

GHM-GREISINGER

**Delta[®]
OHM**



PROFESSIONAL MEASUREMENT Measuring | Controlling | Regulating

*From our new partner,
a new range of products for environmental
measures*



Founded in 2007, GHM Messtechnik continues to grow. With the merge of the Italian company Delta OHM in November 2015, the group including Greisinger, Honsberg, Martens and Imtron now has significant European and International presences and can now offer new applications with devices for environmental measuring technology.

Delta Ohm in Padua, Italy

The acquisition with DeltaOHM from the region of Padua / Venice, the wide offering of GHM has been expanded with devices for environmental measurement technology. This includes complete weather stations and individual measuring devices for the detection and evaluation of light, air speed, CO₂, acoustics and vibration. Devices for the measurement of air quality, air speed and multifunctional measuring devices – data loggers for WBGT, microclimate analysis and environmental and water analysis are now also offered. GHM can now serve and cover the requirements a completely new group of customers. Delta Ohm was founded in 1978. With its staff of 60 employees, it has developed an outstanding international reputation in the area of development and production of electronic measuring devices.

Delta Ohm currently exports to over 100 countries and thereby offers an international platform for the other five companies of the GHM Group, which already enjoyed a nearly worldwide presence with its own subsidiaries in the Czech Republic, Denmark, South Africa, Austria, and the Netherlands, as well as distribution partners through Europe, in North and South America, Asia and Africa.

The ilac-MRA Accredia Lat N°. 124 calibration laboratories of Delta Ohm are accredited for measurements of the following physical quantities:

- Temperature
- Humidity
- Pressure
- Air speed
- Photometry / Radiometry
- Acoustics

Summary

The GHM Messtechnik Group develops and produces its high-quality products in the various locations (centres of competence). With approximately 270 employees and more than 35 developers in seven locations – Erolzheim, Regenstein, Remscheid, Barsbüttel, Owingen, Kassel and now Padua – GHM is capable of offering a complete product portfolio for the widest range of requirements. The products of Delta Ohm will continue to be sold through the international Delta Ohm Sales in Padua, Italy with future supporting distribution from the GHM Distribution and Training Centre established in Erolzheim in 2014.



BENCH-TOP DISSOLVED OXYGEN METER

**HIGHLIGHTS:**

- Primary water treatment
- Chemicals laboratories general use
- Laboratory instrument

HD-3409-2

Bench-top dissolved oxygen meter

General:	
The HD-3409-2 is a bench top instrument for electrochemical measures: dissolved oxygen and temperature. The displayed data can be stored (datalogger) and can be transferred to PC or serial printer. The storing and printing parameters can be set from menu. The HD-3409-2 measures the concentration (in mg/l) of dissolved Oxygen in liquids, the saturation index (in %) and the temperature. Thanks to an internal pressure sensor, the instruments automatically compensate for barometric pressure.	
Specifications:	
Display ranges:	mg/l O ₂ , %O ₂ , mbar, °C/°F measurement
Instrument	
Dimensions:	55 x 120 x 220 mm (H x W x D)
Materials:	ABS, rubber
Display:	2 x 4½ characters plus symbols, visible area: 52 x 42 mm
Operating conditions	
Working temperature:	-5 ... +50 °C
Storage temperature:	-25 ... +65 °C
Working relative humidity:	0 ... 90 % RH without condensation
Protection degree:	IP66
Power	
Batteries:	3 batteries 1.5 V type AA
Autonomy (only batteries):	100 h with 1800 mAh alkaline batteries
Mains (cod. SWD-10):	Output mains adapter 100-240 V AC/ 12 V DC-1 A
Storage of the measured values	
Quantity:	18,000 measures made up of the four parameters mg/l O ₂ , % O ₂ , mbar, [°C or °F]
USB Interface	
Type:	1.1 - 2.0 electrically isolated
Connections	
Serial interface and USB:	8-pole MiniDin connector
Mains adapter (cod. SWD-10)	2-pole connector (positive at centre) 12 V DC/1 A
Measurement connections	
Input for Oxygen probes:	8-pole male DIN45326 connector
Input for temperature probes with SICRAM module or TP47 module:	8-pole male DIN45326 connector
Measurement of the concentration of Dissolved Oxygen	
Measurement range:	0.00 ... 90.00 mg/l
Resolution:	0.01 mg/l
Accuracy:	±0.03 mg/l ±1 digit (0 ... 90 % RH, 1013 mbar, 20 ... 25 °C)

Measurement of the saturation index of dissolved Oxygen	
Measurement range:	0.0 ... 600.0 %
Resolution:	0.1 %
Accuracy:	±0.3 % ±1 digit (in the range 0.0 ... 199.9 %) ±1 % ±1 digit (in the range 200.0 ... 600.0 %)
Automatic/manual temperature compensation:	0 ... 50 °C
Measurement of barometric pressure	
Measurement range:	0.0 ... 1100.0 mbar
Resolution:	0.1 mbar
Accuracy:	±2 mbar ±1 digit between 18 ... 25 °C
Salinity setting	
Setting range:	0.0 ... 70.0 g/l
Resolution:	0.1 g/l
Temperature measurement with the sensor inside the dissolved Oxygen probe	
Measurement range:	0.0 ... 45.0 °C
Resolution:	0.1 °C
Accuracy:	±0.1 °C ±1 digit
Scope of supply:	Instrument HD-3409-2, calibrator HD9709/20 (for polarographic probe) or DO9709/21 (for galvanic probe), 3 1.5 V alkaline batteries, operating manual and DeltaLog9. Dissolved oxygen probes, temperature probes, standard reference solutions, connection cables, cables for data download to PC or printer have to be ordered separately.

Accessories:**DO9709-SS-0-0**

Polarographic combined oxygen and temperature probe, incl. 2 membranes, electrolyte and zero point solution, cable length 2 m

DO9709-SS-1

Galvanic oxygen and temperature probe, incl. 2 membranes, electrolyte and zero point solution, cable length 2 m

DO9709-SS-1-5

Galvanic oxygen and temperature probe, incl. 2 membranes, electrolyte and zero point solution, cable length 5 m

HD2101-USB

Connection cable USB 2.0 connector type A - 8-pole Mini Din for connection to PC with USB input.

SWD-10

Stabilized power supply at 100-240 V AC/12 V DC/1 A mains voltage.

HD-22-3

Laboratory electrode holder with metal basis plate. Flexible electrode holder for free positioning. For Ø 12 mm probes.

HD-40-1

Portable, serial input, 24 column thermal printer, 57 mm paper width, 4 NiMH 1.2 V rechargeable batteries, SWD-10 power supply, instruction manual, 5 thermal paper rolls. Requires the cable HD-2110-CSNM (optional).

HD-2110-CSNM

RS232C 8-pole MiniDin - 9-pole D Sub female null-modem cable for connecting the printer to instruments with MiniDIN connector.


HIGHLIGHTS:

- Primary water treatment
- Chemicals laboratories general use
- Water purification, water softening
- Multi-channel laboratory instrument

HD-3456-2

Bench-top pH and conductivity meter

General:

The HD-3456-2 is a bench top instrument for electrochemical measures: pH, conductivity and temperature. The displayed data can be stored (datalogger) and can be transferred to PC or serial printer. The storing and printing parameters can be set from menu. The HD-3456-2 measures pH, mV, redox potential (ORP), conductivity, resistivity in liquids, total dissolved solids (TDS), and salinity using combined 4-ring and 2-ring conductivity/temperature probes. Temperature is measured by Pt100 or Pt1000 immersion, penetration or contact probes.

Specifications:

Display ranges:	pH, mV, χ , Ω , TDS, Sal, °C/°F measurement
Instrument	
Dimensions:	55 x 120 x 220 mm (H x W x D)
Materials:	ABS, rubber
Display:	2 x 4½ characters plus symbols, visible area: 52 x 42 mm
Operating conditions	
Working temperature:	-5 ... +50 °C
Storage temperature:	-25 ... +65 °C
Working relative humidity:	0 ... 90 % RH without condensation
Protection degree:	IP66
Power	
Batteries:	3 batteries 1.5 V type AA
Autonomy (only batteries):	100 h with 1800 mAh alkaline batteries
Mains (cod. SWD-10):	Output mains adapter 100-240 V AC/12 V DC-1A
Storage of measured values	
Quantity:	20,000 terms of measures made up of [pH or mV], [χ or Ω or TDS or salinity] and temperature.
USB Interface	
Type:	1.1 - 2.0 electrically isolated
Connections	
Serial interface and USB:	8-pole MiniDin connector
Mains adapter (cod. SWD-10):	2-pole connector (positive at centre) 12 V DC/1 A
Connections	
pH / mV input:	Female BNC connector
Conductivity input:	8-pole male DIN45326 connector
Input for temperature probes:	8-pole male DIN45326 connector
Measurement of pH by Instrument	
Measurement range:	-2.000 ... +19.999 pH
Resolution:	0.01 or 0.001 pH selectable from menu
Accuracy:	±0.001 pH ±1 digit
Automatic / manual temperature compensation	-50 ... +150 °C
Measurement of mV by Instrument	
Measurement range:	-1999.9 ... +1999.9 mV
Resolution:	0.1 mV
Accuracy:	±0.1 mV ±1 digit
Standard solutions automatically detected (@25 °C):	1.679 pH - 2.000 pH - 4.000 pH - 4.008 pH - 4.010 pH - 6.860 pH - 6.865 pH - 7.000 pH - 7.413 pH - 7.648 pH - 9.180 pH - 9.210 pH - 10.010 pH

Measurement of conductivity by Instrument

Measurement range (SPT-01G) (Kcell=0.1): 0.00 ... 19.99 μ S/cm, resolution 0.01 μ S/cm

Measurement range (SP-T06-01G) (Kcell=1):
 0.0 ... 199.9 μ S/cm, resolution 0.1 μ S/cm
 200 ... 1999 μ S/cm, resolution 1 μ S/cm
 2.00 ... 19.99 mS/cm, resolution 0.01 mS/cm
 20.0 ... 199.9 mS/cm, resolution 0.1 mS/cm

Accuracy (conductivity): ±0.5 % ±1 digit

Measurement of resistivity by Instrument, resolution

Measurement range (Kcell=0.1): Up to 100 M Ω cm, resolution (*)

Measurement range (Kcell=1):
 5.0 ... 199.9 Ω -cm, resolution 0.1 Ω -cm
 200 ... 999 Ω -cm, resolution 1 Ω -cm
 1.00 k ... 19.99 k Ω -cm, resolution 0.01 k Ω -cm
 20.0 k ... 99.9 k Ω -cm, resolution 0.1 k Ω -cm
 100 k ... 999 k Ω -cm, resolution 1 k Ω -cm
 1 ... 10 M Ω -cm, resolution 1 M Ω -cm

Accuracy (resistivity): ±0.5 % ±1 digit

Measurement of total dissolved solids (with coefficient χ /TDS=0.5)

Measurement range (Kcell=0.1): 0.00 ... 19.99 mg/l / 0.05 mg/l

Measurement range (Kcell=1):
 0.0 ... 199.9 mg/l / 0.5 mg/l
 200 ... 1999 mg/l / 1 mg/l
 2.00 ... 19.99 g/l / 0.01 g/l
 20.0 ... 99.9 g/l / 0.1 g/l

Accuracy (total dissolved solids): ±0.5 % ±1 digit

Measurement of salinity

Measurement range: 0.000 ... 1.999 g/l / 1 mg/l
 2.00 ... 19.99 g/l / 10 mg/l
 20.0 ... 199.9 g/l / 0.1 g/l

Accuracy (salinity): ±0.5 % ±1 digit

Automatic/manual temperature compensation 0 ... 100 °C with α T that can be selected from 0.00 ... 4.00 %/°C

Reference temperature: 20 or 25 °C selectable from menu

χ /TDS conversion factor: 0.4 ... 0.8

Cell constant K (cm⁻¹): 0.01 - 0.1 - 0.7 - 1.0 - 10.0

Standard solutions automatically detected (@25 °C): 1413 μ S/cm

Measurement of temperature by Instrument

Resolution: 0.1 °C

Accuracy: ±0.25 °C

Scope of supply: Instrument HD-3456-2, 3 1.5 V alkaline batteries, operating manual and DeltaLog9 version 2.0.

pH/mV electrodes, conductivity probes, temperature probes, standard reference solutions for different measurement types, connection cables for pH electrodes with S7 connector, cables for data download to PC or printer have to be ordered separately.

(*) The resistivity measurement is obtained from the reciprocal of conductivity measurement.

ACCESSORIES

Accessories:

GE100-BNC *
pH electrode, measuring range: 0 ... 14 pH, 0 ... 80 °C
GE104-BNC *
pH electrode, measuring range: 2 ... 14 pH, 0 ... 80 °C
GE151-BNC *
pH electrode, measuring range: 0 ... 14 pH, -5 ... +80 °C
GE173-BNC *
pH electrode, measuring range: 0 ... 14 pH, 0 ... 80 °C
GR105-BNC *
ORP electrode, measuring range: ± 2000 mV, 0 ... 80 °C
SP-06-T
Conductivity and temperature probe, measuring range: 5 µS/cm ... 200 mS/cm
SP-T01-G
Conductivity and temperature probe, measuring range: 0.1 µS/cm ... 500 µS/cm
TP47-100
PT100 without SICRAM module (1/3 DIN), Ø 3 mm, length 230 mm, measuring range: -50 ... +250 °C
GPH 4,0 / 10
Buffer capsules (10 pieces), pH 4.0
GPH 7,0 / 10
Buffer capsules (10 pieces), pH 7.0
GPH 10,0 / 10
Buffer capsules (10 pieces), pH 10.0
GRP 100
ORP test solution (220 mV at 25 °C), 100 ml
GKL 100
Conductivity control solution (100 ml bottles with 1413 µS/cm acc. to DIN EN 27888)
GKL 102
Conductivity control solution (100 ml bottle with 50 µS/cm)
KCL 3 M
3 mol KCl electrolyte for refilling and storage (fill into protective cap) of electrodes with 3 mol KCl electrolyte, injection bottle, 100 ml
GRL 100
Pepsin cleaning solution, 100 ml
SWD-10
Stabilized power supply at 230 V AC/9 V DC-300 mA mains voltage.
HD-22-3
Laboratory electrode holder with metal basis plate. Flexible electrode holder for free positioning. For Ø 12 mm probes.
HD-2101-USB
Connection cable USB 2.0 connector type A - 8-pole Mini Din for connection to PC with USB input.
HD-40-1
Portable, serial input, 24 column thermal printer, 57 mm paper width, 4 NiMH 1.2 V rechargeable batteries, SWD-10 power supply, instruction manual, 5 thermal paper rolls. Requires the cable HD-2110-CSNM (optional).
HD-2110-CSNM
RS232C 8-pole MiniDin - 9-pole D Sub female null-modem cable for connecting the printer to instruments with MiniDIN connector (HD21xx.1 and HD21xx.2 series, HD34xx.2, HD98569, etc.).

