Vcolor 338

Controller for "top-class" electric ovens for gastronomy and pastry, with 5 or 7 inch TFT graphic display colour touch-screen, in split version that can be integrated into the unit.

Installer manual | ENGLISH
Code 144VC338E304

Important

Read this document thoroughly before installation and before use of the device and follow all recommendations; keep this document with the device for future consultation.

Only use the device in the way described in this document; do not use the same as a safety device.

Disposal

The device must be disposed of in compliance with local standards regarding the collection of electric and electronic equipment.

Indice

1 INTRODUCTION

1.1 Introduction

Vcolor 338 is a range of stylish controllers for electric "top-class" gastronomy and pastry ovens (also rack type).

It is available in split version and the user interface can be mechanically integrated in the unit, resulting in an optimal aesthetic outcome; it consists of a 5-inch (Vcolor 338M) or 7-inch (Vcolor 338L) capacitive touch-screen TFT graphic display, 65K colors, 800 x 480 pixel resolution and guarantees an IP65 frontal protection, for easy cleaning.

It is capable of running the ventilation both in "on-off" and in modulating mode (in this case, an external speed regulator is also required), with reversal of the fan rotation direction.

It has the full steam management (generation, injection and extraction), both in automatic and manual mode; steam can be generated both directly and through the use of an external boiler module also capable of running the water charge/discharge and the "boiler rinsing/washing" functions (the steam generation mode can depend on the chamber temperature).

It can also run washing cycles, both with liquid detergent and tabs; by connecting an external burner module, atmospheric and pressure jet gas ovens can be managed as well.

The user interface installation is by back-panel, with threaded studs and guarantees flush mounting.

1.2 Summary table of the models available, the main features and the purchase codes

The following table illustrates the models available.

Models available	***Vcolor 338***

The following table illustrates the main features of the device.
" / " indicates the feature can be set via a configuration parameter.

Power supply	***Vcolor 338***
12 VAC	•
Analogue inputs (J/K o Pt 100, according to model)	***Vcolor 338***
Environment probe	•
Needle probe	•
Cooking fumes probe	•
Digital inputs (for NO/NC contact)	***Vcolor 338***
Door micro switch	•
Rack rotation limit switch	•
Fan circuit breaker protection (230 VAC)	•
Circuit breaker protection (230 VAC)	•
Electric absorption (230 VAC)	•
Analogue outputs	***Vcolor 338***
0-10 V (fan)	•
Digital outputs (electromechanical relays; A res. @ 250 VAC)	***Vcolor 338***
Temperature adjustment	1 A
Air vent	1 A
Direct steam injection	1 A
Room light	1 A
Technical compartment fan	1 A
Configurable (fan left rotation default) (1)	1 A

Configurable (fan right rotation default) (1)	1 A
Configurable (fan speed default) (1)	1 A
Rack rotation	1 A
Configurable (cleaning water valve by default) (2)	1 A
Configurable (liquid detergent injection by default) (2)	1 A
Configurable (cleaning liquids discharge by default) (2)	1 A
Configurable (rinse aid injection during cleaning by default) (2)	1 A
Communication port	***Vcolor 338***
RS-485 MODBUS	•
USB	•
Other features	***Vcolor 338***
Clock	•
Alarm buzzer	•
Management of ventilation both in "On/off" mode and modulating mode, with inversion of fan rotation direction	•
Management of cleaning cycle with both liquid detergent and tablet	•
"Weekly programmed switch-on" function	•
"Programs" function	•

Notes

(1) configurable for:
- management of ventilation in "On/off" mode and at single speed
- management of ventilation both in "On/off" mode at single speed, with inversion of fan rotation direction
- management of ventilation both in "On/off" mode at double speed, with inversion of fan rotation direction
- management of ventilation in modulating mode, with inversion of fan rotation direction

(2) configurable for:
- management of cleaning cycle with liquid detergent
- management of cleaning cycle with tablet detergent

Options available

None.

For further information, see chapter 20 "TECHNICAL DATA".

The following table illustrates the purchase codes.

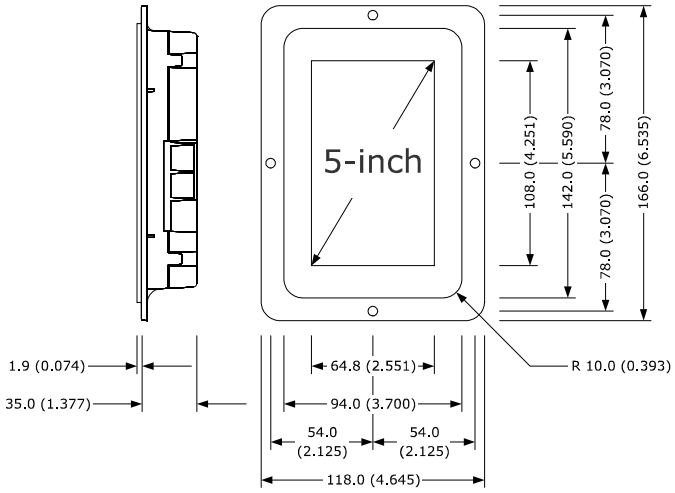
Purchase codes	**Vcolor 338M (kit with control module + 5” user interface)** EVCMC33DJ2E for J/K thermocouples EVCMC33DC2E Pt 100 2 wires **Vcolor 338L (kit with control module + 7” user interface)** EVCLC33DJ2E for J/K thermocouples EVCLC33DC2E Pt 100 2 wires **Options** EVCLE305XXE boiler module EVCLE302XXE burner module

For further models, contact the EVCO sales network.

2 DIMENSIONS AND INSTALLATION

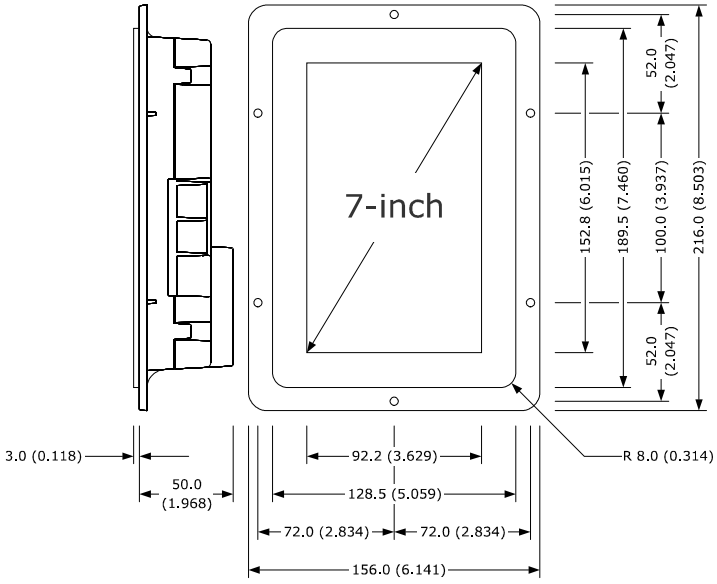
2.1 User interface dimensions of Vcolor 338M

The following drawing illustrates the 5-inch user interface dimensions; these are expressed in mm (in).



2.2 User interface dimensions of Vcolor 338L

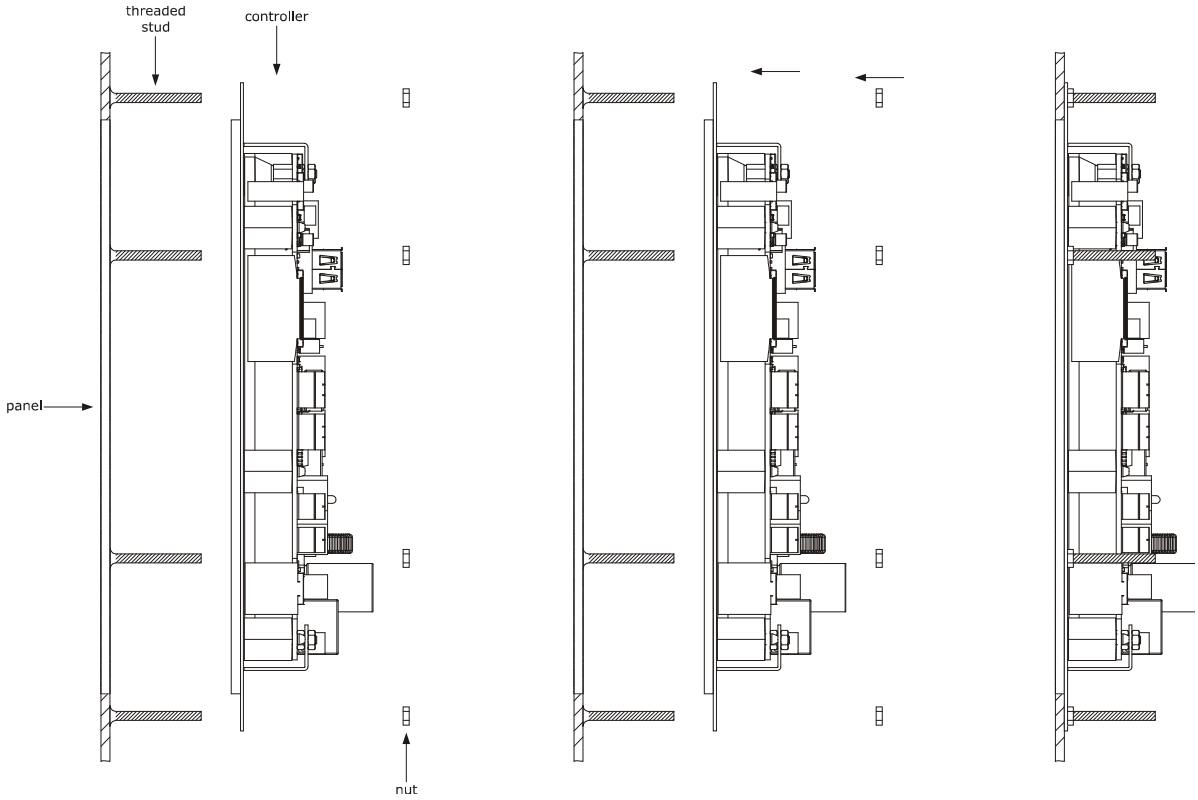
The following drawing illustrates the 7-inch user interface dimensions; these are expressed in mm (in).



2.3 Installation of user interface

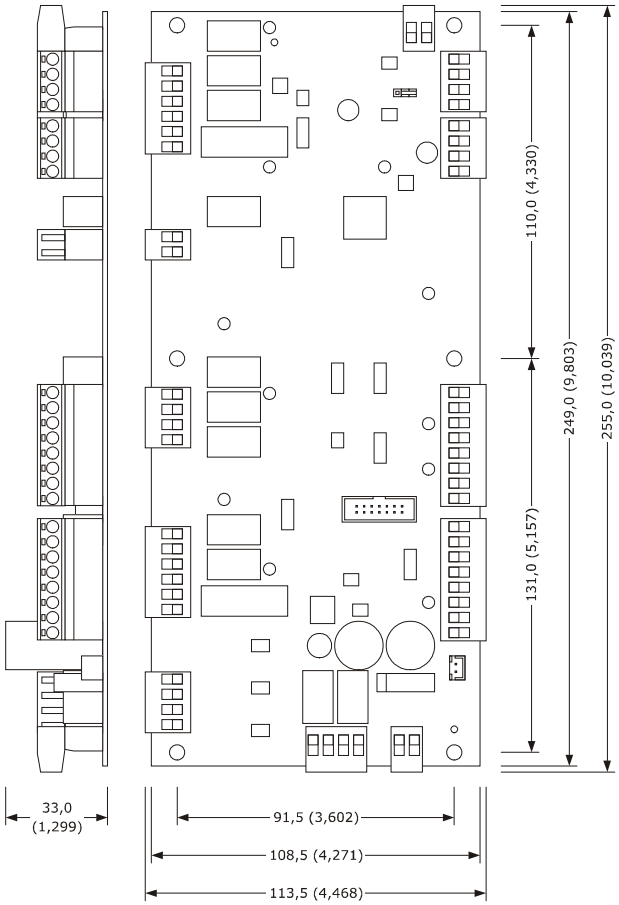
The following drawing illustrates the installation of the device user interface.

This is to be installed on the back of the panel, with studs and allows flush mounting.



Control module dimensions and installation

The following drawing illustrates the device's control module dimensions; these are expressed in mm (in).



The control module is to be installed on a flat surface, with spacers.

2.4 Installation warnings

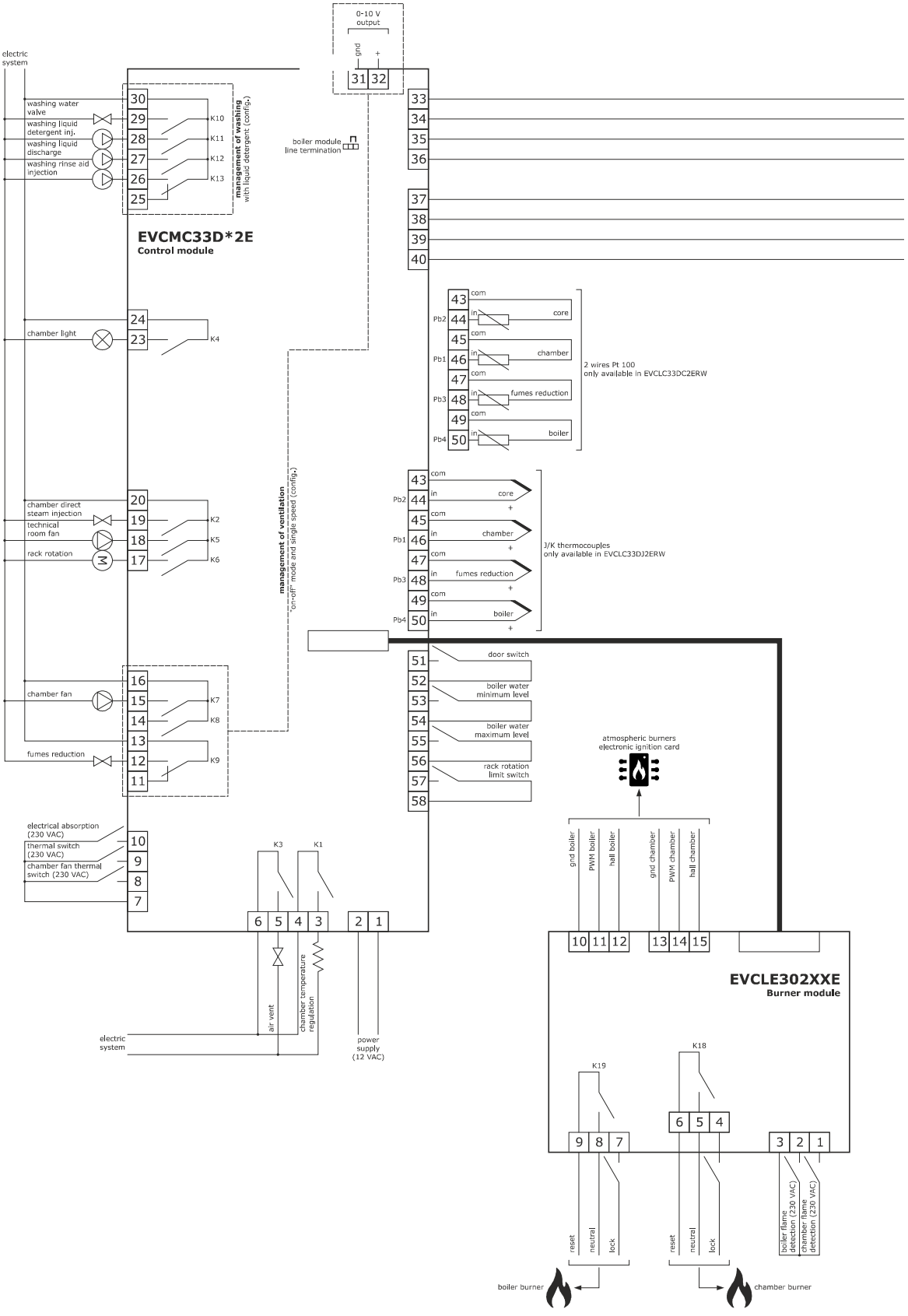
- make sure that the device work conditions (temperature of use, humidity, etc.) lie within the limits indicated; see chapter 20 "TECHNICAL DATA"
- do not install the device near to any heat sources (heating elements, hot air ducts etc.), equipment containing powerful magnets (large diffusers, etc.), areas affected by direct sunlight, rain, humidity, excessive dust, mechanical vibrations or shocks
- any metal parts in proximity of the control module must be at a distance such that they do not compromise the safety distances.
- in compliance with Safety Standards, the device must be installed correctly and in a way to protect against any contact with electric parts; all parts that ensure protection must be fixed in a way that they cannot be removed without the use of tools
- ensure that the thermocouple is properly insulated from contact with metal parts or use already insulated thermocouples.

