HK INSTRUMENTS
USER-FRIENDLY MEASURING DEVICES

DIFFERENTIAL PRESSURE TRANSMITTER, DPT-R8 WITH FLAMEPROOF ENCLOSURE

- Multiple measuring units, field selectable via jumper, including: Pa, kPa, mbar, inchWC, mmWC, psi
- 8 field selectable measurement ranges, unidirectional or bidirectional, selectable via jumper
- Proportional output options including: voltage (0–10 V) and current (4–20 mA)

Technical data:

Sr. No.	Description	Specification
1	Applications	• Fan, blower and filter monitoring • Valve and damper control • Pressure monitoring in cleanrooms • Duct static pressure measurement • Bag-filter / Dust collector system
2	Media	Air, non-combustible and non-aggressive gases
3	Measuring method	Mems pressure sensor
4	Accuracy	±1% (from applied pressure)
5	Supply voltage	24 VAC or VDC, ±10 %
6	Output signal	0 ... 10 V or 4 ... 20 mA, 3-wire
7	Zero point calibration:	Automatic autozero or manual pushbutton
8	Response Time	8.0 s or 0.8 s, selectable via jumper
9	Working and storage temperature	-20 ... +50°C
10	Display	Backlit display, 2- line display (12 characters/line) Line 1: Air volume flow or velocity measurement Line 2: Pressure measurement
11	Electrical connection	4-screw terminal block, Wire: 0.2–1.5 mm2 (12–24 AWG)
12	Cable entry	2 x M20x1.5 double compression
13	Process Connections	6 mm Hose
14	Protection standard	IP 66
15	Housing materials	Cast Aluminium Alloy, LM-6 construction
16	Conformity	RoHS Conformance acc. to 2011/65/EU; CE Conformance acc. to EN 61326
17	Flameproof enclosure	PESO & CIMFR certificate for FLP-JB-IIC enclosure

Basic model description:

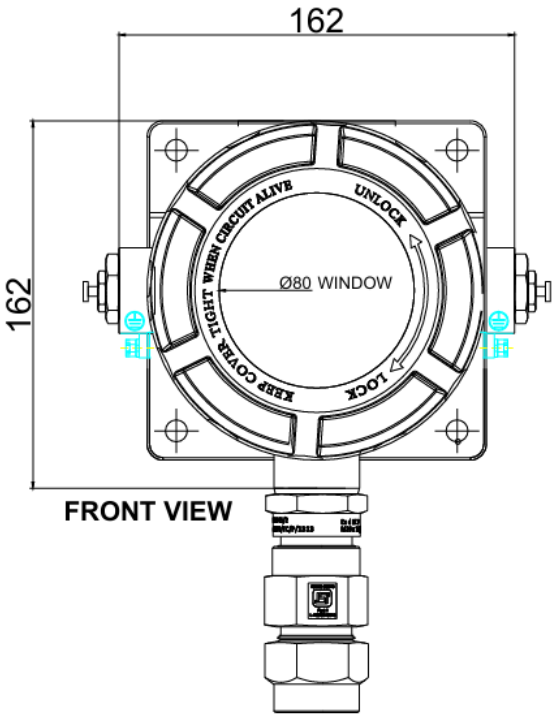
Sr. No.	Model No.	Measurement Range: Pascal	Output signal
1	DPT250-R8 with FLP enclosure	±25, ±50, ±100, ±150, 25, 50, 100, 250 Pa	0 ... 10V or 4 ... 20 mA, 3-wire
2	DPT2500-R8 with FLP enclosure	±100, 100, 250, 500,1000, 1500, 2000, 2500 Pa	0 ... 10V or 4 ... 20 mA, 3-wire
3	DPT7000-R8 with FLP enclosure	1000, 1500, 2000, 2500, 3000, 4000, 5000, 7000 Pa	0 ... 10V or 4 ... 20 mA, 3-wire
4	DPT2500-R8-D with FLP enclosure	±100, 100, 250, 500,1000, 1500, 2000, 2500 Pa	0 ... 10V or 4 ... 20 mA, 3-wire
5	DPT7000-R8-D with FLP enclosure	1000, 1500, 2000, 2500, 3000, 4000, 5000, 7000 Pa	0 ... 10V or 4 ... 20 mA, 3-wire

