

# HK INSTRUMENTS

USER-FRIENDLY MEASURING DEVICES



# USER-FRIENDLY MEASUREMENT

## Specialized performance

HK Instruments is highly specialized in developing technologically advanced measuring devices for HVAC applications. Our products are primarily used in air handling systems and building automation to achieve excellent results in indoor air quality and saving energy.

## Expanding the product offering

In the future we will serve our customers with broader product offering. We will continue to develop building automation devices that meet the cost pressures and environmental requirements of air handling unit manufacturing.



**AIR FLOW AND VELOCITY METERS**



**AIR QUALITY TRANSMITTERS**



# MEASURING DEVICES



**MANOMETERS**



**DIFFERENTIAL PRESSURE SWITCHES**



**DIFFERENTIAL PRESSURE TRANSMITTERS**



**DIFFERENTIAL PRESSURE GAUGES**

# PRODUCT PORTFOLIO

User-friendly solutions for measuring air pressures, air flows, air velocities, liquid pressures and CO gas within ventilation systems.

## AIR PRESSURE TRANSMITTERS

DPT-R8	8-range differential pressure transmitters. . . . .	8
DPT-2W	Differential pressure transmitters with 2-wire configuration . . . . .	12
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DPT-R8



DPT-MOD (-IN)



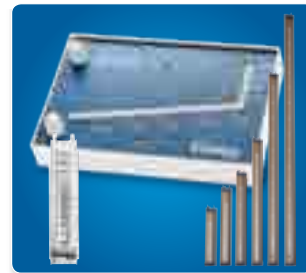
DPI



DPT-DUAL



PS



MM / MMU / MMK



FILTER ALERTS



DPT-FLOW

## AIR FLOW AND VELOCITY METERS

DPT-FLOW	Flow meter for HVAC systems. . . . .	40
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FloXact™



AVT



DPG



DPG+Flow scale



DPTL / PTL



CDT2000



CDT2000 Duct



CMT

# AIR PRESSURE TRANSMITTERS

DPT series pressure transmitters represent the latest development in their class. The new digital sensor makes measuring pressure even more accurate than before. Fully automated zero point calibration, *AZ-calibration*, offers reliability in the most sensitive of applications. In addition, it provides cost savings over the lifetime of a building, as it makes the device completely maintenance free.

While DPT-R8 offers up to eight measurement ranges in a single device, DPT-MOD makes two-way communication possible over Modbus network.

The brand new DPT-Dual with Modbus interface offers savings in the device and installation costs due to its two pressure sensors and Input module.



DPT-R8



DPT-2W



DPT-MOD

<b>DPT-R8</b>	8-range differential pressure transmitters . . . . .	8
<b>DPT-2W</b>	Differential pressure transmitters with 2-wire configuration . . . . .	12
<b>DPT-MOD</b>	Differential pressure transmitters with Modbus configuration . . . . .	14
<b>DPT-MOD-IN</b>	Input module for differential pressure transmitters with Modbus configuration . . . . .	16
<b>DPT-DUAL</b>	Differential pressure transmitter with two pressure sensors . . . . .	18



**DPT-MOD-IN**



**DPT-DUAL**



# DIFFERENTIAL PRESSURE TRANSMITTERS

## DPT-R8

The DPT series includes electronic differential pressure transmitters that offer exceptional performance, high quality and economical pricing.

## Usage & applications

The differential pressure transmitter is used for measuring low pressures of air and non-combustible gases in order to monitor and control building automation, HVAC and cleanroom systems.

## Options

**AZ:** autozero element

**D:** display

**S:** span point calibration for high accuracy applications

**Q:** flow linear output



# DPT-R8

## TECHNICAL DETAILS

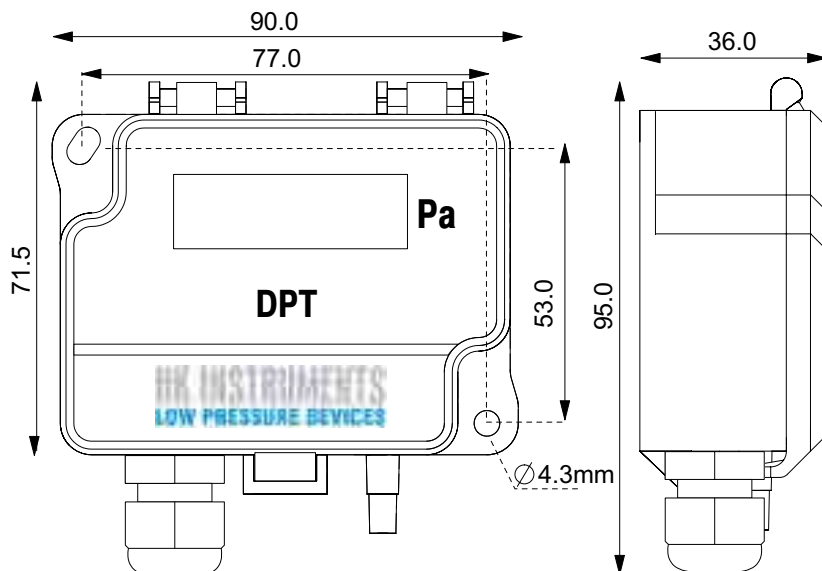
<b>Accuracy (from applied pressure):</b>	±1,5 % + 1 Pa (including: general accuracy, temperature drift, linearity, hysteresis, long term stability and repetition error).
<b>Zero point calibration:</b>	automatic with autozero element (-AZ) or with push button
<b>Measuring unit on display:</b>	selectable by jumper (Pa, kPa, mbar, inchWC, mmWC, psi)
<b>Supply voltage:</b>	24 VDC ±10 % / 24 VAC ±10 %
<b>Power consumption:</b>	< 1.0 W (< 1.5 W with output current 20 mA)
<b>Output signals (3-wire):</b>	0...10 VDC, Load R minimum 1 KΩ 4...20 mA, maximum load 500 Ω
<b>Ambient temperature:</b>	-10...+50 °C
<b>Response Time:</b>	0,8 / 4 s
<b>Protection standard:</b>	IP54

Selectable measurement range

			-150...+150 Pa	-100...+100 Pa	-50...+50 Pa	-25...+25 Pa	0...25 Pa	0...50 Pa	0...100 Pa	0...250 Pa	0...500 Pa	0...1000 Pa	0...1500 Pa	0...2000 Pa	0...2500 Pa	0...3000 Pa	0...4000 Pa	0...5000 Pa	0...7000 Pa	
<b>Model 250</b>	<b>Product code</b>	<b>Product description*</b>																		
	103.004.016	DPT250-R8-AZ	x	x	x	x	x	x	x	x										
	103.004.017	DPT250-R8-AZ-D	x	x	x	x	x	x	x	x										
	103.004.018	DPT250-R8-AZ-S	x	x	x	x	x	x	x	x										
	103.004.019	DPT250-R8-AZ-D-S	x	x	x	x	x	x	x	x										
<b>Model 2500</b>	103.007.023	DPT2500-R8		x					x	x	x	x	x	x	x					
	103.007.024	DPT2500-R8-D		x					x	x	x	x	x	x	x					
	103.007.025	DPT2500-R8-AZ		x					x	x	x	x	x	x	x					
	103.007.026	DPT2500-R8-AZ-D		x					x	x	x	x	x	x	x					
<b>Model 7000</b>	103.016.003	DPT7000-R8										x	x	x	x	x	x	x	x	
	103.016.004	DPT7000-R8-D										x	x	x	x	x	x	x	x	
	103.016.005	DPT7000-R8-AZ										x	x	x	x	x	x	x	x	
	103.016.006	DPT7000-R8-AZ-D										x	x	x	x	x	x	x	x	

\*R8 = number of measurement ranges per device, D = display, AZ = autozero element

## Dimensions



ACCESSORIES  
SEE PAGE 56

# DISPLAY

Whether you choose your transmitter with or without a display, it is easy to remove or add one afterwards even on-site. As simple as SNAP! INSTALL! GO!



SNAP OPEN & CHANGE THE COVER → INSTALL OR REMOVE THE DISPLAY  
→ CLOSE & YOU ARE READY TO GO!

## AZ-CALIBRATION

Autozero element makes the device maintenance free. Element automatically adjusts the transmitter's zero point from time to time. This eliminates the zero point long term drift of the piezoresistive sensing element.

During zero point adjustment the output and display values will maintain the latest measured value. The automatic zero point adjustment takes 4 seconds. Zero point adjustment is normally carried out every 10 minutes.

If the device is not equipped with autozero element, it is recommended to carry out the zero point adjustment every 12 months. Supply voltage must be connected one hour before the zero point adjustment is carried out.



### Choose stability and cost savings

- A device that calibrates itself periodically
- Fully automated zero point calibration
- Fully maintenance free device

“The overall improvement is dependent on remarkable development of transmitters over several years. This means in technical terms as well as in quality, lead-time and pricing of the differential pressure transmitters. With thanks to HK Instruments we have one of the best positions on the market for this kind of products. With the differential pressure transmitters, featuring as many as 8 ranges, temperature compensation and with lots of options like Modbus configuration, we have

a very nice portfolio to offer to our customers on the Swedish market. In addition, the flow transmitter (DPT-Flow) is much appreciated by our customers. We are very pleased with the improvement HK Instruments has done with their product portfolio changing the direction of the entire industry. We look forward to continue our successful cooperation with HK Instruments now and in the future.”

**-Peter Thern, Thermokon-Danelko AB**

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Thermokon-Danelko AB has been a dedicated partner of HK Instruments for 10 years. They work as our distributor, serving the Swedish HVAC and building automation market. Thermokon-Danelko AB is one of the leading companies within the industry in Sweden.

*“We are very pleased with the improvement HK Instruments has done with their product portfolio, changing the direction of the entire industry.”*



# DIFFERENTIAL PRESSURE TRANSMITTERS

## TWO-WIRE

### DPT-2W

The DPT-2W is a differential pressure transmitter with two-wire connection.

### Usage & applications

The differential pressure transmitter is used for measuring low pressures of air and non-combustible gases in order to monitor and control building automation, HVAC and cleanroom systems.



# DPT-2W

## TECHNICAL DETAILS

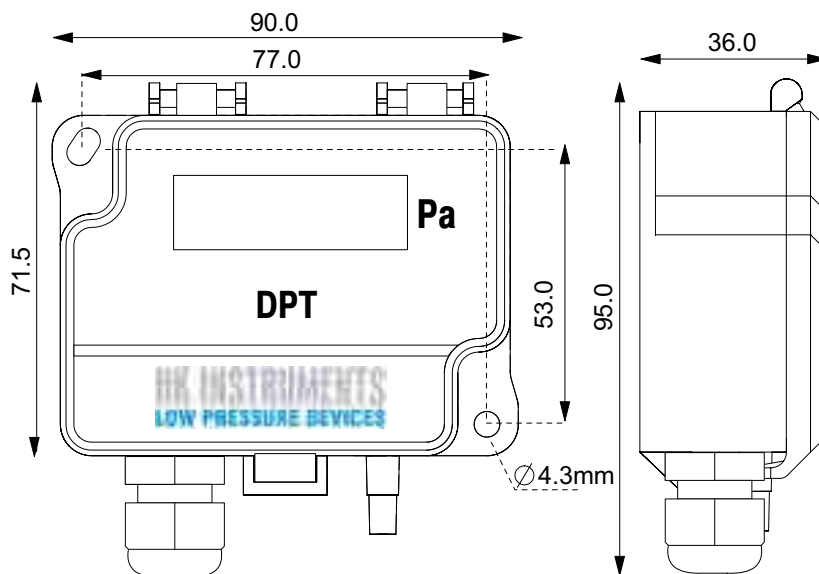
<b>Accuracy from FS:</b>	±1,5 % or (±6 Pa < 250 Pa) (including: general accuracy, temperature drift, linearity, hysteresis and repetition error)
<b>Long term stability, typical 1 year:</b>	≤ ± 8 Pa; model 2500 ≤ ± 24 Pa; model 7000
<b>Zero point calibration:</b>	with push button
<b>Supply voltage:</b>	10...35 VDC
<b>Max. supply current:</b>	32 mA
<b>Output signal:</b>	4...20 mA
<b>Max output current:</b>	32 mA
<b>Ambient temperature:</b>	-10...+50 °C
<b>Response Time:</b>	0.8 / 4 s
<b>Protection standard:</b>	IP54

Selectable measurement range

DPT-2W	Product code	Product description*	Selectable measurement range														
			-100...+100 Pa	0...100 Pa	0...250 Pa	0...500 Pa	0...1000 Pa	0...1500 Pa	0...2000 Pa	0...2500 Pa	0...3000 Pa	0...4000 Pa	0...5000 Pa	0...7000 Pa			
	104.007.005	DPT-2W-2500-R8	x	x	x	x	x	x	x	x							
	104.007.006	DPT-2W-2500-R8-D	x	x	x	x	x	x	x	x							
	104.007.007	DPT-2W-2500-R8-Q	x	x	x	x	x	x	x	x							
	104.007.008	DPT-2W-2500-R8-D-Q	x	x	x	x	x	x	x	x							

\*R8 = number of measurement ranges per device, D = display

## Dimensions



ACCESSORIES  
SEE PAGE 56

# DIFFERENTIAL PRESSURE TRANSMITTERS WITH MODBUS INTERFACE

## DPT-MOD

The DPT-MOD differential pressure transmitter for air is designed for Modbus (RTU) communication network. The measurements can be read over the Modbus (RTU) interface.