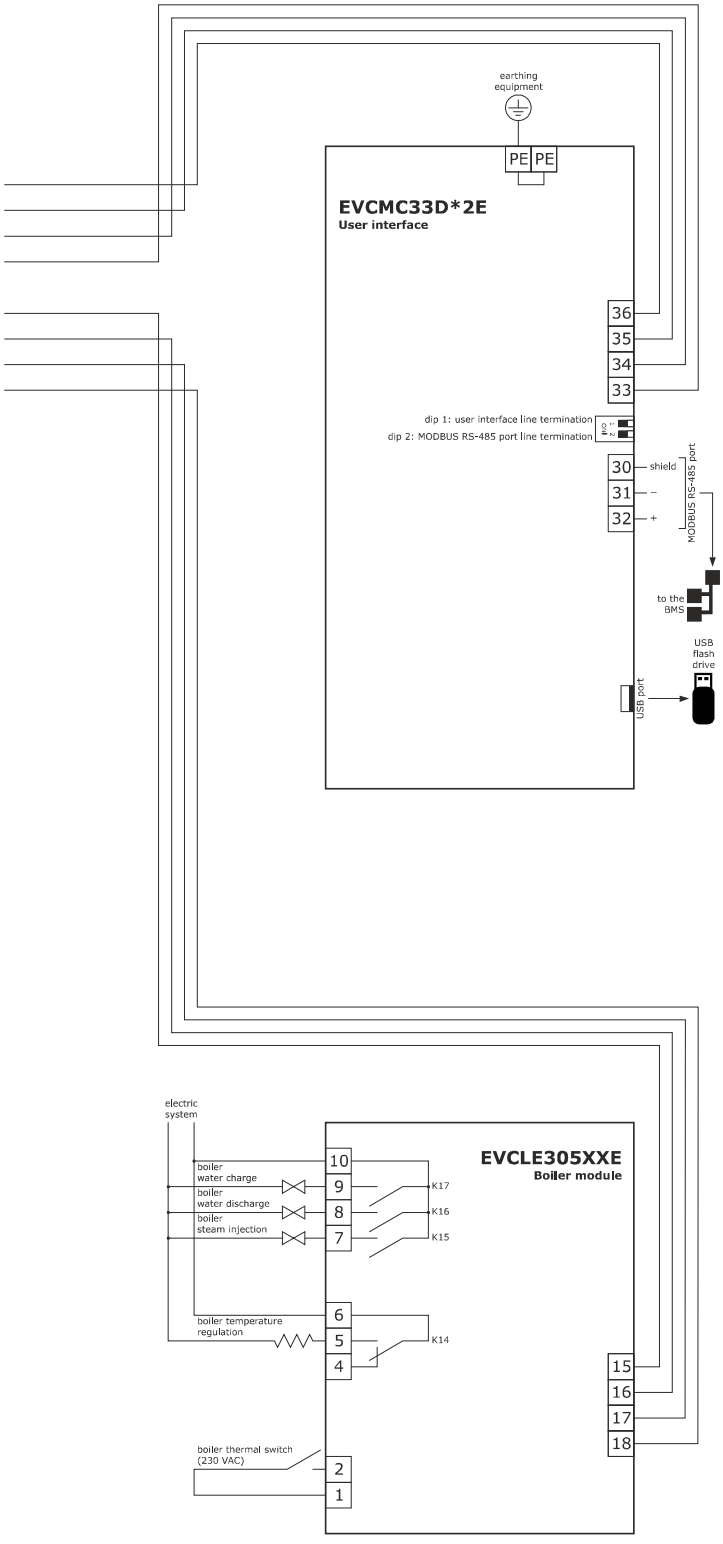
3 ELECTRIC CONNECTION

3.1 Electric connection of Vcolor 338M

The following drawing illustrates the electric connection of the devices with a 5-inch user interface.

For further information on ventilation management please refer to the following drawings.

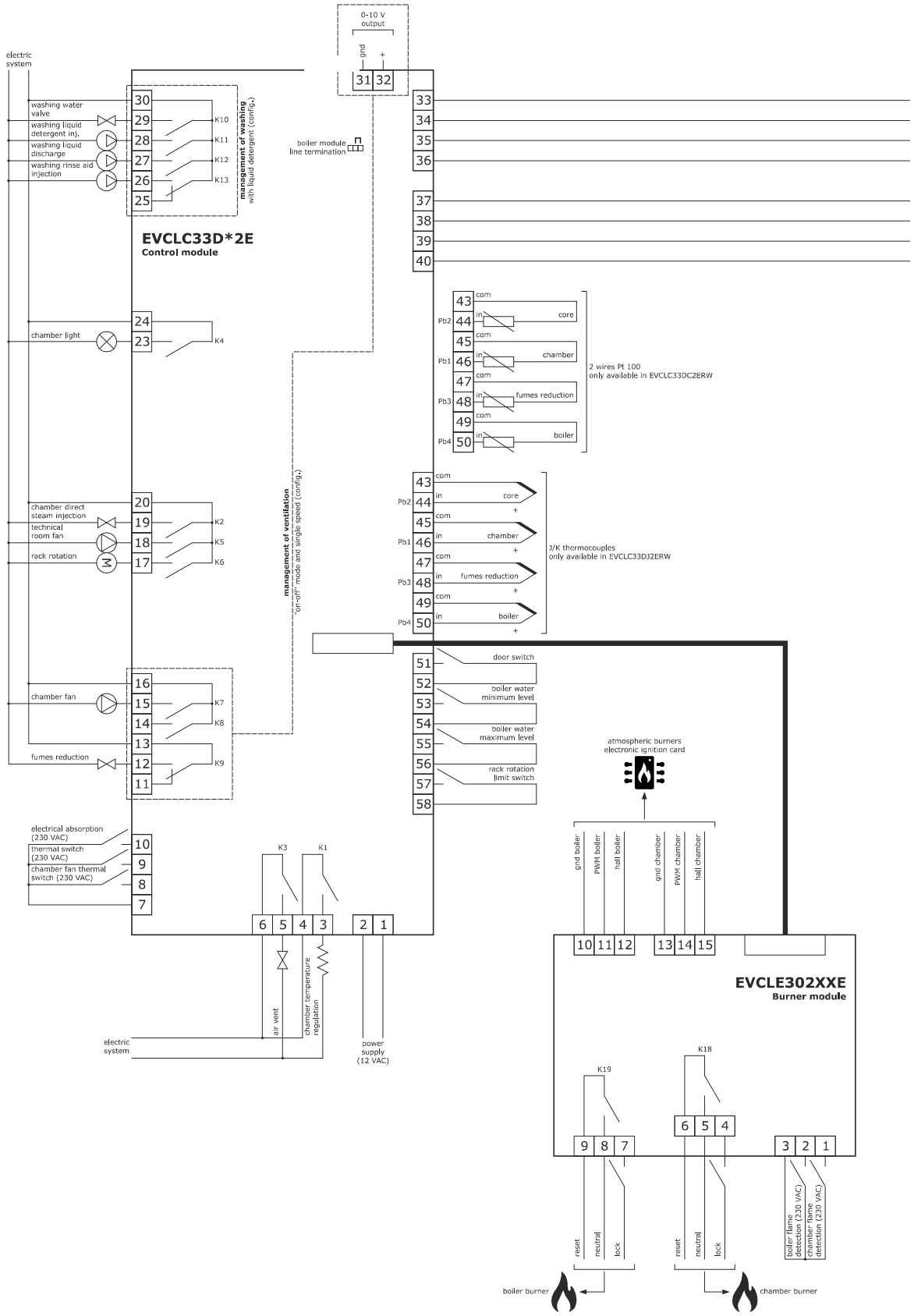


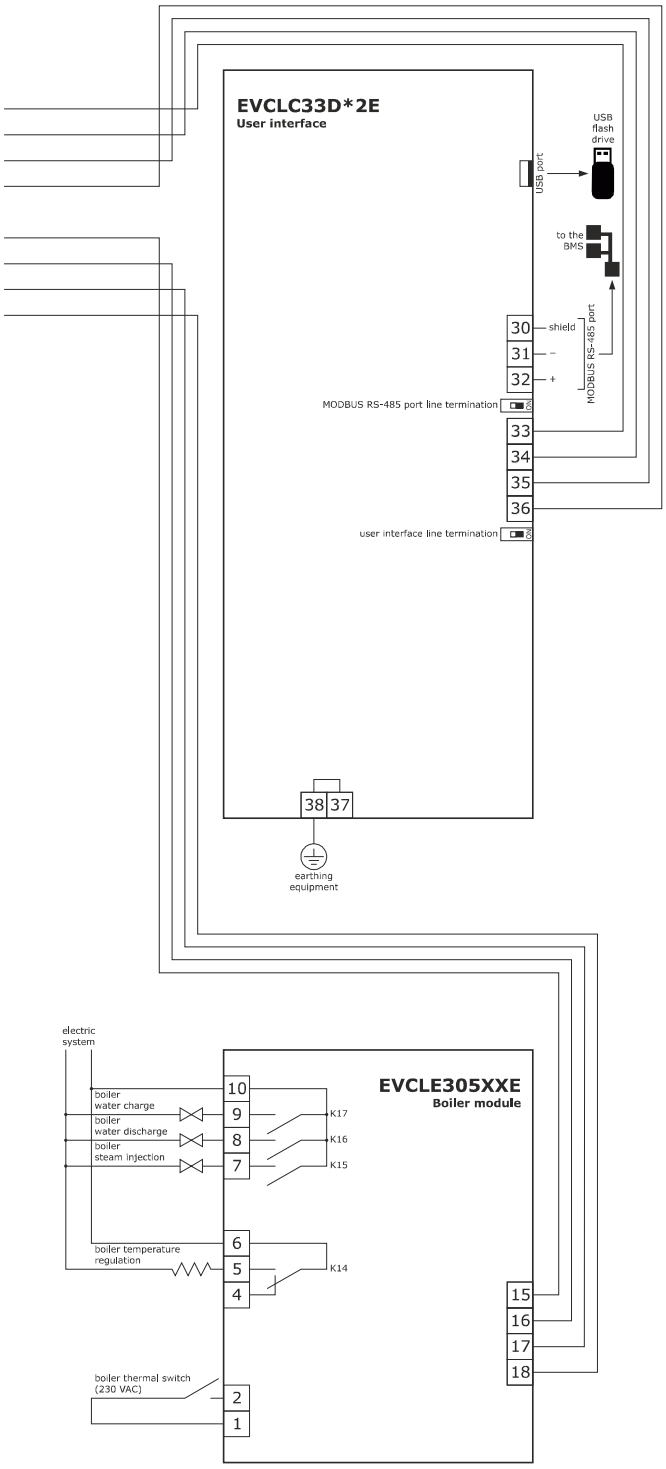

earthing equipment
PE
PE
EVCMC33D*2E
User interface
36
35
34
33
dip 1: user interface line termination
dip 2: MODBUS RS-485 port line termination
30
shield
31
–
32
+
MODBUS RS-485 port
to the BMS
USB flash drive
USB port
electric system
boiler water charge
boiler water discharge
boiler steam injection
boiler temperature regulation
boiler thermal switch (230 VAC)
EVCLE305XXE
Boiler module
10
9
8
7
6
5
4
2
1
K17
K16
K15
K14
15
16
17
18

3.2 Electric connection of Vcolor 338L

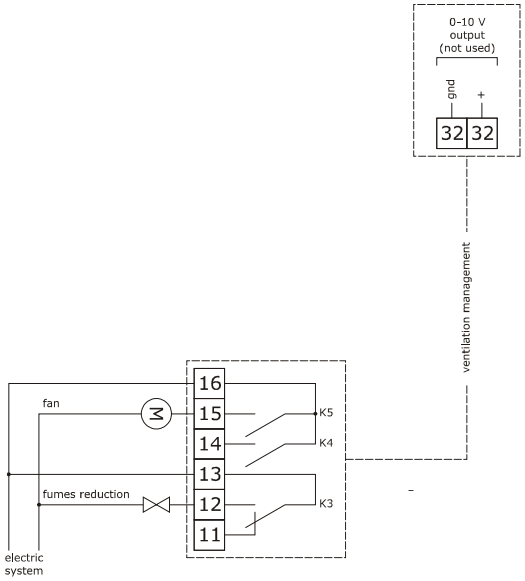
The following drawing illustrates the electric connection of the devices with a 7-inch user interface.

For further information on ventilation management please refer to the following drawings.

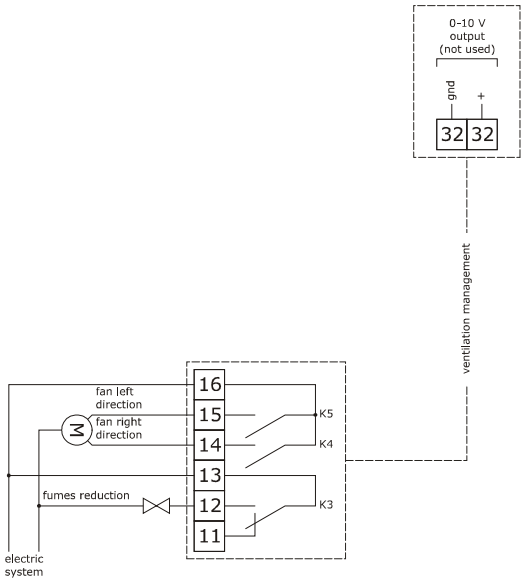



EVCLC33D*2E
User interface
USB flash drive
USB port
to the BMS
30
31
32
shield
–
+
MODBUS RS-485 port
MODBUS RS-485 port line termination
33
34
35
36
user interface line termination
38
37
earthing equipment
electric system
boiler water charge
boiler water discharge
boiler steam injection
boiler temperature regulation
boiler thermal switch (230 VAC)
10
9
8
7
6
5
4
2
1
K17
K16
K15
K14
EVCLE305XXE
Boiler module
15
16
17
18

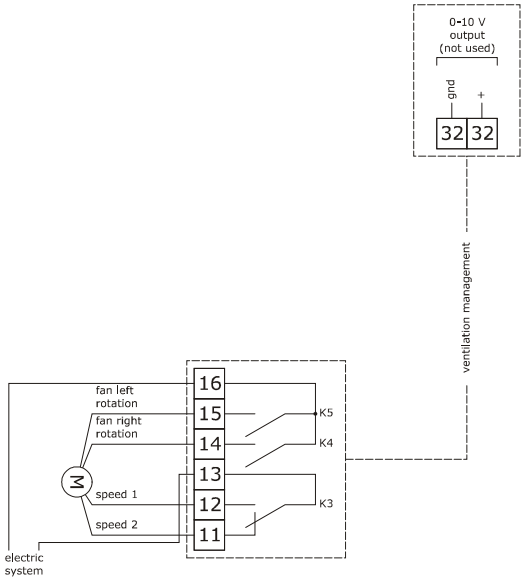
Management of the ventilation in "on/off" mode and with single speed (parameter F0 = 0).



