

DeltaOHM

Member of GHM GROUP



THERMAL COMFORT DATA LOGGER *MICROCLIMATE INDEX & IAQ MEASUREMENT*

HD32.3TC

- ✔ **Bright and clear touch display**
Measurement and calculated values directly visible
- ✔ **High memory capacity**
Suitable for long lasting measurement cycles
- ✔ **Data immediately available**
Remotely accessible via FTP
- ✔ **Portable and independent**
24 hours continuous measurement without recharging
- ✔ **Fully compliant with ISO regulations**
ISO 7730 - ISO 7726 - ISO 7243

Thermal Comfort Data logger

HD32.3TC

Portable data logger suitable for indoor air quality and microclimate analysis (Indoor Air Quality, IAQ).

All data you need to have in just one logger: **WBGT**, **PMV** (Predicted Mean Vote), **PPD** (Predicted Percentage of Dissatisfied), **DR** (draft rate), **TU** (local Turbulence intensity), **HI** (Heat Index), **UTCI** (Universal Thermal Climate Index), **TEP** (Perceived Equivalent Temperature) indices, **CO₂**, **VOC**, **PM1.0**, **PM2.5** and **PM10** measurements.

Estimation of the **SARS-CoV-2 decay on surfaces**.

A **large memory capacity** allows long measuring cycles and the rechargeable battery guarantees an operating autonomy of at least 24 hours. A backlit color graphic LCD display with capacitive touch makes the navigation through the different screens and the visualization of the data **easy and immediate**.

Moreover, the measurement data can be sent to an FTP server by using the **Wi-Fi connection**.

According to ISO 7726 - ISO 7730 - ISO 7243 - ASHRAE Standard 55 and 62.1-2019.

- **Three inputs** for probes with SICRAM module
- Probes **automatically recognized** by turning on the instrument
- **One RS485** serial port for auxiliary probes



Microclimate / IAQ + PM measurements

Technical Specifications

| | |
|------------------|---|
| Reference rules | ISO 7726 Measurement of turbulence - ISO 7730 Measurement of PMV/PPD - ISO 7730 Measurement of WBGT - ISO 7243 |
| Export Formats | CSV - PDF |
| Display | LCD 480x800 pixels Capacitive touch screen |
| Connectivity | USB Host and Device RS485 powered Wi-Fi |
| Storage capacity | 8 GB |
| Logging Interval | From 1 second to 1 hour |

| | |
|----------------------------|---|
| Power supply | Li-Ion battery rechargeable via USB |
| Autonomy | 24 hours on maximum consumption |
| Working temperature and RH | -5...50 °C 0...90% RH no condensation |
| Protection degree | IP54 |
| Instrument uncertainty | ± 1 digit @ 20 °C |
| Dimensions and weight | 185 x 90 x 40 mm - 500 g |
| Inputs | 3 inputs for probes with SICRAM module 1 input RS485 with M12 8-pole connector for PMsense-P |

Applications

There are numerous applications where the HD32.3TC provides a great solution.

Microclimate applications:

- ✓ Measurement of PMV, PPD global comfort indices and of DR local discomfort index in **moderate environment**
- ✓ Measurement of WBGT index in **severe hot environment**

IAQ applications:

- ✓ Measurement of comfort conditions and indoor air quality, for example in schools, offices, factories, etc
- ✓ Sick building syndrome analysis
- ✓ Verification of the efficiency of Heating, Ventilation and Air Conditioning (HVAC) systems
- ✓ Building Automation



| PROBES | TP3207.2 / TP3207* | TP3276.2 / TP3275* | HP3201.2 / HP3201* | TP3204S* | HP3217.2R / HP3217R* | AP3203.2 / AP3203* |
|-------------------------------|--------------------|--------------------|--|---------------------------------|---|--|
| Sensor | Pt100 | Pt100 | Pt100 | Pt100 | T= Pt100 RH= capacitive | NTC 10 kΩ |
| Measuring range | -40...100 °C | -30...20 °C | 4...80 °C | 4...80 °C | T= -40...100 °C RH= 0...100% | 0.02...5 m/s 0...80 °C |
| Accuracy | 1/3 DIN | 1/3 DIN | Class A | Class A | T = 1/3 DIN RH = ±1,5% (0...90% RH) / ±2% (90... 100% RH) @ T=15...35°C (±1.5 + 1.5% of the measurement) % @ T=remaining range | ±(0.05 + 5% of the measurement) m/s |
| Resolution | 0.1 °C | 0.1 °C | 0.1 °C | 0.1 °C | 0.1 °C / 0.1 %RH | 0.01 m/s |
| Temperature drift @20°C | 0.003% / °C | 0.003% / °C | 0.003% / °C | 0.003% / °C | 0.02% RH/°C | 0.06% /°C |
| Long term stability | 0.1 °C / year | 0.1 °C / year | 0.1 °C / year | 0.1 °C / year | 0.1% RH/ year | 0.12 °C / year |
| Response time T ₉₅ | 15 minutes | 15 minutes | 15 minutes | 15 minutes | 15 minutes | |
| Tank capacity and autonomy | | | 15 cc 96 hours @ RH=50%, T=23°C | 500 cc 15 days @ T= 40 °C | | |

* Probes with cable length 2 m.



