

Datalogger RH – Temperature – CO – CO₂

HD37AB17D

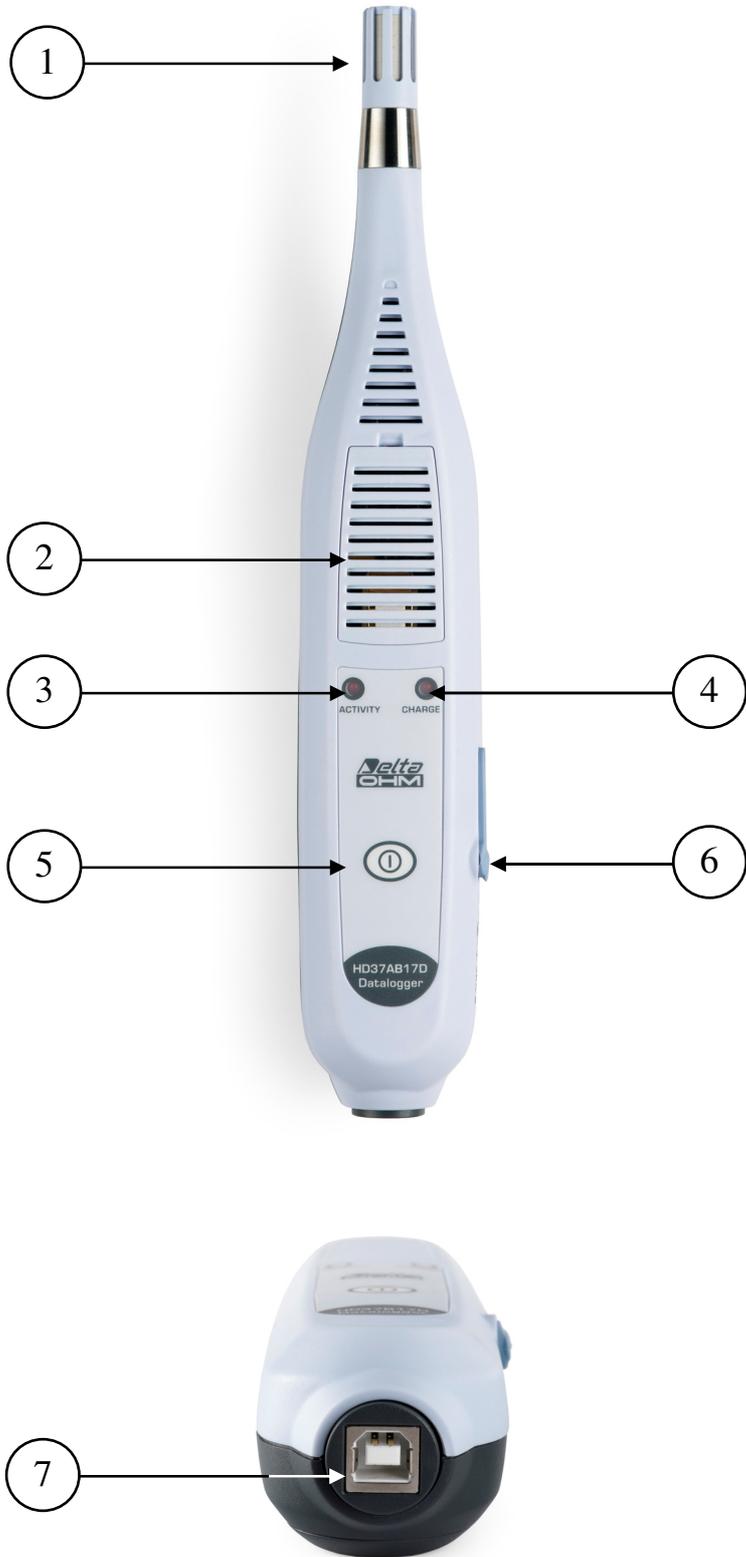
HD37B17D

ENGLISH

The qualitative level of our instruments is the result of a continuous evolution of the same product. This can lead to differences between what is written in this manual and the instrument you bought. We can't completely reject mistakes in the manual, we apologize for this.

The data, the figures and the descriptions contained in this manual can't be juridically worth. We reserve the right to modify and rectify them without any notice.

