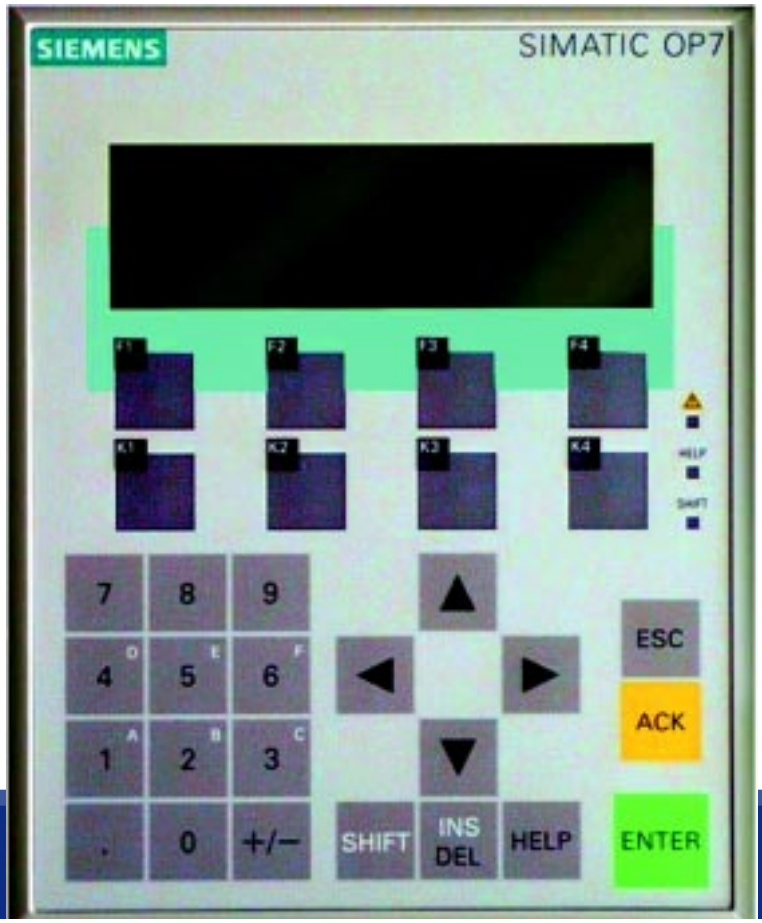
CE

VICPAS®

OP7 control system

Programme for chambers with µPLC



OP7 FOTO

Rel.130601

512976

CONTENTS

1 WARNINGS

- The machine must only be used as described in this handbook.
- The machine must only be used by personnel who have read all the instructions contained in this handbook.

The concept of HUMIDITY always refers to Climatic Chambers. If the chamber is not a climatic chamber, you may ignore the relevant references.

When a temperature grade is set (Centigrades per minute), it is unadvisable to set a humidity grade. The two quantities interfere with each other and therefore the temperature grade would be observed, whereas the humidity grade would not.

The humidity grade should, therefore, be set only when the temperature is kept constant.

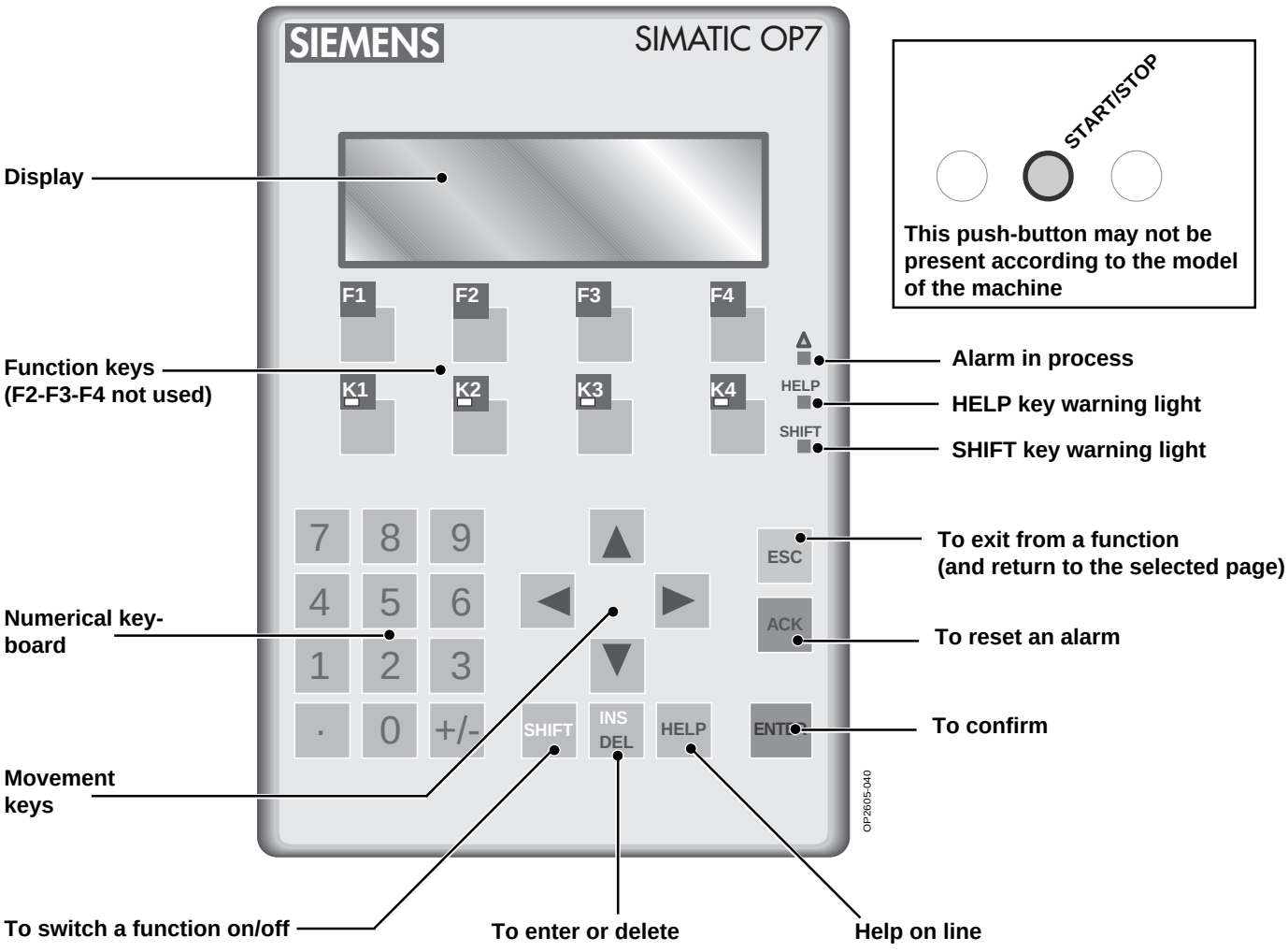
Please refer to the MOLLIER diagram to establish the test logic to be carried out for both temperature and humidity.

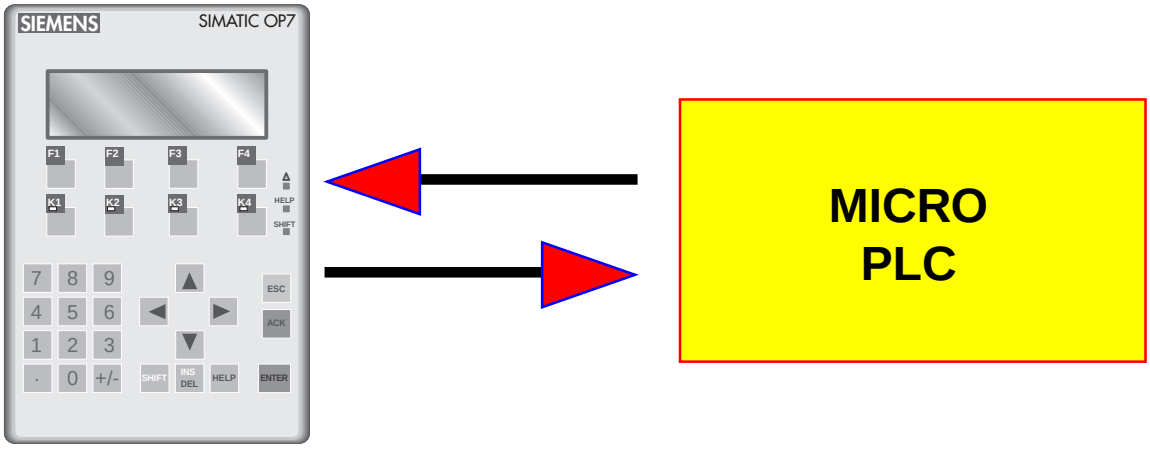
Ambient temperature	min:	min:	+ 5°C
		max	+ 45°C
Relative humidity	RH	max	80%

2 THE OP7 SYSTEM

2.1 DESCRIPTION

The system consists of a control panel equipped with a display, keyboard and function keys.
This system enables temperature and humidity cycles to be carried out.
The system can operate Manually or Automatically.





The programmes set on the OP7 panel have to be memorised permanently in the MICRO PLC; if there is a black-out or if the machine is switched off, those programmes which have not been saved will be lost.

A specific guided procedure enables the relevant programmes to be both programmed and saved.

OP7 Technical Specifications:

N° 10 memorisable programmes
N° 99 segments for each programme
N° 9999 programme repetitions
N° 10 loops in each programme

Some of the displayed messages will differ from those shown here according to the machine version.
In this case only remember the messages shown on your display.
If any further instructions are necessary, they will be attached to this handbook.

2.2 KEY FUNCTIONS

F1

CONTRAST

- Place the cursor in this field.
- Digit a value.
- Press ENTER to confirm.

LANGUAGE

To change the language:

- Place the cursor in this field.
- Press

SHIFT ▲

- Insert a password (100=default value)
- Press

SHIFT ▲

to change the language

- Press ENTER to confirm

(*) Up to version 0.0B.
The language cannot be changed from version 0.0C onwards. The language used by the OP7 system is pre-programmed in the factory.

F2 **F3** **F4** **NOT USED**

K1

CYCLE ON/OFF

- To switch on/off test cycle.
  Press the same key to switch the function on and off.

Led light off	**=**	**chamber switched off**
Fixed led light on	**=**	**chamber in manual operation**
Flashing led light	**=**	**chamber in automatic operation**

K2

SET-UP

- To set a temperature and relevant humdity value.

K3

PROGRAMME SET-UP

K4

GENERAL SETTINGS

- to set software alarms
- to set measurement parameters for external devices connected to the chamber.

SHIFT

To be used together with other keys.
When this key is pressed, the “SHIFT” led light switches on.

INS DEL — To erase a letter pinpointed by the cursor. The letters will then run from right to left.

If it is used together with SHIFT

SHIFT + INS DEL — To insert a space where the cursor is placed. The letters will then run from left to right.

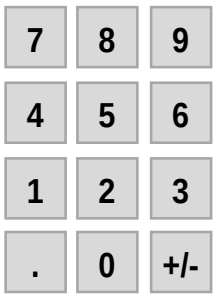
HELP — In some software versions it gives help on line. When this function is switched on, the “HELP” led light switches on.

ENTER — To confirm a choice or a value that has been inserted.

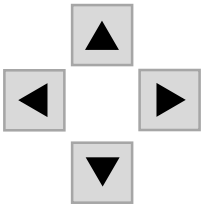
ACK — To read alarm signals and to carry out the relevant reset.

SHIFT + ▲ — To change a choice from ON to OFF and vice versa.

ESC — To exit from a page and to return to the preceding page. The function is switched on only if it is visualized on the page.



To insert a numerical value



To move from one line to another or from one page to another

2.3 BRIEF LIST OF THE MOST USED TERMINOLOGY

- **Programme**
  A set of instructions. The programme can be memorised in the main menu (Micro PLC) and then recalled in the work memory (OP7) in order to be carried out. A programme that has just be set can be carried out even if it has not been saved in the main menu. We advise you to always memorize your programmes in the main memory (MICRO PLC) so as to avoid accidental deletions.

- **Cycle:** a set of several segments.

- **Segment**
  Interval of time in which the required values that the chamber must carry out are set.

- **Maintenance segment**
  A segment in which the set temperature (°C) and/or relative humidity (RH%) values are kept constant for a certain period of time.

- **Maximum speed segment**
  A segment which is carried out at the highest possible speed.

- **Controlled slope segment**
  A segment in which the chamber must reach set point at the required speed (gradient).

- **Gradient**
  Speed at which a segment is carried out. It is expressed as a ratio between the unit of measurement and the time (C/min.; RH%/min. etc...).

- **Set-point**
  The set value (temperature or relative humidity).

- **Flag:** Programme variables which may assume only two values or two different states (for example: 0 or 1; ON or OFF; OK or OFF; SAVE or OFF; etc...)

- **Repetitions**
  It enables an **entire programme** to be repeated automatically, starting from a specific segment. Up to 9999 repetitions of the entire programme may be carried out. When the machine is switched on, the default value is 1 and therefore the number of repetitions must always be reset. The operations included at this stage are not memorized and therefore the data have to be reinserted each time you wish to repeat a programme.

- **Loop table**
  This enables up to 10 repetitions of parts of a programme (series of segments or single segment) to be set. It is possible to carry out another nested loop within a loop; the former, however, must be part of the main loop.

- **Special and/or auxiliary contacts**
  To electrically switch on certain characteristic functions of the system as well as auxiliary contacts (external apparatus).

- **How to load a programme**
  Procedure to load a programme (already saved in the main memory) into the work memory (OP7). This procedure is always carried out before executing a programme.

- **How to save a programme**
  To memorize a programme permanently in the system's main memory (Micro PLC).

- **Channel 1**
  Temperature channel.

- **Channel 2**
  Relative humidity channel.

- **Duration wait**
  ON: the segment is considered finished only when the set time has passed. After this period of time the programme moves on to the following segment, indipendently of the set temperature or humidity value.
  OFF: the segment is considered finished when the set time finishes, whether the set point has been reached or not.
  NB: The "Duration wait" and "Setpoint wait" flags must not both be turned OFF at the same time.