* for more information please see page 48/49 in our main catalogue

PH AND MV SIMULATOR



HIGHLIGHTS:

- Checking and calibrating pH and redox ORP instrument
- Simple to use

HD-9609

pH and mV simulator

General:

The simulator HD-9609 is a portable instrument for checking and calibrating pH and mV measuring instruments. The characteristics of this instrument satisfy any checking and calibrating requirements for both portable and panel-mounted instruments; it can be used in laboratories, in industry or for check out on field. Despite its many functions, the instrument is simple to be used: a large display, with dual indication, and a series of symbols allow it to be used even by unskilled personnel.

Specifications:

pH simulation:	0 ... 14 pH
pH resolution:	0.1 pH
pH accuracy (20 ... 25 °C):	0.002 pH
mV simulation:	±1999 mV
mV resolution:	1 mV
mV accuracy:	±100 µV
Noise (0 ... 10 Hz):	1 µV peak/peak
Simulation of temperature compensation:	-20 ... +150 °C (-4 ... +302 °F)
Output impedance:	100 kΩ 1 %, 1 GΩ 5 % (no leading load capacity)
Display:	LCD 2 lines, 3 ½ digits. Figure height approx. 12.5 mm.
Symbols:	pH, mV, °C, °F, HI imp., LO imp., 0.1 pH, 1 pH, 1 mV, 10 mV
Working temperature:	-5 ... +50 °C (23 ... 122 °F)
Power supply:	9 V DC alkaline battery. Low battery indication.
Consumption (instrument only):	5 mA lit up, 20 µA turned off
Autonomy:	about 200 h
Dimensions:	187 x 72 x 38 mm (H x W x D)
Scope of supply:	instrument HD-9609, adapter cables CP-9509BNC, CP-9509-T, carrying case

Accessories:

- **CP-9509-BNC**
Adapter cable, L = 1 m, male BNC connector on both ends
- **CP-9509-T**
Adapter cable, L = 1 m, male BNC connector on one side



HIGHLIGHTS:

- Indoor air quality permitting calculation of automatic ventilation rate by CO₂ analysis correlate to the real presence of people in the rooms

AIR QUALITY

HD21-AB-17

Indoor air quality monitors

General:

HD21-AB-17 IAQ Monitor is a bench-top/portable instrument manufactured by Delta Ohm for the analysis of indoor air quality (IAQ, Indoor Air Quality).

The instrument simultaneously measures the parameters:

- Carbon Dioxide CO₂
- Carbon Monoxide CO
- Atmospheric Pressure
- Temperature
- Relative Humidity

and it calculates:

- Dew Point
- Wet Bulb Temperature
- Absolute Humidity
- Mixing Ratio
- Enthalpy

These regulations apply to all confined spaces that could be used by people. Kitchens, baths, changing rooms and swimming pools are included, due to their high humidity. You should take into account, in regard to air quality, possible chemical, physical and biological contaminants. The instruments have a wide Dot Matrix graphic display with a resolution of 160 x 160 dots.

The instruments typical applications are:

- Measurement of IAQ (Indoor Air Quality) and comfort conditions in schools, offices and indoor spaces.
- Analysis and study of the Sick Building Syndrome, and of the resulting consequences.
- Checking the HVAC (Heating, Ventilation and Air Conditioning) system efficiency.
- Examination of IAQ conditions in factories to optimize microclimate and improve productivity.
- Building Automation checks.

Specifications:

Instrument	
Dimensions:	300 x 90 x 40 mm (H x W x D) (with probe)
Materials:	ABS, rubber
Display:	Backlit, Dot Matrix, 160 x 160 dots, visible area 52 x 42 mm
Operating conditions	
Operating temperature:	-5 ... +50 °C
Warehouse temperature:	-25 ... +65 °C
Working relative humidity:	0 ... 85 % RH without condensation
Protection degree:	IP30
Instrument uncertainty:	± 1 digit @ 20 °C
Power supply	
Mains adapter (code SWD-10):	12 V DC/1 A
Batteries:	4 x 1.2 V Ni-MH rechargeable batteries AA type
Autonomy:	8 h of continuous use in measure mode
Serial interface	
Socket:	mini-USB
Type:	USB 1.1 or 2.0 not insulated
Storage capacity:	67.600 recordings
Scope of supply:	IAQ Monitor datalogger kit. Complete with: DeltaLog10 software (version 0.1.5.3 and later), monitor, and data processing on Personal Computer, 4 x 1.2 V NiMH rechargeable batteries, operating manual, case.

CO₂ Carbon Dioxide	
Sensor:	NDIR Dual Wavelength
Measurement range:	0 ... 5000 ppm
Sensor working range:	-5 ... +50 °C
Accuracy:	±50 ppm ±3 % of measurement
Resolution:	1 ppm
Temperature dependence:	0.1 % f.s./°C
Response time (T₉₀):	< 120 s (air speed = 2 m / s)

CO Carbon Monoxide	
Sensor:	Electrochemical cell
Measurement range:	0 ... 500 ppm
Sensor working range:	-5 ... +50 °C
Accuracy:	±3 ppm ±3 % of measurement
Resolution:	1 ppm
Response time (T₉₀):	< 50 s
Service life:	> 5 years in normal environment conditions

Atmospheric Pressure Patm	
Type of sensor:	Piezo-resistive
Measurement range:	750 ... 1100 hPa
Accuracy:	±1.5 hPa @ 25 °C
Resolution:	1 hPa
Temperature drift:	±3 hPa with temperature -20 ... +60 °C

Relative Humidity RH	
Type of sensor:	Capacitive
Sensor protection:	Stainless steel grid filter (on request 10 µm sintered filter P6 in AISI 316 or 20 µm sintered filter P7 in PTFE)
Measurement range:	0 ... 100 % RH
Sensor working range:	-20 ... +60 °C
Accuracy:	±1.5 % RH (0 ... 90 % RH) ±2 % RH (elsewhere) for T=15 ... 35 °C ±(1.5 +1.5 % of the measure) % RH for T= -20 ... +60 °C
Resolution:	0.1 °C
Temperature dependence:	±2 % on all temperature range
Hysteresis and repeatability:	1 % RH
Response time (T₉₀):	< 20 s (air speed = 2 m / s) without filter

Temperature T	
Type of sensor:	NTC 10 kΩ
Measurement range:	-20 ... +60 °C
Accuracy:	±0.2 °C ±0.15 % of measurement
Resolution:	0.1 °C
Response time (T₉₀):	< 30 s (air speed = 2 m / s)

Accessories:	
SWD-10	Stabilized power supply at 100-240 V AC/ 12 V DC-1 A mains voltage.
CP-23	Connection cable with type B MiniUSB connector on instrument's side and USB 2.0 connector on PC's side.
BAT-40	Spare batteries with built-in temperature sensor.
ECO-SURE-2E-CO	CO spare sensor
MINICAN-12-A-0	Nitrogen can for CO and CO ₂ calibration at 0 ppm. 20 litres
HD-37-36	Connection tube kit for CO calibration
HD-37-37	Connection tube kit for CO ₂ calibration
HD-33-0	33 % RH saturated solution for checking the relative humidity sensor

PORTABLE THERMAL PRINTER



FOR HD-3409-2, HD-3456-2
HD-21AB-17,
HD-2010-UC

HIGHLIGHTS:

- *Lightweight*
- *Portable*
- *Compact*

HD-40-1

Portable thermal printer

General:

The HD-40-1 is a lightweight, compact, portable thermal printer. It is connected to instruments or PC through the RS232 serial input.

Application:

A careful design allows you to replace the thermal paper roll in a few seconds. A four NiMH rechargeable battery pack provides power supply and ensures long autonomy: you can print up to 3000 lines at full charge.

Specifications:

Printing method:	Thermal
Resolution:	203 DPI (8 dot / mm)
Printing width:	48 mm centered in the paper roll
Paper roll width:	57 ... 58 mm
Max. paper roll diameter:	32 mm
Number of columns:	24
Printing speed:	Up to 90 mm/s (depending on battery charge and ambient conditions)
Sensors:	Paper detection
Character set:	IBM II 858 table
Printing formats:	Normal or extended
Character font:	1 (16 x 24 dot – 2 x 3 mm)
Thermal head durability	
Mechanism life:	100 million pulses (temperature: 20 ... 25 °C)
Abrasion resistance	50 km of paper (temperature: 20 ... 25 °C)
Cover group durability:	2000 opening/closing cycles or more
Communication interfaces:	RS232
Mains power supply (cod. SWD-10):	100-240 V AC/12 V DC-1 A mains battery charger
Batteries:	Four 1.2 V AA rechargeable batteries (NiMH)
Printing autonomy:	3000 lines 24 characters each printing, one line every 10 s
Dimensions:	53 mm x 165 mm x 105 mm (H x W x D)
Material:	ABS
Operating conditions	
Operating temperature:	0 ... 50 °C
Operating relative humidity:	20 ... 85 % RH not condensing
Storage Temperature / Relative humidity:	-25 ... +70 °C / 10 ... 90 % RH not condensing
Protection degree:	IP40
Connections	
Serial interface:	9-pole D sub male connector
Battery charger power supply (cod. SWD-10):	2-pole connector (positive in the centre)
Scope of supply:	24-column portable thermal printer, serial interface RS232, 57 mm paper width, four NiMH 1.2 V rechargeable batteries, SWD-10 power supply, instructions manual, 5 thermal paper rolls.

Accessories:**HD-2110-CSNM**

RS232C 8-pole MiniDin - 9-pole D Sub female null-modem cable for connecting the printer to instruments with MiniDIN connector (HD21xx.1 and HD21xx.2 series, HD34xx.2, HD98569, etc.).

HD-2110-RS

M12 - 9-pole D Sub connectors cable for connecting the printer to instruments with M12 connector (Delta Ohm instruments: HD 2010UC, HD 2010UC/A, HD 2110L).

SWD-10

100-240 V AC/12 V DC-1A Mains battery charger.

BAT-40-1

Spare battery pack for HD-40-1 printer with in-built temperature sensor.

RCT

The kit includes 4 thermal paper rolls 57 mm wide and 32 mm diameter.

HIGHLIGHTS:

- Indoor air quality permitting automatic ventilation rate by CO₂ analysis correlate to the real presence of people in the rooms



AIR QUALITY

other design types upon request

HD46-17B-DT-R

Humidity, Temperature and CO₂ with display and 3 x relay output

HD46-17B-DT-A

Humidity, Temperature and CO₂ with display and 3 x 4 ... 20 mA output

HD45-B-0-R

Only CO₂ without display (just indicator) and 1 x relay output
other design types upon request

General:

The instruments of the series HD45 and HD46 are transmitters, indicators and regulators, to measure and control, depending on the model, the following environmental parameters:

- Relative humidity (RH)
- Ambient temperature (T)
- Carbon dioxide (CO₂)
- Dew point temperature (DP, calculated measurement)

They are suitable for monitoring indoor air quality. A typical application is the examination of air quality in: buildings where there is crowding of people (schools, hospitals, auditoriums, cafeterias, etc.); workplaces to optimize comfort and in general to see if there are small losses CO which may cause explosions or fire. This analysis allows the adjustment of air conditioning (temperature and humidity) and ventilation (changes air/hour) in order to achieve a twofold objective. The instruments are factory calibrated and require no further adjustment by the installer. The instruments are wall mounted and their sensors are installed inside the housing. The temperature T is measured with a high precision NTC sensor.

The measurement of CO₂ (carbon dioxide) is obtained with a special infrared sensor (NDIR technology: Non-Dispersive Infrared Technology), which, by using a double filter and a particular measurement technique, ensures accurate measurements and stable measurements over time. The presence of a protective membrane, which is spread through the air portion, protects the sensor from dust and weather. The instrument can be wall mounted and sensors are internal to the instrument.

The measurement of RH (Relative Humidity) is obtained with a capacitive sensor. All models perform continuous measure storing and data can be downloaded on a PC.

Specifications:

Measuring frequency:	1 sample every 3 s
Storage capacity:	2304 records
Serial output:	Serial output for USB (mini-USB/USB cable with adapter cod. RS45I)
Analog output:	4 ... 20 mA (RL MAX = 400 Ω) (only HD45_A and HD46_A)
Relay output:	Two-state (only HD45 ... R and HD46 ... R) Contact: max 1 A @ 30 V DC resistive load
Power supply:	24 V AC ± 10 % (50 ... 60 Hz) or 15 ... 35 V DC
Power consumption:	100 mW (except of the models with current output) 400 mW (for the models with current output)
Stabilizing time:	15 min (to guarantee the declared accuracy)
Working temperature of the instrument:	0 ... 50 °C
Working humidity of the instrument:	0 ... 90 % RH no condensate
Dimensions:	34 x 80 x 80 mm (HD45-B-Blank) (H x W x D) 34 x 80 x 120 mm (HD46.17B...) (H x W x D)
Housing material:	ABS
Protection degree:	IP30
Scope of supply:	Device, manual

Relative humidity RH:

Sensor:	Capacitive
Measuring range:	0 ... 100 % RH, -40 ... +85 °C Dew point Td
Working range of the sensor:	-40 ... +80 °C

Accuracy:	±1.5 % RH (0 ... 90 % RH) ±2 % RH (elsewhere) for T=15 ... 35 °C ±(1.5 +1.5 % of the measure) % RH for T=40 ... +80 °C
Resolution:	0.1 %
Temperature dependence:	2 % on the whole temperature range
Hysteresis and repeatability:	1 % RH
Response time (T₉₀):	<20 s (air speed = 2 m/s and stable temperature)

Temperature T:	
Sensor type:	NTC 10 kΩ
Measuring range:	-30 ... +85 °C (-22 ... +185 °F)
Accuracy (except for models with current outputs):	±0.2 °C ±0.15 % of the measured value within 0 ... 70 °C ±0.3 °C ±0.15 % of the measured value within -30 ... 0 °C and 70 ... 85 °C
Accuracy (for models with 4 ... 20 mA):	±0.5 °C ±0.15 % of the measured value within -30 ... +85 °C
Resolution:	0.1 °C
Response time (T₉₀):	<30 s (air speed = 2 m/s)

Carbon dioxide CO₂:	
Sensor:	Dual wavelength NDIR
Measuring range:	0 ... 5000 ppm
Working range of the sensor:	0 ... 50 °C
Accuracy:	±(50 ppm +3 % of the measured value) @ 20 °C and 1013 hPa
Resolution:	1 ppm
Temperature dependence:	0.1 % f.s./°C
Response time (T₉₀):	<120 s (air speed = 2 m/s and stable temperature)

Configuration:	
The instruments are equipped with serial output easily accessible on the side of the instrument that allows you to connect to the USB port of your PC via the cable RS45-0 or RS45-I with built-in adapter, for custom configurations. With the RS45-0 cable the instrument is powered directly from the USB port of your PC, thus allowing the configuration of the instrument in the field using a laptop before installing fixed.	