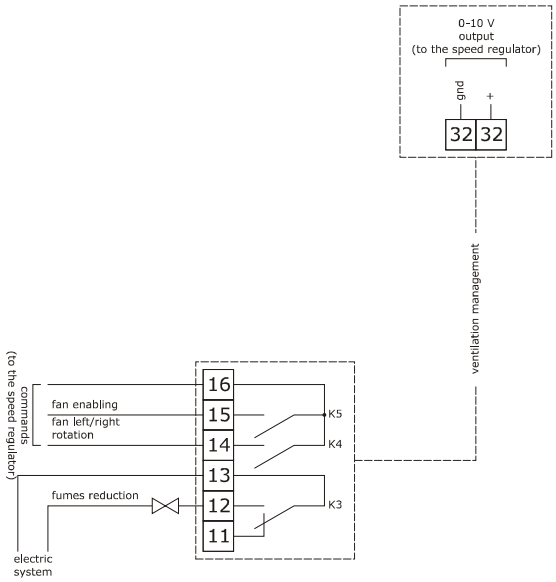
Management of the ventilation in "on/off" mode and with single speed and inversion of the fan rotation direction (parameter F0 = 1).



Management of the ventilation in "on/off" mode and with dual speed and inversion of the fan rotation direction (parameter F0 = 2).



Management of the ventilation in modulating mode and with inversion of the fan rotation direction (parameter F0 = 3).

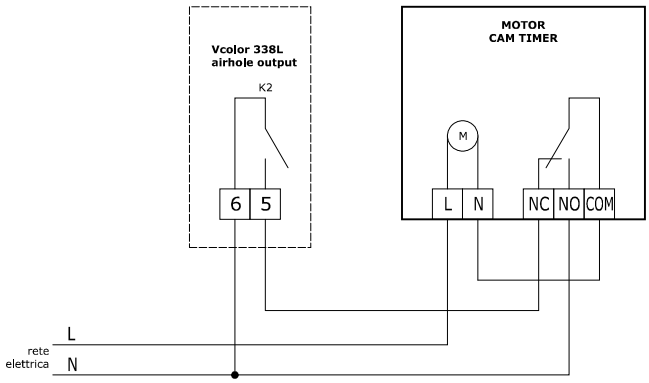


The RS-485 MODBUS port is the communication port with the following EVCO products:

- Parameters Manager set-up software system

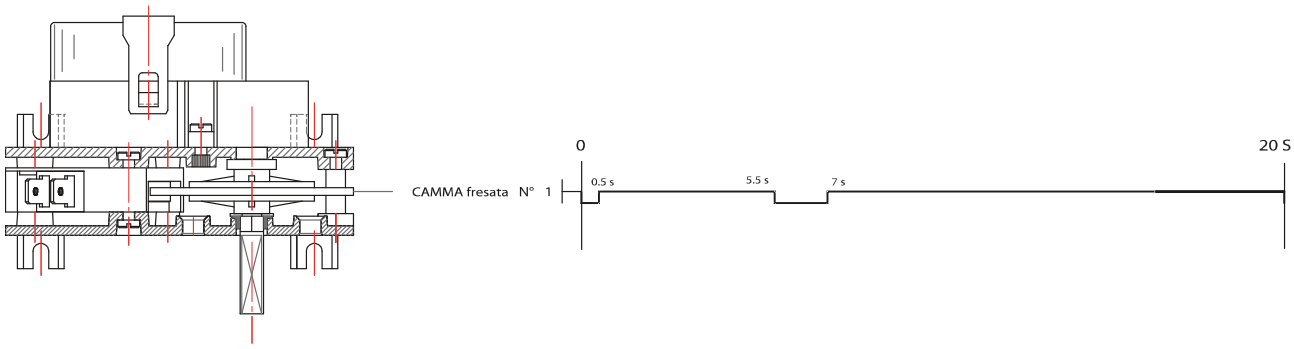
The USB communication port that allows the upload and download of the device settings, through a common USB pen drive.

Example of connection for motorized air vent cam timer.



The following scheme is an example of parameters set up for the cam timer below

u2 = 140 (14 seconds) time-delay for cam rotation
u3 = 10 (1 second) motor activation time for limit switch rearm (short milling)
u4 = 30 (3 seconds) motor activation time for limit switch rearm (long milling)



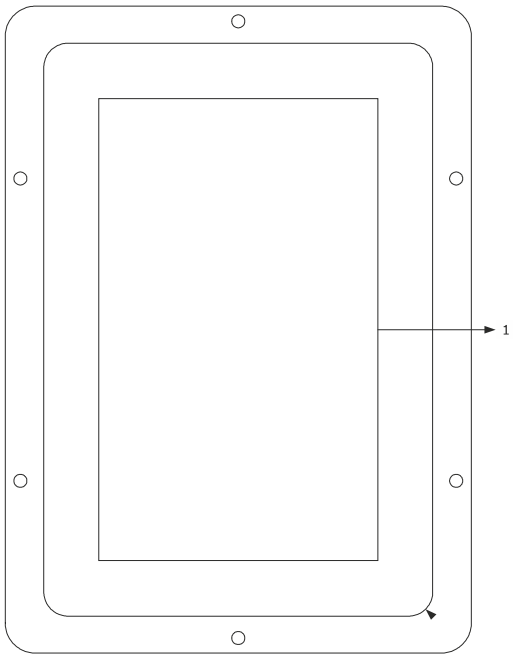
3.3 Warnings for the electric connection

- do not use electric or pneumatic screwdrivers on the device terminal board
- if the device has been taken from a cold to hot place, humidity could condense inside; wait about 1 hour before powering it
- make sure that the power supply voltage, the frequency and the device electric power, correspond to those of the local power supply; see chapter 20 “TECHNICAL DATA”
- disconnect the device power supply before proceeding with any type of maintenance
- position the power cables as far away as possible from the signal cables
- the terminating resistor must be connected in order to reduce the reflections on the signal transmitted along the cables that connect the user interface to the control module.
- for repairs and information regarding the device, contact the EVCO sales network.

4 DESCRIPTION

4.1 Description of the user interface

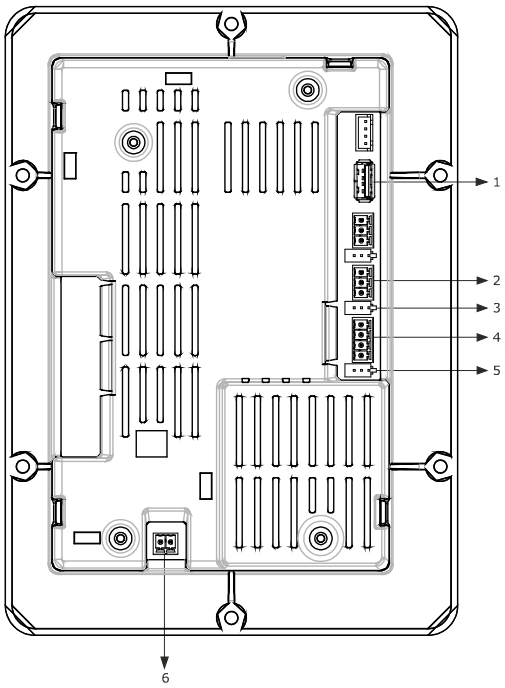
The following drawing illustrates the layout of the device user interface front panel.



The following table illustrates the meaning of the front parts of the device user interface.

PART	MEANING
1	display

The following drawing illustrates the layout of the device user interface rear panel.



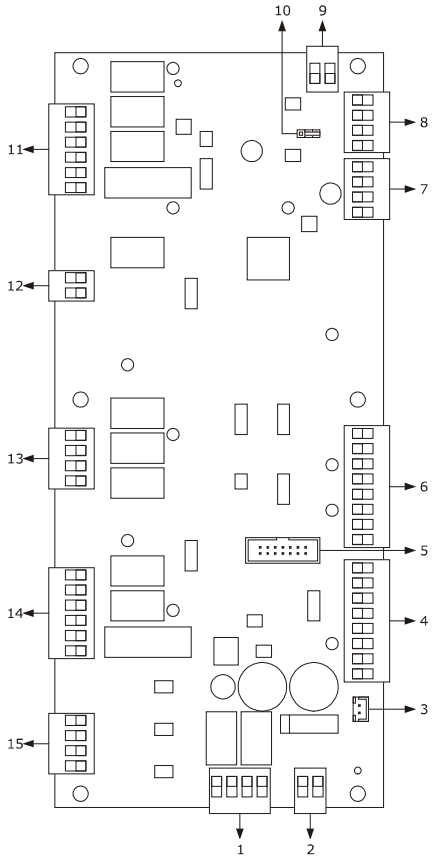
The following table illustrates the meaning of the rear parts of the device user interface.

PART	MEANING
1	USB port
2	MODBUS communication port
3	dip switch to activate the MODBUS RS-485 port terminal resistor
4	communication port with the user interface (power supply)
5	dip switch
6	ground

For further information, see the next chapters.

4.2 Description of the control module

The following drawing illustrates the layout of the device's control module.



The following table illustrates the meaning of the device control module parts.

PART	MEANING
1	digital outputs K1 and K2
2	power supply
3	external buzzer output
4	digital inputs for clean contact
5	reserved
6	analogue inputs
7	reserved
8	user interface communication port
9	analogue output
10	dip switch to activate the terminal resistor

11	digital outputs K10... K13
12	digital output K9
13	digital outputs K6... K8
14	digital outputs K3... K5
15	high voltage digital inputs

For further information, see the next chapters.

5 COMMISSIONING

5.1 Commissioning

Operate as indicated:

1. Install the device using the methods illustrated in chapter 2 "DIMENSIONS AND INSTALLATION", following all warnings given in paragraph 2.4 "Installation warnings".
2. Connect the device electrically using the methods illustrated in chapter 3 "ELECTRIC CONNECTION", following all warnings given in paragraph 3.3 "Warnings for the electric connection", without connecting the power supply and the mains electricity.
3. Connect the device power supply: a splash screen will be displayed for a few seconds.
4. Set the time, the date and the day of the week; see paragraph 16.1 "Setting the time, date and day of the week".
5. Configure the device with the procedure illustrated in the paragraph 16.2 "Setting the configuration parameters".
   The following table illustrates the meaning of the configuration parameters; the parameters are listed according to the appropriate configuration sequence.

PARAM.	MEANING	FACTORY SETTING
P0	Probe type 0 = thermocouple J (only in the J/K versions) 1 = thermocouple K (only in the J/K versions) 2 = Pt 100 (only in the Pt 100 versions)	0
P1	Unit of measurement 0 = °C 1 = °F	0
P2	Enabling the needle probe 1 = YES	0
F0	Type of fan management 0 = in "on/off" mode and at single speed 1 = in "on/off" mode, with single speed and with inversion of the direction of rotation of the fan 2 = in "on/off" mode, with dual speed and with inversion of the direction of rotation of the fan 3 = in modulating mode and with inversion of the direction of rotation of the fan	0
t0	Steam generation mode 0 = direct 1 = with an external humidifier 2 = combined (i.e. direct and with external humidifier)	0
u0	Air vent output contact type 0 = normally open (air vent opens when the contact is closed) 1 = normally closed (air vent opens when the contact is open)	0
u1	Utility managed by the air vent output 0 = ELECTROVALVE ON/OFF 1 = MOTORISED ELECTROVALVE - in this case the u2, u3 and u4 parameters will assume significance	0

K0	Enables rotor	0
W17	Cleaning type 0 = disabled 1 = with liquid detergent, no recycling 2 = with tablet detergent and recycling	1

Successively, check that the remaining settings are appropriate; see paragraph 16.3 "List of configuration parameters"

6. Connect to the electric mains.
7. Switch the device on; see the paragraph 7.1 "Switching the device on/off".

For further information, see the next paragraphs.

6 MANAGEMENT OF UTILITIES

6.1 Preliminary notes

This paragraph illustrates the activity of the utilities during normal operation.

To know the main consequences of an alarm, see chapter 16 "ALARMS".

6.2 Temperature regulation

According to parameter r13 the temperature regulation can be ON-OFF or PI (proportional-integral).

The PI regulation is available on for electric ovens.

In ON-OFF regulation, the output is on until the environment temperature reaches the work set-point and is switched back on when the temperature drops below the value established with the parameter r0 (i.e. "working set-point - r0").

In PI regulation, check parameters r0, r14, r15 and r16.

To set the work set-point, see paragraph 8.2 "Setting the cooking cycle"; to set the configuration parameters, see paragraph 16.2 "Setting the configuration parameters".

6.3 Steam injection

The steam generation mode depends on parameter t0, as follows:

- if the parameter t0 is set at 0, the steam will be generated in direct mode.
- if the parameter t0 is set at 1, the steam will be generated with an external humidifier
- if the parameter t0 is set at 2, the steam will be generated in combined mode (i.e. direct and with external humidifier); in this case the temperature established with parameter t12 determines the temperature above which the steam generated in direct-mode will be injected and below which the steam generated with an external humidifier will be injected (referring to the temperature detected by the environment probe).

The parameter t1 establishes the cycle time for the injection of the steam generated in direct mode and the parameter t2 the duration of the injection of the steam generated with the same mode corresponding to the maximum humidification.

The parameter t6 establishes the cycle time for the injection of the steam generated with external humidifier and the parameter t7 the duration of the injection of the steam generated with the same mode corresponding to the maximum humidification.

To set the humidification, see paragraph 8.2 "Setting the cooking cycle"; to set the configuration parameters, see paragraph 16.2 "Setting the configuration parameters".

6.4 Air Vent

The utility managed by the air vent output depends on parameter u1, as follows:

- if the parameter u1 is set at 0, the utility will be an on/off electrovalve
- if the parameter u1 is set at 1, the utility will be a motorised electrovalve

The air vent is opened automatically on conclusion of each phase of a cooking cycle.

To set the duration of the automatic air vent opening, see the paragraph 8.2 "Setting the cooking cycle".

The air vent is also opened/closed by touching the "manual" area.

6.5 Room light

The environment light is switched on/off by touching the reference area:  .

6.6 Technical compartment fan

The technical compartment fan is on until the temperature of use of the control module reaches the temperature established with parameter F6 and is switched back on when the temperature rises above that established with parameter F7 (i.e. "F6 + F7").

To set the configuration parameters, see paragraph 16.2 "Setting the configuration parameters".

6.7 Fan

The type of ventilation management depends on parameter F0, in the following way:

- if the parameter F0 is set at 0, ventilation will be managed in "on/off" mode and at single speed
- if the parameter F0 is set at 1, ventilation will be managed in "on/off" mode and at single speed and with inversion of the fan rotation direction
- if the parameter F0 is set at 2, ventilation will be managed in "on/off" mode and at dual speed and with inversion of the fan rotation direction
- if the parameter F0 is set at 3, ventilation will be managed in modulating mode and with inversion of the fan rotation direction

If parameter F0 is set at 0, 1 or 2, parameter F1 will establish the duration of fan switch off due to the inversion of the direction of rotation of the same and parameter F2 that of fan switch-on for every direction of rotation.

If parameter F0 is set at 3, the parameters F4 and F5 will establish the minimum and the maximum fan speed, the parameter F8 will establish the minimum fan speed that can be set on a cooking cycle.

To set the fan speed, see paragraph 8.2 "Setting the cooking cycle"; to set the configuration parameters, see paragraph 16.2 "Setting the configuration parameters".

6.8 Cooking fumes reduction

The cooking fumes reduction is active until the temperature detected by the fumes probe reaches the temperature established with parameter t13 and is turned back on when the temperature rises above the one established with the parameter t14 (i.e. "t13 + t14", only if the fumes probe is enabled, i.e.if parameter P3 is set at 1).

To set the configuration parameters, see paragraph 15.2 "Setting the configuration parameters".