Datalogger RH – Temperature – CO – CO₂ **HD37AB17D and HD37B17D**



HD37AB17D – HD37B17D

1. Humidity and temperature sensor.
2. Wicket through which you can enter to the CO sensor (Carbon Monoxide) (**only HD37AB17D**).
3. It visualizes the working state of the instrument.
4. It offers the information about the charge state of the Ni-MH rechargeable batteries.
5. Button **ON/OFF**: it switches the instrument ON and OFF.
6. Connector for the inlet of the external power supply (**6 Vdc – 1A**). The positive pole is the central one .
7. USB 2.0 type B connector for the connection to the PC.

1. INTRODUCTION

HD37AB17D and **HD37B17D** instruments are **dataloggers** able to simultaneously measure and memorize the following parameters:

- Relative Humidity **RH**
- Ambient temperature **T**
- Carbon Monoxide **CO** (**only HD37AB17D**)
- Carbon dioxide **CO₂**

HD37AB17D and **HD37B17D** are instruments suitable to research and monitor the air quality in internal environments.

Typical applications are the examination of the air quality in all the buildings where there is a crowd of people (schools, hospitals, auditoria, canteens, etc.), in the work environments in order to optimize the comfort and in the buildings in order to check if there is a small emission of CO, with the risk of explosions or fires. This analysis allows setting the air-conditioning unit (temperature and humidity) and ventilation (air replacement/hour) in order to get a double purpose: getting a good quality of the air according to ASHRAE and IMC regulations in force and an energetic saving.

HD37AB17D and **HD37B17D** are instruments suitable to fight the so-called syndrome of the ill building.

RH measurement (Relative Humidity) is obtained with a sensor of capacitive type.

T temperature is measured with a high-precision sensor of NTC type.

The sensor for **CO** (Carbon Monoxide, **only HD37AB17D**) measurement consists of an electrochemical cell with two electrodes suitable to detect the presence of carbon monoxide, lethal for man, in residential and industrial environments.

CO₂ (Carbon Dioxide) measurement is obtained with the special infrared sensor (NDIR technology: Non-Dispersive Infrared Technology) that, thanks to the use of a double filter and a special measurement technology, warranties precise and constant measurements over the time. The presence of a protection membrane through which is given off the air to check, protects the sensor from dust and atmospheric agents.

HD37AB17D and **HD37B17D** are **dataloggers** able to memorize the detected measurements, with a frequency prearranged by the user.

HD37AB17D and **HD37B17D** connect to the PC through **USB** inlet.

The instruments are supplied with **DeltaLog13 Software** with which you can manage the connection operations to the PC, the RH, CO (only HD37B17D) and CO₂ sensor calibrations, the instrument working parameters setup, the data transfer, the graphical introduction and the acquired or memorized measurements print.

Through an appropriate procedure, the Software **DeltaLog13** can evaluate the parameter **% OA** (percentage of external air), according to the formula:

$$\%OA = \frac{X_r - X_s}{X_r - X_o} \cdot 100$$

whereas:

X_r = CO₂ in return air

X_s = CO₂ in the outlet air

X_o = CO₂ in the external air

The power supply of the instrument is provided with a 2 Ni-MH rechargeable batteries package (code BAT-20), that ensures over 8 hours of continuous working, in acquisition mode.

2. KEYBOARD AND LED DESCRIPTION

The instrument can have two working modes: the stand-by mode (signalled, every 5 seconds, by a short flashing of the led activity) in which the instrument is waiting to be commanded and reduces the battery consumption to the minimum, and the **measurement mode** (signalled, every 3 seconds, by a double long flashing of the activity led) in which the instrument simultaneously measures all the parameters (RH, T, CO, CO2) and memorizes them in its own internal memory with the set memorization frequency. From **stand-by mode** you can always pass to the measurement mode, pushing the button ON/OFF.

When it is connected to the PC, the instrument automatically goes in **measurement modality**.



Button ON/OFF

To switch the instrument on (**measurement mode**) press the button ON/OFF till the Led Activity starts emitting two long and close flashings, so release the button.

To switch the instrument off (**stand-by mode**) press the button ON/OFF till the Led Activity starts emitting two long and close flashings, so release the button.

It's not possible to switch the instrument off when it's connected to the PC.



Led CHARGE

The led CHARGE offers the information about the charge state of Ni-MH rechargeable batteries.

When the external power supply is connected, the instrument checks the rechargeable batteries charge state and, if necessary, starts the charge operation.

The real charge can be preceded by a pre-charge phase; an inserted mode in order to avoid exorbitant stresses of the batteries when they are particularly discharged or their temperature is too low: in this phase the led CHARGE emits a flashing per second.

After this first phase, the quick charge starts: The led CHARGE remains fixedly ON and it switches OFF only if the charge is completed.