## Usage & applications

The Modbus transmitter is used for measuring low pressures of air and non-combustible gases in order to monitor and control building automation, HVAC and cleanroom systems.



# DPT-MOD

## TECHNICAL DETAILS

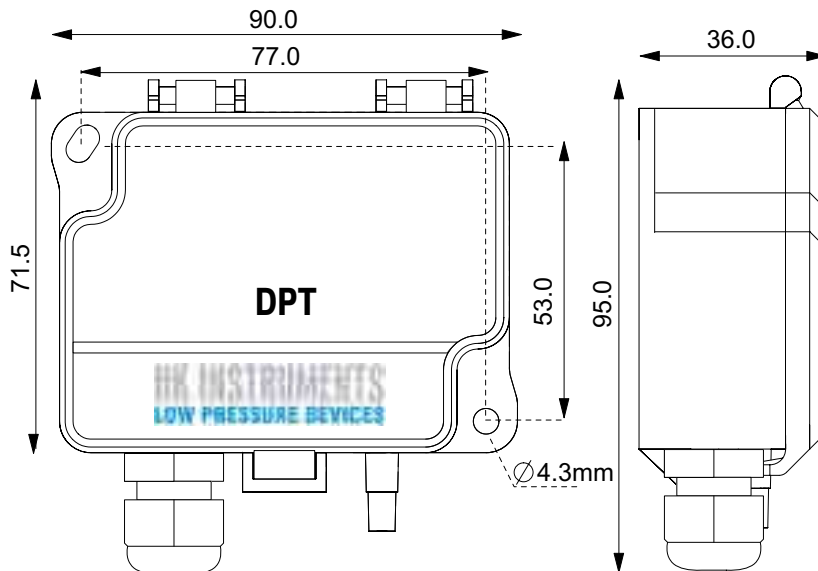
<b>Communication:</b>	RS-485 Modbus (RTU)
<b>Accuracy from range:</b>	±1,5 % (±6 Pa < 250 Pa) (including: general accuracy, temperature drift, linearity, hysteresis and repetition error)
<b>Long term stability, typical 1 year:</b>	±1 Pa with AZ, ±8 Pa without AZ; model 2000 ±24 Pa without AZ; model 5000
<b>Zero point adjustment:</b>	via Modbus or by push button, automatic with optional autozero element (-AZ)
<b>Supply voltage:</b>	24 VDC ±10 % / 24 VAC ±10 %
<b>Power consumption:</b>	< 1.3 W
<b>Output signal:</b>	via Modbus (RTU)
<b>Ambient temperature:</b>	-10...+50 °C
<b>Response Time:</b>	0,8 / 2 / 10 s
<b>Protection standard:</b>	IP54

### DPT-MOD

Code	Product description	Measuring range (Pa)
114.008.001	DPT-MOD±100-AZ	-100...+100
114.001.001	DPT-MOD-2000	0...2000
114.002.001	DPT-MOD-5000	0...5000
114.001.006	DPT-MOD-2000-AZ	0...2000
114.002.004	DPT-MOD-5000-AZ	0...5000



### Dimensions



ACCESSORIES  
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# INPUT MODULE

## FOR MODBUS TRANSMITTERS

### DPT-MOD-IN

Input module is an expansion module for external signal conversion into Modbus.

### Usage & applications

The Input module is a plug-in module that can be assembled into DPT-MOD afterwards, even in the field and onsite. Input signals can be read over Modbus via DPT MOD RS484 interface.



Input module turns your differential pressure transmitter into a multifeatured transmitter that can be used for example as a temperature transmitter.

## TECHNICAL DETAILS

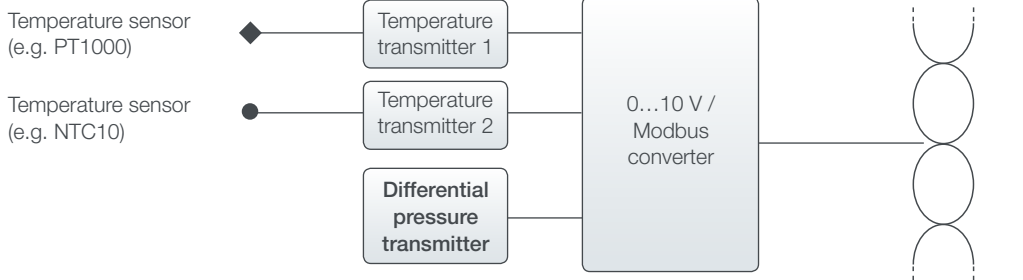
<b>Communication:</b>	RS-485 Modbus (RTU)
<b>Output signal:</b>	via Modbus (RTU)
<b>Supported input signals:</b>	0...10V, ntc10k, Pt1000, Ni1000/(-LG), BIN IN (potential free contact)
<b>Number of input terminals:</b>	2
	Both terminals can be configured independently.

### DPT-MOD

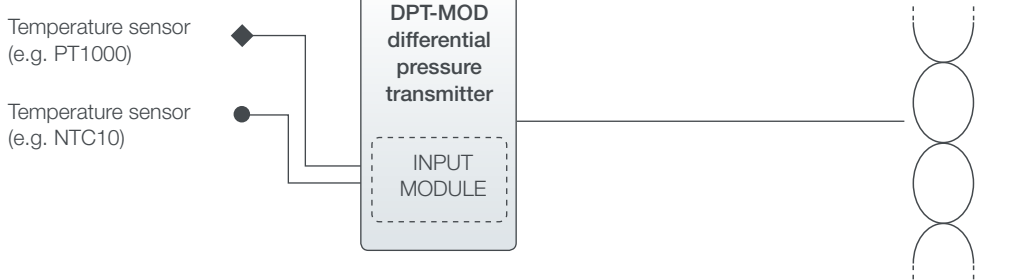
Code	Product description	Measuring range (Pa)
114.008.001	DPT-MOD±100-AZ	-100...+100
114.008.002	DPT-MOD±100-AZ-IN	-100...+100
114.001.007	DPT-MOD-2000-IN	0...2000
114.002.005	DPT-MOD-5000-IN	0...5000
114.001.008	DPT-MOD-2000-AZ-IN	0...2000
114.002.006	DPT-MOD-5000-AZ-IN	0...5000



### Traditional system:



### New system with DPT-MOD-IN



**Benefits:** When using DPT-MOD-IN, you can replace temperature transmitters with temperature sensors such as PT1000 or NTC10 and you won't need a separate converter for Modbus. As a result you will save in costs of the devices and in the installation costs.

# DIFFERENTIAL PRESSURE TRANSMITTERS

## WITH TWO PRESSURE SENSORS

### DPT-DUAL

DPT-Dual combines two differential pressure transmitters into one device. It offers a possibility to measure pressure from two different points. It has a Modbus interface and an Input module. When using the Input module, temperature transmitters can be replaced with temperature sensors. As a result you will save in costs of the devices and in the installation costs.

### Usage & applications

DPT-Dual can be used in all applications where you need to measure two different pressures. It is suitable for air and non-combustible gases.



# DPT-DUAL

## TECHNICAL DETAILS

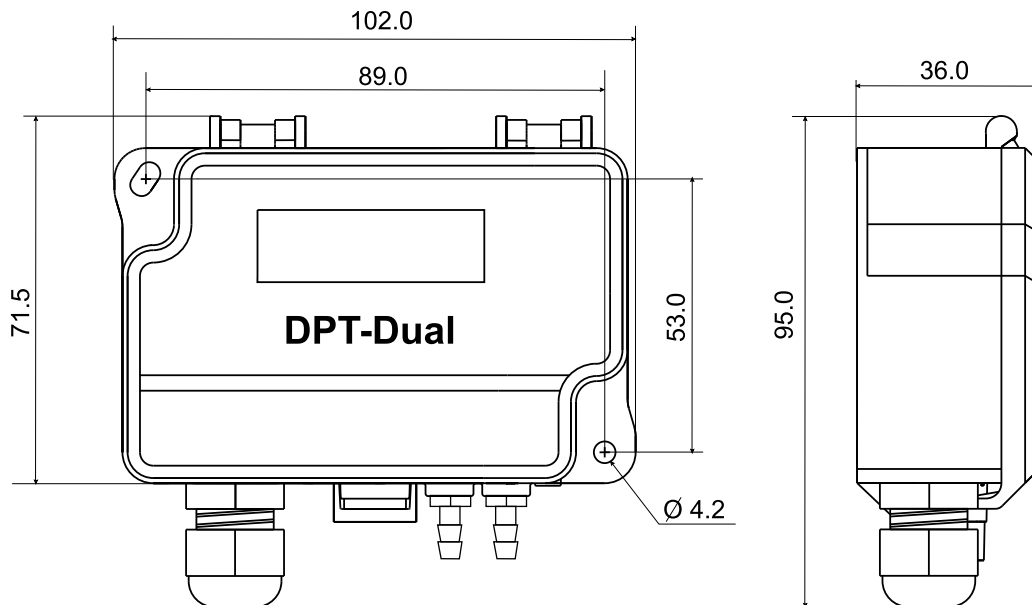
<b>Communication:</b>	RS-485 Modbus (RTU)
<b>Accuracy (from applied pressure):</b>	±1,5 % + 1 Pa (including: general accuracy, temperature drift, linearity, hysteresis, long term stability and repetition error).
<b>Zero point calibration:</b>	via Modbus or by push button
<b>Measuring unit on display:</b>	selectable via menu (Pa, mbar, inchWC, mmWC, psi)
<b>Supply voltage:</b>	24 VDC ±10 % / 24 VAC ±10 %
<b>Power consumption:</b>	< 1.0 W (< 1.5 W with output current 20 mA)
<b>Ambient temperature:</b>	-10...+50 °C
<b>Response Time:</b>	1...20 s selectable via menu
<b>Protection standard:</b>	IP54

## DPT-DUAL

Code	Product description	Measuring range (Pa)
120.007.003	DPT-Dual-MOD-2500	0...2000
120.007.004	DPT-Dual-MOD-2500-D	0...5000



## Dimensions



Save costs with DPT-Dual –  
two pressure sensors in one device

ACCESSORIES  
SEE PAGE 56

# AIR PRESSURE SWITCHES

Our offering includes two kinds of differential pressure switches.

The mechanical differential pressure switches (PS) offer a cost-effective solution for filter monitoring and other applications, where on/off information is required.

The electronic differential pressure switches (DPI) offer up to two relay outputs, each of which can be configured independently, together with 0-10 V output. Therefore, it is the right option for more sophisticated building automation systems. It is an ideal device for example in cleanroom applications and in staircase pressure monitoring.



