HK INSTRUMENTS
USER-FRIENDLY MEASURING DEVICES

AIR FLOW AND VELOCITY TRANSMITTER, DPT-FLOW WITH FLAMEPROOF ENCLOSURE

- Measure and monitor air volume flow, velocity or differential pressure
- Multiple field selectable measurement units: **Volume flow:** m3/s, m3/h, cfm, l/s, **Velocity:** m/s, ft./min **Pressure:** Pa, inWC, mmWC, kPa, mbar, psi
- Unique proportional output options: **Volume flow or velocity:** voltage (0–10 V) or current (4–20 mA) **Pressure:** voltage (0–10 V) or current (4–20 mA)

Technical data:

Sr. No.	Description	Specification
1	Application	▪ Bag-filter / Dust collector system ▪ Air Flow & Velocity Measurement in the ducts ▪ Air flow monitoring across centrifugal fans and blowers
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	1.0–20 s, selectable via menu
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:

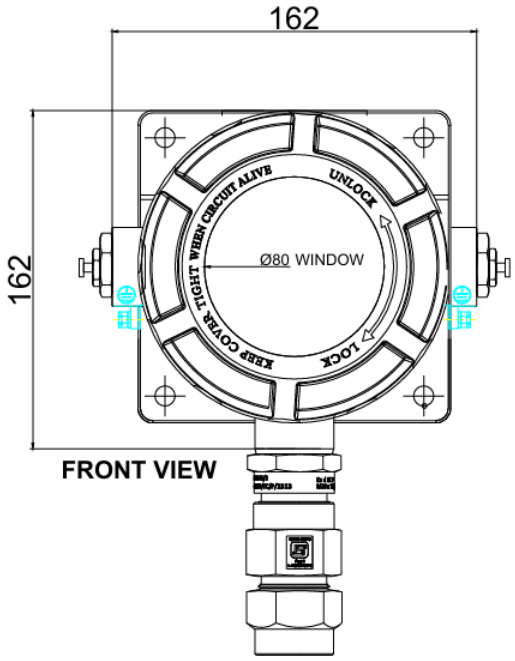
Sr. No.	Model No.	Range:	Output signal
1	DPT-Flow-1000-D	0–1000 Pa	0 ... 10V or 4 ... 20 mA, 3-wire
2	DPT-Flow-1000-AZ-D	0–1000 Pa	0 ... 10V or 4 ... 20 mA, 3-wire
3	DPT-Flow-2000-D	0–2000 Pa	0 ... 10V or 4 ... 20 mA, 3-wire
4	DPT-Flow-2000-AZ-D	0–2000 Pa	0 ... 10V or 4 ... 20 mA, 3-wire

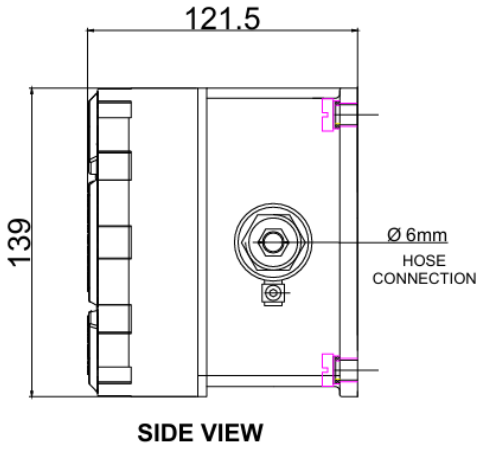
General:

Designation	**AIR FLOW AND VELOCITY TRANSMITTER, DPT-FLOW WITH FLAMEPROOF ENCLOSURE**
Type	**DPT-FLOW**
Manufacturer	**HK Instruments Oy**

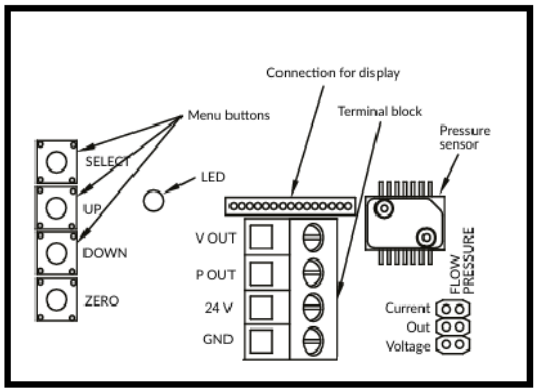
Dimensional Drawings

FLP-JB-IIC enclosure





Terminal for electrical connection



STEP 2: WIRING DIAGRAMS

For CE compliance, a properly grounded shielding cable is required.
1) Unscrew the strain relief and route the cable.
2) Connect the wires as shown in figure 2a and 2b.
3) Tighten the strain relief.

