



## Features and Benefits

- User selectable measurement range and output type
- IP65 Housing
- Duct fixing kit included
- Re-zero facility

## Technical Overview

The PA-DPT differential pressure transmitter is ideal for measuring filter conditions, as well as many other applications in ventilation/air conditioning systems in buildings, laboratory's and clean rooms (air and non- corrosive gases).

Featuring field-selectable output signals (3-wire 4-20mA, 0-10Vdc or 2-10Vdc) and 8 pressure ranges, unidirectional or bi-directional via jumpers. An optional LCD display is also available.

Sensor types 01 & 02 have manual re-zero facility whereas the 01-HA version has an auto zero function for automatic zero point calibration making it a virtually maintenance free sensor.

## Product Codes

<b>PA-DPT-01</b>	Air DP transmitter with multi selectable ranges and user selectable 3-wire 4-20mA or 0-10Vdc/2-10Vdc outputs; 0 - 25Pa, 0 - 50Pa, 0 - 100Pa, 0 - 150Pa, 0 - 250Pa, 0 - 300Pa, 0 - 500Pa & ±50Pa
<b>PA-DPT-01-HA</b>	Air DP transmitter with multi selectable ranges and user selectable 3-wire 4-20mA or 0-10Vdc/2-10Vdc outputs; 0 - 25Pa, 0 - 50Pa, 0 - 150Pa, 0 - 250Pa, 0 - 300Pa, 0 - 500Pa & ±50Pa
<b>PA-DPT-02</b>	Air DP transmitter with multi selectable ranges and user selectable 3-wire 4-20mA or 0-10Vdc/2-10Vdc outputs; 0 - 125Pa, 0 - 250Pa, 0 - 500Pa, 0 - 750Pa, 0 - 1250Pa, 0 - 1500Pa, 0 - 2500Pa & ±250Pa
Suffixes (add to above part code)	
<b>-LCD</b>	Integral LCD display
<i>Accessories</i>	
<b>DFK</b>	Duct fixing kit
<b>TEE</b>	Tee piece air pressure (pack of 10)
<b>PITOT</b>	Aluminium pitot tubes (pair)
<b>PA-TUBE-8MM</b>	Clear tube 8mm o/d x 1.5mm wall, 30m reel
<b>PA-TUBE-RED</b>	Red tube 8mm o/d x 1.5mm wall, 30m reel
<b>PA-TUBE-BLUE</b>	Blue tube 8mm o/d x 1.5mm wall, 30m reel

A 'duct fixing kit' is supplied with the PA-DPT, consisting of 2m of 6mm ID plastic tubing, 2 x pitot tubes and 4 x fixing screws.



Please Note:

Current versions are NOT loop powered and will require a common 0V connection.

## Specification

Power supply:	
(Current output)	24Vac/dc ±10% (3-wire)
Consumption	<1.2W
Load	500Ω maximum
(Voltage output)	24Vac/dc ±10%
Consumption	<1.0W
Resistance	1kΩ minimum
Electrical connections	Terminals to suit 0.2-1.5mm <sup>2</sup> (12-24 AWG) cables
Accuracy (from applied pressure)	
PA-DPT-1	1.5% AP + ±2Pa
PA-DPT-1-HA	1.0% AP + ±2Pa
PA-DPT-2	1.5% AP + ±2Pa
Overpressure:	
Proof pressure	25kPa
Burst pressure	30kPa
Response time	8.0 or 0.8s selectable
Measuring element	MEMS, no flow through
Pressure connections	5mm ID tubing
Housing:	
Material	PC/GF (Halogen free, flame retardant & UV stabilized)
Dimensions	125 x 105 x 85mm
Environmental:	
Operating temp.	-20 to +50°C (PA-DPT-01 & 02) -5 to +50°C (PA-DPT-01-HA)
Storage:	-20 to 60°C 0 to 95% non-condensing
Temp. compensated range	0 to 50°C
Protection	IP65
Country of origin	UK

### WEEE Directive:

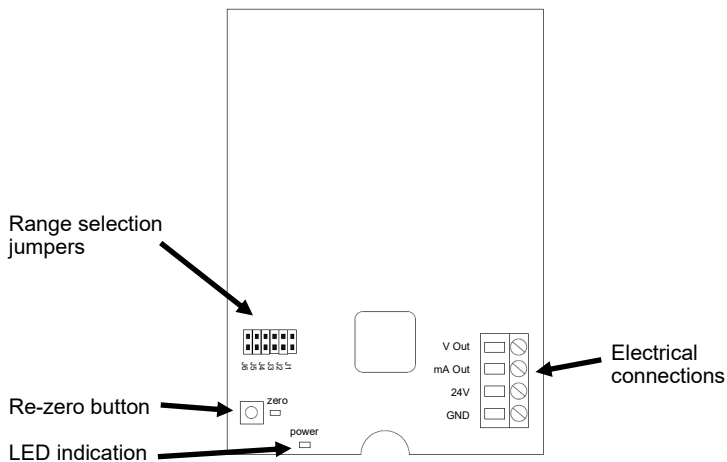


At the end of the products useful life please dispose as per the local regulations. Do not dispose of with normal household waste. Do not burn.