Accessories:	
DeltaLog14	Software for connecting to the PC via the serial output, for the configuration of the instrument and data download. For Windows® operating systems.
RS45-0	Not isolated serial connection cable with built-in adapter. USB connector for PC and mini-USB connector for the serial port of the instrument. The cable powers the instrument.
RS45-I	Isolated serial connection cable with built-in adapter. USB connector for PC and mini-USB connector for the serial port of the instrument. The cable does not power the instrument.
HD45-TCAL	The Kit includes the RS45 cable with built-in adapter and the CD-ROM with the Delta-Log14 software for Windows operating systems. The cable is provided with USB connector on the PC side and mini-USB connector for the serial port of the instrument.

IMPORTANT INFORMATION:
RS45-... and DeltaLog14 are necessary for configuration. Models of the series HD46-... can be equipped with keyboard that allows you to easily configure the instrument even without a PC connection.

AIR SPEED TRANSMITTERS

HD29-0-3T-01

HD29-0-3-TC1-2

HIGHLIGHTS:

- For air conditioning HVAC
- For calculation of outdoor air exchange
- For evaluating the frequency of renewal of air
- For airflow duct control
- For actuators (ventilation rate)

other design types upon request

HD29-0-3T-01

Air speed transmitter, sensor length 150 mm
 Combined with temperature and humidity, other cable lengths, probe lengths or output
 0-10 V upon request

HD29-0-3-TC1-2

Air speed transmitter, sensor length 250 mm, cable length 2 m
 Combined with temperature and humidity, other cable lengths, probe lengths or output
 0-10 V upon request

General:
 The HD29-0-3T-... is employed in the control of air speed in the air conditioning and ventilation (HVAC / BEMS) in the pharmaceutical, museum, clean rooms, ventilation ducts, industrial sectors and households, crowded places, cafeterias, auditoriums, gymnasiums or on farms with large numbers of animals. The sensors in combination with an accurate electronics guarantee precise and reliable measurements in the time.

Common technical specifications:		Notes:
Air speed Measuring range:	0.05 ... 1 m/s 0.1 ... 2 m/s 0.20 ... 10 m/s 0.20 ... 20 m/s	The measuring range can be selected by dip-switch.

Air speed Accuracy range 0 ... 1 m/s	±(0.1 m/s +3 % of measurement)	at 50 % RH and 1013h Pa
range 0 ... 2 m/s	±(0.15 m/s +3 % of measurement)	
range 0 ... 10 m/s	±(0.5 m/s +3 % of measurement)	
range 0 ... 20 m/s	±(0.7 m/s +3 % of measurement)	

Output: 4 ... 20 mA RL < 500 Ω

Power supply: 16 ... 40 V DC or 12 ... 24 V AC ±10 %

Response time (selected by jumper) 0.2 s Fast
2.0 s Slow

Operating temperature electronics 0 ... +60 °C
probe -10 ... +80 °C

Compensation temperature: 0 ... +80 °C

Storage temperature: -10 ... +70 °C

Electronics protection class: IP67

Sensor working conditions: Clean air, RH < 80 %

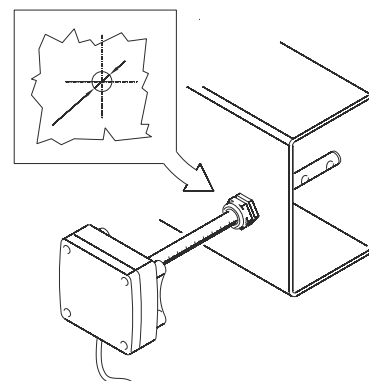
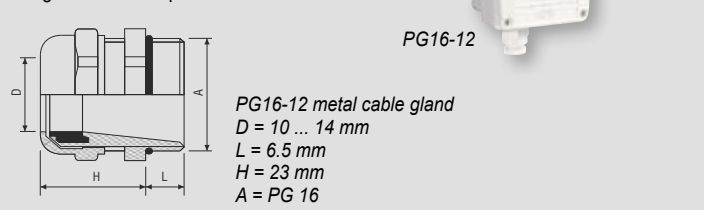
Case dimensions: 80 x 84 x 44 Without probe

Installation notes:

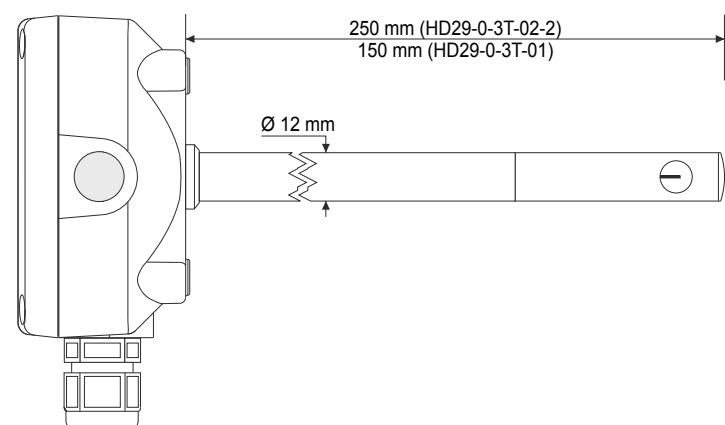
- To fix the probe inside a ventilation duct, a pipe, etc. you can use a PG16-12 metal cable gland (Ø 10 ... 14 mm) or a 3/8" universal biconical connection.
- The transmitters are factory calibrated and no further adjustments are required.
- To select the air speed output range use the dual dip-switch on the board

Accessories:

PG16-12
 Metal gland PG16 for probes Ø 12 mm



Probe dimensions:





HIGHLIGHTS:

- Acoustic normative IEC61672, IEC 61260, IEC61094-4

HD-2010-UC-1

Integrating sound level meter

General:
 HD-2010-UC-1 is an integrating portable sound level meter performing statistical analysis. The instrument has been designed combining maximum low cost and simplicity of use. Attention has been paid to the possibility of adjusting the instrument and adding options at any time to the HD-2010-UC-1 so to extend its applications. The user can upgrade the firmware directly by means of the Noise Studio programme supplied with the instrument. HD-2010-UC-1 is equipped with a backlit graphic display.

- Applications:**
- Assessment of the environmental noise level
 - Optional "advanced data logging"
 - Optional capture and analysis of sound events
 - Statistical analysis with the calculation of 3 percentile level and optional full statistical analysis
 - Noise monitoring ("Advanced data logger" option required)
 - Identification of impulsive noises
 - Measurements in workplaces (Analysis of the noise and vibrations exposure)
 - Selection of personal protective equipment (SNR and HML methods)
 - Production quality control
 - Measurement of machine noise, sound power measurements
 - Vehicles noise emission

With HD-2010-UC-1 sound level meter it is possible to measure the sound pressure level by programming 3 parameters with the possibility of freely selecting the frequency weightings and the time constants. The measured sound levels can be recorded in the large non-volatile memory in order to be transferred to a PC using the supplied Noise Studio software package.

The class 1 HD-2010-UC-1 sound level meter with the "Advanced Data Logger" option is suitable for performing noise monitoring and acoustic mapping and, also assessments of the acoustic climate with capture and analysis of sound events function. When measuring traffic noise in the proximity of airports, railways and roads, the sound level meter can be used as a multi-parameter sound recorder, combining statistical analyzer features. Remote electrical calibrations and diagnostic tests can be executed by using its remote control capabilities.

Specifications:

1/2" Microphone:	UC52 free field, pre-polarized, condenser type
Dynamic range:	30 dBA ... 143 dB Peak
Linearity range:	80 dB
Acoustic Parameters:	Spl, L_{eq} , L_{eq1} , SEL, $L_{EP,d}$, L_{max} , L_{min} , L_{pk} , Dose, L_n
Frequency Weightings:	simultaneous A, C, Z (only C and Z for L_{pk})
Time Weightings:	simultaneous FAST, SLOW, IMPULSE
Integration:	from 1 s ... 99 h with erasing function (Back-Erase)
Statistical Analysis:	It displays up to 3 percentile levels, from L_1 to L_{99} Probability distribution and percentile level calculation from L_1 to L_{99} • Parameter: L_{Fp1} , L_{eq1} , L_{pk} weighted A, C or Z (only C or Z for L_{pk}) • Sampling frequency: 8 samples/s • Classification: Classes of 0.5 dB
Display:	Graphic LCD backlit display 128 x 64 • 3 parameters in numeric format
Memory:	• 4 MB internal, memory for more than 500 records.

Input/Output:	<ul style="list-style-type: none"> • RS232 serial and USB interfaces • AC output (LINE) • DC output
PC Programs:	Noise Studio (provided with the instrument): PC interface for data download, set up and instrument management. Licensed software modules to be enabled by hardware key. • NS4 "Monitor" module. PC based real time acquisition. Synchronized audio recording. Remote monitoring and data capture. Remote connection also via Modem. The program allows programming of measurements and calibrations with timer and performs events audio recording with programmable triggers levels.
Operating conditions:	<ul style="list-style-type: none"> • Working temperature -10 ... 50 °C, 25 ... 90 % RH (without condensation), 65 ... 108 kPa. Protection degree: IP64
Power Supply:	<ul style="list-style-type: none"> • 4 alkaline or rechargeable NiMH type AA batteries or external 9 ... 12 V DC 300 mA
Dimension:	445 x 100 x 50 mm equipped with preamplifier (H x W x D)
Scope of supply:	Class 1 sound level meter HD-2010-UC-1, HD2010PNE2 preamplifier, UC52/1 free field prepolarized microphone, windscreens, USB connection cable, Noise Studio PC software, carrying case and paper instruction manual. Supplied with DAkkS individual calibration Certification, according to IEC 61672.

NECESSARY ACCESSORY:
 HD-2020
 Class 1 sound calibrator (p.r.t. page 11)

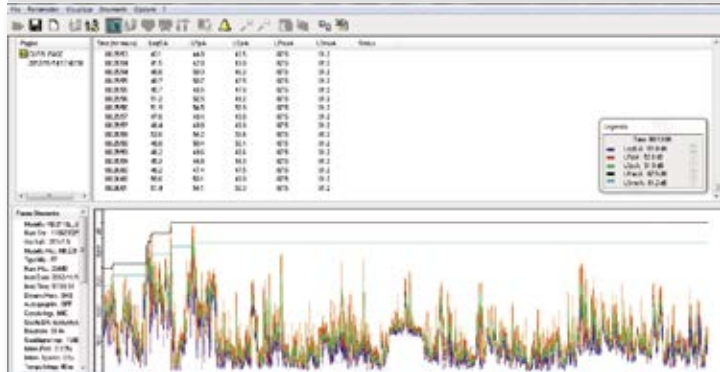
Accessories:
HD-2110-USB
 serial USB cable for PC connection.

SWD-10
 Stabilized mains power supply $V_{in}=100 \dots 230 \text{ V AC} / V_{out}=12 \text{ V DC} / 1000 \text{ mA}$.

CPA/10
 10 m microphone extension cable.

HD-40-1
 Portable thermal serial printer with 57 mm paper rolls equipped with SWD-10 power supply.

HD2110-RS
 M12 - 9-pole D Sub connectors cable for connecting the printer to instruments with M12 connector.



Noise Studio: NS4 "Monitor" module; PC based noise acquisition with synchronized audio recording (for later playback).

Noise Studio NS4

Monitor' module (in scope of supply)

General:
 This software module allows to control the sound level meter with PC in remote location. The main features are:

- Real time display of acquired data, in graphical and tabular form
- Possibility to remotely connect to the sound level meter via modem
- Acquisition of sound level data directly into the mass memory of the PC (monitor function)
- Management of diagnostic and calibration functions
- Automatic acquisition and monitoring programme
- Possibility to log synchronized audio along with the sound level meter measurements, by using the easy trigger function

IMPORTANT INFORMATION:
 Device supply with calibration certificate. Customer must be specified when ordering.

ACOUSTIC CALIBRATOR



HIGHLIGHTS:

- The 1000 Hz frequency allows calibrating sound level meters with any weighting
- Independent of atmospheric pressure
- The 114 dB sound level allows performing calibrations even in high background noise environments
- Simple to use

HD-2020

Acoustic calibrator

General:

The HD-2020 sound level calibrator is a portable, battery operated sound source, suitable for sound level meters (portable and laboratory) and acoustic stations. It allows calibrating 1/2" microphones with mechanical dimensions. The calibration pressure levels of 94 dB and 114 dB can be selected by the keypad. If the microphone is absent or not inserted correctly into the calibrator cavity, the sound level will blink on the display. The clock/calendar allows you to set the number of years and months of validity of the calibration from the date of adjusting: at the expiration time, an appropriate symbol flashes on the display.

Specifications:

Coupling cavity: for standard 1/2" microphones (12.7 ±0.03 mm) according to IEC 61094-1 and IEC 61094-4

Frequency: 1000 Hz

Frequency tolerance: 1 % in the range -10 ... +50 °C and 10 ... 90 % RH

Sound pressure level: 94.0 dB and 114.0 dB ±0.2 dB at 1 kHz (referred to 101.3 kPa, 23 °C ±3 °C and 65 % RH)

Reference conditions: 20 °C, 50 % RH, 101.3 kPa, 10 mm³ cartridge volume

Stabilization time: 10 s

Total distortion: <1 %

Ambient condition influence

Temperature and humidity influence: < 0.3 dB in the range -10 ... +50 °C and 10 ... 90 % RH

Static pressure influence: < 0.1 dB in the range 65 ... 108 kPa

Operating conditions

Working temperature: -10 ... +50 °C

Relative humidity: ≤90 % RH

Storage temperature: -25 ... +70 °C

Microphone equivalent volume: 5 ... 250 mm

Power supply: 9 V alkaline battery IEC type 6LR61. 9 V rechargeable batteries are also allowed.

9 V battery autonomy: 48-hour continuous functioning with good quality alkaline batteries.

Automatic power off: 5 minutes - it cannot be disabled

Display: 3½ LCD, battery symbol

Watch/date-indicator: internal with 3 V lithium buffer battery

Case material: ABS

Dimensions: 83 x 43 x 53 mm (H x W x D)

IP Protection degree: IP64

Effects of electro-magnetic fields: < 0.3 dB

Scope of supply: HD-2020 calibrator, 1x 9 V alkaline battery, instruction manual. ACCREDIA individual calibration certification included.

IMPORTANT INFORMATION:

Device supply with calibration certificate. Custome must be specified when ordering.



ILLUMINANCE, LUMINANCE
PHOTONS FLOW
UVA-, UVB-, UVC-IRRADIANCE
IRRADIANCE IN SPECTRAL BAND OF BLUE LIGHT
GLOBAL SOLAR RADIATION

HIGHLIGHTS:

- Measurement of many different light values
- Wide range of sensors

HD-2302-0

Photo-radiometer

General:
 The HD-2302-0 is a portable instrument with a large LCD display. It measures illuminance, luminance, PAR and irradiance (across VIS-NIR, UVA, UVB and UVC spectral regions or measurement of irradiance effective according to the UV action curve). The probes are equipped with the SICRAM automatic detection module: in addition to detection, the unit of measurement selection is also automatic. The factory calibration data are already memorized inside the instruments.

