

DIFFERENTIAL PRESSURE TRANSMITTER with MODBUS interface Optional Input module

DPT-MOD (-IN)



Summary

Each device is individually temperature compensated.

Type name (-IN for Input module) (-AZ for autozero)	ranges	Accuracy for pressure -10...+50°C	Long term stability typical 1 year
DPT-MOD-2000 (-IN, -AZ)	0...100/250/500/1000/2000	±1,5% or (±6Pa <250 Pa) from range	≤ ± 8 Pa (with AZ ≤ ± 1 Pa)
DPT-MOD-5000 (-IN, -AZ)	0...1000/2000/3000/5000	±1,5% from range	≤ ± 24 Pa (with AZ ≤ ± 1 Pa)

Modbus address: 1...247 Selectable by jumper and push button. Please see the chapter installation.

Optional input module: Input module is fixed assembled expansion board for external signal conversion into modbus. Technical data: see the chapter II-module.

Modbus input module can be assembled afterwards. (Compatible with DPT MOD version REV05 or later)

Technical data

Communication	MODBUS RTU, over RS485	
	8 data bits, none parity, 1 stop bit, baud rate: selectable	
Response Time	0.8s / 2s / 10s	
Zeroing function	Access via MODBUS or by push button. Recommended every 12 months. or by optional autozero module. AZ calibrates zero point automatically. *)	
Bursting pressure	30 kPa	
Suitable media	Air and non-aggressive gases	
Measuring element	Piezoresistive	
Electrical interface	Supply voltage	24 VDC \pm 10 % / 24 VAC \pm 10 %
	Power consumption	< 1.3 W
	Output signal	via Modbus
Materials	Housing	ABS
	Cover	PC
	Pressure connections	ABS
Connections	Pressure connections	Male \varnothing 5,0 mm and 6,3 mm
	Cable entry	M20
Weight	150 grams, with accessories 290 grams	
Dimensions	90,0 x 71,5 x 36,0 mm	
General ambient conditions	Temperature range: Operation	-10...+50°C (setting display: 0°C...+50°C) (AZ model: -5...+50°C)
	Storage	-20...+70°C
	Ambient humidity	0 to 95% RH
Safety	Protection standard	IP54
	Conformance	Meets the requirements for CE marking: RoHS Directive: 2002/95/EC EMC Directive: 2004/108/EC WEEE Directive: 2002/96/EC

Zero-point adjustment

Note! Supply voltage must be connected one hour before the 0-point adjustment is carried out.

- 1) Loose both tubes from the pressure inlets + and – or ensure that the existing differential pressure is zero. (eg. air handling unit switched off)
- 2) Send the zeroing command via modbus or press the push button. The red led turns ON.
- 3) Wait until LED turns off and then install tubes again to the pressure inlets

It is recommended to adjust the zero point every 12 months during normal operation

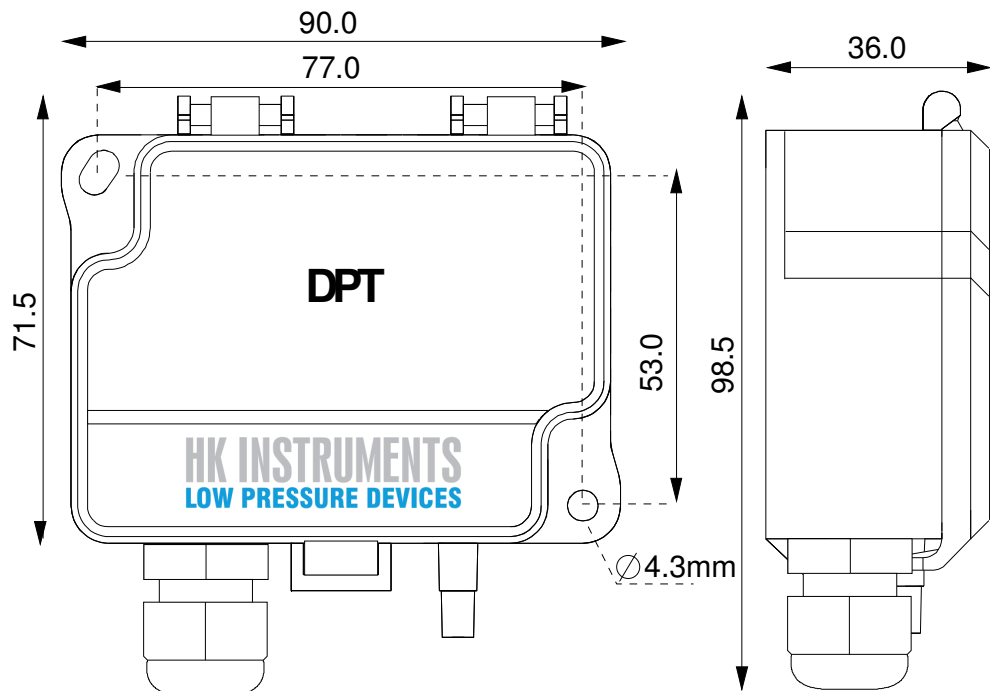
- If the transmitter is equipped with automatic zero element the manual zeroing is not required.
- If the differential pressure in the measurement point is controlled to be zero (etc. air handling unit switched off), the zeroing can be done via modbus.

