Touch screen

Climatic Chambers

C Series

FDM
F.lli Della Marca®

CE

MADE IN ITALY PRODUCT

FDM_UM_C_PRO_CNT__GFR_ENG_01

Original Instructions

Date 15/03/2014

Rev. 00

Summary

1 TOUCH SCREEN CONTROLLER

The appliance is equipped with a touch screen controller. It is a PID regulator that controls temperature, humidity and turning on/off of the lights (or the light radiation intensity if available). The programmer installed on the appliance can storage and run 10 program and 50 segments (for each program).

The controller is operative only if it is running (RUN) the program for which the regulator Temperature / Humidity is provided.

During the short start-up procedure of the tool, it runs a self-test, in which all elements of the display are illuminated and shows the software version. Once this procedure the instrument is ready for use.

The humidity control is activated between the temperature range +10/+70 °C.

In order not to change the features of digital display control, it is recommended not to change any of the internal parameters of the instrument, or to reset it to its original state. In case of change of internal parameters of the instrument, the manufacturer assumes no responsibility for the malfunction and for damages to the stored products.

The equipment can be controlled in two way, Manual mode or Automatic mode. In Manual mode the working set points are selected once by the user and the equipment will work constantly fixed at those set points. In Automatic mode the equipment will perform a pre set program created by the user. The equipment will automatically work in such a way to follow the running program.

The controller is equipped with some buttons on the bottom side, the following image describes the functions of them:

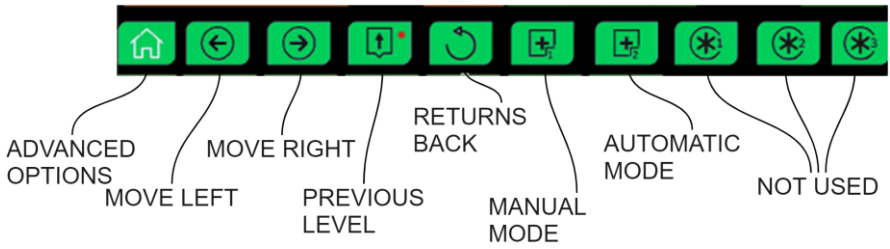


Figure 1 Buttons description

1.1 Home Screen

The figure below shows the Home Screen of the controller with Manual Mode.

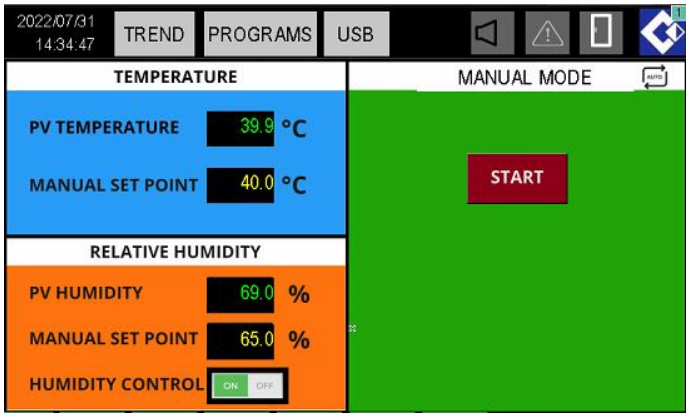


Figure 2 Touch screen controller Home Screen: Manual Mode

The following screen shows the Home Screen of the controller with Automatic Mode.

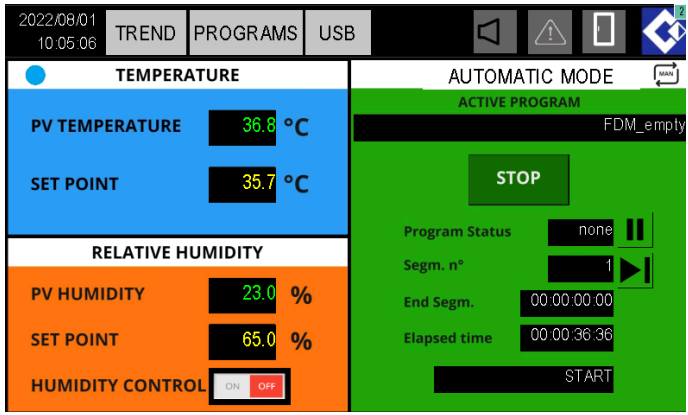


Figure 3 Touch screen controller Home Screen: Automatic Mode

In order to switch between one Mode and another simply press on the "MANUAL MODE" label to switch to "AUTOMATIC MODE" and vice versa.

In every moment is possible to skip directly to one of the two screens by using the button below:

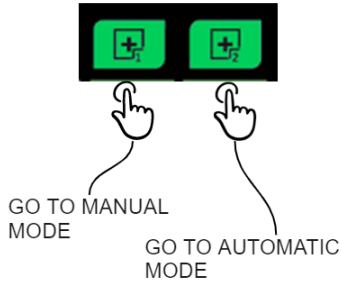


Figure 4 Button to Automatic and Manual Mode

In the Home Screens are displayed the main information about temperature (blue zone), humidity (orange zone) and the active program (green zone).

About temperature and humidity are displayed the following parameters:

- °C/%: it is the actual value of temperature/humidity in the chamber. If two temperature probes are installed (optional) then will be displayed two temperature values: Air temperature and Sample temperature (if this probe is immersed in the sample). In every moment, you can understand with which one probe you are controlling the temperature looking at the "Sample" and "Air" labels. The yellow one is the controlled one
- "Active Program": in this box is displayed the active program. Select START PROGRAM to execute the active program.
- Manual control: with the START button below manual control it is possible to activate the manual control of the chamber.

If a program is started (see par. 3.1) then the following parameters are displayed in Automatic Mode page:

- SET POINT: it is the actual set point value at which the selected segment is working.
- Beacons lights: during the program execution could appear some beacons near the labels "Temperature" and "Humidity". A red beacon mean that the chamber is warming/humidifying, a blue beacon mean that it is cooling/dehumidifying.

About the active program, the following parameters are displayed (in the green box):

- Active Program: in this box is displayed the name of the program.

- Program Status: it is the current status of the program, can be RUN if the program in running, PAUSE if the program is in pause, READY if the program is stopped and ready to be started.
- Seg. N°: it is the number of the running segment of the program (every program can be made of different segments).
- End Segm.: it is the time remaining at the end of the active segment.
- Elapsed Time: it is the total elapsed time from the beginning of the program.
- RUN/PAUSE/STOP button: with this button is possible to RUN/PAUSE/STOP the selected program in the "Active Program" box. If a program is running, after pressing the Stop button the program will stop.
- SKIP button: with this button is possible to skip the current program.

