

## 3-CHANNEL MULTIFUNCTIONAL DATA LOGGER



## HIGHLIGHTS:

- Three independent sensor inputs with automatic probe recognition
- Graphic color display
- Data logger with SD card
- Automatic creation of PDF reports
- Mobility thanks to rechargeable batteries



Connections

## HD 31

Item No. 482870

Universal 3-channel multifunctional data logger with graphic display

## GENERAL:

The HD 31 is a universal data logger with the option of connecting up to 3 "SICRAM" probes. All relevant data (serial number, type, calibration data) are stored in the SICRAM connectors, so that the probes can be connected as required. The connected probe is automatically recognized by the HD 31. Further variables can be derived from the measured values. For example, the dew point temperature, wet bulb temperature, absolute humidity, etc. can be calculated from temperature and humidity. A total of 36 different measured variables are available.

Large color display to show three measured values in numerical form or a real-time graphic. The data is saved in CSV format on an SD card (storage capacity several months, even if several measured variables are logged every second). The HD 31 can be connected directly to a PC using the optional USB cable and is recognized as a mass storage device. In addition, the HD 31 automatically generates PDF logs, which are also stored on the SD card.

## APPLICATIONS:

A large number of sensors and the measured variables derived from them provide a wide range of applications, for example in air conditioning and ventilation technology or in clean rooms. The following measured variables can be recorded:

- Temperature
- Relative humidity
- Pressure (absolute, gauge or differential pressure)
- Air speed
- Illuminance (lux)
- Irradiance ( $W/m^2$ )
- $CO_2$

Numerous derived variables can be calculated, displayed and saved from the above-mentioned measured values. For example, the absolute moisture in  $g/m^3$  (from temperature and rel. humidity) or when measuring in ventilation ducts the volume flow (from the speed and dimensions of the ventilation duct), among other things more.

SICRAM modules are also available, via which external sensors with analog output signals can be connected:

## VP 473:

SICRAM plug module for signal recording of external measuring transducers with voltage output, measuring range  $\pm 20$  VDC, input impedance 1 M $\Omega$

## IP 472:

SICRAM plug module for signal recording of external measuring transducers with current output, measuring range 0..24 mA, input impedance 25  $\Omega$

## VP 472:

SICRAM plug module for connecting pyranometers and albedometers with non-amplified signal output (adjustable sensitivity of 5..30  $\mu V$  per  $W/m^2$ )

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#### TECHNICAL DATA (BASIC DEVICE HD31):

<b>Power supply:</b>	Rechargeable internal 3.7 V lithium battery, 2250 mA/h, 3-pole JST connector (SWD05 power supply optional)
<b>Battery life:</b>	18 hours of continuous operation with 3 Pt100 sensors (the effective runtime depends on the type and number of sensors connected)
<b>Storage interval:</b>	1, 5, 10, 15, 30 s; 1, 2, 5, 10, 15, 20, 30 min; 1 h
<b>Storage capacity:</b>	SD memory card 4 GB, capacity depends on the number of recorded values, typically several months with several measured variables and recording every second
<b>Inputs:</b>	3 SICRAM connections (8-pole, DIN 45326) for connecting measuring sensors with intelligent SICRAM plugs (up to 36 measured variables)
<b>Accuracy:</b>	± 0.02 % of the measured value (based on the HD31 basic device)
<b>Accuracy clock:</b>	max.dift 1 min / month
<b>Display:</b>	Graphic color display, 43 x 58 mm (visible)
<b>USB port:</b>	Mini USB connection, USP port (HID)
<b>RS232C connection:</b>	1 serial RS232C output with RJ12 connection for serial printer (optional)
<b>Auto-off:</b>	Can be set after 2, 5, 10, 15, 20 or 30 minutes
<b>Operating temperatur:</b>	-10 .. + 60 °C, 0.85 % RH non-condensing (instrument)
<b>Storage temperature:</b>	-25 .. + 65 °C (instrument)
<b>Protection class:</b>	IP64
<b>Housing:</b>	ABS plastic, hard rubber 55 SHORE (sides and protective cover)
<b>Dimensions:</b>	165 x 88 x 35 mm (without protective cover)
<b>Weight:</b>	approx. 400 g (incl. Battery and protective cover)
<b>Scope of delivery:</b>	Batteries, SD card, software Delta-Log 9, CP31, HD31.28 and case. Connection modules, sensors and power pack are optional and not included in the scope of delivery.

