Vcolor 379

Controller for rotating pizza ovens

ENGLISH

144VC379E104

Important

Read this document carefully before installation and before using the device and take all the prescribed precautions. Keep this document with the device for future consultation.

Only use the device in the ways described in this document. Do not use the device as a safety device.

Disposal

The device must be disposed of according to local regulations governing the collection of electrical and electronic equipment.

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1   INTRODUCTION

1.1 Product description

The Vcolor 379 controller manages rotating pizza ovens powered by wood, gas or electricity. When connected to an EVCO inverter via its RS-485 serial port, the controller drives the three-phase motor of the rotary plate. Users can choose the direction of rotation (even pausing the plate between rotations) and adjust its speed. It can also control temperature through one or two analogue inputs, with independent regulation of the power or temperature of the top and floor heaters, and it has a number of functions like rapid heating and economy mode. In ovens where it is not possible to control the temperature, the inputs are used to measure and display its current values.

The controller can save up to 99 recipes. Recipes can be compiled in an ODS file (complete with pictures in BMP or GIF format) and uploaded to the controller using a USB flash drive, thanks to the innovative programmable platform which allows users to customise their recipes and add new languages. Recipes can also be altered, overwritten and saved directly from the display and two different recipes can be switched on and off for every day of the week.

The Vcolor 379 controller consists of a control module with an open frame board, an inverter also with an open frame board (both installed on the oven) and a remote user interface with a 5-inch (M) or 7-inch (L) capacitive TFT touch-screen graphic display in glass and IP65 protection for easy cleaning. The user interface can be semi-recessed into the front or installed flush with the panel, fitting in perfectly with the design of the oven.

Users can interact remotely with their equipment and start up/stop working cycles using the EPoCA® cloud platform with Wi-Fi or Ethernet connectivity (which also enables alternative or parallel control through MODBUS TCP). For more details, compare all the connectivity options in the Technical Data table and consult the Management and Monitoring Products/Systems and the Connectivity Products/Devices sections of our website.

1.2 Models available and technical features

The table below shows the technical features of the models available.

	Vcolor 379 M & L with J/K thermocouples	Vcolor 379 M & L with Pt 100 2 wires	EVCO inverter (Compact, Slim or Slim Power)
Power supply			
Control module	12 Vac	12 Vac	
User interface	Powered by the control module	Powered by the control module	
Inverter			230 Vac
Analogue inputs (J/K or Pt 100)			
Top probe (activated as chamber probe if regulation is by single analogue input with power distributed between the top and floor)	J/K thermocouples	Pt 100 2 wires	
Floor probe (deactivated if regulation is by single analogue input)	J/K thermocouples	Pt 100 2 wires	
Digital inputs for NO/NC contact (voltage-free)			
ID2 multi-purpose (voltage-free)	•	•	
ID3 economy (voltage-free)	•	•	
Digital inputs for NO/NC contact (high voltage 230 Vac)			
Power consumption	•	•	
Thermal switch	•	•	
Type 1/2 burner block	•	•	
Digital outputs (electro-mechanical relays; A res. @ 250 Vac)			
Configurable K1 (default top heaters)	5 A	5 A	
Configurable K2 (default stand-by/on)	5 A	5 A	
Configurable K3 (default floor heater)	5 A	5 A	
Configurable K4 (free)	5 A	5 A	
Configurable K5 (default chamber light)	5 A	5 A	
Configurable K6 (free)	5 A	5 A	
Configurable K7 (free)	5 A	5 A	
Configurable K8 (free)	5 A	5 A	
Configurable K9 (free)	8 A	8 A	

Configurable K10 (default electronics compartment fan)	5 A	5 A	
Configurable K11 (default sound)	5 A	5 A	
Configurable K12 (default 1/2 burner block reset)	5 A	5 A	
Configurable K13 (free)	8 A	8 A	
Communications ports			
RS-485 MODBUS	•	•	
USB	•	•	
Connectivity			
RS-485 MODBUS RTU (built-in)	•	•	
Wi-Fi EPoCA/MODBUS TCP (optional through the EVlinking Wi-Fi module powered by controller)	•	•	
Ethernet EPoCA/MODBUS TCP (optional through EV3 Web gateway)	•	•	
Other features			
Rotary plate management			•
Cooking timer function	•	•	
Rapid heating function	•	•	
Energy-saving function	•	•	
Weekly programmed switch-on function	•	•	
Recipe book function	•	•	
Clock	•	•	
Alarm buzzer	•	•	
Independent management of the power delivered to top and floor	•	•	
Independent management of the temperature and power of the top and floor	•	•	

For more information see the section "TECHNICAL SPECIFICATIONS".

The table below lists the purchasing codes of the available models:

Purchasing codes	<u>**With J/K thermocouples**</u>
	Vcolor 379 M (control module + 5" user interface kit):
	EVCMC3ADJ2E (flush fit installation)
	EVCMC3ADJ2EF (semi-recessed installation)
	Vcolor 379 L (control module + 7" user interface kit):
	EVCLC3ADJ2E (flush fit installation)
	EVCLC3ADJ2EF (semi-recessed installation)
	<u>**With Pt 100 2 wires**</u>
	Vcolor 379 M (control module + 5" user interface kit):
	EVCMC3ADC2E (flush fit installation)
	EVCMC3ADC2EF (semi-recessed installation)
	Vcolor 379 L (control module + 7" user interface kit):
	EVCLC3ADC2E (flush fit installation)
	EVCLC3ADC2EF (semi-recessed installation)

For more models, contact the EVCO sales network.

2   MEASUREMENTS AND INSTALLATION

2.1   Format features

The control module is available in a split version with an open frame board. User interfaces are available in 5 or 7-inch versions for vertical operation and have capacitive colour TFT touch-screen graphic displays.

2.2   Control module measurements and installation

Measurements are expressed in mm (inches). Installation is on a flat surface with spacers.
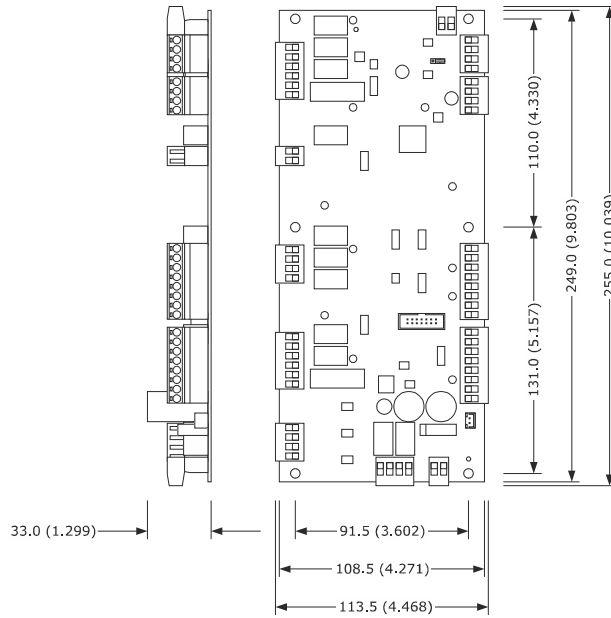
2.3   User interface measurements

The user interface is available in the model which is installed flush and the model which is semi-recessed into the front. The measurements vary according to the model, as illustrated below in mm (in).

Vcolor 379 M
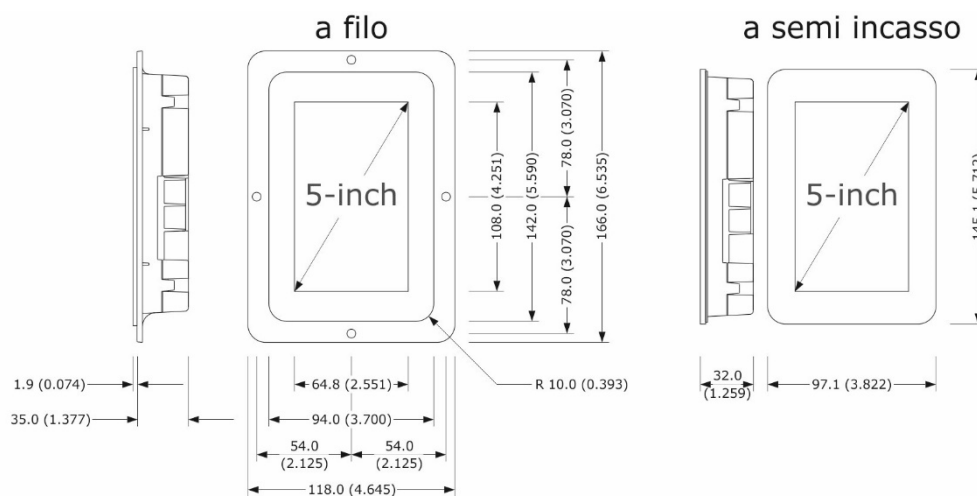
Vcolor 379 L
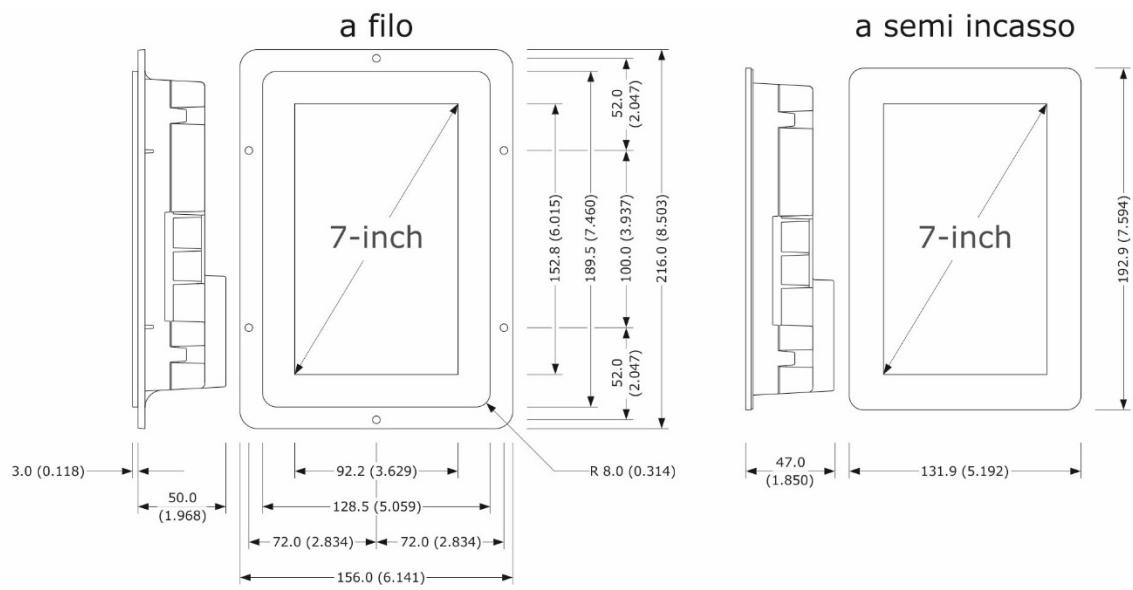
2.4   User interface installation