Now it's possible to disconnect the external power supply and use the instrument using only rechargeable batteries.



Led ACTIVITY

The led ACTIVITY visualizes the working state of the instrument. Every 5 seconds, a short flashing indicates the stand-by mode. At least every 3 seconds, a double flashing indicates that the instrument is measuring.

3. INSTRUMENT INSTALLATION

The instrument has an inlet for the power supply and the recharge of the internal batteries and a 2.0 USB output B type for the connection to the PC.

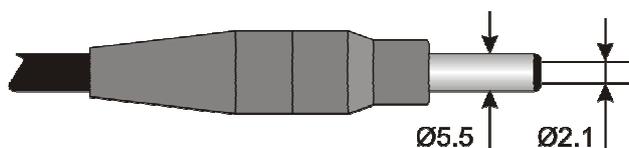
3.1. POWER SUPPLY

The instrument has an inlet (1) for the external power supply (**6 Vdc – 1A**) code **SWD06**. The power supply has a double function: **it feeds the instrument and recharges** the Ni-MH batteries package.



Power supply connector

The power supply connector has a 5.5mm external diameter and a 2.1mm internal diameter.



The positive pole is the central one:



The power supply provided with the instrument has **SWD06** code and the following features:

- Exit voltage: 6Vdc
- Maximum current: 1600mA (9,60 VA Max).

The instrument is provided with a package of 2 Ni-MH rechargeable batteries at 1.2V–2200mA/h, placed in the battery case.

To recharge the batteries, follow the following instruction.

3.1.1. Batteries recharge

To recharge the batteries package, use the **SWD06** battery charger provided with the instrument.

Go on as indicated below:

- connect the pin of the battery charger to the power supply net and the connector of the battery charger to the pin placed at the left of the instrument. **The power supply must be 6Vdc.**
- If the batteries are particularly discharged or their temperature is about zero, the led CHARGE flashes for some seconds (pre-charge phase) and then it remains fixedly on in order to indicate that the instrument is in the speed charge phase.
- Charge the batteries till the led CHARGE doesn't switch off.

3.1.2. Notes for the batteries use

- At the first start up, it's necessary to completely recharge the batteries.
- The charge time of the batteries package is about 4 hours.
- The last of the batteries package in measurement working mode is about 8 hours.
- A new Ni-MH batteries package reaches the maximum of its performance only after being discharged and charged completely again at least twice or three times.
- The batteries package autonomy depends on the instrument use. Even if the instrument is in stand-by with the batteries package completely charges, it is autonomously charged during the time.
- The batteries package can be charge and discharge hundred of times, but using them the charge loses its own capacity. Replace the batteries package when the autonomy is reduced at some hours.
- Use only Delta Ohm batteries package code **BAT-20** and recharge it using **SWD06** battery charger or one that complies with the specifications indicated in the technical data.
- The Ni-MH batteries package lasts more if, sometimes, you act with cutting and you completely discharge it.
- Extreme temperatures weigh negatively on the performances of the batteries package.
- At the beginning of a new charge, you can check a variation of the internal temperature of the instrument that can temporarily influence the CO₂ measurement.

3.1.3. Replacement of the batteries package

For the replacement of the batteries package, go on as indicated below:

- Disconnect the external power supply, if connected.
- Remove, from the back of the instrument, the lid of the batteries case placed on the bottom of the instrument unfastening the screw (1).



- Take off the connector, paying attention not to tear the wires away.
- Remove the batteries package.
- Connect the connector to the new batteries package: the connector has a reference that prevents a wrong insertion.
- Place the package in the batteries case.
- Close the batteries case again with the clamping screw.

3.1.4. Batteries disposal

Recycle the batteries or throw them in a suitable manner.
Don't throw the batteries to the waste.
Don't throw the batteries into the fire.

3.2. CONNECTION TO THE PC

The instrument is provided with a 2.0 USB communication interface B type. For the connection to the PC, it's required the cable code **CP22**.

The instruments are supplied with **DeltaLog13 software**. With the software you can manage the connection operations to the PC, the CO₂ sensor calibration (only HD37B17D), the RH calibrations, the instrument working parameters setup, the data transfer, the graphical introduction, the acquired or memorized measurements print.

DeltaLog13 software is endowed with a "Help on-line" (also in pdf format) that describes the features and the functions.

Moreover, the instruments are compatible with HyperTerminal communication program supplied together with Windows operational systems (from Windows 98 to Windows XP).