6.9 Outputs management for special cleaning cycles

The controller has 4 relay outputs to manage two different types of cleaning:

- **Cleaning cycle with liquid detergent**, with no water recycling;
- **Cleaning cycle with tablet detergent**, with water recycling;
- **Cleaning cycle disabled**.

At the start of every cleaning cycle the room light turns on automatically, and can be turned off and back on again at any time with the dedicated switch.

Below is a detailed description of the two types of cleaning:

Cleaning cycle with liquid detergent, with no water recycling:

There are 4 management relays, each with a different function:

- **K10 Relay**: Mains water solenoid valve;
- **K11 Relay**: Liquid detergent injection pump;
- **K12 Relay**: Water drain pump;
- **K13 Relay**: Liquid rinse aid injection pump;

The cleaning cycle goes through 4 linked phases in cascade.

Phase 1 - Precleaning:

The oven temperature is raised to the precleaning level (w0 parameter) If the room temperature is lower, the heating output will be activated together with the ventilation, while at the same time closing the air vent.

If the temperature is higher than the set one, the controller will keep only the ventilation on, the air vent will remain open and a pop-up message will request the door to be opened in order to facilitate the cooling of the chamber.

When the temperature lies within the "*precleaning w0 - precleaning activation hysteresis authorisation (w1)*"setpoint range , the air vent closes, the door must be closed (if previously opened) and the controller will activate the K10 relay (mains water solenoid valve) for w2 minutes.

At the same time, the K12 relay: *water drain pump* will also be activated. Ventilation remains active for the whole duration of the phase, the heating output will keep the set temperature constant.

At the end of the w2 time, the resistors, ventilation, water solenoid valve and, after a w16 delay the water drain pump will be turned off.

Phase 2 -Cleaning:

The cleaning phase starts at the end of the precleaning. After time F1 (fan deceleration) has elapsed, the K11 (liquid detergent injection) relay is activated for w4 seconds.

After the w4 time has elapsed, there is a w5 minutes pause to allow the detergent to act.

After the w5 time has elapsed, the machine starts heating again, with active ventilation, bringing the chamber up to the cleaning temperature (parameter w3); after the t11 time has elapsed, the controller will start injecting steam in the chamber (with 100% setting) for a total time of w6 minutes.

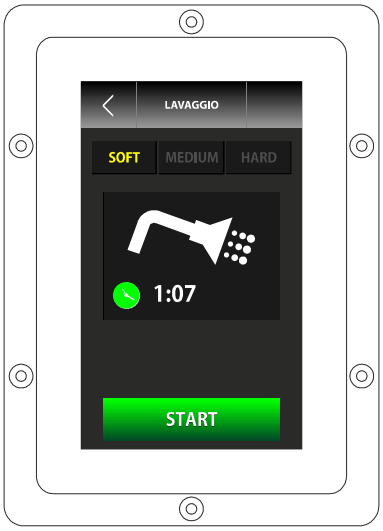
After the w6 time has elapsed, the controller commands a brief rinse of the chamber by activating the K10 (mains water solenoid valve) relay for w7 seconds.

The K11 and K10 relays are activated for 32 seconds.

Phase 2 of the cleaning cycle can be repeated:

- 1 time (soft cleaning)
- 2 times (medium cleaning)
- 3 times (hard cleaning)

according to the settings input by the final user during the cycle selection/setting phase.



Phase 3 - Rinse aid:

The "Rinse aid" phase starts after the end of the cleaning cycle.

The K13 relay: "liquid rinse aid injection pump" is activated for w9 seconds, followed by a pause of w10 seconds to allow the rinse aid to become effective.

After the w10 time has elapsed, the machine starts heating again, with active ventilation, bringing the chamber up to the rinse aid action temperature (parameter w8); after the t11 time has elapsed, the controller will start injecting steam into the chamber (with 100% setting) for a total time of w11 minutes.

Important: with the w9=0 setting the "rinse aid" phase is bypassed entirely.

Phase 4 - Rinse:

The rinse phase starts at the end of the Rinse aid cycle.
The machine (with active ventilation) will be brought to the rinse temperature (parameter w12), the controller will activate relay K10 (mains water solenoid valve) for w13 minutes. At the same time, the K12 relay (water discharge pump) will also be activated.
Ventilation remains active for the whole duration of the phase, the heating output will keep the set temperature constant.
After the w13 time has elapsed, the mains water solenoid valve will be turned off and after a w16 delay the water drain pump will be deactivated.

Phase 5 - Drying:

The drying phase starts at the end of the rinse cycle.
The machine (with active ventilation) will be brought to the drying temperature (parameter w14) for w15 minutes and the air vent will open. After this time has elapsed, the cleaning cycle will end, all outputs will be turned off, including the room light and the machine will go to the ON screen.

Cleaning cycle stop

If the cycle is stopped manually during the precleaning, rinse or drying phase, the cycle stops immediately.
If the cycle is stopped manually during the cleaning or rinse aid phase, the machine will go to the rinse cycle and stop at the end of that phase.
During any phase, the black-out alarm will reset the ongoing phase.
If the door is opened at any time, the cycle is paused and starts again when the door is closed.

Cleaning cycle with tablet detergent, with water recycling;

There are 4 management relays, for:

- **K10 relay**: condenser mains water solenoid valve
- **K11 relay**: water recirculation pump
- **K12 relay**: condenser water drain pump
- **K13 relay**: not used

This kind of cleaning can also be supported by a dedicated probe to check the drain temperature of the water used for cleaning, as it should not exceed 60-75°C in order to be drained into the sewers (national regulation).

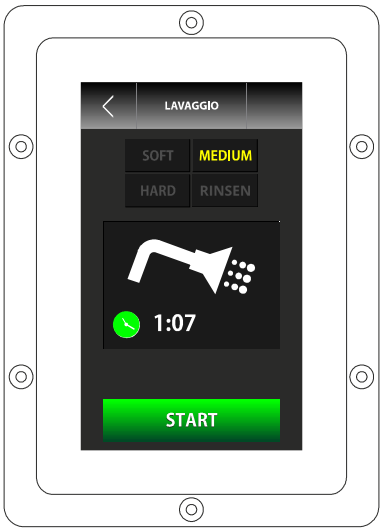
To enable the water drain temperature control, the relevant probe (rather than the fumes one) must be turned on with parameter P3=2.

The cleaning cycle with tablet allows a choice to be made among 4 different types:

- Rinse
- SOFT cleaning.
- MEDIUM cleaning.
- HARD cleaning.

The "Rinse" cleaning type is a special sequence cycle, while the other cycle types differ in the number of repetitions of the cleaning phase carried out.

The following picture shows the "CLEANING" selection screen, where it will be possible to select one of the four–types of cleaning



Cycle selection and start

If a RINSE cycle is selected and started, the machine will go immediately into pre cleaning mode.
If one of the other three available types is selected, instead, the controller will ask for the input of the–number of detergent doses to be injected in the chamber:

- 2 doses = SOFT cleaning
- 4 doses = MEDIUM cleaning
- 6 doses = HARD cleaning

After injecting the detergent (the machine does not check whether the detergent has actually been injected), press the START button again to start the precleaning phase.

Phase 1 - Precleaning:

The oven temperature is raised to the precleaning level (w0 parameter) If the room temperature is lower, the heating output will be activated together with the ventilation, while at the same time closing the air vent.

If the temperature is higher than the set one, the controller will keep only the ventilation on, the air vent will remain open and a pop-up message will request the door to be opened in order to facilitate the cooling of the chamber.
When the temperature lies within the "*precleaning w0 - precleaning activation hysteresis authorisation (w1)*"setpoint range , the air vent closes, the door must be closed (if previously opened) and the controller will activate the K10 relay (mains water solenoid valve) for w2 minutes, during which the condenser will be charged with water and filled to

allow the recirculation pump to collect the water needed for the various cleaning phases.
Ventilation remains active for the whole duration of the phase, the heating output will keep the set temperature constant.
After the w2 time has elapsed, the machine operation will vary according to the type of cycle selected: RINSE or CLEANING cycle.

Phase 2A - RINSE

The selected cycle is performed at the end of the Pre cleaning phase.
The counting of one w10 minutes cycle starts now: during this time, the "condenser mains water inflow solenoid valve", "Direct steam injection" and "water recirculation pump" outputs will be activated with the ventilation on at maximum speed.
After the w10 time has elapsed, the machine will go back to the HOME screen and keep the Water Discharge Pump output in operation for the time w9 in order to empty the condenser.
If the door is opened or the STOP key pressed, the cycle will be immediately interrupted and the machine will go back to the HOME screen.

Phase 2B - Cleaning Preparation

The oven is brought to the cleaning preparation temperature (parameter w8) with 100% humidification for w11 minutes, and in the meanwhile the K10 (condenser mains water inflow solenoid valve) relay will also be activated.
Once the correct temperature is reached, all the outputs except the ventilation one will de deactivated until the temperature has fallen below the w18 temperature; then the regulation, steam injection and mains water injection tasks will be taken up again. After the w11 time has elapsed, the cycle will go on to the next phase.

Phase 3B - Cleaning

At the end of the cleaning Preparation phase, the cycle will launch the cleaning phase.
The cleaning phase sets a w5 time during which the oven is brought to the cleaning temperature (parameter w3), ventilation is always active at full speed, the recirculation pump is started and will pump the hot water from the condenser into the chamber flooding the detergent tablets.
In this phase there is no steam injection.
After w5, a w6 time is set. The machine disconnects all utilities (except power) to allow the detergent to act.

The ***Duty Cycle*** comprising w5 and w6 will be repeated:

- **3 times** if the cleaning cycle is **SOFT**;
- **6 times** if the cleaning cycle is **MEDIUM**;
- **9 times** if the cleaning cycle is **HARD**;

During the entire cleaning phase, if enabled through the P3 parameter and if the value of the Water Drain probe exceeds the maximum water drain set point (parameter w19), the controller will activate the Mains Water Injection output to allow the condenser temperature to drop.
The differential for this adjustment is fixed and equal to -10°C, that is to say, water inflow stops when the temperature read by the **Water Drain** sensor drops by 10°C as against the maximum water drain e set point (parameter w19).
At the end of the number of cycles set for the current one, the machine will go on to the next phase.

Phase 4B - Rinse

This phase has a duration of w13, during which time the condenser mains water injection, the direct steam injection and the maximum speed ventilation will be active.
No heating phase and no recycling phase are entailed. After the w13 time has elapsed, the cycle will go on to the next phase.

Phase 5B - Drying

The drying phase starts at the end of the rinse cycle.
The machine is brought to the drying temperature (parameter w14) and with the ventilation on at maximum speed for w15 minutes, after which the cycle ends and the machine goes back to the HOME screen.

Cleaning cycle stop:

If the cycle is stopped manually during the 1, 2A, 2B or 5B phases, the machine will stop immediately.
If the cycle is stopped manually during the 3B phase, the machine will go on to the 4B phase and then will stop at the end of the 4B phase. If the cycle is stopped manually during the 4B phase, the cycle will continue with the ongoing phase and then will stop.
If the door is opened at any time, (from the moment in which the desired temperature has been attained during phase one with the closing of the air vent at the end of phase 5), this will immediately interrupt the cycle and reset the machine to the HOME screen.
A black-out alarm triggered during any phase will reset the running phase

6.10 User interface variant for ROTOR ovens management

The ROTOR management controller differs from a COMBI one due to the additional presence of:

- rack rotation motor control relay
- rack limit switch digital input that determines the STOP position

Management of the motor rotation control relay output and rack limit switch digital input

The motor rotation output is activated automatically at the start of the oven preheating phase .

It will be possible to stop or restart the rotation at any moment, with the relevant motor rotation/stop key in the user interface; the motor will stop at the next forthcoming activation of the limit switch input, which indicates the position allowing the rack to be extracted after opening the door.
If the limit switch input is fault, incorrectly wired or not installed (e.g., for rotor ovens with non removable rack), the rack will stop after a maximum time determined by parameter k2.

If the door is opened while the rack is rotating, the output stops immediately (without waiting the limit switch activation and the expiration of the maximum time period), to avoid any hazard for the operator.
With the door closed, parameter k1 will establish whether the rack starts to rotate again automatically or remains still in the position it was before the door opening.

7 USER INTERFACE

7.1 Switching the device on/off

Operate as follows to switch the device on:

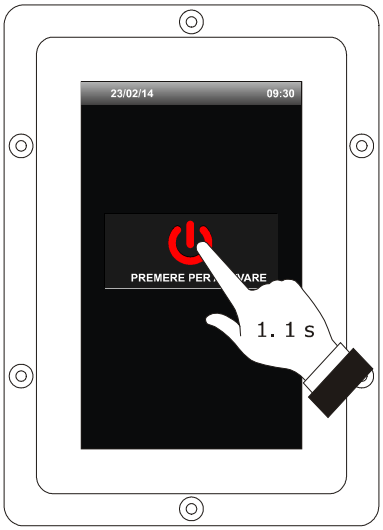
1. Touch .

Operate as follows to switch the device off:

2. Make sure no procedures are in progress.
3. Touch .

If there is a power cut when the device is on or off, when the power supply is restored the device will back to the prior status.

If there is a power cut during the cooking cycle and the duration of said interruption is lower than the time established with parameter r12, when the power supply is restored, the cycle will be re-proposed from the start of the phase during which the power cut occurred (if the duration of the interruption is longer than the time established with parameter r12, when the power supply is restored, the cycle will be interrupted).



Device switch-on.

Device switch-off.

7.2 Silencing the buzzer

Operate as follows to silence the buzzer:

1. Make sure no procedures are in progress.
2. Touch a sensitive area of the display.

8 COOKING CYCLE

8.1 Preliminary notes

Every cooking cycle is preceded by preheating (on condition that Delta T cooking has not been set; the work set-point is relative to the work set-point during the first phase of the cooking cycle, i.e. "work set-point during the first phase of the cooking cycle + work set-point during preheating")

During pre-heat, the fan is switched-on at maximum speed, the humidification is the same of the first cooking cycle phase.

When the temperature detected by the environment probe reaches the work set-point, the buzzer is activated for 3 s.

The opening and closing of the door causes the passage to the first phase of the cooking cycle.

Every cooking cycle is made up from a minimum of one to a maximum of six phases; on conclusion of a phase, the device moves automatically to the next.

For every phase, the device can manage the following settings:

- the type of cooking:
- timed (the phase has duration for the time set and the work set-point is an absolute value)
- with Delta T (only if the needle probe is enabled, i.e. if parameter P2 is set at 1; the phase has duration until the temperature detected by the needle probe reaches the core set-point and the work set-point is a delta referred to the temperature detected by the needle probe, i.e. "temperature detected by the needle probe + Delta T set-point)
- core (only if the needle probe is enabled, i.e. if the parameter P2 is set at 1; the phase has duration until the temperature detected by the needle probe reaches the core set-point and the work set-point is an absolute value)
- the work set-point (only if timed or core cooking has been set)
- the Delta T set-point (only if Delta T cooking has been set)
- the humidification
- the duration of the phase (only if timed cooking has been set)
- the core set-point (only if Delta T or core cooking has been set)
- the fan speed (only if fan management has been set in "on/off" mode with dual speed or in modulating mode, i.e. if the parameter F0 is set at 2 or 3)
- anticipation time of the air vent automatic opening before phase conclusion (only if timed cooking has been set).

The controller can manage removable needle probes.

8.2 Setting the cooking cycle

Operate as follows to set the cooking type:

1. Ensure that the device is switched on and that no other procedure is in progress.
2. Touch the "manual" key:
3. Touch to set:
   - the cooking time:
   - the cooking at Delta T
   - the core cooking:

Operate as follows to set the work set-point:

4. Touch the key
5. Touch the "slide bar" see also parameters r1 and r2.
6. Touch the green icon: to confirm, or the red one: to exit.