- **Control System**
  ON: the relevant channel (temperature, humidity, etc..) is controlled
  OFF: the relevant channel (temperature, humidity, etc...) is not controlled

- **Wait set-point**
  ON: the segment is considered terminated only when the pre-set set-point value (temperature or relative humidity) has been reached; the programme then moves on to the next segment.
  OFF: the segment is considered terminated at the end of the pre-set time, whether the set-point has been reached or not.
  NB: The "Wait duration" and "Wait set-point" flags should never both be switched off at the same time.

- **Maximum speed**
  ON: the set value (SET POINT) is reached at the highest possible speed.
  OFF: the programme considers the set gradient.

- **Near set**
  The tolerance within which the set point is considered to have been reached.
  A default value is memorized; this value should not be changed.
  In order for this indication to be effective while the programme is being carried out, the "Wait set-point" flag must be switched on (ON).

- **CTRL humid. spec.**
  ON/OFF: this option has been introduced in order to improve the performance of the system under certain work conditions. On the basis of the results obtained during a cycle, the user may experiment by changing this flag to see whether the chamber performance improves or not.

2.4 START-UP

- Use the main switch to turn on the machine.
  If the START/STOP switch is not held down, the following alarm message will appear:
- Press the START/STOP key.
- Use the ACK key to reset the alarm.

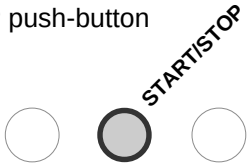
ALARM
SWITCH
START/STOP

The warning light ▲ on the OP7 panel flashes

2.4.1 HOW TO SWITCH ON/OFF

A) By pressing key K1 

Manual mode
When this key is pressed, the machine stops and restarts only in the manual mode. *If the machine is operating automatically, please refer to paragraph 4.6.*

B) By pressing the lighted START/STOP push-button 

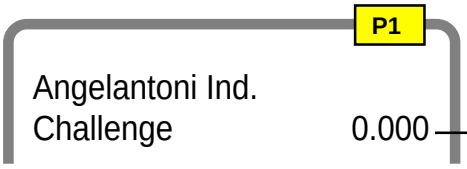
When this push-button is pressed, the machine stops and restarts either manually or automatically. (This push butom may not be present according to the version of the machine).

C) By switching off the main switch (isolating switch)

The machine is switched off.
When it is switched on again:
- in MANUAL mode a cycle has to be reprogrammed and restarted as the data will have been lost.
- in AUTOMATIC mode the cycle may be recalled and restarted.

The instructions to start up the cycles in either MANUAL or AUTOMATIC mode will be given in the following chapters.

When the system is switched on, it checks all the parameters and visualizes page P1.
The page visualized by the system may vary according to the version of the chamber.



2.5 HOW TO SET THE SOFTWARE ALARMS

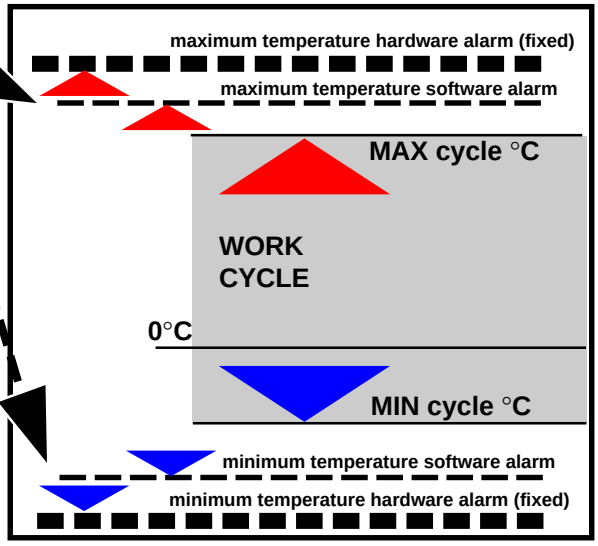
Never carry out a temperature cycle without having set the relevant software and hardware alarms.

The aim of these alarms is to protect the product which has to be tested in the case of temperature failures due to an accidental faulty operation.

Three alarm levels are usually available:

- **Software alarms for maximum and minimum temperature (that can be set on the OP7 panel).**
- **Hardware alarms for maximum and minimum temperature (see chamber handbook).**
- **Fixed alarm for maximum temperature preset in the factory (see chamber handbook).**

Theoretical diagram showing the position of the software and hardware alarms



How to set the software alarm for maximum and minimum temperature
The alarms have to be defined after the minimum and maximum value for the cycle that is to be carried out have been defined. If the alarms are not programmed and they set off within the field of work, the cycle will be stopped and the relevant alarm will be triggered.

Press 

General settings

---

followed by ▼
Overtemp _ _ _
Undert. _ _ _

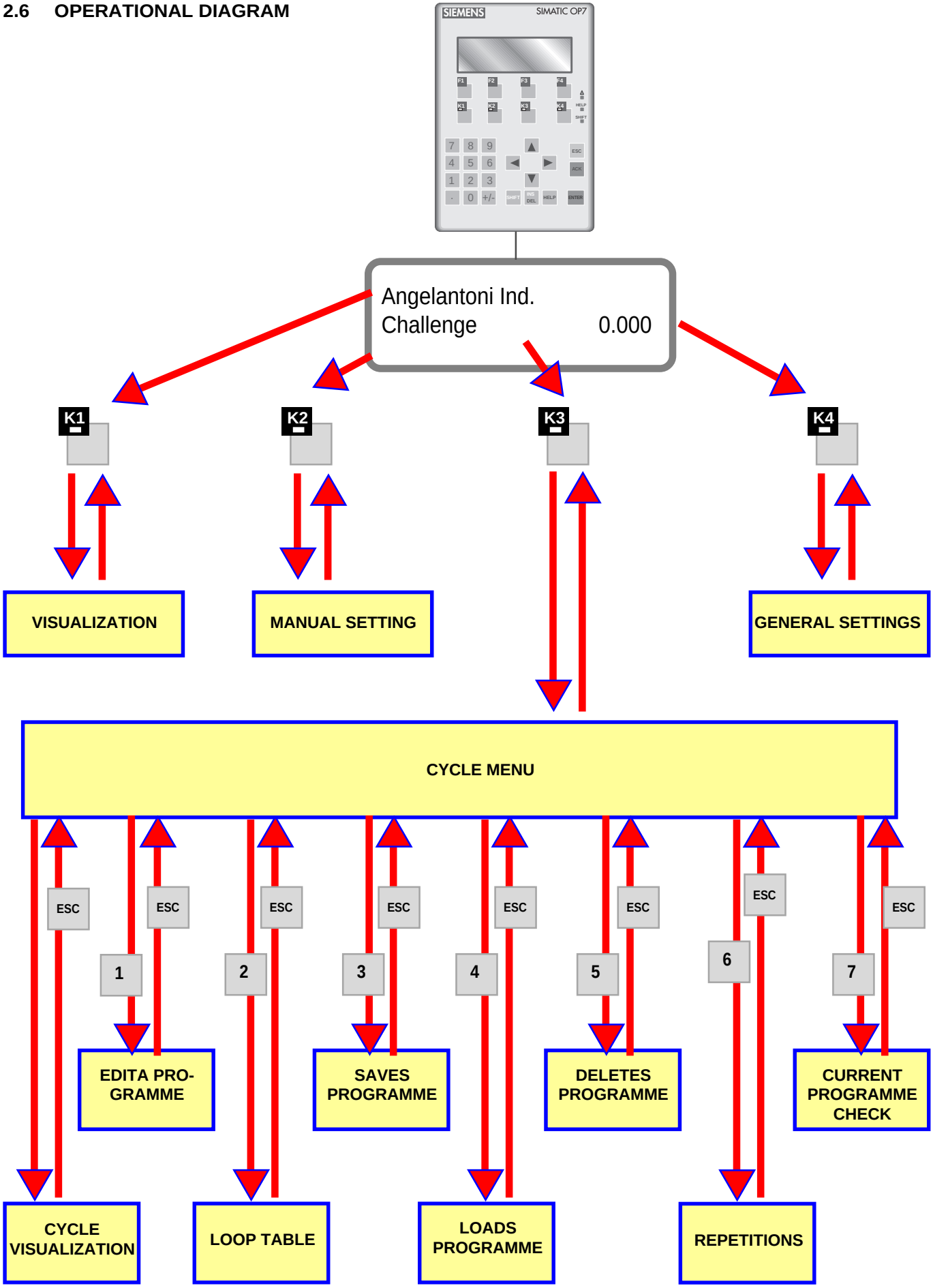
---

followed by ▼
- Insert the relevant alarm values and confirm them with ENTER
- (ESC) if you do not wish to modify any data

Press 

Press K4 to switch off this function

2.6 OPERATIONAL DIAGRAM



3 MANUAL OPERATION

In order to make the following instructions easier to understand, examples with the relevant values will be given.
Operations that can be carried out in manual mode:

3.1 HOW TO SET A VALUE

- **Temperature value setting (e.g. 80°C)**
- **Humidity value setting (e.g. 70%)**

The machine reaches the set value, at maximum speed, both when it rises and when it descends.
Once the value has been reached, the machine will maintain this value.

3.2 HOW TO SET A CONTROLLED SLOPE

- **Controlled temperature slope setting (Example 20 ÷ 35°C) with an average gradient of 1°C per minute and 60% relative humidity.**

- **Humidity setting from 60 to 90% with a gradient of 2% per minute.**

(in order to calculate the average gradient, that is the temperature rise or descent speed, please refer to the technical data contained in the chamber instruction handbook).

Steps to be carried out:

3.2.1 Step A: follow the same procedure described in paragraph 3.1 so that the departure temperature in the chamber reaches 20°C in manual mode.
3.2.2 Step B: set the final value to 35°C and follow a slope with a gradient of 1°C/min. and 60% relative humidity.
The machine will reach the set temperature and humidity and will then maintain these values;
3.2.3 Step C: keep a constant temperature (35°C) and set the controlled RH humidity cycle (60÷90%) with a gradient of 2% per minute.

NB: if a mistaken gradient value is set, the machine will not follow the set slope but will still reach the final temperature and humidity.

3.1 HOW TO SET A VALUE

- **How to set a temperature value (e.g. 80°C)**
- **How to set a humidity value (e.g. 70%)**

• Switch on the machine as described in paragraph 2.4.

KEYS	DISPLAY	FUNCTIONS
K2	A1 Settings	**Temperature values and other parameters are set on this page**
▼	A2 Temper. Set 0.00°C Humid. Set 0.00 %	**Flashing cursor** **To set the temperature (1)** **To set the humidity % (2)**
		Place the cursor as shown in order to set a temperature value
8 0	A3 Temp. gr. 80.00°C Hum. gr. 0.00 %	
ENTER		**If you enter the wrong number, you will still have to press ENTER and then re-digit the number.**

(1) See the temperature range in the chapter entitled "Technical specifications"
(2) See the humidity range in the chapter entitled "Technical specifications"

▼

7 0

Imp. temp.	80.00°C
Imp. umid.	70.00 %

Place the cursor as shown in order to set a humidity value %.

If the chamber is not climatic, leave the value at zero

ENTER

If you enter the wrong number, you will still have to press ENTER and then re-digit the number.

▼

A4

Temp. gr.	0.00°C min
Hum. gr.	0.00 RH%min

Temp. gr. = Temperature gradient (0=maximum speed)
Hum. gr. = Humidity gradient (0=maximum speed)

Data is entered and memorized as described previously.
The average gradient is given in the technical specifications in the chamber handbook.

▼

A5

Temperature enab	OFF
Humidity enab.	OFF

- **To enable or disable the temperature**
- **To enable or disable the humidity**

SHIFT ▲

Temperature enab	ON
Humidity enab.	ON

- **The temperature is enabled**
- **Move the cursor on to the line below and enable humidity**

ENTER

If you enter the wrong number, you will still have to press ENTER and then re-digit the number.

▼

A6

Dehumidification:	OFF	(1)
Vibrator:	OFF	(2)
Specimens:	OFF	(3)
U.V. lamp.:	OFF	(4)

In some versions of the programme the writing in points (1), (2), (3), (4) are replaced by:

(1) *Dedicated contact 1*
(2) *Dedicated contact 2*
(3) *Dedicated contact 3*
(4) *Dedicated contact 4*

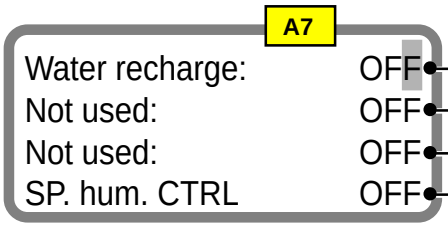
1) **The rising dehumidification (optional) avoids the formation of condensate on the object to be tested. The chamber must be originally equipped with this device.**

2) **Only for special machines equipped with Vibrator**

3) **When it is switched ON, contact E (Apparatus) is closed on the DIGITAL IN/OUT connector (see attached electrical diagram and description of the connector in the chamber instruction handbook).**

4) **Enables the UV lamp (optional) to be switched on.**

In some versions of the programme the writing in points (1), (2), (3), are replaced by:



Dedicated contact 5

Dedicated contact 6

Dedicated contact 7

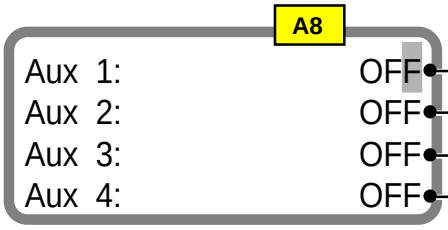
▼

1) **When it is switched ON, the condensate water is recycled**
   When it is switched OFF, the condensate water is drained off.
2) **Not used**
3) **Not used**
4) **When it is switched ON, the humidity slope can be controlled.**

SHIFT ▲

ENTER

If you enter the wrong number, you will still have to press ENTER and then re-digit the number.



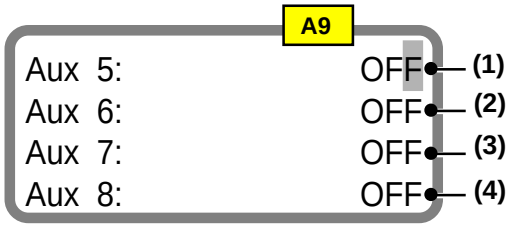
▼

SHIFT ▲

When it is switched ON, the ABCD contacts on the DIGITAL IN/OUT connector are closed (see attached electrical diagram and the description of the connector in the chamber instruction handbook).