Optional auto zero element *

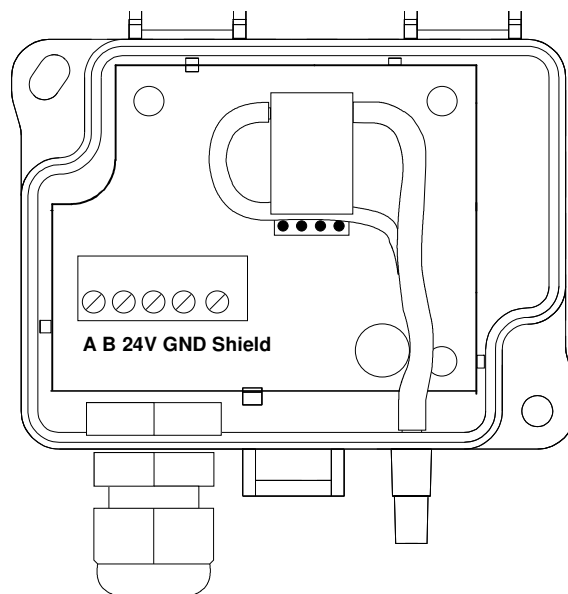
Optional auto zero element makes the transmitter maintenance free for periodical manual zeroing. The element automatically adjusts the transmitters zero point from time to time, this eliminates the zero point long term drift of the piezoresistive sensing element.

Zero point adjustment is carried out every 10 minutes. During zero point adjustment the output and display values will freeze to the latest measured value. The automatic zero point adjustment takes 3,5 seconds.

Dimensions



Installation Connection Diagram



Settings

<p>1. SELECT DEVICE ADDRESS</p> <p> <input type="text" value="1"/> </p> <p> <input type="text" value="2"/></p> <p>...</p> <p> <input type="text" value="247"/></p>	<p>3. SELECT PRESSURE RANGE</p> <p> <input type="text" value="0.100 Pa"/> </p> <p> <input type="text" value="0.250 Pa"/></p> <p> <input type="text" value="0.500 Pa"/></p> <p> <input type="text" value="1.000 Pa"/></p> <p> <input type="text" value="2.000 Pa"/></p>	<p>4. SELECT RESPONSE TIME</p> <p> <input type="text" value="0.8"/> </p> <p> <input type="text" value="2.0"/></p> <p> <input type="text" value="1.0"/></p>
<p>2. SELECT BAUD RATE</p> <p> <input type="text" value="9600"/> </p> <p> <input type="text" value="1920"/></p> <p> <input type="text" value="3840"/></p>		<p>5. ZERO POINT CALIBRATION</p> <p> <input type="text" value="CAL"/> </p> <p>6. MEASURING STATE</p> <p> <input type="text" value="0.5 10 Pa"/> </p>

Modbus functions

The device supports to the following functions and registers:

FUNCTION 04 - Read input Register

Register	Parameter Description	Data type	Value	Range
3x0001	Program version	16 bit	0...1000	0,00...99,00
3x0002	Pressure in Pascals	16 bit	0...2000	0...2000(Pa)

FUNCTION 05 - Write Single coil

Register	Parameter Description	Data type	Value	Range
0x0001	Zeroing function	Bit 0	On - Off	On - Off

To zeroing, write 1 to register 0x0001. The register 0x0001 state returns back to 0 automatically after zeroing.

Technical data, IO-module

Input signals can be read over MODBUS via DPT MOD RS484 interface.

Input	Signals	Accuracy for measurement	Resolution (Modbus signal)
Input 1 and 2	0...10V	2%	1%
	ntc10k	2%	1%
	Pt1000	2%	1%
	Ni1000	2%	1%
	BIN IN (potential free contact)		

Electrical terminals

3 x Screw terminal for wires
Push button
Cable entry

max 1.5mm²
for pressure zero point calibration
M20

Modbus functions and registers

FUNCTION 02 – Read Input status

Register	Parameter Description	Data type	Range
1x0001	Input 1 BIN IN	Bit 0	On – Off
1x0002	Input 2 BIN IN	Bit 0	On – Off

FUNCTION 04 – Read input Register

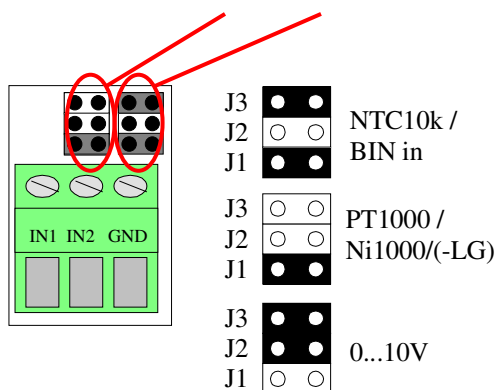
Register	Parameter Description	Data type	Range
3x0004	Input 1 0...10V	16 bit	0...100(%)
3x0005	Input 1 Pt1000 temperature	16 bit	-50...+50C
3x0006	Input 1 Ni1000	16 bit	-50...+50C
3x0007	Input 1 NTC10k	16 bit	-50...+50C
3x0008	Input 2 0...10V	16 bit	0...100(%)
3x0009	Input 2 Pt1000 temperature	16 bit	-50...+50C
3x0010	Input 2 Ni1000	16 bit	-50...+50C
3x0011	Input 2 NTC10k	16 bit	-50...+50C
3x0012	Input 1 Ni1000-LG	16-bit	-50...+50C
3x0013	Input 2 Ni1000-LG	16-bit	-50...+50C

Configuration

The jumpers should be set according to the instructions below and the value should be read from the right register. Both inputs can be configured independently.

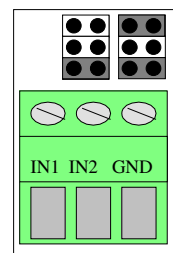
Jumpers

Input 1 / Input 2



Example:

Pt1000 is connected to Input 1
Ntc10k is connected to input 2



Input 1 Pt1000 temperature:

FUNCTION 04 – Read inputRegister
3x0005

Input 2 ntc10k temperature:

FUNCTION 04 – Read input Register
3x0011

