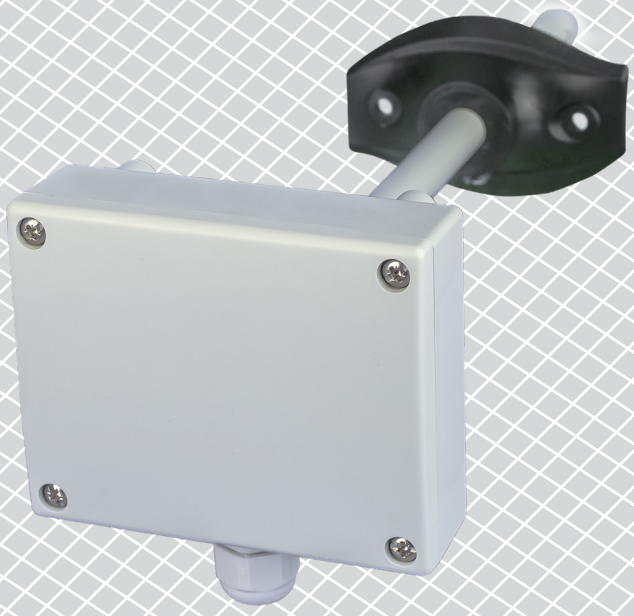
DSMFM-4 | MULTIFUNCTIONAL DUCT TRANSMITTER

Modbus register map



MODBUS REGISTER MAP

INPUT REGISTERS

		Access	Description	Raw data range	Values	
↓ General ↓						
1	Device Status – Errors	R	Indicates the critical faults of the specific device part	Bitwise b0 is LSB	b0 = b1 = b2 = b3 = b4 to b15 =	Supply Voltage Fault Internal Voltage Fault Memory Fault Sensor Fault Undefined
2	Device Status – Warnings	R	Indicates non-critical warnings related to the specific device part	Bitwise b0 is LSB	b0 = b1 = b2 = b3 = b4 to b15 =	Supply Voltage Fault Internal Voltage Fault Undefined Sensor Warning Undefined
3	Supply Voltage	R	Shows actual supply voltage of the device. When powered by AC, the displayed values are higher than the actual ones	150—340	240 =	24,0 VDC
4—10		R	Reserved			
↓ Temperature ↓						
11	Temperature Level	R	Measured temperature level	-300—700	200 =	20,0°C
12	Temperature Output Value	R	Output value according to temperature level and set measurement range (HR11 and HR12)	0—1.000	500 =	50,0% Output
13	Temperature Alerts	R	Indicates that measured temperature level is outside, below or above alert values (HR13 and HR14) and according to setting in HR15	0—2	0 = 1 = 2 =	Green/OK Yellow Alert Red Alert
14	Temperature Sensor State	R	Flag that shows if the communication with temperature sensor is lost	0—4	0 = 1 = 4 =	Sensor OK Sensor Problem Sensor Preheating
15—20			Reserved			
↓ Relative Humidity ↓						
21	Relative Humidity Level	R	Measured level of relative humidity	0—1.000	500 =	50,0% rH
22	Relative Humidity Output Value	R	Output value according to relative humidity level and set measurement range (HR21 and HR22)	0—1.000	500 =	50,0% Output

INPUT REGISTERS

		Access	Description	Raw data range	Values	
23	Relative Humidity Alerts	R	Indicates that the measured relative humidity level is outside, below or above alert values (HR23 and HR24) and according to setting in HR25	0—2	0 = 1 = 2 =	Green/OK Yellow Alert Red Alert
24	Relative Humidity Sensor State	R	Flag that shows if the communication with relative humidity sensor is lost	0—4	0 = 1 = 4 =	Sensor OK Sensor Problem Sensor Preheating
25—30			Reserved			
↓ Dew point ↓						
31	Dew Point Level	R	Calculated dew point level	-500—700	100 =	10,0 °C
32	Dew Point Output Value	R	Output value according to dew point level and set measurement range (HR31 and HR32)	0—1.000	500 =	50,0 % Output
33	Dew Point Alerts	R	Indicates that the measured dew point level is outside, below or above alert values (HR33 and HR34) and according to setting in HR35	0—2	0 = 1 = 2 =	Green/OK Yellow Alert Red Alert
34	Dew Point State	R	Flag that shows if the dew point calculation is done	0—4	0 = 1 = 4 =	Calculation OK Calculation Problem Data preparation
35—40		R	Reserved			
↓ Carbon Dioxide ↓						
51	Carbon Dioxide Level	R	Measured carbon dioxide concentration level	0—2.000	1.000 =	1.000 ppm
52	Carbon Dioxide Output Value	R	Output value according to carbon dioxide level and set measurement range (HR51 and HR52)	0—1.000	500 =	50,0% Output
53	Carbon Dioxide Alerts	R	Indicates that the measured carbon dioxide level is above one or both alert values (HR53 and HR54)	0—2	0 = 1 = 2 =	Green/OK Yellow Alert Red Alert
54	Carbon Dioxide Sensor State	R	Flag that shows if the communication with carbon dioxide sensor is lost	0—4	0 = 1 = 4 =	Sensor OK Sensor Problem Sensor Preheating
55—60			Reserved			
↓ Barometric Pressure ↓						