PS



DPI

**PS** Mechanical differential pressure switch . . . . .22

**DPI** Electronic differential pressure switch with 2 relays and 0-10 V output . . . . 24



# DIFFERENTIAL PRESSURE SWITCH

## PS

The PS is a robust, easy-to-use, differential pressure switch for air and non-combustible gases.

## Usage

The pressure switches are used in ventilation and air-conditioning systems to monitor changes in overpressure, underpressure and differential pressure.

## Applications

- monitoring filters and fans
- monitoring vacuum and overpressure in air ducts
- controlling defrosting functions

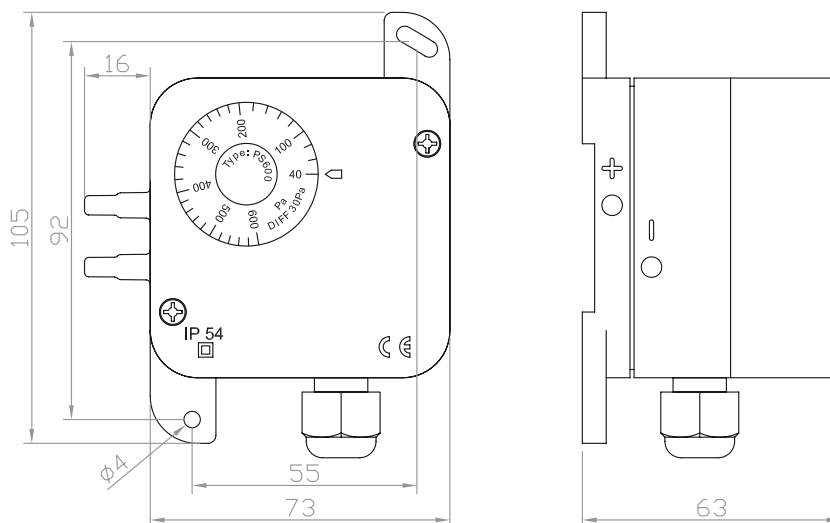


## TECHNICAL DETAILS

<b>Accuracy of switching point (low limit typ.):</b>	±5 Pa (PS1500: ±10 Pa, PS4500: ±50 Pa)
<b>Service life:</b>	over 1 000 000 switching operations
<b>Ambient temperature:</b>	-20...+60 °C
<b>Protection standard:</b>	IP54

PS Code	Product	Measuring range (Pa)	Electrical rating (resistive load)	Electrical rating (inductive load)
105.001.001	PS200	20...200 Pa	0,1A / 250 VAC	--
105.002.001	PS300	30...300 Pa	3A / 250VAC	2A / 250VAC
105.003.001	PS500	30...500 Pa	3A / 250 VAC	2A / 250 VAC
105.004.001	PS600	40...600 Pa	3A / 250 VAC	2A / 250 VAC
105.005.001	PS1500	100...1500 Pa	3A / 250 VAC	2A / 250 VAC
105.006.001	PS4500	500...4500 Pa	5A / 250 VAC	2A / 250 VAC

## Dimensions



# DIFFERENTIAL PRESSURE INDICATOR

## DPI

The DPI is an electronic differential pressure transmitter with up to two relay outputs.

## Usage & applications

The differential pressure indicator is used for measuring and indicating low pressures of air and non-combustible gases in order to monitor and control building automation, HVAC and cleanroom systems.



Need an alarm?

**Select DPI - A transmitter with relay output!**

## TECHNICAL DETAILS

<b>Accuracy from range:</b>	see model selection table
<b>Long term stability, typical 1 year:</b>	±1 Pa (±8 Pa without autozero element -AZ)
<b>Zero point calibration:</b>	automatic with autozero element (-AZ) or with push button
<b>Supply voltage:</b>	21-35 VDC / 24 VAC ±10 % (without -AZ option) 24 VDC ±10 % / 24 VAC ±10 % (with -AZ option)
<b>Current consumption:</b>	35 mA + relays (7 mA each) + AZ (20 mA) + 0...10 V output (10 mA)
<b>Output signals:</b>	0...10 V, L min 1 kΩ Relay output 1 (250 VAC / 30 VDC / 6 A) Optional relay output 2 (250 VAC / 30 VDC / 6 A)
<b>Ambient temperature:</b>	-10...+50 °C
<b>Response Time:</b>	0,5...10s
<b>Protection standard:</b>	IP54

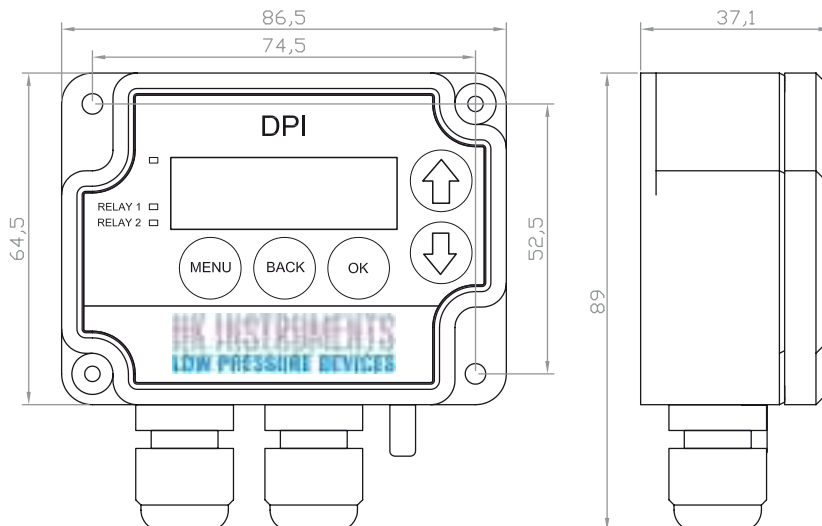
## DPI

Product code	Product description	Measuring range (Pa)	Accuracy from range
118.001.001	DPI±500	±100 / ±250 / ±300 / ±500	±1,5 % or (±3 Pa < 250 Pa)
118.001.002	DPI±500-AZ	±100 / ±250 / ±300 / ±500	±1,5 % or (±3 Pa < 250 Pa)
118.001.003	DPI±500-2R	±100 / ±250 / ±300 / ±500	±1,5 % or (±3 Pa < 250 Pa)
118.001.004	DPI±500-AZ-2R	±100 / ±250 / ±300 / ±500	±1,5 % or (±3 Pa < 250 Pa)
118.002.001	DPI2500	100 / 250 / 1000 / 2500	±1,5 % or (±6 Pa < 250 Pa)
118.002.002	DPI2500-AZ	100 / 250 / 1000 / 2500	±1,5 % or (±6 Pa < 250 Pa)
118.002.003	DPI2500-2R	100 / 250 / 1000 / 2500	±1,5 % or (±6 Pa < 250 Pa)
118.002.004	DPI2500-AZ-2R	100 / 250 / 1000 / 2500	±1,5 % or (±6 Pa < 250 Pa)

\* AZ for autozero element, -2R for 2 relays

\*\* including: general accuracy, temperature drift, linearity, hysteresis and repetition error

## Dimensions



# AIR PRESSURE GAUGES & MANOMETERS

Mechanical differential pressure gauges and manometers offer a reliable and cost-effective solution for pressure monitoring in HVAC systems.

<b>DPG</b>	Differential pressure gauge . . . . .	28
<b>MM</b>	Liquid column manometer with leakage protection system . . . . .	30
<b>MMU</b>	U-tube manometer . . . . .	30
<b>MMK</b>	Manometer with aluminum frame . . . . .	30



DPG



MM



MMU

# RS



MMK



# DIFFERENTIAL PRESSURE GAUGE

## DPG

### DPG

The DPG is a standard pressure gauge for measuring overpressure and differential pressure.

### Usage

The DPG is used to measure low pressures of air and non-combustible gases mainly in HVAC systems.

### Applications

- monitoring filters and ventilators
- monitoring overpressure and pressure difference in air ducts, air handling units, cleanrooms and laminar flow cabinets
- monitoring air flow on ventilators and in air ducts (special flow scales available separately)



DPG with flow scale, a cost-effective solution for on-site air flow measurement

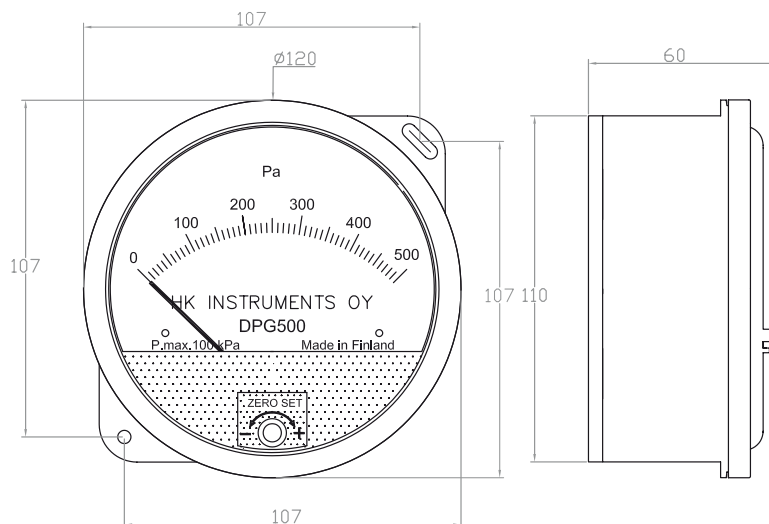
## TECHNICAL DETAILS

<b>Accuracy from FS (20°C):</b>	< ±2 % (DPG60 < ±4 % ; DPG100 < ±3 %)
<b>Ambient temperature:</b>	-5...+60 °C
<b>Zero point adjustment screw:</b>	external in the plastic cover
<b>Mounting:</b>	surface mounting or flush mounting
<b>Mounting position:</b>	vertical
<b>Measuring air flow:</b>	special flow scales available separately, easy to install on-site

## DPG

Code	Product description	Measuring range (Pa)
106.001.001	DPG60	0-60 Pa
106.002.001	DPG100	0-100 Pa
106.003.001	DPG120	0-120 Pa
106.004.001	DPG200	0-200 Pa
106.005.001	DPG250	0-250 Pa
106.006.001	DPG300	0-300 Pa
106.022.001	DPG400	0-400 Pa
106.007.001	DPG500	0-500 Pa
106.008.001	DPG600	0-600 Pa
106.009.001	DPG800	0-800 Pa
106.010.001	DPG1k	0-1 kPa
106.011.001	DPG1,5k	0-1,5 kPa
106.012.001	DPG2k	0-2 kPa
106.013.001	DPG3k	0-3 kPa
106.014.001	DPG5k	0-5 kPa

## Dimensions



## Interchangeable flow scales



Snap!



Install!



Go!

# LIQUID COLUMN MANOMETERS

MM, MMU & MMK

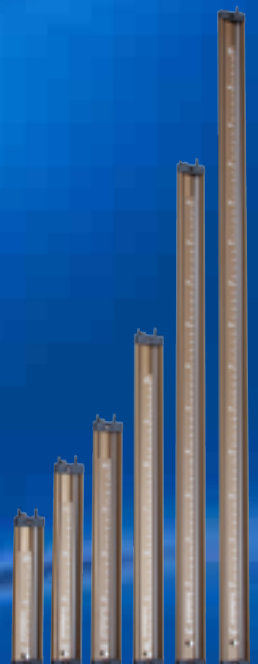


Reliable inclined column manometer  
with leakage protection system



Traditional U-tube  
manometer with easy  
zero point calibration

Extremely robust mano-  
meters used e.g. in vessels



Liquid column manometers are reliable and inexpensive traditional pressure meters. The manometers are good for measuring and indicating small overpressure, underpressure and differential pressure of air and non-aggressive gases in low pressure ranges.

Liquid column manometers are ideal for general-purpose work in air-conditioning and ventilation, monitoring of air filters for contamination and monitoring of air flow and air velocity.