At the top of the display it is possible to see on the left corner the data and time, on the right corner the manufacturer logo, some status icons, in the middle the Menu buttons.

With the Menu buttons is possible to change screen and select one between the following:

Figure 5 Menu and icons

1.1. TREND button .
1.2. Programs Manager Button.
1.3. USB button.
1.4. ACUSTIC ALARM button: switch on to silence the noise alarm.
1.5. Alarm summary button.
1.6. Door Open/closed icon.

1.2 Programs Manager

The figure below shows the Programs Manager screen:

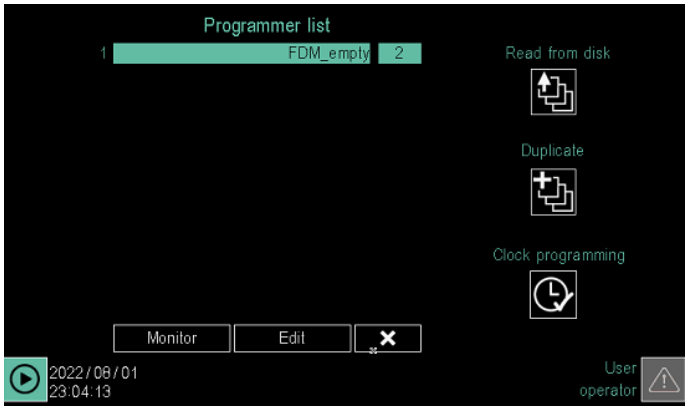


Figure 6 Programs Manager screen

In the Programs Manager screen is possible to create, edit and enable programs. It is composed of:

- A Programmer List box where is visible the currently active program.
- Read from disk button: with this button is possible to read the programs stored in the controller.
- New button: with this is possible to create a new program. This button become Duplicate button when a program is present in the Programmer list box.
- Edit: is possible to edit the selected program.

If a program is running then is not possible to edit the program.

1.2.1 What is a program

A program consists of 3 macro functions to manage a production batch in its entirety.

The 3 macro functions are:

1. Setpoint profile generator.

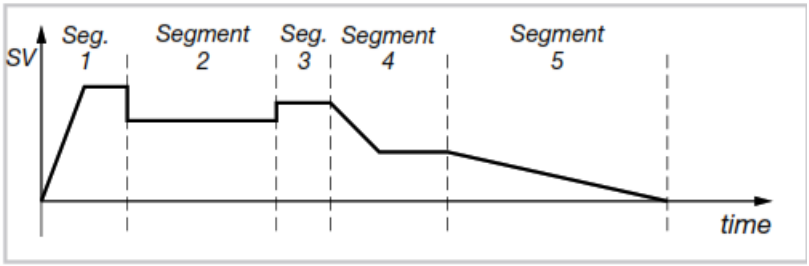
2. Control logic (GETLogic).

3. Batch reports.

Each program can generate up to 4 synchronous profiles, where synchronous means that the 4 segments will start and finish at the same time. A setpoint profile is a set of segments, each characterised by several parameters, which allow you to adjust the value of a process or a device as a function of elapsed time, of specific conditions and reference values stored in the controller or that are supplied from the outside.

A program may consist of a maximum of 50 segments. In its simplest form, a segment consists of a step, or a variation in the time of the setpoint. In its most basic form, a segment consists of one step. It is possible to create profiles made of segments with a double step, which are shown in the graphics as two separate lines. In this case, we have:

- •a ramp, meaning a variation in a more or less long time of the setpoint value;
- an optional permanence, meaning a period of time in which the process value, after having equalled the setpoint value, is kept constant.



The controller can store up to 250 programs.

Each program is defined by the name that is assigned to it.

The program can be controlled using the display, buttons, digital inputs from events (output of GETlogic functions), or commands from the custom pages.

1.2.2 Program Edit Screen

When the "Edit" button is pressed, from the Programs Manager screen, the following screen will be displayed. To navigate to other pages in the Base section, just touch the corresponding number or select the page from the drop-down menu that appears by touching the "Base" label or by using keyboard arrow keys.

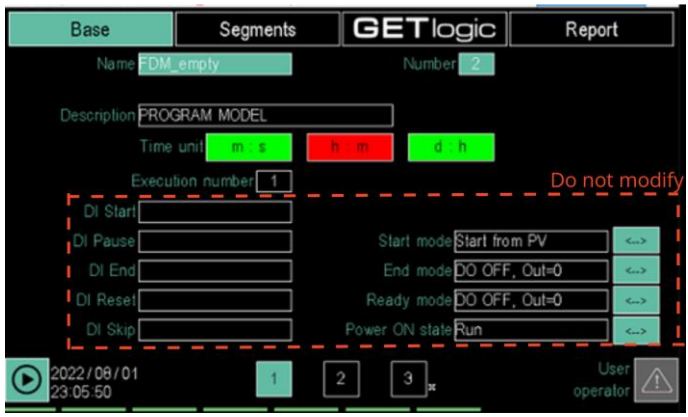


Figure 7 Base Program Edit Screen

BASE - page 1		
Parameter	**Description**	**Possible values**
Program name	Program name. Touching the field opens a pop-up window with which you can select another program.	Alphanumeric string, max. 16 characters long. The name must be unique (duplicates are not allowed). Characters allowed a ... z, A ... Z, 0 ... 9, _.
Number	Absolute program identification number	Automatic value.
Description	Extended program description. It is used to identify the program running on different pages.	Alphanumeric text. The maximum length of the text is 23 (model 2850T) or 30 (model 3850T) characters.
Time unit	It is the time base shared by all program segments. The active base is highlighted in green. To change, touch the time base you want to use.	**m : s** = Minutes : Seconds **h : m** = Hours : Minutes **d : h** = Days : Hours
N° repetitions	Number of automatic program repetitions before it stops. 0 means the program runs one time and then stops; 1 means the program is run twice and then stops, and so on. A program can be run automatically up to 10,000 times.	**0...9999**
Start Mode	Select the reference value at program start (SP = PV or SP can be set).	**Start from SP** **Start from PV**
Stop mode	Operating mode at the end of the program in END status.	**DO off**: **Last step** **Reset**
Ready mode	Behaviour of outputs when the program switches from any state to READY. This case does not include simply loading a program in memory. This behavior is not persistent, and so all parameters will be freely controllable following transition to READY status	**Unchanged Out** **DO off** **Out = PV** **Unchanged Out, DO off** **Out = PV, DO off, PID disabled**
Start state	Status when the controller is switched on. The Run, Hold, and End modes are only active if the program was running (Run or Hold) when turned off, otherwise the program is always brought to the Ready state.	**Ready** **Run** **Hold** **End**

NOTE 1 : Enable the PIDs associated with a profile when the profile starts, using the number in the PID column in the programmer's BASE2 page as reference for association.
NOTE 2: If the PID operates a valve, it will not be possible to disable it at the end of the programme
NOTE 3 : Before it can start again, the PID must operate empty to reset the integral
NOTE 4 : In the following table, DO off means that the program-controlled outputs are reset

The controller is pre-loaded with a sample program that can be duplicated and modified. Use always this base program in order to simplify the program's configuration. Do not modify the highlighted parameters in picture above.