Application:
 For museum and not destructive testing, for tanning/aesthetic centers, photovoltaic and aging chamber

Specifications:

Instrument	
Dimensions:	140 x 88 x 38 mm (H x W x D)
Materials:	ABS
Display:	2 x 4½ digits plus symbols - 52 x 42 mm (visible area)
Operating conditions	
Operating temperature:	-5 ... +50 °C
Storage temperature:	-25 ... +65 °C
Working relative humidity:	0 ... 90 % RH without condensation
Protection degree:	IP67
Power	
Batteries:	3 1.5 V type AA batteries
Autonomy:	200 h with 1800 mAh alkaline batteries
Power absorbed with the instrument off:	20 µA
Measuring unit:	lux - fcd - µmol/m ² ·s - cd/m ² - W/m ² - µW/cm ² - µW/lumen
Connections:	Input module for the probes 8-pole male DIN45326 connector
Scope of supply:	Instrument HD-2302-0, 3 1.5 V alkaline batteries, operating manual, case. <i>The probes must be ordered separately.</i>

Accessories:

LP471-PHOT
LP471-LUM2
LP471-PAR
LP471-UVA
LP471-UVB
LP471-UVC
LP471-P-A
LP471 BLUE
LP SILICON-PYRA

Specification see following pages



LP-471-PHOT

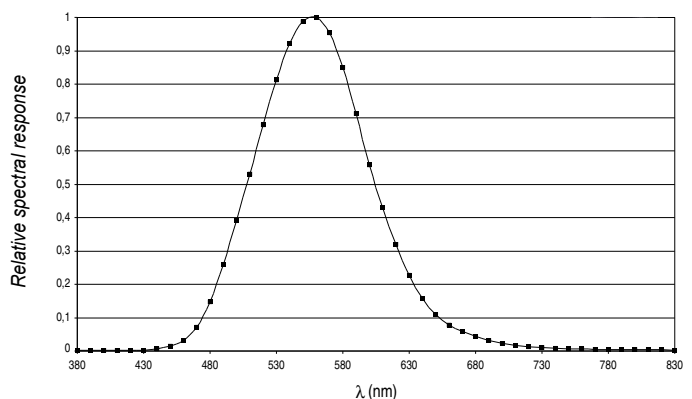
Probe for the measure of Illuminance

Application:
 Special light control for jewelers works to apply local regulation, Escape and traffic routes workplaces and stations

Specifications:

Measuring range (lux):	0.10...199.99 ...1999.9 ...19999 ...199.99·10 ³
Resolution (lux):	0.01 0.1 1 0.01·10 ³
Spectral range:	in agreement with standard photopic curve V(λ)
α (temp. coefficient) f_α (T):	<0.05 % K
Calibration uncertainty:	<4 %
f₁ (in agreement with photopic response V(λ)):	<6 %
f₂ (response according to the cosine law):	<3 %
f₃ (linearity):	<1 %
f₄ (instrument reading error):	<0.5 %
f₅ (fatigue):	<0.5 %
Class:	B
Working temperature:	0 ... 50 °C

Typical response curve: LP-471-PHOT



TECHNICAL CHARACTERISTICS OF PHOTOMETRIC AND RADIOMETRIC PROBES

LUMINANCE

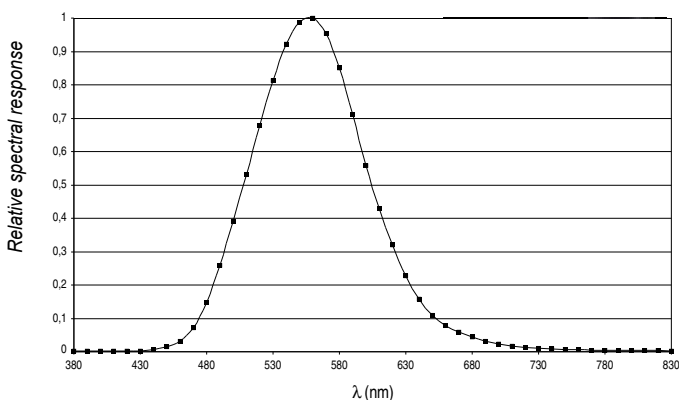


LP-471-LUM 2

Probe for the measure of Luminance

General:				
Spectral response according to the photopic curve, angular field 2°.				
Measuring range: 1.0 cd/m ² ... 2000·10 ³ cd/m ² .				
Application:				
Sensor measures luminance like a human eye, e. g. monitors and lamps, etc. Diaphanoscop, X Ray plates reader, PC monitors light radiations and reflection by white surfaces				
Specifications:				
Measuring range (cd/m ²):	1.0 ... 1999.9	... 19999	... 199.99·10 ³	... 1999.9·10 ³
Resolution (cd/m ²):	0.1	1	0.01·10 ³	0.1·10 ³
Optical angle:	2°			
Spectral range:	in agreement with standard photopic curve V(λ)			
α (temp. coefficient) f ₆ (T):	<0.05 % K			
Calibration uncertainty:	<5 %			
f ₁ (in agreement with photopic response V(λ)):	<8 %			
f ₃ (linearity):	<1 %			
f ₄ (instrument reading error):	<0.5 %			
f ₅ (fatigue):	<0.5 %			
Class:	C			
Drift after 1 year:	<1 %			
Working temperature:	0 ... 50 °C			
Reference Standards:	CIE n.69 - UNI 11142			

Typical response curve: LP-471-LUM 2



PHOTONS FLOW



HIGHLIGHTS:

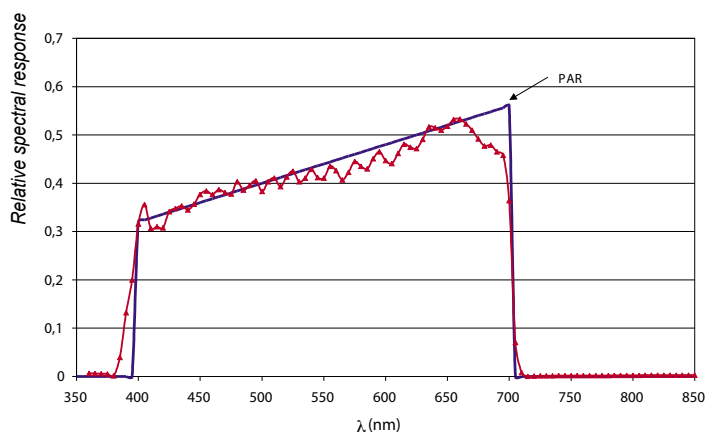
- Photosynthesis activity, radiation (PAR) measure, langley radiation measurement

LP-471-PAR

Quantum radiometric probe

General:				
For measuring the photons flow in the chlorophyll field PAR (Photosynthetically Active Radiation 400 ... 700 nm), μmol m ⁻² s ⁻¹ measure, cosine correction diffuser.				
Measuring range 0.10 μmol m ⁻² s ⁻¹ ... 10·10 ³ μmol m ⁻² s ⁻¹				
Application:				
Plants, agriculture, greenhouses				
Specifications:				
Measuring range (μmol·m ⁻² s ⁻¹):	0.10 ... 199.99	200.0 ... 1999.9	2000 ... 10000	
Resolution (μmol·m ⁻² s ⁻¹):	0.01	0.1	1	
Spectral range:	400 ... 700 nm			
Calibration uncertainty:	<5 %			
f ₂ (response according to the cosine law):	<6 %			
f ₃ (linearity):	<1 %			
f ₄ (instrument reading error):	±1 digit			
f ₅ (fatigue):	<0.5 %			
Drift after 1 year:	<1 %			
Working temperature:	0 ... 50 °C			

Typical response curve: LP-471-PAR





UVA IRRADIANCE

HIGHLIGHTS:

- Control of UV lamps in cosmetic tanning systems
- To check the control of cosmetic tanning systems

LP-471-UVA

Probe for the measure of UVA irradiance

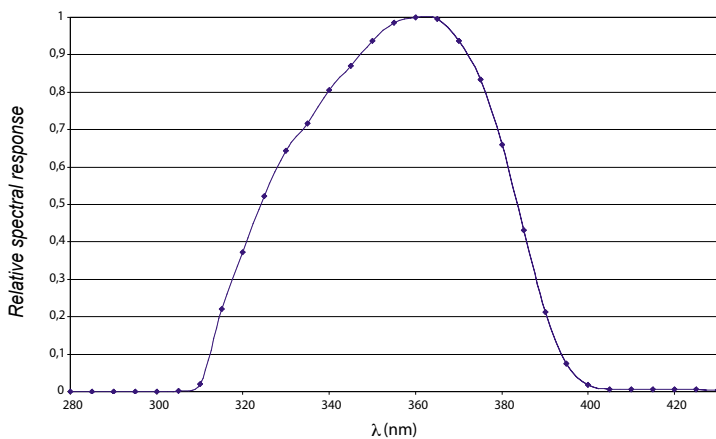
General:
Radiometric probe for measuring the irradiance in the UVA spectral range 315 ... 400 nm, peak at 360 nm, quartz diffuser for cosine correction.
Measuring range: $1.0 \cdot 10^{-3} \text{ W/m}^2 \dots 2000 \text{ W/m}^2$.

Application:
Timing Light to ward off eye problems. For casting and welding control, Polymerization of varnishes, resins, adhesives

Specifications:

Measuring range (W/m²):	$1.0 \cdot 10^{-3} \dots 999.9 \cdot 10^{-3}$
	1.000 ... 19.999
	20.00 ... 199.99
	200.0 ... 1999.9
Resolution (W/m²):	0.1 · 10 ⁻³ 0.001 0.01 0.1
Spectral range:	315 ... 400 nm (Peak 360 nm)
Calibration uncertainty:	<5 %
f₃ (linearity):	<1 %
f₄ (instrument reading error):	±1 digit
f₅ (fatigue):	<0.5 %
Drift after 1 year:	<2 %
Working temperature:	0 ... 50 °C

Typical response curve: LP-471-UVA



UVB IRRADIANCE

HIGHLIGHTS:

- Psoriasis light treatment by UVB lamps

LP-471-UVB

Probe for the measure of UVB irradiance

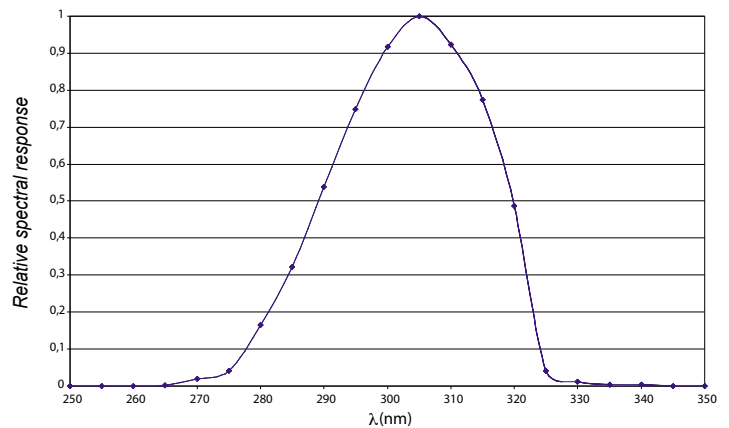
General:
Radiometric probe for measuring the irradiance in the UVB spectral range 280 ... 315 nm, peak at 305 ... 310 nm, quartz diffuser for cosine correction.
Measuring range: $1.0 \cdot 10^{-3} \text{ W/m}^2 \dots 2000 \text{ W/m}^2$.

Application:
Polymerization of varnishes, resins, adhesives. Quality control by UV Lamps. For Offset and lithography & electronic, Casting and welding control, Timing light to ward off eye problems

Specifications:

Measuring range (W/m²):	$1.0 \cdot 10^{-3} \dots 999.9 \cdot 10^{-3}$
	1.000 ... 19.999
	20.00 ... 199.99
	200.0 ... 1999.9
Resolution (W/m²):	0.1 · 10 ⁻³ 0.001 0.01 0.1
Spectral range:	280 ... 315 nm (Peak 305 nm ... 310 nm)
Calibration uncertainty:	<5 %
f₃ (linearity):	<2 %
f₄ (instrument reading error):	±1 digit
f₅ (fatigue):	<0.5 %
Drift after 1 year:	<2 %
Working temperature:	0 ... 50 °C

Typical response curve: LP-471-UVB



TECHNICAL CHARACTERISTICS OF PHOTOMETRIC AND RADIOMETRIC PROBES



UVC IRRADIANCE



IRRADIANCE IN SPECTRAL BAND OF BLUE LIGHT

HIGHLIGHTS:

- Control of UV Lamps during pasteurization, air and water sterilization

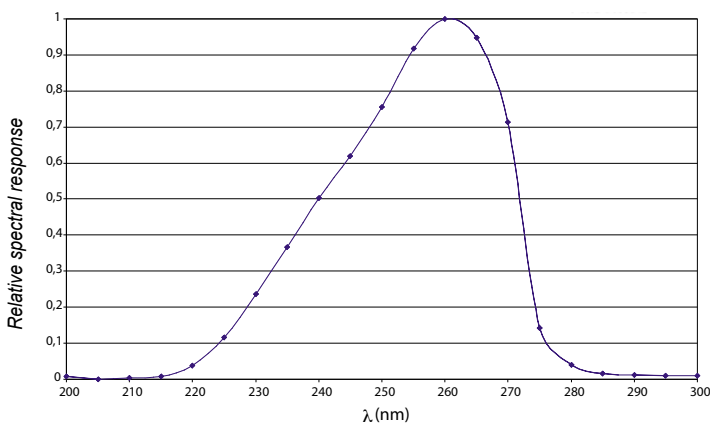
LP-471-UVC

Probe for the measure of UVC irradiance

General:
For measuring in the UVC spectral range 220 ... 280 nm, peak at 260 nm, quartz diffuser for cosine correction.
Measuring range: $1.0 \cdot 10^{-3} \text{ W/m}^2 \dots 2000 \text{ W/m}^2$.

Specifications:				
Measuring range (W/m²):	$1.0 \cdot 10^{-3}$	\dots	$999.9 \cdot 10^{-3}$	
	1.000	\dots	19.999	
	20.00	\dots	199.99	
	200.0	\dots	1999.9	
Resolution (W/m²):	$0.1 \cdot 10^{-3}$	0.001	0.01	0.1
Spectral range:	220 ... 280 nm (Peak 260 nm)			
Calibration uncertainty:	<5 %			
f₃ (linearity):	<1 %			
f₄ (instrument reading error):	±1 digit			
f₅ (fatigue):	<0.5 %			
Drift after 1 year:	<2 %			
Working temperature:	0 ... 50 °C			

Typical response curve: LP-471-UVC



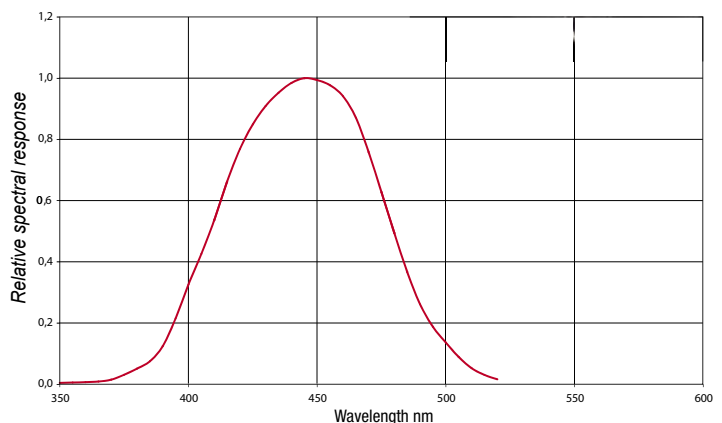
LP-471-BLUE

Probe for the measure of irradiance in spectral band of blue light

General:
The radiometric probe LP471-BLUE measures irradiance (W/m²) in spectral band of blue light. The probe consists of a photodiode plus an appropriate filter and it is provided with diffuser for proper measure in accordance with the cosine law.

