

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

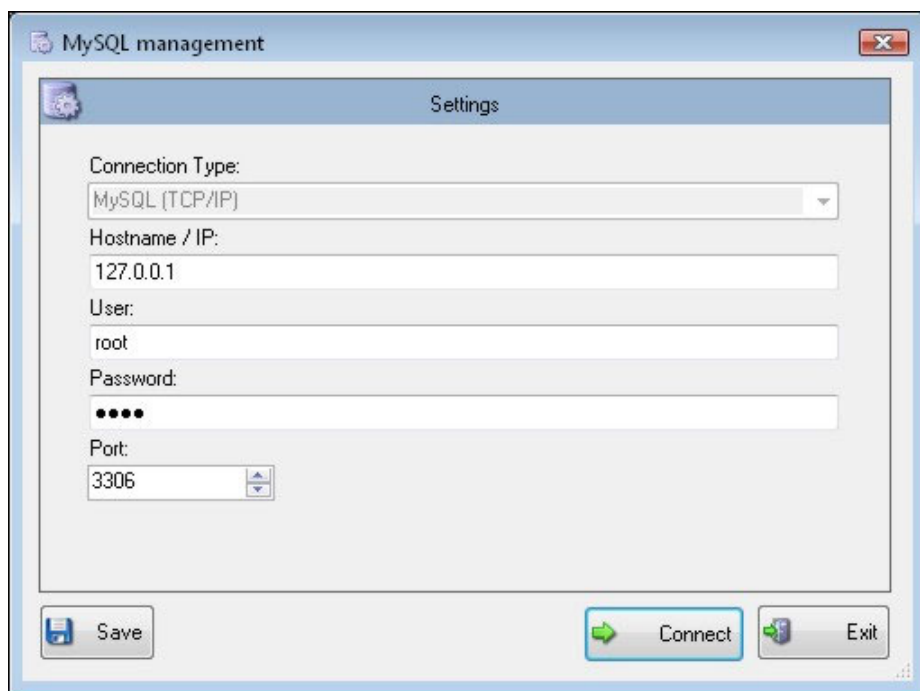
Devices connection modes:

- 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.



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.

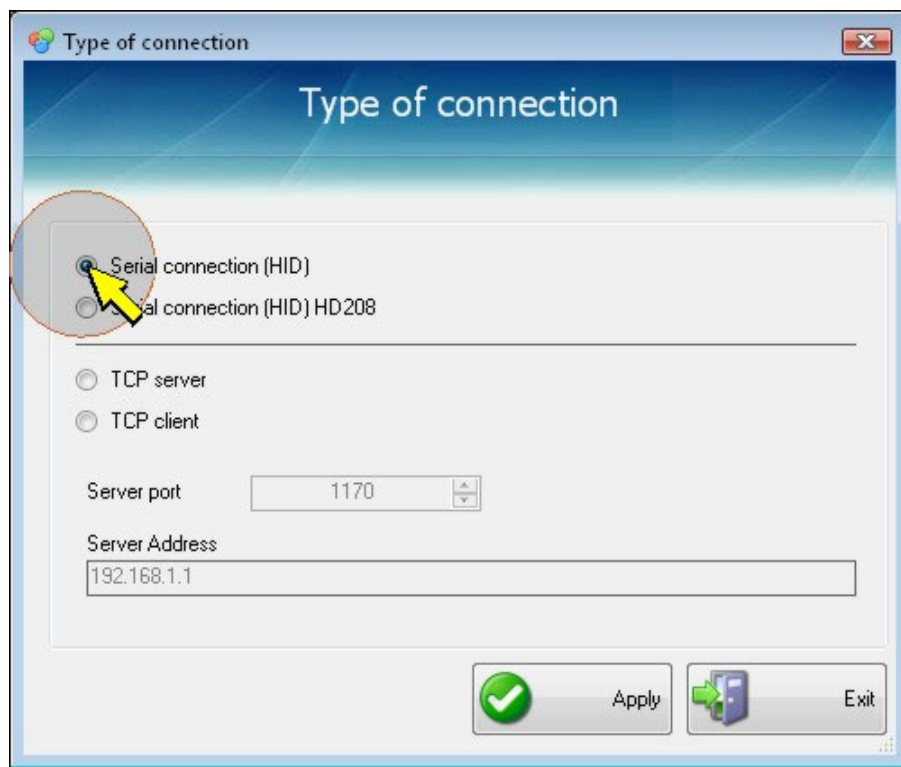
Note: the window can be recalled by selecting the item *MySQL management* from *Tools* menu. The item *MySQL management* is disabled if there is a connection in progress; in this case select the icon *Disconnect* to end the connection and to enable the item *MySQL management*.

4. Select *Type of connection* from *Tools* menu.

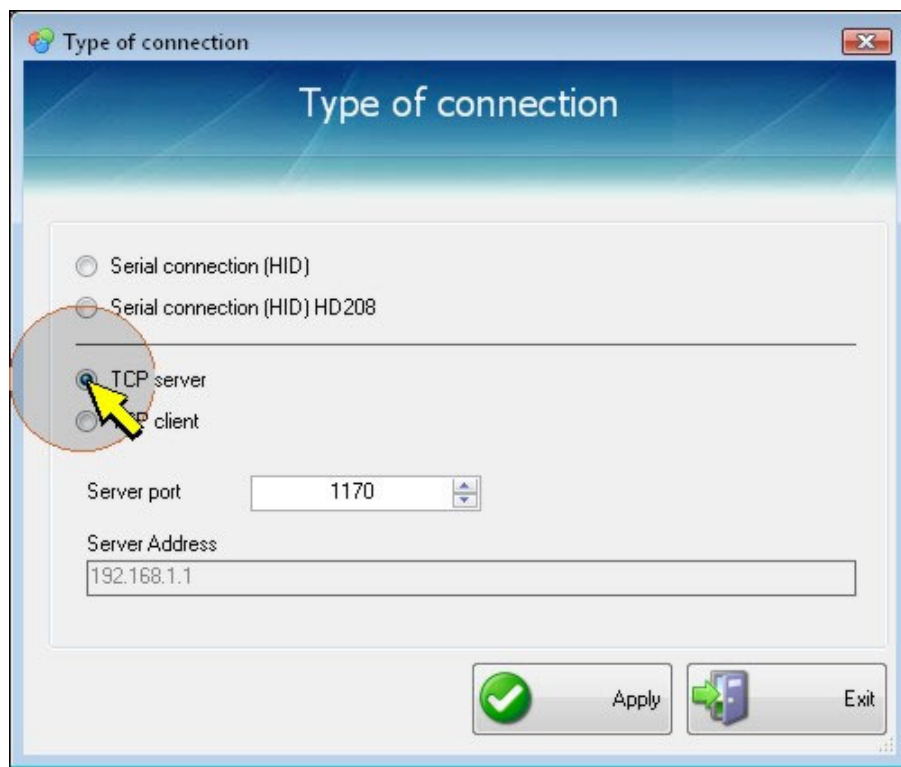


5. Select one of the following connection options:

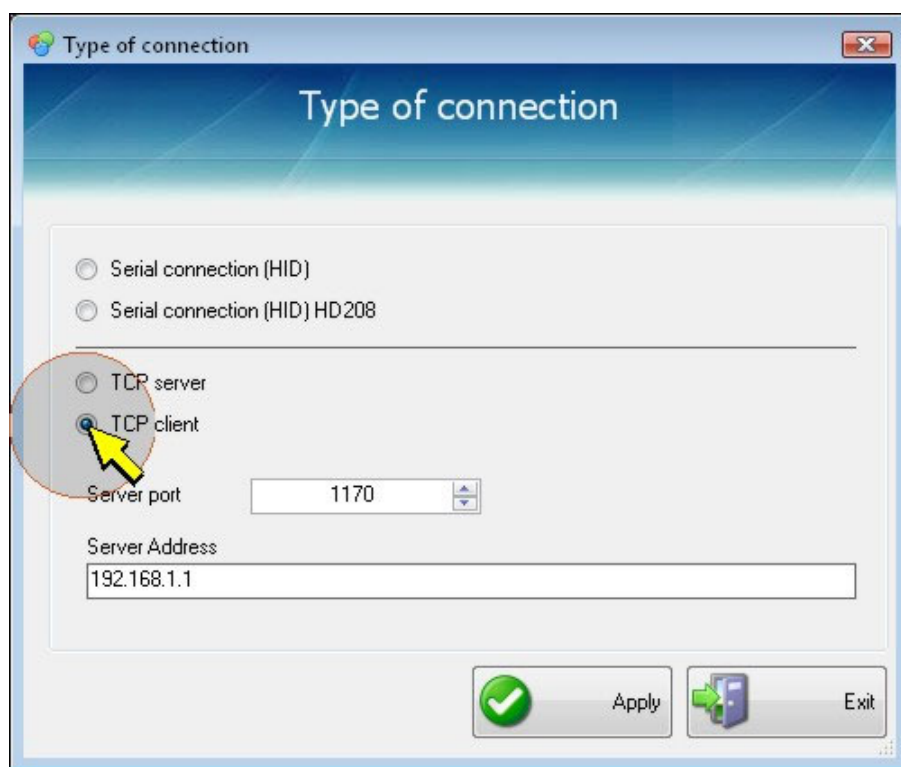
5.1 If the device is connected through the USB cable, select option *Serial connection (HID)* for HD35AP... or *Serial connection (HID) HD208* for HD208..., then select *Apply* to go back to main window.



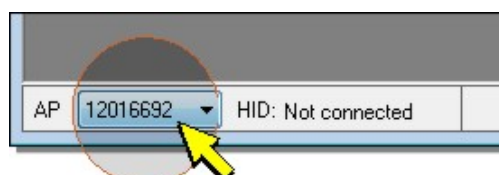
5.2 If the device is connected through a local area network (HD35APW, HD35APR, HD50) or via GPRS TCP/IP (HD35APG, HD35AP3G) and the user is going to connect from a PC that acts as a server, select *TCP server* option and type in the server port number where the PC (server) will listen to incoming connection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



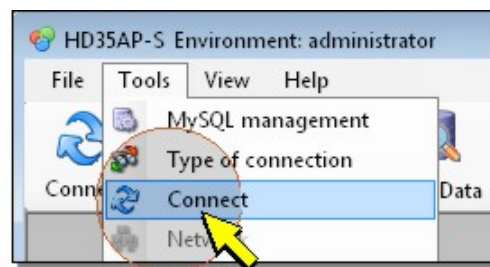
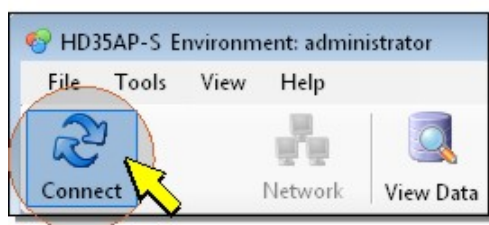
5.3 If the device is connected through a local area network (HD35APW, HD35APR, HD50) or via GPRS TCP/IP (HD35APG, HD35AP3G) and the user is going to connect from a PC that acts as a client, select *TCP client* option, then type in the port number and the IP address of the device (that acts as a server).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



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*.

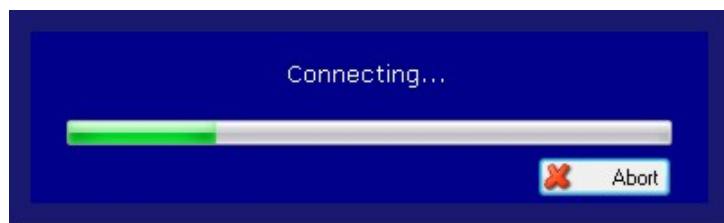


By selecting the option *Remember password*, the software stores the entered password for the next connections (it will be sufficient to press *Apply* without entering the password).

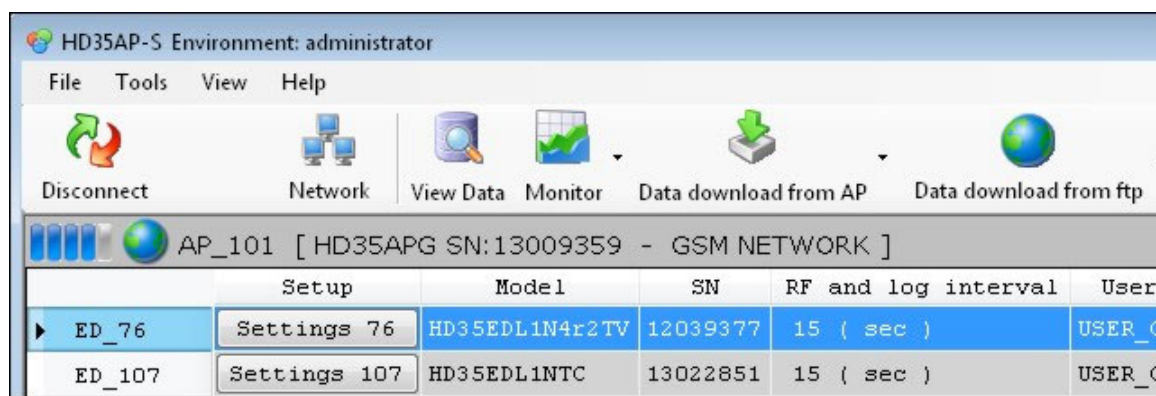
If you do not enter the password and press *Apply*, the software connects automatically after 10 seconds, using the stored password, if existing. The countdown stops if you start to write the password.

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

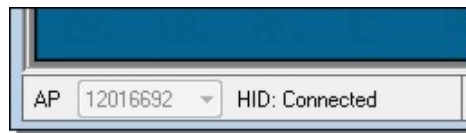
9. Wait for connection to be completed.



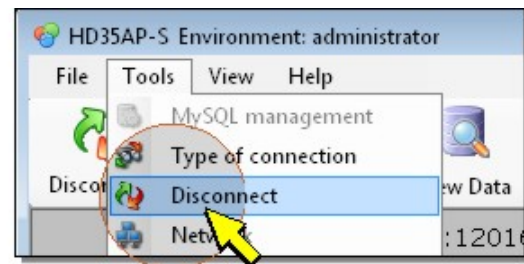
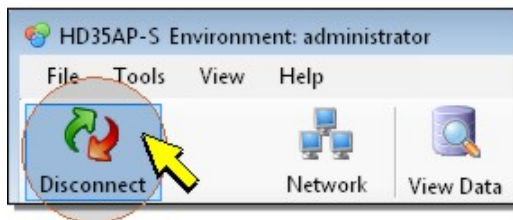
If connection is successfully made, the connected data logger (HD50 or HD208) or, in the case of the HD35 series, the list of all devices of the network related to the connected HD35AP base unit appears in the program main window (if the HD35 network has not been configured yet, the list is empty; in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



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



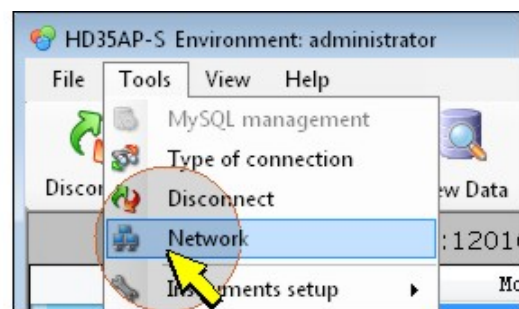
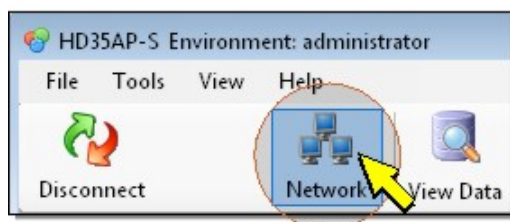
In order to end connection, select the icon *Disconnect* from the toolbar, or alternatively, the command *Disconnect* from *Tools* menu .



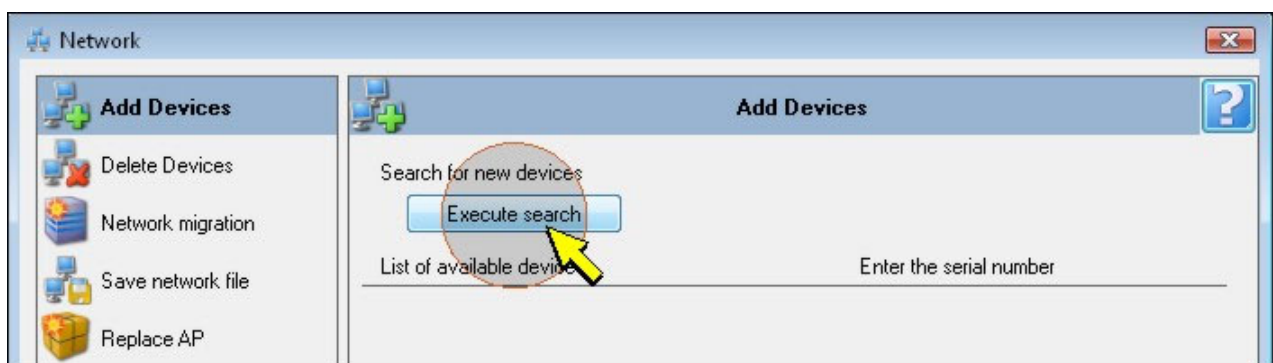
3. ADDING DEVICES TO THE HD35 NETWORK

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

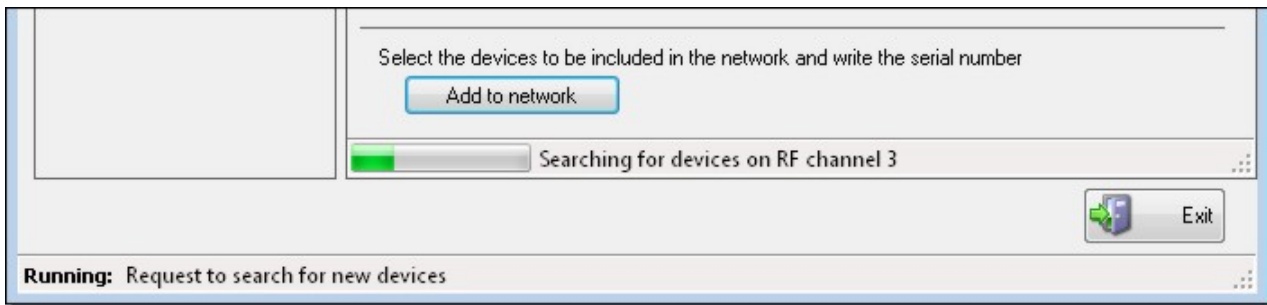
1. Power supply the device to be added. If the two RF LED are off, activate the RF circuit by pressing and keeping down the connection key for 5 seconds. When the RF circuit is on, the red RF LED blinks while waiting for connection to the base unit.
2. Select the icon *Network* from the toolbar, or alternatively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



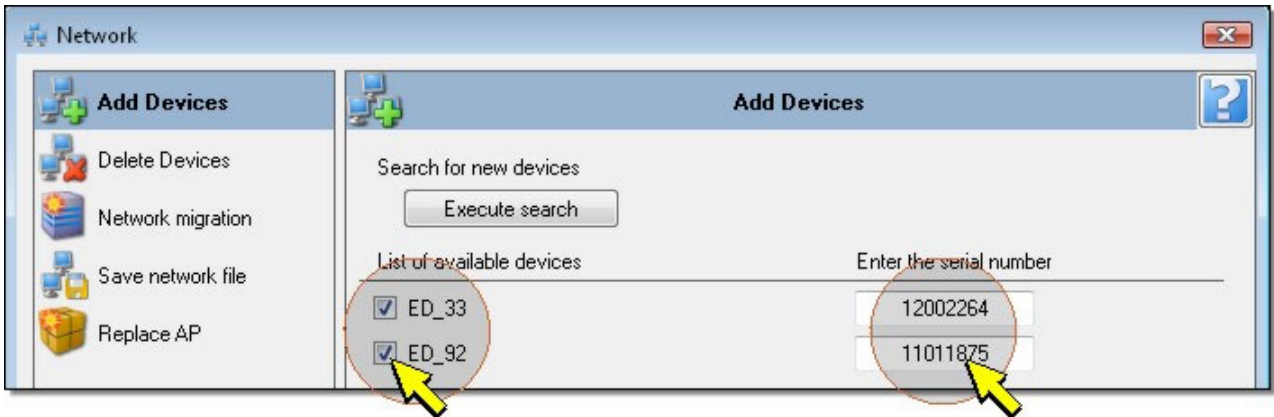
3. From the section *Add Devices*, select *Execute search* key.



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.

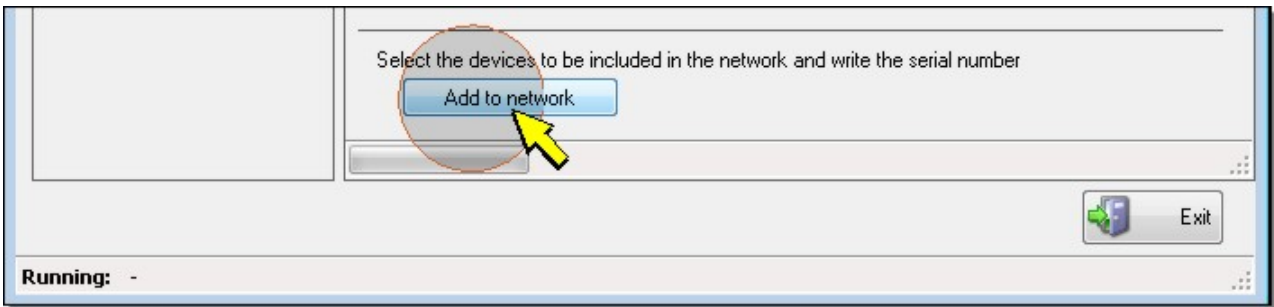


6. When the search procedure is ended, the list of detected devices is shown. Devices are labeled with their RF address (number set at the factory, not editable by the user - RF address is written on the label placed on the back panel of device enclosure). Select devices you want to add. It's possible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



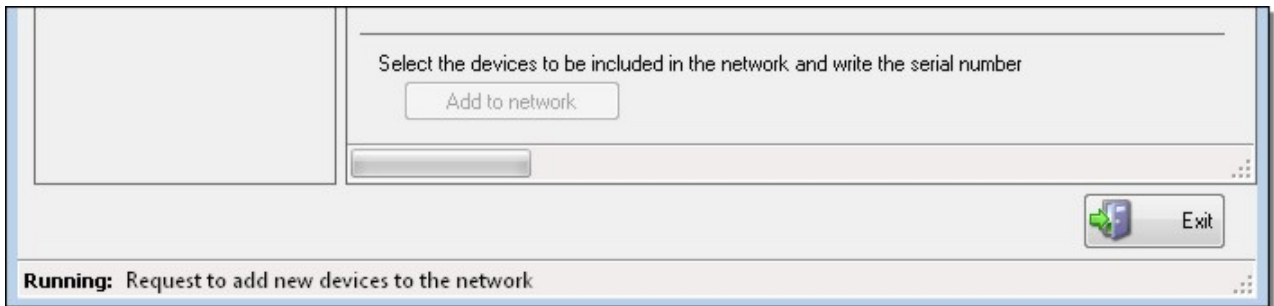
Note: devices already in the network to be configured or belonging to networks connected to other base units will not be detected. In order to add in the current network a device belonging to a different network, it will be necessary to previously delete it from its original network (please see the paragraph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

7. Select the *Add to network* key.



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.



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 [Saving in the PC the network configuration](#). 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.

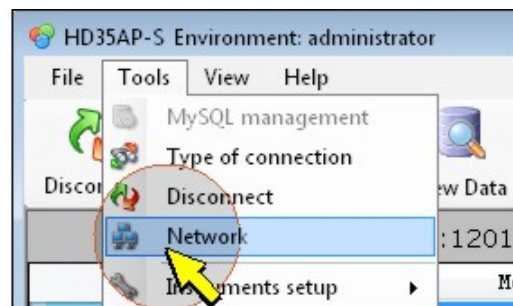
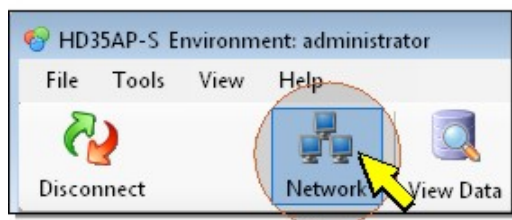
Note: the device adding procedure to the net allows to add a limited number of devices each time. If the software does not list all the devices to be added, carry out the procedure anyway with the listed devices and repeat the procedure to enter the missing devices. By repeating the procedure, the software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

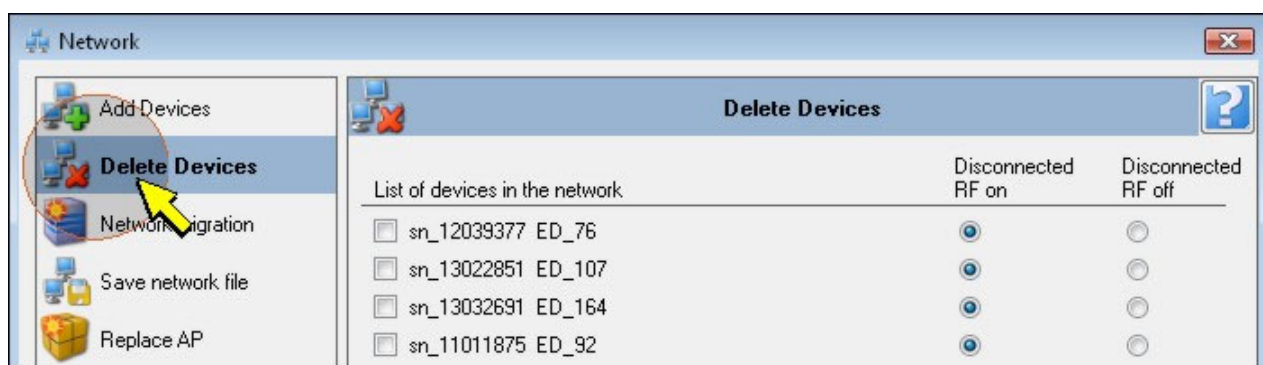
4. REMOVING DEVICES FROM THE HD35 NETWORK

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

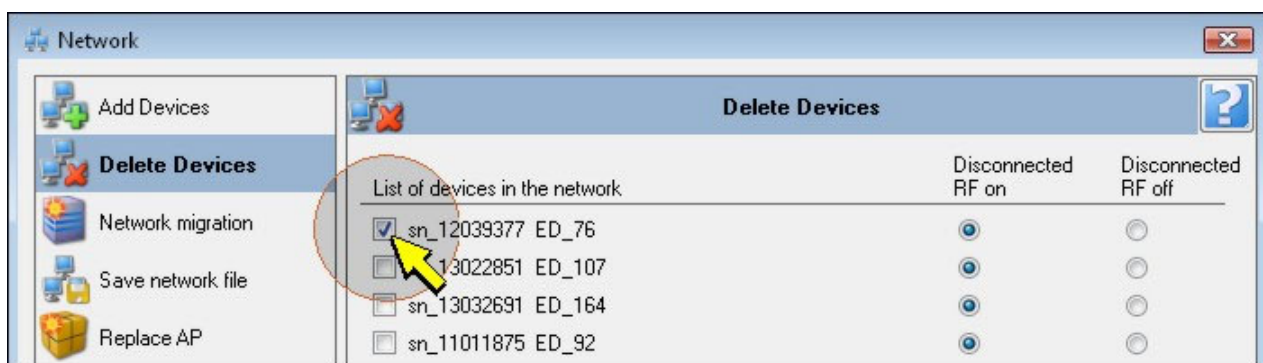
1. Select the icon *Network* from the toolbar, or alternatively from *Tools* menu, select *Network* command.



2. Select section *Delete Devices*.

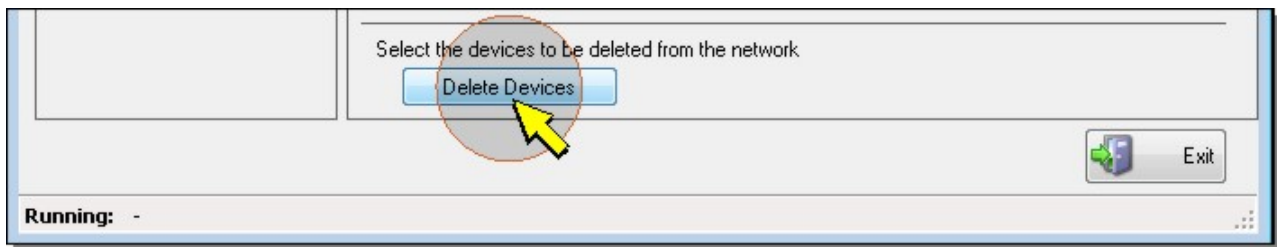


3. Select devices to be deleted from the network. It is possible to delete several devices at the same time.

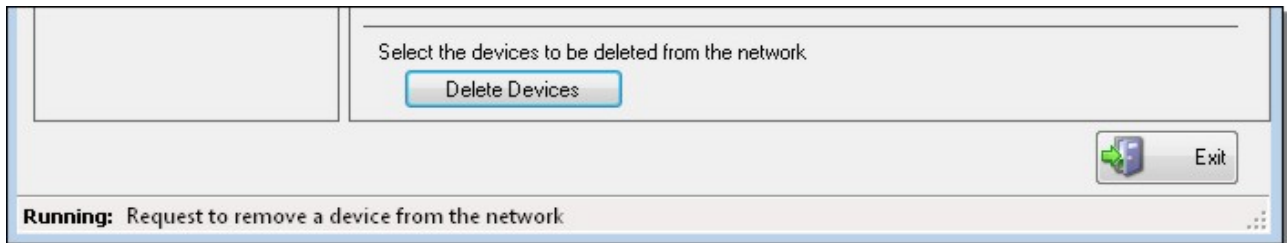


Leaving selected the option *Disconnected RF on*, the device RF circuit will remain turned ON for 30 minutes after device itself has been deleted from the network. Selecting option *Disconnected RF off*, the RF circuit of selected device will be turned OFF after deletion.

4. Select *Delete Devices*.



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.



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 [saving in the PC the network configuration](#). 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.

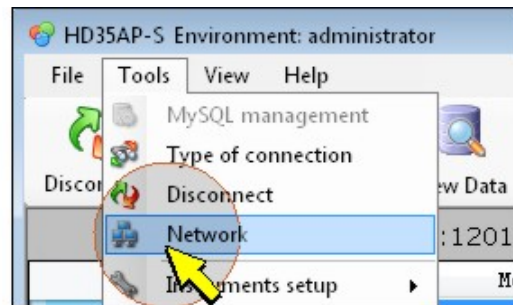
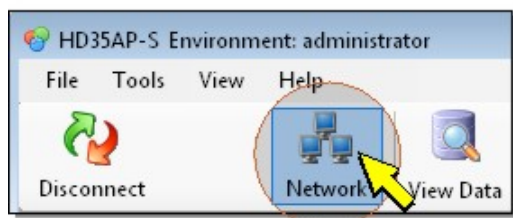
5. SAVING IN THE PC THE HD35 NETWORK CONFIGURATION

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:

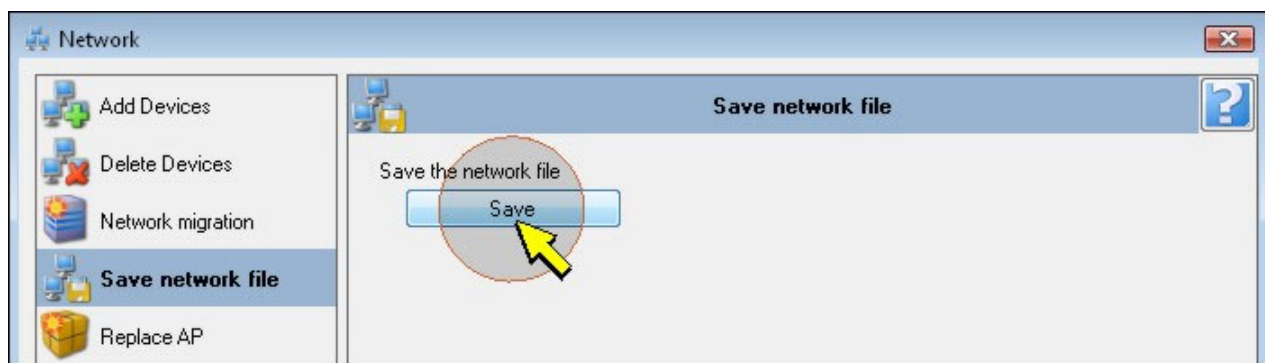
1. From the toolbar, select *Network* icon, or alternatively item *Network* form *tools* menu.



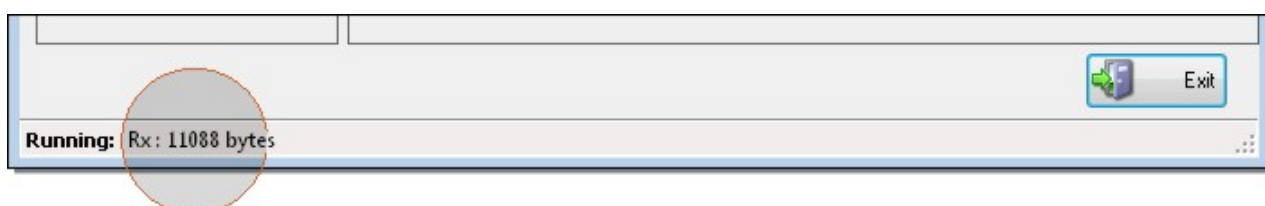
2. Select *Save network file* section.



3. Select *Save* button.



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 [the default working folder](#)). Press *Save* to save the file.
6. Wait until the saving is completed. The saving progress is shown in the window lower part.

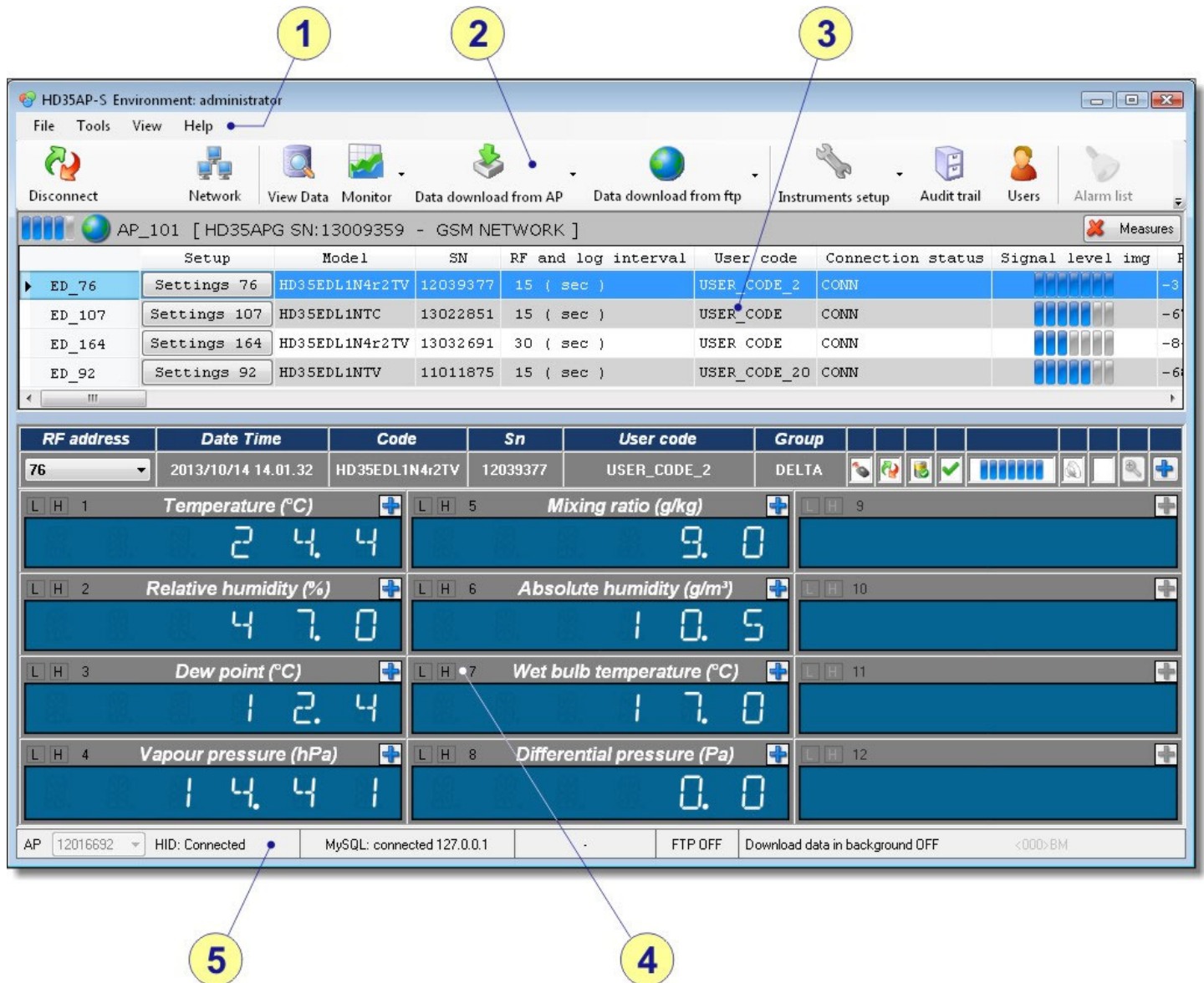


7. At the end a confirmation message appears, press *OK* to proceed.



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

6. MAIN WINDOW DESCRIPTION



In the main window can be identified the following areas:

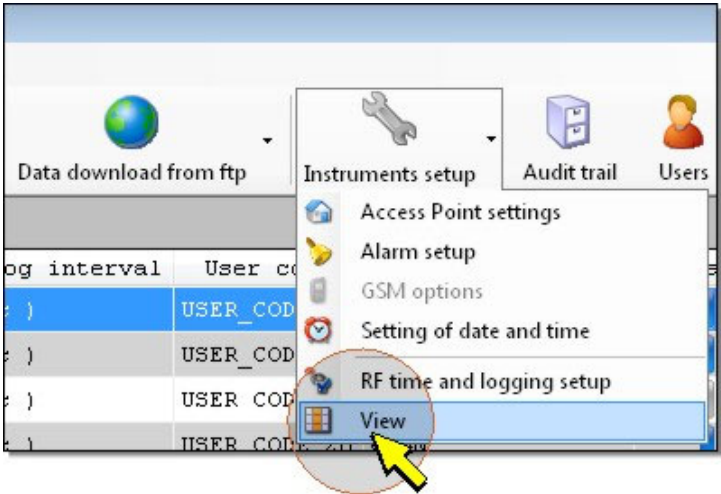
1. **Menu:** collects menu items.
2. **Toolbar:** set of icons used for the main program commands.
3. **Devices window:** displays the properties of the connected data logger (HD50 or HD208) or, in the case of the HD35 series, the devices of the network related to the connected HD35AP base unit.
4. **Measurements 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

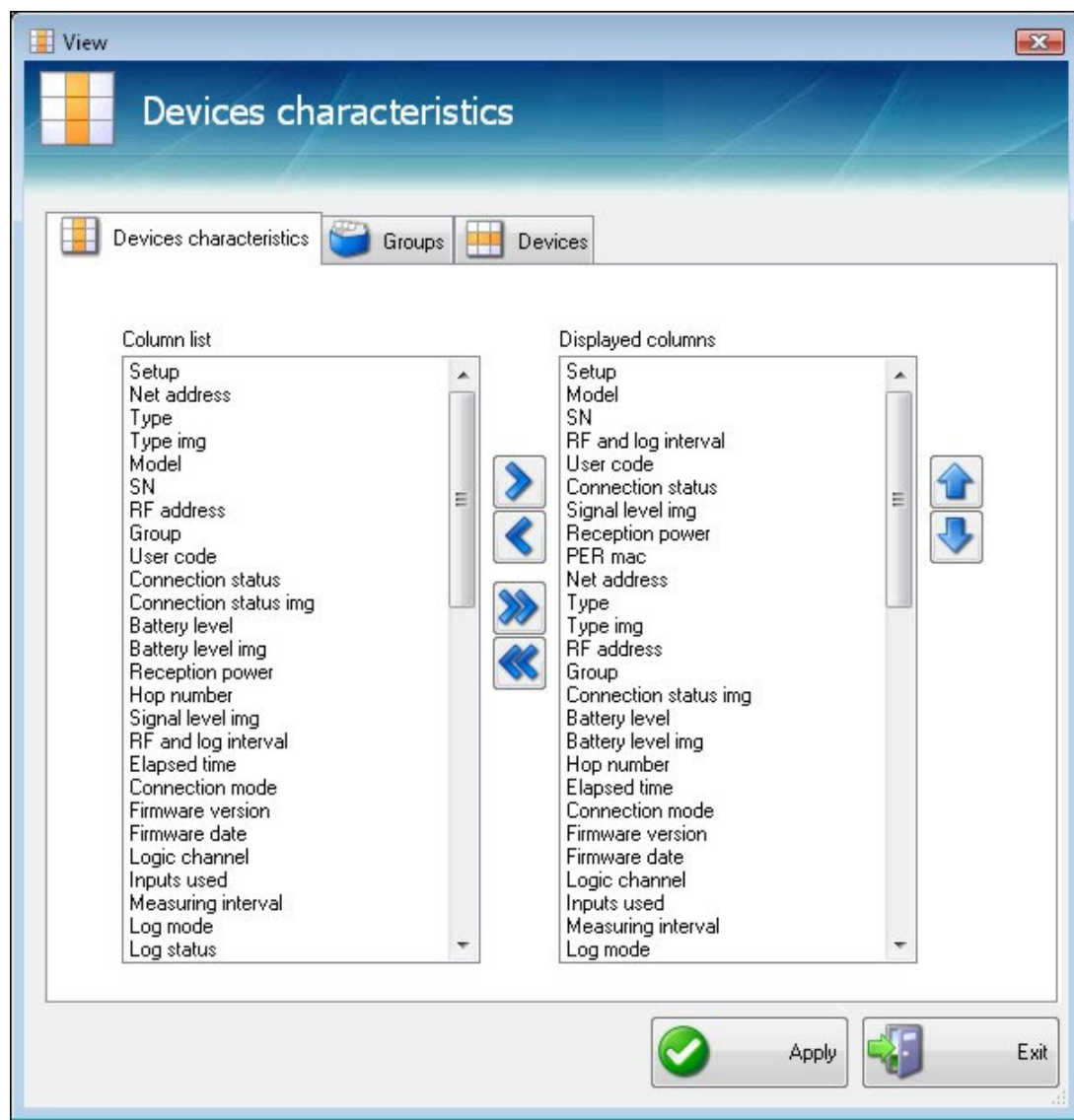
The first row in the devices window provides general information: GSM/3G (only HD35APG/HD35AP3G) or Wi-Fi (only HD35APW and HD50) signal level, RF address (only HD35AP...), device type, serial number, user code. The globe symbol indicates if an Internet connection is available or not.

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

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.



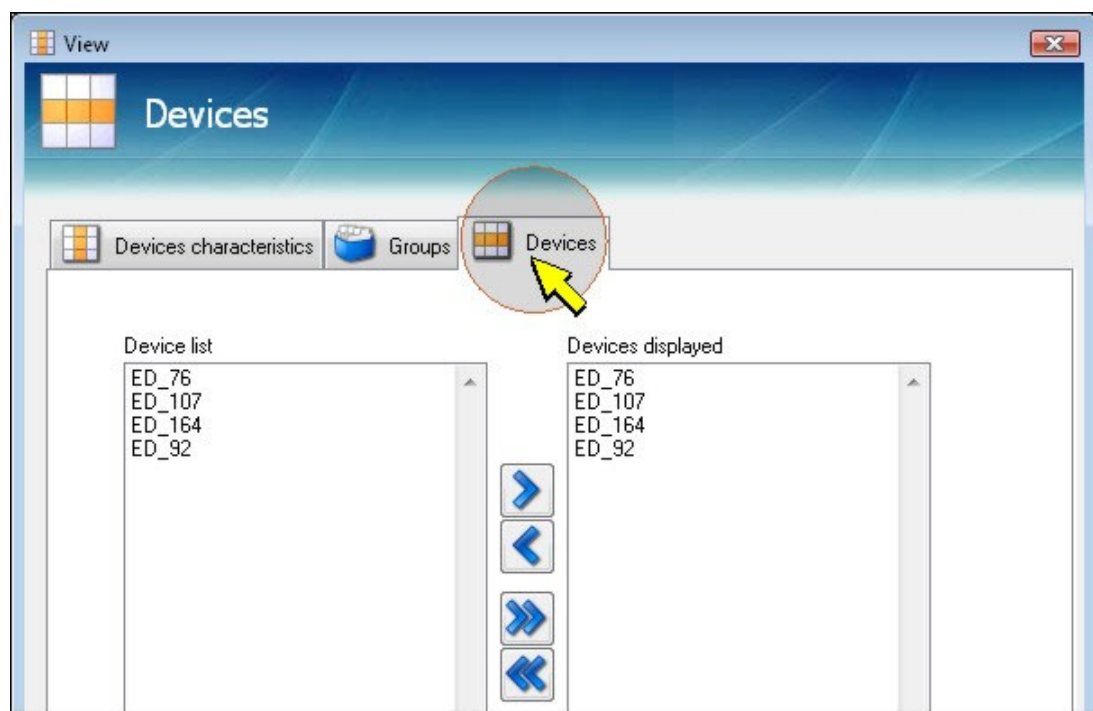
In order to display one or several properties, select required properties from *Columns list* and press  key to move them in *Displayed columns* area.

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

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  or  to respectively forward or backward it.

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



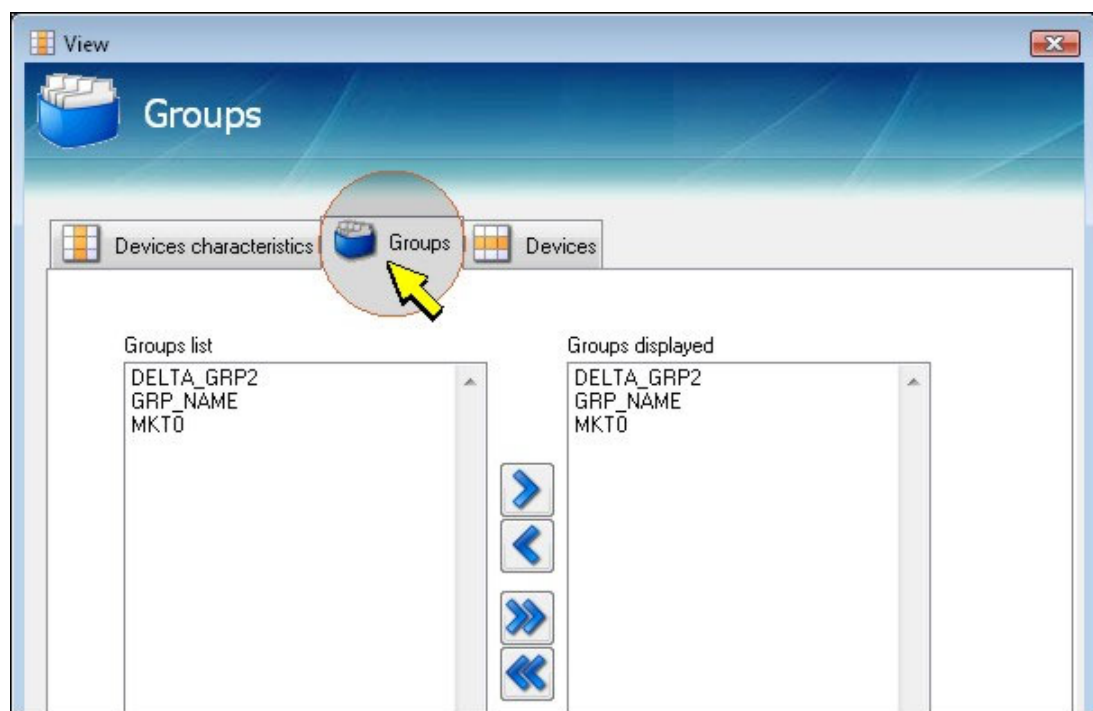
The window *Device list* contains available devices in the network. The window *Displayed devices* contains devices already displayed into the main window. The numbers shown in the lists are the RF addresses of the devices.

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*.



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 *Displayed groups* area .

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

When hiding or displaying all groups at the same time, use  and  keys.

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										
76	2013/10/14 14.01.32	HD35EDL1N4r2TV	12039377	USER_CODE_2	DELTA										
L H 1	Temperature (°C)		L H 5	Mixing ratio (g/kg)											
	2 4. 4			9. 0											

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																							
76	Temperature (°C)		L H 5	Mixing ratio (g/kg)																							
107	2 4. 7			9. 3																							
164																											
92																											

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

Sn	User code	Group													
11011875	USER_CODE_20	MKT0													
Mixing ratio (g/kg)		L H 9													
9. 5															

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

Sn	User code	Group													
11011875	USER_CODE_20	MKT0													
Mixing ratio (g/kg)		L H 9													
9. 5															

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



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.



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.



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



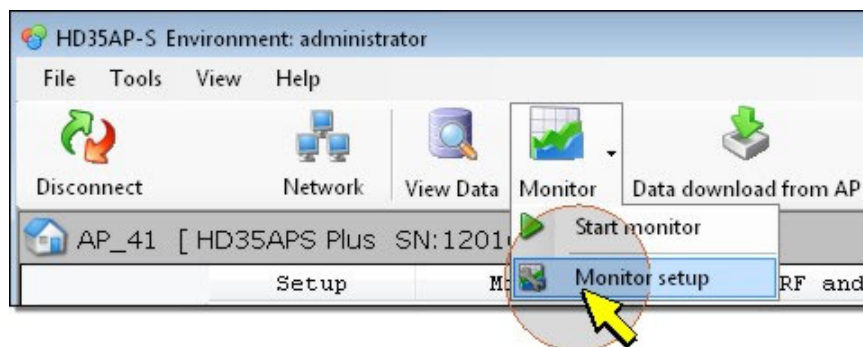
7. MONITOR

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).

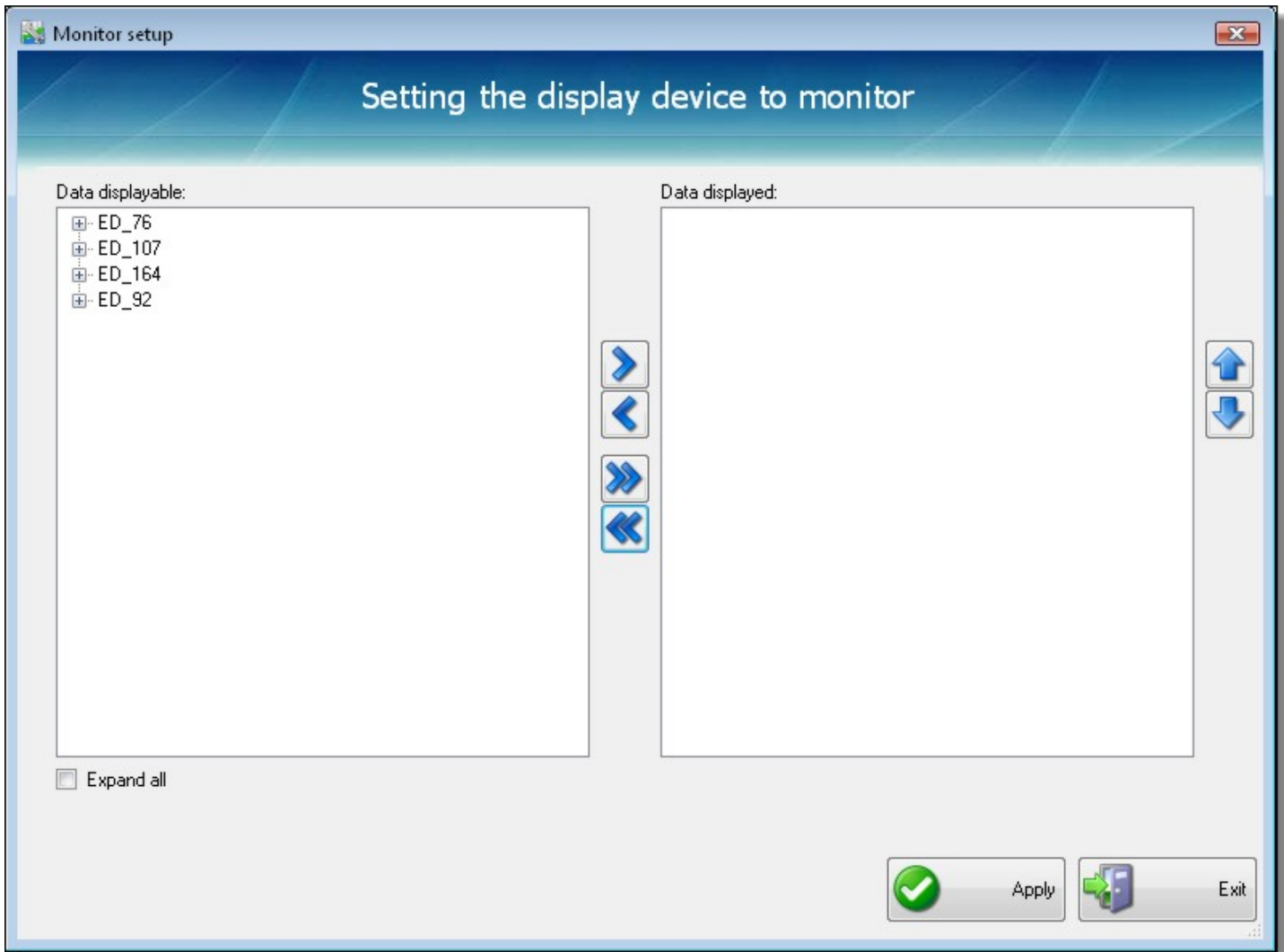
The *Monitor* function **does not allow to store the displayed values**.

7.1. MONITOR FUNCTION CONFIGURATION

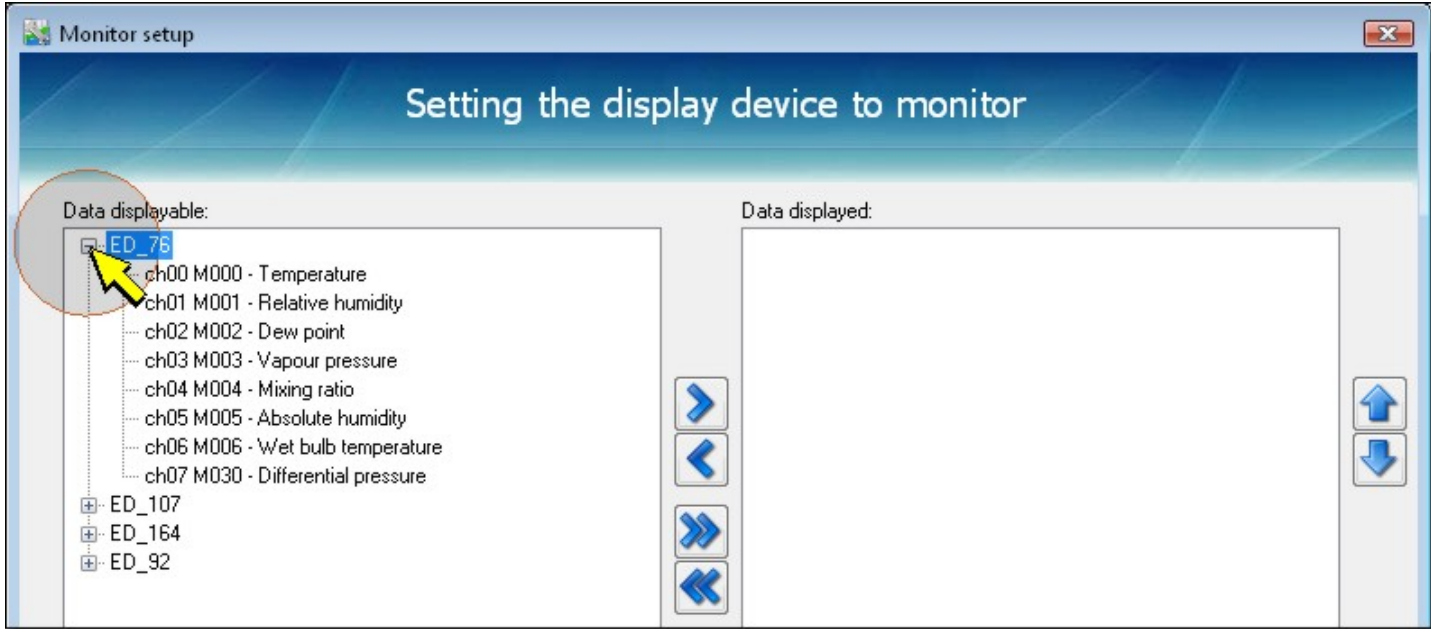
Before starting the Monitor function, set the physical quantities to be displayed by selecting, from the toolbar, the *Monitor* icon; then select the item *Monitor setup* (alternatively it's possible to select the menu item *File >> Monitor >> Monitor setup*).



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.



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





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  key 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.

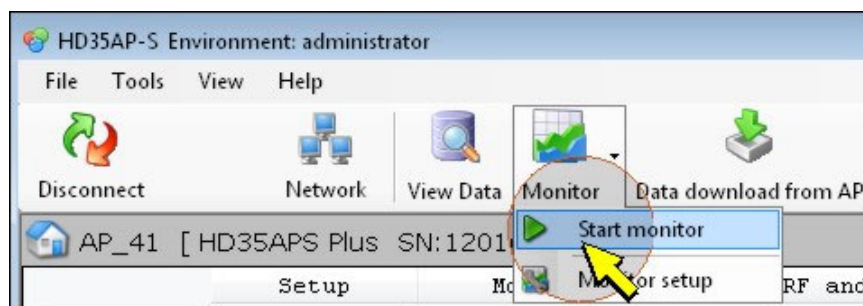
Use keys  and  to add or remove at the same time all quantities measured by all devices.

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

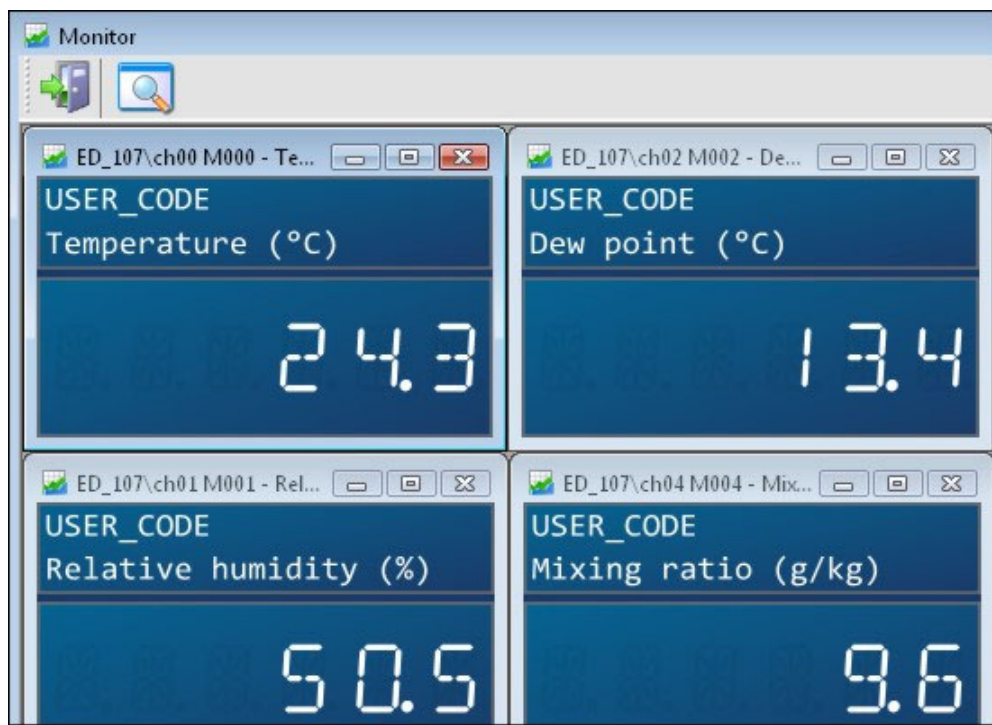
When finished, press *Apply* to save all settings, then *Exit* to go back to the program main window.

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*).

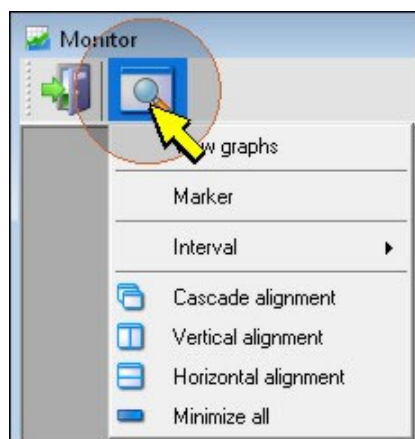


The Monitor window appears, containing itself several windows corresponding to different physical quantities selected during Monitor configuration. For each physical quantity are shown: code of device measuring the physical quantity, name of the physical quantity, measurement unit, value.



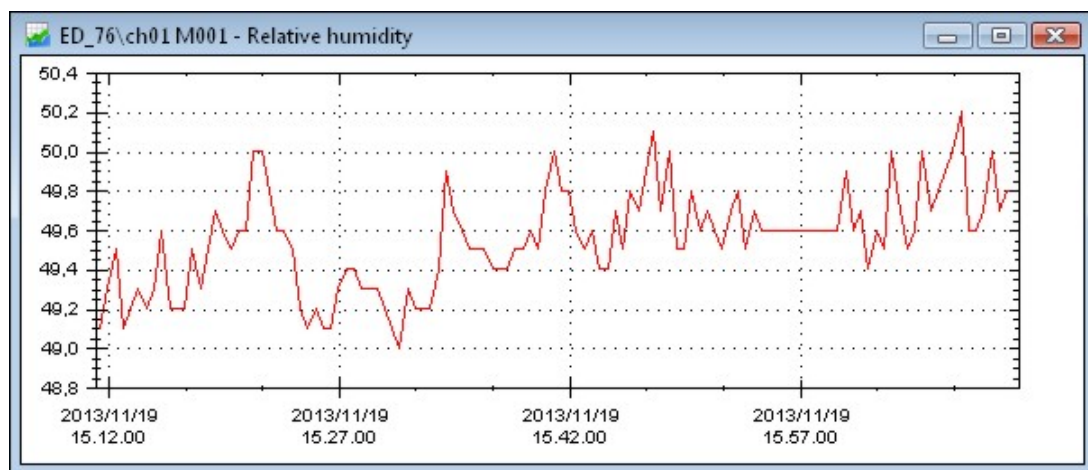
Displayed values are the average of acquired measurements in the recording time defined for that device.

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.

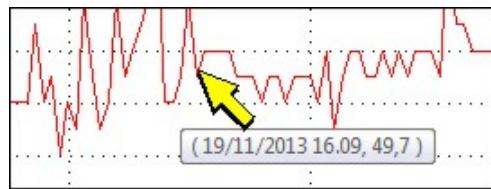


It's possible to minimize each window individually or all at the same time by selecting *Minimize all*.

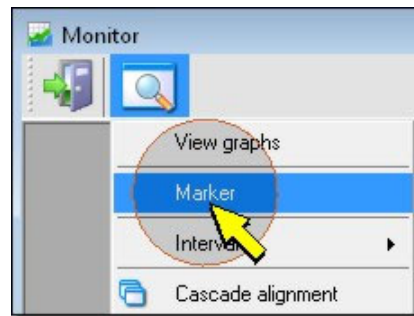
Choose the item *View graphs* to obtain the time history of acquired values in a graphic format.



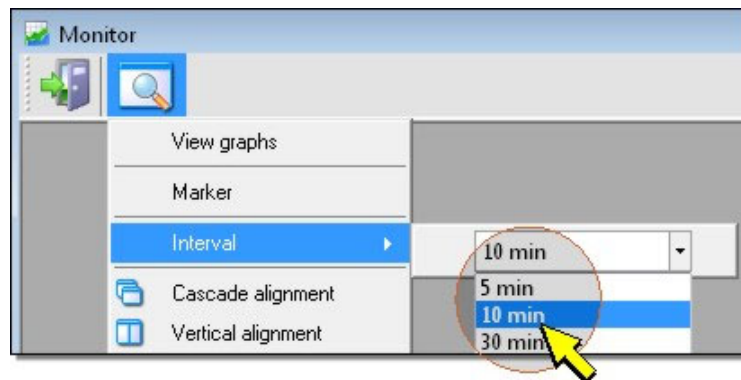
By positioning the mouse pointer in a point on the chart area, the acquisition time and the value in that point are displayed.



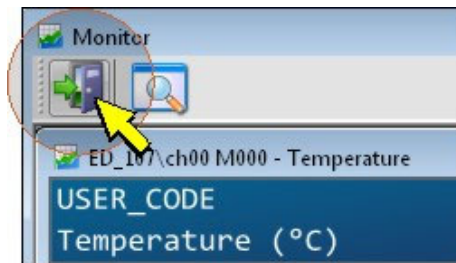
Select the option *Marker* to highlight the acquisition instants of the measurements.



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

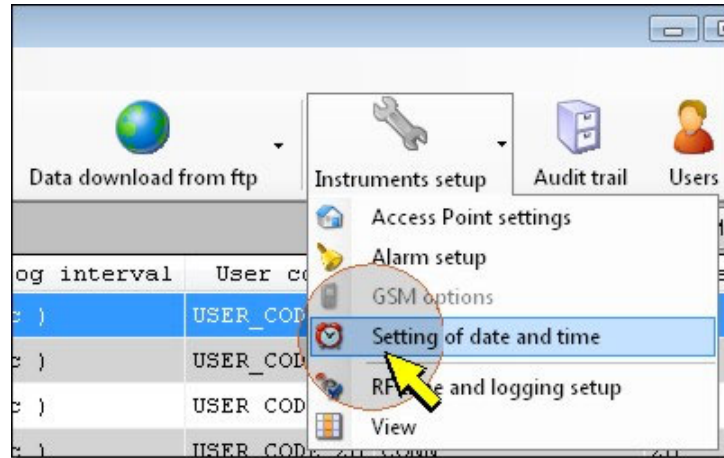


In order to exit from *Monitor* function, select the first icon in the upper left corner.



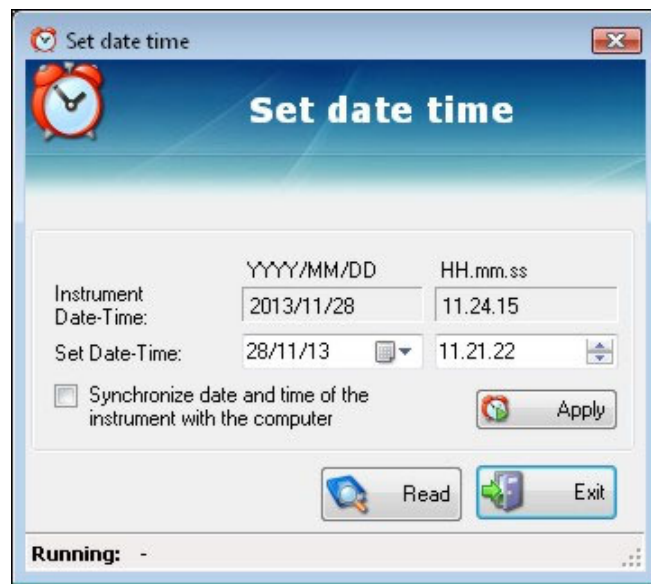
8. CLOCK SETTING

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*).

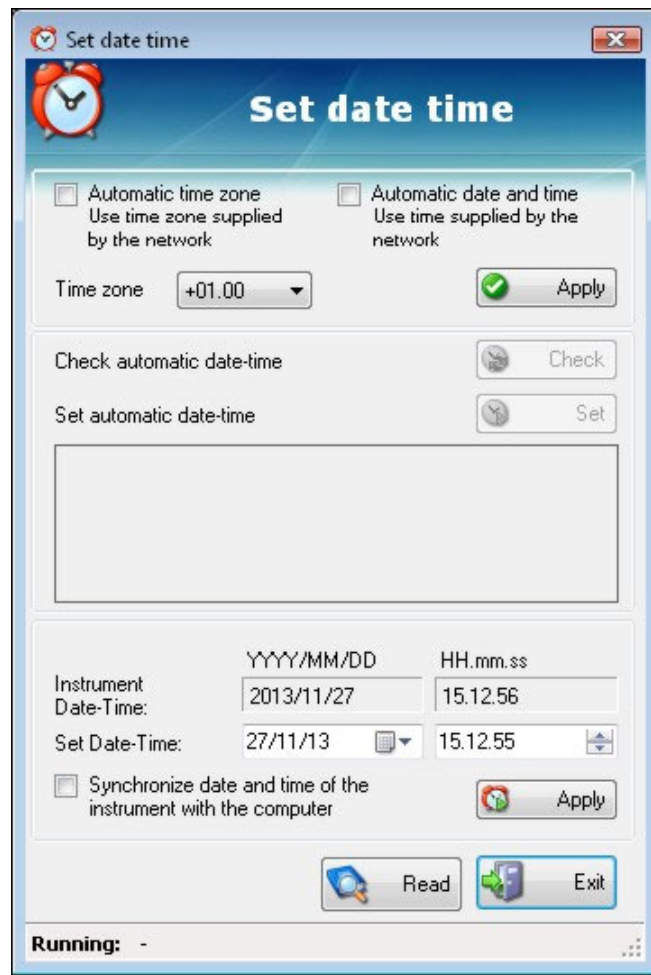


The *Set date time* window appears.