3.2.1 Serial buttons

The connection through USB requests the preventive installation of a driver inserted into the instrument software. **Before connecting the USB cable to the PC, install the driver** (look at the details in the **3.2.2 paragraph Driver Installation for a connection to the 2.0 USB port**).

The parameters of the instrument USB serial transmission are:

- Baud rate 480600 baud
- Parity None
- Bit number 8
- Bit stop 1
- Protocol Xon / Xoff.

The instruments are provided with a full kit of controls and request of data sent by the PC.

All the controls sent to the instrument must have the following structure:

A00ZXCR where: **XX is the control code and CR is the Carriage Return (code ASCII 0D)**.

The XX control characters are only capitals, the instrument responses with "&" if the key is right, with "?" if any combination of characters is wrong.

The response strings of the instrument finish with "|" character (code ASCII 124) followed by the enter of the keys (Carriage Return) and LF (Line Feed).

Key	Response	Description
A00ZP0	&	Ping
A00ZS0		
A00ZS1		
A00ZS2		
A00ZDAaammgghhmmss		
A00ZDSaammgghhmmss		
A00ZDLxxxxx		
A00ZFA		
A00ZFS		
		Instrument code
A00ZG1	& V1R1 2008/12/05	Version and date of the Firmware

Key	Response	Description
	2008/12/10 08.50.00	Date and hour of calibration by the company Date and hour of calibration by the user
	&12345678	Instrument serial number
		User code (max. 32 characters)
A00ZK1	&	Start Logging
A00ZK0	&	Stop Logging
A00ZKT	&	It enables the compensation in temperature
A00ZKN		It disables the compensation in temperature
A00ZKRxxxx yyyy		It executes the memory Dump from the xxxx page to the yyyy page (pages: from 0000 to 1999)
A00ZKS		It prints the list of the memo-rized sections
A00ZKE	&	It resets the number of the sections and of the records
A00ZKZ	&	It resets the Flag of Automatic Start
A00ZRL	&00000	Length in seconds of the programmed Log
A00ZRM	&06800	Next record number in logging
A00ZRP	&01013	Set atmospheric pressure
A00ZRS	&00 ; 00 ; FF ; 00	Options status: FIRST BYTE: temperature correction: SECOND BYTE: user correction: 00=off THIRD BYTE: Status Log: FF=off 00=start 01=Log 02=end FOURTH BYTE: Deferred Log: 00=off
A00ZRT	&0000000090	Sections number
A00ZYU	USER UN_locked	It enables the user parameters change
A00ZWUxx...x	&	It writes till 32 characters in the user code (it's accepted only if it is preceded by A00ZYU)
A00ZWAxx	&	It sets the average per package on xx samples (from 3 sec to 60 sec)
A00ZWPxxxx	& 0ZWP1013	Setup of atmospheric pressure

3.2.2 Driver Installation for a connection to 2.0 USB port

For Windows Vista® operative system, proceed as follows:

1. **Wait to connect instrument to USB port when expressly required.**
2. Insert DeltaLog13 CD-ROM and select "*Install USB driver*".
3. The folder where drivers will be installed is indicated in the installation window. Select "*Install*" **without making changes**.
4. The program checks driver presence in the PC.
5. If drivers have already been installed, the following message appears "*These drivers are already current and up to date, to remove these go to Add/Remove Programs in the Control Panel*". Press "OK" to stop operation.
6. If drivers are not current, their installation is started.
7. If the system protection message is displayed, select "*Install this driver software anyway*".
8. At the end of the installation procedure, the message "*Installation completed successfully*" is displayed. Press "OK" to finish.
9. Connect instrument to PC USB port. When the new instrument is recognized, the message "*Installing device driver software*" appears.
10. Wait for installation procedure to be completed.
11. Installation procedure has been completed: the instrument will be automatically recognized at each next instrument connection.

To check if the whole operation has been successfully completed, double-click on "*Device Manager*" from the Control Panel. The following display will be shown:

"Universal Serial Bus controllers" >> "Delta Ohm USBXpress Device".

When USB cable is disconnected, the display disappear and is displayed again with next cable connection.

For Windows® 2000, NT, XP operative systems, proceed as follows:

1. **Wait to connect instrument to USB only when expressly required.**
2. Insert DeltaLog13 CD-ROM and select "*Install USB driver*".
3. The folder where drivers will be installed is indicated in the installation window. Select "*Install*" **without making changes**.
4. The program checks the driver presence in the PC.
5. If drivers have already been installed, the following message appears "*These drivers are already current and up to date, to remove these go to Add/Remove Programs in the Control panel*". Press "OK" to finish.
6. If drivers are not current, their installation is started.
7. If a message appears informing that the software didn't pass Windows Logo testing, select "*Continue Anyway*".
8. At the end of the installation procedure, the message "*Installation completed successfully*)" is displayed. Press "OK" to finish.