Application:				
The spectral response curve of the probe allows to measure the radiation effective for damages caused by blue light (curve B(λ) according to the standards ACGIH / ICNIRP) in the spectral range from 380 ... 550 nm. The radiation optics in this portion of the spectrum can produce photochemical damage to the retina. Another field of application is the monitoring of the probe irradiance from blue light used in the treatment of neonatal jaundice.				
Specifications:				
Measuring range (W/m²):	$1.0 \cdot 10^{-3}$	\dots	$999.9 \cdot 10^{-3}$	
	1.000	\dots	19.999	
	20.00	\dots	199.99	
	200.0	\dots	1999.9	
Resolution (W/m²):	$0.1 \cdot 10^{-3}$	0.001	.01	0.01
Spectral range:	380 ... 550 nm. Action curve for damages of Blue light B(λ)			
Calibration uncertainty:	<10 %			
f₂ (response according to the cosine law):	<6 %			
f₃ (linearity):	<3 %			
f₄ (instrument reading error):	±1 digit			
f₅ (fatigue):	<0.5 %			
Drift after 1 year:	<2 %			
Working temperature:	0 ... 50 °C			

Typical response curve: LP-471-BLUE





HIGHLIGHTS:

- Non destructive material measurement by ISO 3059:2001

ILLUMINANCE AND UVA IRRADIANCE

LP-471 P-A

Combined probe LP 471 P-A with two sensors for the measure of illuminance and UVA irradiance

General:

Combined probe for measuring illuminance (lux), with standard photopic response, and irradiance ($\mu\text{W}/\text{cm}^2$) in the UVA spectral range (315 ... 400 nm, with peak at 360 nm). Both the sensors are equipped with diffuser for the correction according to the cosine law. Illuminance measuring range: 0.10 lux ... $200 \cdot 10^3$ lux Irradiance measuring range: 1.0 mW/m^2 ... 2000 W/m^2 . This probe provides the ratio between UVA irradiance and illuminance in $\mu\text{W}/\text{lumen}$ (quantity of interest in museums). The probe is equipped with SICRAM module and cable 2 m long.

Application:

Museum (see regulation), Not Destructive Testing (see regulation). For casting and welding control, Museum object damage (CIE 157) for paper and wood safety.

Specifications Illuminance:

Measuring range (lux):	0.10...199.9	...1999.9	...19999	...199.99·10 ³
Resolution (lux):	0.01	0.1	1	0.01·10 ³
Spectral range:	in agreement with standard photopic curve V(λ)			
α (temp. coefficient) f_6 (T):	<0.05 % K			
Calibration uncertainty:	<4 %			
f_1 (in agreement with photopic response V(λ)):	<6 %			
f_2 (response according to the cosine law):	<3 %			
f_3 (linearity):	<1 %			
f_4 (Instrument reading error):	<0.5 %			
f_5 (fatigue):	<0.5 %			
Class:	B			
Drift after 1 year:	<1 %			
Working temperature:	0 ... 50 °C			
Reference Standards:	CIE n.69 - UNI 11142			

Please refer to the spectral response of the LP-471-PHOT probe

Specifications UVA Irradiance:

Measuring range ($\mu\text{W}/\text{cm}^2$):	0.10...199.99	...1999.9	...19999	...199.99·10 ³
Resolution ($\mu\text{W}/\text{cm}^2$):	0.01	0.1	1	0.01·10 ³
Spectral range:	315 ... 400 nm (Peak 360 nm)			
Calibration uncertainty:	<5 %			
f_2 (response according to the cosine law):	<6 %			
f_3 (linearity):	<1 %			
f_4 (instrument reading error):	± 1 digit			
f_5 (fatigue):	<0.5 %			
Drift after 1 year:	<2 %			
Working temperature:	0 ... 50 °C			

Please refer to the spectral response of the LP-471-UVA probe



GLOBAL SOLAR RADIATION

LP-SILICON-PYRA

probe for the measure of global solar radiation

General:

Solarmeter with silicon photodiode for measuring the global solar irradiance, diffuser for cosine correction. Spectral range 400 ... 1100 nm. Measuring range: $1.0 \cdot 10^{-3}$... 2000 W/m^2 . Fixed cable 5 m long, terminated with open wires.

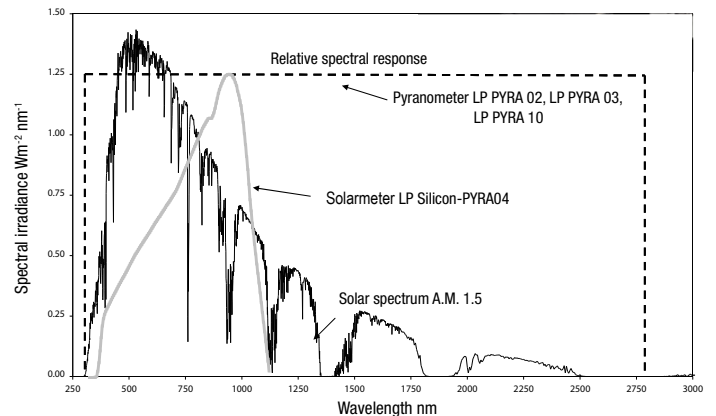
Application:

Private/Home photovoltaic panel efficiency control

Specifications:

Measuring range (W/m^2):	$1.0 \cdot 10^{-3}$... $999.9 \cdot 10^{-3}$	1.000 ... 19.999	20.00 ... 199.99
Resolution (W/m^2):	$0.1 \cdot 10^{-3}$	0.001	.01 0.01
Spectral range:	400 ... 1100 nm		
Calibration uncertainty:	<3 %		
f_2 (response according to the cosine law):	<3 %		
f_3 (linearity):	<1 %		
f_4 (instrument reading error):	± 1 digit		
f_5 (fatigue):	<0.5 %		
Drift after 1 year:	<2 %		
Working temperature:	0 ... 50 °C		

Typical response curve: LP-SILICON-PYRA



THERMO-ANEMOMETER



HD-2303-0
Thermo-Anemometer

General:	
The HD-2303-0 is designed for use in the fields of air conditioning, heating, ventilation and environmental comfort. It uses hotwire or vane probes to measure air speed, flow rate, and temperature inside pipelines and vents. Temperature only is measured by immersion, penetration air or contact probes. The temperature sensor used can be chosen from the Pt100, Pt1000. The probes are equipped with the SICRAM module, with the factory calibration data stored inside.	
Specifications:	
Instrument	
Dimensions:	140 x 88 x 38 mm (H x W x D)
Materials:	ABS
Display:	2 x 4½ digits plus symbols, Visible area: 52 x 42 mm
Operating conditions	
Operating temperature	-5 ... +50 °C
Storage temperature:	-25 ... +65 °C
Working relative humidity:	0 ... 90 % RH without condensation
Protection degree:	IP67
Power supply	
Batteries:	3 1.5 V type AA batteries
Autonomy:	200 h with 1800 mAh alkaline batteries
Power absorbed with instrument off:	< 20 µA
Measuring unit:	°C - °F - m/s - km/h - ft/min - mph - knot - l/s - m³/min - m³/h - ft³/s - ft³/min
Connections	
Input module for the probes:	8-pole male DIN45326 connector
Measurement of temperature by Instrument	
Pt100 measurement range:	-200 ... +650 °C
Pt1000 measurement range:	-200 ... +650 °C
Resolution:	0.1 °C
Accuracy:	±0.1 °C
Scope of supply:	Instrument HD-2303-0, 3 1.5 V alkaline batteries, operating manual, case. Probes must be ordered separately.

AP-471-S1

AP-471-S2

Wind speed measurement probes

Specifications:	AP-471-S1	AP-471-S2
Type of measure:	Air speed, calculated flow rate, air temperature	
Type of sensor		
Speed:	NTC thermistor	Omnidirectional NTC thermistor
Temperature:	NTC thermistor	NTC thermistor
Measurement range		
Speed:	0.1 ... 40 m/s	0.1 ... 5 m/s
Temperature:	-25 ... +80 °C	-25 ... +80 °C
Measurement resolution		
Speed:	0.01 m/s – 0.1 km/h – 1 ft/min – 0.1 mph – 0.1 knot	
Temperature:	0.1 °C	
Measurement accuracy		
Speed:	±0.2 m/s (0 ... 0.99 m/s) ±0.4 m/s (1.00 ... 9.99 m/s) ±0.8 m/s (10.00 ... 40.0 m/s)	±0.2 m/s (0 ... 0.99 m/s) ±0.3 m/s (1.00 ... 5.00 m/s)
Temperature:	±0.8 °C (-10 ... +80 °C) ±0.8 °C (-10 ... +80 °C)	
Minimum speed:	0.1 m/s	
Air temperature compensation:	0 ... 80 °C	
Sensor working conditions:	Clean air, RH <80 %	
Battery life:	Approx. 20 hours @ 20 m/s with alkaline batteries	Approx. 30 hours @ 5 m/s with alkaline batteries
Unit of Measurement		
Speed:	m/s – km/h – ft/min – mph – knot	
Flow rate:	l/s - m³/s - m³/min - m³/h - ft³/s - ft³/min	
Pipeline section for flow rate calculation:	0.0001 ... 1.9999 m²	
Cable length:	~2 m	
Scope of supply:	Hot-wire telescopic probe	Omnidirectional hot-wire probe

AP-472-S2

Vane probe

Specifications:	
Type of measure:	Air speed, calculated flow rate
Diameter:	60 mm
Type of measurement	
Speed:	Vane
Measurement range	
Speed (m/s):	0.5 ... 20
Temperature (°C):	-25 ... +80 (*)
Resolution	
Speed:	0.01 m/s - 0.1 km/h - 1 ft/min - 0.1 mph - 0.1 knot
Accuracy	
Speed:	±(0.4 m/s +1.5 % f.s.)
Minimum speed:	0.5 m/s
Unit of Measurement	
Speed:	m/s – km/h – ft/min – mph – knot
Flow:	rate l/s - m³/s - m³/min - m³/h - ft³/s - ft³/min
Pipeline section for flow rate calculation:	0.0001 ... 1.9999 m²
Cable length:	~2 m
Scope of supply:	Vane probe

(*) The indicated value refers to the vane's working range.



Measurand:

- Temperature
 - Relative humidity
 - Atmospheric pressure and differential pressure
 - Carbon monoxide (CO)
 - Carbon dioxide (CO₂)
- Connection via USB, WLAN, Ethernet, RS485, GSM/GPRS, WiFi

Upon request:

- Solar radiation
- Soil moisture
- Illuminance (lux)
- UVA, UVB and UVC Irradiance
- Rainfall
- Wind speed and direction
- Leaf wetness
- Standard signals, Analog, Digital (ModBus), Potentiometer, potential-free contacts, PT100, PT1000, ...

Description:

The Delta OHM wireless data logging system allows the monitoring of many physical quantities in various application fields.

The models that measure relative humidity and temperature can also calculate derived humidity quantities. The calculated quantities depend on the model and can be: Dew Point, wet bulb temperature, absolute humidity, mixing ratio, partial vapour pressure.

Depending on the model, the external measuring probes are connected to the data logger via M12 connector or screw terminal header. Some of the models are equipped with built-in sensors.

A version of data logger with terminal header inputs is available for the connection of:

- Transmitters with 0 ... 20 or 4 ... 20 mA current output and 0 ... 50 mV, 0 ... 1 V or 0 ... 10 V voltage output
- Pt100 / Pt1000 and K, J, T, N, E type thermocouple temperature sensors
- Sensors with voltage free contact output (counting of switchings) or potentiometric output

This allows to extend the monitoring capability of the system to countless other quantities, in addition to those listed.



Application:

- Food services (refrigerated containers, cold storage, production and carriage of food)
- Health (storage of medicines, vaccines, blood, monitoring of operating rooms)
- Greenhouses and agriculture crops
- Environmental analyses (Air quality, meteorology and hydrology)
- Monitoring of solar panels
- Museums and document archives
- Transportation of perishable and fragile goods (monitoring of shocks by measuring the acceleration)
- Air conditioning
- Clean rooms
- Laboratories
- Industrial processes
- Buildings, offices, schools
- Building automation
- Meteorology
- Industry
- Pharmaceutical industry
- Warehouse
- Photovoltaics

Transmission frequency:

All the models (except HD35APD ...) are available in three versions, depending on the transmitting frequency band:

- 868 MHz (in compliance with the european normative EN 300 220),
- 902 ... 928 MHz (in compliance with U.S. FCC part 15 section 247 and I.C. RSS-210 regulations),
- 915.9 ... 929.7 MHz (in compliance with ARIB STD-T108 standard).

The base unit HD35APD is only available with 868 MHz or 902 ... 928 MHz transmitting frequency band.