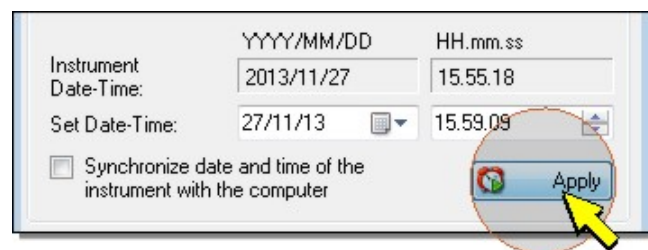
Devices without GSM/GPRS or Ethernet or Wi-Fi functionality



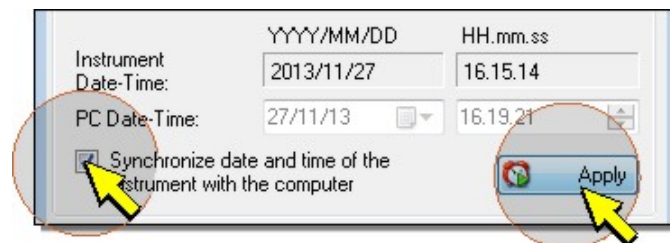
Devices with GSM/GPRS or Ethernet or Wi-Fi functionality



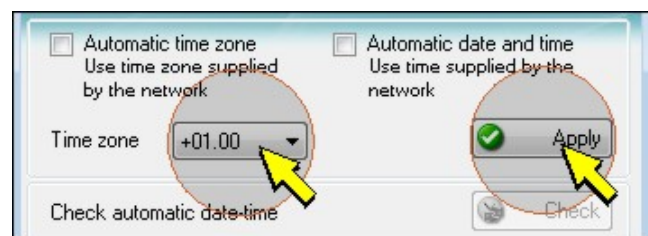
The *Instrument Date-Time* fields show the date and time set in the instrument at the moment of request. In order to manually update the set values, enter the new values in the fields *Set Date-Time* and press the key *Apply*.



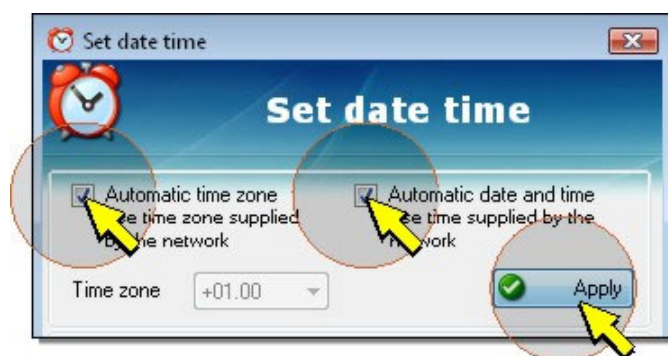
If synchronization of connected device with PC date and time is needed, select the check box *Synchronize date and time of the instrument with the computer* and press the key *Apply*.



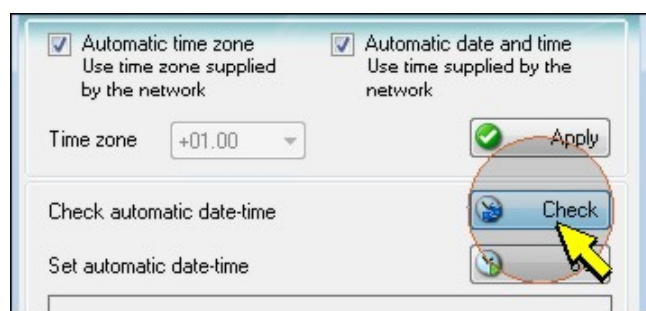
The time zone can be set in the devices with GSM/GPRS or Ethernet or Wi-Fi functionality. To make the new time zone effective, press the key *Apply*.



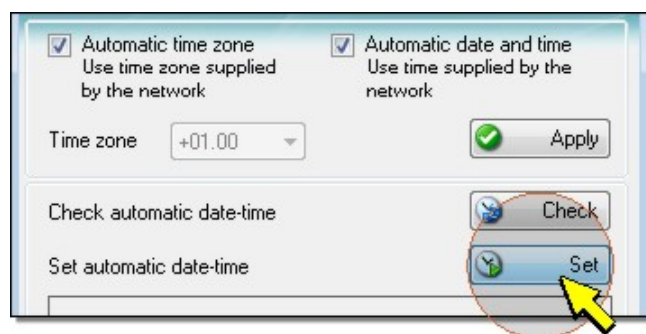
To automatically set date, time and time zone, using the information supplied by the network, select the options *Automatic date and time* and *Automatic time zone* and press the key *Apply*.



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.



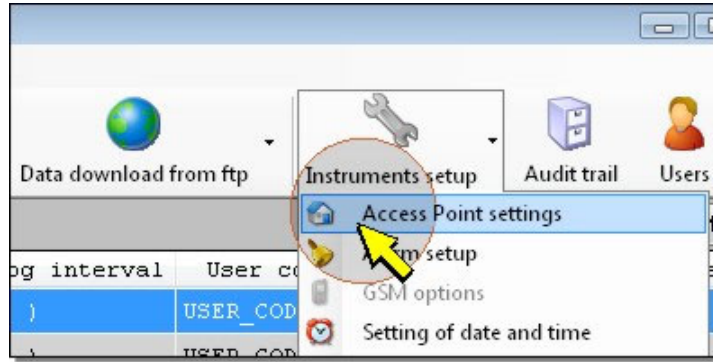
To set in the instrument the date and time of the network anyway, without performing the check, select the key *Set*. The command is available only if at least one of the two options *Automatic date and time* and *Automatic time zone* is active. If only one option is active, only the datum corresponding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



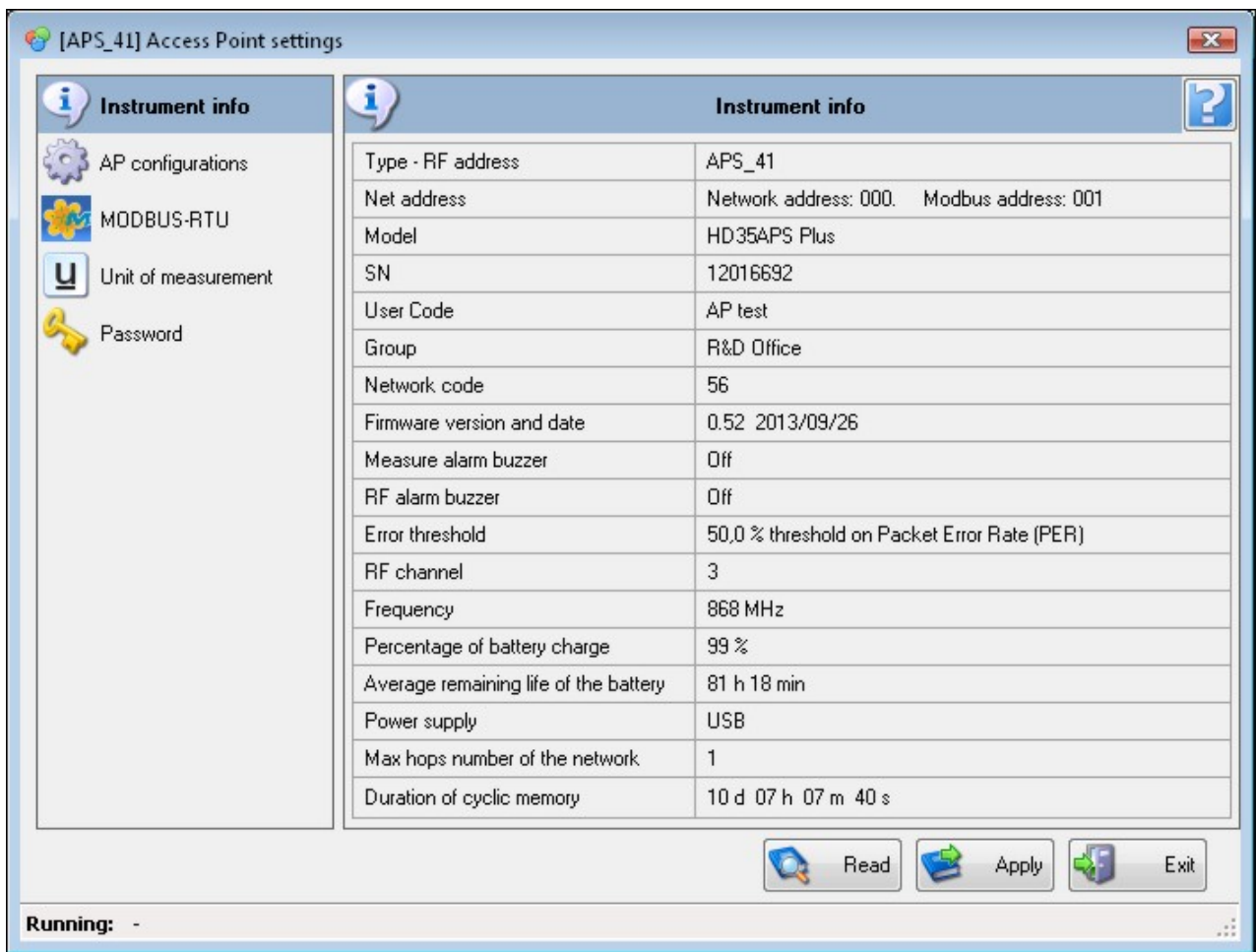
To read again the clock settings, for example in order to verify that the configuration upload operation has correctly been done, select the key *Read*. To close the *Set date time* window, select the key *Exit*.

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.



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:

AP configurations: 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.

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

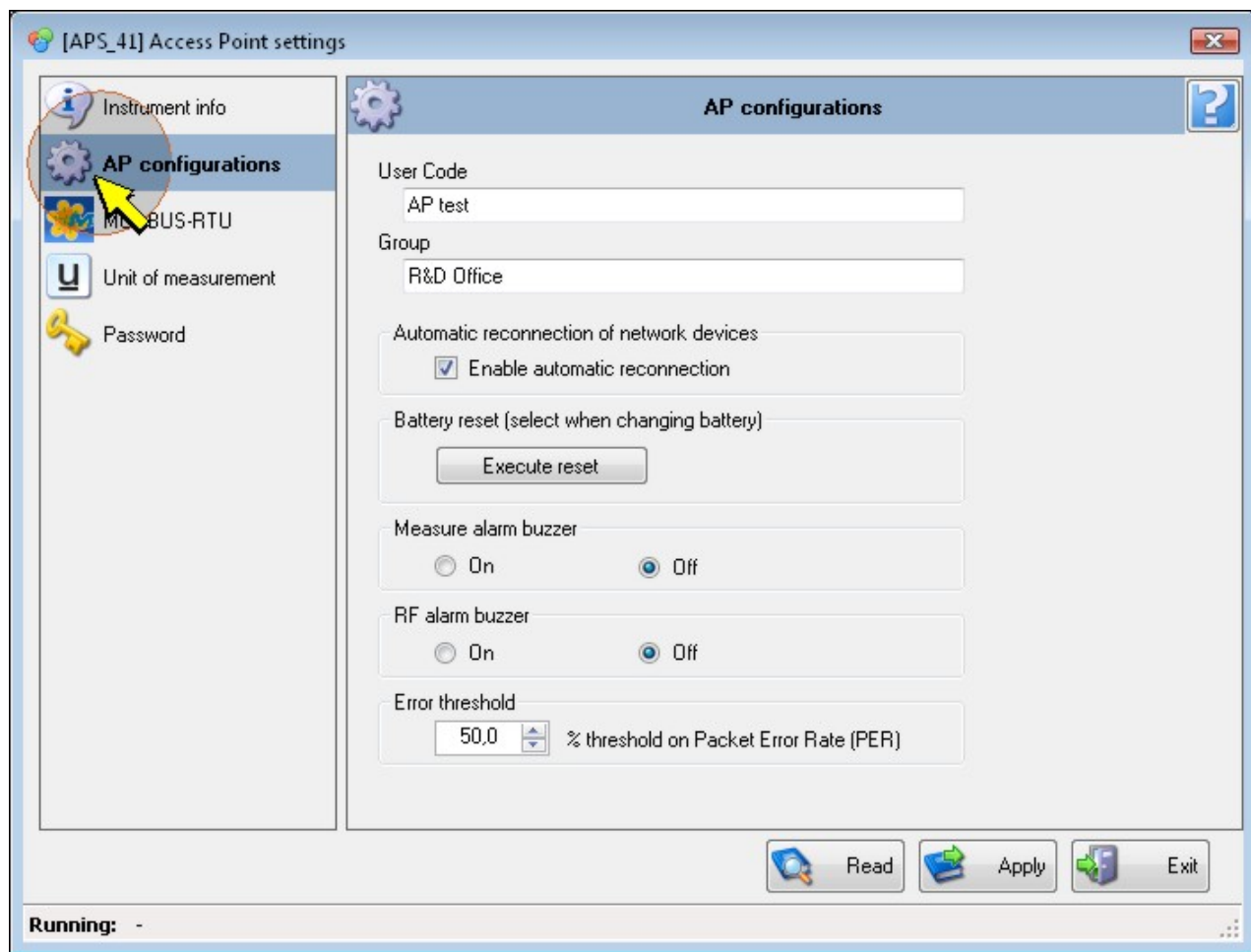
Unit of measurement: allows to set measurement units for temperature, atmospheric pressure and wind speed physical quantities.

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 [Wi-Fi and Ethernet local network settings](#).

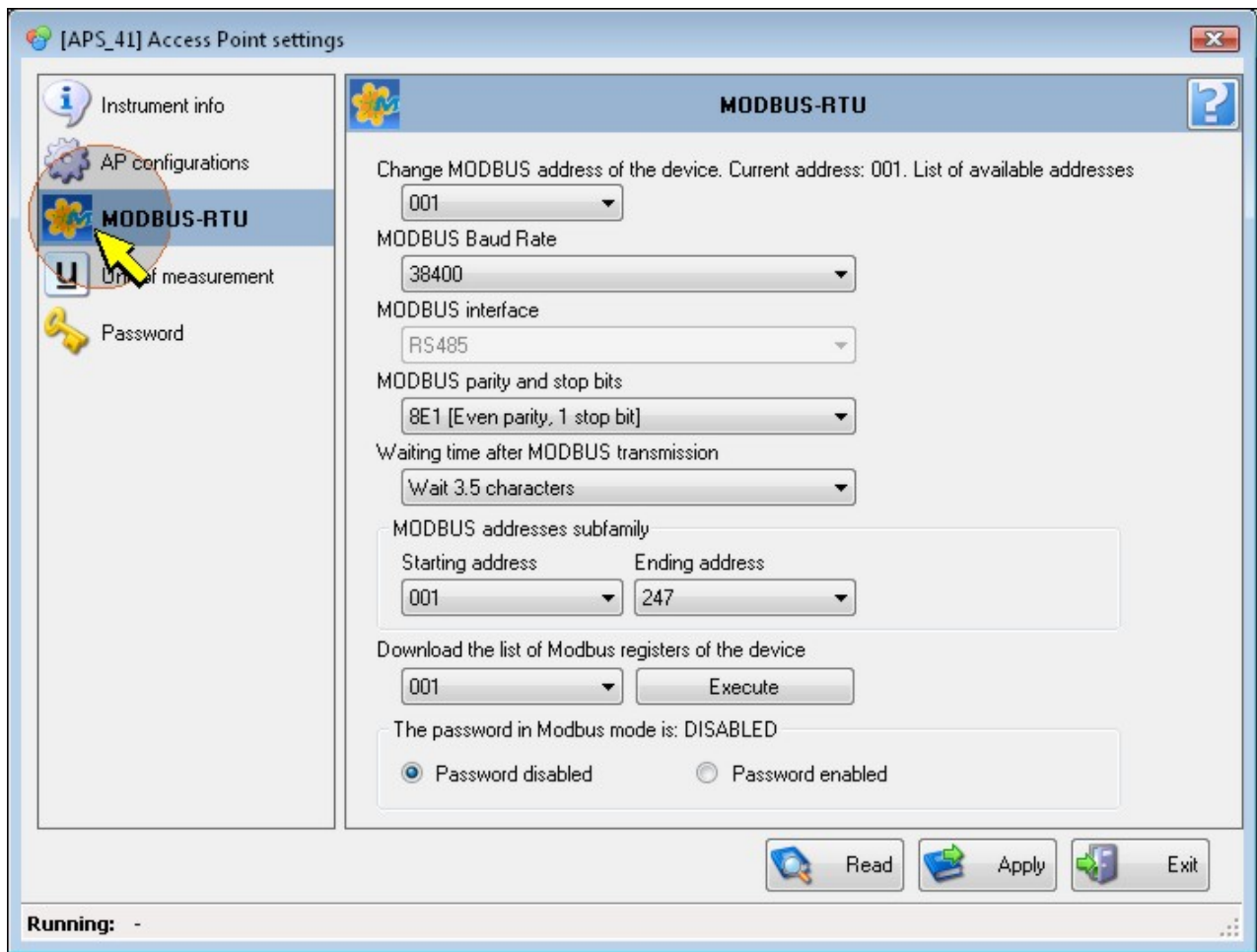
9.1. AP CONFIGURATIONS



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)



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:

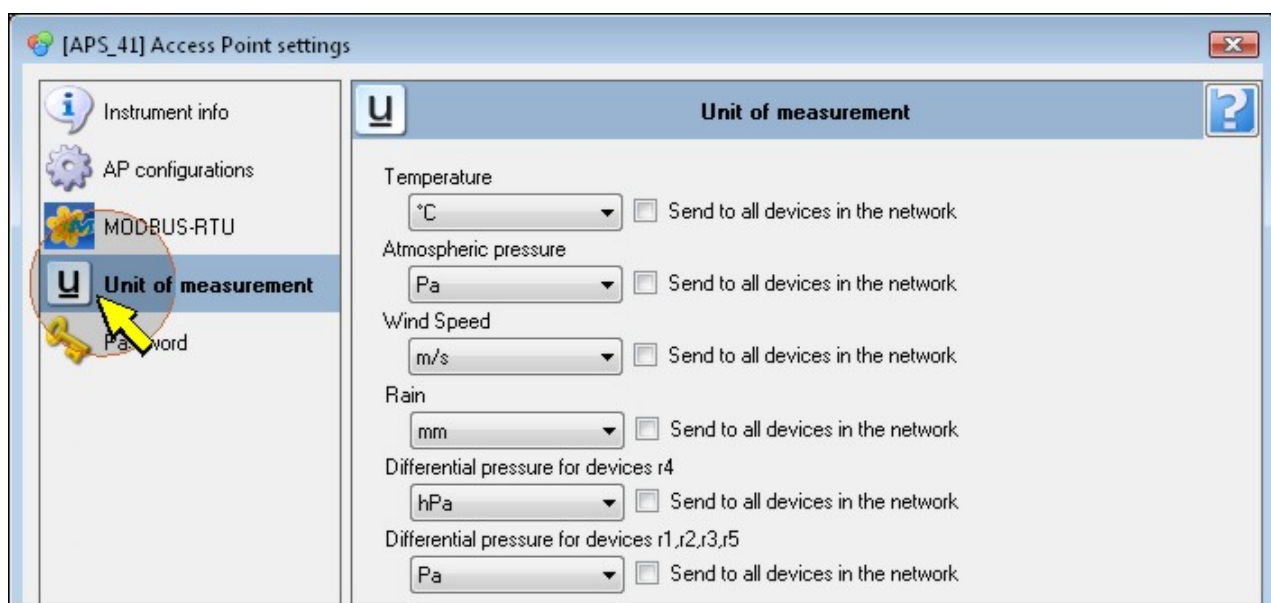
- Descriptive name of register
- Type and address of the register. The address is preceded by two letters which identify the type of register according to the following convention: **IS** = Discrete Input, **CS** = Coil, **IR** = Input Register, **HR** = Holding Register.
- Type of data

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	B	C	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



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, mmH₂O, inchHg, inchH₂O, 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).

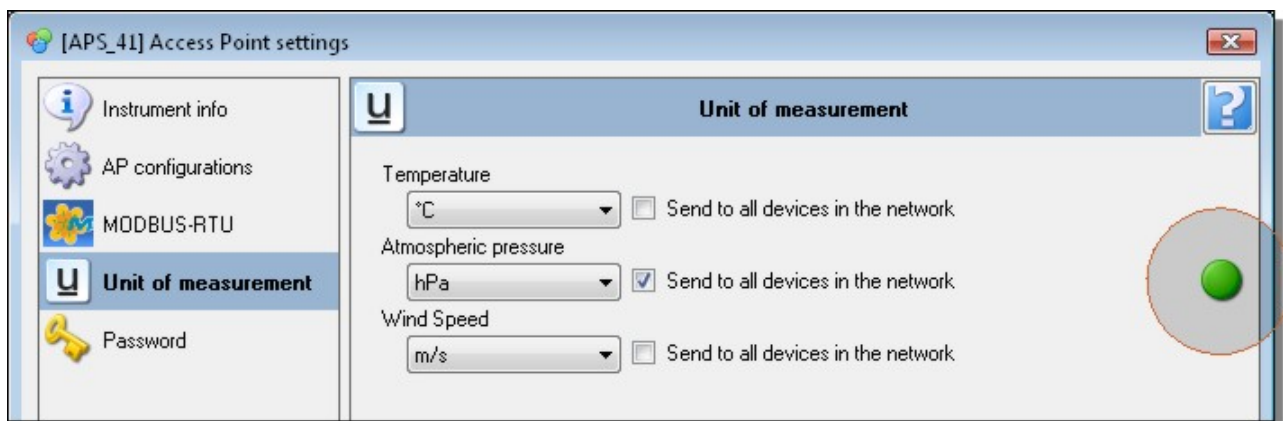
9.4. SETTING THE USER PASSWORD

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.

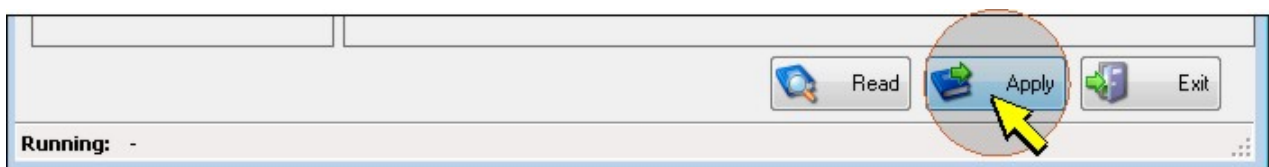


9.5. TRANSFERRING THE CONFIGURATION TO THE INSTRUMENT

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

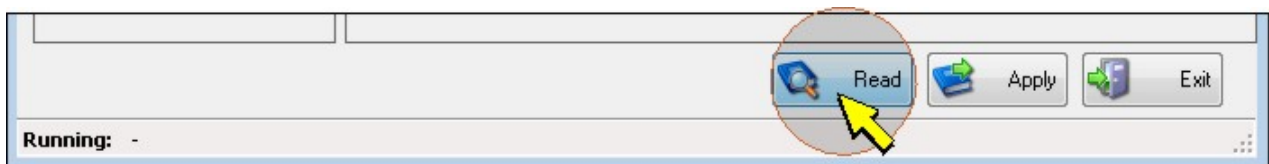


To apply the new settings, select *Apply* key; the green circles on the right side will disappear.



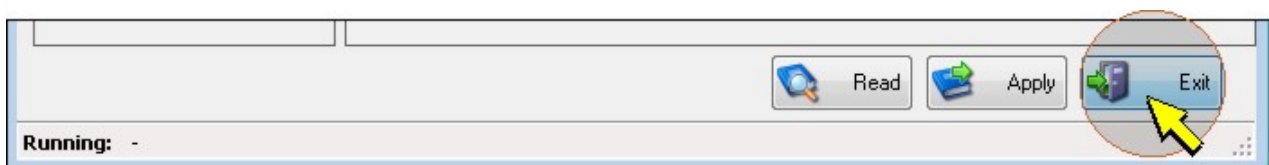
9.6. READING THE INSTRUMENT CURRENT CONFIGURATION

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*.



9.7. CLOSING THE CONFIGURATION WINDOW

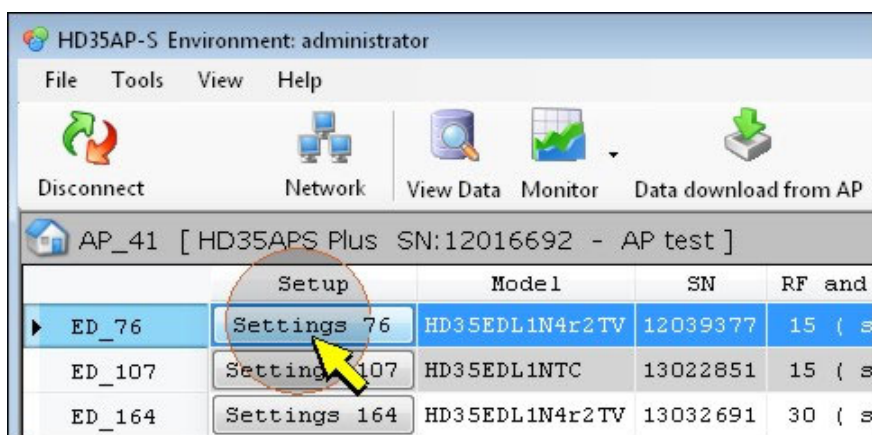
By selecting the *Exit* key, the *Access Point settings* window is closed.



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

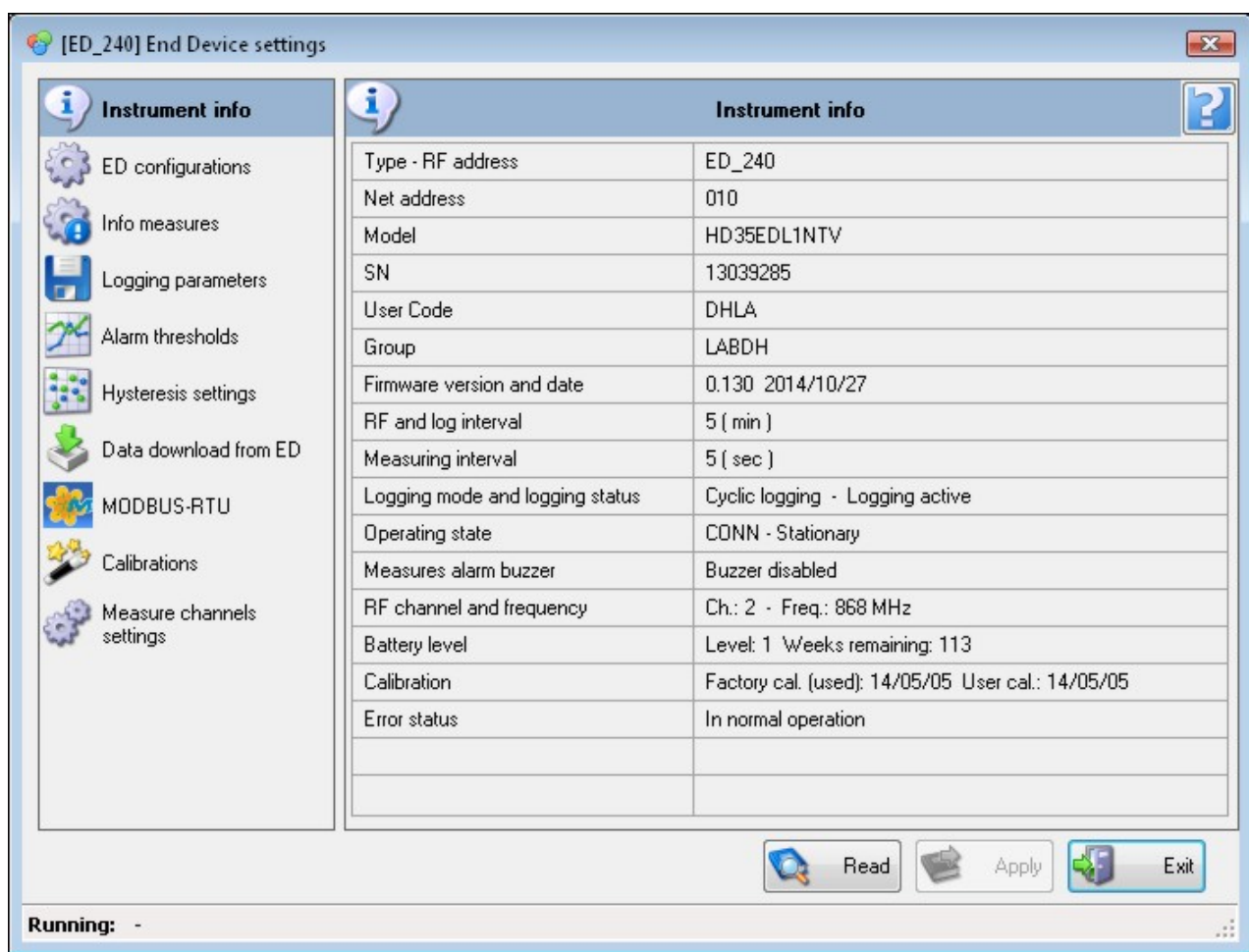
10. HD35ED... AND HD50... DATA LOGGERS CONFIGURATION

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



Note: if *Setup* column is not displayed, please consult paragraph [Main window description](#) 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.



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.

Alarm Thresholds: 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.

Hysteresis settings: 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.

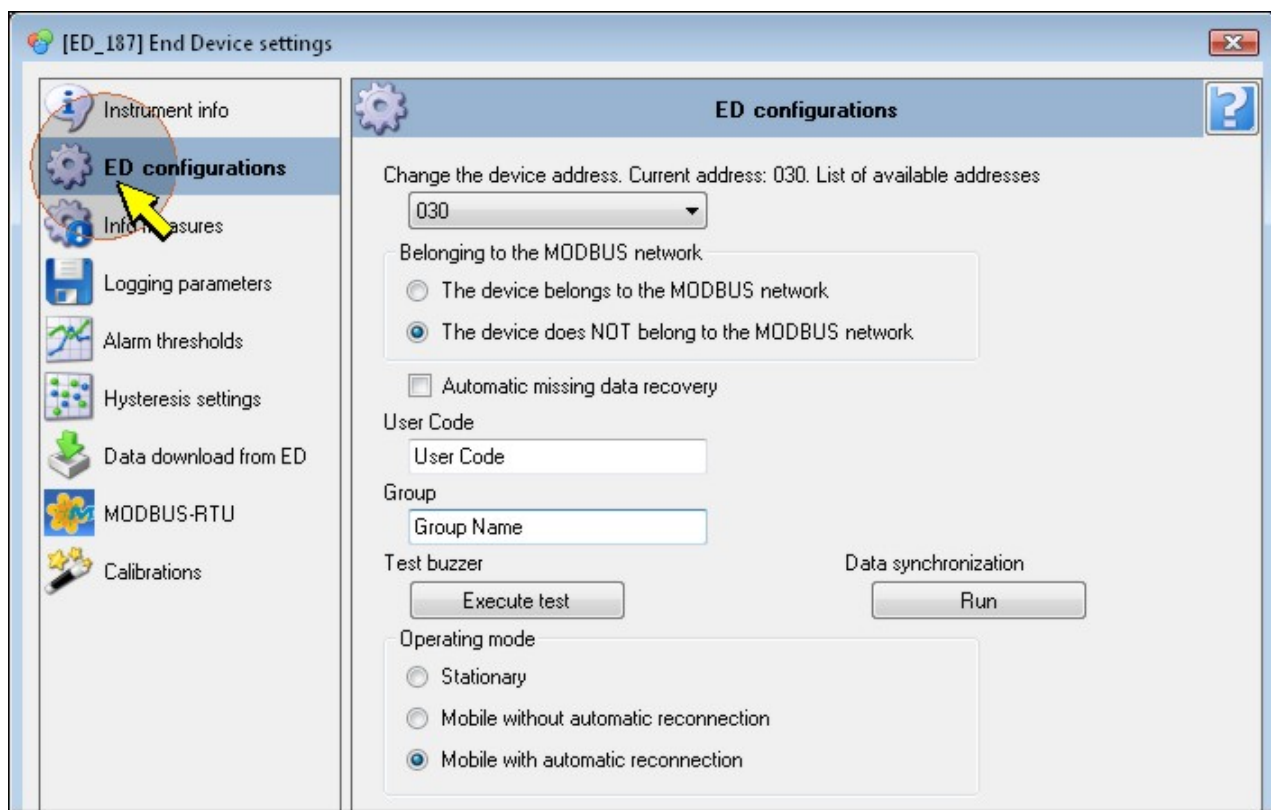
Calibrations: allows calibrating the relative humidity, CO, CO₂ and differential pressure sensors. The CO, illuminance and solar radiation sensor sensitivity can also be set. The section is not available if the model does not have sensors that can be calibrated.

Inputs setup: 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*.

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

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

10.1. ED CONFIGURATIONS



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).

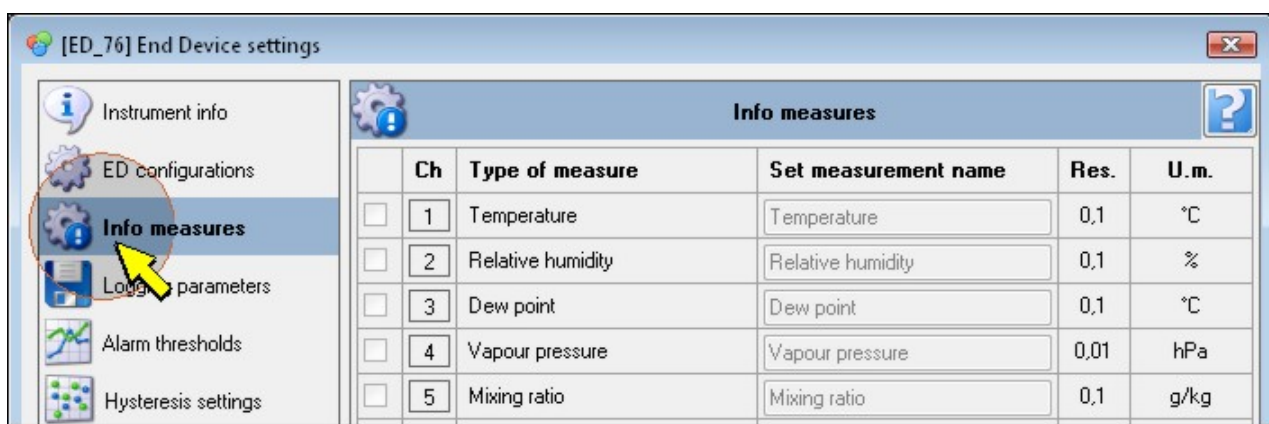
Note: enabling the option can reduce the battery life of the device due to the higher number of transmissions.

- **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 automatic synchronization, e.g. due to RF coverage problems, it is possible to perform a manual synchronization later by selecting the key *Execute*.

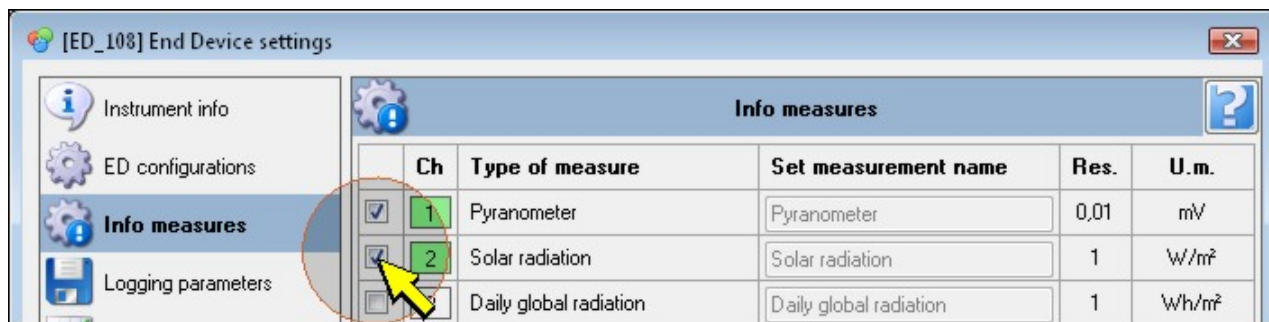
10.2. INFO MEASURES



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*).

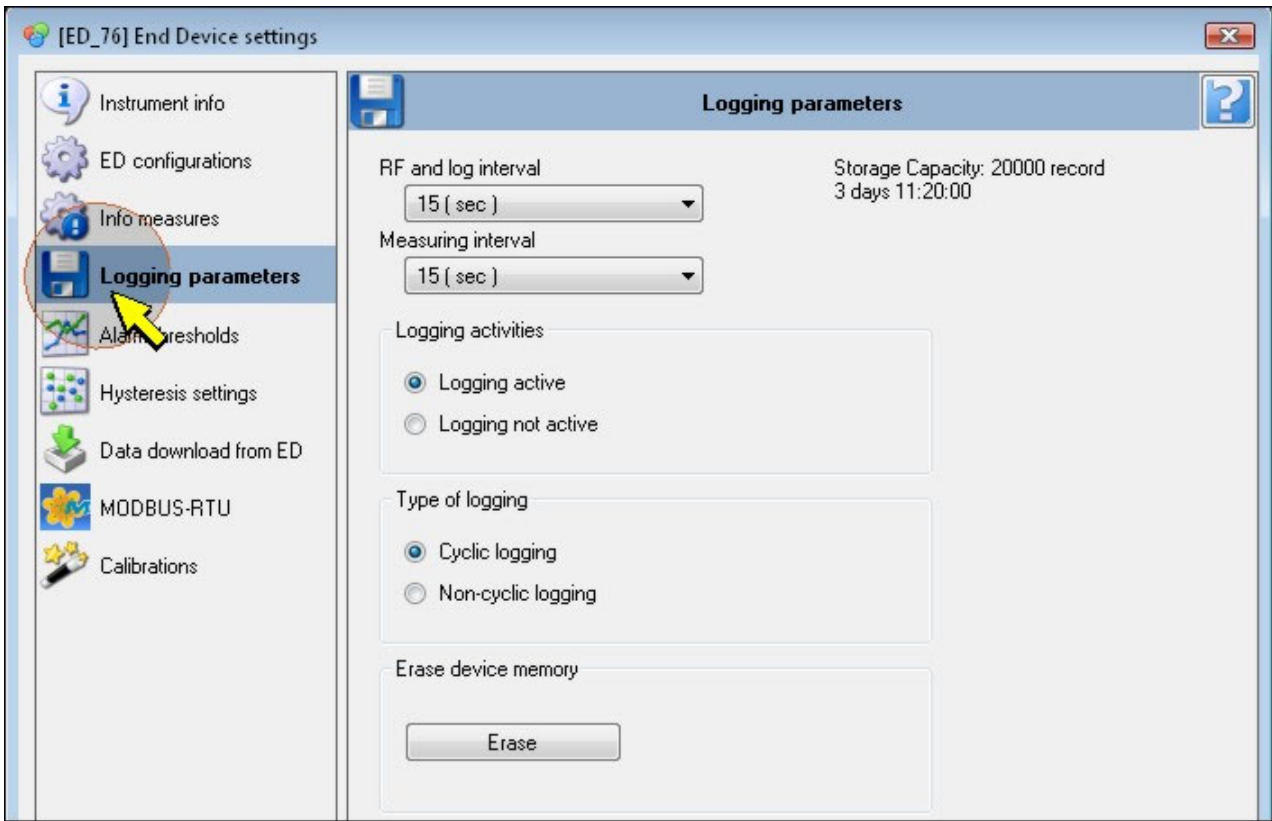
If the device measures more quantities of the same type (for example two temperatures), in the *Set measurement name* field can be entered a name to distinguish the quantities of the same type.

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.



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

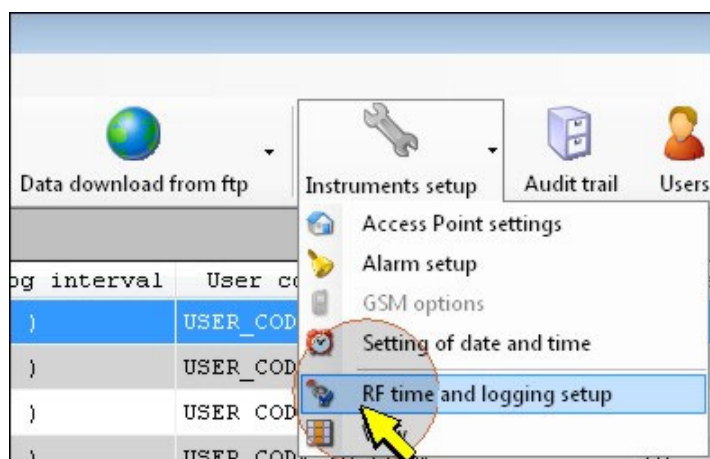
10.3. LOGGING PARAMETERS



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 .

 A screenshot of the 'RF time and logging setup' window. It features a table with columns for 'RF and log interval', 'Measuring interval', 'Logging activities', and 'Type of logging'. The table lists four devices: ED_76, ED_107, ED_164, and ED_92. Each device row has dropdown menus for intervals and checkboxes for 'Logging active' and 'Cyclic logging'. The first row (header) has a green square on the left of the 'RF and log interval' column.

	RF and log interval	Measuring interval	Logging activities	Type of logging
	<input type="checkbox"/> 1 (sec)	<input type="checkbox"/> 1 (sec)	<input type="checkbox"/> Logging active	<input type="checkbox"/> Cyclic logging
ED_76	15 (sec)	15 (sec)	<input checked="" type="checkbox"/> Logging active	<input checked="" type="checkbox"/> Cyclic logging
ED_107	15 (sec)	15 (sec)	<input checked="" type="checkbox"/> Logging active	<input checked="" type="checkbox"/> Cyclic logging
ED_164	30 (sec)	5 (sec)	<input checked="" type="checkbox"/> Logging active	<input checked="" type="checkbox"/> Cyclic logging
ED_92	15 (sec)	15 (sec)	<input checked="" type="checkbox"/> Logging active	<input checked="" type="checkbox"/> 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); de-select option to interrupt data recording when memory gets full.

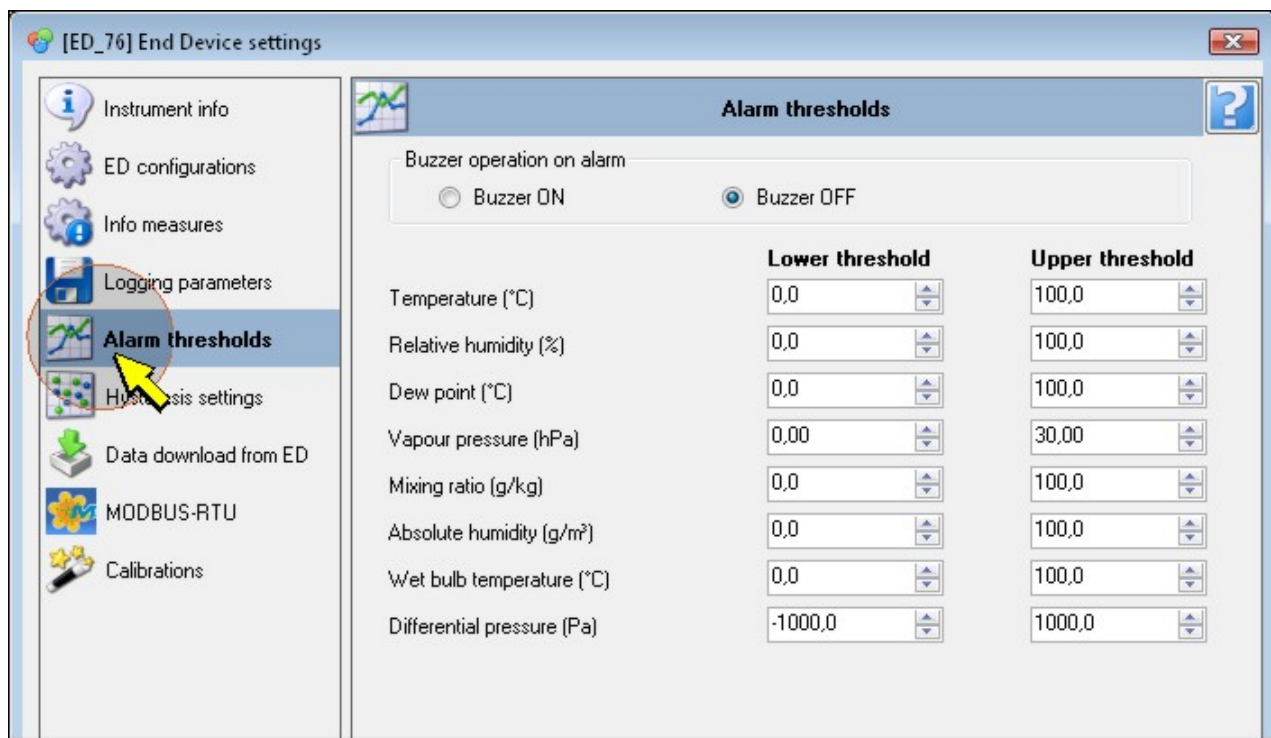
To configure an option at the same value in all the devices, set it in the first line under the heading of the column and select it in the check box near the option. The parameters that will be modified are highlighted by a green square at the left of the parameter.

 A screenshot of the 'RF time and logging setup' window, similar to the previous one, but with the first row (header) highlighted. A yellow mouse cursor is pointing at the 'Logging active' checkbox in the first row. A green square is visible on the left of the 'RF and log interval' column for the first row.

	RF and log interval	Measuring interval	Logging activities	Type of logging
	<input checked="" type="checkbox"/> 15 (sec)	<input type="checkbox"/> 1 (sec)	<input type="checkbox"/> Logging active	<input type="checkbox"/> Cyclic logging
ED_76	15 (sec)	15 (sec)	<input checked="" type="checkbox"/> Logging active	<input checked="" type="checkbox"/> Cyclic logging
ED_107	15 (sec)	15 (sec)	<input checked="" type="checkbox"/> Logging active	<input checked="" type="checkbox"/> Cyclic logging
ED_164	15 (sec)	5 (sec)	<input checked="" type="checkbox"/> Logging active	<input checked="" type="checkbox"/> Cyclic logging
ED_92	15 (sec)	15 (sec)	<input checked="" type="checkbox"/> Logging active	<input checked="" type="checkbox"/> 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



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.

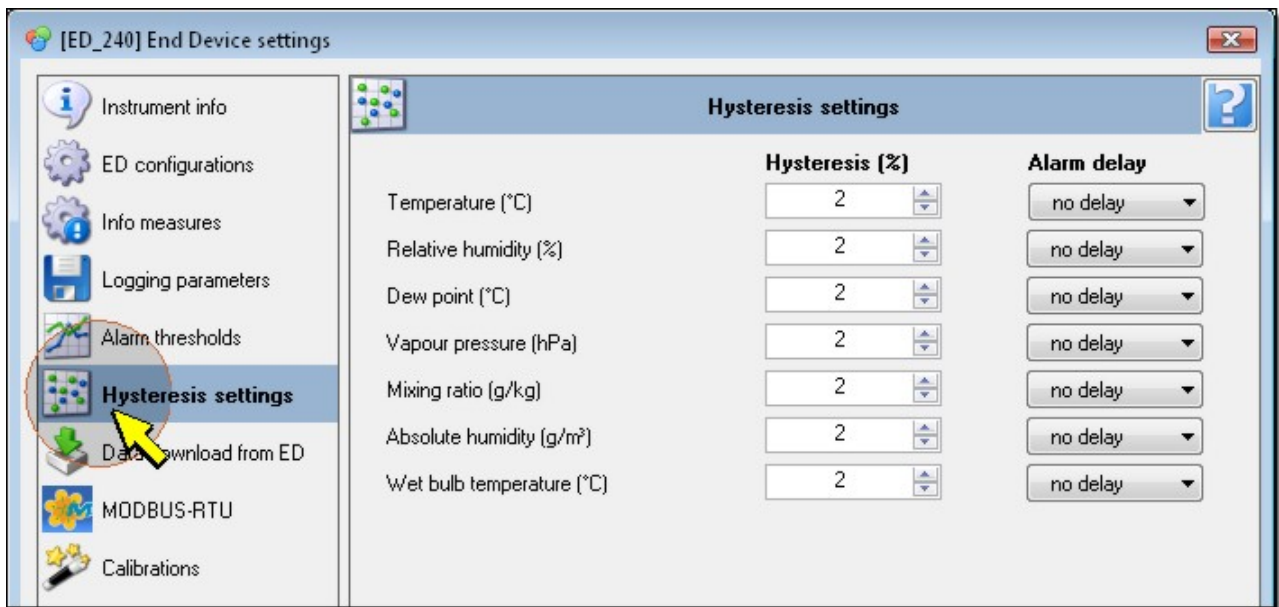
To signal the alarm condition also by SMS/e-mail or by the HD35ED-ALM alarm module (if installed in the HD35 network) please consult section [Alarm setup](#).

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.



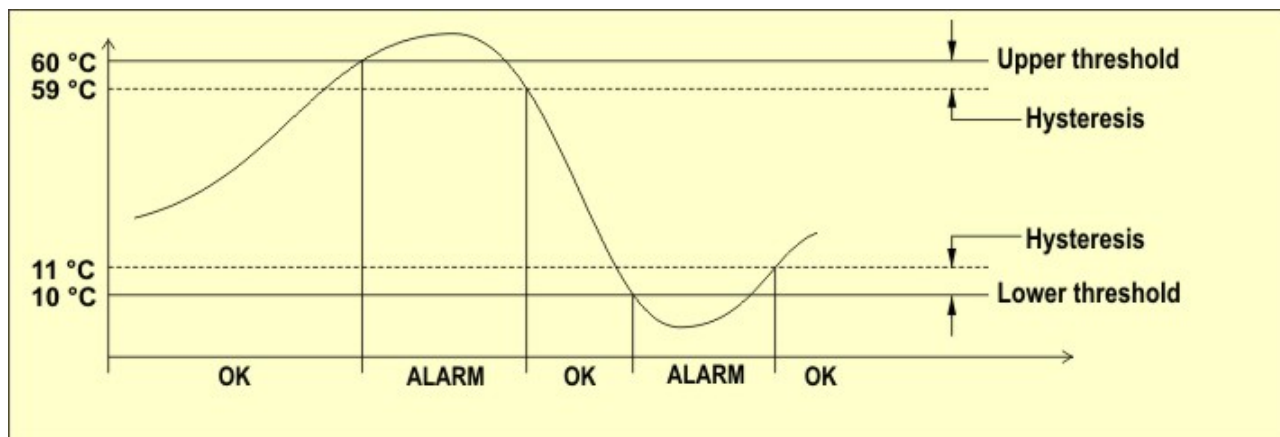
10.5. HYSTERESIS SETTINGS

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.



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 $(60-10) \times 2 / 100 = 1$ °C:

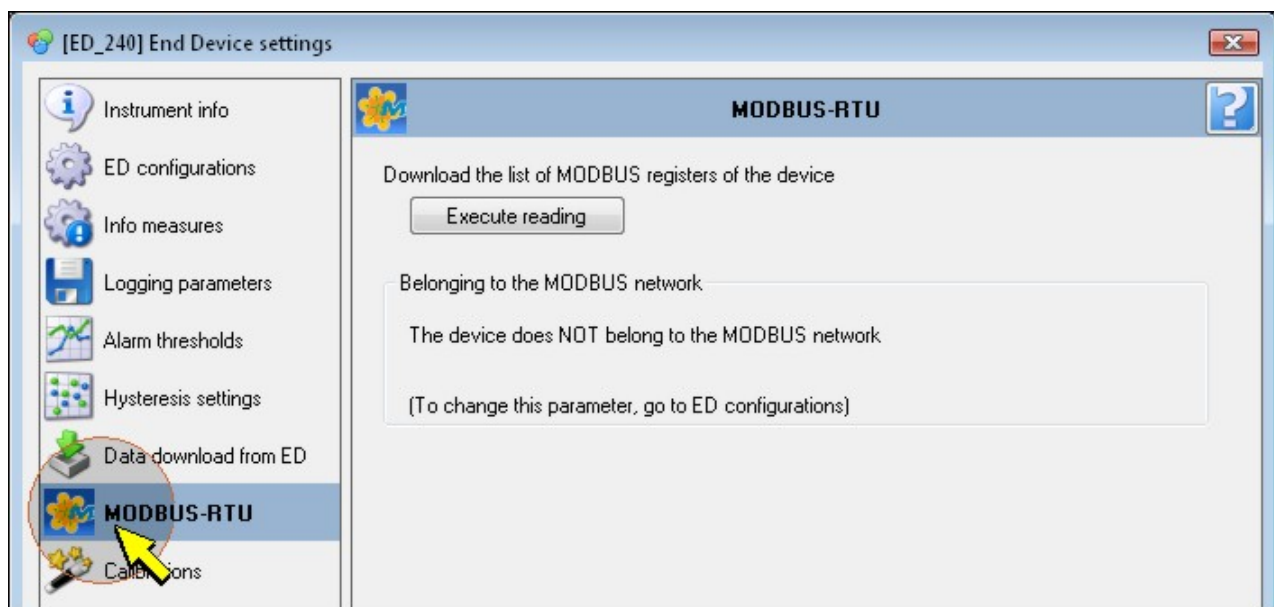


If the measured value drops below the lower threshold or exceeds the upper threshold, the alarm is generated after the time set in the *Alarm delay* field. The alarm is generated immediately if *no delay* is selected. If the alarm condition ends before the delay time is elapsed, the alarm is not generated.

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

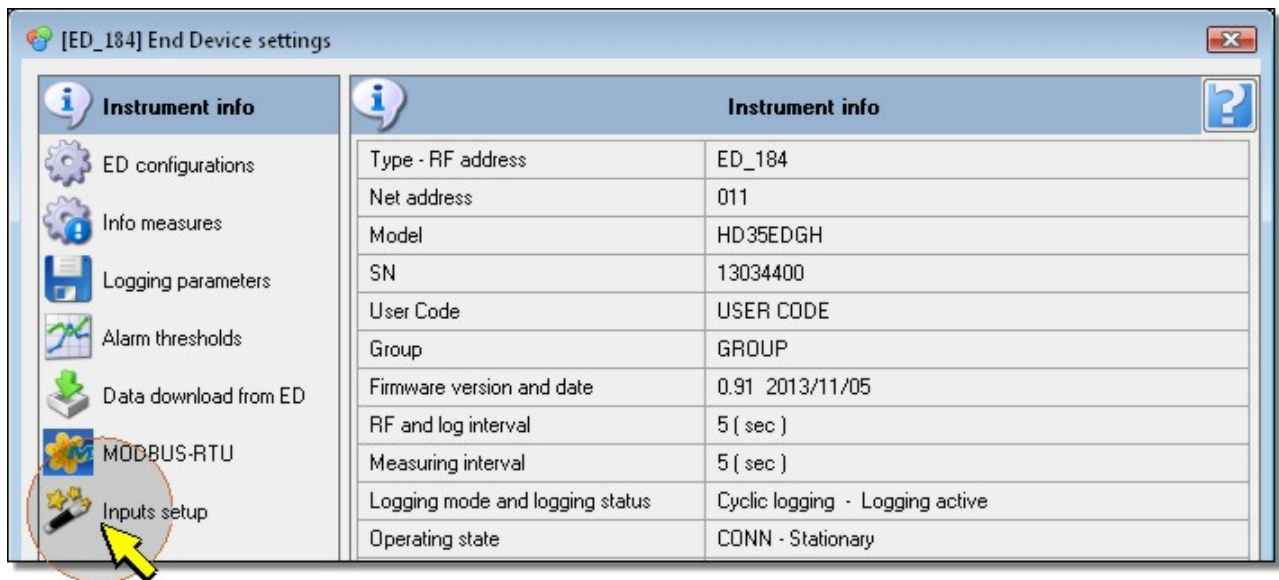
For a few registers there is also a brief description available. The file can be imported in Excel to obtain the alignment of the fields:

	A	B	C	D
1	RE_INTERF	IS00000	bit	interference caused by multiple REs
2	MISSSED_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	

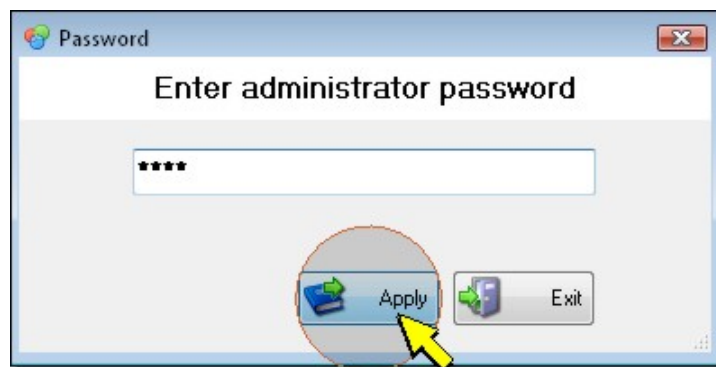
Please refer to the chapter *MODBUS* of the manual of the data logging systems for the complete list of the registers and details on their use.

10.7. INPUTS SETUP

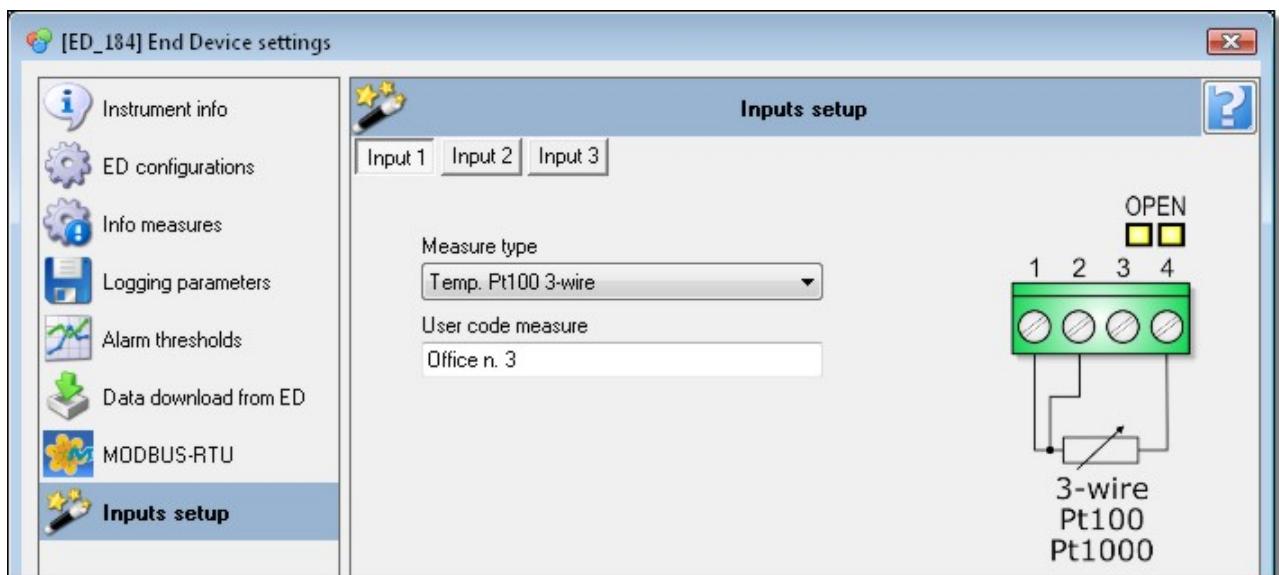
Select *Inputs setup* section from the *End Device settings* window in order to configure the inputs in the models with configurable inputs (for example HD35ED7P/3TC, HD35EDWK/4TC, HD35EDH, HD35EDWH, ...).



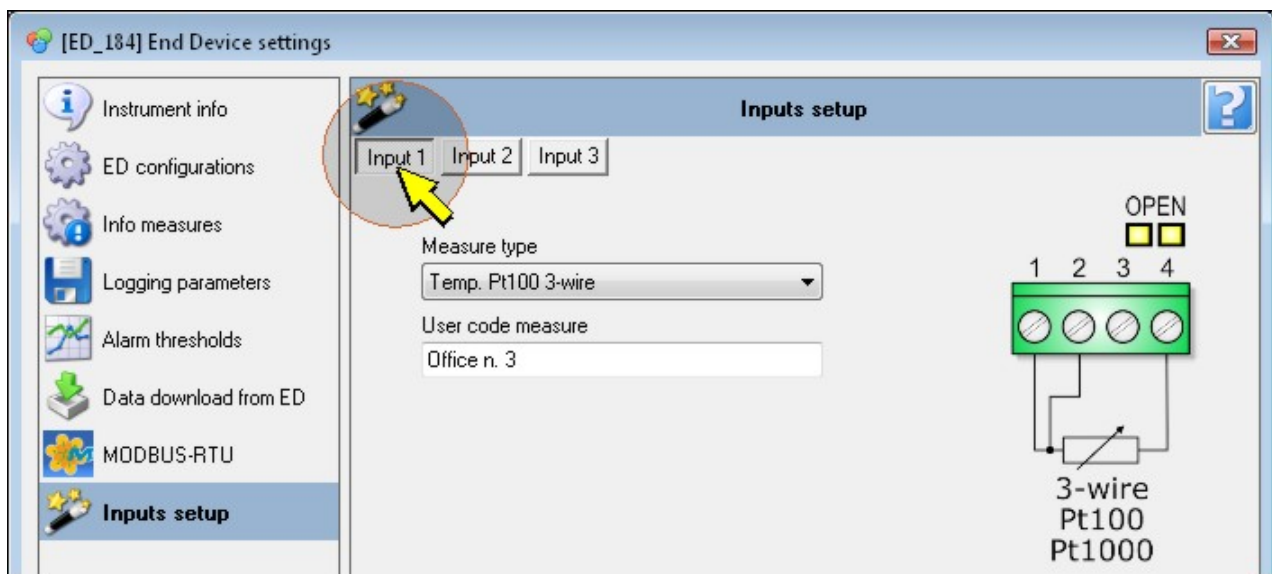
You are prompted for an administrator password. Enter the password and press *Apply*.



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



Select the input to be configured.

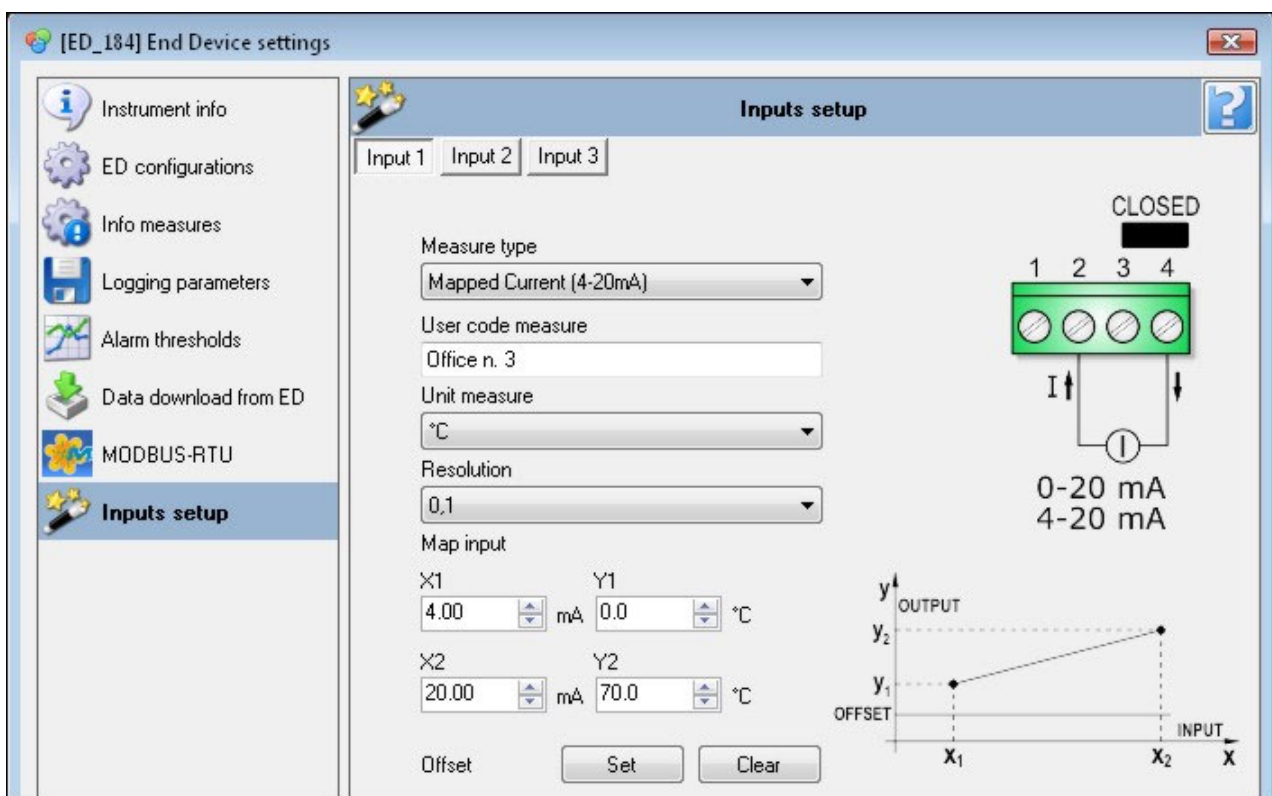


Select the measurement type among those available and enter in the field *User code measure* an identifying name for the measure. The ASCII characters from 32 (blank) to 126 (~) are accepted.

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.



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)

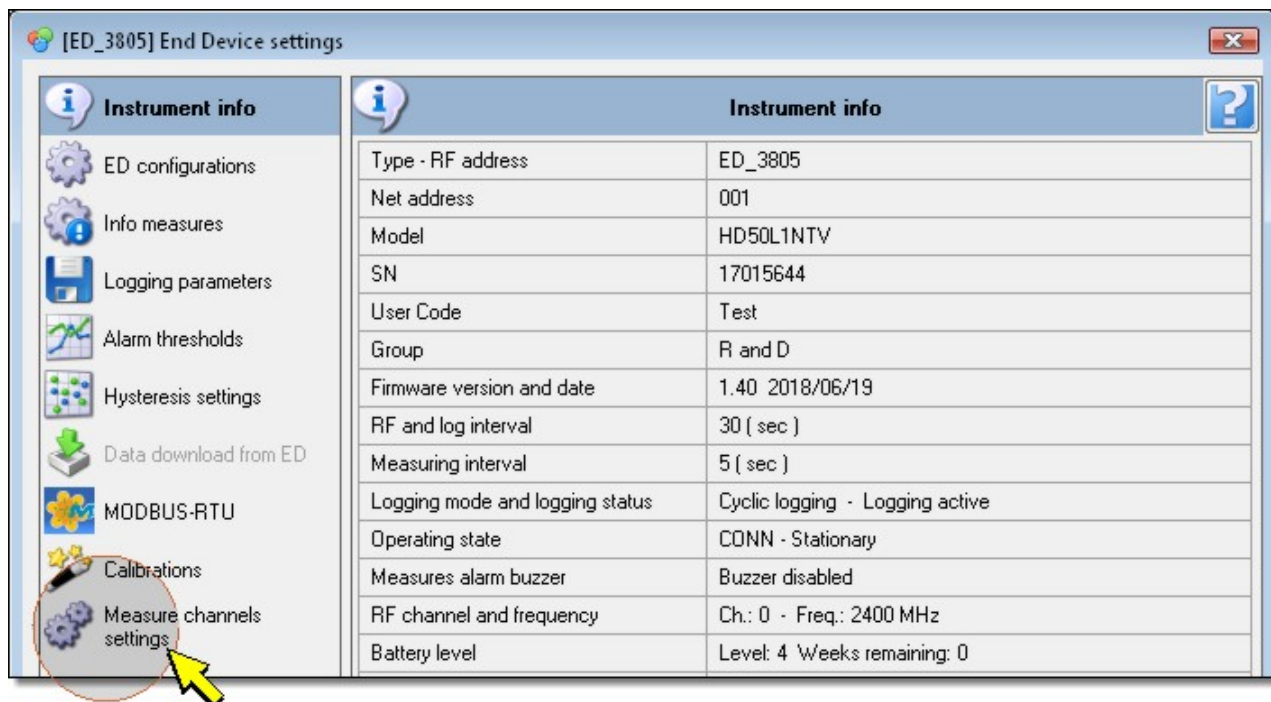
X2 = value of input signal in the second point (e.g. 20.00 mA)

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

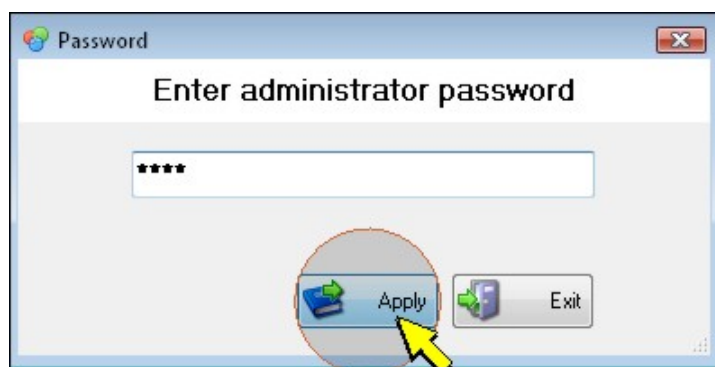
Press the key *Set* to apply to the measure an offset equal to the opposite of the currently measured value (the current measure becomes equal to zero). Press the key *Clear* to cancel the applied offset.

10.8. IMEASURE CHANNELS SETTINGS

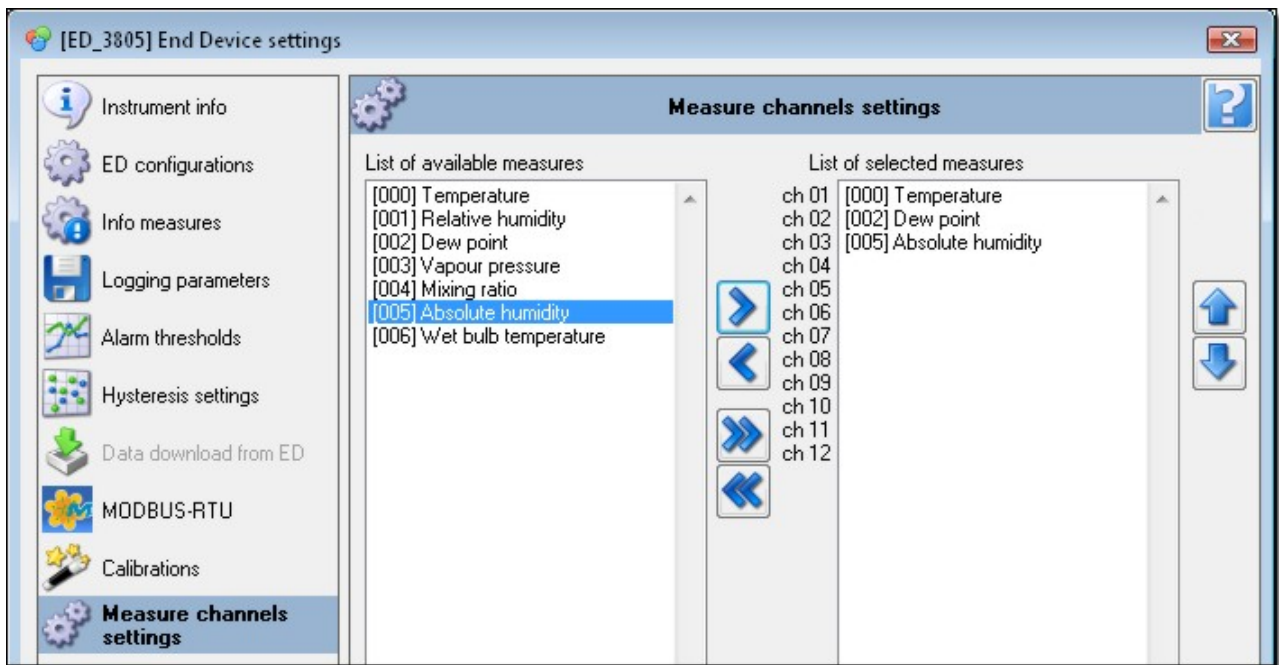
Select *Measure channels settings* section from the *End Device settings* window in order to change the order of the device quantities displayed in the [measurements window](#) of the software.