## MM

<b>MM</b>			
<b>Code</b>	<b>Product</b>	<b>Measuring range (Pa)</b>	<b>Accuracy</b>
107.001.001	MM±50 *)	-50...0... +50 Pa	1 Pa
107.002.001	MM100 *)	-20...0... +100 Pa	1 Pa
107.003.001	MM±100500	-100...0... +500 Pa	5 Pa/25 Pa
107.004.001	MM200600	0...200...600 Pa	5 Pa/25 Pa
107.005.001	MM5001500	0...500...1500 Pa	10 Pa/50 Pa

\*) The types delivered with level bubble

Optional level bubble is available to all models on request!

## MMU

<b>MMU</b>			
<b>Code</b>	<b>Product</b>	<b>Measuring range (Pa)</b>	<b>Accuracy</b>
113.002.001	MMU±500	±500 Pa	10 Pa

## MMK

<b>MMK</b>			
<b>Code</b>	<b>Product</b>	<b>Measuring range (Pa)</b>	<b>Accuracy</b>
108.001.001	MM1K	0...1 000 Pa	10 Pa
108.002.001	MM1,5K	0...1 500 Pa	10 Pa
108.003.001	MM2K	0...2 000 Pa	10 Pa
108.004.001	MM3K	0...3 000 Pa	10 Pa
108.005.001	MM5K	0...5 000 Pa	10 Pa
108.006.001	MM7K	0...7 000 Pa	10 Pa
108.007.001	MM10K	0...10 000 Pa	10 Pa

Available with photoelectric limit switch. 10...30 VDC.



# FILTER ALERTS (DISPLAY + RELAY)

In many situations filter monitoring requires an alarm signal and a local display. Our filter alerts are the right solution for these situations. The filter alerts combine differential pressure switches with gauges and manometers into one practical product offering.

<b>DPG/PS</b>	Combination of differential pressure gauge and differential pressure switch . . . . .	34
<b>MM/PS</b>	Combination of liquid column manometer and differential pressure switch . . . . .	34



**DPG/PS**



**MM/PS**

MANOMETER  
MM 200600

FLL  
P<sub>0</sub> = 1013



MADE BY  
**HK INSTRUMENTS**  
FINLAND

# FILTER ALERTS

The filter alerts are a solution for systems requiring visual indication of pressure onsite, together with switching point signal. The filter alerts are ideal for general-purpose work in air-conditioning and ventilation, especially in monitoring of air filters for contamination.

The available combinations include pressure gauge and pressure switch combination (DPG/PS), and inclined tube manometer and pressure switch combination (MM/PS).



# MM/PS

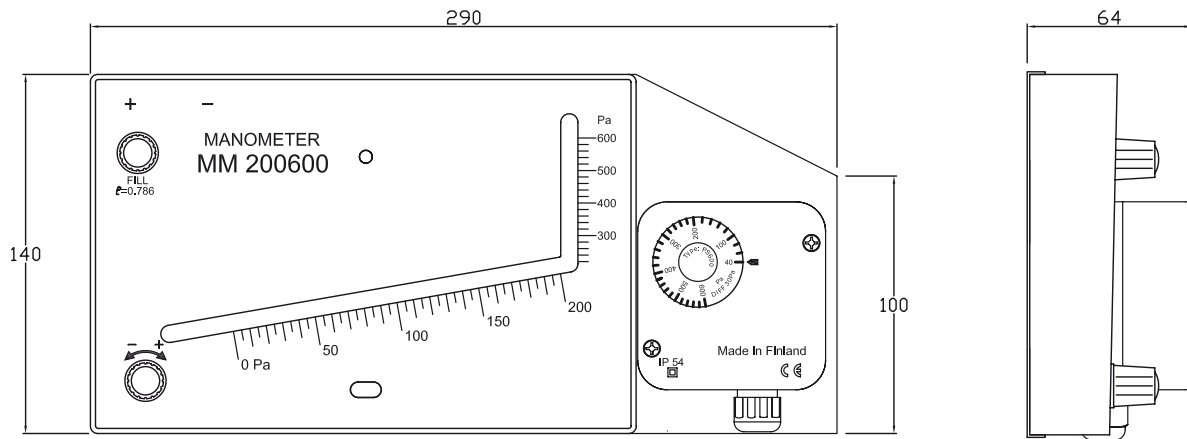
## MM/PS

Code	Product	MM range (Pa)	PS range (Pa)
110.001.001	MM200600/PS600	0... 600 Pa	40...600 Pa
110.002.001	MM5001500/PS1500	0...1500 Pa	100...1500 Pa

### Accessories

Same as for MM and PS

### Dimensions



# DPG/PS

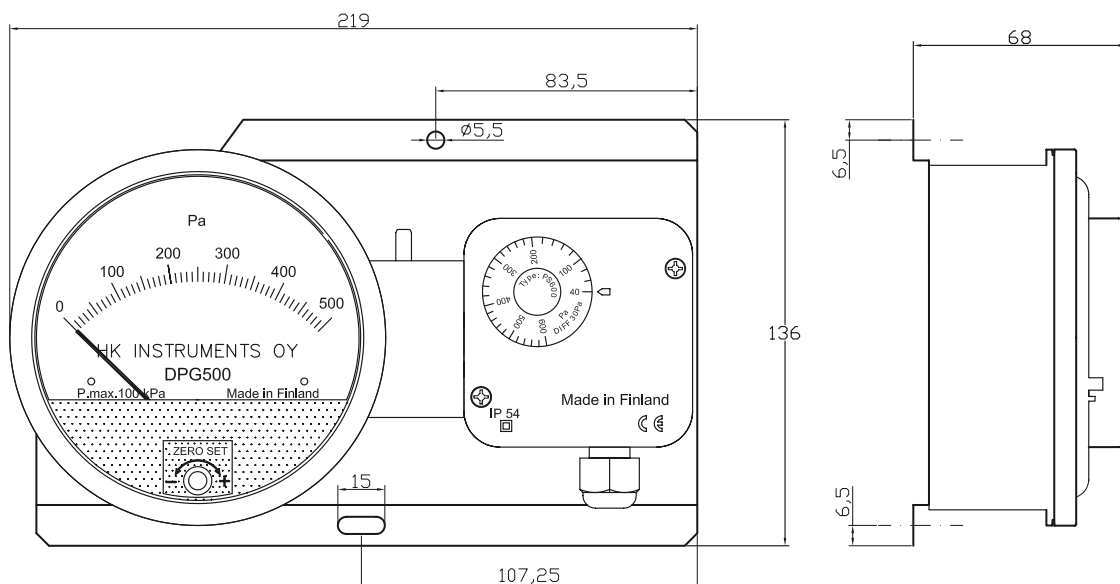
## DPG/PS

Code	Product	DPG range (Pa)	PS range (Pa)
109.001.001	DPG200/PS200	0... 200Pa	20...200 Pa
109.002.001	DPG600/PS600	0... 600 Pa	40...600 Pa
109.003.001	DPG1,5K/PS1500	0...1500 Pa	100...1500 Pa

### Accessories

Same as for DPG and PS

### Dimensions



**ACCESSORIES**  
SEE PAGE 56

# AIR FLOW AND VELOCITY METERS

These unique devices make measuring air flow and air velocity easier than ever before. DPT-Flow provides the flow rate of a fan in matter of seconds. Together with FloXact™ measurement probes the same device is the right option when measuring flow in a duct. Again, if you wish to measure air velocity, your selection would be AVT which offers multiple measurement ranges in a single device together with relay and temperature output signals.

<b>DPT-FLOW</b>	Flow meter for HVAC systems . . . . .	40
<b>FloXact™</b>	Multi-point pitot tube for flow measurements. . . . .	42
<b>AVT</b>	All-in-one air velocity transmitter with temperature and relay outputs . . . . .	44
<b>DPG+flow scale</b>	Differential pressure gauge with air flow scale. . . . .	28



DPT-FLOW



FloXact™



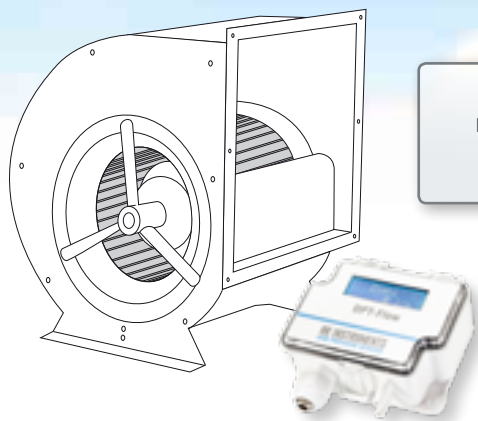
AVT



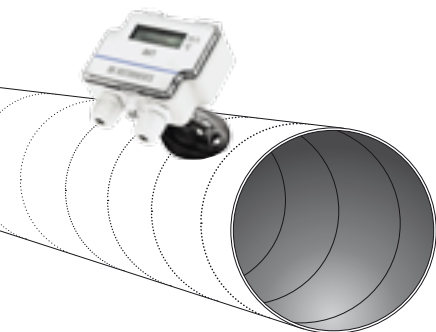
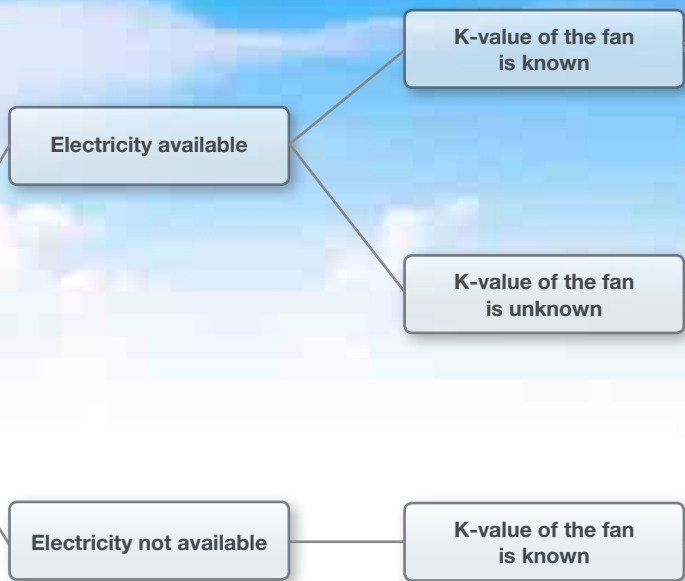
DPG+flow scale

