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PRESSURE AND FLOW

PID controllers with differential

pressure or air flow transmitter and

pressure or air flow transmitter.....56

Modbus communication 58

CONTROLLERS

DPT-CTRL-MOD PID controllers with differential

PRODUCT PORTFOLIO



DIFFERENTIAL PRESSURE TRANSMITTERS

	THANOMITTENO
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	with two pressure sensors 36
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	with 2-wire configuration 38
DPI	Electronic differential pressure
	switch and transmitter40



DPT-CTRL

AIR PRESSURE GAUGES & MANOMETERS

DPG	Differential pressure gauge	88
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PRESSURE SWITCHES

М	Mechanical differential	
	pressure switch	.9



AIR FLOW AND VELOCITY TRANSMITTERS

	THE THE TENE
DPT-FLOW	Flow transmitter for HVAC
-	systems46
FLOXACT™	Averaging multi-point pitot tube for
	flow measurements 48
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FILTER ALERTS (DISPLAY + RELAY)

им/PS	Combination of liquid column
	manometer and differential
	pressure switch9
PG/PS	Combination of differential
	pressure gauge and differential
	pressure switch9

HIGH-QUALITY MEASURING DEVICES FOR CLEAN INDOOR AIR

HK Instruments is a Finnish company that helps its customers to keep the quality of indoor air and the functionality of buildings high, resulting in wellbeing and energy savings. We design highly accurate and easy-to-use measuring devices for HVAC applications in ventilation and building automation systems.

Having lived in the clean Finnish climate, we know what it is like to breathe in good-quality fresh air. This is why we have been leading the way, in Finland and abroad, for 35 years, allowing everyone to enjoy good-quality indoor air.

Our advanced measuring devices produce highly accurate real-time information about indoor air to the building management system. This leads to high functionality of the building, which supports the wellbeing of people while keeping energy costs down. Our products are known for their ease of use. Applications for our devices range from highly demanding laboratory conditions to regular residential buildings.

We understand that there are different needs in different parts of the world and in different applications. This is why we work with you to customize our solutions for your needs. Using the information our devices produce, we help you to make smart decisions to support the wellbeing of your people and the functionality of your building. Our decades of experience and our broad product range allow us to offer our services to market areas at highly different levels of development.

WE SPEND NEARLY 90 % OF OUR TIME INDOORS. THE
QUALITY OF INDOOR AIR IS NOT INSIGNIFICANT. CLEAN
INDOOR AIR THAT MAINTAINS WELLBEING IS ONE OF THE
PRECONDITIONS FOR LIFE. THE CORRECT KIND OF INDOOR AIR
MAINTAINS HEALTH, ENERGY LEVELS AND COMFORT. GOOD
INDOOR AIR QUALITY SAVES COSTS IN HEALTHCARE AND
BUILDING MAINTENANCE.

VALUES

FAMILY | FRIENDSHIP | BASIC NEEDS OF PEOPLE

We respect Family and Friendship. Every person sharing our journey is welcomed to our HK Instruments Family. We care about people's wellbeing – including their right to breathe clean air.



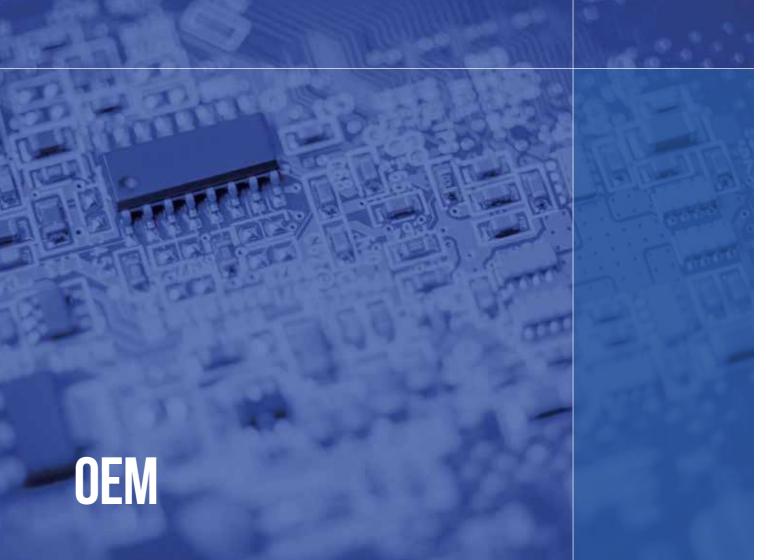
VISION

To deliver the best user and customer experience in HVAC and building automation.



MISSION

Our mission is to provide clean indoor air and energy savings by manufacturing user-friendly measuring devices for HVAC.



Many of our customers are OEMs, in particular companies manufacturing air handling units. They need solutions tailored to their individual needs. We excel at unique, customer-focused implementations.

HK Instruments has cooperated closely with OEMs for 35 years. We have gained broad and varied experience in unique device solutions, and we have always found a functional solution for the customer's specific needs. Our expert team is attuned to your needs and knows how to meet them. We stand out from the competition by being flexible and efficient. We stay on schedule and within budget – while also listening to our customer's needs at all times. Our OEM customers are actively involved throughout the manufacturing process, as we are convinced that continuous interaction produces the best results.

We are always open to new challenges and opportunities and would like to hear from you. We will find a solution that meets your and your company's needs.

 $6 \mid 7$





The Nova hospital complex inaugurated at the beginning of 2021 in Jyväskylä is the largest public investment ever made in Central Finland. The total cost of the hospital was 554 million euros, and its surface area 106 000 m². The hospital consists of four parts divided into separate functions: hot hospital, elective hospital, patient room wards and hospital support functions.

The hospital's building automation system is very impressing with 50 000 measuring points and about 200 km of different pipelines. A whole floor of one building is almost completely dedicated to AHUs: there are about 200 of them in 13 different engine rooms. The air handling units are located vertically in the middle of the building so that they serve optimally both upper and lower floor functions.

HK Instruments' measuring devices are a part of the automation system that enables easily controllable demand-controlled ventilation for the different functions of the hospital. For example, the 24 operating theatres equipped with the latest state-of-the-art technology have high criteria for controlling the indoor climate conditions. The conditions required in the operating theatre are selected for each operation, and the system adjusts the required cleanliness, temperature and air volume accordingly. As part of the system, HK Instruments' high-quality differential pressure and air flow transmitters ensure precise control of the ventilation, thus ensuring patient safety and energy efficiency.

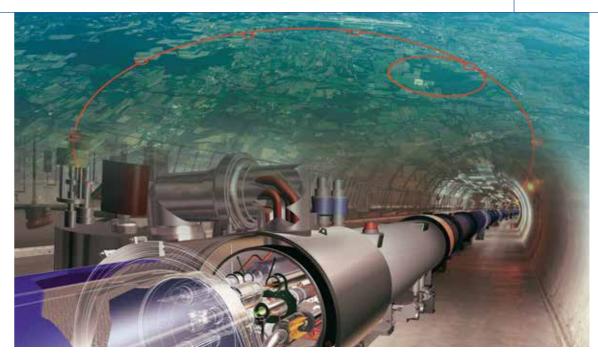


Image: CER

HK INSTRUMENTS EXPERTISE IN CERN

CERN, the European Laboratory for Particle Physics, is carrying out a large project to monitor and regulate the air conditioning inside the LHC (Large Hadron Collider), the particle accelerator that lead to the discovery of the Higgs Boson. For the differential pressure measurements, CERN has selected the DPT250-R8 sensor from HK Instruments to meet the Organization's stringent requirements in terms of accuracy, reliability and ease of integration. A total of 50 DPT transmitters have been installed in the underground areas such as experimental caverns, across galleries and pressurized modules. In addition, air quality transmitters of type CDT2000 are used for the control of air conditioning in control rooms of the LHC experiments.

CERN HAS SELECTED THE
DPT250-R8 SENSOR FROM
HK INSTRUMENTS TO MEET
THE ORGANIZATION'S STRINGENT
REQUIREMENTS IN TERMS OF
ACCURACY.

AS PART OF THE SYSTEM,

HK INSTRUMENTS' HIGH-QUALITY

DIFFERENTIAL PRESSURE AND

AIR FLOW TRANSMITTERS ENSURE

PRECISE CONTROL OF THE

VENTILATION, THUS ENSURING

PATIENT SAFETY

AND ENERGY EFFICIENCY.

JOIN OUR HK INSTRUMENTS FAMILY OF DISTRIBUTORS

We are constantly looking for new distributors to join our HK Instruments family. Our distributors are long-term partners, and we put in work to nurture a relationship built on trust, service and true friendship. In our 35 years' experience, this has been the key to our company's steady growth and strength. Through our success, we've been able to continually develop and create outstanding products for HVAC and building automation.

1. SALES SUPPORT

manager dedicated to assist you with any questions you languages, posters, photos, images, presentations etc. may have, for example choosing the suitable products for your customers.

2. LEAD GENERATION

We understand the importance of more leads for your here to help you. business to grow. We are skilled in developing a sales pipeline and will offer you valuable leads to utilize in 5. FREE SALES AND TECHNICAL TRAINING networking and sales.

3. MARKETING SUPPORT

Instruments is a well-known and trusted brand in Europe, and we are generous in sharing our brand equity with your business. You will receive access to our extensive

media library, where you will find all marketing support We will provide you with an HK Instruments account materials ready to use. This includes catalogues in several

4. TECHNICAL SUPPORT

We guarantee friendly and professional technical support between the hours of 8 a.m. and 4 p.m. GMT+2. We are

We offer our distributors sales and technical training free of charge. In some cases, we can provide you with personal technical training in Finland or in your premises. Contact Building your brand equity will help us both win. HK your personal account manager for more information.