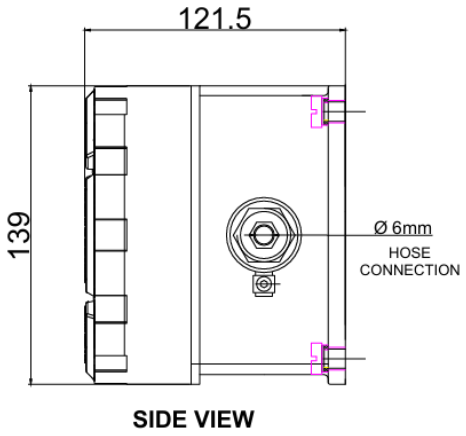
General:

Designation	Differential Pressure Transmitter with Flameproof Enclosure
Type	DPT-R8
Manufacturer	HK Instruments Oy, Finland

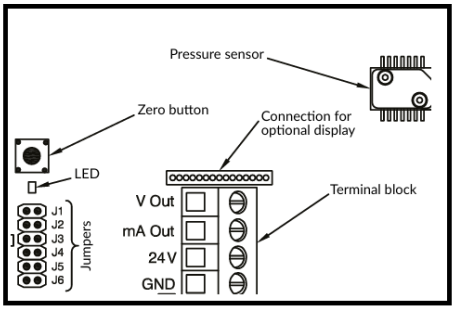
Dimensional Drawings

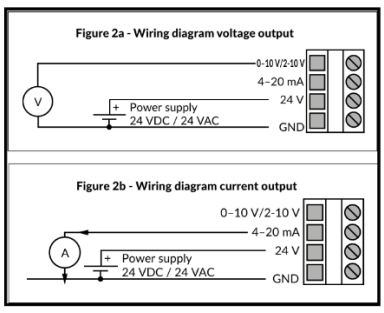
FLP-JB-IIC enclosure





Terminal for electrical connection





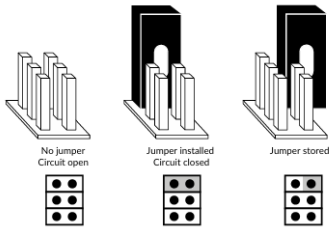
STEP 3: CONFIGURATION

1) Select the desired measurement unit. (see step 4)
2) Select the desired measurement range. (see step 5)
3) Select the desired response time. (see step 6)
4) Select the desired voltage output. (see step 7)
5) Zero the device. (see step 8)
6) Connect the pressure tubes. Connect positive pressure to port labeled “+” and negative pressure to port “-”.
7) Close the lid. The device is now ready to be used.

STEP 4: SELECTING THE MEASUREMENT UNIT

1) To change the measurement unit appearing on the display, install a jumper to both pins of J5 (see Figure 3).
2) Push down the zero button and the measurement unit options (Pa, kPa, mbar, inchWC, mmWC, psi) will cycle on the display.
3) To select a unit option to display, remove the jumper from J5 while the measurement unit is visible on the display.

Figure 3 - Jumper installation



(Grey colour indicates that a jumper is installed)

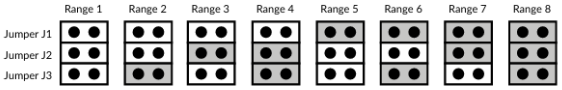
STEP 5: SELECTING THE MEASUREMENT RANGE

1) Determine the range number
a. Find the model in Chart 1.
b. Find the measurment unit (selected in step 4).
c. Find the required measurement range on the same line as the measurement unit (b above) and determine the range number in the header.