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





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.

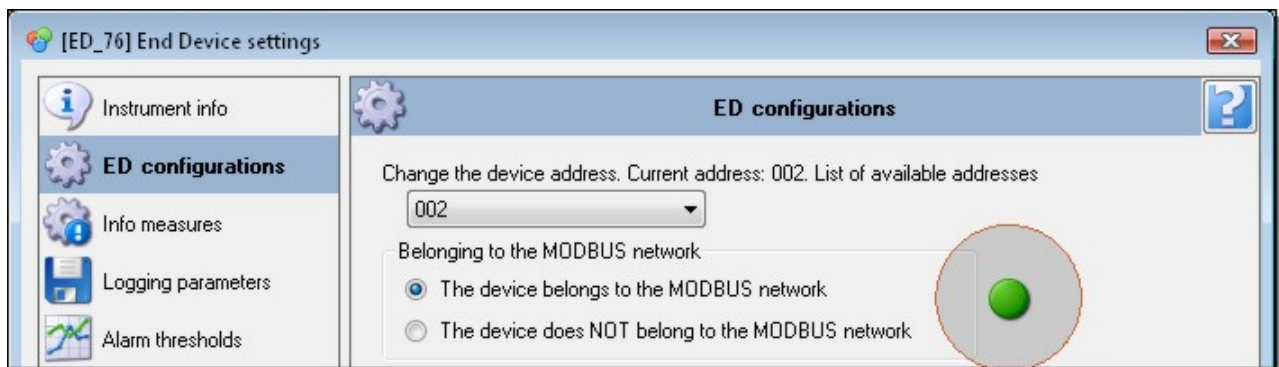
In order to hide one or more quantities, select the required quantities in the right column and press the  key.

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

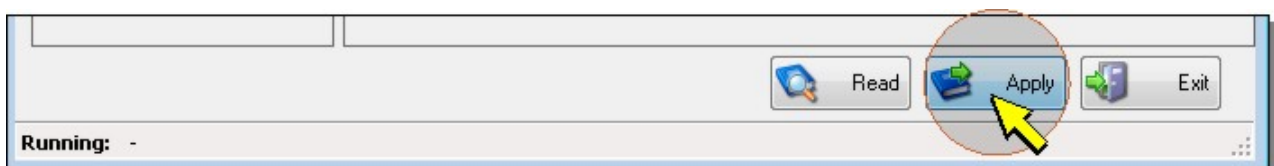
In order to change the position of a displayed quantity, select it in the right column and press  or  to respectively forward or backward it.

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.

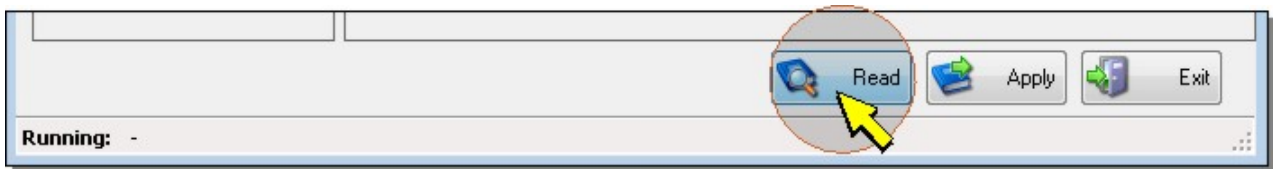


To confirm new settings and apply them to selected device, press the *Apply* key. The green circle will disappear.



10.10. READING THE INSTRUMENT CURRENT CONFIGURATION

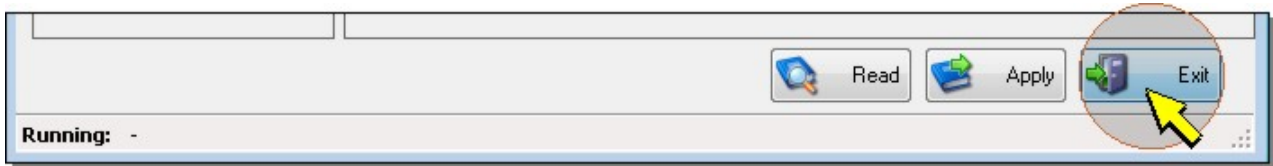
When *End Device setting* window is opened, displayed values are those currently set in the device. To read again the current configuration, for example to check if configuration procedure has been successful, select the *Read* button.



10.11.

10.12. CLOSING THE CONFIGURATION WINDOW

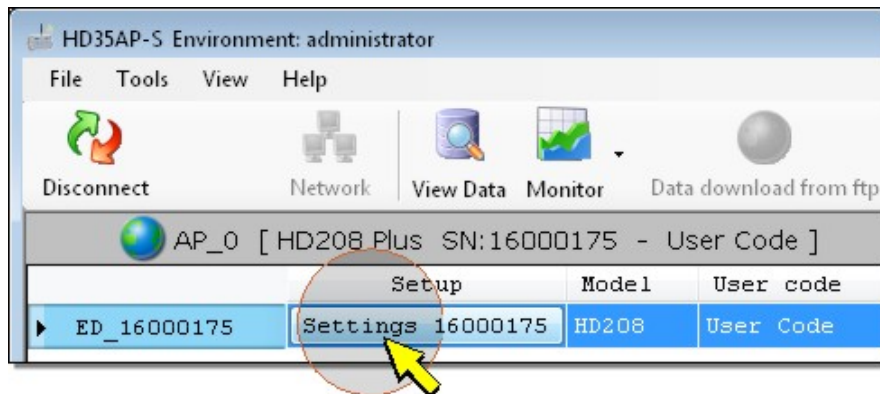
In order to close the *End Device settings* window, select *Exit* button.



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.

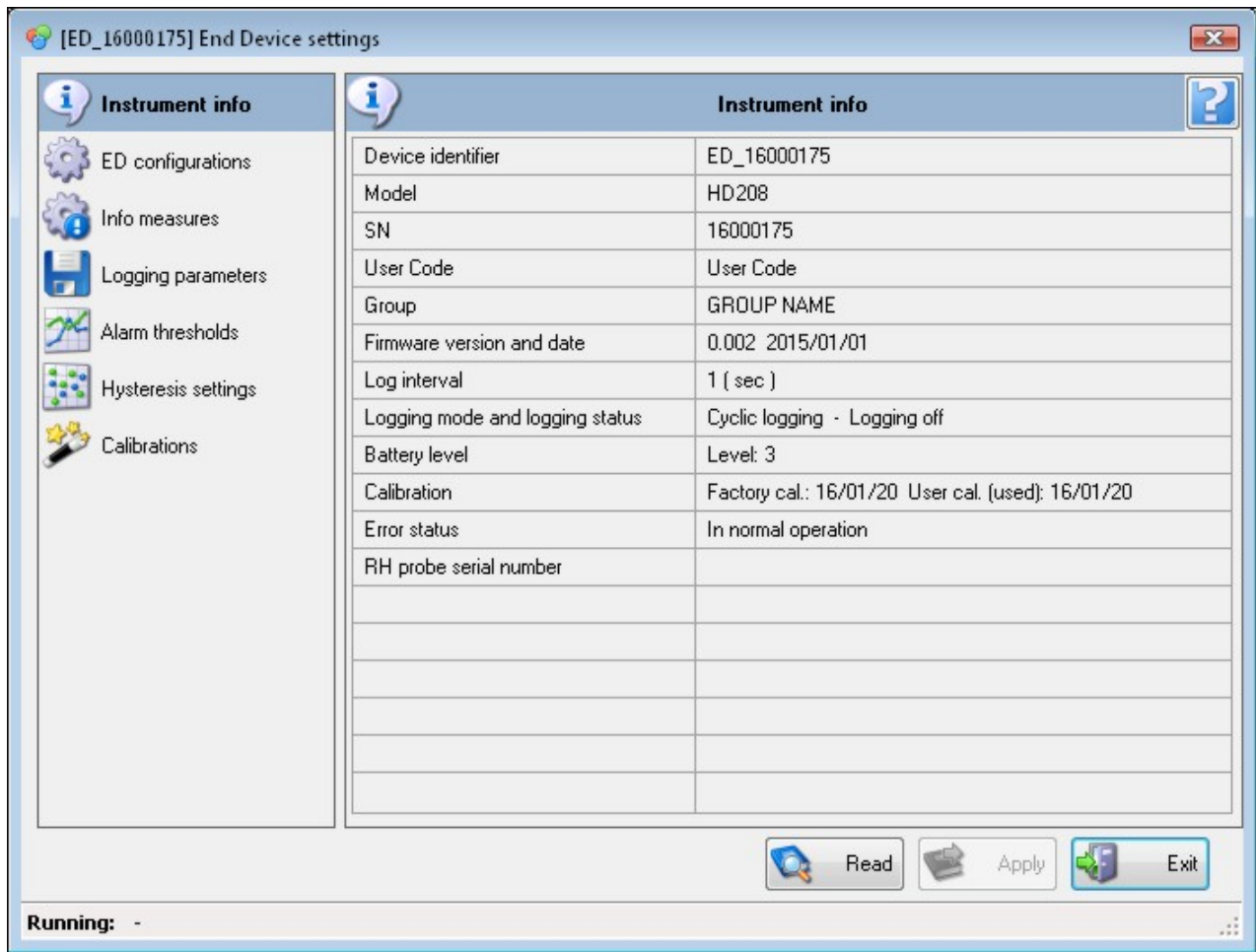
11. HD208... DATA LOGGERS CONFIGURATION

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



Note: if *Setup* column is not displayed, please consult paragraph [Main window description](#) 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.



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.

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

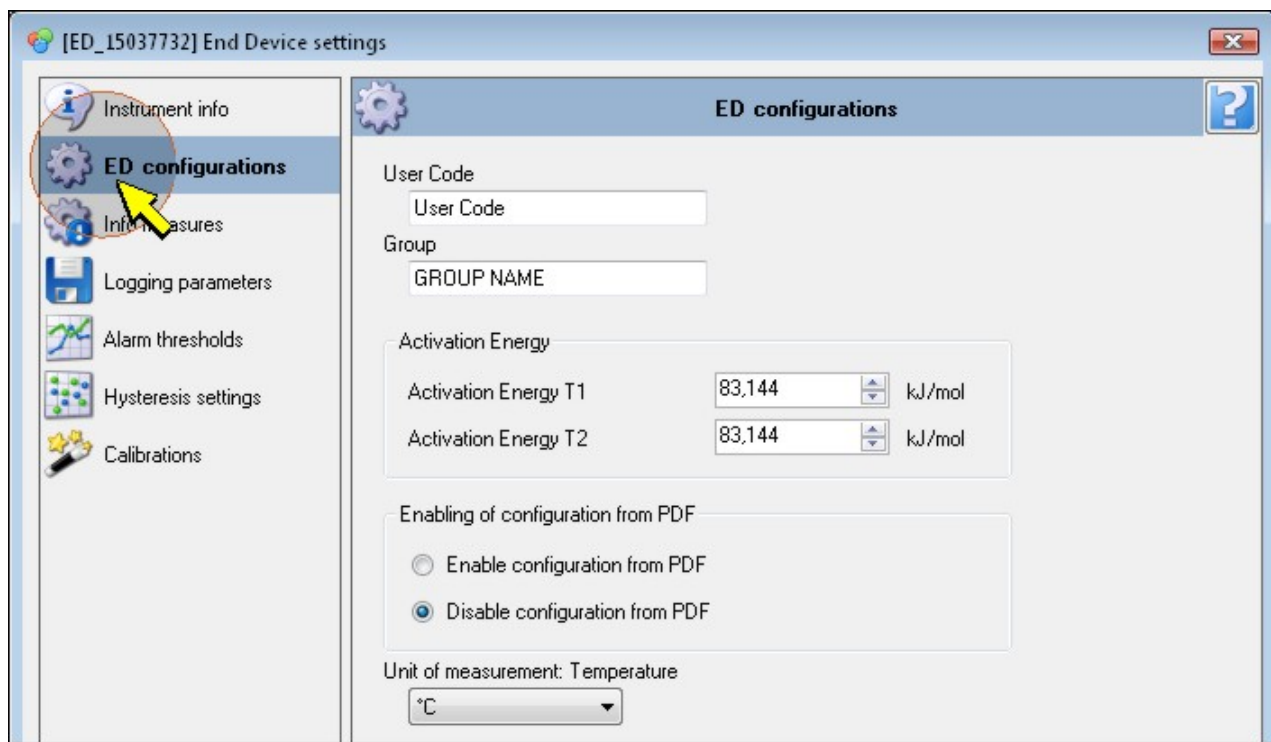
Logging parameters: allows to set the logging parameters and to erase the device memory.

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

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

Calibrations: allows to calibrate the sensors.

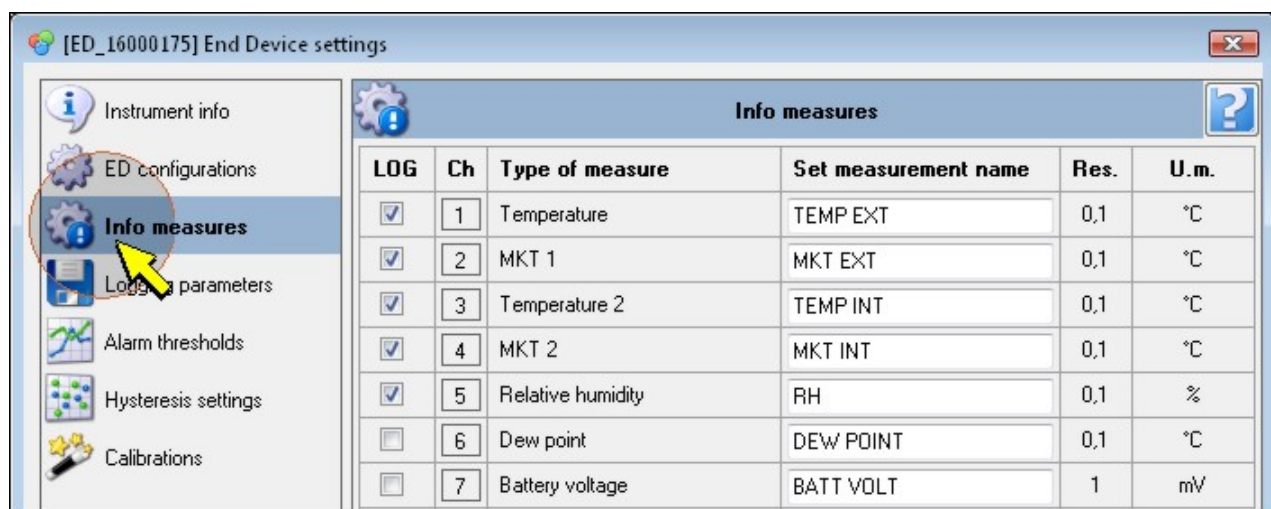
11.1. ED CONFIGURATIONS



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

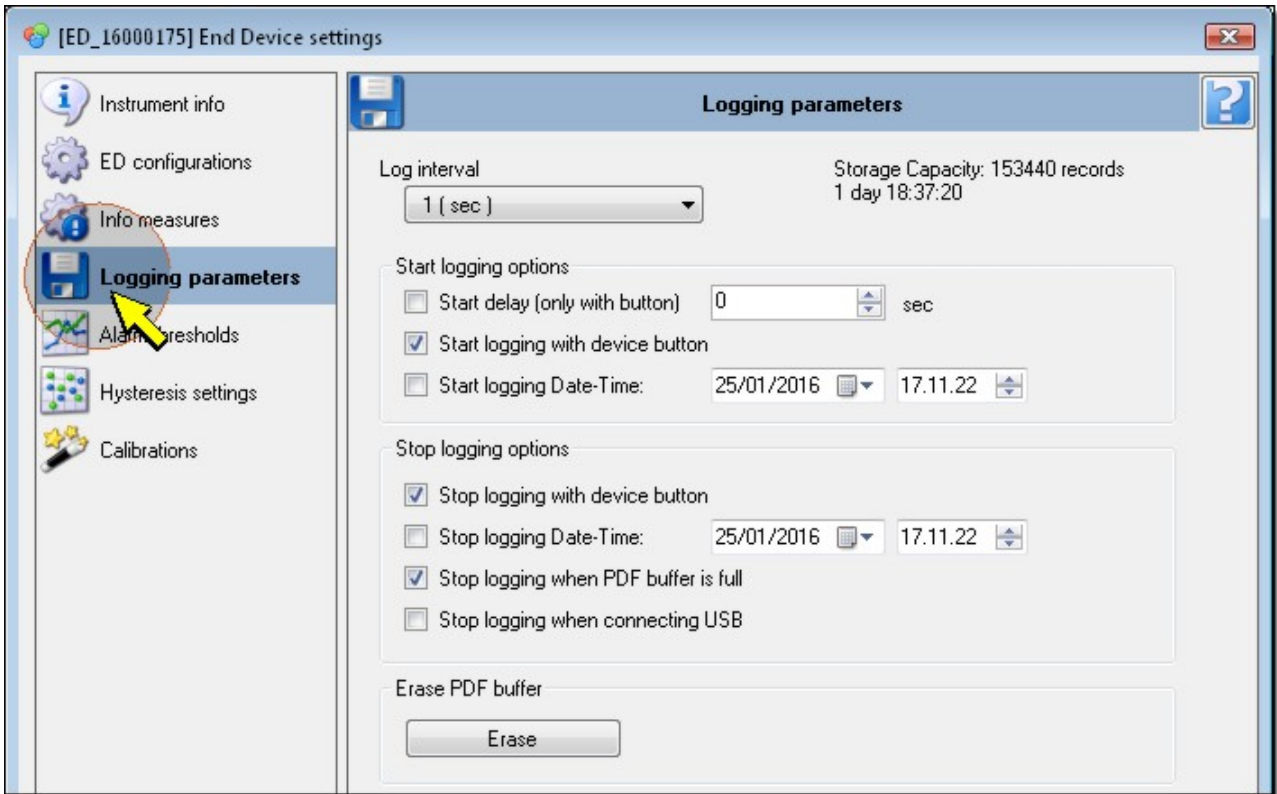


This section lists all physical quantities measured by that specific device. For each quantity resolution and measurement unit are given.

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.

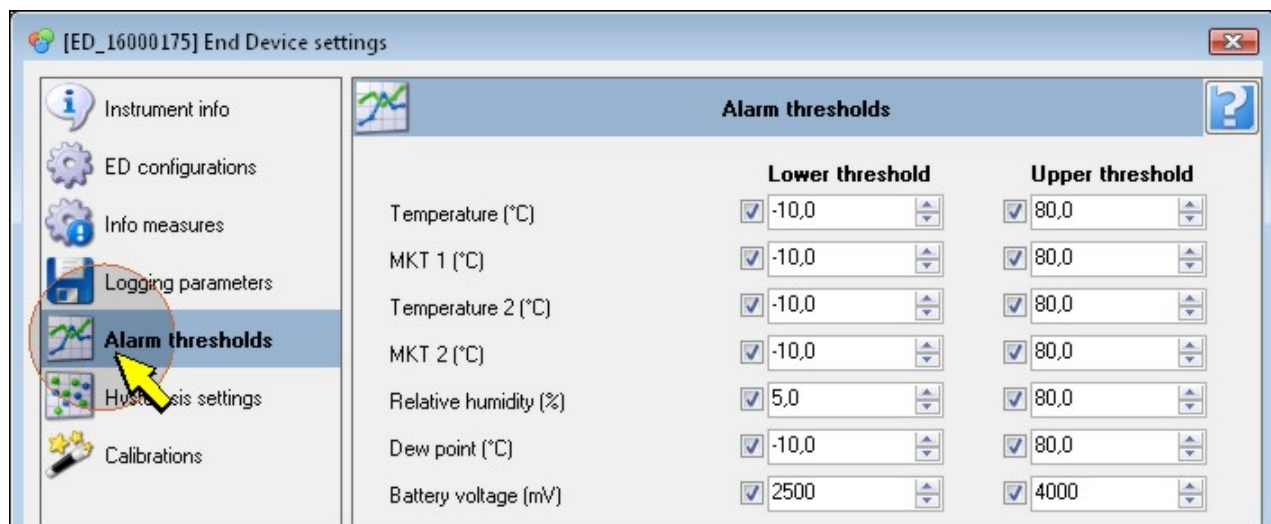
11.3. LOGGING PARAMETERS



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

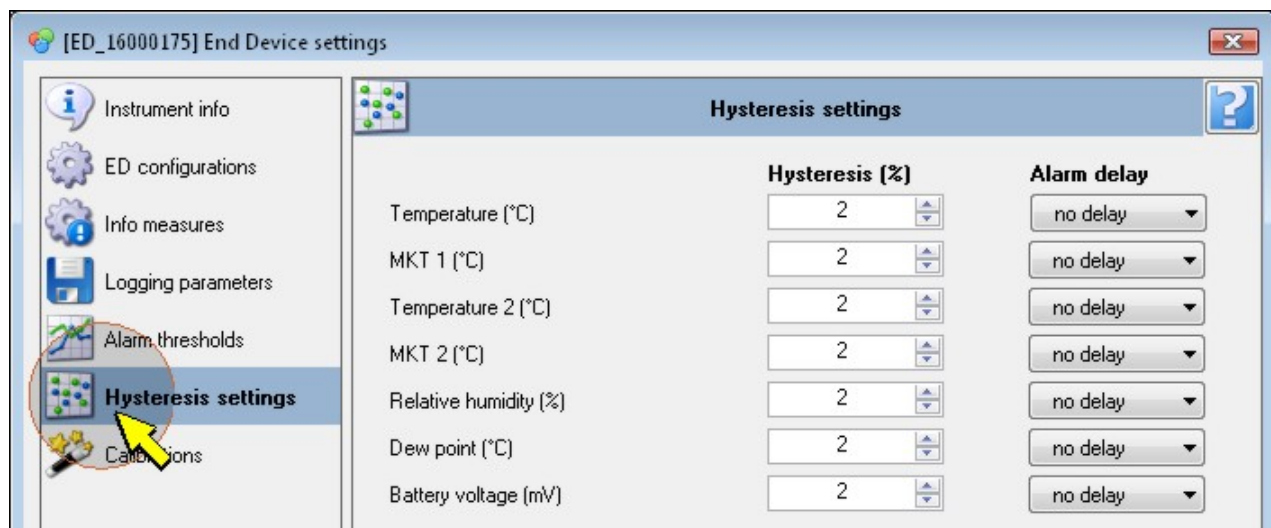


For each physical quantity acquired, two different alarm thresholds can be enabled and set. Alarm is generated when measured value drops below *Lower threshold* value, and when it exceeds the *Upper threshold* value.

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.

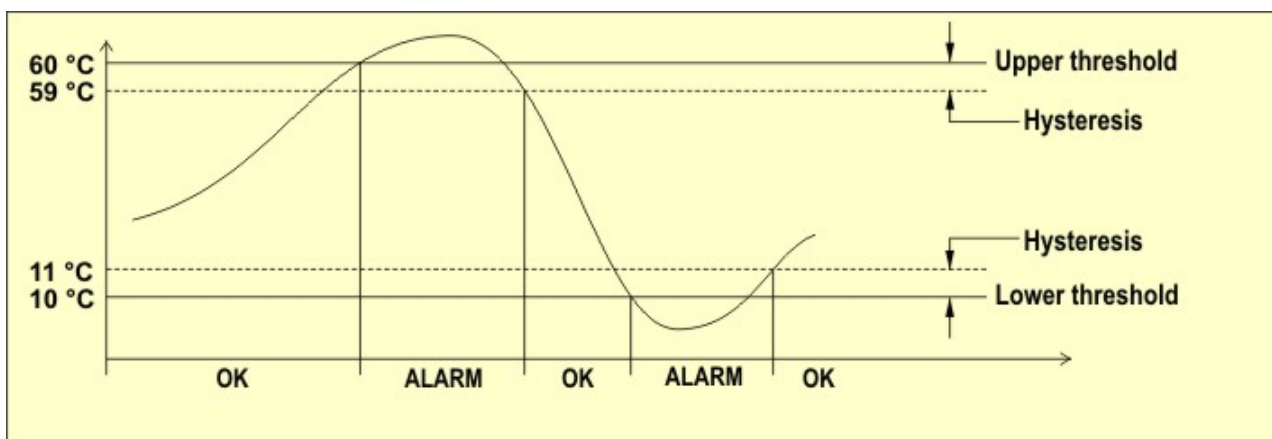


11.5. HYSTERESIS SETTINGS



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

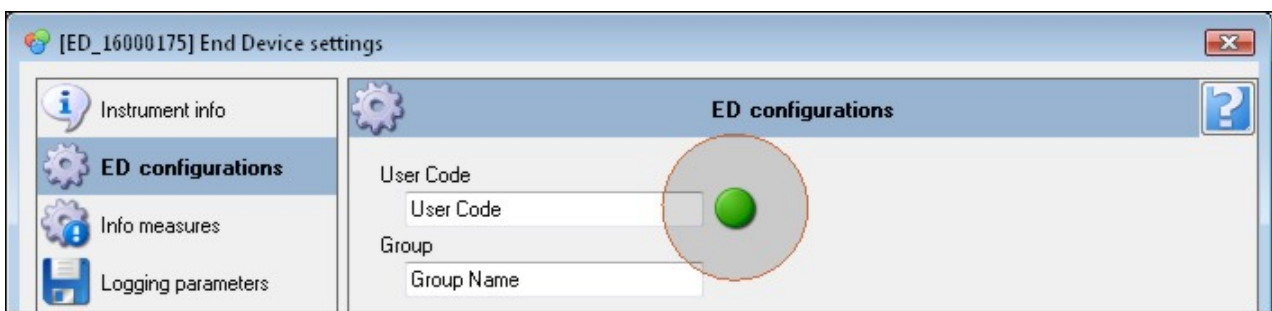
For example, if Hysteresis=2%, Lower threshold=10 °C and Upper threshold=60 °C, the hysteresis is $(60-10) \times 2 / 100 = 1$ °C.



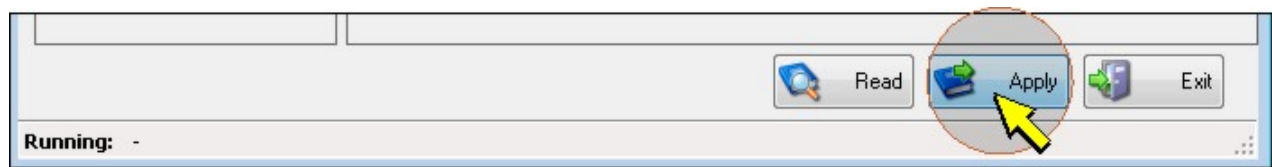
If the measured value drops below the lower threshold or exceeds the upper threshold, the alarm is generated after the time set in the *Alarm delay* field. The alarm is generated immediately if *no delay* is selected. If the alarm condition ends before the delay time is elapsed, the alarm is not generated.

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.

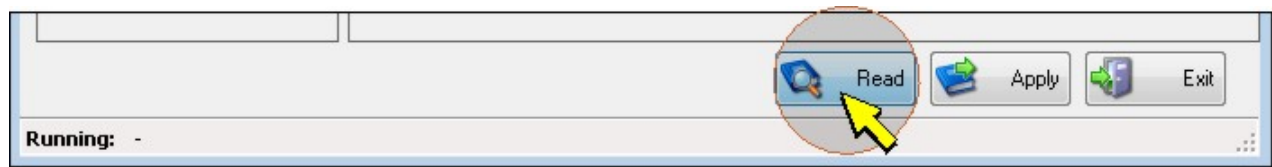


To confirm new settings and apply them to selected device, press the *Apply* key. The green circle will disappear.



11.7. READING THE INSTRUMENT CURRENT CONFIGURATION

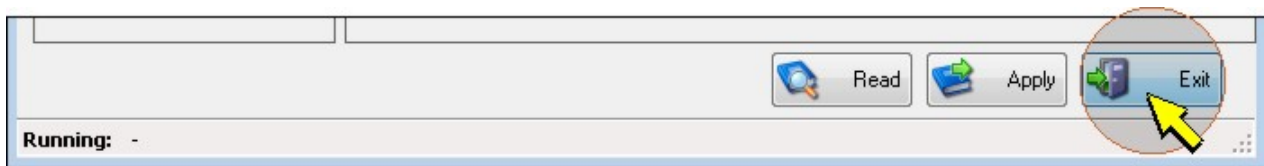
When *End Device setting* window is opened, displayed values are those currently set in the instrument. To read again the current configuration, for example to check if configuration procedure has been successful, select the *Read* button.



11.8.

11.9. CLOSING THE CONFIGURATION WINDOW

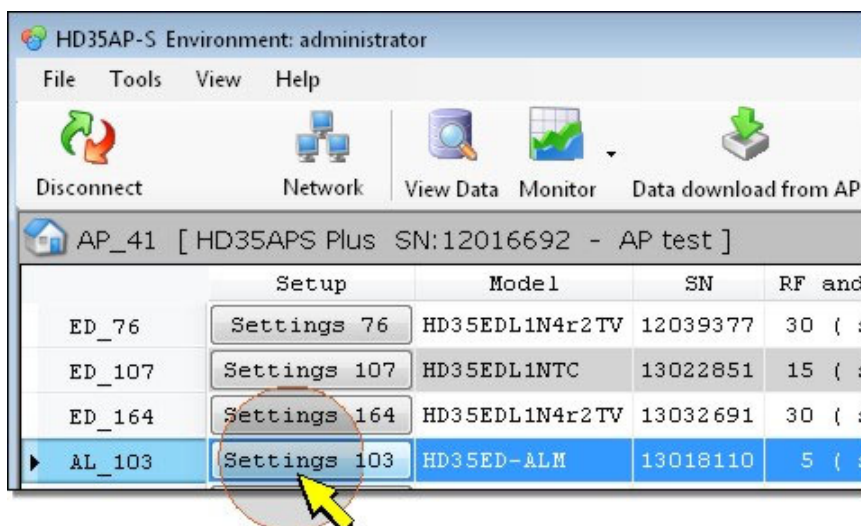
In order to close the *End Device settings* window, select *Exit* button.



If any modifications were 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.

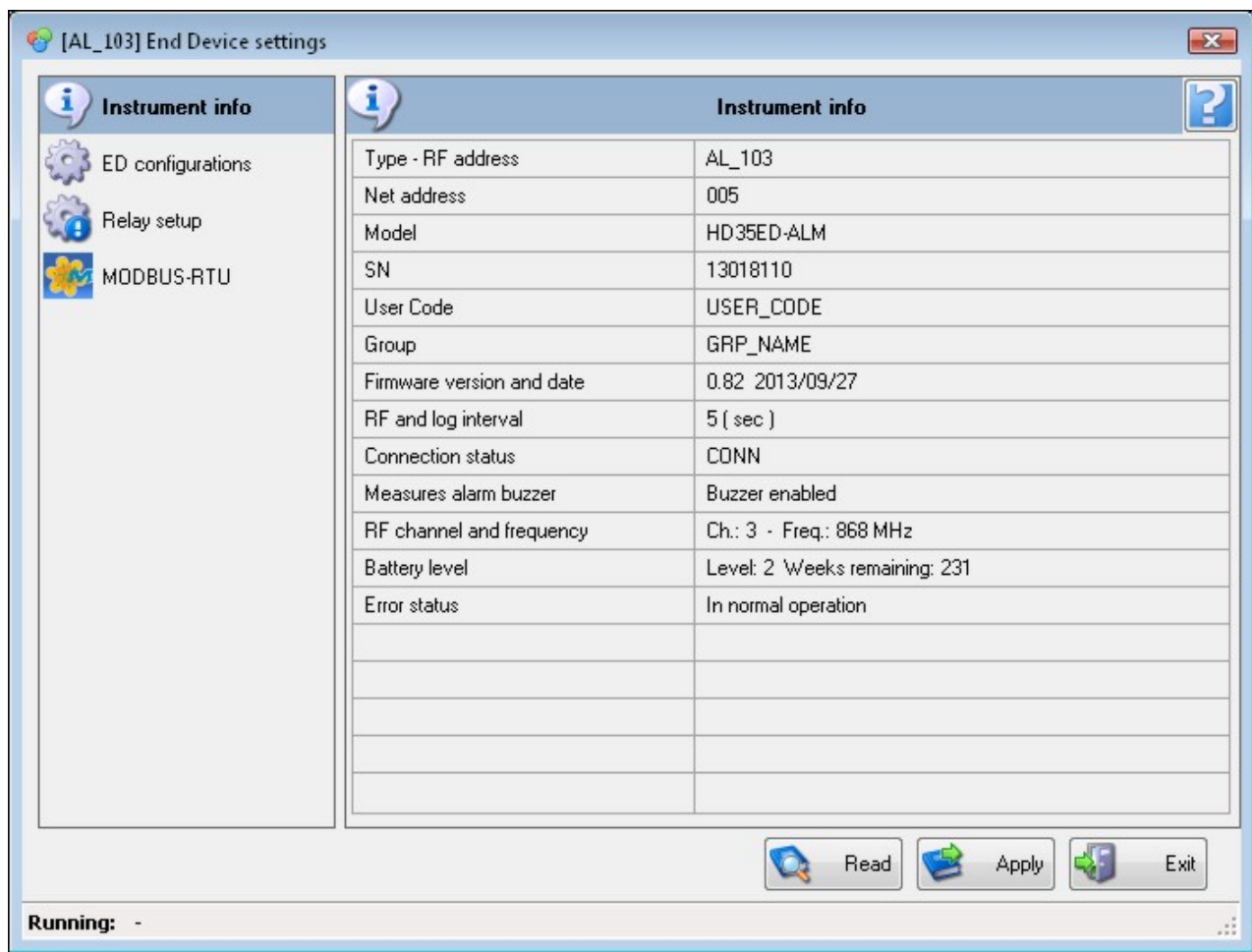
12. CONFIGURATION OF THE ALARM MODULE HD35ED-ALM

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



Note: if *Setup* column is not displayed, please consult paragraph [Main window description](#) 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.



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:

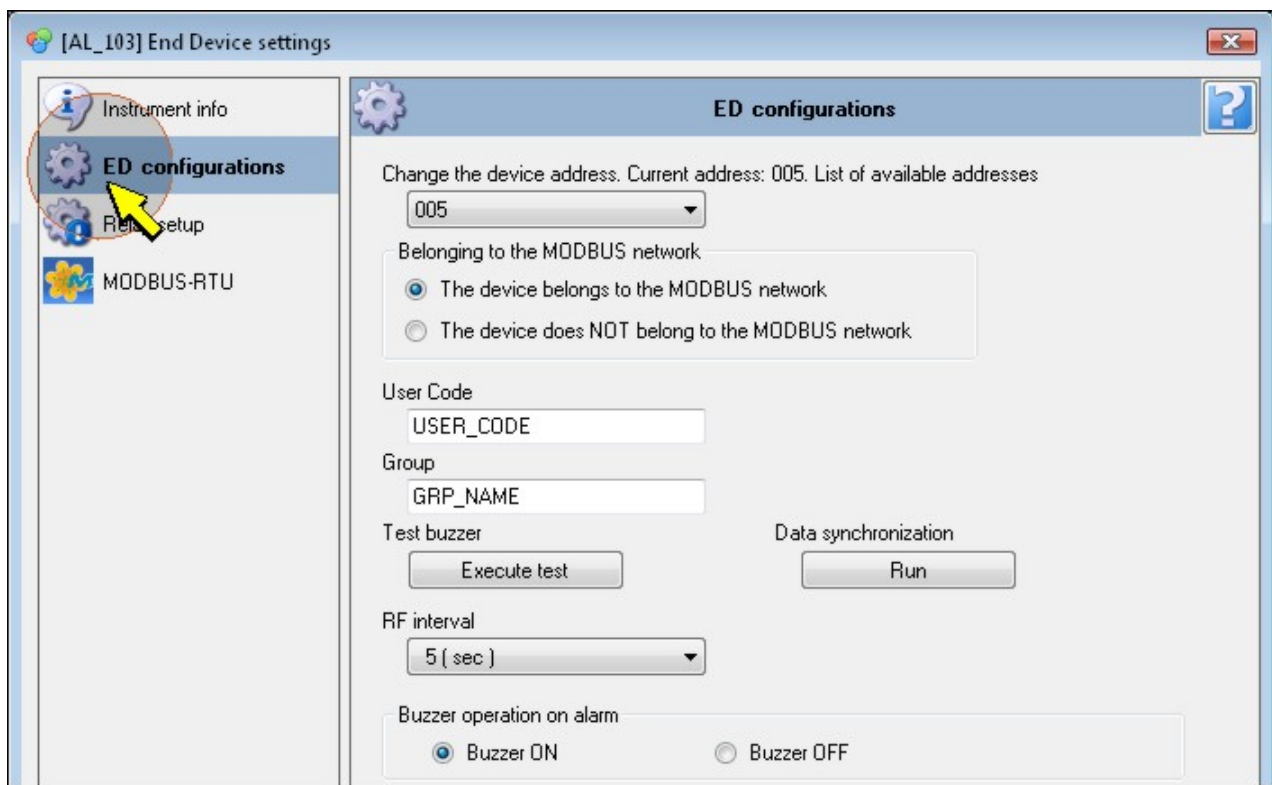
[ED configurations](#): allows to set the user code, the group, the address, the RF interval, the buzzer functions.

[Relay setup](#): 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.



The section allows to configure following parameters:

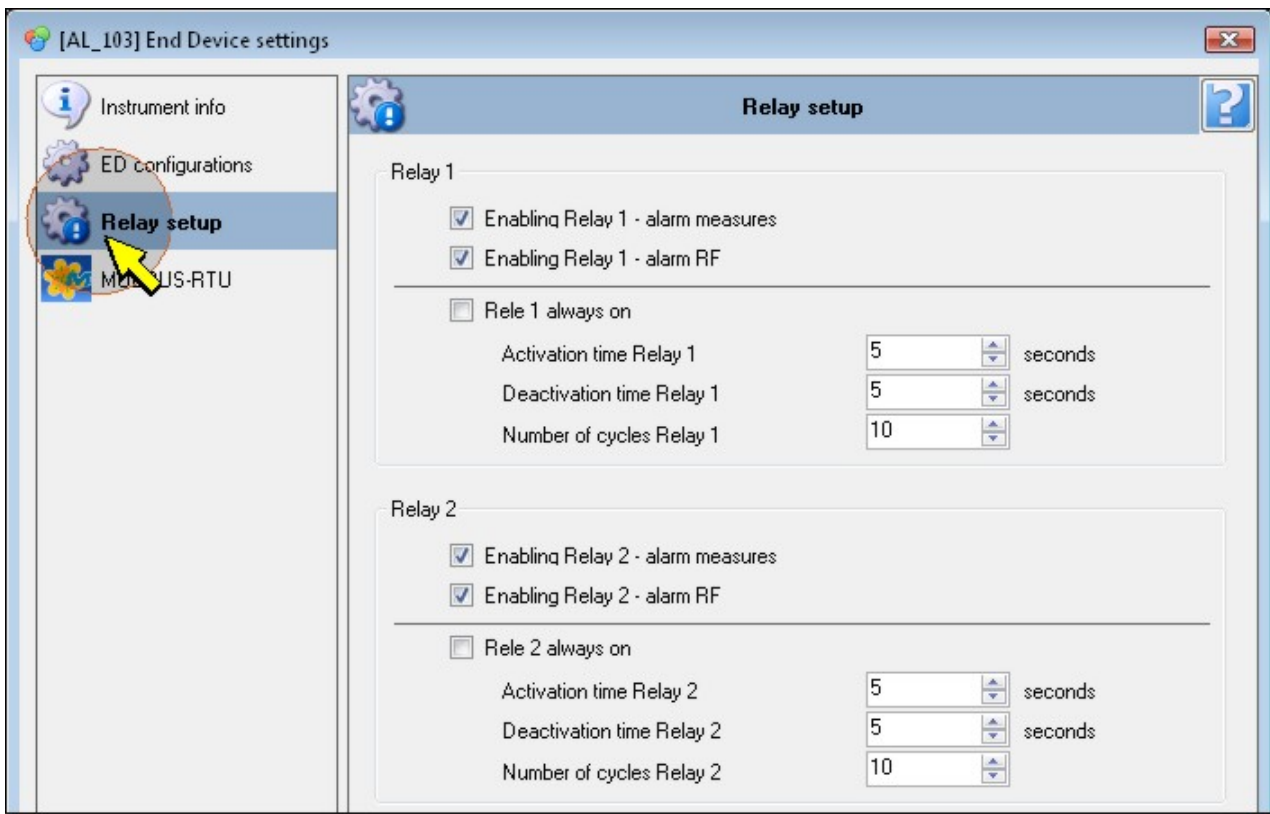
- **Address of the device** : setting of the device address in the wireless network. If the device belongs to a MODBUS network, the address also performs the functions of MODBUS address of the device.
- **Belonging to the MODBUS network** : indicate if the device belongs or not to a MODBUS network (in 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.



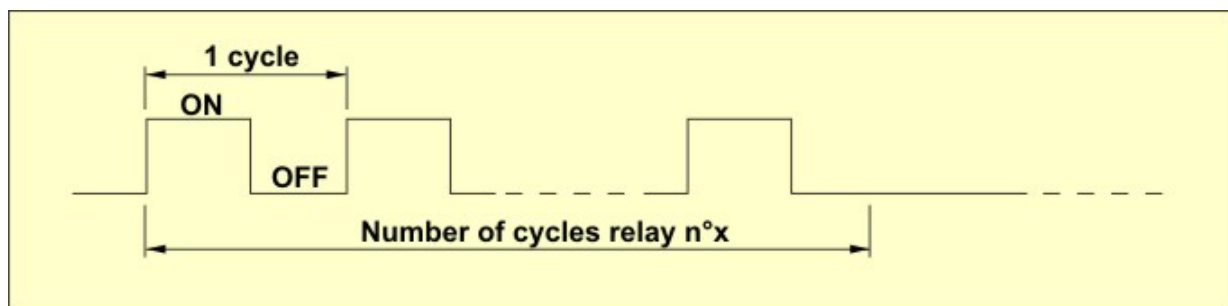
Select *Enabling Relay $n^{\circ}x$ - alarm measures* to activate the relay $n^{\circ}x$ when the measurement thresholds are exceeded.

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 $n^{\circ}x$ always on* in order to keep the relay $n^{\circ}x$ always active as long as the alarm condition lasts.

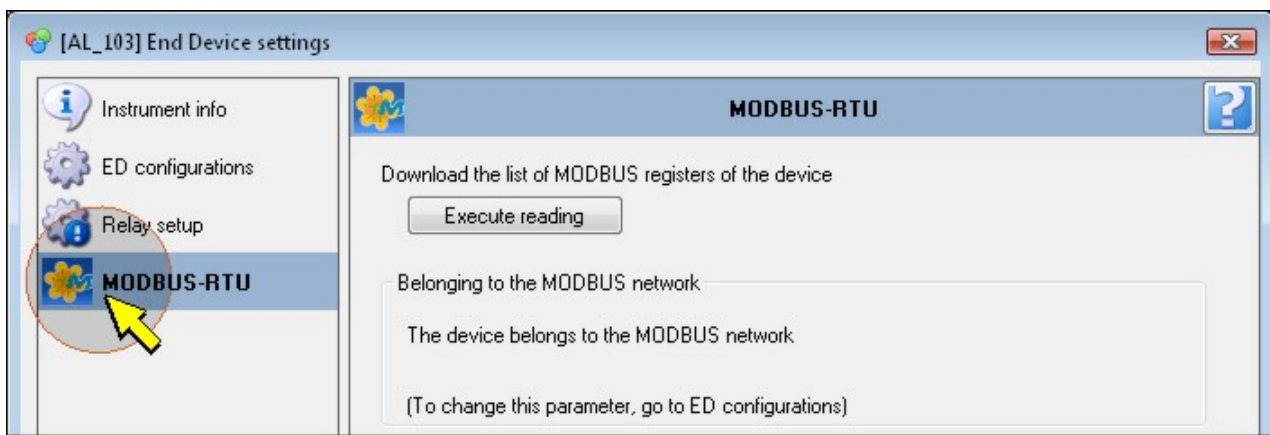
If you wish the relay $n^{\circ}x$ being activated cyclically in case of alarm, clear the option *Relay always on* and set the following parameters:

- *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

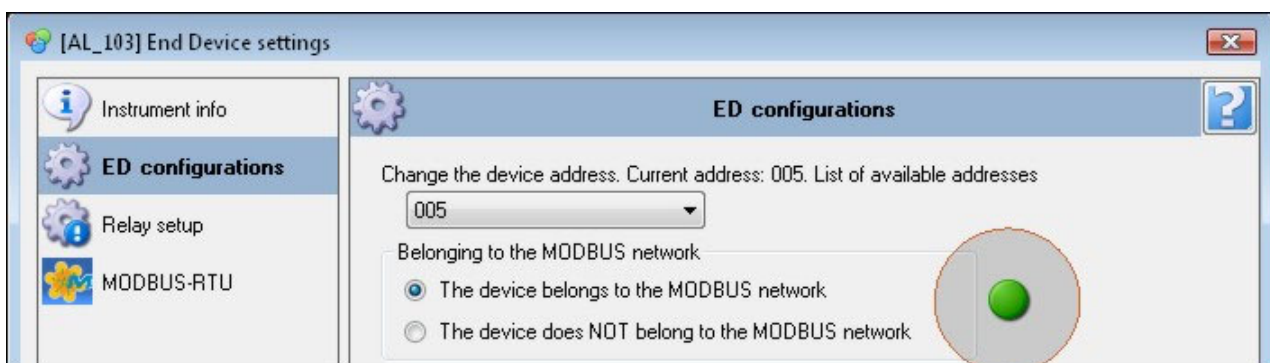
For some registers there is also a brief description available. The file can be imported in Excel to obtain the alignment of the columns:

	A	B	C	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	

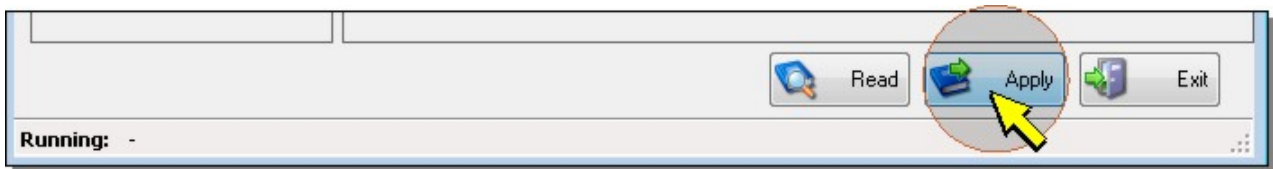
Please refer to the chapter *MODBUS* of data logging system manual for the complete list of the registers and details on their use.

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.

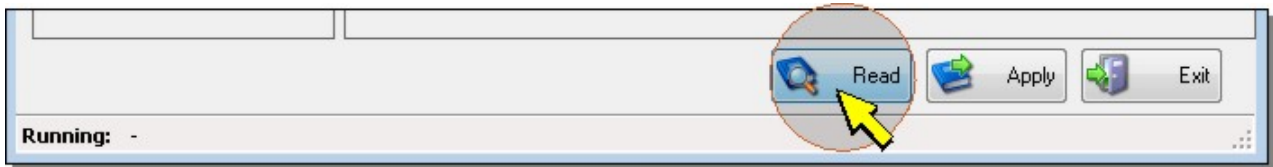


To confirm new settings and apply them to selected device, press the *Apply* key. The green circle will disappear.



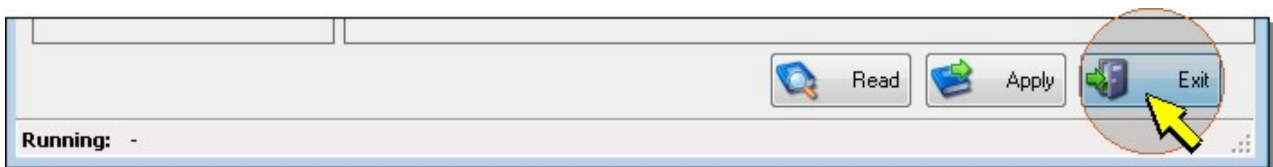
12.5. READING THE INSTRUMENT CURRENT CONFIGURATION

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

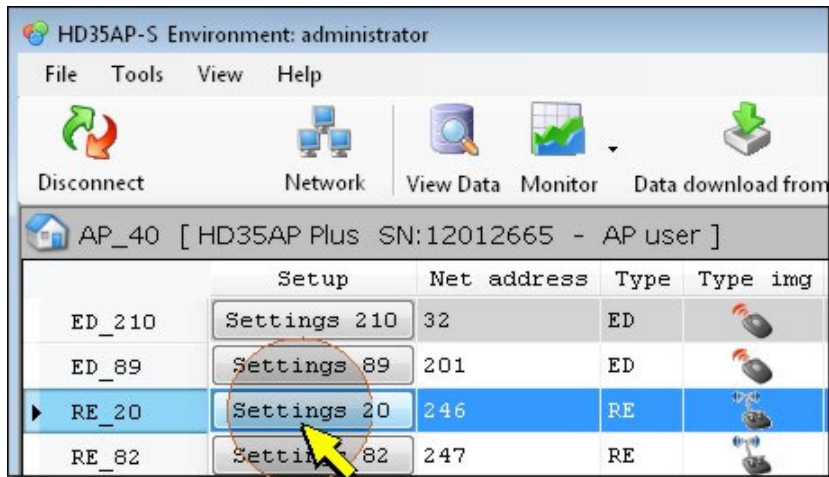
In order to close the *End Device settings* window, select *Exit* button.



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.

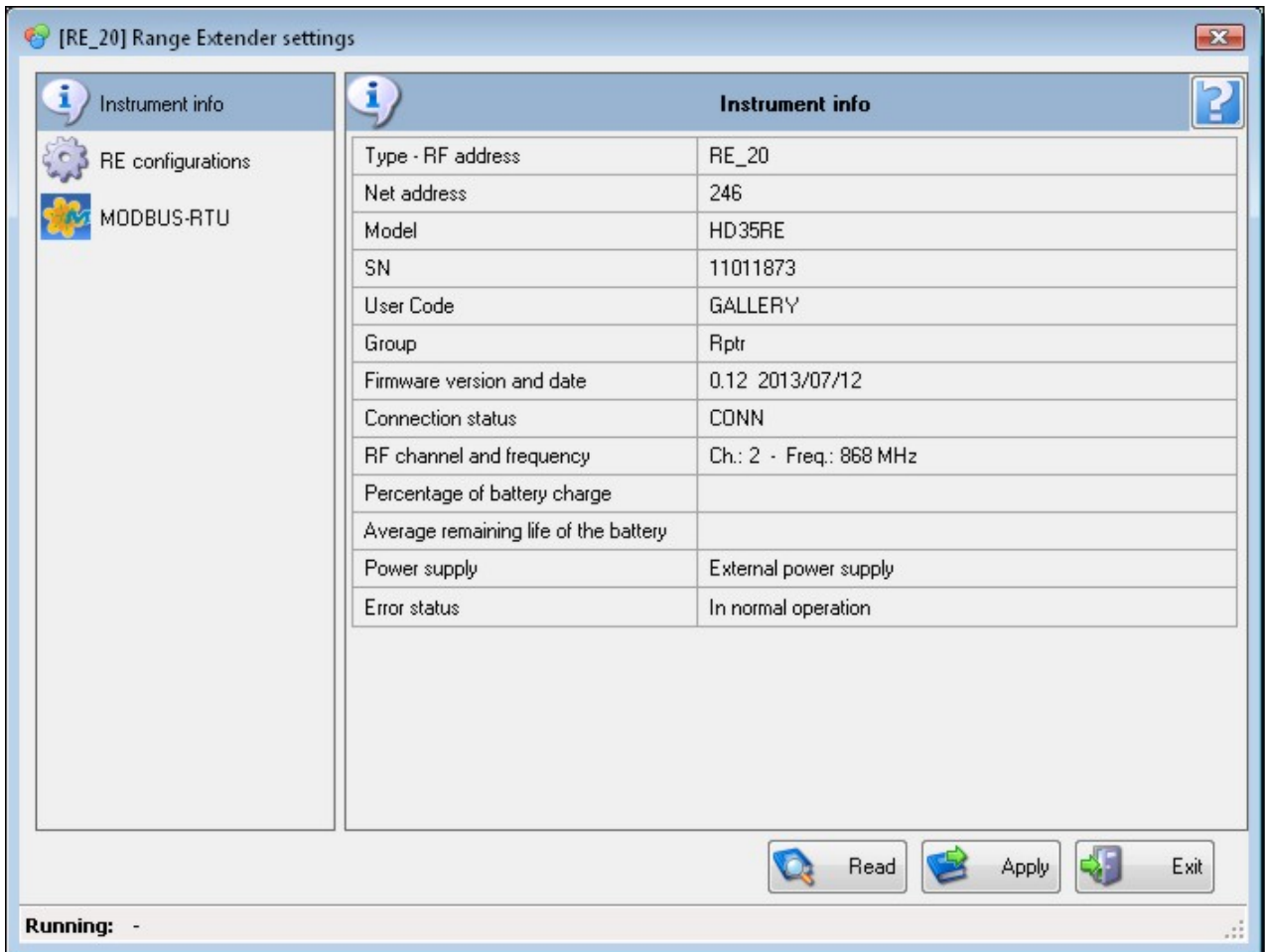
13. CONFIGURATION OF THE REPEATER HD35RE...

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



Note: if *Setup* column is not displayed, please consult paragraph [Main window description](#) 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.



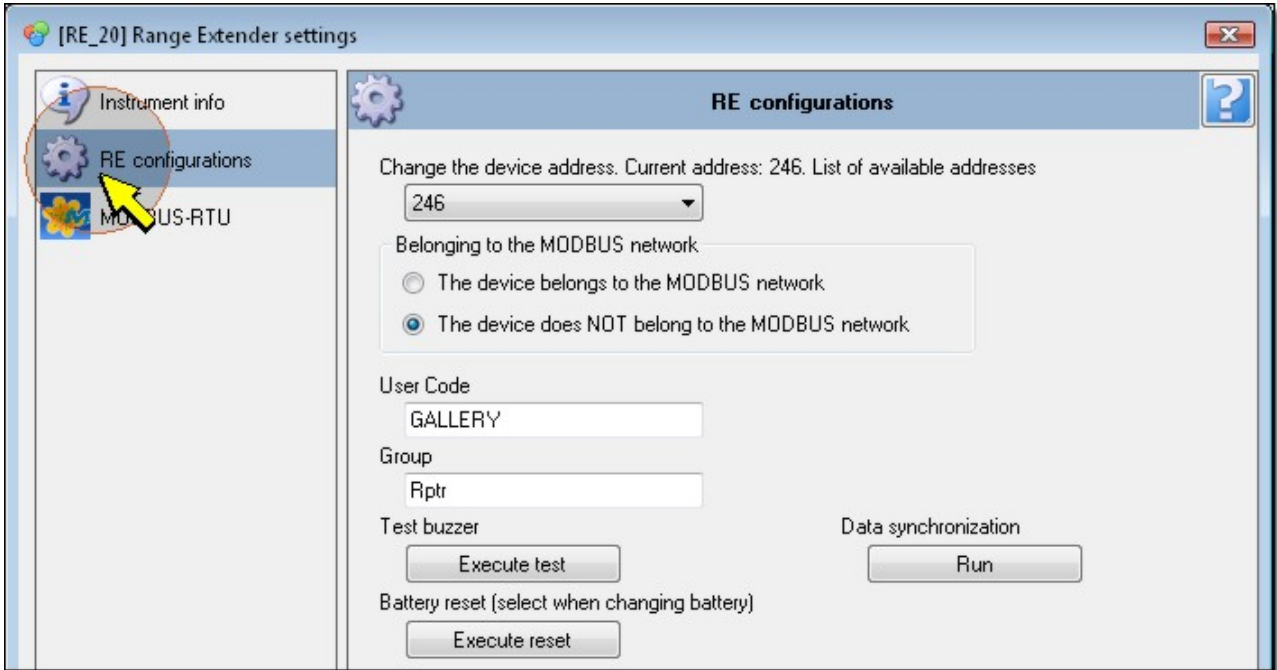
Some of the settings can not be modified by the user: model, serial number, firmware version, frequency, RF address, others can be modified by entering the section listed on the left hand side of the window:

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.



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.

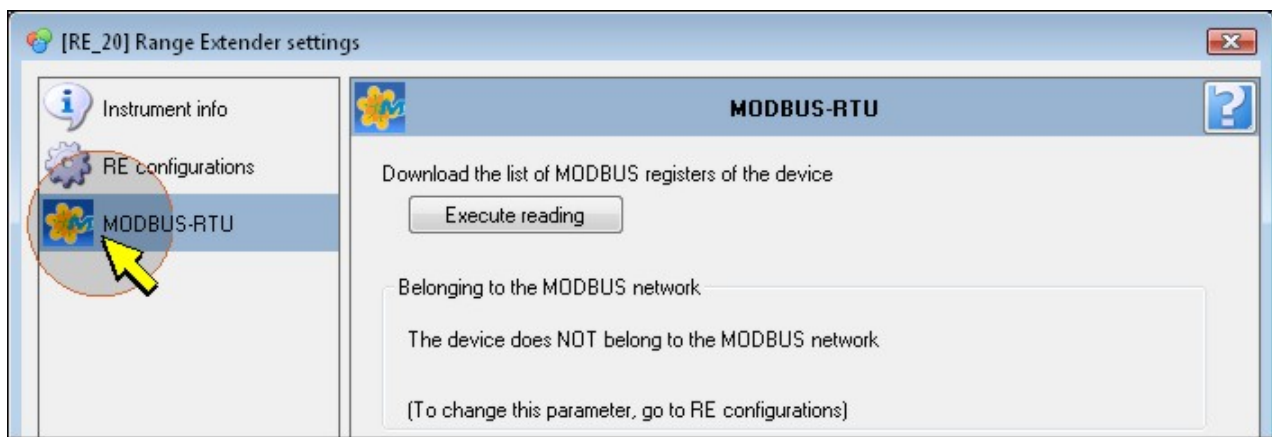
The section allows also to verify the buzzer function, to synchronize the data of the device with the data contained in the base unit and to reset a new battery after replacement (the reset is available only for HD35RE with rechargeable battery, not for HD35REW with not rechargeable battery):

- *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 "[Wireless network settings](#)".

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

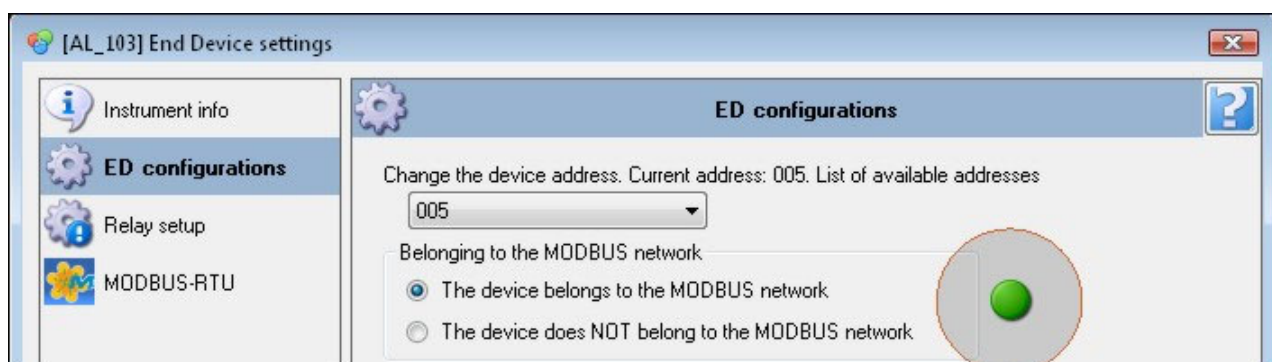
For some registers there is also a brief description available. The file can be imported in Excel to obtain the alignment of the columns:

	A	B	C	D
1	RE_INTERF	IS00000	bit	interference caused by multiple REs
2	MISSSED_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	

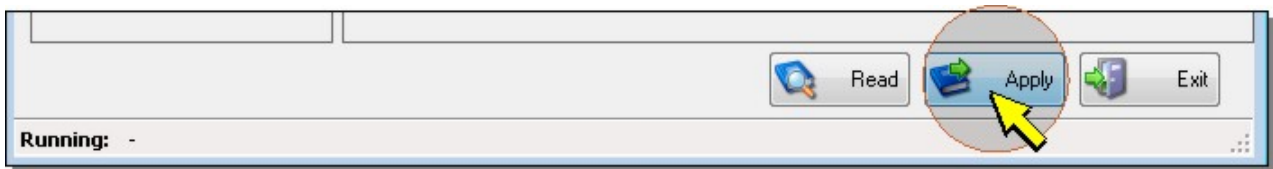
Please refer to the chapter *MODBUS* of data logging system manual for the complete list of the registers and details on their use.

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.

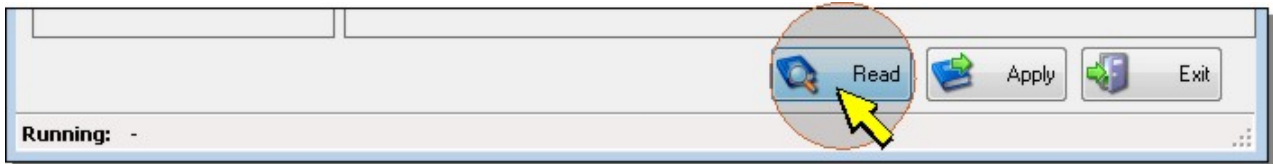


To confirm new settings and apply them to selected device, press the *Apply* key. The green circle will disappear.



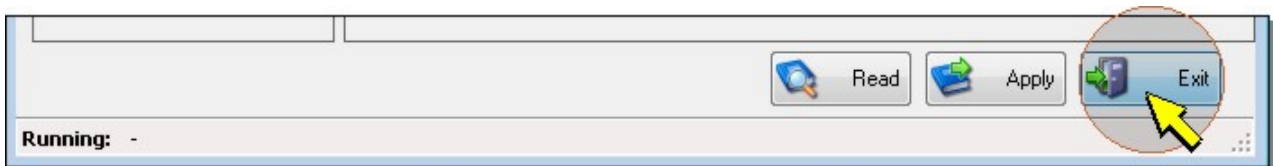
13.4. READING THE INSTRUMENT CURRENT CONFIGURATION

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.



13.5. CLOSING THE CONFIGURATION WINDOW

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

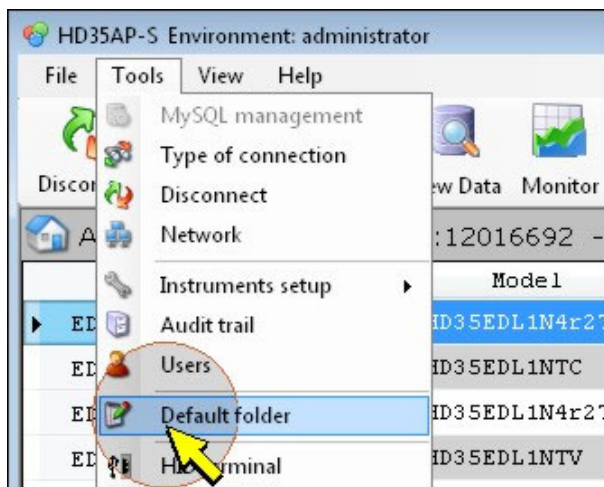


If any modifications were made, but they were not transferred to the device, a message will appear asking whether modifications have to be transferred before closing the window.

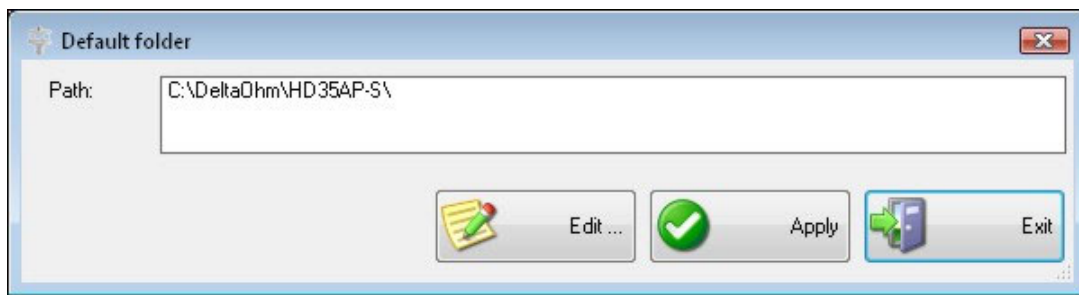
14. DEFAULT WORKING FOLDER

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:



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

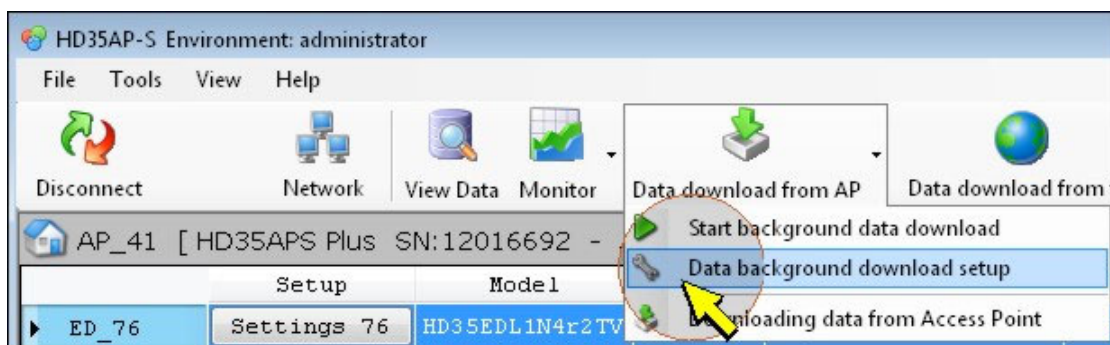
Press the *Apply* button to close the window. Restart the program to make the change effective.

15. DATA DOWNLOAD (HD35 AND HD50)

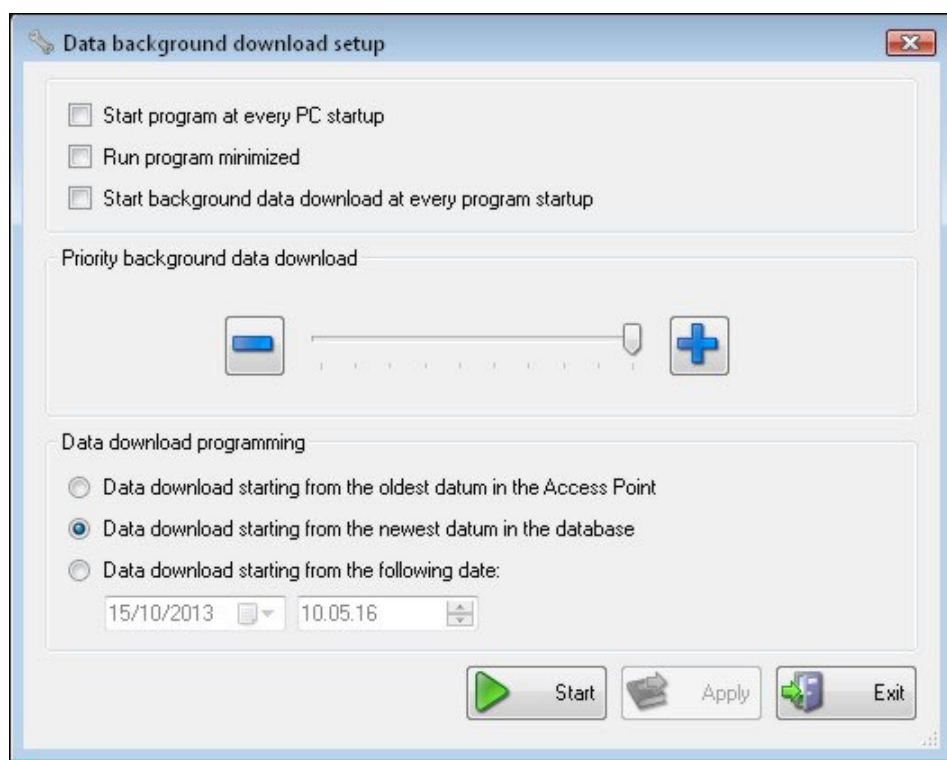
Data acquired by the system can be automatically downloaded by the program, so that new data are immediately collected into the database as soon as they are available. Alternatively it is possible to download on request the data contained into the internal memory of each [individual data logger](#) or the data contained in the [base unit](#) 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*).



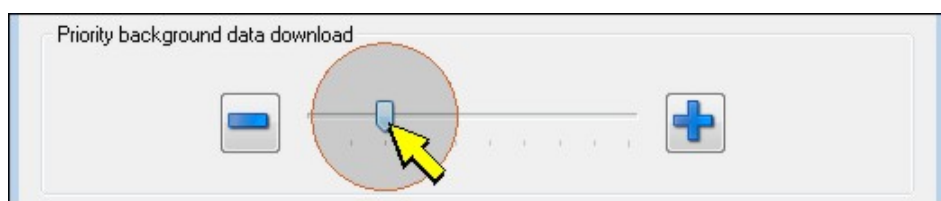
The interface window which allows to configure the automatic download is opened.



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.

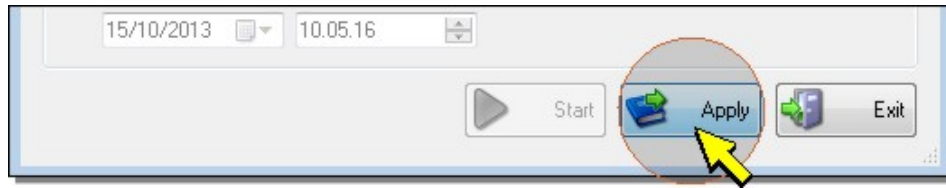
In the central part of the window, a priority for the background data download can be set.



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.



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 .



