

TSVCT | DUCT AIR QUALITY SENSOR

Modbus register map



MODBUS REGISTER MAP

INPUT REGISTERS									
Input register		Access	Description	Raw Data Range	Resolution / Unit	Remark		Table	Code
↓ General ↓									
1	Device State – Errors	R	Indicates the critical faults of the specific device part.	Bitwise b0 – b15		b0 = Undefined b1 = Internal Voltage Fault b2 = Memory Fault b3 = Sensor Fault b4 = Undefined b5 = Undefined b6 = Undefined b7 = Undefined b8 = Undefined b9 = Undefined b10 = Undefined b11 = Undefined b12 = Undefined b13 = Undefined b14 = Undefined b15 = Undefined	IOS063 – Device status errors		
2	Device State – Warnings	R	Indicates non-critical warnings related to the specific device part.	Bitwise b0 – b15		b0 = Undefined b1 = Internal Voltage Warning b2 = Undefined b3 = Sensor Warning b4 = Undefined b5 = Undefined b6 = Undefined b7 = Undefined b8 = Undefined b9 = Undefined b10 = Undefined b11 = Undefined b12 = Undefined b13 = Undefined b14 = Undefined b15 = Undefined	IOS064 – Device status warnings		
3–10			Reserved, returns 0.						
↓ Temperature ↓									
11	Temperature Level	R	Measured temperature level.	-300–700	1/10 °C	Example: 200 = 20,0 °C		IOS010 – Unit codes	100

INPUT REGISTERS

Input register	Access	Description	Raw Data Range	Resolution / Unit	Remark	Table	Code
13		Indicates that measured temperature level is within OK range (HR13 and HR14), within the Alert range (HR15 and HR16) or in Alarm. Temperature alert / alarm Temperature [°C] 70 T alarm maximum (HR16) T alert maximum (HR14) T alert minimum (HR13) T alarm minimum (HR15) -30	0-2		0 = OK 1 = Alert 2 = Alarm	IOS062 – Alert indication colour	
14		Flag that shows if the communication with temperature sensor is lost.	0-4		0 = Sensor OK 1 = Sensor Problem 4 = Sensor Preheating	IOS025 – Sensor state	
15–20		Reserved, returns 0					
↓ Relative Humidity ↓							
21		Measured level of relative humidity.	0-1.000	1/10 % rH	Example: 500 = 50,0 % rH	IOS010 – Unit codes	120
23		Indicates that relative humidity level is within OK range (HR23 and HR24), within the Alert range (HR25 and HR26) or in Alarm. Relative humidity alert / alarm rH [%] 100 RH alarm maximum (HR26) RH alert maximum (HR24) RH alert minimum (HR23) RH alarm minimum (HR25) 0	0-2		0 = OK 1 = Alert 2 = Alarm	IOS062 – Alert indication colour	
24		Flag that shows if the communication with relative humidity sensor is lost.	0-4		0 = Sensor OK 1 = Sensor Problem 4 = Sensor Preheating	IOS025 – Sensor state	

INPUT REGISTERS

Input register	Access	Description	Raw Data Range	Resolution / Unit	Remark	Table	Code
25–30		Reserved, returns 0.					
↓ Dew point ↓							
31	R	Calculated dew point level.	- 500–700	1/10 °C	Example: 100 = 10,0 °C	IOS010 – Unit codes	100
33	R	Indicates that the Dew point delta (Temperature level (IR11) - Dew point level (IR31)) is below alert / alarm sub-thresholds (HR33 and HR34). Dew point alert / alarm Dew point delta [°C] Dew point delta alert sub-threshold (HR33) Dew point delta alarm sub-threshold (HR34) 0	0–2		0 = OK 1 = Alert 2 = Alarm	IOS062 – Alert indication colour	
34	R	Flag that shows if the dew point calculation is done.	0–4		0 = Calculation OK 1 = Calculation Problem		
35–40		Reserved, returns 0.					
55–60		Reserved, returns 0.					
↓ VOC ↓							
61	R	Measured VOC index level.	1–500	1		IOS010 – Unit codes	206
63	R	Indicates that the measured VOC index level is above alert / alarm thresholds (HR63 and HR64). VOC index alert / alarm VOC index 500 VOC index alarm threshold (HR64) VOC index alert threshold (HR63) 1	0–2		0 = OK 1 = Alert 2 = Alarm	IOS062 – Alert indication colour	

INPUT REGISTERS

Input register	Access	Description	Raw Data Range	Resolution / Unit	Remark	Table	Code
64	R	VOC Index Sensor State Flag that shows if the communication with VOC sensor is lost.	0-4		0 = Sensor OK 1 = Sensor Problem 4 = Sensor Preheating	IOS025 – Sensor State	
65	R	VOC Index Air Quality Indication Indicates air quality based on VOC air quality index level.	0-7		0 = Preparing 1 = Excellent 2 = Very good 3 = Good 4 = Fair 5 = Poor 6 = Bad 7 = Very bad	IOS056 – Air quality indication	
66	R	VOC Index Air Quality Trend Indicates air quality trend over the past minutes based on VOC index.	0-3		0 = Preparing 1 = Stable 2 = Improving 3 = Deteriorating	IOS057 – Trend -evolution	
67-70		Reserved, returns 0.					