ENTER

If you enter the wrong number, you will still have to press ENTER and then re-digit the number.



▼

SHIFT ▲

ENTER

If you enter the wrong number, you will still have to press ENTER and then re-digit the number.

TEST START-UP

K2

To switch off (led light switched off)

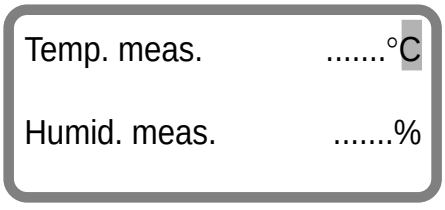
K1

TO VISUALIZE

- **To start the test**
- **The led light switches on the machine starts up and reaches the set temperature and humidity values: 20°C, 60% RH and remains in operation along these values.**

Both the set rising and descending values are reached at maximum speed.

- Press ▼



Data measured inside the chamber are visualized.

The chamber reaches these values and maintains them.

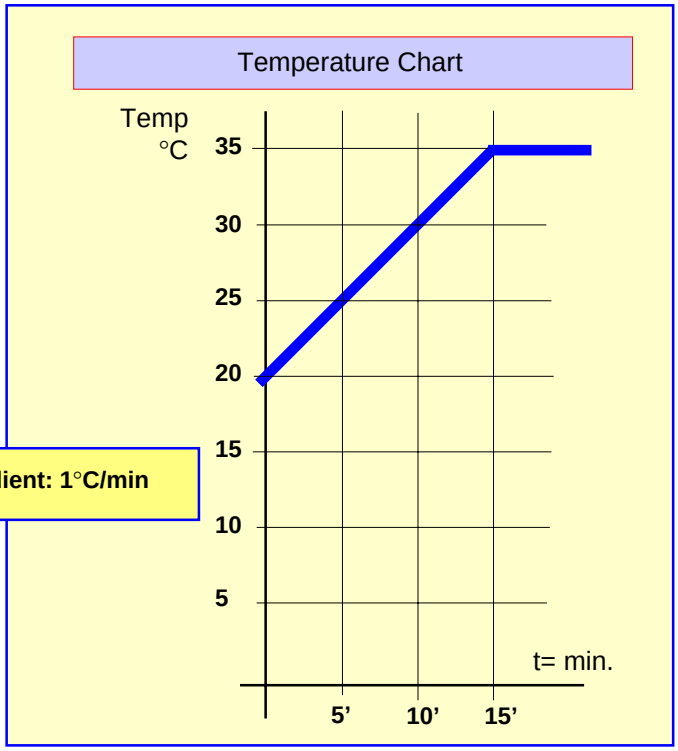
3.2 HOW TO SET A CONTROLLED SLOPE

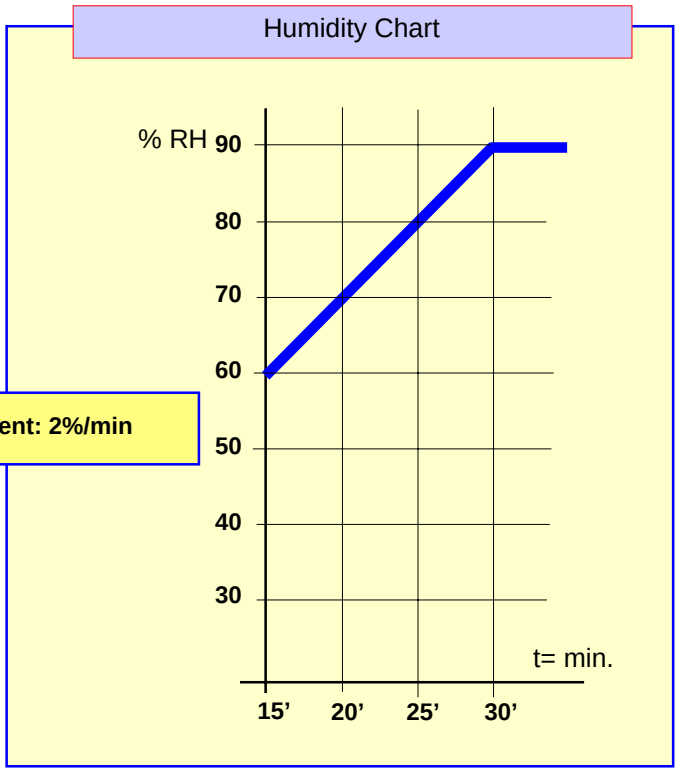
- **Setting of a controlled temperature slope (Example 20÷35°C) with an average gradient of 1°C per minute and 60% relative humidity**

- **Setting of a humidity from 60 to 90% with a gradient of 2% per minute**

(in order to calculate the average gradient, that is the temperature rise or descent speed, please refer to the technical data contained in the chamber instruction handbook).

We advise you not to carry out controlled temperature and humidity slopes (with a gradient) at the same time; in fact, the humidity slope would not be sufficiently controlled.
When you carry out a humidity slope, make sure that the temperature is kept constant.





Operations:

3.2.1 Step A: follow the same procedure described in paragraph 3.1 so that the departure temperature in the chamber reaches 20°C in manual mode.

3.2.2 Step B: set a temperature slope from 20°C to to 35°C and follow a slope with a gradient of 1°C/min.
The machine will reach the set temperature and humidity and will then maintain these values;

3.2.3 Step C: keep a constant temperature (35°C) and set the controlled humidity value (60÷90%) RH with a gradient of 2% per minute.

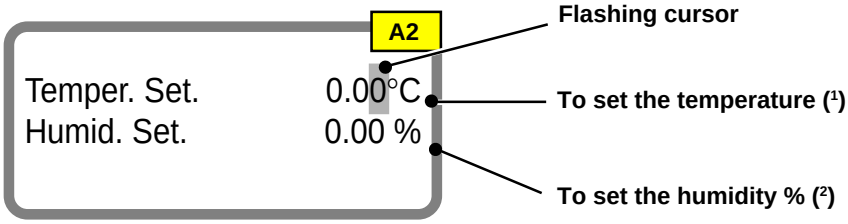
NB: if a mistaken gradient value is set, the machine will not follow the set slope but will still reach the final temperature and humidity.

3.2 STEP A.

Bring the chamber up to the departure temperature value of 20°C.

KEYS	DISPLAY	FUNCTIONS
K2 • For access to the page visualized on the display.	A1 Settings	**The temperature values and other parameters are set on this page.**

▼

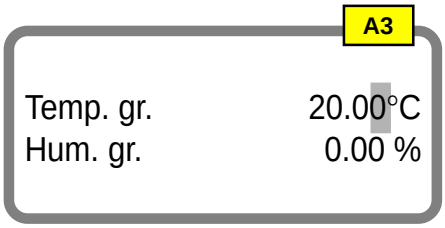


(1) See the temperature range in the chapter entitled "Technical specifications"
(2) See the humidity range in the chapter entitled "Technical specifications"

Place the cursor as shown in order to set a temperature value

---

2 **0**

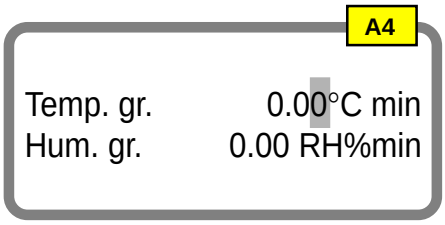


Departure temperature

ENTER

If you enter the wrong number, you will still have to press ENTER and then re-digit the number.

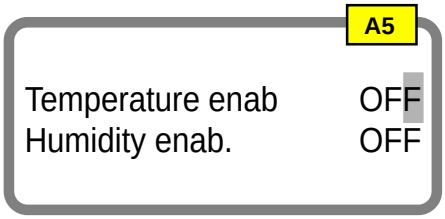
▼



Warning!
in order to reach the departure point, theses values must be set to zero (maximum speed).

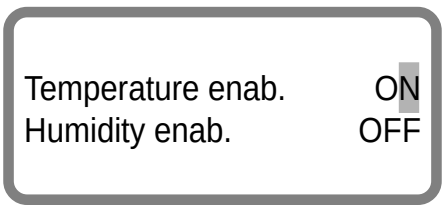
Temp. gr. = Temperature gradient (0=maximum speed)
Hum. gr. = Humidity gradient (0=maximum speed)

▼



- **To enable or disable temperature control**
- **To enable or disable humidity control**

SHIFT ▲



- **Temperature control is enabled**

ENTER

If you enter the wrong number, you will still have to press ENTER and then re-digit the number.

CYCLE START-UP

- Press this key to switch it off (led light switched off)

K2

If the machine has stopped:

- Press this key to start the machine

K1

VISUALIZED ON THE DISPLAY:
- **The key led light is switched on.**
- **The machine starts, reaches the set temperature value (20°C) and continues to operate along this value.**
- **The set rising and descending value is reached at maximum speed.**

- Press

▼

Temp. meas.	.....°C
Humid. meas.	.....%

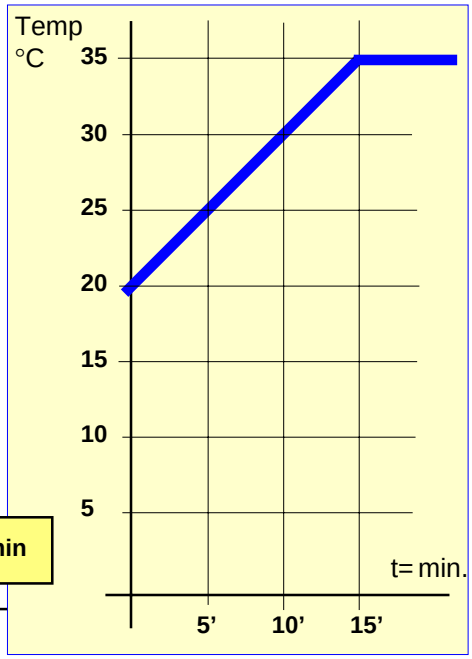
The chamber internal data are visualized.

The chamber reaches these values and maintains them.

3.2 STEP B • Set a temperature slope from 20°C to 35°C with a gradient of 1°C/min and a 60% RH.

KEYS	DISPLAY	FUNCTIONS

- Wait for the chamber to reach the set departure value (20°C) (Step A).
- Follow the example to programme a temperature slope as shown in the diagram with the gradient that is indicated below.
- Move to the page shown below.



K2

A1

Settings

gradient: 1°C/min

▼

A2

Temper. Set.	20.00°C
Humid. Set.	0.00 %

The previously set values are visualized

- Enter the values visualized on the display in the page shown on the right.

A3

Temper. Set.	35.00°C
Humid. Set.	60.00 %

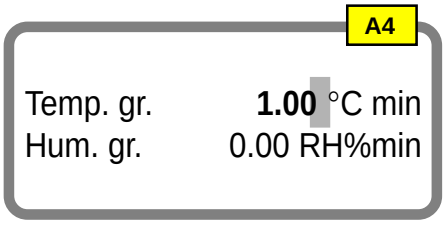
Final temperature

Final humidity

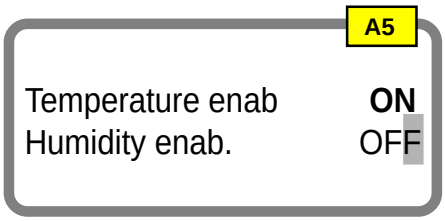
ENTER

To confirm.
If you enter the wrong number, you will still have to press ENTER and then re-digit the number.

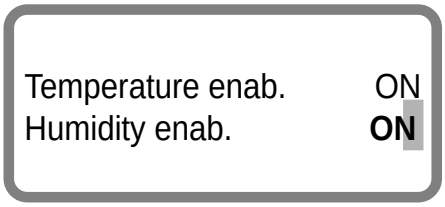
- Enter the temperature gradient but leave the humidity gradient at 0 for the time being.



If you enter the wrong number, you will still have to press ENTER and then re-digit the number.

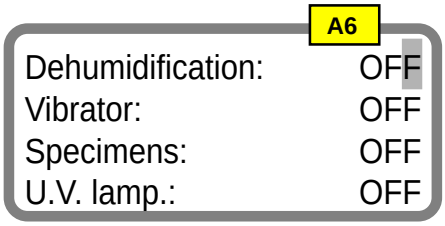


- **To enable or disable temperature control**
- **To enable or disable humidity control**

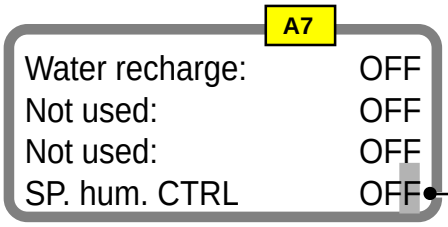


- **Temperature control is enabled If you also wish to enable humdity control, move the cursor to the line below.**

If you enter the wrong number, you will still have to press ENTER and then re-digit the number.



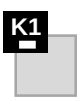
- **Ignore these data for the time being and move on to the next page.**



Humdity slope control remains switched off.

To improve the performance of the system (experiment the setting)

- **To switch off (led light switched off)**

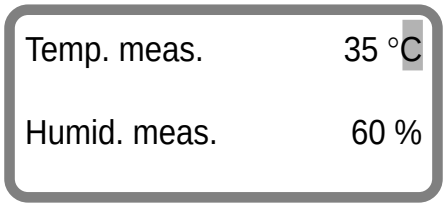


TO VISUALIZE ON THE DISPLAY

- **The key led light is switched on**
- **the machine starts up and carries out the set temperature slope with a 60% RH humdity.**

Once the set temperature values have been reached, the machine will continue along these values.

- Press



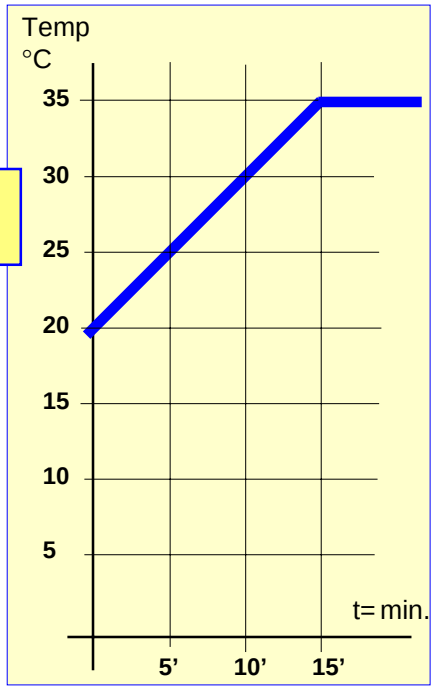
Internal chamber data are visualized.