Depending on the model, installation can be:

-    flush, from behind the panel with threaded studs (not provided) welded to hold it in place;
-    semi-recessed, from the front of the panel with spring clips to hold it in place.

a filo

a semi incasso
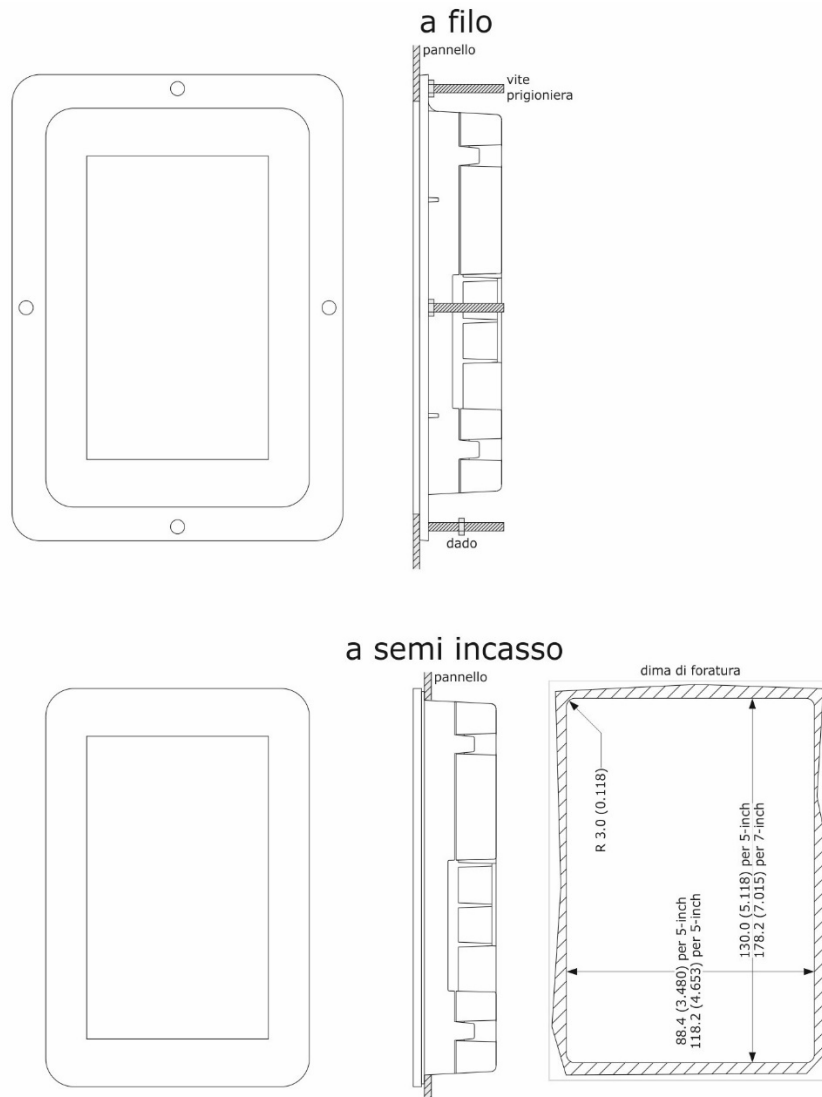
2.5   Installation precautions

-        ensure that the working conditions for the device (operating temperature, humidity, etc.) are within the set limits. See the section "TECHNICAL SPECIFICATIONS"
-        do not install the device close to heat sources (heaters, hot air ducts, etc.), equipment with a strong magnetic field (large diffusers, etc.), in places subject to direct sunlight, rain, damp, excessive dust, mechanical vibrations or shocks
-        any metal parts close to the control module must be far enough away so as not to compromise the safety distance
-        in compliance with safety regulations, the device must be installed properly to ensure adequate protection from contact with electrical parts. All protective parts must be fixed in such a way as to need the aid of a tool to remove them
-        ensure that the thermocouple is properly insulated from contact with metal parts or use already insulated thermocouples.

3   ELECTRICAL CONNECTION

3.1   Vcolor 379M electrical connection

The diagram below shows the electrical connection of the control device with a 5-inch user interface.
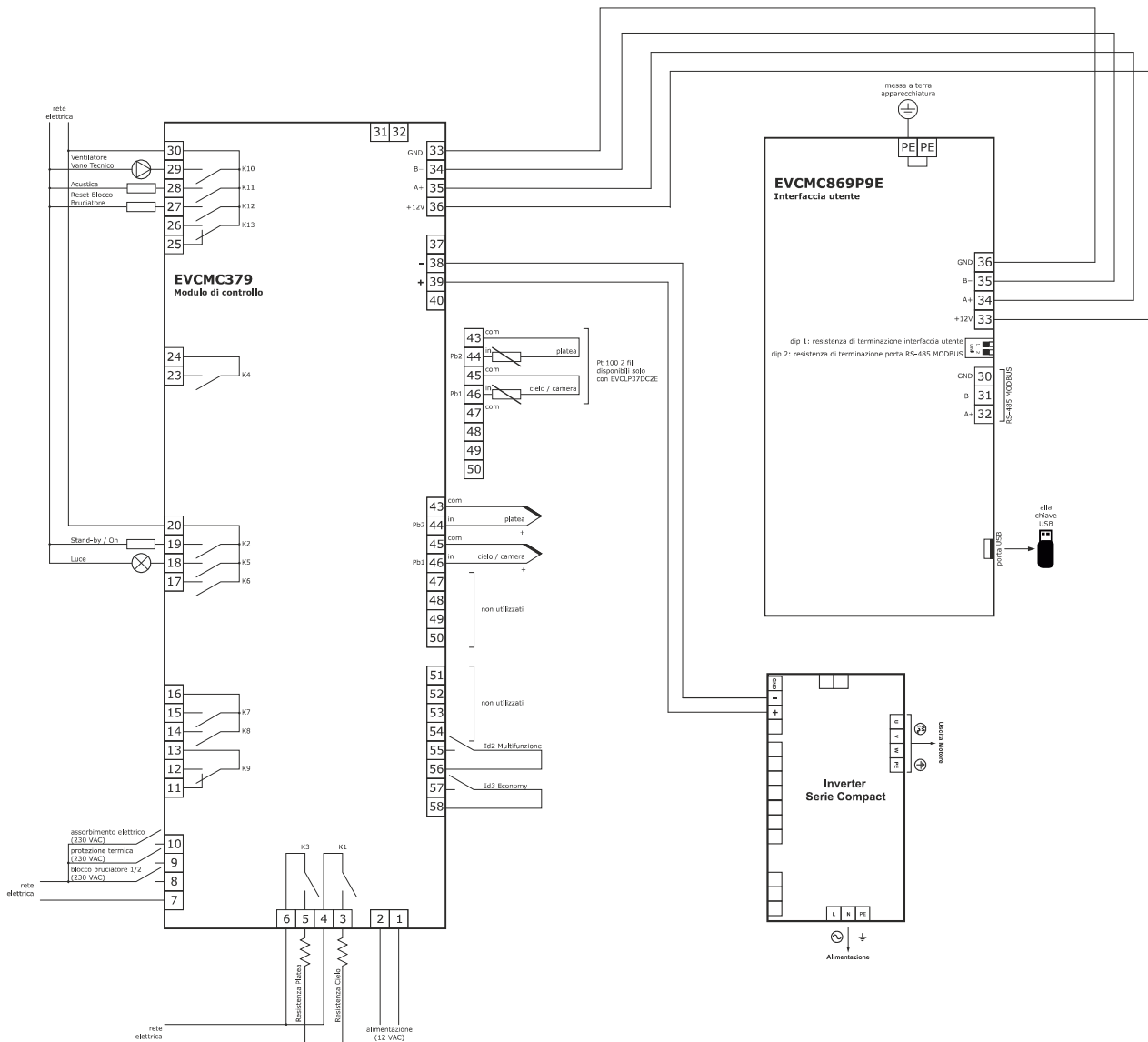
N.B.:

- The USB communications port makes it possible to upload and download the device settings and personalise the graphics, recipes and languages using an ordinary USB flash drive (see the section "USING THE USB PORT").
- The RS-485 MODBUS communications port enables connection to the Parameters Manager set-up software or to the modules for Wi-Fi or Ethernet connectivity to manage the unit using the EPoCA cloud platform or MODBUS TCP systems (see the section "CONNECTIVITY").