Operate as follows to set the Delta T set-point:

7. Touch the key
8. Repeat points 5. and 6.; see also parameters r7 and r8.

Operate as follows to set the humidification:

9. Touch the key
10. Repeat points 5. and 6.

Operate as follows to set the duration of the phase:

11. Touch the key
12. Repeat points 5. and 6.

Operate as follows to set the core set-point:

13. Touch the key
14. Repeat points 5. and 6.; see also parameters r4 and r5.

Operate as follows to set the fan speed:

15. Touch the key and select the desired speed
16. Repeat points 5. and 6.

Operate as follows to set the duration of the automatic air vent opening:

17. Touch the key and then select
18. Repeat points 5. and 6.

Setting the cooking cycle.

Setting the cooking type.

Setting the work set-point.

To select/scroll the cooking cycle phases, proceed as follows:

19. Touch the reference bar 

Operate as follows to add a phase to the cooking cycle:

20. Touch the "add phase" key 

Operate as follows to eliminate the last phase from the cooking cycle:

21. Select the phase.

22. Touch the "Delete phase" key 

To terminate the setting of a program, proceed as follows:

23. From any phase in the cycle ...

24. Touch the "Delete Recipe" key 

Once the program has been set, the controller will display a summary of the set cycle.
From this screen it is possible to:

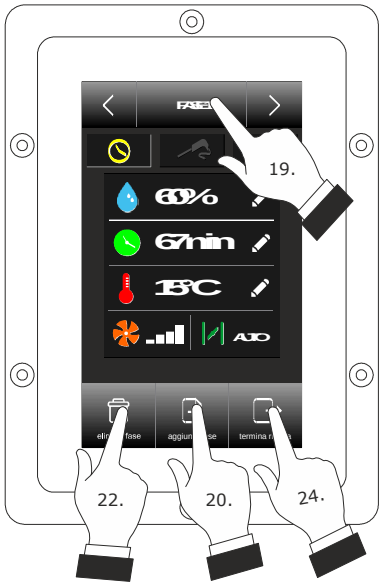
25. back to cycle settings:
    Key  or

26. key 

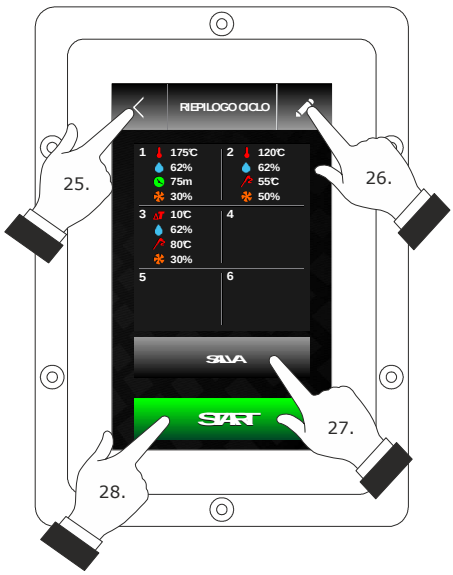
27. Save the set cycle, touching the relevant key: 

28. Start the set cycle, touching the relevant key: 

Note: The duration of an infinite time cycle cannot be modified during the cooking. The duration of a finite time cycle can be modified during the cooking but cannot be set to infinite time.



Cycle setting screen



Set cycle summary screen

8.3 Starting the cooking cycle

Once the cooking cycle has been launched, preheating will start.

Opening and closing the door or pressing on the status bar causes the machine to start the first phase of the cooking cycle.

During preheat and during the cooking cycle, the display shows the value of the variables affected by the process and the relative setting.

To modify the settings; see the paragraph 8.2 "Setting the cooking cycle".

Touch:

- to open/close the air vent
- to switch the environment light on/off
- to display the value of the process variables and machine status.

On conclusion of the cooking cycle, the buzzer is activated for the time established with parameter c0.

Operate as follows to extend the cooking cycle:

3. Touch PROLUNGA ? .
   A screen enabling the extension of the cooking cycle is displayed.
4. Touch the slide bar to set the desired value
5. Touch the green icon to confirm.

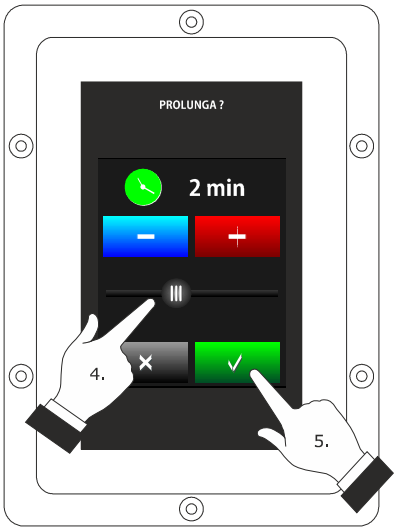
8.4 Stopping the cooking cycle

Operate as follows to stop the cooking cycle:

1. Make sure no procedures are in progress.
2. Touch for 1 s.

Starting the cooking cycle and Pre-heat

End or interruption of the cooking cycle



Extension of the cooking cycle.

9 "MY COOKBOOK" FUNCTION

9.1 Preliminary notes

The "MY COOKBOOK" function allows to memorise the settings of a cooking cycle in a recipe; when starting up the recipe, the device will function with the memorised settings.
It is possible to save up to max. 99 recipes.

9.2 Saving a recipe

With the device on and in "Cycle recap" mode it is possible to save a recipe, proceeding as follows:

1. Set the cooking cycle; see the paragraph 8.2 "Setting the cooking cycle".
2. Touch "SAVE" 

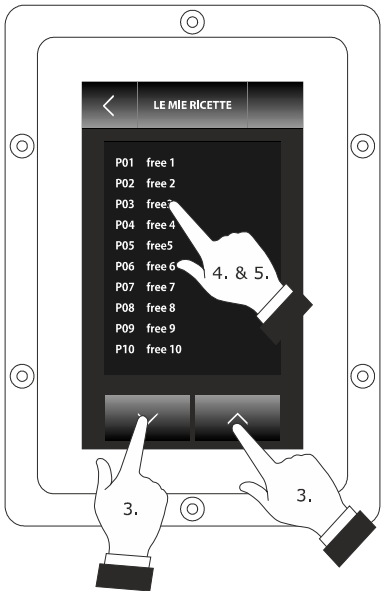
This allows to access the "MY COOKBOOK" screen, where it will be possible to select the recipe to be saved.

3. Touch  or  to scroll through the pages with list of recipes.
4. Touch the name of the relevant recipe to save it.
5. Touch the display to associate a new name to the recipe.
6. Touch  to exit the procedure without overwriting
7. Touch  to confirm.

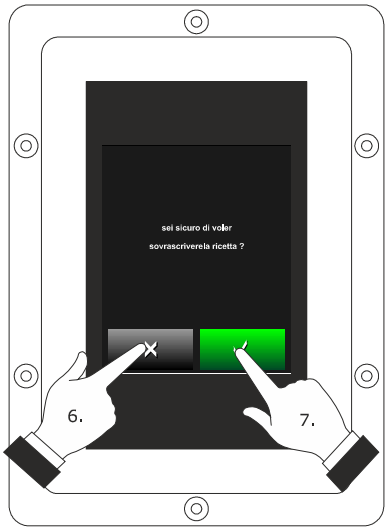
If the name of the recipe needs to be changed, proceed as follows:

4. Touch the name of the selected recipe
5. Touch  to confirm.

Cycle recap screen to access "My Cookbook"



"My Cookbook" screen.



Recipe overwriting screen

Memorising a recipe

9.3 Starting a recipe

Operate as follows to start a recipe:

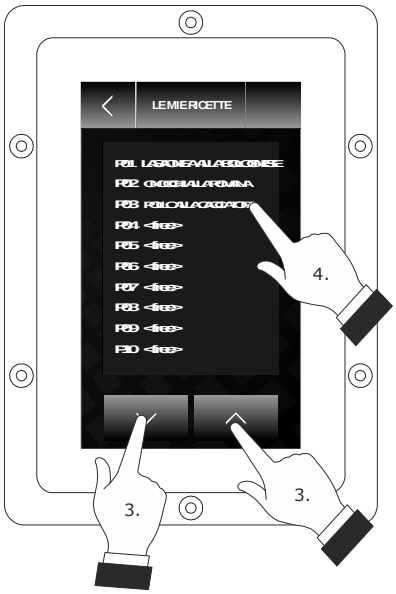
1. Ensure that the device is switched on and that no other procedure is in progress.
2. Touch the "Recipes" key
3. Touch or to select the recipe.
4. Touch the display next to the relevant recipe
5. Touch START : the recipe will be activated.
6. Touch to enter the recipe settings and change them

9.4 Deleting a recipe

Operate as follows to delete a recipe:

1. From item 4. of paragraph 9.3 "Starting a recipe", touch "delete" to delete the reference recipe.

Access to a recipe.



10 "SPECIAL CYCLES" FUNCTION

10.1 Preliminary notes

The "Special cycles" function allows to use the work cycles made available by EVCO.

One of the following work cycles can be started:

- core regeneration cycle (only if the needle probe is enabled, i.e. if parameter P2 is set at 1)
- timed regeneration cycle
- timed proofing cycle
- environment cooling cycle.

The following table illustrates the factory settings of the core regeneration cycle.

SETTING	DEFAULT	MINIMUM... MAXIMUM
work set-point	110 °C	20... 180 °C
humidification	70 %.	40... 100 %.
core set-point	70 °C	20... 100 °C
fan speed	minimum	
air vent opening	on conclusion of the cycle	

The following table illustrates the factory settings of the timed regeneration cycle.

SETTING	DEFAULT	MINIMUM... MAXIMUM
work set-point	110 °C	20... 180 °C
humidification	70 %.	40... 100 %.
duration of the phase	25 min	1... 90 min
fan speed	minimum	
air vent opening	on conclusion of the cycle	

The following table illustrates the factory settings of the timed proofing cycle.

SETTING	DEFAULT	MINIMUM... MAXIMUM
work set-point	30 °C	20... 50 °C
humidification	80 %.	40... 100 %.
duration of the phase	120 min	1... 300 min
fan speed	minimum	
air vent opening	on conclusion of the cycle	

The following table illustrates the factory settings of the environment cooling cycle; the opening and closing of the door does not cause any consequence.

SETTING	DEFAULT	MINIMUM... MAXIMUM
work set-point	50 °C (param. r11)	0... 500 °C
fan speed	maximum, without inversion of rotation direction (if envisioned)	
air vent opening	at the start of the cycle, for the entire duration of the same	

10.2 Starting a special cycle

Operate as follows to start a special cycle:

1. Ensure that the device is switched on and that no other procedure is in progress.
2. Touch the "specials" key 
3. Touch the identification icon of the special cycle.
4. Then touch 

to start the cycle

Note: In the picture on the left (***Start a special cycle***) the special cycle refers to ***leavening***, but the procedure is the same as that for the start of all the remaining special cycles: regeneration, cooling and cleaning.

Access to a special cycle.

Starting a special cycle.

11 "FAVOURITE CYCLES" FUNCTION

11.1 Preliminary notes

The "Favourite cycles" function allows to start one of the last 10 work cycles performed.

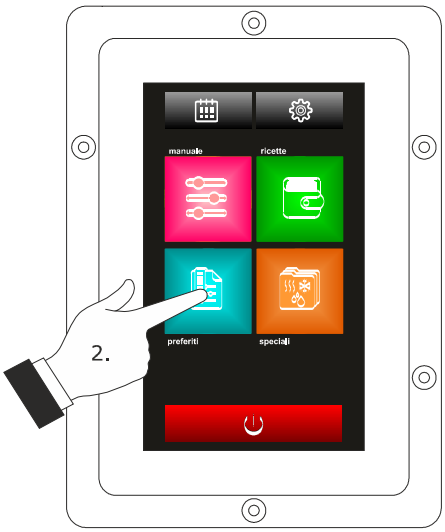
One of the following types of work cycle can be started:

- cooking cycles set with the procedure illustrated in the paragraph 8.2 "Setting the cooking cycle" (in this case, the last cycle performed can be started)
- recipes from the "MY COOKBOOK" function
- "Special cycles" function work cycles.

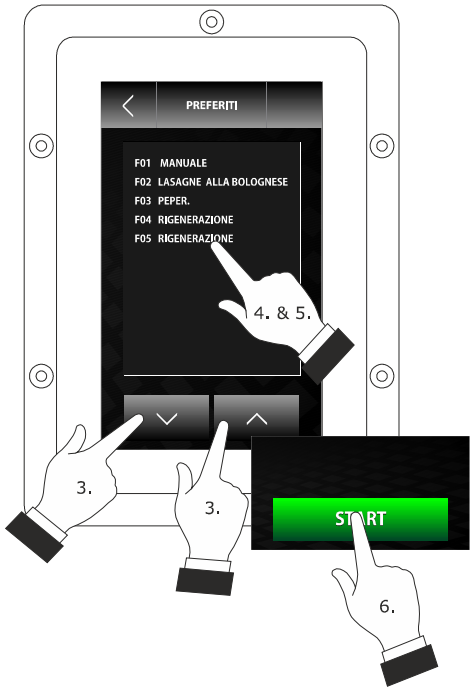
11.2 Starting a favourite cycle

Operate as follows to start a favourite cycle:

1. Ensure that the device is switched on and that no other procedure is in progress.
2. Touch the "favourites" icon 
3. Touch the identification icon of the interested special cycle
4. Touch START : the favourite cycle will be started.



Access to a favourite cycle.



Starting a favourite cycle.

12 "WEEKLY PROGRAMMED SWITCH-ON" FUNCTION

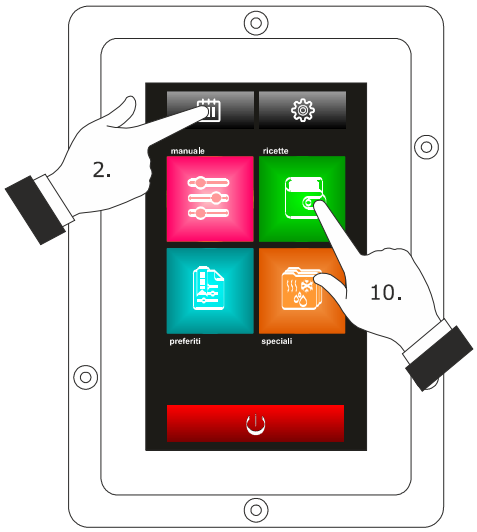
12.1 Preliminary notes

The "Weekly programmed switch-on" function allows to program up to a maximum of 9 weekly switch-ons of the device and simultaneously start a recipe; see chapter 9 ""MY COOKBOOK" FUNCTION".

12.2 Setting the "weekly programmed switch-on" function

Operate as follows to access the procedure:

1. Ensure that at least one recipe is memorised, that the device is on and that no other procedure is in progress.
2. Touch the key  .



Access to the setting procedure of the function

Operate as follows to set the switch-on day:

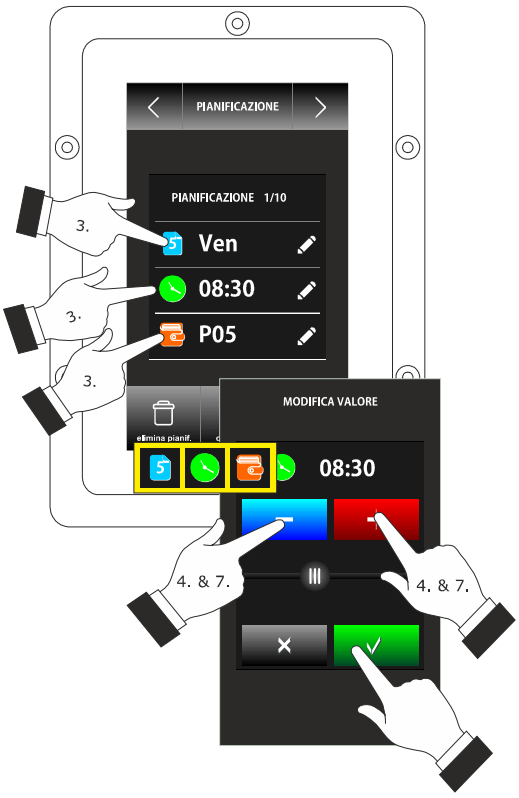
3. Touch  .