3.2 STEP C

Set a controlled humidity slope from 60% to 90% with a gradient of 2%/min with a constant temperature and 60% RH humidity

KEYS	DISPLAY	FUNCTIONS

- Wait for the chamber to reach the preset values, 35°C and 60% RH (Step **A** and Step **B**).
- Follow the example given to programme a temperature slope as shown in the diagram with the gradient indicated.
- Move to the next page.



Temperature slope already carried out

The previously set values are visualized.

K2

A1

Settings

▼

A2

Temp. Set 35.0°C
Humid. Set 60.0 %

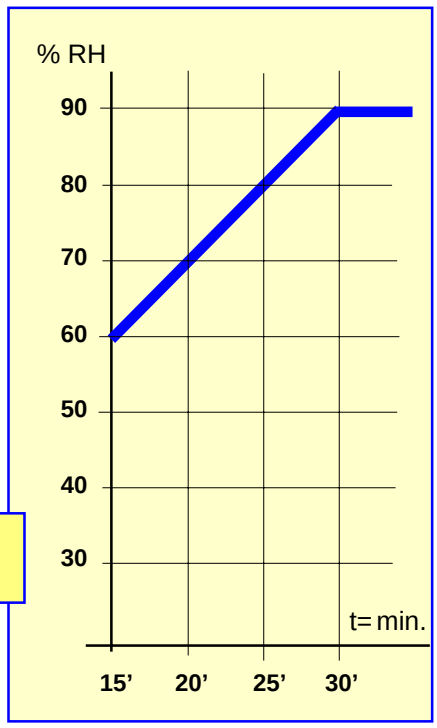
A3

Temp. Set 35.0°C
Humid. Set 90.0 %

Final humidity

ENTER

If the K1 key lights up, the machine will carry out the command immediately



▼

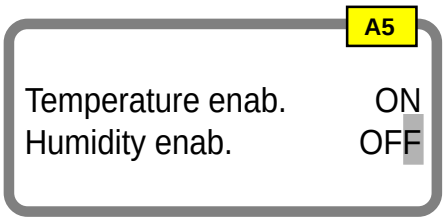
A4

Temp. gr. 0.00°C min
Hum. gr. **2.00** RH%min

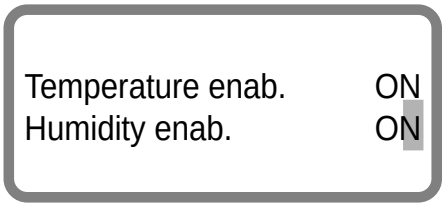
- Turn the temperature gradient to 0
- Turn the humidity gradient to 2

ENTER

gradient: 2%/min



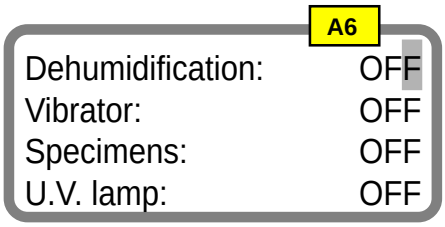
- **To enable or disable temperature control**
- **To enable or disable humidity control**



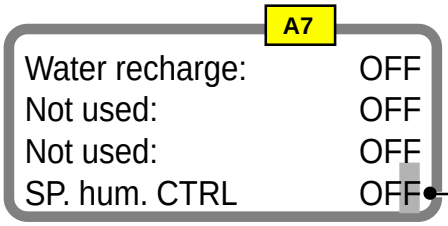
- **Temperature control is enabled. If you also wish to enable humdity control, move the cursor to the line below and use the same keys.**

If you enter the wrong number, you will still have to press ENTER and then re-digit the number

---

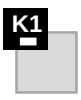


- **Ignore these data for the time being and move on to the next page**



To improve the performance of the system (experiment the setting)

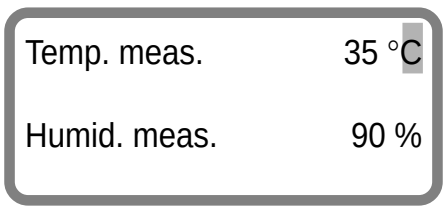
- **To switch off (led light switched off)**



TO VISUALIZE

- **The key led light is switched on the machine starts up and carries out the controlled humidity slope.**
- **Once the set temperature values have been reached, the machine will continue along these values.**

- Press

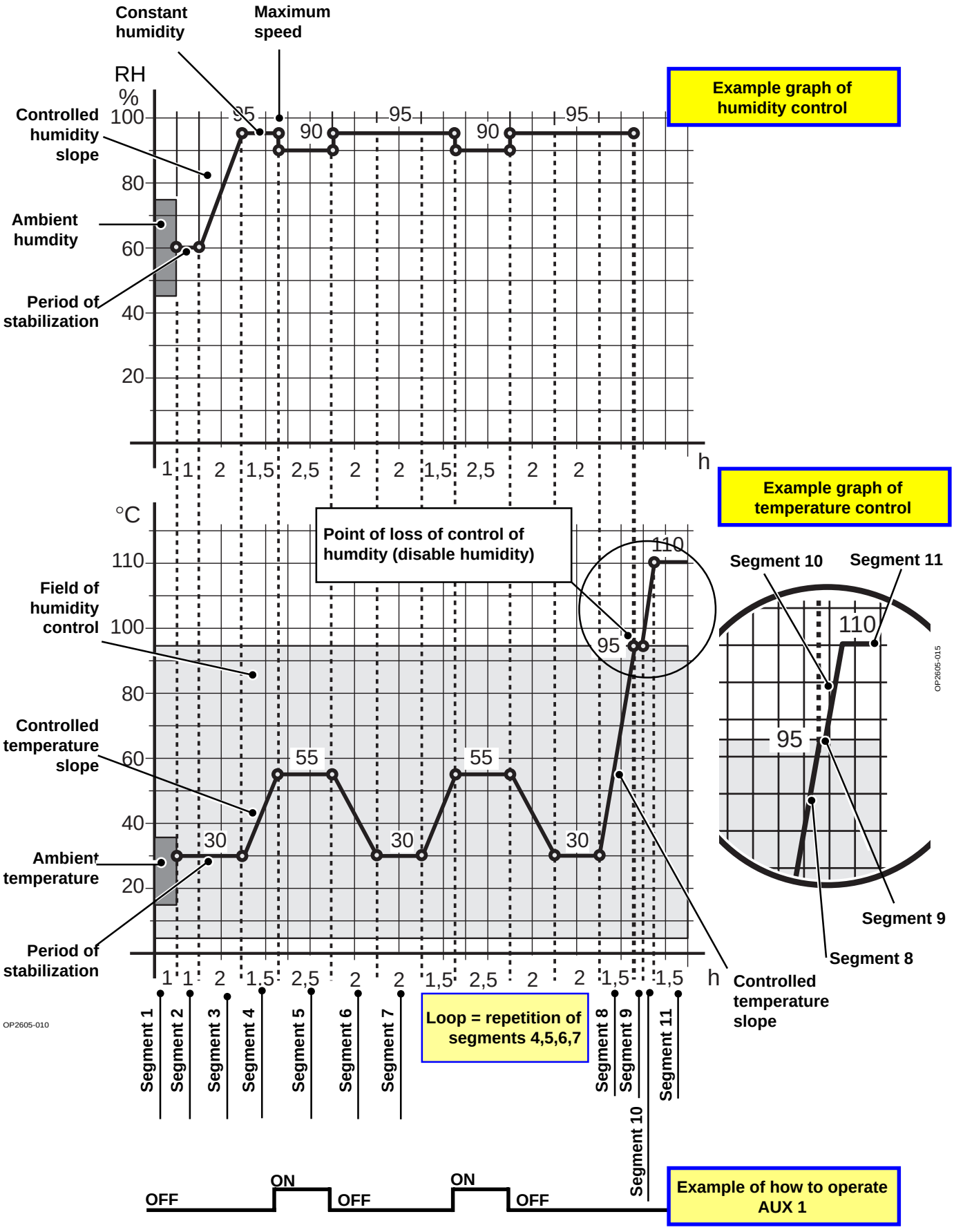


Internal chamber data are visualized.

4 AUTOMATIC OPERATION

In order to make the following instructions easier to understand, a temperature and humidity cycle will be carried out.

4.1 EXAMPLE CYCLE



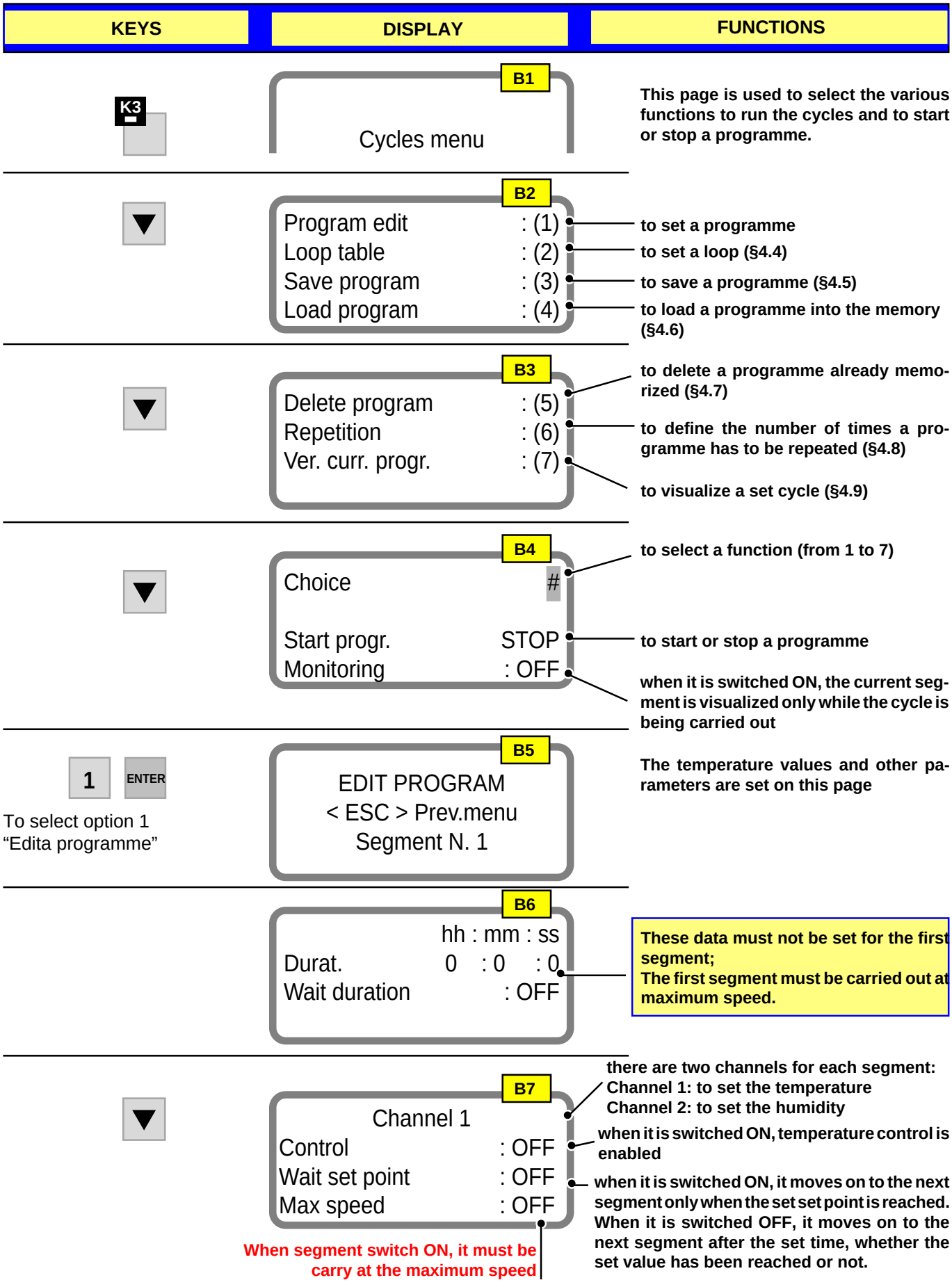
4.2 EXAMPLE CYCLE TABLE

Segment n°	1	2	3	4	5	6	7	8	9	10	11
Duration	.....	1:0:0	2:0:0	1:30:0	2:30:0	2:0:0	2:0:0	1:30:0	0:0:5	0:0:0	1:30:0
Duration wait:	OFF	ON	ON	ON	ON	ON	ON	ON	ON	OFF	ON
CHANNEL 1											
Control:	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Wait for set point	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	ON
Max speed	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
Set point	30	30	30	55	55	30	30	95	95	110	110
Gradient	0.00	0.00	0.00	0.28	0.00	0.21	0.00	0.70	0.00	0.00	0.00
Near set	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CHANNEL 2											
Control:	ON	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF
Wait for set point	ON	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
Max speed	ON	OFF	OFF	OFF	ON	ON	OFF	OFF	ON	OFF	OFF
Set point	60	60	95	95	90	95	95	95	95	0.00	0.00
Gradient	0.00	0.00	0.29	0.00	20	20	0.00	0.00	0.00	0.00	0.00
Near set	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Special contacts											
Dehumidification	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Vibrator	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Apparatus	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
UV lamp	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Water recycle	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Humid. spec. CTRL	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON
Auxiliary contacts											
Aux1	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
Aux2	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Aux3	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Aux4	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Aux5	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Aux6	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Aux7	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Aux8	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
To save segment	SAVE	SAVE	SAVE	SAVE	SAVE	SAVE	SAVE	SAVE	SAVE	SAVE	SAVE
Total segments	1	2	3	4	5	6	7	8	9	10	11
Confirm progr.											OK

4.3 HOW TO SET A PROGRAMME

The cycle shown in the graph will be set as an example here below.