6. NFR SAMPLES

demonstrations and training.

7. SHARING BEST PRACTICES

We encourage you to share your success stories and feedback with our community. Connect with us and your 10. PROJECT PRICING OPTION fellow HK Instrument partners around the world.

8. PAYMENT TERMS

In some cases, we can offer you exclusive longer payment terms. We will always evaluate these cases individually and offer these terms solely to companies of solid credit standing and financial strength.

9. IMMEDIATE REPLACEMENT

We are happy to send you Not for Resale (NFR) In some cases, we offer immediate replacement of the samples of HK Instruments products for use in testing, products for our long standing partners, within our 5-year warranty period. No waiting for repair - instead, you will be instantly sent a fully functional product after sending us the defective piece.

When you are competing against a strong offer from a competitor for a substantial project, you can always ask for a project price.

MOST IMPORTANTLY, WE OFFER PRODUCTS THAT SELL.

In the HVAC and building automation industry, HK Instruments is known for:

- constant product development efforts to meet the highest standards of the HVAC industry
- competitive pricing and high quality products
- high-end Finnish design and quality

- 5-year warranty
- customized OEM products and private labeling
- its strong Nordic brand that is trusted globally by a wide scope of OEMs, system integrators, distributors and well-know multinational corporations
- 35 years of experience in manufacturing measuring devices for HVAC and building automation.

Contact our export sales managers for a chat and let's discuss more opportunities!

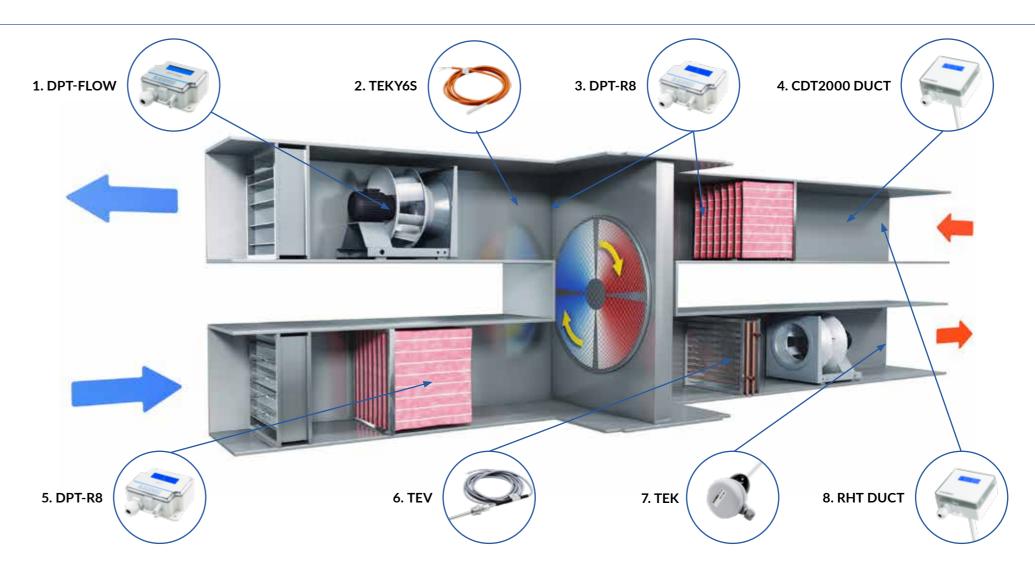
APPLICATIONS

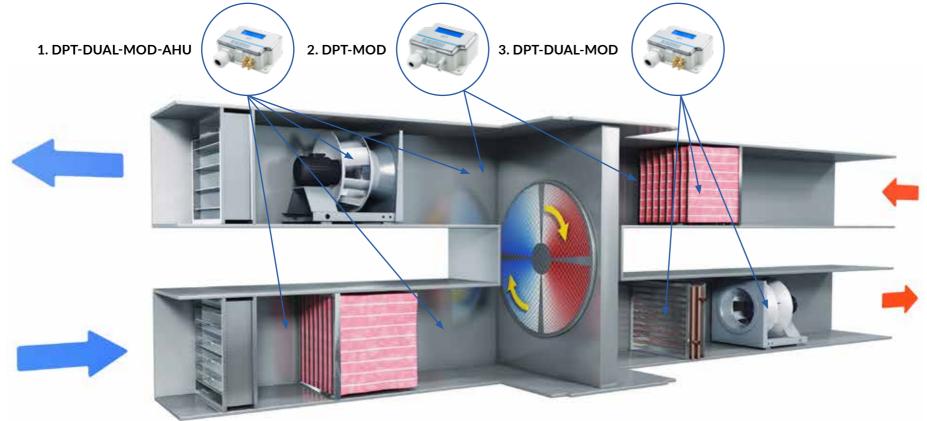
AIR HANDLING UNITS (AHU) — MEASUREMENTS AND CONTROLS

TRADITIONAL SOLUTION

Air handling units are used in nearly all new and renovated buildings to ensure high-quality indoor air. In addition to providing clean indoor air, HK Instruments' easy-to-use devices enable cost-efficiency and effortless installation and monitoring of air handling units. In comparison with analogue devices, modern Modbus devices require less wiring, which reduces the cost of cabling work. Designed specifically for AHUs, the DPT-Dual-MOD-AHU combination is the only one of its kind on the market.

DPT-Flow (1) enables accurate air volume flow adjustment and control for supply and extracted air. DPT-R8 (3,5) monitors filter cleanliness and frosting in the heat recovery unit. The CDT (4), RHT (8) and temperature sensors (2,6,7) ensure demand-controlled ventilation.





MODBUS SOLUTION

Our main products are also available with Modbus communication. When using a bus solution, you need less wires in cables and fewer input points in the controller. As a result, you will save in costs of the devices and installation.

DPT-Dual-MOD combines two differential pressure transmitters into one device. When using the Input terminal, temperature transmitters can be replaced with temperature sensors. This makes it possible to measure four different types of data.

With the Modbus solution, you only need 4 wires as opposed to 23 wires when using the traditional solution.

In the Modbus solution, DPT-Dual-MOD-AHU **(1)** monitors and controls air volumes. It also functions as a filter alert, replacing two separate measuring devices: air flow transmitter and differential pressure transmitter. DPT-Dual-MOD **(3)** is the right choice when you want to monitor and control duct pressure instead of air volumes. Two temperature sensors are connected to both DPT-Dual-MOD models. These sensors are essential for the functioning of the air handling unit. DPT-MOD **(2)** prevents frosting in the heat recovery unit.

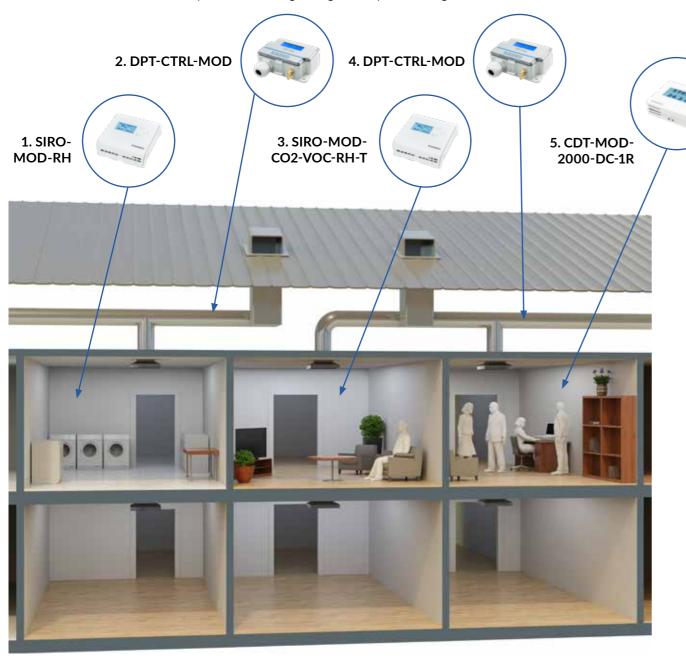


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ROOF EXTRACTION UNIT

In apartment buildings, roof extraction units are often necessary to ensure clean, high-quality indoor air. Ventilation in apartment buildings is often set at a default level, even though the load varies. This results in a significant loss of energy. Ventilation applications in apartment buildings are easy to implement by using HK Instruments' measurement devices. Our cost-efficient solutions do not necessarily need to be supported by an expensive building automation system.

DPT-Ctrl-MOD (2) keeps the air volume in the laundry facility at the desired standard value by controlling the EC exhaust fan. Siro-MOD-rH (1) monitors the air humidity and causes DPT-Ctrl-MOD to increase capacity when the air humidity increases. Siro-MOD-CO2-VOC-rH-T (3) and CDT-MOD-2000-DC-1R (5) monitor the air quality in apartments, and DPT-Ctrl-MOD (4) actively adjusts the exhaust fan. When the time extension mode of the CDT-MOD-2000-DC-1R is activated, the DPT-Ctrl-MOD receives the information via its binary input and boosts ventilation. All devices communicate seamlessly with the building management system through the Modbus interface.