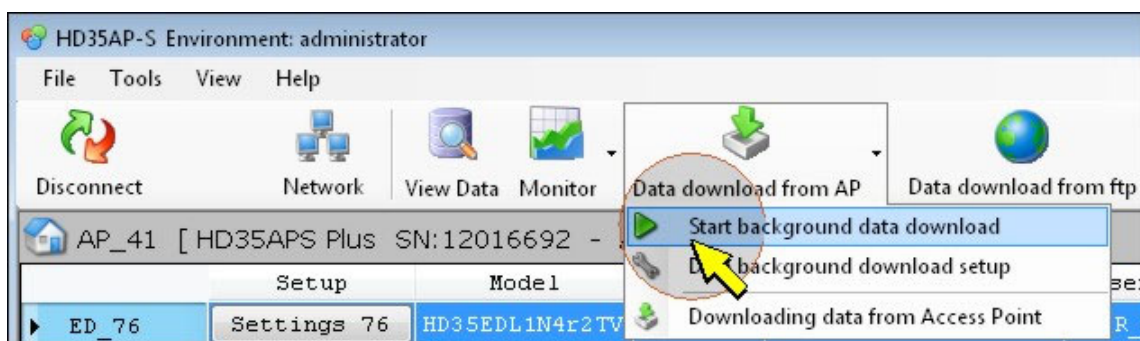
To end the automatic data download, press the *Stop* button.



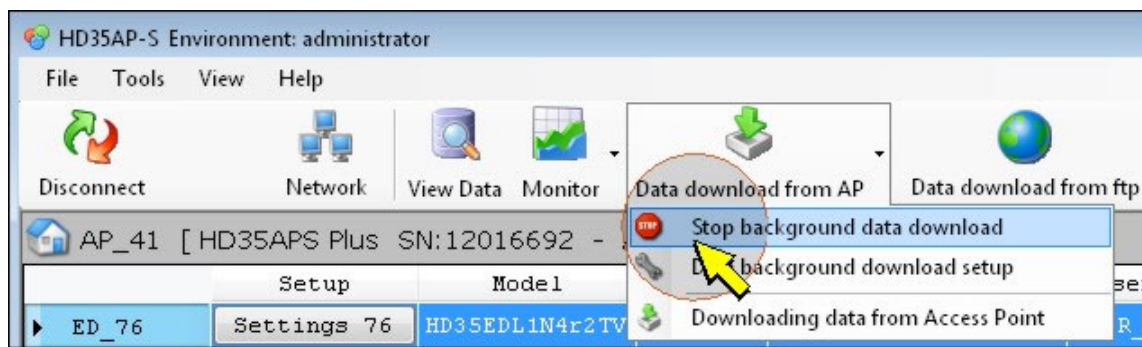
A message asking the user to confirm the stop of data download appears; press *YES* in order to end the data download.

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.

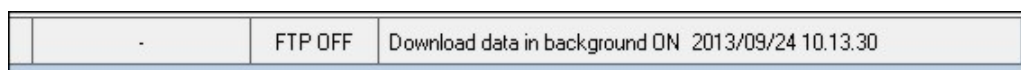
It is possible to start automatic data download without going through the setup window. To do that select the icon *Data download from AP* in the toolbar, then the item *Start background data download* (alternatively select the menu *File >> Data download from AP >> Start background data download*).



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*).



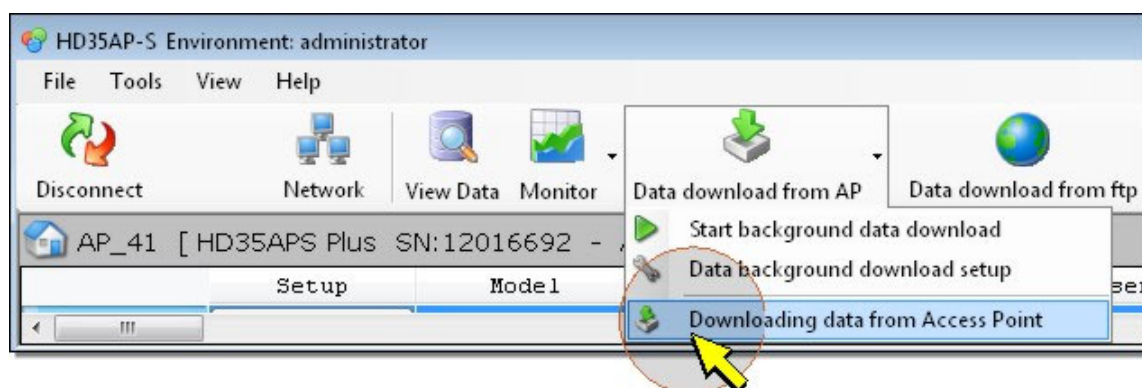
When the automatic data download is in progress, the icon *Data download from AP* blinks, and, in the main window status bar, the date and time of the last sample downloaded is displayed.



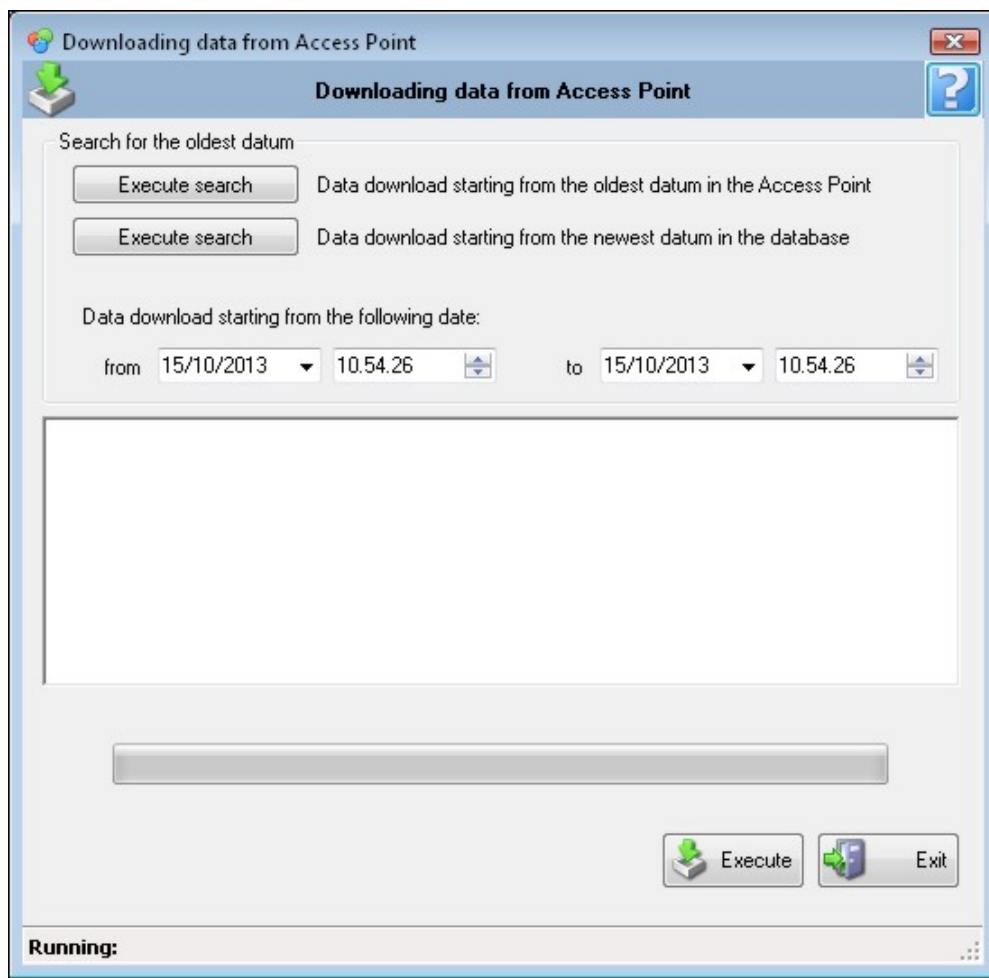
Note: automatic data download is interrupted if the user closes the program or the base unit is disconnected from the program.

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

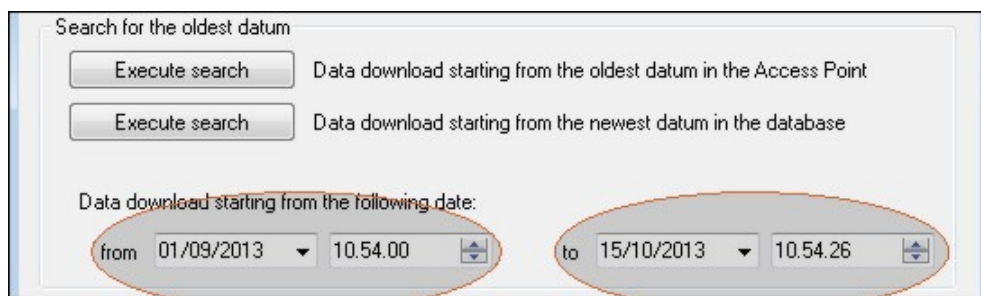
To download data from the HD35AP... base unit or HD50... data logger memory on request, select the icon *Data download from AP* in the toolbar, then the item *Downloading data from Access Point* (alternatively select the menu item *File >> Download data from AP >> Downloading data from Access Point*).



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

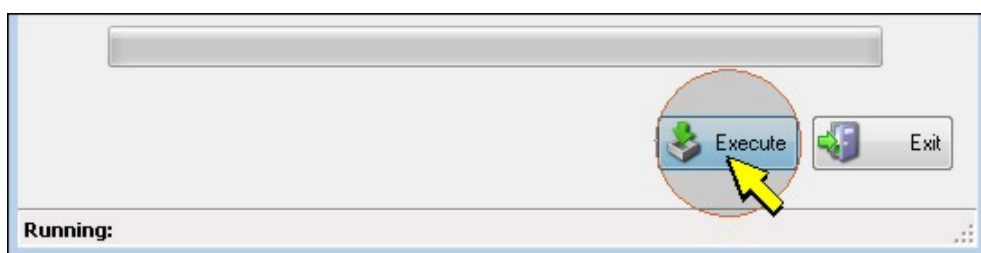


Insert the starting date and time (field *from...*) and the ending date and time (field *to...*) of required time period to be downloaded.

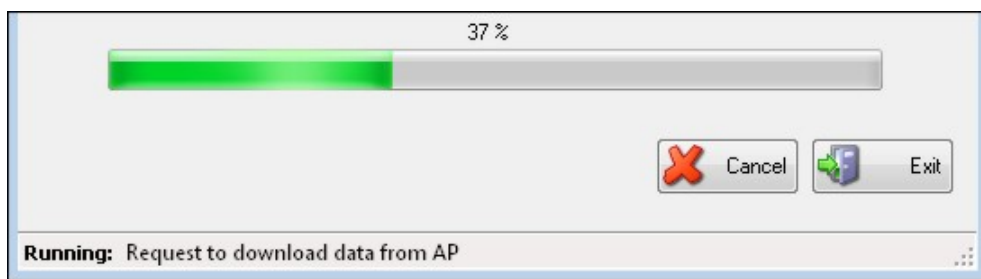


To enter as starting date and time the acquisition instant of the oldest datum in the device or the acquisition instant of the newest datum in the database, press the corresponding *Execute search* button.

To start data download press *Execute* button .



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

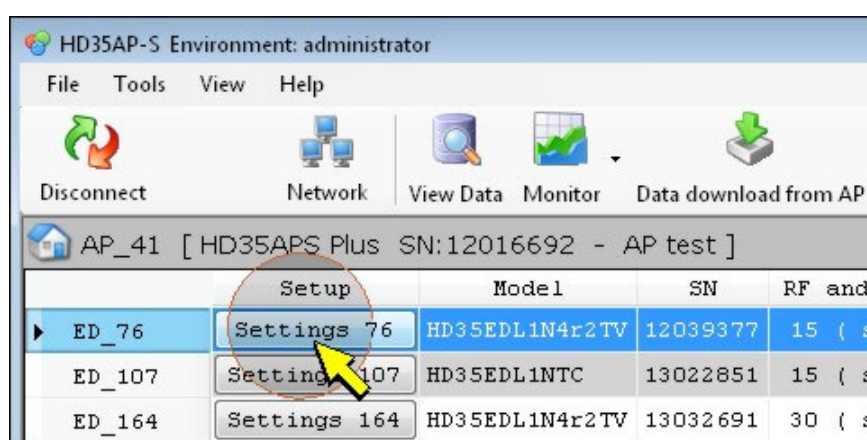


To close the *Downloading data from Access Point* window and go back to the main program window, press the *Exit* button.

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

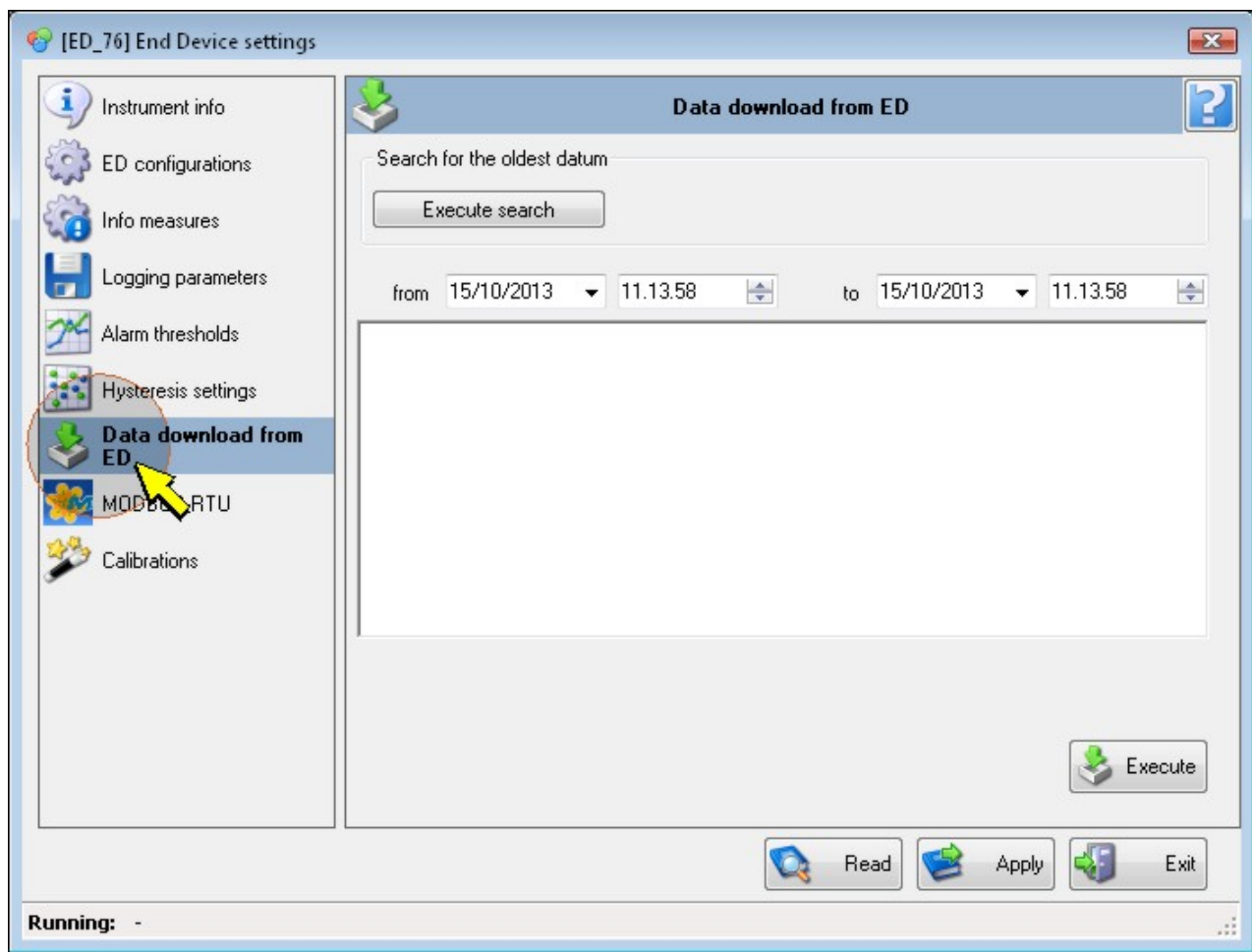
Downloading of data directly from HD35ED... data loggers memory can be necessary in the case that the system was not able to transfer the data from the data loggers to the base unit, for example due to RF transmission problems or failure of the base unit.

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.

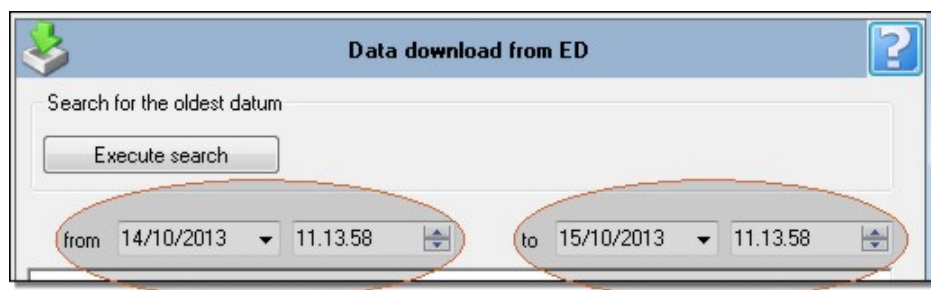


Note: if column *Setup* is hidden, please consult the section [Main window description](#) for information on how to display the columns.

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



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



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.

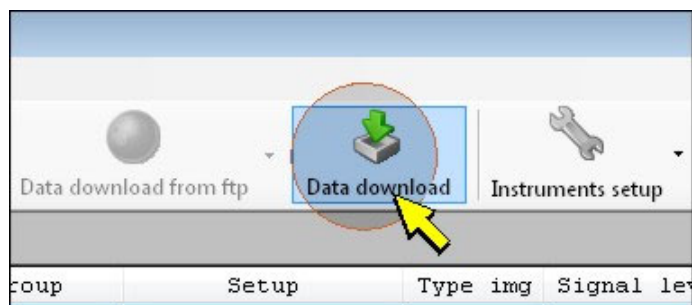


At the end of data download, the *Cancel* button turns into *Execute*.

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

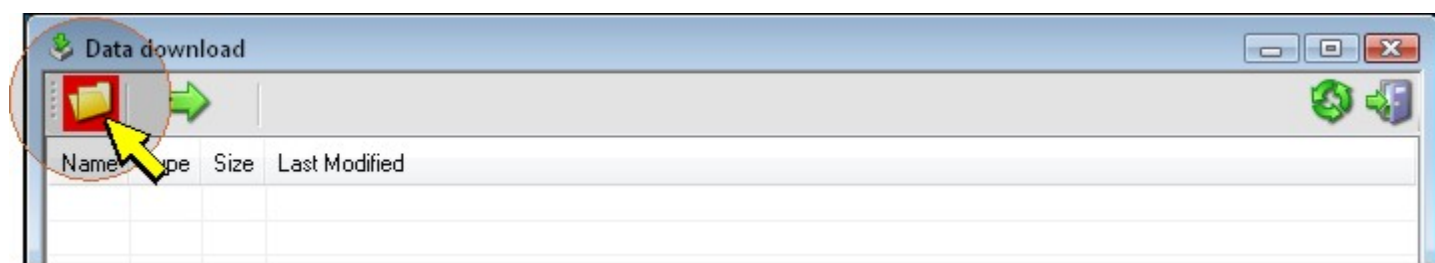
16. DATA DOWNLOAD (HD208)

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*).

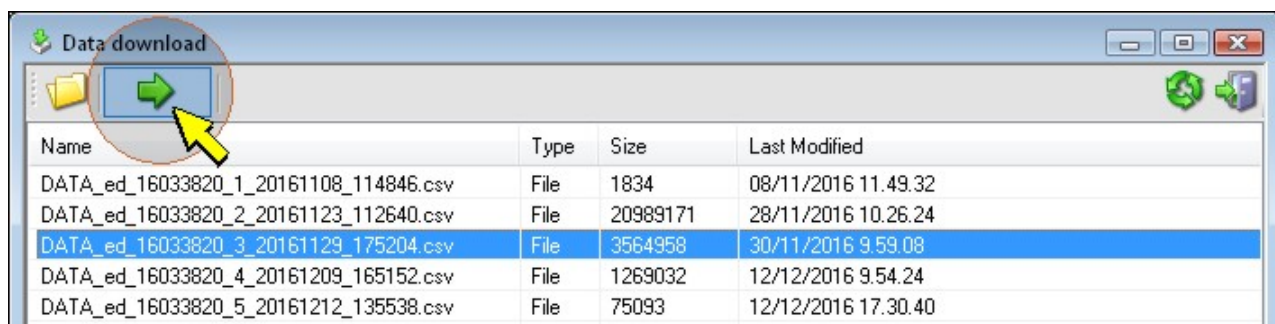


Note: to download data, any logging session in progress must be stopped: it is not possible to download measures if the instrument is in acquisition mode.

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).

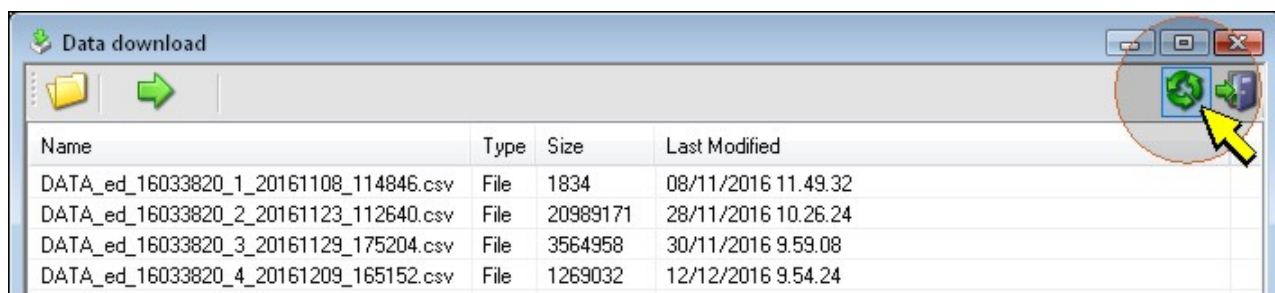


If there are stored data in memory, the list of acquired sessions (CSV files) is displayed. The data logger serial number and the acquisition initial date and time are shown in the name of the CSV files. Select the logging session you wish to import into the database and press the *Import* icon.



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.

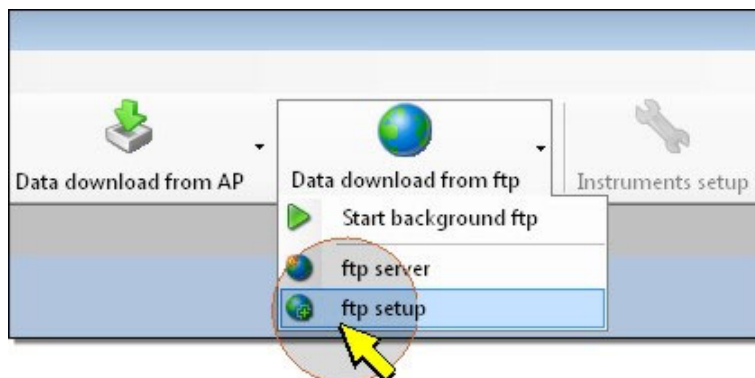


Once data download is complete, press the *Exit* icon to return to the program main window.

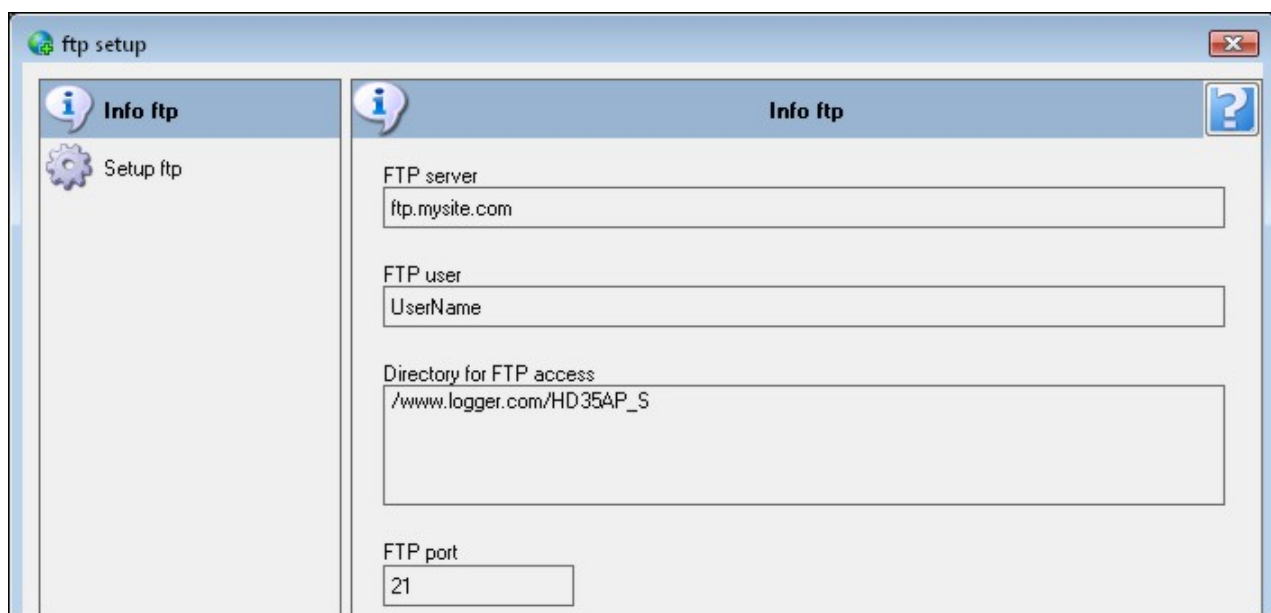
17. DATA DOWNLOAD FROM FTP

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.

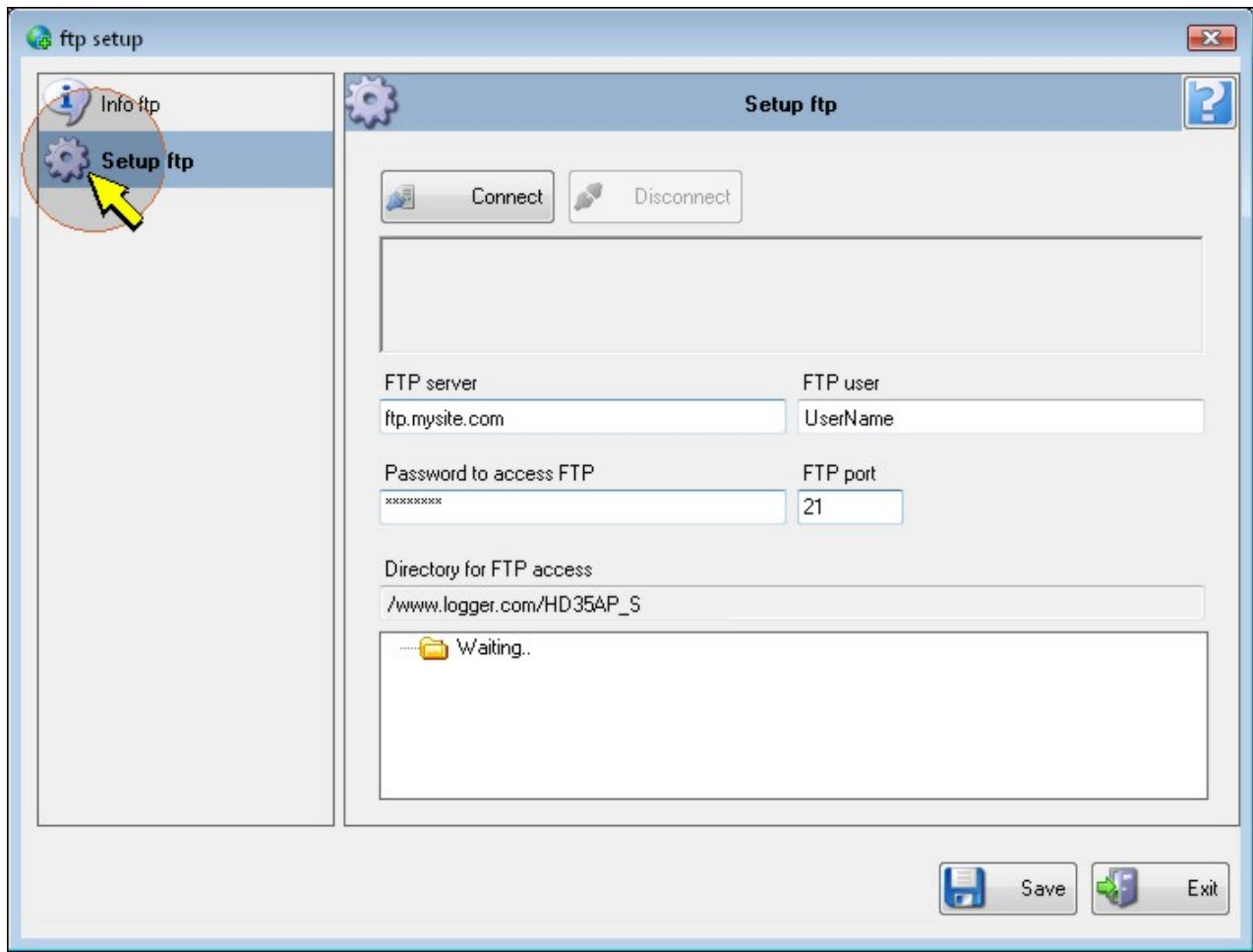
In order to configure a connection to the FTP server, select the icon *Data download from ftp* in the toolbar, then select the item *ftp setup* (alternatively select menu *File >> Data download from ftp>> ftp setup*).



The current FTP settings are displayed in the appearing window.



To modify the settings, select the section *Setup ftp*.



Set the following parameters :

FTP server : enter FTP address .

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

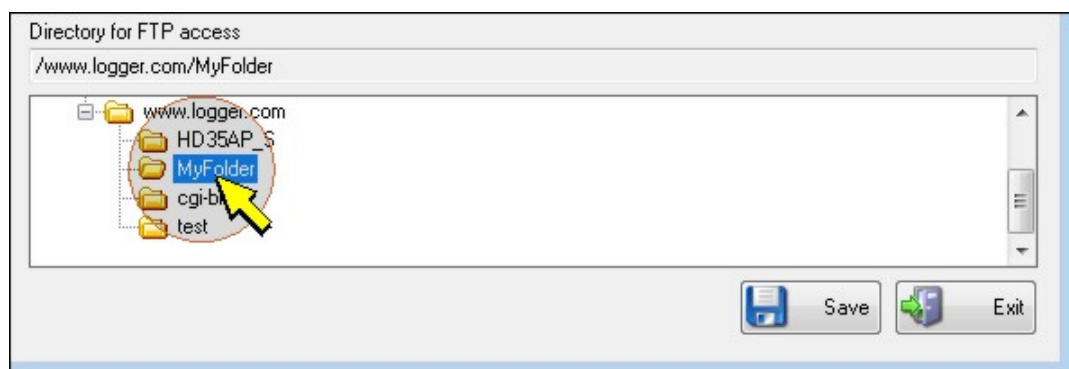
Password to access FTP : enter the password to access the FTP server.

FTP port : enter the port number for FTP service.

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



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.



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

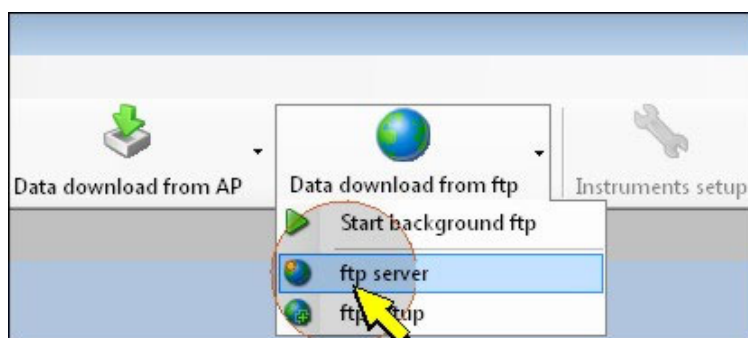


To go back to the main program window, press *Exit*.

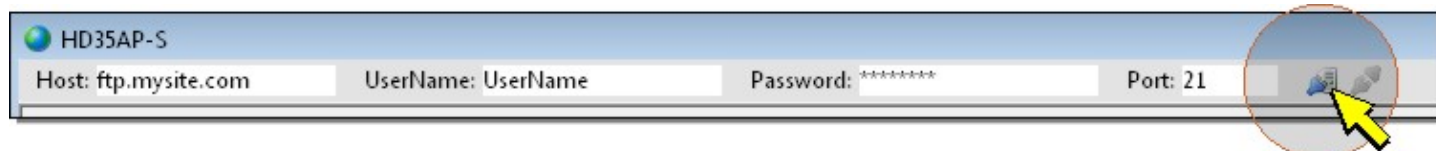
Note: when *Setup ftp* window is closed, the FTP server is automatically disconnected.

17.1. MANUALLY DOWNLOADING THE DATA FROM FTP

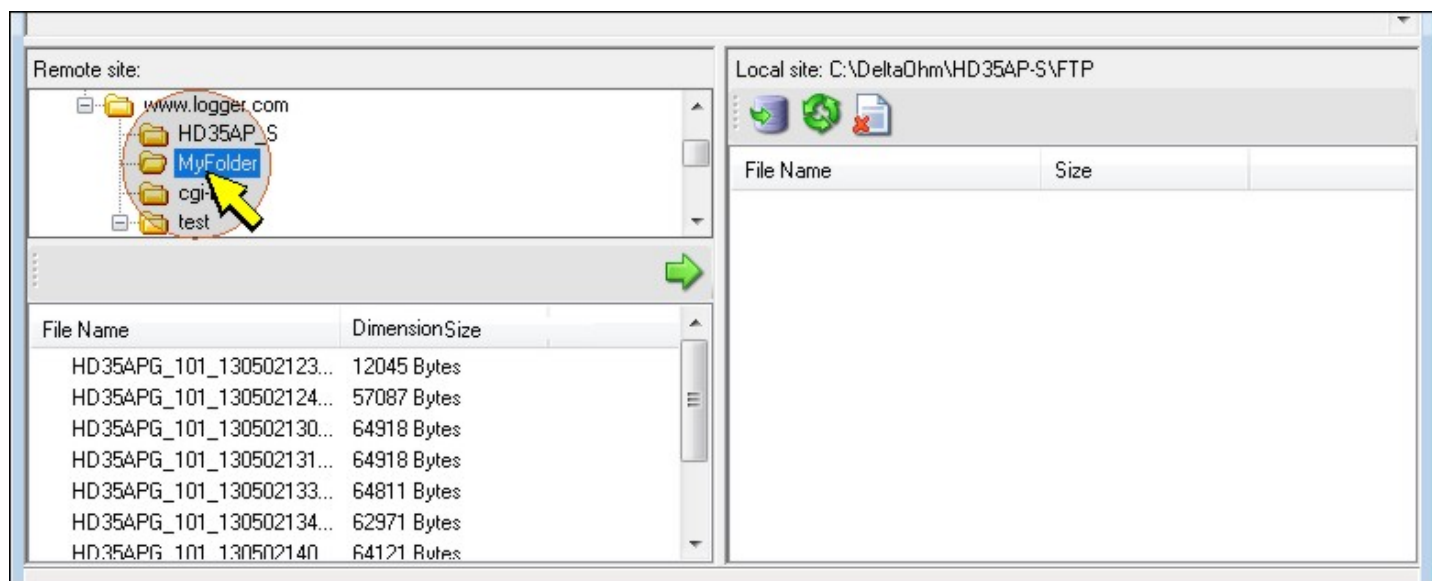
In order to manually download measurement data from the FTP server, select the icon *Data download from FTP* in the toolbar, then the item *FTP Server* (alternatively select menu item *File >> Data download from ftp >> ftp server*).



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



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.

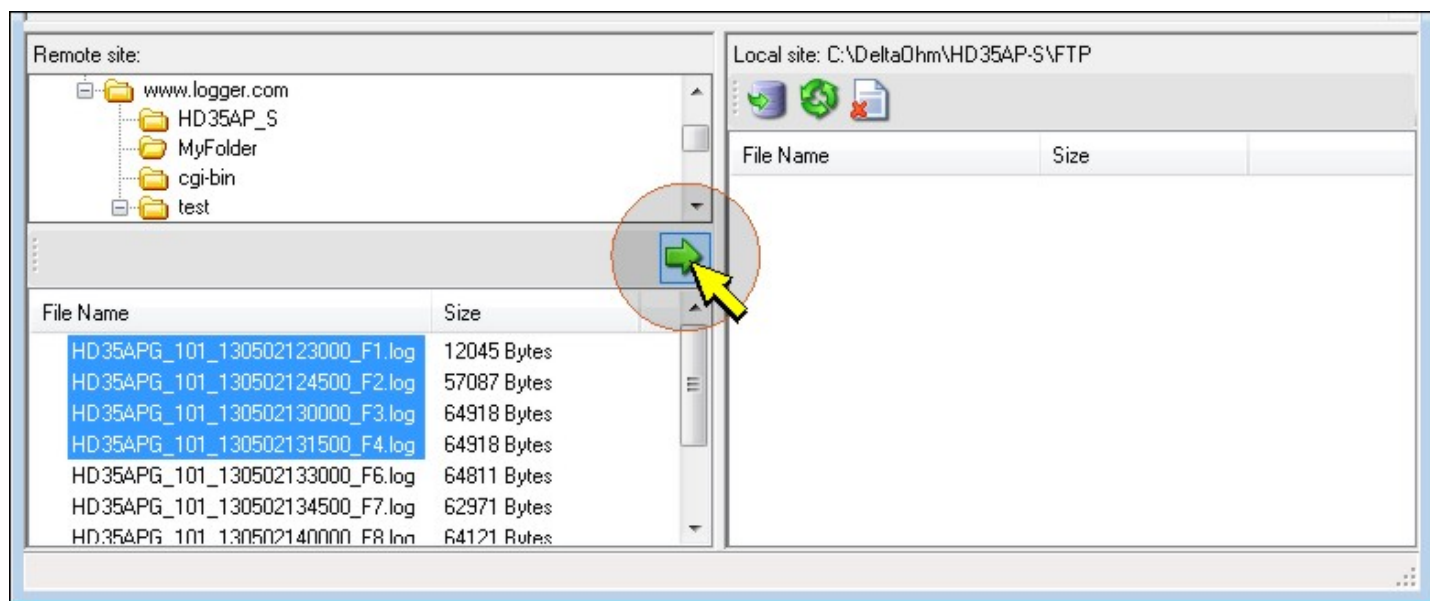


In the lower part of the window is shown the list of data files. Files are identified by: device RF address, date and time when the file was sent and a sequential number.

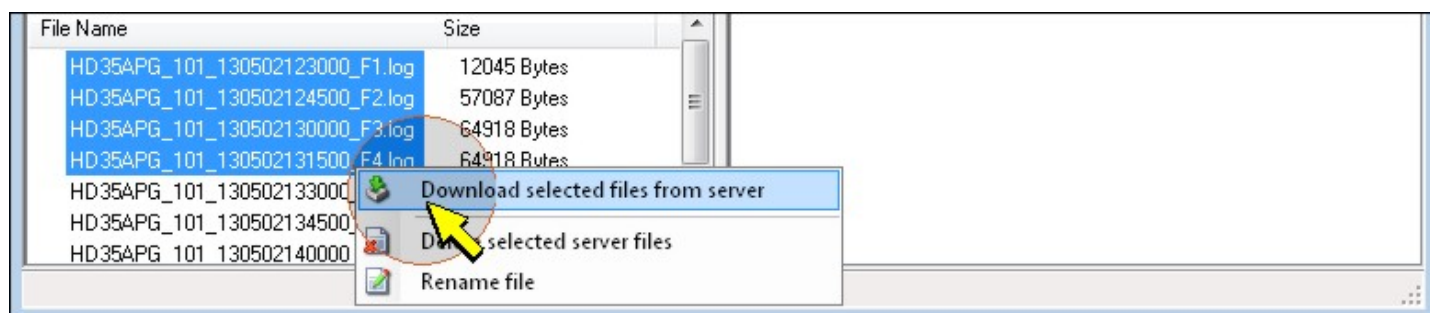
Note: the time interval between sending two successive files can be set (please see paragraphs [GSM/3G settings](#) and [Wi-Fi and Ethernet settings](#)).

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.

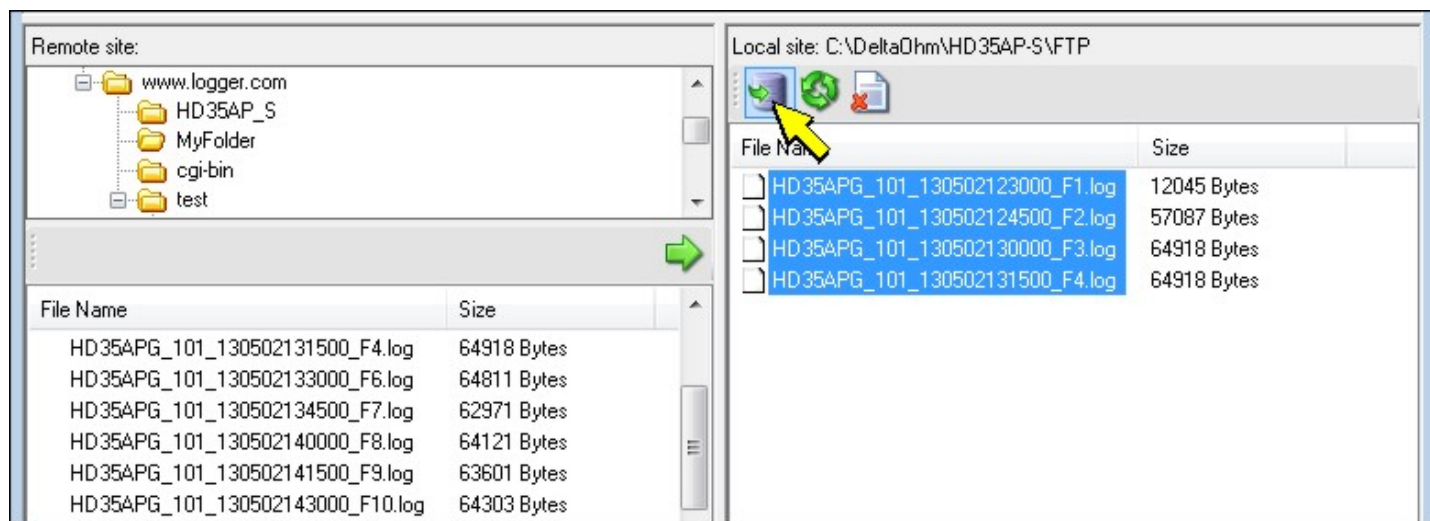
Select the files you need to download and press the right green arrow to transfer them into your PC. The files are downloaded into the FTP folder in the default working folder.



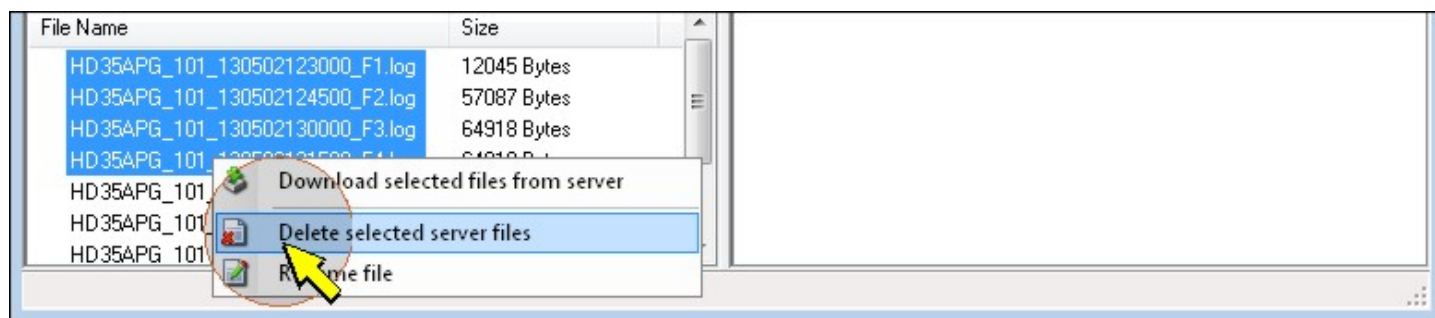
As an alternative, it is possible to download the remote files by a right mouse click and selecting item *Download selected files from server*.



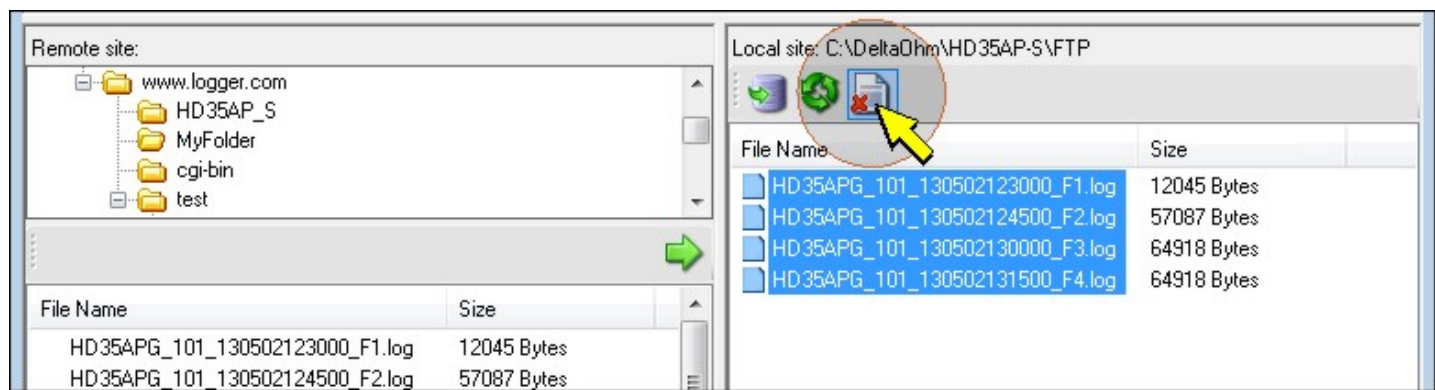
After successful download files can be collected into the database. To do that, select required files on the right panel and press the insertion button placed above the file name header.



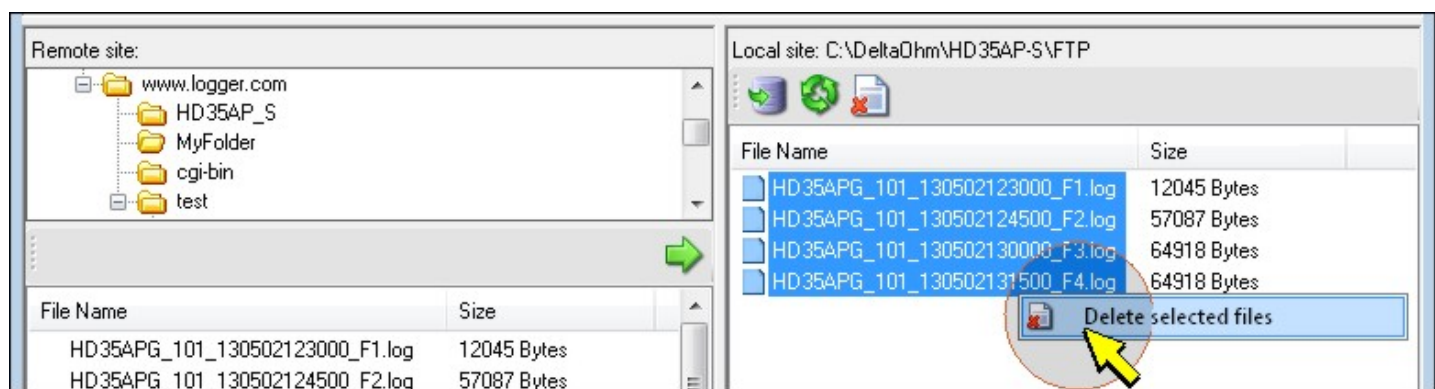
If you need to delete from the FTP server the files already downloaded, select them, press the right mouse button and select *Delete selected server files*.



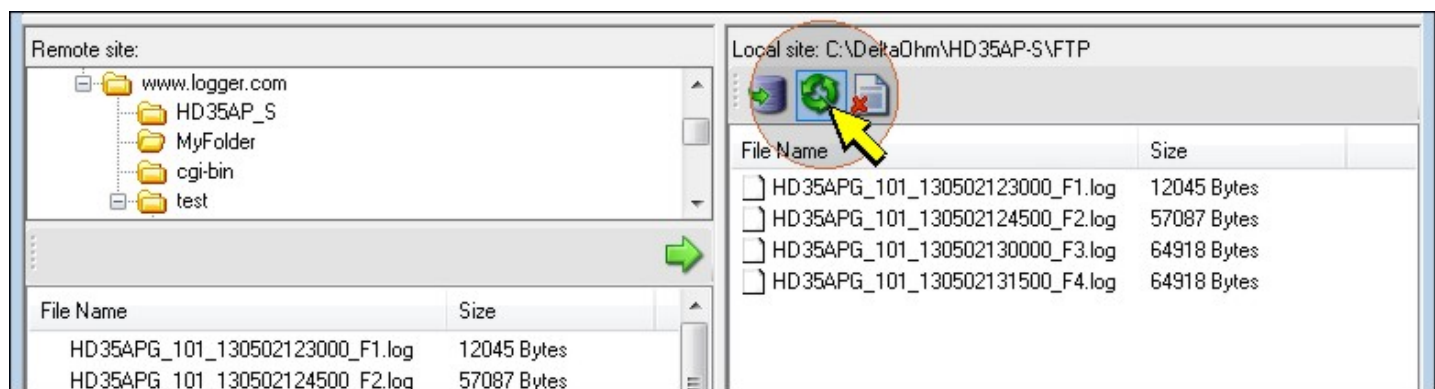
In order to delete from PC the files already collected into the database, select them and press the delete button in the right panel.



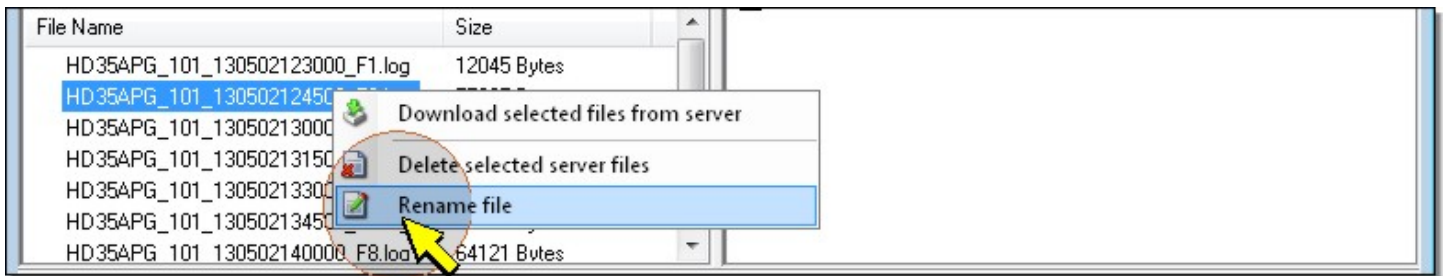
As an alternative, the files can be deleted by a right mouse click and selecting item *Delete selected files*.



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



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

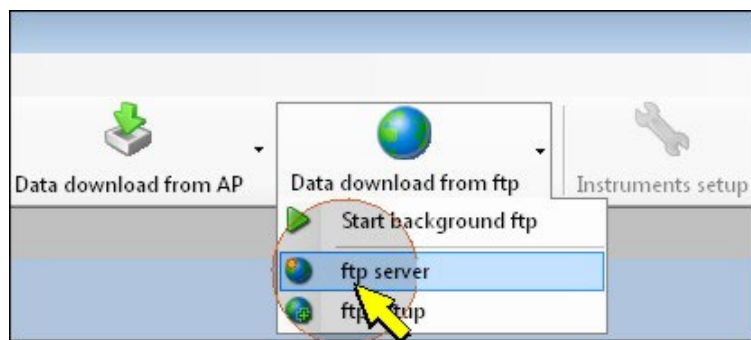


In order to terminate the FTP connection to server, select *Disconnect* icon on the upper right side of the window.

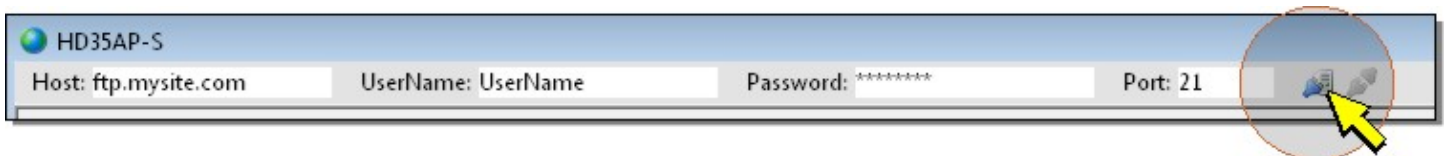


17.2. AUTOMATIC DATA DOWNLOAD FROM FTP

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*).

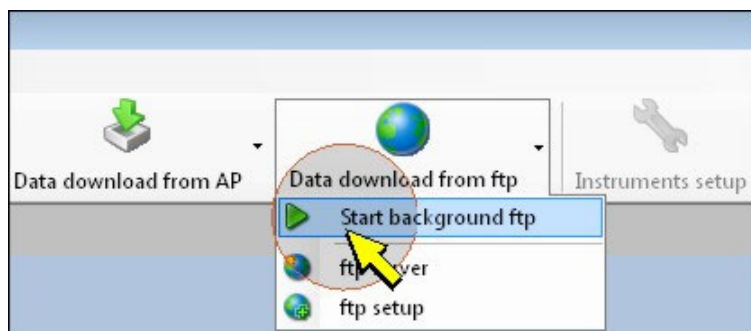


In the upper part of the appearing window, the settings for the FTP server are displayed. Select *connection* icon to connect to the FTP server.



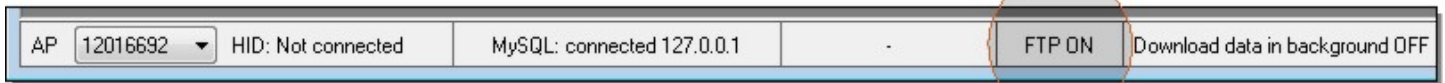
After connection to FTP server is successfully done, minimize the window (do not close the window, or the FTP server would be disconnected and the program would not be able to download data).

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*).

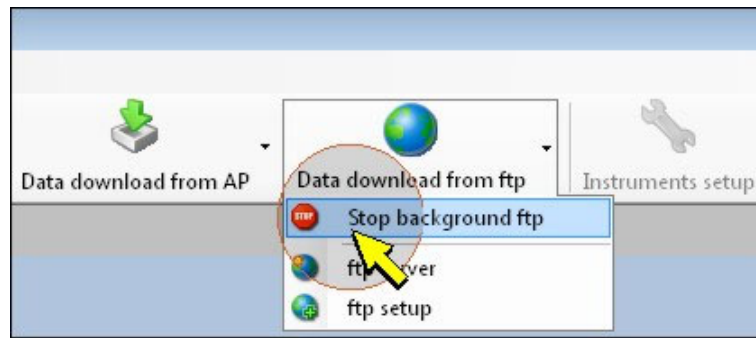


The program will automatically download data from the FTP as soon as they will be available. Data are automatically collected into the database. After collection into the database, files are deleted both from the server and from the local PC.

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.

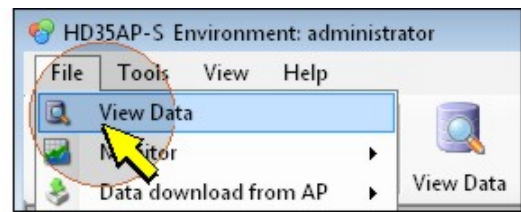
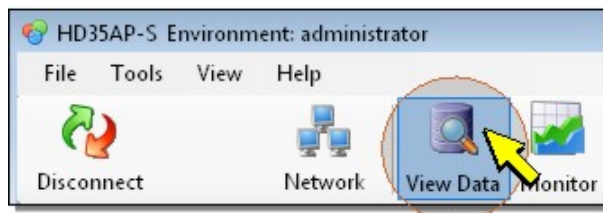


The automatic data download can be stopped by selecting the icon *Data download from ftp* in the toolbar, then the item *Stop background ftp* (alternatively select the menu item *File >> Data download from ftp >> Stop background ftp*).

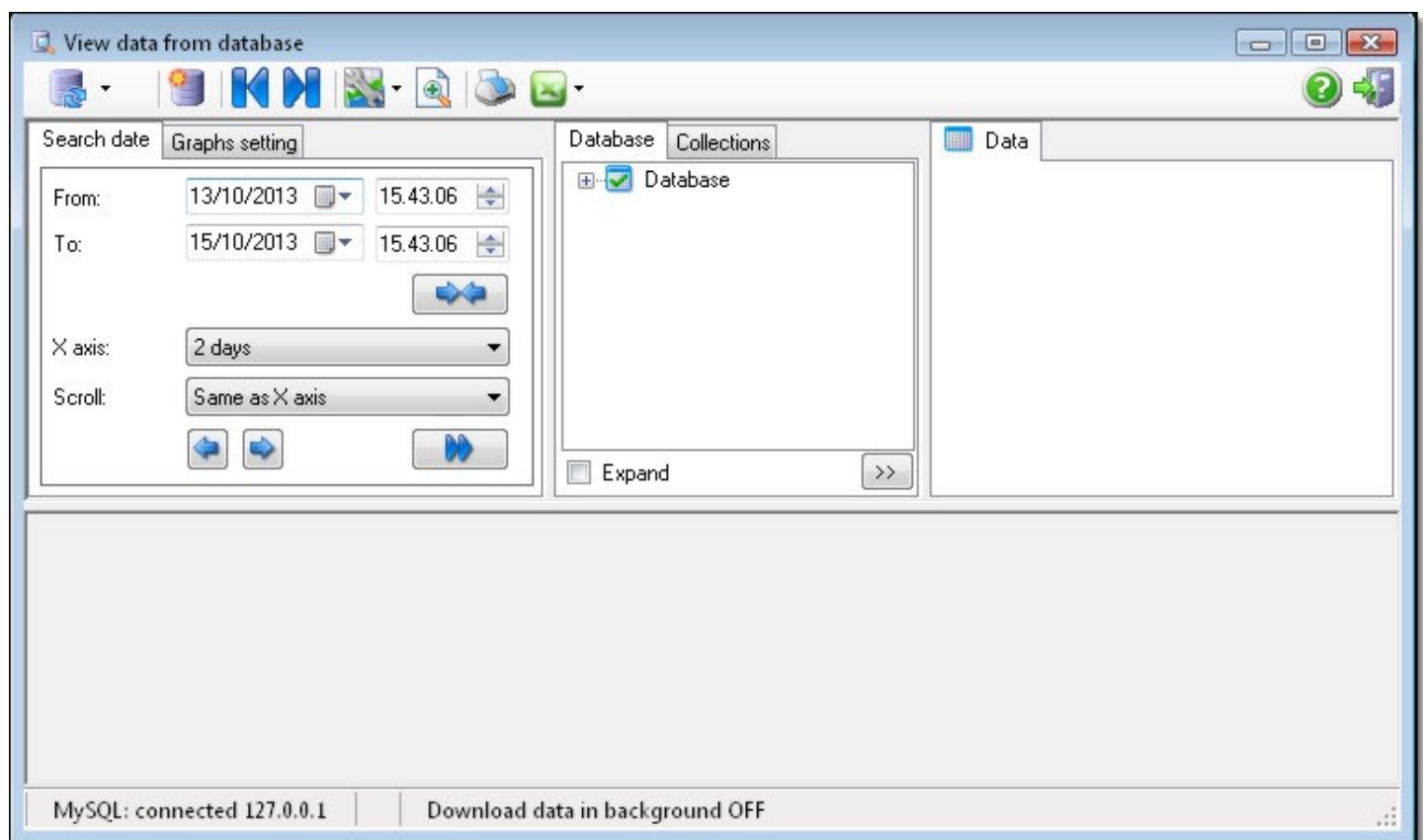


18. DISPLAYING DATA STORED IN THE DATABASE

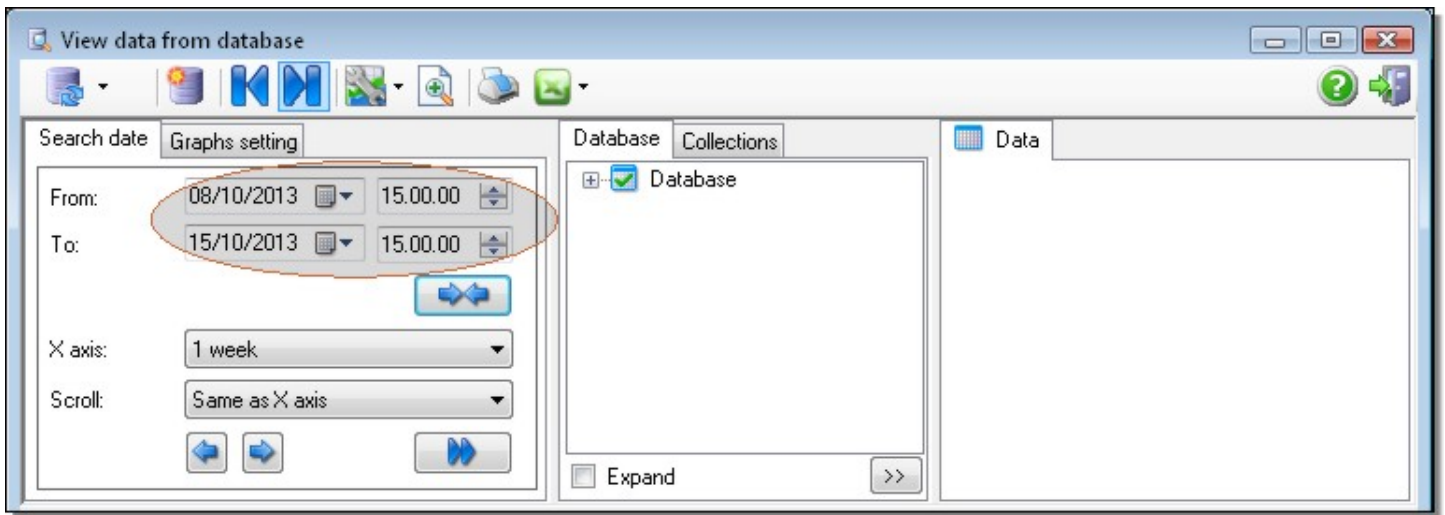
In order to recall the data collected in the database, select the icon *View Data* from the toolbar, or the item *View Data* from the *File* menu.



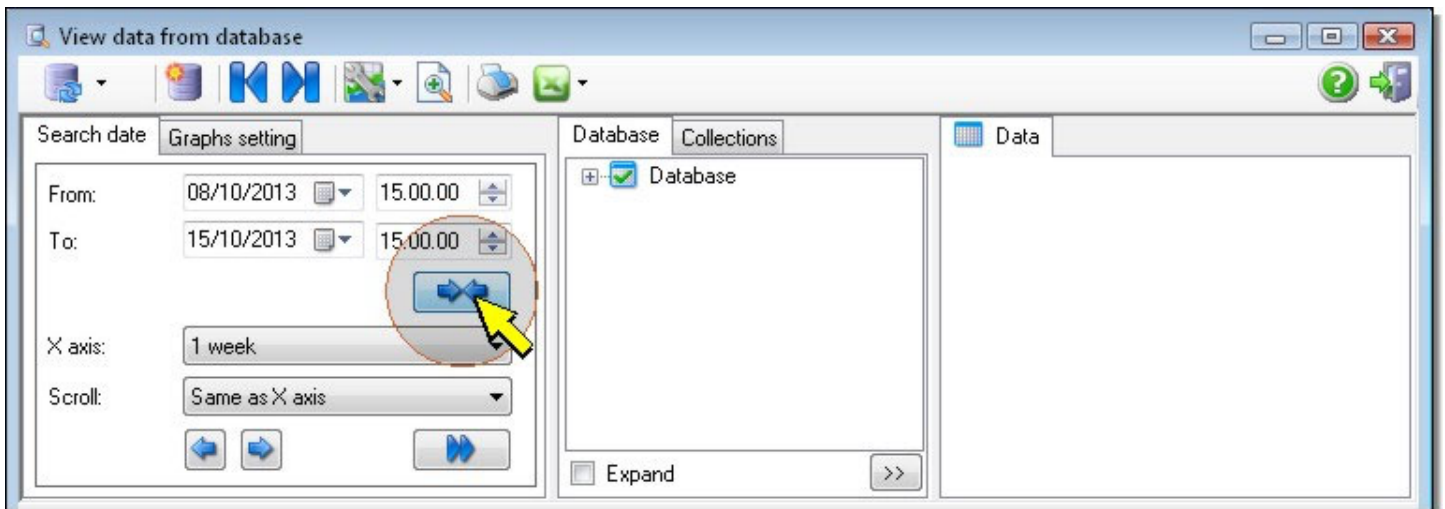
The database window is opened.



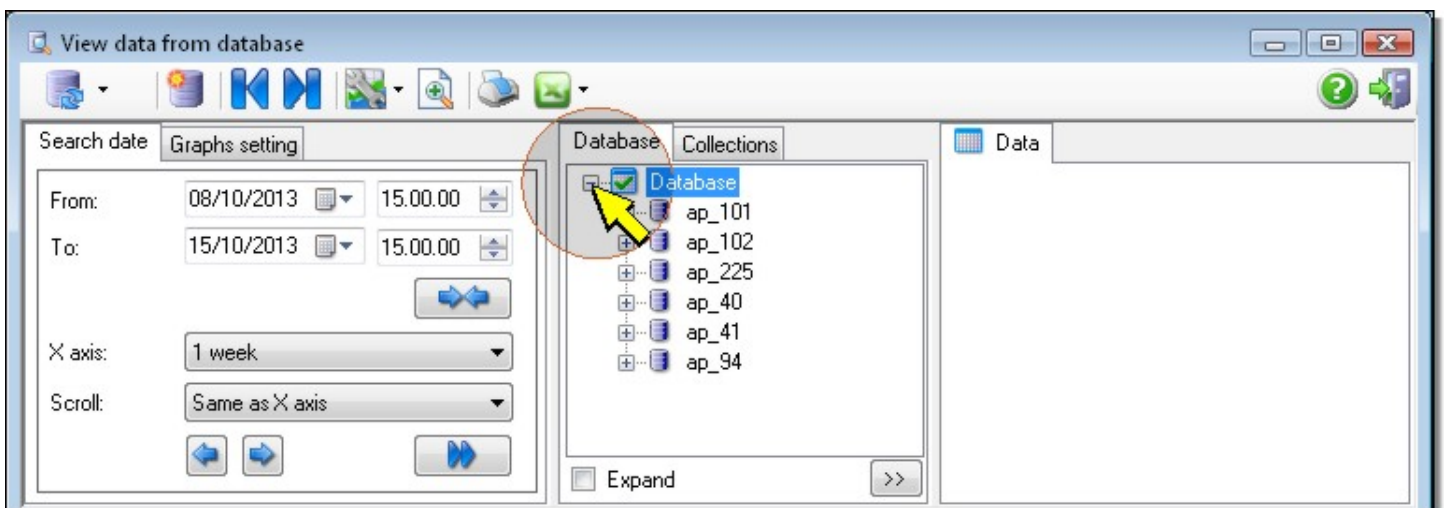
In the section *Search date*, insert starting date and time (fields *from...*) and ending date and time (fields *To...*) of required period .



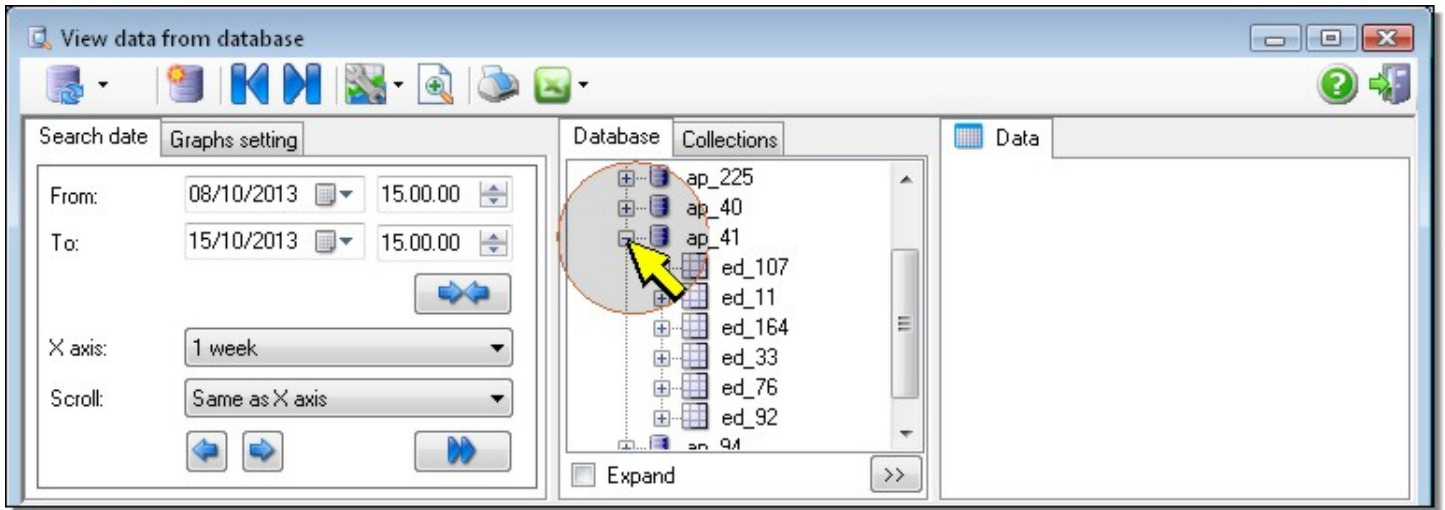
Press the  button to restrict search within selected period.



