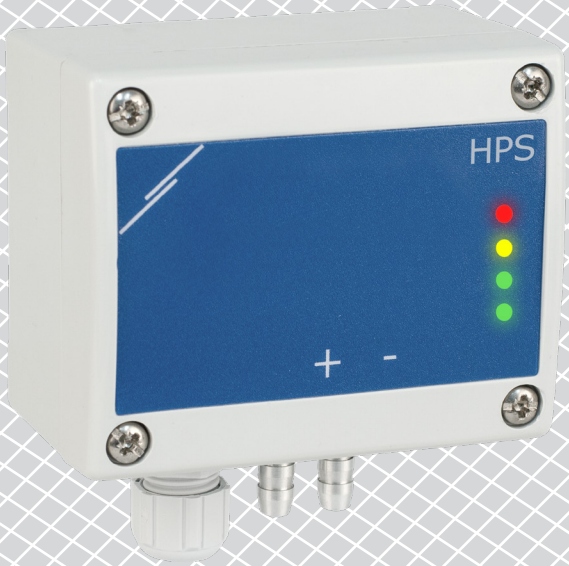
HPSA -2 | DIFFERENTIAL PRESSURE CONTROLLER FOR DAMPER ACTUATOR

Modbus register map



MODBUS REGISTER MAP

INPUT REGISTERS

		Data type	Description	Raw data range		Values	
1	Differential pressure	unsigned integer	Measured differential pressure	HPSAX-1K0-2 HPSAX-2K0-2	0—1.000 0—2.000	100 =	100 Pa
2			Reserved, returns 0				
3	Volume flow rate	unsigned integer	Air Volume flow rate in m³/h. The value in this registers is equal to the K-factor (holding register 62) of the motor / fan multiplied by square root of measured differential pressure. If K-factor is not known, volume flow rate is calculated from a duct cross sectional area (holding register 63) multiplied by air flow velocity (Pitot air velocity (holding register 64) should be enabled and Pitot tube connected)	HPSAX-1K0-2 HPSAX-2K0-2	0—25.000 0—40.000	1.000 =	1.000 m³/h
4	Air velocity	unsigned integer	Measured air velocity. Active only if holding register 64 is set to 1	0—300		100 =	10,0 m/s
5	Output	unsigned integer	Output value in percentage	0—1.000		100 =	10,0 %
6			Reserved, returns 0				
7	Calculated maximum of volume flow rate	unsigned integer	The maximum possible volume flow rate calculated from according to selected K factor or a duct cross sectional area	HPSAX-1K0-2 HPSAX-2K0-2	0—25.000 0—40.000	1.000 =	1.000 m³/h
8	Air pressure/ volume/velocity span flag	unsigned integer	Flag indicates that measured air pressure, volume or velocity is outside set setpoint span values. Set to '1' when the measured value is outside the pressure, volume or velocity setpoint span values set defined by holding registers 13, 14, 21, 23, 28 and 29	0, 1		0 = 1 =	OK Alert
9	Air pressure/ volume/velocity alarm flag	unsigned integer	Flag indicates that measured air pressure, volume or velocity is outside set setpoint alarm values. Set to '1' when the measured value is outside the pressure, volume or velocity setpoint alarm values set defined by holding registers 11, 12, 17, 19, 26 and 27	0, 1		0 = 1 =	OK Out of range
10			Reserved, returns 0				
11	Sensor fault	unsigned integer	Indicates a failure in pressure sensor element	0, 1		0 = 1 =	OK Fault (Red LED flashing)

INPUT REGISTERS

		Data type	Description	Raw data range	Values
12—20			Reserved, return 0		

Note: The input registers can be read via the Modbus command: "Read input registers".