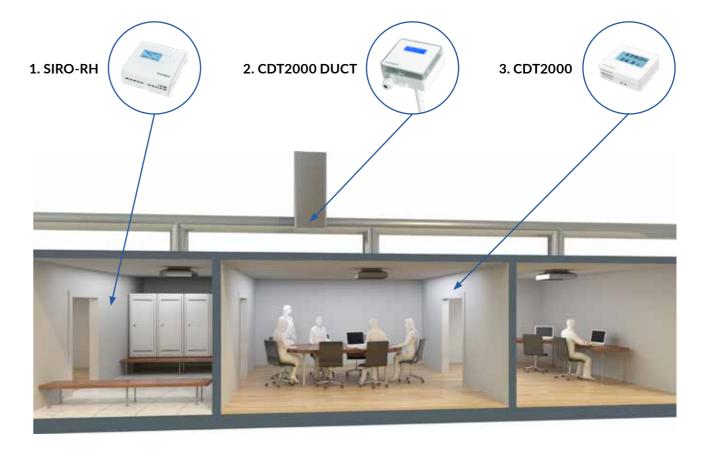


DEMAND-CONTROLLED VENTILATION (DCV)

HK Instruments' multifunctional measuring devices are used as a part of demand-controlled ventilation. Ventilation is boosted when a large number of people are in the building. Ventilation solutions of this type are needed in schools, offices, sports halls and hotels – that is, in all locations where it is important to maintain good air quality, even if utilisation rates vary greatly. In addition to ensuring good air quality, demand-controlled ventilation reduces energy consumption in buildings.

As a result of technical innovations, our devices are even more versatile than before. CDT2000-DC, a CO_2 transmitter using Dual Channel technology, is maintenance-free and can also be used in hospitals, nursing homes and other environments that would be challenging for ordinary CO_2 transmitters. The large display on a CDT device is informative and easy to read, which also creates added value for the users of the building.

Siro-rH (1) and CDT2000 (3) monitor the air quality in individual rooms and communicate any needs for added capacity to the building management system. CDT2000 Duct (2) monitors the extracted air across the area, enabling demand-controlled ventilation in the entire office.

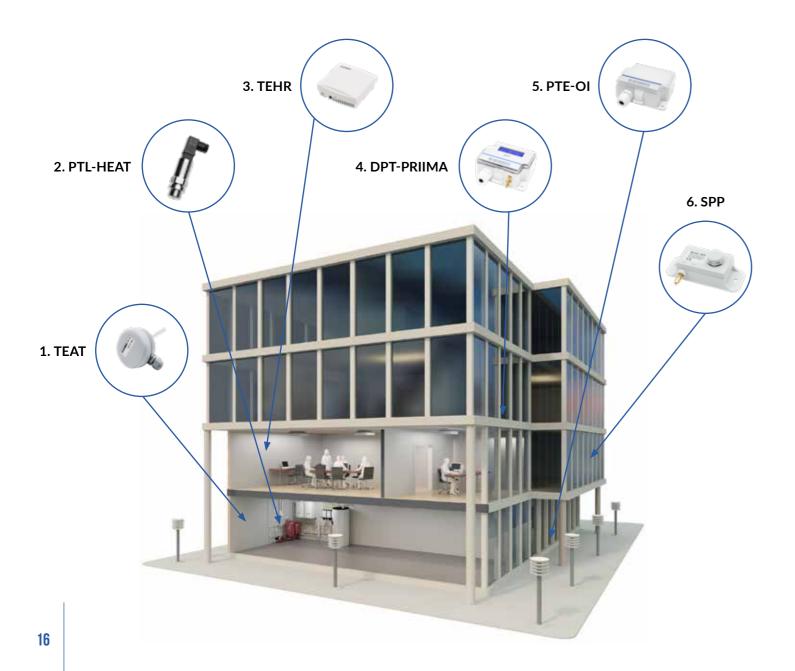


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COMMERCIAL BUILDING SOLUTIONS

HK Instruments produces user-friendly measurement devices for indoor and outdoor facilities. Passive outdoor temperature and light sensors are reliable in use and reduce the need for cabling. These sensors predict the need for heating in a building and control outdoor lighting sensibly and energy-efficiently. Liquid pressure transmitters can be used to monitor district heating and cooling, as well as detecting any leaks and preventing water damage. Surveillance of differential pressure across the building envelope takes care of the health of the building and prevents serious structural problems.

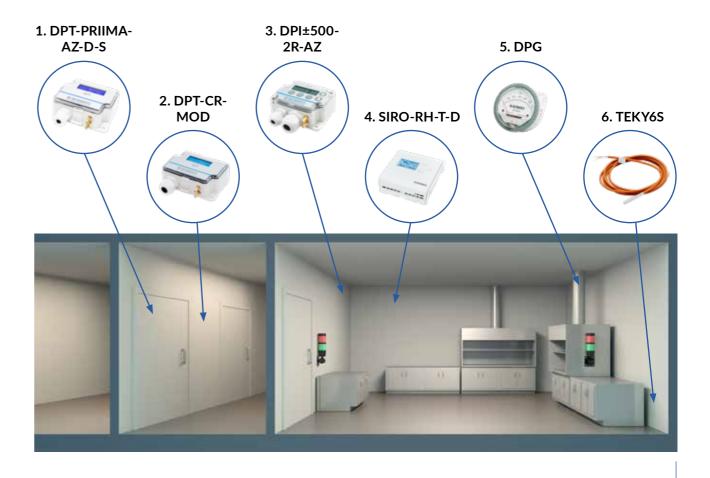
PTE-OI (5) measures outdoor temperatures and the level of outdoor light. Together with TEHR (3), which measures room temperatures, and TEAT (1), which measures heating system temperatures, the sensors enable the proactive control of the heating network. PTL-Heat (2) monitors pressure in the heating network and provides alerts about leaks when pressure decreases. PTE-OI carries out light measurements to determine when outdoor lighting should be switched on and off. DPT-Priima (4) measures the differential pressure over the building envelope, maintaining the desired pressure balance. SPP (6), static pressure port, connected to DPT-Priima, prevents direct wind interference on the transmitter by filtering any wind gusts.



CLEANROOM APPLICATION

Pressure differences between rooms in hospitals, laboratories and other demanding environments can be controlled through pressurisation and depressurisation to ensure favourable working conditions and the cleanliness of products. Designed to monitor pressure differences between rooms, differential pressure transmitters measure the difference in pressure between the cleanroom and the adjacent room. DPT-Priima, which measures even the smallest pressure differences, is an excellent choice when the pressurisation of facilities requires high accuracy and operational reliability. In addition to measuring pressure differences, it is important to measure the temperature and humidity in cleanrooms. The Siro humidity and temperature transmitter is the perfect choice for such measurements. All our cleanroom devices are available with a calibration certificate. Our devices ensure uninterrupted production in cleanrooms, which require reliable, continuous monitoring.

The DPT-Priima-AZ-D-S (1) and DPT-CR-MOD (2) monitor overpressure in laboratory facilities. In addition, DPT-CR-MOD works as a cleanroom panel that shows differential pressure, relative humidity and temperature on its display. DPT-CR-MOD is connected to Siro-rH-T-D (4) that communicates the room temperature and humidity both to DPT-CR-MOD and to the automation system. The relay of the DPI±500-2R-AZ (3) electronic differential pressure switch and transmitter activates the beacon alarm light if the pressure in the facility exceeds the threshold value. The DPG analogue gauge (5) is easy to read, which makes it suitable for indicating the exact pressure in the laminar flow cabinet. TEKY6S (6) measures the temperature in a refrigerated cabinet, making it possible to collect long-term historical data.





DIFFERENTIAL PRESSURE TRANSMITTERS

DPT series pressure transmitters are accurate and user-friendly devices with a stylish and modern design. Fully automated zero point calibration, AZ-calibration, offers reliability in the most sensitive of applications. In addition, the AZ-calibration provides cost savings over the lifetime of a building, as it makes the device completely maintenance-free.

The excellent usability of DPT-R8 series is widely known among electricians and installers all over the world. DPT-Priima is designed especially for high accuracy applications, and is also available as Modbus version, DPT-Priima-MOD, that includes air flow measurement. DPT-MOD and DPT-IO-MOD series Modbus transmitters can be connected on serial line and therefore require less wiring than traditional transmitters. Modbus communication is a modern and distortion-free way to transmit measurement data.

The DPT-Dual-MOD with Modbus communication offers savings in the device and installation costs due to its two pressure sensors and Input terminal. DPT-Dual-MOD-AHU is designed especially for air handling units. It offers a possibility to measure pressure from two different points, and one of the measurements can be set to show the air flow rate.



DPT-R8 DIFFERENTIAL PRESSURE TRANSMITTERS

THREE-WIRE



DPT-R8

The DPT-R8 series includes electronic differential pressure transmitters that offer exceptional performance, high quality and competitive pricing. Because of the high accuracy of the devices, it is usually not necessary to narrow down the range to get accurate measurements. DPT-R8 devices are easily customizable, and also available for private labeling.