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

HOLDING REGISTERS										
		Access	Description	Raw Data Range	Resolution / Units	Remarks		Preset	Table	Code
↓ General ↓										
1	Device Slave Address	R/W	Modbus device address.	1–247				1	IOS004 – Modbus slave ID	
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	IOS002 – Communication speed	
3	Modbus Parity	R/W	Parity check mode.	0–2		0 = 8N1 1 = 8E1 2 = 8O1		1	IOS003 – Parity check	
4	Device Type	R	Device type.	XXXX		Device specific		TSVCT – 1823	IOS013 – Device type	
5	HW Version	R	Hardware version.	XXXX		Hardware version specific 0x0100 = HW version 1.00		Depends on hardware release		
6	FW Version	R	Firmware version.	XXXX		Firmware version specific 0x0120 = FW version 1.30		Depends on firmware release		
7			Reserved, returns 0.							
9	Modbus Network Resistor Termination (NBT)	R/W	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	R/W	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		
↓ Temperature ↓										
13	Temperature Alert Minimum	R/W	Temperature alert minimum level used to control IR13.	HR15–HR14	1/10 °C	Example: 200 = 20,0 °C		190	IOS010 – Unit codes	100
14	Temperature Alert Maximum	R/W	Temperature alert maximum level used to control IR13.	HR13–HR16	1/10 °C	Example: 300 = 30,0 °C		300	IOS010 – Unit codes	100

HOLDING REGISTERS									
		Access	Description	Raw Data Range	Resolution / Units	Remarks	Preset	Table	Code
15	Temperature Alarm Minimum	R/W	Temperature alarm minimum level used to control IR13.	-300–HR13	1/10 °C	Example: 100 = 10,0 °C	100	IOS010 – Unit codes	100
16	Temperature Alarm Maximum	R/W	Temperature alarm maximum level used to control IR13.	HR14–700	1/10 °C	Example: 400 = 40,0 °C	400	IOS010 – Unit codes	100
17–19			Reserved, returns 0.						
20	Temperature Correction Value	R/W	Manual temperature offset correction value.	-50–50	1/10 °C	Example: 50 = 5,0 °C	0	IOS010 – Unit codes	100
↓ Relative Humidity ↓									
23	Relative Humidity Alert Minimum	R/W	Relative humidity alert minimum level used to control IR23.	HR25–HR24	1/10 % rH	Example: 300 = 30,0% rH	300	IOS010 – Unit codes	120
24	Relative Humidity Alert Maximum	R/W	Relative humidity alert maximum level used to control IR23.	HR23–HR26	1/10 % rH	Example: 700 = 70,0% rH	700	IOS010 – Unit codes	120
25	Relative Humidity Alarm Minimum	R/W	Relative humidity alarm minimum level used to control IR23.	0–HR23	1/10 % rH	Example: 100 = 10,0% rH	100	IOS010 – Unit codes	120
26	Relative Humidity Alarm Maximum	R/W	Relative humidity alarm maximum level used to control IR23.	HR24–1000	1/10 % rH	Example: 900 = 90,0% rH	900	IOS010 – Unit codes	120
27–29			Reserved, returns 0.						
30	Relative Humidity Correction Value	R/W	Manual relative humidity offset correction value.	-100–100	1/10 % rH	Example: 100 = 10,0% rH	0	IOS010 – Unit codes	120
↓ Dew point ↓									
33	Dew Point Delta Alert Sub-threshold	R/W	Dew point delta alert sub-threshold used to control IR33.	HR34–100	1/10 °C	Example: 20 = 2,0 °C	40	IOS010 – Unit codes	100
34	Dew Point Delta Alarm Sub-threshold	R/W	Dew point delta alarm sub-threshold used to control IR33.	0–HR33	1/10 °C	Example: 20 = 2,0 °C	20	IOS010 – Unit codes	100
35–40			Reserved, returns 0.						

HOLDING REGISTERS										
		Access	Description	Raw Data Range	Resolution / Units	Remarks	Preset	Table	Code	
56—59			Reserved, returns 0.							
↓ VOC ↓										
63	VOC Index Alert Threshold	R/W	VOC alert level used to control IR63.	0–HR64	1	Example: 150 = 150	150	IOS010 – Unit codes	206	
64	VOC Index Alarm Threshold	R/W	VOC alert level used to control IR63.	HR63–500	1	Example: 250 = 250	400	IOS010 – Unit codes	206	
65–69			Reserved, returns 0.							
70	VOC Index Correction Value	R/W	Manual VOC offset correction value.	-100–100	1	Example: 100 = 100	0	IOS010 – Unit codes	206	
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										