# FLOW MEASUREMENT

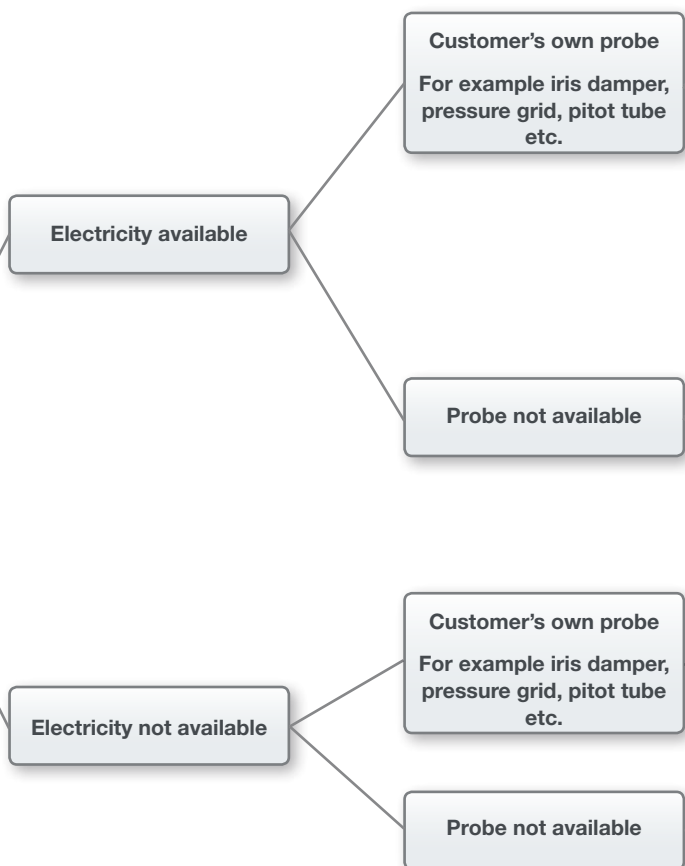
## Product Selection Guide

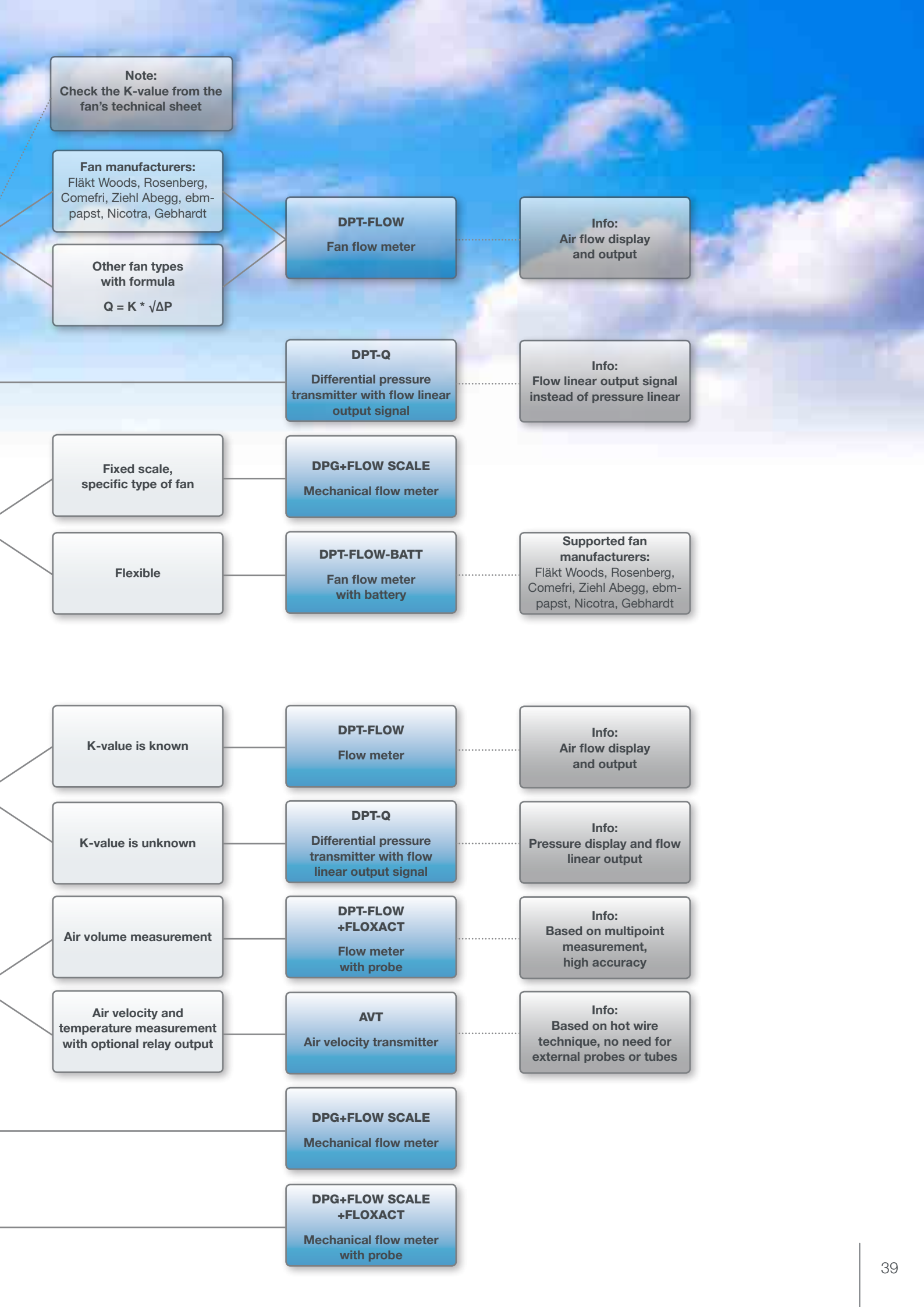


**Fan flow measurement**  
(Measuring inlets in the fan)



**Flow in duct**





**Note:**  
Check the K-value from the fan's technical sheet

**Fan manufacturers:**  
Fläkt Woods, Rosenberg, Comefri, Ziehl Abegg, ebmpapst, Nicotra, Gebhardt

**Other fan types with formula**  
 $Q = K * \sqrt{\Delta P}$

**DPT-FLOW**  
Fan flow meter

**Info:**  
Air flow display and output

**DPT-Q**  
Differential pressure transmitter with flow linear output signal

**Info:**  
Flow linear output signal instead of pressure linear

**Fixed scale, specific type of fan**

**DPG+FLOW SCALE**  
Mechanical flow meter

**Flexible**

**DPT-FLOW-BATT**  
Fan flow meter with battery

**Supported fan manufacturers:**  
Fläkt Woods, Rosenberg, Comefri, Ziehl Abegg, ebmpapst, Nicotra, Gebhardt

**K-value is known**

**DPT-FLOW**  
Flow meter

**Info:**  
Air flow display and output

**K-value is unknown**

**DPT-Q**  
Differential pressure transmitter with flow linear output signal

**Info:**  
Pressure display and flow linear output

**Air volume measurement**

**DPT-FLOW +FLOXACT**  
Flow meter with probe

**Info:**  
Based on multipoint measurement, high accuracy

**Air velocity and temperature measurement with optional relay output**

**AVT**  
Air velocity transmitter

**Info:**  
Based on hot wire technique, no need for external probes or tubes

**DPG+FLOW SCALE**  
Mechanical flow meter

**DPG+FLOW SCALE +FLOXACT**  
Mechanical flow meter with probe

# FLOW METER FOR HVAC SYSTEMS

## DPT-FLOW

DPT-Flow is a flow meter that provides a new and easy way to measure the flow rate on centrifugal fans or in a duct system. One device is suitable for a range of fan types. It can also be used with several different measurement probes such as FloXact™ or pitot tube, and air dampers.

## Usage

The DPT-Flow can be used to measure the air flow on centrifugal fans or as a transmitter to regulate the air flow in the duct or on the selected fan or blower. It can also be used in duct system or in air-handling units as an on-site display for flow.

## Applications

The DPT-Flow is an ideal instrument for air flow monitoring and control, and fan and blower control.



Take fan monitoring and control into a new level with DPT-Flow

# DPT-FLOW

## TECHNICAL DETAILS

<b>Accuracy (from applied pressure):</b>	±1,5 % or (± 2 Pa < 125 Pa) (including: general accuracy, temperature drift, linearity, hysteresis, long term stability and repetition error).
<b>Zero point calibration:</b>	automatic with autozero element (-AZ) or with push button
<b>Supply voltage:</b>	24 VAC ±10 % / 24 VDC ±10 %
<b>Power consumption:</b>	< 1.0 W
<b>Output signals for pressure and air flow (selectable by jumper):</b>	0...10 VDC, Load R minimum 1kΩ or 4...20 mA, maximum load 500Ω
<b>Ambient temperature:</b>	-5...+50 °C
<b>Response Time:</b>	1...20 s
<b>Protection standard:</b>	IP54
<b>Calculation formula:</b>	$V = k * \sqrt{\Delta P(Pa)}$

Ideal product for measuring the flow rate both on centrifugal fans and in a duct system

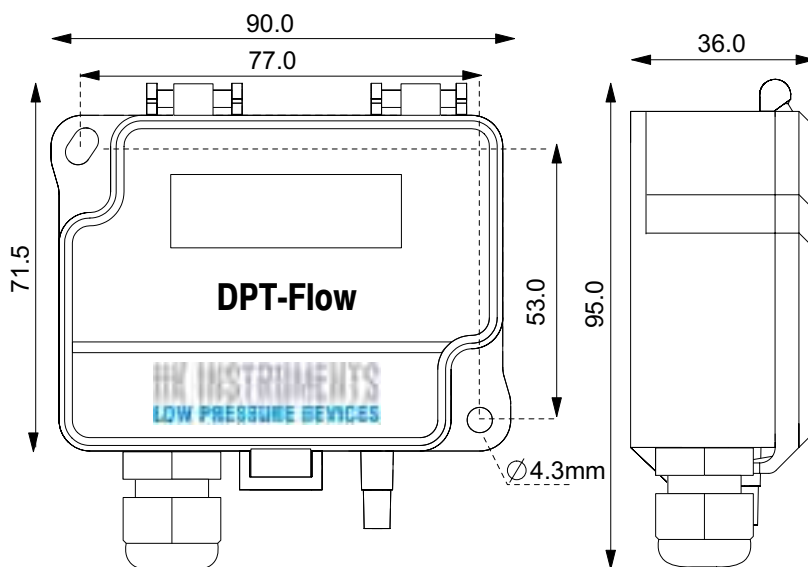
## DPT-FLOW

Product code	Product description	Measuring range (Pa)
102.001.012	DPT-FLOW-1000-D	0...1000
102.002.009	DPT-FLOW-2000-D	0...2000
102.004.012	DPT-FLOW-5000-D	0...5000
102.006.013	DPT-FLOW-7000-D	0...7000
102.001.002	DPT-FLOW-1000-AZ-D	0...1000
102.002.002	DPT-FLOW-2000-AZ-D	0...2000
102.004.003	DPT-FLOW-5000-AZ-D	0...5000
102.006.002	DPT-FLOW-7000-AZ-D	0...7000

## Supported fan manufacturers

Fläkt Woods, Rosenberg, Nicotra, Comefri, Ziehl-Abegg ebm-papst, Gebhardt

## Dimensions



# FloXact™

## Application

The FloXact™ probe is a differential air pressure device designed to measure air velocities in a duct. It includes multiple sensing points to measure total and static pressures. The FloXact™ probe incorporates a unique design to amplify the differential pressure by approximately 2.5 times for accurate measurement of lower air velocities down to 200 fpm. It is easy to install and cost-effective.

## Design features

- Multiple sensing points for greater accuracy
- Easy installation
- Chamfered sensing points for consistent readings
- 2 % accuracy
- 2.5 X signal amplification
- Accepts 1/4" OD tubing



Figure 1. FloXact™-L mounting

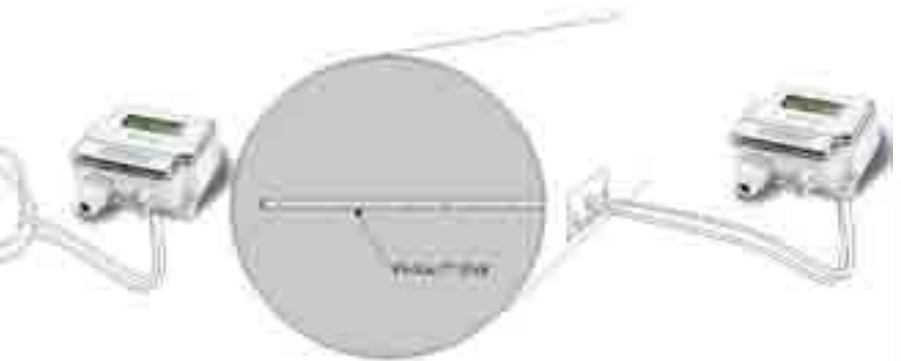
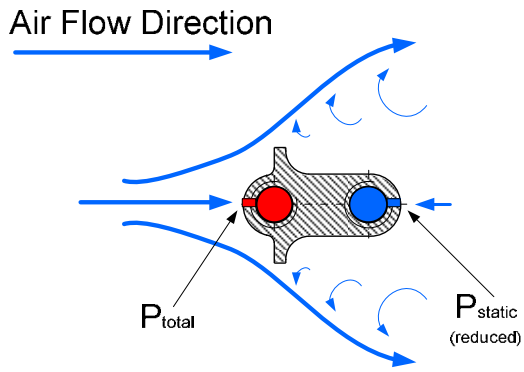