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

20

AZ: autozero element D: display S: span point calibration for high accuracy applications -40C: cold-resistant model

TECHNICAL DETAILS

Accuracy (from applied pressure): Pressure < $125 \text{ Pa} = 1 \% + \pm 2 \text{ Pa}$ (models 250 and 2500) Pressure > $125 \text{ Pa} = 1 \% + \pm 1 \text{ Pa}$ Accuracy (from applied pressure): Pressure < $125 \text{ Pa} = 1.5 \% + \pm 2 \text{ Pa}$ (model 7000) Pressure > $125 \text{ Pa} = 1.5 \% + \pm 1 \text{ Pa}$

Zero point calibration: automatic with autozero element (-AZ) or by pushbutton

Measuring units: Pa, kPa, mbar, inchWC, mmWC, psi
Supply voltage: 24 VDC ±10 % / 24 VAC ±10 %

Power consumption: < 1.0 W (< 1.2 W with output current 20 mA)

-40 °C model: <4.0 W when <0 °C

Output signals (3-wire): 0/2...10 VDC 4...20 mA

Operating temperature: -20...+50 °C (with autozero calibration -5...+50 °C)

-40...+50 °C (-40C model)

Response time: 0.8 / 8 s

Protection standard: IP54

DPT-R8

Example:	Produ	Product series										
DPT2500-R8-AZ-D	DPT	Differer	itial pressu	ıre transn	nitter							
		Measur	ing ranges	(Pa)								
		250	-150+	150 / -10	0+10	0 / -50	.+50 / -25.	+25 / 025 / 050 / 0100 / 0250				
		2500	2500 -100+100 / 0100 / 0250 / 0500 /)1000 / 01500 / 02000 / 02500				
	7000	0100	0 / 015	01500 / 02000 / 02500 / 03000 / 04000 / 05000 / 07000								
							Model type					
			-R8	Eight r	Eight measuring ranges							
				Zero	point ca	llibratio	n					
				-AZ	With	autozer	o calibratio	on				
					Stan	on manual zero point calibration						
			/		Disp	lay						
					/-D/	With	display					
						With	out display					
			11/1			Spar	n point cali	bration				
						-S	Span po	oint calibration				
							Withou	t span point calibration				
							Cold re	sistance				
			H				-40C	-40 °C cold resistant (not available with autozero calibration)				
								Without -40 °C cold resistance				
Model	DPT	2500	-R8	-AZ	-D							



DPT-PRIIMA DIFFERENTIAL PRESSURE TRANSMITTERS

HIGH ACCURACY



TECHNICAL DETAILS

Accuracy (from applied pressure): 0.4 % + ±0.4 Pa

Measuring ranges (Pa): -25...+25 / -50...+50 / -100...+100 / -500...+500 / 0...25 / 0...50 / 0...250 / 0...1000

Zero point calibration: automatic with autozero element (-AZ) or by pushbutton

Measuring units: Pa, kPa, mbar, inchWC, mmWC, psi
Supply voltage: 24 VDC ±10 % / 24 VAC ±10 %

Power consumption: < 1.0 W (< 1.2 W with output current 20 mA)

Output signals (3-wire): 0/2...10 VDC 4...20 mA

Operating temperature: -5...+50 °C

Response time: 0.4 / 8 s

Protection standard: IP54

DPT-PRIIMA

Example:	Produ	ct series	series								
DPT-Priima-AZ-D-S	DPT	Differer	ferential pressure transmitter								
		Model t	уре	-							
		-Priima	High a	accuracy	су						
			Zero	point ca	alibration						
			-AZ	With	h autozero calibration						
				Displ	play						
				-D	With display						
					Without display						
					Span point calibration						
					-S Span point calibration						
				/	Without span point calibration						
Model	DPT	-Priima	-AZ	-D	-\$ / / /						

DPT-PRIIMA

DPT-Priima is a high accuracy differential pressure transmitter designed for cleanrooms and other demanding applications. DPT-Priima has a new, extremely accurate sensor and automatic zero point calibration, and optional span point calibration and calibration certificate.

USAGE & APPLICATIONS

DPT-Priima is used in applications where the required accuracy is higher than the regular building automation pressure transmitters can reach. The most common applications are pressure monitoring in cleanrooms and over the building envelope.



DPT-PRIIMA TOGETHER WITH SPP (STATIC PRESSURE PORT) IS A COMPLETE SOLUTION FOR BUILDING ENVELOPE MEASUREMENT

DPT-PRIIMA-MOD DIFFERENTIAL PRESSURE TRANSMITTERS

HIGH ACCURACY, WITH MODBUS COMMUNICATION



DPT-PRIIMA-MOD

DPT-Priima-MOD is a multifunctional high accuracy differential pressure transmitter with Modbus communication and air flow measurement. It is designed for cleanrooms and other demanding applications. DPT-Priima-MOD has a new, extremely accurate sensor and automatic zero point calibration, and optional calibration certificate.

USAGE & APPLICATIONS

The DPT-Priima-MOD is used for measuring differential pressure and air flow in building automation, HVAC and clean-room systems. It can also be used with several different measurement probes such as FloXact™ or pitot tube, and air dampers. The most common applications are pressure monitoring in cleanrooms and over the building envelope.

TECHNICAL DETAILS

Communication: RS-485 Modbus (RTU)

Accuracy (from applied pressure): 0.4 % + ±0.4 Pa

Measuring ranges (Pa): -120...+120 / -240...+240 / -620...+620 / -1240...+1240 / -2490...+2490

Zero point calibration: automatic with autozero element (-AZ), by pushbutton or via Modbus **Measuring units:** Pressure: Pa, kPa, mbar, inchWC, mmWC, psi

Pressure: Pa, kPa, mbar, inchWC, mmWC, psi Flow: m³/s, m³/h, cfm, l/s, m/s, ft/min

Supply voltage: $24 \text{ VDC} \pm 10 \% / 24 \text{ VAC} \pm 10 \%$

Power consumption: < 1.0 W

Output signal: via Modbus

Operating temperature: -5...+50 °C

Response time: 0.4-20 s

Protection standard: IP54

DPT-PRIIMA-MOD

Example:	Produ	ct series	series							
DPT-Priima-MOD-	DPT	Differential pressure transmitter								
AZ-D		Model type								
		-Priima-MOD	High a	High accuracy, with Modbus communication						
			Zero	Zero point calibration -AZ With autozero calibration						
			-AZ							
			/	Display						
				-D	With display					
Model	DPT	-Priima-MOD	-AZ	-D						



INCLUDES AIR FLOW MEASUREMENT

DPT-MOD DIFFERENTIAL PRESSURE TRANSMITTERS

WITH AIR FLOW MEASUREMENT AND MODBUS COMMUNICATION



DPT-MOD

DPT-MOD is a multifunctional transmitter for measuring volume flow, velocity, and static and differential pressure. The measurements can be read and the configuration done via Modbus communication. DPT-MOD requires less wiring than the traditional 3-wire transmitters because multiple devices can be connected on serial line.

USAGE & APPLICATIONS

The DPT-MOD is used for measuring air flow or low pressures of air and non-combustible gases in order to monitor and control building automation, HVAC and cleanroom systems. It can also be used with several different measurement probes such as FloXact™ or pitot tube, and air dampers.

TECHNICAL DETAILS

Communication: RS-485 Modbus (RTU)

Accuracy (from applied pressure): Pressure $< 125 \text{ Pa} = 1 \% + \pm 2 \text{ Pa}$ (model 2500) Pressure $> 125 \text{ Pa} = 1 \% + \pm 1 \text{ Pa}$

Accuracy (from applied pressure): Pressure $< 125 \text{ Pa} = 1.5 \% + \pm 2 \text{ Pa}$ (model 7000) Pressure $> 125 \text{ Pa} = 1.5 \% + \pm 1 \text{ Pa}$

Zero point calibration: automatic with autozero element (-AZ), by pushbutton or via Modbus

Measuring units: Pressure: Pa, kPa, mbar, inchWC, mmWC, psi

Flow: m³/s, m³/h, cfm, l/s, m/s, ft/min

Supply voltage: $24 \text{ VAC} \pm 10 \% / 24 \text{ VDC} \pm 10 \%$

Power consumption: < 1.3 W

-40 °C model: <4.3 W when <0 °C

Output signal: via Modbus

Response time: 1.0–20 s, selectable via menu or via Modbus

Operating temperature: -20...+50 °C (with autozero calibration -5...+50 °C)

-40...+50 °C (-40C model)

Protection standard: IP54

DPT-MOD

Example:	Produ	ct series						
DPT-MOD-2500-AZ-D	DPT	Differen	tial pressu	re trans	mitter			
		Model t	уре					
		-MOD	Modbus	s commu	unication			
			Measur	ing rang	ges (Pa)			
			-2500 -2502500					
				-7000	-700	7000		
			1	Zero point calibration				
				-AZ	With	autozero calibration		
					Stand	ard with pushbutton manual zero point calibration		
					Display			
					/-D/	With display		
						Cold resistance		
						-40C -40°C cold resistant (not available with autozero calibration)		
			$M \subset$			Without -40 °C cold resistance		
Model	DPT	-MOD	-2500	-AZ	-D			

NOW AVAILABLE WITH AIR FLOW MEASUREMENT AND AUTOZERO CALIBRATION





DPT-IO-MOD DIFFERENTIAL PRESSURE TRANSMITTERS

WITH MODBUS COMMUNICATION AND INPUT TERMINAL



DPT-IO-MOD

DPT-IO-MOD differential pressure transmitter for air is designed for Modbus (RTU) communication network. The DPT-IO-MOD has an input terminal that turns it into a multifeatured transmitter. When using the input terminal, temperature transmitters can be replaced with temperature sensors. Very precise pressure sensor and easily operated interface make the device reliable and user-friendly.