1.2.3 Configuring the Program Segments

From Base Program Edit Screen press "Segments" or press once the right arrow key.

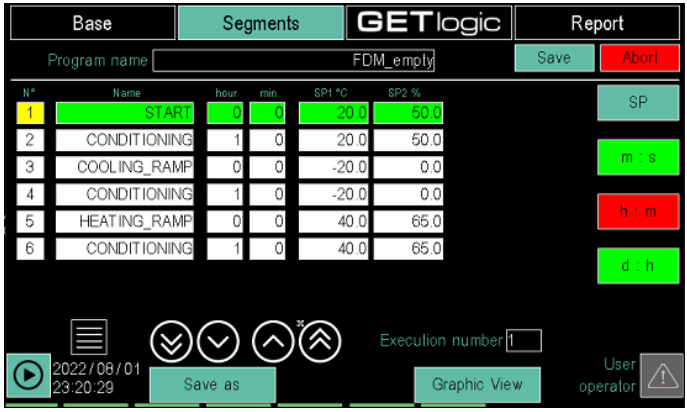


Figure 8 Segments Program edit screen

Touch the icon  to open a pop-up window that allows you to:

- Create a new segment before or after the selected segment (highlighted in green).
- Configure the status of input and output events while running the segment.
- Configuring segment profiles.
- Deleting the segment.

To create a new segment touch New before or New after depending on whether you want the new segment to appear before or after the selected segment. When creating the first segment, the choice is indifferent.

A blank line appears in the window for the new segment.

Touch the individual fields to:

- Give a descriptive name to the segment. The name can be an alphanumeric text up to 16 characters long.
- • Set:
  - the duration of the step, in the case of a single step (default)
  - the duration of the ramp phase, in the case of a double step ("m : sec" for minutes : seconds, "h : m" for hours : minutes or "d : h" for days : hours)
- According to the status of the "SP\Gradient" button attribute:
  - a value to SP 1, the setpoint of the 1st synchronous profile. or to Gradient 1, gradient of the 1st synchronous profile
  - a value to SP 2, the setpoint of the 2nd synchronous profile. or to Gradient 2, gradient of the 2nd synchronous profile, if any.
  - a value to SP 3, the setpoint of the 3rd synchronous profile. or to Gradient 3, gradient of the 3rd synchronous profile, if any.
  - a value to SP 4, the setpoint of the 4th synchronous profile. or to Gradient 4, gradient of the 4th synchronous profile, if any.

The step number is generated automatically.

Touch the CFG step button in the pop-up menu to open the profile configuration window of the individual segments.

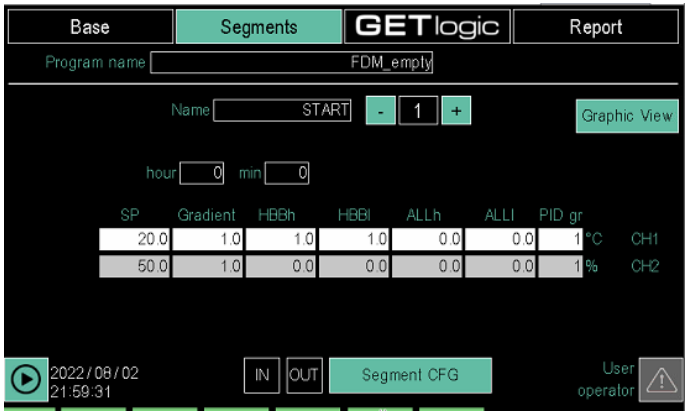


Figure 9 Individual segment configuration

As a segment run time, you can set a time a gradient or both.

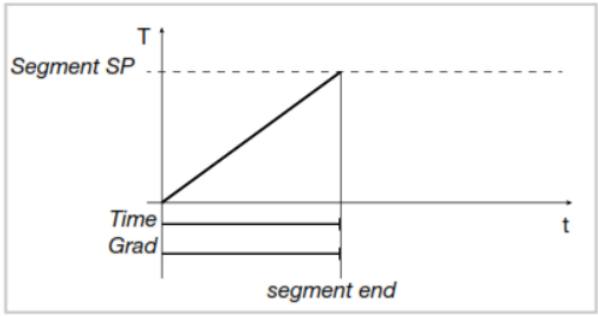
The configuration of the single profile can therefore be:

- Time = 0 and Grad ≠ 0: the SP setpoint for the profile is generated following the gradient value set.
- Time ≠ 0 and Grad = 0: the SP setpoint for the profile generated following the set time.
- Time ≠ 0 and Grad ≠ 0: the SP setpoint for the profile is generated based on the gradient but also takes into account the set time, as shown below.

Segment behaviour with Time ≠ 0 and Grad ≠ 0

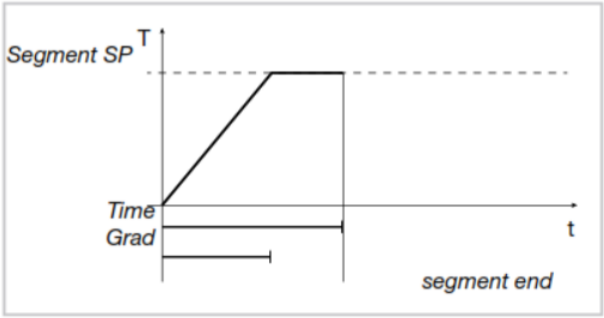
Case 1 - Segment time = Grad.

The set gradient reaches the segment SP setpoint in the set time. The segment change occurs at the end of the set time.