#### ACCESSORIES OR SPARE PARTS:

- CP31**  
USB connection cable, USB 2.0, mini USB socket type B.
- SWD05**  
Stabilized power supply, 100..240 VAC, 5 VDC, output type A USB plug



Hard rubber protective cover (55 SHORE) with stand and magnet for use in harsh environments

#### TEMPERATURE SENSORS:

Temperature sensors with thermocouples and Pt100/1000 are available. Either as a complete sensor with SICRAM plug or alternatively as a SICRAM module for connecting external sensors (including for thermocouples of type K, J, T, E, N, R, S, B).



#### Example: TP 472 I (Pt100, immersion sensor)

Item No. 475642  
Immersion probe, -196 .. + 500 °C, ± 0.25 °C (-196 .. + 300 °C), Ø 3 mm, probe length 300 mm, cable length 2 m



#### SICRAM adapter for DO9847 and HD31

**TP471**  
Item No. 482871  
for 4-wire Pt100 platinum temperature sensor



**TP471D**  
Item No. 482872  
for 1 thermocouple, input DIN miniature socket



**TP471D1**  
Item No. 482872  
for 2 thermocouples, input 2 x DIN miniature socket



**TP471D0**  
for 1 thermocouple, without ice point compensation, 2-core copper output cable 1.5 m for connection to the thermocouple at 0 °C in the ice



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#### COMBINED MOISTURE AND TEMPERATURE SENSORS

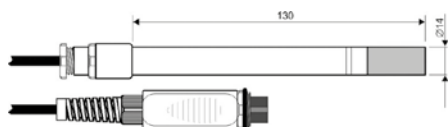
Nine different sensors with SICRAM plugs are currently available. Temperature measuring range, depending on the version up to 180 °C, moisture measuring range 0..100 % RH.

Example:

**HP 478 ACR (Pt100, capacitive)**

Item No. 482875

Measuring range: -40 .. + 150 °C, 0..100 % RH, probe length 130 mm, cable length 5 m



#### PRESSURE SENSORS (ABSOLUTE, RELATIVE AND DIFFERENTIAL PRESSURE)

**PP 472:**

SICRAM probe for measuring the barometric pressure (600..1.100 mbar, ± 0.3 mbar, working range -10 .. + 60 °C).

**PP 473 S1 ..S8:**

SICRAM probes (differential pressure, measuring range depending on the probe from 10 mbar to 2,000 mbar)

#### AIR VELOCITY SENSORS:

According to various measuring methods (heat wire or impeller anemometer and pilot probes).

**Heat wire probes:**

Direction-dependent (measuring range 0.1..40 m/s) or omnidirectional for measuring thermal comfort (0.1..5 m/s) (see next page)



**Impeller probes:**

Measuring range 0.6..25 m/s (Ø 100 mm) or 0.4..20 m/s (Ø 60 mm) (see next page)



**Pitot pressure probes:**

Measuring ranges, 2..40 m/s to 2..130 m/s, depending on the probe design (T1 to T4) and the SICRAM differential pressure module used (PP 473 S1 ..S4)



... Details in data sheet HD 31.

#### PHOTOMETRIC AND RADIOMETRIC PROBES:

Wide range of photo- and radiometric probes (completely ready for connection with SICRAM connectors) for the measurement of:

- Illuminance (lux)
- Luminance (cd/m<sup>2</sup>)
- UVA, UVB, UVC irradiance (W/m<sup>2</sup>)
- UVEff irradiance, weighted (W/m<sup>2</sup>)
- Irradiance in the visible and NIR range, 400..1050 nm (W/m<sup>2</sup>)
- "PAR" photosynthetically active radiation (W/m<sup>2</sup>)
- Irradiance of blue light, 380..550 nm (W/m<sup>2</sup>)
- Global solar radiation (W/m<sup>2</sup>) (see next page)



**LP 471 PYRA02.5**

for measuring solar radiation (class 2 pyranometer according to WMO. Further pyranometers according to class 1, secondary standard or low cost version with silicon sensor on request)



**HD31.B3**

Item No. 482877

CO<sub>2</sub> probe (NDIR) with SICRAM connector, measuring range 0..5,000 ppm CO<sub>2</sub>, working temperature -5 .. + 50 °C