9. Connect instrument to PC USB port. When Windows recognizes the new device, a guided installation of the new hardware (*Found New Hardware Wizard*) is started.
10. If the message asking the permission to search for an updated software is displayed, answer "*No, not this time*" and continue.
11. In the installation window, select "*Install from a list or specific location*".
12. In next window, select options "*Search for the best driver in these locations*" and "*Include this location in the search*". By means of "*Browse*" command, select installation folder supplied at point 3:

"C:\Program Files\Silabs\MCU\USBXpress"

Confirm with "*Next*".
13. If a message is displayed informing that the software didn't pass Windows Logo testing, select "*Continue Anyway*".
14. USB drivers are installed: at the end of procedure, press "*End*".
15. Installation procedure has been completed: the instrument will be automatically recognized at every new connection.

To check if the whole operation has been correctly completed, double-click on "*System*" icon from the Control Panel. Select "*Hardware*" folder, then "*Device Manager*". The following item should be displayed:

"Universal Serial Bus controllers " >> Delta Ohm USBXpress Device".

When USB cable is disconnected, this item disappears and is shown again at next connection.

Notes.

1. If the instrument is connected to the USB port **before** installing the drivers, Windows signals the presence of an unknown device: in this case, cancel the operation and repeat the process explained at the beginning of this paragraph.
2. **In the documentation provided with DeltaLog13 CD-ROM**, there is a detailed version with images of this chapter. Moreover, the steps for the removal of USB drivers are indicated.

4. SENSORS CALIBRATION

The instruments are calibrated by the company and don't usually request any other intervention by the user. However, there is the possibility to calibrate again.

It's possible to calibrate the RH (Relative Humidity), CO (Carbon Monoxide – only HD37AB17D) and CO₂ (Carbon Dioxide) sensors.

It's not foreseen any calibration for the temperature sensor.

To calibrate, it's necessary to connect the instrument to the PC and start **DeltaLog13** program.

For a right calibration of the probes, it's important to know and respect the physical phenomena that are at the basis of the measurement: For this reason, we suggest you to carefully follow what is indicated below and calibrate again only if you have the adequate technical knowledge:

4.1. RH SENSOR CALIBRATION

Before starting the calibration, it's convenient to **check**, with the help of saturated solutions at 75.4%RH and 33%U, the necessity to calibrate again: only if there is a measurement mistake in at least one of these two points, go on calibrating.

This calibration process cancels the data of the previous calibrations.

For a correct sensor calibration, **the first point must be at 75%RH** and the second one at 33%RH.

1. Connect the instrument to the PC by USB connection cable code CP22 and start DeltaLog13 program. Follow the DeltaLog13 sensors calibration guided process.
2. Control that inside the chamber containing saturated saline solution, there are in the same time:
 - salt at solid state
 - liquid solution or wet salt.
3. The instrument and the saturated solution to use for this operation must have the same temperature and so they have to be placed in an environment with a stable temperature for the whole period of the calibration.
4. Unscrew the protection grid of the probe, screw M12X1 ring nut of the plug of the saturated solution.
5. If inside the measurement chamber some liquid is formed, dry it with an absorbent clean sheet.
6. Screw the ring nut to the case with the saturated solution to check. Avoid any contact of the sensible element with the hands or another item or liquids.
7. Once introduced the sensor, wait at least 30 minutes, if the probe and the salts have the same temperature.
8. Follow the DeltaLog13 guided process for calibrating the sensor.



4.2. CO SENSOR CALIBRATION (ONLY HD37AB17D)

It's possible to calibrate the CO sensor zero in clean air (in an external environment the CO concentration is less than 0,1ppm) or using nitrogen cylinders (code MINICAN.12A).

CO zero calibration in clean air:

1. Put the instrument in an environment with clean air (the concentration of CO in the external environment is less than 0.1ppm), switch the instrument on and wait at least 15 minutes because the measurement must stabilize.
2. Connect the instrument to the PC by USB connection cable code CP22 and start DeltaLog13 program, so follow the instruction connected with the **CO zero** calibration.