- Place the software alarms into position (paragraph 2.5)
- Place the hardware alarms into position (see machine handbook)



SHIFT ▲ ENTER

B8

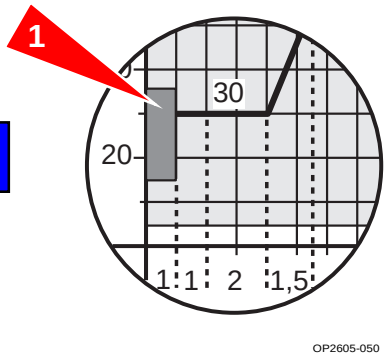
Channel 1
Control : ON
Wait set point : ON
Max speed : ON

Turn all the values to ON as shown

▼

B9

Set point : 0.00 °C
Grad. : 0.00 °C/min
Near set : 1,00 °C



OP2605-050

To set segment 1 (°C)

Temperature 30°C
At maximum speed

B10

Set point : **30.00** °C
Grad. : 0.00 °C/min
Near set : 1,00 °C

Leave the gradient at 0 = max speed

Default value (tollerance within which the segment is considered to have been reached)

▼

B11

Channel 2
Control : OFF
Wait set point : OFF
Max speed : OFF

Channel 2: to set the humidity

SHIFT ▲ ENTER

B12

Channel 2
Control : ON
Wait set point : ON
Max speed : ON

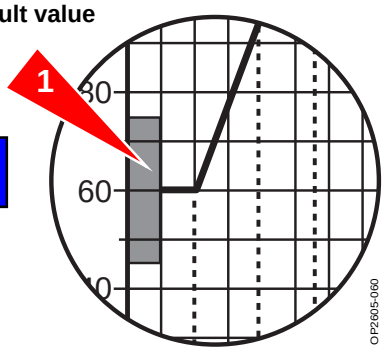
Turn all the values to ON as shown

▼

B13

Set point : 0.00 RH %
Grad. : 0.00 RH %/min
Near set : 3,00 RH %

Default value



OP2605-060

To set segment 1 (% RH)

60% humidity
At maximum speed

- Enter the values shown on the page.

B14

Set point : **60.00** RH %
Grad. : 0.00 RH %/min
Near set : 3,00 RH %

Leave the gradient at 0 = max speed

Default value
(tollerance within which the segment is considered to have been reached)

In some versions of the programme the writing of these fields are replaced by:
Dedicated contact 1
Dedicated contact 2
Dedicated contact 3
Dedicated contact 4

▼

B15

Dehumidification : OFF (1)
Vibrator : OFF (2)
Specimens : OFF (3)
U.V. lamp : OFF (4)

Leave all values OFF

1) **The rising dehumidification (optional) avoids the formation of condensate on the object to be tested. The chamber must be equipped from the start with this device.**
2) **Only special machines equipped with vibrator**
3) **When it is switched to ON, contact E (Apparatus) on the DIGITAL IN/OUT connector is closed (see attached electrical diagram and the description of the connector in the chamber instruction handbook).**
4) **Enables the UV lamp (optional) to be switched on.**

In some versions of the programme the writing of these fields are replaced by:
Dedicated contact 5
Dedicated contact 6
Dedicated contact 7

▼

B16

Water recharge: OFF
Not used: OFF
Not used: OFF
SP. hum. CTRL OFF

When it is switched to ON, the condensate water is recycled.
When it is switched to OFF, the condensate water is drained off.

To improve the performance of the system (experiment the setting)

▼

B17

Aux 1: OFF
Aux 2: OFF
Aux 3: OFF
Aux 4: OFF

▼

B18

Aux 5: OFF
Aux 6: OFF
Aux 7: OFF
Aux 8: OFF

▼

B19

Save segment : OFF

Total segment : OFF
Confirm progr : OFF

SHIFT ▲ ENTER

B20

Save segment : SAVE

to save the programmed segment

This page is visualized

Save segment : OFF

Total segment : 0
Confirm progr : OFF

When this page is shown, if the described operations have been carried out, the segment has already been saved. Do not, therefore, try to save it again.
Move on to the next step.
DO NOT PRESS THE ▲ KEY OR ANY OTHER KEYS BEFORE THIS PAGE APPEARS, OTHERWISE THE SEGMENT WILL NOT BE SAVED.

Once the first segment has been finished, the entire procedure from page B5 to B20 has to be repeated. To simplify the explanations, we have given the following pages different numbers.

B21

- Press repeatedly ▲▲▲

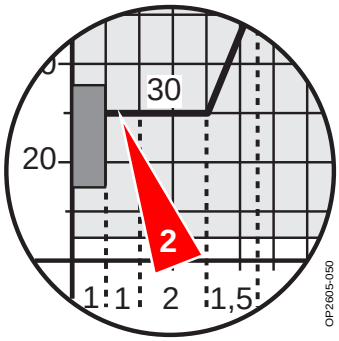
EDIT PROGRAM
< ESC > Prev. menu
Segment N. 2

Wait for this number to appear

WARNING!
If you have accidentally saved the same segment twice, correct the number on this page.

To set segment 2 (°C)

Temperature 30°C
Duration 1h - Maintenance



C1

hh : mm : ss
Durat. **1** : 0 : 0
Wait duration : ON

C2

Channel 1
Control : ON
Wait set point : OFF
Max speed :**OFF**

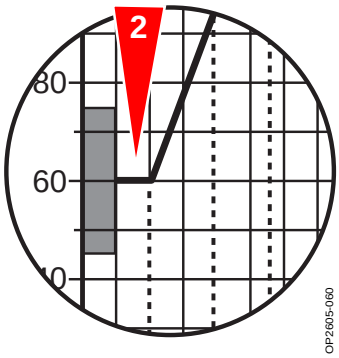
Because the same temperature value is maintained

C3

Set point : **30.00** °C
Grad. : 0.00 °C/min
Near set : 1,00 °C

To set segment 2 (% RH)

Humidity 60%
Duration 1h - Maintenance



C4

Channel 2
Control : ON
Wait set point : OFF
Max speed :**OFF**

Because the same temperature value is maintained

C5

Set point : **60.00** RH %
Grad. : 0.00 RH %/min
Near set : 3.00 RH %

C6

SHIFT ▲ ENTER Save segment : **SAVE**

to save the programmed segment

This page is visualized

Save segment : OFF
Total segment : 0
Confirm progr : OFF

When this page is visualized, if the previously described operations have been carried out, the segment has been saved and therefore must not be saved again. Move on to the next step.

C7

- Press repeatedly ▲▲▲

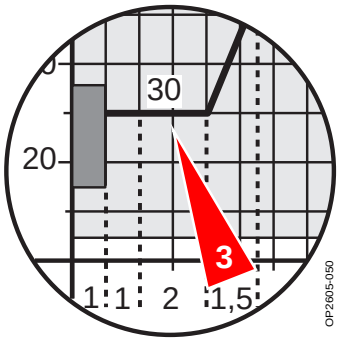
EDIT PROGRAM
< ESC > Prev. menu
Segment N. 3

Wait for this number to appear

WARNING!
If you have accidentally saved the same segment twice, correct the number on this page.

To set segment 3 (°C)

Temperature 30°C
Duration 2h - Maintenance



D1

hh : mm : ss
Durat. **2** : 0 : 0
Wait duration : ON

D2

Channel 1
Control : ON
Wait set point : OFF
Max speed : **OFF**

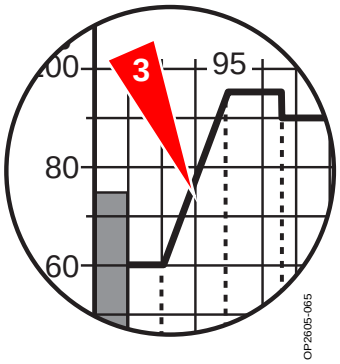
Because the same temperature value is maintained

D3

Set point : **30.00** °C
Grad. : 0.00 °C/min
Near set : 1,00 °C

To set segment 3 (% RH)

Humidity from 60% to 95%
Duration 2h -slope-gradient 0.29 RH%/min



D4

Channel 2
Control : ON
Wait set point : OFF
Max speed : **OFF**

Because the same temperature value is maintained

D5

Set point : **95.00** RH %
Grad. : **0.29** RH %/min
Near set : 3,00 RH %

D6

Water recharge: OFF
Not used: OFF
Not used: OFF
SP. hum. CTRL. OFF

D7

SHIFT ▲ ENTER

Save segment : **SAVE**

to save the programmed segment

D8

This page is visualized

Save segment : OFF

Wait for this word to appear

Total segment : 0
Confirm progr : OFF

When this page is visualized, if the previously described operations have been carried out, the segment has been saved and therefore must not be saved again. Move on to the next step.

- Press repeatedly ▲ ▲ ▲

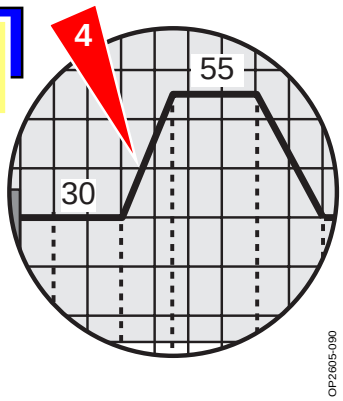
EDIT PROGRAM
< ESC > Prev. menu
Segment N. 4

Wait for this number to appear.

WARNING!
If you have accidentally saved the same segment twice, correct the number on this page.

To set segment 4 (°C)

Temperature from 30°C to 55°C
Duration 1.5h - slope - gradient 0,28°C/min



E1

hh : mm : ss
Durat. **1** : **30** : 0
Wait duration : ON

E2

Channel 1
Control : ON
Wait set point : ON
Max speed : **OFF**

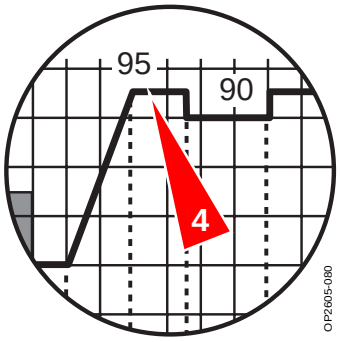
Because a controlled slope is set

E3

Set point : **55.00** °C
Grad. : **0.28** °C/min
Near set : 1,00 °C

To set segment 4 (% RH)

Humidity 95%
Duration 1.5h - Maintenance



E4

Channel 2
Control : ON
Wait set point : OFF
Max speed : **OFF**

Because the same temperature value is maintained

E5

Set point : **95.00** RH %
Grad. : 0.00 RH %/min
Near set : 3,00 RH %

E6

Water recharge: OFF
Not used: OFF
Not used: OFF
SP. hum. CTRL. OFF

E7

SHIFT ▲ ENTER Save segment : **SAVE**

to save the programmed segment

This page is visualized

Save segment : OFF
Total segment : 0
Confirm progr : OFF

When this page is visualized, if the previously described operations have been carried out, the segment has been saved and therefore must not be saved again. Move on to the next step.

E8

- Press repeatedly ▲▲▲

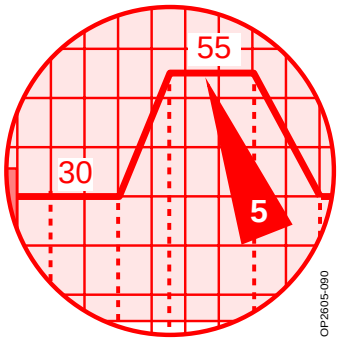
EDIT PROGRAM
< ESC > Prev. menu
Segment N. 5

Wait for this number to appear

WARNING!
If you have accidentally saved the same segment twice, correct the number on this page.

To set segment 5 (°C)

Temperature 55°C
Duration 2,5h - Maintenance



F1

hh : mm : ss
Durat. **2** : **30** : 0
Wait duration : OFF

F2

Channel 1
Control : ON
Wait set point : ON
Max speed : **OFF**

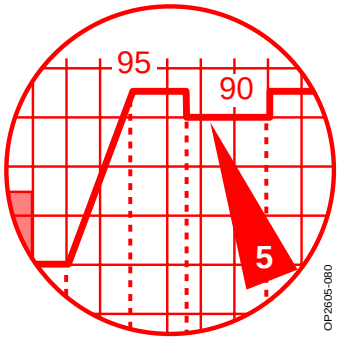
Because the same temperature value is maintained

F3

Set point : **55.00** °C
Grad. : **0.00** °C/min
Near set : 1,00 °C

To set segment 5 (% RH)

Humidity from 95% to 90% and maintenance
Duration 2.5h - Maintenance



F4

Channel 2
Control : ON
Wait set point : OFF
Max speed : **OFF**

F5

Set point : **90.00** RH %
Grad. : **20,00** RH %/min
Near set : 3,00 RH %

Unreal gradient which enables maximum speed to be obtained

F6

Water recharge: OFF
Not used: OFF
Not used: OFF
SP. hum. CTRL. **ON**

To improve the system performance (experimentally set)

F7

Aux 1: **ON**
Aux 2: OFF
Aux 3: OFF
Aux 4: OFF

In this segment the AUX1 must be switched ON

F9

SHIFT ▲ ENTER Save segment : **SAVE**

to save the programmed segment

This page is visualized.

Save segment : OFF
Total segment : 0
Confirm progr : OFF

When this page is visualized, if the previously described operations have been carried out, the segment has been saved and therefore must not be saved again. Move on to the next step.

F10

- Press repeatedly ▲▲▲

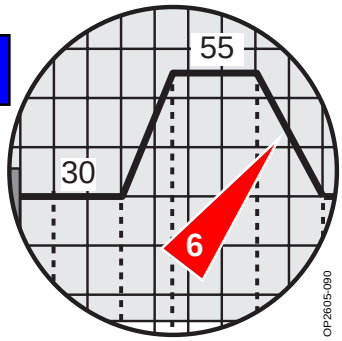
EDIT PROGRAM
< ESC > Prev. menu
Segment N. 6

Wait for this number to appear.

WARNING!
If you have accidentally saved the same segment twice, correct the number on this page.