USAGE & APPLICATIONS

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

TECHNICAL DETAILS

Communication: RS-485 Modbus (RTU)

Accuracy (from applied pressure): Pressure $< 125 \text{ Pa} = 1 \% + \pm 2 \text{ Pa}$ (model 2500) Pressure $> 125 \text{ Pa} = 1 \% + \pm 1 \text{ Pa}$

Accuracy (from applied pressure): Pressure $< 125 \text{ Pa} = 1.5 \% + \pm 2 \text{ Pa}$ (model 7000) Pressure $> 125 \text{ Pa} = 1.5 \% + \pm 1 \text{ Pa}$

Zero point calibration: by pushbutton or via Modbus

Measuring units: Pa, kPa, mbar, inchWC, mmWC, psi

Supply voltage: $24 \text{ VDC} \pm 10 \% / 24 \text{ VAC} \pm 10 \%$

Power consumption: < 1.3 W

Output signal: via Modbus

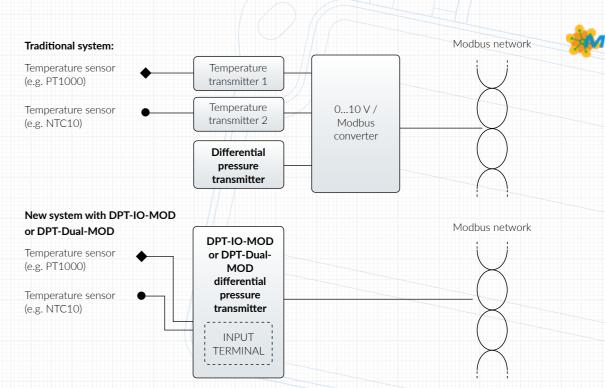
Operating temperature: -20...+50 °C

Response time: 1...20 s selectable via menu

Protection standard: IP54

DPT-IO-MOD

Example:	Product series	Product series								
DPT-IO-MOD-2500-D	DPT	Differential pressure transmitter Model type								
		-IO-MOD Input terminal and Modbus communication								
			Measurii	leasuring ranges (Pa)						
			-2500	-2502500						
			-7000	-7007000						
				Display						
				-D / With display						
Model	DPT	-IO-MOD	-2500	-D // /						



DPT-CR-MOD DIFFERENTIAL PRESSURE TRANSMITTERS

FOR CLEANROOM MONITORING



DPT-CR-MOD

DPT-CR-MOD is a differential pressure transmitter designed specially for cleanroom monitoring. In addition to differential pressure, the device enables monitoring temperature and relative humidity. A 0...10 V voltage input of an external humidity and temperature transmitter (for example Siro-rH-T) can be connected to the input terminal of the device. In this case, all three measured values (differential pressure, relative humidity, temperature) can be shown simultaneously on the display. Alternatively, a passive temperature sensor can be connected to the input terminal. DPT-CR-MOD is compatible with Modbus serial communication protocol.

USAGE & APPLICATIONS

DPT-CR-MOD is used for monitoring and controlling differential pressure, relative humidity and temperature in cleanrooms.

TECHNICAL DETAILS

Communication: RS-485 Modbus (RTU)

Accuracy (from applied pressure): Pressure < 125 Pa = 1 % + ±2 Pa

Pressure > 125 Pa = 1 % + ±1 Pa

Zero point calibration: by pushbutton or via Modbus

Measuring units: Pressure: Pa, kPa, mbar, inchWC, mmWC, psi

Temperature: °C, °F

Supply voltage: $24 \text{ VDC} \pm 10 \% / 24 \text{ VAC} \pm 10 \%$

Power consumption: < 1.3 W

Output signal: via Modbus

Operating temperature: -20...+50 °C

Response time: 1...20 s selectable via menu

Protection standard: IP54

DPT-CR-MOD

Example: DPT-CR-MOD-D	Product ser	Product series								
DPT-CR-MOD-D	DPT	transmitter								
		Model type								
		-CR-MOD	For cle	anroom monitoring, with Modbus communication						
			Displa	У						
			-D	With Display						
Model	DPT	-CR-MOD	-D							

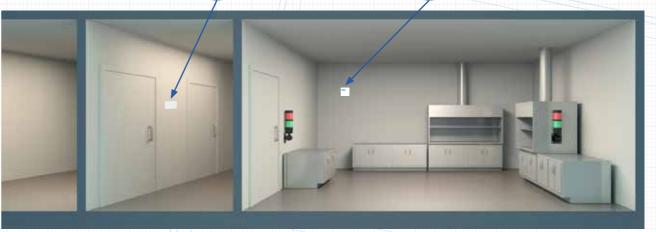
DPT-CR-MOD



SIRO-RH-T







DPT-CR-MOD measures the pressure difference between the cleanroom and the anteroom and sends the information to the automation system via Modbus to maintain optimal conditions in the cleanroom. DPT-CR-MOD is connected to the Siro indoor air quality transmitter that measures relative humidity and temperature. Siro sends the information to DPT-CR-MOD that shows it on its display, together with differential pressure measurement.

DPT-DUAL-MOD DIFFERENTIAL PRESSURE TRANSMITTERS

WITH TWO PRESSURE SENSORS AND MODBUS COMMUNICATION



TECHNICAL DETAILS

Communication: RS-485 Modbus (RTU)

Accuracy (from applied pressure): Pressure $< 125 \text{ Pa} = 1 \% + \pm 2 \text{ Pa}$ (model 2500) Pressure $> 125 \text{ Pa} = 1 \% + \pm 1 \text{ Pa}$

Accuracy (from applied pressure): Pressure < 125 Pa = 1.5 % + ±2 Pa

nodel 7000) Pressure > 125 Pa = 1.5 % + ±1 Pa

Zero point calibration: by pushbutton or via Modbus

Measuring units: Pressure: Pa, kPa, mbar, inchWC, mmWC, psi

Supply voltage: $24 \text{ VDC} \pm 10 \% / 24 \text{ VAC} \pm 10 \%$

Power consumption: < 1.3 W

Output signal: via Modbus

Operating temperature: -20...+50 °C

Response time: 1...20 s selectable via menu

Protection standard: IP54

DPT-DUAL-MOD

Example:	Product series	S					
DPT-Dual-MOD-2500-D	DPT	Differential pressure transmitter					
		Model type					
		-Dual-MOD	Two pres	ssure sensors and Modbus communication			
			Measuring ranges (Pa)				
			-2500	-2502500			
			-7000	-7007000			
				Display			
				-D With display			
Model	DPT	-Dual-MOD	-2500	/ -D			



DPT-DUAL-MOD

DPT-Dual-MOD combines two differential pressure transmitters into one device. It offers a possibility to measure pressure from two different points. DPT-Dual-MOD has a Modbus interface and an Input terminal. When using the Input terminal, 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-MOD can be used in all applications where you need to measure two different pressures. The devices are suitable for air and non-combustible gases.

DPT-DUAL-MOD-AHU DIFFERENTIAL PRESSURE TRANSMITTERS

FOR AIR HANDLING UNITS



DPT-DUAL-MOD-AHU

DPT-Dual-MOD-AHU is especially designed for air handling units, combining two differential pressure transmitters into one device. It offers a possibility to measure pressure from two different points. One of the measurements can be set to show the air flow rate. DPT-Dual-MOD-AHU has a Modbus interface and an Input terminal. When using the Input terminal, 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-MOD-AHU is designed for air handling units where one sensor monitors the air flow across the centrifugal fan while the other sensor monitors the filter cleanliness. The devices are suitable for air and non-combustible gases.

TECHNICAL DETAILS

Communication: RS-485 Modbus (RTU)

Accuracy (from applied pressure): Sensor A (-700...7000 Pa):

Pressure < 125 Pa = 1.5 % + ±2 Pa Pressure > 125 Pa = 1.5 % + ±1 Pa

Sensor B (-250...2500 Pa):

Pressure < 125 Pa = $1 \% + \pm 2$ Pa Pressure > 125 Pa = $1 \% + \pm 1$ Pa

Zero point calibration: by pushbutton or via Modbus

Measuring units: Pressure: Pa, kPa, mbar, inchWC, mmWC, psi

Flow: m³/s, m³/h, cfm, l/s, m/s, ft/min

Supply voltage: 24 VDC $\pm 10 \%$ / 24 VAC $\pm 10 \%$

Power consumption: < 1.3 W

Output signal: via Modbus

Operating temperature: -20...+50 °C

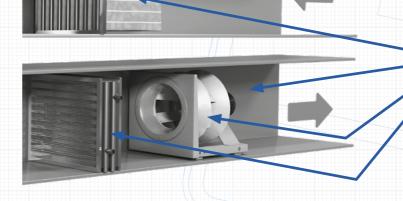
Response time: 1...20 s selectable via menu

Protection standard: IP54

DPT-DUAL-MOD-AHU

Example:	Product series							
DPT-Dual-MOD-AHU-D	DPT	e transmitter						
		Model type						
		-Dual-MOD-AHU	For air handling units, both 2500 and 7000 sensors, flow measurement and Modbus communication					
			Display					
			-D With display					
Model	DPT	-Dual-MOD-AHU	/-D					







DPT-Dual-MOD-AHU transmitters can be used to measure four different types of data, for example air flow, filter condition, heating coil and air temperature.