CO zero calibration with nitrogen cylinder (code MINICAN.12A):

1. Using a screwdriver, open the wicket on the frontal side of the instrument.
2. Connect the pipe coming from the MINICAN.12A cylinder with the rubber cowl- ing on the CO sensor head.
3. Connect the instrument to the PC by the USB connection cable code CP22 to the PC and start the DeltaLog13 guided process of sensors calibration.
5. Supply the gas, controlling the cylinder fluxmeter in order to have a constant flow between 0.1 and 0.2 l/min.
6. Wait two minutes necessary for the calibration without modifying the working conditions.
7. At the end of the process, close the cylinder tap and remove the CO sensor cowl- ing.
8. Insert the protection grid.

CO sensor replacement:

In normal conditions of use, the CO sensor has an average expected life over 5 years. If it is necessary to replace the CO sensor, order a new one (code **ECO-SURE-2E CO**), then follow the process indicated below for the replacement of the CO sensor.

1. Switch the instrument off.
2. Using the screwdriver, open the wicket of the sensor-holder and pull the flat CO sensor out.
3. Take the new CO sensor and note the number stamped on the new sensor bor- der that expresses its own sensitivity in nA/ppm.
4. Insert the electrodes into the contact of the new sensor.
5. Switch the instrument on and wait at least 5 minutes till the measurement is stabilized.
6. Connect the instrument to the PC by USB connection cable code and start Del- taLog13 program, go to replace CO sensor. If necessary, execute the zero cali- bration of the new CO sensor.



4.3. CO₂ SENSOR CALIBRATION

The CO₂ sensor can be calibrated:

- at 400ppm in clean air
- at 0ppm with the help of nitrogen cylinders (code MINICAN.12A).

The instrument is able to automatically recognize the started calibration mode: if 400ppm or 0ppm. The calibration must be executed on only one point: each new calibration cancels the previous one.

Go on as indicated below:

1. Connect the instrument to the PC by USB connection cable code CP22 and start DeltaLog13 program. Follow the DeltaLog13 guided process of the sensor calibration.
2. Unscrew the grub screw with a hexagonal slot placed on the instrument back side on a black aluminium disc. Instead of the grub screw, screw the metal tube that is placed at the end of the plastic one, connecting to the MINICAN.12A cylinder for calibration.
3. If you want to calibrate around 400ppm, let the inlet open: in this second calibrating process, make sure that the instrument is really in clean air.
4. For the calibration at 0ppm, after connecting the tube coming from the nitrogen cylinder to the CO₂ inlet of said instrument, control the cylinder fluxmeter to have a constant flow between 0.3 and 0.5l/min.
5. Switch the instrument on and wait at least 15 minutes before going on.
6. Supply CO₂ for at least 2 minutes in order that the measurement is stabilized.
7. Wait two minutes necessary for the calibration without modifying the working conditions.
8. Follow the DeltaLog13 guided process for calibrating the sensor.
9. At the end screw the instrument tube and close the hole with the grub screw with M6 hexagonal slot.



5. STORAGE

Instrument storage conditions:

Temperature:

- Humidity: 10...90%RH no condensing.
- During the storage, avoid the points where:
 - The humidity is high.
 - The instrument is exposed at the direct radiation of the sun.
 - The instrument is exposed at a high temperature source.
 - There are hard vibrations.
 - There are vapour, salt and/or corrosive gas.

The instrument case is in ABS plastic material: don't use not compatible solvents for their cleaning.

6. TECHNICAL FEATURES

Dimensions	280 mm x 45 mm x 40 mm
Weight	230 g (complete of batteries)
Materials	
Net power supply (code SWD06)	Net batteries charger 100-240Vac/6Vdc-1A
Batteries	Package with 2 rechargeable batteries 1.2 AA type (NiMH)
Autonomy	8 hours of continuous working in measurement mode
Absorbed current with instrument in stand-by mode	200µA
Instrument working temperature	50°C
Working relative humidity	0%RH ... 95%RH no condensing
Temperature / Storage humidity	-25°C ... 90%RH no condensing
Humidity and temperature sensor	
Safety of the memorized data	Unlimited
Connections	
USB interface	2.0 USB cable B type Baudrate 460800
Batteries charger power supply (code SWD06)	2 – poles connector (positive at the centre) Outlet voltage: Maximum current: 1600mA (9.60VA Max).
Measuring rate	1 sample every three seconds
Storage capacity	200 Records Every record is made up of: <ul style="list-style-type: none">- date and hour- measurement of the carbon dioxide (CO₂)- measurement of the carbon monoxide (CO- only HD37AB)- measurement of the relative humidity (RH)- measurement of the temperature (T)
Measure frequency	1 sample every 3 seconds
Logging interval	selectable within: 3, 6, 12, 15, 30, 60, 120, 180, 240, 300 seconds. The stored values represent the average value of the samples that are stored every three seconds.
Printing interval	selectable within: 3, 6, 12, 15, 30, 60, 120, 180, 240, 300 seconds. The printed values represent the average value of the samples that are stored every three seconds.