SELECTING THE MEASUREMENT RANGE CONTINUED

2) Install jumpers on J1, J2 and J3 as required.
a. Using the range number from 1c above, find the corresponding range number in Chart 2.
b. Install jumpers on J1, J2 and J3 on device, as shown under the range number in Chart 2. (Grey colour indicates that a jumper is installed. Reference figure 3 for jumper installation.)

Chart 2



(Grey colour indicates that a jumper is installed. Reference Figure 3 and Schematics for jumper installation.)

STEP 6: SELECTING THE RESPONSE TIME

The response time affects how fast the transmitter reacts to changes in the system. The response time is the time the device takes to reach 63 % of the measured value. To smooth out unstable pressure fluctuations in airflow applications, select a longer response time.
Example:
Selected response time: 8.0 seconds
Result: Output signal achieves a new value in 40 seconds (Response time*5)
To change response time, install or remove jumper on J4.
(see Figure 3)
1) Install jumper on J4 for 8.0 second response time.
2) Remove jumper from J4 for 0.8 second response time.

STEP 7: USING 2-10 V OUTPUT

In some applications it is critical to know immidiately if the wire is broken or the device is damaged. In these cases, a 2-10 voltage output is recommended.

1) Install jumper on J6 for 2-10 voltage output
2) Remove jumper from J6 for 0-10 voltage output

NOTE! When using current output J6 circuit must be open!

Chart 1

Model DPT250-R8

	Range 1	Range 2	Range 3	Range 4	Range 5	Range 6	Range 7	Range 8
Pa	0–25	0–50	0–100	0–250	-25–25	-50–50	-100–100	-150–150
kPa	0–0.025	0–0.05	0–0.1	0–0.25	-0.025–0.025	-0.05–0.05	-0.1–0.1	-0.15–0.15
mbar	0–0.25	0–0.50	0–1.00	0–2.50	-0.25–0.25	-0.50–0.50	-1.0–1.00	-1.50–1.50
inchWC	0–0.10	0–0.20	0–0.40	0–1.00	-0.10–0.10	-0.20–0.20	-0.40–0.40	-0.60–0.60
mmWC	0–2.6	0–5.1	0–10.2	0–25.5	-2.6–2.6	-5.1–5.1	-10.2–10.2	-15.3–15.3
psi	0–0.0036	0–0.0073	0–0.0145	0–0.0363	-0.0036–0.0036	-0.0073–0.0073	-0.0145–0.0145	-0.0218–0.0218

Model DPT2500-R8

	Range 1	Range 2	Range 3	Range 4	Range 5	Range 6	Range 7	Range 8
Pa	-100–100	0–100	0–250	0–500	0–1000	0–1500	0–2000	0–2500
kPa	-0.10–0.10	0–0.10	0–0.25	0–0.50	0–1.00	0–1.50	0–2.00	0–2.50
mbar	-1.00–1.00	0–1.00	0–2.50	0–5.00	0–10.0	0–15.0	0–20.0	0–25.0
inchWC	-0.40–0.40	0–0.40	0–1.00	0–2.01	0–4.01	0–6.02	0–8.03	0–10.03
mmWC	-10.2–10.2	0–10.2	0–25.5	0–51.0	0–102.0	0–153.0	0–203.9	0–254.9
psi	-0.0145–0.0145	0–0.0145	0–0.0363	0–0.0725	0–0.1450	0–0.2176	0–0.2901	0–0.3626

Model DPT7000-R8

	Range 1	Range 2	Range 3	Range 4	Range 5	Range 6	Range 7	Range 8
Pa	0–1000	0–1500	0–2000	0–2500	0–3000	0–4000	0–5000	0–7000
kPa	0–1.00	0–1.50	0–2.0	0–2.50	0–3.00	0–4.00	0–5.00	0–7.00
mbar	0–10.0	0–15.0	0–20.0	0–25.0	0–30.0	0–40.0	0–50.0	0–70.0
inchWC	0–4.01	0–6.02	0–8.03	0–10.3	0–12.04	0–16.05	0–20.07	0–28.09
mmWC	0–102.0	0–153.0	0–203.9	0–254.9	0–305.9	0–407.9	0–509.9	0–713.8
psi	0–0.1450	0–0.2176	0–0.2901	0–0.3626	0–0.4351	0–0.5802	0–0.7252	0–1.0153

