



Instrument Technical Data

Instrument Dimensions (Length x Width x Height) Weight Materials Display

Operating conditions Operating temperature Warehouse temperature Working relative humidity Protection degree

Instrument uncertainty

Power supply Mains adapter (code SWD10) Batteries Autonomy Power absorbed with instrument off

Security of stored data

Serial interface: Socket: Type: Baud rate: Data bits: Parity: Stop bits: Flow control: Cable length:

Memory Storage capacity Logging interval 210x90x40 mm (HD21AB) 300x90x40 mm (HD21AB17 with probe) 470 g (batteries included) ABS, rubber Backlit, Dot Matrix 160x160 dots, visible area 52x42 mm

-5...50°C -25...65°C 0 ... 85% RH without condensation IP30

± 1 digit @ 20°C

12Vdc/1A 4 x 1.2V Ni-MH rechargeable batteries AA type 8 hours of continuous use in measure mode $<45 \mu A$

Unlimited

mini-USB USB 1.1 or 2.0 not insulated 460800 8 None 1 Xon-Xoff Max 5 m

Divided in 64 blocks. 67600 recordings. Selectable among: 15, 30 seconds, 1, 2, 5, 10, 15, 20, 30 minutes and 1 hour.

HD21ABE, HD21ABE17 INDOOR AIR QUALITY MONITORS

HD21ABE and HD21ABE17 IAQ Monitors are bench-top/portable instruments manufactured by **Delta OHM** for the analysis of indoor air quality (IAQ, Indoor Air Quality).

The instruments simultaneously measure the parameters:

- Carbon Dioxide CO₂
- Carbon Monoxide CO
- Atmospheric Pressure
- The HD21ABE17 instrument also measures:
- Temperature
- Relative Humidity
- and it calculates:
- Dew Point
- Wet Bulb Temperature
- Absolute Humidity
- Mixing Ratio
- Enthalpy

HD21ABE and HD21ABE17 are dataloggers with a memory capacity of 67600 recordings, divided in 64 blocks. They use the DeltaLog10 software from version 0.1.5.3. Reference Standards: ASHRAE 62.1 – 2004, Italian Legislative Decree 81/2008. 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 160x160 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.



Logging interval	Storage capacity	Logging interval	Storage capacity
15 seconds	About 11 days and 17 hours	10 minutes	About 1 year and 104 days
30 seconds	About 23 days and 11 hours	15 minutes	About 1 year and 339 days
1 minute	About 46 days and 22 hours	20 minutes	About 2 years and 208 days
2 minutes	About 93 days and 21 hours	30 minutes	About 3 years and 313 days
5 minutes	About 234 days and 17 hours	1 hour	About 7 years and 261 days

Technical data of the sensors CO₂ Carbon Dioxide

Sensor Measurement range Sensor working range Accuracy Resolution Temperature dependence Response time (T_{90}) Long-term stability

CO Carbon Monoxide

Sensor Measurement range Sensor working range Accuracy Resolution Response time $(T_{\rm g0})$ Long-term stability Service life

Atmospheric Pressure Patm

Type of sensor Measurement range Accuracy Resolution Long-term stability Temperature drift

Relative Humidity RH (HD21ABE17 only)

Type of sensor Sensor protection

Measurement range Sensor working range Accuracy

Resolution Temperature dependence Hysteresis and repeatability Response time (T_{s0}) Long-term stability

Temperature T (HD21ABE17 only)

Type of sensor Measurement range Accuracy Resolution Response time (T₉₀) Long-term stability NDIR Dual Wavelength 0 ... 5000ppm -5 ... 50°C ±50ppm±3% of measurement 1ppm 0.1%f.s./°C < 120 sec (air speed = 2m/sec) 5% of measurement/5 years

- Electrochemical cell 0 ... 500ppm -5 ... 50°C ±3ppm±3% of measurement 1ppm < 50 sec 5% of measurement/year > 5 years in normal environment conditions
- Piezo-resistive 750 ... 1100 hPa ±1.5 hPa @ 25°C 1 hPa 2hPa/year ±3hPa with temperature -20 ... +60°C

Capacitive Stainless steel grid filter (on request 10µm sintered filter P6 in AISI 316 or 20µm sintered filter P7 in PTFE) 0 ... 100 % RH -20 ... +60°C ±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 0.1°C

1°C
±2% on all temperature range
1% RH
< 20 sec (air speed = 2m/sec) without filter
1%/year

NTC 10kΩ -20 ... +60°C ±0.2°C ±0.15% of measurement 0.1°C < 30 sec (air speed = 2m/sec) 0.1°C/year





ORDERING CODES

- HD21ABE: IAQ Monitor datalogger kit. It measures CO, CO₂ and atmospheric pressure. Complete with: DeltaLog10 software downloadable from Delta OHM website (version 0.1.5.3 and later) for data download, monitor, and data processing on Personal Computer, 4 x 1.2V NiMH rechargeable batteries, CP23 USB cable, power supply SWD10, operating manual, case. The cables must be ordered separately.
- HD21ABE17: IAQ Monitor datalogger kit. It measures CO, CO₂, atmospheric pressure, temperature and relative humidity. Complete with: DeltaLog10 software downloadable from Delta OHM website (version 0.1.5.3 and later) for data download, monitor, and data processing on Personal Computer, 4 x 1.2V NiMH rechargeable batteries, CP23 USB cable, power supply SWD10, operating manual, case. The cables must be ordered separately.

Accessories:

BAT-40: Spare batteries with built-in temperature sensor.

Accessories for CO and CO₂ sensors:

MINICAN.12A: Nitrogen bottle for CO and CO₂ sensor calibration at 0ppm. Volume 12 liters. With adjustment valve.

- MINICAN.12A1: Nitrogen bottle for CO and CO₂ sensor calibration at 0ppm. Volume 12 liters. Without adjustment valve.
- HD37.36: Kit connection tube between instrument and MINICAN.12A for CO calibration.
- HD21AB17.9: Connection accessory between instrument and MINICAN.12A for CO2 calibration. The connecting tube is included.

Accessories for Humidity sensor:

HD75: Saturated solution at 75.4%RH@20°C for calibration of relative humidity probes, ring M24x1.5 and M12x1.

- HD33: Saturated solution at 33.0%RH@20°C for calibration of relative humidity probes, ring M24x1.5 and M12x1.
- HD11: Saturated solution at 11.0%RH@20°C for calibration of relative humidity probes, ring M24x1.5 and M12x1.
- P6: Complete protection in $10\mu m$ sintered AISI 316 for Ø 14mm probes.

P7: Complete protection in 20µm sintered PTFE for Ø 14mm probes.

P8: 20µm protection grid in stainless steel and PBT for Ø 14mm probes, thread M12x1.