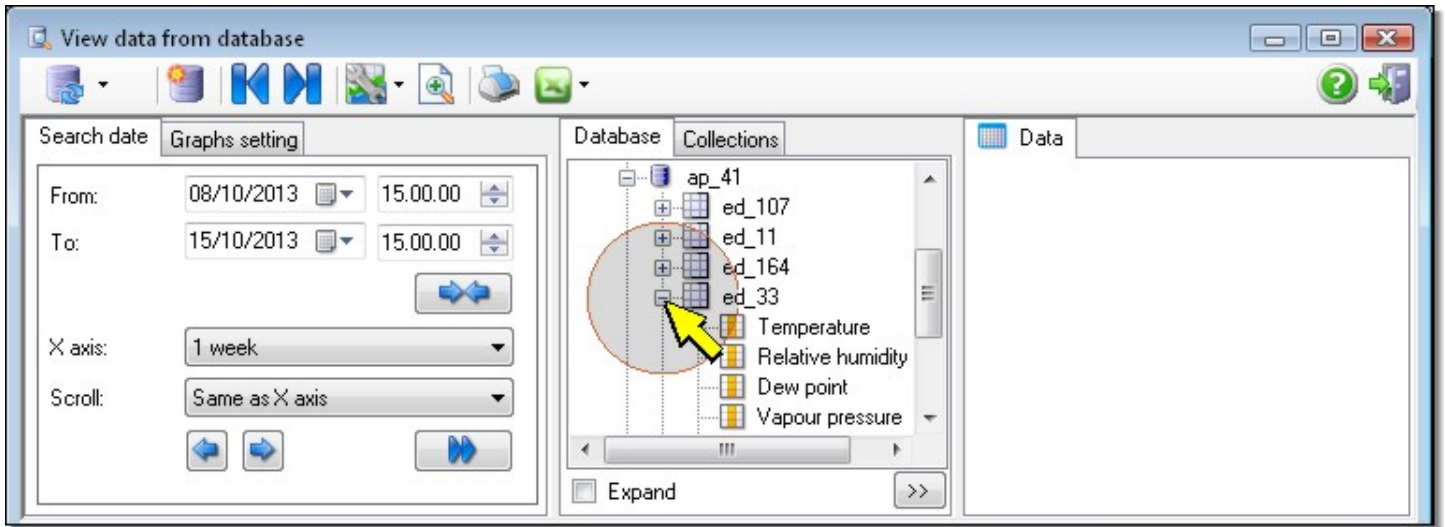
In the *Database* section, expand the database structure. It will appear the list of the base units, identified by their RF address, from which the data were downloaded. If data from the HD50... and/or HD208... data loggers were downloaded, the item *ap_0* appears.



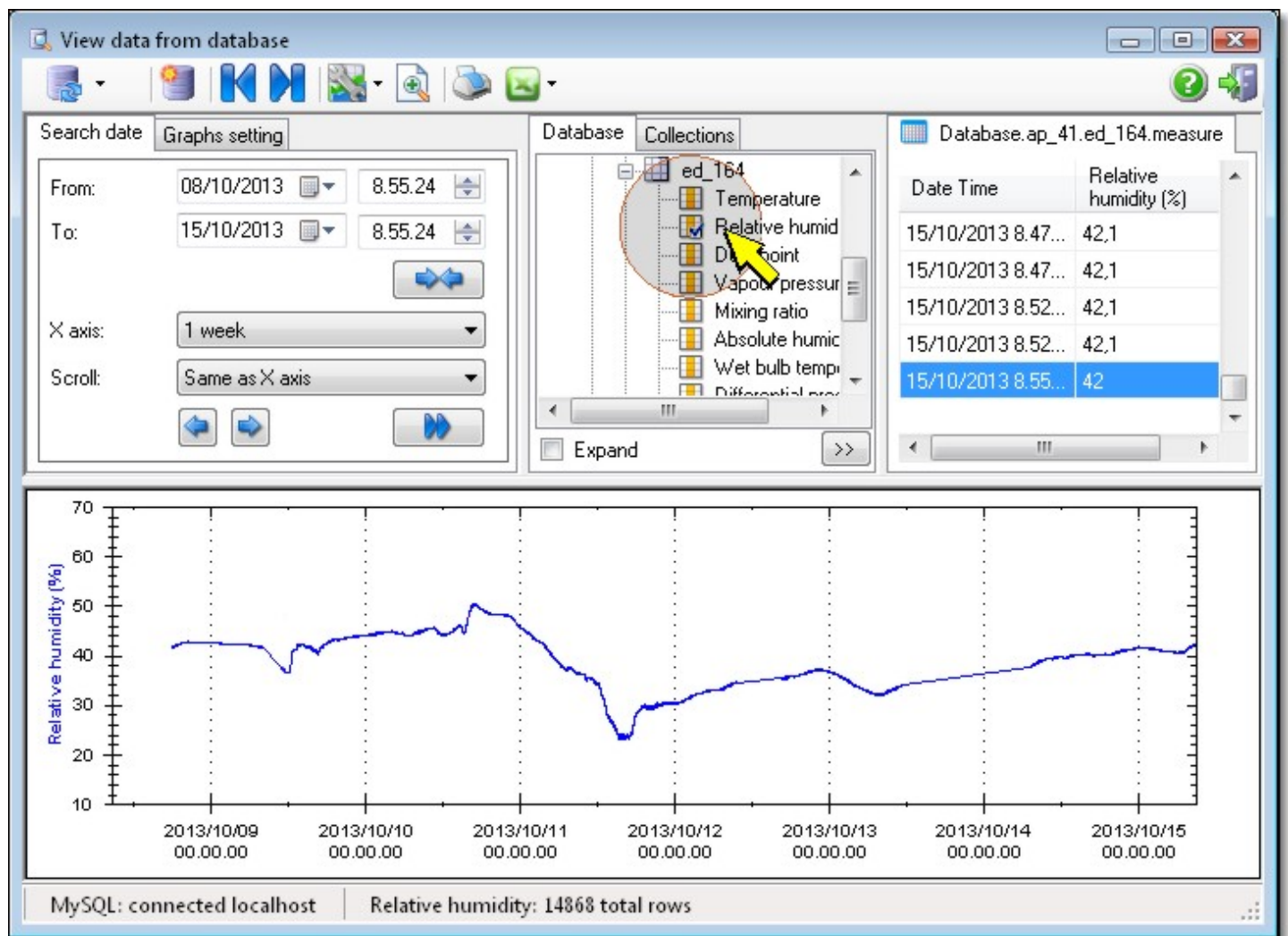
Expand the required access point or the item *ap_0* (for HD50... and/or HD208... data loggers): the list of data loggers appears. HD35ED... and HD50... data loggers are identified by their own RF address. HD208... data loggers are identified by their own serial number.



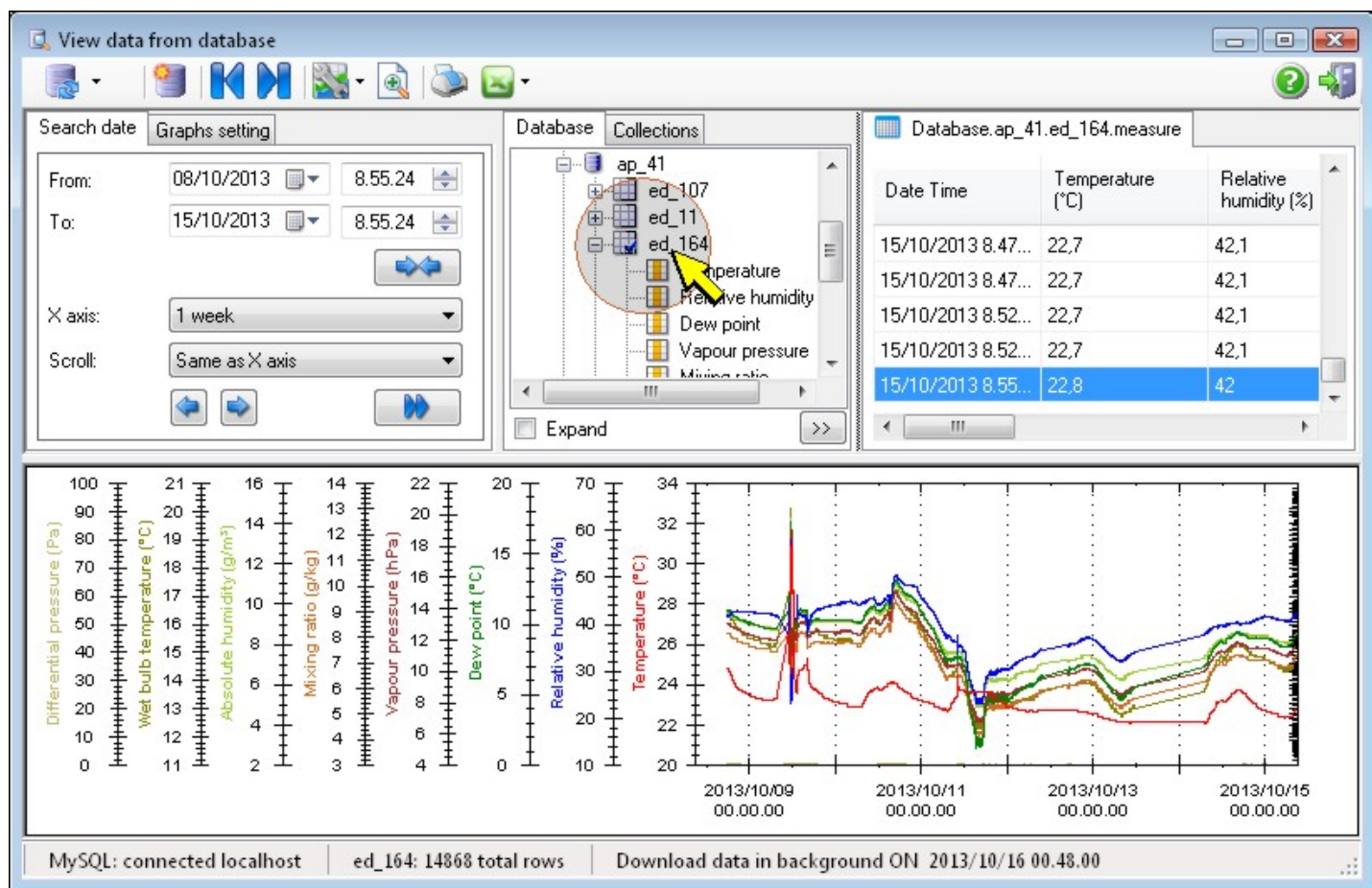
Expand required data logger. The list of physical quantities acquired by selected data logger are displayed.





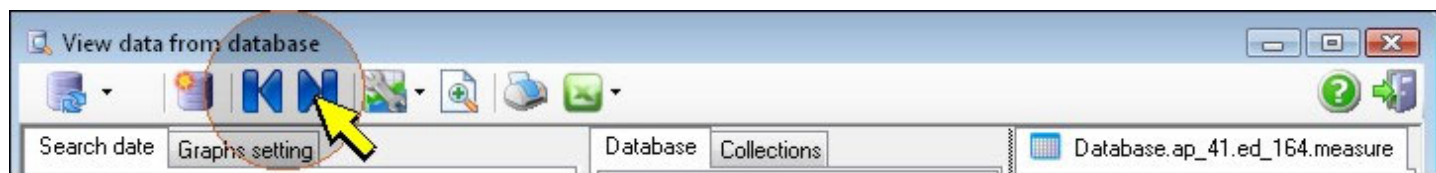
Select the quantity of interest. In the *Data* section, the list of measured values in selected time interval appears, and in the lower part of the window the time history of values for selected quantity is displayed.



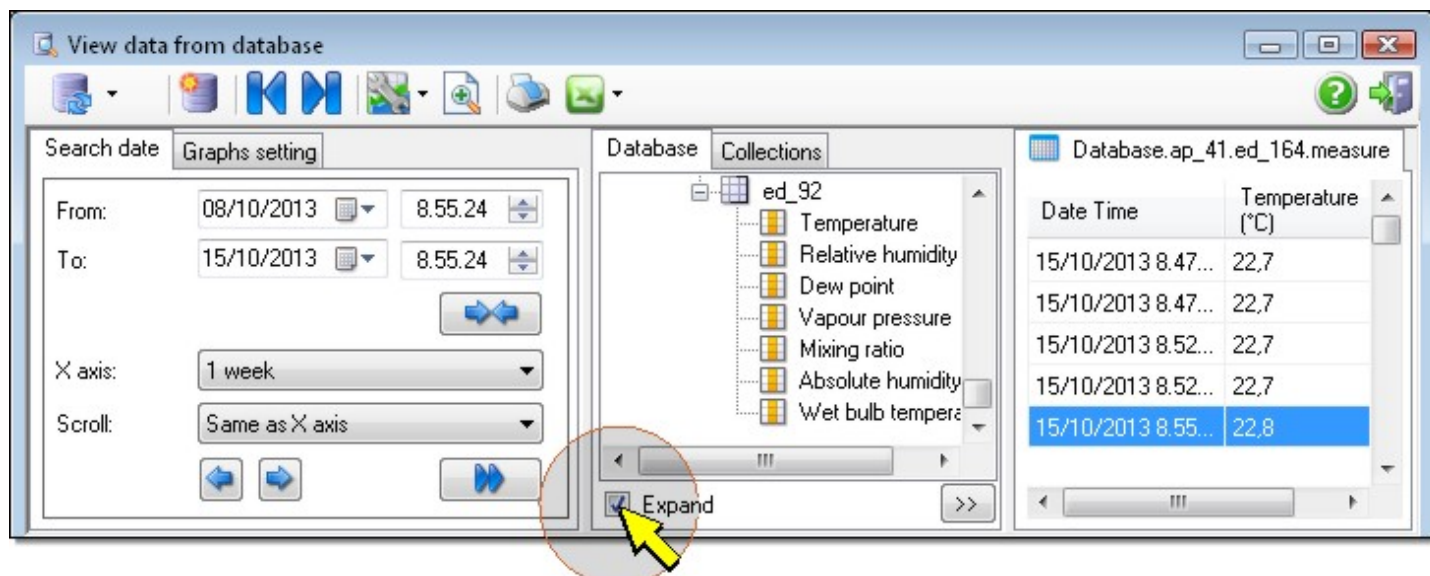
If, instead of a single physical quantity, the user selects the item corresponding to the data logger, values and time histories of all the physical quantities acquired and calculated by the data logger are displayed.



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



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 .



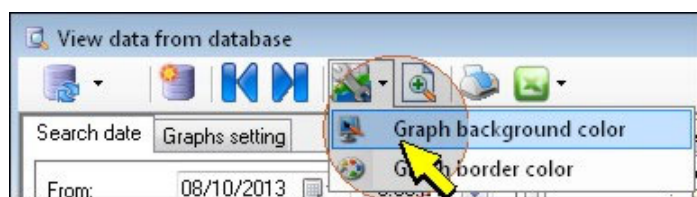
Deselect the *Expand* check box, in order to collapse the database structure.

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

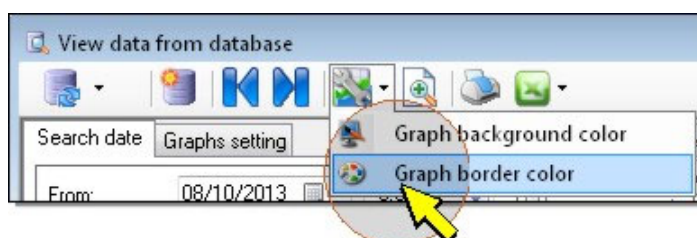
In the upper part of the window, select the icon *Graphics settings*, then the item *Graph background color*.



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*.

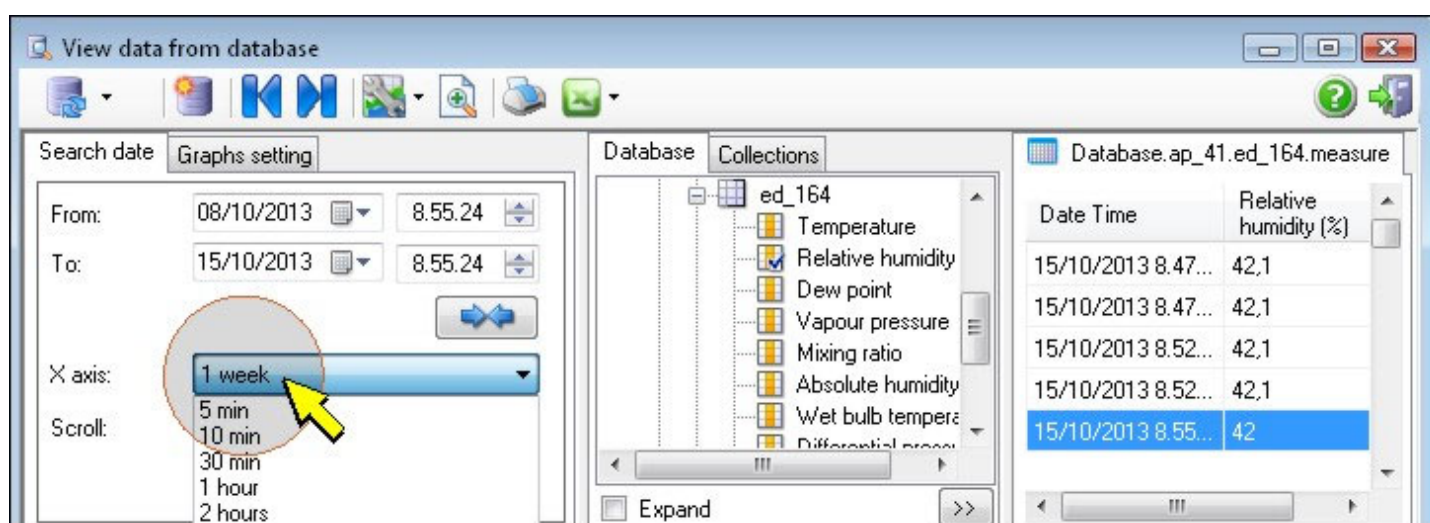


In the color table which is opened, select the desired color and press *OK* to confirm.

18.4. EDITING THE ABCISSA SCALE

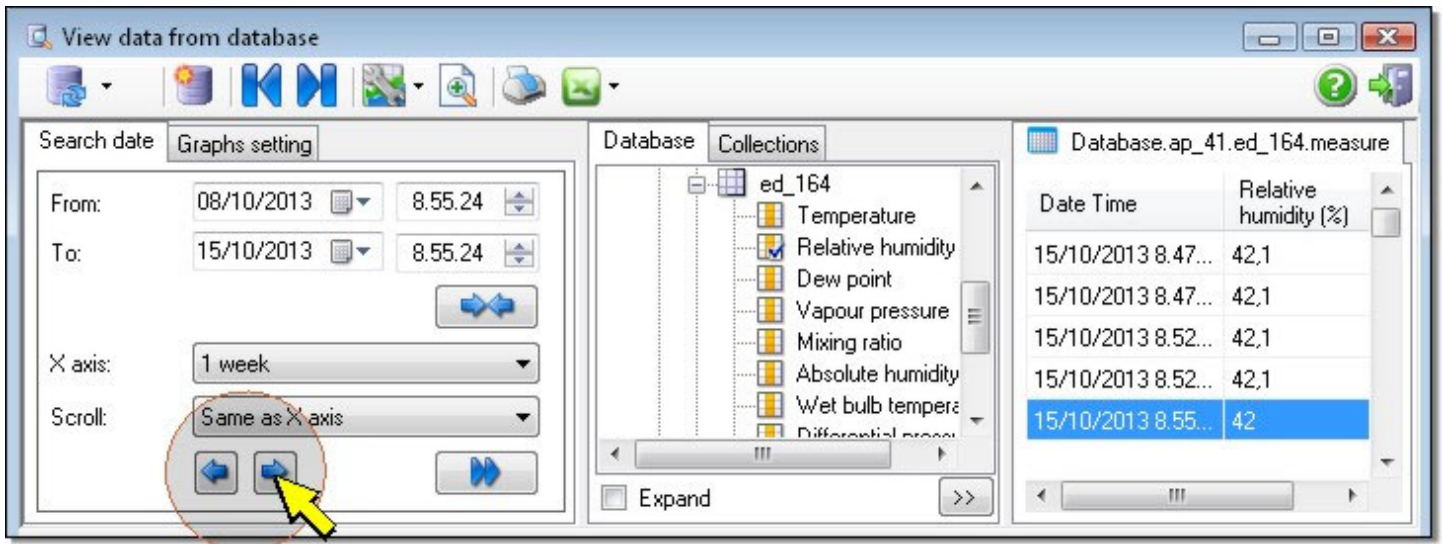
When a time interval is selected using the  button, the abscissa scale is automatically set so that to include the whole period selected.

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

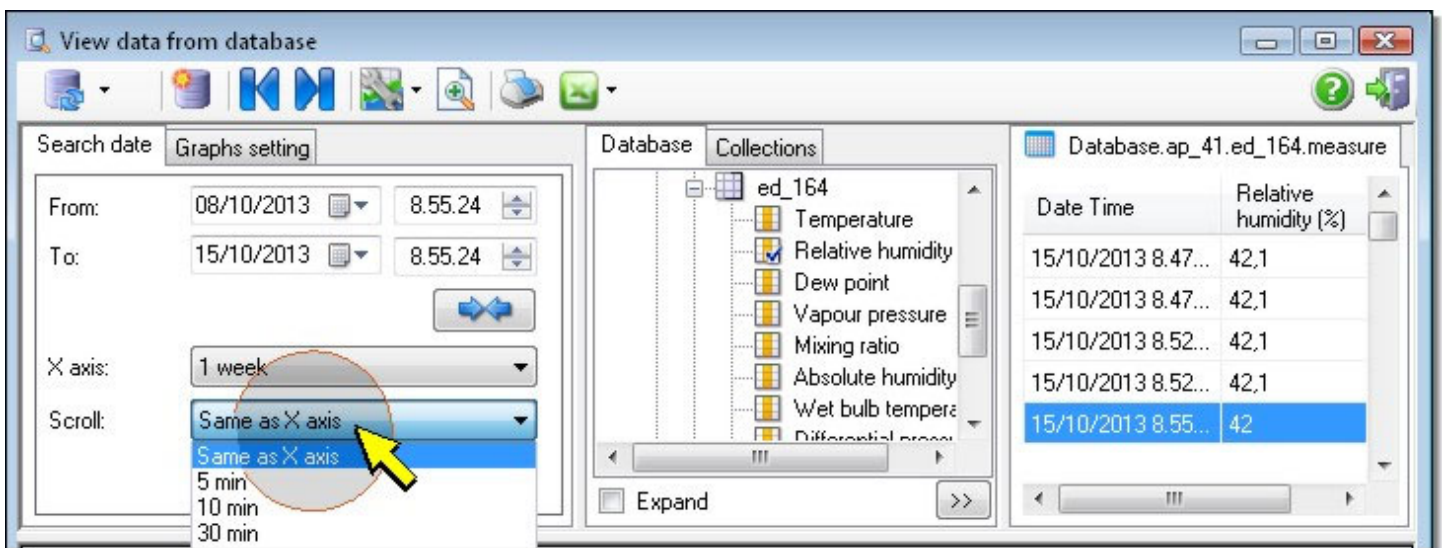


When the user modifies the field *X axis*, the starting date and time (field *From...*) of time period defined in the *Search date* section is automatically modified so that interval duration is equal to the value set in *X axis* field.

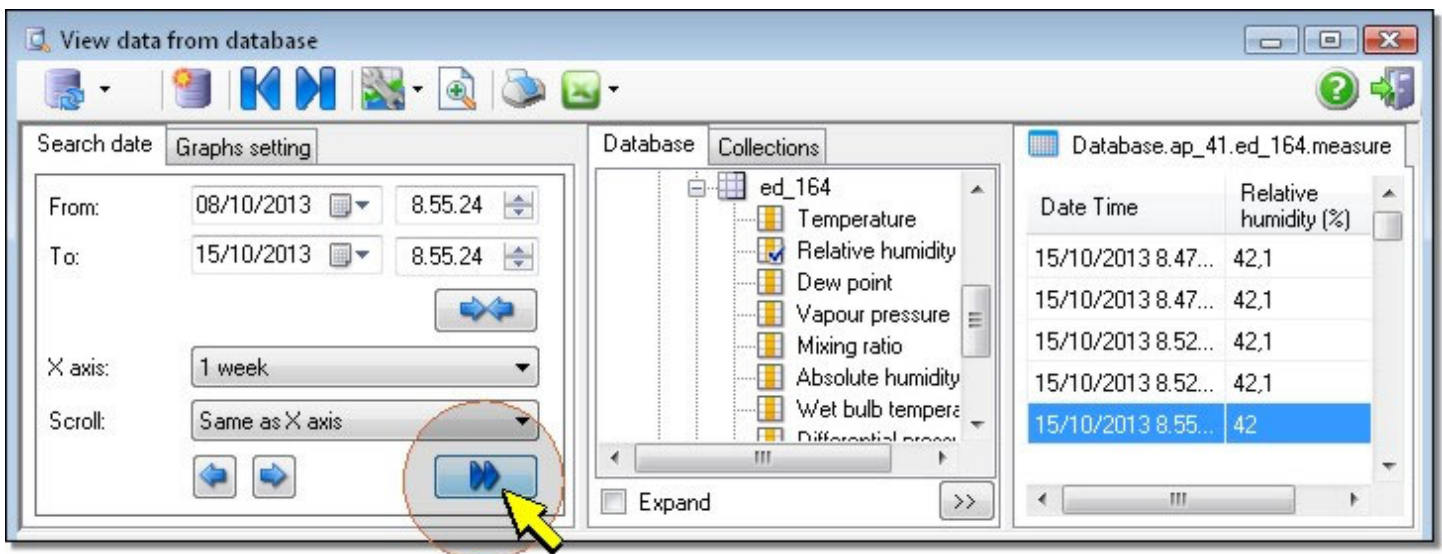
Using the small arrow keys it is possible to scroll forward or backward in time the measured values.



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*.

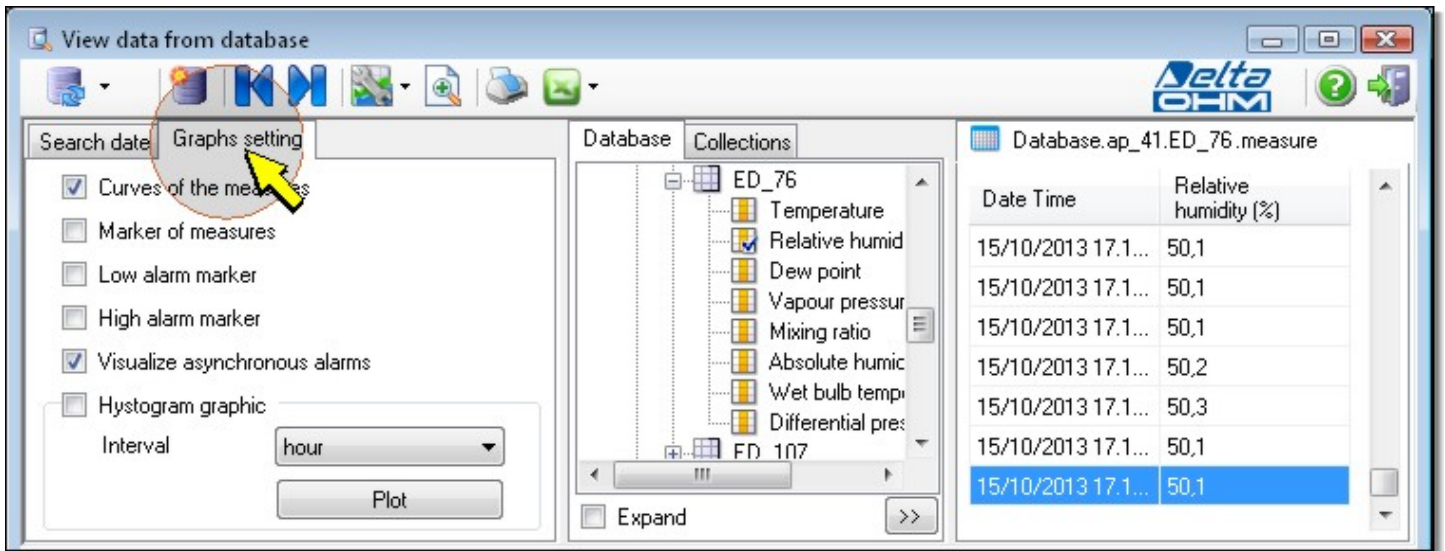


In order to quickly jump to the latest values measured, press the double arrow button .



18.5. MARKERS AND HISTOGRAM 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.



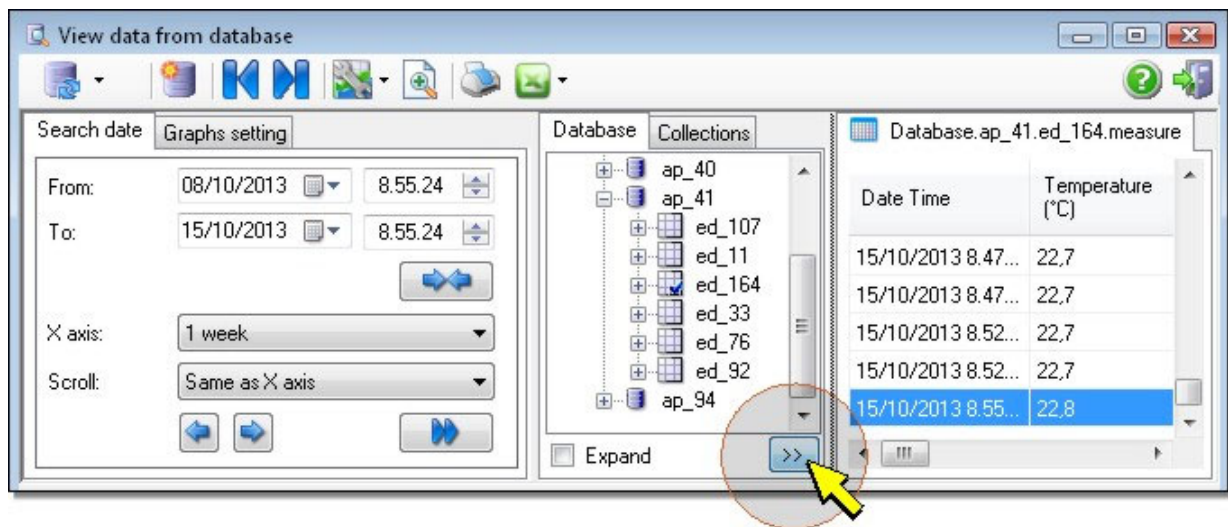
By selecting the option *Visualize asynchronous alarms*, all the measures in alarm are displayed in the graph, even if they are not in correspondence of logging instants (only if the measurement interval is lower than the logging interval and the logging interval is higher than 2 minutes). By deselecting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

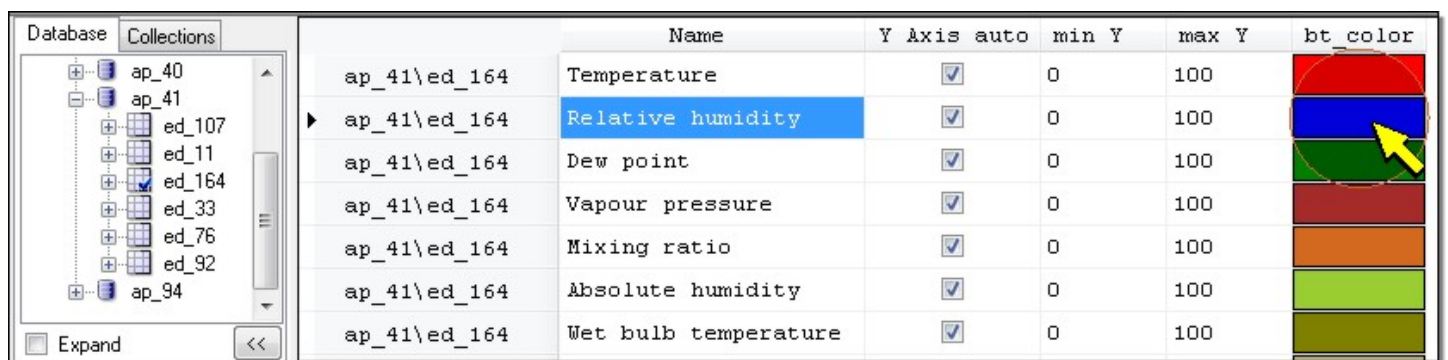
Only for rainfall measurement, the *Hystogram graphic* option can be selected: select the interval (minute, hour, day) for the graph and press *Plot*.

18.6. EDITING THE ORDINATE SCALE AND COLOR OF THE GRAPHS

Press the **>>** 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.



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

+

ap_40

+

ap_41

+

ed_107

+

ed_11

+

ed_164

+

ed_33

+

ed_76

+

ed_92

+

ap_94

☐ Expand

<<

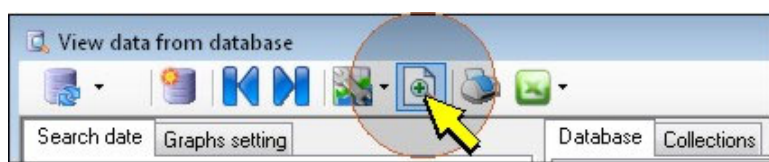
	Name	Y Axis auto	min Y	max Y	bt_color
ap_41\ed_107	Temperature	<input checked="" type="checkbox"/>	0	100	<div></div>
ap_41\ed_107	Relative humidity	<input type="checkbox"/>	0	100	<div></div>
ap_41\ed_107	Dew point	<input checked="" type="checkbox"/>	0	100	<div></div>
ap_41\ed_107	Vapour pressure	<input checked="" type="checkbox"/>	0	100	<div></div>
ap_41\ed_107	Mixing ratio	<input checked="" type="checkbox"/>	0	100	<div></div>
ap_41\ed_107	Absolute humidity	<input checked="" type="checkbox"/>	0	100	<div></div>
ap_41\ed_107	Wet bulb temperature	<input checked="" type="checkbox"/>	0	100	<div></div>

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. ENLARGEMENT OF A GRAPH

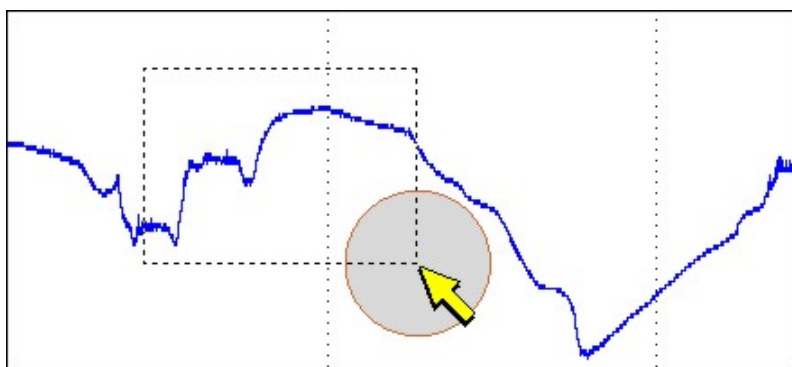
In the upper part of the window, select the icon .



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

18.9. ZOOM

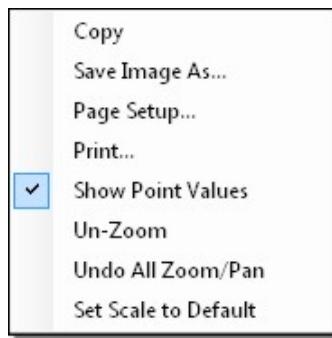
In order to enlarge a specific area on the chart, press the left mouse key to define the first corner of a rectangular area, then, holding down the key, drag the mouse to the second point and release it to define the zoom window.



The area selected will fill the whole area destined 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.



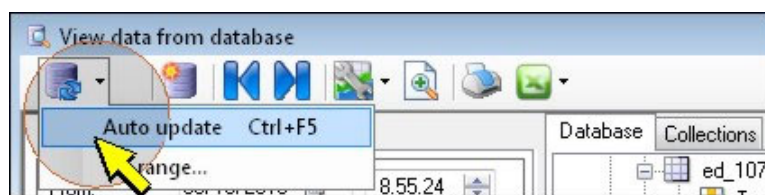
Set scale to Default: adapt the vertical scale to measured values; the maximum zoom level is set in order to show the complete trace.

18.10. UPDATING INFORMATION DISPLAYED

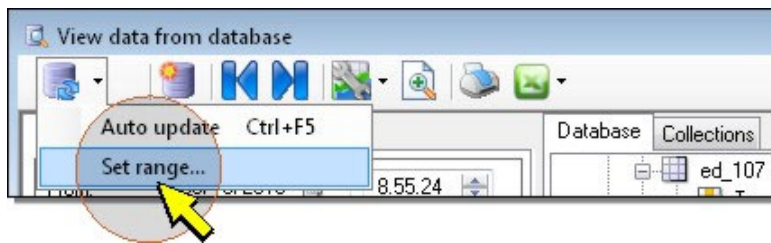
In order to update the window as to display also the data collected in the database after the window was opened, select the icon .



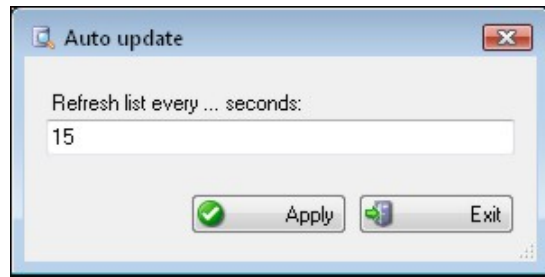
To automatically refresh the window so as to display the new data collected into the database, select the small arrow placed on the right of *refresh* icon, then click on *Auto update* command.



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



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



18.11. EXPORT OF DATA

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

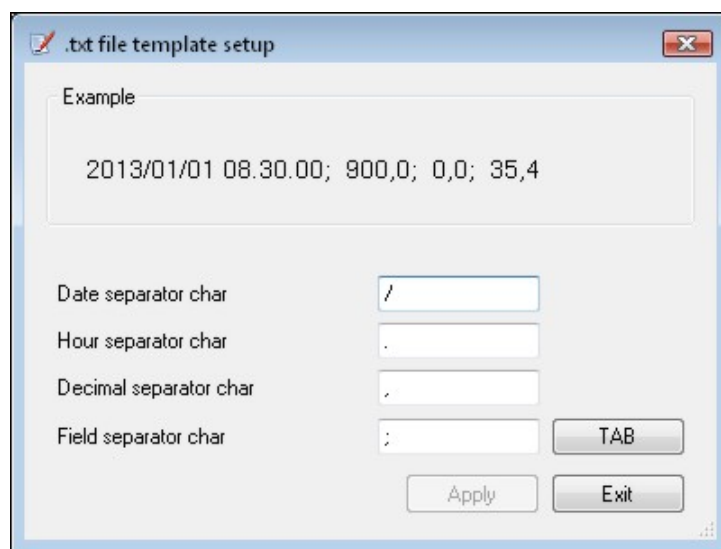


After a few seconds a message confirming successful export operation appears. The text files are saved in the default working folder.

By selecting the command *Setup Export File Text*:



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



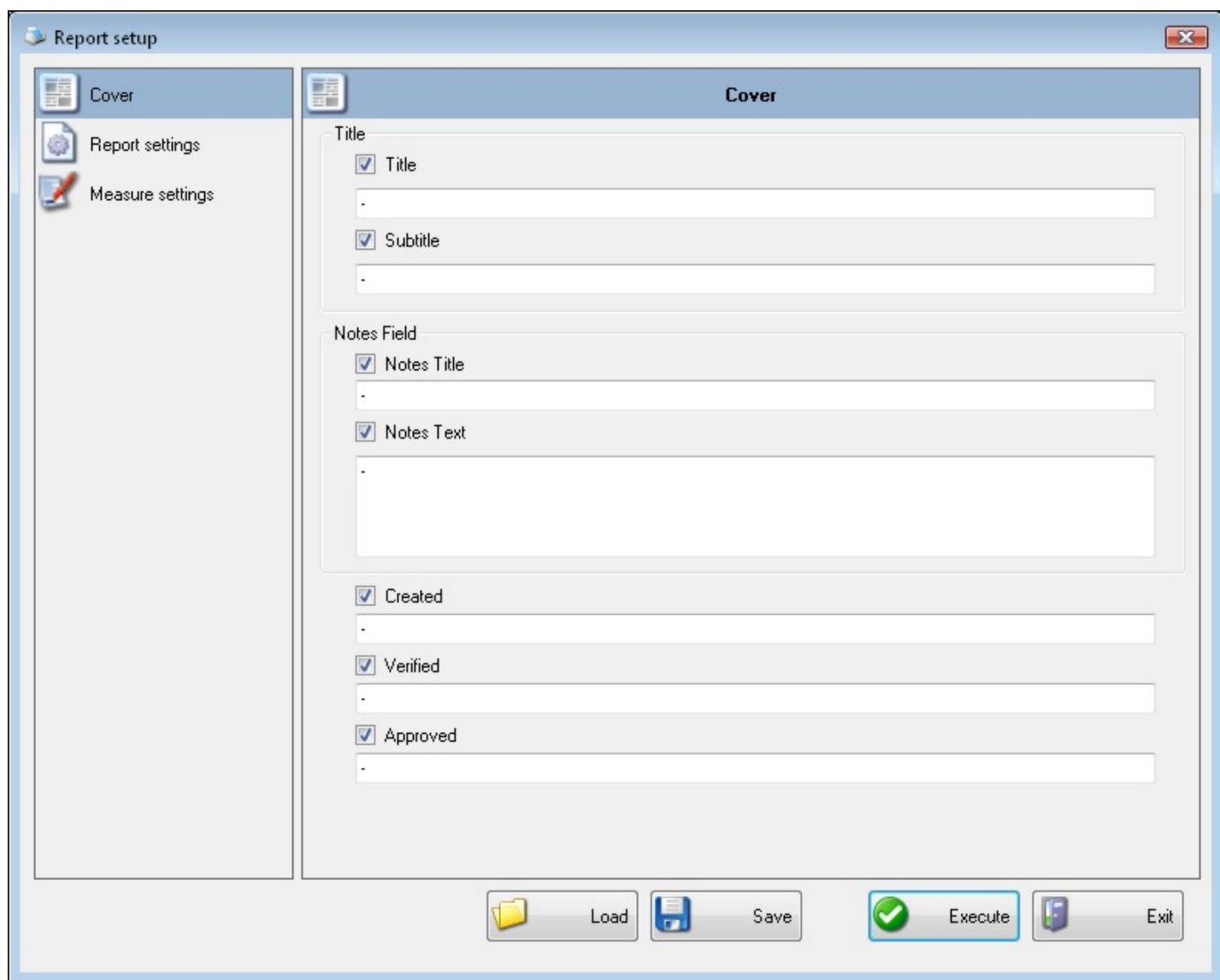
Note: if the seconds do not appear in the date-time field when opening the CSV file with Excel®, set the custom format "dd/mm/yyyy hh.mm.ss" for the cells (use the set date and time separators).

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  icon.



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

☒ Title
-

☒ Subtitle
-

Notes Field

☒ Notes Title
-

☒ Notes Text
-

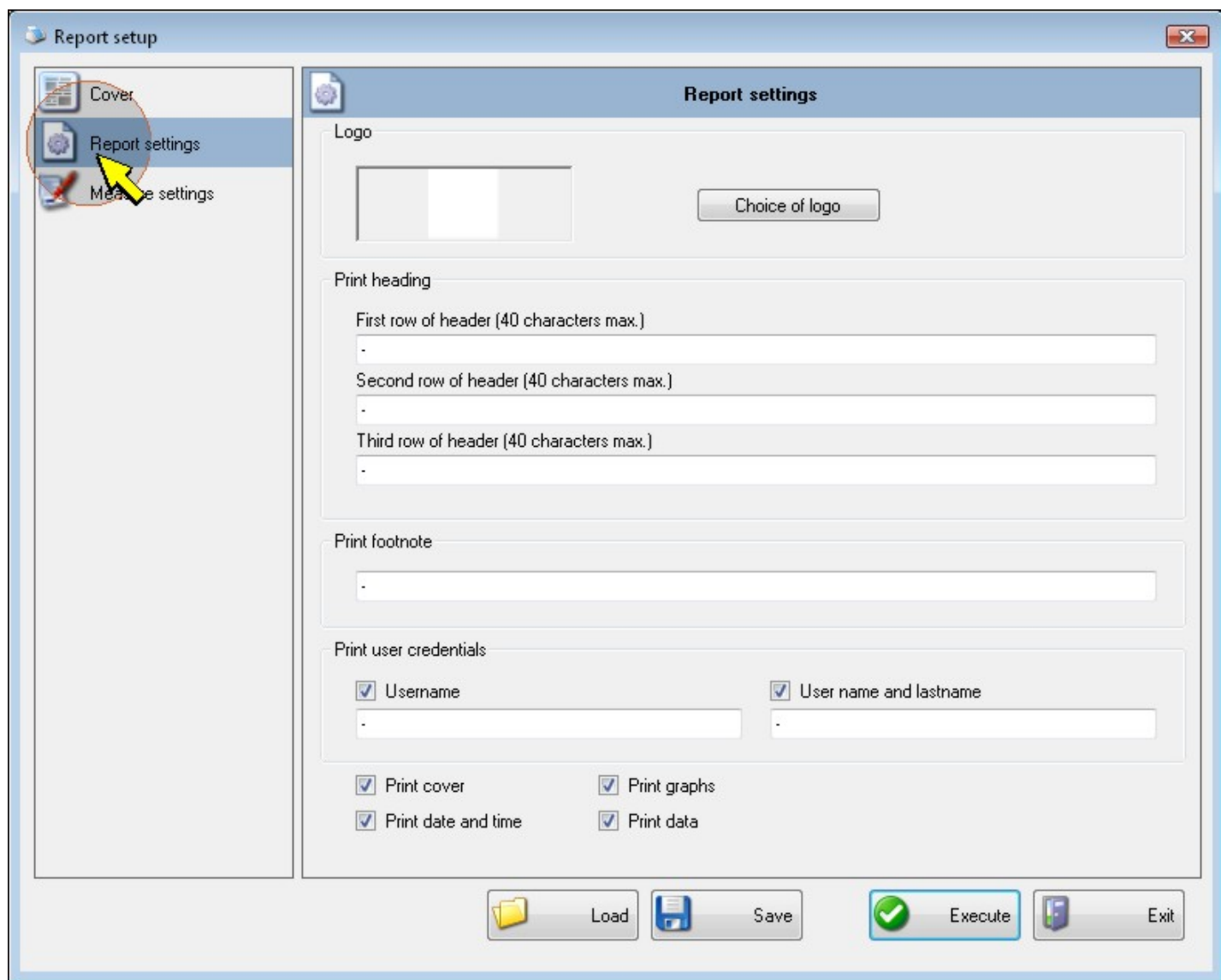
☒ Created
-

☒ Verified
-

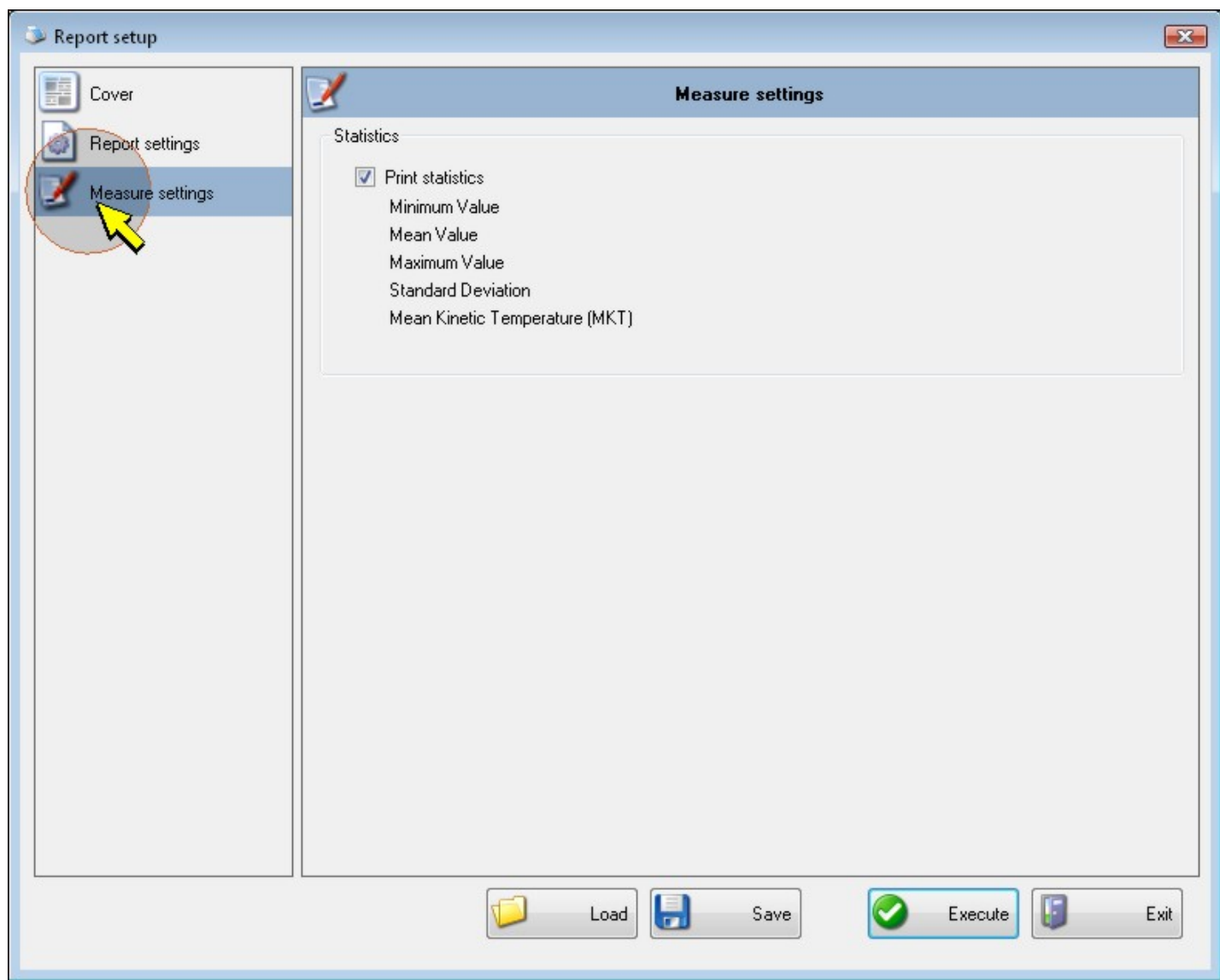
☒ Approved
-

Load Save Execute Exit

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, ...



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



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

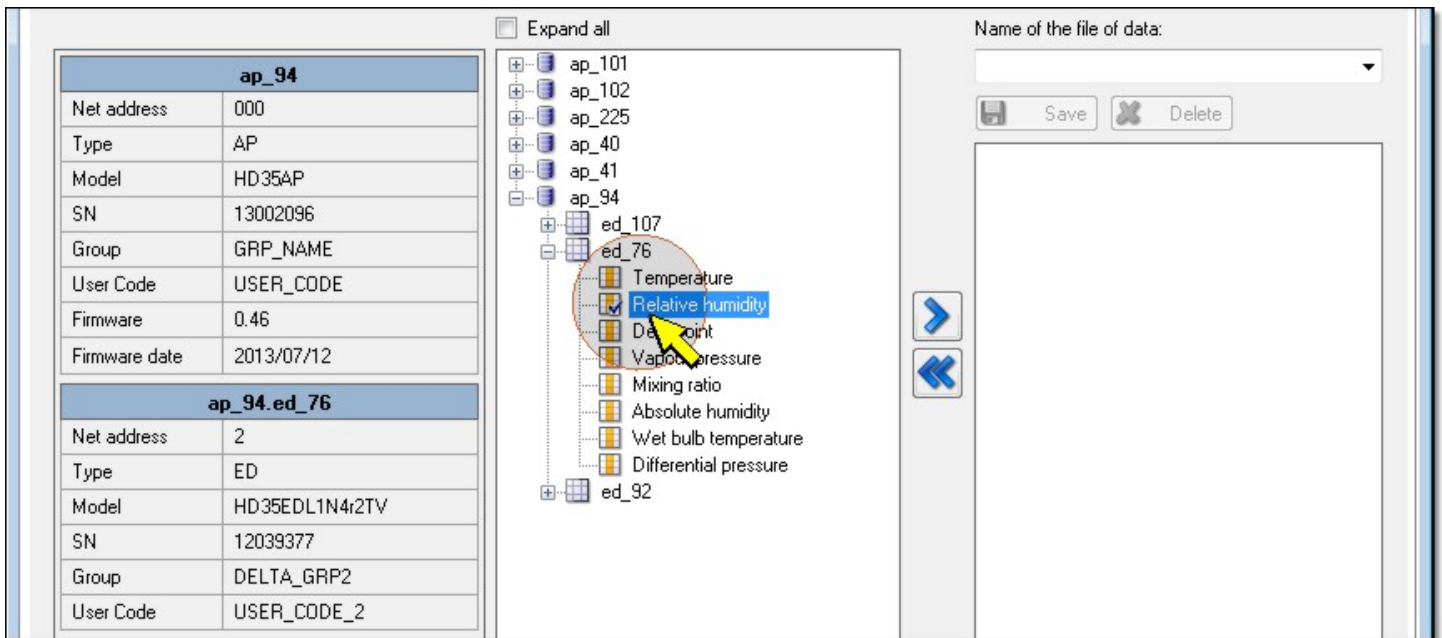
If the user is interested to independently analyze specific subsets of physical quantities acquired by the system, it is possible to extract from the database subsets of data. In HD35AP-S software, such subsets are named *Collections*.

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

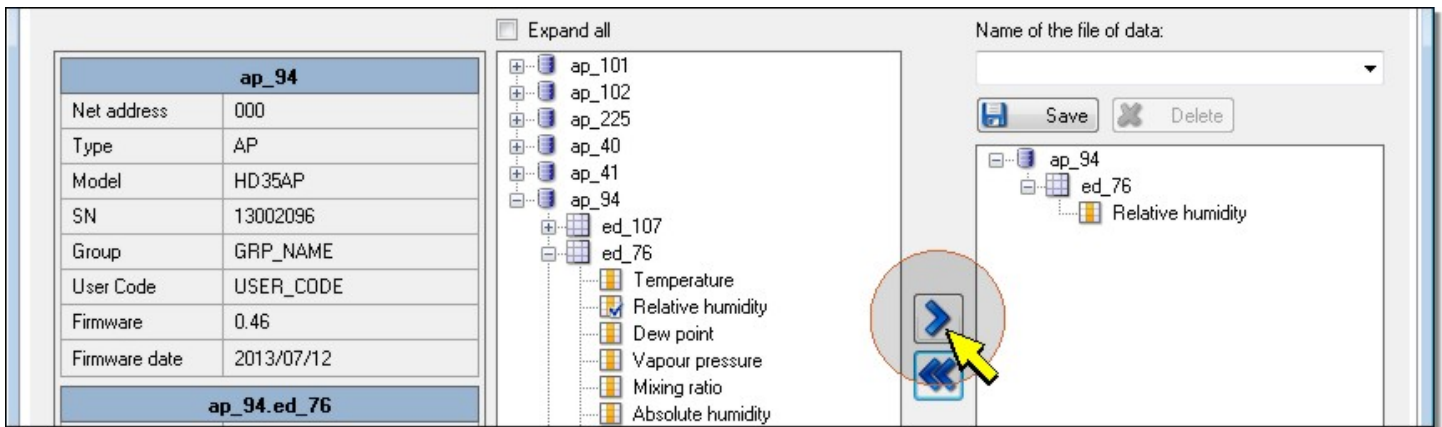


Warning: to access the customized structures, the administrator password is required; if during the connection to the system the administrator password has not been entered, the software asks to enter it now before continuing.

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.

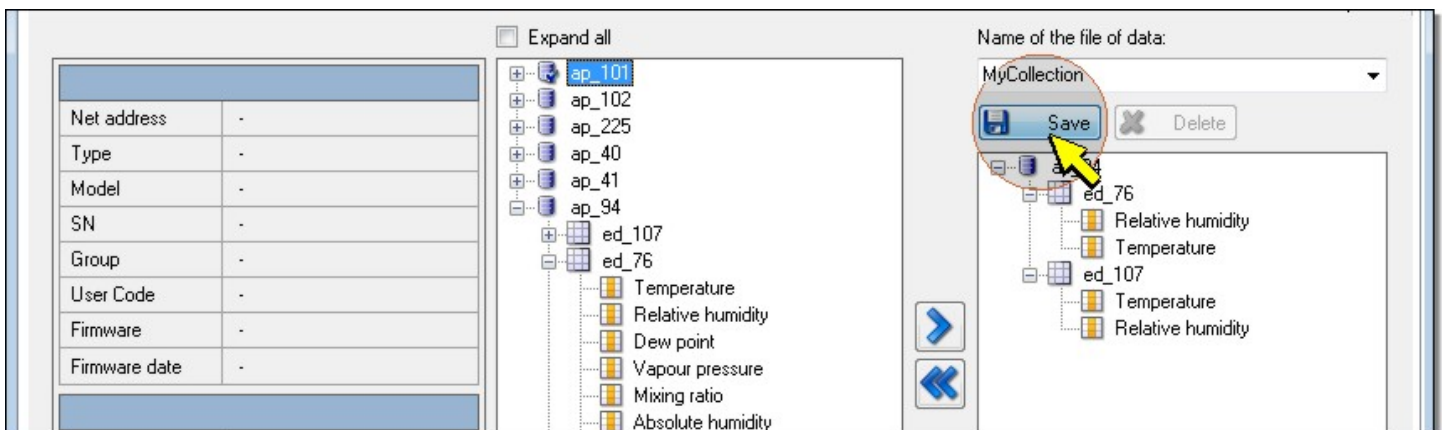


Press the button  to include selected item into a collection.

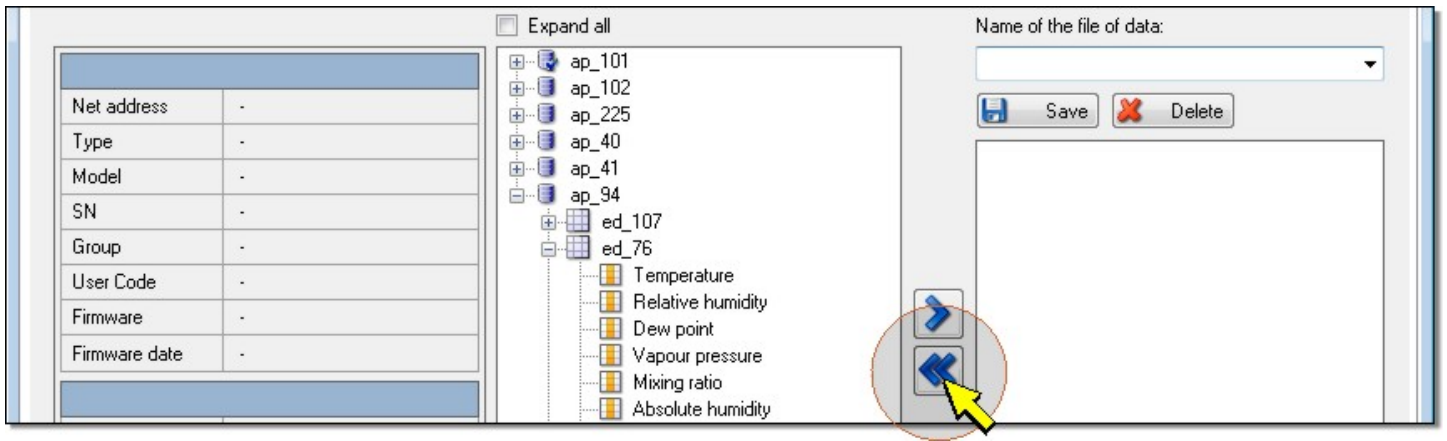


Proceed in the same way for additional elements to include in the same collection.

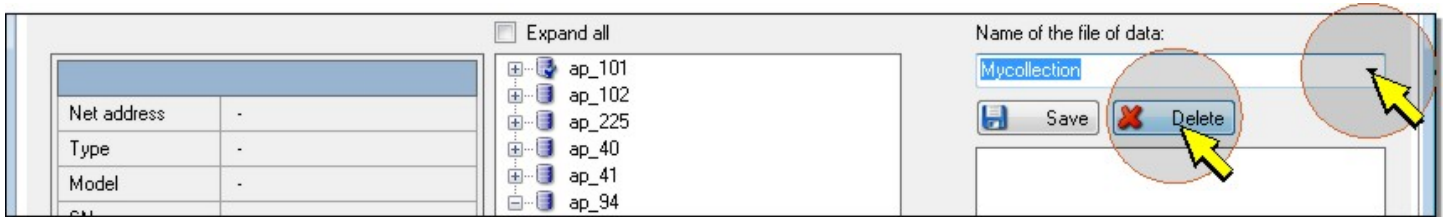
Type in a name for the collection in the field *Name of the file of data* and press the *Save* button.



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



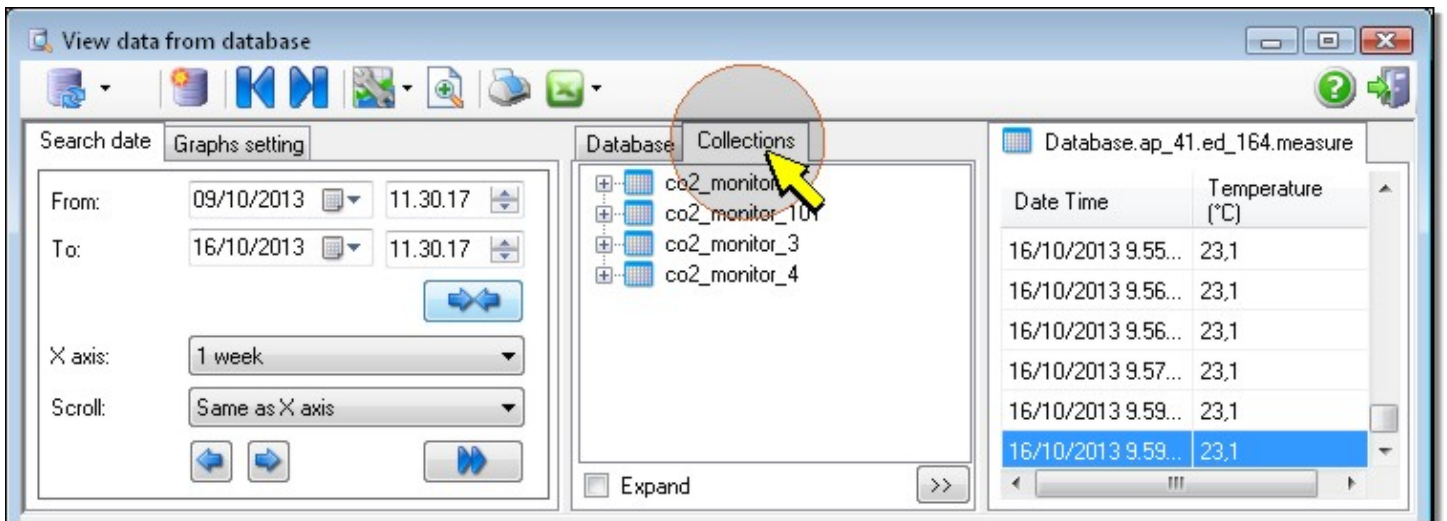
To delete a specific collection, select it in the the field *Name of the file of data* and press the *Delete* key.



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



All collections saved are available by selecting the section *Collections*.

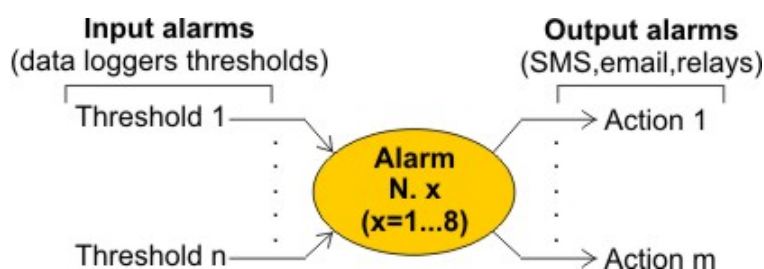


Procedures to display the data of collections are exactly the same of those described for the display of data contained in the whole database; for additional information refer to the appropriate section in the previous paragraphs in this chapter.

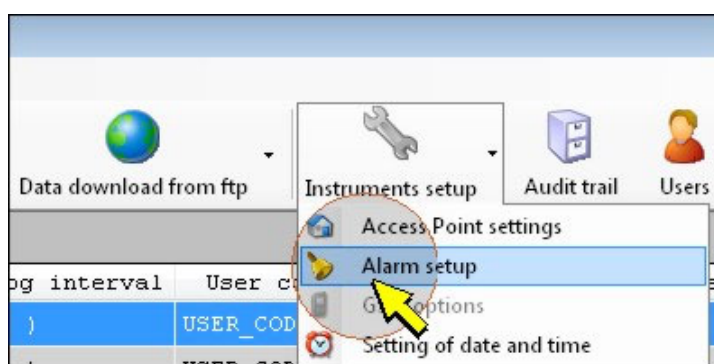
19. ALARMS CONFIGURATION (ONLY HD35)

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 Ethernet) connection, or to activate any warnings or actions using the module with relays outputs HD35ED-ALM (if present in the system).

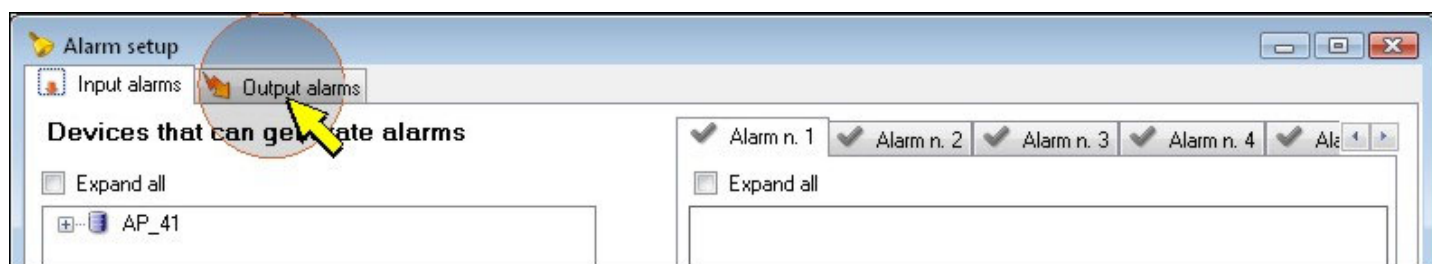
Up to 8 alarms can be defined. Each alarm performs one or more actions and can be activated by one or more thresholds as you want.



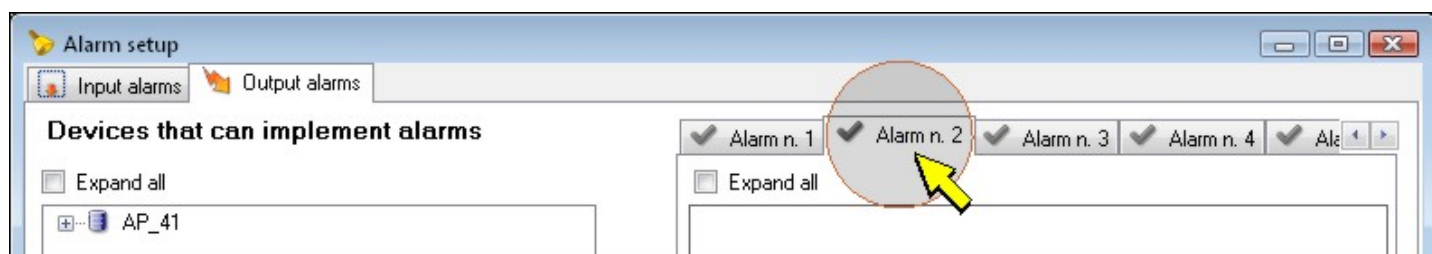
In order to configure the actions to carry out when an alarm occurs, select the icon *Instruments setup* from the toolbar, then the item *Alarm setup* (alternatively select the menu item *Tools >> Instruments setup >> Alarms setup*).



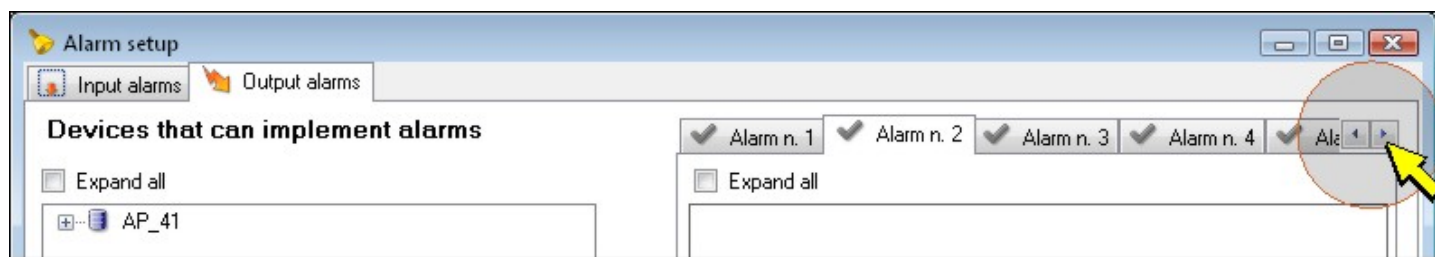
The window *Alarm setup* will be opened. Choose the section *Output alarms*.



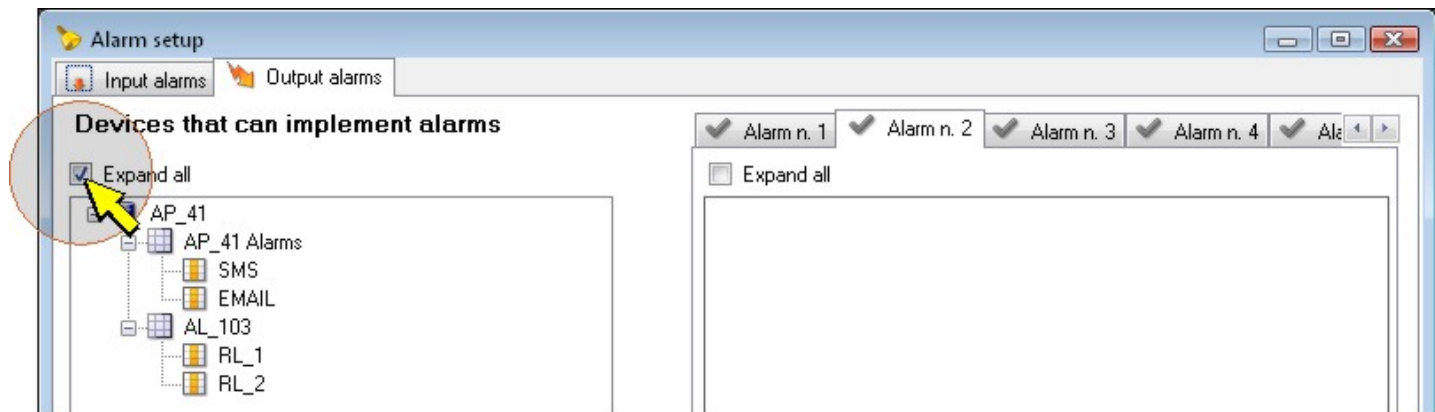
There are 8 alarms available, numbered from 1 to 8. In order to set an alarm action, select the panel corresponding to the alarm number you need to configure.



