USER MANUAL OF HD35AP-S SOFTWARE

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1. INTRODUCTION

The HD35AP-S software allows managing via PC the HD35 wireless data logging system and the dataloggers of the HD50 and HD208 series.

The software allows:

- the configuration of the system: setting logging and transmission intervals, setting alarm thresholds, adding or removing data loggers from HD35 system, etc.;
- the transfer of the measured data from data logger to PC;
- the display of the measurements in real time (Monitor), also in graphic format;
- · managing the graphical representation, print and export of acquired data;
- the calibration of relative humidity, differential pressure CO and CO₂ sensors.

The HD35AP-CFR21 option (working with hardware key) allows, in addition to the features of the basic software, the protection of recorded data and configuration of the system in response to FDA 21 CFR part 11 recommendations.

WARNING: the data transferred into PC are saved in a database. Correct operation of the database requires MySQL database management system to be installed. In order to install MySQL, run the file *Autorun.exe* of the software package, select *Install MySQL* and follow the instructions in *Guide to MySQL server installation* available in *Documentation* section. For safety reasons, perform regularly the backup of the data contained in the database by using the utility program MySQLBackup which is installed in the PC together with the software HD35AP-S.

2. CONNECTION

Devices connection modes:

• The **HD35AP**... base units can be connected to a PC through the mini-USB connector and **CP31** cable (directly with type A USB connector for HD35APD). In this connection mode, the base unit is power supplied by the PC USB port.

• The base unit HD35APW can alternatively be connected to a PC through a local area Wi-Fi or Ethernet network.

• The base unit **HD35APR** can alternatively be connected to a PC through a local area Ethernet network.

• The base units **HD35APG** and **HD35AP3G** can alternatively communicate with PC via Internet through the GPRS TCP/IP (**HD35APG**) or 3G TCP/IP (**HD35AP3G**) protocol. Please see the system user manual for the GPRS/3G TCP/IP connection procedure.

- The data loggers HD50... can be connected to a PC through a local area Wi-Fi or Ethernet network.
- The data loggers HD208... can be connected to a PC through the mini-USB connector and CP23 cable.

Note: The USB connection does not require any driver installation: when the device is connected to PC, Windows® operating system automatically detects the device as a HID device (Human Interface Device) and uses the drivers already installed in the operating system.

After proper connection of the device, proceed as follows:

- 1. Start the HD35AP-S software program by a double "click" on program icon on the desktop or by selecting HD35AP-S item from *DeltaOhm* folder on START menu.
- 2. If an internet connection is available, the program first of all verifies automatically if a software update is available; if available, the user is asked to install the update. If the program doesn't detect any internet connection or if there is no update available, the main program window is started directly.
- **3.** Only when you first start the software, a message appears asking you to set the parameters for the connection to the database: press *OK*, the window to enter the connection parameters appears.

ġ.	Settings	
Connection Type:		
MySQL (TCP/IP)		
Hostname / IP:		
127.0.0.1		
User:		
root		
Password:		
••••		
Port:		
3306		

Hostname / IP : insert *localhost* if the database is installed in the same PC as the software; on the contrary insert the IP address of PC where the database is installed.

User : leave default setting (root).

Password : type in the password inserted during MySQL installation.

Port : type in the port number inserted during MySQL installation.

Press *Save* to save the parameters in the PC. Press *Connect* to connect to the database. Press *Exit* to go back to the main program window.

Note: the window can be recalled by selecting the item *MySQL management* from *Tools* menu. The item *MySQL management* is disabled if there is a connection in progress; in this case select the icon *Disconnect* to end the connection and to enable the item *MySQL management*.

4. Select Type of connection from Tools menu.



- 5. Select one of the following connection options:
- **5.1** If the device is connected through the USB cable, select option *Serial connection (HID)* for HD35AP... or *Serial connection (HID) HD208* for HD208..., then select *Apply* to go back to main window.

😚 Type of connection	n	x
	Type of connection	/
e Serial connecti		
 TCP server TCP client 	on (HID) HD208	
Server port Server Address	1170	
192.168.1.1]
	Apply E	i

5.2 If the device is connected through a local area network (HD35APW, HD35APR, HD50) or via GPRS TCP/IP (HD35APG, HD35AP3G) and the user is going to connect from a PC that acts as a server, select *TCP server* option and type in the server port number where the PC (server) will listen to incoming connection requests from the device. Press *Apply* to go back to main window.

Type of connection				E
	Туре о	f connec	tion	
Criticana i'	(115)			
 Serial connection Serial connection 				
\rightarrow				
TCP server				
Server port	1170			
Server Address				
192.168.1.1				
			Apply	E×
			· · · · · · ·	

5.3 If the device is connected through a local area network (HD35APW, HD35APR, HD50) or via GPRS TCP/IP (HD35APG, HD35AP3G) and the user is going to connect from a PC that acts as a client, select *TCP client* option, then type in the port number and the IP address of the device (that acts as a server). Press *Apply* in order to go back to the main window.

Type of connection	Type of	connect	ion	
Serial connection				
Serial connection	(HID) HD208			
 TCP server TCP client 				
Server port	1170	A.		
Server Address				
192.168.1.1				
				-
			Apply	E

6. The software provides a function able to automatically search for devices connected to PC via USB. If more than one device is connected to PC, in the lower left part of the program window the user can select the serial number of the device to be connected.



7. From the toolbar select *Connect* icon or, from *Tools* menu, select *Connect* item.



8. If the password request is enabled, you are prompted for a password to connect. Enter the password supplied with the device and press *Apply*.

🎊 Password	X
Insert password	
Remember password	
06 sec 🥩 Apply	
	ii

By selecting the option *Remember password*, the software stores the entered password for the next connections (it will be sufficient to press *Apply* without entering the password).

If you do not enter the password and press *Apply*, the software connects automatically after 10 seconds, using the stored password, if existing. The countdown stops if you start to write the password.

The password request can be enabled/disabled by selecting the item *Password required* from the *Tools* menu.

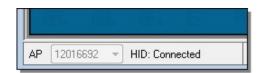
9. Wait for connection to be completed.



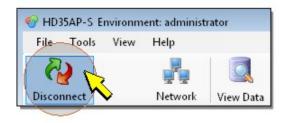
If connection is successfully made, the connected data logger (HD50 or HD208) or, in the case of the HD35 series, the list of all devices of the network related to the connected HD35AP base unit appears in the program main window (if the HD35 network has not been configured yet, the list is empty; in this case please see the paragraph <u>Add devices to the network</u> to start the network configuration).

-	vironment: administra	ator			
File Tools	View Help				
<i>(</i>)		🔯 🛃 .	- 👌	i . 🎱	
Disconnect	Network	View Data Monitor	Data downloa	d from AP Data download	from ftp
A 🕑 📲	P_101 [HD35A	PG SN:13009359	- GSM NE	TWORK]	
	Setup	Model	SN	RF and log interval	Use
ED DC	Settings 76	HD35EDL1N4r2TV	12039377	15 (sec)	USER
▶ ED_76					

In the bottom part of the program window is shown the indication of connection status.



In order to end connection, select the icon *Disconnect* from the toolbar, or alternatively, the command *Disconnect* from *Tools* menu.

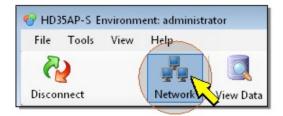


File	Tools	View Help	
Disco	🔊 Ту	vSQL manageme	
DISCO	LAN D	isconnect	ew Data

3. ADDING DEVICES TO THE HD35 NETWORK

In order to add a device (data logger, repeater or alarm unit) to the network, follow the procedure described below.

- 1. Power supply the device to be added. If the two RF LED are off, activate the RF circuit by pressing and keeping down the connection key for 5 seconds. When the RF circuit is on, the red RF LED blinks while waiting for connection to the base unit.
- 2. Select the icon *Network* from the toolbar, or alternatively the *Network* command from *Tools* menu.



File	Tools	View H	lelp	1
Discor	S I	ySQL mana pe of conn sconnect		🔍 :w Data
	🗿 N	etwork		:120:
	a 1	ments s	2	 ,

3. From the section Add Devices, select Execute search key.

🚑 Network			X
Add Devices		Add Devices	?
Delete Devices	Search for new devices		
Network migration	List of available devide	Enter the serial number	
Replace AP			

- 4. By selecting the key *Execute search*, a message will be prompted asking to confirm the command, press YES to proceed.
- **5.** Wait for the search of new devices to be completed. In the lower part, a bar showing the operation advancement status is displayed.

	Select the devices to be included in the network and write the serial number Add to network	
	Searching for devices on RF channel 3	.::
		Exit
Running: Request to search f	or new devices	d

6. When the search procedure is ended, the list of detected devices is shown. Devices are labeled with their RF address (number set at the factory, not editable by the user - RF address is written on the label placed on the back panel of device enclosure). Select devices you want to add. It's possible to add several devices at the same time. For every device selected, insert the serial number written on the label placed on the back panel of the device enclosure.

Add Devices		Add Devices
Delete Devices Network migration	Search for new devices Execute search	
Save network file	List of available devices	Enter the serial number
Replace AP	 ✓ ED_33 ✓ ED_92 	12002264

Note: devices already in the network to be configured or belonging to networks connected to other base units will not be detected. In order to add in the current network a device belonging to a different network, it will be necessary to previously delete it from its original network (please see the paragraph <u>Removing devices from the network</u>).

7. Select the Add to network key.

Select the devices to be included in the network and write the serial number Add to network			
		Exit	
Running: -			

- 8. A message appears, asking to confirm the command, press YES to proceed.
- 9. During operation, in the lower part of the window the Request to add new devices to the network message is shown.

	Select the devices to be included in the network and write the serial number Add to network		
		Kit	
Running: Request to add new device	es to the network		

10. When the message has disappeared, the operation has been completed. Added device will emit a beep. Press *Cancel* to go back to the program main window.

After the addition of new devices, save the structure of the network as described in section <u>Saving in the PC the network</u> <u>configuration</u>. If you leave the window *Network* before saving the new structure, a message appears asking whether the new network file has to be saved before leaving: press *Yes*; to start the saving procedure.

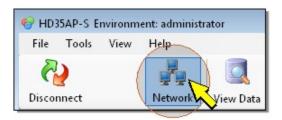
Note: the device adding procedure to the net allows to add a limited number of devices each time. If the software does not list all the devices to be added, carry out the procedure anyway with the listed devices and repeat the procedure to enter the missing devices. By repeating the procedure, the software will list only the devices not entered yet.

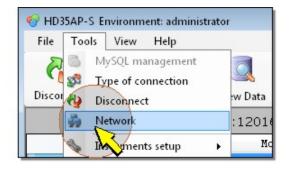
Note: during the procedure, keep a distance of at least 2 meters between devices and base unit, in order to avoid RF signal saturation.

4. REMOVING DEVICES FROM THE HD35 NETWORK

In order to remove a device (data logger, repeater or alarm unit) from the network, proceed as follows.

1. Select the icon *Network* from the toolbar, or alternatively from *Tools* menu, select *Network* command.





2. Select section Delete Devices.

Add Devices		Delete Devices	
Delete Devices	List of devices in the network	Disconnected RF on	Disconnected RF off
Networkigration	sn_12039377 ED_76	۲	0
Save network file	📄 sn_13022851 ED_107	۲	\odot
	🗐 sn_13032691 ED_164	۲	\odot
Replace AP	📄 sn_11011875 ED_92	۲	\odot

3. Select devices to be deleted from the network. It is possible to delete several devices at the same time.

Add Devices		Delete Devices		
Delete Devices	List of devices in the network		Disconnected RF on	Disconnected RF off
Network migration	In 12039377 ED_76		۲	0
Save network file	13022851 ED_107		۲	\odot
Save network file	sn_13032691 ED_164		۲	0
🚽 Replace AP	📄 💼 sn_11011875 ED_92		۲	0

Leaving selected the option *Disconnected RF on*, the device RF circuit will remain turned ON for 30 minutes after device itself has been deleted from the network. Selecting option *Disconnected RF off*, the RF circuit of selected device will be turned OFF after deletion.

4. Select Delete Devices.

	Select the devices to be deleted from the network Delete Devices	E xit
Running: -		.:

- 5. A message asking to confirm the operation is prompted; press YES to proceed.
- 6. During deletion procedure, in the lower part of the window the *Request to remove a device from the network* message appears.

	Select the devices to be deleted from the network Delete Devices	Exit
Running: Request to remove a devi	ce from the network	.el

7. When the message has disappeared, operation is completed. Deleted device will emit a beep. Press *Cancel* to go back to the main program window.

After devices have been removed, save the network structure as described in the paragraph <u>saving in the PC the network</u> <u>configuration</u>. If the user leaves the *Network* window before the network structure has been saved, a message appears asking to save the new network file before leaving the window: press Yes to start the saving procedure.

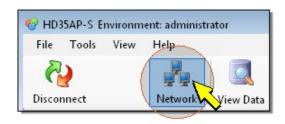
5. SAVING IN THE PC THE HD35 NETWORK CONFIGURATION

After any modifications have been made at the network configuration, it is suggested to save the network structure in a file; in this way it will be not necessary to rebuild manually the network in the case of a fault of the base unit.

The procedure for saving the network structure in a file must be carried out with the base unit connected to the PC via USB (no Wi-Fi, Ethernet or GSM/GPRS).

In order to save the network configuration proceed as follows:

1. From the toolbar, select Network icon, or alternatively item Network form tools menu.



NO:	SAP-S E	nvironment: administr	atoi	r
File	Tools	View Help		
Discor	S I	ySQL management pe of connection sconnect		🔍 w Data
	🗿 N	etwork		:12016
	s il	ments setup	۲	Mo

2. Select Save network file section.

	×
Save network file	2
Save the network file	
	Save the network file

3. Select Save button.

🚑 Network		X
Add Devices	Save network file	?
Pelete Devices	Save the network file	
Network migration	Save	
Save network file		
Peplace AP		

- 4. A message appears asking to confirm the file saving, press Yes to proceed.
- 5. A window is opened; enter the file name (the default name is *netfile_ap_RF address.bin*) and the path where the file will be saved (it is proposed to use <u>the default working folder</u>). Press *Save* to save the file.
- 6. Wait until the saving is completed. The saving progress is shown in the window lower part.

	E xit
Running: Rx : 11088 bytes	

7. At the end a confirmation message appears, press OK to proceed.



8. Press Exit to close the Network window and go back to the main program window.

6. MAIN WINDOW DESCRIPTION

	1	2		3	
😵 HD35AP-S Environment: administ	rator				
File Tools View Help 🗕	_/				
Disconnect Network	View Data Monitor	Data download from AP	Data download from ftp	istruments setup Audit trail	Alarm list
0000	1	- GSM NETWORK]			Measures
Setup	Model	-	og interval User/cod	e Connection status S	ignal level img F
ED 76 Settings 76	_		-		-3
ED 107 Settings 10	=	13022851 15 (sec) USER CODE	CONN	-61
ED 164 Settings 16	4 HD35EDL1N4r2T	/ 13032691 30 (sec) USER CODE	CONN	-8
ED 92 Settings 92	HD35EDL1NTV	11011875 15 (sec) USER_CODE	20 CONN	-61
•					•
RF address Date T	ime Cod	e Sn	User code G	roup	
76 2013/10/14	14.01.32 HD35EDL1	N4r2TV 12039377		ELTA 💊 🚱 🗹 💷	
LH 1 Temperatu	ıre (°C) 🛛 🖶	LH 5 Mixi	ng ratio (g/kg) 🛛 🚦 🖶	LH 9	+
2 10 10 2	પ પ		9. 0		
LH 2 Relative hur	nidity (%) 🛛 📲	LH6 Absolu	e humidity (g/m³) 🛛 🚦	LH 10	+
	٦. 0		I 0. S		
LH 3 Dew poir	nt (°C) 📑	LH•7 Wet bulk	temperature (°C) 🛛 🚦	LH 11	+
	2. 4		1 7.0		
LH 4 Vapour press	sure (hPa) 🛛 🚦	LH 8 Differen	tial pressure (Pa) 🛛 🚦	LH 12	+
18 8 A H	. 4 1		0. 0		
AP 12016692 - HID: Connected	MySQL: conne	acted 127.0.0.1	FTP OFF Downlo	ad data in background OFF	<000>BM
/					

In the main window can be identified the following areas:

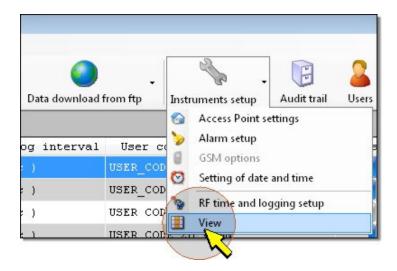
- 1. Menu: collects menu items.
- 2. Toolbar: set of icons used for the main program commands.
- 3. **Devices window**: displays the properties of the connected data logger (HD50 or HD208) or, in the case of the HD35 series, the devices of the network related to the connected HD35AP base unit.
- 4. **Measurements window**: it displays real time measurements made by the instrument selected in the devices window (point 3). Displayed values are the average of measurements acquired during the storage period set.
- 5. Status bar: provides information on connection status.

6.1. DEVICES WINDOW

The first row in the devices window provides general information: GSM/3G (only HD35APG/HD35AP3G) or Wi-Fi (only HD35APW and HD50) signal level, RF address (only HD35AP...), device type, serial number, user code. The globe symbol indicates if an Internet connection is available or not.

IIII 🕥 AP_101 [HD35APG SN:13009359 - GSM NETWORK]								
	Setup	Model	SN	RF and	log	interval		
▶ ED_76	Settings 76	HD35EDL1N4r2TV	12039377	15 (s	ec)			

Rows below show the properties of the devices (not reachable devices of the HD35 series are marked with an orange row). It is possible to select which properties to display and in which order. Select icon *Instruments setup* from the main toolbar, then *View* (alternatively select item *Tools* >> *Instruments setup* >> *View*).



A window is opened with two lists: *Column List,* containing available properties, and *Displayed columns,* containing those properties already visible in the main devices window.

Devices characteristics Image: Groups Devices Column list Setup Displayed columns Setup Image: Group Setup Model SN RF SN RF Faddress Group Image: Group Image: Group User code Image: Group Image: Group Battery level Image: Group Image: Group Signal level img Image: Group Image: Group Group Image: Group Image: Group Image: Group Signal level img Image: Group Image: Group Image: Group Group Image: Group Image: Group <t< th=""><th>Devices characteristic</th><th>s</th></t<>	Devices characteristic	s
Log status	Column list Setup Net address Type Type img Model SN RF address Group User code Connection status Connection status img Battery level Battery level img Reception power Hop number Signal level img RF and log interval Elapsed time Connection mode Firmware version Firmware date Logic channel Inputs used Measuring interval Log mode	Displayed columns Setup Model SN RF and log interval User code Connection status Signal level img Reception power PER mac Net address Type Type img RF address Group Connection status img Battery level Battery level Battery level Battery level Battery level Battery level img Hop number Elapsed time Connection mode Firmware version Firmware date Logic channel Inputs used Measuring interval

In order to display one or several properties, select required properties from Columns list and press key to move them in Displayed columns area.

In order to hide one or several properties, select required properties from *Displayed columns* and press the kev.

Use keys and in order to display or hide all properties at the same time.

In order to change the position of a displayed property, select it in Displayed columns area and press spectively forward or backward it.

By selecting Devices folder, it's possible to define which devices to show in the main window (only HD35).

🔢 View		
Devices		///
Devices characteristics G	aroups Devices	
Device list ED_76 ED_107 ED_164 ED_92	Devices displayed ED_76 ED_107 ED_164 ED_92	

The window *Device list* contains available devices in the network. The window *Displayed devices* contains devices already displayed into the main window. The numbers shown in the lists are the RF addresses of the devices.

In order to display one or several devices, select them from *Devices list* and press the key in order to move them in *Displayed devices* area.

In order to hide one or several devices, select them in *Displayed devices* and press key.

It is possible to use and keys when hiding or displaying all devices at the same time is needed.

When it is necessary to view or hide all network devices belonging to the same group, select section Groups.

View Groups		
Groups list DELTA_GRP2 GRP_NAME MKTO	iroups Devices Groups displayed DELTA_GRP2 GRP_NAME MKTO	

Note: group property allows to create subsets of devices, for example all devices installed in the same room. Please see section *Devices configuration* for information on the way to assign a device to a specific group.

In order to display all devices	present in a group,	select the group	under Groups	list and press	💹 key, to move it in <i>L</i>)i-
splayed groups area .						

In order to hide all devices present in a group, select the group under Displayed groups and press N

When hiding or displaying all groups at the same time, use 🜌 and ≤

When finished, press *Apply* to go back to the main program window.

6.2. MEASUREMENT WINDOW

The header of the measurement window displays the following general information for selected device in the devices window: RF address (serial number in some models), date and time of the last acquired sample (consisting of all the measurements displayed), model, serial number, user code, group. Device type, connection status, battery level, alarm condition, RF signal level, status of the buzzer are also shown in graphical format.

RF address	Date Time	Code	Sn	User code	Group Group	
76 🔫	2013/10/14 14.01.32	HD35EDL1N4r2TV	12039377	USER_CODE_2	DELTA 💊 🚱 🗹 🚺	
LH 1	Temperature (°C)	t H	5 M	ixing ratio (g/kg)	9 🛛 🕂 9	+
	્ટપ્	୍ୟା		8 8 9	8	

In order to display information on another device (only HD35), select it in the devices window, or select its address in the first field of the window header (Address field).

RF address	Date Time	Code	Sn	User code	
76 -	2013/10/14 14.58.47	HD35EDL1N4r2TV	12039377	USER_CODE_2	
107	Temperature (°C)	+ LH	5 🚺	lixing ratio (g/kg)	
164 92	2 Y	7		9	-7

The measurement window can be expanded full screen by selecting key in the upper right side of the measurement window.

				Þ
Sn	User code	Group		
11011875	USER_CODE_20	мкто	s 🖗 🖪	s - s -
М	ixing ratio (g/kg)	🕂 L H	9	
	9.	5		

After expanding the window, the 뒢 key turns into 💷 . To resize the window to its original dimension, select 💷 key.

User code	Group				
USER_CODE_20	мкто	5	3 🔽 🔳		
ixing ratio (g/kg)		9			
8 10 🖸 I					
	- 1				
	USER_CODE_20	USER_CODE_20 MKT0	USER_CODE_20 MKTO 💊 🐼	USER_CODE_20 MKT0 💊 🐼 💌 🚺	USER_CODE_20 MKTO 💊 🚱 🗹 🚺 🔊

In order to enlarge the frame containing the individual physical parameter, select the 💼 key in the upper right part of the measurement frame.

			۶.
		Group	
11011875	USER_CODE_20		2 🕂
M	lixing ratio (g/kg)	e 🕂 🗖 🕂 9	+
	9.	S	

By enlarging the frame of each single measurement it is possible to display, in a graphic format, the time profile of measured values. Select sequentially the icon shown in the picture below, in order to switch from graphic to numerical representation.

	Code	Sn	User code	Group					
.15	HD35EDL1NTV	11011875	USER_CODE_20	мкто	5	8			
>	Marker of measures	🗹 Y axis automat	ic Ymin: <mark>O</mark>	Y max	: 100		X axis: 1 o	ora	
		<u></u>							

When the time history graph is displayed, set in the field *X* axis the time interval to display in abscissa axis. In order to manually set the scale of ordinate axis, unselect option *Y* axis automatic and insert the minimum and maximum scale values into the *Min Y* and *Max Y* fields. Select the option *Marker of measures* to highlight the acquisition instants of the measurements.

To reset the single measurement frame to its original dimension, select the 💻 key.

	Code	Sn	User code	Group		
.15	HD35EDL1NTV	11011875	USER_CODE_20	мкто 💊 🐼		
V	Marker of measures	🔽 Y axis automal	ic Ymin: <mark>O</mark>	Y max. 100	X axis: 1 ora	
						- N

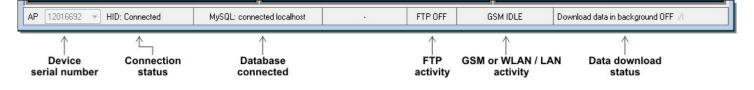
In order to hide the measurement window, press the *Measures* key.



Select again the same key to show again the measurement window.



6.3. STATUS BAR



7. MONITOR

The *Monitor* function allows to select which quantities to show in real time on PC screen, and to show physical quantities acquired by different devices as well (only HD35).

The Monitor function does not allow to store the displayed values.

7.1. MONITOR FUNCTION CONFIGURATION

Before starting the Monitor function, set the physical quantities to be displayed by selecting, from the toolbar, the *Monitor* icon; then select the item *Monitor setup* (alternatively it's possible to select the menu item *File* >> *Monitor* >> *Monitor setup*).

😵 HD35AP-S E	nvironment: administr	rator					
File Tools	View Help						
Real Disconnect	Network	Q View Data	Mon	itor	Data down	iload fro	m AP
🕥 AP_41	[HD35APS Plus	SN:1201		Start	monitor		
	Setup	M		Monit	tor setup	RF	and
				しく	5		

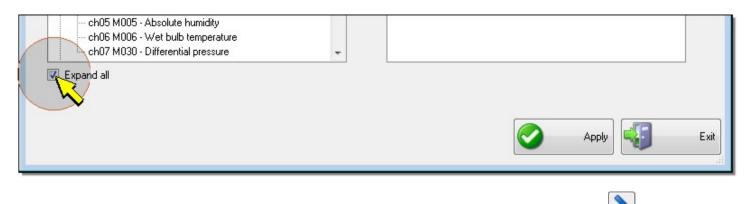
It is opened a window having two sectors: *Data displayable,* containing all physical quantities measured and calculated by devices, and *Data displayed*, containing all quantities to be displayed in the monitor screen.

Monitor setup		×
	Setting the display device to monitor	
Data displayable: ED_76 ED_107 ED_164 ED_92	Data displayed:	
		Exit

In Data displayable section, expand the row corresponding to device whom you want to display physical quantities.

🔠 Monitor setup		×
Setting the o	display device to monitor	
Data displayable: CD_76 Ch00 M000 - Temperature Ch01 M001 - Relative humidity Ch02 M002 - Dew point Ch03 M003 - Vapour pressure Ch04 M004 - Mixing ratio Ch05 M005 - Absolute humidity Ch06 M006 - Wet bulb temperature Ch07 M030 - Differential pressure CD_107 ED_164 ED_92	Data displayed:	

In order to expand all available devices (only HD35), select option Expand all.



In order to add a physical quantity to *Monitor* screen, select it in *Data displayable* section and press *leventer* to transfer it in *Data displayed*.

To remove a quantity from Monitor screen, select it in Displayed data section and press key

Proceed in the same way for all physical quantities, even belonging to different devices (only HD35), to display them in the monitor screen.

Use keys 🔊 and ≤ to add or remove at the same time all quantities measured by all devices.

In order to modify position of a physical quantity, select it in *Data displayed* and press keys **III** or **III** to forward or backward it.

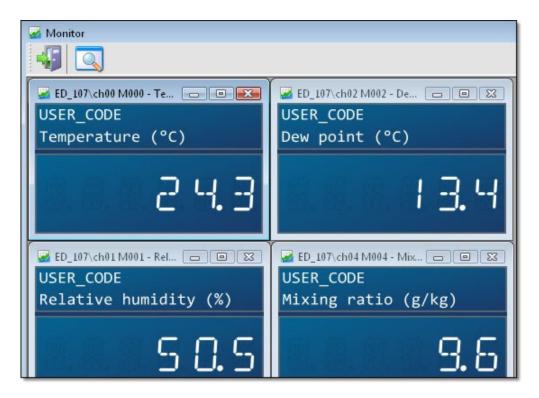
When finished, press Apply to save all settings, then Exit to go back to the program main window.

7.2. How to start Monitor function

In order to start the *Monitor* function, select *Monitor* icon from the toolbar, then *Start monitor* item (alternatively select menu *File >> Monitor >> Start monitor*).

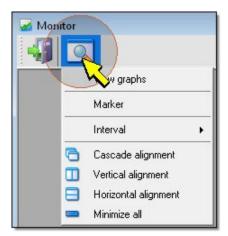
🚱 HD35AP-S	Environm	ent: administi	ator			
File Tools	View	Help				
<i>i</i>		.				\$
Disconnect		Network	View Data	Monitor	Data downlo	oad from AP
🕥 AP_41	[HD35	SAPS Plus	SN:1201	Start	t monitor	
		Setup	Mo	Ma Ma	or setup	RF and

The Monitor window appears, containing itself several windows corresponding to different physical quantities selected during Monitor configuration. For each physical quantity are shown: code of device measuring the physical quantity, name of the physical quantity, measurement unit, value.

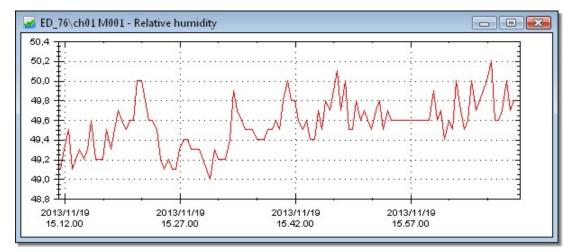


Displayed values are the average of acquired measurements in the recording time defined for that device.

