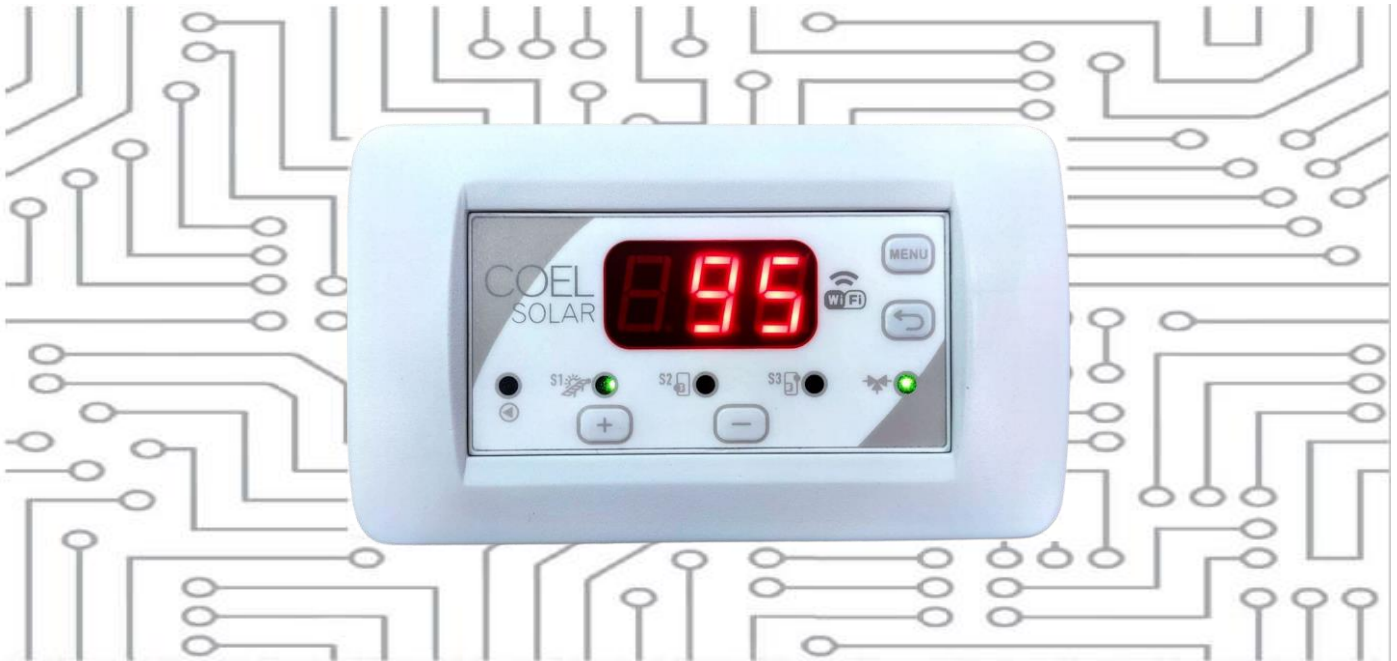




COEL-SOLAR-WIFI 4Din



User manual and programming instructions

Control unit subjected to functionality check.
We declare that the control unit has been functionally testing by an authorized person and must be installed by qualified operators pursuant to the provisions of art. 15 paragraph 9 of Legislative Decree 209/3. COELTE Ltd declines any responsibility for the assembly and use of the control unit according to methods not envisaged by current regulations.