To set segment 6 (°C)

Temperature from 55°C to 30°C
Duration 2h - slope - gradient 0.21°C/min



G1

hh : mm : ss
Durat. **2** : 00 : 0
Wait duration : ON

G2

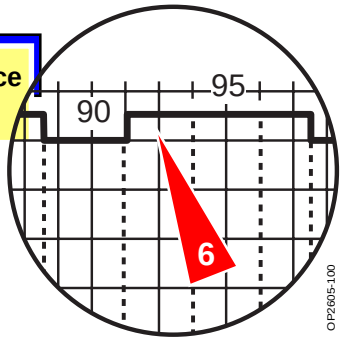
Channel 1
Control : ON
Wait set point : ON
Max speed : **OFF** — **Because the same temperature value is maintained**

G3

Set point : **30.0** 0 °C
Grad. : **0.21** °C/min
Near set : 1,00 °C

To set segment 6 (% RH)

Humidity from 90% to 95% and maintenance
Duration 2h - Maintenance



G4

Channel 2
Control : ON
Wait set point : OFF
Max speed : **ON**

G5

Set point : **95.00** RH %
Grad. : **20,0** RH %/min — **Unreal gradient which enables maximum speed to be obtained**
Near set : 3,00 RH %

G6

Water recharge: OFF
Not used: OFF
Not used: OFF
SP. hum. CTRL. **ON** — **To improve the system performance (experimentally set)**

G8

Aux 1: **OFF** — **In this segment the AUX1 must be switched OFF**
Aux 2: OFF
Aux 3: OFF
Aux 4: OFF

G8

SHIFT ▲ ENTER Save segment : **SAVE** — **to save the programmed segment**

This page is visualized.

Save segment : OFF
Total segment : 0
Confirm progr : OFF

When this page is visualized, if the previously described operations have been carried out, the segment has been saved and therefore must not be saved again. Move on to the next step.

G9

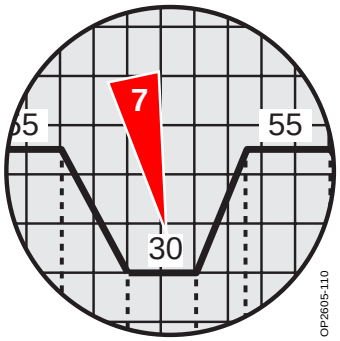
- Press repeatedly ▲▲▲

EDIT PROGRAM
< ESC > Prev. menu
Segment N. 7 — **Wait for this number to appear**

WARNING!
If you have accidentally saved the same segment twice, correct the number on this page.

To set segment 7 (°C)

Temperature 30°C
Duration 2h - Maintenance



H1

hh : mm : ss
Durat. **2** : 00 : 0
Wait duration : ON

H2

Channel 1
Control : ON
Wait set point : OFF
Max speed : **OFF**

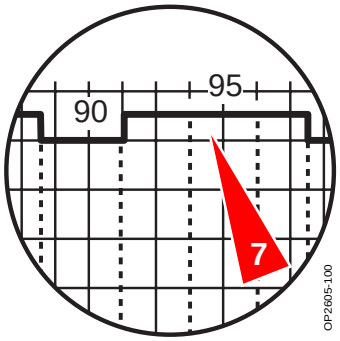
Because the same temperature value is maintained

H3

Set point : **30.00** °C
Grad. : **0.00** °C/min
Near set : 1,00 °C

To set segment 7 (% RH)

Humidity from 95%
Duration 2h - Maintenance



H4

Channel 2
Control : **ON**
Wait set point : OFF
Max speed : **OFF**

H5

Set point : **95.00** RH %
Grad. : **0.00** RH %/min
Near set : 3,00 RH %

Unreal gradient which enables maximum speed to be obtained

H6

Water recharge: OFF
Not used: OFF
Not used: OFF
SP. hum. CTRL. **ON**

To improve the system performance (experimentally determined)

H7

SHIFT ▲ ENTER Save segment : **SAVE**

to save the programmed segment

This page is visualized

Save segment : OFF
Total segment : 0
Confirm progr : OFF

When this page is visualized, if the previously described operations have been carried out, the segment has been saved and therefore must not be saved again. Move on to the next step.

H8

- Press repeatedly ▲▲▲

EDIT PROGRAM
< ESC > Prev. menu
Segment N. 8

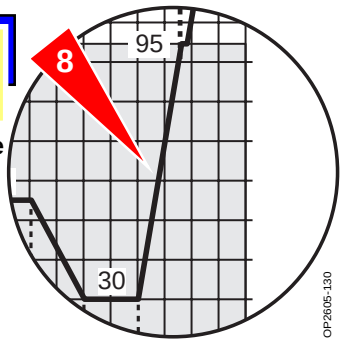
Wait for this number to appear

WARNING!
If you have accidentally saved the same segment twice, correct the number on this page.

The following four segments are the same as 4,5,6,7 and therefore a repetition loop will be set later on.
When segment 7 has been programmed, the procedure will pass on to segments 8,9,10,11 and then a repetition loop will be inserted.

To set segment 8 (°C)

Temperature from 30°C to 95°C
Duration 1.5h - slope -gradient 0.70°C/min



Segment 8, from 30°C to 110°C is divided into 3 segments (8,9,10 as humdity must be switched off at 95°C)

L1

	hh : mm : ss
Durat.	**1** : **30** : 0
Wait duration	: ON

L2

Channel 1

Control	: ON
Wait set point	: OFF
Max speed	: **OFF**

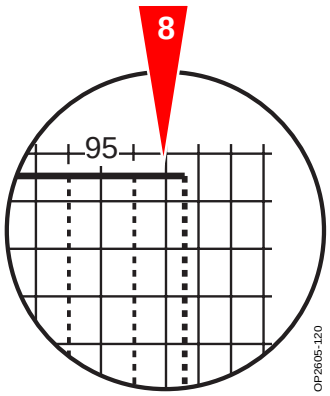
Because the same temperature value is maintained

L3

Set point	:**95.00** °C
Grad.	: **0.70** °C/min
Near set	: 1,00 °C

To set segment 8 (% RH)

Humidity 95%
Duratation 2,h - Maintenance



L4

Channel 2

Control	: ON
Wait set point	: ON
Max speed	: **OFF**

L5

Set point	: **95.00** RH %
Grad.	: 0.00 RH %/min
Near set	: 3,00 RH %

Unreal gradient which enables maximum speed to be obtained

L6

Water recharge:	OFF
Not used:	OFF
Not used:	OFF
SP. hum. CTRL.	**ON**

To improve the system performance (experimentally set)

L7

SHIFT ▲ ENTER

Save segment : **SAVE**

to save the programmed segment

This page is visualized

Save segment	: OFF
Total segment	: 0
Confirm progr	: OFF

When this page is visualized, if the previously described operations have been carried out, the segment has been saved and therefore must not be saved again.
Move on to the next step.

L8

- Press ▲ repeatedly

EDIT PROGRAM
< ESC > Prev. menu
Segment N. 9

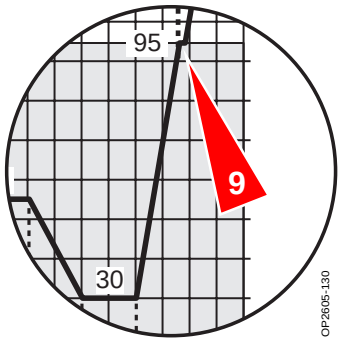
Wait for this number to appear

WARNING!
If you have accidentally saved the same segment twice, correct the number on this page.

When the temperature reaches 95°C, humidity control must be switched off, so a very short segment (9) has to be carried out that lasts only a few seconds (e.g. 5 secs.)

To set segment 9 (°C)

Temperature 95°C
Duration 5 secs - Maintenance



M1

	hh : mm : ss
Durat.	0 : 0 : **5**
Wait duration	: ON

M2

Channel 1	
Control	: ON
Wait set point	: OFF
Max speed	: OFF

Because the same temperature value is maintained

M3

Set point	: **95.00** °C
Grad.	: 0.00 °C/min
Near set	: 1,00 °C

Because the same temperature value is maintained

To set segment 9 (% RH)

Humidity 95% (switch off humidity)

M4

Channel 2	
Control	: OFF
Wait set point	: OFF
Max speed	: OFF

To switch off humidity control

M5

Set point	: **95.00** RH %
Grad.	: 0.00 RH %/min
Near set	: 3,00 RH %

This data as well as the following data will be ignored as the humidity control has been switched off.

M6

Water recharge:	OFF
Not used:	OFF
Not used:	OFF
SP. hum. CTRL.	**ON**

M7

SHIFT ▲ ENTER Save segment : **SAVE**

to save the programmed segment

This page is visualized

Save segment	: OFF
Total segment	: 0
Confirm progr	: OFF

When this page is visualized, if the previously described operations have been carried out, the segment has been saved and therefore must not be saved again.
Move on to the next step.

M8

- Press repeatedly ▲ ▲ ▲

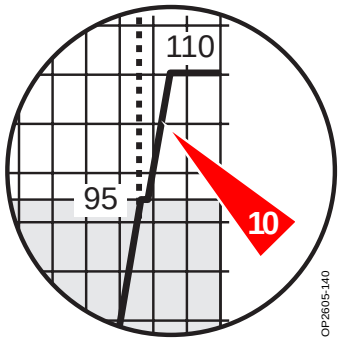
EDIT PROGRAM
< ESC > Prev. menu
Segment N. 10

Wait for this number to appear.

WARNING!
If you have accidentally saved the same segment twice, correct the number on this page.

To set segment 10 (°C)

Temperature from 95°C to 110°C
Maximum speed



N1

hh : mm : ss
Durat. 0 : 0 : **0**
Wait duration : OFF

N2

Channel 1
Control : ON
Wait set point : **ON**
Max speed : **ON**

To carry out the segment at maximum speed

N3

Set point :**110.00** °C
Grad. : 0.00 °C/min
Near set : 1,00 °C

To set segment 10 (% RH)

Humidity - - - - not controlled

Leave everything switched OFF as humidity is not controlled in this temperature range

SHIFT ▲ ENTER Save segment : **SAVE**

to save the programmed segment

This page is visualized

Save segment : OFF
Total segment : 0
Confirm progr : OFF

When this page is visualized, if the previously described operations have been carried out, the segment has been saved and therefore must not be saved again. Move on to the next step.

N4

- Press repeatedly ▲▲▲

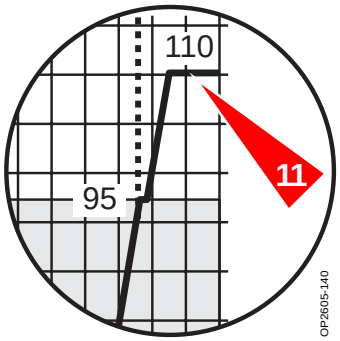
EDIT PROGRAM
< ESC > Prev. menu
Segment N. 11

Wait for this number to appear.

WARNING!
If you have accidentally saved the same segment twice, correct the number on this page.

To set segment 11 (°C)

Temperature 110°C
Maximum speeDuration 1.5h - Maintenance



N1

hh : mm : ss
Durat. **1** : **30** : **0**
Wait duration : ON

N2

Channel 1
Control : ON
Wait set point : ON
Max speed : OFF — **because it is being maintained**

N3

Set point :**110.00** °C
Grad. : 0.00 °C/min
Near set : 1,00 °C

To set segment 11 (% RH)

Humidity - - - - not controlled

Leave everything switched OFF as humidity is not controlled in this temperature range

SHIFT ▲ ENTER — Save segment : **SAVE** — **to save the programmed segment**

This page is visualized

- digit the number of segments (11) and then press ENTER.

Save segment : **OFF**
Total segment : **11**
Confirm progr : **OK**

When this page is visualized, if the previously described operations have been carried out, the segment has been saved and therefore must not be saved again. Move on to the next step.

SHIFT ▲ ENTER

It automatically moves on to this page

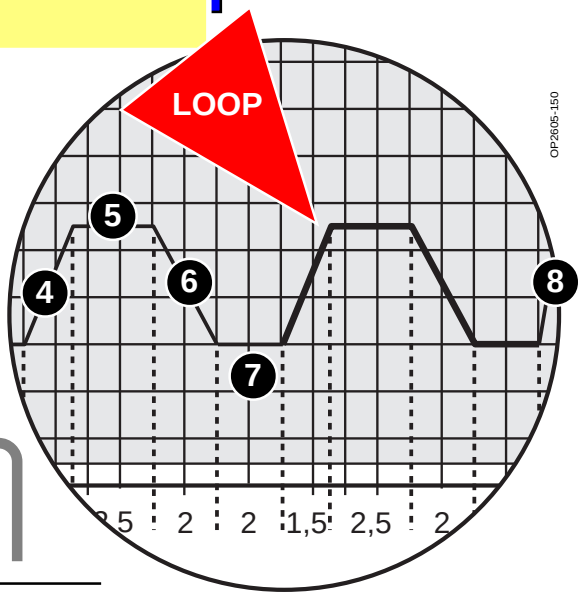
Cycles Menu

4.4 LOOP TABLE

To set a LOOP

How to set the LOOP, a repetition of segments 4,5,6,7

This enables up to 10 repetitions of parts of a programme (series of segments or single segment) to be set.
It is possible to carry out another nested loop within a loop; however, must form part of the main loop.
E.g. Loop of segments 4,5,6,7 (see diagram on the right)
Execution: 4,5,6,7
Nested loop 5,6
Execution: 4,5,6,**5**,**6**,7, 4,**5**,**6**,5,6,7



Move on to page 01

O1

Cycles Menu

O2

Program edit : (1)
Loop table : (2) — **to define a loop**
Save program : (3)
Load program : (4)

O3

Delete program : (5)
Ripetition : (6)
Ver. curr. progr. : (7)

O4

Choice **2** — **to set a loop**

Start progr. STOP
Monitoring : OFF

O5

LOOP page

Loop Table
< ESC > menu prec.

O6

Loop 1
From (<) : _ _ _ — **First loop segment (always lower than the following number)**
To (>) : _ _ _ — **Last loop segment (always higher than the preceding number)**
Loops : _ _ _ — **Number of times the loop has to be executed**

O7

Loop 1
From (<) : **4**
To (>) : **7**
Loops : **2** — **The set segments (page O6) are carried out twice**

Digit the data shown and confirm them with Enter

It is now possible:
To save the programme (paragraph 4.5)
To carry out the programme even if it has not been saved (paragraph 4.6).

4.5 HOW TO SAVE A PROGRAMME

It is extremely important to save the programme in the main memory (MICRO PLC) in order to avoid accidental deletions due to blackouts or to the machine being switched off.