By selecting the second icon in the upper left corner, it's possible to define how to view the graphs: cascade, vertically lined up, horizontally lined up, minimized.



It's possible to minimize each window individually or all at the same time by selecting *Minimize all*. Choose the item *View graphs* to obtain the time history of acquired values in a graphic format.



By positioning the mouse pointer in a point on the chart area, the acquisition time and the value in that point are displayed.



Select the option Marker to highlight the acquisition instants of the measurements.

🛃 Mon	itor
45	
	View graphs
	Marker
	Interver
	🔁 Cascade alignment

Select the option *Interval* to set the time interval for the x-axis.

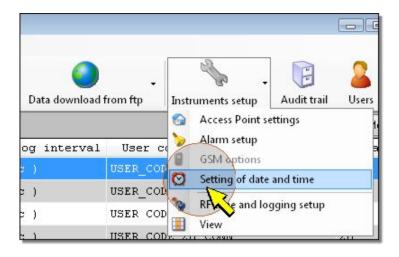
Monitor		
	View graphs Marker	
	Interval 🕨	10 min 🝷
0 B	Cascade alignment Vertical alignment	5 min 10 min 30 min

In order to exit from *Monitor* function, select the first icon in the upper left corner.



8. CLOCK SETTING

In order to update the device date and time, select the icon *Instruments setup* from the toolbar, then the item *Settings of date and time* (alternatively select the menu command *Tools >> Instruments setup >> Setting of date and time*).



The Set date time window appears.

Devices without GSM/GPRS or Ethernet or Wi-Fi functionality

9	Set date	time
	YYYY/MM/DD	HH.mm.ss
Instrument Date-Time:	2013/11/28	11.24.15
Set Date-Time:	28/11/13	11.21.22
Synchronize d instrument with	ate and time of the hthe computer	🚫 Apply
	🔯 Be	ead 🐳 Exit
unning: -		

Devices with GSM/GPRS or Ethernet or Wi-Fi functionality

Automatic time zone Automatic date and time Use time zone supplied by the network				
Time zone +01	1.00 🔻		Apply	
Check automatic c	late-time	8	Check	
		0	Set	
Set automatic date	e-time	9		
Set automatic date		UH mm ss	360	
Instrument	>time YYYY/MM/DD 2013/11/27	HH.mm.ss 15.12.56		
	YYYY/MM/DD			

The *Instrument Date-Time* fields show the date and time set in the instrument at the moment of request. In order to manually update the set values, enter the new values in the fields *Set Date-Time* and press the key *Apply*.

	YYYY/MM/DD	HH.mm.ss
Instrument Date-Time:	2013/11/27	15.55.18
Set Date-Time:	27/11/13	15.59.09
Synchronize d instrument with	ate and time of the the computer	C Apply

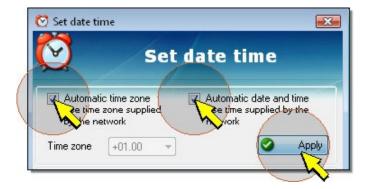
If synchronization of connected device with PC date and time is needed, select the check box Synchronize date and time of the instrument with the computer and press the key Apply.

	YYYY/MM/DD	HH.mm.ss
Instrument Date-Time:	2013/11/27	16.15.14
PC Date-Time:	27/11/13	16.19.21
Synchronize d	ate and time of the hthe computer	

The time zone can be set in the devices with GSM/GPRS or Ethernet or Wi-Fi functionality. To make the new time zone effective, press the key *Apply*.

Automatic time zone Use time zone supplied by the network	Automatic date and time Use time supplied by the network
Time zone +01.00	
Check automatic date-time	Chreck

To automatically set date, time and time zone, using the information supplied by the network, select the options *Automatic date and time* and *Automatic time zone* and press the key *Apply*.



To check the date and time difference between the instrument and the network, select the key *Check*. The command is available only if at least one of the two options *Automatic date and time* and *Automatic time zone* is active. If only one option is active, only the information corresponding to the active option is checked (only date-time or only time zone). If the difference between the time of the instrument and the time of the network is greater than 5 seconds, the clock of the instrument is automatically updated, otherwise the software indicates that the clock update is not necessary.

 Automatic time zone Use time zone supplied by the network 	Automatic date and time Use time supplied by the network
Time zone +01.00 -	
Check automatic date-time	Check
Set automatic date-time	<u>e</u>

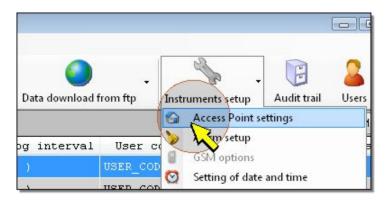
To set in the instrument the date and time of the network anyway, without performing the check, select the key *Set*. The command is available only if at least one of the two options *Automatic date and time* and *Automatic time zone* is active. If only one option is active, only the datum corresponding to the active option is set (only date-time or only time zone).

Automatic time zone Use time zone supplied by the network	 Automatic date and time Use time supplied by the network
Time zone +01.00 -	Apply
Check automatic date-time	Check
Set automatic date-time	Set Set

To read again the clock settings, for example in order to verify that the configuration upload operation has correctly been done, select the key *Read*. To close the *Set date time* window, select the key *Exit*.

9. HD35AP... BASE UNIT CONFIGURATION

In order to configure the base unit, select the icon *Instruments setup* from the toolbar, then the icon *Access Point settings*, (alternatively select menu item *Tools >> Instruments setup >> Access Point* settings).



Access Point settings window will be opened. When opened, it displays the section Instrument info, which contains general settings of the base unit connected.

Instrument info	i)	Instrument info
AP configurations	Type - RF address	APS_41
	Net address	Network address: 000. Modbus address: 001
MODBUS-RTU	Model	HD35APS Plus
Unit of measurement	SN	12016692
	User Code	AP test
Password	Group	R&D Office
	Network code	56
	Firmware version and date	0.52 2013/09/26
	Measure alarm buzzer	Off
	RF alarm buzzer	Off
	Error threshold	50,0 % threshold on Packet Error Rate (PER)
	RF channel	3
	Frequency	868 MHz
	Percentage of battery charge	99 %
	Average remaining life of the battery	81 h 18 min
	Power supply	USB
	Max hops number of the network	1
	Duration of cyclic memory	10 d 07 h 07 m 40 s
		🔯 Read 🥩 Apply 🖏 Exit

Some of the settings cannot be modified by the user (model, serial number, firmware version, frequency, RF address); others can be user modified by accessing the sections listed in the left part of the window:

<u>AP configurations</u>: it allows to set the user code, the group, the network code, connection type (automatic or manual) of devices on the network, the buzzer correct operation, the admissible error percentage in the data packets transmission. This section allows also to reinitialize the calculation of remaining battery capacity when the base unit battery is replaced with a new one.

<u>MODBUS-RTU</u>: allows to setup parameters for RS485 communication using MODBUS-RTU protocol between base unit and PC.

<u>Unit of measurement</u>: allows to set measurement units for temperature, atmospheric pressure and wind speed physical quantities.

Password: allows to set the password required to access the system as a user.

Note: to set the GSM/3G parameters in the model HD35APG/HD35AP3G, please consult paragraph GSM/3G settings.

Note: to set the Wi-Fi or Ethernet network parameters in the models HD35APW and HD35APR, please consult paragraph <u>Wi-Fi and Ethernet local network settings</u>.

9.1. AP CONFIGURATIONS

😵 [APS_41] Access Point setting	32	
Instrument info	AP configurations	2
AP configurations	User Code AP test Group R&D Office Automatic reconnection of network devices I Enable automatic reconnection Battery reset (select when changing battery) Execute reset Measure alarm buzzer On On On Off RF alarm buzzer On On Off Error threshold 50,0 $$ % threshold on Packet Error Rate (PER)	
	Read 😂 Apply	Exit
Running: -		

In this section it's possible to configure the following parameters:

• User code : alphanumeric code that identifies the base unit. Maximum length 20 characters. The ASCII characters from 32 (blank) to 126 (~) are accepted.

• *Group* : code used to identify a subset of devices, for example all devices installed in the same room. Maximum length 10 characters.

• Automatic reconnection of network devices : by enabling automatic reconnection, devices which have lost RF connection to the base unit (for example due to obstacles momentarily interposed) will be automatically reconnected when RF connection is restored. If automatic reconnection is disabled, it will be necessary to manually reconnect using the connection key available on the device front panel.

• *Battery reset* : after replacement of the battery of the base unit with a new one, select the command *Execute reset*; this allows the base unit to correctly recalculate remaining capacity of new battery.

• *Measure alarm Buzzer* : if you need to activate the buzzer of the base unit when measured value exceeds the set threshold, select *On*. Select *Off* if it is not required to report possible measurement errors using the buzzer.

• *RF alarm Buzzer* : select *On* if it is required to activate the buzzer of the base unit when the error percentage of data packets transmission exceeds the set threshold. Select *Off* if it is not required to report possible problems on RF transmission through the buzzer of base unit.

• *Error threshold* : gives the data packets error percentage (PER) above which RF transmission errors are reported.

9.2. MODBUS-RTU SETTINGS (ONLY FOR HD35APS)

😵 [APS_41] Access Point setting	lz.	X
Instrument info	MODBUS-RTU	2
AP configurations MODBUS-RTU When the measurement Password	Change MODBUS address of the device. Current address: 001. List of available addresses 001 MODBUS Baud Rate 38400 MODBUS interface RS485 MODBUS parity and stop bits 8E1 [Even parity, 1 stop bit] Waiting time after MODBUS transmission Wait 3.5 characters MODBUS addresses subfamily Starting address 001 247 Download the list of Modbus registers of the device 001 Execute The password in Modbus mode is: DISABLED Password disabled Password enabled	
	Read 😂 Apply	Exit
Running: -		,d

The following parameters can be set:

• *MODBUS address of device* : setting of base unit address for MODBUS-RTU mode. Address value must be within 1 and 247.

- MODBUS Baudrate : Baud Rate setup for MODBUS-RTU mode.
- MODBUS Interface : connection is RS485 type and it is not user editable.
- MODBUS parity and stop bits : setting of parity and number of stop bits for MODBUS-RTU protocol.

• *Waiting time after MODBUS transmission* : waiting time selection between *Waiting 3.5 characters* (option that complies with MODBUS-RTU protocol) or *Immediate Reception* (option that does not comply with MODBUS-RTU protocol).

• *MODBUS addresses subfamily* : set the MODBUS addresses range inside which all HD35... devices are located. Select the minimum address into the field *Starting address*; select the maximum address into the field *Ending address*. It is not necessary that all devices within indicated interval are physically present (for example, if there are three data loggers with MODBUS address 3,5 and 9, set 9 as *Ending address*, even if in the network are not present devices having address 2,4,6,7,8).

• Download the list of MODBUS registers of the device : if the list of MODBUS registers is not available, it is possible, by selecting the device address and pressing the key *Execute*, to ask the device the list of registers and save it into a text file.

• Password in MODBUS mode : options Password enabled and Password disabled allow to enable or disable the user password request from the device, before executing MODBUS commands requiring editing of parameters of device itself.

The file of MODBUS registers that the software allows to download contains the following fields, separated by commas:

- Descriptive name of register

-Type and address of the register. The address is preceded by two letters which identify the type of register according to the following convention: **IS** = Discrete Input, **CS** = Coil, **IR** = Input Register, **HR** = Holding Register.

- Type of data

For a few registers, there is also a brief description available. The file can be imported in Excel; to obtain the alignment of fields:

	A	В	С	D
1	RE_INTERF	IS00000	bit	interference caused by multiple REs
2	MISSED_LAST_MEAS	IS00001	bit	last measure lost
3	PENDING_CONF	IS00002	bit	pending configuration
4	SCHED_PROBLEM	IS00004	bit	scheduling problem
5	CH_SWITCH_IN_PROGRESS	IS00005	bit	channel switch is in progress
6	LOG_STATUS	CS00001	bit	log status (enable/disable)
7	LOG_MODE	CS00002	bit	log mode (cyclic/not cyclic)
8	LOG_ERASE	CS00003	bit	delete log data
9	BUZZER_ALARM	CS00004	bit	buzzer alarm status {0:off/1:on}
10	CMD_FAILURE	CS00007	bit	cmd failure status
11	DEVICE_INFO_STATUS	CS00014	bit	device info updated at AP (0)/ possibly not updated
12	CO2_AUTO_CALIBRATION_STATUS	CS00015	BIT	CO2 auto calibration status (enable/disable)
13	TEMP_HYT_271	IR00046	Sign Word	
14	ALARM_TEMP_HYT_271	IR00047	byte	

Please refer to chapter *MODBUS* of the manual of the data logging system for the complete list of registers and details on their use.

9.3. SETTING THE MEASUREMENT UNITS

🊱 [APS_41] Access Point setting	s 🔤	
Instrument info	Unit of measurement	
AP configurations	Temperature	
MODBUS-RTU	C → Send to all devices in the network	
Unit of measurement	Atmospheric pressure Pa	
Nord Nord	Wind Speed m/s Send to all devices in the network	
	Rain	
	mm Send to all devices in the network	
	Differential pressure for devices r4	
	hPa Send to all devices in the network	
	Differential pressure for devices r1,r2,r3,r5	
	Pa Send to all devices in the network	

The following measurement units can be set:

- Temperature measurement unit : °C or °F.
- Atmospheric pressure and differential pressure measurement unit : mbar, bar, Pa, hPa, kPa, atm, mmHg, mmH₂0, inchHg, inchH₂0, kgf/cm² or PSI.
- Wind speed measurement unit : m/s, km/h, ft/s, mph or knot.
- Rain measurement unit : mm, inch or count.

Select option Send to all devices in the network in order to modify the measurement unit also in remote devices (not only in the base unit).

9.4. SETTING THE USER PASSWORD

Select *Password* section in order to insert a user password. Enter the password (number between 0 and 8999) in the field *Enter user password* and press *New Password* key. This user password allows to access the program to display measurements and download the data but it does not allow to modify system configuration. To modify the system configuration the administrator password is required which is supplied with the device and is not editable.

😵 [APS_41] Access Point settin	gs			
Instrument info	\$		Password	2
AP configurations	Enter user password			
MODBUS-RTU		***	New Password	
Unit of measurement				
Password				
K				

9.5. TRANSFERRING THE CONFIGURATION TO THE INSTRUMENT

Modified configuration parameters are highlighted with a green circle on the right side of parameter.

😵 [APS_41] Access Point setting	5	EX
Instrument info	Unit of measurement	2
AP configurations	Temperature	
MODBUS-RTU	C Send to all devices in the network Atmospheric pressure	
Unit of measurement	hPa Send to all devices in the network	
🍫 Password	Wind Speed m/s Send to all devices in the network	

To apply the new settings, select *Apply* key; the green circles on the right side will disappear.

	Read Read Apply 🕼 Exit
Running: -	

9.6. READING THE INSTRUMENT CURRENT CONFIGURATION

When opening the *Access Point settings* window, displayed values are those set in the base unit. If it is necessary to read again the values set, for example in order to verify that the configuration upload operation has correctly been done, select the key *Read*.

	Read 😂 Apply 🖏 Exit	
Running: -		ai

9.7. CLOSING THE CONFIGURATION WINDOW

By selecting the *Exit* key, the *Access Point settings* window is closed.

	Read 😂 Apply
Running: -	

If modifications have been done without uploading them to the instrument, a message appears asking whether modifications upload is required.

10. HD35ED... AND HD50... DATA LOGGERS CONFIGURATION

In order to setup a data logger, select the corresponding *Settings* key from devices window in the *Setup* column.

File	Tools	View	Help							
2)				đ			_		
Discon	s nect		Networ	k v	View Data	Monitor	Data	downloa	d fror	n AP
👍 💼	P_41	[HD35	SAPS PIL	us S	N:1201	6692 -	AP te	est]		
🚮 AF	P_41	[HD35	SAPS Plu Setup	s s		6692 - odel	AP te	est] SN	RF	and
	2_41 _76				M				RF 15	
ED		Se	Setup ttings		M	odel L1N4r2	rv 120	SN		(

Note: if *Setup* column is not displayed, please consult paragraph <u>Main window description</u> for columns display operation mode.

End Device settings window will be opened. When opened, the window displays the Instrument info section, containing the general settings of the device.

Instrument info	i)	Instrument info
B ED configurations	Type - RF address	ED_240
3	Net address	010
🧃 Info measures	Model	HD35EDL1NTV
Logging parameters	SN	13039285
	User Code	DHLA
Alarm thresholds	Group	LABDH
🕄 Hysteresis settings	Firmware version and date	0.130 2014/10/27
	RF and log interval	5 (min)
🌽 Data download from ED	Measuring interval	5(sec)
MODBUS-RTU	Logging mode and logging status	Cyclic logging - Logging active
a.	Operating state	CONN - Stationary
Calibrations	Measures alarm buzzer	Buzzer disabled
Measure channels	RF channel and frequency	Ch.: 2 - Freq.: 868 MHz
settings	Battery level	Level: 1 Weeks remaining: 113
	Calibration	Factory cal. (used): 14/05/05 User cal.: 14/05/05
	Error status	In normal operation
	J	🔯 Read 🐋 Apply 🖏 Exit

Some of the settings cannot be modified by the user (model, serial number, firmware version, ...); others can be modified using the sections listed in the left part of the window as described below:

ED configurations: user code, group and some general parameters can be set.

Info measures: it lists the physical quantities acquired by the end device, the resolution and measurement units.

Logging parameters: allows setting the measurement interval, the logging period, the logging state (on or off), the logging type (circular or not) and erasing the device memory.

<u>Alarm Thresholds</u>: can be set the minimum and maximum alarm thresholds for each physical quantity acquired. Can be enabled or disabled the buzzer of that specific device.

<u>Hysteresis settings</u>: can be set the hysteresis of the alarm thresholds and the alarm delay for each physical quantity acquired.

Data download from ED: access the section for setup of data download from the device internal memory (only HD35ED...).

MODBUS-RTU: allows downloading the list of MODBUS registers of that specific device and to save the list in a text file.

<u>Calibrations</u>: allows calibrating the relative humidity, CO, CO_2 and differential pressure sensors. The CO, illuminance and solar radiation sensor sensitivity can also be set. The section is not available if the model does not have sensors that can be calibrated.

<u>Inputs setup</u>: allows configuring the inputs. The section is available only in the models with configurable inputs (for example HD35ED7P/3TC, HD35EDWK/4TC, HD35EDH, HD35EDWH, ...) and replaces the section *Calibrations*.

<u>Measure channels settings</u>: allows changing the order of the device quantities displayed in the <u>measurements</u> <u>window</u> of the software.

Note: some sections may not be present in some types of data loggers.

10.1. ED CONFIGURATIONS

😚 [ED_187] End Device settings	
Instrument info	ED configurations
Instrument info ED configurations Info asures Logging parameters Alarm thresholds Hysteresis settings Data download from ED MODBUS-RTU Calibrations	ED configurations Change the device address. Current address: 030. List of available addresses 030 • Belonging to the MODBUS network • The device belongs to the MODBUS network • The device does NOT belong to the MODBUS network • Automatic missing data recovery • User Code • User Code • Group • Group Name • Test buzzer Data synchronization Execute test Run Operating mode • Stationary • Mobile without automatic reconnection •
	Mobile with automatic reconnection

This section is deputed to setup the following parameters:

• *End Device address* : to setup device address in the wireless network. If device belongs to a MODBUS network, the address entered has the function of MODBUS address of that specific device as well.

• *Belonging to the MODBUS network* : specify whether selected device belongs or not to a MODBUS network (in the case of HD35ED..., in order to belong to a MODBUS network it is necessary that the base unit has the MODBUS option).

• Automatic missing data recovery (only HD35ED...) : if the transmission of a data packet fails, the device attempts retransmission up to 3 times, after which the data are no longer transmitted automatically. Selecting this option, the base unit attempts to automatically retrieve the data of the device that, for any reason, could not be received in the past (for example, because the device is installed in a moving vehicle that had moved away from the base unit). Note: enabling the option can reduce the battery life of the device due to the higher number of transmissions.

• User code : alphanumeric code which identifies the base unit. Maximum length 20 characters. The ASCII characters from 32 (blank) to 126 (~) are accepted.

• *Group* : code useful to identify subsets of devices, for example all devices installed in the same room. Maximum length 10 characters.

• Operating mode (only HD35ED...) : select Stationary if device is in a fixed installation. On the contrary, in the case of a mobile device, select Mobile without automatic reconnection if the automatic reconnection is not required when the device returns into the field of the base unit (in this case it will be necessary to manually re-connect that device using the connection key placed on the device front panel), or Mobile with automatic reconnection if automatic reconnection to the base unit is required.

The section allows also to verify the operation of the buzzer and to synchronize the parameters of the device with the ones contained in the base unit:

• *Test buzzer* : select the key *Execute test* to verify the buzzer operation of the device, after a moment the device should activate the buzzer for a short period of time.

• *Data synchronization* (only HD35ED...) : the base unit keeps a copy of the configuration parameters of each device of the net. The synchronization between the parameter values of the device and the copy present in the base unit; normally executed automatically. If it is not possible to make the automatical synchronization, e.g. due to RF coverage problems, it is possible to perform a manual synchronization later by selecting the key *Execute*.

10.2. INFO MEASURES

Instrument info	1		Info measures		
ED configurations	Ch	Type of measure	Set measurement name	Res.	U.m
Info measures] Temperature	Temperature	0,1	°C
	2	Relative humidity	Relative humidity	0,1	%
Logo parameters	3	Dew point	Dew point	0,1	°C
Alarm thresholds	4	Vapour pressure	Vapour pressure	0,01	hPa
🕄 Hysteresis settings	5	Mixing ratio	Mixing ratio	0,1	g/kg

This section lists all physical quantities measured by that specific device. For each quantity resolution and measurement unit are given (in order to change the units of measurement, possible only for some of the quantities, select the icon *Instruments setup* from the toolbar, then the item *Access Point settings* and the section *Unit of measurement*).

If the device measures more quantities of the same type (for example two temperatures), in the *Set measurement name* field can be entered a name to distinguish the quantities of the same type.

For models without scroll key of the measured quantities, it is possible to select the quantities to be visualized cyclically in the main line of the display.

	1		Info measures		
🔅 ED configurations	Ch	Type of measure	Set measurement name	Res.	U.m.
lnfo measures		Pyranometer	Pyranometer	0,01	mV

After having selected the quantities, select Apply to give effect to the new setting.

10.3. LOGGING PARAMETERS

😵 [ED_76] End Device settings			×		
Instrument info	Logging parameters				
ED configurations Info measures	RF and log interval 15 (sec) ▼ Measuring interval 15 (sec) ▼	Storage Capacity: 20000 record 3 days 11:20:00			
Aldre resholds Hysteresis settings Data download from ED MODBUS-RTU Calibrations	Logging activities Logging active Logging not active Type of logging Cyclic logging Non-cyclic logging Erase device memory Erase				

The following parameters can be set:

• *RF* and log interval : setting of logging interval and transmission interval of measurements (the two intervals are the same, the transmission interval concerns only the HD35 series and refers to the data transmission from HD35ED... to HD35AP...). Interval can be set to 1 s, 2 s, 5 s, 10 s, 15 s, 30 s, 1 m, 2 m, 5 m, 10 m, 15 m, 30 m, 1 h. The value stored and transmitted is the average of acquired values (with interval equal to the measurement period) within the logging interval set. The storage capacity as number of samples (record) and the time autonomy before running out of memory is given.

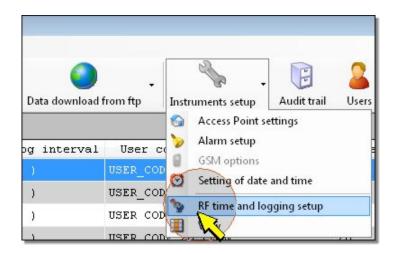
• *Measuring interval* : setting of measurements acquisition period. Interval can be set to 1 s, 2 s, 5 s, 10 s, 15 s, 30 s, 1 m, 2 m, 5 m, 10 m, 15 m, 30 m, 1 h. This value must be lower or equal to RF and log interval (if a higher value is set, it is forced to the RF and log interval value).

• Logging activities : select Logging active or Logging not active in order to respectively enable or disable the measurement logging of device.

• *Type of logging* : select *Cyclic logging* to continue storing data when device memory is run out (the oldest measurement data will be overwritten). Select *Non-cyclic logging* to stop the data storage when the device memory is run out.

• *Erase device memory* : press *Erase* button in order to delete measurement data stored in the device memory. It appears a message asking to confirm the command; press *YES* to proceed.

Only for the HD35 series, other than in *End Device settings* window, logging parameters can be set also by selecting the icon *Instruments setup* in the main window toolbar, then *RF time and logging setup* (alternatively select menu item *Tools* >> *Instruments setup* >> *RF time and logging setup*).



A window is launched, allowing the user to see and set contemporarily logging parameters for all devices in the system .

😵 RF time and	logging setup			
	RF ti	ime and loggi	ng setup	
	RF and log interval	Measuring interval	Logging activities	Type of logging
	🔲 🔲 (sec) 🛛 🔻	🔲 🛛 (sec) 🛛 🔻	Logging active	🔲 Cyclic logging
ED_76	15 (sec) 🔻	15(sec) 🔻	📝 Logging active	📝 Cyclic logging
ED_107	15 (sec) 🔹	15 (sec) 🔹	🔽 Logging active	📝 Cyclic logging
ED_164	30 (sec) 🔹 🔻	5(sec) 🔻	🔽 Logging active	📝 Cyclic logging
ED_92	15 (sec) 🔻	15 (sec) 🔻	🔽 Logging active	🔽 Cyclic logging

In the *Logging setup* window it is possible to configure parameters of a single device or to assign common settings to all devices at the same time. If a single device needs to be configured, select desired options in the row corresponding to that specific device.

Select option Log active to activate the logging on desired device; deselect option in order to stop logging on that device.

Select option *Cyclic logging* in order to continue data recording even if memory is full (oldest data will be overwritten); deselect option to interrupt data recording when memory gets full.

To configure an option at the same value in all the devices, set it in the first line under the heading of the column and select it in the check box near the option. The parameters that will be modified are highlighted by a green square at the left of the parameter.

	RFt	ime and logg	ing setup	
	RF and log interval	Measuring interval	Logging activities	Type of logging
	15 (sec) -	🔲 🛛 (sec) 🛛 🔻	Logging active	🔲 Cyclic logging
ED_76	□ 1 0(sec) -	15 (sec) 🔹	📝 Logging active	📝 Cyclic logging
ED_107	📕 15(sec) 🔹	15 (sec) 🔹	🔽 Logging active	🔽 Cyclic logging
ED_164	📕 15(sec) 🔹	5(sec) 💌	🔽 Logging active	🔽 Cyclic logging
ED_92	15(sec) ▼	15 (sec) 🔹	Logging active	🔽 Cyclic logging

All modifications made to configuration, will be sent to the devices as soon as the *Apply* button in the lower part of the window is pressed.

10.4. ALARM THRESHOLDS

Instrument info	2~	Alarm thresholds	
ED configurations	Buzzer operation on alarm Buzzer ON 	Buzzer OFF	
Logging parameters		Lower threshold	Upper threshold
Logging parameters	Temperature (°C)	0,0 🚔	100,0 🚔
Alarm thresholds	Relative humidity (%)	0,0	100,0 🚖
Hystosis settings	Dew point (°C)	0,0	100,0 🚔
Data download from ED	Vapour pressure (hPa)	0,00	30,00
	Mixing ratio (g/kg)	0,0 🚔	100,0 🚔
MODBUS-RTU	Absolute humidity (g/m³)	0,0 🚔	100,0 🚔
Calibrations	Wet bulb temperature (°C)	0,0	100,0 🚔
	Differential pressure (Pa)	-1000,0 🚔	1000,0 🚔

For each physical quantity acquired, two different alarm thresholds can be set. Alarm is generated when measured value drops below *Lower threshold* value, and when it exceeds the *Upper threshold* value.

Select option *Buzzer ON* or *Buzzer OFF* if you need to respectively enable or disable the buzzer activation in the case of an alarm.

To signal the alarm condition also by SMS/e-mail or by the HD35ED-ALM alarm module (if installed in the HD35 network) please consult section <u>Alarm setup</u>.

The measurement in alarm appears with a red background in the main window of the program. The L (lower threshold) and H (upper threshold) indicators show which of the two thresholds has been exceeded.

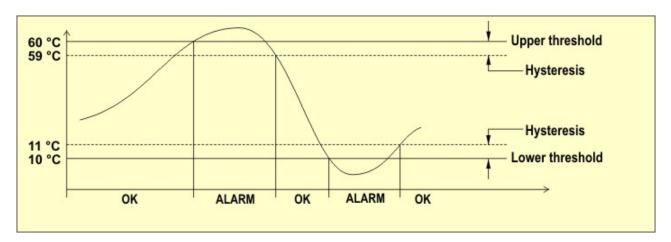


10.5. HYSTERESIS SETTINGS

In order to set the hysteresis of the alarm thresholds and the alarm delay for each physical quantity to be measured, select *Hysteresis settings* section from the *End Device settings* window.