Sensor Features

Relative Humidity RH

Sensor	Capacitive
Sensor Protection	Net filter in INOX steel and ABS (on request P6 filter in sintered AISI316 20µm or P7 filter in sintered PTFE 10µm)
Measurement range	5...98 % RH
Sensor working range	-40...+80°C
Accuracy	±2% (15..90%RH) @ 20°C, ±2.5% in the re- maining range
Resolution	0,1%
Dependence on the temperature	2% on all the 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

Sensor type	NTC 10KΩ
Measurement range	-40...+60°C
Accuracy	±0.2°C ±0.15% of the measurement
Resolution	0,1°C
Response time (T ₉₀)	<30 sec. (air speed = 2m/sec) without filter
Long term stability	0.1°C/year

Carbon Monoxide CO (only HD37AB17D)

Sensor	Electro chemical cell
Measurement range	0...500ppm
Sensor working range	-5...50°C
Accuracy	±3ppm+3% of the measurement
Resolution	1ppm
Response time (T ₉₀)	<50 sec.
Long term stability	5% of the measurement/year
Expected life	>5 years in normal environment conditions

Carbon Dioxide CO₂

Sensor	NDIR with a double wave length
Measurement range	0...5000 ppm
Sensor working range	-5...50°C
Accuracy	±50ppm+3% of the measurement
Resolution	1ppm
Dependence on temperature	0,1%f.s./°C
Response time (T ₉₀)	<120 sec. (air speed= 2m/sec)
Long term stability	5% of the measurement/5 years

Standard Rules EMC

Safety	EN61000-4-2, EN61010-1 level 3
Electrostatic discharges	EN61000-4-2 level 3
Fast electrical transients	EN61000-4-4 level 3, EN61000-4-5 level 3
Voltage variations	EN61000-4-11
Susceptibility to electromagnetic interferences	EN61000-6-2
Emission Electromagnetic interferences	EN61000-6-4

7. ORDER CODES

- HD37AB17D** The kit consists of: **HD37AB17D** instrument to measure CO₂ (Carbon Dioxide), CO (Carbon Monoxide), RH (Relative Humidity), T (temperature), **DeltaLog13** Software, USB cable code **CP22**, **SWD06** power supply, **BAT-20** batteries package, instruction manual, case.
- HD37B17D** The kit consists of: **HD37B17D** instrument to measure CO₂ (Carbon Dioxide), RH (Relative Humidity), T (Temperature), **Delta-Log13** Software, USB cable code **CP22**, **SWD06** power supply, **BAT-20** batteries package, instruction manual, case.

Accessories:

- VTRAP20** Tripod with a maximum height of 270 mm.
- SWD06** Main voltage power supply **100-240Vac/6Vdc-1A**.
- BAT-20** **Package of spare batteries for** HD37AB17D and HD37B17D instruments with integrated temperature sensor.
- P5** Protection on the net in stainless steel for probes diameter 14, thread M12×1.
- P6** Protection on the net in sintered stainless steel 20μ, for probes diameter 14, thread M12×1.
- P7** Protection in PTFE 10μ, for probes diameter 14, thread M12×1.
- P8** Protection on the net in stainless and ABS for probes diameter 14, thread M12×1.
- HD75** Saturated solution for testing the Relative Humidity with 75% RH, complete of joint ring for probes diameter 14, thread M12×1.
- HD33** Saturated solution for testing the Relative Humidity with 33% RH, complete of joint ring for probes diameter 14, thread M12×1.
- MINICAN.12A** Cylinder of nitrogen for the calibration of CO and CO₂ at 0ppm. Volume 12 litres. **With adjustment valve.**
- MINICAN.12A1** Cylinder of nitrogen for the calibration of CO and CO₂ at 0ppm. Volume 12 litres. **With adjustment valve.**
- ECO-SURE-2E CO** Spare sensor of CO.
- HD37.36** Kit connection pipe for the instrument and MINICAN.12A for the calibration of CO.
- HD37.37** Kit connection pipe for the instrument and MINICAN.12A for the calibration of CO₂.