INPUT REGISTERS

		Access	Description	Raw data range	Values	
141	Barometric Pressure Level	R	Measured atmospheric pressure	300—1.250	1.000 =	1.000 hPa
142—143			Reserved			
144	Barometric Pressure Sensor State	R	Flag that shows if the communication with pressure sensor is lost	0—4	0 = 1 = 4 =	Sensor OK Sensor Problem Sensor Preheating
145—150			Reserved			
↓ Altitude ↓						
151	Altitude	R	Estimated altitude. Accuracy of this value is increasing with time	-100—8.000	1.000 =	1.000 m
152—153			Reserved			
154	Altitude State	R	Flag that shows if the altitude calculation is done	0—4	0 = 1 = 4 =	Calculation OK Calculation Problem Data preparation
155—160			Reserved			

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

HOLDING REGISTERS

		Access	Description	Raw data range	Values			Preset	
↓ General ↓									
1	Device slave address	R/W	Modbus device address	1—247				1	
2	Modbus baud rate	R/W	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 =	19.200 bps

HOLDING REGISTERS

		Access	Description	Raw data range	Values		Preset	
3	Modbus parity	R/W	Parity check mode	0—2	0 = 1 = 2 =	8N1 8E1 8O1	1 = 8E1 (8 bits – even parity – 1 stop bit)	
4	Device type	R	Device type	XXXX	1.803 =	DSMFM-4		
5	HW version	R	Hardware version of the device	XXXX	0x0100 =	HW version 1.0		
6	FW version		Firmware version of the device. Read only	XXXX	0x0100 =	FW version 1.0		
7—8			Reserved					
9	Modbus network resistor termination (NBT)	R/W	Set device as end device of the line / or not by connecting NBT	0, 1	0 = 1 =	NBT disconnected NBT connected	0 =	NBT disconnected
10	Modbus registers reset		Resets Modbus Holding registers to default values. When finished this register is automatically reset to '0'	0, 1	0 = 1 =	Idle Reset Modbus Registers	0 =	Idle
			↓ Temperature ↓					
11	Minimum Temperature Range	R/W	Minimum temperature value that corresponds to minimum output value, cannot be set higher than maximum temperature range – 2 °C	-400—(Max. temp. range—20)	100 =	10,0°C	0 =	0,0 °C
12	Maximum Temperature Range	R/W	Maximum temperature value that corresponds to maximum output value, cannot be set lower than minimum temperature range + 2 °C	(Min. temp. range + 20)—1.250	500 =	50,0°C	500 =	50,0 °C
13	Temperature Alert 1 Level	R/W	Temperature alert 1 level used to control alert register IR13	-400—1.250	200 =	20,0 °C	0 =	0,0 °C
14	Temperature Alert 2 Level	R/W	Temperature alert 2 level used to control alert register IR13	-400—1.250	200 =	20,0 °C	500 =	50,0 °C
15	Temperature Alert Indication Scheme	R/W	Ascending mode – Yellow alert flag is raised when measured temperature is between HR13 and HR14 levels. Red alert flag is raised when measured temperature is above both HR13 and HR14 levels Within range mode – Red alert flag is raised when measured temperature is outside the range defined by HR13 and HR14 levels Descending mode – Yellow alert flag is raised when measured temperature is between HR14 and HR13 levels. Red alert flag is raised when measured temperature is below both HR14 and HR13 levels	0—2	0 = 1 = 2 =	Ascending Within Range Descending	1 =	Within Range Monitoring
16—19			Reserved					