Instrument info		Hysteresis settings	
ED configurations		Hysteresis (%)	Alarm delay
Info measures	Temperature (°C)	2 🚖	no delay 🔹 🔻
	Relative humidity (%)	2	no delay 🔹
Logging parameters	Dew point (°C)	2	no delay 🔻
Alarm thresholds	Vapour pressure (hPa)	2	no delay 🔹
Hysteresis settings	Mixing ratio (g/kg)	2	no delay 🔹
Data winload from ED	Absolute humidity (g/m³)	2	no delay 💌
	Wet bulb temperature (°C)	2	no delay 🔻

The width of the hysteresis is a percentage (0 ... 100%) of the difference between the two alarm thresholds. For example, if Hysteresis=2%, Lower threshold=10 °C and Upper threshold=60 °C, the hysteresis is (60-10)x2/100= 1 °C:

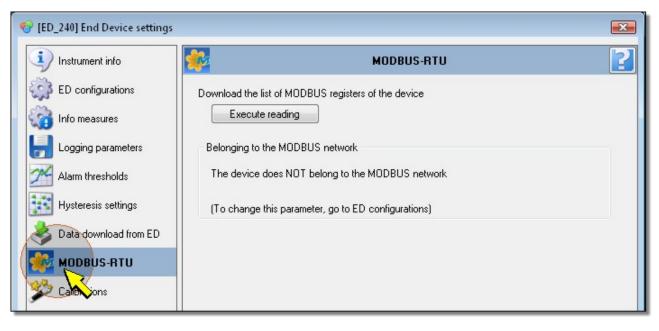


If the measured value drops below the lower threshold or exceeds the upper threshold, the alarm is generated after the time set in the *Alarm delay* field. The alarm is generated immediately if *no delay* is selected. If the alarm condition ends before the delay time is elapsed, the alarm is not generated.

Note: the timely reporting of an alarm condition depends on the measuring interval: the shorter is the measuring interval, the more timely the reporting of the alarm condition will be.

10.6. MODBUS-RTU

Select the section *MODBUS-RTU* in *End Device settings* window; then press *Execute reading* button to download the list of MODBUS registers of the device and save it in a text file.



The downloaded file contains the following fields, separated by commas:

- Descriptive name of the register
- Type and address of the register. The address is preceded by two letters that identify the type of register according to the following convention: IS = Discrete Input, CS = Coil, IR = Input Register, HR = Holding Register.
- Type of data

For a few registers there is also a brief description available. The file can be imported in Excel to obtain the alignment of the fields:

	A	В	С	D
1	RE_INTERF	IS00000	bit	interference caused by multiple REs
2	MISSED_LAST_MEAS	IS00001	bit	last measure lost
3	PENDING_CONF	IS00002	bit	pending configuration
4	SCHED_PROBLEM	IS00004	bit	scheduling problem
5	CH_SWITCH_IN_PROGRESS	IS00005	bit	channel switch is in progress
6	LOG_STATUS	CS00001	bit	log status (enable/disable)
7	LOG_MODE	CS00002	bit	log mode (cyclic/not cyclic)
8	LOG_ERASE	CS00003	bit	delete log data
9	BUZZER_ALARM	CS00004	bit	buzzer alarm status {0:off/1:on}
10	CMD_FAILURE	CS00007	bit	cmd failure status
11	DEVICE_INFO_STATUS	CS00014	bit	device info updated at AP (0)/ possibly not updated
12	CO2_AUTO_CALIBRATION_STATUS	CS00015	BIT	CO2 auto calibration status (enable/disable)
13	TEMP_HYT_271	IR00046	Sign Word	
14	ALARM_TEMP_HYT_271	IR00047	byte	

Please refer to the chapter *MODBUS* of the manual of the data logging systems for the complete list of the registers and details on their use.

10.7. INPUTS SETUP

Select *Inputs setup* section from the *End Device settings* window in order to configure the inputs in the models with configurable inputs (for example HD35ED7P/3TC, HD35EDWK/4TC, HD35EDH, HD35EDWH, ...).

Instrument info	(i)	Instrument info	
ED configurations	Type - RF address	ED_184	
	Net address	011	
j Info measures	Model	HD35EDGH	
Logging parameters	SN	13034400	
	User Code	USER CODE	
Alarm thresholds	Group	GROUP	
S Data download from ED	Firmware version and date	0.91 2013/11/05	
	RF and log interval	5(sec)	
MODBUS-RTU	Measuring interval	5(sec)	
Inputs setup	Logging mode and logging status	Cyclic logging - Logging active	
0	Operating state	CONN - Stationary	

You are prompted for an administrator password. Enter the password and press Apply.

🚱 Pass	word	X
	Enter administrator password	

	Apply Apply Exit	

Wait a few instants for the password verification, until opening of the section Inputs setup.

😚 [ED_184] End Device settings			
Instrument info	2	Inputs setup	2
ED configurations	Input 1 Input 2 Input 3		
info measures	Measure type		
Logging parameters	Temp. Pt100 3-wire	•	1 2 3 4
Alarm thresholds	User code measure Office n. 3		0000
y Data download from ED			
MODBUS-RTU			
🌮 Inputs setup			3-wire Pt100
			Pt1000

Select the input to be configured.

😚 [ED_184] End Device settings			
Instrument info	2	Inputs setup	2
ED configurations	Input 1 Input 2 Input 3		
info measures	Measure type		
Logging parameters	Temp. Pt100 3-wire	•	1 2 3 4
Alarm thresholds	User code measure Office n. 3		
崣 Data download from ED			
MODBUS-RTU			
🌮 Inputs setup			3-wire Pt100
			Pt1000

Select the measurement type among those available and enter in the field *User code measure* an identifying name for the measure. The ASCII characters from 32 (blank) to 126 (~) are accepted.

Note: select the measurement type Current (4-20mA) also for 0-20 mA input signals.

If the input is not used, select *Undefined measurement* in the field *Measure type*.

If a *mapped* type measure is selected, additional fields appear to define the correspondence between the input signal and a physical quantity.

😵 [ED_184] End Device settings		×
Instrument info	Inputs setup	2
ED configurations	Input 1 Input 2 Input 3	
info measures	Measure type	CLOSED
Logging parameters	Mapped Current (4-20mA)	3 4
Alarm thresholds	User code measure	
Data download from ED	Unit measure I †	ł
MODBUS-RTU	°C ▼	-0-
🌮 Inputs setup	0-2	0 mA 0 mA
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	INPUT_
	Offset Set Clear X1	X ₂ X

Select the unit of measurement and the resolution of the physical quantity associated to the input. Enter in the fields *X1*, *X2*, *Y1* and *Y2* the coordinates of the linear relation between the input signal and the physical quantity:

X1 = value of input signal in the first point (e.g. 4.00 mA)

Y1 = value of the physical quantity corresponding to the input signal value X1 (e.g. 0.0 °C)

X2 = value of input signal in the second point (e.g. 20.00 mA)

Y2 = value of the physical quantity corresponding to the input signal value X2 (e.g. 70.0 °C)

Press the key *Set* to apply to the measure an offset equal to the opposite of the currently measured value (the current measure becomes equal to zero). Press the key *Clear* to cancel the applied offset.

10.8. IMEASURE CHANNELS SETTINGS

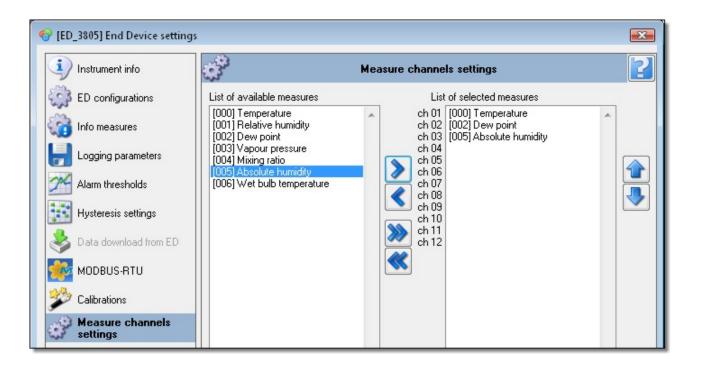
Select *Measure channels settings* section from the *End Device settings* window in order to change the order of the device quantities displayed in the <u>measurements window</u> of the software.

Instrument info	(i)	Instrument info	
ED configurations	Type - RF address	ED_3805	
	Net address	001	
Info measures	Model	HD50L1NTV	
Logging parameters	SN	17015644	
	User Code	Test	
Alarm thresholds	Group	R and D	
Hysteresis settings	Firmware version and date	1.40 2018/06/19	
	RF and log interval	30 (sec)	
Data download from ED	Measuring interval	5(sec)	
MODBUS-RTU	Logging mode and logging status	Cyclic logging - Logging active	
	Operating state	CONN - Stationary	
Calibrations	Measures alarm buzzer	Buzzer disabled	
Measure channels	RF channel and frequency	Ch.: 0 - Freq.: 2400 MHz	
settings	Battery level	Level: 4 Weeks remaining: 0	

You are prompted for an administrator password. Enter the password and press Apply.

🚱 Passw	ord	X
	Enter administrator password	

Wait a few instants for the password verification, until opening of the section *Measure channels settings*. In the section there are two columns: the left column lists the quantities available in the device, the right column lists the quantities displayed in the measurements window of the software.



In order to display one or more quantities, select the required quantities in the left column and press key to move them in the right column.

In order to hide one or more quantities, select the required quantities in the right column and press the www.

Use keys and in order to display or hide all quantities at the same time.

In order to change the position of a displayed quantity, select it in the right column and press used or backward it.

10.9. TRANSFERRING THE CONFIGURATION TO THE INSTRUMENT

Configuration parameters which have been modified in *End Device settings* window are highlighted by a green circle placed on the right of modified parameter.

🊱 [ED_76] End Device settings		X
Instrument info	ED configurations	2
ED configurations	Change the device address. Current address: 002. List of available addresses	
info measures		
logging parameters	Belonging to the MODBUS network The device belongs to the MODBUS network	
Alarm thresholds	The device does NOT belong to the MODBUS network	

To confirm new settings and apply them to selected device, press the Apply key. The green circle will disappear.

	Read Read
Running: -	

10.10. READING THE INSTRUMENT CURRENT CONFIGURATION

When *End Device setting* window is opened, displayed values are those currently set in the device. To read again the current configuration, for example to check if configuration procedure has been successful, select the *Read* button.

	Read 😂 Apply 🖏 Exit
Running: -	

10.11.

10.12. CLOSING THE CONFIGURATION WINDOW

In order to close the End Device settings window, select Exit button.

	Read Read Apply
Running: -	

If any modifications was made, but they were not transferred to the device, a message will appear asking the user if he wants to transfer modifications before closing the window.

11. HD208... DATA LOGGERS CONFIGURATION

In order to setup a data logger, select the Settings key in the devices window.

HD35A	P-S E	nvironm	ent: adminis	trator				
File T	ools	View	Help					
2					1	-		
Disconne	ct		Network	View Data	Monite	or Dat	a download fro	om ftp
	AP_0 [HD208 Plus SN:16000175 - User Code]							
			(Setup	I	lodel	User coo	ie
▶ ED_1	6000)175	Setti	ngs 160001	.75 H	D208	User Cod	
			F	K				

Note: if *Setup* column is not displayed, please consult paragraph <u>Main window description</u> for columns display operation mode.

End Device settings window will be opened. When opened, the window displays the Instrument info section, containing the general settings of the device.

😵 [ED_16000175] End Device settings 🛛 🔊						
i) Instrument info	i)	Instrument info				
ED configurations	Device identifier	ED_16000175				
	Model	HD208				
info measures	SN	16000175				
Logging parameters	User Code	User Code				
	Group	GROUP NAME				
Alarm thresholds	Firmware version and date	0.002 2015/01/01				
Hysteresis settings	Log interval	1(sec)				
-18	Logging mode and logging status	Cyclic logging - Logging off				
Calibrations	Battery level	Level: 3				
	Calibration	Factory cal.: 16/01/20 User cal. (used): 16/01/20				
	Error status	In normal operation				
	RH probe serial number					
Read Apply Exit						
Running: -		.:				

Some of the settings cannot be modified by the user (model, serial number, firmware version, ...); others can be modified using the sections listed in the left part of the window as described below:

ED configurations: user code, group and activation energy can be set.

<u>Info measures</u>: it lists the physical quantities acquired by the device, the resolution and measurement units. Allows to select the quantities to be logged.

Logging parameters: allows to set the logging parameters and to erase the device memory.

Alarm Thresholds: can be set the minimum and maximum alarm thresholds for each physical quantity acquired.

<u>Hysteresis settings</u>: can be set the hysteresis of the alarm thresholds and the alarm delay for each physical quantity acquired.

Calibrations: allows to calibrate the sensors.

11.1. ED CONFIGURATIONS

[ED_15037732] End Device se	ttings		X
Instrument info	\$	ED configurations	2
ED configurations	User Code		
	User Code		
	Group		
Logging parameters	GROUP NAME		
Alarm thresholds Hysteresis settings Calibrations	Activation Energy Activation Energy T1 Activation Energy T2	83,144 🚖 kJ/mol 83,144 🚖 kJ/mol	
	Enabling of configuration from Enable configuration from Disable configuration fro Unit of measurement: Temperat	m PDF m PDF	

This section is deputed to setup the following parameters:

• *User code* : alphanumeric code which identifies the base unit. Maximum length 20 characters. The ASCII characters from 32 (blank) to 126 (~) are accepted.

• *Group* : code useful to identify subsets of devices, for example all devices installed in the same room. Maximum length 10 characters.

• Activation Energy : parameter necessary for calculating the mean kinetic temperature MKT (if the instrument measures two temperatures, T1=external sensor and T2=internal sensor).

• *Enabling of configuration from PDF* : allows enabling or disabling the use of the PDF form for the configuration of the instrument (for the PDF form usage instructions, press the *Help* button in the form).

• Temperature unit of measurement : °C or °F.

11.2. INFO MEASURES

Instrument info	Info measures					
ED configurations	LOG	Ch	Type of measure	Set measurement name	Res.	U.m.
Info measures		1	Temperature	TEMP EXT	0,1	°C
		2	MKT 1	MKT EXT	0,1	°C
Logo parameters		3	Temperature 2	TEMP INT	0,1	°C
Alarm thresholds		4	MKT 2	MKT INT	0,1	°C
🕄 Hysteresis settings		5	Relative humidity	RH	0,1	%
College		6	Dew point	DEW POINT	0,1	°C
Calibrations		7	Battery voltage	BATT VOLT	1	mV

This section lists all physical quantities measured by that specific device. For each quantity resolution and measurement unit are given.

If the device measures more quantities of the same type (for example two temperatures), in the Set measurement name field can be entered a name to distinguish the quantities of the same type.

To log a quantity, select the *LOG* option.

11.3. LOGGING PARAMETERS

😵 [ED_16000175] End Device set	tings	×				
Instrument info	Logging parameters					
ED configurations	Log interval Storage Capacity: 153440 records 1 day 18:37:20					
Alan resholds Alan resholds Mysteresis settings Calibrations	Start logging options Start delay (only with button) Start logging with device button Start logging Date-Time: 25/01/2016 Stop logging options Stop logging with device button Stop logging Date-Time: 25/01/2016 Stop logging with device button Stop logging Date-Time: 25/01/2016 Stop logging when PDF buffer is full Stop logging when connecting USB Erase Erase					

The following parameters can be set:

• Log interval : interval can be set to 1 s, 2 s, 5 s, 10 s, 15 s, 30 s, 1 m, 2 m, 5 m, 10 m, 15 m, 30 m, 1 h. The storage capacity as number of samples (record) and the time autonomy before running out of memory is given.

• Start logging options : select Start logging with device button to start the logging manually, or select Start logging Date-Time and set the starting date and time to schedule the automatic start. By selecting the Start delay option, the manual logging starts after the set delay time (in seconds) from the pressure of the START button of the instrument.

• Stop logging options : select Stop logging with device button to stop the logging manually, or select Stop logging Date-Time and set the stop date and time to schedule the automatic stop.

Select the *Stop logging when PDF buffer is full* option to stop logging when the memory buffer used to generate the PDF report is full, or deselect the option to continue storing data in the buffer, overwriting the oldest measurement data.

Select the *Stop logging when connecting USB* option to stop the data storage when the instrument is connected to PC (if logging is in progress, the data and the PDF reports can not be downloaded).

• *Erase PDF buffer* : press *Erase* button in order to delete measurement data stored in the memory buffer used to generate the PDF report. It appears a message asking to confirm the command; press Yes to proceed.

11.4. ALARM THRESHOLDS

Instrument info	24	Alarm thresholds	
ED configurations		Lower threshold	Upper threshold
lnfo measures	Temperature (°C)	-10,0 🚔	80,0
	MKT 1 (°C)	-10,0 🚔	80,0
Logging parameters	Temperature 2 (°C)	10,0	80,0
Alarm thresholds	MKT 2 (°C)	-10,0	80,0
Hystocis settings	Relative humidity (%)	5,0 🚔	80,0
Calibrations	Dew point (°C)	-10,0	80,0
	Battery voltage (mV)	2500	4000

For each physical quantity acquired, two different alarm thresholds can be enabled and set. Alarm is generated when measured value drops below *Lower threshold* value, and when it exceeds the *Upper threshold* value.

The measurement in alarm appears with a red background in the main window of the program. The L (lower threshold) and H (upper threshold) indicators show which of the two thresholds has been exceeded.

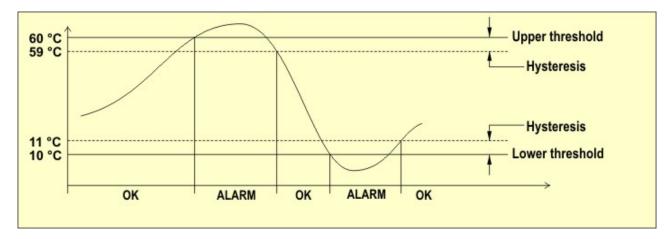
H 1	TEMP EXT (°C)	+	LH 5	RH (%)	+
		3 0.0	8.8.8.8.8.	息息的 剧剧	12.4

11.5. Hysteresis settings

[ED_16000175] End Device set	tings		X
Instrument info		Hysteresis settings	2
ED configurations		Hysteresis (%)	Alarm delay
info measures	Temperature (°C)	2	no delay 🔻
	MKT 1 (°C)	2	no delay 🔻
	Temperature 2 (°C)	2	no delay 💌
Alarm thresholds	MKT 2 (°C)	2	no delay 🔻
Hysteresis settings	Relative humidity (%)	2	no delay 🔻
Canto Cons	Dew point (°C)	2	no delay 🔻
~	Battery voltage (mV)	2	no delay 🔻

The width of the hysteresis is a percentage (0 ... 100%) of the difference between the two alarm thresholds.

For example, if Hysteresis=2%, Lower threshold=10 °C and Upper threshold=60 °C, the hysteresis is (60-10)x2/100= 1 °C:



If the measured value drops below the lower threshold or exceeds the upper threshold, the alarm is generated after the time set in the *Alarm delay* field. The alarm is generated immediately if *no delay* is selected. If the alarm condition ends before the delay time is elapsed, the alarm is not generated.

11.6. TRANSFERRING THE CONFIGURATION TO THE INSTRUMENT

Configuration parameters which have been modified in *End Device settings* window are highlighted by a green circle placed on the right of modified parameter.

😵 [ED_16000175] End Device se	ettings	×
Instrument info	ED configurations	2
ED configurations	User Code	
Info measures	User Code	
Logging parameters	Group Name	

To confirm new settings and apply them to selected device, press the Apply key. The green circle will disappear.

	Read Read Exit
Running: -	

11.7. READING THE INSTRUMENT CURRENT CONFIGURATION

When *End Device setting* window is opened, displayed values are those currently set in the instrument. To read again the current configuration, for example to check if configuration procedure has been successful, select the *Read* button.

	Read Apply Exit
Running: -	

11.8.

11.9. CLOSING THE CONFIGURATION WINDOW

In order to close the End Device settings window, select Exit button.

	Read Read Apply
Running: -	

If any modifications was made, but they were not transferred to the device, a message will appear asking the user if he wants to transfer modifications before closing the window.

12. CONFIGURATION OF THE ALARM MODULE HD35ED-ALM

To configure the alarm module, select the corresponding *Settings* key in the column *Setup* of the device window.

File Tools	View Help				
3					
Disconnect	Network	View Data Monitor	Data downloa	id from	A
AP_41 [HD35APS Plus S	SN:12016692 - A	AP test]		
	Setup	Model	SN	RF	an
		HD35EDL1N4r2TV	12039377	30	(
ED_76	Settings 76	J HDOOLDDIN HEB IV		00	
ED_76 ED_107	Settings 76 Settings 107	HD35EDL1NTC	13022851	15	-
_					(

Note: if *Setup* column is not displayed, please consult paragraph <u>Main window description</u> for columns display operation mode.

The window *End Device settings* is opened. Upon opening, the window visualizes the section *Instrument info*, which contains the main settings of the device.

Instrument info	i)	Instrument info
ED configurations	Type - RF address	AL_103
	Net address	005
Relay setup	Model	HD35ED-ALM
MODBUS-RTU	SN	13018110
	User Code	USER_CODE
	Group	GRP_NAME
	Firmware version and date	0.82 2013/09/27
	RF and log interval	5(sec)
	Connection status	CONN
	Measures alarm buzzer	Buzzer enabled
	RF channel and frequency	Ch.: 3 - Freq.: 868 MHz
	Battery level	Level: 2 Weeks remaining: 231
	Error status	In normal operation
		🔯 Read 🥩 Apply 🖏 E

Some of the settings can not be modified by the user: model, serial number, firmware version, frequency, RF address, others can be modified by entering the section listed on the left hand side of the window:

ED configurations: allows to set the user code, the group, the address, the RF interval, the buzzer functions.

<u>Relay setup</u>: allows to set the functioning mode of the relays of the module.

MODBUS-RTU: allows to require the MODBUS registers of the device and to save it in a text file.

12.1. ED CONFIGURATIONS

Select the sections *ED configurations* of the window *End Device settings* to set the user code, the group, the address, the RF interval, the buzzer function.

[AL_103] End Device settings		×
Instrument info	ED configurations	2
ED configurations Refinetup MODBUS-RTU	Change the device address. Current address: 005. List of available addresses 005 Belonging to the MODBUS network The device belongs to the MODBUS network The device does NOT belong to the MODBUS network	
	User Code USER_CODE Group GRP_NAME Test buzzer Data synchronization Execute test Run RF interval 5 (sec) Buzzer operation on alarm @ Buzzer ON @ Buzzer OFF	

The section allows to configure following parameters:

- Address of the device : setting of the device address in the wireless network. If the device belongs to a MODBUS network, the address also performs the functions of MODBUS address of the device.
- *Belonging to the MODBUS network* : indicate if the device belongs or not to a MODBUS network (in order to belong to a MODBUS net, the base unit of the wireless network must have the MODBUS option and has to be connected in a RS485 net).
- User code : alphanumerical code which identifies the device. Maximum length 20 characters. The ASCII characters from 32 (blank) to 126 (~) are accepted.
- *Group* : useful code to identify subsystems of devices, i.e. the devices installed in the same environment. Maximum length 10 characteristics.
- *RF interval*: setting of the data communication interval. It is recommended to set a short interval so that the alarm conditions is signaled quickly.
- Buzzer operation on alarm : select the option Buzzer ON o Buzzer OFF to enable or disable the buzzer function in case of alarm.

The section allows also to verify the buzzer function and to synchronize the data of the device with the data contained in the base unit:

• *Test buzzer* : select the key *Execute test* to verify the buzzer function of the device, after a few seconds the device should activate the buzzer for a brief period of time.

• *Data synchronization* : the base unit keeps a copy of the configuration parameters of each of the devices of the net. The synchronization between the parameter values of the device and the copy in the base unit is normally performed automatically. If it is not possible to execute an automatic synchronization, e.g. due to RF coverage, it is possible to execute a manual synchronization later by selecting the key *Run*.

12.2. RELAYS SETTING

Select the section *Relay setup* of the window *End Device settings* to set the functioning mode of the two relays of the module in case of alarm.

😵 [AL_103] End Device settings		
Instrument info	Relay setup	2
ED configurations Relay setup MM US-RTU	Relay 1	
	Relay 2 Image: Enabling Relay 2 - alarm measures Image: Enabling Relay 2 - alarm RF Image: Rele 2 always on Activation time Relay 2 Deactivation time Relay 2 Number of cycles Relay 2	_

Select Enabling Relay n°x - alarm measures to activate the relay n°x when the measurement thresholds are exceeded.

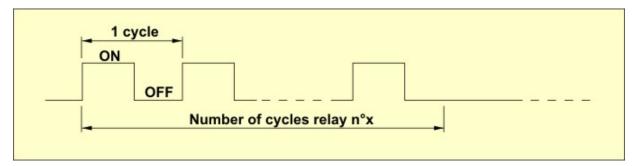
Select *Enabling Relay* $n^{\circ}x$ - *alarm RF* to activate the relay $n^{\circ}x$ when the maximum transmission error percentage is exceeded.

Select *Relay n°x always on* in order to keep the relay *n°x* always active as long as the alarm condition lasts.

If you wish the relay *n*°*x* being activated cyclically in case of alarm, clear the option *Relay always on* and set the following parameters:

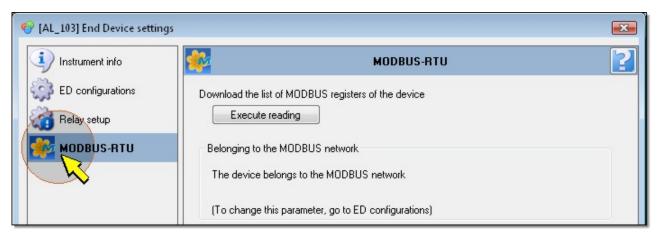
- Activation time Relay $n^{\circ}x$: Indicate how long the relay $n^{\circ}x$ has to be activated (ON) during a cycle.
- Deactivation time Relay $n^{\circ}x$: indicate how long the relay $n^{\circ}x$ has to be inactive (OFF) during a cycle.

• Number of cycles Relay $n^{\circ}x$: indicate how many times the relay $n^{\circ}x$ has to get activated. After the number of cycles set, the relay $n^{\circ}x$ is deactivated even if the alarm condition is still present.



12.3. MODBUS-RTU

Select the section *MODBUS-RTU* of the window *End Device settings* and press the key *Execute reading* to read the list of MODBUS registers to the device and to save it in a text file.



The downloaded file contains the following fields, separated by commas:

- Descriptive name of the register
- Type and address of the register The address is preceded by two letters which identify the register type according to the following convention: IS = Discrete Input, CS = Coil, IR = Input Register, HR = Holding Register.
- Type of data

For some registers there is also a brief description available. The file can be imported in Excel to obtain the alignment of the columns:

33 X	A	В	С	D
1	RE_INTERF	IS00000	bit	interference caused by multiple REs
2	MISSED_LAST_MEAS	IS00001	bit	last measure lost
3	PENDING_CONF	IS00002	bit	pending configuration
4	SCHED_PROBLEM	IS00004	bit	scheduling problem
5	CH_SWITCH_IN_PROGRESS	IS00005	bit	channel switch is in progress
6	LOG_STATUS	CS00001	bit	log status (enable/disable)
7	LOG_MODE	CS00002	bit	log mode (cyclic/not cyclic)
8	LOG_ERASE	CS00003	bit	delete log data
9	BUZZER_ALARM	CS00004	bit	buzzer alarm status {0:off/1:on}
10	CMD_FAILURE	CS00007	bit	cmd failure status
	DEVICE_INFO_STATUS	CS00014	bit	device info updated at AP (0)/ possibly not updated
12	CO2_AUTO_CALIBRATION_STATUS	CS00015	BIT	CO2 auto calibration status (enable/disable)
13	TEMP_HYT_271	IR00046	Sign Word	
14	ALARM_TEMP_HYT_271	IR00047	byte	

Please refer to the chapter *MODBUS* of data logging system manual for the complete list of the registers and details on their use.

12.4. TRANSFERRING THE CONFIGURATION TO THE INSTRUMENT

Configuration parameters which have been modified in *End Device settings* window, are highlighted by a green circle placed on the right of modified parameter.

(AL_103) End Device settings		X
Instrument info	ED configurations	2
ED configurations	Change the device address. Current address: 005. List of available addresses	
Constant Setup Relay setup MODBUS-RTU	O05 Belonging to the MODBUS network The device belongs to the MODBUS network The device does NOT belong to the MODBUS network	

To confirm new settings and apply them to selected device, press the Apply key. The green circle will disappear.