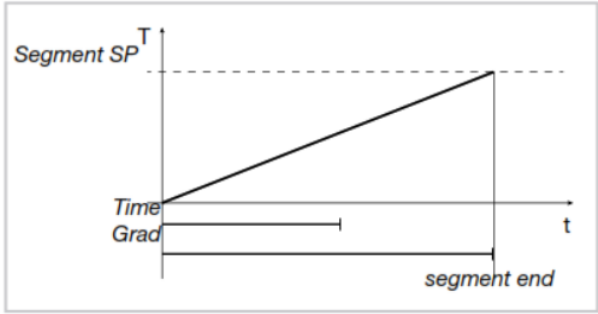
Case 2 - Segment time > Grad.

The set gradient reaches the segment SP setpoint before the set time. The setpoint is maintained and the segment change occurs at the end of the set time.



Case 3 - Segment time < Grad.

The set gradient reaches the segment SP setpoint after the set time. The segment change occurs when the setpoint is reached.



Set the segment time , touching the fields, and using the virtual keyboard to enter the values. The units of measure are the same as those set in the Base section.

For each segment, set:

- **SP:** final setpoint value in the segment.
- **Grad:** gradient, that is, the "speed" at which the SP setpoint is reached. This figure is indicated in seconds, minutes, or hours depending on whether the time measurement unit is, respectively, m:s, h:m or d:h (always use the lower indicated pair unit of measurement). The increase or decrease ramp is linear. Starting from the process value (PV) at the start of the segment, the controller increments or decreases the setpoint value linearly so that, at the end of the set time, the setpoint corresponds to the final SP value.
- **HBBh:** High range value for HBB alarm
- **HBBl:** Low range value for HBB alarm
- **ALLh:** Generic high temperature alarm value
- **ALLl:** Generic low temperature alarm value
- **Group:** PID group used for the segment. Each individual segment may be characterized by different PID control parameter groups (the reference PID number is the one set as the BASE - page 2) to appropriately control all stages in the process. Leave this values as standard.

With the Graphic View button is possible to see the program from a graphical point of view.

The GET LOGIC and REPORT sections are already set as standard by the manufacturer in the sample program to be used so it is not necessary to edit them.

1.2.4 HBB function

The HoldBack function is useful in those cases in which you want to keep the testing volume at certain set-point values for a defined time. When switching from one set-point to another, the chamber will take an unknown time to reach the set-point values. With this function you can tell the controller to start counting the time of the maintenance phase from the moment the perceived temperature value is equal to the set-point value plus the value of the set HBBh and minus the value of the set HBBl value. The controller pauses the program until the measured value enters the user-defined tolerance band. From that moment on, the minutes count of the maintenance phase starts.

1.3 Trend Monitor Screen

The figure below shows the Trend Monitor Screen:

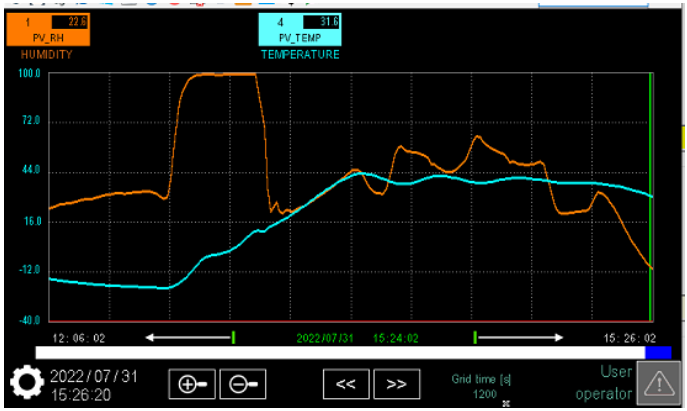


Figure 10 Trend monitor screen)

In this screen is possible to monitor temperature and humidity recorded data.

In the graphical view screen there is a chart with on the x-axis the time expressed in hh:mm:ss and on the y-axis the stored values in °C for temperature (blue) and in % for relative humidity (orange). In the following are described the main commands:

- Green vertical bar: with this bar is possible to select a point of the graph to read time and recorded data.

- PREV/FWD buttons: With these keys you can scroll backwards (PREV) or forwards (FWD) the history of the recorded data. You must first press the DISP button.
- +/- buttons: With these keys you can zoom in (+) or out (-) the graph.
- Orange e blue boxes on top: in this box is displayed the temperature and humidity values of the selected point in the graph with the green vertical bar. Pressing on the number 1 for humidity or number 4 for temperature will switch off and on the trace on the graph.
- Gear Button: with this button is possible to select different visualization of the recorder data and is possible to select the y axis displayed range.

In order to change the Y axe scale press on Gear button, then on "Trend Settings" then activate the desired scale (temperature or humidity) by pressing on SCALE box near the name of the desired one. The active scale will light on in green.

In the same page is possible to change the Sampling interval for the trend, in the following picture it is set to 60 seconds:

Figure 11 Trace selection and sampling time modification

1.4 Alarms Summary Screen

The figure below shows the Alarms Summary Screen:

Figure 12 Alarms Summary screen

When an alarm occurs the Alarm icon on the home page will start to blink red. Press on the icon to go on Alarm Summary Page.

In this page the active alarms are displayed. With the tick button  is possible to acknowledge an alarm. If the alarm is still ongoing the alarm will be still listed in between the Active Alarms.

The possible alarms are the followings:

- Extreme Temperature: it is maximum temperature alarm. This alarm occurs in case the temperature is over the maximum acceptable by the chamber. In case of this alarm occur, the heating will be switched off.
- Max Temperature: it lights on when the actual temperature value goes over the set maximum value
- Min Temperature: it lights on when the actual temperature value goes below the set minimum value.
- Dev. Temperature: it lights on when the actual temperature value goes under the set value minus or plus the set alarm threshold.
- Max Humidity: it lights on when the actual humidity value goes over the set maximum value

- Min Humidity: it lights on when the actual humidity value goes below the set minimum value.
- Dev. Humidity: it lights on when the actual Humidity value goes under the set value minus or plus the set alarm threshold.

The device is equipped with a visual and audible alarm. When an alarm occur the alarm beacon on the Home page will light on. It is possible to switch off the alarm noise with the Alarm noise icon (Figure 5).

The deviation alarm is activated when the internal measured value exceeds the set point plus the alarm value or is lower than the set point minus the alarm value for a period of time more than 30 minutes as default.

Normal operating condition:

$$T_{SP} - ALRM1 \leq T_{PV} \leq T_{SP} + ALRM1$$

Where:

- T_SP = set point temperature.
- ALRM1 = alarm set value.
- T_PV = perceived temperature value.