Figure 2. FloXact™-R mounting



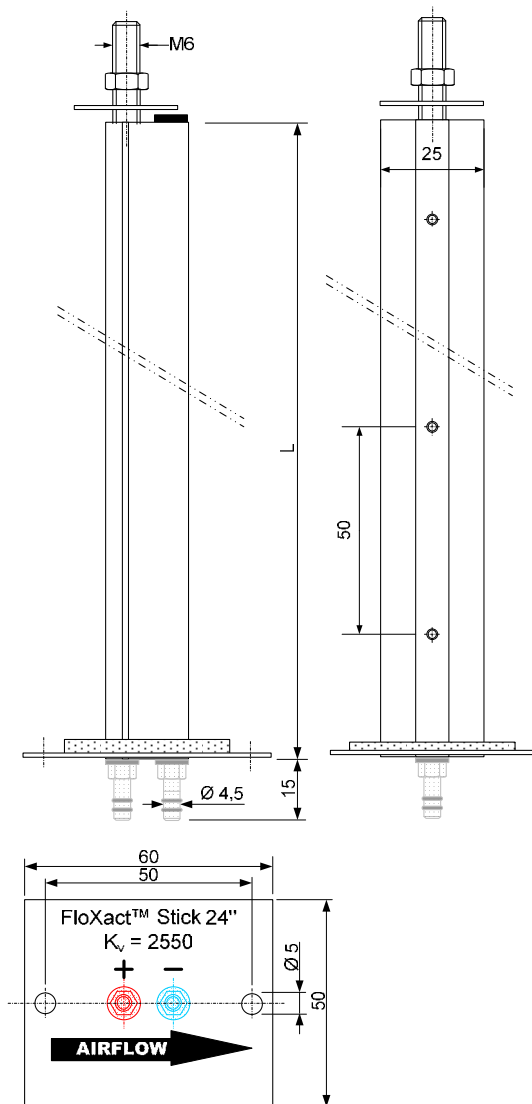
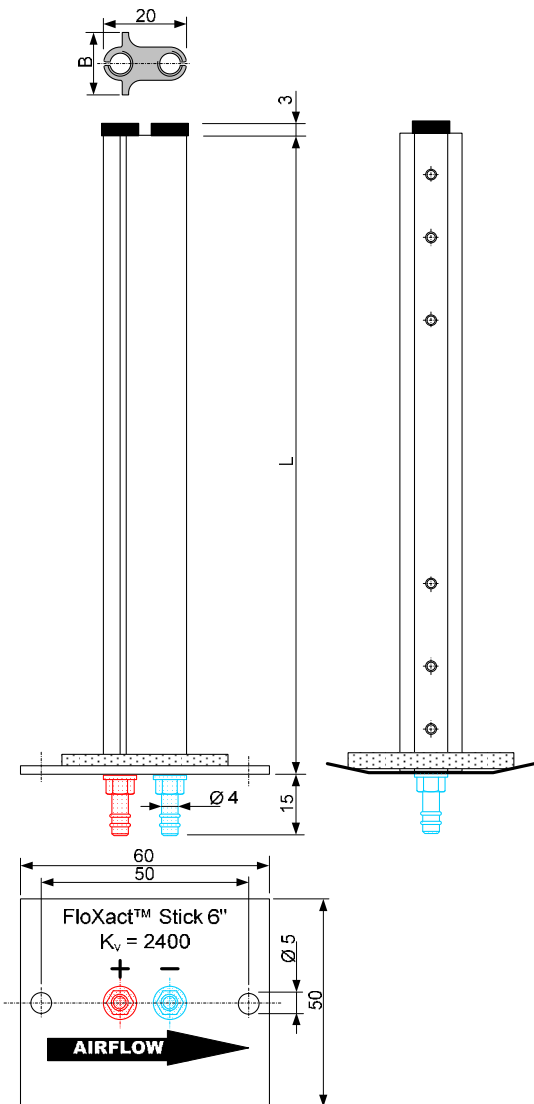


Operation of the FloXact™

**Dimensions**

FloXact™-R available models :  
100, 125, 160, 200, 250, 315, 400 and 450

FloXact™-L available models :  
250, 300, ... 1200 (50mm steps)



# AIR VELOCITY TRANSMITTER

## AVT

The AVT is an electronic air velocity and temperature transmitter for air and non-combustible gases with optional relay output.

## Usage

AVT is used in HVAC and building automation systems.

## Applications

Monitoring air velocity and temperature in ducts and laminar flow cabinets, and at ventilators and dampers.



Air velocity and temperature transmitter with relay output

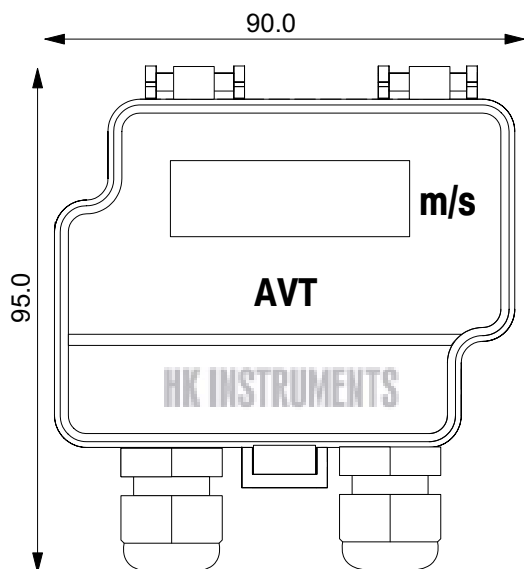
## TECHNICAL DETAILS

<b>Accuracy:</b>	< 0,1 m/s + 5 % from reading (Range 0...2 m/s) < 0,5 m/s + 5 % from reading (Range 0...10 m/s) < 1,0 m/s + 5 % from reading (Range 0...20 m/s)
<b>Supply voltage:</b>	24 VDC ±10 % / 24 VAC ±10 %
<b>Power consumption:</b>	35 mA (50 mA with relay) + 40 mA with mA outputs
<b>Output signal 1:</b>	0...10 V (linear to °C), L min 1 kΩ or 4...20 mA (linear to °C), L max 400 Ω
<b>Output signal 2:</b>	0...10 V (linear to m/s), L min 1 kΩ or 4...20 mA (linear to m/s), L max 400 Ω
<b>Optional relay output:</b>	Potential free SPDT 250 VAC, 6 A / 30 VDC, 6 A with adjustable switching point and hysteresis
<b>Ambient temperature:</b>	0...+50 °C
<b>Probe:</b>	Adjustable Immersion length 50...190 mm, mounting flange included
<b>Protection standard:</b>	IP54

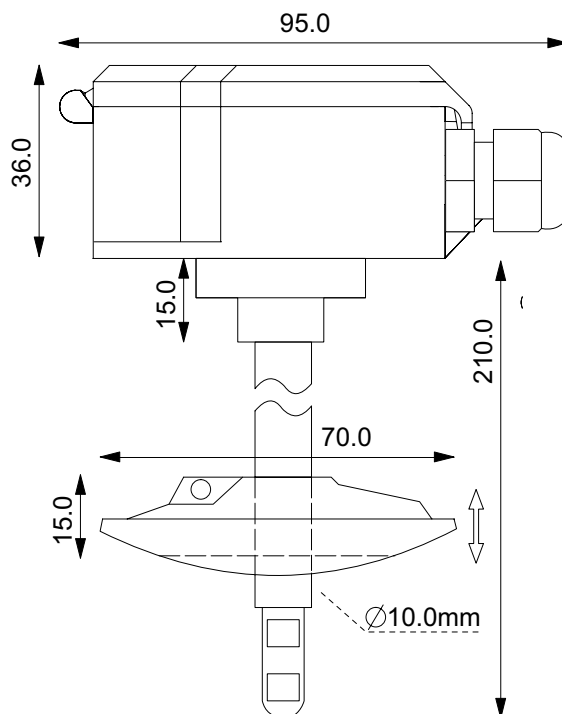
### AVT

Product code	Product description	Measuring range (Pa)
117.004.001	AVT	0...2 / 0...10 / 0...20 m/s
117.004.002	AVT-D	0...2 / 0...10 / 0...20 m/s
117.004.003	AVT-D-R	0...2 / 0...10 / 0...20 m/s

Dimensions



Dimensions of probe



# LIQUID PRESSURE TRANSMITTERS

These robust devices are the right choice when looking for reliable pressure instruments for liquids.

<b>PTL</b>	Absolute pressure transmitters for liquids .....	46
<b>DPTL</b>	Differential pressure transmitters for liquids .....	46



**PTL**



**DPTL**

# PTL

The PTL is a pressure transmitter for pressure detection in liquids for air-conditioning, heating and water systems. Suitable for plants that use refrigerants.

## TECHNICAL DETAILS

<b>Accuracy (typ.):</b>	±0,7%
<b>Power:</b>	15...24 VDC/VAC
<b>Output:</b>	0...10 V or 4-20 mA
<b>Protection standard:</b>	IP65
<b>Pressure connector:</b>	G1/4" (G1/2" adaptor included)
<b>Ambient temperature:</b>	-40...105 °C

PTL Code	Product	Measuring range (bar)
112.001.001	PTL4/V	0...4 bar
112.002.001	PTL6/V	0...6 bar
112.003.001	PTL10/V	0...10 bar
112.004.001	PTL16/V	0...16 bar
112.005.001	PTL25/V	0...25 bar
112.001.002	PTL4/A	0...4 bar
112.002.002	PTL6/A	0...6 bar
112.003.002	PTL10/A	0...10 bar
112.004.002	PTL16/A	0...16 bar
112.005.002	PTL25/A	0...25 bar



# DPTL

The DPTL is made for differential pressure detection in liquids for air-conditioning, heating and water systems. The equipment can withstand mildly corrosive substances and liquids.

## TECHNICAL DETAILS

<b>Accuracy from FS:</b>	±1 %
<b>Power:</b>	15...24 VDC/VAC
<b>Output:</b>	0...10 V or 4-20 mA
<b>Protection standard:</b>	IP54
<b>Pressure connector:</b>	inside thread G1/4"
<b>Ambient temperature:</b>	-10...50 °C

DPTL Code	Product	Measuring range (bar)
111.001.001	DPTL1/V	0...1 bar
111.002.001	DPTL2,5/V	0...2,5 bar
111.003.001	DPTL4/V	0...4 bar
111.004.001	DPTL6/V	0...6 bar
111.001.002	DPTL1/A	0...1 bar
111.002.002	DPTL2,5/A	0...2,5 bar
111.003.002	DPTL4/A	0...4 bar
111.004.002	DPTL6/A	0...6 bar



# AIR QUALITY TRANSMITTERS

Our selection of air quality transmitters provides solutions for many different applications in the field of building automation.

CMT is a reliable and easy-to-use transmitter for monitoring CO gas levels. CDT2000 product family offers economical and versatile devices that measure CO<sub>2</sub>, relative humidity (rH) and temperature (T). These devices are available for duct or wall mounting in off-white case suitable for any décor. CDT2000 is the first device measuring CO<sub>2</sub> and rH with large touchscreen display enabling easy configuration and adjustment.



CDT2000



CDT2000 DUCT



CMT

<b>CDT2000</b>	CO2 transmitter with temperature output . . . . .	50
<b>RHT</b>	Humidity (rH) transmitter with temperature output . . . . .	50
<b>CDT2000 Duct</b>	CO2 transmitter with temperature output for duct. . . . .	52
<b>RHT Duct</b>	Humidity (rH) transmitter with temperature output for duct. . . . .	52
<b>CMT</b>	Carbon monoxide transmitter . . . . .	54



# CARBON DIOXIDE TRANSMITTER

## WALL MOUNTED CO<sub>2</sub>, RELATIVE HUMIDITY AND TEMPERATURE TRANSMITTER

### CDT2000

### Usage and applications

CDT2000 combines CO<sub>2</sub>, relative humidity and temperature measurements in one modern looking device with a touchscreen display. It offers easy installation and adjustment, several different model options and various output signals that are configurable separately for each measurement parameter.

CDT2000 wall mount model is used to monitor and control CO<sub>2</sub> and humidity levels in offices, public spaces, hospitals, meeting rooms and classrooms.