The "Scheduling" screen will be displayed, and from there it is possible to proceed with the settings.

4. Touch  or  (within 15 s) to reduce or increase the relevant value.
5. Touch the key  to confirm the input value.

Operate as 0066ollows to set the switch-on time:

6. Touch  .
7. To set the time, touch  or  (within 15 s) to reduce or increase the relevant value.
8. To set the minutes, touch the display near the centre, , touch  or  (within 15 s) to reduce or increase the relevant value.
9. Touch the key  to confirm the input value.



Setting the start time and the functions time

To select the recipe to be launched, from the main screen proceed as follows:

10. Touch the "Recipes" key  .
11. Repeat item 3. ... 5. of paragraph 9.3 "Starting a recipe".

12.3 Enabling the "Weekly programmed switch-on" function

Operate as follows to access the procedure:

1. Ensure that at least one switch-on is set, that the device is on and that no other procedure is in progress.
2. Touch for 1 s.

Operate as follows to select a switch-on:

3. Touch or .

Operate as follows to modify a switch-on:

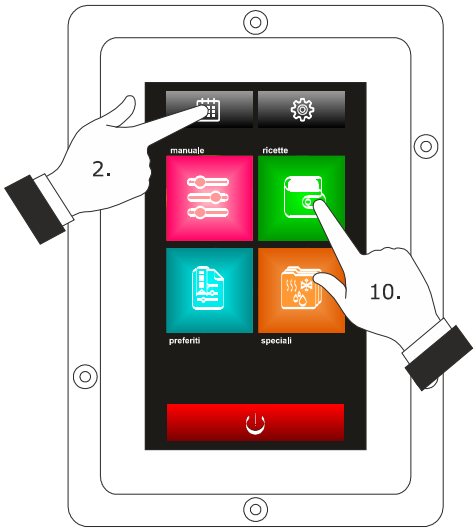
4. Repeat. Points from 3 to 11 of paragraph 12.2 "Setting the "weekly programmed switch-on" function".

Operate as follows to activate the function:

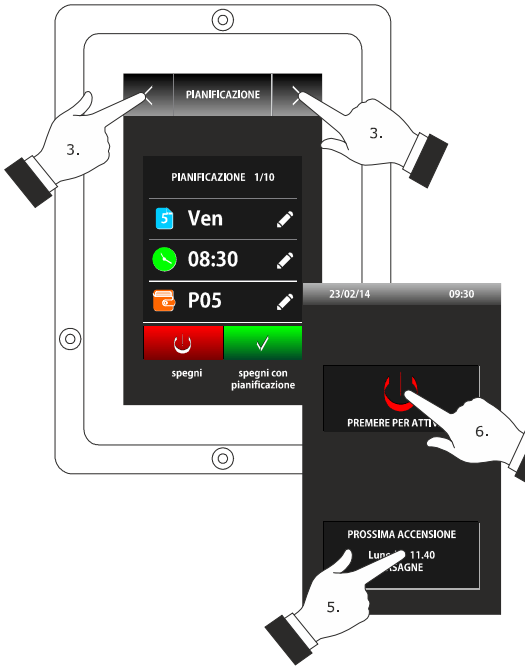
5. Touch .

Operate as follows to deactivate the function:

6. Touch before point 4.



Access to the function activation procedure "Weekly programmed switch-on".



Selection of a switch-on and activation of the function "Weekly programmed switch-on".

13 OTHER FUNCTIONS

13.1 Display of the alarms status

Operate as follows to access the procedure:

1. Ensure that the device is switched on and that no other procedure is in progress.
2. Touch  .
3. Touch "LIST OF ALARMS".

13.2 Display of the process variables value and of the machine status

Operate as follows to access the procedure:

1. Ensure that the device is switched on and that no other procedure is in progress.
2. Touch  .
3. Touch "INTERNAL VALUES".

13.3 Setting the language used for the screens

Operate as follows to access the procedure:

1. Ensure that the device is switched on and that no other procedure is in progress.
2. Touch  .
3. Touch "**LANGUAGES**" to select the language.
4. Touch the desired language on the display.

14 BOILER EXPANSION

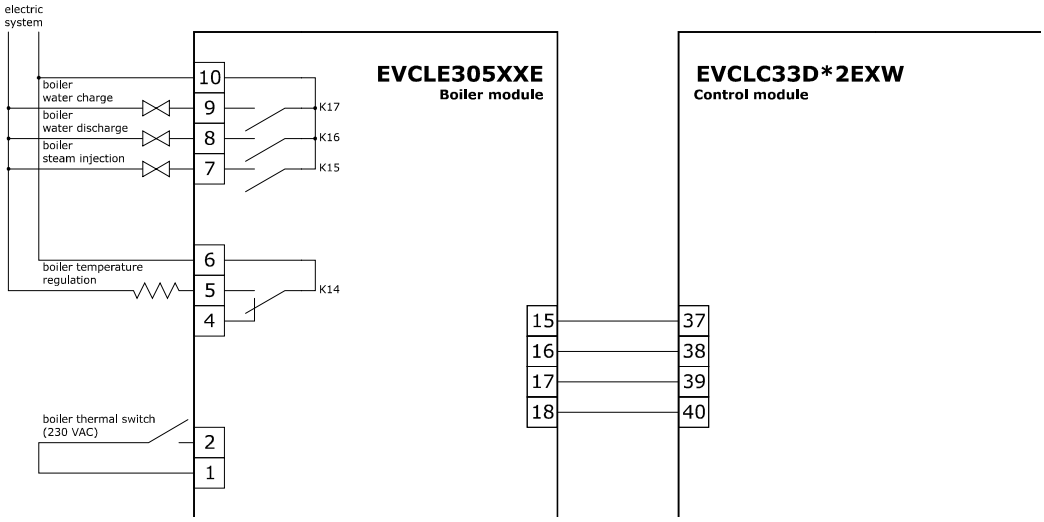
14.1 Activation of the expansion

To enable the boiler expansion EVCLE305XXE, it will be necessary to respect the following conditions.

1. Enable the boiler through parameter T15 (T15 = 1)
2. Set the steam generation mode with external or mixed humidification through parameter T0 (T0 = 1 o 2)
3. Turn the device on

14.2 Electrical connection

Example for Vcolor 338L.



14.3 Operation

14.3.1 Water charge management

When the device is ON, the water is charged and kept above the maximum level.

If the minimum required level is not reached within the expected time (parameter t27), the alarm "MIN BOILER WATER LEV" will be activated.

If the maximum required level is not reached within the expected time (parameter t28), the alarm "MAX BOILER WATER LEV" will be activated.

These alarms can be manually reset from 

key., pressing  the alarm will be reset and a new water charge cycle will be started.

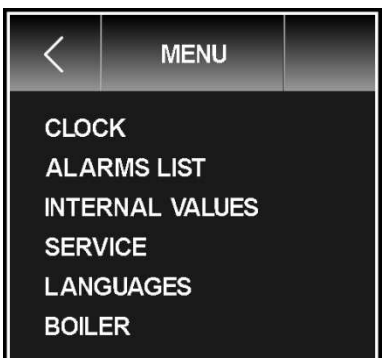
14.3.2 Water heating management

When the device is ON, the water is heated and maintained at "Boiler steam holding temperature" (parameter t18). While cooking, cleaning the boiler or the room, the water is heated and maintained at "Boiler steam working temperature" (parameter T17).

When water is not sufficient (minimum level not reached), the control is deactivated.

14.3.3 Boiler rinse

It is possible to access the BOILER menu from the settings menu.



In the BOILER menu, it will be possible to select the function RINSE

Starting this cycle, the following phases will be performed:

1. Water charge to maximum level.
2. Water drain.
3. Water charge to maximum level.
4. Water drain.

If the drain fails, the alarm "BOILER DRAIN" will be activated and it will be possible to reset it from 

key.
If the maximum required level is not reached within the expected time (parameter t28), the alarm "MAX BOILER WATER LEV" will be activated and it will be possible to reset it from 

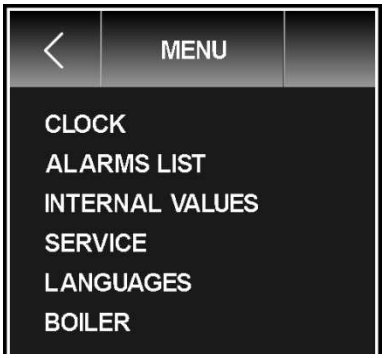
key.
In the event of "BOILER DRAIN" or "MAX BOILER WATER LEV" alarms, the rinse will temporarily stop until the cause is removed.
To exit, press the 

key; to stop the cycle during an alarm, keep pushed the 

key for 4 seconds.

14.3.4 Boiler cleaning

It is possible to access the BOILER menu from the settings menu.



In the BOILER menu, it will be possible to select the function CLEANING

When pressing CLEANING, a password will be requested (default "1").
Starting this cycle, the following phases will be performed:

1. Water charge to maximum level.
2. Water drain.
3. Descaler charge request: the charge will be manually performed, to proceed press the  key.
4. Water charge to maximum level.
5. Descaler action activation: its duration depends on parameter t22, while the water heating to a certain temperature depends on parameter t23.
6. Water drain.
7. Water charge to maximum level.
8. Cleaning action activation: its duration depends on parameter t24, while the water heating to a certain temperature depends on parameter t25.
9. Next step is point 6. The cleaning phase (points 6,7,8) will be performed a certain number of times according to parameter t26. The cleaning ends with the Boiler water drain.

If the drain fails, the alarm "BOILER DRAIN" will be activated and it will be possible to reset it from SCARICO BOILER key.

If the maximum required level is not reached within the expected time (parameter t28), the alarm "MAX BOILER WATER LEV" will be activated and it will be possible to reset it from BOILER ACQUA LIV. MAX key.

In the event of "BOILER DRAIN" or "MAX BOILER WATER LEV" alarms, the rinse will temporarily stop until the cause is removed.

To exit, press the STOP key; to stop the cycle during an alarm, keep pushed the STOP key for 4 seconds.

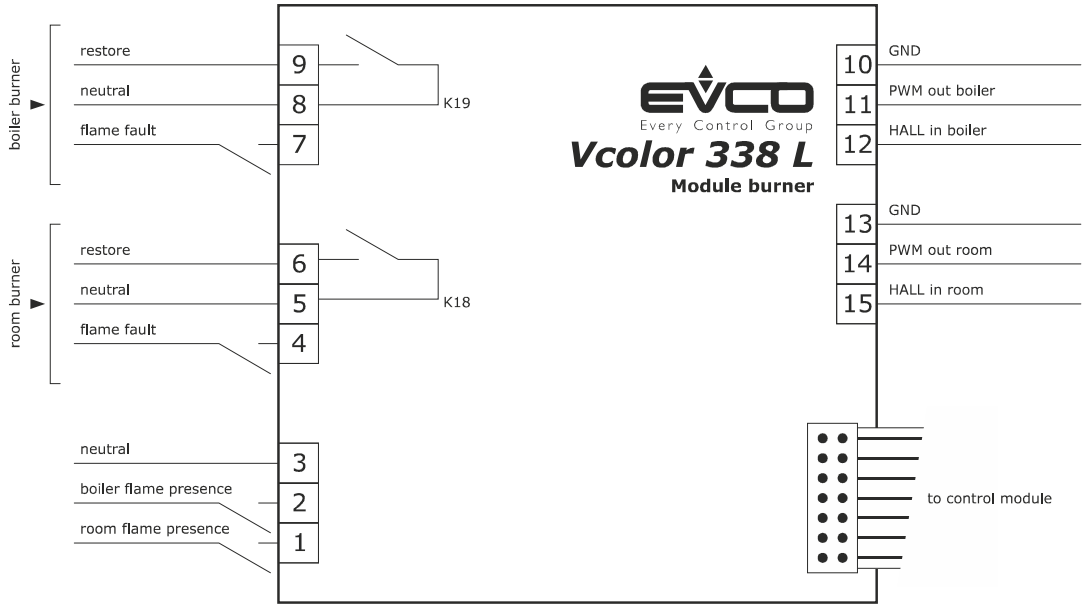
15 BURNERS EXPANSION

15.1 Expansion activation

To enable the burners expansion, it will be necessary to set the parameter b14 = 1 (gas oven).

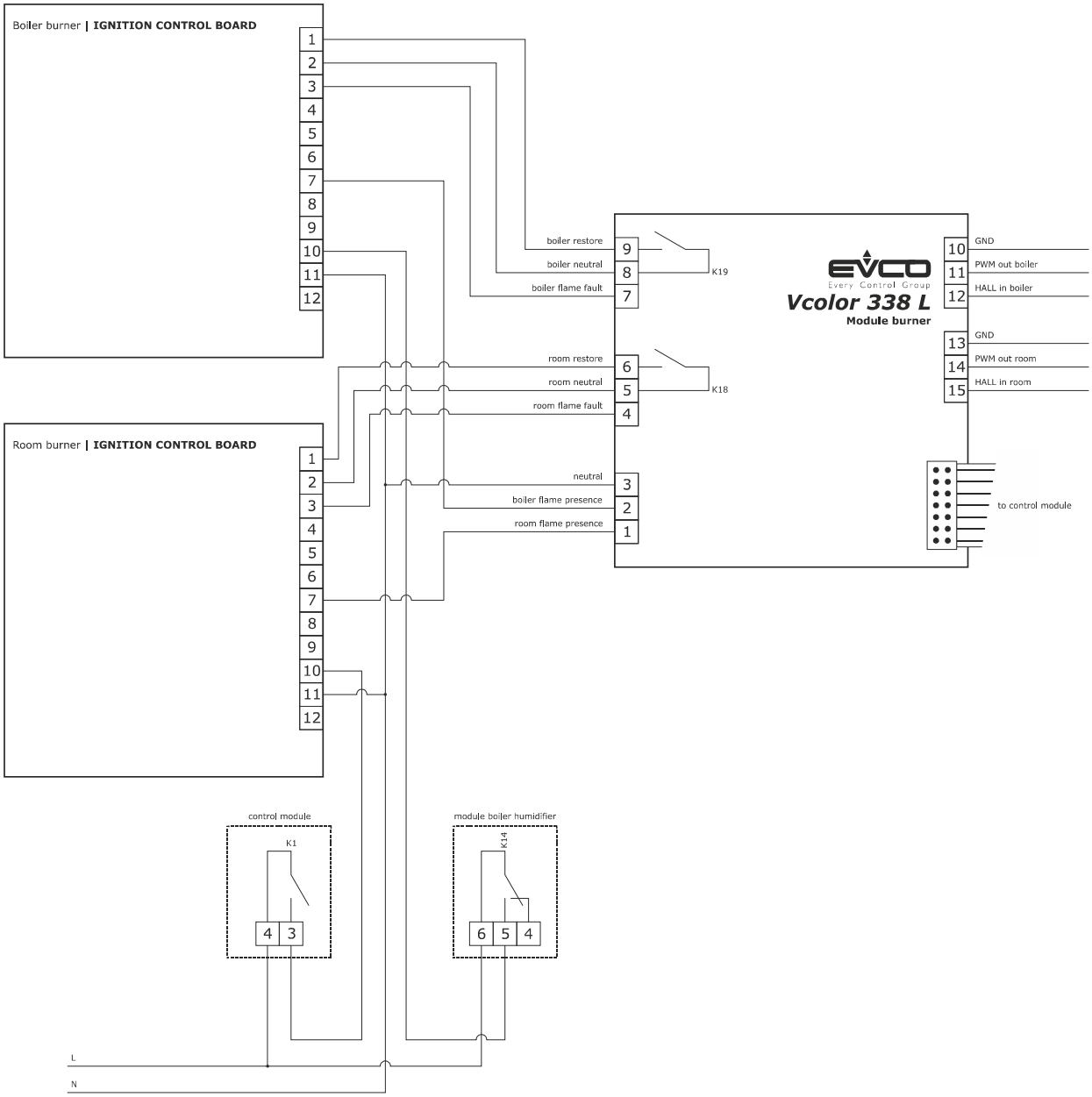
15.2 Electrical connection

Example for Vcolor 338L.