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
1	Device slave address	unsigned integer	Modbus device address	1—247		1
2	Modbus baud rate	unsigned integer	Modbus communication baud rate	0—6	0 = 4.800 1 = 9.600 2 = 19.200 3 = 38.400 4 = 57.600 5 = 115.200 6 = 230.400	2
3	Modbus parity check	unsigned integer	Parity check mode	0 = 8N1 1 = 8E1 2 = 8O1	0 = None 1 = Even 2 = Odd	1
4	Device type	unsigned integer	Device type, read only	1.739—1.742	HPSAG-1K0 -2 = 1.739 HPSAG-2K0 -2 = 1.740 HPSAF-1K0 -2 = 1.741 HPSAF-2K0 -2 = 1.742	
5	HW version	unsigned integer	Hardware version, read only	XXXX	0x0100 = HW version 1.00	
6	FW version	unsigned integer	Firmware version, read only	XXXX	0x0230 = FW version 2.30	
7			Reserved, returns 0			
8	Modbus safety timeout	unsigned integer	After time with no Modbus communication, outputs are set to 0	0—60	60 = 60 minutes	0
9	Modbus network resistor termination (NBT)	unsigned integer	Set device as end device of the line / or not by connecting NBT	0, 1	0 = NBT disconnected 1 = NBT connected	0
10	Modbus registers reset	unsigned integer	Resets Modbus Holding registers to default values. When finished this register is automatically reset to '0'	0, 1	0 = Idle 1 = Reset Modbus Registers	0

HOLDING REGISTERS

		Data type	Description	Raw data range	Values		Factory default values
11	Minimum pressure setpoint alarm	unsigned integer	Minimum pressure setpoint alarm, cannot be set higher than Differential Pressure setpoint	0—(Maximum pressure range —50 Pa)	100 =	100 Pa	0
12	Maximum pressure setpoint alarm	unsigned integer	Maximum pressure setpoint alarm, cannot be set lower than Differential Pressure setpoint	(Minimum pressure range + 50 Pa) - default	100 =	100 Pa	HPSAX-1K0-2: 1.000 HPSAX-2K0-2: 2.000
13	Minimum pressure setpoint span	unsigned integer	Minimum pressure setpoint span, cannot be set higher than Differential Pressure setpoint	Min. pressure range—Max. pressure alarm	100 =	100 Pa	0
14	Maximum pressure setpoint span	unsigned integer	Maximum pressure setpoint span, cannot be set lower than Differential Pressure setpoint	Min. pressure alarm—Max. pressure range	100 =	100 Pa	HPSAX-1K0-2: 1.000 HPSAX-2K0-2: 2.000
15	Differential Pressure setpoint	unsigned integer	Setpoint - Desired differential pressure	0—max max: 1.000 (HPSAX-1K0 -2) 2.000 (HPSAX-2K0 -2)	100 =	100 Pa	0
16			Reserved, returns 0				
17	Minimum Volume Flow Rate setpoint alarm	unsigned integer	Minimum volume flow setpoint alarm, cannot be set higher than Volume flow setpoint.	0—(Maximum volume flow range - 10 m³/h)	10.000 =	10.000 m³/h	0
18			Reserved, returns 0				
19	Maximum Volume Flow Rate setpoint alarm	unsigned integer	Maximum volume flow setpoint alarm, cannot be set lower than Volume flow setpoint.	(Minimum volume flow range + 10 m³/h) - default	10.000 =	10.000 m³/h	HPSAX-1K0-2: 25.000 HPSAX-2K0-2: 40.000
20			Reserved, returns 0				