3.2 Vcolor 379L electrical connection

The diagram below shows the electrical connection of the control device with a 7-inch user interface.
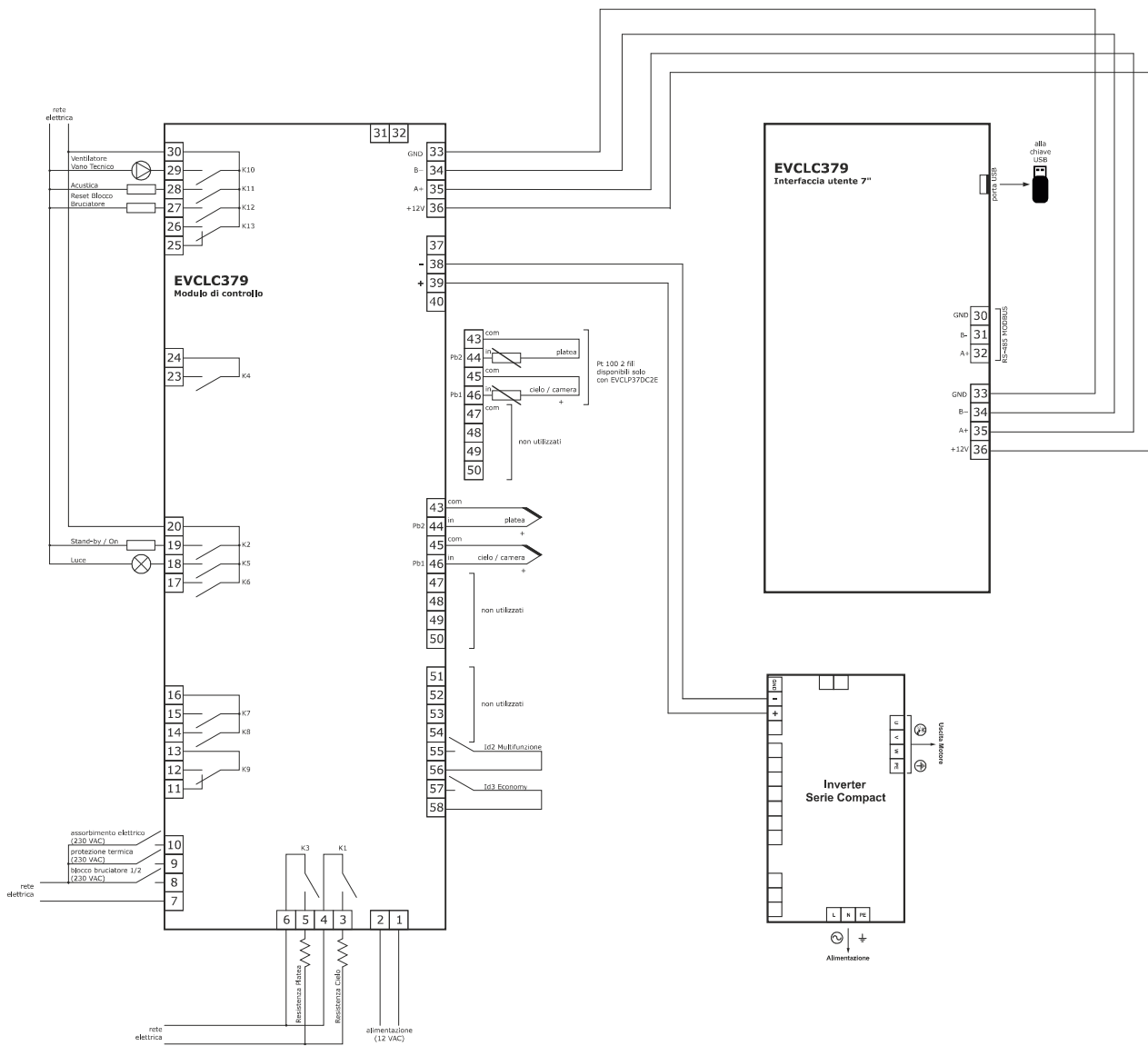
N.B.:

- The USB communications port makes it possible to upload and download the device settings and personalise the graphics, recipes and languages using an ordinary USB flash drive (see the section "USING THE USB PORT").
- The RS-485 MODBUS communications port enables connection to the Parameters Manager set-up software or to the modules for Wi-Fi or Ethernet connectivity to manage the unit using the EPoCA cloud platform or MODBUS TCP systems (see the section "CONNECTIVITY").

3.3   Precautions for electrical connection

-       do not use electric or pneumatic screwdrivers on the terminal blocks of the device
-       if the device is moved from a cold to a warm place, the humidity may cause condensation to form inside. Wait about an hour before switching on the power
-       make sure that the supply voltage, electrical frequency and power of the device correspond to the local power supply. See the section "TECHNICAL SPECIFICATIONS"
-       disconnect the device from the power supply before doing any type of maintenance
-       locate the power cables as far away as possible from those for the signal
-       to reduce reflections on the signal transmitted along the cables connecting the user interface to the control module, it is necessary to fit a termination resistor
-       ensure that the thermocouple is properly insulated from contact with metal parts or use already insulated thermocouples
-       for repairs and for further information on the device, contact the EVCO sales network.

4   FIRST-TIME USE

4.1   First-time use

Proceed as follows:

1.   Install the device as shown in the "INSTALLATION" section, taking all the precautions mentioned in the section "Installation precautions".

2.   Make the electrical connection as shown in the section "ELECTRICAL CONNECTION".

3.   Connect the power supply to the device: the device will show a splash screen for a few seconds.

4.   Set the time, date and day of the week; see the section "CONFIGURATION".

5.   Configure the device as shown in the section "LIST OF CONFIGURATION PARAMETERS".

The following table describes the main configuration parameters. The parameters are listed in the recommended configuration order.

PARAM.	DESCRIPTION	FACTORY SETTING
P0	type of probe 0 = J thermocouple (only for J/K power board) 1 = K thermocouple (only for J/K power board) **N.B.: this parameter is only relevant for models for thermocouples; this parameter is not used in the models for Pt 100 probes**	0
P1	temperature measurement unit 0 = °C 1 = °F **N.B.: when moving from °C to °F and vice versa, the temperature settings are automatically converted; check they are correct**	0
P2	type of operation 0 = WITH CHAMBER PROBE 1 = WITH TOP AND FLOOR PROBES	0

Next check the remaining parameters are properly set; see the section "LIST OF CONFIGURATION PARAMETERS".

5   USER INTERFACE

5.1   Initial information

The controller has the following operating modes:

- "OFF": no power to the device; the display and all the loads are switched off.
- "STAND-BY": the device is powered, the display is on and all the loads are switched off (except the chamber light if activated manually).
- "ON": the device is powered and the display is on; the loads may be switched on, depending on machine status.

5.2   Splash screen

When the control module is powered up, it defaults to the EVCO splash screen for a few seconds.

5.3   STAND-BY screen

After the splash screen, the user interface displays the stand-by screen:

Hold down the ON/OFF key for a few seconds

to switch the device on.

N.B.: OFF/ON status can be linked to a relay output configured as "Stand-by/On" (uxc=10); this output will be deactivated when the controller is ON.
If the "weekly programming" function is enabled by the parameter (C5 = 1), the Planning key will also be displayed,

making it possible to set weekly programmed switch-ons (see the section "WEEKLY PROGRAMMED SWITCH-ON").

The "Configuration" key

allows users to access the list of alarms, view internal values, start the display cleaning function, set the date, time and language, manage the USB to download/upload files and configure parameters and recipes (see the section "CONFIGURATIONS" for a detailed description of all the available options).

The "suction hood light" key and the "chamber light" key

manually switch on or off the suction hood light and the chamber light respectively, even when the controller is in stand-by.

5.4   ON screen

5.4.1   Initial information

Depending on the construction features of the oven, and according to whether it has 1 or 2 analogue inputs, the controller can be regulated in two different ways that have to be set with parameter P2:

P2 = 0,   1 analogue input (chamber probe)

P2 = 1,   2 analogue inputs (top probe and floor probe)

To exclude oven temperature regulation from the controller's functions and only view its values, set parameter r9=1.

5.4.2   Oven regulated by one chamber probe

In this type of oven, separate temperature management for the top and the floor is obtained by setting the percentage of power delivered above (top) and below (floor). The percentages can be set individually and may be linked to each other through parameter r7.
The following screen is displayed:

The settings for ovens with one chamber probe are as follows:

- chamber setpoint (shown in smaller type to the side of the chamber temperature)
- top power
- floor power
- cooking timer
- recipe selection
- activation of rapid heating
- activation of economy mode

- suction hood light
- chamber light
- rotary plate management

5.4.3   Oven regulated by two probes (top and floor)

In this type of oven there are two probes for independent reading of the top and floor temperatures. Separate temperature management for the top and floor is obtained by setting two different temperature setpoints: one for the top and one for the floor.

The following screen is displayed:

The possible settings for ovens with 2 probes (one for the top and one for the floor) are as follows:

- top setpoint (shown in smaller type to the side of the top temperature)
- floor setpoint (shown in smaller type to the side of the floor temperature)
- top power
- floor power
- cooking timer
- recipe selection
- activation of rapid heating
- activation of economy mode
- suction hood light
- chamber light
- rotary plate management

5.4.4   Oven with 1 or 2 probes but no regulation (temperature displayed only)

In this type of oven the probes are used to measure the chamber temperature or the top and floor temperatures only.

The temperature is displayed according to the configuration of parameter r9; if r9=0 temperature regulation is managed, if r9=1 there is no temperature regulation.

The following screen is displayed:

OVEN WITH 1 PROBE (CHAMBER)

OVEN WITH 2 PROBES (TOP - FLOOR)

The settings for ovens with two probes are as follows:

- cooking timer
- recipe selection
- suction hood light
- chamber light
- rotary plate management

5.4.5   Light

The On/Off light key

light on   light off

manually switches the light on and off when the device is in stand-by or on. The light can be switched on and off automatically using parameters "e0" and "e1".

5.4.6   Economy and rapid heating functions

- **Economy function**

function deactivated   function activated

The energy-saving function can always be activated, except when rapid heating is in operation. For more details, see the section "ECONOMY FUNCTION".

- **Rapid heating function**

The key is displayed when either one or two analogue inputs are configured:

function deactivated   function activated

The rapid heating function enables the oven to reach its regulation setpoint in a shorter amount of time by activating the top and floor heaters at full power. This function cannot be

activated when the oven is in Economy mode. For more details, see the section "RAPID HEATING".

5.4.7   Cooking timer function

There is a timer on the main screen which, when started, counts down the time; when the time has elapsed, the buzzer sounds to signal the end of the cooking cycle. This timer has no effect on regulation.