MICRO PLC

ESC

P1

Cycles Menu

P2

▼

Program edit : (1)
Loop table : (2)
Save program : (3) — to save the programme
Load program : (4)

P3

▼

Delete program : (5)
Ripetition : (6)
Ver. curr. progr. : (7)

P4

▼

Choice **3** — to save the current programme

Start progr. STOP
Monitoring : OFF

P5

SAVE PROGRAM
< ESC > Prev. menu

P6

▼

Current program
will be saved
on position N° : _ _ **1** (*)
Save program OFF

P7

SHIFT ▲

Current program
will be saved
on position N° : _ _ **1**
Save program **SAVE** — this will flash

ENTER

The programme is saved

(*) 10 programmes can be saved in the main memory (Micro PLC)
The number of the first free position in the memory is visualized in this field; the programme can, in fact, only be saved in the first free position. Make a note of the position in which the programme was saved. If there are no free positions, this message will flash.
The LOOP table will be saved together with the programme.

P8

Flash eprom full
<ESC> To exit

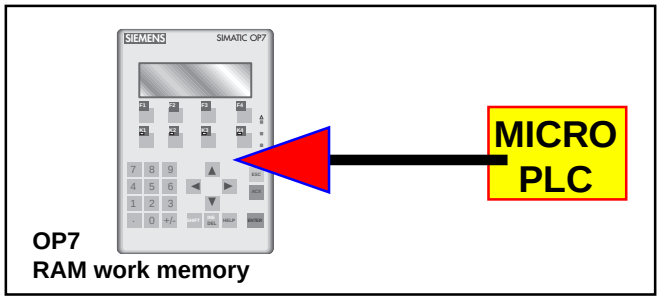
Proceed as follows:

ESC **to exit from this page**

Move on to paragraph 4.8 “HOW TO DELETE A PROGRAMME”

4.6 HOW TO LOAD AND CARRY OUT A PROGRAMME

- The programme to be carried out must always be present in the work memory (OP7).
- If the programme is not present in the work memory (OP7), it will have to be loaded from the MICRO PLC according to the following procedure.



Move on to the page shown on the right as follows:

- **"ESC" key if you have been programming and you want to carry out the cycle that is still inside the memory**
- **Key "K3" if you were carrying out other functions**

Q1

Cycles Menu

Q2

▼

Program edit : (1)
Loop table : (2)
Save program : (3)
Load program : (4)

Q3

▼

Delete program : (5)
Ripetition : (6)
Ver. curr. progr. : (7)

Q4

▼

Choice **4** — **to load a programme into the memory**

Start progr. STOP
Monitoring : OFF

Q5

▼

LOAD PROGRAM
< ESC > Prev. menu

Program to load **1** — **to select programme 1 (*)**
Load program **LOAD** — **to load the programme into the memory**

(*) if the selected position does not contain a programme, the following flashing message will appear

Position empty
<ENTER> to exit

(Keep a note of the saved programmes)

Q6

ESC

Cycles Menu — **to load the programme into the memory**

Q7

- Press repeatedly ▲

Choice
Start progr. STOP
Monitoring : OFF

Q8

SHIFT ▲

Choice
Start progr. **START**
Monitoring OFF — **Turn to ON if you wish to visualize the cycle during its execution**

Q8

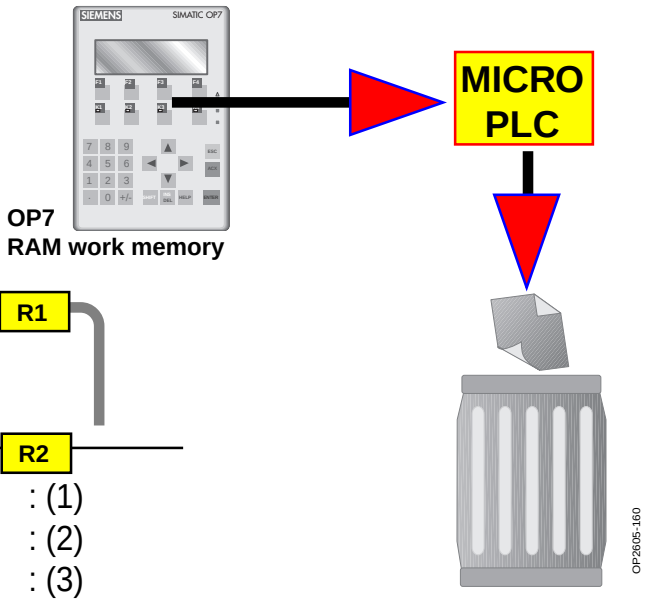
ENTER

THE PROGRAMME IS CARRIED OUT

in order to visualize the programme during its execution, please refer to paragraph 4.10.

4.7 HOW TO DELETE A PROGRAMME

- A programme to be deleted can be removed from the MICRO PLC memory as follows:



ESC

R1

Cycles Menu

R2

▼

Program edit : (1)
Loop table : (2)
Save program : (3)
Load program : (4)

R3

▼

Delete program : (5)
Ripetition : (6)
Ver. curr. progr. : (7)

R4

▼

Choice **5** — to gain access to the delete function

Start progr. STOP
Monitoring : OFF

R5

DELETE PROGRAM
< ESC > Prev. menu
First pos. free _ _ _ — This indicates the first free position in the memory
Prog. to delete _ _ _ — Programme to be deleted
Delete progr. OFF

If you wish to move a programme from one position to another, first save the programme in the new position and then delete the programme from its old position.

R6

To delete, for example, programme N° 4:

▼

To move the cursor and digit the number

DELETE PROGRAM
< ESC > Prev. menu
First pos. free _ _ _
Prog. to delete _ _ **4** — Programme to be deleted
Delete progr. OFF

R7

▼

To switch on the delete option

SHIFT ▲

DELETE PROGRAM
< ESC > Prev. menu
First pos. free _ _ _
Prog. to delete _ _ **4**
Delete progr. **DELE** — Move the cursor and then

ENTER

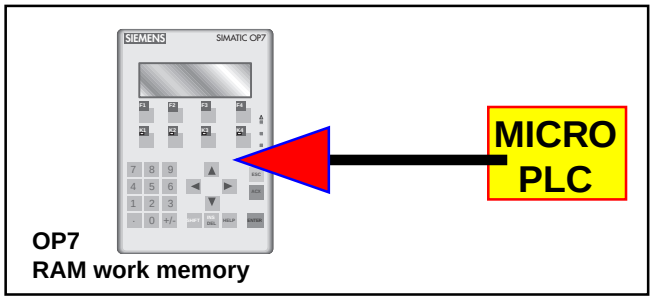
THE PROGRAMME WILL BE DELETED

4.8 REPETITIONS (HOW TO REPEAT A PROGRAMME)

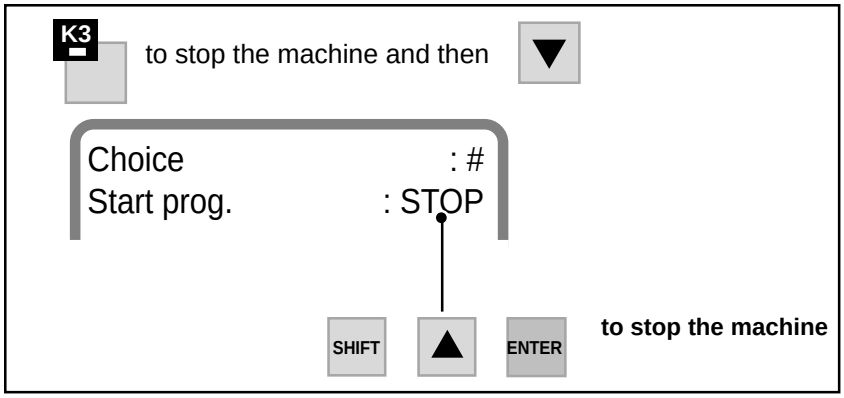
- An entire programme can be repeated automatically, starting from a specific programme.
  NB: The first segment must always be carried out at maximum speed.

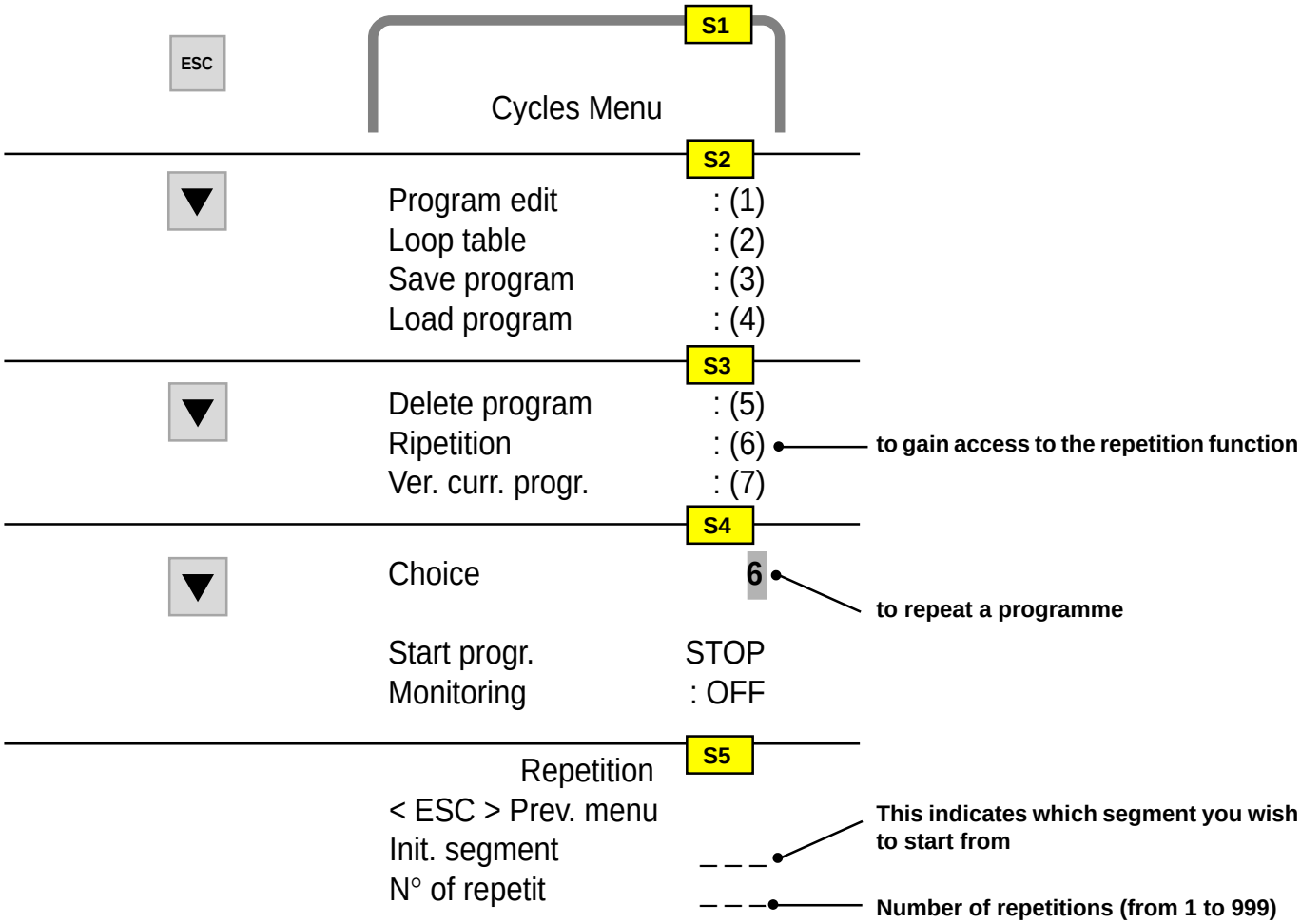
- Up to 9999 repetitions of the entire programme may be carried out. When the machine is switched on, the default value is **1** and therefore the number of repetitions must always be reset.

- The operations included at this stage are not memorized and therefore the data have to be reinserted each time you wish to repeat a programme.



The following operations must be carried out with the machine switched off.
Switch off the machine by carrying out the steps described in the box.





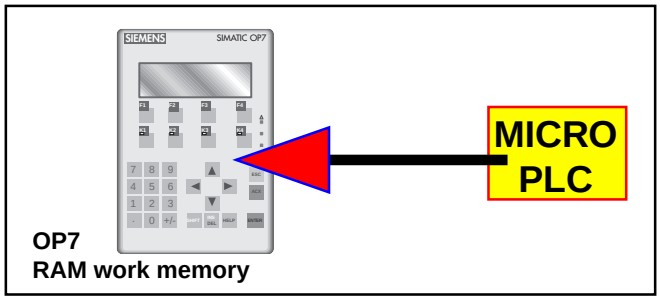
Enter the requested data and press ENTER to confirm

In order to start up the machine again, please refer to paragraph 4.6.

4.9 HOW TO CHECK A PROGRAMME

This option enables one or more segments of the programme being loaded into the memory to be checked.

The data in the memory cannot be modified at this stage.



ESC

T1

Cycles Menu

T2

Program edit : (1)
Loop table : (2)
Save program : (3)
Load program : (4)

T3

Delete program : (5)
Ripetition : (6)
Ver. curr. progr. : (7)

T4

Choice 7

to visualize the current programme data

Start progr. STOP
Monitoring : OFF

The following will appear

T5

VER. CURRENT PROGRAM
< ESC > Prev. menu
Segment N° _ _ _
Load segment LOAD

Digit which segment you wish to visualize

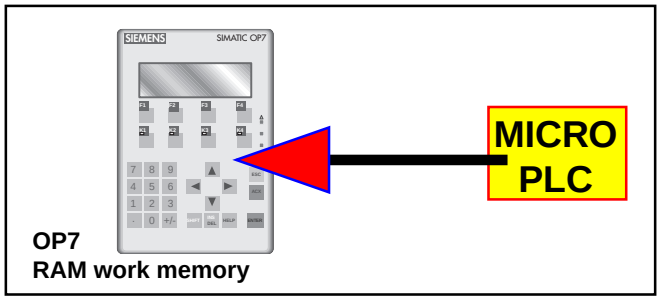
To load and visualize the segment

Press several times ▼ **To visualize all the options for the selected segment**

4.10 HOW TO VISUALIZE A PROGRAMME

This option enables the state of the chamber to be visualized during executiuon of the cycle.

