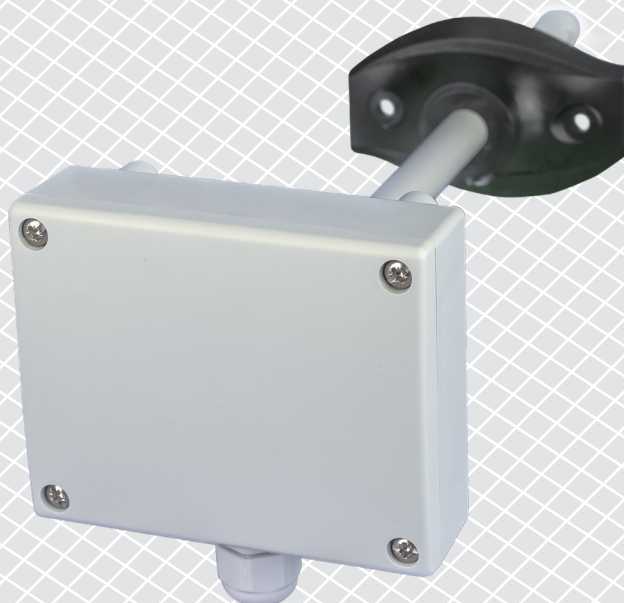


# DCTHM-2 | INTELLIGENT TEMPERATURE AND HUMIDITY DUCT SENSOR

## Modbus register map



## MODBUS REGISTER MAP

| INPUT REGISTERS |                                    | Data type        | Description   | Raw data range | Values   |
|-----------------|------------------------------------|------------------|---|----------------|--|
| 1               | Temperature reading                | signed integer   | Actual temperature level  | -300–700       | 500 = 50,0°C   |
| 2               | Temperature output value           | unsigned integer | Output value according to temperature   | 0–1.000        | 1.000 = 100 %  |
| 3               | Temperature alert flag             | unsigned integer | Flag indicates that measured temperature is outside set alert values. Set to '1' when the measured value is outside the Temperature alert values defined by holding registers 13 and 14               | 0, 1           | 0 = Temperature measurement OK<br>1 = Temperature measurement too low / high             |
| 4               | Temperature range limit flag       | unsigned integer | Flag indicates that measured temperature is outside set range limit values. Set to '1' when the measured temperature is outside limit range values defined by holding registers 11 and 12             | 0, 1           | 0 = Temperature measurement OK<br>1 = Temperature measurement too low / high             |
| 5               | Temperature sensor state           | unsigned integer | Flag that shows if the communication with temperature sensor is lost  | 0, 1           | 0 = OK<br>1 = Temperature sensor problem   |
| 6–9             |                                    |                  | Reserved, return 0  |                |  |
| 10              | Relative humidity level            | unsigned integer | Actual relative humidity level  | 0–1.000        | 1.000 = 100 % rH   |
| 11              | Relative humidity output value     | unsigned integer | Output value according to relative humidity   | 0–1.000        | 1.000 = 100 %  |
| 12              | Relative humidity alert flag       | unsigned integer | Flag indicates that measured relative humidity is outside set alert values. Set to '1' when the measured value is outside the Relative humidity alert values defined by holding registers 21 and 22   | 0, 1           | 0 = Relative humidity measurement OK<br>1 = Relative humidity measurement too low / high |
| 13              | Relative humidity range limit flag | unsigned integer | Flag indicates that measured relative humidity is outside set range limit values. Set to '1' when the measured Relative humidity is outside limit range values defined by holding registers 19 and 20 | 0, 1           | 0 = Relative humidity measurement OK<br>1 = Relative humidity measurement too low / high |
| 14              | Humidity sensor state              | unsigned integer | Flag that shows if the communication with the humidity sensor is lost   | 0, 1           | 0 = OK<br>1 = rH sensor problem  |
| 15              | Dew point level                    | signed integer   | Calculated dew point  | -700–700       | 200 = 20,0°C   |