DPT-DUAL DIFFERENTIAL PRESSURE TRANSMITTERS

WITH TWO PRESSURE SENSORS



TECHNICAL DETAILS

Accuracy (from applied pressure): Pressure < 125 Pa = 1 % + \pm 2 Pa (model 2500) Pressure > 125 Pa = 1 % + \pm 1 Pa

Accuracy (from applied pressure): Pressure $< 125 \text{ Pa} = 1.5 \% + \pm 2 \text{ Pa}$ (model 7000) Pressure $> 125 \text{ Pa} = 1.5 \% + \pm 1 \text{ Pa}$

Zero point calibration: by pushbutton

Measuring units: Pa, kPa, mbar, inchWC, mmWC, psi
Supply voltage: 24 VDC ±10 % / 24 VAC ±10 %

Power consumption: < 1.0 W

Output signals (3-wire): 2 x 0...10 VDC or 2 x 0...5 VDC (selectable by jumper)

Operating temperature: -20...+50 °C

Response time: 0.8 / 4 s

Protection standard: IP54

DPT-DUAL

Example:	Product series								
DPT-Dual-2500-D	DPT	Differential pressure transmitter							
		Model type							
		-Dual	With two	With two pressure sensors					
			Measuri	Measuring ranges (Pa)					
			-2500	-100.	+100 / 0100 / 0250 / 0500 / 01000 / 01500 / 02000 / 02500				
			-7000	010	000 / 01500 / 02000 / 02500 / 03000 / 04000 / 05000 / 07000				
				Display					
				-D	With display				
				1//	Without display				
Model	DPT	-Dual	-2500	-D /					

DPT-DUAL

DPT-Dual series differential pressure transmitters are engineered for building automation in the HVAC/R industry. DPT-Dual is a technologically advanced transmitter measuring static and differential pressure from two different points, with field selectable units, range and output, all in a single device.

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 and HVAC systems.

DPT-2W DIFFERENTIAL PRESSURE TRANSMITTERS

TWO-WIRE



TECHNICAL DETAILS

Protection standard:

Accuracy (from FS): ±1.5 %

Long term stability, typical 1 year: ≤ ± 8 Pa; model 2500

IP54

Measuring unit: Pa

Zero point calibration:by pushbuttonSupply voltage:10...35 VDCOutput signal:4...20 mAOperating temperature:-10...+50 °CResponse time:0.8 / 4 s

DPT-2W

Example:	Product series							
DPT-2W-2500-R8-D	DPT-2W	Differential pressure transmitter with 2-wire configuration						
		Measurir	Measuring ranges (Pa)					
		-2500 -100+100 / 0100 / 0250 / 0500 / 01000 / 01500 / 02000 / 02						
			Model	type				
			-R8 Eight measuring ranges					
				Display				
				-D With display				
				Without display				
Model	DPT-2W	-2500	-R8	-D				

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.

LOOP-POWERED 4-20 MA TRANSMITTER

ELECTRONIC DIFFERENTIAL PRESSURE SWITCH AND TRANSMITTER



DPI

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

USAGE & APPLICATIONS

The DPI 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.

TECHNICAL DETAILS

Accuracy (from FS): $\pm 1.5 \%$ ($\pm 0.7 \%$ with span point calibration) (including: general accuracy,

temperature drift, linearity, hysteresis, and repetition error)

Long term stability, typical 1 year: ±1 Pa (±8 Pa without autozero element -AZ)

Zero point calibration: automatic with autozero element (-AZ) or by using the buttons on the lid

Supply voltage: 21–35 VDC / 24 VAC ±10 % (without -AZ option) 24 VDC ±10 % / 24 VAC ±10 % (with -AZ option)

24 VDC 110 % / 24 VAC 110 % (WILII -AZ OPLION)

Current consumption: 35 mA + relays (7 mA each) + AZ (20 mA) + 0...10 V output (10 mA)

Output signals: 0...10 V

Relay output 1 (250 VAC / 30 VDC / 6 A) Optional relay output 2 (250 VAC / 30 VDC / 6 A)

Operating temperature: -10...+50 °C (with autozero calibration -5...+50 °C)

Response time: 0.5...10 s

Protection standard: IP54

DPI

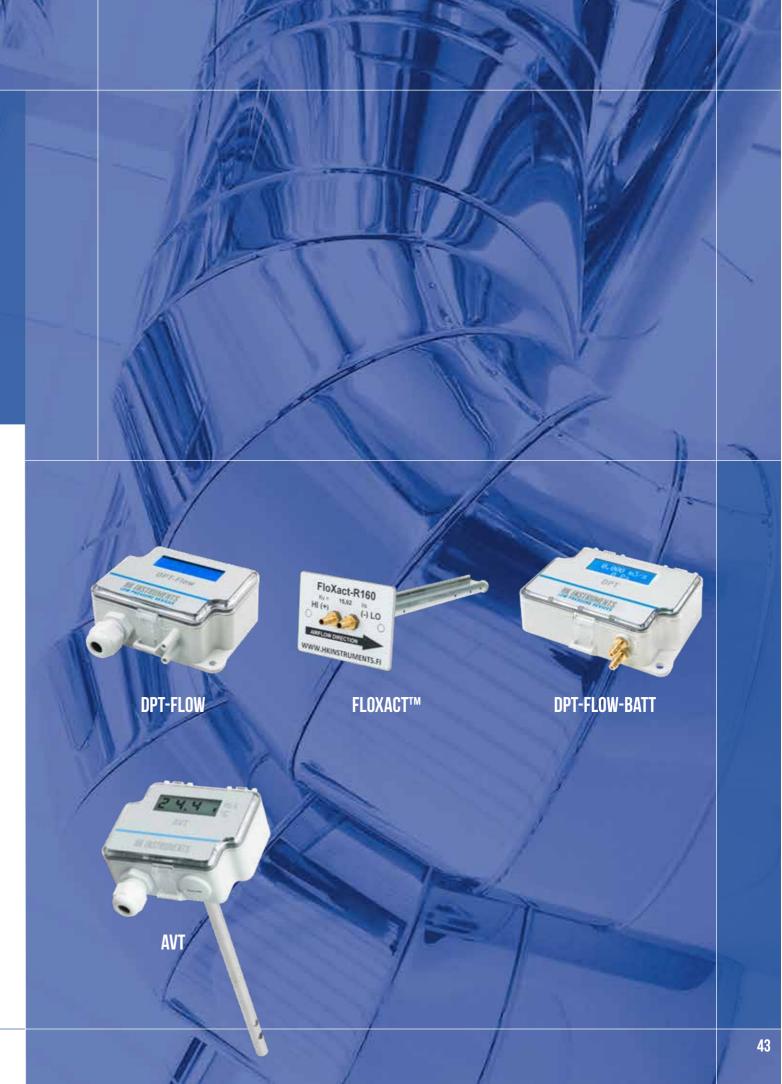
Example:	Product serie	es								
DPI±500-2R-D	DPI	Electronic differential pressure switch and transmitter								
		Measuri	Measuring ranges (Pa)							
		±500	±500 -100100 / -250250 / -300300 / -500500							
		2500	0100	0100 / 0250 / 01000 / 02500						
			Numbe	Number of relays						
			-1R	One relay Two relays						
			-2R							
				Zero point calibration						
				-AZ	With autozero calibration					
				И	Standard with manual zero point calibration					
			/	# # # # #	Display					
					-D With display					
Model	DPI	±500	-1R	/	-D					

UP TO TWO RELAYS WHICH CAN BE CONFIGURED SEPARATELY

ALSO WITH AUTOZERO CALIBRATION

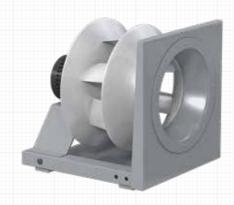


DPT-Flow transmitters are unique devices that make measuring air flow easier than ever before. Together with FloXact™ measurement probes the same devices are the right option when measuring flow in a duct. Again, if you wish to measure air velocity, your selection would be AVT which offers multiple measuring ranges in a single device together with relay and temperature output signals. DPT-Flow-Batt is an on-site display for air flow or differential pressure designed for environments where electricity is not available.



FLOW MEASUREMENT

PRODUCT SELECTION GUIDE



Fan flow measurement

(Measuring inlets in the fan)

Electricity available

Electricity not available

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

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

EC fans

Other fan types with formula

Q = K * √ΔP

Flexible



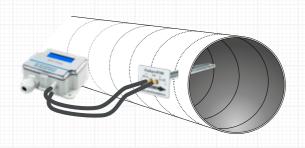


Info: Air flow display and output

0-10 V PID output enables direct fan flow control of electric commuted fans



Supported fan manufacturers: Fläkt Woods, Rosenberg, Comefri, Ziehl-Abegg, ebm-papst, Nicotra Gebhardt



Flow in duct

Electricity available

Customer's own probe

For example iris damper, pitot tube etc. Probe not available

Probe not available

Electricity not available

Customer's own probe

For example iris damper, pitot tube etc.

Air velocity and temperature measurement with optional relay output

Volume flow measurement





Air velocity transmitter



DPT-FLOW + FLOXACT

Info: Air flow display and output

Based on hot wire technique Based on multipoint measurement, high accuracy



+FLOXACT
Battery powered air flow meter with probe



Fan flow meter with battery

ALSO USABLE WITH

MEASUREMENT PROBES

SUCH AS FLOXACT™,

AND AIR DAMPERS

PITOT TUBES,

DPT-FLOW FLOW TRANSMITTER FOR **HVAC SYSTEMS**



DPT-FLOW

DPT-Flow is a flow transmitter that provides an 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 a duct or on the selected fan or blower. It can also be used in a duct system or in air-handling units as an onsite display for flow.