STEP 8: ZEROING THE DEVICE

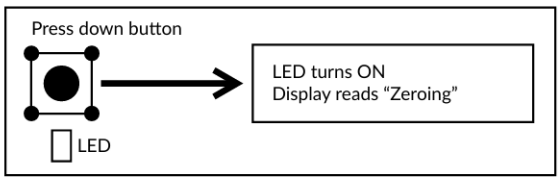
NOTE! Always zero the device before use.

To zero the device two options are available:
1) Manual Pushbutton zero point calibration
2) Autozero calibration

Does my transmitter have an autozero calibration? See the product label. If it shows -AZ in the model number, then you have the autozero calibration.

1) Manual Pushbutton zero point calibration
NOTE: Supply voltage must be connected at least one hour prior to zero point adjustment.
a) Disconnect both pressure tubes from the pressure ports labeled + and –.
b) Push down the zero button until the LED light (red) turns on and the display reads “zeroing” (display option only). (see Figure 4)
c) The zeroing of the device will proceed automatically in 4 seconds. Zeroing led lights only for a moment. Zeroining is complete when the display reads 0 (display option only).
d) Reinstall the pressure tubes ensuring that the High pressure tube is connected to the port labeled +, and the Low pressure tube is connected to the port labeled –.

Figure 4



2) Autozero calibration
If the device includes the optional autozero circuit, no action is required.

Autozero calibration (-AZ) is an autozero function in the form of an automatic zeroing circuit built into the PCB board. The autozero 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 autozero 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 will freeze to the latest measured value.

Transmitters equipped with the autozero calibration are virtually maintenance free.

-40C MODEL: OPERATION IN COLD ENVIRONMENT

The lid of the device has to be closed when the operation temperature is below 0 °C. The display needs 15 minutes to warm up if the device is started in temperature below 0 °C.

NOTE! The power consumption rises and there can be an additional error of 0,015 V or 0,024 mA when the operation temperature is below 0 °C.

RECYCLING/DISPOSAL

The parts left over from installation should be recycled according to your local instructions. Decommissioned devices should be taken to a recycling site that specializes in electronic waste.

WARRANTY POLICY

The seller is obligated to provide a warranty of five years for the delivered goods regarding material and manufacturing. The warranty period is considered to start on the delivery date of the product. If a defect in raw materials or a production flaw is found, the seller is obligated, when the product is sent to the seller without delay or before expiration of the warranty, to amend the mistake at his/her discretion either by repairing the defective product or by delivering free of charge to the buyer a new flawless product and sending it to the buyer. Delivery costs for the repair under warranty will be paid by the buyer and the return costs by the seller. The warranty does not comprise damages caused by accident, lightning, flood or other natural phenomenon, normal wear and tear, improper or careless handling, abnormal use, overloading, improper storage, incorrect care or reconstruction, or changes and installation work not done by the seller or his/her authorized representative. The selection of materials for devices prone to corrosion is the buyer’s responsibility, unless otherwise is legally agreed upon. Should the manufacturer alter the structure of the device, the seller is not obligated to make comparable changes to devices already purchased. Appealing for warranty requires that the buyer has correctly fulfilled his/her duties arisen from the delivery and stated in the contract. The seller will give a new warranty for goods that have been replaced or repaired within the warranty, however only to the expiration of the original product’s warranty time. The warranty includes the repair of a defective part or device, or if needed, a new part or device, but not installation or exchange costs. Under no circumstance is the seller liable for damages compensation for indirect damage.