	Read Read Exit
Running: -	

12.5. READING THE INSTRUMENT CURRENT CONFIGURATION

When *End Device setting* window is opened, displayed values are those currently set on the base unit. To read again the current configuration, for example to check if configuration procedure has been successful, select the *Read* button.



12.6. CLOSING THE CONFIGURATION WINDOW

In order to close the End Device settings window, select Exit button.

	Read Read Apply
Running: -	

If any modifications were made, but they were not transferred to the device, a message will appear asking whether modifications have to be transferred before closing the window.

13. CONFIGURATION OF THE REPEATER HD35RE...

To configure a repeater, select the corresponding *Settings* key in the column *Setup* of the device window.

File To	ools	View	Help						
3			-			1	-	- 🕹	3
Disconneo	t		Networ	k v	View Data	Monitor	Data	downloa	ad fro
>									
🛄 AP_4	40 [HD35	SAP Plus	s SN	1:12012	2665 -	AP use	er]	
🔟 AP_4	40 [HD35	SAP Plus Setup			2665 - ddress		-	img
ED_2	-	_						-	img
	10	Set	Setup	210	Net a		Type	-	img
ED_2:	10	Set Se	Setup tings	210 89	Net a		Type ED	-	img

Note: if *Setup* column is not displayed, please consult paragraph <u>Main window description</u> for columns display operation mode.

The window *Range Extender settings* is opened. Upon opening, the window visualizes the section *Instrument info*, which contains the main settings of the device.

🍄 [RE_20] Range Extender setting	gs	
instrument info	i)	Instrument info
RE configurations	Type - RF address	RE_20
	Net address	246
MODBUS-RTU	Model	HD35RE
	SN	11011873
	User Code	GALLERY
	Group	Rptr
	Firmware version and date	0.12 2013/07/12
	Connection status	CONN
	RF channel and frequency	Ch.: 2 - Freq.: 868 MHz
	Percentage of battery charge	
	Average remaining life of the battery	
	Power supply	External power supply
	Error status	In normal operation
		🔯 Read 🥩 Apply 🖏 Exit
Running: -		.:

Some of the settings can not be modified by the user: model, serial number, firmware version, frequency, RF address, others can be modified by entering the section listed on the left hand side of the window:

RE configurations: allows to set the user code, the group, the address.

MODBUS-RTU: allows to require the MODBUS registers of the device and to save it in a text file.

13.1. RE CONFIGURATIONS

Select the sections *RE configurations* of the window *Range Extender settings* to set the user code, the group, the address.

🊱 [RE_20] Range Extender settin	gs	
Instrument info	RE configurations	2
RE configurations	Change the device address. Current address: 246. List of available addresses 246 Belonging to the MODBUS network Image: The device belongs to the MODBUS network Image: The device does NOT belong to the MODBUS network User Code Group Rptr Test buzzer Data synchronization Execute test Bun	
	Battery reset (select when changing battery) Execute reset	

The section allows to configure following parameters:

• Address of the device : setting of the device address in the wireless network. If the device belongs to a MODBUS network, the address also performs the functions of MODBUS address of the device.

• *Belonging to the MODBUS network* : indicate if the device belongs or not to a MODBUS network (in order to belong to a MODBUS net, the base unit of the wireless network must have the MODBUS option and has to be connected in a RS485 net).

- User code : alphanumerical code which identifies the device. Maximum length 20 characters. The ASCII characters from 32 (blank) to 126 (~) are accepted.
- *Group* : useful code to identify subsystems of devices, i.e. the devices installed in the same environment. Maximum length 10 characteristics.

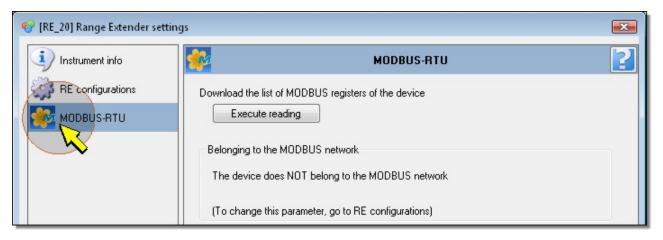
The section allows also to verify the buzzer function, to synchronize the data of the device with the data contained in the base unit and to reset a new battery after replacement (the reset is available only for HD35RE with rechargeable battery, not for HD35REW with not rechargeable battery):

- *Test buzzer* : select the key *Execute test* to verify the buzzer function of the device, after a few seconds the device should activate the buzzer for a brief period of time.
- *Data synchronization* : the base unit keeps a copy of the configuration parameters of each of the devices of the net. The synchronization between the parameter values of the device and the copy in the base unit is normally performed automatically. If it is not possible to execute an automatic synchronization, e.g. due to RF coverage, it is possible to execute a manual synchronization later by selecting the key *Run*.
- *Battery reset* (only for HD35RE with rechargeable battery) : after replacement of the battery of the repeater with a new one, select the command *Execute reset*; this allows the repeater to correctly recalculate remaining capacity of new battery.

Note: to configure the behaviour of the system when using Low Power HD35REW repeaters, see the section "<u>Wireless</u> <u>network settings</u>".

13.2. MODBUS-RTU

Select the section *MODBUS-RTU* of the window *Range Extender settings* and press the key *Execute reading* to read the list of MODBUS registers to the device and to save it in a text file.



The downloaded file contains the following fields, separated by commas:

- Descriptive name of the register
- Type and address of the register The address is preceded by two letters which identify the register type according to the following convention: IS = Discrete Input, CS = Coil, IR = Input Register, HR = Holding Register.
- Type of data

For some registers there is also a brief description available. The file can be imported in Excel to obtain the alignment of the columns:

	A	В	С	D
1	RE_INTERF	IS00000	bit	interference caused by multiple REs
2	MISSED_LAST_MEAS	IS00001	bit	last measure lost
3	PENDING_CONF	IS00002	bit	pending configuration
4	SCHED_PROBLEM	IS00004	bit	scheduling problem
5	CH_SWITCH_IN_PROGRESS	IS00005	bit	channel switch is in progress
6	LOG_STATUS	CS00001	bit	log status (enable/disable)
7	LOG_MODE	CS00002	bit	log mode (cyclic/not cyclic)
8	LOG_ERASE	CS00003	bit	delete log data
9	BUZZER_ALARM	CS00004	bit	buzzer alarm status {0:off/1:on}
10	CMD_FAILURE	CS00007	bit	cmd failure status
11	DEVICE_INFO_STATUS	CS00014	bit	device info updated at AP (0)/ possibly not updated
12	CO2_AUTO_CALIBRATION_STATUS	CS00015	BIT	CO2 auto calibration status (enable/disable)
13	TEMP_HYT_271	IR00046	Sign Word	
14	ALARM_TEMP_HYT_271	IR00047	byte	

Please refer to the chapter *MODBUS* of data logging system manual for the complete list of the registers and details on their use.

13.3. TRANSFERRING THE CONFIGURATION TO THE INSTRUMENT

Configuration parameters which have been modified in *Range Extender settings* window, are highlighted by a green circle placed on the right of modified parameter.

😵 [AL_103] End Device settings		X
Instrument info	ED configurations	2
ED configurations	Change the device address. Current address: 005. List of available addresses	
ব্যু Relay setup ক্রি MODBUS-RTU	005 Belonging to the MODBUS network Image: The device belongs to the MODBUS network The device does NOT belong to the MODBUS network	

To confirm new settings and apply them to selected device, press the Apply key. The green circle will disappear.

	Read Read Apply 🖏 Exit
Running: -	

13.4. READING THE INSTRUMENT CURRENT CONFIGURATION

When *Range Extender settings* window is opened, displayed values are those currently set on the base unit. To read again the current configuration, for example to check if configuration procedure has been successful, select the *Read* button.

	Read Apply Kit
Running: -	

13.5. CLOSING THE CONFIGURATION WINDOW

In order to close the Range Extender settings window, select Exit button.

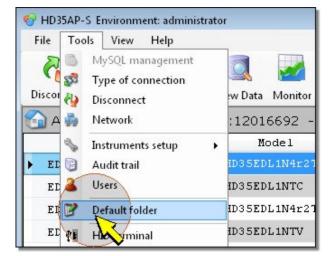
	Read 😒 Apply
Running: -	

If any modifications were made, but they were not transferred to the device, a message will appear asking whether modifications have to be transferred before closing the window.

14. DEFAULT WORKING FOLDER

The files created by the software (e.g. the network configuration, the data exported from the database, etc.) are saved inside a folder defined as "Default working folder". During installation, the software creates, in the "Documents" folder of the PC, the default folder HD35AP-DATA.

To modify the name and position of the working folder, the command Default folder from the Tools menu is provided.



The following window will be opened:

🖗 Default	folder	X
Path:	C:\DeltaOhm\HD35AP-S\	
	Edit Contraction Apply	Exit

Press the key *Edit* ... and select the new folder. Then press *OK* to confirm.

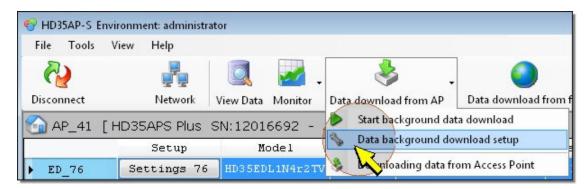
Press the Apply button to close the window. Restart the program to make the change effective.

15. DATA DOWNLOAD (HD35 AND HD50)

Data acquired by the system can be automatically downloaded by the program, so that new data are immediately collected into the database as soon as they are available. Alternatively it is possible to download on request the data contained into the internal memory of each <u>individual data logger</u> or the data contained in the <u>base unit</u> memory (which contains data coming from various data loggers, for the HD35 series).

15.1. AUTOMATIC DATA DOWNLOAD

Select the icon *Data download from AP* in the toolbar, then *Data background download setup* (alternatively select menu *File >> Data download from AP >> Data background download setup*).



The interface window which allows to configure the automatic download is opened.

👆 Dat	a background download setup	X
	Start program at every PC startup	
	Run program minimized	
	Start background data download at every program startup	
Prio	rity background data download	
Dat		
Data	a download programming	
0	Data download starting from the oldest datum in the Access Point	
۲	Data download starting from the newest datum in the database	
\odot	Data download starting from the following date:	
	15/10/2013 🔲 🔻 10.05.16 🚔	
	Start Apply	Exit

In the upper part of the interface window, it is possible to select whether the program is automatically started at every PC startup (requires administrator privileges), if it should start minimized and if automatic data download (in background) should be launched each time the program is started.

If the user chooses to automatically activate data download at every program startup, the device (HD35AP... or HD50...) will be immediately automatically connected after the program startup.

In the central part of the window, a priority for the background data download can be set.

Prio	ity background data download

During background data download the user can freely carry out other activities with the program. By selecting higher values of priority (close to the symbol +), data download will be faster, but other activities could be slowed.

In the lower part of the interface window it is possible to select whether the data will be downloaded starting from the oldest data present in the device (HD35AP... or HD50...), from the newest data present in the database or from a specific date and time (in this last case the user must specify, in the fields placed under the option, desired date and time).

Press Apply button to confirm and activate the new settings.

15/10/2013 🗐 🔻 10.05.16		
	Sta	

Note: settings of the automatic data download are recorded in registry keys of the operating system. If an anti-virus software protection is active in the system, it is possible that a confirmation of registry modifications is requested by the software.

Press the Start button to begin data download .

15/10/2013	10.05.16	
	Start	Apply Apply Exit
		h.

To end the automatic data download, press the Stop button.

15/10/2013 📑 🕇 10.05.16	
	Stop Stop

A message asking the user to confirm the stop of data download appears; press YES in order to end the data download.

Press the *Exit* button to go back to the main program window. If the data download is in progress, this will continue even if the user exits the window for download configuration.

It is possible to start automatic data download without going through the setup window. To do that select the icon *Data download from AP* in the toolbar, then the item *Start background data download* (alternatively select the menu *File >> Da- ta download from AP >> Start background data download*).

😵 HD35AP-S E	nvironment: administra	tor		
File Tools	View Help			
R Disconnect	Network	View Data Monitor	Data download from AP	Data download from ftp
🙆 AP_41	[HD35APS Plus	SN:12016692 -	Start background dat	
	Setup	Model	background dov	vnload setup
▶ ED_76	Settings 76	HD35EDL1N4r2TV	👶 Downloading data fro	om Access Point R_

In order to stop the automatic data download, select the icon *Data download from AP* in the toolbar, then the item *Stop background data download* (alternatively can be selected the menu item *File >> Data download from AP >> Stop background data download*).

File Tools	View Help			
W Disconnect		View Data Monitor	Data download from AP	Data download from fi
~		SN:12016692 -	Stop background dat	ta download
	2 -+	Model	- background dov	wnload setup
	Setup	noder		

When the automatic data download is in progress, the icon *Data download from AP* blinks, and, in the main window status bar, the date and time of the last sample downloaded is displayed.

	•	FTP OFF	Download data in background ON 2013/09/24 10.13.30	
-				-

Note: automatic data download is interrupted if the user closes the program or the base unit is disconnected from the program.

15.2. DATA DOWNLOAD FROM HD35AP... OR HD50... ON REQUEST

To download data from the HD35AP... base unit or HD50... data logger memory on request, select the icon *Data downlo*ad from AP in the toolbar, then the item *Downloading data from Access Point* (alternatively select the menu item *File >> Download data from AP >> Downloading data from Access Point*).

File Tools V	ïew Help			
<i>[</i>]		🔍 🌌 .	. 👌 🗸	0
Disconnect	Network	View Data Monitor	Data download from AP	Data download from ftp
🕤 AP_41 [H	ID35APS Plus	SN:12016692 -	Start background dat	E DO DE DE TRETER DE TRETER DE
	Setup	Model	Data background do	wnload setup Be:
< []			👌 Downloading data fr	om Access Point

The program opens the window from where it is possible to configure the data download on request.

🌚 Downloading data from A	ccess Point			
&	Downloading	data from Acc	ess Point	2
Search for the oldest datum				
Execute search	Data download	starting from the	oldest datum in the <i>i</i>	Access Point
Execute search	Data download	starting from the	newest datum in the	e database
Data download starting fro				
from 15/10/2013	• 10.54.26	to	15/10/2013 -	10.54.26 🚖
			Exec	ute Kit
Runnina:				
Running:				.d

Insert the starting date and time (field *from...*) and the ending date and time (field *to...*) of required time period to be downloaded.

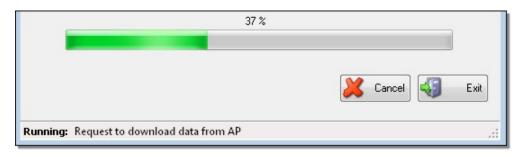
Execute search	Data download starting from the oldest datum in the Access Point
Execute search	Data download starting from the newest datum in the database
ata download starting	from the following date:

To enter as starting date and time the acquisition instant of the oldest datum in the device or the acquisition instant of the newest datum in the database, press the corresponding *Execute search* button.

To start data download press Execute button .

	Execute Exit
Running:	, ii

The data download operation status is indicated by a progress bar.



To close the *Downloading data from Access Point* window and go back to the main program window, press the *Exit* button.

15.3. DATA DOWNLOAD FROM INDIVIDUAL HD35ED... DATA LOGGERS ON REQUEST

Downloading of data directly from HD35ED... data loggers memory can be necessary in the case that the system was not able to transfer the data from the data loggers to the base unit, for example due to RF transmission problems or failure of the base unit.

In order to download data on request from a specific data logger, select the corresponding *Settings* button present in the *Setup* column in the devices window.

- The solar of th	nvironment: administra	tor			
File Tools	View Help				
<i>?</i>	.	🔍 🌌 🗸			
Disconnect	Network	View Data Monitor	Data downloa	d fron	n AF
AP_41	[HD35APS Plus	SN:12016692 - 4	ND test 1		
		SILLECTOODE .	n cosej		
	Setup	Model	SN	RF	and
ED_76				RF 15	
	Setup	Model	SN		(

Note: if column *Setup* is hidden, please consult the section <u>Main window description</u> for information on how to display the columns.

The interface window End Device settings Will be opened. Select Data download from ED.

😵 [ED_76] End Device settings		X
Instrument info	Data download from ED	2
ED configurations	Search for the oldest datum	
info measures	Execute search	
Logging parameters	from 15/10/2013 - 11.13.58 🚖 to 15/10/2013 - 11.13.58	÷
Alarm thresholds		-
Hysteresis settings		
Data download from		
🧩 Calibrations		
		_
	Execu	ite
	🔯 Read 🥩 Apply	xit
Running: -		

Insert starting date and time (field from...) and ending date and time (field to...) for the time period to download.

	Data	downloa	d from ED	
Search for the oldest d	latum			
Execute search				
				-
	▼ 11.13.58	(to 15/10/2013	÷.

By pressing the *Execute search* button, the user can search for the oldest date available in the data logger memory. To start the data download, press the *Execute* button.



During the data download, the *Execute* button turns into *Cancel*. Press *Cancel* if you want to interrupt the download procedure.

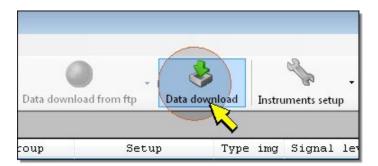


At the end of data download, the Cancel button turns into Execute.

To return to the main program window, press the Exit key.

16. DATA DOWNLOAD (HD208)

To download into the database the data from the HD208... data logger memory, select the icon *Data download* in the toolbar (alternatively select the menu item *File >> Data download*).



Note: to download data, any logging session in progress must be stopped: it is not possible to download measures if the instrument is in acquisition mode.

In the *Data download* window, select the (flashing) "Folder" icon, then select the folder containing the CSV files recorded by the data logger (the data logger appears as a mass storage device).

😤 Data download	
	🕹 🖏
Name pe Size Last Modified	

If there are stored data in memory, the list of acquired sessions (CSV files) is displayed. The data logger serial number and the acquisition initial date and time are shown in the name of the CSV files. Select the logging session you whish to import into the database and press the *Import* icon.

😤 Data download				
				\$ 43
Name	Туре	Size	Last Modified	
DATA_ed_16033820_1_20161108_114846.csv	File	1834	08/11/2016 11.49.32	
DATA_ed_16033820_2_20161123_112640.csv	File	20989171	28/11/2016 10.26.24	
DATA_ed_16033820_3_20161129_175204.csv	File	3564958	30/11/2016 9.59.08	
DATA_ed_16033820_4_20161209_165152.csv	File	1269032	12/12/2016 9.54.24	*
DATA_ed_16033820_5_20161212_135538.csv	File	75093	12/12/2016 17.30.40	

The status of data being transferred is displayed through the bar at the bottom of the window.

To update the list of sessions, press the *Refresh* icon.

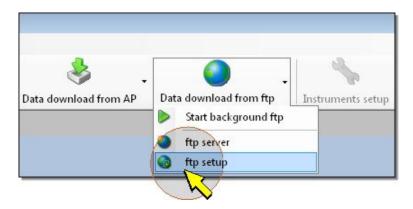
Data download					
Name	Туре	Size	Last Modified		
DATA_ed_16033820_1_20161108_114846.csv	File	1834	08/11/2016 11.49.32		
DATA_ed_16033820_2_20161123_112640.csv	File	20989171	28/11/2016 10.26.24		
DATA_ed_16033820_3_20161129_175204.csv	File	3564958	30/11/2016 9.59.08		
DATA_ed_16033820_4_20161209_165152.csv	File	1269032	12/12/2016 9.54.24		

Once data download is complete, press the *Exit* icon to return to the program main window.

17. DATA DOWNLOAD FROM FTP

If the device has the GSM/3G or LAN (Wi-Fi or Ethernet) connection and it has been configured to send the data to an FTP address, using the software it is possible to download data from the FTP address directly to the database. To download data from an FTP address, it is compulsory that the PC is connected to the internet and that the connection to FTP server is active.

In order to configure a connection to the FTP server, select the icon *Data download from ftp* in the toolbar, then select the item *ftp setup* (alternatively select menu *File >> Data download from ftp>> ftp setup*).



The current FTP settings are displayed in the appearing window.

🚱 ftp setup		
i) Info ftp	🤹 Info ftp	
Setup ftp	FTP server ftp.mysite.com	
	FTP user UserName	
	Directory for FTP access /www.logger.com/HD35AP_S	
	FTP port 21	

To modify the settings, select the section Setup ftp.

🚱 ftp setup		E
Infoftp	Sel	tup ftp
Setup ftp	Connect Disconnect	
	FTP server ftp.mysite.com	FTP user UserName
	Password to access FTP	FTP port 21
	Directory for FTP access /www.logger.com/HD35AP_S	
	Waiting.	
		Save Save Exit

Set the following parameters :

FTP server : enter FTP address .

FTP user : enter the user name to access the FTP service.

Password to access FTP : enter the password to access the FTP server.

FTP port : enter the port number for FTP service.

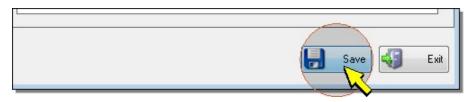
After correct configuration, select Connect button in the upper left side of the window.

🚱 ftp setup		
🚺 Info ftp	Setup ftp	2
Setup ftp	Connect Disconnect	

As soon as FTP connection is successfully done, select the *Directory for FTP access*, that is the folder physically located on the FTP server where data coming from the device are stored.

Directory for FTP access	
/www.logger.com/MyFolder	
HD 35AP_S	•
cgi-bi	E
	Save 🤤 Exit

When folder is selected, click on *Save* button to store all settings in the local PC. These settings will be used for future connections.

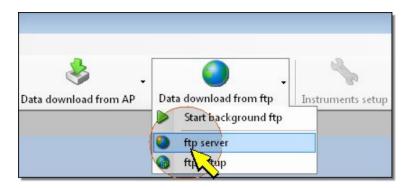


To go back to the main program window, press Exit.

Note: when Setup ftp window is closed, the FTP server is automatically disconnected.

17.1. MANUALLY DOWNLOADING THE DATA FROM FTP

In order to manually download measurement data from the FTP server, select the icon *Data download from FTP* in the toolbar, then the item *FTP Server* (alternatively select menu item *File >> Data download from ftp >> ftp server*).



It is launched the FTP server window. In the upper part of the window, the FTP server settingsare given. Select connection icon in order to connect to the FTP server.

HD35AP-S				
Host: ftp.mysite.com	UserName: UserName	Password: *******	Port: 21	

As soon as connection to FTP server is successfully done, select the folder on the FTP server where the data coming from the device are located.

Remote site:		Local site: C:\Delt	Local site: C:\DeltaOhm\HD35AP-S\FTP	
Cgi test		File Name	Size	
File Name	DimensionSize	<u>^</u>		
HD35APG_101_130502123	12045 Bytes			
HD35APG_101_130502124		=		
HD35APG_101_130502124 HD35APG_101_130502130	64918 Bytes	E		
HD35APG_101_130502124 HD35APG_101_130502130 HD35APG_101_130502131	64918 Bytes 64918 Bytes	=		
HD35APG_101_130502124 HD35APG_101_130502130	64918 Bytes 64918 Bytes 64811 Bytes	=		

In the lower part of the window is shown the list of data files. Files are identified by: device RF address, date and time when the file was sent and a sequential number.

Note: the time interval between sending two successive files can be set (please see paragraphs <u>GSM/3G settings</u> and <u>Wi-FI and Ethernet settings</u>).

Note: if the automatic data download from FTP is active (in background), and the data files have been already downloaded and stored into the database, they are automatically deleted from the FTP folder, therefore the folder could appear empty.

Select the files you need to download and press the right green arrow to transfer them into your PC. The files are downloaded into the FTP folder in the default working folder.

Remote site:		•	Local site: C:\DeltaOH	m\HD35AP-S\FTP	
MyFolder 			File Name	Size	
File Name	Size	L.M	×		
HD35APG_101_130502123000_F1.log	12045 Bytes		I		
HD35APG_101_130502124500_F2.log	57087 Bytes	=			
HD35APG_101_130502130000_F3.log	64918 Bytes				
HD35APG_101_130502131500_F4.log	64918 Bytes				
HD35APG_101_130502133000_F6.log	64811 Bytes				
HD35APG_101_130502134500_F7.log	62971 Bytes				
HD35APG 101 130502140000 F8 log	64121 Rutes	-			

As an alternative, it is possible to download the remote files by a right mouse click and selecting item *Download selected files from server*.

File Name	Size	<u>^</u>	
HD35APG_101_1305021230	00_F1.log 12045 Bytes		
HD35APG_101_13050212450	00_F2.log 57087 Bytes	E	
HD35APG_101_1305021300	00_F3.log 64918 Bytes		
HD35APG_101_13050213150	00 E4 Ion 64918 Butes		
HD35APG_101_13050213300	🖸 🌺 🛛 Download selected file	es from server	
HD35APG_101_13050213450	100000000000000000000000000000000000000	<i>c</i> 1	
HD35APG 101 13050214000	Description of the server	files	
	Rename file		

After successful download files can be collected into the database. To do that, select required files on the right panel and press the insertion button placed above the file name header.

Remote site:		^	Local site: C:\DeltaOhm\HD35AP-S\FTP	
Ggi-bin ⊡-⊖ test		-	File Na HD35APG_101_130502123000_F1.log HD35APG_101_130502124500_F2.log HD35APG_101_130502130000_F3.log HD35APG_101_130502131500_F4.log	Size 12045 Bytes 57087 Bytes 64918 Bytes 64918 Bytes
File Name	Size	•		0.0.000,000
HD35APG_101_130502131500_F4.log HD35APG_101_130502133000_F6.log HD35APG_101_130502134500_F7.log HD35APG_101_130502140000_F8.log HD35APG_101_130502141500_F9.log HD35APG_101_130502143000_F10.log	64918 Bytes 64811 Bytes 62971 Bytes 64121 Bytes 63601 Bytes 64303 Bytes	II		

If you need to delete from the FTP server the files already downloaded, select them, press the right mouse button and select *Delete selected server files*.

File Name	Size	*	
HD35APG_101_130502124500_F2.log HD35APG_101_130502130000_F3.log		E	
HD35APG 101			

In order to delete from PC the files already collected into the database, select them and press the delete button in the right panel.

F	Remote site: 		^	Local site: C:\DeltaDhm\HD35AP-S\FTP	
	MyFolder Ggi-bin test		-	File Name HD35APG_101_130502123000_F1.log HD35APG_101_130502124500_F2.log HD35APG_101_130502130000_F3.log HD35APG_101_130502131500_F4.log	57087 Bytes 64918 Bytes
	File Name	Size	<u>^</u>		04510 5905
	HD35APG_101_130502123000_F1.log HD35APG_101_130502124500_F2.log	12045 Bytes 57087 Bytes	=		

As an alternative, the files can be deleted by a right mouse click and selecting item *Delete selected files*.

Remote site:		Local site: C:\DeltaOhm\HD35AP-S\FTP	
Ggi-bin □ Cgi-bin test		File Name HD 35APG_101_130502123000_F1.log HD 35APG_101_130502124500_F2.log HD 35APG_101_130502130000_F3.log HD 35APG_101_130502131500_F4.log	57087 Bytes 64918 Bytes
File Name	Size		te selected files
HD35APG_101_130502123000_F1.log HD35APG_101_130502124500_F2.log	12045 Bytes 57087 Bytes		

To update the content of the PC folder, press the *Refresh* button in the right panel.

Remote site:		Local site: C:\DeltaDhm\HD35AP-S\FTP		
MyFolder 		-	File Name HD35APG_101_130502123000_F1.log HD35APG_101_130502124500_F2.log HD35APG_101_130502130000_F3.log HD35APG_101_130502131500_F4.log	Size 12045 Bytes 57087 Bytes 64918 Bytes 64918 Bytes
File Name	Size			04010 Dytes
HD35APG_101_130502123000_F1.log HD35APG_101_130502124500_F2.log	12045 Bytes 57087 Bytes	E		

To modify the name of a file located in the server, select it and press the right mouse key, then click on *Rename file*.

File Name	Size	<u>^</u>
HD35APG_101_130502123000_F1.log	12045 Bytes	
HD35APG_101_13050213000 HD35APG_101_13050213150	vnload selected files f	
HD35APG_101_13050213300 HD35APG_101_13050213450 HD35APG_101_130502140000_F8.loo	ame file 64121 Bytes	•

In order to terminate the FTP connection to server, select *Disconnect* icon on the upper right side of the window.

•				
Host: ftp.mysite.com	Nome uten UserName	Password: ******	Porta: 21	
				- W

17.2. AUTOMATIC DATA DOWNLOAD FROM FTP

It is possible to automatically download files from the FTP in background. In order to enable the automatic FTP download, from the toolbar select the icon *Data download from ftp*, then the item *ftp server* (alternatively select the menu item *File >> Data download from ftp >> ftp server*).

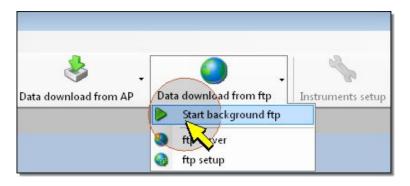
Sata download from AP	Data download from ftp	istruments setup
	ftp server ftp server	

In the upper part of the appearing window, the settings for the FTP server are displayed. Select *connection* icon to connect to the FTP server.