Touchscreen display for easy adjustment

# CDT2000 / RHT

## TECHNICAL DETAILS

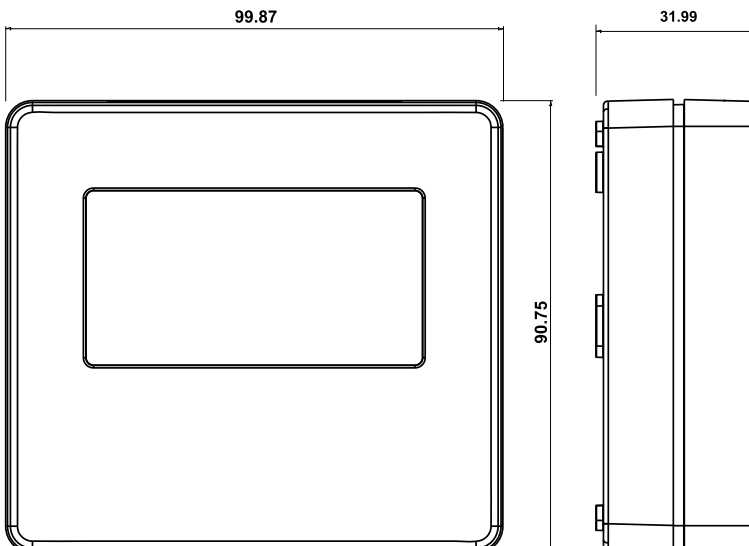
<b>Suitable media:</b>	Air and non-aggressive gases
<b>Measurement elements:</b>	Pt1000 temperature sensor, Non Dispersive Infrared (NDIR) CO2 sensor, thermoset polymer capacitive sensing element for humidity
<b>Electrical interface:</b>	Supply voltage: 24 VDC/VAC $\pm$ 10 %
<b>Current consumption:</b>	150 mA (max)
<b>Output signal 1:</b>	0/2...10 V (linear to CO2), L min 1 k $\Omega$ or 4...20 mA (linear to CO2), L max 500 $\Omega$
<b>Output signal 2:</b>	0/2...10 V (linear to rH), L min 1 k $\Omega$ or 4...20 mA (linear to rH), L max 500 $\Omega$
<b>Output signal 3:</b>	0/2...10 V (linear to Temp), L min 1k $\Omega$ or 4...20 mA (linear to Temp), L max 500 $\Omega$
<b>Optional relay output:</b>	Potential free SPDT 250 VAC, 6 A / 30 VDC, 6 A with adjustable switching point and hysteresis
<b>Materials:</b>	Housing: ABS
<b>Cover</b>	ABS
<b>Ambient temperature:</b>	0...+50 °C
<b>Protection standard:</b>	IP20

CDT2000		RHT	
Product code	Product description*	Product code	Product description*
301.001.001	CDT2000	301.002.001	RHT
301.001.002	CDT2000-D	301.002.002	RHT-D
301.001.003	CDT2000-1R-D	301.002.003	RHT-MOD-D
301.001.004	CDT-MOD-2000-D		
301.001.005	CDT-MOD-2000-1R-D		
301.003.001	CDT2000-rH		
301.003.002	CDT2000-rH-D		
301.003.003	CDT2000-1R-rH-D		
301.003.004	CDT2000-rH-D		
301.003.005	CDT-MOD-2000-1R-rH-D		



\*D = display, 1R = relay, MOD = Modbus, rH = humidity

## Dimensions



CO<sub>2</sub>, humidity and temperature measurements in one device

NEW!

# CARBON DIOXIDE TRANSMITTER

## CO<sub>2</sub> TRANSMITTER WITH TEMPERATURE OUTPUT FOR DUCT

### CDT2000 Duct

CDT2000 Duct combines CO<sub>2</sub> and relative humidity measurements in one device installed in air ventilation duct. Big illuminated display ensures easy readability also from a distance.

### Usage & applications:

CDT2000 Duct is used to monitor and control CO<sub>2</sub> and humidity levels of incoming and return air in ventilation system.



# CDT2000 DUCT / RHT DUCT

## TECHNICAL DETAILS

<b>Suitable media:</b>	Air and non-aggressive gases
<b>Measurement elements:</b>	NTC10k temperature sensor, Non Dispersive Infrared (NDIR) CO <sub>2</sub> sensor, thermoset polymer capacitive sensing element for humidity
<b>Electrical interface:</b>	Supply voltage: 24 VDC/VAC ±10 %
<b>Current consumption:</b>	150 mA (max)
<b>Output signal 1:</b>	0/2...10 V (linear to CO <sub>2</sub> or rH), L min 1 kohm or
<b>Output signal 2:</b>	0/2...10 V (linear to T), L min 1 kohm or
<b>Materials:</b>	Housing: ABS Cover: PC
<b>Ambient temperature:</b>	0...+50 °C
<b>Protection standard:</b>	IP54

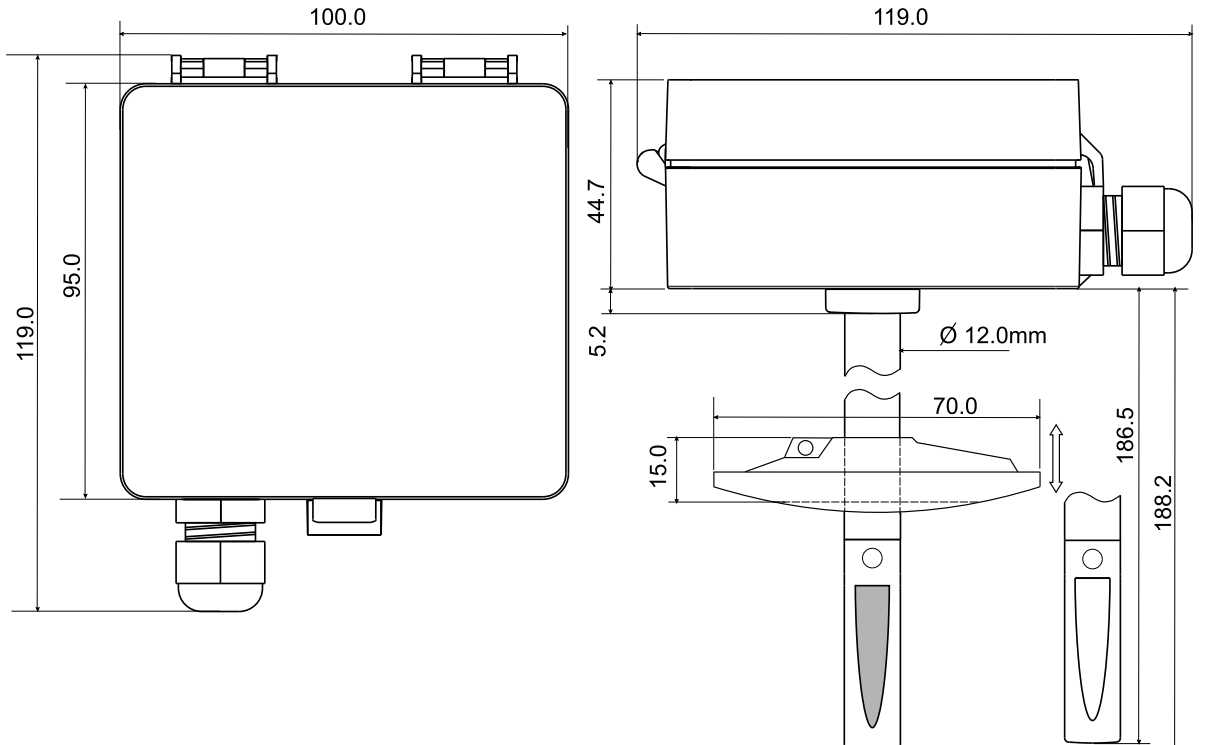
## CDT2000 Duct / RHT Duct

Product code	Product description*
CDT2000 Duct	302.001.001
CDT2000 Duct -D	302.001.002
RHT Duct	302.002.001
RHT Duct -D	302.002.002

\*D = display

Measure the total concentration of CO<sub>2</sub> and humidity where room measurement is not feasible

## Dimensions



# CMT

The CMT is an easy-to-use, reliable transmitter for detecting CO gas. It is commonly used in places where air includes CO gas emissions, such as parking garages.



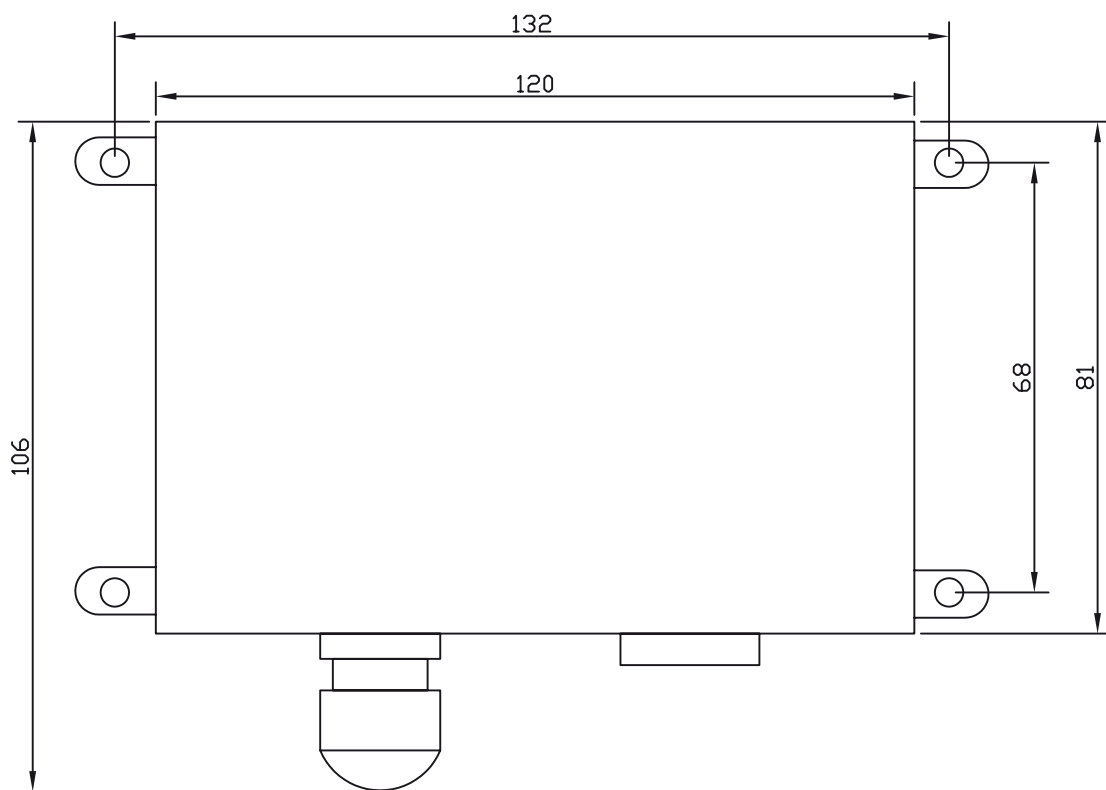
## TECHNICAL DETAILS

<b>Power:</b>	20...28 VDC
<b>Output:</b>	4-20 mA (2-wire)
<b>Protection standard:</b>	IP65
<b>Ambient temperature:</b>	-10...40 °C

## CMT

Code	Product	Measuring range	Linearity	Cross sensitivity
115.001.001	CMT	0...300 ppm CO	≤ 2 % on 300 ppm CO	≤ 2 % on 300 ppm CO

## Dimensions



# ACCESSORIES

	DPT (all models)	DPT-FLOW	DPI	AVT	PS	DPG	MM	MMU	MMK	DPTL	PTL	CMT	CDT / RHT	CDT / RHT Duct	MM / PS	DPG / PS
<b>STANDARD ACCESSORIES*</b>																
<b>Product description</b>																
Mounting screw	x	x	x		x	x	x		x				x	x	x	x
PVC tube 2 m	x	x	x		x	x	x	x	x						x	x
Duct connector, plastic for d=4 mm tube (80 mm)	x	x	x		x	x										x
Gauge fluid 30 ml							x	x	x						x	
Attention stickers							x								x	x
Adaptor G1/4" to G1/2"										x						
Mounting flange			x										x			
*Supplied with single packed product																
<b>OPTIONAL ACCESSORIES**</b>																
<b>Product code</b>	<b>Product description</b>															
T00100	x	x	x	x	x	x	x	x	x							
P00297	x			x												
P00653	x	x												x		
P00026	x	x	x		x	x	x	x	x						x	x
T00120	x	x	x		x	x	x		x						x	x
T00110	x	x	x		x	x	x	x	x						x	x
T00111						x										
T00199							x	x	x						x	
T00103							x	x	x						x	
T00198							x								x	
P00038	x	x	x		x	x	x	x	x						x	x
P00761	x	x	x		x	x	x		x						x	x
P00762	x	x	x		x	x	x		x						x	x
P00031	x	x	x		x	x	x	x	x							
P00137	x	x	x	x	x	x	x	x	x			x				
139xxx						x										x

\*\*to be ordered separately



## HK INSTRUMENTS – TERMS AND CONDITIONS

**1. Applicability of the Terms and Conditions.** These terms and conditions shall be applied to trade in devices, components and accessories between HK Instruments Oy and the customer, unless the parties have otherwise mutually agreed in writing. These conditions do not apply to trade by agents, to which the manufacturer's conditions of sale shall be applied.