The threshold values settled by the manufacturer are the following:

- High/Low Temperature Thresholds: +2/-2 °C from the set value.
- High/Low Humidity Thresholds: +5/-5 % from the set value.

The Extreme temperature and Max and Min alarms will switch off the power of the of the related output. For example if the Max Temperature Alarm occur the system will switch off the heating until the Alarm disappear and has been acknowledged.

1.5 How to edit the alarm values

In order to edit the alarm values in necessary to go on alarms settings page.

In order to do this from the HOME PAGE press right arrow key  until the following page appear:

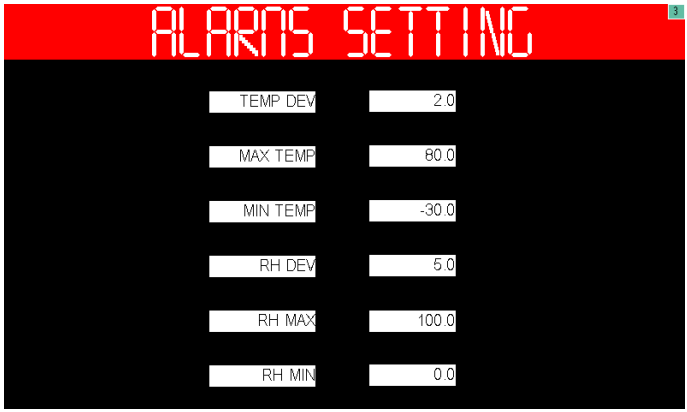


Figure 13 Alarms setting page

To edit the values press on the desired one and change it with the keyboard. In order to edit the alarm sets is necessary to log in as Admin. The standard user is not allowed to edit the values (par. 2).

2 HOW TO CHANGE USER LEVEL

As standard the user levels are two:

1) Operator
2) Admin

In order to change the user level press the HOME button  then press the bottom right corner of the screen 

on User.

The following page will appear:

Figure 14 USER LEVEL LOG IN PAGE

Insert the proper Username and Password for the desired level. The operator level as no password, press on logout to use the operator level.

The Admin level has: Username admin, Password 5678

3 HOW TO RUN/STOP A PROGRAM

To RUN a program press the START button in the HOME Screen Automatic Mode, the enabled program will start.

To STOP a program press the STOP button in the HOME Screen Automatic Mode, the running program will stop.

3.1 How to load a program

To load a program proceed as follow:

1. From the HOME page press PROGRAMS button
2. Press "Read From Disk" button to access the list of saved programs.
3. Select the desired program from the list it will be loaded and the name will appear on Programmer List.

Now the desired program is enabled and ready to be executed. The name of the enabled program will be displayed in the Active Program box in the HOME Screen Automatic Mode.

Please note that is not possible to Load programs while the display is in "RUN" mode.

3.2 How to start the Manual Control

With manual control, the chamber can be operated at a constant temperature and humidity. To activate the manual control, proceed as follows:

1. From the HOME screen Manual Mode, select the manual SP boxes in the temperature and humidity ranges to manually change the set point values.
2. Press the START button to start the chamber.

The chamber will start working at the set manual set point values.

It is possible to disable the humidity control by pressing the ON/OFF button in the humidity orange box.

4 HOW TO EDIT A PROGRAM

To edit a program proceed as follow (refer to par. 1.22):

1. From the Programs Manager Screen select "Read from Disk" button.
2. Select the Program named **FDM_empty.**
3. Press on "Duplicate" button, the following screen appear:

4. Press the Name box to edit the program name, then press the save button.
5. The controller will redirect automatically on the Program Edit screen where is possible to edit the program (ref. par. 1.2.2).

6. Once the program has been correctly edited press Save button to save the modifications and then return back with "Automatic Mode" button.

4.1 Example of setting a program

This paragraph describes how to set the following program:

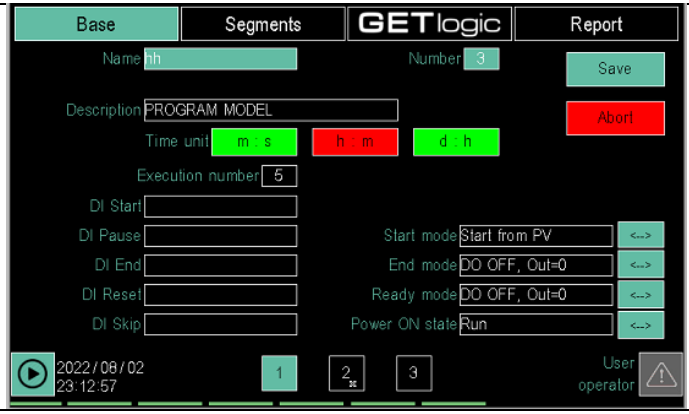
1. Reach the temperature range 19-21°C with a gradient of 1°C/min and humidity 50% with a gradient of 1%/min;
2. Maintain the set point 20°C/50% for 1 hour;
3. Cooling ramp to -20°C with a temperature gradient of 1°C/min. Humidity disables (below 10°C it will be automatically disabled).
4. Maintain -20°C for 1 hour.
5. Heating ramp at +40°C and 65% r.H with a gradient of 1°C/min and 1%/min;
6. Maintain 40°C/65% for 1 hour;

The program must repeat itself 5 times before ending.

To set this program proceed as follows:

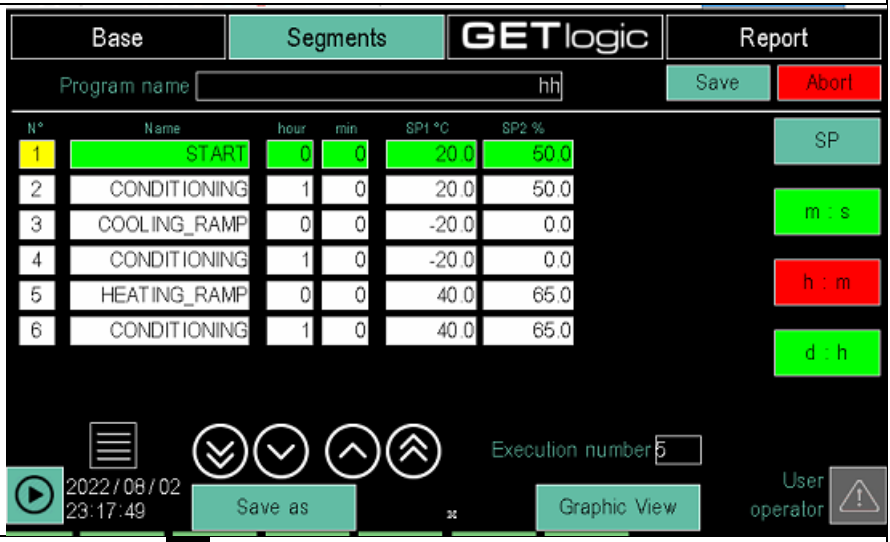
1) From the HOME screen, press the PROGRAMS button and access the Programs Manager screen.
2) Press "Read from Disk" and select the sample profram FDM_empty.
3) Insert a name and Save. Use the arrow keys to select an empty line in the list of stored programs. Press the "Change program name" box and enter "Example" as program name. Press the SAVE key. Proceed as follow,.