HOLDING REGISTERS

		Access	Description	Raw data range	Values		Preset	
20	Temperature Correction Value	R/W	Manual temperature offset correction value	-50—50	50 =	5,0 °C	0 =	0,0 °C
			↓ Relative Humidity ↓					
21	Minimum Relative Humidity Range	R/W	Minimum relative humidity value that corresponds to minimum output value, cannot be set higher than maximum relative humidity range – 5% rH	0—(Max. rH range—50)	100 =	10,0% rH	50 =	5,0 %rH
22	Maximum Relative Humidity Range	R/W	Maximum relative humidity value that corresponds to maximum output value, cannot be set lower than minimum relative humidity range + 5% rH	(Min. rH range + 50)—1.000	900 =	90,0% rH	950 =	95,0% rH
23	Relative Humidity Alert 1 Level	R/W	Relative humidity alert level used to control alert register IR23	0—1.000	500 =	50,0% rH	300 =	30,0% rH
24	Relative Humidity Alert 2 Level	R/W	Relative humidity alert level used to control alert register IR23	0—1.000	500 =	50,0% rH	700 =	70,0% rH
25	Relative Humidity Alert Indication Scheme	R/W	Ascending mode – Yellow alert flag is raised when measured humidity is between HR23 and HR24 levels. Red alert flag is raised when measured temperature is above both HR23 and HR24 levels Within range mode – Red alert flag is raised when measured humidity is outside the range defined by HR23 and HR24 levels Descending mode – Yellow alert flag is raised when measured humidity is between HR24 and HR23 level. Red alert flag is raised when measured humidity is below both HR23 and HR24 levels	0—2	0 = 1 = 2 =	Ascending Within Range Descending	1 =	Within Range
26—29			Reserved					
30	Relative Humidity Correction Value	R/W	Manual relative humidity offset correction value	-100—100	100 =	10,0% rH	0 =	0,0 %rH
			↓ Dew point ↓					
31	Minimum Dew Point Range	R/W	Minimum dew point value that corresponds to minimum output value	-500—(Max. dew point range—20)	200 =	20,0 °C	-350 =	-35,0 °C
32	Maximum Dew Point Range	R/W	Maximum dew point value that corresponds to maximum output value	(Min. dew point range + 20)—700	200 =	20,0 °C	500 =	50,0 °C
33	Dew Point Alert 1 Level	R/W	Dew point alert level used to control alert register IR33	-500—700	100 =	10,0 °C	100 =	10,0 °C
34	Dew Point Alert 2 Level	R/W	Dew point alert level used to control alert register IR33	-500—700	100 =	10,0 °C	150 =	15,0 °C

HOLDING REGISTERS

		Access	Description	Raw data range	Values		Preset	
35	Dew Point Alert Indication Scheme	R/W	Ascending mode – Yellow alert flag is raised when measured dew point is between HR33 and HR34 levels. Red alert flag is raised when measured dew point is above HR33 and HR34 levels Within range mode – Red alert flag is raised when measured dew point is outside the range defined by HR33 and HR34 levels Descending mode – Yellow alert flag is raised when measured dew point is between HR34 and HR33 levels. Red alert flag is raised when measured dew point is below HR34 and HR33 levels	0—2	0 = 1 = 2 =	Ascending mode Within range mode Descending mode	0 =	Ascending
36—40			Reserved					
↓ Carbon dioxide ↓								
51	Minimum Carbon Dioxide Range	R/W	Minimum carbon dioxide concentration value that corresponds to minimum output value, cannot be set higher than maximum carbon dioxide range – 100 ppm CO_2	0—(Max. CO_2 range - 100)	400 =	400 ppm	350 =	350 ppm
52	Maximum Carbon Dioxide Range	R/W	Maximum carbon dioxide concentration value that corresponds to maximum output value, cannot be set lower than minimum carbon dioxide range + 100 ppm CO_2	(Min. CO_2 range + 100)—2.000	2.000 =	2.000 ppm	2.000 =	2.000 ppm
53	Carbon Dioxide Alert 1 Level	R/W	Carbon dioxide alert level used to control alert register IR53	0—2.000	1.000 =	1.000 ppm	900 =	900 ppm
54	Carbon Dioxide Alert 2 Level	R/W	Carbon dioxide alert level used to control alert register IR53	0—2.000	1.000 =	1.000 ppm	1.200 =	1.200 ppm
55	Carbon Dioxide Alert Indication Scheme	R	Ascending mode – Yellow alert flag is raised when measured carbon dioxide concentration is between HR53 and HR54 levels. Red alert flag is raised when measured carbon dioxide concentration is above both HR53 and HR54 levels	0	0 =	Ascending mode	0 =	Ascending mode
56—57			Reserved					
58	Carbon Dioxide Automatic Baseline Control	R/W	Enables or disables the automatic baseline control feature. If enabled it is advisable that the CO_2 concentration drops to lowest level at least once in a 7 day period	0, 1	0 = 1=	Disabled Enabled	1 =	Enabled
59			Reserved					
60	Carbon Dioxide Correction Value	R/W	Manual carbon dioxide offset correction value. Default value is set according to **NASA CO_2 chart** taking into account ABC algorithm	-100—100	100 =	100 ppm	20 =	20 ppm
↓ Barometric Pressure ↓								
141—149			Reserved					
150	Barometric Pressure Correction Value	R/W	Manual barometric pressure correction value	-100—100	100 =	100 hPa	0 =	0 hPa

HOLDING REGISTERS						
		Access	Description	Raw data range	Values	Preset
↓ Altitude ↓						
151—160			Reserved			
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						