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



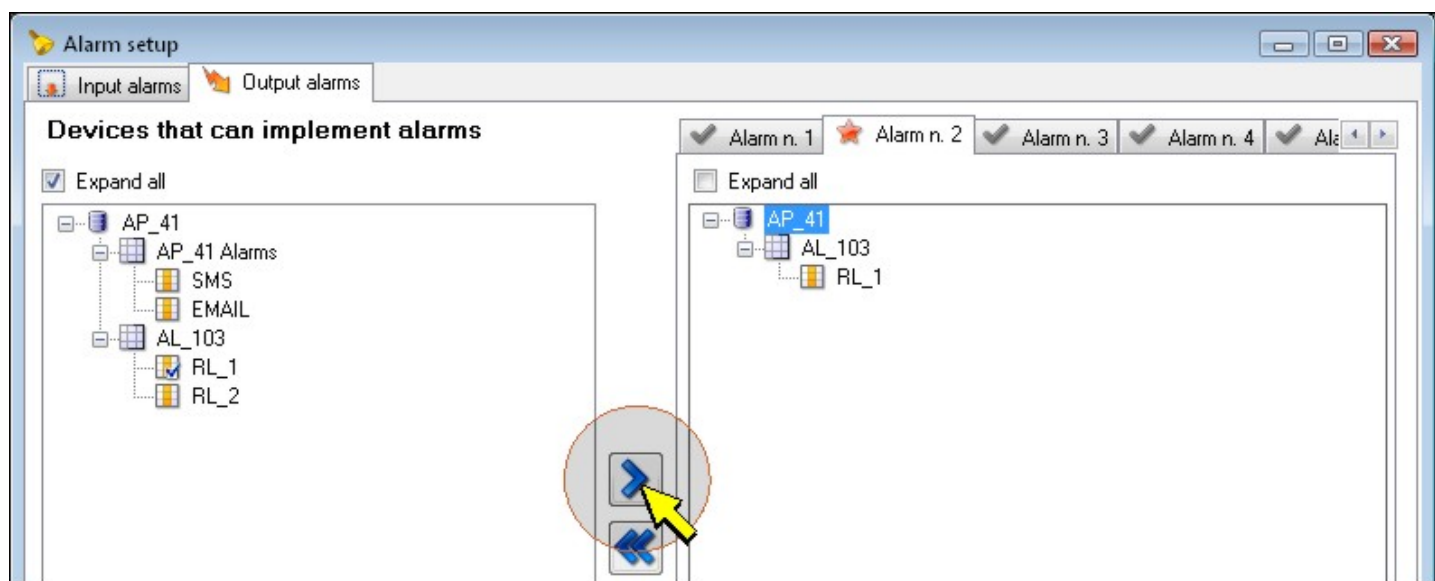
In the left side of the window, expand the base unit to make the alarm options appear.



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 option and press the key  to transfer it to the panel *Alarm n...*



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.

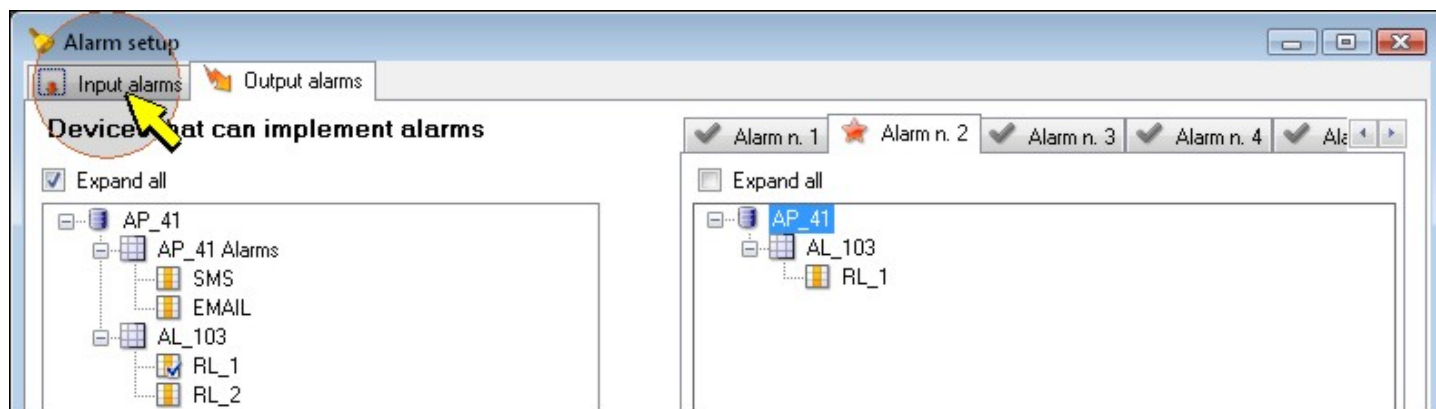
Proceed in the same manner for all alarm options you wish to enter in the panel. It is possible to enter the same alarm options in multiple panels.

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 .

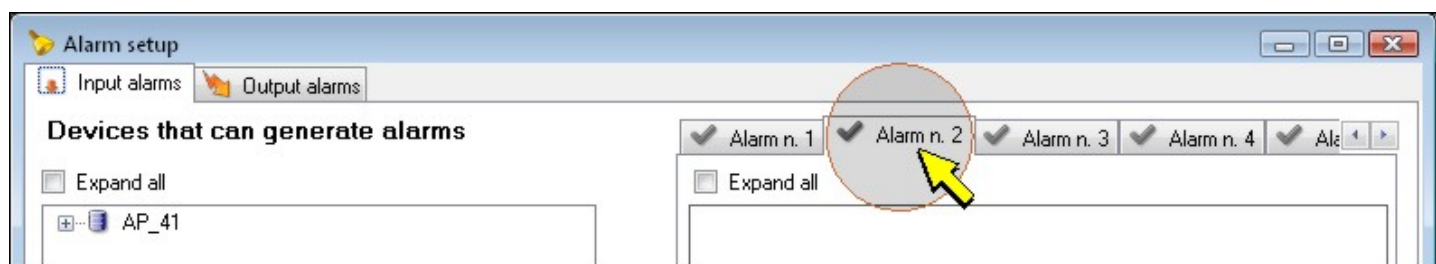
To enter in the *Alarm n...* panel all the options of all devices (activation of all relays of the alarm module, sending of SMS and e-mail), select the base unit and press the key .

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

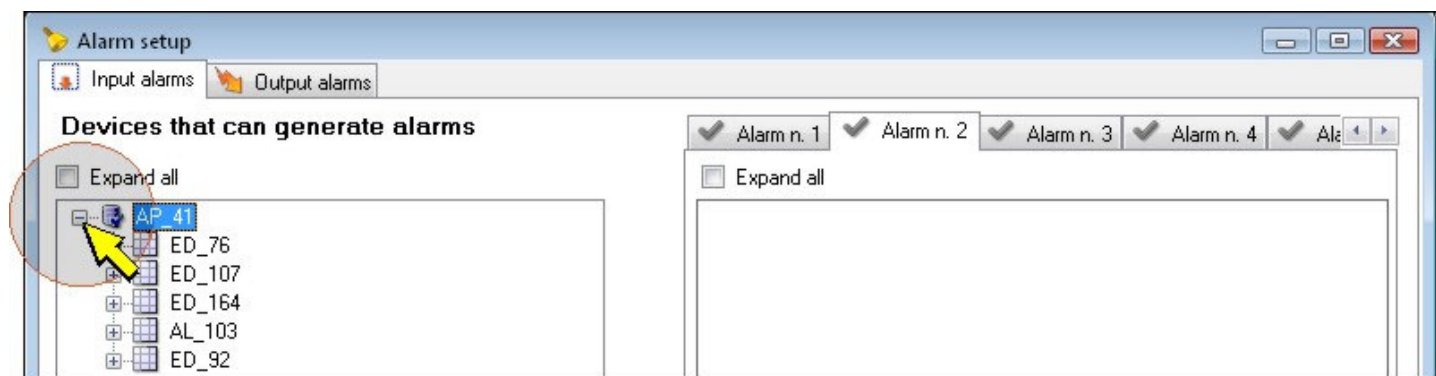
After the setting of the typology of the alarm actions it s necessary to define which alarm thresholds to associate to the actions set. To associate the thresholds to the actions set, go back to the sections *Input alarms*.



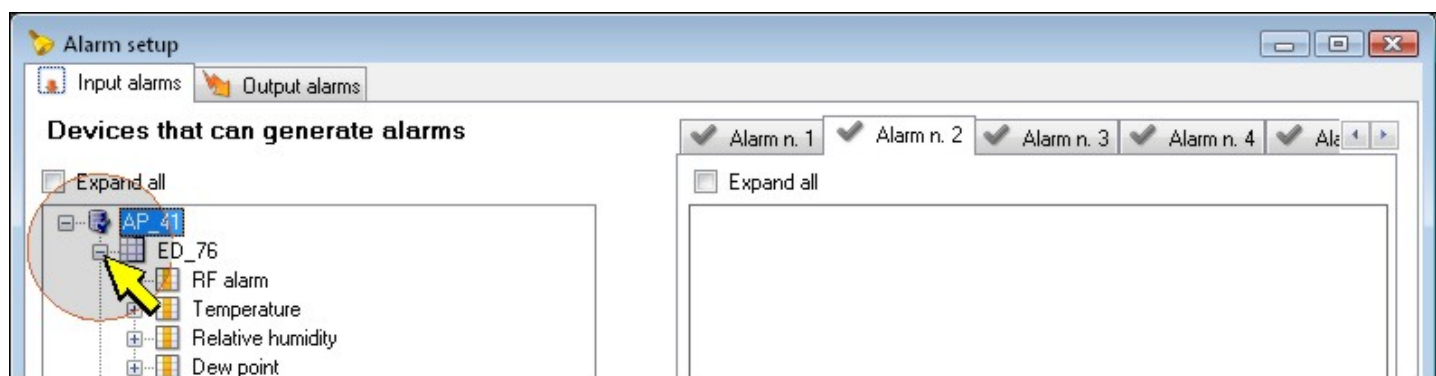
In the section *Input alarms* select, in the right window part, the alarm number to be associated to the thresholds.



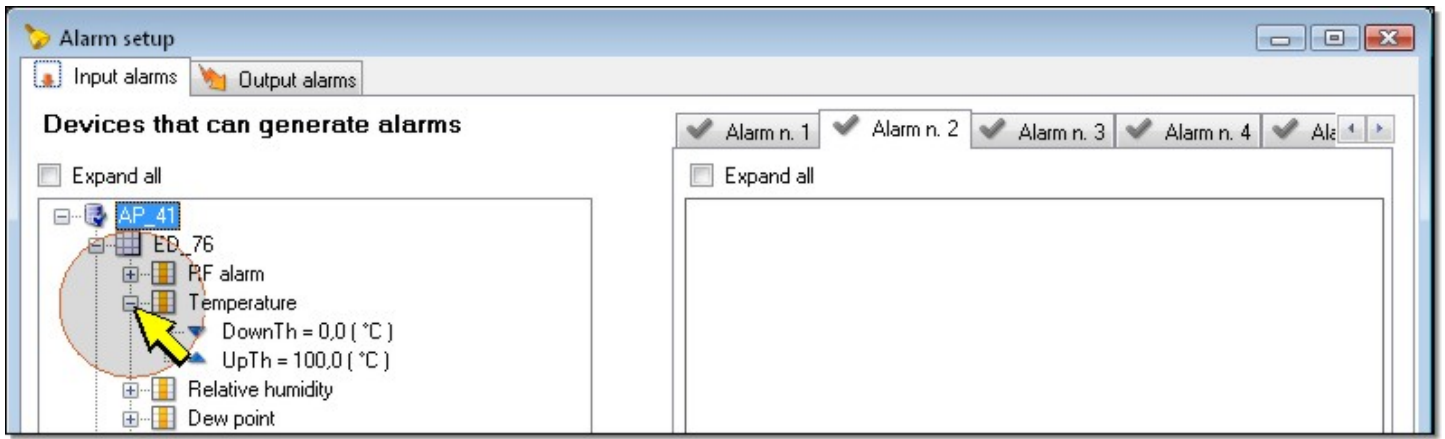
In the left window part, expand the base unit. The list of data loggers associated to the unit appears. Data loggers are identified by their RF address.



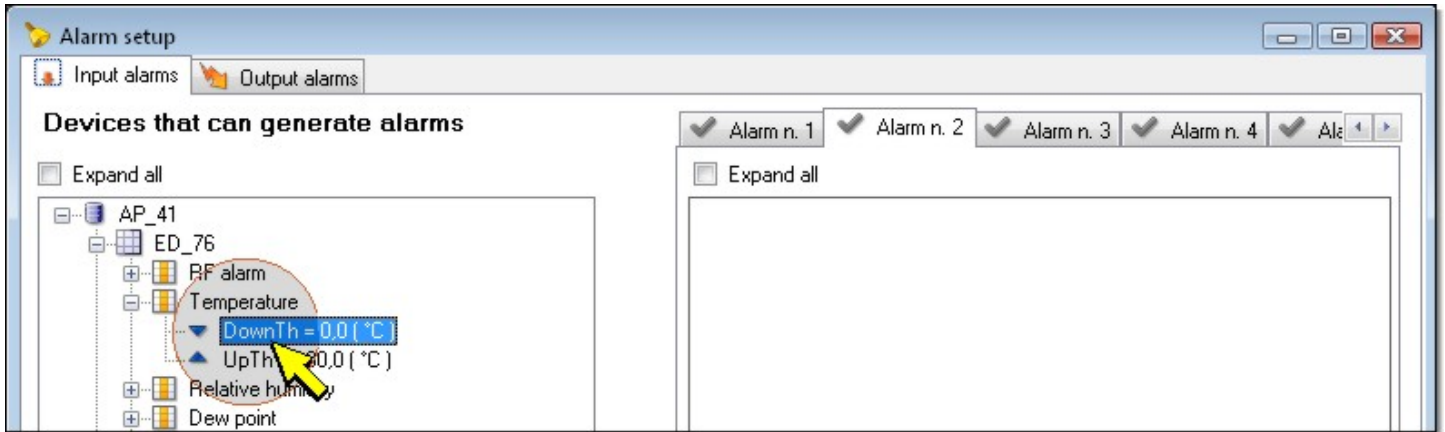
Expand the data logger of interest. The item *RF Alarm* appears (allows to generate an alarm when the error percentage of the transmission errors exceeds a determined threshold) followed by the quantities measured by the data logger.



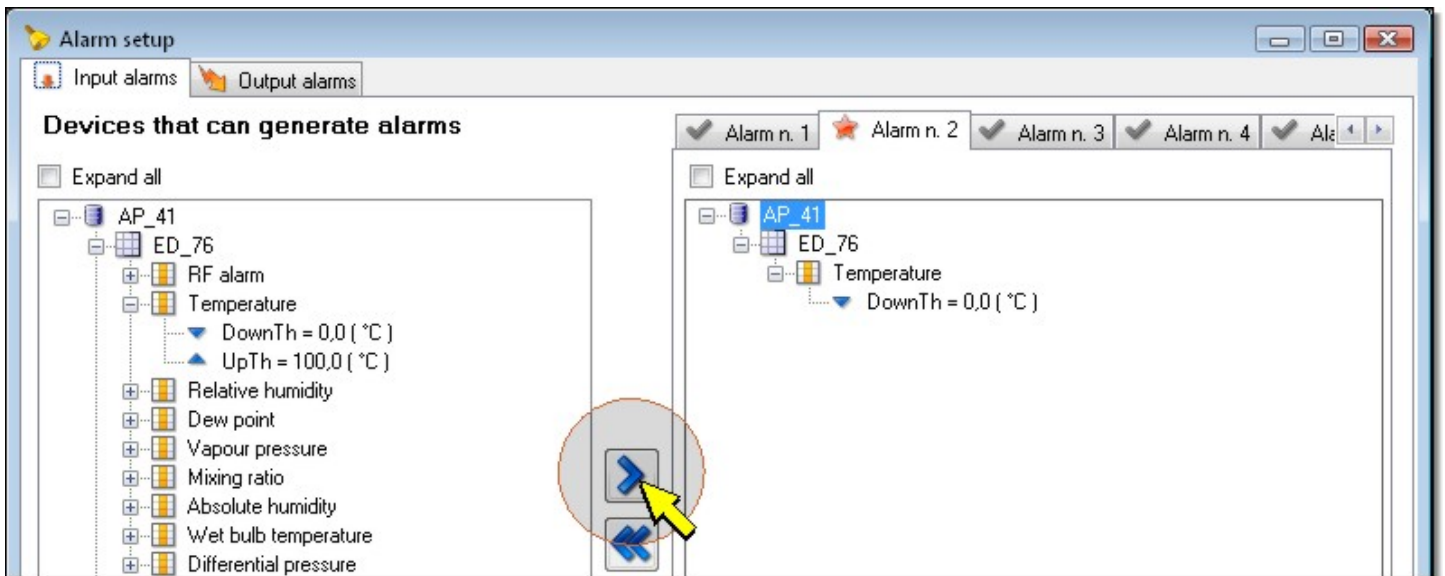
Expand the physical quantity of interest. The lower (*DownTh*) and upper (*UpTh*) values of alarm threshold will appear.



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



Press the button  to associate selected threshold to the alarm.



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.

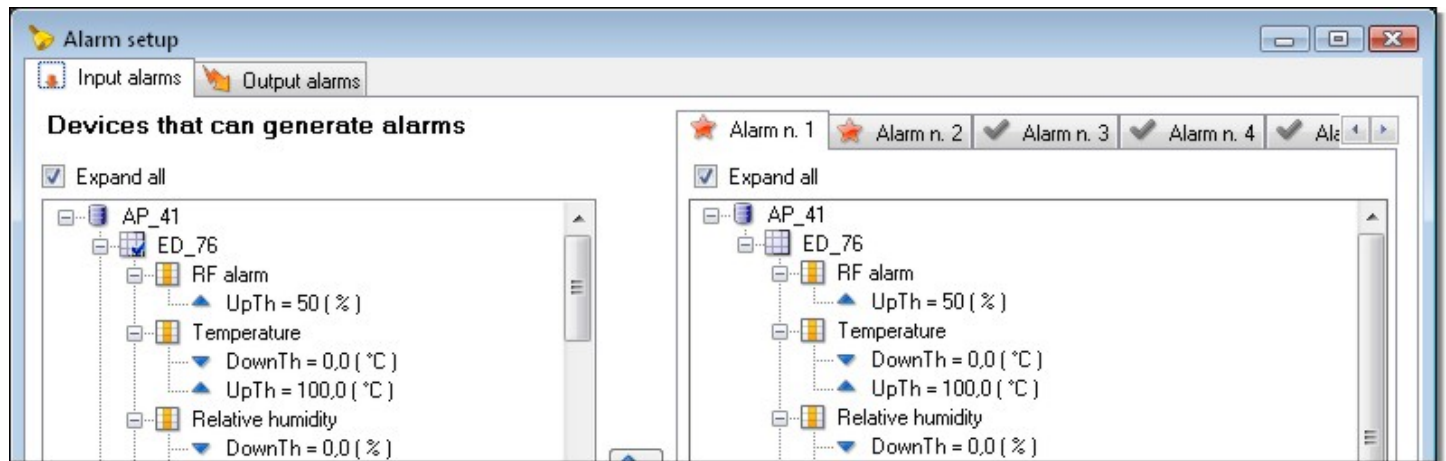
To associate an alarm to both thresholds of a physical quantity, select the physical quantity and press the button  .

In order to associate all thresholds of a data logger to a specific alarm, select the data logger and press the button  .

In order to associate all the thresholds of all the data loggers in the network to a specific alarm, select the base unit and press the button  .

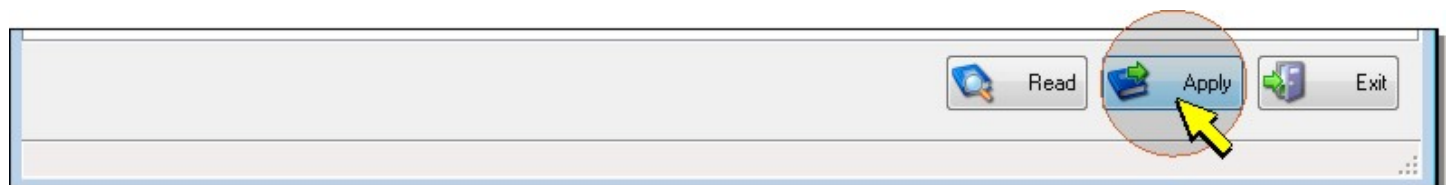
In order to cancel the thresholds associated to an alarm, select the alarm number and press the button .

In order to quickly expand the whole network structure with a single mouse click, select the check box *Expand all*.



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

To apply the new settings, select the key *Apply*.



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

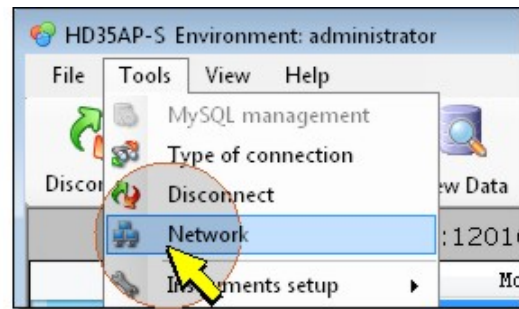
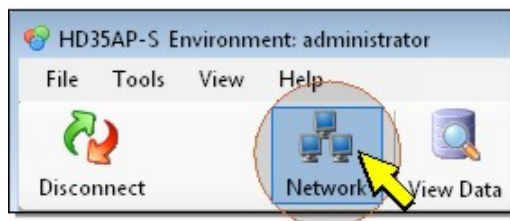


To close the window *Alarm setup*, select the key *Exit*. If modifications have been done which have not been transferred to the instrument, a message appears asking whether the modifications have to be transferred to the instrument before leaving.

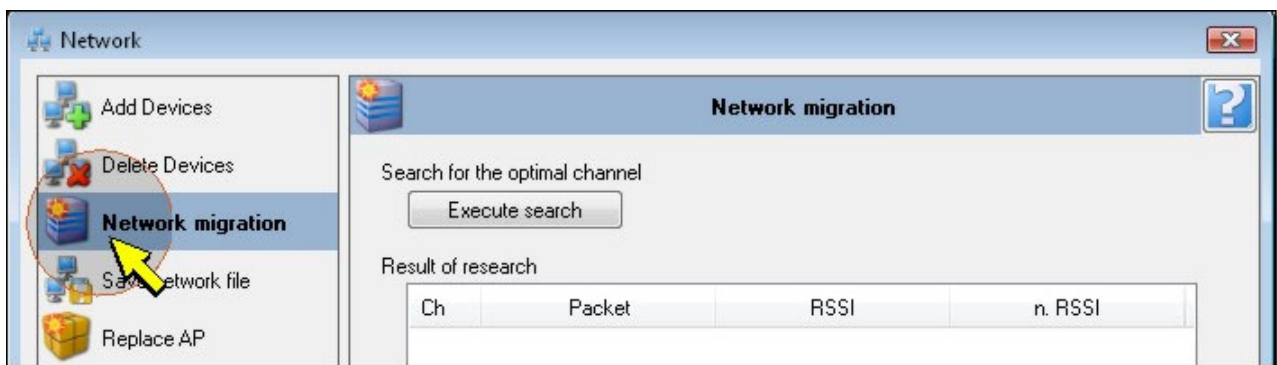
20. SEARCH FOR THE OPTIMAL TRANSMISSION CHANNEL (ONLY HD35)

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.

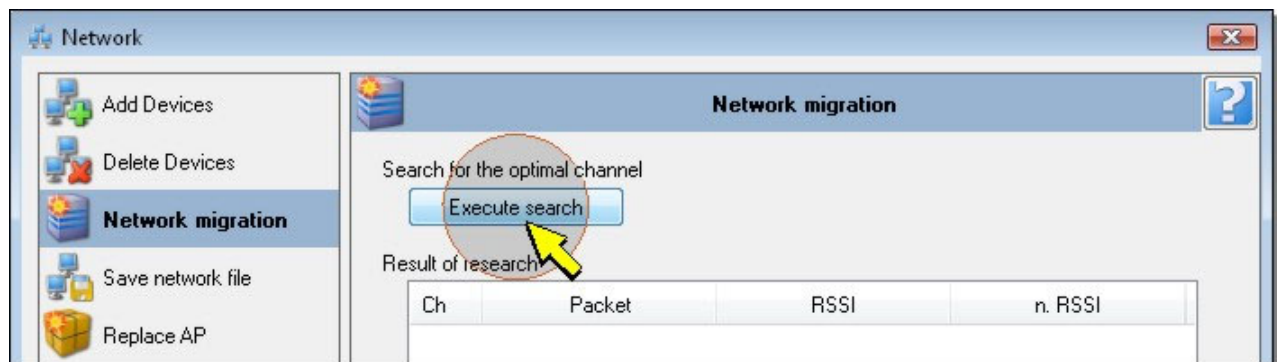
1. Select the *Network* icon in the toolbar, or the *Network* item from *Tools* menu.



2. Select the icon *Network migration*.



3. Press *Execute search* button.



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

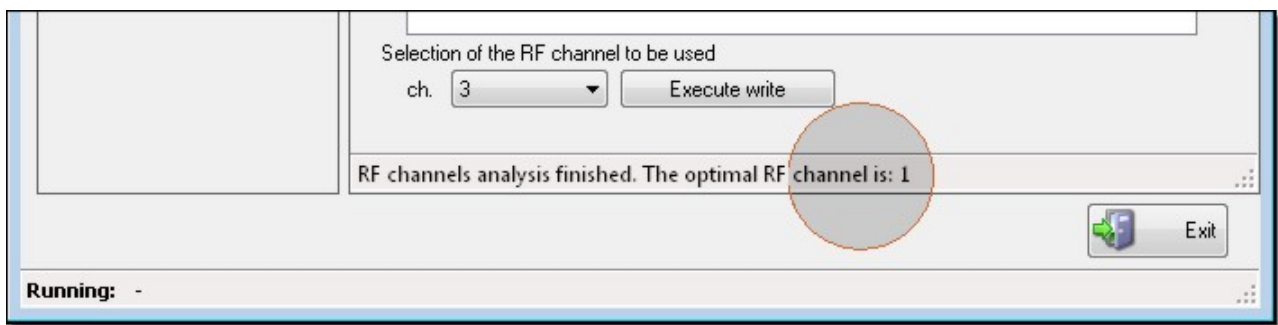
Result of research			
Ch	Packet	RSSI	n. RSSI
3	85	-100	51
0	21	-101	20
1	15	-100	32
2	162	-100	46

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.

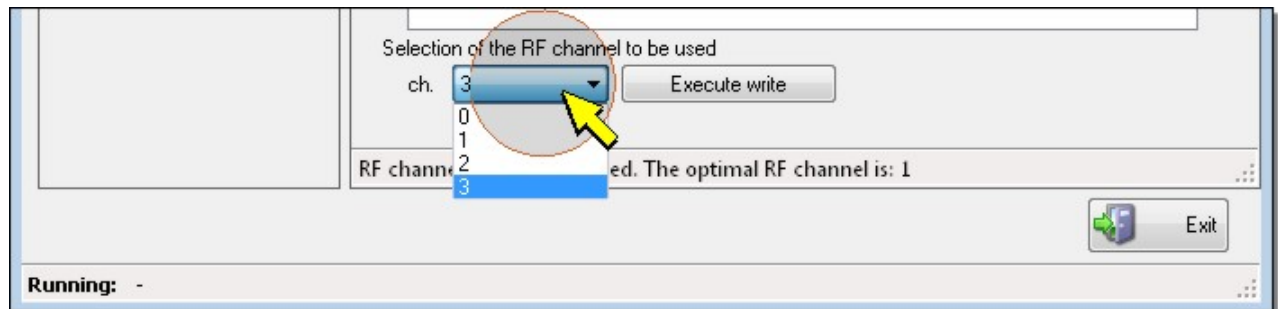
RSSI : Indicates the average signal level received (Received Signal Strength Indication) in dBm.

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

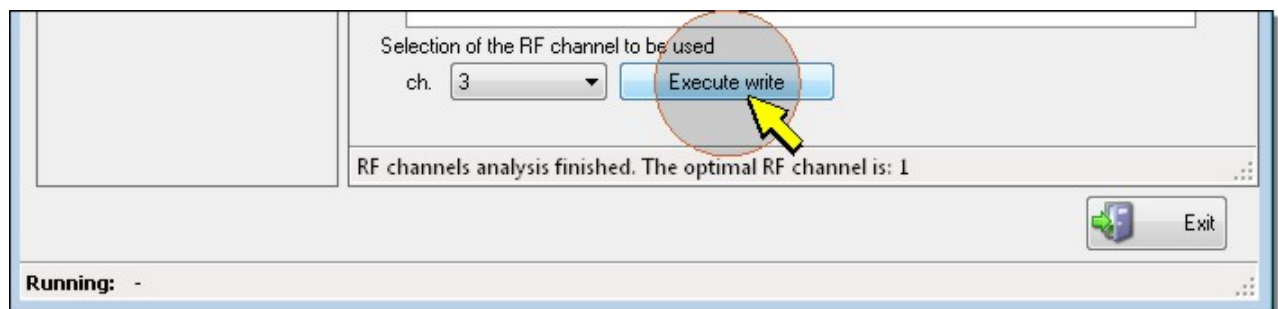
5. At the end, in the lower part of the window, the software shows which is the optimal channel .



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



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



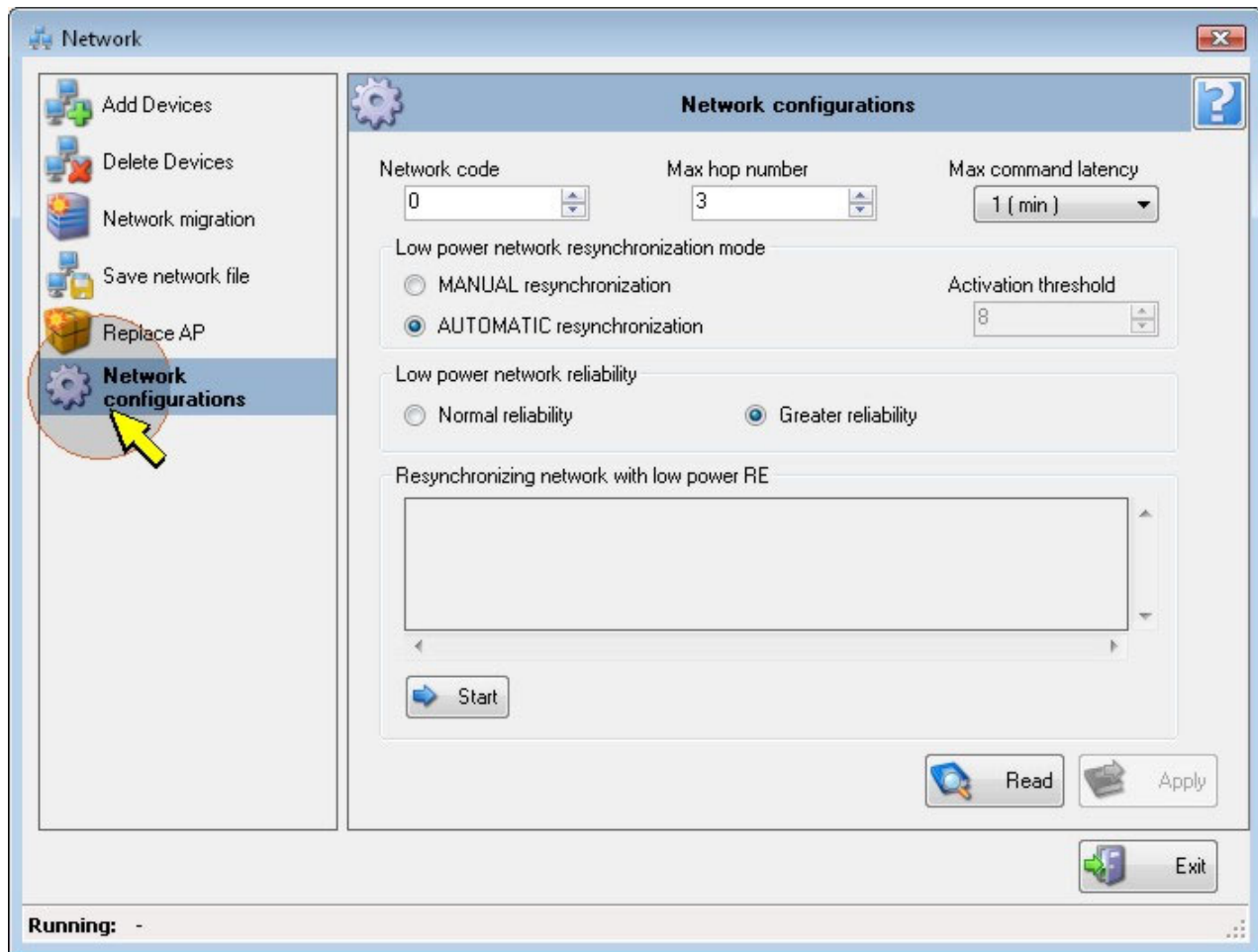
8. A message asking to confirm the operation appears; press *YES* to proceed. At the end, press *Exit* to go back to the main program window.

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.



Max command latency :

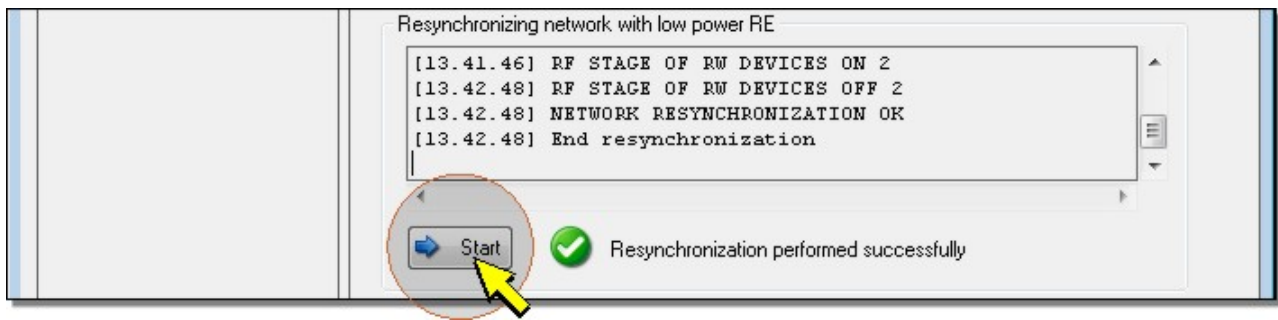
The communication of the settings change between the base unit and the other devices occurs when the devices activate the RF circuit (which is not always active, to reduce the battery consumption). To activate the RF circuit of the devices more frequently than the measures transmission interval, so that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



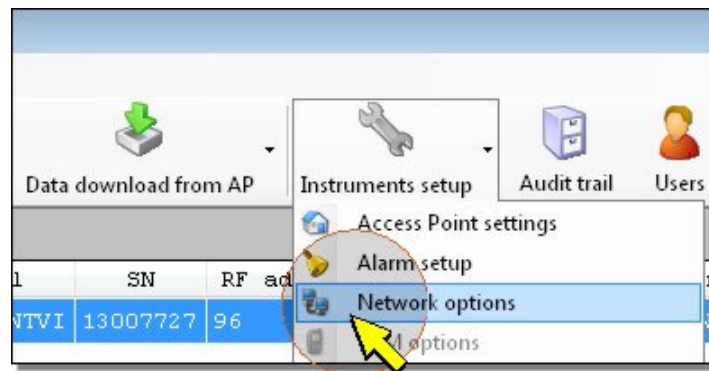
Low power network reliability :

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)

[WiFi networks](#) (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:

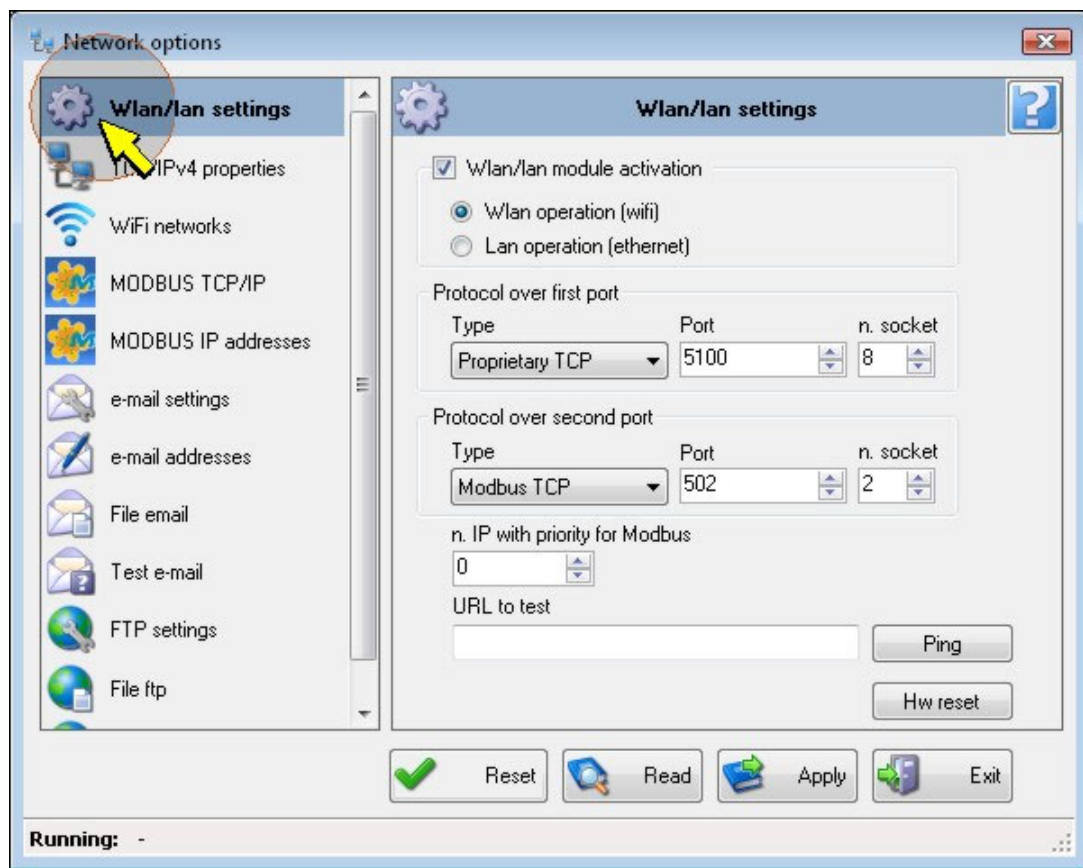
[FTP settings](#) (FTP server settings where data files will be sent)

[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.



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 Ethernet 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 [MODBUS IP addresses](#).

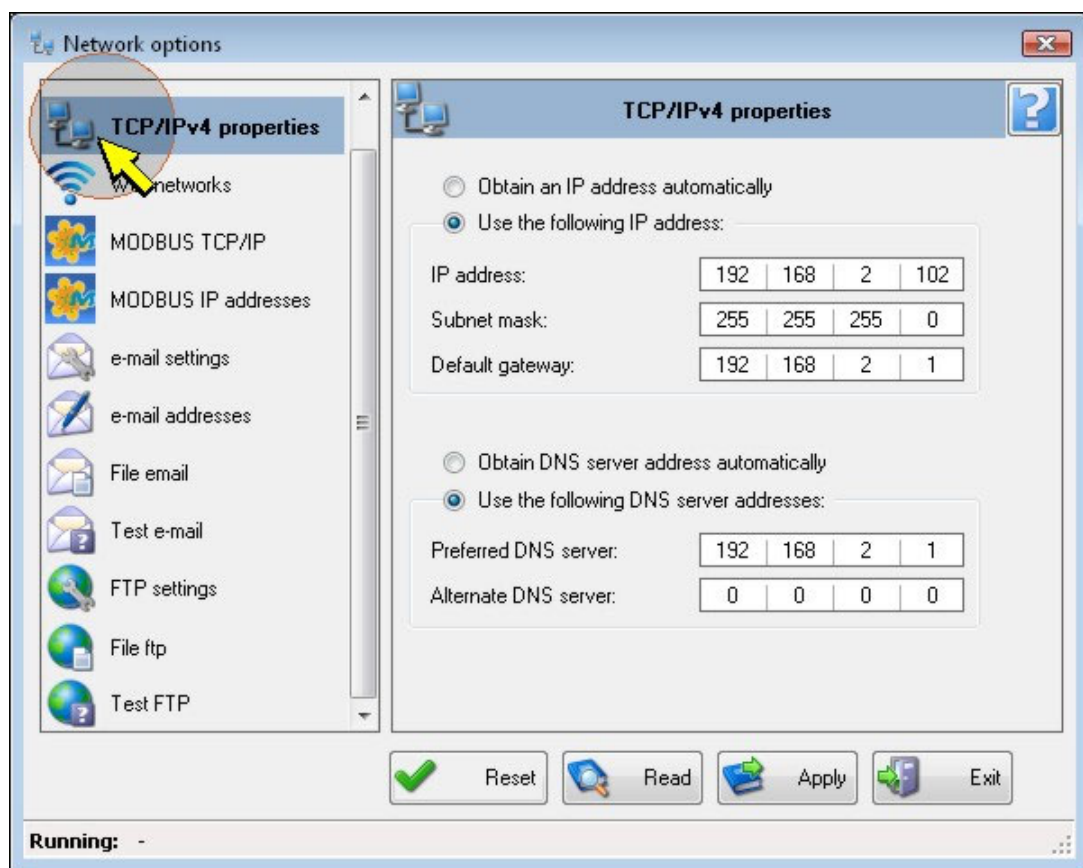
To check if an Internet connection is available, enter an address in the field *URL to test* and press *Ping*. If the connection is available, a check mark will appear on the left of the URL field.

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.



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).

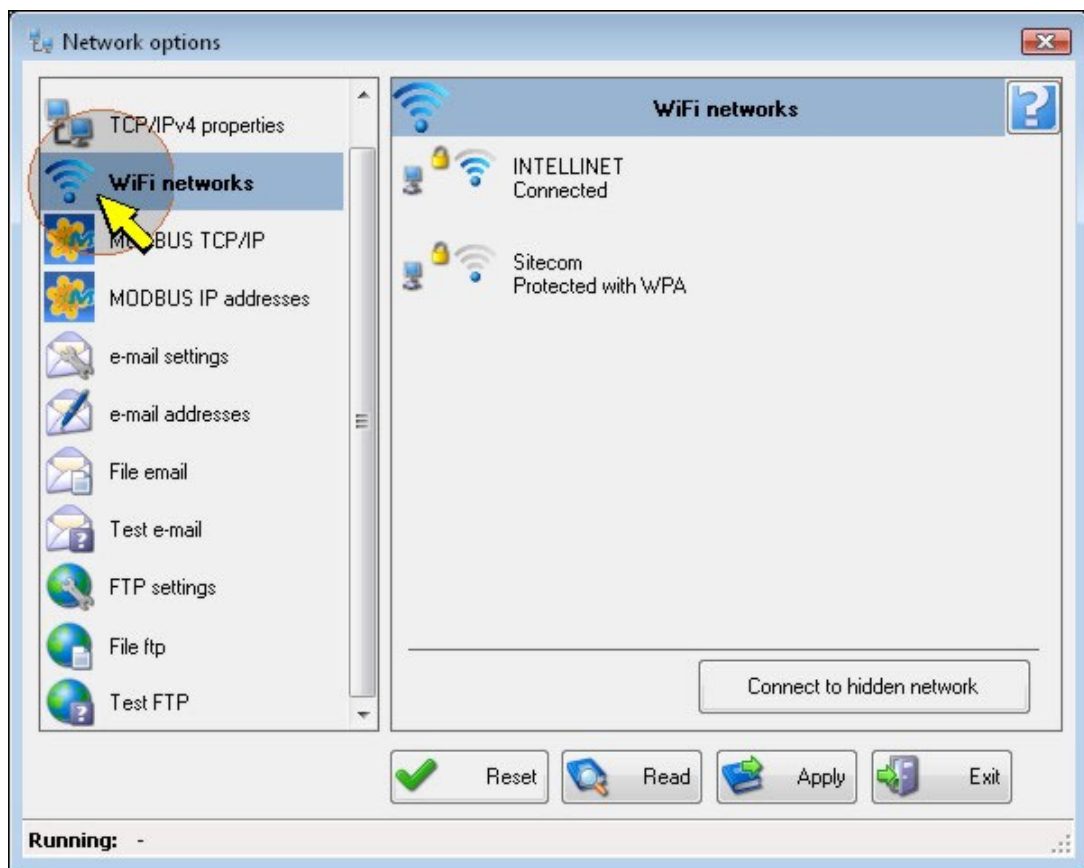
Note: it is suggested to enter a static IP for the connection with the HD35AP-S software, because the software does not automatically detect any changes in the IP address of the device (the IP address with which the software communicates is entered manually in the *Type of connection* window of the *Tools*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



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.



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

Wi-Fi hidden network

Insert network SSID and security settings of Wi-Fi hidden network to connect.

Network SSID:

Password: None

☐ View password

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.

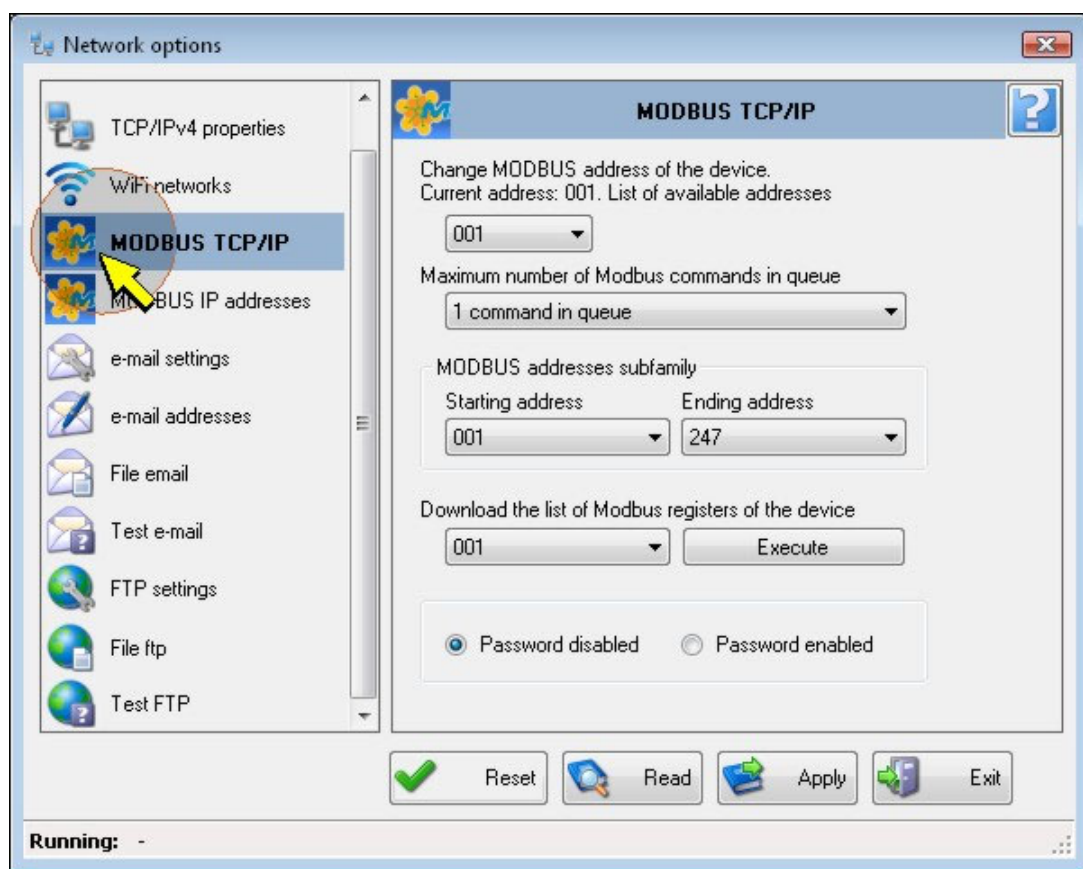
To disconnect a Wi-Fi network and delete the corresponding information stored in the device, select the network and press *Delete*.



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 address*.

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

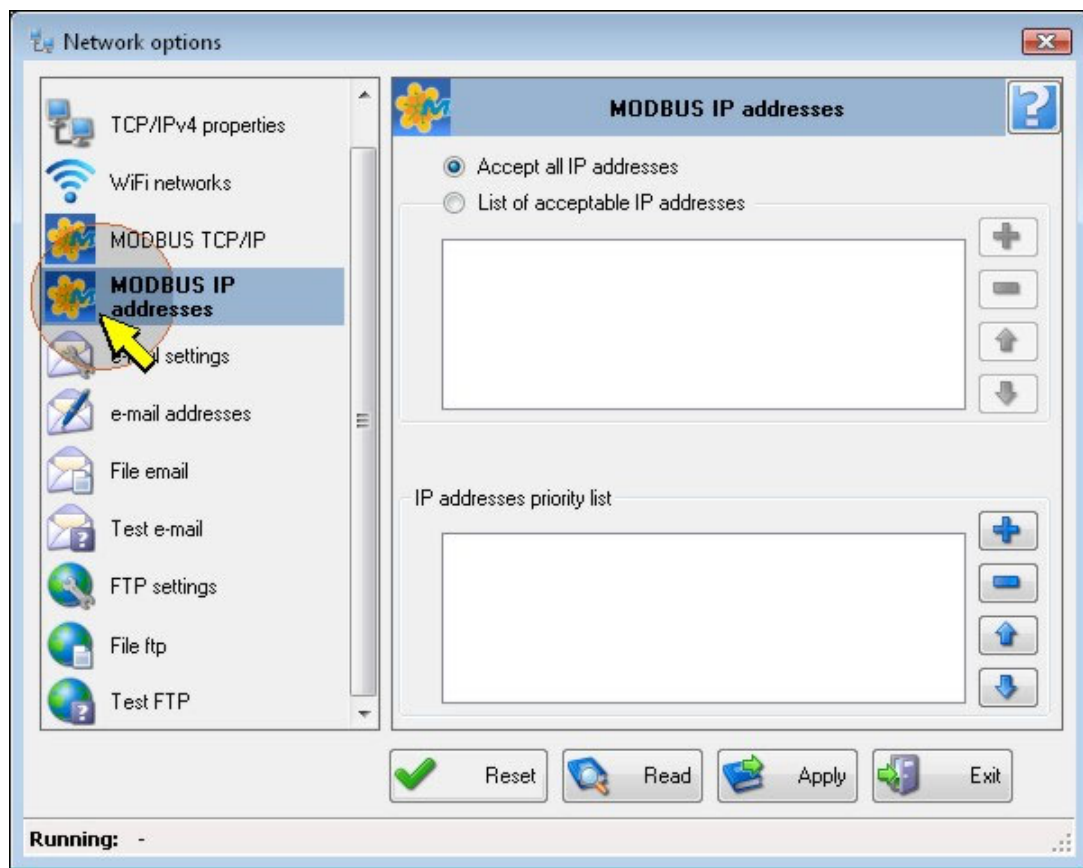
For a few registers, there is also a brief description available. The file can be imported in Excel; to obtain the alignment of fields:

	A	B	C	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	

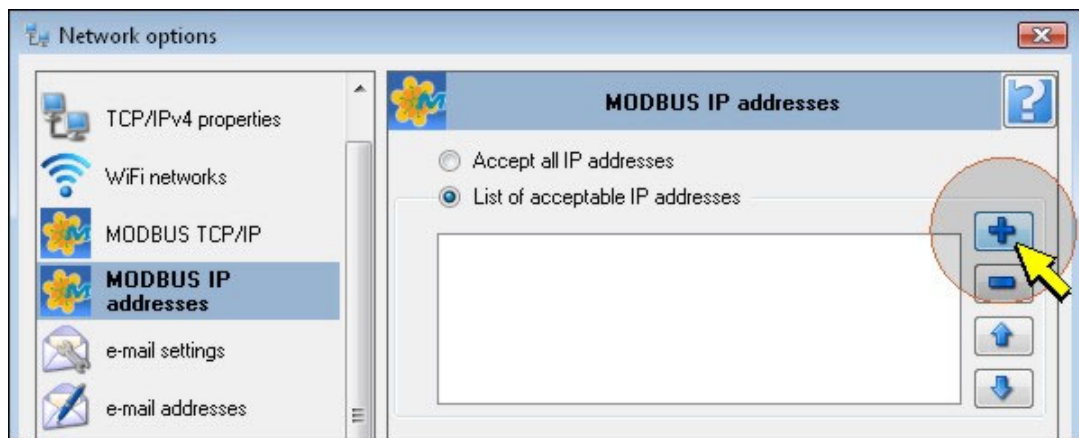
Please refer to the manual of the data logging system for the complete list of MODBUS registers and details on their use.

22.5. MODBUS IP ADDRESSES

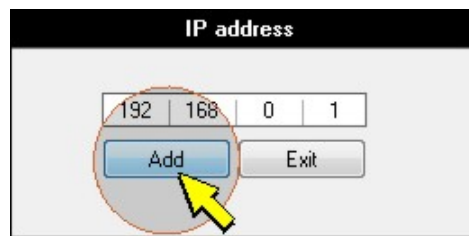
The window allows to define from which local network IP addresses the MODBUS requests should be accepted.



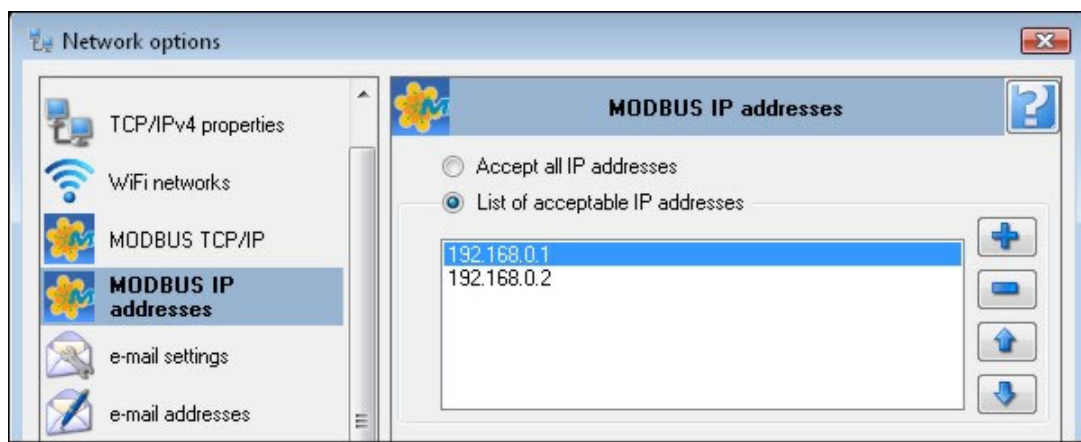
Choose whether to accept requests from all the IP addresses or manually enter the list of the IP addresses acceptable. To enter an IP address, press the "Plus" key.



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*.



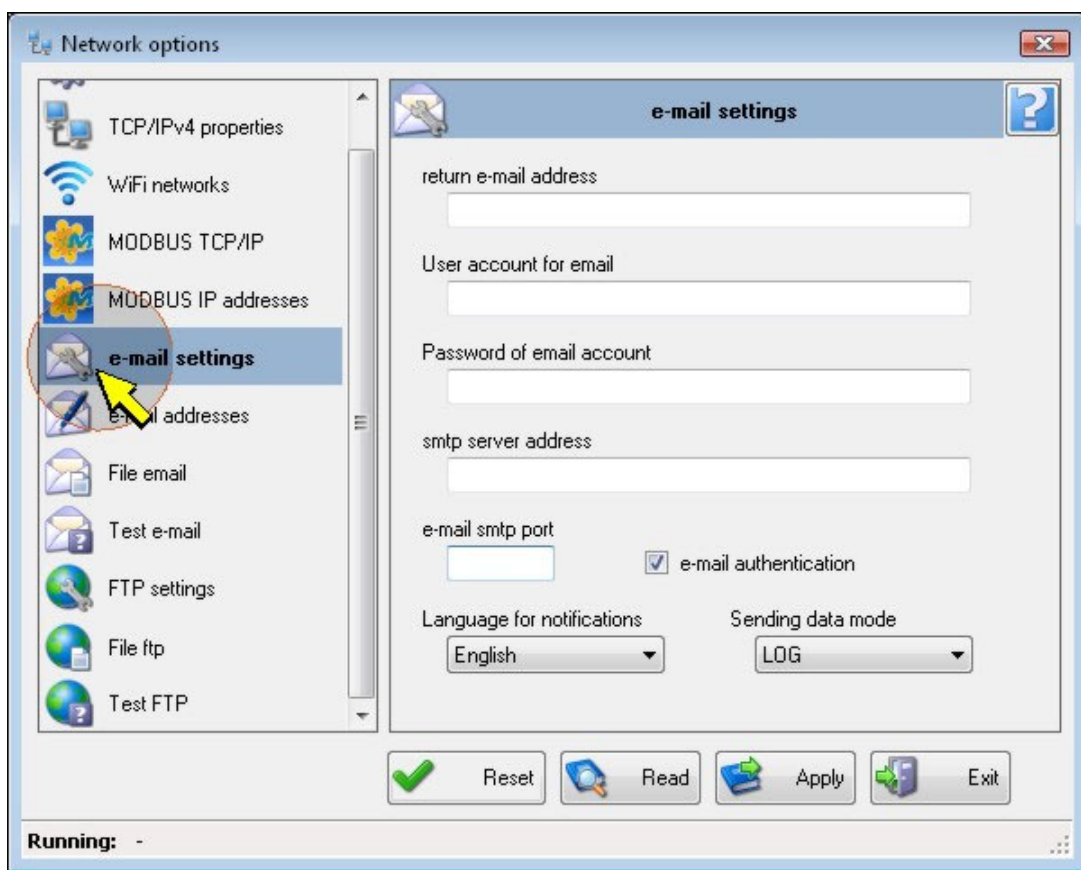
To move an IP address up or down in the list, select it and press the "Up arrow" or "Down arrow" keys. To delete an IP address, select it and press the "Minus" key.



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*.



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 .

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

e-mail smtp 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.

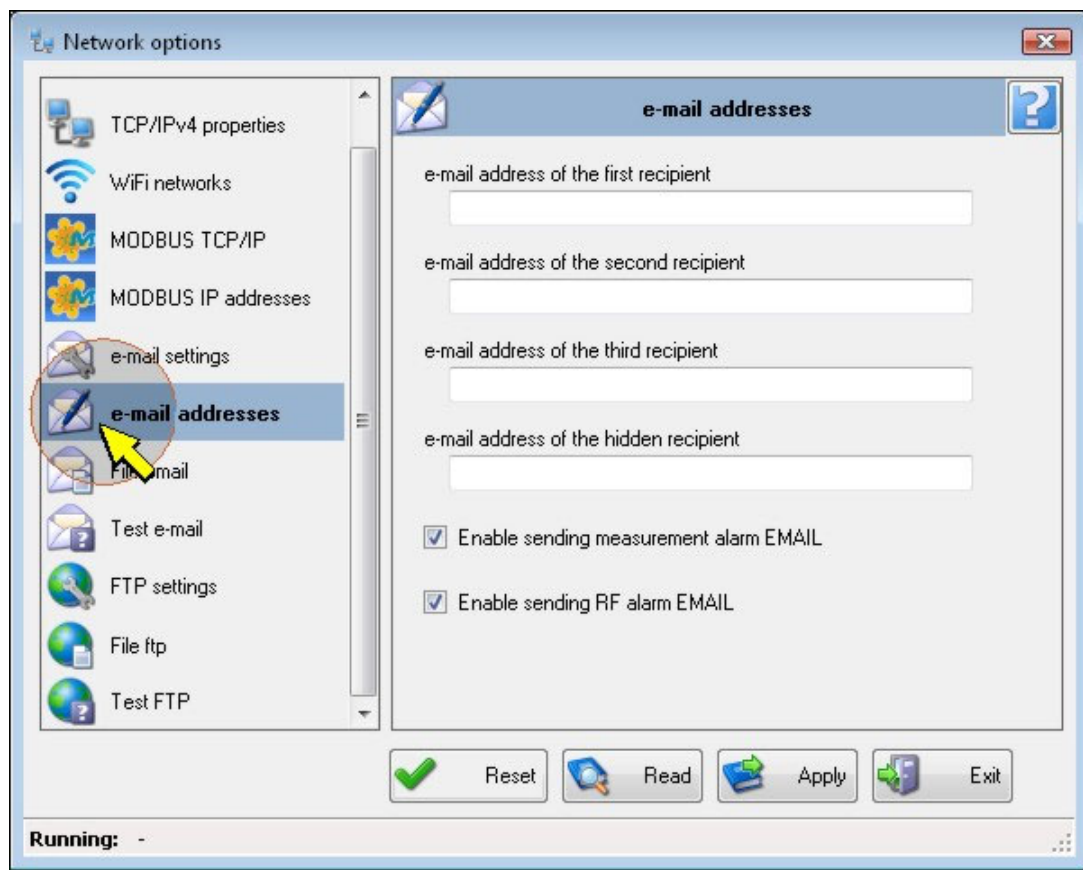
Language for notifications : select the language to be used for transmission of information.

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 sent as file attachments to e-mails.

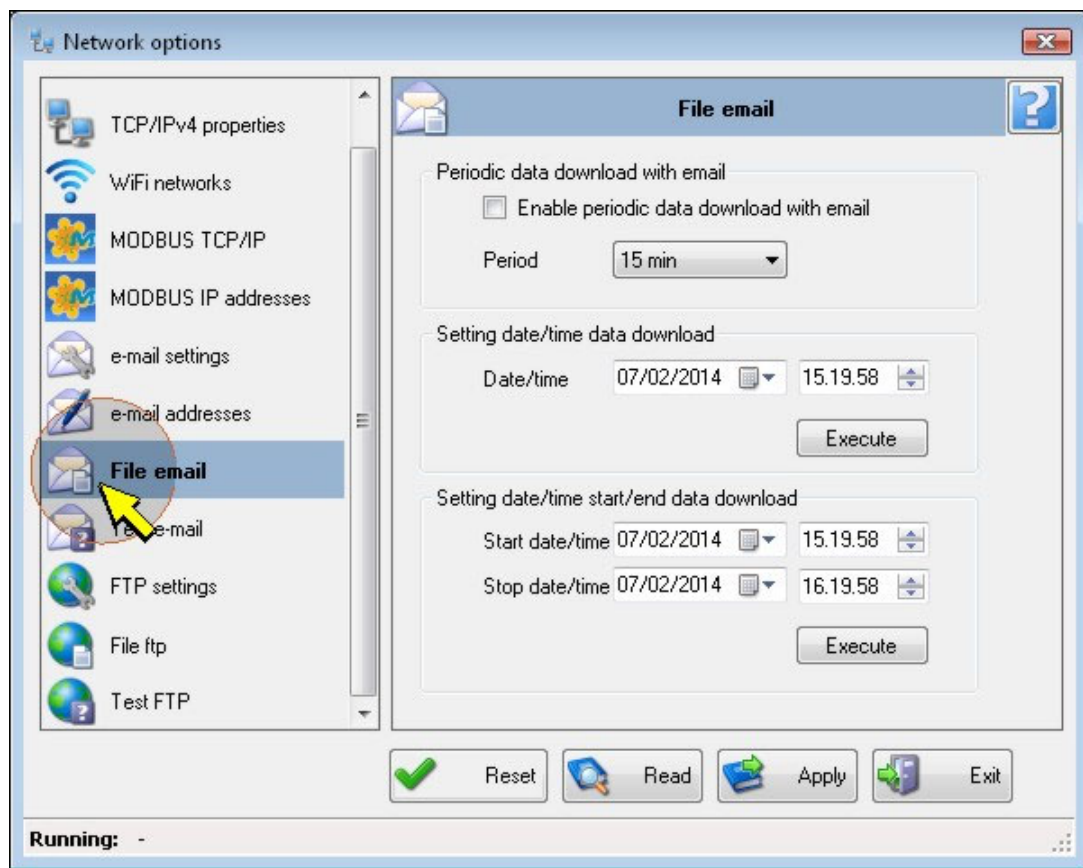


To the address entered in the field *e-mail address of the hidden recipient*, the e-mails are sent as C.C. (Carbon Copy).

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 via e-mail and to require the sending of the relevant data at a determined time interval.



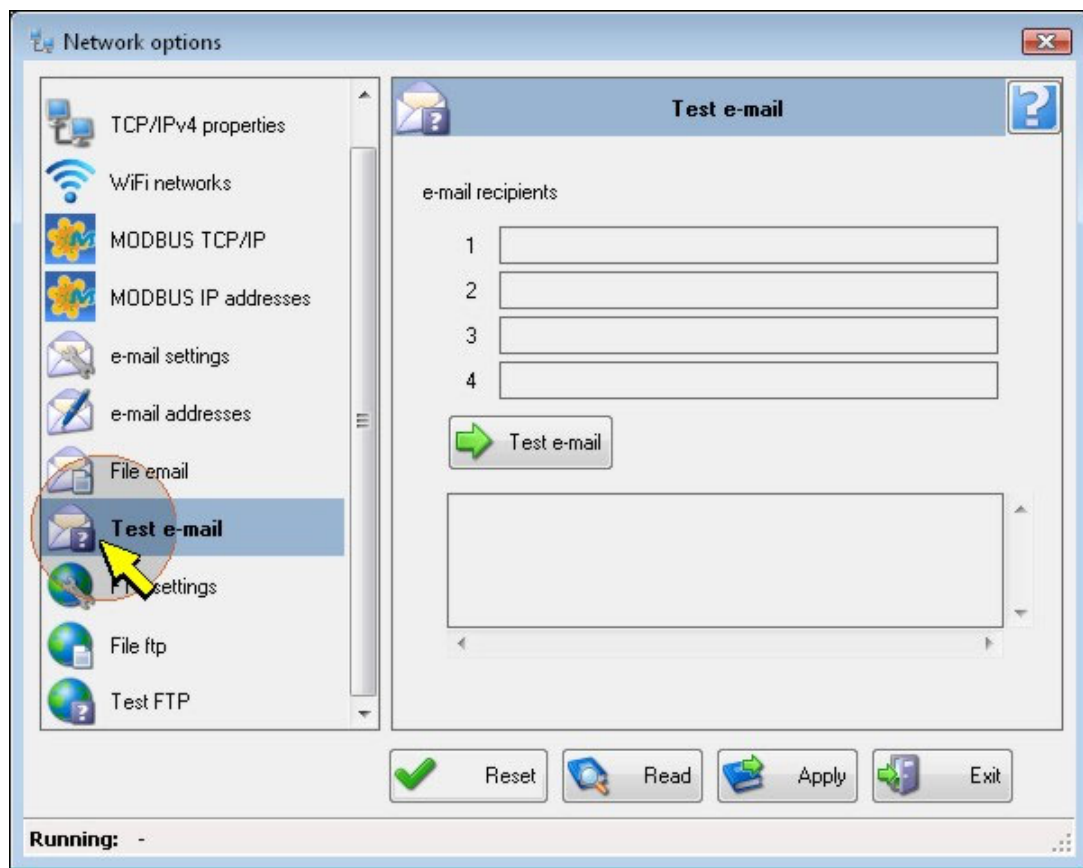
To enable the periodical sending of data via e-mail, select the check box *Enable periodic data download with email* and select the time interval for data sending in the field *Period*. The intervals available are: 15 min, 30 min, 1 hour, 2 hours, 4 hours, 8 hours, 12 hours, 24 hours, days, 4 days, 1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

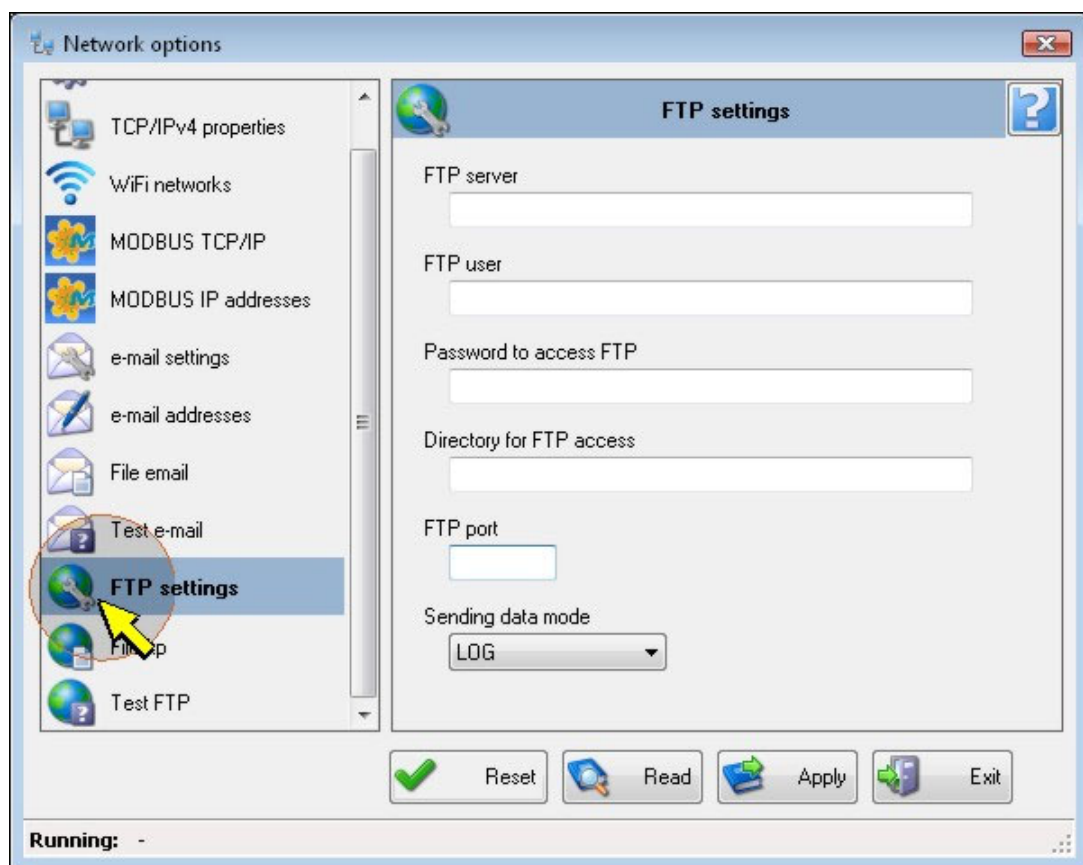


Test e-mail are sent to those addresses previously entered in the *e-mail addresses* section. *E-mail recipients* fields cannot be modified in this section.