15.3 Application scheme

The burner module EVCLE302XXE interacts with electronic ignition control boards for atmospheric burners such as "Honeywell 4565"series (and similar) and with variable speed centrifugal fans with PWM control signal+ feedback (HALL sensor).
Example for Vcolor 338L.



15.4 Operation

During the heating phase, the controller will activate the relevant room or boiler heating outputs, as well as the relevant burner, whose heating power is managed proportionally to the work set point trough the centrifugal fan speed control.
The burner activation procedure is the following:

1. Pre-ventilation phase: the burner speed will rise to the value determined by parameter b2 for the room burner or by parameter b9 for the boiler burner and it will remain constant for k 10 seconds.
2. Ignition phase: once pre-ventilation time is over, the speed stability is checked through the feedback of the Hall sensor and the burner control unit is activated by starting the relevant relay (room or boiler heating). The flame will be detected through the digital input and the heating phase will start.
3. Heating phase: the burner speed will rise to the value required by the regulation to heat the oven. Such speed is proportional to the difference between the temperature and the work set point inside the proportional band given by parameter b3 for the room or b10 for the boiler. The speed may vary from a minimum value given by parameter b1 for the room or b8 for the boiler, to a maximum value given by b0 for the room or b7 for the boiler.

15.5 Errors handling

Ignition phase:
If no flame is detected during ignition phase, the burner will maintain the ignition speed.

Heating phase:
If no flame is detected during heating phase, the activation relay is turned off, the fan returns to the ignition speed for 10 seconds and after 20 seconds the ignition attempt is repeated.

Room/boiler burner fault alarm:
If the ignition control board activates the room/boiler burner fault digital input, a recovery procedure is performed. The procedure consists in 3 ignition attempts before signalling the alarm.

Room burner alarm
The room burner fan speed is constantly checked through the Hall input. If the speed set for the room fan burner differs more than parameter b5 from the Hall sensor feedback for a time longer than parameter b6, the alarm is signalled.

Boiler burner alarm:
The boiler burner fan speed is constantly checked through the Hall input. If the speed set for the boiler fan burner differs more than parameter b12 from the Hall sensor feedback for a time longer than parameter b13, the alarm is signalled.

16 CONFIGURATION

16.1 Setting the time, date and day of the week

Operate as follows to access the procedure:

1. Ensure that the device is switched on and that no other procedure is in progress.
2. Touch  .

Operate as follows to select a value:

3. Touch  repeatedly until the green rectangle shows the desired value.

Operate as follows to set a value:

5. Touch  or  to change the value.
6. Touch  after changing the desired values to confirm the change.

Time, date and day of the week setting procedure.

16.2 Setting the configuration parameters

Operate as follows to access the procedure:

1. Ensure that the device is switched on and that no other procedure is in progress.
2. Touch  .
3. Touch "SERVICE".
4. Touch  or  to set the password "**-19**".
5. Touch  to confirm.

Operate as follows to select a parameter:

6. Touch  or  to select the relevant parameter.

Operate as follows to set a parameter:

7. Touch the relevant parameter
8. Touch  or  to set the value.
9. Touch  to confirm.

Access to the configuration parameters setting procedure.

Access to the configuration parameters setting procedure.

16.3 List of configuration parameters

The following table illustrates the meaning of the device configuration parameters.

PARAM.	MIN.	MAX.	U.M.	DEF.	ANALOGUE INPUTS
P0	0	2	- - -	0	probe type 0 = thermocouple J (only in the J/K versions) 1 = thermocouple K (only in the J/K versions) 2 = Pt 100 (only in the Pt 100 versions)
P1	0	1	- - -	0	temperature unit of measurement (1) 0 = °C 1 = °F
P2	0	1	- - -	0	enabling the needle probe 1 = YES
P3	0	2	- - -	0	enabling the cooking fumes /condenser water drain probe 0 = probe disabled 1 = fumes probe 2 = water drain probe
CA1	-25/-50	25/50	°C/°F (2)	0	environment probe offset
CA2	-25/-50	25/50	°C/°F (2)	0	needle probe offset
CA3	-25/-50	25/50	°C/°F (2)	0	fumes probe offset
PARAM.	MIN.	MAX.	U.M.	DEF.	MAIN REGULATOR
r0	1	99	°C/°F (2)	5	If r13 = 0 work set-point differential (referring to the temperature detected by the environment probe) If r13 = 0 Proportional band for PI adjustment
r1	0	r2	°C/°F (2)	0	work set-point differential (referring to the temperature detected by the environment probe)
r2	r1	500	°C/°F (2)	300	maximum work set-point (referring to the temperature detected by the environment probe)
r3	r1	r2	°C/°F (2)	130	work set-point for factory setting (referring to the temperature detected by the environment probe); see also r0
r4	0	r5	°C/°F (2)	0	minimum set-point at the core (referring to the temperature detected by the needle probe)
r5	r4	500	°C/°F (2)	100	maximum set-point at the core (referring to the temperature detected by the needle probe)
r6	r4	r5	°C/°F (2)	30	work set-point at the core for factory setting (referring to the temperature detected by the needle probe)

r7	0	r8	°C/°F (2)	0	minimum delta T set-point (referring to the temperature detected by the needle probe)
r8	r7	150	°C/°F (2)	30	maximum delta T set-point (referring to the temperature detected by the needle probe)
r9	r7	r8	°C/°F (2)	5	delta T set-point for factory setting (referring to the temperature detected by the needle probe)
r10	-199	199	°C/°F (2)	10	work set-point during preheat (relative to the work set-point during the first phase of the cooking cycle, i.e. "work set-point during the first phase of the cooking cycle + r10"; referring to the temperature detected by the environment probe); see also parameter r0
r11	0	500	°C/°F (2)	50	work set-point during cooling (referring to the temperature detected by the environment probe)
r12	0	240	min	240	duration of a power supply cut-off (3), occurring during a cooking cycle, that may cause interruption
r13	0	1	---	0	Temperature control 0 = ON-OFF Adjustment 1 = PI Adjustment (Proportional Integral), **ONLY ON ELECTRIC OVEN**
r14	60	999	s	180	Minimum time between two successive activations of the output for temperature regulation (Only if r13 = 1)
r15	10	240	s	10	Minimum activation/deactivation time of the output for temperature regulation (Only if r13 = 1)
r16	0	240	min	30	Integral time (Only if r13 = 1)
PARAM.	MIN.	MAX.	U.M.	DEF.	VARIOUS
c0	-1	120	s	10	duration of buzzer activation on conclusion of the cooking cycle -1 = until it is silenced by hand
c1	0	1	- - -	0	activation of the buzzer (for 1 s) on conclusion of a cooking cycle phase
c2	0	240	min	60	time that must elapse without operations on the device (from activation of the "Weekly programmed switch-on") until this switches off
c3	0	99	°C/°F (2)	10	temperature above which the display of the temperature detected by the environment probe is locked (relative to the work set-point, i.e. "work set-point + c3") 0 = function absent

c4	0	99	°C/°F (2)	10	temperature above which the display of the temperature detected by the environment probe is locked (relative to the work set-point, i.e. "work set-point - c4") 0 = function absent
PARAM.	MIN.	MAX.	U.M.	DEF.	FAN
F0	0	3	- - -	0	type of fan management 0 = in "on/off" mode and at single speed 1 = in "on/off" mode, with single speed and with inversion of the direction of rotation of the fan 2 = in "on/off" mode, with dual speed and with inversion of the direction of rotation of the fan 3 = in modulating mode and with inversion of the direction of rotation of the fan
F1	5	120	s	15	duration of the fan switch-off due to the inversion of the direction of rotation of the same (only if F0 = 1, 2 or 3); see also F2
F2	5	600	s	120	duration of the fan switch-on for every direction (only if F0 = 1, 2 or 3); see also F1
F3	0	1	- - -	0	temperature regulation output switch-off during fan switch-off due to the effect of the inversion of the fan rotation direction (only if F0 = 1, 2 or 3) 0 = YES
F4	0	F5	%	0	minimum fan speed (intended as a percentage of the maximum speed; only if F0 = 3)
F5	F4	100	%	100	maximum fan speed (intended as a percentage of the maximum speed; only if F0 = 3)
F6	20/65	65/150	°C/°F (2)	60	temperature above which the technical compartment fan is switched-on (referring to the temperature used by the control module); see also F7
F7	1	99	°C/°F (2)	10	differential of F6
F8	0	100	%	10	Minimum speed that can be set by the fan user (intended as a percentage of maximum speed; only if F0=3)
PARAM.	MIN.	MAX.	U.M.	DEF.	STEAM INJECTION
t0	0	2	- - -	0	steam generation mode 0 = direct 1 = with an external humidifier 2 = combined (i.e. direct and with external humidifier)

t1	t2	240	s	60	cycle time for injection of the steam generated in direct mode
t2	0	t1	s	30	duration of the injection of the steam generated in direct mode corresponding to the maximum humidification
t3	0	999	s	60	injection delay of the steam generated in direct mode from start of a cooking cycle phase 0 = the device will manage the humidification to the value used for the first phase of the cooking cycle also during the pre-heating
t4	0	1	- - -	0	enabling of the restriction between the injection of the steam generated in direct mode and the fan 1 = YES - the injection stops when the fan is off If the fan is off when the steam has to be injected, the injection will be made on the next fan switch-on and if the fan has to stop during steam injection, it will be switched-off after the conclusion of the injection
t5	0	1	- - -	0	enabling of the restriction between the injection of the steam generated in direct mode and the output for temperature regulation. 1 = YES - if the output is off when the steam is injected, the injection will be made on successive output switch-on and if the output has to stop during steam injection, it will be switched-off after the conclusion of the injection
t6	t7	999	s	60	cycle time for injection of the steam generated with an external humidifier
t7	0	t6	s	30	duration of the injection of the steam generated with external humidifier corresponding to the maximum humidification
t8	0	999	s	60	injection delay of the steam generated with external humidifier from start of a cooking cycle phase 0 = the device will manage the humidification to the value used for the first phase of the of the cooking cycle also during the pre-heating
t9	0	1	- - -	0	enabling of the restriction between the injection of the steam generated with external humidifier and the fan 1 = YES - if the fan is off when the steam has to be injected, the injection will be made on successive fan switch-on and if the fan has to stop during steam injection, it will be switched-off on conclusion of the injection

t10	0	1	- - -	0	enabling of the restriction between the injection of the steam generated with external humidifier and the output for temperature regulation. 1 = YES - if the output is off when the steam is injected, the injection will be made on successive output switch-on and if the output has to be closed during steam injection, it will be switched-off on conclusion of the injection
t11	0	240	s	5	steam injection delay time from temperature regulation output switch-on or from fan switch-on
t12	0	500	°C/°F (2)	120	temperature above which the injection of steam generated in direct mode is activated and below which the injection of steam generated with external humidifier is activated (referring to the temperature detected by the environment probe; only if t0 = 2)
t13	0	500	°C/°F (2)	90	temperature above which cooking fumes reduction is activated (referring to the temperature detected by the fumes probe); see also t14
t14	1	99	°C/°F (2)	5	differential of t13
t15	0	1	---	0	enabling the Boiler expansion 1 = YES
t16	1	500	°C/°F (2)	80	boiler temperature above which the injection of boiler steam is enabled
t17	1	500	°C/°F (2)	95	boiler steam working temperature
t18	1	500	°C/°F (2)	70	boiler steam holding temperature
t19	1	99	°C/°F (2)	2	hysteresis for t17, t18
t20	0	240	s	2	time delay for boiler water charge
t21	0	240	min	2	time delay for boiler water drain
t22	0	240	min	25	descaler action time for Cleaning phase 1
t23	1	500	°C/°F (2)	60	descaler action temperature for Cleaning phase 1
t24	0	240	min	20	cleaning action time for phase 2
t25	1	500	°C/°F (2)	60	cleaning action temperature for phase 2
t26	1	10	---	3	number of cleaning cycles phase 2

t27	0	240	s	5	minimum water level alarm delay
t28	0	240	min	3	maximum water level alarm delay
t29	0	1	- - -	0	Humidification setting modality 0 = Percentage (gastronomy ovens) 1 = Seconds (pastry/bread ovens)
PARAM.	MIN.	MAX.	U.M.	DEF.	TEMPERATURE ALARMS
A0	1	99	°C/°F (2)	10	differential of A1
A1	0	**500**	°C/°F (2)	0	temperature above which the maximum temperature alarm is activated (referring to the temperature detected by the environment probe); see also A0 and A3
A2	0	240	min	0	maximum temperature alarm delay
A3	0	2	- - -	0	maximum temperature alarm type 0 = no alarm 1 = absolute (i.e. A1) 2 = relative to the work set-point (i.e. "work set-point + A1")
A4	0	80/175	°C/°F (2)	70	temperature above which the use temperature alarm is activated (referring to the temperature of use of the control module) 0 = no alarm
PARAM.	MIN.	MAX.	U.M.	DEF.	DIGITAL INPUTS
i0	0	1	- - -	0	type of door micro switch input contact 0 = normally open (input active with closed contact) 1 = normally closed (input active with open contact)
i1	0	1	- - -	0	type of circuit breaker protection input 0 = normally open (input active with closed contact) 1 = normally closed (input active with open contact)
i2	0	1	- - -	0	reserved
i3	0	1	- - -	0	type of safety thermal protection input 0 = normally open (input active with closed contact) 1 = normally closed (input active with open contact)

i4	0	1	- - -	0	type of electric absorption input contact 0 = normally open (input active with closed contact) 1 = normally closed (input active with open contact)
PARAM.	MIN.	MAX.	U.M.	DEF.	DIGITAL OUTPUTS
u0	0	1	- - -	0	type of air vent output contact 0 = normally open (air vent opens with closed contact) 1 = normally closed (air vent opens with open contact)
u1	0	1	- - -	0	utility managed by the air vent output 0 = ELECTROVALVE ON/OFF 1 = MOTORISED ELECTROVALVE - in this case the u2, u3 and u4 parameters will assume significance
u2	0	600	ds (s/10)	120	air vent output inhibition duration from the conclusion of the brief impulse for air vent opening and from the conclusion of the long impulse for air vent closure (only if u1 = 1); see also u3 and u4
u3	0	600	ds (s/10)	10	duration of the brief impulse for air vent opening (only if u1 = 1); see also u2 and u4
u4	0	600	ds (s/10)	30	duration of the long impulse for air vent closure (only if u1 = 1); see also u2 and u3
PARAM.	MIN.	MAX.	U.M.	DEF.	SERIAL NETWORK
LA	1	247	- - -	247	device address
Lb	0	3	- - -	2	baud rate 0 = 2.400 baud 1 = 4.800 baud 2 = 9.600 baud 3 = 19.200 baud
LP	0	2	- - -	2	parity 0 = none (no parity) 1 = odd 2 = even
PARAM.	MIN.	MAX.	U.M.	DEF.	ROTOR
k0	0	1	- - -	0	0 = enables suction hood, 1 = enables rotor