BASE CONFIGURATION



Insert a Program description if desired, select h:m as time, insert 5 as Ecxecution number (the program will be repeated 5 times). Leave the other parameter as in picture. Then press on Segments.

SEGMENTS PAGE



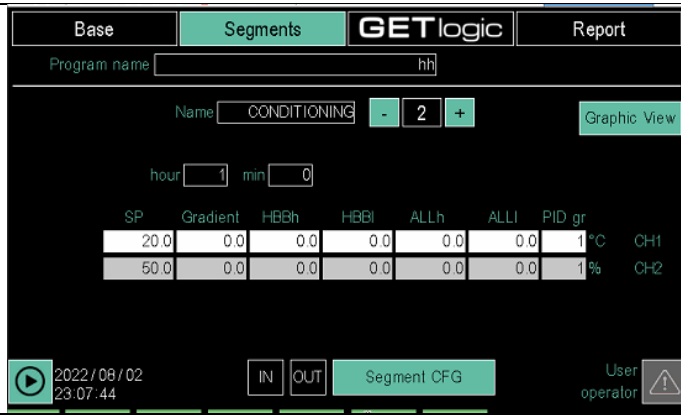
With the icon  button create 6 segments and name them as desired. Then set values as in picture.

SEGMENT 1

Reach the temperature range 19-21°C with a gradient of 1°C/min and humidity 50% with a gradient of 1%/min;

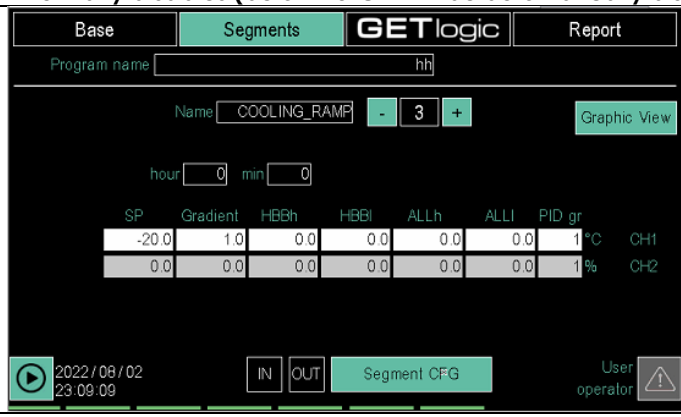
SEGMENT 2

Maintain the set point 20°C/50% for 1 hour;



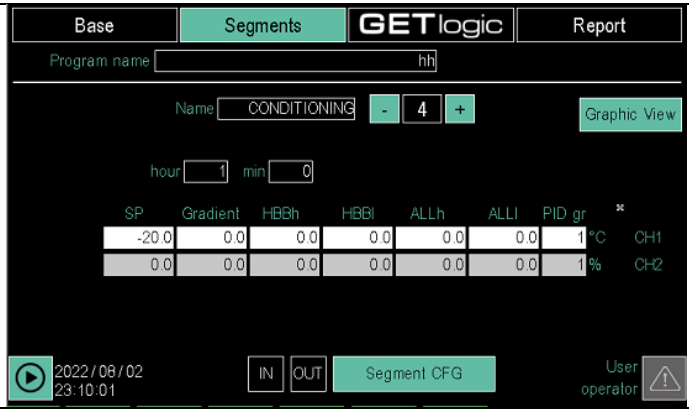
SEGMENT 3

Cooling ramp to -20°C with a temperature gradient of 1°C/min. Humidity disables (below 10°C it will be automatically disabled).

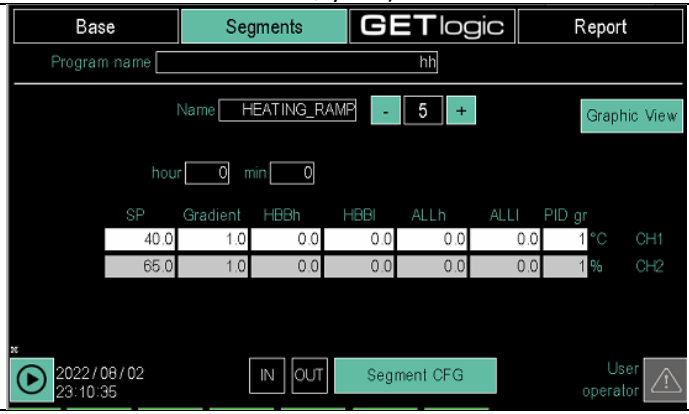


SEGMENT 4:

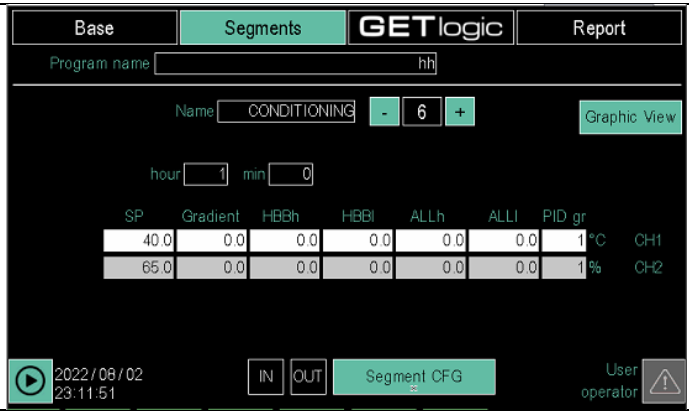
Maintain -20°C for 1 hour.



SEGMENT 5:
Heating ramp at +40°C and 65% r.H with a gradient of 1°C/min and 1%/min;



SEGMENT 6:
Maintain 40°C/65% for 1 hour;



At the end of this program the chamber will stop and wait for new commands.