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*.



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.

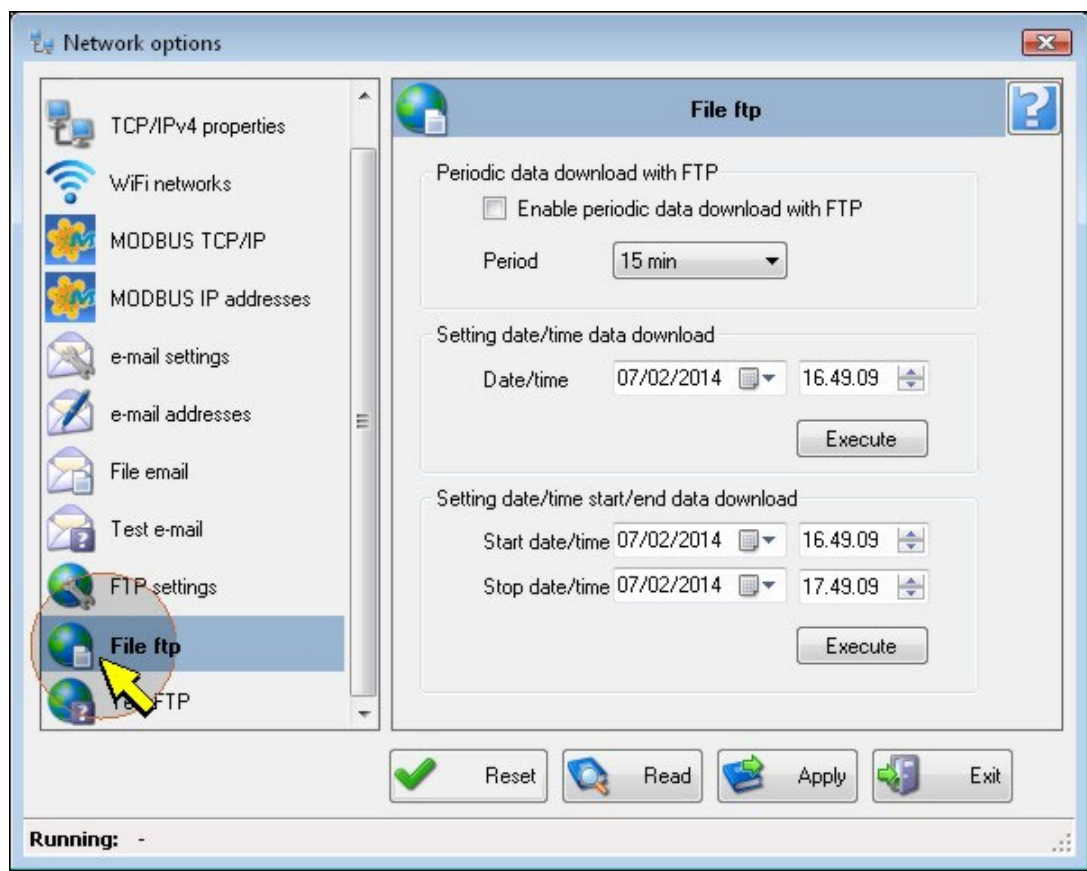
FTP port : enter the FTP server port number supplied by the service provider.

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.



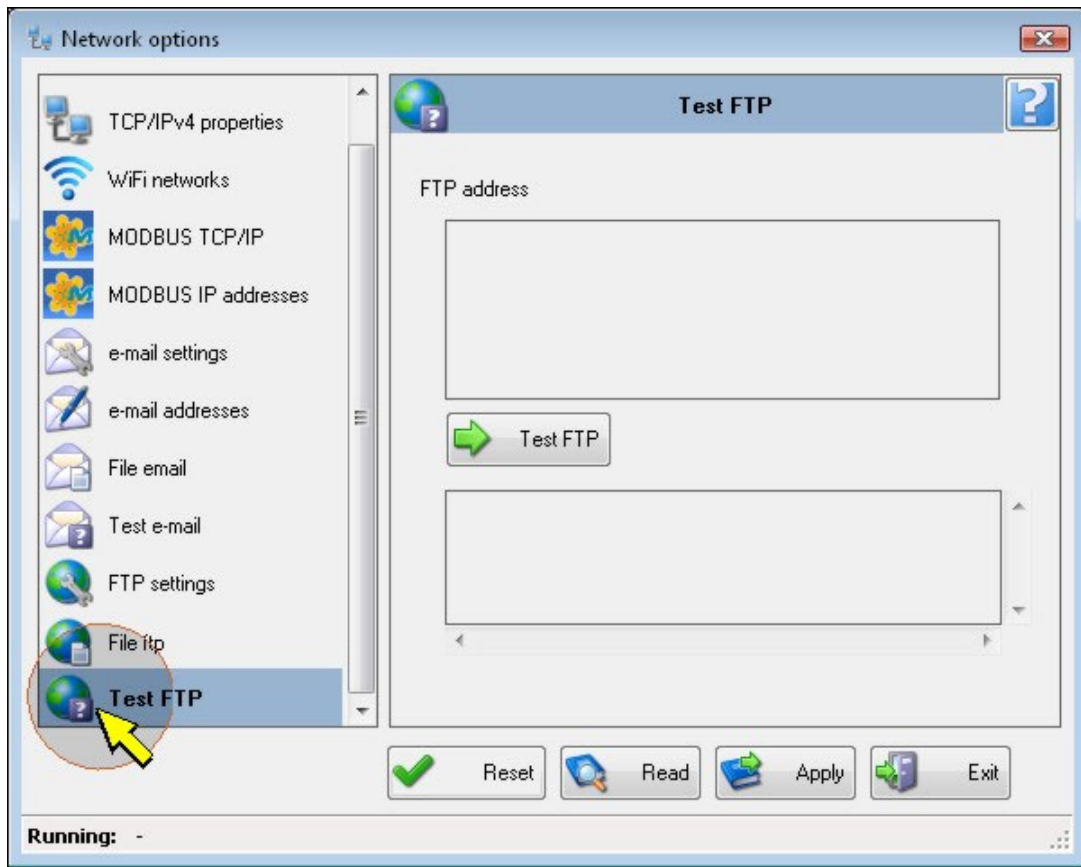
To enable the periodical sending of data via ftp, select the check box *Enable periodic data download with ftp* and select the interval of data sending in the field *Period*. The intervals available are: 15 min, 30 min, 1 hour, 2 hours, 4 hours, 8 hours, 12 hours, 24 hours, days, 4 days, 1 week.

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.

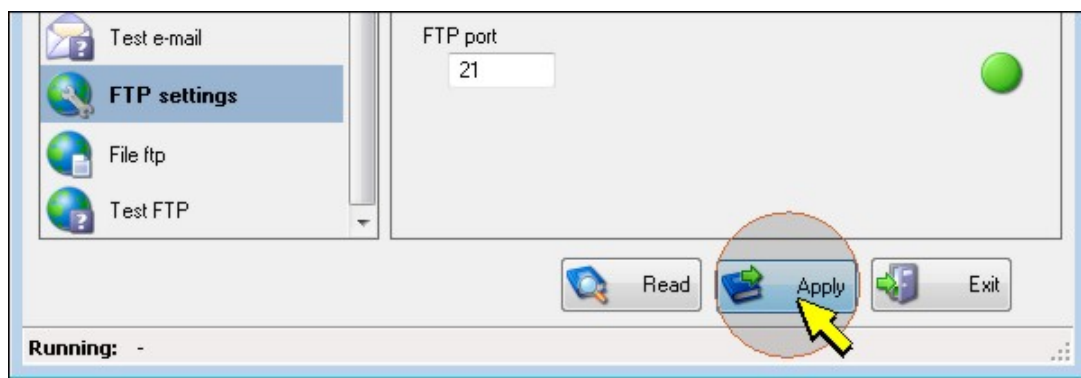


Data are sent to the address previously specified in the section *FTP settings*. The field *FTP address* cannot be modified in this section.

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

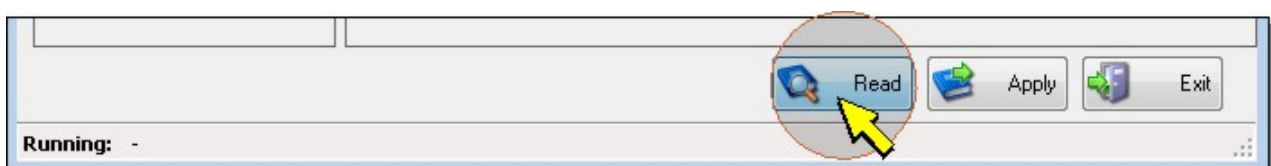
22.13. TRANSFER OF SETTINGS TO INSTRUMENT

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.



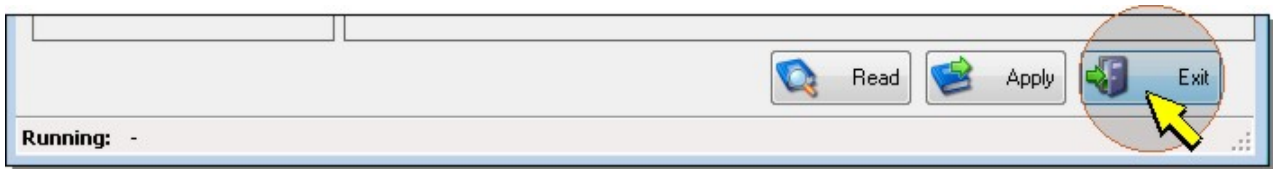
22.14. READING THE CURRENT INSTRUMENT CONFIGURATION

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.



22.15. CLOSING CONFIGURATION WINDOW

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

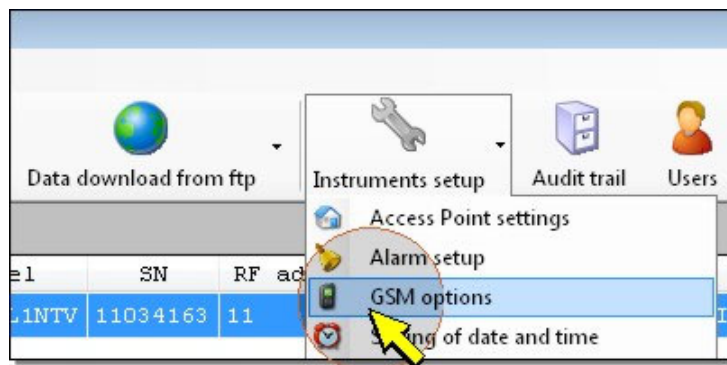


If modifications have been done, but they were not transferred to the instrument, a message will appear asking to transfer modifications before closing the window.

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 tool-bar, then the item *GSM options* (alternatively select the menu *Tools >> Instruments setup >> GSM options*).



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)

[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)

SMS sections:

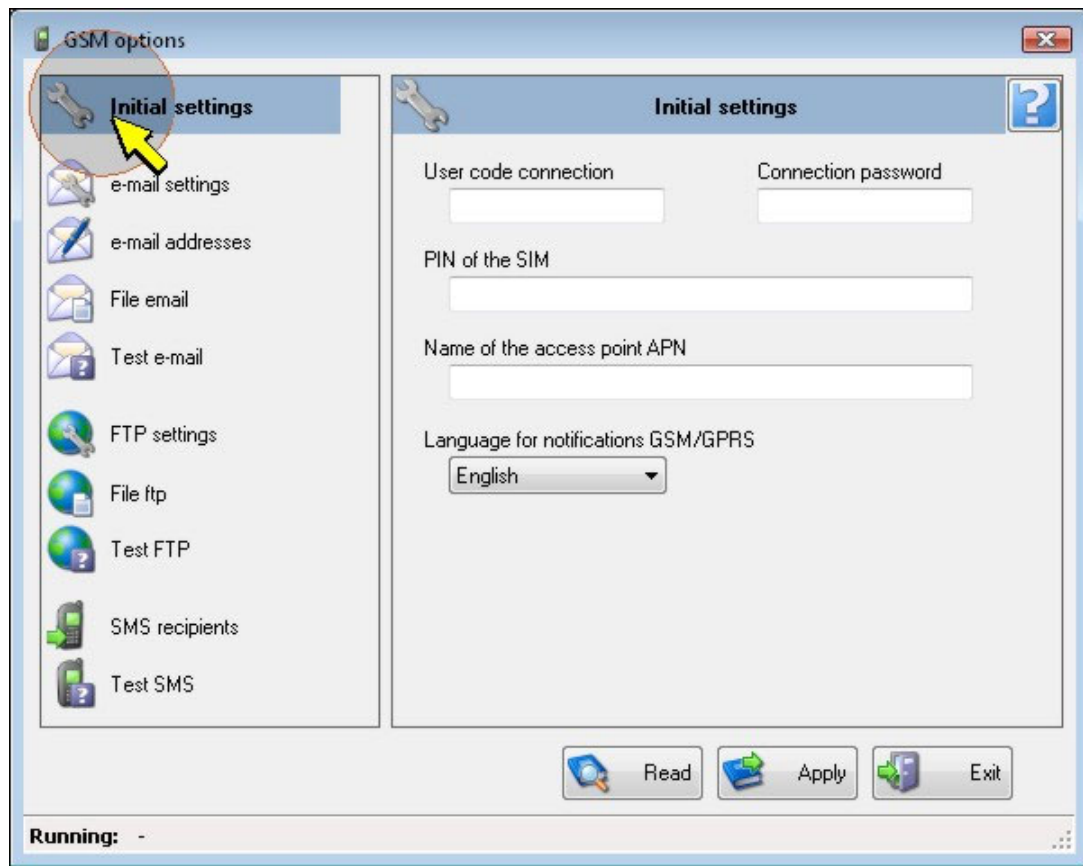
[SMS recipients](#) (enter the phone numbers the SMS alarm will be sent to)

[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



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.

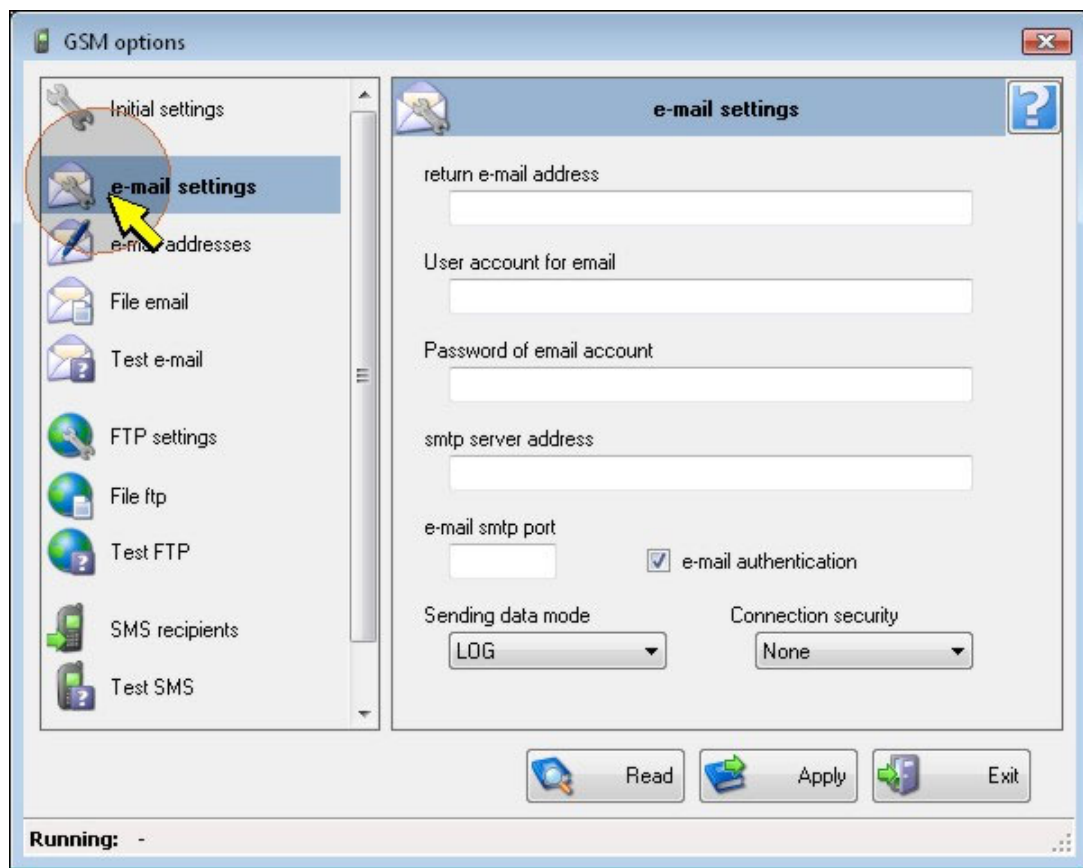
PIN of the SIM : enter the PIN code of the SIM card inserted in the GSM/3G module.

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*.



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 .

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

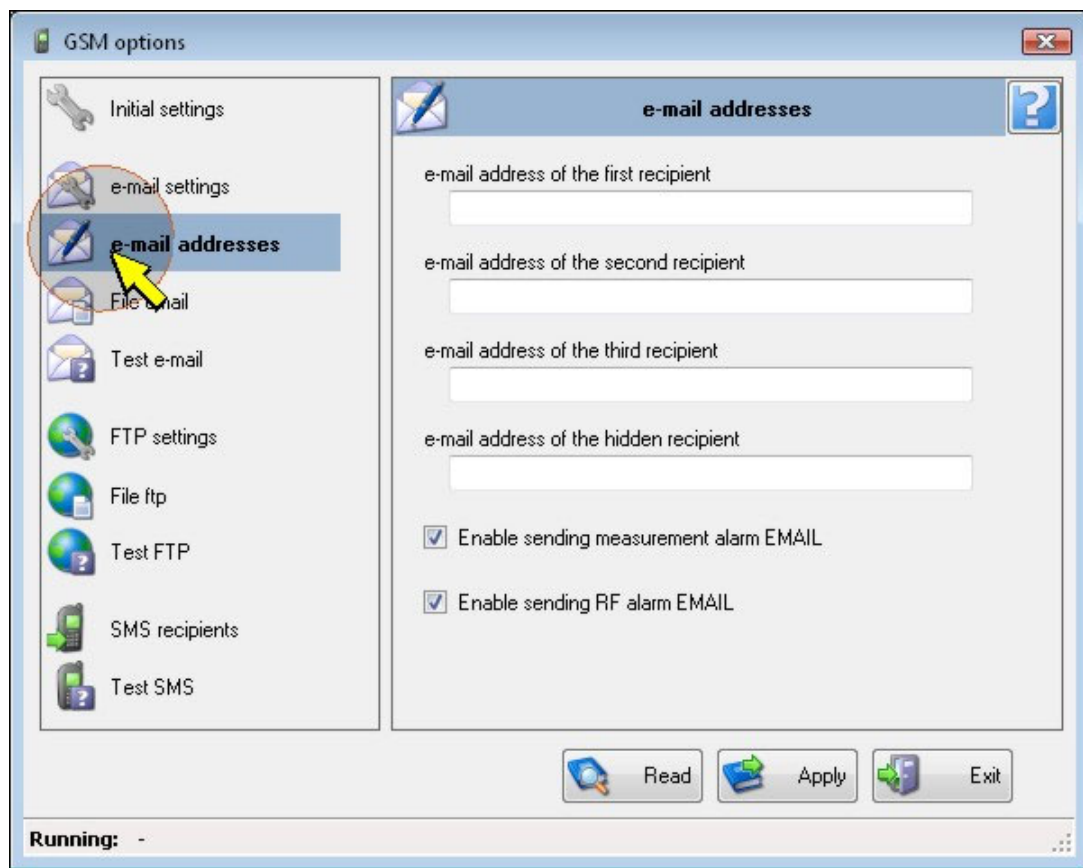
e-mail smtp port : type in the server port number for outgoing mail. This is supplied by the e-mail service provider. Select the checkbox *e-mail authentication* in order to authenticate e-mails sent.

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.

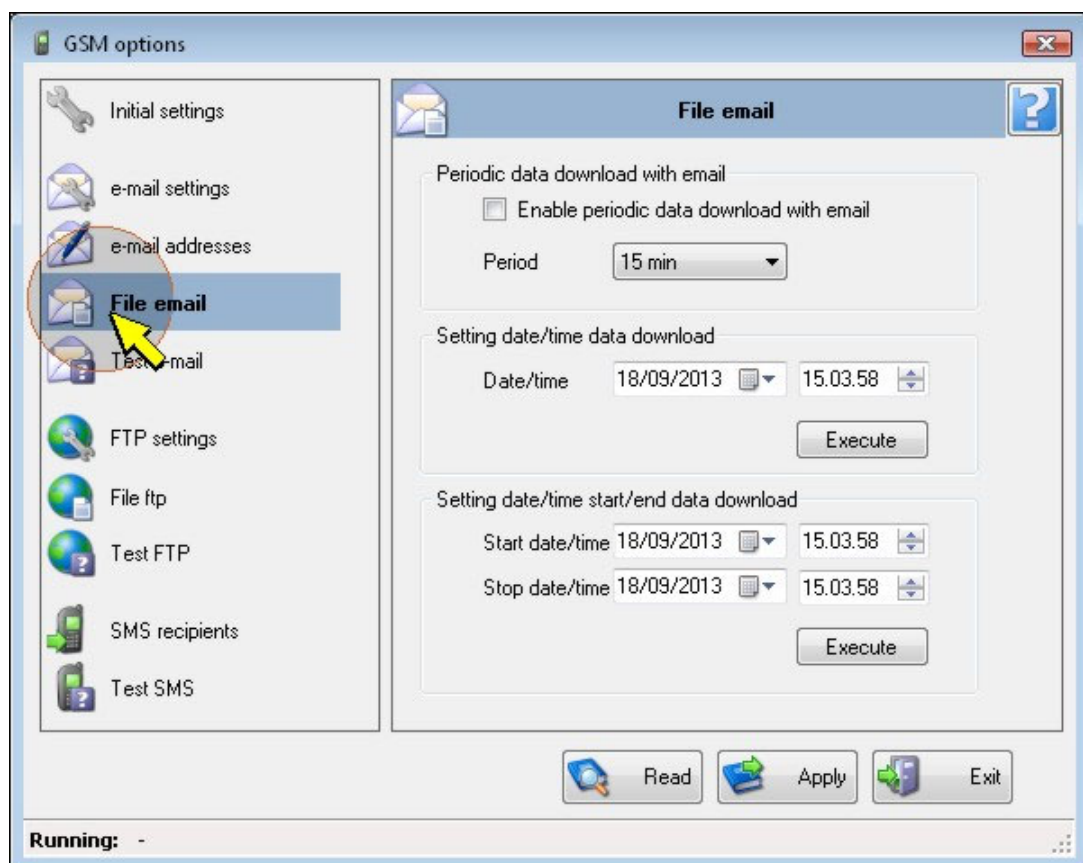


The e-mail address entered in the field *e-mail address of the hidden recipient* will not be visible to other recipients.

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 via e-mail and to require the sending of the relevant data at a determined time interval.



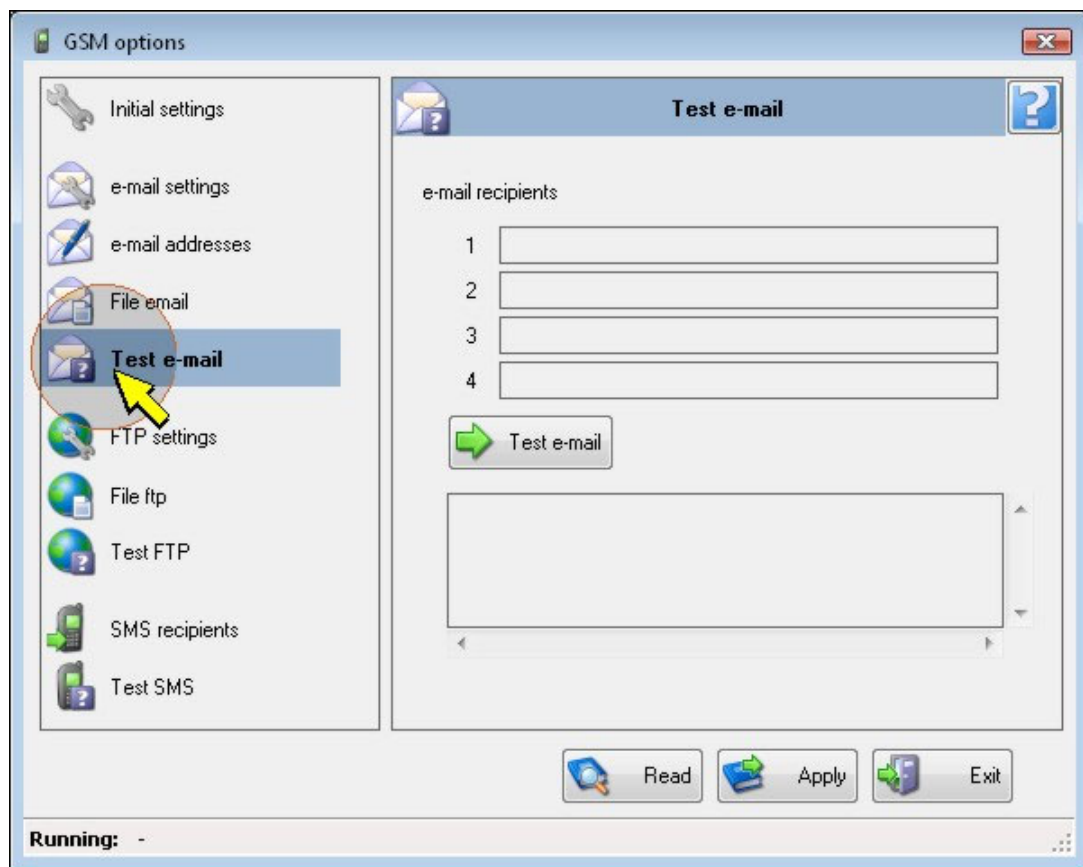
To enable the periodical sending of data via e-mail, select the check box *Enable periodic data download with email* and select the time interval for data sending in the field *Period*. The intervals available are: 15 min, 30 min, 1 hour, 2 hours, 4 hours, 8 hours, 12 hours, 24 hours, days, 4 days, 1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

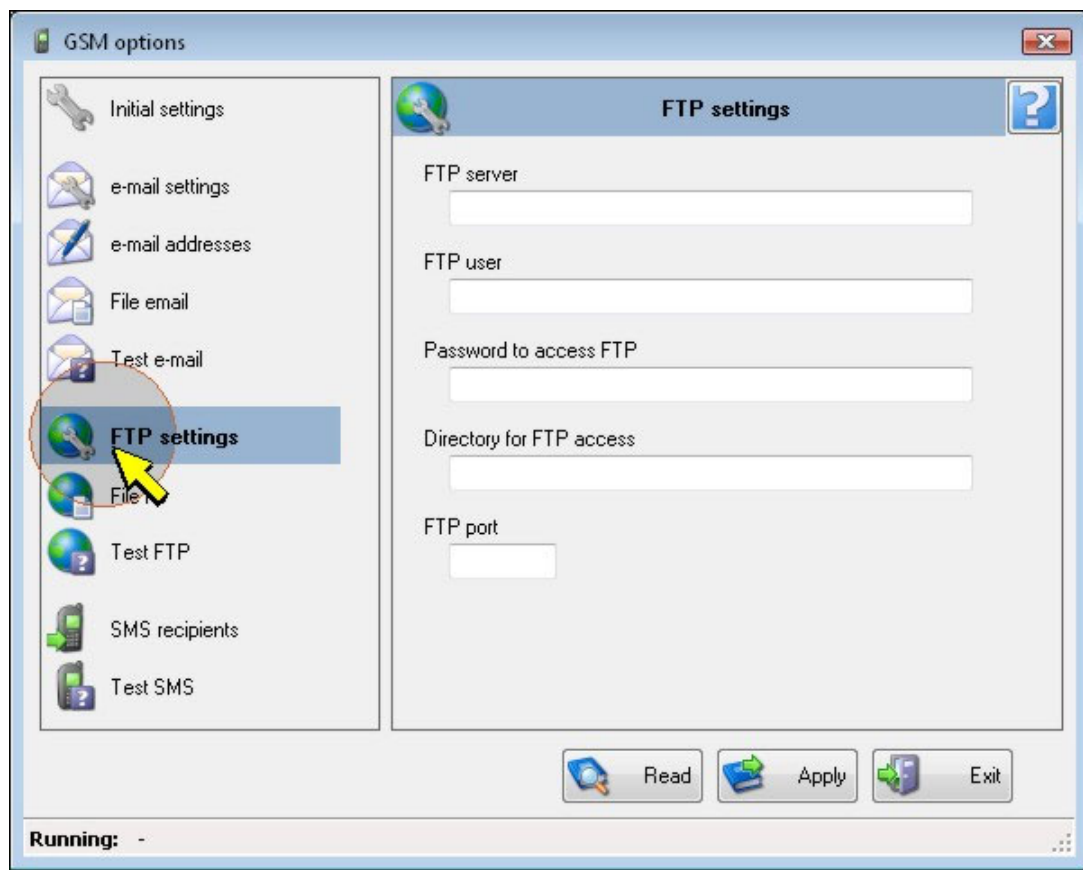


Test e-mail are sent to those addresses previously entered in the *e-mail addresses* section. *E-mail recipients* fields cannot be modified in this section.

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*.



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 .

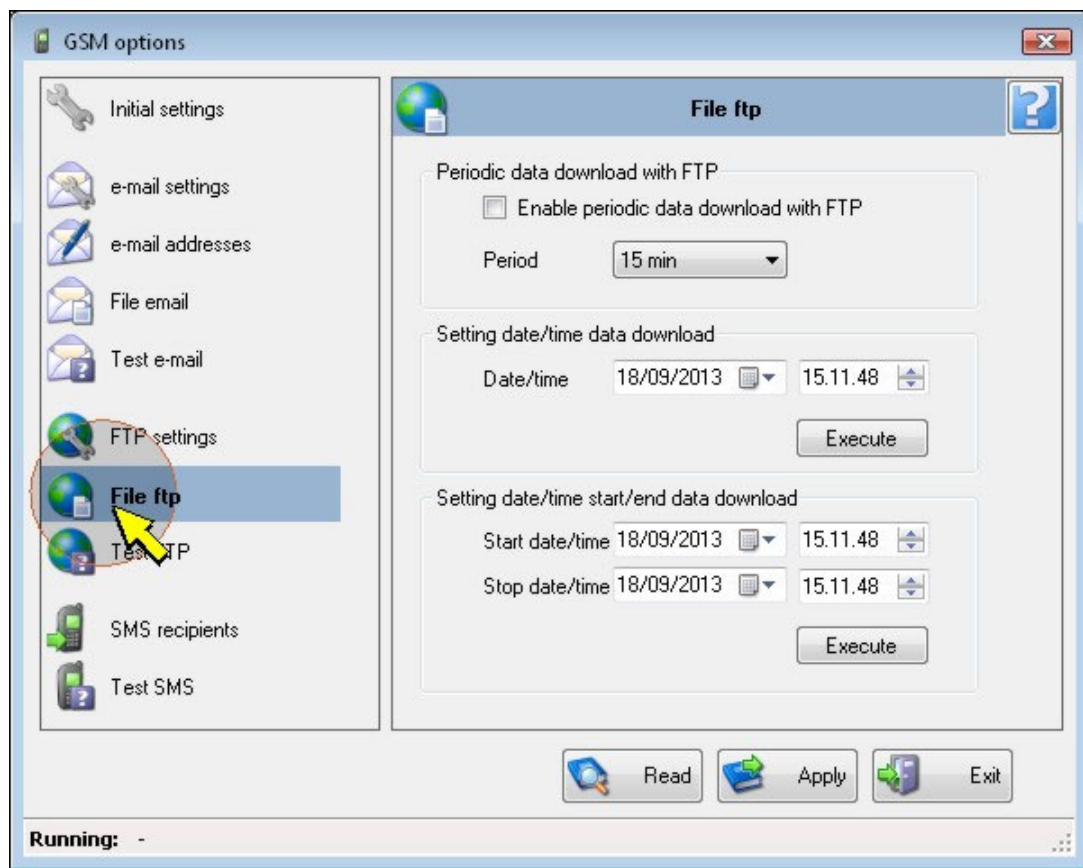
Directory for ftp access : enter the folder path in the FTP server, where data files from data logging system will be transferred.

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.



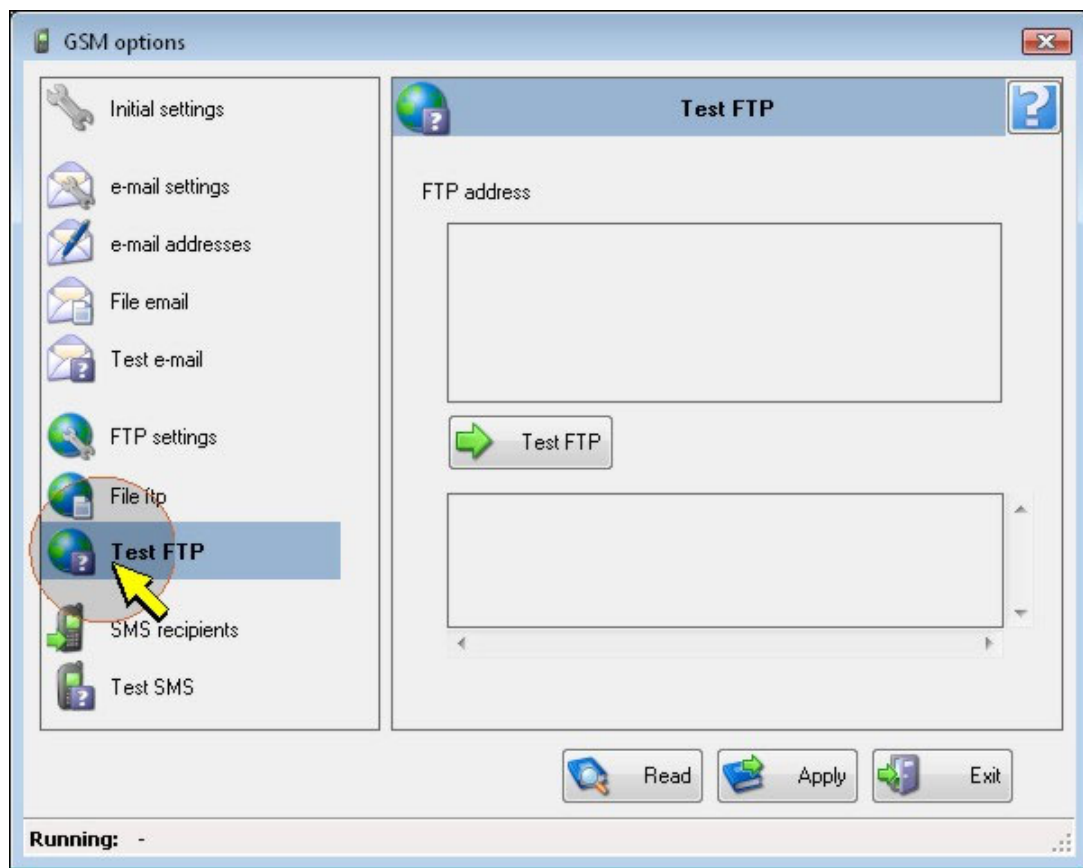
To enable the periodical sending of data via ftp, select the check box *Enable periodic data download with ftp* and select the interval of data sending in the field *Period*. The intervals available are: 15 min, 30 min, 1 hour, 2 hours, 4 hours, 8 hours, 12 hours, 24 hours, days, 4 days, 1 week.

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*.

23.8. TEST FTP

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

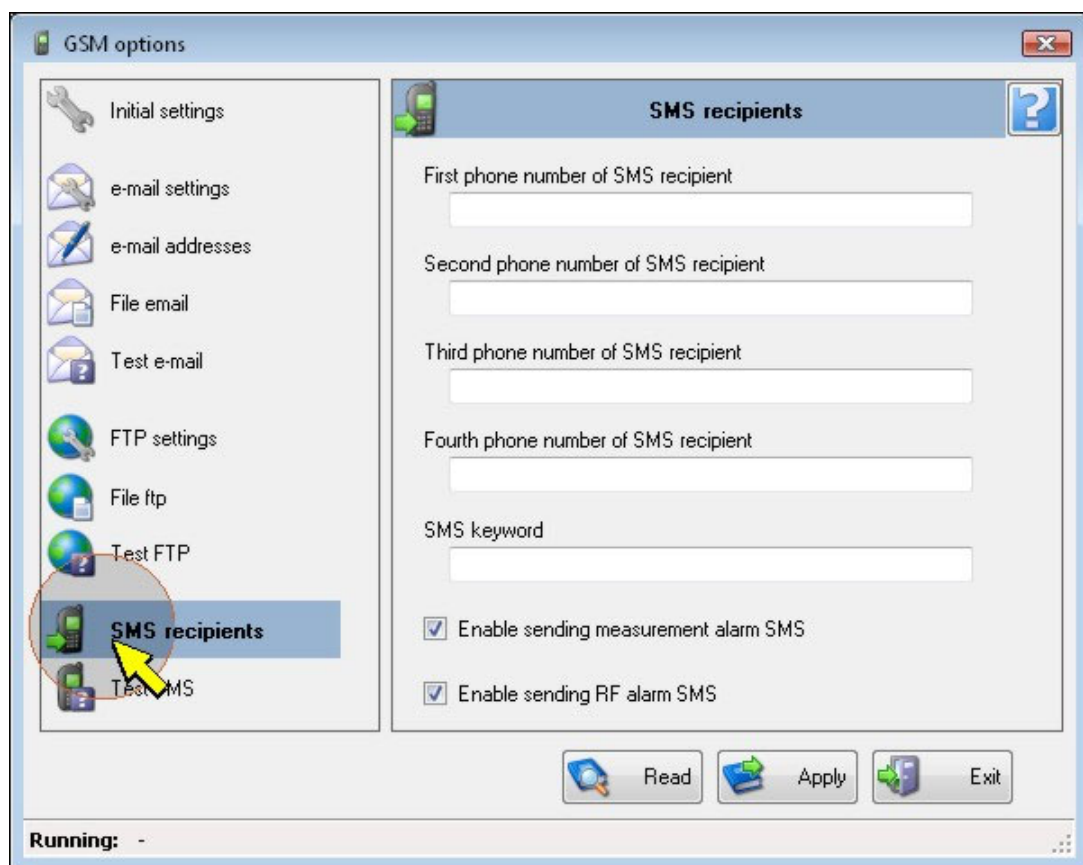


Data are sent to the address previously specified in the section *FTP settings*. The field *FTP address* cannot be modified in this section.

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

23.9. SMS RECIPIENTS

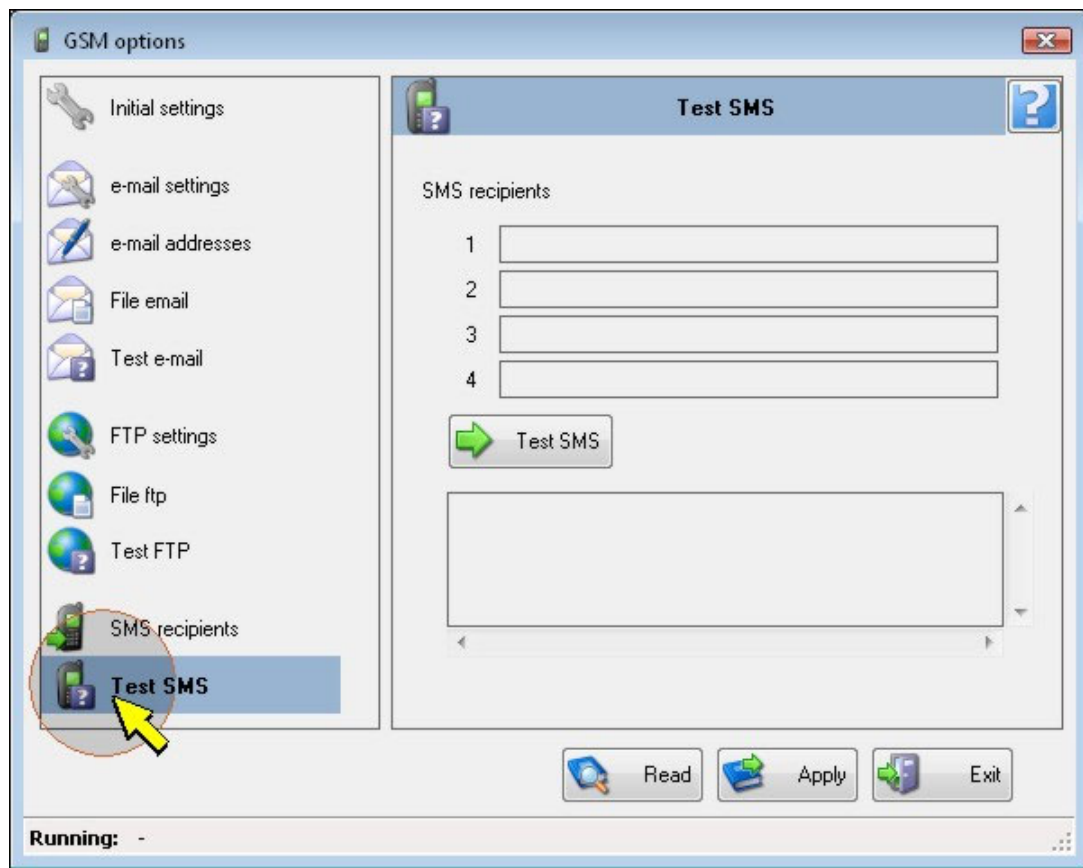
In the section *SMS recipients*, the phone numbers which will receive alarm SMSes are entered . It is possible to enter up to 4 phone numbers.



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.

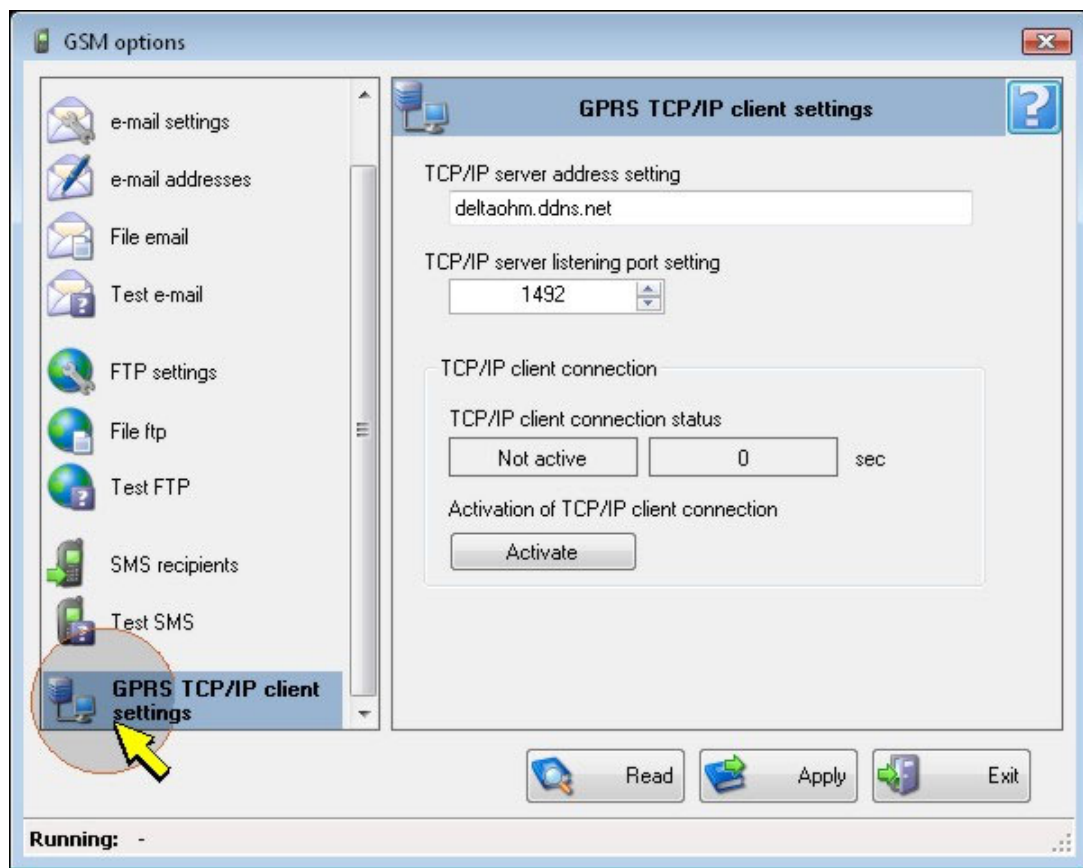


The SMS message will be sent to the phone numbers that have previously been entered in the section *SMS recipients*. The field *SMS recipients* cannot be edited from this section.

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*.



The section consists of the following fields:

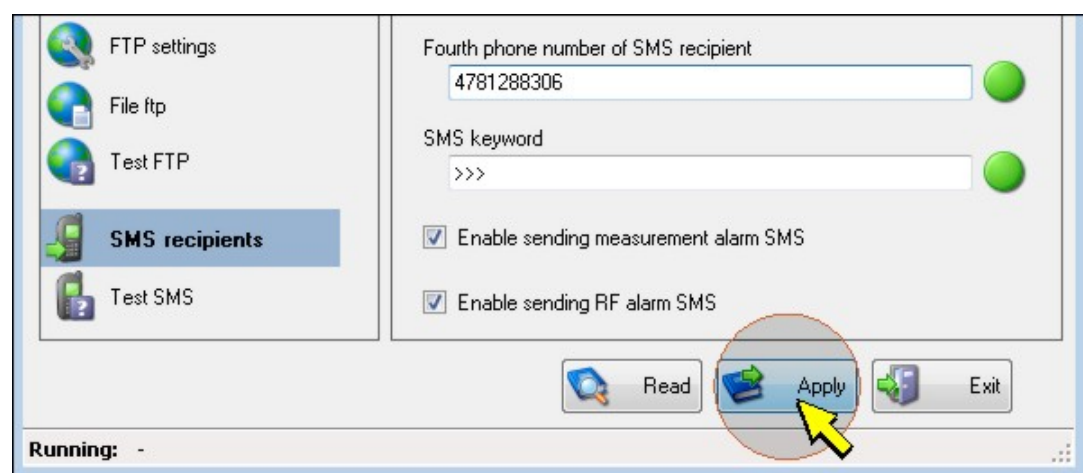
TCP/IP server address setting : enter the server IP address (if the server has a static IP address) or DNS name. If the server has a dynamic IP address, use a dynamic DNS service.

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.

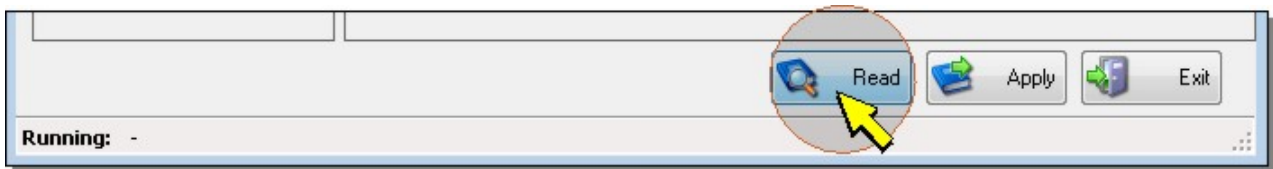
23.12. TRANSFER OF SETTINGS TO INSTRUMENT

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.



23.13. READING THE CURRENT INSTRUMENT CONFIGURATION

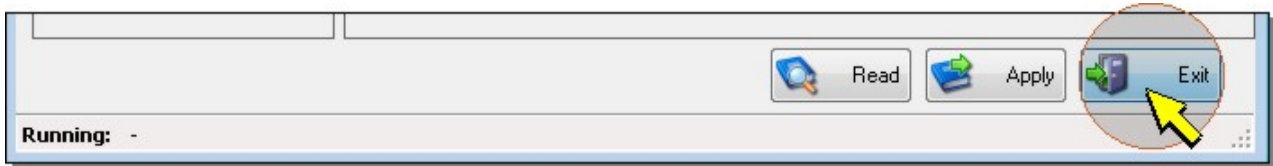
When *GSM Options* window is opened, values displayed are those configured in the base unit. To read again configured values, for example in order to check that the configuration upload operation has been correctly carried out, press the *Read* button.



23.14.

23.15. CLOSING CONFIGURATION WINDOW

In order to close the *GSM Options* window, select the *Exit* key.



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)

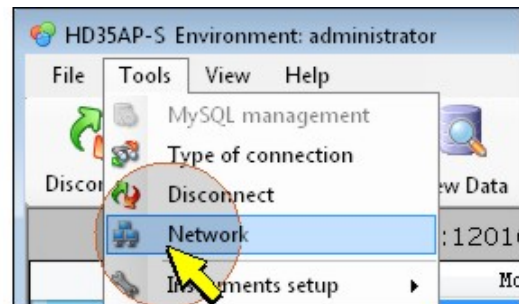
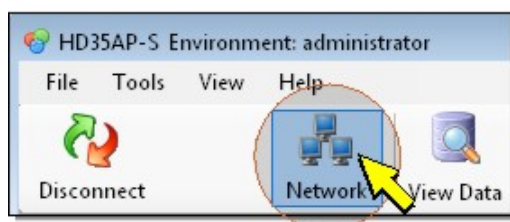
In the case of a failure of the base unit, it is possible to replace it and transfer the network structure information in a new base unit .

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 [Saving in the PC the network configuration](#).

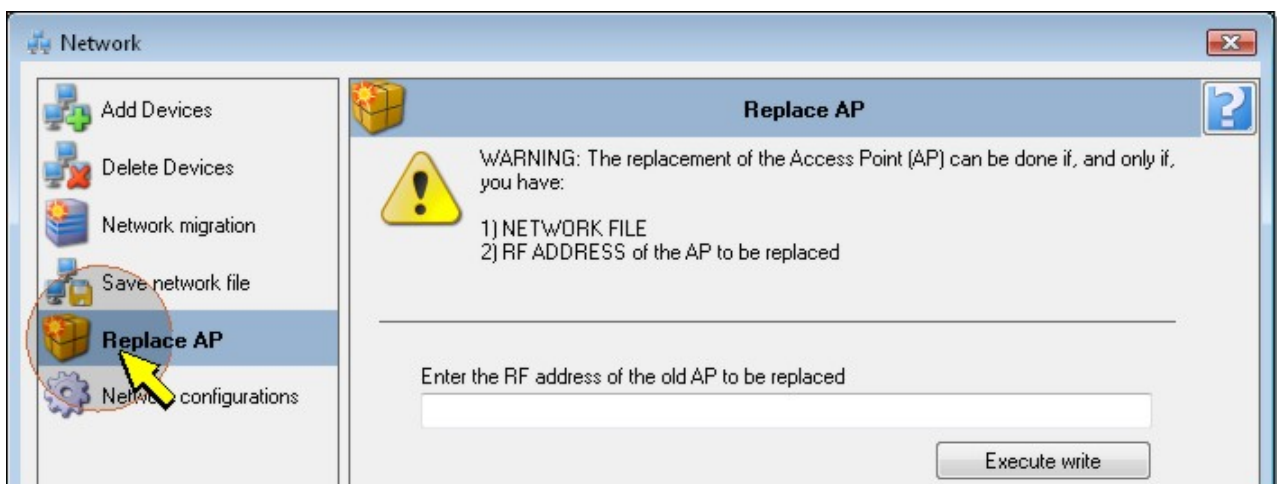
The replacement procedure must be carried out with the base unit connected to the PC via USB (no Wi-Fi, Ethernet or GSM/GPRS).

To replace the old base unit, proceed as follows.

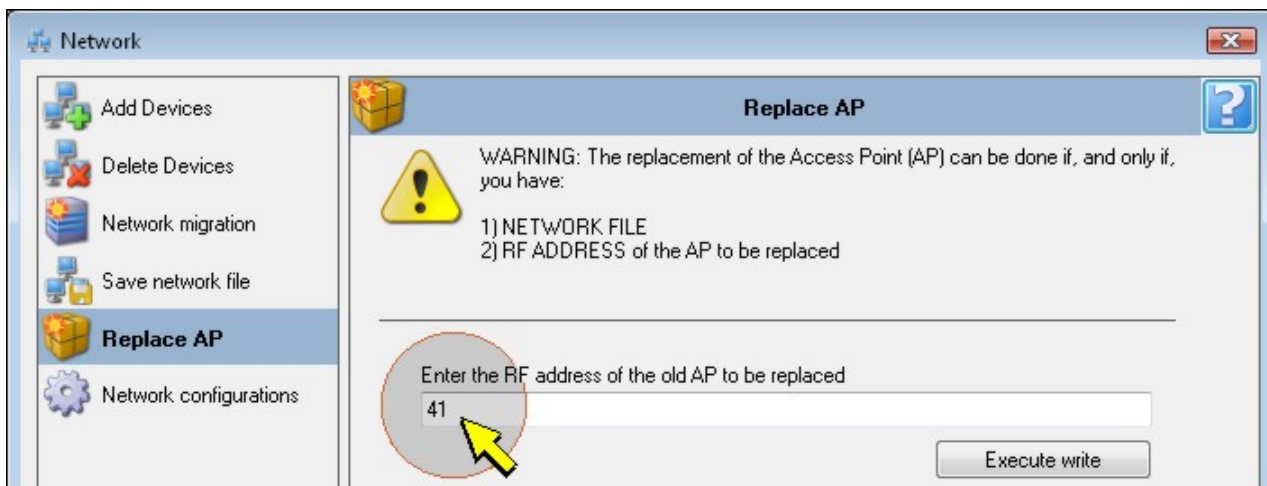
1. Disconnect the old base unit and connect the new one. Disconnect power supply of the old one (disconnect also the internal battery) to avoid any possible interference during replacement operation.
2. Select the icon *Network* in the toolbar, or the item *Network* in the *Tools* menu.



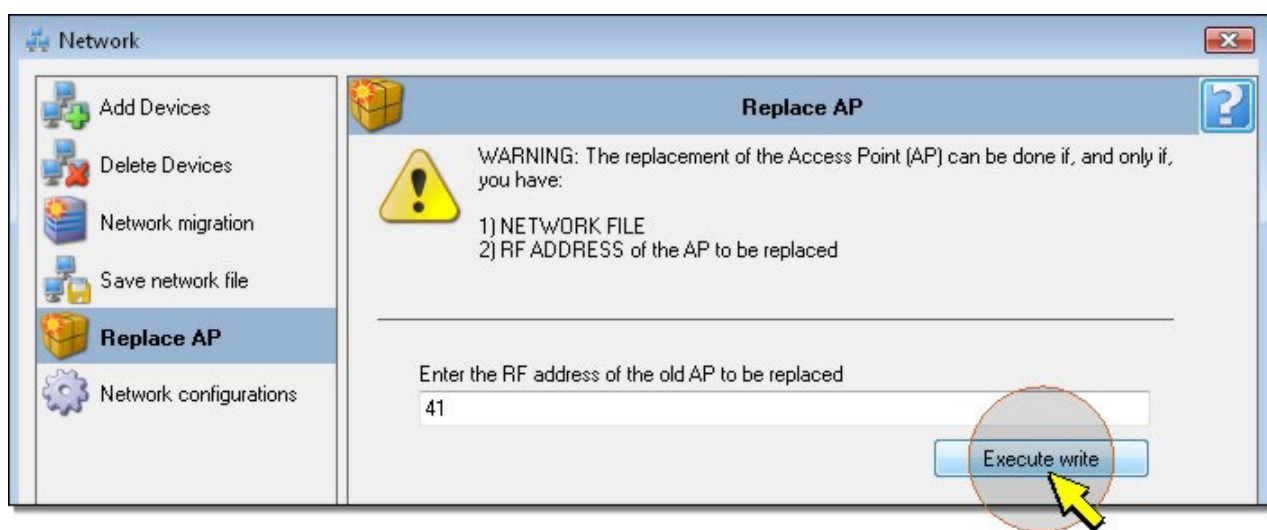
3. Select section *Replace AP*.



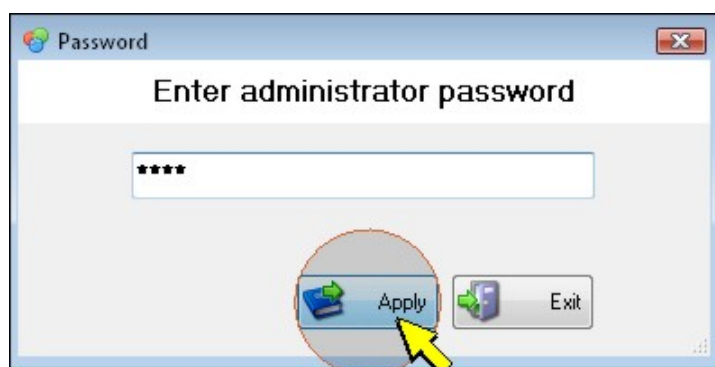
4. Enter the RF address of the old base unit to be replaced.



5. Press the key *Execute write*.



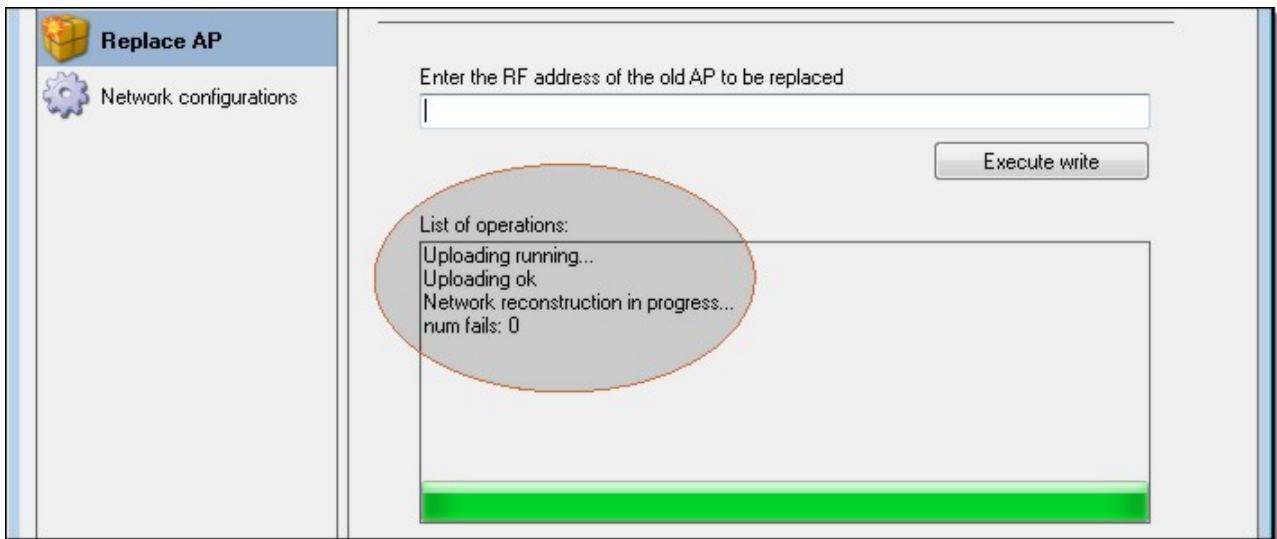
6. In order to proceed with the replacement, the administrator password is required. Enter the password and press *Apply*.



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*.



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 [Saving the net configuration in the PC](#). 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 [relative humidity](#) sensor, of the [CO₂](#) sensor, of the [CO](#) sensor and of the differential pressure sensor.

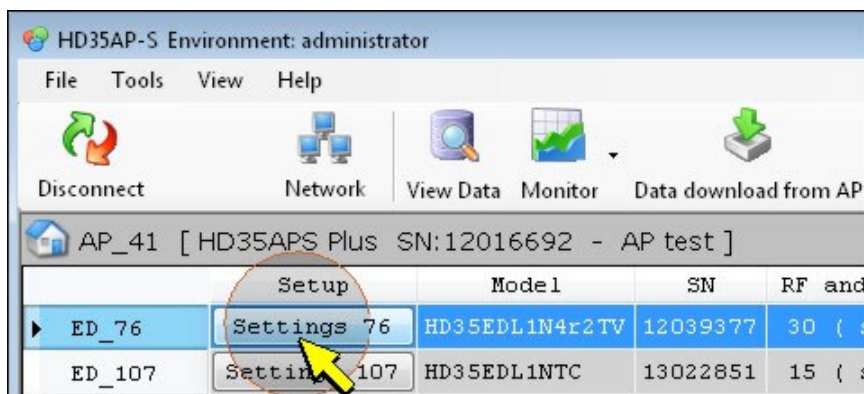
It is also possible to set the sensitivity of [CO](#), [Illuminance](#) and [solar radiation](#) sensors.

There is no provision for temperature calibration.

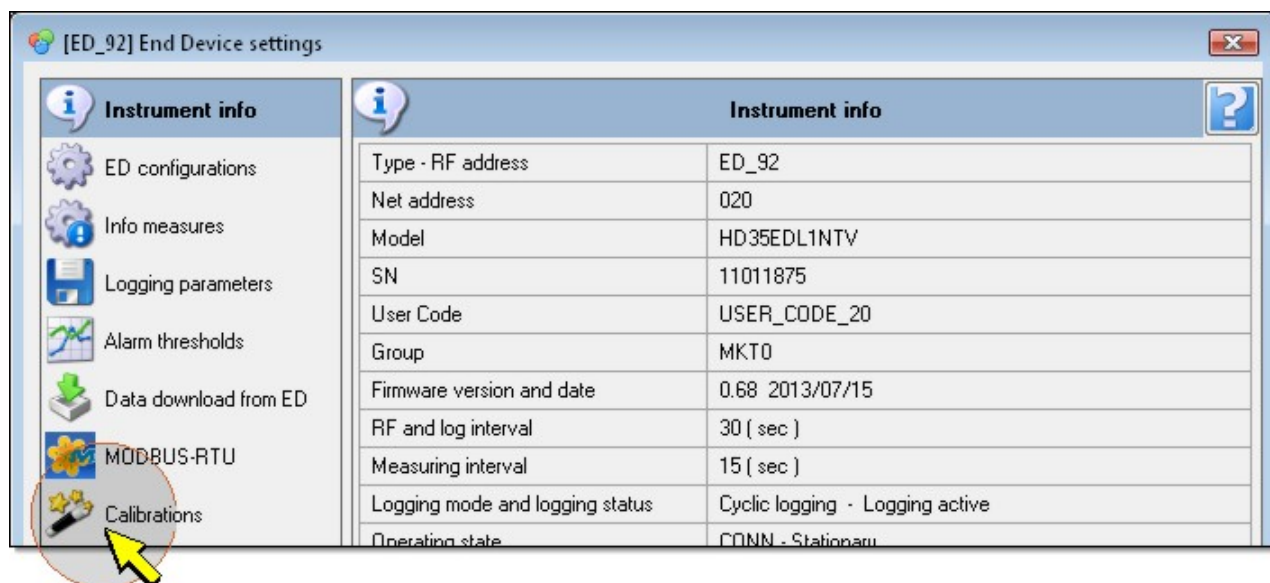
For a correct calibration of the probes, it is fundamental to know and respect the physical phenomena the measurement is based on: for this reason it is recommended to carefully follow the following instructions and perform new calibrations only if in possession of the appropriate knowledge.

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).

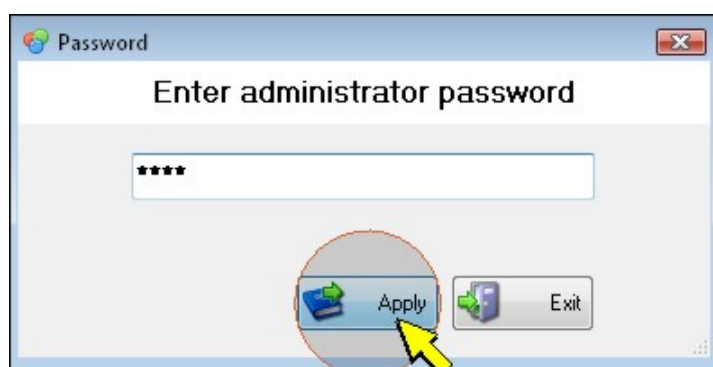
To enter calibration, open the *Settings* window of the device.



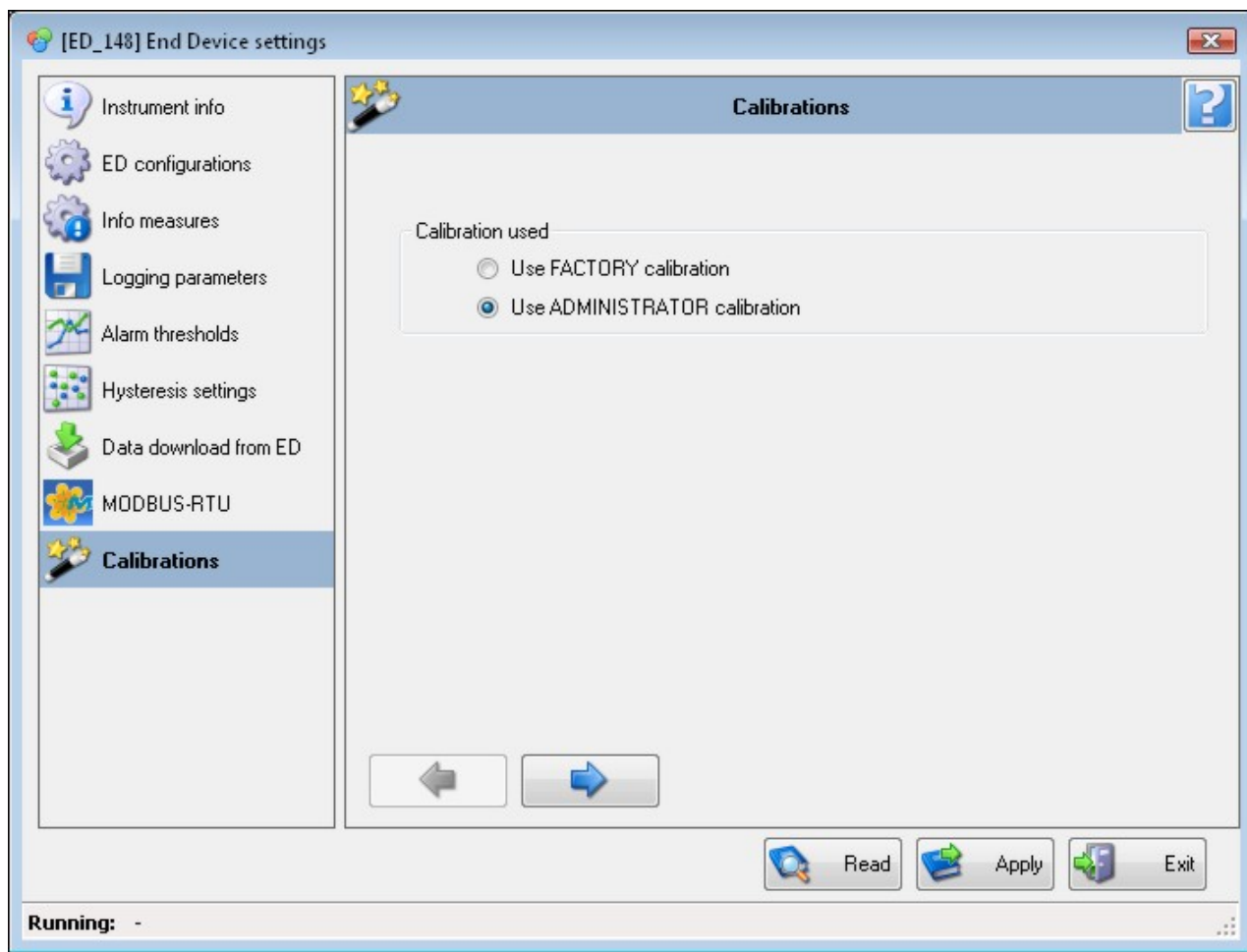
Select the section *Calibrations*.



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



Wait a few instants for the password verification, until opening of the section *Calibrations*.



To modify the calibration in use, select the option *Use FACTORY calibration* or *Use ADMINISTRATOR calibration* and press the key .

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.

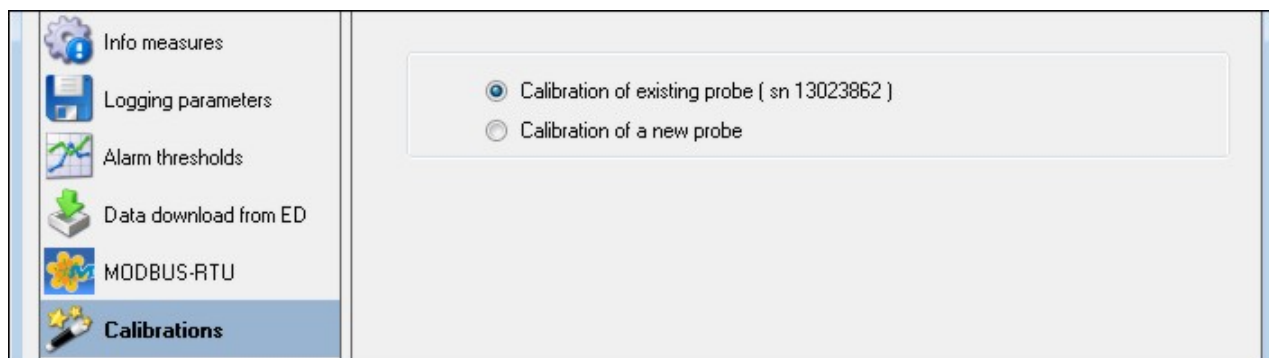
3. Screw the included M12X1 ring nut on the probe.

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.