| INPUT REGISTERS |                     |                  |  |                |   |
|-----------------|---------------------|------------------|--|----------------|---|
|                 |                     | Data type        | Description  | Raw data range | Values                                    |
| 16–38           |                     |                  | Reserved, return 0   |                |   |
| 39              | Actual output value | unsigned integer | The actual output value in percentage that can be used to control fan/motor via modbus | 0–1.000        | 1.000 = 100 %                             |
| 40              | Output control mode | unsigned integer | The source of the output value   | 1, 2, 99       | 1 = Temperature<br>2 = rH<br>99 = All off |
| 41-50           |                     |                  | 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      3 = 38.400<br>1 = 9.600      4 = 57.600<br>2 = 19.200     5 = 115.200      6 = 230.400 | 2                      |
| 3                 | Modbus parity        | unsigned integer | Parity check mode                         | 0–2            | 0 = 8N1<br>1 = 8E1<br>2 = 8O1   | 1                      |
| 4                 | Device type          | unsigned integer | Device type. Read only                    | 1.783          | 1.783 = DCTHM-2   |                        |
| 5                 | HW version           | unsigned integer | Hardware version of the device. Read only | XXXX           | 0x0100 = HW version 1.0   |                        |

## HOLDING REGISTERS

|       |   | Data type        | Description   | Raw data range  | Values                                    | Factory default values |
|-------|---|------------------|---|---|---|------------------------|
| 6     | FW version                                | unsigned integer | Firmware version of the device. Read only   | XXXX  | 0x0110 = FW version 1.1                   |                        |
| 7–8   |   |                  | Reserved, return 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<br>1 = NBT connected | 0                      |
| 10    | Modbus registers reset                    | unsigned integer | Resets Modbus Holding registers (above 10) to default values. When finished this register is automatically reset to '0' | 0, 1  | 0 = Idle<br>1 = Reset Modbus Registers    | 0                      |
| 11    | Minimum temperature range                 | signed integer   | Minimum value of temperature range, cannot be set higher than maximum temperature range minus 5 °C                      | -300—(Max - 50)   | 100 = 10,0°C                              | 0                      |
| 12    | Maximum temperature range                 | signed integer   | Maximum value of temperature range, cannot be set less than minimum temperature range plus 5 °C                         | (Min + 50)—700  | 500 = 50,0°C                              | 500                    |
| 13    | Minimum temperature alert                 | signed integer   | Minimum temperature alarm value   | Min. temperature range—Max. temperature alarm             | 500 = 50,0°C                              | 0                      |
| 14    | Maximum temperature alert                 | signed integer   | Maximum temperature alarm value   | Min. temperature alarm— Max. temperature range            | 500 = 50,0°C                              | 500                    |
| 15–18 |   |                  | Reserved, return 0  |   |   |                        |
| 19    | Minimum relative humidity range           | unsigned integer | Minimum value of relative humidity range, cannot be set higher than maximum relative humidity range minus 5 %           | 0—(Max - 50)  | 200 = 20,0 % rH                           | 0                      |
| 20    | Maximum relative humidity range           | unsigned integer | Maximum value of relative humidity range, cannot be set less than minimum relative humidity range plus 5 %              | (Min + 50)—1000   | 1.000 = 100 % rH                          | 1.000                  |
| 21    | Minimum relative humidity alert           | unsigned integer | Minimum relative humidity alarm value   | Min. relative humidity range—Max. relative humidity alarm | 200 = 20,0 % rH                           | 0                      |

| HOLDING REGISTERS |   |                  |  |   |                   |                        |
|-------------------|---|------------------|--|---|-------------------|------------------------|
|                   |   | Data type        | Description  | Raw data range  | Values            | Factory default values |
| 22                | Maximum relative humidity alert             | unsigned integer | Maximum relative humidity alarm value  | Min. relative humidity alarm—<br>Max. relative humidity range | 1.000 = 100 % rH  | 1.000                  |
| 23–44             |   |                  | Reserved, return 0   |   |                   |                        |
| 45                | Minimum output value                        | unsigned integer | Set minimum value of output signal in percentage   | 0–400   | 200 = 20 %        | 0                      |
| 46                | Maximum output value                        | unsigned integer | Set maximum value of output signal in percentage   | 600–1.000   | 600 = 60 %        | 1.000                  |
| 47                | Temperature sensor selection (On/Off)       | unsigned integer | Turn ON or OFF the temperature sensor (related to output value - input register 39 and 40) | 0, 1  | 0 = Off<br>1 = On | 1                      |
| 48–56             |   |                  | Reserved, return 0   |   |                   |                        |
| 57                | Relative humidity sensor selection (On/Off) | unsigned integer | Turn ON or OFF the rH sensor (related to output value - input register 39 and 40)          | 0, 1  | 0 = Off<br>1 = On | 1                      |
| 58–70             |   |                  | 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>