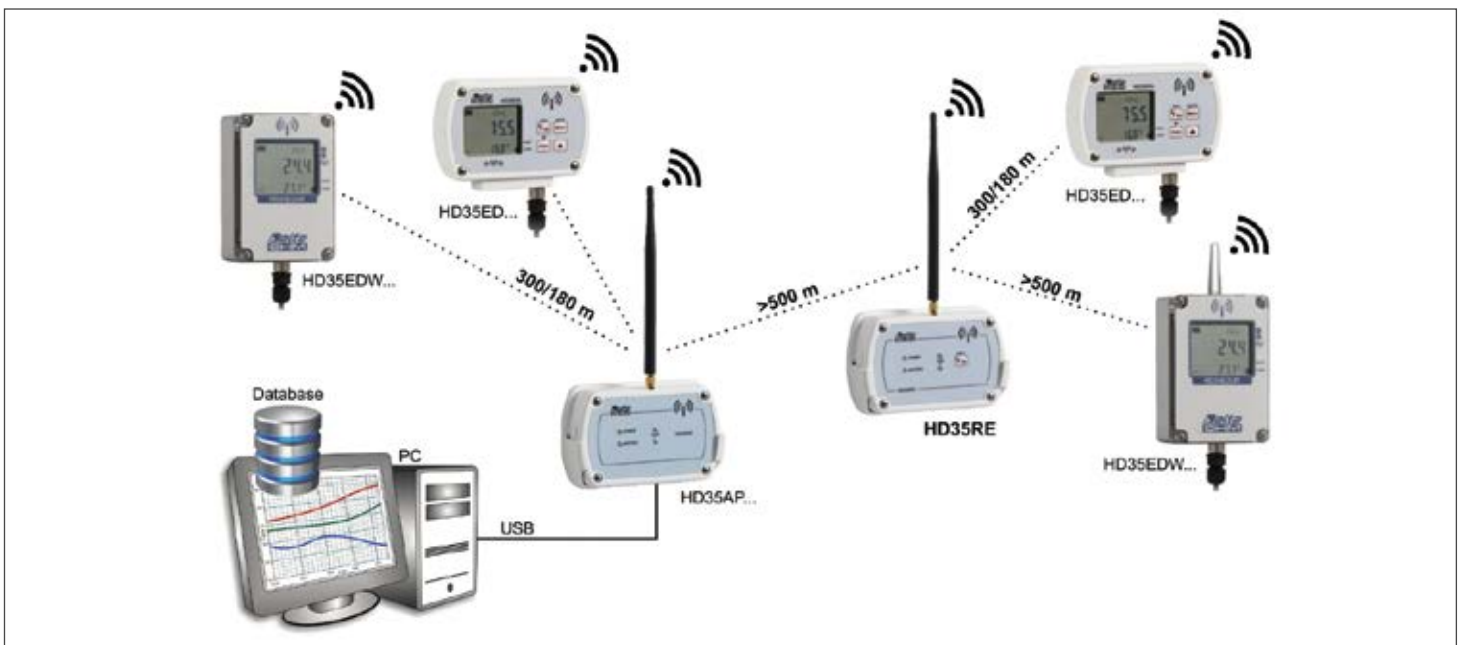
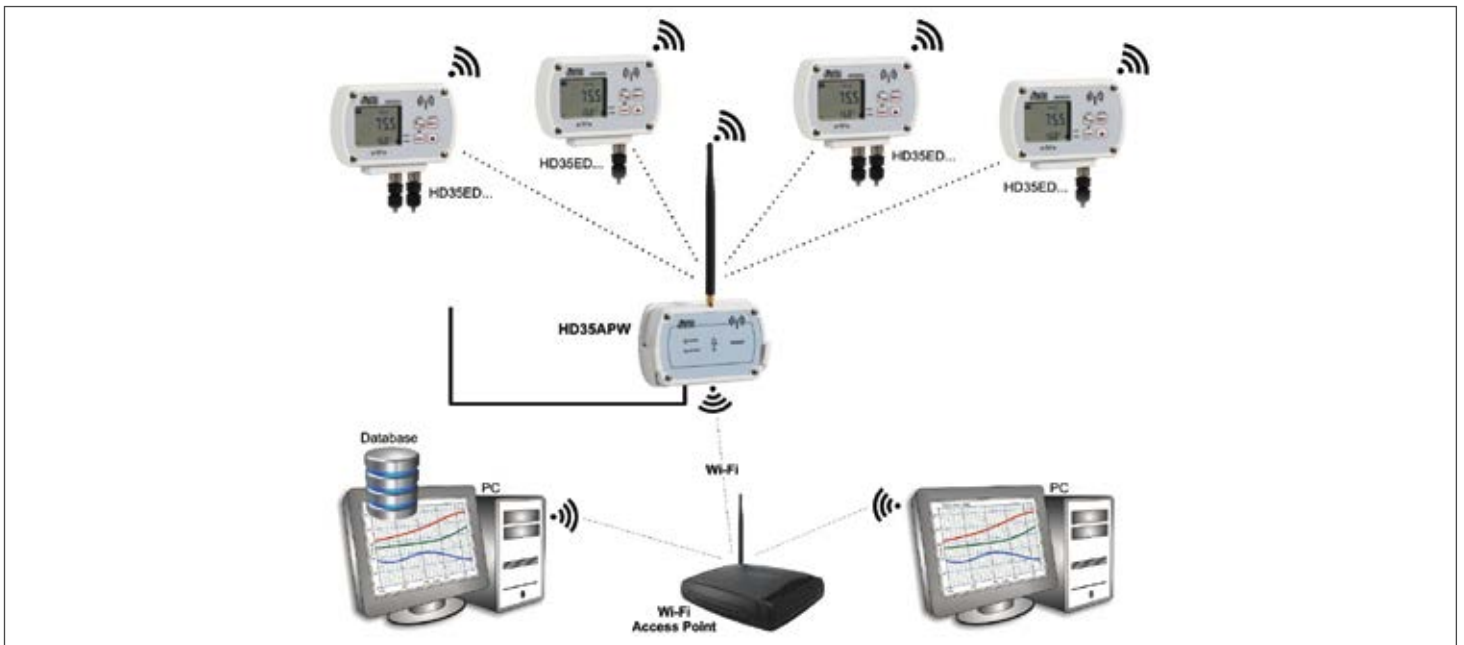
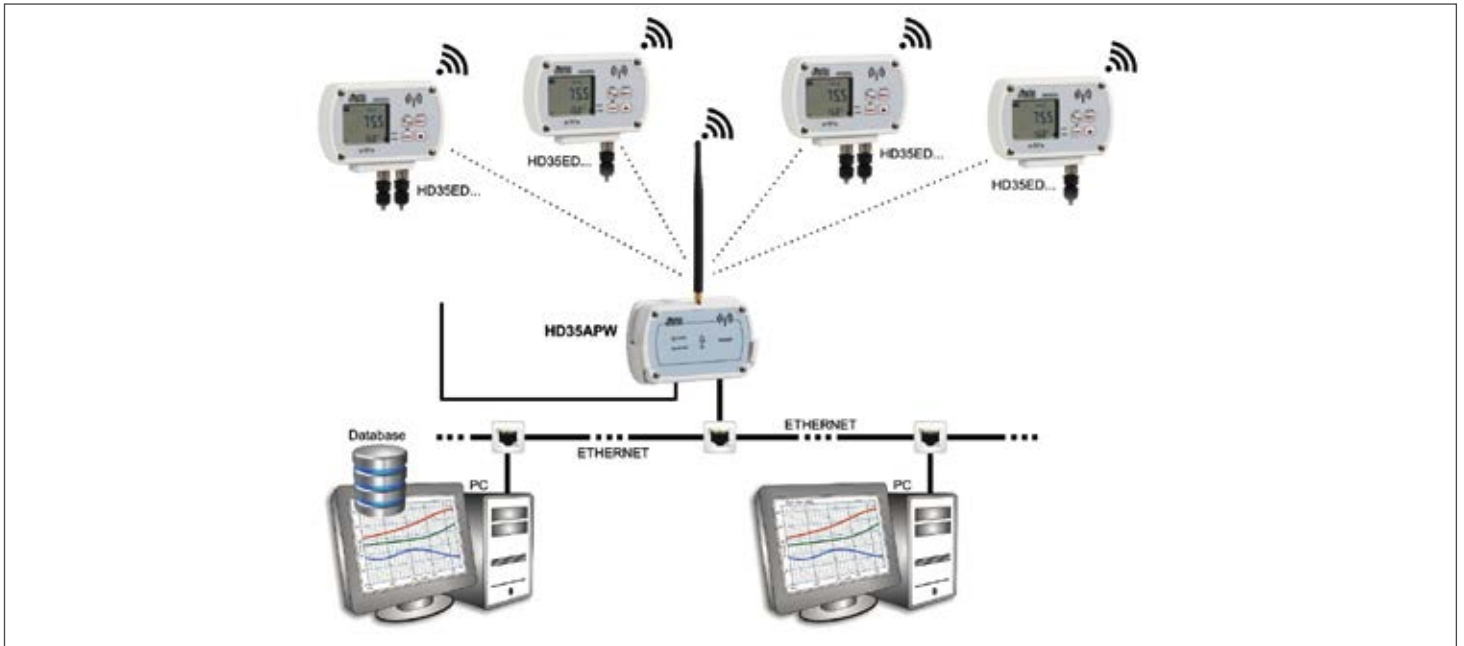
The 902 - 928 MHz transmitting frequency band can be reduced to 915 ... 928 MHz (Australia) or 921 ... 928 MHz (New Zealand).

The wireless transmission of the Delta OHM system is extremely robust against radio frequency interference. The system is able to detect any RF interference in the transmission channel, and to transfer the data communication in another channel of the same transmitting band. The correctness of the transmitted data is ensured by the bidirectional communication between the base unit and the remote data loggers.

Transmission range and Repeater:

To increase the distance between the base unit and the data loggers, the HD35RE... repeaters are used. More repeaters in cascade can be used ("multi-hop" network). Depending on HF-frequency band the typical transmitting range between two devices communicating directly is 300 m in open field (the range can be reduced if there are obstacles between the two devices.).

EXAMPLES



REPEATER



HD35-RE-E

Repeater

General:

The device is able to act as a bridge between the base unit HD35-AP... and the remote data loggers HD35-ED..., allowing the communication distance between data loggers and base unit to be increased.

Several repeaters in cascade can be used. External 6 VDC power supply. Internal back-up battery. Configuration via HD35-AP-S software. Wall mount removable (by using the included support) or fixed (with optional flanges) installation.

Specifications:

Power supply:	Internal 3.7 V lithium ion rechargeable battery, capacity 2250 mA/h, JST 3-pole connector Optional 6 V DC external power adapter (SWD06) Powered directly from the PC USB port
Power consumption:	30 mA
Battery autonomy (typical):	3 days
Transmitting frequency:	868 MHz
Antenna:	Whip external
Serial outputs:	USB with Mini USB type connector (cable CP23) Only for configuration and firmware update, not for data download
LED indicators:	Presence of external power supply, battery charge level, RF communication status.
Keyboard:	Push-button for connection / PING (for testing RF)
Working temperature and humidity range:	-10 ... +60 °C / 0 ... 85 % RH not condensing
Housing:	
Material:	LURAN® S 777K
Dimensions:	135 x 86 x 33 mm (excluding antenna) (H x W x D)
Installation:	Wall mount support (supplied) for removable installation or flanges (optional) for fixed installation
Scope of supply:	Device, battery HD35-BAT1, wall mount support HD35-03, without power supply

Accessories:

SWD-10

Stabilized mains power supply $V_{in}=100 \dots 230 \text{ V AC}$ / $V_{out}=12 \text{ V DC}$ / 1000 mA.

Signal range	HD35-RE-E	HD35-AP...	HD35-AP-D-E
		868 MHz frequency	
HD35-ED... with internal antenna	300 m	300 m	180 m

BASE UNIT



**SOFTWARE HD35-AP-S
INCLUDED**

HD35-AP-D-E

Base unit

General:

"Dongle" base unit for interfacing among PC and data loggers of the system. USB connection. Powered only by the PC USB port (the unit has no internal battery). Internal antenna.

Specifications:

Versions:	With internal antenna
Power supply:	Powered directly from the PC USB port
Transmitting frequency:	868 MHz
Transmitting range:	See table
Output:	USB with type A connector
Internal memory:	The number of samples that can be stored depends on the type of data loggers connected. The capacity is 226,700 samples if all the data loggers record 7 quantities.
LED indicators:	RF communication status
Working temperature and humidity range:	-10 ... +60 °C / 0 ... 85 % RH not condensing
Dimensions:	62 x 25.5 x 13.2 mm (H x W x D)
Scope of supply:	Device, basic HD35-AP-S software, operating manual

Comparison of the different Access Points

Connection	HD35-AP-D-E	HD35-AP-W-E	HD35-AP-G-E
USB	•	•	•
RS485			
Wi-Fi		•	
Ethernet		•	
GSM / GPRS			•
Protocols			
Proprietary on USB	•	•	•
Proprietary on TCP/IP		•	•
Modbus RTU		•	
Modbus TCP/IP		•	
SMS commands			•
Data processing			
Automatical data download in the Database	•	•	•
Sending of data via e-mail		•	•
Sending of data to an FTP address		•	•
Integrated web server		•	
Alarms			
Alarm thresholds	•	•	•
Alarm SMSes			•
Alarm e-mails		•	•

BASE UNIT



**SOFTWARE HD35-AP-S
INCLUDED**

HD35-AP-W-E

Base unit, USB output, Wi-Fi and ethernet interface

HD35-AP-G-E

Base unit, USB output and GSM module

General:

Device acting as an interface between the network data loggers that are positioned in the measurement sites, and the PC. It receives via wireless the data acquired by the remote data loggers and communicate with the PC via the USB output, the GSM connection or the Ethernet or WIFI local network.
Does not require the installation of USB drivers.
Directly powered by the USB port of the PC, if connected, or by the external 6 V DC power supply. Internal backup battery.
If the PC is not connected, the internal memory allows the storage of the measurement data received from the data loggers (the memory is managed in circular mode: when the memory is full, the oldest data are overwritten by the new ones).
Acoustic alarm with internal buzzer. Configuration via HD35-AP-S software. Wall mount removable (by using the included support) or fixed (with optional flanges) installation.

Specifications:

Power supply:	Internal 3.7 V lithium ion rechargeable battery, capacity 2250 mA/h, JST 3-pole connector
Power consumption:	30 mA without Ethernet/Wi-Fi and with typical GSM activity (**) 160 mA with Ethernet, 275 mA with Wi-Fi
Battery autonomy (typical):	3 days if not connected to the local network and with typical GSM activity (**) 11 hours with Ethernet, 8 hours with Wi-Fi
Transmitting frequency:	868 MHz
Antenna:	Whip external
Transmitting range:	See table on page before
Serial outputs:	USB with Mini USB type connector (cable CP23)
Ethernet connection: (Only HD35-AP-W-E)	Permits (if the Internet connection is available) sending alarm e-mail and the recorded data via e-mail or to an FTP address (***). Allows the MODBUS TCP/IP protocol. With integrated Web server.
Wi Fi connection: (Only HD35-AP-W-E)	Permits (if the Internet connection is available) sending alarm e-mail and the recorded data via e-mail or to an FTP address (***). Allows the MODBUS TCP/IP protocol. With integrated Web server.
GSM connection: (Only HD35-AP-G-E)	For sending alarm e-mail or SMS and data via e-mail or FTP (***). Allows the GPRS TCP/IP protocol.
Internal memory:	The number of samples that can be stored depends on the type of data loggers connected. The capacity is 226,700 samples if all the data loggers record 7 quantities.
LED indicators:	Presence of external power supply, battery charge level, RF communication status
Working temperature and humidity range:	-10 ... +60 °C / 0 ... 85 % RH not condensing
Housing	
Material:	LURAN® S 777K
Dimensions:	135 x 86 x 33 mm (excluding antenna) (H x W x D)
Installation:	Wall mount support (supplied) for removable installation or flanges (optional) for fixed installation
Scope of supply:	Device, battery HD35-BAT1, software HD35-AP-S, wall mount support HD35-03, power supply

(**) The intensive use of the GSM transmission can significantly increase the power consumption and reduce the battery life.

(***) In the basic version, the data are sent via FTP with an interval of not less than 2 minutes and only if in the network there are up to 5 data loggers. For the full FTP functionality, the PLUS option has to be requested.

Accessories p.r.t. page 27

TEMPERATURE WIRELESS DATA LOGGER



HD35ED-L-N/3-TC-E

3-input temperature wireless data logger for NTC sensor temperature probes with cable (probes not included)

General:

HD35ED-L-N/3-TC-E stores the measures in its internal memory (42,000 samples) and transmits the logged data to the base unit automatically at regular intervals or upon request.