THERMAL
SOLAR
ENERGY

Manual COELsolar WIFI
Code: 1627SO
Item: 301B-SOLAR WI-FI

Made by: coelte.net

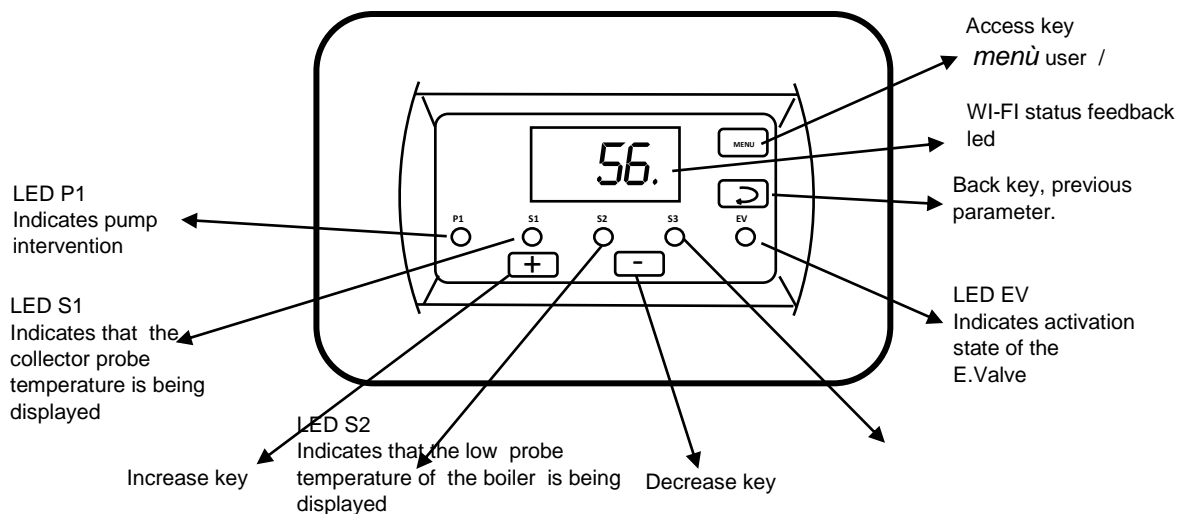
EQUIPMENT DISPOSAL POLICY BY PRIVATE INDIVIDUALS IN THE TERRITORY OF THE EUROPEAN UNION pursuant to article 13 legislative decree 25 July 2005, n.151 "Implementing Directives 2002/95/CE, 2002/96/CE and 2003/108/EC, on the restriction of the use of certain hazardous substances in electric and electronic equipment as well as waste disposal". The crossed-out wheellie-bin symbol (as required by this directive) on the equipment or its packaging, indicates that the end user should separate the product from other waste at the end-of- life . The user must deliver the equipment that has reached the end of its life to the appropriate collection facilities for electronic and electro-technical waste , or return it to the dealer when purchasing a new equipment of an equivalent type, on a one to one basis. The correct disposal of the equipment for recycling and treatment will help prevent potential negative consequences for the environment and human health and help the re-use and/or recycling of the equipment materials .Illegal dumping of the product by the user involves the application of the administrative sanctions envisaged by current legislation, pursuant to Legislative Decree n. 22/1997 (article 50 and following of the legislative decree n.22/1997)



Enrollment in the EEE Register n° IT19070000011569.

The electronic Control unit COELsolar is characterized by a simple design and provides clear and intuitive controls reading to allow an unprecedented ease of installation and use.

Warning e lights and function activation



Probes connection

The connection of the probes requires attention in identifying the probe marked by the label SOLAR COLLECTOR PROBE to be connected to terminal 14, corresponding to input S1.

Main functions

Coelsolar WIFI is a device for controlling natural and forced circulation thermal solar systems. The desired program can be increased from a dedicated menu, and the temperatures measured by the probes can be used and controlled according to this. The probes data and the control unit main functions can be monitored using the COELAPP smartphone app which can be downloaded from the Android or iOS stores.

Programs description

Program	Probes used	Function	Description
1	S1	Suitable for natural circulation systems	Display of the BOILER temperature and electro-valve output control
2	S1 S2	Suitable for forced circulation systems	Display of the manifold temperature and differential control of the circulator output Display of the BOILER temperature and electro-valve output control
3	S1 S2 S3	Suitable for forced circulation systems	Display of the manifold temperature and differential control of the circulator output in relation to probe S2 located in the lower part of the BOILER Display of the temperature in the lower part of the BOILER using probe S2 Display of the temperature in the upper part of the BOILER using probe S3 and control of the solenoid valve output

Temperature Display

The display of the read temperatures can be Increased by pressing the + or – keys. A led will lit up corresponding to the Increased probe and the display will show the measured temperature.

User menu

By pressing the menu key it is possible to access the TEV parameter setting menu which corresponds to the Setting of the intervention temperature of the solenoid valve thermostat for the integration with another DHW generator.

Technical menu

Access to this menu is recommended only for technical personnel as the control unit may not work properly if a correct programming is not carried out.

Technical menu can be accessed by holding down the menu key (5 Seconds).

To move between the menu items you must press the *menu* key to advance or the *return* key to return to the previous item.

MENU	DEFAULT	RANGE	FUNCTION
PRG	1	1-3	SELECTION OF THE REQUIRED SYSTEM PROGRAM
TSC	100	100-150	CHANGE THE SAFETY TEMPERATURE AGAINST SOLAR COLLECTOR OVERTEMPERATURE
ISc	15	0-20	COLLECTOR SAFETY HYSTERESIS (TSC NB: ISC = 0 DISABLE COLLECTOR SAFETY)
TSb	92	65-150	CHANGE THE VALUE OF THE SAFETY THERMOSTAT AT THE BOILER PROBES S2 S3
ISb	5	5-10	BOILER SAFETY HYSTERESIS (TSb)
DEL	8	2-20	DELTA DIFFERENTIAL PROBE
ITD	4	2-20	CHANGE DIFFERENTIAL THERMOSTAT HYSTERESIS
IST	2	2-20	CHANGE DIFFERENTIAL THERMOSTAT HYSTERESIS INTEGRATION ELECTROVALVE
TST	0	0-10	THE MANUAL OPERATION OF THE PUMP IS ACTIVATED IN MINUTES FOR TEST FUNCTION
TAG	0	0-6	CHANGE THE ANTIFREEZE THERMOSTAT "if Set to 0 the function is disabled"
IAG	3	2-20	HYSTERESIS ANTIFREEZE THERMOSTAT
DAB	7	1-30	ANTI-BLOCK INTERVAL DAYS CIRCULATORS
SAB	25	0-59	ANTI-BLOCK DURATION CIRCULATORS SECONDS
BEP	ON		ENABLING BEEP KEYPAD
EPU	ON		ENABLING PWM CONTROL
SPU	25%	0-100%	MINIMUM SETTING % PWM
CPU	2	1-2	PWM CONTROL CURVE
LED	1	0-1	WI-FI CONNECTION LED INDICATOR
LV2			EE SECOND LEVEL TECHNICAL MENU
RES	OFF		PRESS + KEY 5 TIMES TO TURN IT TO ON, THEN PRESS MENU TO RESET THE CONTROL UNIT