The program change has been completed. Press SAVE button and Home Page Automatic mode button to return to the home page where the edited program will be ready to be started.

Press the RUN button to start the program.

5 HOW TO ACKNOWLEDGE AN ALARM

When an alarm occurs, a flashing button will appear in the HOME screen and the chamber will start to make some noise. To acknowledge the alarm press the flashing button then press the tick button  (ref. 1.4).

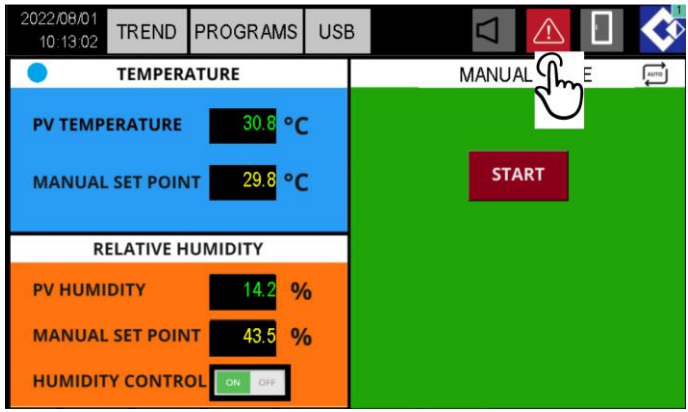


Figure 15 Visual alarm icon

6 HOW TO RECORD DATA

The data-logging function of the control unit allows to record the data on the internal memory of the controller (SD card).

By default the sampling time is every 60 seconds.

The recording of the data is correlated to the selected program. When a program is started a new report file will be created in the internal memory of the controller. This mean that while in manual control the data will not be collected (but can be displayed in TREND).

6.1 How to download collected data on USB KEY (OPTIONAL)

Insert the USB key is the supplied connector. From HOME page press USB button. The following screen appear:

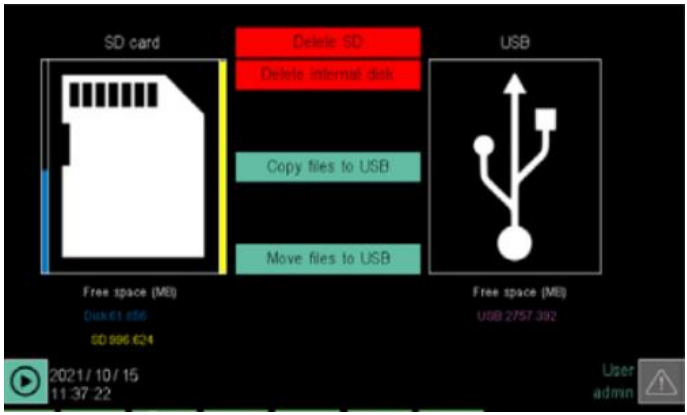


Figure 16 USB screen

The USB page allows you to maintain an archive of the processes completed through the following steps:

- Erase all records in internal memory or in the SD card by touching the appropriate button.
- Copy the recording files, or the alarm log file, to a USB key by touching the Copy files to USB button.
- Move (copy + delete) all recording files on a USB key by touching the Move all files key.

When an operation is performed, the state of progress is displayed by a progressive horizontal bar. At the end of the operation, the Operation completed message appears.

Caution! Due to the time required to save to USB (Program reports, Alarm log, Audit Trail if 21-CFR on), we recommend you save to USB while record signal sampling is not running. The likelihood that saving files to USB will interrupt a recording in progress for a short time is remote enough for normal device use.

Using the "Erase SD" and "Erase internal disk" keys, all the Report files on the respective memory media are deleted, including the folders with the names of the programs that contain them.

On the other hand, moving the Report files to USB (or to an FTP server via the integrated client) the moved Report files are deleted on the device but the folders with the program names remain (even if empty).

A USB key must be inserted in the controller before you copy or move files. If the key is missing or is not properly inserted, Wait USB appears under the USB bus symbol, to the right.

Free USB key space is indicated under the USB box.

7 HOW TO ESTABLISH A REMOTE CONNECTION WITH VNC (OPTIONAL)

The PRO controller of the FDM climatic/thermostatic chambers can be viewed and controlled remotely.

The remote connection allows the same screen as the PRO controller to be displayed on a computer connected via Ethernet cable or WiFi and to interact with the controller as if you are standing in front of the equipment.

To make the remote connection, you must have purchased the "Ethernet Port" or "WiFi" option when purchasing the camera.

For the WiFi option it is necessary to connect the WiFi extender to the local wifi net. Please follow the attached instruction of the WiFi Extender.

7.1.1 Arrangement for remote connection

On the computer that will be connected to the PRO controller, download and install a VNC software. A free version is available at the following link:

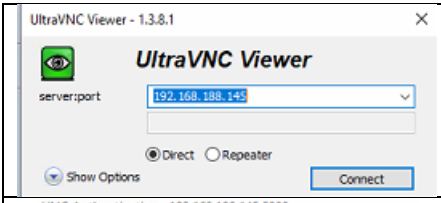
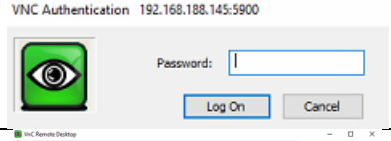
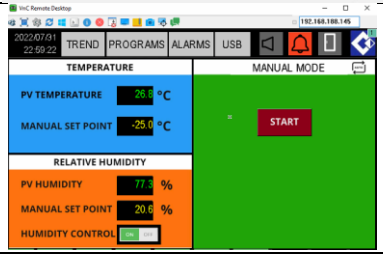
https://uvnc.com/downloads/ultravnc.html

Connect the computer to the PRO controller via the Ethernet connection cable or connect the computer to the WiFi network generated by the chamber.

Note: the PRO controller should have the same IP address family of the computer to be connected with. To check and edit the IP address of the PRO controller refers to par.6.2.3. Example: the IP address of the computer is 192.168.1.2, the PRO controller should have an IP address 192.168.1.X where X is a number available on the local net. The subnet mask should be the same.