Specifications:

Temperature

Sensor:	NTC 10 kΩ @ 25 °C
Measuring range:	-40 ... +105 °C (the measuring range can be limited by the operating temperature of the used probe)
Resolution:	0.1 °C
Accuracy:	± 0.3 °C in the range 0...+70 °C ± 0.4 °C outside

Instrument

Transmission frequency:	868 MHz
Transmission range:	300 m (E, J) / 180 m (U) in open field (can be reduced in presence of obstacles or adverse atmospheric conditions)
Logging interval:	1, 2, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
Power supply:	Non rechargeable lithium thionil chloride (Li-SOCl ₂) internal battery, 3.6 V, AA format, 2-pole Molex 5264 connector
Battery life:	2 years typical (without repeaters, measurement interval 5 s and log interval 30 s)
Operating conditions:	-20 ... +70 °C / 0 ... 85 % RH non condensing
Dimensions:	135 x 102 x 33 mm (excluding the probes) (H x W x D)
Housing:	LURAN® S 777K
Protection degree:	IP 64
Scope of supply:	Device, battery, wall mount support HD35-03 NTC probes have to be ordered separately.

Necessary accessories:

DTP35N-1-3-C
NTC 10 kΩ, temperature range -20 ... +75 °C, Ø 5 x 40 mm, temperature sensor, 3 m cable length, 4-pole M12 connector

Additional accessories p.r.t. page 27



HD35ED-O-N-TV-E

Temperature wireless data logger with fixed vertical probe, without display

HD35ED-L-N-TV-E

Temperature wireless data logger with fixed vertical probe, with display

General:
 HD35ED-O-N-TV-E stores the measures in its internal memory (68,000 samples) and transmits the logged data to the base unit automatically at regular intervals or upon request.
 Temperature fixed vertical probe with NTC 10 KΩ temperature sensor.
 Acoustic alarm with internal buzzer. Configuration via HD35-AP-S software. Powered by the internal battery. Wall mount removable (by using the included support) or fixed (with optional flanges) installation.

Specifications:	
Temperature	
Sensor:	NTC 10 kΩ @ 25 °C
Measuring range:	-40 ... +105 °C
Resolution:	0.1 °C
Accuracy:	± 0.3 °C in the range 0 ... +70 °C ± 0.4 °C outside
Instrument	
Transmission frequency:	868 MHz
Transmission range:	300 m (E, J)/180 m (U) in open field (can be reduced in presence of obstacles or adverse atmospheric conditions)
Logging interval:	1, 2, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
Power supply:	Non rechargeable lithium thionil chloride (Li-SOCl ₂) internal battery, 3.6 V, AA format, 2-pole Molex 5264 connector
Battery life:	2 years typical (without repeaters, measurement interval 5 s and log interval 30 s)
Operating conditions:	-20 ... +70 °C / 0 ... 85 % rF non condensing
Dimensions:	135 x 144 x 33 mm (H x W x D)
Housing:	LURAN® S 777 K
Protection degree:	IP 64
Scope of supply:	Device, battery HD35-BAT1, wall mount support HD35-03

Accessories p.r.t. page 27



Picture shows HD35ED-L-1N-TVI-E with display

HD35ED-0-1N-TVI-E

Temperature and humidity wireless data logger with T/RH fixed vertical probe, without display

HD35ED-L-1N-TVI-E

Temperature and humidity wireless data logger with T/RH fixed vertical probe, with display

General:
 HD35ED-...-1N-TVI-E stores the measures in its internal memory (24,000 samples) and transmits the logged data to the base unit automatically at regular intervals or upon request.
 Temperature and relative humidity fixed vertical probe with temperature sensor integrated in the R.H. module.
 Calculated quantities: dew point, wet bulb temperature, absolute humidity, mixing ratio, partial vapour pressure.
 Acoustic alarm with internal buzzer. Configuration via HD35-AP-S software or front keyboard (only version with LCD). Powered by the internal battery. Wall mount removable (by using the included support) or fixed (with optional flanges) installation.

Specifications:	
Humidity	
Sensor:	Capacitive
Measuring range:	0 ... 100 % RH
Resolution:	0.1 % RH
Accuracy (@ 23 °C):	± 1.8 % RH (0 ... 80 % RH) ± [1.8 + 0.11 * (RH -80)] % RH (remaining range)
Sensor	
Operating temperature:	-40 ... +105 °C (R.H. max=[100 ² *(T-80)] @ T=80 ... 105 °C)
Temperature	
Sensor:	Sensor integrated in humidity module
Measuring range:	-40 ... +105 °C
Resolution:	0.1 °C
Accuracy:	± 0.2 °C in the range 0 ... +60 °C ± (0.2 - 0.05 * T) °C in the range T=-40 ... 0 °C ± [0.2 + 0.032 * (T-60)] °C in the range T=+60 ... +105 °C
Instrument	
Transmission frequency:	868 MHz
Transmission range:	300 m (E, J)/180 m (U) in open field (can be reduced in presence of obstacles or adverse atmospheric conditions)
Logging interval:	1, 2, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
Power supply:	Non rechargeable lithium thionil chloride (Li-SOCl ₂) internal battery, 3.6 V, AA format, 2-pole Molex 5264 connector
Battery life:	2 years typical (without repeaters, measurement interval 5 s and log interval 30 s)
Operating conditions:	-20 ... +70 °C / 0 ... 85 % rF non condensing
Dimensions:	135 x 144 x 33 mm (H x W x D)
Housing:	LURAN® S 777K
Protection degree:	IP 64
Scope of supply:	Device, battery HD35-BAT1, wall mount support HD35-03

Accessories p.r.t. page 27

TEMPERATURE AND HUMIDITY WIRELESS DATA LOGGER



HD35ED-L-1N-TV-E

Temperature and humidity wireless data logger with T/RH fixed vertical probe

General:
 HD35ED-L-1N-TV-E stores the measures in its internal memory (24,000 samples) and transmits the logged data to the base unit automatically at regular intervals or upon request.
 Temperature and relative humidity fixed vertical probe with NTC 10 KΩ temperature sensor and high accuracy R.H. sensor.
 Calculated quantities: dew point, wet bulb temperature, absolute humidity, mixing ratio, partial vapour pressure.
 Acoustic alarm with internal buzzer. Configuration via HD35-AP-S software or front keyboard. Powered by the internal battery. Wall mount removable (by using the included support) or fixed (with optional flanges) installation.

Specifications:	
Humidity	
Sensor:	Capacitive
Measuring range:	0 ... 100 % RH
Resolution:	0.1 % RH
Accuracy (@ 23 °C):	± 1.5 % RH (0 ... 90 % RH) ± 2 % RH (remaining range)
Sensor operating temperature:	-20 ... +80 °C
Temperature	
Sensor:	NTC 10 kΩ @ 25 °C
Measuring range:	-40 ... +105 °C
Resolution:	0.1 °C
Accuracy:	± 0.3 °C in the range 0...+70 °C ± 0.4 °C outside
Instrument	
Transmission frequency:	868 MHz
Transmission range:	300 m (E, J)/180 m (U) in open field (can be reduced in presence of obstacles or adverse atmospheric conditions)
Logging interval:	1, 2, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
Power supply:	Non rechargeable lithium thionyl chloride (Li-SOCl ₂) internal battery, 3.6 V, AA format, 2-pole Molex 5264 connector
Battery life:	2 years typical (without repeaters, measurement interval 5 s and log interval 30 s)
Operating conditions:	-20 ... +70 °C / 0 ... 85 % RH non condensing
Dimensions:	135 x 144 x 33 mm (H x W x D)
Housing:	LURAN® S 777K
Protection degree:	IP 64
Scope of supply:	Device, battery HD35-BAT1, wall mount support HD35-03

TEMPERATURE, HUMIDITY AND ATMOSPHERIC PRESSURE WIRELESS DATA LOGGER



HD35ED-G-14BN-TVI-E

Temperature, humidity and atmospheric pressure wireless data logger with T/RH fixed vertical probe

General:
 HD35ED-G-14BN-TVI-E stores the measures in its internal memory (22,000 samples) and transmits the logged data to the base unit automatically at regular intervals or upon request.
 Temperature and relative humidity fixed vertical probe with temperature sensor integrated in the R.H. module. Integrated pressure sensor.
 Calculated quantities: dew point, wet bulb temperature, absolute humidity, mixing ratio, partial vapour pressure.
 Acoustic alarm with internal buzzer. Configuration via HD35-AP-S software or front keyboard. Powered by the internal battery. Wall mount removable (by using the included support) or fixed (with optional flanges) installation.

Specifications:	
Humidity	
Sensor:	Capacitive
Measuring range:	0 ... 100 % RH
Resolution:	0.1 % RH
Accuracy (@ 23 °C):	± 1.8 % RH (0 ... 80 % RH) ± [1.8 + 0.11 * (RH - 80)] % RH (remaining range)
Sensor	
Operating temperature:	-40 ... +105 °C (RH max=[100-2*(T-80)] @ T=80 ... 105 °C)
Temperature	
Sensor:	Sensor integrated in humidity module
Measuring range:	-40 ... +105 °C
Resolution:	0.1 °C
Accuracy:	± 0.2 °C in the range 0 ... +60 °C ± (0.2 - 0.05 * T) °C in the range T=-40 ... 0 °C ± [0.2 + 0.032 * (T-60)] °C in the range T=60 ... 105 °C
Atmospheric pressure	
Sensor:	Piezo-resistive
Measuring range:	300 ... 1100 hPa
Resolution:	0.1 hPa
Accuracy:	± 0.5 hPa (800 ... 1100 hPa) @ T=25 °C ± 1 hPa (300 ... 1100 hPa) @ T=0 ... 50 °C
Instrument	
Transmission frequency:	868 MHz
Transmission range:	300 m (E, J)/180 m (U) in open field (can be reduced in presence of obstacles or adverse atmospheric conditions)
Logging interval:	2, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
Power supply:	Non rechargeable lithium thionyl chloride (Li-SOCl ₂) internal battery, 3.6 V, AA format, 2-pole Molex 5264 connector
Battery life:	2 years typ. (without repeaters, measurement interval 10 s and log interval 30 s)
Operating conditions:	-20 ... +70 °C / 0 ... 85 % RH non condensing
Dimensions:	135 x 144 x 33 mm (H x W x D)
Housing:	LURAN® S 777K
Protection degree:	IP 64
Scope of supply:	Device, battery HD35-BAT1, wall mount support HD35-03

TEMPERATURE, HUMIDITY, ATMOSPHERIC PRESSURE, CARBON MONOXIDE (CO) AND CARBON DIOXIDE (CO₂) WIRELESS DATA LOGGER



HD35ED-G-14BNAB-E

Temperature, humidity, atmospheric pressure, carbon monoxide (CO) and carbon dioxide (CO₂) wireless data logger, with display

HD35ED-O-14BNAB-E

Temperature, humidity, atmospheric pressure, carbon monoxide (CO) and carbon dioxide (CO₂) wireless data logger, without display

General:

HD35ED-G-14BNAB-E stores the measures in its internal memory (32,000 samples) and transmits the logged data to the base unit automatically at regular intervals or upon request. The sensors are all inside the housing. Calculated quantities: dew point, wet bulb temperature, absolute humidity, mixing ratio, partial vapour pressure. Acoustic alarm with internal buzzer. Configuration via HD35-AP-S software or front keyboard. Powered by the internal battery. Wall mount removable (by using the included support) or fixed (with optional flanges) installation.

Specifications:

Humidity	
Sensor:	Capacitive
Measuring range:	0 ... 100 % RH
Resolution:	0.1 % RH
Accuracy (@ 23 °C):	± 1.8 % RH (0 ... 80 % RH) ± [1.8 + 0.11 * (RH - 80)] % RH (remaining range)
Sensor	
Operating temperature:	-40 ... +105 °C (RH max=[100 ² *(T-80)] @ T=80 ... 105 °C)
Temperature	
Sensor:	Sensor integrated in humidity module
Measuring range:	-40 ... +105 °C
Resolution:	0.1 °C
Accuracy:	± 0.2 °C in the range 0 ... +60 °C ± (0.2 - 0.05 * T) °C in the range T=-40 ... 0 °C ± [0.2 + 0.032 * (T-60)] °C in the range T=+60 ... +105 °C
Atm. pressure	
Sensor:	Piezo-resistive
Measuring range:	300 ... 1100 hPa
Resolution:	0.1 hPa
Accuracy:	± 0.5 hPa (800 ... 1100 hPa) @ T=25 °C ± 1 hPa (300 ... 1100 hPa) @ T=0 ... 50 °C
Carbon monoxide (CO)	
Sensor:	Electrochemical cell
Measuring range:	0 ... 500 ppm
Resolution:	1 ppm
Accuracy:	±3 ppm +3 % of measurement
Operating temperature:	-5 ... +50 °C
Response time:	T ₉₀ < 50 s
Carbon dioxide (CO ₂)	
Sensor:	Non-dispersive infrared rays (NDIR)
Measuring range:	0 ... 5000 ppm

Resolution:	1 ppm
Accuracy:	±(50 ppm +3 % of measurement) @ 20 °C and 1013 hPa
Operating temperature:	-5 ... +50 °C
Response time:	T ₉₀ < 120 s (air speed= 2 m/s)
Instrument	
Transmission frequency:	868 MHz
Transmission range:	300 m (E, J)/180 m (U) in open field (can be reduced in presence of obstacles or adverse atmospheric conditions)
Logging interval:	10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
Power supply:	Non rechargeable lithium thionil chloride (Li-SOCl ₂) internal battery, 3.6 V, AA format, 2-pole Molex 5264 connector
Battery life:	1.5 years typical (without repeaters, measurement and log interval 2 min)
Operating conditions:	-10 ... +70 °C / 0 ... 85 % RH non condensing
Dimensions:	135 x 126 x 33 mm (H x W x D)
Housing:	LURAN® S 777K
Scope of supply:	Device, battery HD35-BAT1, wall mount support HD35-03

Accessories p.r.t. page 27

TEMPERATURE, HUMIDITY AND CARBON DIOXIDE (CO₂) WIRELESS DATA LOGGER



HD35ED-O-1NB-E

Temperature, humidity and carbon dioxide (CO₂) wireless data logger, without display

HD35ED-G-1NB-E

Temperature, humidity and carbon dioxide (CO₂) wireless data logger, with display

General:

HD35ED-G-1NB-E stores the measures in its internal memory (44,000 samples) and transmits the logged data to the base unit automatically at regular intervals or upon request.

The sensors are all inside the housing.

Calculated quantities: dew point, wet bulb temperature, absolute humidity, mixing ratio, partial vapour pressure.

Acoustic alarm with internal buzzer. Configuration via HD35-AP-S software or front keyboard. Powered by the internal battery. Wall mount removable (by using the included support) or fixed (with optional flanges) installation.