HD35AP-S					
Host: ftp.mysite.com	UserName: UserName	Password: *******	Port: 21	A.C.	
				- ht	_

After connection to FTP server is successfully done, minimize the window (do not close the window, or the FTP server would be disconnected and the program would not be able to download data).

In the program main window, select the icon *Data download from ftp* from the toolbar, then the item *Start background ftp* (alternatively select the menu item *File >> Data download from ftp >> Start background ftp*).

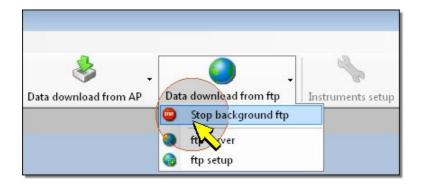


The program will automatically download data from the FTP as soon as they will be available. Data are automatically collected into the database. After collection into the database, files are deleted both from the server and from the local PC.

When the automatic FTP data download is running, the icon *Data download from ftp* blinks. When a file is downloaded from the FTP server, the background of "*ftp* ON" indication placed on the status bar becomes red for a while.

AP	12016692 HID: Not connected	MySQL: connected 127.0.0.1	-	FTP ON	Download data in background OFF
				V.	7
Contraction of the local division of the loc					

The automatic data download can be stopped by selecting the icon *Data download from ftp* in the toolbar, then the item *Stop background ftp* (alternatively select the menu item *File >> Data download from ftp >> Stop background ftp*).



18. DISPLAYING DATA STORED IN THE DATABASE

In order to recall the data collected in the database, select the icon *View Data* from the toolbar, or the item *View Data* from the *File* menu.



The database window is opened.

🔍 View data	from database		
- 🌄	🧐 🛃 🕅 🔛 - 💽 🖎 🖻	-	04
Search date	Graphs setting	Database Collections	Data
From:	13/10/2013 🖉 🗸 15.43.06 🚔	⊕ 🔽 Database	
To:	15/10/2013 🗐 🔻 15.43.06 🚖		
X axis:	2 days 👻		
Scroll:	Same as X axis 🔹		
		Expand >>	
	1 1		
MySQL: co	nnected 127.0.0.1 Download da	ita in background OFF	

In the section *Search date*, insert starting date and time (fields *from*...) and ending date and time (fields *To*...) of required period .

🔍 View data from database		
- III III III III III III III III III I	•	0 🖏
Search date Graphs setting	Database Collections	Data
From: 08/10/2013 🗊 🕶 15.00.00 🚖		
To: 15/10/2013 ₪▼ 15.00.00 😫		
X axis: 1 week		
Scroll: Same as X axis	Expand >>	

Press the button to restrict search within selected period.

🕻 View dat	a from database 🎱 🛃 隆 🎇 - 💽 📚	× •		
Search date		Database Collections	Data	
From:	08/10/2013 🗐 🗸 15.00.00 😓	🕀 🔽 Database		
To:	15/10/2013 🕞 🗸 15/00.00 🚖			
X axis:	1 week			
Scroll:	Same as X axis 🔹			
		Expand	>>>	

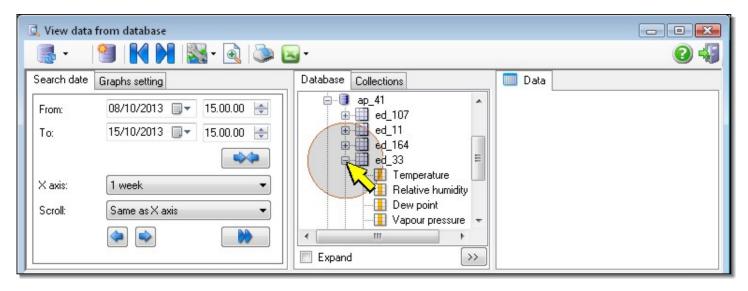
In the *Database* section, expand the database structure. It will appear the list of the base units, identified by their RF address, from which the data were downloaded. If data from the HD50... and/or HD208... data loggers were downloaded, the item *ap_0* appears.

🔍 View data	from database		
-	🧐 🚺 🕅 🞇 - 💽 🔊 🕻	•	0 🖏
Search date	Graphs setting	Database Collections	Data
From:	08/10/2013 🗐 🗸 15.00.00 🚖 🗌	Database	
To:	15/10/2013 🗐 🗸 15.00.00 🔄	ap_102 ⊕… i ap_225 ⊕… i ap_40	
X axis:	1 week 🔹		
Scroll:	Same as X axis 🔹		
		Expand >>	

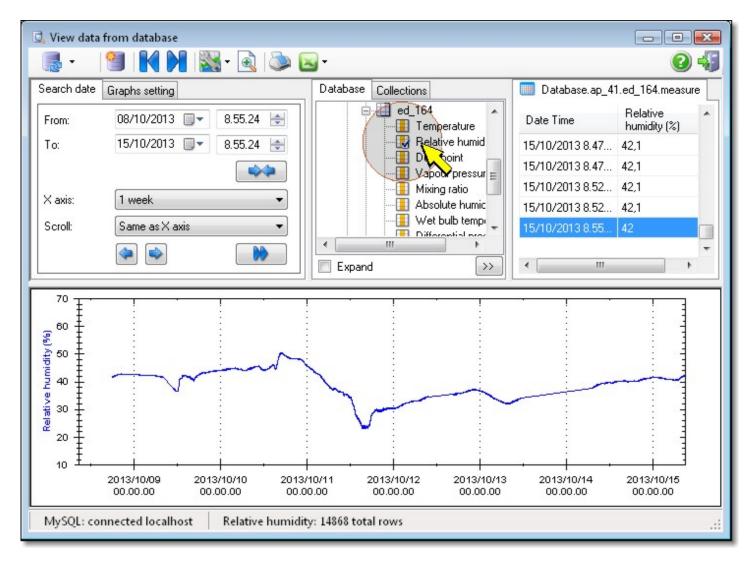
Expand the required access point or the item *ap_0* (for HD50... and/or HD208... data loggers): the list of data loggers appears. HD35ED... and HD50... data loggers are identified by their own RF address. HD208... data loggers are identified by their own serial number.

View data from database 👼 🔹 🛛 🧐 🛛 🙀 🎽 🛛 🏧 🗟 🕬 🖻	•	
earch date Graphs setting	Database Collections	Data
From: 08/10/2013 , 15.00.00	ap_225 ▲ ap_40 ap_41 ed_107 ed_11	
X axis: 1 week ▼ Scroll: Same as X axis ▼	ed_164 ed_33 ed_76 ed_92 ed_94 ■	

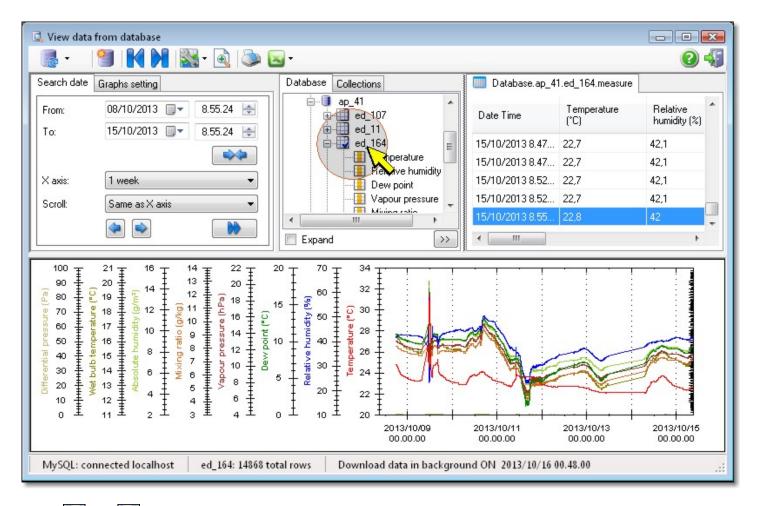
Expand required data logger. The list of physical quantities acquired by selected data logger are displayed.



Select the quantity of interest. In the *Data* section, the list of measured values in selected time interval appears, and in the lower part of the window the time history of values for selected quantity is displayed.



If, instead of a single physical quantity, the user selects the item corresponding to the data logger, values and time histories of all the physical quantities acquired and calculated by the data logger are displayed.



Select and buttons in order to jump to the first or last sample respectively in the list of measured values in the *Data* section.

🖸 View data from database								
📑 • 🗐 H N 🔀 • 🗟 🍉 🖻	-	2 🖏						
Search date Graphs setting	Database Collections	Database.ap_41.ed_164.measure						

The whole database structure can be quickly expanded with a single click. In order to quickly expand the database structure select the *Expand* check box .

💁 View data	from database		- • •
- 5	🅙 i 🚺 i 🎇 • 💽 i 🔈 🕻	g -	24
Search date	Graphs setting	Database Collections	Database.ap_41.ed_164.measure
From:	08/10/2013 🗐 🗸 8.55.24 🚖	ed_92	Date Time Temperature (°C)
To:	15/10/2013 🗐 🔻 8.55.24 🚖		15/10/2013 8.47 22,7
		Dew point 	15/10/2013 8.47 22,7
		Mixing ratio	15/10/2013 8.52 22,7
X axis:	1 week 🔻	Absolute humidity	15/10/2013 8.52 22,7
Scroll:	Same as X axis 🔹 🔻		15/10/2013 8.55 22,8
		Expand >>	• • • •

Deselect the Expand check box, in order to collapse the database structure.

18.1. GRAPHS CUSTOMIZATION

It is possible to modify the background color of graphs area, axes color, the abscissa axis scale, color and scale of each individual ordinate axis.

18.2. EDITING THE BACKGROUND COLOR

In the upper part of the window, select the icon Graphics settings, then the item Graph background color.

	🧐 🛃 М	
CIC!		
Search date	Graphs setting	Graph background color

In the color table which is opened, select the desired color and press OK to confirm.

18.3. EDITING AXES COLOR

In the upper part of the window, select the icon Graphics settings, then the item Graph border color.

-		📉 - 🗟 🔊 🖂 -
Search date	Graphs setting	Graph background color
From:	08/10/2013	🔕 🛛 Graph border color

In the color table which is opened, select the desired color and press OK to confirm.

18.4. EDITING THE ABSCISSA SCALE

When a time interval is selected using the button, the abscissa scale is automatically set so that to include the whole period selected.

In order to modify the abscissa scale, select a value in the X axis field.

Search date Graphs setting	Database Collections	Database.ap_41.ed_164.measur
From: 08/10/2013 - 8.55.24	ed_164	Date Time Relative humidity (%)
To: 15/10/2013 🗐 🔻 8.55.24	Relative humidity	15/10/2013 8.47 42,1
	Dew point	15/10/2013 8.47 42,1
	Mixing ratio	15/10/2013 8.52 42,1
X axis: 1 week 5 min	Absolute humidity	TOTTOTECTO O.OE TE,T
Scroll:	Wet bulb tempera Differential press	

When the user modifies the field X axis, the starting date and time (field From...) of time period defined in the Search date section is automatically modified so that interval duration is equal to the value set in X axis field.

Using the small arrow keys it is possible to scroll forward or backward in time the measured values.

🔍 View data	a from database							×
-		🖁 - 🗟 🕭 🕻	<u>-</u>				0	-
Search date	Graphs setting		Database	Collections		Database.ap_41	.ed_164.meas	ure
From:	08/10/2013 🗐 🗸	8.55.24		🛄 ed_164 — 🚹 Temperature	*	Date Time	Relative humidity (%)	-
To:	15/10/2013 🔲 🔻	8.55.24 🚖				15/10/2013 8.47	42,1	
						15/10/2013 8.47	42,1	
	<u> </u>			Mixing ratio	1	15/10/2013 8.52	42,1	
X axis:	1 week	•				15/10/2013 8.52	42,1	
Scroll:	Same as X axis	▼]		Wet bulb tempera	-	15/10/2013 8.55	42	
			Expand		·>	<	•	*

The time interval for scrolling using the small arrows can be set in the *Scroll* field. In order to scroll data of an interval equal to the period set for abscissa scale, select the option *Same as X axis*.

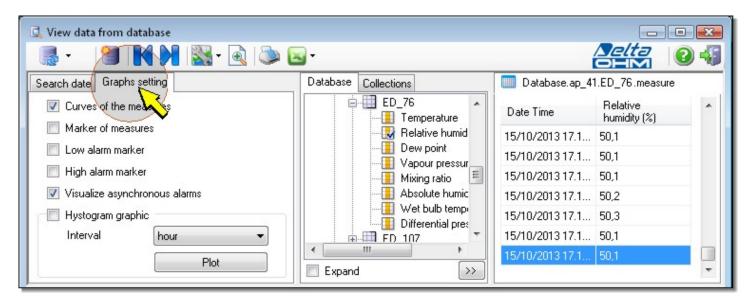
earch date	e Graphs setting	Database Collections	Database.ap_4	1.ed_164.measure
From:	08/10/2013 🗐 🗸 8.55.24 🚔	ed_164	Date Time	Relative humidity (%)
To:	15/10/2013 🗐 🔻 8.55.24 🚔		15/10/2013 8.47	42,1
		Dew point 	15/10/2013 8.47	42,1
		Mixing ratio	15/10/2013 8.52	42,1
Kaxis:	1 week		15/10/2013 8.52	42,1
Scroll:	Same as X axis 🚬 👻 👻		15/10/2013 8.55	42

In order to quickly jump to the latest values measured, press the double arrow button

.	🅙 🛛 🖌 🕅 🔛 - 💽 🖉		-	24
Search date	Graphs setting		Database Collections	Database.ap_41.ed_164.measure
From:	08/10/2013 🗐 🗸 8.55.24 🔮		ed_164	Date Time Relative humidity (%)
To:	15/10/2013 🗐 🛪 🛛 8.55.24 🔮		Relative humidity	15/10/2013 8.47 42,1
		n II	Dew point	15/10/2013 8.47 42,1
	[5	Mixing ratio	15/10/2013 8.52 42,1
X axis:	1 week			15/10/2013 8.52 42,1
Scroll:	Same as X axis	1/2		15/10/2013 8.55 42
			Expand >>	

18.5. MARKERS AND HYSTOGRAM GRAPHIC

By selecting the section *Graphs settings*, the user can choose to display, on the time history chart, the markers of measured data and the markers for low and high alarm thresholds.



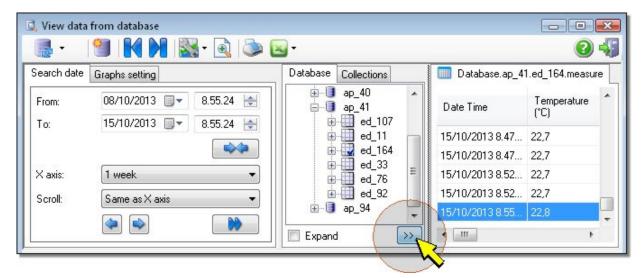
By selecting the option *Visualize asynchronous alarms*, all the measures in alarm are displayed in the graph, even if they are not in correspondence of logging instants (only if the measurement interval is lower than the logging interval and the logging interval is higher than 2 minutes). By deselecting the option, the measures in alarm are displayed in the graph only if in correspondence of logging instants.

Unselect the option Curves of the measures to disable the interpolation curve applied on measured data.

Only for rainfall measurement, the *Hystogram graphic* option can be selected: select the interval (minute, hour, day) for the graph and press *Plot*.

18.6. EDITING THE ORDINATE SCALE AND COLOR OF THE GRAPHS

Press the \longrightarrow button to open the section that allows to set each individual chart.



In order to modify the color of the graph representing a physical quantity, select the *Color* column in the row corresponding to the physical quantity to be modified.

Database Collections			Name	Y Axis auto	min Y	max Y	bt_color
	*	ap_41\ed_164	Temperature		0	100	
i		ap_41\ed_164	Relative humidity		0	100	
ed_11 ⊕ ₩ ed_164		ap_41\ed_164	Dew point		0	100	
ed_33 ed_12 ed_76 ed_92 ed_92 ed_94	=	ap_41\ed_164	Vapour pressure		0	100	
		ap_41\ed_164	Mixing ratio		0	100	
	-	ap_41\ed_164	Absolute humidity		0	100	
Expand		ap_41\ed_164	Wet bulb temperature		0	100	

A colour palette is opened; select desired colour and press OK.

In order to manually set, for a specific physical quantity, the ordinate scale in a chart, unselect the checkbox *Y* Axis auto in the row relative to the physical quantity of interest, then type in directly the minimum and maximum scale values, under the columns *min Y* and *max Y*.

Database Collections			Name 🔻	Y Axis auto	min Y	max Y	bt_color
iap_40 ▲		ap_41\ed_107	Temperature		0	100	
i ap_41 i ap_41 i d_ d_107		Ø ap_41\ed_107	Relative humidity	R	0	100	
ed_11	1	ap_41\ed_107	Dew point	(The	0	100	
ed_33		ap_41\ed_107	Vapour pressure		0	100	
i ed_76 ⊕ ed_92		ap_41\ed_107	Mixing ratio		0	100	
		ap_41\ed_107	Absolute humidity		0	100	
Expand <<		ap_41\ed_107	Wet bulb temperature		0	100	

18.7. ZOOM FUNCTION

It is possible to apply a zoom function, in order to enlarge specific areas on the charts. The chart area can be enlarged so as to fill the entire surface of the data display window.

18.8. ENIARGEMENT OF A GRAPH

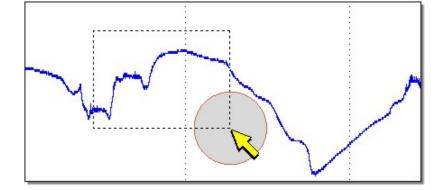
In the upper part of the window, select the icon

🔜 - 🛛 🚰 🚺 🕅 💹 🖓 - 🗟 🖓 🖓 -	

The charts will occupy the whole available area. In order to reduce the occupied area, press again the same icon.

18.9. Zоом

In order to enlarge a specific area on the chart, press the left mouse key to define the first corner of a rectangular area, then, holding down the key, drag the mouse to the second point and release it to define the zoom window.



The area selected will fill the whole area destinated to the chart.

If a mouse with a scroll wheel is used, the chart can be enlarged and reduced also rotating the wheel forward and backward.

To go back to previous zoom settings, click with the right mouse key to open the following list of commands:



then select:

Un-Zoom: go back to previous zoom level.

Undo All Zoom/Pan: go back to the original graph display setting.

These commands are active only if a zoom has been applied to the chart.

In addition to Un-Zoom functions, by a right mouse click the following commands will be available:

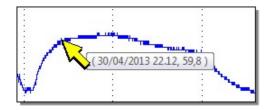
Copy: copy the chart image in the Clipboard.

Save image as...: save the chart as bitmap image in the following formats: "emf", "png", "gif", "jpg", "tif" or "bmp".

Page setup: allows to setup the page format for chart printout.

Print: print the chart.

Show Point Values: enable or disable the display of acquired values when the mouse pointer is placed on a point over the chart trace.



Set scale to Default: adapt the vertical scale to measured values; the maximum zoom level is set in order to show the complete trace.

18.10. UPDATING INFORMATION DISPLAYED

In order to update the window as to display also the data collected in the database after the window was opened, select the icon .

🖳 View data	from database		
	🅙 🔣 🕅 🔛 - 🗟 🖎 🖻	•	
Search	Graphs setting	Database	Collections

To automatically refresh the window so as to display the new data collected into the database, select the small arrow placed on the right of *refresh* icon, then click on *Auto update* command.

🔍 View data from database			
	- 🗟 🔊 🖪	-	
Auto update Ctrl+F5		Database	Collections
range	8.55.24	Ē	🛄 ed_107

Select the command Set range if you need to set the time interval for new data automatic refresh.

🕽 View data from database		
🏽 - 🧾 🛯 🖌 📓	- 🗟 🔊 🛙	-
Auto update Ctrl+F5		Database Collections
Set range	8.55.24	ed_107

In the interface window, type in the value in seconds for automatic refresh period and press Apply.

Refresh I	ist every se	econds:		
15				
		Apply	2	Exit

18.11. EXPORT OF DATA

Data displayed can be exported in TXT and CSV format by selecting the command Export File Text.

2 ·	👅 I 🔽 PI I 🔯 T 🔍 I 🍣	
Search date	Graphs setting	😡 🚛 Export File Text

After a few seconds a message confirming successful export operation appears. The text files are saved in the default working folder.

By selecting the command Setup Export File Text:

	🧠 🚺 🚺 📖 - 🗟 🙈	—
iearch date	🕤 🔣 M M 🔛 🔬 🧆 Graphs setting	Export File Text
From:	08/10/2013 🔍 8.55.24 🔄	🕑 Setup Export File Text

will be launched a window which allows the user to set various separator characters for the data.

📝 .txt file template setup		X
Example		
2013/01/01 08.30.00); 900,0; 0,0; 35,4	
Date separator char	/	
Hour separator char		
Decimal separator char		
Field separator char	2	TAB
	Apply	Exit

Note: if the seconds do not appear in the date-time field when opening the CSV file with Excel®, set the custom format "dd/mm/yyyy hh.mm.ss" for the cells (use the set date and time separators).

18.12. REPORT CREATION

Displayed data can be included in a PDF report. To do that, on the upper part of the window, click on the window.

🖳 View data	from database			
-	🧐 🔣 🕅 📓	- 🗟 🔍 🖻	-	
Search date	Graphs setting	K	Database	Collections

Will be opened a window that allows the user to set the report cover: title, subtitle, notes, names of those who create, verify and approve the report.

Report setup		×
Cover	Cover	
Report settings Measure settings	Title Title Title Title Title Title Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tubes Tube	
	Load 🚽 Save 💽 Execute	ixit

The section *Report settings* allows the user to set the report header and the page footer. Press the *Choice of logo* button to select required file containing customized image. Select what to print: cover, date/time, graphs, numeric data, ...

Report setup		x
Cover	Report settings	
Mean e settings	Logo Choice of logo	
	Print heading First row of header (40 characters max.)	
	- Second row of header (40 characters max.)	
	- Third row of header (40 characters max.) -	
	Print footnote	
	Print user credentials Image: Constraint of the second	
	Image: Print cover Image: Print graphs Image: Print date and time Image: Print data	
	Load Gave Execute Exi	it

In order to include the statistical data in the report, go to section *Measure settings*.

🍛 Report setup		3
Cover	Measure settings	
Report settings Measure settings	Statistics Minimum Value Mean Value Maximum Value Standard Deviation Mean Kinetic Temperature (MKT)	
	Load Gave Execute Exit	

Press the Execute button to generate the report.

Press the Save button to store the report settings in the PC.

Press the Load button to import the saved settings.

18.13. CUSTOMIZED STRUCTURES

If the user is interested to independently analyze specific subsets of physical quantities acquired by the system, it is possible to extract from the database subsets of data. In HD35AP-S software, such subsets are named *Collections*.

In order to create a collection, in the upper part of the data window, select the 🛄 icon.

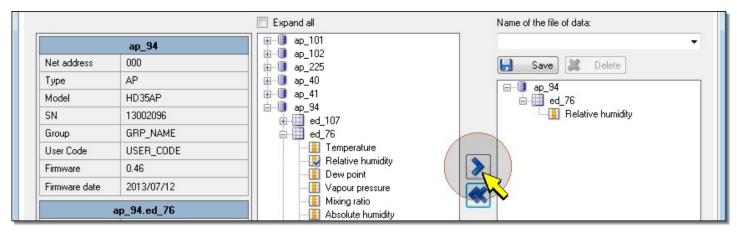
Q View data from dat	ąbase		
	🚺 🔪 I 📉 - 🗟 I 🔊 🖪	•	
Search date Graph	etting	Database	Collections

Warning: to access the customized structures, the administrator password is required; if during the connection to the system the administrator password has not been entered, the software asks to enter it now before continuing.

The interface window *Building custom databases* will be opened. In the middle there is a section where the whole database structure is shown. In the whole database structure, it is possible to select the base unit, the data loggers or directly the physical quantities to include in *Collections*. The whole structure can be automatically expanded by selecting the check box *Expand all*. In the left side of the window, general information regarding the base unit and the end selected devices are shown.

		🔲 Expand all	Name of the file of data:
	ap_94	⊕ ap_101 ⊕ ap 102	
Net address	000	⊕[] ap_102 ⊕[] ap_225	🛃 Save 🎎 Delete
Туре	AP	i ⊕ i ap_40	
Model	HD35AP	⊕] ap_41	
SN	13002096		
Group	GRP_NAME	ed_76	
User Code	USER_CODE		
Firmware	0.46	Relative humidity	>
Firmware date	2013/07/12		
	ap_94.ed_76	Mixing ratio	
Net address	2	Wet bulb temperature	
Туре	ED	Differential pressure	
Model	HD35EDL1N4r2TV	i ed_92	
SN	12039377		
Group	DELTA_GRP2		
User Code	USER_CODE_2		

Press the button *b* to include selected item into a collection.



Proceed in the same way for additional elements to include in the same collection.

Type in a name for the collection in the field Name of the file of data and press the Save button.

		🔲 Expand all	Name of the file of data:
Net address Type Model	· ·		MyCollection View Delete
SN Group	•	- □ □ - □ = □ = 04 - □ - □ = 0 = 02 - □ - □ - 02 - 02	Guilden Belative humidity Guilden Belative humidity
User Code Firmware		Electric function Electric function	Temperature
Firmware date	·	Vapour pressure Mixing ratio Absolute humidity	

In order to reinitialize the content of a collection, use the button

		🔲 Expand all	Name of the file of data:
			_
Net address	•		🛃 Save 😹 Delete
Туре	•		
Model		ap_41	
SN		—— i ap_94 i → III ed 107	
Group		ed_76	
User Code			
Firmware		Relative humidity	
Firmware date		Vapour pressure	
		Mixing ratio	
-		Absolute humidity	

To delete a specific collection, select it in the the field Name of the file of data and press the Delete key.

		🔲 Expand all	Name of the file of data:	
Net address	·		Mycollection Save	K
Туре	•			
Model	•	i∰…iii ap_41 i⊟…iii ap_94		
CN		⊟~ u ap_34		

Once the collections just created are stored, press the Exit key to go back to the data display window.

9 Building custom databases		
💿 Building custom databases	Duery Query	
		Pelp Exit

All collections saved are available by selecting the section Collections.

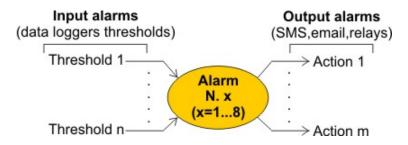
🕽 View data	from database 🗐 🛃 🔪 🎇 - 💽 📚 🄅		
Search date	Graphs setting	Database Collections	Database.ap_41.ed_164.measure
From:	09/10/2013 🗐 🕶 11.30.17 🚖	co2_monitor co2_monitor co2_monitor	Date Time Temperature (°C)
To:	16/10/2013 🗐 🗸 11.30.17 🚖	co2_monitor_3	16/10/2013 9.55 23,1
		i ⊞⊶ 🛄 co2_monitor_4	16/10/2013 9.56 23,1
			16/10/2013 9.56 23,1
X axis:	1 week 🔻		16/10/2013 9.57 23,1
Scroll:	Same as X axis 🔹		16/10/2013 9.59 23,1
		Expand >>	16/10/2013 9.59 23,1 ▼

Procedures to display the data of collections are exactly the same of those described for the display of data contained in the whole database; for additional information refer to the appropriate section in the previous paragraphs in this chapter.

19. ALARMS CONFIGURATION (ONLY HD35)

When the measurement of a physical quantity exceeds a predefined alarm threshold, the system can be configured to carry out specific actions, as for example to send an SMS/e-mail, if the base unit has the GSM/3G or LAN (Wi-Fi or E-thernet) connection, or to activate any warnings or actions using the module with relays outputs HD35ED-ALM (if present in the system).

Up to 8 alarms can be defined. Each alarm performs one or more actions and can be activated by one or more thresholds as you want.



In order to configure the actions to carry out when an alarm occurs, select the icon *Instruments setup* from the toolbar, then the item *Alarm setup* (alternatively select the menu item *Tools >> Instruments setup >> Alarms setup*).

0		1	÷.	E	2
Data download	from ftp	Inst	ruments setup	Audit trail	Users
		0	Access Point s	ettings	
q interval	User d		Alarm setup		
g interval	USEL (1	GLAptions		
	USER_CO		N N		
	HCED CO		Setting of date	e and time	

The window Alarm setup will be opened. Choose the section Output alarms.

> Alarm setup	
🔹 💽 Input alarms 🔪 Output alarms	
Devices that can get ate alarms	🖌 Alarm n. 1 🖌 Alarm n. 2 🖌 Alarm n. 3 🖌 Alarm n. 4 🖌 Ala
Expand all	Expand all

There are 8 alarms available, numbered from 1 to 8. In order to set an alarm action, select the panel corresponding to the alarm number you need to configure.

