DSCA8-DM | DESTRATIFICATION CONTROLLER

Modbus register map

MODBUS REGISTER MAP

INPUT REGISTERS

Input register		Data Type	Description	Raw Data Range	Resolution / Unit	Values
↓ General ↓						
1	Device status – errors	R	Shows the critical faults of the specific device part. For example, 'Supply voltage out of range' indicates that the connected power supply is not supported by the controller. 'Memory Fault' indicates an error with the microcontroller.	Bitwise b0 – b15		b0 = Reserved b1 = Internal Voltage Fault b2 = Memory Fault b3 – b15 = Reserved
2	Device status – warnings	R	Shows non-critical warnings related to the specific device part. For example, "Internal Voltage Warning" indicates that the internal power supply is out of range.	Bitwise b0 – b15		b0 = Reserved b1 = Internal Voltage Warning b2 – b15 = Reserved
↓ Analogue Output ↓						
11	Analogue output level	R	Shows the current analogue output level.	0–1.000	1/10 %	500 = 50 % Output
↓ Relay Output ↓						
21	Relay state	R	Shows the state of the relay.	0–1		0 = OFF 1 = ON
↓ Temperature Probe 1 ↓						
31	Floor temperature sensor state	R	Shows the state of the floor temperature sensor.	0–2		0 = Short circuit failure 1 = Connected 2 = Not connected
32	Floor temperature	R	The measured temperature value at floor level.	-185–550	1/10°C	-185 = -18,5 °C 550 = 55 °C
↓ Temperature Probe 2 ↓						
33	Ceiling temperature sensor state	R	Shows the state of the ceiling temperature sensor.	0–2		0 = Short circuit failure 1 = Connected 2 = Not connected
34	Ceiling temperature	R	The measured temperature value at ceiling level.	-185–550	1/10°C	-185 = -18,5 °C 550 = 55 °C

INPUT REGISTERS

Input register		Data Type	Description	Raw Data Range	Resolution / Unit	Values
↓ Application ↓						
41	Application state	R	Shows the current application state.	0–6		0 = Idle (inactive) 1 = Delta control 2 = Reserved 3 = Summer control 4 = Override control 5 = Alarm 6 = Post Alarm 7 = Locked Alarm
42	Critical HW alarm	R	Shows the critical faults of the application. For example, it indicates sensor errors with one of the sensors ("Ceiling Temperature Sensor Fault" or " Floor Temperature Sensor Fault") or other hardware defects. When b2 "Device Status – Errors" is present, refer to Input register 1 (Device status – errors) for additional information.	Bitwise b0 is LSB		b0 = Ceiling Temperature Sensor Fault b1 = Floor Temperature Sensor Fault b2 = Device Status – Errors b3 – b15 = Reserved
43	HW warnings	R	Shows non-critical warnings of the application. When bit 0 "Device status - Warnings" is present, refer to input register 2 for additional information.	Bitwise b0 is LSB		b0 = Device Status – Warnings b1 – b15 = Reserved
44	Critical logical alarm	R	Shows the critical logical faults of the application. The floor and ceiling temperature sensors have been swapped.	Bitwise b0 is LSB		b0 = Inverted Temperature Sensors b1 – b15 = Reserved
45	Logical warnings	R	Shows non-critical logical warnings of the application.	Bitwise b0 is LSB		b0 – b15 = Reserved

