selection (0.8 or 4 sec).



Display (-D) option

For local differential pressure visualization there are optional models (-D versions) with a 2 rows x 12 characters digit display.

The measuring unit can be changed pressing button when jumper 5 is placed.



Units available are: Pa, kPa, mbar, inchwc, mmwc, psi.

Now display has backlight to facilitate the reading of the value in dark environments.

Technical Specification

Pressure Ranges	**DP2500**	**DP0250**
	-100...+100 Pa	0...25 Pa
	0...100 Pa	0...50 Pa
	0...250 Pa	0...100 Pa
	0...500 Pa	0...250 Pa
	0...1000 Pa	-25...+25 Pa
	0...1500 Pa	-50...+50 Pa
	0...2000 Pa	-100...+100 Pa
	0...2500 Pa	-150...+150 Pa
Accuracy	±1,5% or (±3 Pa<250 Pa) (including: general accuracy, temperature drift, linearity, hysteresis, long term stability and repetion error)	
Response Time	0.8 / 4s selectable by jumper	
Max. pressure	400 kPa	
Suitable media	Air and non-aggressive gases	
Measuring element	Piezoresistive	
Electrical interface (3-wire)		
Supply Voltage	24 VAC or VDC	
Max. Tolerance	±10%	
Power Consumption	<1.0 W (<1.5 W with Iout 20 mA)	
Output Signal	0…10 VDC, Load R minimum 1kΩ or 4…20 mA, maximum load 500Ω	
Materials		
Housing	ABS	
Cover	PC	
Pressure Connections	ABS	
Duct Connectors	ABS	
Tubing	PVC, soft	
Connections		
Electrical Connections	4 screw terminals, max 1.5 mm^2	
Cable Entry	M16	
Pressure Connections	Male ∅ 5,0 mm and 6,3 mm	
Weight	150 grams, with accessories 290 grams	
Dimensions	90,0 x 71,5 x 36,0 mm	
General Ambient Condition		
Temperature Range Operation	-10…+50 °C (-5…+50 °C for –AZ model)	
Storage	-20…+70 °C	
Ambient Humidity	0 to 95% RH	
Protection Class	IP54	
CE Compliance	Johnson Controls, Inc., declares that these products are in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC. Rohs Directive 2002/95/EY	

Johnson Controls

Building Efficiency

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