For long lasting monitoring, the VTRAP tripod and a 4-probe holder are available.

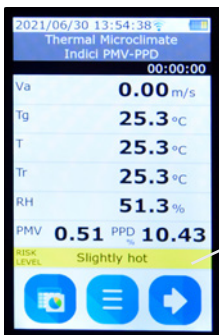
| PROBES | HP3217B4 | HP3217BV4 | PMsense-P |
|---------------------|---|-----------|---|
| Sensor | T/R.H.= CMOS / P _{atm} = piezoresistive CO ₂ = NDIR / VOC= Metal-Oxide film (<i>only BV4</i>) | | Laser scattering principle |
| Measuring range | T= -20...80 °C / R.H. = 0...100% P _{atm} = 300...1250 hPa / CO ₂ = 0...5000 ppm VOC index = 1...500 (dimensionless) | | 0...1000 µg/m ³ (for each pollutant) |
| Accuracy | T= 0.1 °C / RH = ±2% (0...80% RH) / P _{atm} = ± 0.5 hPa CO ₂ = ± (50 ppm + 3% of the measure) VOC index= relative qualitative measurement | | <5% linearity error <3% repeatability |
| Resolution | T= 0.1 °C / RH= 0.1 %RH / P _{atm} = 0.1 hPa CO ₂ = 1 ppm / VOC index = 1 | | 0.1 µg/m ³ |
| Temperature drift | P _{atm} = ± 0.75 Pa/°C (0...55 °C / 700...1100 hPa) CO ₂ = 1 ppm/°C (-20...45 °C) T = < 0.03 °C/year R.H. = < 0.25 %RH/year | | < 0.01 µg/m ³ /°C |
| Long term stability | P _{atm} = ± 0.33 hPa/year CO ₂ = 5% of the measure/5 years | | |
| Response time | T / R.H.= 10 s CO ₂ = < 120 s | | Measurements update rate 1 s |



SP32TC probes holder

| | Probes and measured parameters | | | | | | | | |
|---|--------------------------------|---|--|---------|--|-----------------------------|--|-------------------------|-----------------------|
| | TP3207.2 / TP3207 | TP3276.2 / TP3275 | HP3201.2 / HP3201 | TP3204S | HP3217.2R / HP3217R | AP3203.2 / AP3203 | HP3217B4 | HP3217BV4 | PMsense-P |
| Which probes do I need to measure following indexes? | Air Temperature (T) | Globe thermometer temperature (T _g) | Natural wet bulb temperature (T _{nw}) <i>(the 2 probes are interchangeable)</i> | | Relative Humidity and Air Temperature (RH - T) | Air Speed (V _a) | Air Temperature - Relative Humidity - Atmospheric Pressure - CO ₂ | As HP3217B4 + VOC Index | PM1.0, PM2.5 and PM10 |
| WBGT | √ | √ | √ | √ | | | | | |
| WBGT | | √ | √ | √ | √ | | | | |
| Mean Radiant Temperature T _r | | √ | | | √ | √ | | | |
| PMV | | √ | | | √ | √ | | | |
| PPD | | √ | | | √ | √ | | | |
| TU | | | | | | √ | | | |
| DR | | | | | | √ | | | |
| HI | | | | | √ | | | | |
| UTCI | | √ | | | √ | √ | | | |
| TEP | | √ | | | √ | √ | | | |
| SARS-CoV-2 | | | | | √ | | √ | √ | |
| CO ₂ | | | | | | | √ | √ | |
| VOC | | | | | | | | √ | |
| PM1.0 / PM2.5 / PM10 | | | | | | | | | √ |

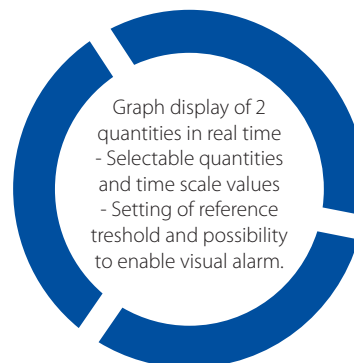
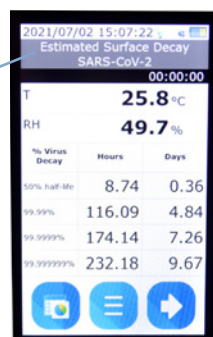
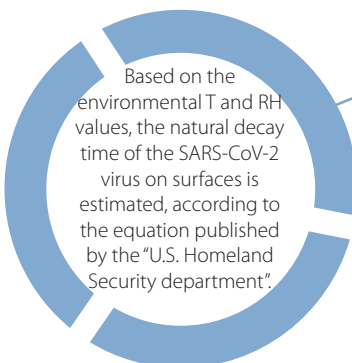
√ = Only one of the indicated probes is sufficient to obtain the measurement √ = To obtain the measurement, the combination of the probes is necessary



The colored bar in the PMV/PPD index, heat index, UTCI temperature and TEP temperature screens indicates the evaluation of thermal stress.



Detection of volatile organic compounds (VOC) - after the time of adaptation to the environment, the state of VOC pollution is expressed as an index variable from 1 to 500 (dimensionless)



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In order to ensure the quality of our instruments, we are constantly re-evaluating our products. Improvements can imply changes in specification; we advise you to always check our website for the newest version of our documentation.