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

HOLDING REGISTERS

Holding register		Data Type	Description	Raw Data Range	Resolution / Units	Values	Factory Default Values
			↓ 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
3	Modbus parity	R/W	Parity check mode.	0–2		0 = 8N1 1 = 8E1 2 = 8O1	1
4	Device type	R	Sentera article code of the device.	XXXX		Device specific	1055 = DSCA8-DM
5	HW version	R	Hardware version of the device.	XXXX		Hardware version specific 0x0100 = HW version 1.00	Depends on the hardware release
6	FW version	R	Firmware version of the device.	XXXX		Firmware version specific 0x0100 = FW version 1.00	Depends on the firmware release
9	Modbus network resistor termination (NBT)	R/W	To avoid communication losses and reflections on the Modbus line, the NBT in two devices (at both ends of the line) must be activated.	0–1		0 = NBT disconnected 1 = NBT connected	0
10	Modbus registers reset		To reset the Modbus Holding registers to their default values, set this register to "1". After the reset is completed, the register is automatically set back to "0".	0–1		0 = Idle (inactive) 1 = Reset Modbus Registers	0
			↓ Analogue Output ↓				
11	Analogue output type	R/W	Select analogue / modulating output type.	0–6		0 = 0–10 VDC 1 = 0–20 mA 2 = PWM 12 VDC 3 = PWM Open Collector 4 = 2–10 V 5 = 4–20 mA 6 = 0–5 V	0
13	Maximum analogue output value	R/W	Maximum value of the analogue output signal according to the fan specifications. (The minimum output value can be found in **HR16**.)	200–1.000	1/10 %	1.000 = 100 % Output	1.000
14	Analogue output override value	R/W	Override value for the analogue output.	0–1.000	1/10 %	1.000 = 100 % Output	500

HOLDING REGISTERS

Holding register		Data Type	Description	Raw Data Range	Resolution / Units	Values	Factory Default Values
15	Analogue output source	R/W	Indicates the actual source that controls the analogue output.	0–1		0 = Override 1 = Auto (Application, based on sensor measurements)	1
16	Start/pre-shut down speed (Minimum speed if Always ON (HR17) is enabled)	R/W	Defines the minimum value of the analogue output during startup and stopping of the ceiling fans in Delta control state (**HR15 = 1**). While the fan minimum runtime (**HR72**) has not yet expired, the fan keeps running at this speed before stopping completely. When 'Always ON' is enabled (**HR17** = 1), the fan will not stop, but always run at this speed or faster.	0–800	1/10 %	800 = 80 % Output	200
17	Analogue output always ON	R/W	If Enabled, the fan will never stop, but always run at minimum speed (specified in **HR16**), or faster. This setting does not override the application logic.	0–1		0 = Disable 1 = Enable	0
↓ Relay Output ↓							
31	Relay output override value	R/W	Override value for the relay output.	0–1		0 = OFF 1 = ON	0
32	Relay output source	R/W	Indicates the actual source that controls the relay output.	0–1		0 = Override 1 = Auto (Application, based on sensor measurements)	1
↓ Delta Control ↓							
71	Delta temperature threshold	R/W	Defines the desired temperature difference between the floor and the ceiling.	0–200	1/10 °C	50 = 5 °C	40
72	Analogue output minimum runtime	R/W	The analogue output runs at pre-shut down speed (**HR16**) until specified time.	0–10	1	10 = 10 minutes	2
73	Thermostat trigger time	R/W	Activates the relay at the specified time if the destratification fails to achieve the desired result. For example, if the desired temperature difference between the floor and the ceiling is not reached in 2 minutes, the relay output is activated to start additional heating.	0–10	1	2 = 2 minutes	2
74	Thermostat setpoint	R/W	Defines the target temperature that the thermostat maintains.	0–300	1/10 °C	200 = 20 °C	220
75	Relay output minimum runtime	R/W	The relay output remains energised until specified time.	2–10	1	2 = 2 minutes	5

HOLDING REGISTERS

Holding register		Data Type	Description	Raw Data Range	Resolution / Units	Values	Factory Default Values
↓ Summer Control ↓							
81	Summer control fan speed level	R/W	Fan speed level for summer control. When summer control state is active, the fans will continuously run at this speed.	0–1.000	1/10 %	500 = 50 % Output	500
82	Summer control temperature threshold	R/W	Temperature threshold above which summer control is activated. When summer control is active, the fans run continuously at a fixed speed (HR81).	0–400	1/10 °C	400 = 40 °C	280
↓ LED Indication ↓							
91	LED indication brightness	R/W	Selection of LED indication brightness.	0–10		0 = Off 1 = 10 % Brightness 2 = 20 % Brightness 3 = 30 % Brightness 4 = 40 % Brightness 5 = 50 % Brightness 6 = 60 % Brightness 7 = 70 % Brightness 8 = 80 % Brightness 9 = 90 % Brightness 10 = Full Brightness	5

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