How to use the timer:

the timer is not running; to start it, press the key once;

the timer is running; to stop it, press the key once.

Every time the timer is stopped - either during countdown or when the set time has elapsed - it displays the last set time.

To change this time, hold the key down for at least three seconds: a numerical keypad will appear to set the new value.

5.5   Recipe book

New recipes can be used or saved using the UPLOAD RECIPE and SAVE RECIPE keys.

When the UPLOAD RECIPE key is pressed, the following screen opens. From here a recipe can be retrieved and started up only (recipes with a default image and the label "Recipe" are recipes with standard settings). Once the selected recipe has been uploaded to the main cooking screen, it can be personalised with an image and a name.

A recipe which has already been loaded and is then changed can be saved using the SAVE RECIPE key. The following screen opens and the user chooses where to save it.

Up to 99 recipes can be saved in the recipe book.

5.5.1   Clock and alarms

The "clock" field shows the current date and time, which can be configured in either EUROPEAN or US format:

EUROPEAN:
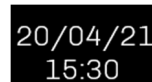
US:
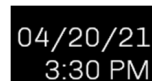
If an alarm is active, the following icon will appear in place of the "clock" field.

By pressing the icon, the page with the active alarms will be displayed.

5.6   Locked display

Following a period of inactivity of the keypad, which can be set using parameter e3, the display goes into locked display mode but the information on the display remains the same. When the display is touched, the message "PRESS TO UNLOCK" appears: press down on the message for at least 4 seconds to unlock the display.

The locked display function can be deactivated using parameter e3=0.

6 "WEEKLY PROGRAMMED SWITCH-ON" FUNCTION

6.1 Initial information

If enabled by parameter C5, the "Weekly programmed switch-on" function allows the user to programme up to two recipes, each with 2 switch-ons, for every day of the week.

The recipe will be loaded and the oven will reach the pre-set temperature for the recipe.

6.2 Setting and activating the function

To access this procedure, proceed as follows:

1. Make sure at least one recipe has been saved and that the device is in stand-by; if no recipes have been saved, the default recipe will be used.

2. Touch the 🗓 key at the top left of the screen. The following screen will appear with the default recipe (if it is the first time it is programmed) or with the previously used recipe:
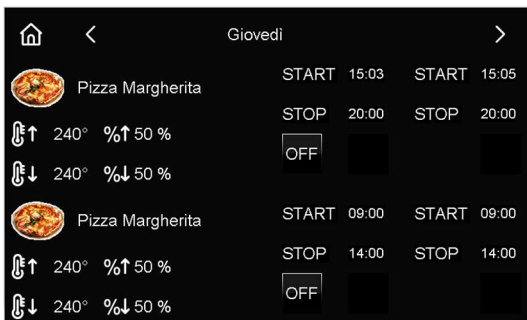

To programme a switch-on, proceed as follows:

1. Select the day of the week.

2. Select one of the two recipes; a screen will open to choose which recipe to upload. Select the recipe:

3. Press on the START and STOP area and a keypad will appear to change the start and end times of the two programmed switch-ons. To enable the deferred start, press the OFF/ON key of the desired recipe; two more OFF/ON keys will appear under the respective timings to activate either one or both of the switch-ons.

4.
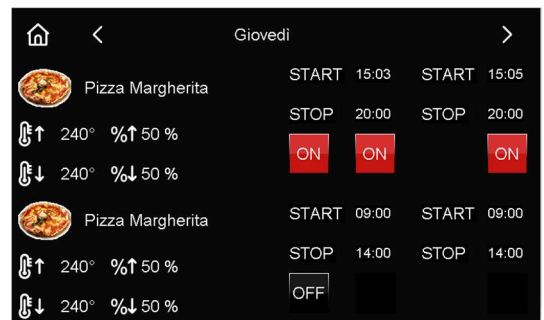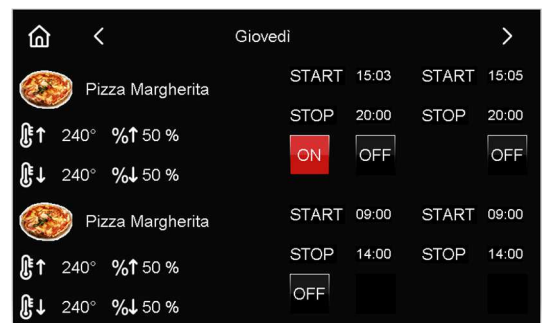
When programming is complete, press the HOME 🏠 key to go back to the stand-by page. The page will display the day and time of the closest deferred start.

The weekly programme can be changed at any time by pressing the 🗓 key and repeating this procedure.

If the oven is on because a programmed switch-on has started up, the programming icon will be displayed.

7 MANAGING LOADS

7.1 Initial information

This paragraph describes the loads during normal operation.

To learn the main consequences of an alarm signal, see the section "ALARM MANAGEMENT".

7.2 Temperature regulation

Temperature is regulated by activating the related relays (if configured). When the relay activation is cyclical, switch-ons will be separated in time as much as possible to minimise the top and floor relays overlapping when they switch-on. The minimum relay switch-on is also controlled by parameter r10 (minimum on/off duration of the output for temperature regulation) which cannot be set below 10 seconds when the regulation relays are electro-mechanical.

7.2.1 Devices with one analogue input (chamber probe)

The oven temperature in this type of device is regulated by the chamber probe and there are two relay outputs for the top and floor.

Regulation is always ON-OFF: the outputs are switched on, according to the power set for each one, either together or in sequence, until the temperature detected by the chamber probe reaches the working setpoint. They are switched on again when the temperature falls below that set by parameter r0 ("working setpoint - r0").

The switch-on cycle period is set in seconds by parameter r8. The switch-on time for each load is calculated as follows:

$$Ton = r8 * power/100$$
$$Toff = Ton - r8$$

The top and floor powers can be linked to each other by setting parameter r7 to 1 or 2 (this enables the constraint between the power delivered to the top and the power delivered to the floor).

If r7 = 1, the setting for the power delivered to the top causes automatic adaptation of the power delivered to the floor, and vice-versa, so as to guarantee that the sum of the two power values is always 100.

If, on the other hand, r7 = 2, the power selected for the top (within the range 0-100%) has priority, so the maximum power that can be set for the floor must not exceed the remaining power calculated using the formula "max. power range - top power set".

Examples:

- if the top power is set to 80%, the power of the floor can be set from 0% to 20% max.

- if the top power is set to 50% and the floor power to 50%, if the power of the top is increased, from 50% to 70% for instance, the power of the floor is automatically decreased (from 50% to 30%).

7.2.2 Devices with 2 analogue inputs (top and floor probes)

This type of device has two different independent oven temperature regulation systems: one operates the top probe, the other the floor probe, each linked to a top and a floor relay.

Regulation is always ON-OFF: the outputs are switched on, according to the power set for each one, either together or in sequence, until the temperature detected by each probe reaches the working setpoint. They are switched on again when the temperature falls below that set by parameter r0 ("working setpoint - r0").

The switch-on cycle period is set in seconds by parameter r8. The switch-on time for each load is calculated as follows:

$$Ton = r8 * power/100$$
$$Toff = Ton - r8$$

The top and floor powers can be linked to each other by setting parameter r7 to 1 or 2 (this enables the constraint between the power delivered to the top and the power delivered to the floor).

If r7 = 1, the setting for the power delivered to the top causes automatic adaptation of the power delivered to the floor, and vice-versa, so as to guarantee that the sum of the two power values is always 100.

If, on the other hand, r7 = 2, the power selected for the top (within the range 0-100%) has priority, so the maximum power that can be set for the floor must not exceed the remaining power calculated using the formula "max. power range - top power set".

Examples:

- if the top power is set to 80%, the power of the floor can be set from 0% to 20% max.

- if the top power is set to 50% and the floor power to 50%, if the power of the top is increased, from 50% to 70% for instance, the power of the floor is automatically decreased (from 50% to 30%).

7.2.3   Rapid heating

The rapid heating function is activated using the key; this function will force activation of the heaters, regardless of their regulation percentage, to reach the chamber temperature as rapidly as possible during the pre-heating phase.

The parameters are set as follows:

- c6: this activates the "rapid heating" function when the device is switched from stand-by to on.
- c7: chamber temperature above which the "rapid heating" function is interrupted. If c7 is set to 0, the function stops when the working setpoint is reached.

N.B: this function cannot be activated if the Economy function is running.

7.2.4   Economy function

The Economy function reduces consumption and is activated using the key. The maximum duration of the Economy function is set by parameter c8.

- **Devices with one analogue input**

  The function cannot be activated in these devices if the "rapid heating" function is in progress.

  Consumption is reduced by decreasing the percentage of power delivered to the top and floor through parameter c9. The ratio is as follows:

  power in Economy= power set * c9/100

  In this configuration, the key is always present on the main screen.

- **Devices with 2 analogue inputs**

  The function cannot be activated in these devices if the "rapid heating" function is in progress.

  Consumption is reduced by inhibiting simultaneous activations of the relay outputs.

  For ON-OFF regulation, the switch-on cycle periods are set in seconds by parameter r8. The switch-on time for each load will be half that period, r8/2 seconds, and switch-ons will be separated in time so as to avoid overlapping. In this configuration, the key is always present on the main screen.

7.3   Rotary plate management

The three-phase motor which turns the rotary plate is controlled by an EVCO inverter connected to the controller through an RS-485 serial port.

A series of keys appear on the screen and have the following functions:

Activation and deactivation of the rotary plate

This key indicates that the plate is rotating; press it to halt rotation.

This key indicates that the plate is not rotating; press it to start rotation.

Direction of rotation and pause time when changing direction

The red key shows which direction has been set.

Press the number to change the pause time when changing direction; a screen with a numeric keypad will open to set the new value.

If this configuration is displayed (parameter TIP=1), two fixed speeds can be set:

Minimum plate rotation time: the value indicates the time (in seconds) needed for the rotary plate to make one complete rotation. If this time has been selected, the key will be red; if not, it will be black.