🏷 Alarm setup	
🔝 Input alarms 🔌 Output alarms	
Devices that can implement alarms	Alarm n. 1 Alarm n. 2 Alarm n. 3 Alarm n. 4 Alar
Expand all	Expand all

If the panel is not visible, press the arrow on the right side of the row header to scroll the panels forward or backwards.

🏷 Alarm setup	
🔝 Input alarms 🐚 Output alarms	
Devices that can implement alarms	Alarm n. 1 🖤 Alarm n. 2 🖤 Alarm n. 3 🖤 Alarm n. 4 🛶 Ala
Expand all	Expand all

In the left side of the window, expand the base unit to make the alarm options appear.

	🏷 Alarm setup	
	🔝 Input alarms 🔌 Output alarms	
1	Devices that can implement alarms	✔ Alarm n. 1 ✔ Alarm n. 2 ✔ Alarm n. 3 ✔ Alarm n. 4 ✔ Ala
	🖳 Expand all	Expand all
	AP_41	
	AP_41 Alarms	
	EMAIL	

The options *RL_1* (activates relay 1 of the alarm module) and *RL_2* (activates relay 2 of the alarm module) are available only if the system includes at least one alarm module. The alarm modules are identified by their RF address.

The options *SMS* (send a notifying SMS when an alarm threshold is exceeded) and *EMAIL* (send a notifying e-mail when an alarm threshold is exceeded) are available only if the base unit has the GSM/3G option.

Select the desired of	ption and p	oress the key	y 📶 to	transfer it to	b the	panel Alarm	n
-----------------------	-------------	---------------	--------	----------------	-------	-------------	---

🍃 Alarm setup	
🚺 Input alarms 🔌 Output alarms	
Devices that can implement alarms	✔ Alarm n. 1 🚖 Alarm n. 2 ✔ Alarm n. 3 ✔ Alarm n. 4 ✔ Ala
🔽 Expand all	Expand all
	□ □ AL_103 □ □ BL_1

The checkmark next to the panel header will be replaced by the star symbol, to highlight that the panel contains modifications of the alarms which have not been saved yet.

Proceed in the same manner for all alarm options you wish to enter in the panel. It is possible to enter the same alarm options in multiple panels.

To enter all device options in the panel Alarm n... (i.e. the activations of both relays of an alarm module), select the device

and press the key 📐

To enter in the Alarm n... panel all the options of all devices (activation of all relays of the alarm module, sending of SMS

and e-mail), select the base unit e press the key

To remove the alarm options from the panel, press the key

After the setting of the typology of the alarm actions it s necessary to define which alarm thresholds to associate to the actions set. To associate the thresholds to the actions set, go back to the sections *Input alarms*.

Alarm setup	
Device dat can implement alarms	✔ Alarm n. 1 🚖 Alarm n. 2 ✔ Alarm n. 3 ✔ Alarm n. 4 ✔ Ala
Expand all	Expand all
	□ □ AP_41 □ □ AL_103
iania AL_103 Iania RL_1	

In the section Input alarms select, in the right window part, the alarm number to be associated to the thresholds.

🏷 Alarm setup	
🔝 Input alarms 🔌 Output alarms	
Devices that can generate alarms Expand all AP_41	Alarm n. 1 Alarm n. 2 Alarm n. 3 Alarm n. 4 Alar

In the left window part, expand the base unit. The list of data loggers associated to the unit appears. Data loggers are identified by their RF address.

> Alarm setup	
Input alarms Moutput alarms	
Devices that can generate alarms	Alarm n. 1 Alarm n. 2 Alarm n. 3 Alarm n. 4 Alare Alare
ED_76 ED_107	
 ⊕ ⊕ ⊕ ED_164 ⊕ ⊕ ⊕ ED_103 ⊕ ⊕ ⊕ ED_92 	

Expand the data logger of interest. The item *RF Alarm* appears (allows to generate an alarm when the error percentage of the transmission errors exceeds a determined threshold) followed by the quantities measured by the data logger.

🏷 Alarm setup	
🚺 Input alarms 🐚 Output alarms	
Devices that can generate alarms	Alarm n. 1 💙 Alarm n. 2 ✔ Alarm n. 3 ✔ Alarm n. 4 ✔ Ala
Expand all	Expand all
ED_76	
😟 🧾 Relative humidity	
🚊 📃 Dew point	

Expand the physical quantity of interest. The lower (*DownTh*) and upper (*UpTh*) values of alarm threshold will appear.

🍃 Alarm setup	
🔝 Input alarms 🐚 Output alarms	
Devices that can generate alarms	Alarm n. 1 💙 Alarm n. 2 ✔ Alarm n. 3 ✔ Alarm n. 4 ✔ Ala
Expand all	Expand all
AP 41 ED 76	
PF alarm	
ia Interpretature ↓ ↓ DownTh = 0,0 (*C)	
UpTh = 100,0 (*C)	
er-∎ Relative humidity er-∎ Dew point	

Select the threshold which the user desires to associate the alarm action.

🏷 Alarm setup	
🔝 Input alarms 🔪 Output alarms	
Devices that can generate alarms	Alarm n. 1 🗸 Alarm n. 2 🗸 Alarm n. 3 🖍 Alarm n. 4 🗸 Ala
Expand all	Expand all
□ □ AP_41 □	
⊕	
DownTh = 0.0 (*C)	
UpTh 20,0 (*C)	
eral Relative humov eral Dew point	

Press the button *b* to associate selected threshold to the alarm.

🏷 Alarm setup	
🔝 Input alarms 🐚 Output alarms	
Devices that can generate alarms	✔ Alarm n. 1 🔶 Alarm n. 2 ✔ Alarm n. 3 ✔ Alarm n. 4 ✔ Ala
Expand all	Expand all
⊕∎ Dew point ♥apour pressure Wixing ratio	
⊕∎ Absolute humidity ⊕∎ Wet bulb temperature ⊕∎ Differential pressure	▶

Proceed in the same way for all thresholds which you need to associate alarm actions. It is also possible to associate the same threshold to more alarms.

To associate an alarm to both thresholds of a physical quantity, select the physical quantity and press the button

In order to associate all thresholds of a data logger to a specific alarm, select the data logger and press the bu	utton 🜌 .
In order to associate all the thresholds of all the data loggers in the network to a specific alarm, select the ba	ase unit and
press the button 🔊 .	

In order to cancel the thresholds associated to an alarm, select the alarm number and press the button . In order to quickly expand the whole network structure with a single mouse click, select the check box *Expand all*.

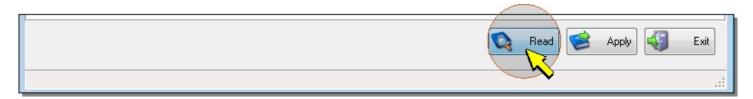
🏷 Alarm setup	
🔝 Input alarms 🐚 Output alarms	
Devices that can generate alarms	🚖 Alarm n. 1 🚖 Alarm n. 2 ✔ Alarm n. 3 ✔ Alarm n. 4 ✔ Ala 🔸
🔽 Expand all	Expand all
⊡	
⊟ BF alarm ▲ UpTh = 50 (%)	⊟
E-II Temperature	
	──▼ DownTh = 0,0 (°C) ──▲ UpTh = 100,0 (°C)
□ ■ Relative humidity □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	☐ Relative humidity DownTh = 0.0 (%)

Deselect the check box *Expand all* to compress the structure again.

To apply the new settings, select the key Apply.

Read Apply S Exit

To read again the settings, e.g. to make sure that the configuration transfer has been successfully, select the key Read.

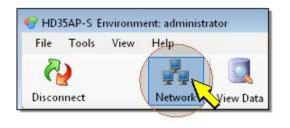


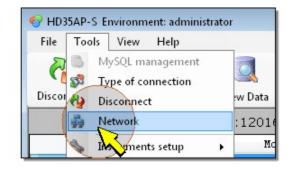
To close the window *Alarm setup*, select the key *Exit*. If modifications have been done which have not been transferred to the instrument, a message appears asking whether the modifications have to be transferred to the instrument before leaving.

20. SEARCH FOR THE OPTIMAL TRANSMISSION CHANNEL (ONLY HD35)

The base unit is able to carry out a scanning of RF transmission channels, which allows to detect the best channel to be used; detected channel is the one having the lower RF interference.

1. Select the *Network* icon in the toolbar, or the *Network* item from *Tools* menu.





2. Select the icon Network migration.

💐 Network					X
Add Devices)	ļ	Network migration		2
	Search for the	optimal channel			
Network migration	Execut	e search			
Sa Sa etwork file	Result of resea	rch			
	Ch	Packet	RSSI	n. RSSI	
Replace AP					

3. Press Execute search button.

Add Devices			letwork migration	
Delete Devices	Search for the o	ptimal channel		
Network migration	Execute	search		
Save network file	Result of research		L SANCES	0.000 CM
	Ch	Packet	RSSI	n. RSSI

4. Wait for search to be completed; it can take several minutes. During detection, for each available RF channel, following information is displayed:

Save network file	Result of research			
	Ch	Packet	RSSI	n. RSSI
😝 Replace AP	3	85	-100	51
	0	21	-101	20
Vetwork configurations	1	15	-100	32
	2	162	-100	46

Packet : Number of packets received from the HD35ED... series data logger not belonging to the network of the base unit connected (i.e. data loggers present in the area but belonging to other networks). The higher the number indicated, the higher the probability of RF interference using such a channel.

RSSI : Indicates the average signal level received (Received Signal Strength Indication) in dBm.

n. RSSI: Indicates the percentage (in ‰) of measured RSSI levels which resulted exceeding a reference threshold

5. At the end, in the lower part of the window, the software shows which is the optimal channel .

	Selection of the RF channel to be used ch. 3 Execute write RF channels analysis finished. The optimal RF channel is: 1	
Running: -	Ex	it:

6. In order to modify RF transmission channel used by the network, select the *ch* key, then choose desired channel.

	Selection of the RF channel to be used ch. 3 Execute write 0 1 RF channel 2 ed. The optimal RF cl	nannel is: 1
		Kit Exit
Running: -		

7. To confirm the selection of the channel to be used, press the key *Execute write*.

	Selection of the RF channel to be used ch. 3 Execute write RF channels analysis finished. The optimal RF channel is: 1	
		Exit
Running: -		,d

8. A message asking to confirm the operation appears; press YES to proceed. At the end, press *Exit* to go back to the main program window.

Note: if in the same area there are several different networks present, it is suggested to assign to each network an alternative transmission channel, in order to avoid the networks to interfere.

21. WIRELESS NETWORK SETTINGS (ONLY HD35)

The Section Network configuration of the window Network allows:

- entering a numeric identification code of the net;

- setting the maximum number of RF hops between a HD35ED... device and the base unit (the number of RF hops is equal to the number of interposed repeaters between the HD35ED... device and the base unit plus one);

- setting the maximum response time of the system to configuration changes (Max command latency);
- configuring the behaviour of the system when using Low Power HD35REW repeaters.

		×
Add Devices	Network configurations	?
Delete Devices Network migration Save network file	Network code Max hop number Max command latency 0 3 1 (min) Low power network resynchronization mode Activation threshold MANUAL resynchronization Activation threshold Image: AUTOMATIC resynchronization 8	
Network configurations	Low power network reliability Normal reliability Resynchronizing network with low power RE	
	Start	
	Read C Apply	
	Exit	
Running: -		

Max command latency :

The communication of the settings change between the base unit and the other devices occurs when the devices activate the RF circuit (which is not always active, to reduce the battery consumption). To activate the RF circuit of the devices more frequently than the measures transmission interval, so that the system is updated more quickly, set the *Max command latency* interval.

Low power network resynchronization mode :

The HD35REW Low Power repeaters are programmed to activate the RF circuit at predetermined instants, depending on the transmission intervals of the data loggers. For this reason, it is important that the internal clocks of the devices are kept properly synchronized, otherwise, the communication through a HD35REW repeater would fail continuously.

If the AUTOMATIC resynchronization option is selected, the resynchronization is performed automatically after a number of failed communication attempts equal to the number shown in the Activation threshold field (equal to 8 and not settable). To disable the automatic resynchronization, select the MANUAL resynchronization option.

At any time (even if the AUTOMATIC resynchronization option is selected) the resynchronization can be started manually by pressing *Start*. At the end of the resynchronization, a message reporting the result of the operation will appear.

Resynchronizing network with low power RE	
[13.41.46] RF STAGE OF RW DEVICES ON 2	*
[13.42.48] RF STAGE OF RW DEVICES OFF 2	
[13.42.48] NETWORK RESYNCHRONIZATION OK	
[13.42.48] End resynchronization	E
	-
	Þ
Resynchronization performed successfully	

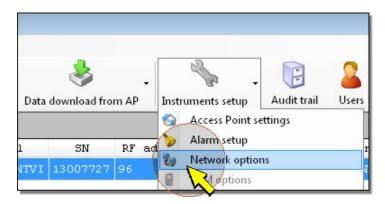
Low power network reliability :

Selecting the *Greater reliability* option, the devices will perform a greater number of transmission attempts if the percentage of communication errors (Packet Error Rate) is above the RF alarm threshold, in order to increase the number of correct transmissions in the time unit. The disadvantage of such behaviour is a greater battery consumption of the devices. Selecting the *Normal reliability* option, the devices will always perform a standard number of transmission attempts, trying to preserve the battery life.

To apply the new settings, select the key Apply.

22. WI-FI AND ETHERNET SETTINGS (HD35APW, HD35APR AND HD50...)

In order to setup parameters needed to connect the device to the Wi-Fi or Ethernet local network, select the icon *Instruments setup* in the toolbar, then the item *Network options* (alternatively select the menu *Tools >> Instruments setup >> Network options*).



It will be shown the *Network options* window. Available options are divided in the following sections:

Network properties sections:

Wlan/lan settings (selection of Wi-Fi or Ethernet mode, setting of protocols and ports)

TCP/IPv4 properties (IP address and DNS server)

<u>WiFi networks</u> (list of available Wi-Fi networks)

MODBUS TCP/IP sections:

MODBUS TCP/IP (setting of communication with MODBUS TCP/IP protocol)

MODBUS IP addresses (insertion of the IP addresses authorized to send MODBUS requests)

e-mail sections:

e-mail settings (configuration of e-mail sender account)

e-mail addresses (insertion of recipients e-mail addresses)

File e-mail (selection of data to send to e-mail addresses)

Test e-mail (sends a test e-mail to specified addresses)

FTP sections:

FTP settings (FTP server settings where data files will be sent)

File FTP (select data to send via FTP)

Test FTP (sends the test file to a specified FTP address)

22.1. WLAN/LAN SETTINGS

The window allows to enable or disable the WLAN/LAN module for the connection to the local network and to choose whether to use the Wi-Fi or Ethernet connection.

Le Network options		×
Wlan/lan settings	Wlan/lan settings	2
	Vlan/lan module activation	
🛜 WiFi networks	 Wlan operation (wifi) Lan operation (ethernet) 	
MODBUS TCP/IP	Protocol over first port	
MODBUS IP addresses	Type Port n. socket Proprietaru TCP → 5100 🚔 8 🚔	
e-mail settings	Proprietary TCP	
🧭 e-mail addresses	Type Port n. socket	
File email	Modbus TCP ■ 502	
🖙 Test e-mail		
FTP settings	URL to test Ping	
File ftp	Hw reset	
	✔ Reset 🔯 Read 🥩 Apply 🖏 Ex	sit
Running: -		

To enable the WLAN/LAN module, select the check box Wlan/lan module activation.

To use the Wi-Fi connection, select the option *Wlan operation (wifi)*. To use the Ehternet connection, select the option *Lan operation (ethernet)*.

To disable the WLAN/LAN module, deselect the check box Wlan/lan module activation.

The WLAN/LAN module has two TCP/IP ports. For each of the two ports, set the following:

- the *protocol* : select *Proprietary TCP* to communicate with proprietary TCP/IP protocol, or *Modbus TCP* to communicate with MODBUS TCP/IP protocol.
- the *port number* : the numbers set by default are 5100 and 502.

- the *number of sockets* of the port : the number of sockets corresponds to the maximum number of connections that can be active at the same time through the port. In total **there are 10 sockets to be divided between the two ports** (for example, if 8 sockets are assigned to the first port, the second port can have a maximum of 2 sockets).

Note: actually, the number of MODBUS TCP/IP connections that can be active at the same time is equal to the set number of sockets less one, because a socket is always kept free to accept new connection requests (after a new connection is accepted, the socket corresponding to the oldest request is released).

In the MODBUS TCP/IP communication you can reserve a certain number of sockets to specific IP addresses, called IP addresses with priority. Enter the number of IP addresses with priority in the field *n. IP with priority for Modbus*. To enter the Modbus IP addresses with priority, please see the section <u>MODBUS IP addresses</u>.

To check if an Internet connection is available, enter an address in the field *URL to test* and press *Ping*. If the connection is available, a check mark will appear on the left of the URL field.

WARNING: if the WLAN/LAN module configuration is changed, the new settings are not immediately activated, but only after the reset of the module. To immediately activate the new settings, press *Reset*.

To reset the WLAN/LAN module to the factory configuration, press *Hw reset*.

22.2. TCP/IPv4 PROPERTIES

The window allows to set the IP address of the device and the address of the DNS server.

Network options			X
TCP/IP+4 properties	ТСР/ІРv4 рго	perties	?
	 Obtain an IP address automatical Use the following IP address: 	ly	
	IP address: 192	168 2 102	
MODBUS IP addresses	Subnet mask: 255	255 255 0	
e-mail settings	Default gateway: 192	168 2 1	
💋 e-mail addresses 🛛 🛓			
File email	 Obtain DNS server address autor Obtain DNS server address autor 		
😪 Test e-mail			
	Preferred DNS server: 192	168 2 1	
FTP settings	Alternate DNS server: 0	0 0 0	
File ftp			
Test FTP 🚽			
	🖌 Reset 🔯 Read	Apply Ex	it
Running: -			.d

Select whether to manually enter the IP address of the device (**static IP** address) or obtain the address automatically (**dynamic IP** address) via DHCP (Dynamic Host Configuration Protocol).

Note: it is suggested to enter a static IP for the connection with the HD35AP-S software, because the software does not automatically detect any changes in the IP address of the device (the IP address with which the software communicates is entered manually in the *Type of connection* window of the *Tools* menu).

Similarly, select whether to manually enter the addresses of the **DNS** (Domain Name System) **servers** or obtain the server address automatically.

To set the TCP/IPv4 properties you should consult the local network administrator.

22.3. WIFI NETWORKS

The window lists the Wi-Fi local networks detected by the device, with the corresponding signal level.

🛃 Network options		
TCP/IPv4 properties	🛜 WiFi networks	
WiFi networks	3 TINTELLINET Connected	
MODBUS IP addresses	Sitecom Protected with WPA	
e-mail settings		
e-mail addresses 🛛 🗧		
File email		
Test e-mail		
FTP settings		
Test FTP	Connect to hidden network	
	🖌 Reset 🔯 Read 🥩 Apply 🖏 Exit	
Running: -		.d

In addition to the detected networks, other networks not currently available, but whose information are stored in the device, may be displayed. The networks stored but not available are displayed with zero signal level.

The padlock symbol next to the signal level means that the network is protected by a security key.

To connect to a Wi-Fi network, select it and press *Connect*. If the network is protected, the software will ask to enter the security protocol (WEP64, WEP128, WAP, WAP2 or none) and the password to access the network.

TCP/IPv4 properties	• WiFi networks	×
WiFi networks	INTELLINET Connected	
MODBUS TCP/IP MODBUS IP addresses	3 Sitecom Protected with WPA	Connect
e-mail settings		

To connect to a hidden Wi-Fi network, press *Connect to hidden network*. The software will ask to enter the network name (SSID), the security protocol (WEP64, WEP128, WAP, WAP2 or none) and the password to access the network. Press *Connect* to connect to the network.

Connect to hidden network							
((10	Wi-Fi hidden network Insert network SSID and security settings of Wi-Fi hidden network to connect.						
	Network SSID:						
	Password:	View password	None				
			Connect Cancel				

Once the first connection to a Wi-Fi network is established, the network information are stored in the device and in the future the device will automatically attempt to connect to the network (or to one of the other networks already stored) in the event of signal loss.

To disconnect a Wi-Fi network and delete the corresponding information stored in the device, select the network and press *Delete*.



Note: if the device is connected via Wi-Fi to the PC, only the Wi-Fi networks already stored are displayed. To display any Wi-Fi networks not stored, connect the device via USB to the PC.

22.4. MODBUS TCP/IP

The device is able to work as MODBUS TCP/IP gateway for other devices connected to the local network. The window allows to set the MODBUS TCP/IP communication parameters.



The following parameters can be set:

• *MODBUS address of device* : setting of device address for MODBUS/TCP IP mode. Address value must be within 1 and 247.

• Maximum number of Modbus commands in queue : if the device is busy with other activities, it may not reply immediately to any MODBUS request, creating in this case a queue of response packets to be sent. Enter how to manage the queue. If **1** command in queue is selected, the base unit will only reply to the last MODBUS request received; if **More than 1** command in queue is selected, the base unit will reply to all the MODBUS requests in the queue.

• MODBUS addresses subfamily : set the MODBUS addresses range inside which all HD35... devices are located. Select the minimum address into the field Starting address; select the maximum address into the field Ending ad-

dress. It is not necessary that all devices within indicated interval are physically present (for example, if there are three data loggers with MODBUS address 3,5 and 9, set 9 as *Ending address*, even if in the network are not present devices having address 2,4,6,7,8).

• Download the list of MODBUS registers of the device : if the list of MODBUS registers is not available, it is possible, by selecting the device address and pressing the key *Execute*, to ask the device the list of registers and save it into a text file.

• *Password in MODBUS mode* : options *Password enabled* and *Password disabled* allow to enable or disable the user password request from the device, before executing MODBUS commands requiring editing of parameters of device itself.

The file of MODBUS registers that the software allows to download contains the following fields, separated by commas:

- Descriptive name of register

-Type and address of the register. The address is preceded by two letters which identify the type of register according to the following convention: IS = Discrete Input, CS = Coil, IR = Input Register, HR = Holding Register.

- Type of data

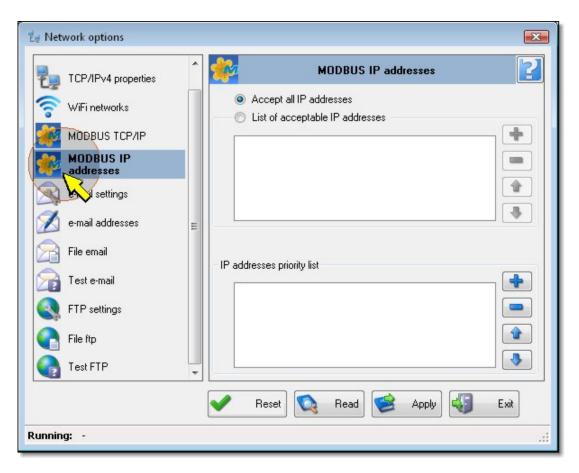
For a few registers, there is also a brief description available. The file can be imported in Excel; to obtain the alignment of fields:

3 Y	A	В	С	D
1	RE_INTERF	IS00000	bit	interference caused by multiple REs
2	MISSED_LAST_MEAS	IS00001	bit	last measure lost
3	PENDING_CONF	IS00002	bit	pending configuration
4	SCHED_PROBLEM	IS00004	bit	scheduling problem
5	CH_SWITCH_IN_PROGRESS	IS00005	bit	channel switch is in progress
6	LOG_STATUS	CS00001	bit	log status (enable/disable)
7	LOG_MODE	CS00002	bit	log mode (cyclic/not cyclic)
8	LOG_ERASE	CS00003	bit	delete log data
9	BUZZER_ALARM	CS00004	bit	buzzer alarm status {0:off/1:on}
10	CMD_FAILURE	CS00007	bit	cmd failure status
11	DEVICE_INFO_STATUS	CS00014	bit	device info updated at AP (0)/ possibly not updated
12	CO2_AUTO_CALIBRATION_STATUS	CS00015	BIT	CO2 auto calibration status (enable/disable)
	TEMP_HYT_271	IR00046	Sign Word	
14	ALARM_TEMP_HYT_271	IR00047	byte	

Please refer to the manual of the data logging system for the complete list of MODBUS registers and details on their use.

22.5. MODBUS IP ADDRESSES

The window allows to define from which local network IP addresses the MODBUS requests should be accepted.



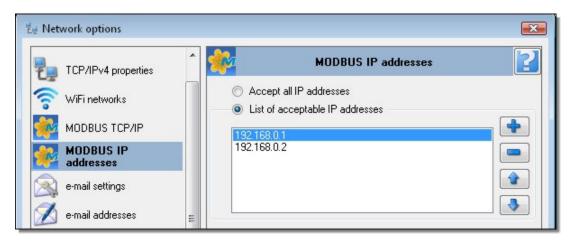
Choose whether to accept requests from all the IP addresses or manually enter the list of the IP addresses acceptable. To enter an IP address, press the "Plus" key.

Network options	^ ``	MODBUS IP addresses	₹
WiFi networks		Accept all IP addresses List of acceptable IP addresses	
MODBUS TCP/IP			
MODBUS IP addresses			
🙈 e-mail settings			
🚿 e-mail addresses	=	2	

Enter the IP address and press *Add*. To enter additional addresses, write them one at a time and press *Add* after each address. When finished, press *Exit*.

IP ad	dress		
192 168	0	1	
Add	E>	ait	
R			

To move an IP address up or down in the list, select it and press the "Up arrow" or "Down arrow" keys. To delete an IP address, select it and press the "Minus" key.



If for some IP addresses you want to keep always available a socket for communication, include the addresses in the *IP* addresses priority list. The number of IP addresses with priority must be lower than the number of sockets assigned to the communication port with MODBUS TCP/IP protocol.

22.6. E-MAIL SETTINGS

In order to enable the device sending e-mail (if the local network has access to the Internet), it is necessary to associate it to an e-mail account. Parameters of the e-mail account can be set in the section *e-mail settings*.

t∉ Network options			3
TCP/IPv4 properties	*	e-mail settings	
🛜 WiFi networks		return e-mail address	
MODBUS TCP/IP		User account for email	
MODBUS IP addresses			
e-mail settings		Password of email account	
addresses	ш	smtp server address	
File email			
Test e-mail		e-mail smtp port	
FTP settings		Language for notifications Sending data mode	
File ftp		English LOG	
Test FTP	*		
		🖌 Reset 🔯 Read 🥩 Apply 🖏 Exit	
Running: -			

This section consists of the following fields:

Return e-mail address : enter the e-mail address of account that will be used to send the e-mail, that address is what will appear as the sender of the e-mail sent to the recipients

User account for e-mail : enter the user name of the account.

Password of e-mail account : enter the password to access the account .

smpt server address : enter the server name for outgoing mail. This is supplied by the e-mail service provider.

e-mail smpt port : type in the server port number for outgoing mail. This is supplied by the e-mail service provider.

e-mail authentication : select the checkbox in order to authenticate e-mails sent.

Language for notifications : select the language to be used for transmission of information.

Sending data mode : select the format of the data sent via e-mail (LOG=format for database, CSV=format per Excel).

Note: sending e-mail and MODBUS TCP/IP communication are mutually exclusive activities. The e-mails are not sent if a MODBUS TCP/IP communication is active.

22.7. E-MAIL ADDRESSES

In the section *e-mail addresses*, it is possible to enter addresses where to send alarms and stored data. Data are send as file attachments to e-mails.

t∉ Network options		X
TCP/IPv4 properties	e-mail addresses	2
🛜 WiFi networks	e-mail address of the first recipient	
MODBUS TCP/IP	e-mail address of the second recipient	
MODBUS IP addresses		
e-mail settings	e-mail address of the third recipient	
e-mail addresses	e-mail address of the hidden recipient	
Test e-mail	Enable sending measurement alarm EMAIL	
FTP settings	Enable sending RF alarm EMAIL	
File ftp		
Test FTP		
	✔ Reset 🔯 Read 🥩 Apply 🖏 Exit	
Running: -		

To the address entered in the field *e-mail address of the hidden recipient*, the e-mails are sent as C.C. (Carbon Copy).

To enable the sending of alarms via e-mail, select the check boxes *Enable sending measurement alarm EMAIL* and/or *Enable sending RF alarm EMAIL*.

22.8. FILE EMAIL

In the section *File e-mail* it is possible to enable or disable the periodical sending of data vie e-mail and to require the sending of the relevant data at a determined time interval.

🛃 Network options		×
TCP/IPv4 properties	File email	?
WiFi networks	Periodic data download with email	
MODBUS IP addresses	Period 15 min -	
e-mail settings	Setting date/time data download Date/time 07/02/2014 🗐 🖛 15.19.58 🚖	
e-mail addresses	Execute	
Re-mail	Setting date/time start/end data download Start date/time 07/02/2014	
FTP settings	Stop date/time 07/02/2014 🔲 🔻 16.19.58 🚔	
File ftp	Execute	
	🖌 Reset 🔯 Read 🥩 Apply 🖏 Exit	
Running: -		.d

To enable the periodical sending of data via e-mail, select the check box *Enable periodic data download with email* and select the time interval for data sending in the field *Period*. The intervals available are: 15 min, 30 min, 1 hour, 2 hours, 4 hours, 8 hours, 12 hours, 24 hours, days, 4 days, 1 week.