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

TECHNICAL DETAILS

Accuracy (from applied pressure): Pressure < 125 Pa = 1 % + ±2 Pa (models 1000 and 2000) Pressure > 125 Pa = 1 % + ±1 Pa Accuracy (from applied pressure): Pressure < 125 Pa = $1.5 \% + \pm 2 Pa$

(models 5000 and 7000) Pressure > 125 Pa = 1.5 % + ±1 Pa

Zero point calibration: automatic with autozero element (-AZ) or by pushbutton

Pressure: Pa, kPa, mbar, inchWC, mmWC, psi Measuring units: Flow: m³/s, m³/h, cfm, l/s, m/s, ft/min

24 VAC ±10 % / 24 VDC ±10 % Supply voltage:

< 1.0 W Power consumption: -40C model: <4.0 W when <0 °C

Output signals for pressure 0/2...10 VDC 4...20 mA

and air flow (selectable by jumper):

Operating temperature:

-20...+50 °C (with autozero calibration -5...+50 °C)

-40...+50 °C (-40C model)

1...20 s Response time: Protection standard: IP54

NPT-FI NW

Example:	Product ser	ies						
DPT-Flow-2000-AZ-D	DPT-Flow	Flow tra	transmitter for HVAC systems					
		Measur	ing rang	ges (Pa)				
		-1000	-1000 01000					
		-2000	-2000 02000					
		-5000	-5000 05000 -7000 07000					
		-7000						
			Zero point calibration					
			-AZ	With	autozero calibration			
				Standard with pushbutton manual zero point calibration				
				Display				
				-D	With display			
		/			Cold resistance			
					-40C -40 °C cold resistant (not available with autozero calibration)			
					Without -40 °C cold resistance			
Model	DPT-Flow	-2000	-AZ	-D				

PRE-PROGRAMMED FAN MANUFACTURERS

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

The fan only needs to have a pressure tap/port to which the DPT-Flow can be connected



FLOXACT™ **AVERAGING MULTI-POINT** PITOT TUBE FOR FLOW **MEASUREMENTS**



FLOXACT™

The FloXact™ probe is a differential air pressure device designed to measure air volume flow 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 2.5 times for accurate measurement of lower air velocities down to 1.0 m/s (200 fpm). It is easy to install and cost-effective.

DESIGN FEATURES

• Easy installation

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

Air Flow Direction **OPERATION**

Operation of the FloXact™

INSTALLATION

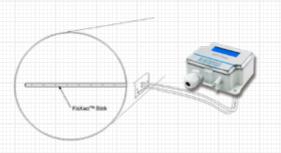
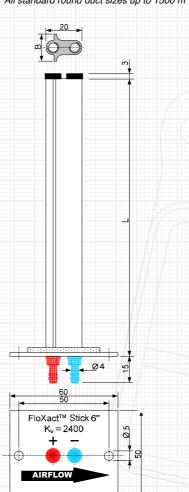


Figure 1. FloXact™ -R mounting.

DIMENSIONS

FloXact™-R available models . All standard round duct sizes up to 1500 m



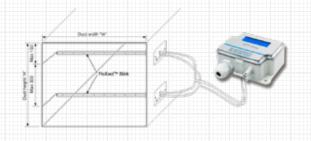
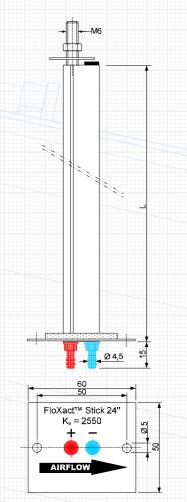


Figure 2. FloXact™ -L mounting

FloXact™-L available models : 250, 300, ... 1500 (50 mm steps)



DPT-FLOW-BATT BATTERY POWERED DIFFERENTIAL PRESSURE AND AIR FLOW METER



TECHNICAL DETAILS

Accuracy (from FS): ±

±1.5 % (Including: general accuracy, temperature drift, linearity, hysteresis,

long term stability, and repetition error)

Zero point calibration: by pushbutton

Measuring units: Pressure: Pa, kPa, mbar, inchWC, mmWC, psi

Flow: m³/s, m³/h, cfm, l/s, m/s, ft/min

Supply voltage: 9 V battery

Current consumption: ~20 mA on active mode

Operating temperature: -20...+50 °C

Response time: 1.0–10 s, selectable via menu

Protection standard: IP54

DPT-FLOW-BATT

Example:	Product series		
DPT-Flow-Batt-7000-D	DPT-Flow-Batt	wered air flow meter	
		Measurin	g ranges (Pa)
		-7000	07000
			Display
			-D With display
Model	DPT-Flow-Batt	-7000	-D

DPT-FLOW-BATT

DPT-Flow-Batt is a user-friendly on-site display for air flow or differential pressure designed for environments and applications where electricity is not available. One device is suitable for a range of different fan types. It also provides an easy way to measure the flow rate in a duct system for example together with a FloXactTM averaging measurement probe.

USAGE & APPLICATIONS

DPT-Flow-Batt is an on-site display designed for air handling units to measure the air flow on centrifugal fans. DPT-Flow-Batt can also be used in the duct system as an on-site display for flow. The device can be used with several different measurement probes such as $FloXact^{TM}$ or pitot tube, and air dampers. The requirement is that the K-value of the measurement probe or damper is known.

AIR VELOCITY AND TEMPERATURE TRANSMITTER

WITH RELAY OUTPUT



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.

TECHNICAL DETAILS

Accuracy (from reading): < 0.2 m/s + 5 % (Range 0...2 m/s) < 0.5 m/s + 5 % (Range 0...10 m/s)

< 1.0 m/s + 5 % (Range 0...20 m/s)

 $\label{eq:msigma} \mbox{Measuring units:} \qquad \mbox{m/s, °C}$

Supply voltage: $24 \text{ VDC} \pm 10 \% / 24 \text{ VAC} \pm 10 \%$

Power consumption: 35 mA (50 mA with relay) + 40 mA with mA outputs

Output signal 1: 0...10 V or 4...20 mA (linear to °C)

Output signal 2: 0...10 V or 4...20 mA (linear to m/s)

Optional relay output: Potential free SPDT 250 VAC, 6 A / 30 VDC, 6 A with adjustable switching point and hysteresis

Operating temperature: 0...+50 °C

Probe: Adjustable immersion length 50...180 mm, mounting flange included

Protection standard: IP54

AVT

Example: AVT-D-R	Product ser	ries					
AVT-D-R	AVT	Air velocity transmitter, measuring ranges 02 / 010 / 020 m/s Display					
		-D	With display				
			Without display				
			Relay				
		/	-R With relay				
			Without relay				
Model	AVT	-D	-R				



PRESSURE AND FLOW CONTROLLERS

The DPT-Ctrl series PID controllers are engineered for stand-alone building automation in the HVAC/R industry. With the built-in controller it is possible to control the constant pressure or flow of fans, VAV systems or dampers. DPT-Ctrl series offers various models for energy-efficient control of modern EC fans in all sizes of systems.

The DPT-Ctrl-MOD can be used as a pressure or flow controller in modular building automation systems. Setpoints and other parameters can be adjusted remotely via bus. With the temperature compensation feature, the fan speed can be adjusted according to temperature. This saves energy by exhausting the right amount of air in cold environments.



DPT-CTRL PID CONTROLLERS

WITH DIFFERENTIAL PRESSURE OR AIR FLOW TRANSMITTER



DPT-CTRL

DPT-Ctrl is a multifunctional PID controller with differential pressure or air flow transmitter. It enables controlling constant pressure or flow of fans, VAV systems or dampers. When controlling flow, it is possible to select a fan manufacturer or a common measuring probe that has a K-value.

USAGE & APPLICATIONS

DPT-Ctrl can be used to control air flow or constant pressure in applications where it is important to keep a constant vacuum or a steady air flow, such as vacuuming units in renovation sites that keep a constant negative pressure so that impurities do not spread to other spaces.

TECHNICAL DETAILS

Accuracy (from applied pressure): Pressure < 125 Pa = 1 % + ±2 Pa (model 2500)

Pressure > 125 Pa = 1 % + ±1 Pa

Accuracy (from applied pressure): Pressure < 125 Pa = $1.5 \% + \pm 2$ Pa

(model 7000)

Pressure > 125 Pa = 1.5 % + ±1 Pa

Measuring units:

Pressure: Pa, kPa, mbar, inchWC, mmWC, psi

Flow: m³/s, m³/h, cfm, l/s, m/s, ft/min

Control signal:

0...10 VDC

Output signal for pressure or air flow (selectable via menu):

0...10 VDC 4...20 mA

PID-parameters:

Adjustable via menu

Zero point calibration:

Automatic with autozero element (-AZ) or by pushbutton

Supply voltage:

24 VDC ±10 % / 24 VAC ±10 %

Power consumption:

< 1.0 W

Operating temperature:

-20...+50 °C with autozero (-AZ) calibration -5...+50 °C

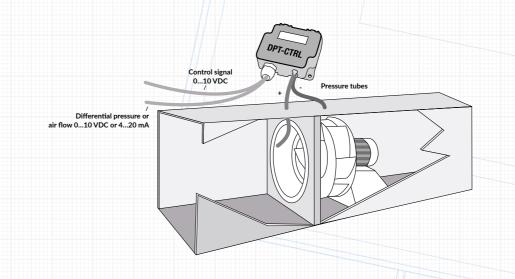
-40...+50 °C (-40C model)

Protection standard:

IP54

DPT-CTRL

Example:	Product se	ries							
DPT-Ctrl-2500-AZ-D	DPT-Ctrl	Pressure	ssure and flow controller						
		Measuring ranges (Pa)							
		-2500							
		-7000							
			Zero po	Zero point calibration					
			-AZ With autozero calibration						
				Standa	ard with pushbutton manual zero point calibration				
			$H \neq$	Display					
				-D	With display				
					Cold resistance				
					-40C -40 °C cold resistant (not available with autozero calibration)				
			1		Without -40 °C cold resistance				
Model	DPT-Ctrl	-2500	-AZ	-D/					





DPT-CTRL-MOD PID CONTROLLERS

WITH DIFFERENTIAL PRESSURE OR AIR FLOW TRANSMITTER AND MODBUS COMMUNICATION



DPT-CTRL-MOD

The DPT-Ctrl-MOD controller is engineered for building automation in the HVAC industry. With the built-in controller of the DPT-Ctrl-MOD it is possible to control the constant pressure or flow of fans, VAV systems or dampers. When controlling air flow, it is possible to select a fan manufacturer or a common measuring probe that has a K-value. Modbus communication enables remote adjustment of the setpoint and other parameters, so it can be used as a part of building management systems (BMS).