- Load the programme (see § 4.6)



ESC

U1

Cycles Menu

U2

▼

Program edit : (1)
Loop table : (2)
Save program : (3)
Load program : (4)

U3

▼

Delete program : (5)
Ripetition : (6)
Ver. curr. progr. : (7)

U4

▼

Choice #

Start progr. STOP
Monitoring **: ON** — **to visualize a programme during its execution**

U5

CYCLES MONITORING
< ESC > Prev. menu

▼ **To visualize the state of all the programme options being carried out**

V1

▼

CYCLES MONITORING
< ESC > Prev. menu — **(flashing)**
Temp. meas. _ _ _ _ _ _ °C — **measured temperature**
Humid. meas. _ _ _ _ _ _ % — **measured humidity**

V2

▼

Temp. set _ _ _ _ _ _ °C — **set temperature**
Humid. set _ _ _ _ _ _ % — **set humidity**
Temp. gr. _ _ _ _ _ _ °C min
Hum. gr _ _ _ _ RH % min

In some versions of the programme the writing of these fields are replaced by:

V3

Dehumidification : _ _ _ — *Dedicated contact 1*
Vibrator : _ _ _ — *Dedicated contact 2*
Specimens : _ _ _ — *Dedicated contact 3*
U.V. lamp : _ _ _ — *Dedicated contact 4*

V4

Water recharge: : _ _ _ — *Dedicated contact 5*
Not used: : _ _ _ — *Dedicated contact 6*
Not used: : _ _ _ — *Dedicated contact 7*
SP. hum. CTRL. : _ _ _

V5

Aux 1: : _ _ _
Aux 2: : _ _ _
Aux 3: : _ _ _
Aux 4: : _ _ _

V6

Aux 5: : _ _ _
Aux 6: : _ _ _
Aux 7: : _ _ _
Aux 8: : _ _ _

V7

Program mode : _ _ _ — **This indicates whether the chamber is carrying out a cycle (ON) or not (OFF)**
N° of segments : _ _ _ — **Total number of set segments**
Init. segment : _ _ _ — **Number of the segment starting the cycle that the chamber is carrying out**
Current segment : _ _ _ — **Current number of the segment of the cycle that the chamber has reached.**

V8

Total repetit : _ _ _ — **Number of cycle repetitions the chamber has to carry out**
Curr. tot. repet : _ _ _ — **Current number of cycle repetitions (that the chamber has carried out)**
Time from init. cycle — **Time that has passed from the beginning of the current cycle**

hh:	mm:	ss
_ _ _ _ _:	_ _ _:	_ _ _:

Time from init. segm. — **Time that has passed from the beginning of the current segment**

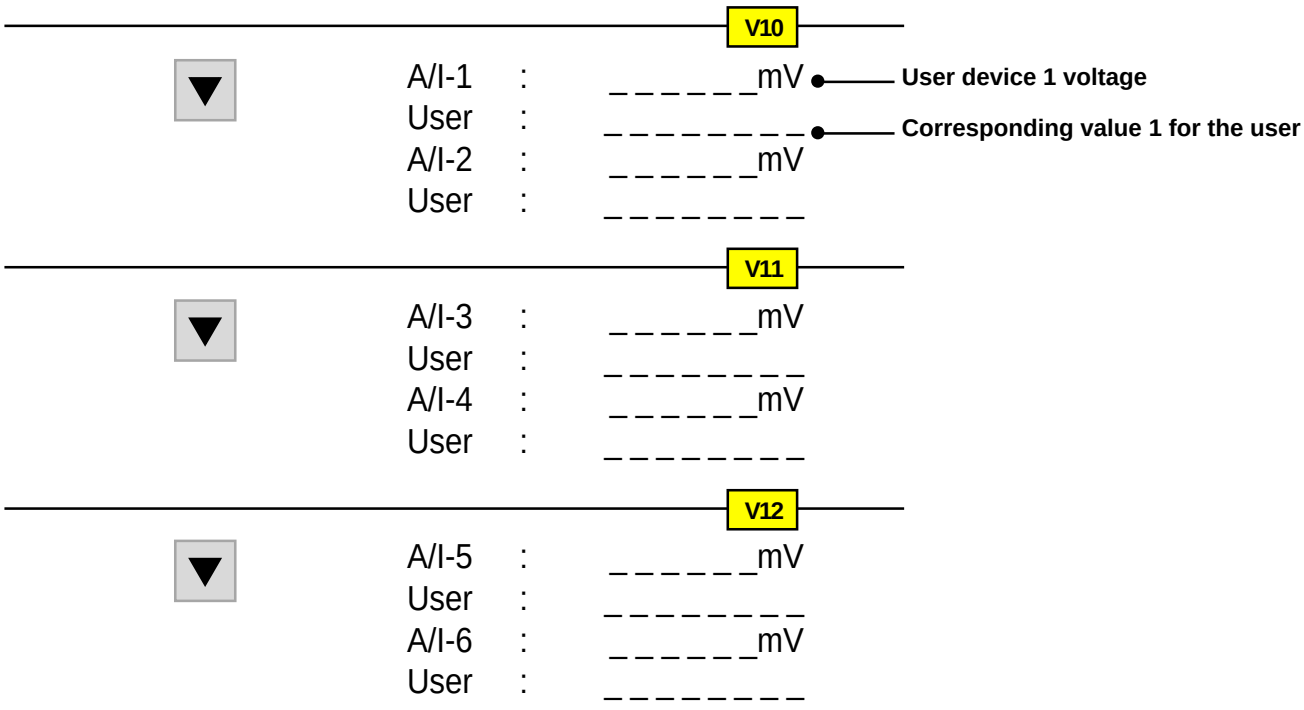
hh:	mm:	ss
_ _ _ _ _:	_ _ _:	_ _ _:

V9

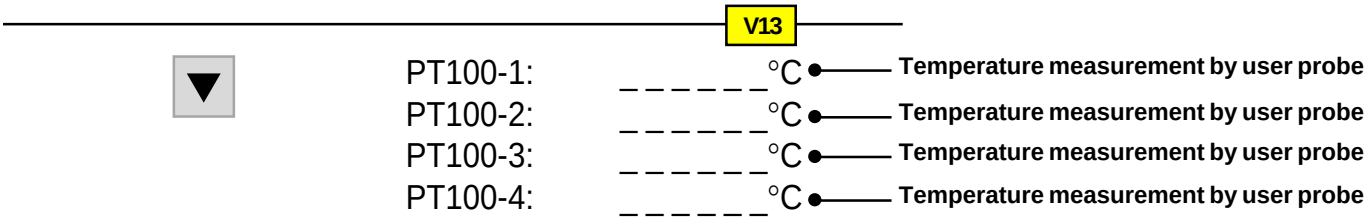
Time to end segment — **Time that still has to pass before the end of the current segment (only for maintenance segments, for the other types of segments the value is always equal to 0).**
The time is indicated in hours: minutes: seconds of the cycle or the segment.

hh:	mm:	ss
_ _ _ _ _:	_ _ _:	_ _ _:

4.11 HOW TO VISUALIZE USER ANALOG INPUTS

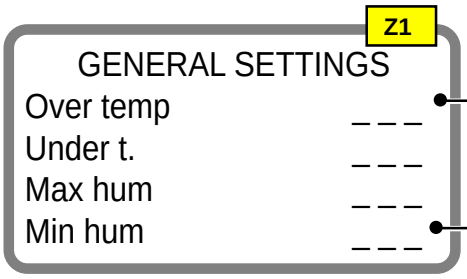


4.12 HOW TO VISUALIZE USER PT100



5 GENERAL SETTINGS

Press K4

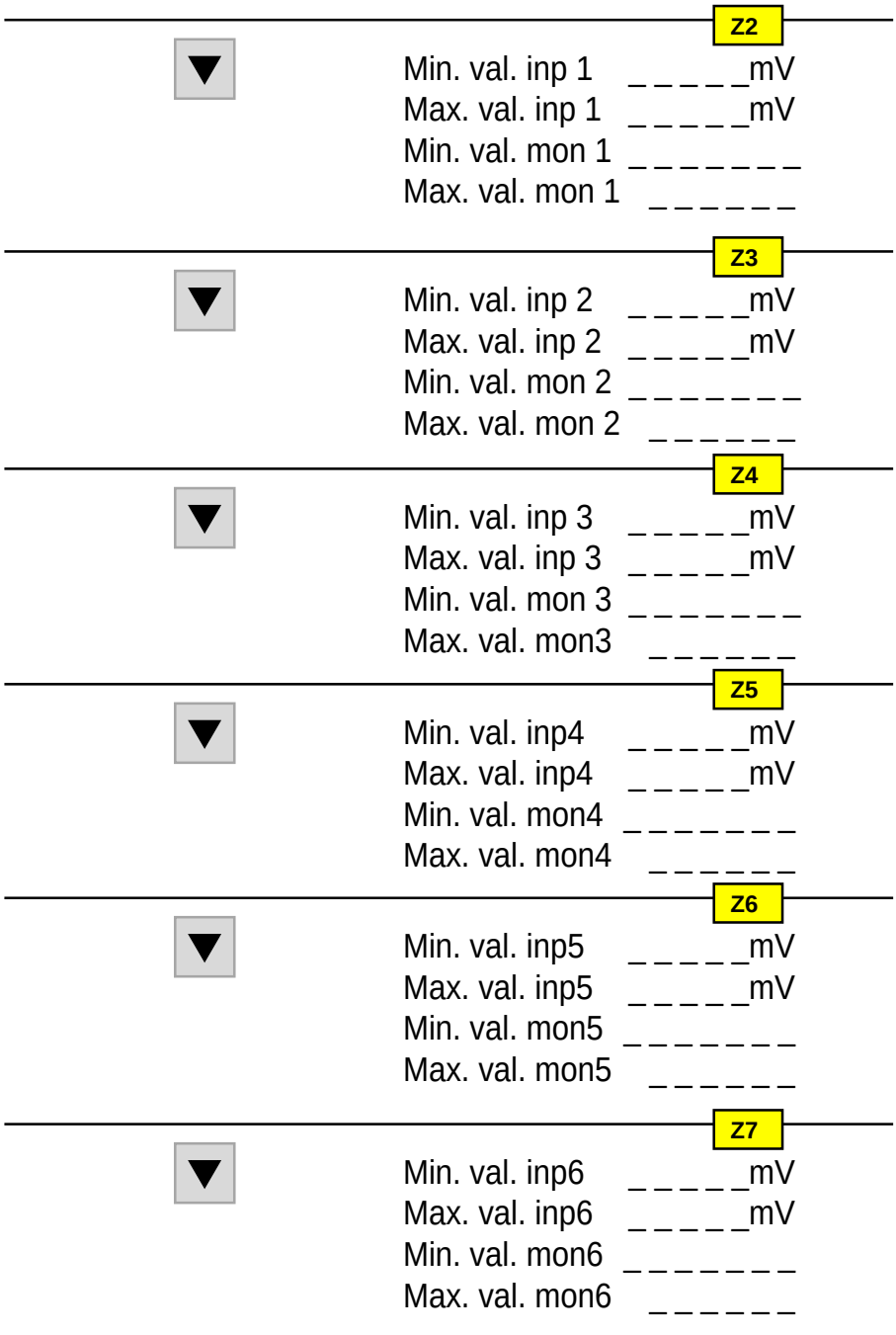


In order to set the alarm parameters, please refer to paragraph 2.5 (HOW TO SET THE SOFTWARE ALARMS).

These fields are present only in some versions of the programme. They enable relative humidity values (min. and max.) to be set and they are lit by a warning signal.
E.g.: this is useful when your specimens must not remain at high and/or low relative humidity.

The following instructions refer to machines equipped with special connectors or analog IN/OUT sockets.
They may be controlled by devices such as PT100 probes or proportional signals.

5.1 USER ANALOG INPUT CONFIGURATION (FROM 1 TO 6)



Enter the values for input 1
E.G.
Min. value inp. 1
Max. value inp. 1
Min. val. vis. 1
Max. val. vis. 1

In the example shown on the left a sensor to measure the air speed has been inserted.
A speed of 0 m/sec. is associated with the value 0 mV.
A speed of 20 m/sec. is associated with the value 10000 mV.

When the input is measured, the sensor will supply a voltage of 5000 mV, at which point the speed shown will be 10 m/sec.

6 ALARMS

WARNING!
Each time an operation is carried out to eliminate an alarm, a RESET must be carried out by pressing the ACK key on the OP7 operator panel.
If the cause of the alarm has not been eliminated, the message on the display will disappear, whereas the led light showing that an alarm has been triggered remains switched on.

MESSAGGE	SOLUTION
START SWITCH OFF ALARM	• Switch on the START switch
POWER SUPPLY LACK ALARM	• Check that the mains supply is available (only for chambers equipped with a UPS no-break power group)
SAFETY THERMOSTAT ALARM	• Contact your technical assistance service
WATER LACK ALARM	• Reset humidification water supply
SERVICE MAX TEMPERATURE ALARM	• Contact your technical assistance service
THERMAL PROTECTION HIGH STAGE COMPRESSOR ALARM	• Contact your technical assistance service
THERMAL PROTECTION LOW STAGE COMPRESSOR ALARM	• Contact your technical assistance service.
MAX PRESSURE HIGH STAGE COMPRESSOR ALARM	• Contact your technical assistance service
MAX PRESSURE LOW STAGE COMPRESSOR ALARM	• Contact your technical assistance service
MIN USER TEMPERATURE ALARM	• Check the value set on the minimum thermostat (it must be higher than the set-point).
MAX USER TEMPERATURE ALARM	• Check the value set on the maximum thermostat (it must be higher than the set-point).
MOTOR PROTECTION ALARM	• Reset the magnetothermal switch that has triggered off; if another alarm sets off, contact the ANGELANTONI Industrie SpA technical assistance service.
NOT AVAILABLE IN PROGRAMME MODE	• The K2 key has been pressed during an automatic running of a programme. Press K2 (the led light will switch off).

Some of the displayed messages will differ from those shown here according to the machine version.
In this case only remember the messages shown on your display.
If any further instructions are necessary, they will be attached to this handbook.