To require the sending via e-mail of all the memorized data subsequently to a given instant, indicate the instant in the panel Setting date/time data download and press the key Execute.

To require the sending via e-mail of all memorized data in a determined interval of time, indicate the starting and the ending instant of the interval in the panel Setting date/time Start/End data download and press the key Execute.

22.9. TEST E-MAIL

The section Test e-mail allows to verify that e-mails are sent correctly.

🛃 Network options		
TCP/IPv4 properties		Test e-mail
🛜 WiFi networks		e-mail recipients
MODBUS TCP/IP		1
MODBUS IP addresses		2
e-mail settings		3
💋 e-mail addresses	ш	Test e-mail
File email		
Test e-mail		
		_
File ftp		۰ ۴
Test FTP	-	
		✔ Reset 🔇 Read 🥩 Apply 🖏 Exit
Running: -		

Test e-mail are sent to those addresses previously entered in the *e-mail addresses* section. *E-mail recipients* fields cannot be modified in this section.

Press the key Test e-mail, then check that the test email are correctly received by recipients.

22.10. FTP SETTINGS

To allow the device to send data files to a specific FTP address (if the local network has access to the Internet), it is necessary to configure server access information in the section *FTP settings*.

党e Network options	
TCP/IPv4 properties	?
WiFi networks FTP server	
MODBUS TCP/IP FTP user	
MODBUS IP addresses	
e-mail settings Password to access FTP	
e-mail addresses	
File email	
Test e-mail FTP port	
FTP settings Sending data mode	
🖌 Reset 🔯 Read 🥩 Apply	sit
Running: -	.d

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The section consists of the following fields:

Server ftp : insert the FTP server name provided by the internet service provider.

User ftp : enter the user name to access the FTP service.

Password to access ftp : enter the password for FTP service access .

Directory for ftp access : enter the folder path in the FTP server, where data files from the device will be transferred.

FTP port : enter the FTP server port number supplied by the service provider.

Sending data mode : select the format of the data sent via FTP (LOG=format for database, CSV=format per Excel).

WARNING: to send the data via FTP, the user must be allowed to read, write and create folders on the FTP server.

22.11. FILE FTP

In the section *File ftp* it is possible to enable or disable the periodical sending of data via ftp and to require the sending of the relevant data at a determined time interval.

t∉ Network options	
TCP/IPv4 properties	File ftp
WiFi networks	Periodic data download with FTP Enable periodic data download with FTP Period 15 min
MODBUS IP addresses e-mail settings e-mail addresses	Setting date/time data download Date/time 07/02/2014 □▼ 16.49.09 🚖
File email Test e-mail	Setting date/time start/end data download Start date/time 07/02/2014 🔍 16.49.09 😓 Stop date/time 07/02/2014 🔍 17.49.09 🔿
File ftp	
Running: -	

To enable the periodical sending of data via ftp, select the check box *Enable periodic data download with ftp* and select the interval of data sending in the field *Period*. The intervals available are: 15 min, 30 min, 1 hour, 2 hours, 4 hours, 8 hours, 12 hours, 24 hours, days, 4 days, 1 week.

To require the sending via ftp of all data memorized subsequently to a determined instant, indicate the instant in the panel *Settings date/time data download* and press the key *Execute*.

To require the sending via ftp of all the data memorized in a determined interval of time, indicate the starting and ending instant in the panel Setting date/time start/end data download and press the key Execute.

22.12. TEST FTP

The section *Test FTP* allows to verify the correct transmission of data to specified FTP address.

번 Network options	
TCP/IPv4 properties	Test FTP
🛜 WiFi networks	address
MODBUS TCP/IP	
MODBUS IP addresses	
e-mail settings	
🧭 e-mail addresses 🗉	
🕞 File email	
😭 Test e-mail	*
STP settings	
File itp	•
Test FTP -	
	Reset 🔯 Read 🥩 Apply 🖏 Exit
Running: -	.ii.

Data are sent to the address previously specified in the section *FTP settings*. The field *FTP address* cannot be modified in this section.

Press the key Test FTP, then verify that data are correctly received.

22.13. TRANSFER OF SETTINGS TO INSTRUMENT

Modified parameters are highlighted by a green circle on the right side of the field. In order to confirm modified settings, select the *Apply* button. The green circles will disappear as soon as settings are applied.

Test e-mail	FTP port		
FTP settings	21		•
File ftp			
Test FTP			
		Read Read	Exit
Running: -			

22.14. READING THE CURRENT INSTRUMENT CONFIGURATION

When *Network options* window is opened, values displayed are those configured in the base unit. To read again configured values, for example in order to check that the configuration upload operation has been correctly carried out, press the *Read* button.

	Read Septy Exit
Running: -	

22.15. CLOSING CONFIGURATION WINDOW

In order to close the Network options window, select the Exit key.

	Read 😂 Apply
Running: -	

If modifications have been done, but they were not transferred to the instrument, a message will appear asking to transfer modifications before closing the window.

23. GSM/3G SETTINGS (HD35APG ... / HD35AP3G ...)

If the base unit is provided with GSM/3G option, the system will be able to send alarms via **SMS** and **e-mail**, to send the stored data to **e-mail** addresses and **FTP** addresses, to communicate via **GPRS/3G TCP/IP**.

In order to setup parameters needed by GSM/3G module to work properly, select the icon *Instruments setup* in the toolbar, then the item *GSM options* (alternatively select the menu *Tools* >> *Instruments setup* >> *GSM options*).

Access Point settings	Users	Audit trail	struments setup	n ftp	ownload fron	Data d
1 SN RF ad Alarmyetup		ttings	Access Point se	RF	SN	1

It will be shown the GSM Options window. Available options are divided in the following sections:

Initial settings (connection user code and password, PIN of the SIM, name of the access point APN)

e-mail sections:

e-mail settings (configuration of e-mail sender account)

e-mail addresses (insertion of recipients e-mail addresses)

File e-mail (selection of data to send to e-mail addresses)

<u>Test e-mail</u> (sends a test e-mail to specified addresses)

FTP sections:

FTP settings (FTP server settings where data files will be sent)

File FTP (select data to send via FTP)

Test FTP (sends the test file to a specified FTP address)

SMS sections:

SMS recipients (enter the phone numbers the SMS alarm will be sent to)

Test SMS (sends a test SMS to the specified phone numbers)

GPRS TCP/IP section:

GPRS TCP/IP client settings (server address and port for the GPRS TCP/IP communication)

23.1. INITIAL SETTINGS

GSM options			×
Initial settings	2	Initial settings	2
e-mail settings	User code connection	Connection password	
🧭 e-mail addresses	PIN of the SIM		
🔀 File email			
Test e-mail	Name of the access point	APN	
FTP settings	Language for notifications	GSM/GPRS	
File ftp	English	•	
Test FTP			
SMS recipients			
Test SMS			
		Read 😻 Apply 🖏 Ex	sit
Running: -			

The section Initial settings has the following fields:

User code connection : enter the user name for connection. This is normally provided by mobile operator.

Connection Password : enter the password for connection. This is provided by mobile operator.

PIN of the SIM : enter the PIN code of the SIM card inserted in the GSM/3G module.

Name of the access point APN : for data transmission via e-mail and/or FTP, insert the network access point APN name which is provided by the mobile operator .

Language for notifications GSM/GPRS : select the language to be used for transmission of information.

23.2. E-MAIL SETTINGS

In order to enable the device sending e-mail, it is necessary to associate it to an e-mail account. Parameters of the e-mail account can be set in the section *e-mail settings*.

GSM options		X
Initial settings	e-mail settings	2
e-mail settings	return e-mail address	
addresses	User account for email	
File email		
Test e-mail ≡	Password of email account	
FTP settings	smtp server address	
File ftp	e-mail smtp port	
Test FTP	e-mail authentication	
SMS recipients	Sending data mode Connection security	
Test SMS		
	😋 Read 🥩 Apply	Exit
Running: -		

This section consists of the following fields:

Return e-mail address : enter the e-mail address of account that will be used to send the e-mail, that address is what will appear as the sender of the e-mail sent to the recipients

User account for e-mail : enter the user name of the account.

Password of e-mail account : enter the password to access the account .

smpt server address : enter the server name for outgoing mail. This is supplied by the e-mail service provider.

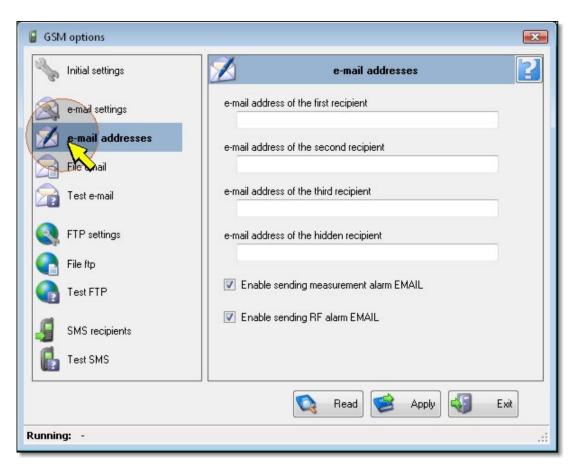
e-mail smpt port : type in the server port number for outgoing mail. This is supplied by the e-mail service provider. Select the checkbox *e-mail authentication* in order to authenticate e-mails sent.

Sending data mode : select the format of the data sent via e-mail (LOG=format for database, CSV=format per Excel).

Connection security : select whether to make a secure connection using the SSL/TLS cryptographic protocol or not.

23.3. E-MAIL ADDRESSES

In the section *e-mail addresses*, it is possible to enter addresses where to send alarms and stored data. Data are send as file attachments to e-mails.



The e-mail address entered in the field e-mail address of the hidden recipient will not be visible to other recipients.

To enable the sending of alarms via e-mail, select the check boxes *Enable sending measurement alarm EMAIL* and/or *Enable sending RF alarm EMAIL*.

23.4. FILE E-MAIL

In the section *File e-mail* it is possible to enable or disable the periodical sending of data vie e-mail and to require the sending of the relevant data at a determined time interval.

GSM options		X
Initial settings	File email	2
e-mail settings e-mail addresses	Periodic data download with email Enable periodic data download with email Period 15 min	
	Setting date/time data download	
	Date/time 18/09/2013 🗐 🔻 15.03.58 🚖	
FTP settings	Execute	
File ftp	Setting date/time start/end data download	
Test FTP	Start date/time 18/09/2013 🗐 🖛 15.03.58 🚖	
	Stop date/time 18/09/2013 🗐 🔻 15.03.58 🚖	
SMS recipients	Execute	
Test SMS		
	🔯 Read 🥩 Apply 🖏 Exi	
Running: -		.d

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To enable the periodical sending of data via e-mail, select the check box *Enable periodic data download with email* and select the time interval for data sending in the field *Period*. The intervals available are: 15 min, 30 min, 1 hour, 2 hours, 4 hours, 8 hours, 12 hours, 24 hours, days, 4 days, 1 week.

To require the sending via e-mail of all the memorized data subsequently to a given instant, indicate the instant in the panel Setting date/time data download and press the key Execute.

To require the sending via e-mail of all memorized data in a determined interval of time, indicate the starting and the ending instant of the interval in the panel Setting date/time Start/End data download and press the key Execute.

23.5. TEST E-MAIL

The section *Test e-mail* allows to verify that e-mails are sent correctly.

GSM options	
Initial settings	Test e-mail
🧟 e-mail settings	e-mail recipients
🧭 e-mail addresses	1
File email	2
Test e-mail	4
FTP settings	Test e-mail
File ftp	
Test FTP	
SMS recipients	
🛃 Test SMS	
	🔯 Read 🥩 Apply 🖏 Exit
Running: -	

Test e-mail are sent to those addresses previously entered in the *e-mail addresses* section. *E-mail recipients* fields cannot be modified in this section.

Press the key Test e-mail, then check that the test email are correctly received by recipients.

23.6. FTP SETTINGS

To allow the system to send data files to a specific FTP address, it is necessary to configure server access information in the section *FTP settings*.

GSM options		×
hitial settings	FTP settings	2
e-mail settings	FTP server	
🧭 e-mail addresses	FTP user	
File email		
Test e-mail	Password to access FTP	
ETP settings	Directory for FTP access	
E E	FTP port	
Test FTP		
SMS recipients		
🛃 Test SMS		
	🔯 Read 🥩 Apply	Exit
Running: -		i

The section consists of the following fields:

Server ftp : enter the FTP server name provided by the internet service provider.

User ftp : enter the user name to access the FTP service.

Password to access ftp : enter the password for FTP service access .

Directory for ftp access : enter the folder path in the FTP server, where data files from data logging system will be transferred.

FTP port : enter the FTP server port number supplied by the service provider.

WARNING: to send the data via FTP, the user must be allowed to read, write and create folders on the FTP server.

23.7. FILE FTP

In the section *File ftp* it is possible to enable or disable the periodical sending of data via ftp and to require the sending of the relevant data at a determined time interval.

GSM options		
Initial settings	File ftp	2
e-mail settings	Periodic data download with FTP	
e-mail addresses	Period 15 min 💌	
Test e-mail	Setting date/time data download Date/time 18/09/2013 🗐 🔻 15.11.48 🚖	
FTP settings	Execute	
File ftp	Setting date/time start/end data download	
TENTP	Start date/time 18/09/2013 🗐 🗸 15.11.48 🚖	
	Stop date/time 18/09/2013 🗐 🔻 15.11.48 🚖	
SMS recipients	Execute	
Test SMS		
	🔯 Read 🥩 Apply 🖏 Exi	•
Running: -		.d

To enable the periodical sending of data via ftp, select the check box *Enable periodic data download with ftp* and select the interval of data sending in the field *Period*. The intervals available are: 15 min, 30 min, 1 hour, 2 hours, 4 hours, 8 hours, 12 hours, 24 hours, 4 days, 4 days, 1 week.

To require the sending via ftp of all data memorized subsequently to a determined instant, indicate the instant in the panel *Settings date/time data download* and press the key *Execute*.

To require the sending via ftp of all the data memorized in a determined interval of time, indicate the starting and ending instant in the panel Setting date/time start/end data download and press the key Execute.

23.8. TEST FTP

The section *Test FTP* allows to verify the correct transmission of data to specified FTP address.

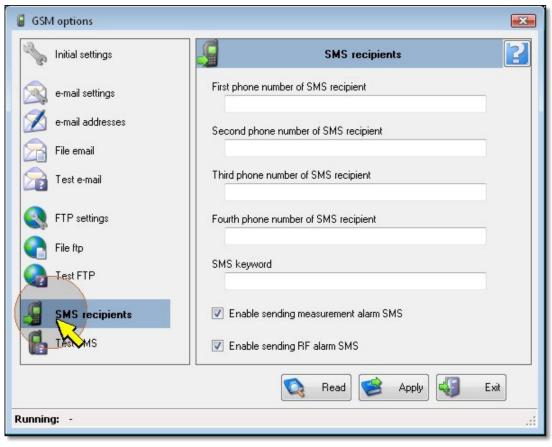
GSM options		×
Initial settings	Test FTP	
e-mail settings	FTP address	
💋 e-mail addresses		
File email		
Test e-mail		
FTP settings	Test FTP	
File Itp	×	
Test FTP		
SMS recipients		
Test SMS	4 F	
	Read 😒 Apply 🖏 Exit	
Running: -		

Data are sent to the address previously specified in the section *FTP settings*. The field *FTP address* cannot be modified in this section.

Press the key Test FTP, then verify that data are correctly received.

23.9. SMS RECIPIENTS

In the section *SMS recipients,* the phone numbers which will receive alarm SMSes are entered. It is possible to enter up to 4 phone numbers.



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The base unit is able to receive SMSes (sent from a mobile phone to the telephone number of the SIM card contained in the base unit) and execute the commands contained in the text message. This function is useful in the case that a modification of GSM/3G settings is needed and a direct PC connection is not available. For security, commands are executed only if the SMS text contains a string beginning with a keyword defined by the user. The keyword is entered in the field *SMS keyword*. For the list of commands, please see the manual of the system.

23.10. TEST SMS

The section Test SMS allows to check that the system is able to transmit correctly SMS messages.

Nitial settings	Test SMS	2
e-mail settings	SMS recipients	
🚿 e-mail addresses	1	
File email	2	
Test e-mail	3 4	
FTP settings	Test SMS	
File ftp		
Test FTP		
SMS recipients		
	- I	Exit

The SMS message will be sent to the phone numbers that have previously been entered in the section *SMS recipients*. The field *SMS recipients* cannot be edited from this section.

Press the key Test SMS in order to send a test message, then verify that the SMS is correctly sent to all recipients.

23.11. GPRS TCP/IP CLIENT SETTINGS

To allow the system to communicate as "Client" via GPRS TCP/IP, it is necessary to configure server (PC) access information in the section GPRS TCP/IP client settings.

🔓 GSM options	
e-mail settings	GPRS TCP/IP client settings
🧭 e-mail addresses	TCP/IP server address setting
File email	deltaohm.ddns.net TCP/IP server listening port setting 1492
FTP settings	TCP/IP client connection
Test FTP	Not active 0 sec Activation of TCP/IP client connection
SMS recipients	Activate
GPRS TCP/IP client settings	T Read Apply Site
Running: -	

The section consists of the following fields:

TCP/IP server address setting : enter the server IP address (if the server has a static IP address) or DNS name. If the server has a dynamic IP address, use a dynamic DNS service.

TCP/IP server listening port setting : enter the number of the port on which the server listens for the request for TCP/IP connection.

To activate immediately the TCP/IP connection, press the Activate button.

23.12. TRANSFER OF SETTINGS TO INSTRUMENT

Modified parameters are highlighted by a green circle on the right side of the field. In order to confirm modified settings, select the *Apply* button. The green circles will disappear as soon as settings are applied.

RTP settings	Fourth phone number of SMS recipient
File ftp	4781288306
Test FTP	SMS keyword
SMS recipients	Enable sending measurement alarm SMS
🚺 Test SMS	Enable sending RF alarm SMS
	Read Apply S Exit
Running: -	

23.13. READING THE CURRENT INSTRUMENT CONFIGURATION

When *GSM Options* window is opened, values displayed are those configured in the base unit. To read again configured values, for example in order to check that the configuration upload operation has been correctly carried out, press the *Read* button.

	Read Sector Apply Exit	
Running: -		:

23.14.

23.15. CLOSING CONFIGURATION WINDOW

In order to close the GSM Options window, select the Exit key.

	Read Apply Exit
Running: -	Apply Apply

If modifications have been done, but they were not transferred to the instrument, a message will appear asking to transfer modifications before closing the window.

24. BASE UNIT REPLACEMENT (ONLY HD35)

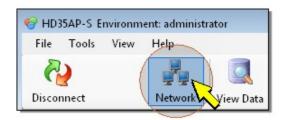
In the case of a failure of the base unit, it is possible to replace it and transfer the network structure information in a new base unit .

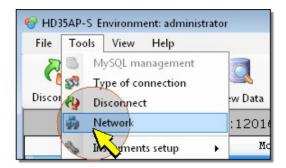
In order to transfer the network structure into a new base unit, it is necessary that the old network configuration file has been previously saved with the old base unit, according to procedure explained in the section <u>Saving in the PC the network configuration</u>.

The replacement procedure must be carried out with the base unit connected to the PC via USB (no Wi-Fi, Ethernet or GSM/GPRS).

To replace the old base unit, proceed as follows.

- 1. Disconnect the old base unit and connect the new one. Disconnect power supply of the old one (disconnect also the internal battery) to avoid any possible interference during replacement operation.
- 2. Select the icon *Network* in the toolbar, or the item *Network* in the *Tools* menu.

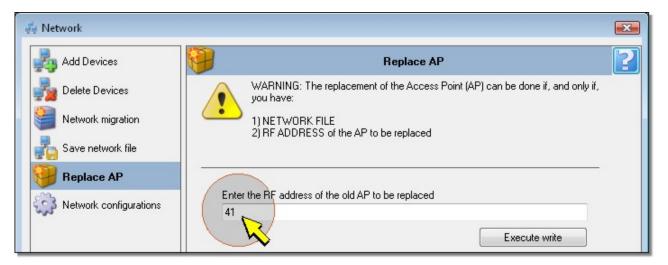




3. Select section Replace AP.

🐳 Network		X
齃 Add Devices	Replace AP	2
Delete Devices	WARNING: The replacement of the Access Point (AP) can be done if, and only if, you have:	
Network migration	1) NETWORK FILE 2) RF ADDRESS of the AP to be replaced	
NetWo configurations	Enter the RF address of the old AP to be replaced	
	Execute write	

4. Enter the RF address of the old base unit to be replaced.



5. Press the key Execute write.

🚑 Network		
Add Devices	Replace AP	3
Delete Devices	WARNING: The replacement of the Access Point (AP) can be done if, and only if, you have:	
Network migration	1) NETWORK FILE 2) RF ADDRESS of the AP to be replaced	
Save network file		
Replace AP		
Network configurations	Enter the RF address of the old AP to be replaced	
	41	
	Execute write	

6. In order to proceed with the replacement, the administrator password is required. Enter the password and press Apply.



- 7. Wait a few instants for password verification until a message appears notifying that, by proceeding, possible already existing net configurations in the base unit will be overwritten. Press *Apply* to proceed.
- 8. Select the network configuration file previously saved into a PC folder and press Open.
- **9.** Wait for the transfer of the new configuration to the base unit. At the end of the transfer, the software executes an automatical connection with the base unit. The several stages of this operations are highlighted in the panel *List of operations*.

Peplace AP	
Network configurations	Enter the RF address of the old AP to be replaced
	Execute write List of operations: Uploading running Uploading ok Network reconstruction in progress num fails: 0

9. At the end of the replacement, press *Exit* to go back to the main program window.

After the replacement, save the structure of the net according to the description in the chapter <u>Saving the net configura-</u> <u>tion in the PC</u>. If you leave the window *Network* before saving the new structure, a message will appear, asking whether the new file has to be saved before leaving. Press Yes to start the saving procedure.

25. SENSORS CALIBRATION

The program allows to execute the calibration of the <u>relative humidity</u> sensor, of the <u>CO</u> sensor, of the <u>CO</u> sensor and of the differential pressure sensor.

It is also possible to set the sensitivity of <u>CO</u>, <u>Illuminance</u> and <u>solar radiation</u> sensors.

There is no provision for temperature calibration.

For a correct calibration of the probes, it is fundamental to know and respect the physical phenomena the measurement is based on: for this reason it is recommended to carefully follow the following instructions and perform new calibrations only if in possession of the appropriate knowledge.

The calibration procedure cancels the data of the previous user calibration. In case of erroneous execution of the procedure, it is always possible to get back to the manufacturer calibration (see option *Use FACTORY calibration* described later).

To enter calibration, open the Settings window of the device.

🚱 HD35AP-S E	nvironment: administra	tor		
File Tools	View Help			
<i>6</i>		🔍 🗾 .		
Disconnect	Network	View Data Monitor	Data downloa	d from AP
🕤 AP_41	[HD35APS Plus S	SN:12016692 - A	AP test]	
	Setup	Model	SN	RF and
▶ ED_76	Settings 76	HD35EDL1N4r2TV	12039377	30 (;
ED_107	Settin 107	HD35EDL1NTC	13022851	15 (:

Select the section Calibrations.

Instrument info	i)	Instrument info	
ED configurations	Type - RF address	ED_92	
_	Net address	020	
Info measures	Model	HD35EDL1NTV	
Logging parameters	SN	11011875	
1	User Code	USER_CODE_20	
Alarm thresholds	Group	МКТО	
Data download from ED	Firmware version and date	0.68 2013/07/15	
	RF and log interval	30 (sec)	
MODBUS-RTU	Measuring interval	15(sec)	
Calibrations	Logging mode and logging status	Cyclic logging - Logging active	
	Operating state	CONN - Stationaru	

You are prompted for an administrator password. Enter the password and press Apply.

Enter a	administrator password

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Wait a few instants for the password verification, until opening of the section Calibrations.

😵 [ED_148] End Device settings		×
Instrument info	Calibrations	?
ED configurations		
info measures	Calibration used	
Logging parameters	Use FACTORY calibration	
Alarm thresholds	Use ADMINISTRATOR calibration	23
Hysteresis settings		
intersection and the second se		
MODBUS-RTU		
Dibrations		
	🔯 Read 🥩 Apply	:
Running: -		

To modify the calibration in use, select the option *Use FACTORY calibration* or *Use ADMINISTRATOR calibration* and press the key *Apply*.

The calibration is admitted only if the calibration in use is ADMINISTRATOR. To access the calibration procedure press

the key

25.1. RH CALIBRATION (RELATIVE HUMIDITY)

It is possible to calibrate the sensor in two points : 75%RH and 33%RH.

Before starting the calibration procedure, it is recommended to verify the necessity of new calibration with the help of saturated solution at 33.0%RH and 75.4%RH: proceed with the calibration only if there is an error of at least a few percentage points of relative humidity on at least one of the two verified points.

The calibration can be done in one or in two points. In case of calibration in two points, it is recommended to calibrate first at 75.4%.

Preliminary operations:

Check whether the chamber containing the saturated salt solutions contains at the same time:

- salt in solid state,
- liquid solution or wet salt, especially for the 75%RH solution.

The instrument as well as the salt solutions to be used for this operation have to be kept in a temperature stable environment during the whole period of calibration. Wait at least two hours at stable temperature to ensure that both instrument and saturated solutions reach a thermal equilibrium with the environment before starting the calibration procedure. It is fundamental for a good calibration that the probe and the instrument are at the same temperature. It has to be taken into consideration that plastic material has a bad heat conductance.

Procedure:

1. Unscrew the protection grid of the probe and the cap of the saturated salt solution.

Note: to prolong the life time of the saturated salt solutions, it is important that they remain open only while introducing the sensor.

2. Sometimes there can be liquid inside the chamber, in this case dry it with clean absorbent paper.

- **3**. Screw the included M12X1 ring nut on the probe.
- 4. Screw the ring nut with the probe on the saturated salt solution bottle without touching the sensitive element with your hands or any other object or liquids.
- 5. Once the sensor has been introduced, wait at least 30+45 minutes.
- 6. Open the Settings window of the device and enter the section Calibrations like described at the beginning of the chapter <u>Calibration of the sensors</u>. Only if the device has a probe with connector, before the choice "FACTORY calibration / ADMINISTRATOR calibration" the software asks if the existing probe with indicated serial number or a new probe is

going to be calibrated. Select the desired option and press the key

info measures	
Logging parameters	Calibration of existing probe (sn 13023862)
Alarm thresholds	Calibration of a new probe
Data download from ED	
MODBUS-RTU	
Dilibrations	

If you have chosen to calibrate a new probe, the software asks for the serial number of the probe Enter the serial number and press *Save SN*, the new serial number will be stored in the instrument.

info measures	Serial number of the probe. Cur	rent: 13023862	
Logging parameters	New serial number	13023862	Save SN
Alarm thresholds			
崣 Data download from ED			
MODBUS-RTU			
Delibrations			

7. Read the temperature provided by the probe.

Info measures	R.H. calibration points	Ĩ
Logging parameters	Temperature (°C)	Relative humidity (%)
Alarm thresholds	24.3	75.6
y Data download from ED		
MODBUS-RTU	Calibration 75% RH 75,4	Cal 75%
Calibrations	Calibration 33% RH 33,0	Cal 33%

8. Read in the humidity-temperature correspondence table of the saturated salt solution the humidity value corresponding to the measured temperature. For 75%RH solution (code HD75) the table is the following:

Temp. °C	75%RH solution	
10	75.6	
15	75.6	
20	75.4	
25	75.2	
30	75.0	
35	74.8	
40	74.6	
45	74.5	
50	74.4	

Note: the calibration has to be performed at a temperature within 15°C and 30°C.

9. Set the humidity value obtained from the correspondence table of the saturated solution using the apposite arrow on the right hand side of the field or by writing directly the value.

info measures	R.H. calibration points	
Logging parameters	Temperature (°C)	Relative humidity (%)
Alarm thresholds	24.3	75.6
臱 Data download from ED		
MODBUS-RTU	Calibration 75% RH	.4 🔁 Cal 75% 🗆
🜮 Calibrations	Calibration 33% RH	.0 Cal 33%

10. Press the key *CAL* 75% to calibrate at 75%RH, the indicator on the right near the key becomes green.

Info measures	R.H. calibration points	
Logging parameters	Temperature (°C)	Relative humidity (%)
Alarm thresholds	243	75.4
崣 Data download from ED		
MODBUS-RTU	Calibration 75% RH 75,4	🔁 🗌 Cal 75%
🜮 Calibrations	Calibration 33% RH 333,0	

- 11. Replace the 75% RH saturated salt solution with the 33%RH solution and wait at least 30÷45 minutes.
- **12**. Read the temperature provided by the probe.

info measures	R.H. calibration points	
Logging parameters	Temperature (°C)	Relative humidity (%)
Alarm thresholds	24.3	3 3.6
intersection and the second se		
MODBUS-RTU	Calibration 75% RH 75,4	🚖 Cal 75%
🜮 Calibrations	Calibration 33% RH 33,0	🔁 Cal 33%

Note: in the HD35ED...TVI models, for a better accuracy, calibrate the second point at a temperature close to that of the first point.

