

HD21ABE, HD21ABE17



Instrument Technical Data

Instrument

| | |
|--------------------------------------|---|
| Dimensions (Length x Width x Height) | 210x90x40 mm (HD21AB) 300x90x40 mm (HD21AB17 with probe) |
| Weight | 470 g (batteries included) |
| Materials | ABS, rubber |
| Display | Backlit, Dot Matrix 160x160 dots, visible area 52x42 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 SWD10) | 12Vdc/1A |
| Batteries | 4 x 1.2V Ni-MH rechargeable batteries AA type |
| Autonomy | 8 hours of continuous use in measure mode |
| Power absorbed with instrument off | < 45µA |

Security of stored data

Unlimited

Serial interface:

| | |
|---------------|------------------------------|
| Socket: | mini-USB |
| Type: | USB 1.1 or 2.0 not insulated |
| Baud rate: | 460800 |
| Data bits: | 8 |
| Parity: | None |
| Stop bits: | 1 |
| Flow control: | Xon-Xoff |
| Cable length: | Max 5 m |

Memory

Divided in 64 blocks.

Storage capacity

67600 recordings.

Logging interval

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.



HD21ABE17

| 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 | NDIR Dual Wavelength |
| Measurement range | 0 ... 5000ppm |
| Sensor working range | -5 ... 50°C |
| Accuracy | ±50ppm±3% of measurement |
| Resolution | 1ppm |
| Temperature dependence | 0.1%f.s./°C |
| Response time (T ₉₀) | < 120 sec (air speed = 2m/sec) |
| Long-term stability | 5% of measurement/5 years |

CO Carbon Monoxide

| | |
|----------------------------------|--|
| Sensor | Electrochemical cell |
| Measurement range | 0 ... 500ppm |
| Sensor working range | -5 ... 50°C |
| Accuracy | ±3ppm±3% of measurement |
| Resolution | 1ppm |
| Response time (T ₉₀) | < 50 sec |
| Long-term stability | 5% of measurement/year |
| 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 |
| Long-term stability | 2hPa/year |
| Temperature drift | ±3hPa with temperature -20 ... +60°C |

Relative Humidity RH (HD21ABE17 only)

| | |
|----------------------------------|---|
| Type of sensor | Capacitive |
| Sensor protection | Stainless steel grid filter (on request 10µm sintered filter P6 in AISI 316 or 20µm 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 (T ₉₀) | < 20 sec (air speed = 2m/sec) without filter |
| Long-term stability | 1%/year |

Temperature T (HD21ABE17 only)

| | |
|----------------------------------|-------------------------------|
| Type of sensor | NTC 10kΩ |
| Measurement range | -20 ... +60°C |
| Accuracy | ±0.2°C ±0.15% of measurement |
| Resolution | 0.1°C |
| Response time (T ₉₀) | < 30 sec (air speed = 2m/sec) |
| Long-term stability | 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 10µm 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.



HD21ABE