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## 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, **CO<sub>2</sub>**, **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 <sub>95</sub>	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.

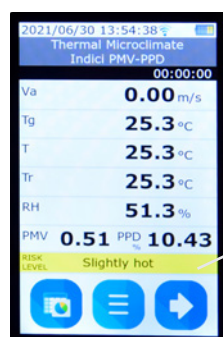
PROBES	HP3217B4	HP3217BV4	PMsense-P
Sensor	T/R.H.= CMOS / P <sub>atm</sub> = piezoresistive CO <sub>2</sub> = NDIR / VOC= Metal-Oxide film ( <b>only BV4</b> )		Laser scattering principle
Measuring range	T= -20...80 °C / R.H. = 0...100% P <sub>atm</sub> = 300...1250 hPa / CO <sub>2</sub> = 0...5000 ppm VOC index = 1...500 (dimensionless)		0...1000 µg/m <sup>3</sup> (for each pollutant)
Accuracy	T= 0.1 °C / RH = ±2% (0...80% RH) / P <sub>atm</sub> = ± 0.5 hPa CO <sub>2</sub> = ± (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 <sub>atm</sub> = 0.1 hPa CO <sub>2</sub> = 1 ppm / VOC index = 1		0.1 µg/m <sup>3</sup>
Temperature drift	P <sub>atm</sub> = ± 0.75 Pa/°C (0...55 °C / 700...1100 hPa) CO <sub>2</sub> = 1 ppm/°C (-20...45 °C) T = < 0.03 °C/year R.H. = < 0.25 %RH/year P <sub>atm</sub> = ± 0.33 hPa/year CO <sub>2</sub> = 5% of the measure/5 years		< 0.01 µg/m <sup>3</sup> /°C
Long term stability			
Response time	T / R.H.= 10 s CO <sub>2</sub> = < 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 <sub>g</sub> )	Natural wet bulb temperature (T <sub>nw</sub> )  (the 2 probes are interchangeable)		Relative Humidity and Air Temperature (RH – T)	Air Speed (V <sub>a</sub> )	Air Temperature - Relative Humidity - Atmospheric Pressure - CO <sub>2</sub>	As HP3217B4 + VOC Index	PM1.0, PM2.5 and PM10
WBGT	√	√	√	√					
WBGT		√	√	√	√				
Mean Radiant Temperature T <sub>r</sub>		√			√	√			
PMV		√			√	√			
PPD		√			√	√			
TU						√			
DR						√			
HI					√				
UTCI		√			√	√			
TEP		√			√	√			
SARS-CoV-2					√		√	√	
CO <sub>2</sub>							√	√	
VOC								√	
PM1.0 / PM2.5 / PM10									√

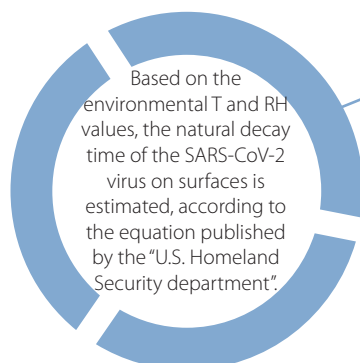
√ = Only one of the indicated probes is sufficient to obtain the measurement    √ = To obtain the measurement, the combination of the probes is necessary



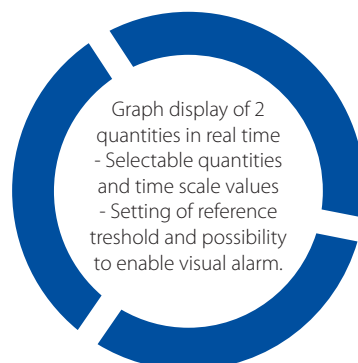
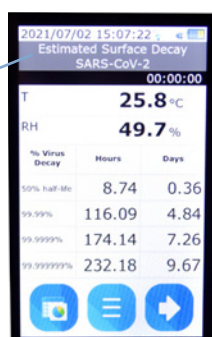
The colored bar in the PMV/PPD index, heat index, UTCI temperature and TEP temperature screens indicates the evaluation of thermal stress.



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)



Based on the environmental T and RH values, the natural decay time of the SARS-CoV-2 virus on surfaces is estimated, according to the equation published by the "U.S. Homeland Security department".



Graph display of 2 quantities in real time  
- Selectable quantities and time scale values  
- Setting of reference threshold and possibility to enable visual alarm.