INDEX

1 . INTRODUCTION	4
2 . KEYBOARD AND LED DESCRIPTION	5
3 . INSTRUMENT INSTALLATION.....	6
3.1 . POWER SUPPLY	6
3.1.1 . Batteries recharge	7
3.1.2 . Notes for the batteries use	7
3.1.3 . Replacement of the batteries package	8
3.1.4 . Batteries disposal	8
3.2 . CONNECTION TO THE PC.....	9
3.2.1 Serial buttons	9
3.2.2 Driver Installation for a connection to 2.0 USB port	11
4 . SENSORS CALIBRATION.....	13
4.1 . RH SENSOR CALIBRATION.....	13
4.2 . CO SENSOR CALIBRATION (ONLY HD37AB17D)	15
4.3 . CO ₂ SENSOR CALIBRATION	16
5 . STORAGE.....	17
6 . TECHNICAL FEATURES	18
7 . ORDER CODES.....	20

CERTIFICATO DI CONFORMITÀ DEL COSTRUTTORE

MANUFACTURER'S CERTIFICATE OF CONFORMITY

rilasciato da

issued by

DELTA OHM SRL STRUMENTI DI MISURA

DATA

DATE

2009/02/09

Si certifica che gli strumenti sotto riportati hanno superato positivamente tutti i test di produzione e sono conformi alle specifiche, valide alla data del test, riportate nella documentazione tecnica.

We certify that below mentioned instruments have been tested and passed all production tests, confirming compliance with the manufacturer's published specification at the date of the test.

La riferibilità delle misure ai campioni internazionali e nazionali delle unità del SIT è garantita da una catena di riferibilità ininterrotta che ha origine dalla taratura dei campioni di laboratorio presso l'Istituto Primario Nazionale di Ricerca Metrologica.

The traceability of measures assigned to international and national reference samples of SIT units is guaranteed by a uninterrupted reference chain which source is the calibration of laboratories samples at the Primary National Metrological Research Institute.

All calibration data for test equipment are retained on Delta Ohm and are available for inspection upon request.

Tipo Prodotto:

Product Type:

Datalogger

Datalogger

Nome Prodotto:

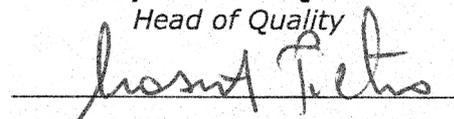
Product Name:

HD37AB17D

HD37B17D

Responsabile Qualità

Head of Quality



DELTA OHM SRL

35030 Caselle di Selvazzano (PD) Italy

Via Marconi, 5

Phone. +39.0498977150 r.a. - Telefax +39.049635596

Cod. Fisc./Vat Number IT03363960281 - N.Mecc. PD044279

R.E.A. 306030 - ISC. Reg. Soc. 68037/1998

WARRANTY



WARRANTY CONDITIONS

All DELTA OHM instruments are deeply checked, are warranted for 24 months from the purchasing date. DELTA OHM will repair or replace as free of charge those items that, within the warranty period, will be, in its own opinion, not efficient. The whole replacement is excluded and we don't recognize damage claims. DELTA OHM warranty involves only the instrument repair. The warranty expires if the damage is caused by fortuitous breaks during the transport, by negligence, by a wrong use, by a connection with different voltage from the one established by the instrument by the operator. At last, the repaired or tampered item is out of the warranty by non-authorized third parties. The instrument will be sent as FREE OF CHARGE to your reseller. For any dispute, the competent court is the one placed in Padua.



The electrical and electronic instruments, having this symbol can't be discharged in the public dumps. In compliance with UE 2002/96/EC Directive, the European users of electric and electronic instruments have the possibility to send back to the Distributor or the Manufacturing, the used instrument when they buy another new one. The unauthorized removal of the electric and electronic instruments is punished with a pecuniary administrative penalty

This certificate must accompany the instrument sent to the Assistance Service.
IMPORTANT: The warranty is valid only if this coupon will fill out in every part.

Instrument code **HD37AB17D** **HD37B17D**

Serial number _____

RENEWALS

Date _____	Date _____
Operator _____	Operator _____
Date _____	Date _____
Operator _____	Operator _____
Date _____	Date _____
Operator _____	Operator _____



CE CONFORMITY	
Safety	EN61000-4-2, EN61010-1 LEVEL 3
Electro static discharges	EN61000-4-2 LEVEL 3
Speed electrical transients	EN61000-4-4, EN61000-4-5 LEVEL 3
Voltage changes	EN61000-4-11
Susceptibility to electromagnetic interferences	IEC1000-4-3
Emissione interferenze elettromagnetiche	EN55020 class B