Specifications:

Humidity	
Sensor:	Capacitive
Measuring range:	0 ... 100 % RH
Resolution:	0.1 % RH
Accuracy (@ 23 °C):	± 1.8 % RH (0 ... 80 % RH) ± [1.8 + 0.11 * (RH - 80)] % rF (remaining range)
Sensor	
Operating temperature:	-40 ... +105 °C (RH max=[100 ² *(T-80)] @ T=80 ... 105 °C)
Temperature	
Sensor:	Sensor integrated in humidity module
Measuring range:	-40 ... +105 °C
Resolution:	0.1 °C
Accuracy:	± 0.2 °C in the range 0 ... +60 °C ± (0.2 - 0.05 * T) °C in the range T=-40 ... 0 °C ± [0.2 + 0.032 * (T-60)] °C in the range T=60 ... 105 °C
Carbon dioxide (CO₂)	
Sensor:	Non-dispersive infrared rays (NDIR)
Measuring range:	0 ... 5000 ppm
Resolution:	1 ppm
Accuracy:	±(50 ppm +3 % of measurement) @ 20 °C and 1013 hPa
Operating temperature:	-5 ... +50 °C
Response time:	T ₉₀ < 120 s (air speed= 2 m/s)
Instrument	
Transmission frequency:	868 MHz
Transmission range:	300 m (E, J)/180 m (U) in open field (can be reduced in presence of obstacles or adverse atmospheric conditions)
Logging interval:	10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
Power supply:	Non rechargeable lithium thionil chloride (Li-SOCl ₂) internal battery, 3.6 V, AA format, 2-pole Molex 5264 connector
Battery life:	1.5 years typical (without repeaters, measurement and log interval 2 min)
Operating conditions:	-10 ... +70 °C / 0 ... 85 % RH non condensing
Dimensions:	135 x 126 x 33 mm (H x W x D)
Housing:	LURAN® S 777K
Scope of supply:	Device, battery HD35-BAT1, wall mount support HD35-03

WIRELESS DATA LOGGER WITH 3 TERMINAL HEADER INPUTS



HD35ED-G-H-E

Wireless data logger with three terminal header inputs for standard sensors, with display

General:

Wireless data logger with three terminal header inputs for the connection of transmitters with 4 ... 20 mA, 0 ... 1 V or 0 ... 50 mV output, Pt100/Pt1000 sensors, K, J, T, N, E thermocouples, sensors with voltage free contact output (max. one sensor) and potentiometric sensors. It stores the measures in its internal memory (from 36,000 to 68,000 samples depending on the number and type of connected sensors) and transmits the logged data to the base unit automatically at regular intervals or upon request. Acoustic alarm with internal buzzer. Configuration via HD35-AP-S software. Powered by the internal battery. Wall mount removable (by using the included support) or fixed (with optional flanges) installation.

Connection:

The model HD35ED-0-H is equipped with three terminal header inputs. Each input can be configured as input for: Pt100/Pt1000, thermocouple, 4 ... 20 mA (the shunt resistance is internal), 0 ... 1 V, 0 ... 50 mV or potentiometer. Only input 3 can also be configured as pulse counter (counting of switchings of a voltage-free contact).

Specifications:

Pt100/Pt1000	
Measuring range:	-200 ... +650 °C
Resolution:	0.1 °C
Accuracy:	± 0.1 °C (excluding probe error)
Connection:	2, 3 or 4 wires
Thermocouple	
Measuring range:	K: -200 ... +1370 °C J: -100 ... +750 °C E: -200 ... +750 °C T: -200 ... +400 °C N: -200 ... +1300 °C
Resolution:	0.1 °C
Accuracy:	± 0.1 ~0.2 °C (excluding probe error)
Input 0/4 ... 20 mA	
Shunt resistance:	Internal (50 Ω)
Resolution:	16 bit
Accuracy:	± 2 µA
Input 0 ... 50 mV / 1 V	
Input resistance:	100 MΩ
Resolution:	16 bit
Accuracy:	± 0.01 % f.s.
Voltage-free contact	
Switching frequency:	50 Hz max.
Potentiometer	
Value, Resolution:	Typical 10 kΩ, 16 bit
Accuracy:	± 0.01 % f.s.
Instrument	
Transmission frequency:	868 MHz
Transmission range:	300 m (E, J)/180 m (U) in open field (can be reduced in presence of obstacles or adverse atmospheric conditions)
Logging interval:	5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
Power supply:	Non rechargeable lithium thionil chloride (Li-SOCl ₂) internal battery, 3.6 V, AA format, 2-pole Molex 5264 connector
Battery life:	2 years typ. (without repeaters, measurement interval 10 s and log interval 30 s)
Operating conditions:	-10 ... +70 °C / 0 ... 85 % RH non condensing
Dimensions:	135 x 110 x 33 mm (H x W x D)
Housing:	LURAN® S 777K
Scope of supply:	Device, battery HD35-BAT1, wall mount support HD35-03 <i>For temperature sensors please see our main catalogue!</i>

WATERPROOF WIRELESS DATA LOGGER WITH FOUR TERMINAL HEADER INPUTS



HD35ED-W-H-E

Waterproof wireless data logger with four terminal header inputs for standard sensors

General:

Wireless data logger with four terminal header inputs for the connection of transmitters with 4 ... 20 mA, 0 ... 1/0 ... 10 V or 0 ... 50 mV output, Pt100/Pt1000 sensors, K, J, T, N, E thermocouples, sensors with voltage free contact output (max. one sensor) and potentiometric sensors.

IP 67 waterproof housing. It stores the measures in its internal memory (from 28,000 to 58,000 samples depending on the number and type of connected sensors) and transmits the logged data to the base unit automatically at regular intervals or upon request.

Acoustic alarm with internal buzzer. Configuration via HD35-AP-S software. Powered by the internal battery or external 7... 28 V DC power supply (option E). Installation: wall mounting with HD35-24W flange (optional)

Specifications:

Pt100/Pt1000

Measuring range: -200 ... +650 °C

Resolution: 0.1 °C

Accuracy: ± 0.1 °C (excluding probe error)

Connection: 2, 3 or 4 wires

Thermocouple

Measuring range: K: -200...+1370 °C J: -100...+750 °C
E: -200...+750 °C T: -200...+400 °C
N: -200...+1300 °C

Resolution: 0.1 °C

Accuracy (excluding probe error): K: ± 0.1°C (< 600°C) E: ± 0.1°C (< 300°C)
± 0.2°C (> 600°C) ± 0.2°C (> 300°C)
N: ± 0.1°C (< 600°C) J: ± 0.1°C
± 0.2°C (> 600°C) T: ± 0.1°C

Input 0/4 ... 20 mA:

Shunt resistance: Internal (50 Ω)

Resolution: 16 bit

Accuracy: ± 2 µA

Voltage Input

Input resistance: 100 MΩ

Resolution: 16 bit

Accuracy: ± 0.01 % f.s.

Voltage-free contact

Switching frequency: 50 Hz max.

Potentiometer

Value: Typical 10 kΩ

Resolution: 16 bit

Accuracy: ± 0.01 % f.s.

Instrument

Transmission frequency: 868 MHz

Transmission range: In open field: 300 m (E, J)/ 180 m (U) with internal antenna

Logging interval: 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min

Power supply: Non rechargeable lithium thionil chloride (Li-SOCl₂) internal battery, 3.6 V, C format, 2-pole Molex 5264 connector

Battery life: 4 years typ. (without repeaters, measurement interval 10 s and log interval 30 s)

Operating conditions: -20 ... +70 °C / 0 ... 100 % rF non condensing

Dimensions: 140 x 80 x 55 mm (excluding ext. antenna) (H x W x D)

Housing: Polycarbonate

Protection degree: IP 67

Scope of supply: Device, battery

For temperature sensors please see our main catalogue!

WATERPROOF TEMPERATURE WIRELESS DATA LOGGER WITH FIXED VERTICAL PROBE



HD35ED-W-N-TV-E

Waterproof temperature wireless data logger with fixed vertical probe, without display

General:

IP 67 waterproof housing. It stores the measures in its internal memory (68,000 samples) and transmits the logged data to the base unit automatically at regular intervals or upon request.

Temperature fixed vertical probe with NTC 10 kΩ temperature sensor.

Acoustic alarm with internal buzzer. Configuration via HD35-AP-S software. Powered by the internal battery. Installation: wall mounting with HD35-24W flange (optional)

Specifications:

Temperature

Sensor: NTC 10 kΩ @ 25 °C

Measuring range: -40 ... +105 °C

Resolution: 0.1 °C

Accuracy: ± 0.3 °C in the range 0 ... +70 °C
± 0.4 °C outside

Instrument

Transmission frequency: 868 MHz

Transmission range: In open field: 300 m (E, J)/ 180 m (U) with internal antenna.

Logging interval: 1, 2, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min

Power supply: Non rechargeable lithium thionil chloride (Li-SOCl₂) internal battery, 3.6 V, AA format, 2-pole Molex 5264 connector

Battery life: 2 years typical (without repeaters, measurement interval 5 s and log interval 30 s)

Operating conditions: -20 ... +70 °C / 0 ... 100 % RH non condensing

Dimensions: 170 x 80 x 55 mm (excluding external antenna) (H x W x D)

Housing: Polycarbonate

Protection degree: IP 67

Scope of supply: Device, battery

Accessories p.r.t. page 27

WATERPROOF TEMPERATURE AND HUMIDITY WIRELESS DATA LOGGER WITH T/RH FIXED VERTICAL PROBE ACCESSORIES FOR WIRELESS DATA LOGGERS SYSTEM



HD35ED-W-1N-TVI-E

Waterproof temperature and humidity wireless data logger with T/RH fixed vertical probe

General:

IP 67 waterproof housing. It stores the measures in its internal memory (24,000 samples) and transmits the logged data to the base unit automatically at regular intervals or upon request.
 Temperature and relative humidity fixed vertical probe with temperature sensor integrated in the R.H. module.
 Calculated quantities: dew point, wet bulb temperature, absolute humidity, mixing ratio, partial vapour pressure.
 Acoustic alarm with internal buzzer. Configuration via HD35-AP-S software. Powered by the internal battery. Installation: wall mounting with HD35-24W flange (optional)

Specifications:

Humidity	
Sensor:	Capacitive
Measuring range:	0 ... 100 % RH
Resolution:	0.1 % RH
Accuracy (@ 23 °C):	± 1.8 % RH (0 ... 80 % RH) ± [1.8 + 0.11 * (RH - 80)] % RH (remaining range)
Sensor	
Operating temperature:	-40 ... +105 °C (R.H. max=[100 ² *(T-80)] @ T=80 ... 105 °C)
Temperature	
Sensor:	Sensor integrated in humidity module
Measuring range:	-40 ... +105 °C
Resolution:	0.1 °C
Accuracy:	± 0.2 °C in the range 0 ... 60 °C ± (0.2 - 0.05 * T) °C in the range T=-40 ... 0 °C ± [0.2 + 0.032 * (T-60)] °C in the range T=60 ... 105 °C
Instrument	
Transmission frequency:	868 MHz
Transmission range:	In open field: 300 m (E, J)/180 m (U) with internal antenna. > 500 m (E, J, U) with external antenna. (can be reduced in presence of obstacles or adverse atmospheric conditions)
Logging interval:	1, 2, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
Power supply:	Non rechargeable lithium thionyl chloride (Li-SOCl ₂) internal battery, 3.6 V, AA format, 2-pole Molex 5264 connector
Battery life:	2 years typical (without repeaters, measurement interval 5 s and log interval 30 s)
Operating conditions:	-20 ... +70 °C / 0 ... 100 % RH non condensing
Dimensions:	170 x 80 x 55 mm (excluding external antenna) (H x W x D)
Housing:	Polycarbonate
Protection degree:	IP 67
Scope of supply:	Device, battery

Accessories:

- **HD35-CP23**
Configuration cable
- **HD35-SWD06**
Power supply
- **HD35-24W**
Flange for fixing to the wall the waterproof models HD35-ED-W...
Specify when ordering on which instruments should be assembled.



HD35-BAT1

3.7 V lithium-ion rechargeable battery. For the base units HD35-AP... (except HD35-AP-D and HD35-AP-R) and the repeater HD35-RE

HD35-BAT2

3.6 V lithium-thionyl chloride (Li-SOCl₂) non-rechargeable battery. For the data loggers HD35-ED... and the alarm module HD35-ED-ALM.

HD35-ED-ALM-E

Wireless module with two relay outputs for signalling alarm events. Controlled by the base unit, it allows to activate more signalling devices (sirens, blinking lights, etc.) or actuators. Transmitting range: 300 m in open field. Instrument operating temperature / humidity: -10 ... +70 °C / 0 ... 85 % RH. Powered by the internal battery. Supplied with 3.6 V non-rechargeable Li-SOCl₂ battery and HD35-03 wall mount support.

HD35-AP-S

Further copy of the CD-ROM with HD35-AP-S basic software. For Windows® operating systems.

HD35-AP-PLUS

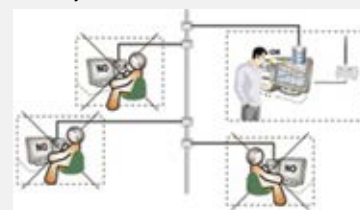
Advanced version of the HD35-AP-S software. For Windows® operating systems.

Advanced (PLUS) functionalities:

- The system basic functionality allows managing only the data in the local database of the PC in which the HD35-AP-S software is installed. Furthermore, limited FTP functionalities are allowed: the data are sent via FTP by the HD35-AP-G or HD35-AP-W base unit with an interval of not less than 2 minutes and only if in the network there are up to 5 data loggers.
- For advanced applications, the HD35-AP-PLUS option with the following additional features is available for a fee:
 - Multi-client connection to the database: it is possible to store the data in either a local database or in a remote database on the local network to which the PC is connected; the display of the data can be done from any PC on the local network running the software HD35-AP-S.
 - Full FTP functionality: no limit on the data sending interval and on the number of data loggers.

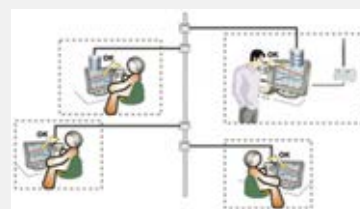
Basic functionality

Storing and viewing of data only in the local database.



Plus functionality (Unlimited Access Points)

Storing of data in a local or remote database. Viewing of data from any PC of the local network in which the HD35-AP-S software has been installed.



others upon request

Contact:



Steve Teichert
Keyaccount Management
Hans-Sachs-Straße 26
93128 Regenstau
Germany
Phone: +49-9402-9383-0
Fax +49-9402-9383-33
info@greisinger.de

Request our catalogue:



German



English

Website:



www.greisinger.de



www.ghm-messtechnik.de

Catalog prices effective from 01.01.2016
Errors, changes and price adjustments excepted.
All prices exclude shipping and sales tax.
Our terms and conditions can be found in the internet at www.ghm-messtechnik.de

GHM - GREISINGER

GHM Messtechnik GmbH
Standort Greisinger

93128 Regenstau | Hans-Sachs-Straße 26
+49-9402-9383-0 | www.greisinger.de
+49-9402-9383-33 | info@greisinger.de