HOLDING REGISTERS

		Data type	Description	Raw data range	Values		Factory default values
21	Minimum Volume Flow Rate setpoint span	unsigned integer	Minimum volume flow setpoint span, cannot be set higher than Volume flow setpoint.	Min. volume flow range - Max. volume flow alarm	10.000 =	10.000 m³/h	0
22			Reserved, returns 0				
23	Maximum Volume Flow Rate setpoint span	unsigned integer	Maximum volume flow setpoint span, cannot be set lower than Volume flow setpoint.	Min. volume flow alarm - Max. volume flow range	10.000 =	10.000 m³/h	HPSAX-1K0-2: 25.000 HPSAX-2K0-2: 40.000
24			Reserved, returns 0				
25	Volume Flow Rate SetPoint	unsigned integer	Set Point - Desired Volume Flow Rate	0 - default	10.000 =	10.000 m³/h	HPSAX-1K0-2: 25.000 HPSAX-2K0-2: 40.000
26	Minimum air velocity setpoint alarm	unsigned integer	Minimum pressure setpoint alarm, cannot be set higher than Air Velocity setpoint	0—(Maximum air velocity range — 1 m/s)	100=	10,0 m/s	0
27	Maximum air velocity setpoint alarm	unsigned integer	Maximum pressure setpoint alarm, cannot be set lower than Air Velocity setpoint	(Minimum air velocity range + 1 m/s)—300	100 =	10,0 m/s	300
28	Minimum air velocity setpoint span	unsigned integer	Minimum pressure setpoint span, cannot be set higher than Air Velocity setpoint	Min. air velocity range—Max. air velocity range	100 =	10,0 m/s	0
29	Maximum air velocity setpoint span	unsigned integer	Maximum pressure setpoint span, cannot be set lower than Air Velocity setpoint	Air Velocity setpoint—300	100 =	10,0 m/s	300
30	Air Velocity setpoint	unsigned integer	SetPoint - desired air velocity	0—300	100 =	10,0 m/s	0
31—50			Reserved, returns 0				
51	Output type	unsigned integer	Select analogue / modulating output type	1—3	1 = 0—10 VDC 2 = 0—20 mA 3 = PWM		1

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
52	Overwrite enable / disable	unsigned integer	Enables the direct control over output 1	0, 1	0 = Disabled 1 = Enabled	0
53	Overwrite value	unsigned integer	Overwrite value for output 1. Active only if Holding register 52 is set to 1	0—1.000	0 = 0 % 1.000 = 100 %	0
54	Internal voltage source selection	unsigned integer	Selection of internal voltage source for PWM output	0, 1	0 = 3,3 VDC 1 = 12 VDC	0
55	Minimum output value	unsigned integer	Miminum output value of the motor (between 0 and 50 %)	0—500	100 = 10 %	200
56	Maximum output value	unsigned integer	Maximum output value of the motor (between 50 and 100 %)	500—1.000	500 = 50 %	1.000
57	Kp	unsigned integer	Proportional Gain	1—30		10
58	Ti	unsigned integer	Integration Period	1—1.000	10 = 10*100 ms = 1s	40
59—60			Reserved, return 0			
61	Operating Mode Selection	unsigned integer	Selection of Operating Mode	0—3	0 = OFF 1 = Differential Pressure 2 = Volume Flow Rate 3 = Air Velocity	1
62	K-factor	unsigned integer	K factor according to the motor / fan specification	0—1.000		0
63	Duct cross sectional area [cm²]	unsigned integer	Used for calculation of the Volume Flow Rate when K-factor is not known	0—32.000	0 = not used 100 = 100 cm² (1—32.000)	0
64	Pitot air velocity	unsigned integer	Enables Air Velocity Readout. If '0' air velocity readout is disabled, If '1' air velocity readout is enabled and it is accessible in input register 4. Pitot tube needed (PSET-PTX-200)	0, 1	0 = Disabled 1 = Enabled	0

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
65—69			Reserved, return 0			
70	Auto-zeroing	unsigned integer	Put sensor to 0 Pa	0, 1	0 = Inactive 1 = Active	0
71—91			Reserved, return 0			
92	Altitude	unsigned integer	Current altitude	0—5.000	1.000 = 1.000 m	0
93	Start-up timer	unsigned integer	Start-up period before setting alarm and span flags. During this period the alarm and span limits are not compared with the measured pressure/ volume/velocity and alarm flag and span limit flag registers will remain '0' for this period. Timer is reloaded when operating setpoint is set to 0 or Operating mode is set to 'OFF'	0—1.000	100 = 100 s	60 s
94			Reserved, returns 0			
95	LED intensity / brightness	unsigned integer	LED intensity (incrementing with a step of 10 %)	0—10	0 = OFF 1 = 10 % 10 = 100 %	5
96—100			Reserved, return 0			

Note: The holding registers can be managed via the following Modbus commands: "Read Holding Registers", "Write Single Register" or "Write Multiple Registers".

The free Sentera configuration and monitoring software 3SModbus can be downloaded via: https://www.sentera.eu/en/3SMCenter