13. Read in the humidity-temperature correspondance table of the saturated salt solution the humidity value corresponding to measured temperature. For the 33%RH (code HD33) the table is the following:

Temp. °C	33%RH solution
10	33.4
15	33.3
20	33.0
25	32.7
30	32.4
35	32.0
40	31.6
45	31.1
50	30.5

14. Set the humidity value obtained from the correspondence table of the saturated solution using the apposite arrow on the right hand side of the field or by writing directly the value.

Info measures	R.H. calibration points	
Logging parameters	Temperature (°C)) Relative humidity (%)
Alarm thresholds	24.	. 3 3 3 3 6
Data download from ED		
MODBUS-RTU	Calibration 75% RH	75.4 Cal 75%
🜮 Calibrations	Calibration 33% RH	33,0 😭 Cal 33%
		h h

15. Press the key CAL 33% to calibrate at 33%RH, the indicator on the right near the key becomes green.

info measures	R.H. calibration points	
Logging parameters	Temperature (°C)	Relative humidity (%)
Alarm thresholds	243	3 3 3 0
崣 Data download from ED		
MODBUS-RTU	Calibration 75% RH	75,4 🗧 Cal 75%
🌮 Calibrations	Calibration 33% RH	33,0 😫 🔽 Cal 33%

The software goes automatically back to the first calibration screen. Press *Exit* to return to the main window of the program.

Unscrew the M12X1 ring nut on the probe and screw on again the protection filter of the probe, by avoiding to touch the sensitive element with your hands. Close the used saturated solution immediately with its cap.

25.2. CALIBRATION AND SETTING OF THE SENSITIVITY OF THE CO SENSOR

To calibrate the CO sensor at zero or to set the sensor sensitivity, open the *Settings* window of the device and enter the section *Calibrations* like described at the beginning of the chapter <u>Calibration of the sensors</u>.

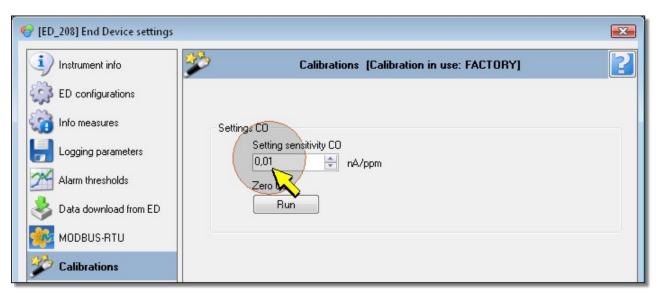
Select the CO option and press the key

🚱 [ED_208] End Device settings		x
Instrument info	Calibrations [Calibration in use: FACTORY]	?
ED configurations		
info measures	Choice calibration	-
Logging parameters		
Alarm thresholds		
Data download from ED		
MODBUS-RTU		
🎾 Calibrations		
	Read 😂 Apply 🖏 Exi	:
Running: -		

To calibrate the CO sensor at zero, place the data logger in clean air (in the external environment CO concentration is less than 0.1 ppm) or connect the nitrogen bottle MINICAN.12A (adjust the bottle flowmeter to obtain a constant flow ranging between 0.1 and 0.2 l/min), then wait for the measure to become stable (at least 15 minutes) and press the key *Run*.

😵 [ED_208] End Device settings	
Instrument info	Calibrations [Calibration in use: FACTORY]
ED configurations	
info measures	Settings CO
Logging parameters	Setting sensitivity CO 0,01
Alarm thresholds	Zero CO
Data download from ED	Run
MODBUS-RTU	
🌮 Calibrations	

To set the sensitivity of the sensor, use the arrow keys on the right side of the field or write directly the value.



Press Apply to store the value.

25.3. CO2 CALIBRATION

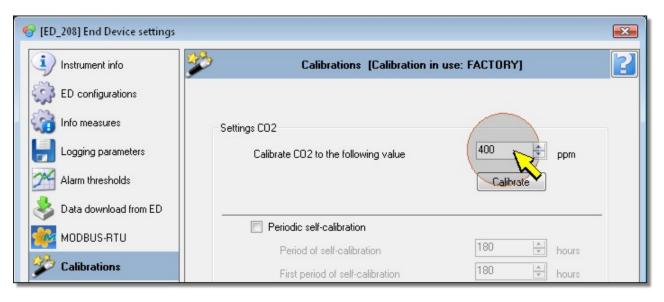
To calibrate the CO_2 sensor, open the *Settings* window of the device and enter the section *Calibrations* like described at the beginning of the chapter <u>*Calibration of the sensors*</u>.

Select the CO2 option and press the key	~

😵 [ED_208] End Device settings		×
Instrument info	Calibrations [Calibration in use: FACTORY]	2
ED configurations		
info measures	Choice calibration	
Logging parameters		
Alarm thresholds		
臱 Data download from ED		
MODBUS-RTU		
🌮 Calibrations		
	Read 😂 Apply 🖏 E	xit
Running: -		.d

Place the data logger in an environment with known CO_2 concentration (for ex. in clean air), then wait for the measure to become stable (at least 15 minutes).

Enter the calibration value.



Press the key Calibrate.

(ED_208) End Device settings		X
Instrument info	Calibrations [Calibration in use: FACTORY]	2
ED configurations		
info measures	Settings CO2	
Logging parameters	Calibrate CO2 to the following value	
Alarm thresholds	Calibrate	
I Data download from ED		
MODBUS-RTU	Periodic self-calibration	
	Period of self-calibration 180 🕒 hours	
Calibrations	First period of self-calibration	

Wait for a few minutes for measurement completion. In the meantime, don't stay too close to the instrument to avoid altering the measurement.

CO₂ sensor auto-calibration

The instrument can be set so as CO_2 calibration is automatically performed at predetermined intervals. In order for auto calibration to be effective, the CO_2 concentration in the environment where the instrument is installed must assume a known value (referred to as environment background value). For example, we can have that an instrument installed inside a public place performs a weekly auto calibration when people are not present and CO_2 concentration is close to the outdoor air value (if there is an adequate air change).

Select the option *Periodic self-calibration* to set the instrument so as CO₂ sensor calibration is automatically performed at predetermined intervals.

Data download from ED	Reriodic self-calibration		
MODBUS-RTU	Veriod of self-calibration	180 🚔 hours	
Calibrations	First period of self-calibration	180 🚔 hours	
	Background level of CO2	400 📄 ppm	
	Maximum CO2 variation for period	25 🚔 ppm	

Set the following values:

• Period of self-calibration : time interval between two consecutive auto-calibrations.

- First period of self-calibration : time interval after which the first auto-calibration will be performed after activation.
- *Background level of CO2* : CO₂ reference value for auto-calibration.

• *Maximum CO2 variation for period* : maximum offset that can be applied to the measurement by the auto-calibration procedure, so as to avoid erroneous calibrations when the measured value differs too much from the estimated background value. The auto calibration procedure acts therefore in the following way:

- if the difference between the measured value and the background value is lower than the maximum offset, an offset is applied to the measurement so that the measured value coincides with the background value.

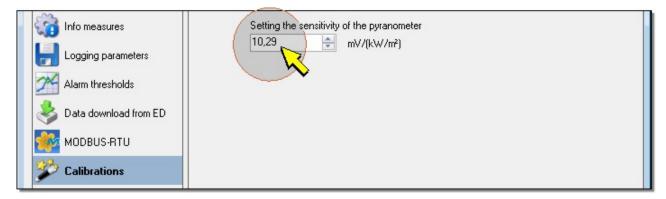
- if the difference between the measured value and the background value is higher than the maximum offset, only the maximum offset is added or subtracted so as to approach the background value.

Press Apply to store the values.

25.4. SETTING THE SENSITIVITY OF THE ILLUMINANCE AND SOLAR RADIATION SENSORS

If you replace the Illuminance or solar radiation probe, it is necessary to set the new sensitivity of the probe in the data logger.

To set the new sensitivity, open the *Settings* window of the device and enter the section *Calibrations* like described at the beginning of the chapter <u>Calibration of the sensors</u>. Set the sensitivity using the arrow keys on the right side of the field or by writing directly the value.



Press Apply to store the value.

26. ACTIVATION OF CFR21 PART 11 MODE

(The HD35AP-CFR21 option is required)

In order to activate the mode, the hardware key supplied with the HD35AP-CFR21 option must be connected. The hardware key can be connected to any PC connected to the same local network of the PC in which the HD35AP-S software is installed. The key management software must be installed on the PC to which the hardware key is connected (please see the instructions provided with the key).

In CFR21 part 11 mode, the program records the activities of the system and allows controlling the users access. In order to enable the CFR21 part 11 mode, select the item *Software module 21 CFR part 11* from *Help* menu.

File Too	ols	View	He	lp	
2				Manual HD35AP-S	Ctrl+F1
C C				License HD35AP-S	
isconnect				Request of Product Licens	e
ି 🙎	A	P_396	58	Products Activation	
			•	Software module 21 CFR p	art 11 [Off]

If the password request is enabled, you are prompted for a password to activate the mode. Enter the administrator password (the mode can be enabled only by a user with administrator credentials) and press *Apply*.

nassword	X
Insert password	
Remember password	
06 sec 🥩 Apply	

You are prompted to confirm the operation, press Yes to proceed. In the window that opens, enter the IP address of the PC where the hardware key is inserted (enter 127.0.0.1 if it is the local PC) and the port number set in the management software of the hardware key (default 15151), then press *Test* and wait for the hardware key to be recognized (*present* indication).

3	Settings for conne	ection to hardware key)	
6	ATTENTION: Enter the IP ADDRESS where the hardware ke Start the hardware key Computer where the hardware key	y is inserted belo recognition prog	owl gram on the	
IP addre				_
IP addre 127.0.0	\$8			
127.0.0. Port:	ss			
127.0.0	\$8			
127.0.0. Port:	ss			

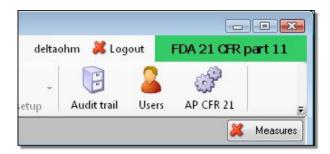
Press *Save* to save the parameters in the PC. Press *Exit* to close the window: the message confirming the activation appears, press *OK* and restart the software.

After the restart, the software requires the access credentials: enter the user name and the password (the default user name and password are supplied with the hardware key) and press *OK* to proceed.

Note: the database (Database Login) and hardware key (Setup Hw Key) parameters are those already entered previously.

	ogin FDA 21 CFF	
Database login	Setup Hw key	
Connection Type:	IP address	
MySQL (TCP/IP)	127.0.0.1	
Hostname / IP:	Port:	
127.0.0.1	15151 🚔	
User:		
root		
Password: Show password		
••••		
Port:		
3306 Save database parameters?		
User login		
Username		
		_
Password	Show password	

In the upper part of the program window are shown the user name and the icons of the CFR21 part 11 functions (Audit trail, Users and AP CFR 21).



To close the user session, press the *Logout* button next to the user name.

In order to disable the CFR21 part 11 mode, select the item *Software module 21 CFR part 11* from *Help* menu. If the password request is enabled, you are prompted for a password: enter the administrator password (**the mode can be di-sabled only by a user with administrator credentials**) and press *Apply*. You are prompted to confirm the operation, press Yes to proceed. The message confirming the disabling appears, press *OK*, then restart the software.

27. USERS MANAGEMENT

(function available only with CFR21 part 11 mode active)

To define the list of the users authorized to access the system, select the icons *Users* in the toolbar of the commands, or the item *Users* of the menu *Tools*.



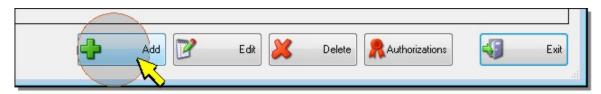
File	Tools	View Help
2	1 M	lySQL management
(🔊 Ту	pe of connection
Disco	🕗 Di	isconnect
6	🐞 N	etwork
	🗞 In	struments setup
EI	A D	udit trail
EI	🚨 U	sers
AI	2 A	P CFL. Q

The list of the users registered in the active database (the database indicated during login) appears.

2	Users management								
				Setu	p user	login			
Image: The password expires every 90 • • days Image: If the password is not correct, block the account after 3 • • attempts Image: Minimum password length 8 • • characters						ltempts	ſ	<u></u>	
	Fo	llow the recommendatio	ns of FDA CF	R21 Part 11				Reload	Apply
					Jser lis	t			
	ld	Registration Date	Login	Description	Status	Name	Last Name	e-mail	Position
		05/11/2015 17.16.55	User A	User A	Active	User			Superuser
	2	05/11/2015 17.17.38	User B	User B	Active	User	В		User
						Exit			

27.1. ADD A NEW USER

Press the Add button.



The user form appears; enter the required data and press OK.

Registration Date	-	Update registration
Login	User C	
Password	••••	
Confirm password	••••	
Description		
Status	Deactive	•
Name	John	
Last Name	Smith	
e-mail	I	
Position	User	•

The *Status* field allows enabling (Status=*Active*) or disabling (Status=*Deactive*) the user acces to the system. The *Position* field determines the user permissions (*Administrator*, *Superuser* or *User*).

Note: by pressing the "magnifying glass" symbol next to the Password field, the password is displayed.

The user is registered in the active database (the database indicated during login).

27.2. EDIT THE PROPERTIES OF A USER

In the list of the users, select the desired user and press the *Edit* button.



The user form appears; edit the data and press OK. To update the registration date to the current date, press the Update registration button.

💩 Users management		.
	Edit user data ente	red
Registration Date	05/11/2015 17.16.55	Update registration
Login	User A	
Password	••••	

27.3. DELETE A USER

In the list of the users, select the user to be deleted and press the Delete button.



You are prompted to confirm the operation, press Yes to proceed.

27.4. TYPES OF USERS AND PERMISSIONS

There are three types of user: **Administrator**, **Superuser** and **User**. For each type of user you can decide which operations can be performed with the software.

Press the Authorizations button.



For each type of user, select the authorized operations. To select all the operations, press the *Select all* buttons in the upper part of the window. To set the default authorizations, press the *Default* buttons. When finished, press the *Save* button. Press *Exit* to return to the list of users.

Admi	inistrator:	Default	Select all				
Superuser: Default Select all							
User	:	Default	Select all				
	Parameter		,	Administrator	Superuser	User	
01	Show database	÷.				V	
02	Build collections	s of data		V	1		
03	Export database	e data			1		
04	Printing databas	se reports			V	1	
05	Data download	from ftp			V	1	H
06	Ftp settings				V		1
07	Data download	from Access Point			v	1	
08	Access Point S	ettings			V		
09	End Device Sel	ttings			V	1	
10	Data download	from End Device			V		-
11	End Device Info	0			V	1	-
12	Network setting	IS			V		
13	Alarm settings				V		
14	Viewing Audit T	rail					-

27.5. PASSWORD PROPERTIES

In the Setup user login section of the Users management window, you can configure:

- The period of validity of the password.
- The number of attempts with wrong password before blocking the user.
- The minimum length of the password.

To set the CFR21 part 11 recommended values (period=90 days, number of attempts=3, minimum length=8), select the option *Follow the recommendations of FDA CFR21 Part 11*.

Press Apply to save the settings. To cancel the changes not yet saved, press Reload.

If the password expiration is enabled, at login the software tells the user how soon the password expires. To renew the password, the administrator must update the registration date of the user (please see the section "Edit the properties of a user").

28. TRACEABILITY OF THE ACTIVITIES

(function available only with CFR21 part 11 mode active)

To visualize the list of recorded activities, select the icons *Audit trail* in the toolbar of the commands, or the item *Audit trail* of the menu *Tools*.





The complete list of recorded activities are reported in chronological order.

Audit trail							
apply Filter		•	T				
Date Time	Computer	User	Access Point	Category	Remark		
05/11/2015 14.12.59	UT12	deltaohm	APW_396	Request to change user code			
05/11/2015 14.13.06	UT12	deltaohm	APW_396	User code changed			
05/11/2015 14.13.07	UT12	deltaohm	APW_396	Request to disable measurement alarm buzzer			
05/11/2015 14.13.37	UT12	deltaohm	APW_396	Measurement alarm buzzer disabled			
05/11/2015 14.13.38	UT12	deltaohm	APW_396	Request to disable RF alarm buzzer			
05/11/2015 14.13.38	UT12	deltaohm	APW_396	RF alarm buzzer disabled			
05/11/2015 14.13.38	UT12	deltaohm	APW_396	Request to change RF alarm threshold			
05/11/2015 14.13.39	UT12	deltaohm	APW_396	RF alarm threshold changed			
05/11/2015 14.13.40	UT12	deltaohm	APW_396	Request to change temperature unit of measurement			
05/11/2015 14.13.40	UT12	deltaohm	APW_396	Temperature unit of measurement changed			
05/11/2015 14.13.41	UT12	deltaohm	APW_396	Rrequest to change pressure unit of measurement			
05/11/2015 14.13.41	UT12	deltaohm	APW_396	Pressure unit of measurement changed			
05/11/2015 14.13.41	UT12	deltaohm	APW_396	Request to change wind speed unit of measurement			
05/11/2015 14.13.41	UT12	deltaohm	APW_396	Wind speed unit of measurement changed			
05/11/2015 14.13.42	UT12	deltaohm	APW_396	request to set rain unit measure			
05/11/2015 14.13.42	UT12	deltaohm	APW_396	set rain unit measure			
05/11/2015 14.13.42	UT12	deltaohm	APW_396	request to set differential pressure unit measure			
05/11/2015 14.13.43	UT12	deltaohm	APW_396	set differential pressure unit measure			
< [III			•	

To list only the activities recorded in a determined interval of time, select the interval in the lower part of the window and press the key *Apply*.

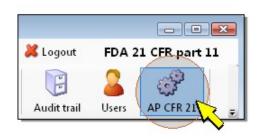
To filter the activities according to the content of the fields, select the Apply filter option in the upper part of the window.

To print the report of the activities, press the *Report* key (*note*: the *Report* key is also available in the system configuration windows).

29. CFR21 DEVICE

(function available only with CFR21 part 11 mode active)

You can make sure that only the authorized users of the currently active database (and not the users of other databases that will be activated in the future) can change the configuration of the system; in this way, all the system changes are definitely tracked in the same database. To enable this feature, connect the device and select the icon *AP CFR21* in the toolbar of the commands, or the item *AP CFR21* of the menu *Tools*.





A list of devices appears, press the *Activate* button corresponding to the connected device (**only the status of the connected device can be changed**).

	List	Access P	oints CFR 2	21
Registration Date	Model	RF address	Serial number	Activate
09/11/2015 11.36.53	HD 35APW	396	14009006	Activate
30/10/2015 8.22.21	HD 35APW	1150	15009045	Deactivate
06/11/2015 10.50.44	HD 35APG	225	13037513	Deactivate
30/10/2015 17.07.43	HD35APS	41	12016692	Deactivate

You are prompted to confirm the activation, press Yes to proceed. The message confirming the activation appears, press *OK*.

The feature can be disabled (only by a user registered in the database and authorized for this operation) by pressing the *Deactivate* button.

WARNING: if the feature is active, the SMS and MODBUS commands that modify the system configuration are disabled, and the HD35ED... devices with LCD can not be configured through the front keyboard.

Note: while connecting with the device, the software asks if you wish to enable the feature, if it is not enabled for the device that is being connected; by answering *Yes*, the list of devices shown above appears.

30. SOFTWARE LANGUAGE

In order to modify the software language, select the item *Language* from *Help* menu; then select the appropriate language.



The program allows to select a language edited by the user (User language).

File Tools View	Help	
Connect	Manual HD35AP-S Ctrl+F1 License HD35AP-S Request of Product License Products Activation	download from AP Data down
	Language	Italian H English
		Erench Spanish
		User language
		Setur Ser language

In order to edit the strings in the user language, select the item Setup user language.

HD35AP-S Environm		
File Tools View	Help Image: Second system Image: Second system	download from AP Data down
	Language	 Italian English
		 French Spanish User language
		Setup user language

The list of program text strings will be opened (by default the strings are in english language). In order to edit a text string, press the *New String* key in the corresponding row .

U FormSetupU	serLanguage	
	Original st	ring
New string	File	
New string	New session	
New string	Open	
New	, Monitor	
New string	Data download	

A window is launched where it is possible to enter the new text and press Apply.

U New string	
Max char: 8	
Open	*
	-
Open	~
	-
	Apply

When finished, press *Apply* to go back to the main program window.

Apply	-	Cancel
	Apply	Apply

31. SOFTWARE INFORMATION

For additional information on the software version and software license agreement, or to consult the user manual of the program, select the *Help* menu.



The Help function can be consulted quickly by selecting the icon characterized by a question mark in the command tool bar.



32. FIRMWARE UPDATE

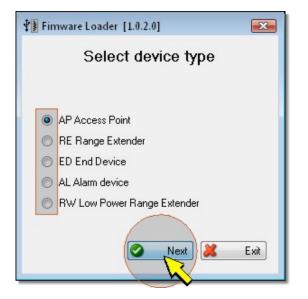
The program (*firmware*) which runs a device can be updated through the functions *Firmware Loader* of the menu *Tools*. To require any available firmware updates, contact Delta Ohm.

Procedure for HD33, HD35 and HD50:

- 1. By means of USB cable, connect the device to the PC where the HD35AP-S program is installed.
- 2. In the Menu Tools, select the item Firmware Loader.



- 3. Select the type of device to be updated:
 - AP = HD35AP... base unit , HD50... data logger, HD33...GSM data logger
 - RE = HD35RE repeater
 - ED = HD35ED... data logger
 - AL = HD35ED-ALM alarm module
 - RW = HD35REW low power repeater



4. With the key Browse... (the key blinks) select the update file that has previously been saved in a folder of the PC.

	<u>×</u>
E Browse	
Start 🕼 E	ait (
	Start

5. If multiple devices are connected, select the serial number of the device to be updated.

AP Access Point - Fimware Loader [1.0.1.0]				X
C:\DeltaOhm\HD35AP-S\HD35APS.hex				
File size: 591130 bytes			C B	rowse
	•	Start		Exit
Not connected - serial (HID)				

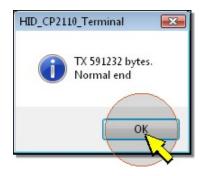
6. Select the icon *Connect* (the icon blinks).

AP Access Point - Fimware Loader [1.0.1.0]		
C:\DeltaOhm\HD35AP-S\HD35APS.hex		
File size: 591130 bytes		Browse
	Start	E xit
Not connected - serial (HID)		

7. Wait for the accomplishment of the connection, highlighted in the status bar, and the automatic start of the update.

Connect 12016692 -		
C:\DeltaOhm\HD35AP-S\HD35AP!	j.hex	
File size: 591130 bytes		Browse
	Start	🔏 Abort!

8. At the end of the update, a confirmation message appears, press OK to proceed.



Procedure for HD208:

- 1. By means of USB cable, connect the device to the PC where the HD35AP-S program is installed.
- 2. Connect the device by pressing *Connect* button.
- 3. In the Menu *Tools,* select the item *Firmware Loader*.



- **4**. You will see a window asking you to confirm the update: press Yes to continue. To exit without making any changes, press *No*.
- 5. The program which runs the whole update will start.

STM Device in DFU Mode 📃 💌		File: Vendor ID:	Procuct ID:	Browse Version:	
DFU Mode: - Vendor ID: 0483	Procuct ID:	Version: 0200	Start Upg		Verify after downlo

6. Press *Browse*... to select the update file having a DFU extension, which you have already copied in a folder.

Available DFU Devices	Upgrade file
STM Device in DFU Mode	File: HD208_1NT_C_S_V.dfu Browse
DFU Mode:	Vendor ID: Procuct ID: Version:
Vendor ID: Version:	0483 DF11 0200
0483 DF11 0200	Start Upgrade Verify after downloa
File co	rrectly loaded.

7. To begin writing the file, press the *Start Upgrade* button. The program will continue with update automatically.

Firmware upgrade	- •
Available DFU Devices	Upgrade file
STM Device in DFU Mode	File: HD208_1NT_C_S_V.dfu Browse
DFU Mode:	Vendor ID: Procuct ID: Version:
Vendor ID: Procuct ID: Version:	0483 DF11 0200
0483 DF11 0200	Start Upgrade Verify after download
Target 00: Upgradin	ng - Download Phase (41%)
Abort	Quit

Note: the instrument display may turn off while updating; in that case, the instrument will turn on automatically once the update is finished.

8. Once the update is finished, the message "Upgrading successfull" will appear. The update is complete (*note*: disconnect and reconnect the USB cable).

33. SOFTWARE OPTIONS

For the compliance with the recommendations of FDA 21 CFR Part 11, the **HD35AP-CFR21** option is available upon payment. To request the option after purchase, proceed as follows:

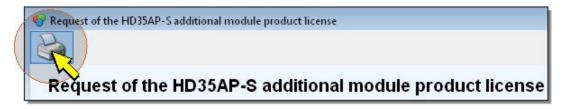
1. Select the item *Request of Product License* in the menu *Help* of the software.



2. Fill in the appearing Request module

Serial number of the instrument:	01234567	1	
Dealer:	*		
Name of the dealer			
Company:	*	Address:	9
Name of the customer		Address of the customer	
City:	*	Province:	3
Dity of the customer		Province of the customer	
Post Code:	*	Country:	
Post code of the customer		Country	
Contact person:	*	Fax:	
Contact person		Fax number	
Felephone:	*	E-mail:	
Phone number		Custoemr e-mail	
dditional modules:		🚖 Required	l fields
			l fields

3. Select the *Print* icon to create a PDF file of the filled module.



- 4. Send the request to the dealer from whom the instruments have been purchased.
- 5. Upon completion of the commercial practices, you will receive the hardware key to activate the option.

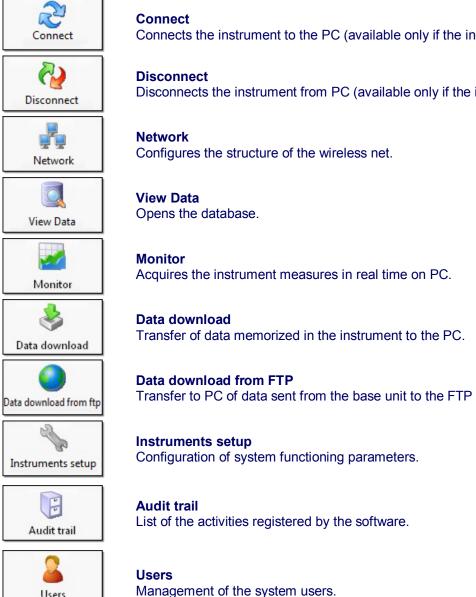
34. HID TERMINAL

The function *Terminal HID* of the menu *Instruments* is intended to be used by the technical assistance service.



35. COMMAND ICONS

Users



Connects the instrument to the PC (available only if the instrument is not connected).

Disconnects the instrument from PC (available only if the instrument is connected).

Transfer to PC of data sent from the base unit to the FTP server.

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AP CFR 21 Users authorized for the configuration of the system.



Alarm list Visualizes and configures the alarms.



Help Opens the program manual.



Exit Closes the program or the open window.

36. MENU COMMANDS

File >> View Data: opens database.

File >> Monitor: setting and starting of the Monitor function.

File >> Data download: transfer to PC of the data memorized in the instrument.

File >> Data download from ftp: transfer to the PC of the data sent from base unit to FTP server.

File >> Exit: closure of the program.

Tools >> MySQL management: setting of the parameter for the connection to the database.

Tools >> Setup hardware key for CFR 21 : setting of the IP address and TCP/IP port number of the hardware key.

Tools >> Type of connection: setting of connection from instrument to PC.

Tools >> Connect: connection of the instrument to PC (command available only if the instrument is disconnected).

Tools >> Disconnect: disconnection of the instrument from PC (command available only if the instrument is connected).

Tools >> Network: configuration of the wireless net system.

Tools >> Instruments setup: configuration of the system functioning parameters.

Tools >> Password required: enabling/disabling the password request.

Tools >> Audit trails: list of the activities registered by the software.

Tools >> Users: management of the system users.

Tools >> AP CFR 21: users authorized for the configuration of the system.

Tools >> Default folder : sets the path of the working folder.

Tools >> HID terminal: function intended for technical service only.

Tools >> Firmware Loader: updates the firmware of the base unit.

View >> Toolbar: enables or disables the visualization of command icons.

View >> Status Bar: enables or disables the visualization of the information in the status bar.

Help >> Manual HD35AP-S: opens the program manual.

Help >> License HD35AP-S: visualises the user license of the program.

Help >> Request of Product License: filling and printing of the form to request HD35AP-CFR21 license.

Help >> Language: selects the program language.

Help >> About...: visualizes the program version.