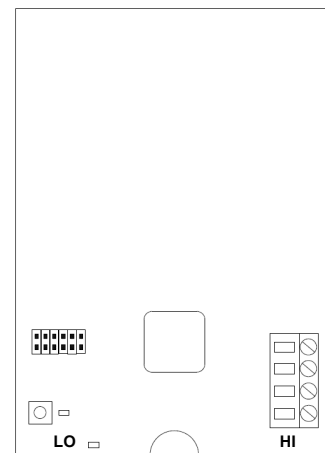


The products referred to in this data sheet meet the requirements of EU Directive 2014/30/EU

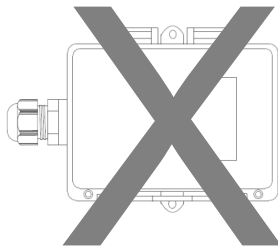
## PCB Layout



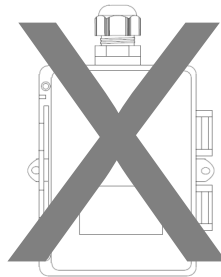
## Pressure Connections



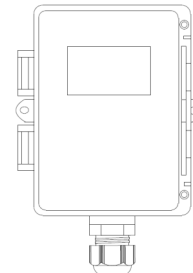
## Mounting The Sensor



NO



NO



YES

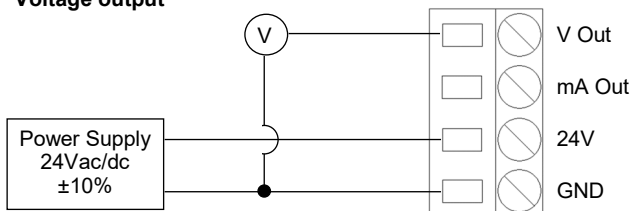
## Installation



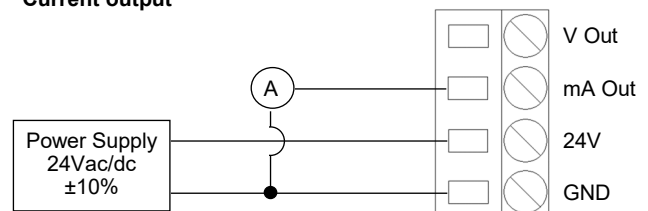
Antistatic precautions must be observed when handling these sensors. The PCB contains circuitry that can be damaged by static discharge.

1. If the sensor is to be mounted outside, it is recommended that the unit be mounted with the cable entry at the bottom. If the cable is fed from above then into the cable gland at the bottom, it is recommended that a rain loop be placed in the cable before entry into the sensor.
2. In a suitable location, drill two holes at 92mm $\varnothing$  and fix the housing with appropriate screws (see mounting positions above).
3. Release the snap-fit lid by gently squeezing the locking tab and feed the cable through the waterproof gland & terminate the cores at the terminal block.

## Voltage output



## Current output



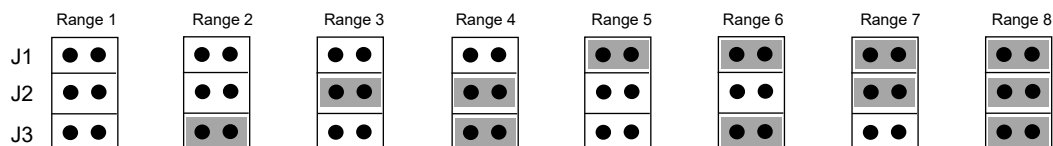
## NOTE

Current versions are NOT loop powered and will require a common 0V connection.

## Installation (continued)

4. Using the PCB jumper headers, select (Please note, the grey shaded area indicates that a jumper is fitted):

### Pressure range

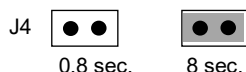


<b>PA-DPT-01</b>	0-25Pa	0-50Pa	0-100Pa	0-150Pa	0-250Pa	0-300Pa	0-500Pa	±50Pa
<b>PA-DPT-02</b>	0-125Pa	0-250Pa	0-500Pa	0-750Pa	0-1250Pa	0-1500Pa	0-2500Pa	±250Pa

### Response time

The response time affects how fast the sensor reacts to changes in pressure. The response time is the time the sensor takes to reach 63% of the measured value. To smooth out unstable pressure fluctuations in airflow applications, select a longer response time.

To change response time



Using 2-10Vdc output (NOTE When using 4-20mA output J6 must be removed)



### Measurement unit (ONLY applicable to sensors fitted with display)

- To change measurement unit, fit jumper to both pins of J5.
- Press the zero button and the measurement unit options will cycle on the display (Pa, kPa, mbar, inchWC, mmWC & psi).
- To select a unit option to the display, remove the jumper from J5 while the measurement unit is visible on the display.
- See next page for chart.