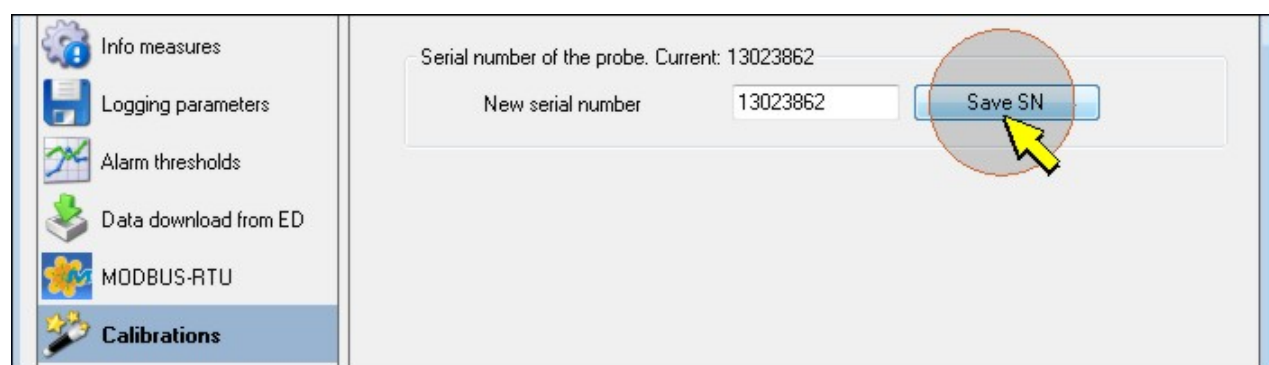
5. Once the sensor has been introduced, wait at least 30÷45 minutes.

6. Open the *Settings* window of the device and enter the section *Calibrations* like described at the beginning of the chapter [Calibration of the sensors](#). 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

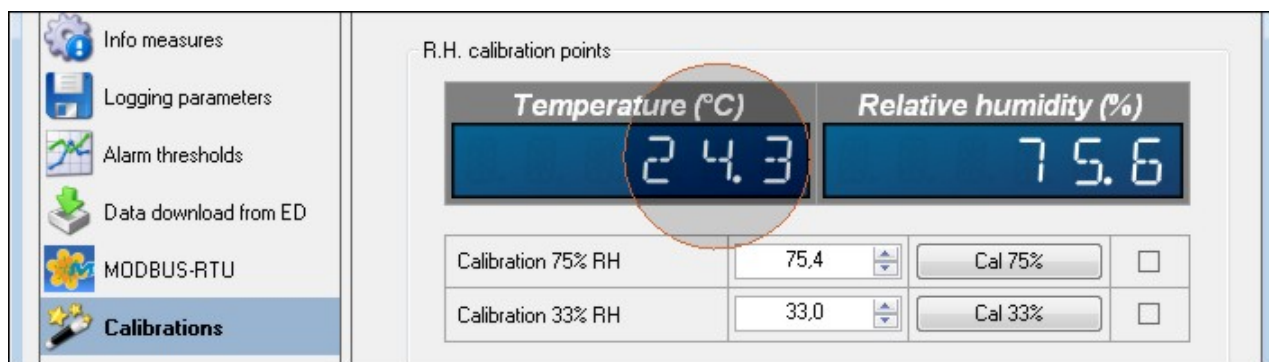
going to be calibrated. Select the desired option and press the key .



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.



7. Read the temperature provided by the probe.

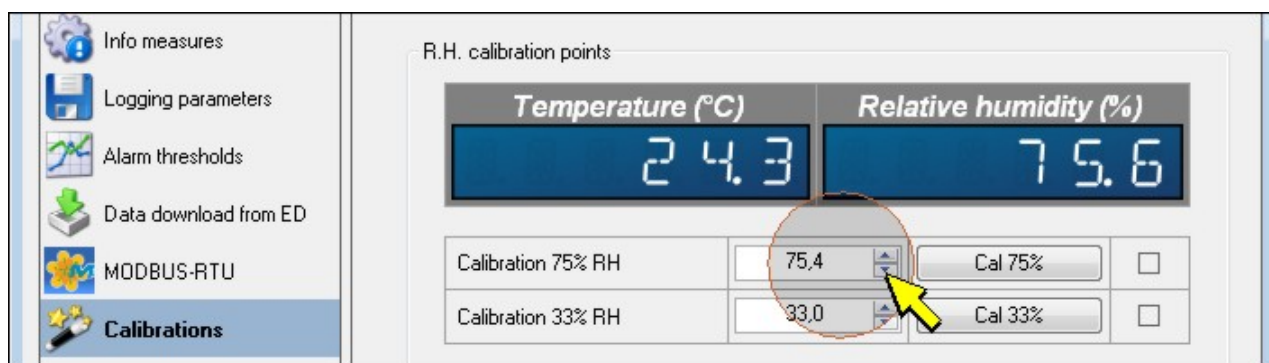


8. Read in the humidity-temperature correspondence table of the saturated salt solution the humidity value corresponding to the measured temperature. For 75%RH solution (code HD75) the table is the following:

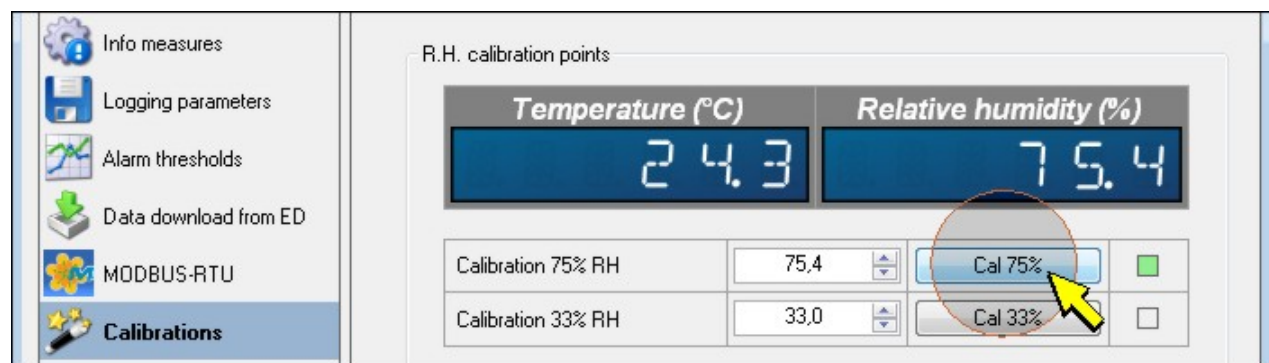
Temp. °C	75%RH solution
10	75.6
15	75.6
20	75.4
25	75.2
30	75.0
35	74.8
40	74.6
45	74.5
50	74.4

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.

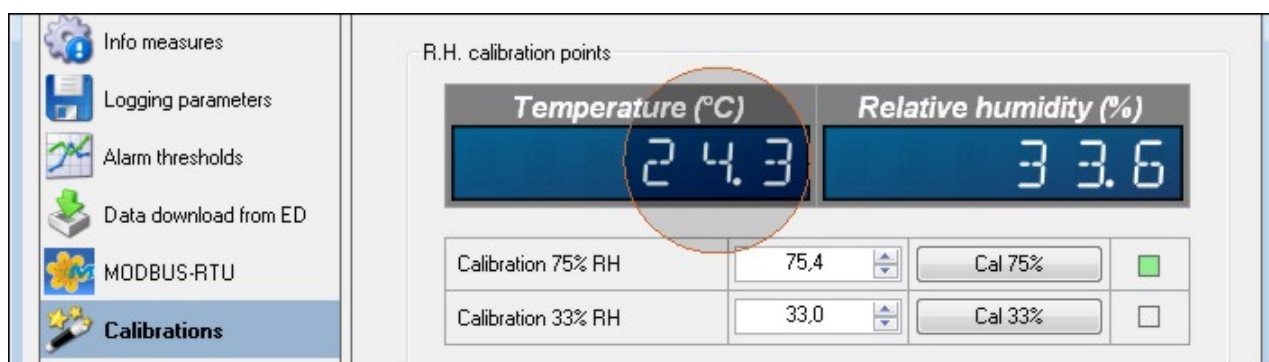


10. Press the key **CAL 75%** to calibrate at 75%RH, the indicator on the right near the key becomes green.



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.

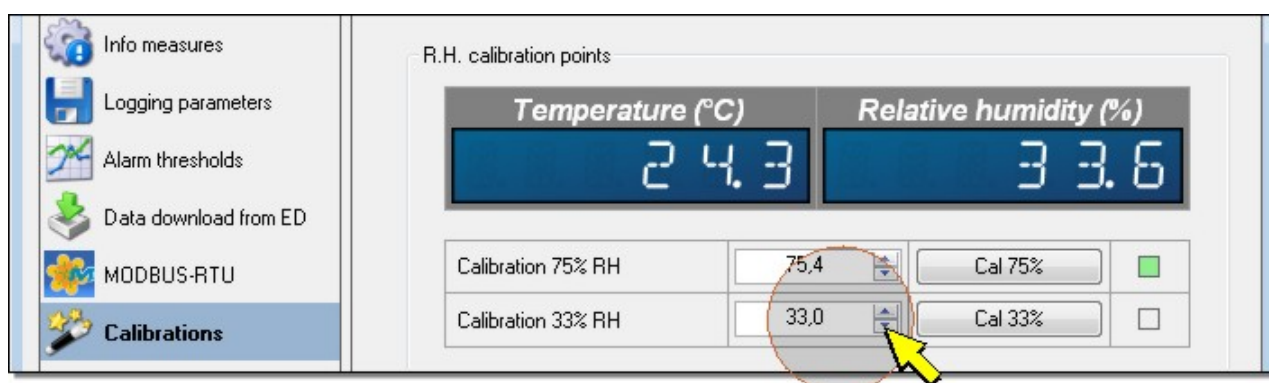


Note: in the HD35ED...TVI models, for a better accuracy, calibrate the second point at a temperature close to that of the first point.

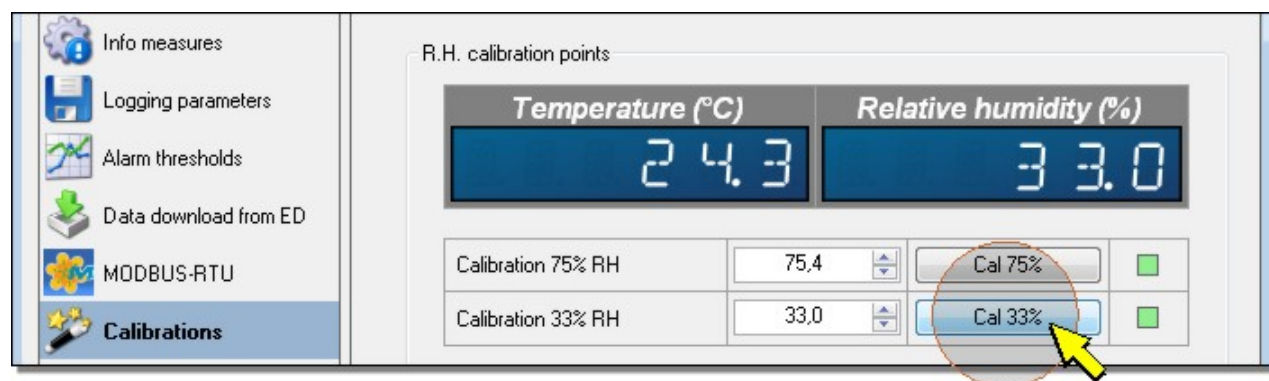
13. Read in the humidity-temperature correspondance table of the saturated salt solution the humidity value corresponding to measured temperature. For the 33%RH (code HD33) the table is the following:

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.



15. Press the key **CAL 33%** to calibrate at 33%RH, the indicator on the right near the key becomes green.



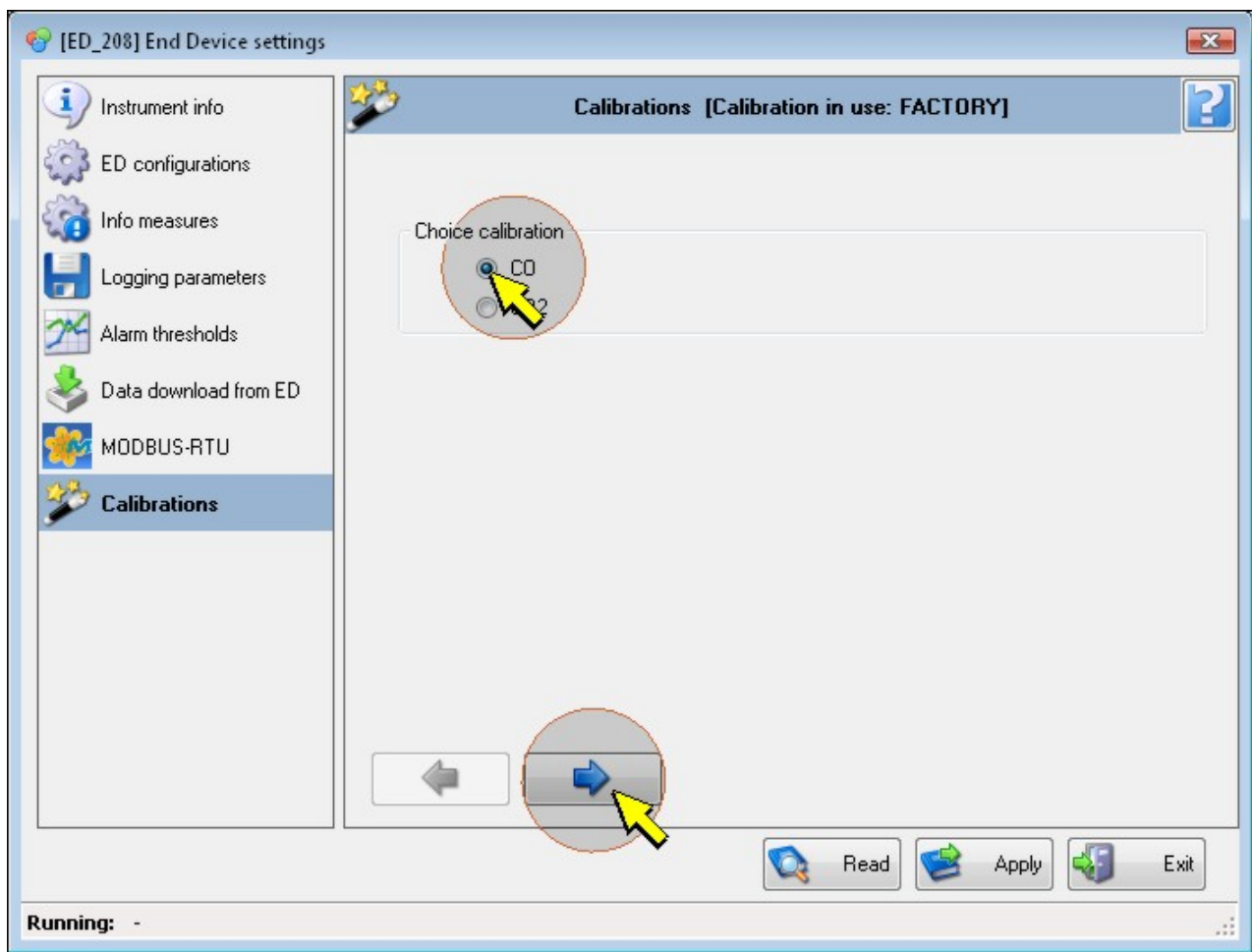
The software goes automatically back to the first calibration screen. Press *Exit* to return to the main window of the program.

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.

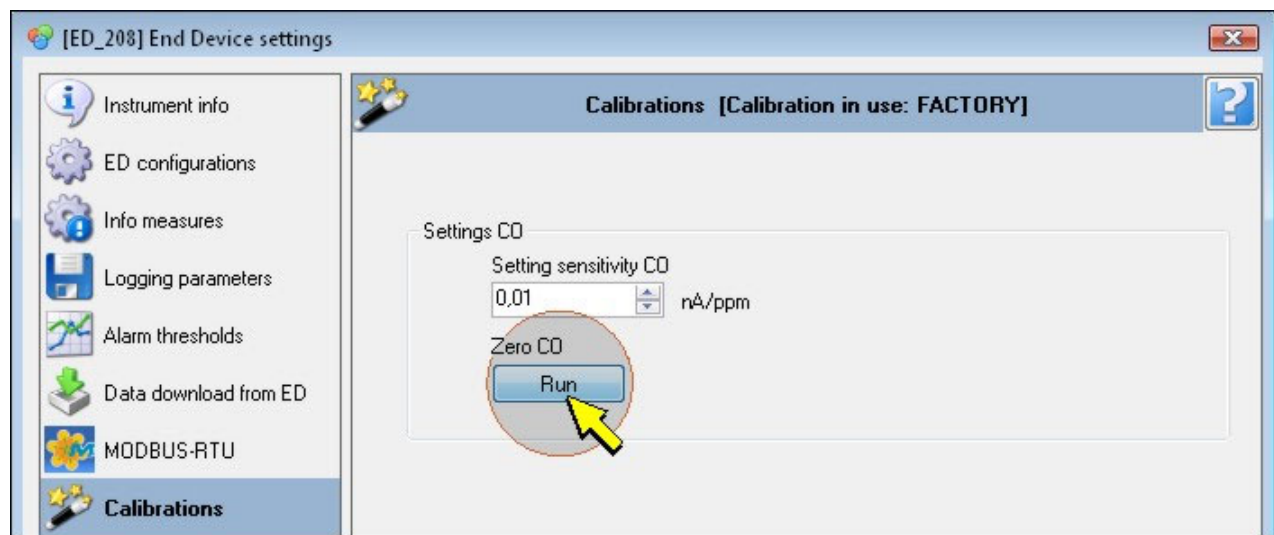
25.2. CALIBRATION AND SETTING OF THE SENSITIVITY OF THE CO SENSOR

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 [Calibration of the sensors](#).

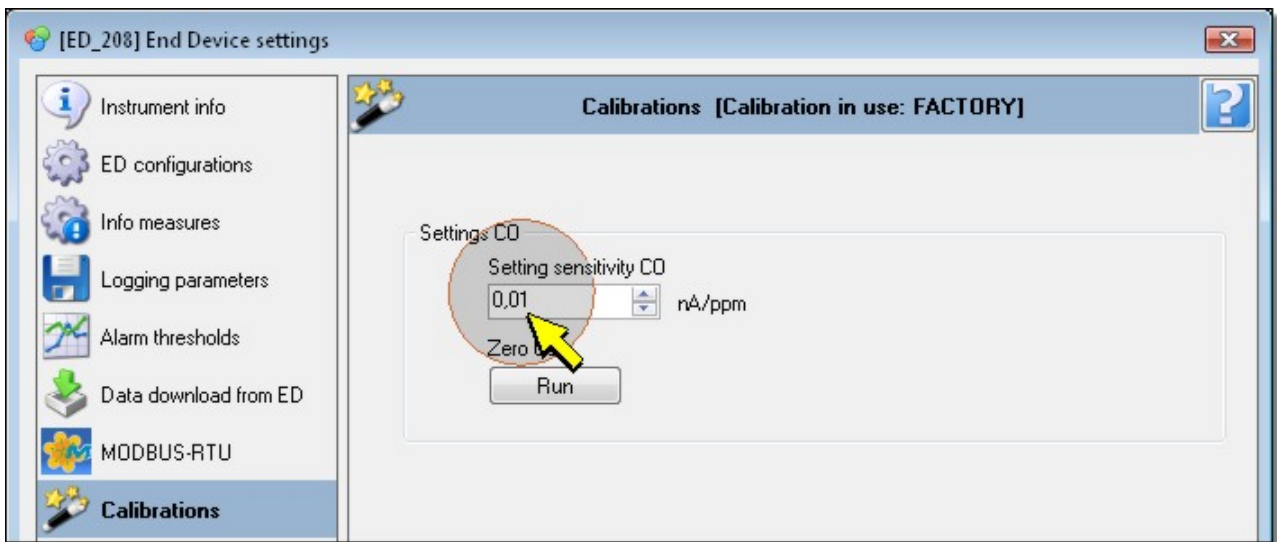
Select the **CO** option and press the key .



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*.



To set the sensitivity of the sensor, use the arrow keys on the right side of the field or write directly the value.

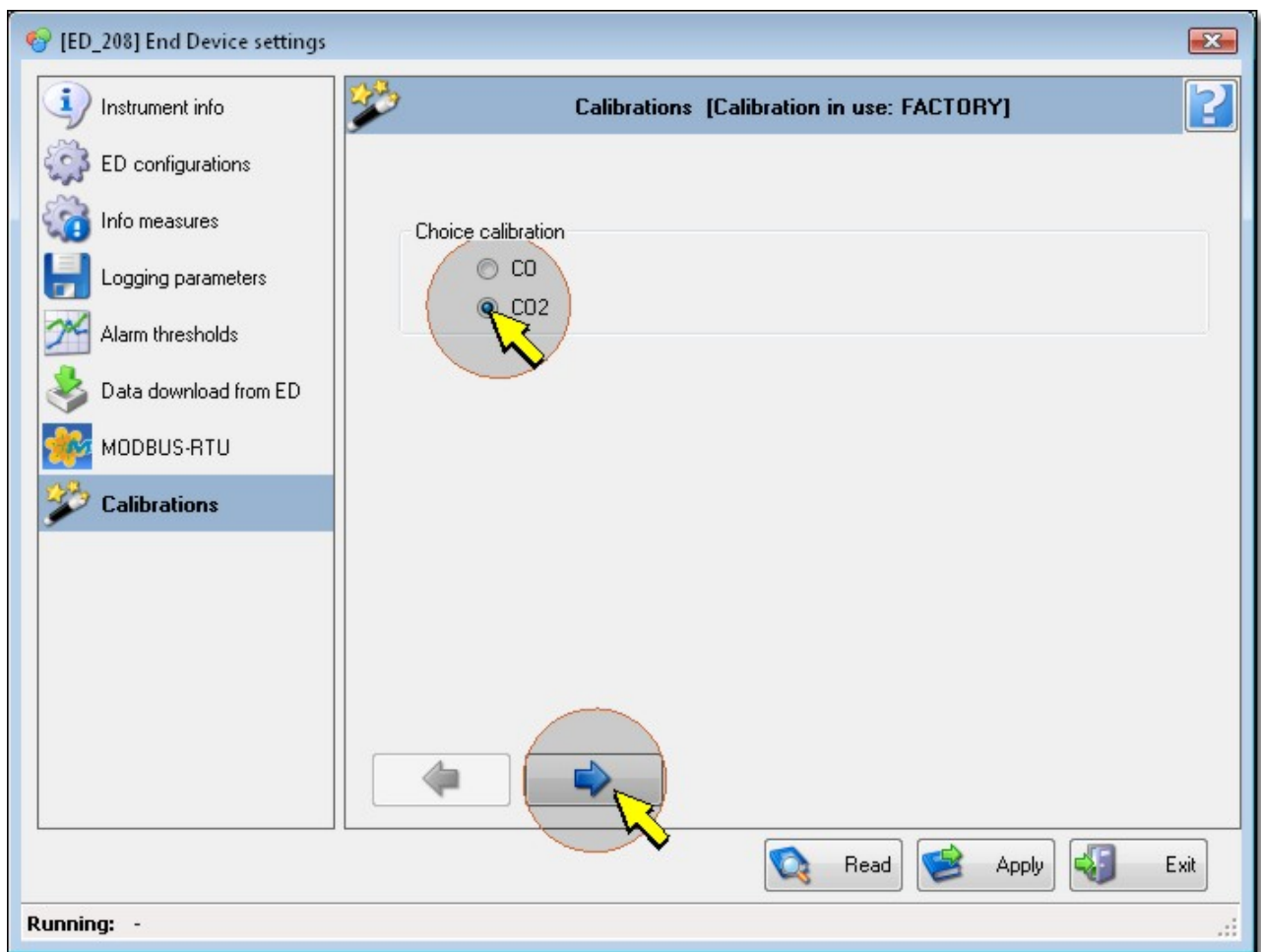


Press *Apply* to store the value.

25.3. CO₂ CALIBRATION

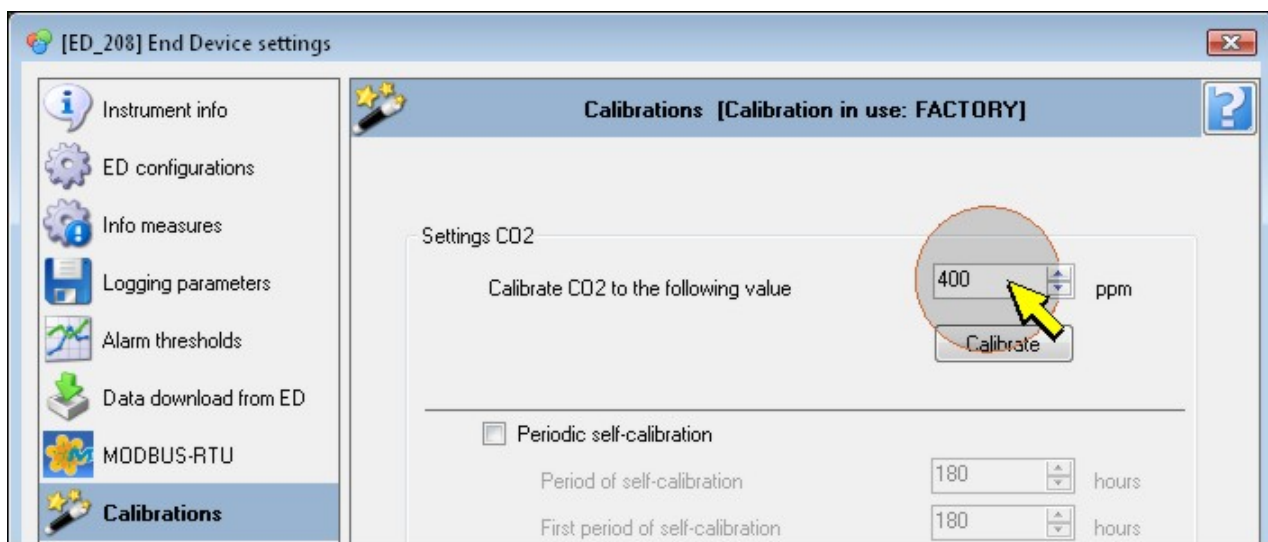
To calibrate the CO₂ sensor, open the *Settings* window of the device and enter the section *Calibrations* like described at the beginning of the chapter [Calibration of the sensors](#).

Select the **CO₂** option and press the key .

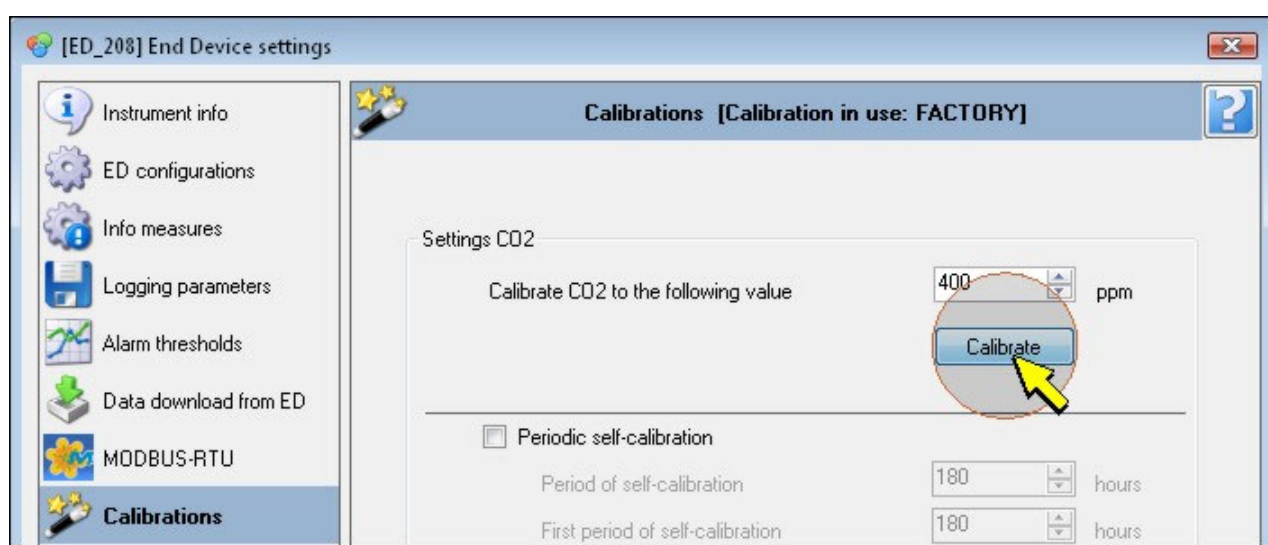


Place the data logger in an environment with known CO₂ concentration (for ex. in clean air), then wait for the measure to become stable (at least 15 minutes).

Enter the calibration value.



Press the key *Calibrate*.

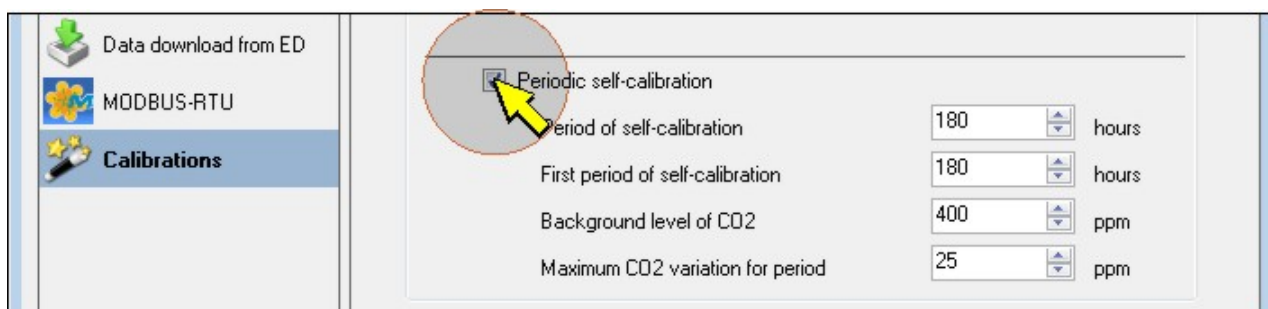


Wait for a few minutes for measurement completion. In the meantime, don't stay too close to the instrument to avoid altering the measurement.

CO₂ sensor auto-calibration

The instrument can be set so as CO₂ calibration is automatically performed at predetermined intervals. In order for auto calibration to be effective, the CO₂ 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 CO₂ 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.



Set the following values:

- *Period of self-calibration* : time interval between two consecutive auto-calibrations.

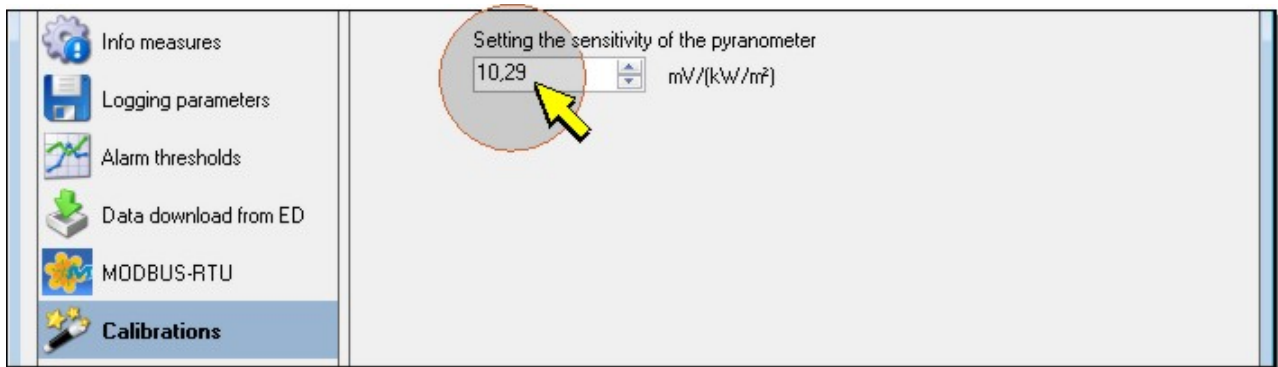
- *First period of self-calibration* : time interval after which the first auto-calibration will be performed after activation.
- *Background level of CO₂* : CO₂ reference value for auto-calibration.
- *Maximum CO₂ variation for period* : maximum offset that can be applied to the measurement by the auto-calibration 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 [Calibration of the sensors](#). Set the sensitivity using the arrow keys on the right side of the field or by writing directly the value.



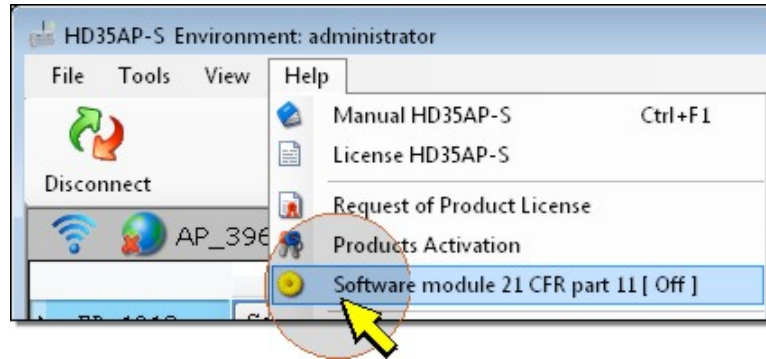
Press *Apply* to store the value.

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.



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*.



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).



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.

Delta OHM **HD35AP-S** **Login** **FDA 21 CFR part 11**

Database login

Connection Type:

Hostname / IP:

User:

Password:

Port: ☒ Save database parameters?

Setup Hw key

IP address:

Port:

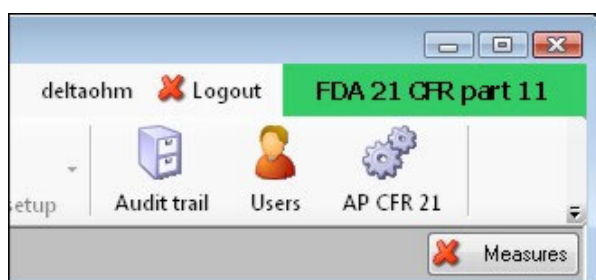
User login

Username:

Password:

☒ ok

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*).



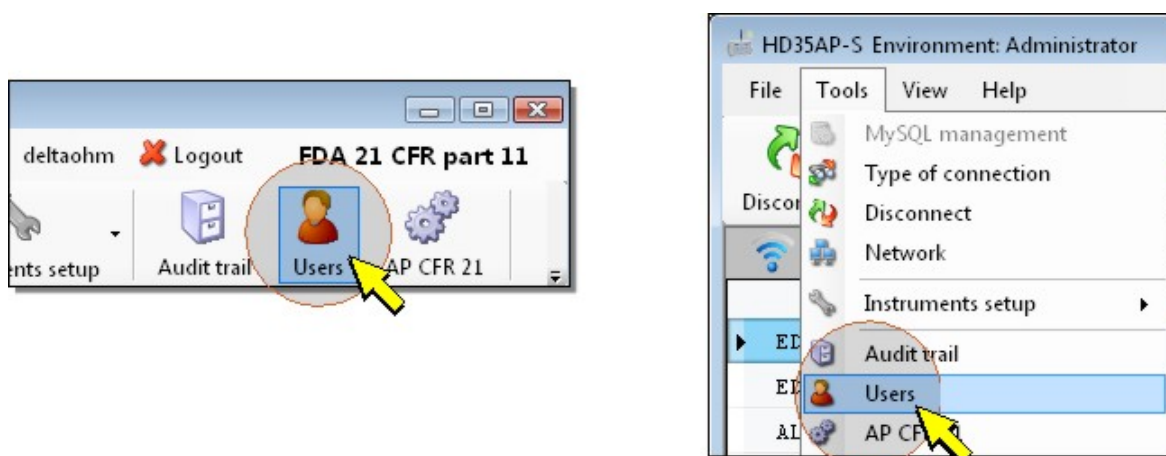
To close the user session, press the *Logout* button next to the user name.

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 disabled 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*.



The list of the users registered in the active database (the database indicated during login) appears.

Setup user login

☐ The password expires every days

☐ If the password is not correct, block the account after attempts

☐ Minimum password length characters

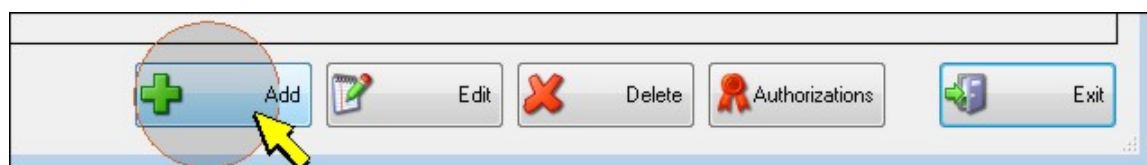
☐ Follow the recommendations of FDA CFR21 Part 11

User list

Id	Registration Date	Login	Description	Status	Name	Last Name	e-mail	Position
1	05/11/2015 17.16.55	User A	User A	Active	User	A		Superuser
2	05/11/2015 17.17.38	User B	User B	Active	User	B		User

27.1. ADD A NEW USER

Press the *Add* button.



The user form appears; enter the required data and press *OK*.

The screenshot shows a window titled "Users management" with a sub-header "Data entry of a new user". The form contains the following fields and controls:

- Registration Date: - (with an "Update registration" button next to it)
- Login: User C
- Password: masked with dots (with a magnifying glass icon to the right)
- Confirm password: masked with dots
- Description: (empty text field)
- Status: Deactive (dropdown menu)
- Name: John
- Last Name: Smith
- e-mail: (empty text field)
- Position: User (dropdown menu)

At the bottom right, there are three buttons: a green checkmark icon, "OK", and a blue folder icon with "Exit".

The *Status* field allows enabling (Status=*Active*) or disabling (Status=*Deactive*) the user acces to the system.

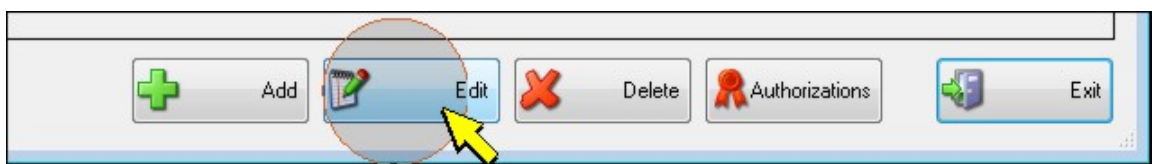
The *Position* field determines the user permissions (*Administrator*, *Superuser* or *User*).

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.

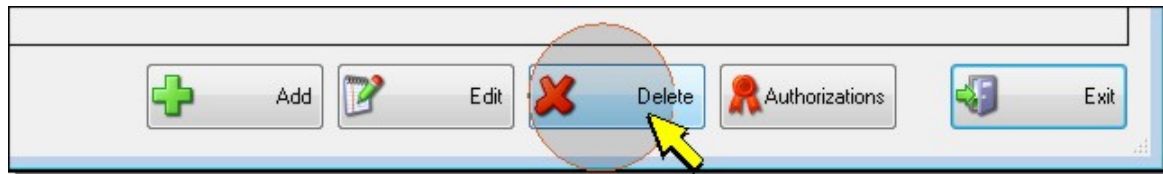
The screenshot shows a window titled "Users management" with a sub-header "Edit user data entered". The form contains the following fields and controls:

- Registration Date: 05/11/2015 17.16.55 (with an "Update registration" button next to it)
- Login: User A
- Password: masked with dots (with a magnifying glass icon to the right)

A red circle highlights the "Update registration" button, with a yellow arrow pointing to it.

27.3. DELETE A USER

In the list of the users, select the user to be deleted and press the *Delete* button.

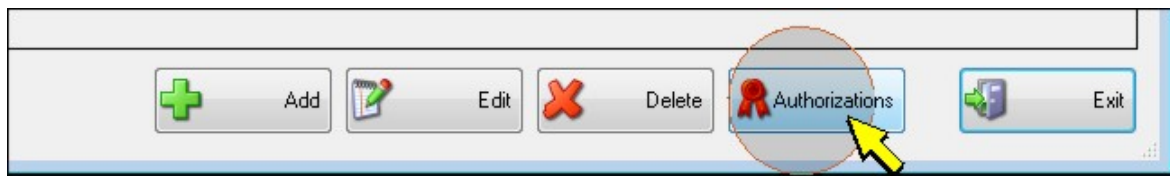


You are prompted to confirm the operation, press Yes to proceed.

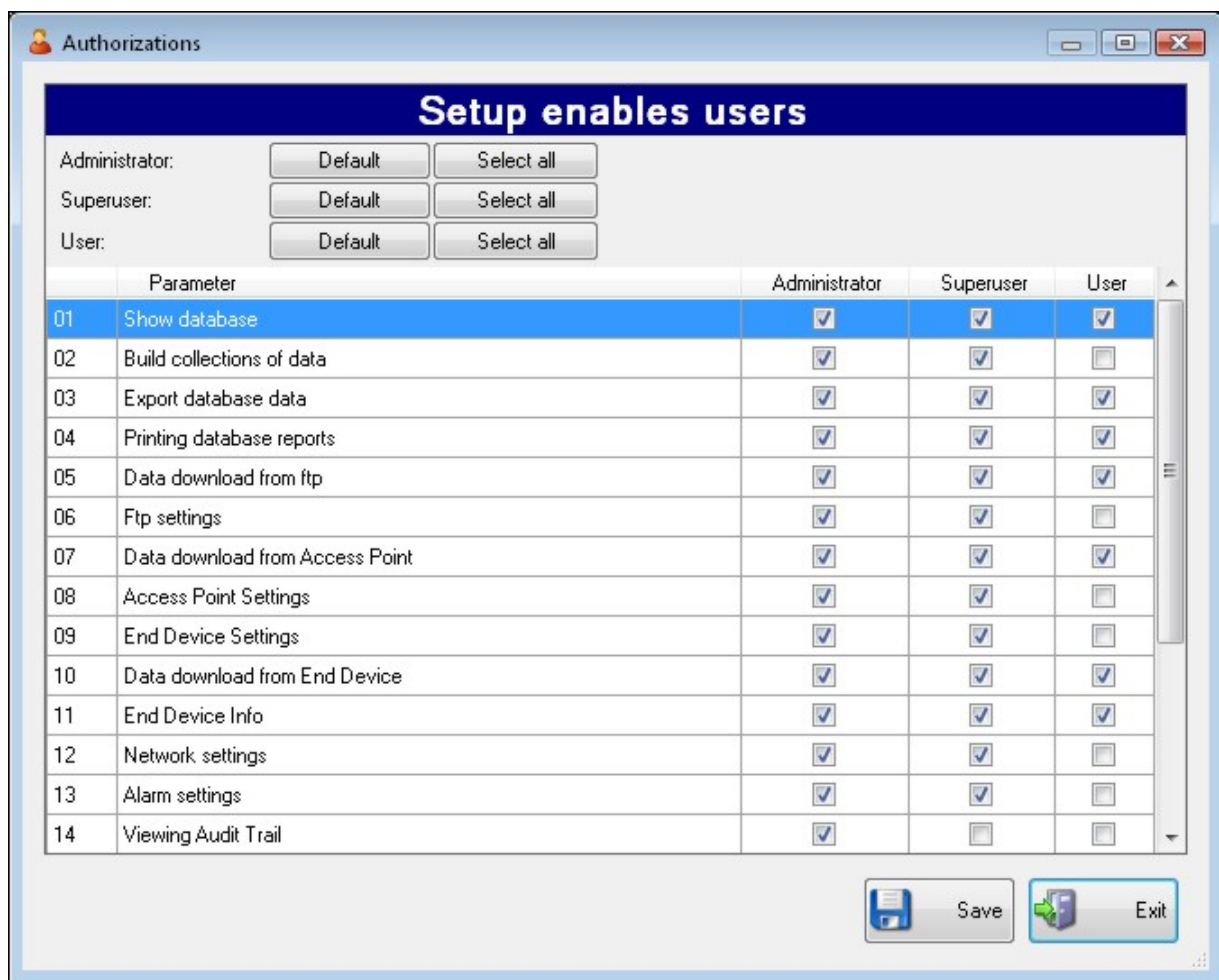
27.4. TYPES OF USERS AND PERMISSIONS

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.



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*.

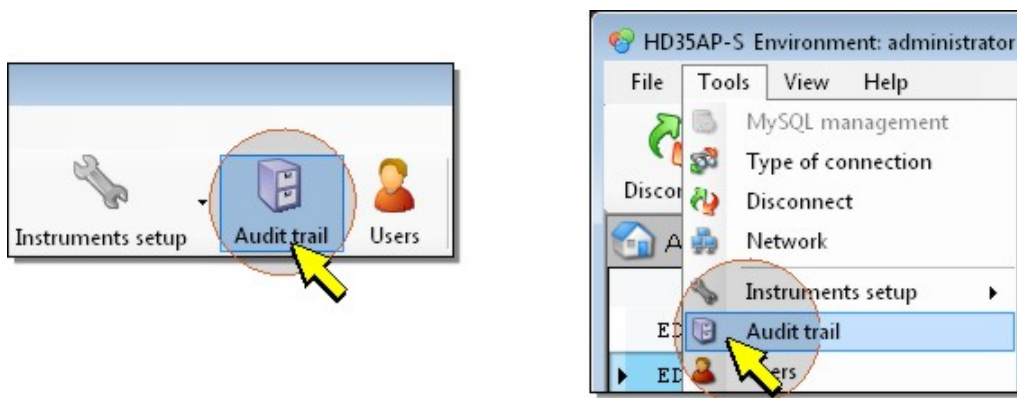
Press *Apply* to save the settings. To cancel the changes not yet saved, press *Reload*.

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.

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	Request 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	

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.

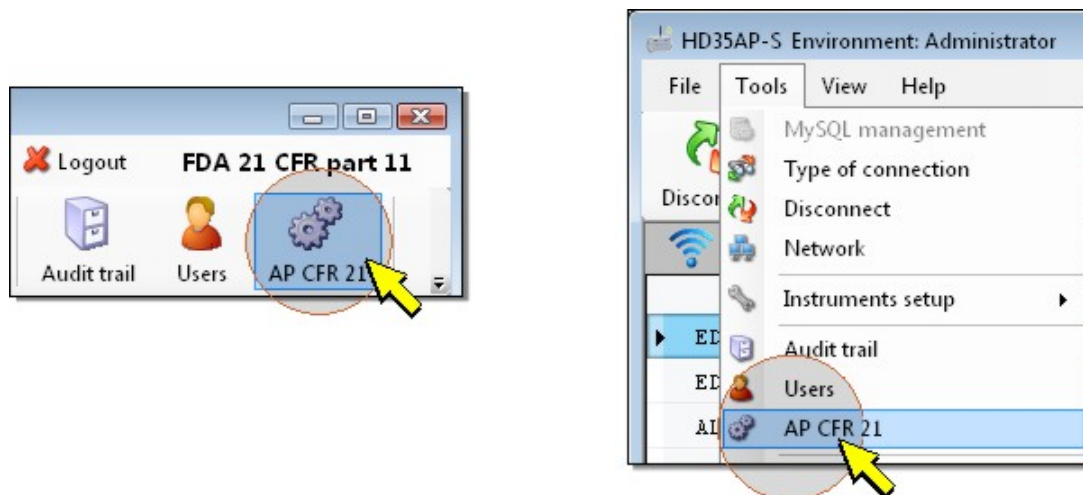
To print the report of the activities, press the *Report* key (*note*: the *Report* key is also available in the system configuration windows).

To close the activity window, press the key *Exit*.

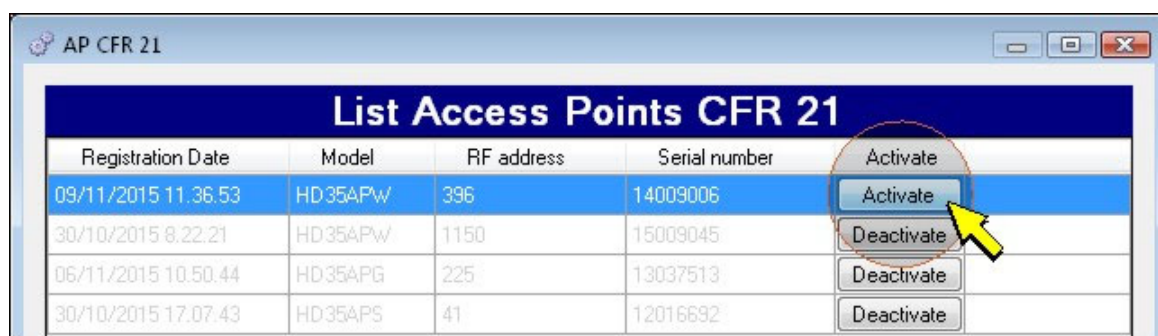
29. CFR21 DEVICE

(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**).



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.



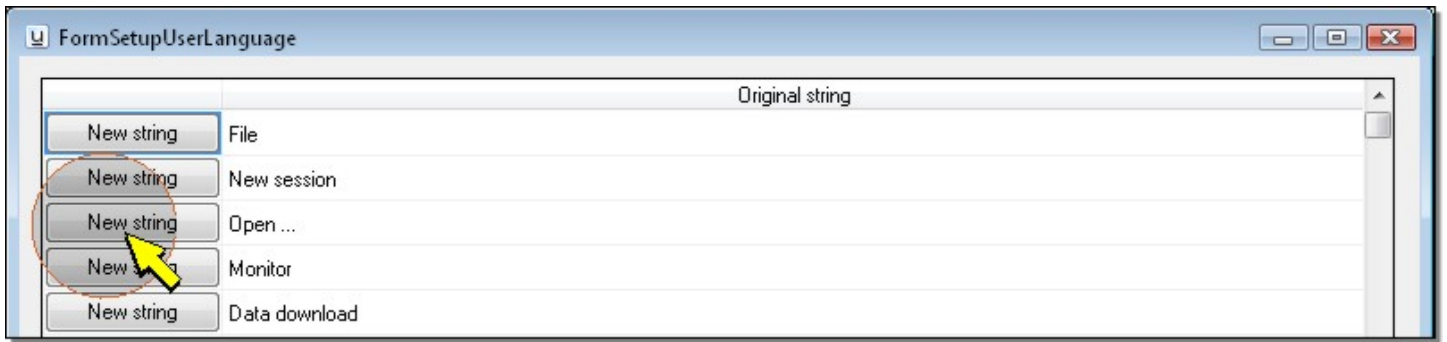
The program allows to select a language edited by the user (*User language*).



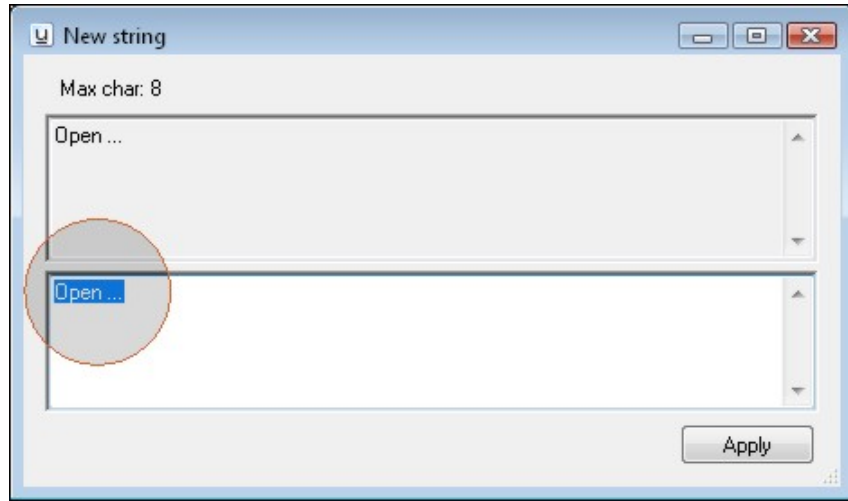
In order to edit the strings in the *user language*, select the item *Setup user language*.



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 .



A window is launched where it is possible to enter the new text and press *Apply*.

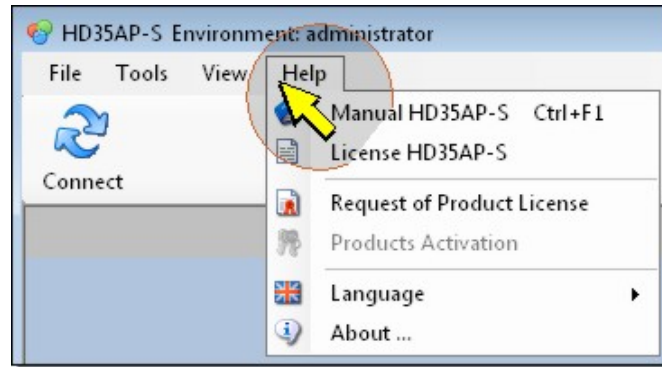


When finished, press *Apply* to go back to the main program window.

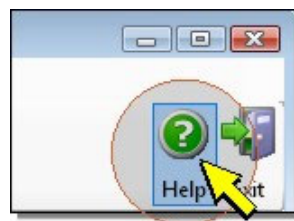


31. SOFTWARE INFORMATION

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.

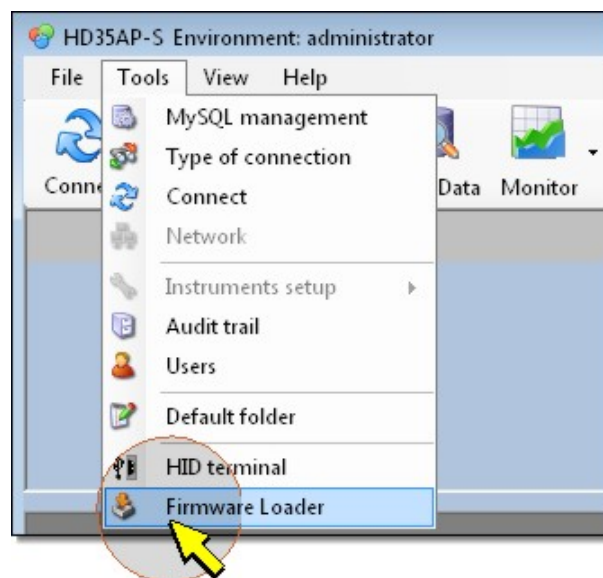


32. FIRMWARE UPDATE

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

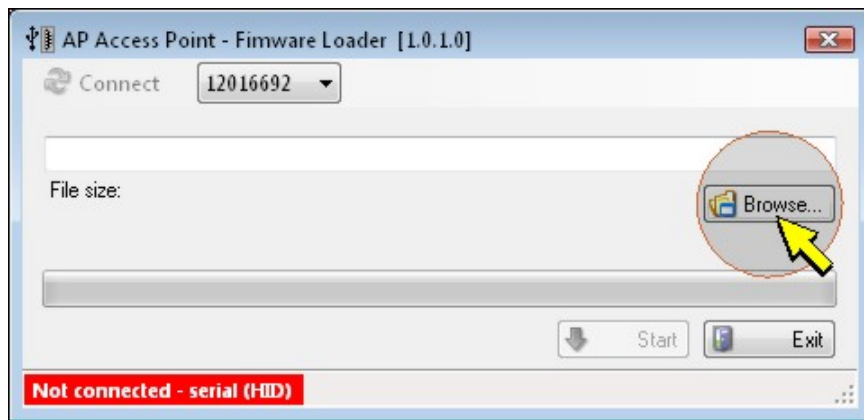
AL = HD35ED-ALM alarm module

RW = HD35REW low power repeater

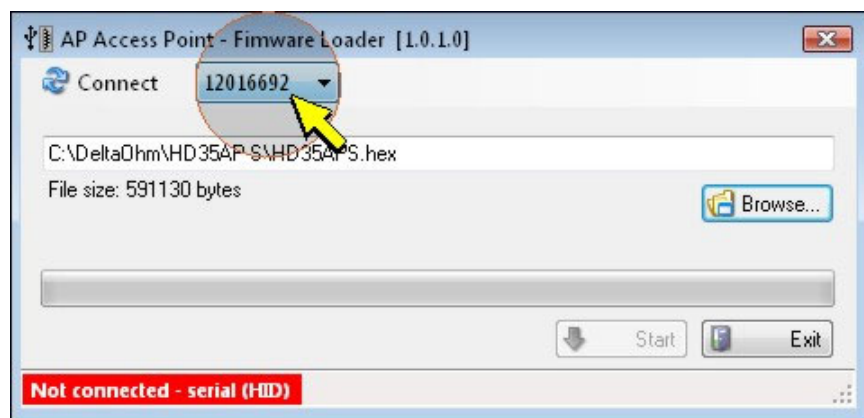
Press *Next*.



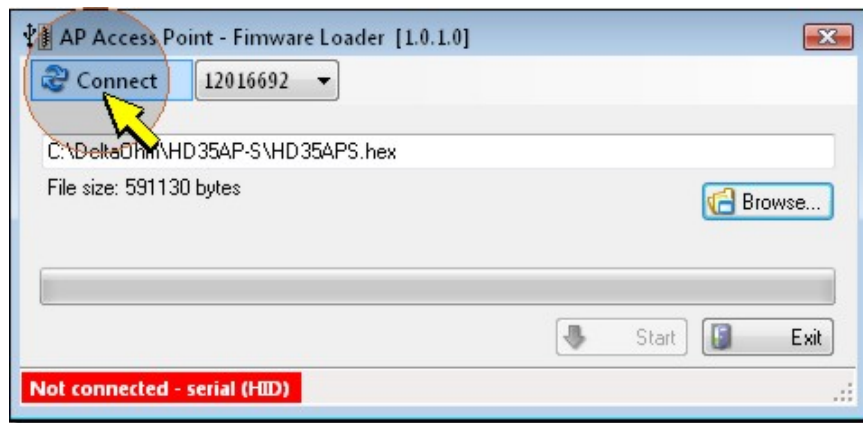
4. With the key *Browse...* (the key blinks) select the update file that has previously been saved in a folder of the PC.



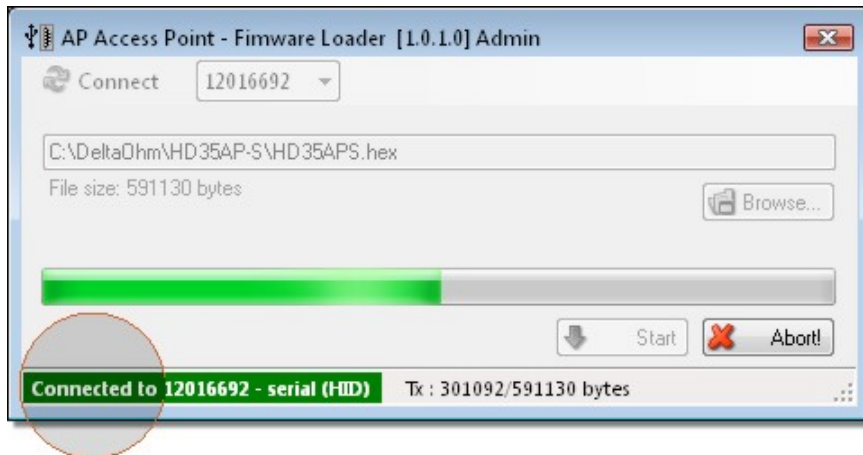
5. If multiple devices are connected, select the serial number of the device to be updated.



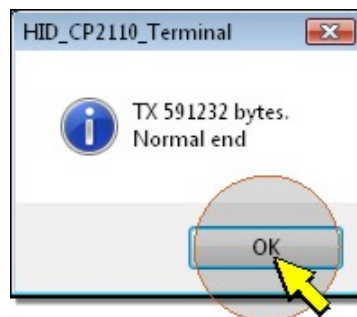
6. Select the icon *Connect* (the icon blinks).



7. Wait for the accomplishment of the connection, highlighted in the status bar, and the automatic start of the update.

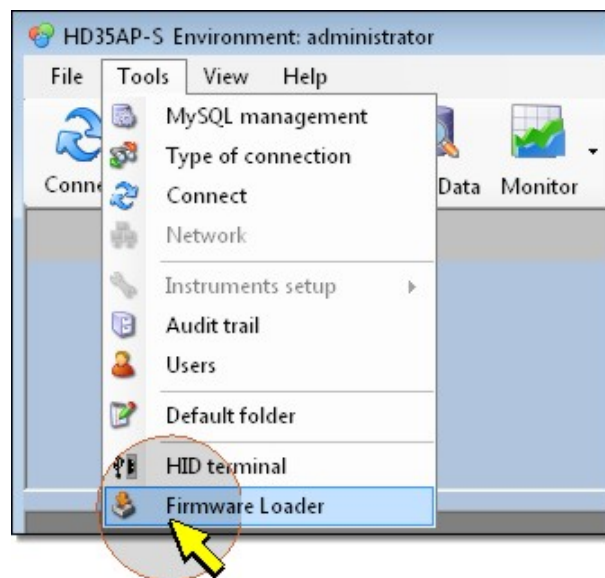


8. At the end of the update, a confirmation message appears, press OK to proceed.

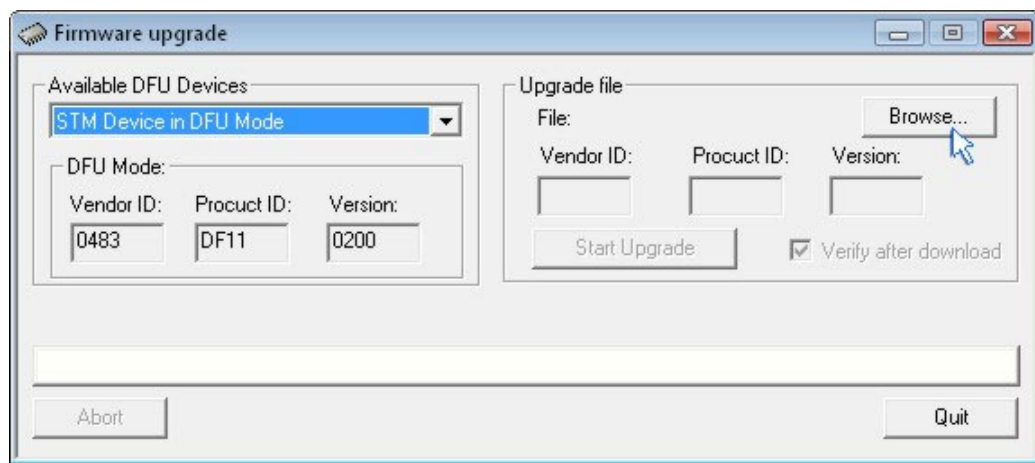


Procedure for HD208:

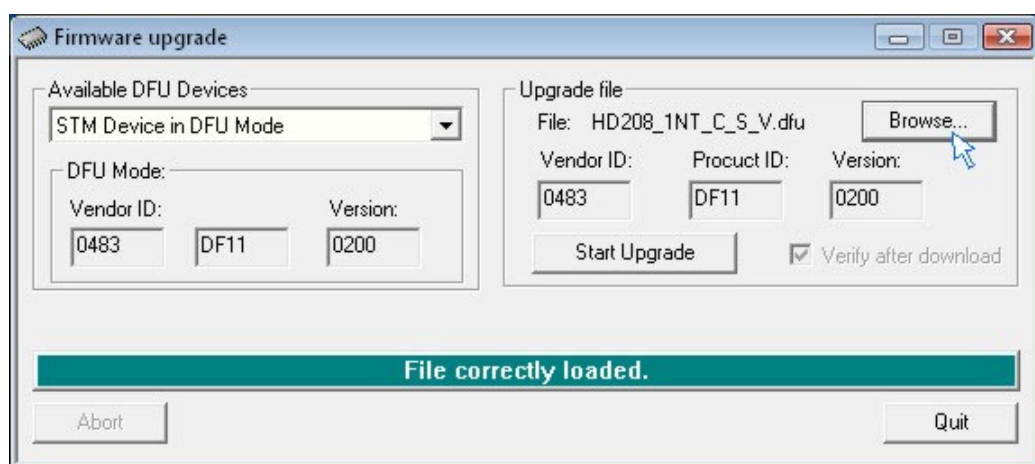
1. By means of USB cable, connect the device to the PC where the HD35AP-S program is installed.
2. Connect the device by pressing *Connect* button.
3. In the Menu *Tools*, select the item *Firmware Loader*.



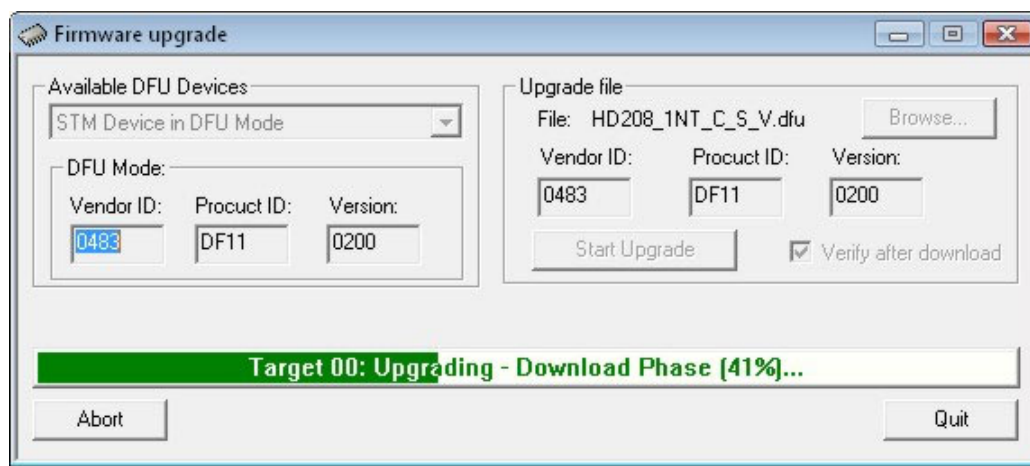
4. You will see a window asking you to confirm the update: press *Yes* to continue. To exit without making any changes, press *No*.
5. The program which runs the whole update will start.



6. Press *Browse...* to select the update file having a DFU extension, which you have already copied in a folder.



7. To begin writing the file, press the *Start Upgrade* button. The program will continue with update automatically.



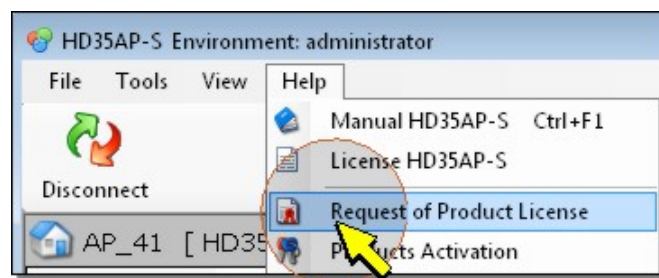
Note: the instrument display may turn off while updating; in that case, the instrument will turn on automatically once the update is finished.

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

Request of the HD35AP-S additional module product license

Request of the HD35AP-S additional module product license

Serial number of the instrument: 01234567 ★

Dealer: ★
Name of the dealer

Company: ★
Name of the customer

City: ★
City of the customer

Post Code: ★
Post code of the customer

Contact person: ★
Contact person

Telephone: ★
Phone number

Address: ★
Address of the customer

Province: ★
Province of the customer

Country: ★
Country

Fax: ★
Fax number

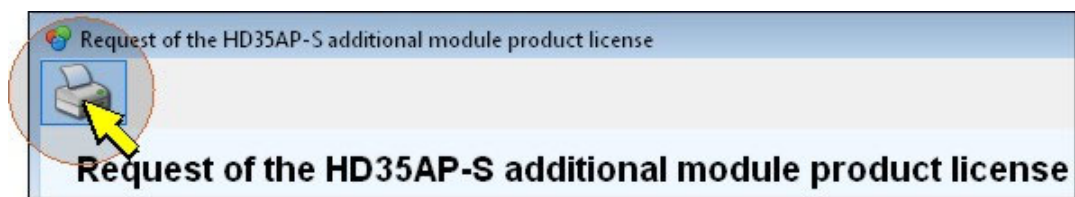
E-mail: ★
Custoemr e-mail

Additional modules: ★ Required fields

☒ HD35AP CFR21

★

3. Select the *Print* icon to create a PDF file of the filled module.

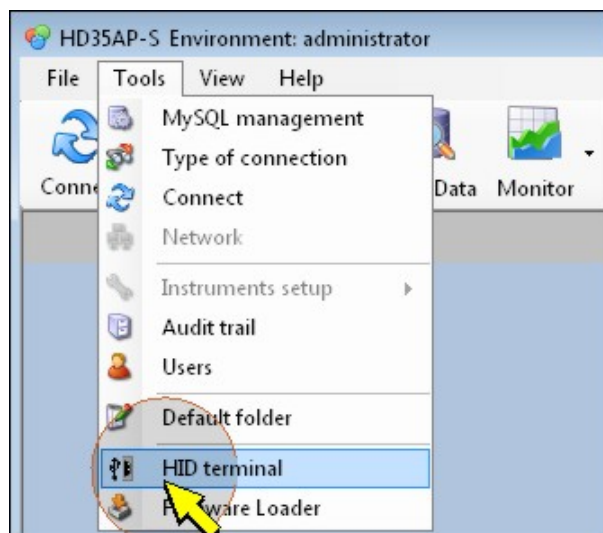


4. Send the request to the dealer from whom the instruments have been purchased.

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.

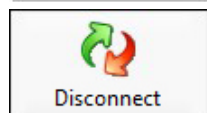


35. COMMAND ICONS



Connect

Connects the instrument to the PC (available only if the instrument is not connected).



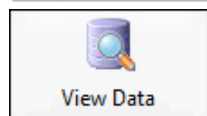
Disconnect

Disconnects the instrument from PC (available only if the instrument is connected).



Network

Configures the structure of the wireless net.



View Data

Opens the database.



Monitor

Acquires the instrument measures in real time on PC.



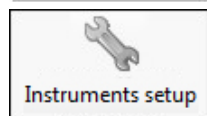
Data download

Transfer of data memorized in the instrument to the PC.



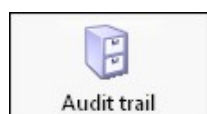
Data download from FTP

Transfer to PC of data sent from the base unit to the FTP server.



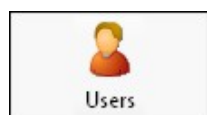
Instruments setup

Configuration of system functioning parameters.



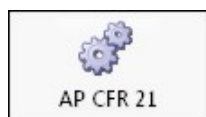
Audit trail

List of the activities registered by the software.



Users

Management of the system users.



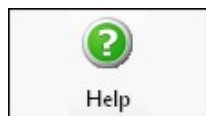
AP CFR 21

Users authorized for the configuration of the system.



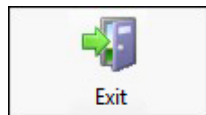
Alarm list

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.