k1	0	1	- - -	1	door action on rotor: the door opening stops the rotation When the door is closed afterwards, 0 = the motor remains still 1 = it restarts as before the interruption
k2	0	100	s	10	K0 = 0, Maximum suction hood enabling time K2 = 0, Suction hood OFF K0 = 1, Maximum rotor enabling time K2 = 0, rotor OFF.
k3	0	1	- - -	0	type of rack limit switch input contact 0 = normally open (input active with closed contact) 1 = normally closed (input active with open contact)
PARAM.	MIN.	MAX.	U.M.	DEF.	CLEANING
w0	0	500	°C/°F (2)	60	working set point for the precleaning phase
w1	1	99	°C/°F (2)	10	hysteresis authorisation for precleaning activation
w2	0	240	min	10	precleaning time
w3	0	500	°C/°F (2)	70	working set point for the cleaning phase
w4	0	240	s	5	liquid detergent inflow time
w5	0	240	min	10	liquid detergent action time cleaning time (cleaning with tablet)
w6	0	240	min	10	steam injection time for liquid detergent action detergent action time (cleaning with tablet)
w7	0	240	s	10	short rinse time
w8	0	500	°C/°F (2)	70	working set point for the rinse aid phase working set point for cleaning preparation (cleaning with tablet)
w9	0	240	s	5	rinse aid injection time water drain pump activation time after cycle end (cleaning with tablet)
w10	0	240	min	10	rinse aid action time RINSE phase time (cleaning with tablet)
w11	0	240	min	10	steam injection time for rinse aid action cleaning preparation time (cleaning with tablet)
w12	0	500	°C/°F (2)	60	working set point for the rinse phase
w13	0	240	min	5	rinse phase duration

w14	0	500	°C/°F (2)	100	working set point for the drying phase
w15	0	240	min	10	drying phase duration
w16	0	240	sec	15	water discharge pump activation delay
w17	0	1	s	1	cleaning type 0 = disabled 1 = with liquid detergent, no recycling 2 = with tablet detergent and recycling
w18	r0	99	°C/°F (2)	7	consent band for cleaning preparation activation (cleaning with tablet)
w19	0	500	°C/°F (2)	70	cleaning drain probe set point (cleaning with tablet)
W20	0	1	---	1	relation between detergent/rinse aid output and Mains water solenoid valve 0 = no relation 1 = Mains water solenoid valve will be activated in parallel
PARAM.	MIN.	MAX.	U.M.	DEF.	BURNERS
b0	2500	6000	RPM	5000	room burner fan maximum RPM
b1	1500	4000	RPM	2500	room burner fan minimum RPM
b2	1000	3000	RPM	1000	room burner fan ignition RPM
b3	1	99	°C/°F (2)	10	proportional band for room temperature regulation
b4	2	10	sec	3	room burner fan ramp time
b5	200	1000	RPM	200	room burner fan RMP feedback alarm threshold
b6	10	120	sec	10	room burner fan RMP feedback alarm delay
b7	2500	6000	RPM	5000	boiler burner fan maximum RPM
b8	1500	4000	RPM	2500	boiler burner fan minimum RPM
b9	1000	3000	RPM	1000	boiler burner fan ignition RPM
b10	1	99	°C/°F (2)	10	proportional band for boiler temperature regulation
b11	2	10	sec	3	boiler ramp time
b12	200	1000	RPM	200	boiler burner fan RMP feedback alarm threshold
b13	10	120	sec	10	boiler burner fan RMP feedback alarm delay
b14	0	1	---	0	oven type 0 = electric, 1 = gas

PARAM.	MIN.	MAX.	U.M.	DEF.	BURNERS
e0	0	1	---	1	Reserved
e1	0	1	---	1	Lock screen 0 = disabled 1 = automatic

Notes

(1) Properly set the parameters corresponding to the regulators after setting parameter P1

(2) the unit of measurement depends on P1

(3) if the duration of the power cut is shorter than the time established with parameter r12, when the power supply is restored, the cycle will be re-proposed from the start of the phase running during power cut.

17 USE OF THE USB PORT

17.1 Preliminary information

Through the USB port it is possible to make the following operations:

- upload and download of the settings contained in the recipes from the "MY COOKBOOK" function and from the "Special cycles" function work cycles (hereinafter called "programs")
- upload and download of the settings contained in the configuration parameters.

The operations are guaranteed with the use of the USB flash drive EVUSB4096M.

The upload operations are allowed on condition that the firmware of the device of origin is the same as that of the device of destination.

17.2 Upload of the settings contained in the programs

To make the upload of the settings contained in the programs, operate as follows:

1. Ensure that the device is switched off and that no other procedure is in progress.
2. Plug in a USB flash drive containing a proper text document called "prog.txt" in the USB port of the device and wait a few seconds.
3. Touch "UPLOAD PROGRAMS".
4. Touch  to confirm.
5. At the end of the upload remove the USB flash drive from the USB port of the device.

17.3 Download of the settings contained in the programs

To make the download of the settings contained in the programs, operate as follows:

1. Ensure that the device is switched off and that no other procedure is in progress.
2. Plug in a USB flash drive in the USB port of the device and wait a few seconds.
3. Touch "DOWNLOAD PROGRAMS".
4. Touch  to confirm.

17.4 Upload of the settings contained in the configuration parameters

To make the upload of the settings contained in the programs, operate as follows:

1. Ensure that the device is switched off and that no other procedure is in progress.
2. Plug in a USB flash drive containing a proper text document called "prog.txt" in the USB port of the device and wait a few seconds.
3. Touch "UPLOAD PARAMETERS".
4. Touch  to confirm.
5. To the end of the upload remove the USB flash drive from the USB port of the device.

17.5 Download of the settings contained in the configuration parameters

To make the download of the settings contained in the programs, operate as follows:

1. Ensure that the device is switched off and that no other procedure is in progress.
2. Plug in a USB flash drive in the USB port of the device and wait a few seconds.
3. Touch "DOWNLOAD PARAMETERS".
4. Touch  to confirm.

18 ALARMS

18.1 Alarms

A buzzer is activated if an alarm occurs, the display shows the icon ⚠ and an alarm code. Touch the display in the centre to silence the buzzer and restore normal display.

The following table illustrates the meaning of the device alarm codes.

ALARM CODE	MEANING
Chamber probe ALARM	chamber probe alarm solutions: - check the type of probe; see parameter P0 - check the device-probe connection - check the temperature of the chamber main consequences: - if the alarm occurs when the device is on, a cooking cycle cannot be started - if the alarm occurs during a cooking cycle, the cycle will be interrupted - the output for temperature regulation will be switched-off
Core probe ALARM	core probe alarm solutions: - the same as the preceding case but with respect to the core probe main consequences: - if the alarm occurs when the device is on, a Delta T and a core cooking cycle cannot be allowed - if the alarm occurs during a Delta T or core cooking cycle, the cycle will be interrupted
Cooking fumes probe offset alarm	cooking fumes probe alarm solutions: - the same as the preceding case but with respect to the fumes probe main consequences: - the output for management of fumes reduction will be switched off
No voltage ALARM	power supply cut-off alarm solutions: - check the device-power supply connection main consequences: - if the alarm occurs when the device is on or off, once the power supply is restored, the device will be switched off. - if the alarm occurs during the cooking cycle and the duration of said interruption is lower than the time established with parameter r12, when the power supply is restored, the cycle will be re-proposed from the start of the phase during which the power cut occurred (if vice versa the duration of the interruption is longer than the time established with parameter r12, when the power supply is restored, the cycle will be interrupted).

No connection ALARM	user interface-control module communication alarm solutions: - check user interface-control module connection main consequences: - if the alarm occurs when the device is on, a cooking cycle cannot be started - if the alarm occurs during a cooking cycle, no consequence
Temperature ALARM	maximum temperature alarm solutions: - check the temperature detected by the environment probe; see parameters A0, A1 and A3 main consequences: - no consequence
Board temperature alarm ALARM	use temperature alarm. solutions: - check the use temperature of the control module; see parameter A4 main consequences: - if the alarm occurs when the device is on, a cooking cycle cannot be started - if the alarm occurs during a cooking cycle, the cycle will be interrupted - the air vent will be opened, the technical compartment fan will be switched on and the remaining outputs will be switched off.
	door micro switch input alarm solutions: - check the causes of the input activation; see parameter i0 main consequences: - if the alarm occurs during a cooking cycle, the temperature regulation output, the fan and the steam injection output will be switched off and the vent will be opened
Circuit breaker protection ALARM	fan circuit breaker protection input alarm solutions: - check the causes of the input activation; see parameters i1 and i2 main consequences: - if the alarm occurs during a cooking cycle, the temperature regulation output and the fan will be switched off
Peak absor. ALARM	electric absorption input alarm solutions: - check the causes of the input activation; see parameter i4 main consequences: - if the alarm occurs during a cooking cycle, the outputs will be switched off
Boiler probe ALARM	boiler probe alarm solutions: - check the probe type; see parameter P0 - check the device-probe connection - check the boiler temperature main consequences: - the boiler temperature regulation output will be deactivated

Minimum boiler water level ALARM	minimum boiler water level alarm solutions: - check boiler input; see parameter t27 main consequences: - the boiler temperature regulation output will be deactivated
Maximum boiler water level ALARM	cooking fumes probe alarm solutions: - check boiler input; see parameter t28 main consequences: - the boiler temperature regulation output will be deactivated
Boiler drain ALARM	boiler drain alarm solutions: - check Min, Max H2O Boiler inputs; see parameter t21 main consequences: - the boiler temperature regulation output will be deactivated
Boiler communication ALARM	control module-boiler expansion module communication alarm solutions: - check the control module-boiler expansion module connection main consequences: - all boiler regulation outputs will be deactivated
ALLARME sicurezza boiler	boiler safety alarm solutions: - check the reasons that caused the input activation main consequences: - all boiler regulation outputs will be deactivated
Room/boiler burner fault ALARM	room/boiler burner fault alarm solutions: - check the reasons that caused the burner fault main consequences: - the room/boiler burner will be deactivated
Room burner ALARM	Room/boiler burner alarm solutions: - check the correct operation of the respective centrifugal fan, the hall sensor feedback signal and parameters b5/b6 (room) or b12/b13 (boiler) main consequences: - the room/boiler burner will be deactivated

When the problem that caused the error disappears, the device is restored to normal operation.

19 ACCESSORIES

19.1 Optoisolated RS-485/USB serial interface

The interface can be used to connect the device to the Parameters Manager set-up software system.

19.2 USB cap for panel installation

The cap can be used to make the device USB communication port more accessible.

To connect the cap to the device, connection cable 0810500018 or 0810500020 must be used (to be ordered separately).

19.3 Connection cables 0810500018/0810500020

The cables can be used to connect the USB cap for panel installation 0812000002 to the device.

The cable 0810500018 measures 2.0 m; the cable 0810500020 measures 0.5 m.

19.4 4 GB USB pen drive EVUSB4096M

Using the pen drive it is possible to upload and download the settings and data recorded by the device.

20 TECHNICAL DATA

20.1 Technical data

Purpose of the command device:	operating command device.	
Construction of the command device:	built-in electronic device.	
Case:	*user interface*	*user interface*
	black self-extinguishing.	board without cover.
Dimensions:	*user interface*	*control module*
	Vcolor 338M: 118.0 x 166.0 x 35.0 mm (4.645 x 6.535 x 1.377 in; L x H x D) Vcolor 338L: 156.0 x 216.0 x 50.0 mm (6.141 x 8.503 x 1.968 in; L x H x D).	113.5 x 255.0 x 33.0 mm (4.468 x 10.039 x 1.299 in; L x H x D).
Command device mounting method:	*user interface*	*control module*
	on the back of the panel, with studs, and ensures flush mounting	on flat surface, with spacers.
Protection rating:	*user interface*	*control module*
	IP40.	IP00.
Connections:	*user interface*	*control module*
	removable screw terminal board (control module and RS-485 MODBUS port), USB type A connector (USB port).	removable screw terminal board (user interface, power supply, inputs and outputs).
	The maximum length of the analogue inputs and analogue output connection cables must be less than 10 m (32,808 ft). The maximum length of the user interface-control module connection cables must be less than 10 m (32,808 ft).	
Use Temperature:	from 0 to 55 °C (from 32 to 131 °F).	
Storage temperature:	from -10 to 70 °C (from 14 to 158 °F).	
Humidity:	from 10% to 90 % relative humidity without condensate.	
Command device pollution situation:	2.	
Power:	*user interface*	*control module*

	supplied from the control module.	12 VAC (±15%), 50 / 60 Hz (±3 Hz), 20 VA max.
Rated impulse voltage:	4 KV.	
Overvoltage category:	III.	
Class and structure of software:	A.	
Clock:	incorporated.	
	autonomy in the event of a power-cut: 24 h when fully charged.	
	battery charging time: 2 min (the battery is charged by the device power supply).	
Analogue inputs	3 inputs (environment probe, needle probe and fumes probe), can be set via configuration parameter for J/K thermocouples or Pt 100 2 wire probes.	
	<u>thermocouple J type analogue inputs</u> Type of sensor: iron/constantan. Field of measurement: from -50 to 700°C (from -58 to 1.292 °C). Resolution: 1 °C (1 °F). Protection: none.	
	<u>thermocouple K type analogue inputs</u> Type of sensor: chromel/alumel. Field of measurement: from -50 to 1.100°C (from -58 to 2.012 °C). Resolution: 1 °C (1 °F). Protection: none.	
	<u>Pt 100 analogue inputs</u> Type of sensor: Pt 100 class A. Field of measurement: from -50 to 550°C (from -58 to 1.022 °C). Resolution: 1 °C (1 °F). Protection: none.	
Digital inputs:	5 inputs: - 2 (door micro switch and rotor rack limit switch) which can be set via configuration parameter due to normally open contact/normally closed contact (potential-free contact, 5 VDC, 0,5 mA) - 3 (fan circuit breaker protection, thermal protection and current draw) which can be set via configuration parameter due to normally open contact/normally closed contact (live contact, 230 VAC)	

	digital inputs for potential-free contact Power supply: none. Protection: none.
	digital inputs for high voltage contact Power supply: 230 VAC. Protection: none.
Analogue outputs:	1 0-10 V output for fan management (in this case, an external speed regulator must be used).
Digital outputs:	13 outputs (electromechanical relays): - 1 x 1 A res. @ 250 VAC SPST type (K1) for environment temperature regulation management - 1 x 1 A res. output @ 250 VAC SPST type (K2) for air vent management - 1 x 1 A res. output @ 250 VAC SPDT type (K8) for direct steam injection management - 1 x 4 A res. output @ 250 VAC SPST type (K9) for environment light management* - 1 x 1 A res. output @ 250 VAC SPST type (K7) for management of the technical compartment fan - 1 x 1 A res. output @ 250 VAC SPST type (K5) configurable (default setting, for fan left drive management) - 1 x 1 A res. output @ 250 VAC SPST type (K4) configurable (default setting, for fan right drive management) - 1 x 1 A res. output @ 250 VAC SPST type (K3) configurable (default setting, for fan speed management) - 1 x 1 A res. output @ 250 VAC SPST type (K6) for rack rotation management - 1 x 1 A res. output @ 250 VAC SPST type (K10) configurable (default setting, for cleaning water valve management) - 1 x 1 A res. output @ 250 VAC SPST type (K11) configurable (default setting, for liquid detergent injection management) - 1 x 1 A res. output @ 250 VAC SPST (K12) configurable (default setting, for cleaning fluid discharge management) - 1 x 1 A res. output @ 250 VAC SPDT (K13) configurable (default setting, for rinse aid injection management). The maximum current allowed on the loads is 3 or 4 A (please refer to the wiring diagram). * The relays do not manage LED and fluorescent lamps
Displays:	5 or 7 inch, 16k colour TFT touch-screen graphical display with 800 x 480 pixel resolution. The presence of point defects on the display falls within the tolerance limits as provided by applicable standards.
Type 1 or Type 2 actions:	Type 1.
Complementary features of Type 1 or Type 2 actions:	C.

Communication port:	2 ports: - 1x RS-485 MODBUS port - 1x USB port.
Signal buzzer and alarm:	integrated.

Vcolor 338

Controller for "top-class" electric ovens for gastronomy and confectionery, with 7 inch TFT graphic display colour touch-screen, in split version and can be integrated into the unit.

Installer manual ver. 3.0
GL - 23/18
Code 144VC338E304

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