Maximum plate rotation time: the value indicates the time (in seconds) needed for the rotary plate to make one complete rotation. If this time has been selected, the key will be red; if not, it will be black.

To change the time needed for the rotary plate to make one complete rotation, press the number.

If this configuration is displayed (parameter TIP=0), the number indicates the time needed for the rotary plate to make one complete rotation. To decrease or increase this value, press the or the key respectively.

N.B.: as the motor has a gear reducer, care must be taken to set the correct "Total motor shaft reducer" value for the RT parameter.

7.4   Buzzer management

The buzzer is activated in the following situations:

- at the end of the cooking cycle (see parameter c0)
- on activation of an alarm.

N.B.: buzzer activation can be linked to a relay if configured as "Sound" (uxc=11).

The buzzer can also be placed outside the electronics compartment using an expansion device, supplied as an accessory (CT1ES0070000), which must be connected to the relevant connector on the power board (see the section "ELECTRICAL CONNECTION").

7.5 Electronics compartment fan

Management of the electronics compartment fan depends mainly on the status of the device:

- if the device is switched on, the fan will switch on
- if the device is switched off, the fan will switch off

N.B.: the fan may remain on when the device is switched off if the operating temperature of the control module is above the u6 threshold.

7.6 Stand-by/on relay management

When an output is configured as a stand-by/on relay, management of the connected load depends on the status of the device:

- if the device is switched on, the relay will switch on
- if the device is switched off, the relay will switch off

7.7 Sound relay management

When an output is configured as a sound relay, the relay will behave as follows every time the buzzer is activated:

- if the buzzer is switched on, the relay will switch on
- if the buzzer is switched off, the relay will switch off

7.8 Type 1 or 2 burner block reset (only for gas ovens)

Burner block reset management is only active if one of the relays is configured as "Burner block reset" (uxc=12); the type of burner block (1 or 2) depends on the high voltage input (230 Vac) which the burner is connected to.

In the event of a burner block alarm, in both cases, a key is displayed to the side of the alarm signal which, when pressed, activates the relay output for 5 seconds, resetting the gas control unit and restoring normal operation.

TYPE 1 BURNER BLOCK INPUT – the top and floor outputs will be switched off, the device will display "BURNER BLOCK" and the buzzer will be activated (until the input is deactivated). It is possible to reset the alarm by pressing the alarm key which will activate the relative relay output for 5 seconds, resetting the gas control unit and restoring normal operation.

TYPE 2 BURNER BLOCK INPUT – the top and floor outputs will not be switched off, the device will display "BURNER BLOCK" and the buzzer will be activated (until the input is deactivated). It is possible to reset the alarm by pressing the alarm key which will activate the relative relay output for 5 seconds, resetting the gas control unit and restoring normal operation.

8 CONFIGURATION

8.1 Initial information

Touch the ⚙ key on the Stand-by screen to access the menu which has several different options:

Page 1

<	MENU	⌃⌃
		⌃
LISTA ALLARMI		
VALORI INTERNI		
PULIZIA DISPLAY		
OROLOGIO		⌄
LINGUA		⌄⌄

Page 2

<	MENU	⌃⌃
		⌃
PULIZIA DISPLAY		
OROLOGIO		
LINGUA		
USB		⌄
SERVICE		⌄⌄

If the controller is ON, press the ☰ key to access the menu which, in this case, will give only a few options:

<	MENU	
LISTA ALLARMI		
VALORI INTERNI		
PULIZIA DISPLAY		

To access the various procedures, touch the screen near the information/function required.

8.2 List of alarms

This option displays the page with the active alarms. If no alarm is active, the page cannot be selected.

8.3 Internal values

This option displays the values and status of the controller's inputs and outputs.

8.4 Display cleaning

If this option is selected, the display is deactivated for 15 seconds, during which time the glass may be cleaned without altering any of the settings on the screen.

8.5 Setting the date and time

By selecting this option, the date and

time can be changed and either the "EU" or "US" format chosen.

In the event of "multi-base" configuration, this function can only be accessed if all the levels are in stand-by (this menu has a key which automatically puts all the ovens in stand-by).

8.6 Languages

By selecting this option, the device can be configured with the required language. One of the following languages can be selected: Italian, English, German, French or Spanish.

8.7 USB

If this option is selected, the map of parameters or the recipe book can be imported or exported.

In the event of "multi-base" configuration, this function can only be accessed if all the levels are in stand-by (this menu has a key which automatically puts all the ovens in stand-by).

8.8 Service

This option (accessed using the password -19) gives access to a sub-menu where it is possible to change the parameters, restore factory settings, factory recipes and all the settings or test the relays.

The password for "reset parameters" or "restore recipes" is "149", while it is "-119" for "restore settings" (restore parameters + recipe book). Please be aware that, for safety reasons, the "restore settings" function configures all outputs to "unused" and they will therefore need to be reconfigured manually (unless the "restore.csv" file has been uploaded by the oven manufacturer).

In the event of "multi-base" configuration, the service can only be accessed if all the levels are in stand-by (this menu has a key which automatically puts all the ovens in stand-by).

9   LIST OF CONFIGURATION PARAMETERS

PARAM.	MIN.	MAX.	M.U.	DEF.	ANALOGUE INPUTS
P0	0	1	- - -	0	type of probe 0 = J thermocouple (only for J/K power board) 1 = K thermocouple (only for J/K power board) **N.B.: this parameter is only relevant for models for thermocouples; this parameter is not used in the models for Pt 100 probes**
P1	0	1	- - -	0	temperature measurement unit 0 = °C 1 = °F **N.B.: when moving from °C to °F and vice versa, the temperature settings are automatically converted; check they are correct**
P2	0	1		0	type of operation 0 = <u>WITH CHAMBER PROBE</u> 1 = <u>WITH TOP AND FLOOR PROBES</u>
CA1	-25	25	°C [1]	0	chamber probe offset (top if P2=1)
CA2	-25	25	°C [1]	0	floor probe offset
PARAM.	MIN.	MAX.	M.U.	DEF.	MAIN REGULATOR
r0	1	99	°C [1]	5	chamber/top setpoint differential
r1	0	r2	°C [1]	0	minimum chamber/top setpoint
r2	r1	999	°C [1]	300	maximum chamber/top setpoint
r3	r1	r2	°C [1]	130	chamber/top setpoint
r4	0	r5	°C [1]	0	minimum floor setpoint
r5	r4	999	°C [1]	300	maximum floor setpoint
r6	r4	r5	°C [1]	130	floor setpoint
r7	0	1	- - -	0	enable constraint between power delivered to the top and power delivered to the floor 0 = no 1 = yes – the setting for the power delivered to the top causes automatic adaptation of the power delivered to the floor, and vice-versa, so as to guarantee that the sum of the two power values is always 100 2 = yes – the setting for the power delivered to the top (priority) causes automatic adaptation of the power delivered to the floor, so as to guarantee that the sum of the two power values is always 100 (the floor power will always be the remaining percentage, considering "100 % - % top").
r8	1	650	s	80	cycle time for switch-on of the top and floor outputs
r9	0	1	---	0	heating management 0 = ON-OFF regulation 1 = no regulation (temperature displayed only)
r10	1	240	s	10	minimum on/off duration of the output for temperature regulation N.B.: values below 10 seconds are not recommended for outputs with electro-mechanical relays
PARAM.	MIN.	MAX.	M.U.	DEF.	MISCELLANEOUS

c0	-1	120	s	15	duration of buzzer activation on completion of the cooking cycle -1 = until silenced manually
c1	0	1	- - -	0	buzzer activation when the cooking timer starts 0 = deactivated 1 = activated for 1 s
c3	0	99	°C [1]	10	temperature above which the temperature detected by the chamber probe cannot be displayed (referring to the working setpoint, i.e. "working setpoint + c3") 0 = function absent value considered for top and floor
c4	0	99	°C [1]	10	temperature below which the temperature detected by the chamber probe cannot be displayed (referring to the working setpoint, i.e. "working setpoint - c4") 0 = function absent value considered for top and floor
c5	0	1	- - -	0	enable the "weekly programmed switch-on" function 0 = no 1 = yes
c6	0	1	- - -	0	activation of the "rapid heating" function when the device is switched on (only for 1-probe operation) 0 = no 1 = yes
c7	0	999	°C [1]	150	chamber temperature above which the "rapid heating" function is interrupted (only for 1-probe operation) 0 = THE FUNCTION IS INTERRUPTED WHEN THE WORKING SETPOINT IS REACHED
c8	0	240	min	60	maximum duration of the "ECONOMY" function 0 = infinite duration (until manual deactivation) N.B.: only applies if the "ECONOMY" function has not been activated or kept active by the digital input (see i7)
c9	0	100	%	50	percentage reduction in the duration of the top and floor output switch-ons during the "ECONOMY" function ONLY APPLIES FOR 1-PROBE OPERATION. IT CAN ALSO BE SET USING THE QUICK PROCEDURE
c10	0	1	- - -	0	maintain "ECONOMY" function when moving from STD-BY to ON 0 = no 1 = yes
PARAM.	MIN.	MAX.	M.U.	DEF.	TEMPERATURE ALARMS
A0	1	99	°C [1]	10	high temperature alarm differential
A1	0	500	°C [1]	0	temperature above which the high temperature alarm is raised (referring to the temperature detected by the chamber probe or the top and floor temperatures). See also A0 and A3. N.B.: check the temperature value is appropriately set if A3 = 1 or 2
A2	0	240	min	0	high temperature alarm delay
A3	0	2	- - -	0	type of high temperature alarm 0 = alarm absent 1 = absolute (i.e. the value of A1) 2 = relative to the working setpoint (i.e. "working setpoint+A8")