Figure 2a - Wiring diagram: Volume flow output

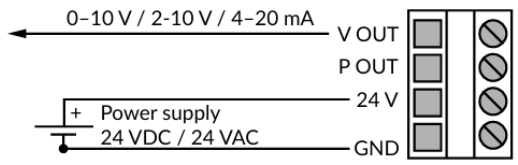


Figure 2b - Wiring diagram: Pressure output

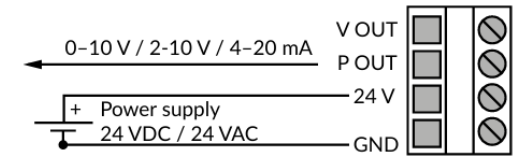
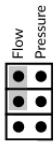


Figure 2c - Output mode selection



Jumper installed to the two upper pins on the left side:
Current output selected for flow

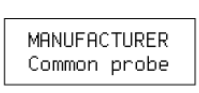
Jumper installed to the two lower pins on the left side:
Voltage output selected for flow

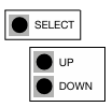
Jumper installed to the two upper pins on the right side:
Current output selected for pressure

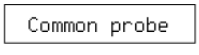
Jumper installed to the two lower pins on the right side:
Voltage output selected for pressure

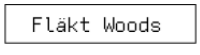
STEP 3: CONFIGURATION

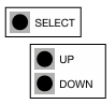
1) Activate the device Menu by pushing the select button for 2 seconds
2) Select the functioning mode of the flow meter:
- Select *Manufacturer* when connecting DPT-Flow to a fan with pressure measurement points
- Select *Common probe* when using DPT-Flow with a common measurment probe that follows the formula:
  $q = k \cdot \sqrt{\Delta P}$ (i.e. FloXact)





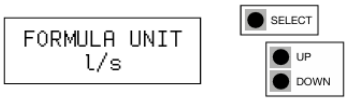






CONFIGURATION CONTINUED

3) If *Common probe* selected: select measurement units used in the formula (aka Formula unit) (i.e. l/s)



4) Select K-value
a. If manufacturer selected in step 1:
Each fan has a specific K-value. Select the K-value from fan manufacturer's specifications.

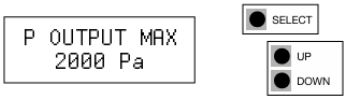
Manufacturer:	*K-value:*
Fläktwoods	k = 0,3...99
Rosenberg	k = 37...800
Nicotra	k = 10...1500
Comefri	k = 10...2000
Ziehl	k = 10...1500
Ebm-papst	k = 10...1500
Gebhardt	k = 50...4700

b. If *Common probe* selected in step 1:
Each common probe has a specific K-value. Select the K-value from common probe manufacturer's specifications.
Available K-value range: 0.001...9999.000

5) Select pressure unit for display and output: Pa, kPa, mbar, inWC or mmWC

6) Pressure output scale (p OUT). Select pressure output scale to improve output resolution.

DPT-Flow-1000	DPT-Flow-2000	DPT-Flow-5000	DPT-Flow-7000
100–1000 Pa	200–2000 Pa	500–5000 Pa	700–7000 Pa
0.1–1.0 kPa	0.2–2.0 kPa	0.5–5.0 kPa	0.7–7.0 kPa
1.0–10 mbar	2.0–20 mbar	5.0–50 mbar	7.0–70 mbar
10–100 mmWC	20–200 mmWC	50–500 mmWC	70-700 mmWC
0.4–4.0 inWC	0.8–8.0 inWC	2.0–20 inWC	2.5–30 inWC



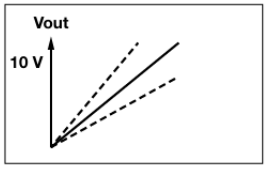
7) Select flow unit for display and output:
Flow volume: m^3/s, m^3/h, cfm, l/s, none
Velocity: m/s, f/min

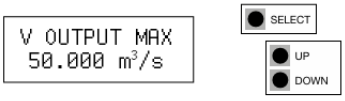
CONFIGURATION CONTINUED

8) Output mode: Select output voltage 0-10 V or 2-10 V. By selecting 2-10 V you gain ability to detect if the wire is broken.

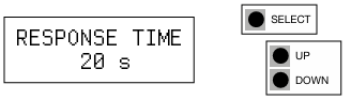
9) Flow output scale (V OUT): Select flow output scale to improve output resolution.

Unit:	*Range:*
m3/s	0.025–50
m3/h	100–200,000
cfm	50–100,000
l/s	25–50,000
m/s	1.0–100
f/min	200–20,000





10) Response time: Select response time between 1.0–20 s.



11) Push select button to save changes and to exit menu.

STEP 4: ZEROING THE DEVICE

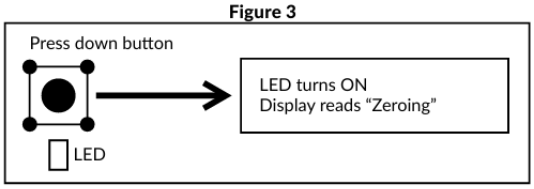
NOTE! Always zero the device before use.

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 3)
c) The zeroing of the device will proceed automatically. Zeroing is complete when the LED turns off, and 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 3



STEP 4: ZEROING THE DEVICE CONTINUED

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 volts 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.