5. Manual Push button zero point calibration NOTE: Supply voltage must be connected at least one hour prior to zero point adjustment  
PA-DPT-01 & PA-DPT-02 (manual zero point calibration)

- Disconnect both pressure ports.
- Press the zero button until the LED (red) turns on (LED lights for only a moment).
- The Zeroing of the device will proceed automatically in 4 seconds, then the LED is off.
- Re-install the pressure tubes ensuring that the high pressure tube is connect to the port labelled as + & the low pressure tube is connect to the port labelled as -.

#### PA-DPT-01-HA (Auto zero point calibration)

Auto zero calibration is an automatic zeroing circuit built into the PCB board. The auto zero calibration electronically adjusts the transmitter zero at predetermined time intervals (every 10 minutes). The function 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 auto zero adjustment takes 4 seconds after which the device returns to its normal measuring mode. During the 4 second adjustment period, the output and display values (if fitted) will freeze to the latest measured value.

- Ensure the tubing is cut square and push the pressure tubing firmly over the barb and thread of the pressure ports on the unit. Ensure that the Hi and Lo ports have been correctly identified (see PCB for identification)
- Snap shut the lid. Leaving some slack inside the unit, tighten the cable gland onto the cable to ensure water tightness.

It is recommended that screened cable be used and that the screen should be earthed at the controller only. Care should be taken not to lay control signal wiring in close proximity to power or other cables which may produce significant electromagnetic noise.



### CAUTION

The PA-DPT will be damaged if subjected to excessive pressure. Do NOT test the unit by blowing into the inlet ports.

## Measurement Units/Ranges

### PA-DPT-01

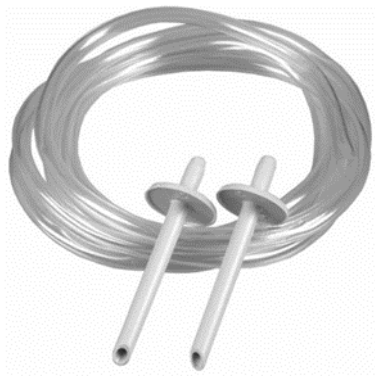
	Range 1	Range 2	Range 3	Range 4	Range 5	Range 6	Range 7	Range 8
Pa	0-25	0-50	0-100	0-150	0-250	0-300	0-500	±50
kPa	0-0.025	0-0.05	0-0.1	0-0.15	0-0.25	0-0.30	0-0.50	±0.05
mbar	0-0.25	0-0.50	0-1.00	0-1.50	0-2.50	0-3.0	0-5.00	±0.50
inchWC	0-0.10	0-0.20	0-0.40	0-0.602	0-1.00	0-1.20	0-2.01	±0.20
mmWC	0-2.6	0-5.1	0-10.2	0-15.3	0-25.5	0-30.6	0-51.0	±5.1
psi	0-0.0036	0-0.0073	0-0.0145	0-0.0218	0-0.0363	0-0.0435	0-0.0725	±0.0073

### PA-DPT-02

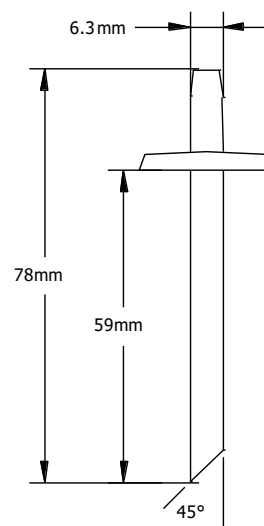
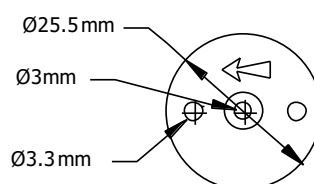
	Range 1	Range 2	Range 3	Range 4	Range 5	Range 6	Range 7	Range 8
Pa	0-125	0-250	0-500	0-750	0-1250	0-1500	0-2500	±250
kPa	0-0.125	0-0.25	0-0.50	0-0.750	0-1.25	0-1.50	0-2.50	±0.25
mbar	0-1.25	0-2.50	0-5.00	0-7.50	0-12.50	0-15.0	0-25.0	±2.50
inchWC	0-0.502	0-1.00	0-2.01	0-3.01	0-5.02	0-8.03	0-10.3	±1.00
mmWC	0-12.7	0-25.5	0-51.0	0-76.5	0-127	0-153.0	0-254.9	±25.5

## Duct Fixing Kit

A 'duct fixing kit' is supplied with the PA-DPT, consisting of 2m of 5mm i/d plastic tubing, 2 x pitot tubes and 4 x fixing screws.



Pitot tube dimensions;



Whilst every effort has been made to ensure the accuracy of this specification, Sontay cannot accept responsibility for damage, injury, loss or expense resulting from errors or omissions. In the interest of technical improvement, this specification may be altered without notice.