PARAM.	MIN.	MAX.	M.U.	DEF.	
A4	0	80	°C [1]	70	temperature above which the working temperature alarm is raised (referring to the working temperature of the control module) 0 = alarm absent
A5	-1	240	min	240	duration of a power failure during the cooking cycle sufficient to interrupt it -1 = returns to previous status without activating the PF alarm 0 = the controller is forced into stand-by without activating the PF alarm 1÷240 = the PF alarm is activated - If the interruption is less than A5, the cycle resumes from the beginning; if it is more than A5, the cycle is interrupted. N.B. if the PF alarm is still activated when going from one day to the next, the controller is forced into stand-by.
A8	0	999	°C [1]	0	high temperature alarm threshold if A3=2 (relative to the setpoint)
PARAM.	**MIN.**	**MAX.**	**M.U.**	**DEF.**	**DIGITAL INPUTS**
i2	0	1	- - -	0	polarity of multi-purpose digital input ID2 (pin 55-56) 0 = input active with contact closed (normally open) 1 = input active with contact open (normally closed)
i3	0	1	- - -	0	polarity of digital input ID3 (pin 57-58) 0 = input active with contact closed (normally open) 1 = input active with contact open (normally closed)
i6	0	120	s	5	thermal switch alarm signal delay (230 Vac)
i7	0	1	- - -	0	effect caused by activation of the multi-purpose input ID2 0 = no effect 1 = <u>DEVICE SWITCHED OFF</u> – the device is placed in stand-by and, when the input is active, the on-off key is disabled; deactivating the input will not automatically start the controller back up again but will enable the on-off key so the controller can be switched on manually. 2 = <u>START-UP OF COOKING CYCLE</u>
i9	0	1	- - -	0	effect caused by activation of ID3 input 0 = no effect 1 = <u>"ECONOMY" FUNCTION ACTIVATED</u> – the "Economy" function is activated (until the input is deactivated)
i10	0	1	- - -	0	polarity of power consumption input (pin 7-10) 230 Vac 0 = normally open (input active with contact closed) 1 = normally closed (input active with contact open)
i11	0	1	- - -	0	polarity of thermal switch input (pin 7-9) 230 Vac 0 = normally open (input active with contact closed) 1 = normally closed (input active with contact open)
i12	0	1	- - -	0	polarity of 1/2 burner block input (pin 7-8) 230 Vac 0 = normally open (input active with contact closed) 1 = normally closed (input active with contact open)
i13	0	1	- - -	0	type of gas burner block connected 0 = type 1 1 = type 2
PARAM.	**MIN.**	**MAX.**	**M.U.**	**DEF.**	**DIGITAL OUTPUTS**

u6	20	65	°C [1]	60	temperature above which the electronics compartment fan is switched on with the oven in stand-by mode (referring to the operating temperature of the control module). See also u7
u7	1	99	°C [1]	10	u6 differential
u1c	0	8	- - -	1	K1 relay 0 = unused 1 = top heater 2 = floor heater 3 = chamber light 4 = electronics compartment fan (see also parameters u6 and u7) 5 = stand-by/on 6 = sound 7 = burner block reset 8 = hood light
u2c	0	8	- - -	5	K2 relay same configurations as u1c
u3c	0	8	- - -	2	K3 relay same configurations as u1c
u4c	0	8	- - -	0	K4 relay same configurations as u1c
u5c	0	8	- - -	3	K5 relay same configurations as u1c
u6c	0	8	- - -	0	K6 relay same configurations as u1c
u7c	0	8	- - -	0	K7 relay same configurations as u1c
u8c	0	8	- - -	0	K8 relay same configurations as u1c
u9c	0	8	- - -	0	K9 relay same configurations as u1c
u10c	0	8	- - -	4	K10 relay same configurations as u1c
u11c	0	8	- - -	6	K11 relay same configurations as u1c
u12c	0	8	- - -	7	K12 relay same configurations as u1c
u13c	0	8	- - -	0	K13 relay same configurations as u1c
u14c	0	8	- - -	0	K14 relay reserved
u15c	0	8	- - -	0	K15 relay reserved
u16c	0	8	- - -	0	K16 relay reserved
u17c	0	8	- - -	0	K17 relay reserved
u18c	0	8	- - - [1]	0	K18 relay

PARAM.	MIN.	MAX.	M.U.	DEF.	
					reserved
u19c	0	8	- - -	0	K19 relay reserved
PARAM.	**MIN.**	**MAX.**	**M.U.**	**DEF.**	**SERIAL NETWORK**
rE0	1	240	min	5	internal data sampling time
bLE	0	99	- - - -	1	serial port configuration for connectivity 0 = free for MODBUS RTU 1-99 = EPoCA local network address (in this case the baud rate is automatically configured to 19,200 baud irrespective of the Lb value) N.B.: if connectivity comes from EVlinking Wi-Fi, the only value that can be set is 1
LA	1	247	- - -	247	device address
Lb	0	3	- - -	3	baud rate (the parameter is relevant only if bLE = 0) 0 = 2,400 baud 1 = 4,800 baud 2 = 9,600 baud 3 = 19,200 baud
LP	0	2	- - -	2	parity 0 = none 1 = odd 2 = even
PA1	-999	999	- - - -	426	EPoCA level 1 password (User)
PA2	-999	999	- - - -	824	EPoCA level 2 password (Administrator)
PARAM.	**MIN.**	**MAX.**	**M.U.**	**DEF.**	**OTHERS**
e0	0	1	---	0	behaviour of chamber light when going from STD-BY to ON 0 = light on 1 = maintains the status it had in STD-BY
e1	0	1	---	0	behaviour of chamber light when going from ON to STD-BY 0 = light off 1 = maintains the status it had in ON
e3	0	240	s	0	locked display 0 = not locked 1÷240 = locked display activation delay
PARAM.	**MIN.**	**MAX.**	**M.U.**	**DEF.**	**EVCO INVERTER** [2]
S202	2	2000	ds (s/10)	30	duration acceleration ramp
S203	2	2000	ds (s/10)	50	duration deceleration ramp
S204	S205[5]	6000	RPM	1500	maximum motor speed
S205	150	S204[5]	RPM	300	minimum motor speed
S206	0	1	---	0	motor rotation direction 0= clockwise 1= anti-clockwise
S403	0	600	ds (s/10)	20	time-out inverter communication alarm
S501[3]	1	94	dA (A/10)	55[4]	nominal current
S502[3]	50	400	V	230	nominal voltage

S503[3]	0	100	Hz	50	nominal frequency
S504[3]	1	8	---	2	number of pole pairs
S506[3]	1	3000	RPM	1380[4]	nominal motor revolutions
S511	0	50	%	50	motor overload
S512	0	60	ds (s/10)	30[4]	maximum time motor overload
S513	1	3	---	1	stop type: 1 = stop with ramp 2 = stop with DC voltage injection 3 = stop with ramp + DC voltage injection
S515	0	200	ds (s/10)	0	duration of breaking in DC voltage (only if S513=2 or 3)
S516	0	50	%	0	DC bus voltage percentage applied to the motor during braking with DC voltage (only if S513=2 or 3)
S529	5	16	KHz	5	PWM carrier frequency
S534	0	100	%	0	motor phase loss alarm sensitivity percentage
S602	120	S603	V	200	undervoltage level
S603	S602	450	V	420	overvoltage level
RT	1	2000	- - -	281	total motor shaft reducer
TIP	0	1	- - -	0	rotary plate speed management: 0 = 2 keys which increase and decrease plate rotation time 1 = 2 keys configured for minimum and maximum speed

Notes:

(1)   The temperature unit of measurement depends on parameter P1. Temperatures are given in °C; refer to the conversion table for minimum and maximum settable values in °F.

(2)   For a complete list of inverter parameters, see the dedicated documentation supplied with the inverter used. Except for S403, all parameters with their relative interval and default values are acquired when the inverter is switched on.

(3)   The parameter depends on the motor rating label data.

(4)   Values may differ depending on the inverter installed: the values indicated refer to the Compact inverter with power 1.5 KW and are given purely for reference purposes.

(5)   The upper limit of the minimum motor speed depends on the value set for S204; similarly, the lower limit of the maximum motor speed depends on the value set for S205. It is not possible, for instance, to set the minimum motor speed (parameter S205) at a value which is higher than the value of the maximum motor speed (parameter S204).
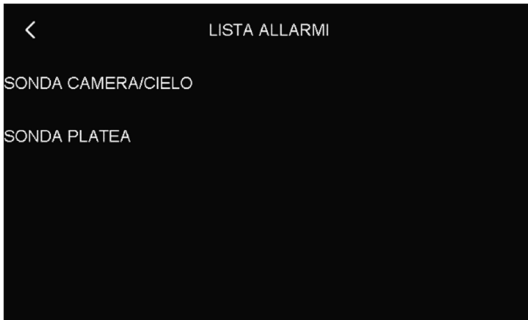
10 ALARM MANAGEMENT

If an alarm situation occurs, the buzzer is activated and the alarm icon below will appear on the ON screen in place of the clock field.

Pressing this key will silence the buzzer and the page with the active alarms will automatically be displayed.

