

# Temperature / Humidity Sensor



## THD Series CATALOG

**For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.**

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

### Features

- Compact design
- Built-in high accuracy temperature / humidity sensor
- 7 segment LED display (THD-DD / THD-WD)
- Various output options: DC4-20mA, 1-5 VDC, RS485 (Modbus RTU)
- Wide measurable range of temperature / humidity: -19.9 to 60.0 °C / 0.0 to 99.9 %RH
- Communication speed: 115200 bps

### Ordering Information

This is only for reference.

For selecting the specified model, follow the Autonics website.

THD - ① ② ③ - ④

#### ① Mounting type

R: Room type (for indoor)

D: Duct mounting type

W: Wall mounting type

#### ② Display

No mark: Non-display type

D: Display type

#### ③ Sensor pole length

No mark: Built-in type

1: 100 mm

2: 200 mm

#### ④ Output

|      | Temperature                | Humidity       |
|------|----------------------------|----------------|
| C    | Current output             |                |
| V    | Voltage output             |                |
| T    | RS485 communication output |                |
| PT   | DPt100Ω resistance value   | -              |
| PT/C | DPt100Ω resistance value   | Current output |

### Product Components

- Product
- Instruction manual
- Bracket (THD-W / D model)

### Software

Download the installation file and the manuals from the Autonics website.

#### ■ DAQMaster

DAQMaster is comprehensive device management program. It is available for parameter setting, monitoring.

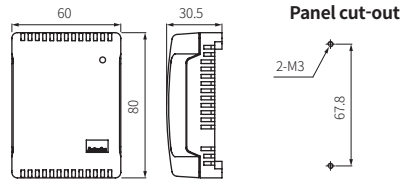
| Specifications        |  |
|-----------------------|--|
| Model                 | THD-R-PT   |
| Sensor type           | Temperature sensor   |
| Display type          | Non-display type   |
| Temp. measuring range | -19.9 to 60.0 °C   |
| Temp. accuracy        | ≤ ±0.8 °C  |
| Temp. output          | DPT100Ω resistance value (TCR: 3850 ppm/°C)                                |
| Protection structure  | IP10 (IEC standards)   |
| Ambient temperature   | -20 to 60 °C, Storage: -20 to 60 °C (rated at no freezing or condensation) |
| Approval              | CE ENEC  |

| Model                   | THD-R-PT/C   | THD-R-C<br>THD-R-V<br>THD-R-T | THD-D□-□<br>THD-W□-□  | THD-DD□-□<br>THD-WD□-□ |
|-------------------------|--|-------------------------------|---|------------------------|
| Power supply            | 24 VDC ± 10 %  |                               |   |                        |
| Power consumption       | ≤ 2.4W   |                               |   |                        |
| Sensor type             | Temperature/Humidity Sensor  |                               |   |                        |
| Sensor response time    | 10 sec   |                               |   |                        |
| Display type            | Non-display type   |                               | 7 seg. LED display  |                        |
| Display digit           | -  |                               | Each 3 digits for temp. / humi.   |                        |
| Temp. measuring range   | -19.9 to 60.0 °C   |                               |   |                        |
| Humi. measuring range   | 0.0 to 99.9 %RH (THD-R is required to attend for using over 90 %RH)                            |                               |   |                        |
| Temp. accuracy          | ± 1.0 °C (at room temp.)   |                               |   |                        |
| Humi. accuracy          | ± 3 %RH (30 to 70 %RH, at room temp.)<br>± 4 %RH (10 to 90 %RH)                                |                               | Typ. ± 2 %RH (10 to 90 %RH, at room temp.)<br>± 2.5 %RH                                 |                        |
| Temp. output            | DPT100Ω resistance value (TCR: 3850 ppm/°C)  |                               | DC 4-20 mA (allowable impedance: ≤ 600 Ω),<br>1-5 VDC, RS485 Communication (Modbus RTU) |                        |
| Humi. output            | DC 4-20 mA (allowable impedance: ≤ 600 Ω)  |                               |   |                        |
| Resolution              | 1/1000   |                               |   |                        |
| Sampling period         | 0.5 sec  |                               |   |                        |
| Insulation resistance   | ≥ 100 MΩ (500 VDC= megger)   |                               |   |                        |
| Dielectric strength     | 500 VAC~ 50/60 Hz for 1 min  |                               |   |                        |
| Noise immunity          | ± 0.3 kV the square wave noise (pulse width: 1 μs) by the noise simulator                      |                               |   |                        |
| Vibration               | 0.75 mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 1 hour |                               |   |                        |
| Vibration (Malfunction) | 0.5 mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour   |                               |   |                        |
| Shock                   | 300 m/s <sup>2</sup> (≈ 30 G) in each X, Y, Z direction for 3 times                            |                               |   |                        |
| Shock (Malfunction)     | 100 m/s <sup>2</sup> (≈ 10 G) in each X, Y, Z direction for 3 times                            |                               |   |                        |
| Protection structure    | IP10 (IEC standards)   |                               | IP65 (except sensor part, IEC standards)  |                        |
| Ambient temperature     | -20 to 60 °C, Storage: -20 to 60 °C (rated at no freezing or condensation)                     |                               |   |                        |
| Cable spec.             | -  |                               | Ø4 mm, 4-wire, length: 2 m  |                        |
| Wire spec.              | -  |                               | AWG22 (0.08 mm, 60-wire), Insulator diameter: Ø1.25 mm                                  |                        |
| Approval                | CE ENEC (only for THD-□-T model) ENEC  |                               |   |                        |

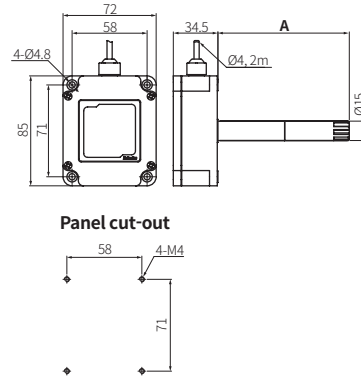
## Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

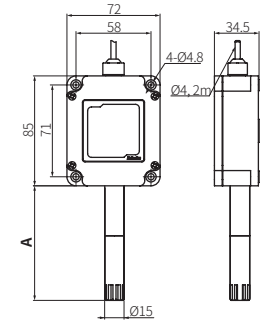
### THD-R



### THD-D

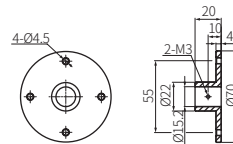


### THD-W



| Model    | Sensor pole length (A) |
|----------|------------------------|
| THD-□1-□ | 100 mm                 |
| THD-□2-□ | 200 mm                 |

### Bracket



## Communication Interface

### RS485

|                      |                                 |
|----------------------|---------------------------------|
| Comm. protocol       | Modbus RTU                      |
| Application standard | Compliance with EIA RS485       |
| Max. Connection      | 31 units (address: 01 to 31)    |
| Synchronous method   | Asynchronous                    |
| Comm. method         | 2-wire half duplex              |
| Comm. distance       | < 800 m                         |
| Comm. speed          | 1200 to 115200 bps (selectable) |
| Start bit            | 1 bit (fixed)                   |
| Data bit             | 8 bit (fixed)                   |
| Parity bit           | None (fixed)                    |
| Stop bit             | 1 bit (fixed)                   |

- It is not allowed to change parameter related to THD communication under the communication with high order system. (THD and upper system are available to change the address at communication status.)
- Match the parameter of THD communication to be same as the high order system.
- It is not allowed to set overlapping communication address at the same communication line. Use twisted pair wire which is appropriate communication cable for RS485 communication.