**2. Price.** The prices in effect at the time the offer is made form the basis of pricing. All prices exclude VAT. If changes occur in customs, freight, VAT or other general payments related to the delivery before the date of delivery, the seller has the right to change the price of the goods in the same proportion that said changed prices or payments affected the price of the goods.

**3. Offer.** The seller's offer is binding and it is valid for 30 days unless otherwise agreed. Provided the seller's offer is tendered under intermediary terms and conditions of sale, an immediate in storage offer is denoted whereby the goods may be sold to a third party during the period the offer is valid and the seller does not guarantee the inventory is sufficient.

**4. Contract.** A contract between the seller and the buyer is deemed to have been established when

- the parties have signed a written contract (purchase agreement)
- the buyer has approved a binding offer in writing (order) or
- the seller has confirmed in writing as such an order other than one based on an offer or an order different from the offer (order confirmation)

**5. Drawings and Descriptions.** The information on prices, measurements, weights and performances given in descriptions, photos, memos, drawings, directories and price lists and other information containing technical and other details have been given without obligations, unless specifically referred to in the offer. All technical drawings and documents needed for the manufacture of the product or its component, which one party has provided to the other party prior to, or after the signing of the contract, shall remain the property of the provider. The receiving party may not, without the provider's consent, use, copy, surrender or divulge by other means information regarding them to a third party.

**6. Condition of Delivery.** The condition of delivery is free seller's storage (re: Incoterms 2010 EXW) unless otherwise agreed.

**7. Packaging.** The prices stated in price lists and directories apply to unpacked products.

**8. Time of Delivery.** Unless the time of delivery is agreed, the seller shall stipulate the time of delivery. The goods are considered to have been delivered when handed over to a freight carrier for forwarding to the purchaser. When, according to the terms of the contract, the buyer has to collect the goods from the seller or from a place designated by the seller, the goods are deemed conveyed when the seller has notified the buyer that the goods are ready for delivery.

**9. Conveyance and Examination of the Goods.** On acceptance of the goods, the customer must make sure that the delivered goods correspond with the packing list and are externally undamaged. Before using, connecting, or installing the goods, the customer must again examine the goods to ensure their flawless condition. Complaints regarding errors or deficiencies must be made to the seller without delay, at the latest within 8 days of the conveyance of the goods.

**10. Force Majeure.** The seller is not liable to fulfill the contract if an obstacle the seller is unable to overcome exists regarding the contract, or if fulfilling the contract would require sacrifices that are unreasonable compared to the advantage for the buyer should the seller fulfill the contract. If said obstacle or disparity ceases to exist within a reasonable period of time, the

buyer has the right to demand that the seller fulfill the contract. When the manufacturer or the party from which the seller obtains the goods has not fulfilled the terms of his contract thus causing the seller's delivery to be delayed or not completed, the seller is not obligated to compensate the buyer for any potential losses. The buyer does not have the right to request a new delivery to replace a flawed product if an obstacle as noted in this section exists for the seller. When completion of the contract within a reasonable period of time becomes impossible due to factors noted in this section, both parties are entitled to cancel the contract with no liability to compensate by notifying the other party of their intentions in writing.

**11. Payment.** The payment period starts from the invoice date. In case of a delay in payment, the buyer is liable for compensating the seller according to his/her rate of interest and paying the expenses arising from the collection of payment.

**12. Warranty.** The seller is obligated to provide a warranty of 24 months 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 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.

**13. Returns.** The sale made is binding and irrevocable and the seller is not liable to accept the return of a product. Products delivered according to contract are taken back and products reimbursed up to 70% provided the seller has, prior to the return of the product, agreed to it. Returned products may be taken back and credited provided they are in the original package and in original condition.

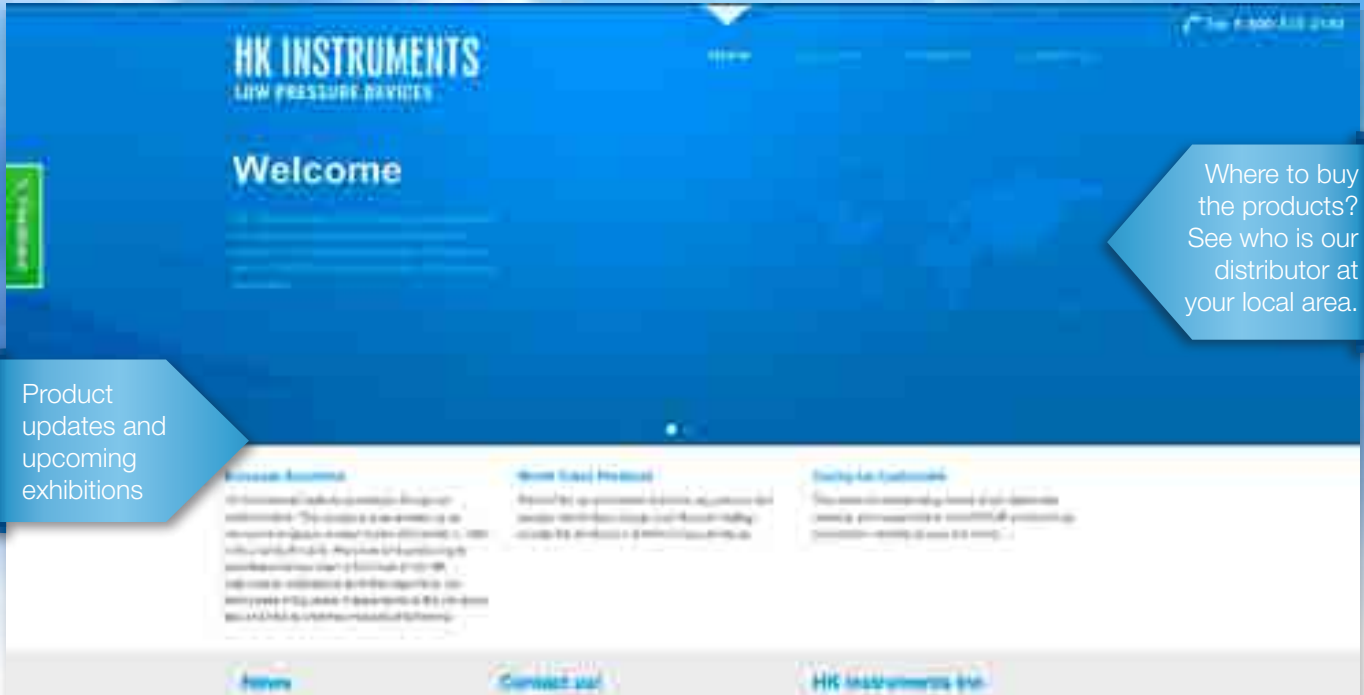
**14. Notifications.** The sender is responsible for ensuring the arrival of notifications sent to the other party.

**15. Ownership.** Ownership of the product is passed to the buyer when the price is paid in full.

**16. Disagreements.** Disagreements concerning contracts and related stipulations should be settled primarily by the parties to the contract. In case a settlement cannot be reached, the dispute shall be resolved in Finland in the lower court at the domicile of the seller.

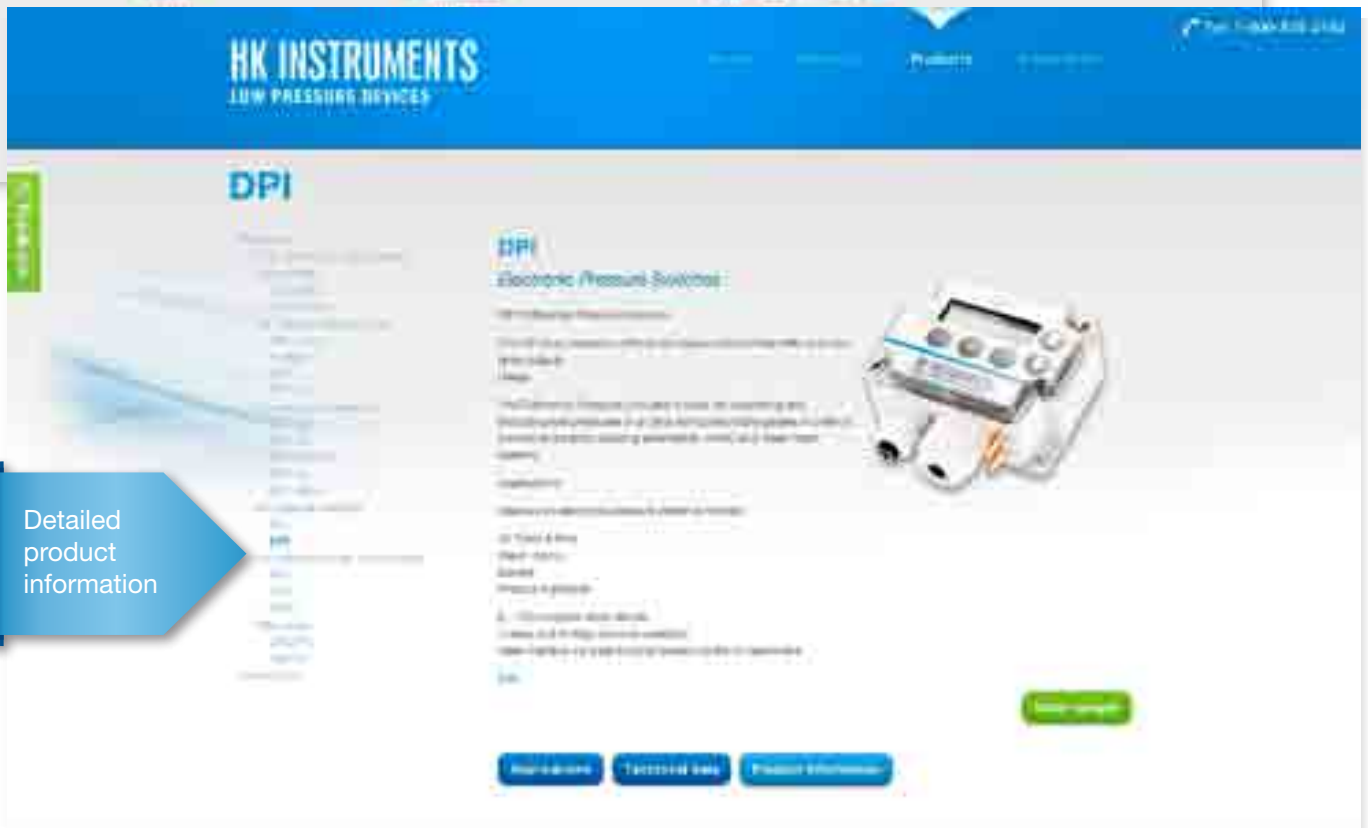
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# **HK INSTRUMENTS**

Keihästie 7  
FIN-40950 MUURAME  
FINLAND

Phone. +358 14 337 2000  
Fax. +358 14 337 2020

[info@hkinstruments.fi](mailto:info@hkinstruments.fi)  
[www.hkinstruments.fi](http://www.hkinstruments.fi)