If the alarm is automatically reset, once the alarm situation has been resolved, the signal will no longer be displayed on this page; if, on the other hand, the alarm must be manually reset, another icon will appear to manually reset it. An example of an active alarm display is given below:

The table below shows the meaning of the device's various alarm codes.

| ALARM CODE	DESCRIPTION
RTC	to correct: - set the date and time
TOP/CHAMBER PROBE	to correct: - check the type of probe; see parameter P0 - check the device-probe connection - check the temperature of the top/chamber main results: - the temperature regulation output will be switched off
FLOOR PROBE	to correct: - as in the previous case, but relating to the floor main results: - the temperature regulation output will be switched off
POWER FAILURE	to correct: - check the device-power supply connection main results: - if the alarm occurs when the device is in stand-by, it is not signalled - if the alarm occurs when the device is on, see parameter A5 in cases "-1" and "0" - if the alarm occurs during a cooking cycle with A5>0 and the interruption lasts for a shorter time than that set by parameter A5, when power is restored the cycle will be resumed from the start (if the interruption lasts longer than the time set by parameter A5, the cycle will be interrupted when power is restored).
NO CONNECTION	to correct: - check the user interface-control module connection main results: - the loads will be deactivated
POWER BOARD COMPATIBILITY	to correct: - check the user interface-control module FIRMWARE versions main results: - the loads will be deactivated
CHAMBER/TOP HIGH TEMPERATURE	to correct:

|	- check the temperature detected by the chamber probe (if the device has one probe) or by the top probe (if it has two probes). See parameters A0, A1, A2, A3 and A8 main results: - no effect
FLOOR HIGH TEMPERATURE	to correct: - check the temperature detected by the floor probe. See parameters A0, A1, A2, A3 and A8 main results: - no effect
BOARD HIGH TEMPERATURE	to correct: - check the operating temperature of the control module. See parameter A4 main results: - the electronics compartment fan will come on, the top and floor outputs will be switched off
THERMAL SWITCH	to correct: - check the cause of input activation. See parameter i6 main results: - the top and floor outputs will be switched off
PEAK CONSUMPTION	to correct: - check the cause of input activation main results: - the top and floor outputs will be switched off
BURNER BLOCK TYPE 1 OR TYPE 2	to correct: - check the burner is working properly main results: - see relevant paragraph
INVERTER COMMUNICATION	to correct: - make sure the wiring is correct and intact - check the inverter is powered correctly
INVERTER PHASE LOSS	to correct: - check the wiring between the inverter and the motor - if the problem persists, contact EVCO's technical support
INVERTER UNDERVOLTAGE	to correct: - check the characteristics of the motor - check the inverter is powered correctly
INVERTER OVERVOLTAGE	to correct: - check the characteristics of the motor - check the inverter is powered correctly
INVERTER OVERLOAD	to correct: - check the characteristics of the motor - check the wiring
INVERTER OVERCURRENT	to correct: - check the characteristics of the motor - check the wiring
INVERTER OVERHEATING	to correct: - check the inverter is powered correctly - check the inverter is aired correctly

11 CONNECTIVITY

11.1 Initial information

Users can interact remotely with their equipment and start up/stop working cycles using the EPoCA cloud platform with Wi-Fi or Ethernet connectivity (which also enable alternative or parallel control through MODBUS TCP). For more details, compare the connectivity options in the "Models available and technical features" table and consult the Management and Monitoring Products/Systems and the Connectivity/Devices sections of our website www.evco.it.
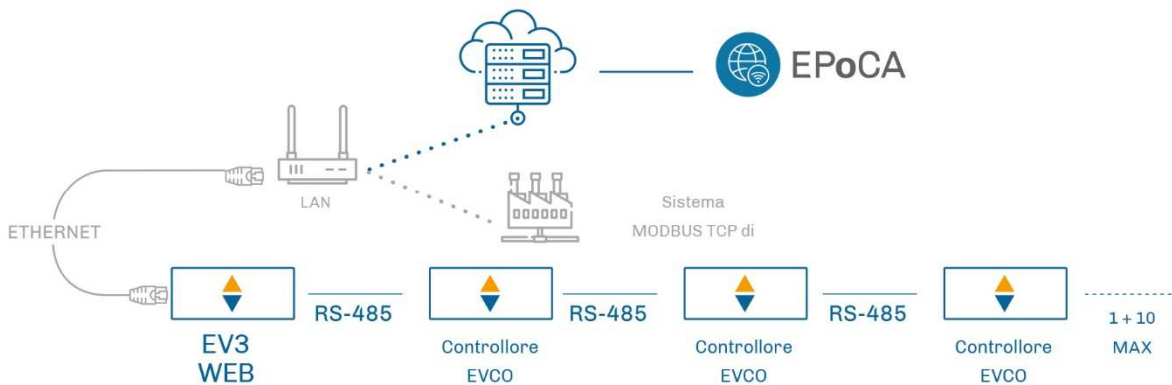
Schematic diagram for operation with EVlinking Wi-Fi (Wi-Fi connectivity)
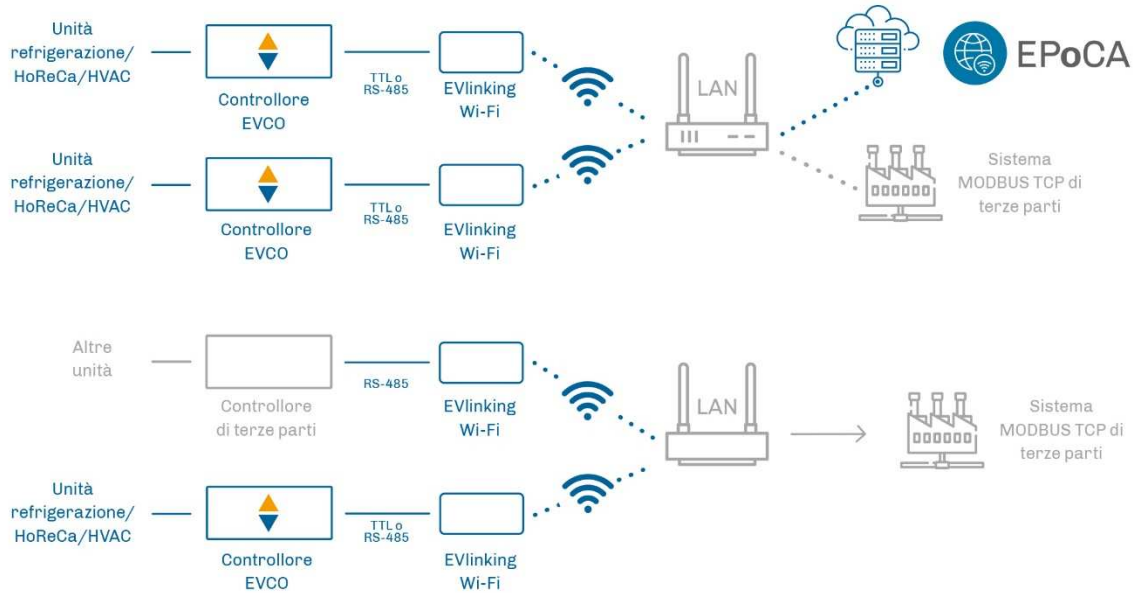
Detail of electrical connection of EVlinking Wi-Fi to Vcolor 379
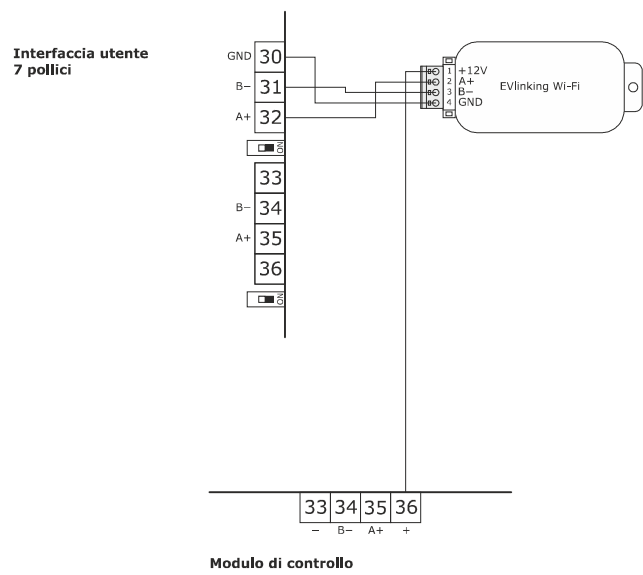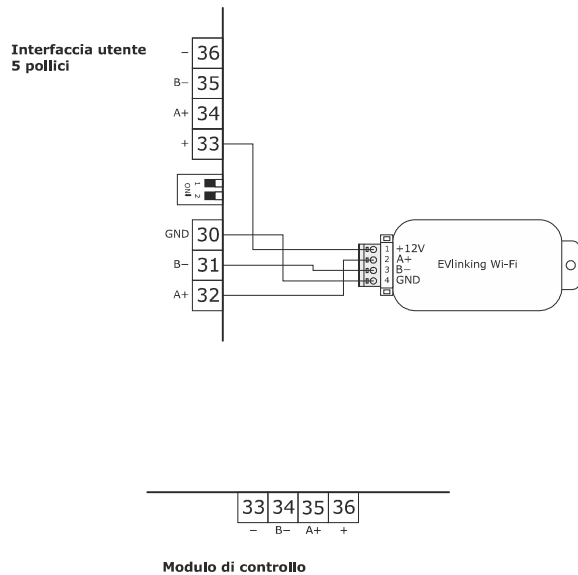
Schematic diagram for operation with EV3 Web (Ethernet connectivity)

Detail of electrical connection of EV3 Web to Vcolor 379
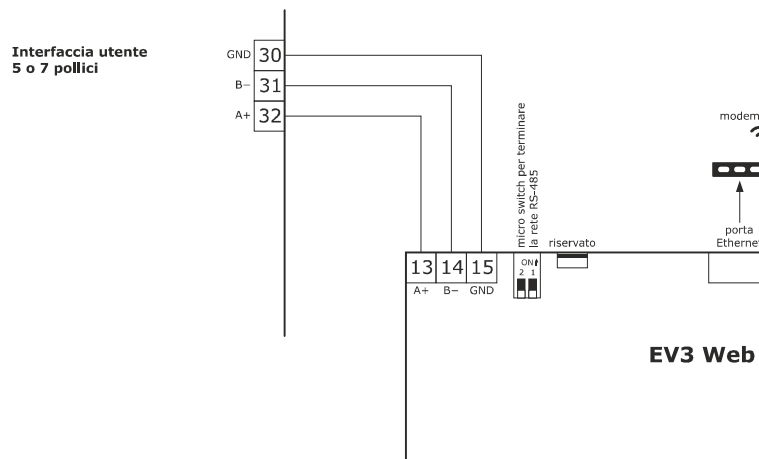
11.2 EPoCA cloud platform

EPoCA® is a remote management and monitoring system based on a cloud platform. Originally developed to meet the management needs of the food preservation and cooking sector, it has been expanded to HVAC units in response to market demand.

To connect to the cloud system and remotely control machinery from a PC, tablet or smartphone, all users need is an EVCO controller with native EPoCA® technology and connectivity which is either built-in or provided by external hardware modules. All devices are configured using the dedicated "EPoCA Start" mobile app.