USAGE & APPLICATIONS

DPT-Ctrl-MOD is designed to be used in buildings with a BMS to control air flow or constant pressure of an individual zone. A building operator can easily monitor and adjust the parameters via Modbus. The outdoor temperature compensation feature brings energy savings in cold areas automatically by decreasing extract air flow rates to preserve warm air.

TECHNICAL DETAILS

(model 7000)

Communication: RS-485 Modbus (RTU)

Accuracy (from applied pressure): Pressure < 125 Pa = 1 % + ±2 Pa (model 2500) Pressure > 125 Pa = 1 % + ±1 Pa

Accuracy (from applied pressure): Pressure < 125 Pa = 1.5 % + ±2 Pa

Measuring units: Pressure: Pa, kPa, mbar, inchWC, mmWC, psi

Flow: m³/s, m³/h, cfm, l/s, m/s, ft/min

Pressure > 125 Pa = 1.5 % + ±1 Pa

Control signal: 0...10 VDC

PID-parameters: Selectable via menu and Modbus

Zero point calibration: via Modbus or by pushbutton

Supply voltage: 24 VDC ±10 % / 24 VAC ±10 %

Power consumption: < 1.0 W

Output signal: via Modbus

Operating temperature: -20...+50 °C

Protection standard: IP54

DPT-CTRL-MOD

Example:	Product series	Product series Product series									
DPT-Ctrl-MOD- 2500-D	DPT-Ctrl	Pressure and flow controller									
		Model ty	Model type								
		-MOD	Modbus	Modbus communication							
			Measuri	ng ranges (Pa)							
			-2500	-2502500_							
			-7000	-7007000							
				Display							
				-D With display							
Model	DPT-Ctrl	-MOD	-2500	(/-D							



OUTSIDE AIR TEMPERATURE COMPENSATION FUNCTION AND FIXED OUTPUT FUNCTION VIA MENU AND MODBUS

2SP FEATURE WITH A BINARY INPUT TO SELECT BETWEEN TWO USER-ADJUSTABLE SETPOINTS

DPG DIFFERENTIAL PRESSURE GAUGE



TECHNICAL DETAILS

Accuracy (from FS): $< \pm 3\%$ (DPG60 $< \pm 5\%$; DPG100 $< \pm 4\%$)

Operating temperature: -5...+60 °C

J.... 00 0

Zero point adjustment screw:

external in the plastic cover

Mounting:

surface mounting or flush mounting

Mounting position:

vertical

Product	Measuring range
DPG60	0-60 Pa
DPG100	0-100 Pa
DPG120	0-120 Pa
DPG200	0-200 Pa
DPG250	0-250 Pa
DPG300	0-300 Pa
DPG400	0-400 Pa
DPG500	0-500 Pa
DPG600	0-600 Pa
DPG800	0-800 Pa
DPG1K	0-1 kPa
DPG1.5K	0-1.5 kPa
DPG2K	0-2 kPa
DPG3K	0-3 kPa
DPG5K	0-5 kPa

DPG

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

USAG

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



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GAUGES & MANOMETERS

LIQUID COLUMN **MANOMETERS**



Reliable inclined column manometer with leakage protection system

manometer with easy zero point calibration

Liquid column manometers are reliable and inexpensive traditional pressure meters. The manometers are good for measuring and indicating small overpressure, vacuum 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.

Product	Measuring range	Accuracy
MM±100500*)	-100100500 Pa	2 Pa/25 Pa
MM200600	0200600 Pa	5 Pa/25 Pa

^{*)} Delivered with level bubble.

Optional level bubble is available to MM200600 on request!

MMU

Product	Measuring range	Accuracy
MMI I+500	+500 Pa	10 Pa



YM-3 OVERPRESSURE METER FOR CIVIL DEFENCE AND MILITARY SHELTERS

PROTECTED AGAINST BLAST SHOCK AND STATIC PRESSURE LOADS

TECHNICAL DETAILS

Accuracy (MM±100500):

-100...100 Pa ±5 Pa 100...500 Pa ±25 Pa

Overpressure:

Static pressure -20...300 kPa

Measurement ranges:

-100...100...500 Pa

Safety:

Withstands rapid change in velocity 2.5 m/s, 30 g Withstands vibration with acceleration of 2.5 m/s, 30 g Protected against blast shock and static pressure loads

Certificate VTT-C-12329-18 granted by VTT / Technical Research Centre of Finland

CERTIFIED BY VTT / TECHNICAL RESEARCH **CENTRE OF FINLAND**





The YM-3 overpressure meter is designed and tested to withstand strong blast loadings exerted on the meter through its connection pipe. YM-3 is type-tested and approved by the Technical Research Centre of Finland / VTT that performs type inspecting mandated by the Finnish Ministry of the Interior.

USAGE & APPLICATIONS

Measures and monitors overpressure in civil defence and military shelters.



PS DIFFERENTIAL PRESSURE SWITCH



PS

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, vacuum and differential pressure.

APPLICATIONS

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

TECHNICAL DETAILS

Accuracy of switching point

(low limit typ.):

±8 Pa (PS1500: ±20 Pa, PS4500: ±100 Pa)

Accuracy of switching point

(high limit typ.):

±15 %

Service life:

over 1 000 000 switching operations 3 A / 250 VAC (PS200: 0.1 A / 250 VAC)

Electrical rating (resistive load): Electrical rating (inductive load):

2 A / 250 VAC (PS200: --)

Operating temperature:

Protection standard:

-20...+60 °C

IP54

Product	Measuring range
PS200	20200 Pa
PS300	30300 Pa
PS500	30500 Pa
PS600	40600 Pa
PS1500	1001500 Pa
PS4500	5004500 Pa





FILTER ALERTS





The filter alerts are a solution for systems requiring visual indication of pressure on site, together with a 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

Product	MM range	PS range
MM200600/PS600	0 600 Pa	40600 Pa

DPG/PS

Product	DPG range	PS range
DPG200/PS200	0 200Pa	20200 Pa
DPG600/PS600	0 600 Pa	40600 Pa
DPG1 5K/PS1500	0 1500 Pa	100 1500 P





ACCESSORIES

TUBES AND EXTENSIONS



PVC tube 4/7 matt, 2 m



PVC tube 4/7 matt, 100 m coil



T-connector for d=4 mm tube L-connector for d=4 mm tube Connector extension for d=4 mm tube

MOUNTING



Accessory pack (tube, duct connectors)



Duct connector, plastic, for d=4 mm tube (80 mm)



DPTL mounting plate



Accessory pack for DPG flush mounting



Duct connector, metallic, for d=4 mm tube (40 mm)



Mounting flange for duct sensors



PTL adapter G1/4"-G1/2"



Duct connector, metallic, for d=4 mm tube (100 mm)



Siro mounting plate

MANOMETER LIQUIDS



Gauge fluid 0,786; 30 ml (red) Gauge fluid 0,786; 250 ml (red)



THERMOMETERS

Thermometer -40...60 °C

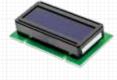
OTHER ACCESSORIES



Display upgrade kit (DPT & DPT-Flow)



DPT cover with front label



Digital display, blue (DPT & DPT-Flow)



4-digit, green/black display (2W, AVT)



Static pressure port



Commissioning tool for Siro transmitters







FRIENDLY AND PROFESSIONAL **CUSTOMER SERVICE**





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.

HK INSTRUMENTS - TERMS AND CONDITIONS

- 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 2020 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 the seller has handed them 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
- 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 five (5) 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 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. 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. This warranty sets forth the total aggregate liability of the seller in respect to any defects in the products and the seller specifically disclaims any other guarantees. representations and warranties, either express or implied, including but not limited to warranty for fitness for specific purpose.
- 13. Limitation of Liability. Parties are responsible for their obligations under the agreement. However, the seller shall not be liable for any indirect or consequential damages to customer including but not limited to loss of production or profit, financing costs, loss of data, costs or damages related to cover purchase, damage to other products or equipment. The total aggregate liability of the seller under the contract shall not exceed the contract value of the delivered products under the respective agreement excluding the value added tax. The limitations of liability under this section 13 shall not apply, if the damage is caused by willful misconduct or gross negligence.
- 14. 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.
- 15. Notifications. The sender is responsible for ensuring the arrival of notifications sent to the other party.
- 16. Ownership. Ownership of the product is passed to the buyer when the price is paid in full.
- 17. 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





FAST DELIVERIES

HK INSTRUMENTS

USER-FRIENDLY MEASURING DEVICES

HK Instruments is a Finnish company specialized in manufacturing and developing technologically advanced measuring devices for HVAC applications. Our devices are primarily used in air handling systems and building automation.

35 years of experience and exports to more than 45 countries prove our high-class product development and cost-effective manufacturing. We have invested in practical user interfaces and that is why the installation of our devices is extremely easy and fast.

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