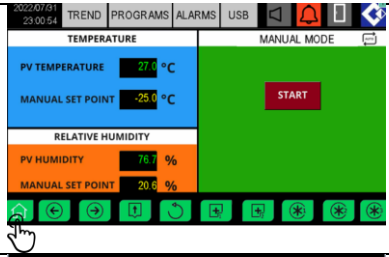
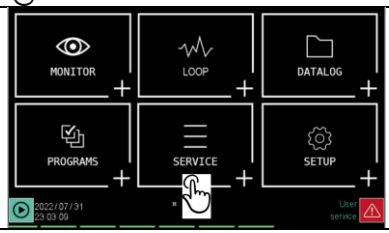
7.1.2 Make remote connection

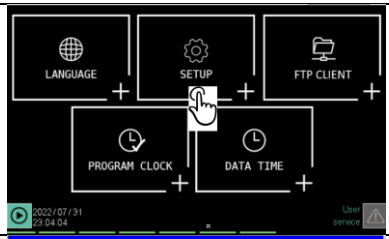
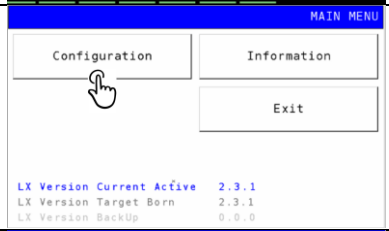
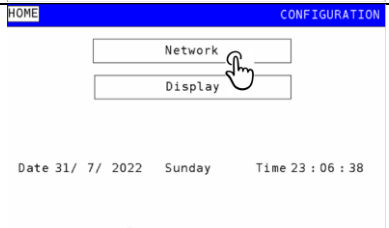
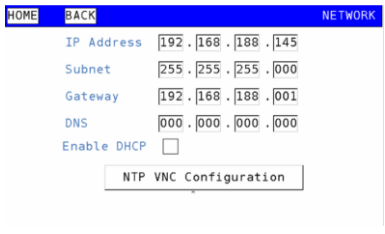
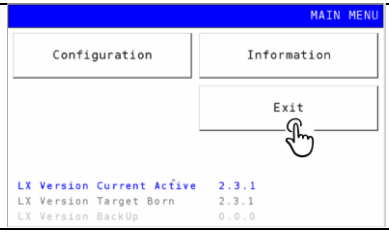
Open the previously installed program on the PC, enter the IP address of the chamber and press connect:

	Enter IP address of the chamber and press "Connect"
	Enter the password when required: **Fdm 1234** and press Log On
	The same screen of the display will appear. It is possible to work with the chamber remotely.
It is now possible to interact with the PRO controller remotely, in the same way you would interact locally.	

7.1.3 How to check and edit the IP Address

In order to check and edit the IP address of the PRO controller, proceed as follow:

	Press HOME button on the green bar
	Press SERVICE, the login access page will be displayed. Enter the credential of the Admin user (ref. 2)

		Press SETUP
		Press CONFIGURATION
		Press NETWORK
		Enter the IP Address assigned to the chamber and the other parameters of the network. It is even possible to "Enable DHCP" to automatically assign a valid IP address to the chamber from the router. Once done press HOME on top left corner.
		Press Exit to return back.

8 HOW TO ESTABLISH A REMOTE CONNECTION WITH MODBUS (OPTIONAL)

8.1 Serial communication

To establish a remote connection connect the remote cable to the chamber. The connector is on the side of the control panel for Modbus TCP connection.

With the cable connected you can READ and EDIT the parameter of the communication list.

8.2 Communication settings

COMMUNICATION SETTINGS

Modbus TCP/IP	
SLAVE ID	255
Port. N.	502

COMMUNICATION LIST PARAMETERS

Type	Modbus Address	Description	Value	Read /Write
WordAddress	1001	Temperature Process Value (PV)	-30,0/80,0	R
WordAddress	2020	Temperature Set Point (SP)	-25,0/70,0	R/W
WordAddress	1002	Humidity Process Value (PV)	0/100	R
WordAddress	2022	Humidity Set Point (SP)	10/98	R/W
BitAddress	3500	MAN RUN/STOP chamber	0 = STOP 1= RUN	R/W
BitAddress	10001	Max Temp. Alarm	0 = NO ALARM 1 = YES ALARM	R/W
BitAddress	10002	Min Temp. Alarm	0 = NO ALARM 1 = YES ALARM	R
BitAddress	10000	Deviation Temp. Alarm	0 = NO ALARM 1 = YES ALARM	R

BitAddress	10004	Max Humidity Alarm	0 = NO ALARM 1 = YES ALARM	R
BitAddress	10005	Min Humidity Alarm	0 = NO ALARM 1 = YES ALARM	R
BitAddress	10003	Deviation Humidity alarm	0 = NO ALARM 1 = YES ALARM	R
BitAddress	3041	Silence alarm	0 = noise enabled 1 = noise disabled	R/W
BitAddress	3006	Chamber Status	0 = STOP 1 = RUN	R
BitAddress	3503	Humidity control ON/OFF	0 = OFF 1 = ON	R/W
BitAddress	3018	Door Open/Closed Status	0 = Door Open 1 = Door Closed	R

Note: when editing the PV and SP value by remote, you should consider that the system does not accept the dot. To set correctly the values see the following example:

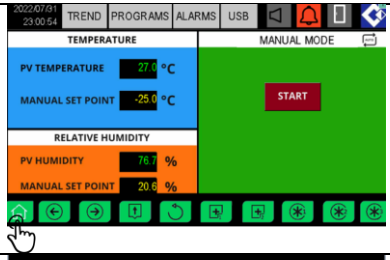
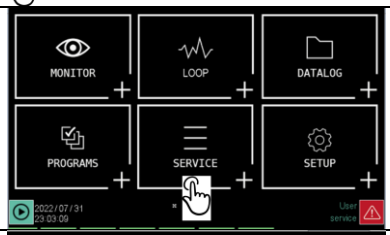
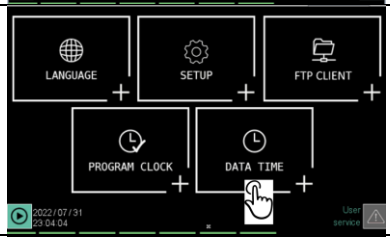
Desired Value	Edited Value
+15,0	+150
-15,0	-150
+22,5	+225

When it is necessary to write a register always write the first register with the desired value and the second register as 0. For example when writing 23,5°C as temperature set point, the system will expect a write like this:

"Write Multiple registers (0x10)": Register 2020 = 235, Register 2021 = 0

9 HOW TO SET THE CLOCK

To set the display clock proceed as follow:

	Press HOME button on the green bar
	Press SERVICE, the login access page will be displayed. Enter the credential of the Admin user (ref. 2)
	Press DATA TIME
	Insert the desired values for Date and Time. NOTE: no modification is allowed while a program is in progress.

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