The responsive design and the graphic interface conceived to provide a pleasant user experience make EPoCA® a "ready-to-use" solution for easily accessible management and monitoring operations, even for entry-level users, while offering all the typical functions of professional platforms.

With the appropriate protection measures for access and data, the system makes it possible for one or more enabled users to operate remotely on the unit to configure its parameters, activate cycles, receive automatic alerts, view data (also as a graph) and download records in the most popular formats, such as XLSX, CSV and PDF.

12 USING THE USB PORT

12.1 Initial information

The following actions are possible through the USB port:
-           upload and download recipe settings
-    upload and download configuration parameter settings
-           upload CSV files to personalise the graphics, recipes and languages.

These operations are guaranteed by using the EVUSB4096M USB key.

The uploading operations are only possible if the firmware of the device from which it originates and the firmware of the destination device are the same.

12.2 Uploading the recipe settings

The recipe settings can be uploaded as follows:
1.   Ensure that the device is in stand-by and that no procedures are in progress.
2.   Insert the USB flash drive containing the recipe file with the name "prog.bin" (previously downloaded from another device) in the USB port of the device and wait a few seconds.
3.   Press the "UPLOAD RECIPES" key.
4.   When the upload is complete, remove the USB flash drive from the USB port of the device.

12.3 Downloading the recipe settings

The programme settings can be downloaded as follows:
1.   Ensure that the device is in stand-by and that no procedures are in progress.
2.   Insert a USB flash drive in the USB port of the device and wait for a few seconds.
3.   Press the "DOWNLOAD RECIPES" key.
4.   When the operation is complete, a "prog.bin" file will be generated which can be used to upload the contents to other controllers.

12.4 Uploading the settings in the configuration parameters

The programme settings can be uploaded as follows:
1.   Ensure that the device is in stand-by and that no procedures are in progress.
2.   Insert the USB flash drive containing the recipe file with the name "param.bin" (previously downloaded from another device) in the USB port of the device and wait a few seconds.
3.   Press the "UPLOAD PARAMETERS" key.
4.   When the upload is complete, remove the USB flash drive from the USB port of the device.

12.5 Downloading the settings in the configuration parameters

The programme settings can be downloaded as follows:
1.   Ensure that the device is in stand-by and that no procedures are in progress.
2.   Insert a USB flash drive in the USB port of the device and wait for a few seconds.
3.   Press the "DOWNLOAD PARAMETERS" key.
4.   When the upload is complete, remove the USB flash drive from the USB port of the device.

12.6 Uploading CSV files to personalise the graphics, recipes and languages

For the procedure to compile the ODS file, convert it to CSV, transfer to a USB flash drive and upload it to the controller, please refer to "Personalisation of the Vcolor platform".

13 ACCESSORIES

13.1 EVCO Inverter

Enables modulating management of asynchronous motors.

Compact series: EI750M2C04O0VXX/EI1K5M2C04O0VXX/EI2K2M2C04O0VXX/EI2K3M2C04O0VXX
Single-phase inverter 0.75/1.5/2.2/2.3 KW @ 230 Vac.

Slim Power series: EI550M2L02TXVXX/ EI550M2L12TXVXX/ EI550M2L22TXVXX
Single-phase inverter with power up to 550 W @ 230 Vac.

Slim series: EI250M2S02O0
Single-phase inverter with power up to 250 W @ 230 Vac.

13.2 Safety transformer

ECTSFD004
The transformer can power the user interface.

13.3 Non-optoisolated RS-485/USB serial interface

EVIF20SUXI
The interface enables the device to be connected to the Parameters Manager set-up software system.

13.4 USB plug for panel installation

0812000002

The plug makes the USB communications port of the device more accessible.

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

13.5 Connecting cables

0810500018/0810500020

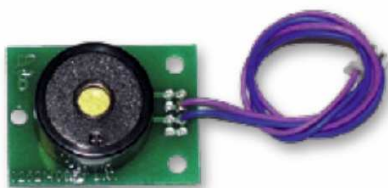These cables are used to connect the USB plug for panel installation 0812000002 to the device.

Cable 0810500018 is 2 m long; cable 0810500020 is 0.5 m long.

13.6 Buzzer expansion

CT1ES0070000

The buzzer can be placed outside the electronics compartment using an expansion device which can be connected to the control module.

13.7 4GB USB flash drive

EVUSB4096M

The flash drive makes it possible to upload and download the settings and the data recorded by the device.

13.8 EVlinking Wi-Fi RS-485 module

EVIF25SWX

Through the RS-485 communications port, the module provides the controller with Wi-Fi connectivity which enables remote management and monitoring from the Internet using the EPoCA® cloud system.

13.9 EV3 Web gateway

EV3W01

IoT gateway with Ethernet connectivity and data logging functions to remotely monitor and control an RS-485 MODBUS RTU network with up to 10 EVCO controllers with EPoCA® technology using the EPoCA® cloud platform.

14 TECHNICAL SPECIFICATIONS

14.1 Technical data

Purpose of the control device:	function controller	
Construction of the control device:	built-in electronic device	
Housing:	user interface	control module
	plastic housing	open frame board
Category of heat and fire resistance:	D	
Measurements:	user interface M	user interface L
	Flush fit installation:	Flush fit installation:
	118.0 x 166.0 x 35.0 mm (4.645 x 6.535 x 1.377 in; L x H x D)	156.0 x 216.0 x 50.0 mm (6.141 x 8.503 x 1.968 in; L x H x D)
	Semi-recessed installation:	Semi-recessed installation:
	97.1 x 145.1 x 32.0 mm (3,822 x 5,712 x 1,259 in; L x H x D)	131.9 x 192.9 x 47.0 mm (5,192 x 7,594 x 1,850 in; L x H x D)
Mounting methods for the control device:	user interface	control module
	flush with the panel from behind with threaded studs (not provided) to hold it in place or semi-recessed from the front of the panel using the spring clips	on a flat surface with spacers
Degree of protection:	user interface	control module
	IP65 (front)	IP00.
Connection method:	user interface	control module
	plug-in screw terminal blocks for wires up to 1.5 mm², type A female USB connector (USB port)	plug-in screw terminal blocks for wires up to 2.5 mm²
	Maximum permitted length for connection cables:	
	- user interface-control module connection: 10 m (32.8 ft)	
	- power supply: 10 m (32.8 ft)	
	- analogue inputs: 10 m (32.8 ft)	
	- digital inputs: 10 m (32.8 ft)	
	- digital outputs: 100 m (329 ft)	
	- RS-485 MODBUS port: 1,000 m (3,280 ft)	
	- USB port: 1 m (3.28 ft).	
Operating temperature:	from 0 to 55 °C (from 32 to 131 °F)	
Storage temperature:	from -10 to 70 °C (from 14 to 158 °F)	
Operating humidity:	relative humidity without condensate from 10 to 90%	

Pollution status of the control device:	2
Environmental standards:	- RoHS 2011/65/EC - WEEE 2012/19/EU - REACH (EC) Regulation no. 1907/2006
EMC standards:	- EN 60730-1 - IEC 60730-1
Power supply:	user interface / control module powered by the control module / 12 Vac (±15%), 50/60 Hz (±3 Hz), 20 VA max.
Rated impulse withstand voltage:	4 KV
Overvoltage category:	III
Software class and structure:	A
Clock:	built-in (with secondary lithium battery) clock drift: ≤ 60 s/month at 25 °C (77 °F) clock battery autonomy in the absence of a power supply: > 6 months at 25 °C (77 °F) clock battery charging time: 24 h (the battery is charged by the power supply of the device)
Analogue inputs:	2 inputs (top probe, floor probe, for J/K thermocouples or Pt 100 according to the power board used) thermocouple J type analogue inputs Sensor type: iron/constantan Measurement field: from -50 to 700 °C (from -58 to 1,292 °F) Resolution: 1 °C (1 °F) Protection: none thermocouple K type analogue inputs Sensor type: chromel/alumel Measurement field: from -50 to 1,100 °C (from -58 to 2,012 °F) Resolution: 1 °C (1 °F) Protection: none Pt 100 type analogue inputs Type of sensor: Pt 100 class A Measurement field: from -50 to 550 °C (from -58 to 1,022 °F) Resolution: 1 °C (1 °F) Protection: none
Digital inputs:	5 inputs:

	- 2 can be set using the configuration parameter for a normally open/normally closed contact (voltage-free, 5 Vdc, 0.5 mA) - 3 (power consumption, thermal switch, type 1/2 burner block) for a normally open/normally closed contact (high voltage contact, 230 Vac)
	voltage-free digital inputs Power supply: none Protection: none
	digital inputs for high voltage contact Power supply: 230 Vac Protection: none
Digital outputs:	13 outputs (electro-mechanical relays): - 1 5 A res. @ 250 Vac type SPST (K1) output - 1 5 A res. @ 250 Vac type SPST (K2) output - 1 5 A res. @ 250 Vac type SPST (K3) output - 1 5 A res. @ 250 Vac type SPST (K4) output - 1 5 A res. @ 250 Vac type SPST (K5) output - 1 5 A res. @ 250 Vac type SPST (K6) output - 1 5 A res. @ 250 Vac type SPST (K7) output - 1 5 A res. @ 250 Vac type SPDT (K8) output - 1 8 A res. @ 250 Vac type SPST (K9) output - 1 5 A res. @ 250 Vac type SPST (K10) output - 1 5 A res. @ 250 Vac type SPST (K11) output - 1 5 A res. @ 250 Vac type SPST (K12) output - 1 8 A res. @ 250 Vac type SPDT (K13) output * The relays do not control LED or fluorescent lights
Displays:	5- or 7-inch TFT touch-screen graphic display, 16K colours, 800 x 480 pixel resolution. The presence of imperfection points on the display is within the tolerance limits as established by the reference standards.
Type 1 or Type 2 actions:	type 1.
Additional features of Type 1 or Type 2 actions:	C
Communications ports:	2 ports: - 1 RS-485 MODBUS port - 1 USB port
Warning and alarm buzzer:	built-in.

Notes

Vcolor 379

Controller for rotating pizza ovens

Installer manual ver. 1.0

PB - 31/23

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