2nd LEVEL TECHNICAL MENU

The second level technical menu is reserved for selecting the type of probe to be used, the types supported are described in the following table:

TYPES	ID TYPE	DESCRIPTION	READING RANGE	RESOLUTION
NTC 10K	0	SELECT TYPE 0 FOR PROBE NTC 10K @25°C K3450	-20 + 250 °C	1 °C
NTC 100K	1	SELECT TYPE 1 FOR PROBE NTC 100K OHM @25°C	0 150 °C	1 °C
PT100	2	SELECT TYPE 2 FOR PROBE PT100	0 250 °C	4 °C
PT1000	3	SELECT TYPE 3 FOR PROBE PT100	0 250 °C	3 °C

To access the Second level menu you must already be in the technical menu, scroll through the various menu items up to the indication LV2, alternating with this wording the indication "off" also appears. The + key must be pressed 5 times to make the word "on" appear, at this point press "Menu".

The following items will be displayed:

MENU	DEFAULT	RANGE	FUNCTION
So1	0 (10kntc)	0-3	PROBE TYPE SELECTION FOR OUTPUT 1 CLAMP 14
So2	0 (10kntc)	0-3	PROBE TYPE SELECTION FOR OUTPUT 2 CLAMP 15
So3	0 (10kntc)	0-3	PROBE TYPE SELECTION FOR OUTPUT 3 CLAMP 16
Tu1	--	--	TUNING PROBE 1 *

*The Tu1 parameter is useful for fine-tuning any possible degree of inaccuracy in the reading of probe S1.

Solenoid valve thermostat output

All programs provide for the possibility of using a relay output with clean contacts to allow connection of a solenoid valve for integration with other sources of domestic hot water.

In program 1 the control takes place by reading from probe S1, in program 2 the reading takes place from probe S2 and in program 3 it takes place by reading from probe S3.

TEST function of the circulator

It is possible to test the circulator by enabling the desired time in minutes in the technical parameter TS, when the Set time has elapsed, the circulator will again be controlled by the Increased system program.

Circulator anti-blocking function.

To avoid circulator blocking due to prolonged inactivity, the control unit has a function based on checking the time elapsed without starting it. If the circulator does not restart within the days Set in the dab parameter (7 days default) it activates for the Seconds Set in the Sab parameter (anti-blocking Seconds). The function is also active in standby. If there is a voltage drop, causing the ECU to restart, an anti-lock cycle is carried out because it is not possible to know how long the power was off.

AGE Antifreeze function

If it is necessary to prevent the heat transfer liquid from reaching temperatures close to freezing, it is possible to intervene by activating the AGE function (Antifreeze). The function has the task of activating the circulation pump when the temperature read by probe S1 reaches or is lower than the AGE parameter in the technical menu; the function can be disabled by setting the AGE parameter to 0.

Factory reset

To reset the control unit to the factory values, it is necessary to reach the RES item in the technical menu, press the + key 5 times, the wording ON will appear, at this point press menu. The control unit will display the scrolling wording "Done" to confirm the operation. Attention: all previously entered data will be cancelled, including wifi association data.

ALARMS Alarm situations that may occur are the following:

ALARMS	CAUSED BY	Display with scrolling down text
1	PROBE 1 OPEN OR NOT CONNECTED	PROBE 1 OPEN
2	PROBE 2 IN SHORT CIRCUIT	PROBE 1 IN SHORT CIRCUIT
3	PROBE 2 OPEN OR NOT CONNECTED	PROBE 2 OPEN
4	PROBE 2 IN SHORT CIRCUIT	PROBE 2 IN SHORT CIRCUIT
5	PROBE 3 OPEN OR NOT CONNECTED	PROBE 3 OPEN
6	PROBE 3 IN SHORT CIRCUIT	PROBE 3 IN SHORT CIRCUIT

Management of the PWM circulator

The management of the pwm circulator is regulated by 3 technical parameters:

•SP1 minimum PWM value

SP1 Sets the minimum PWM that can be used during control

•EP1=ON When the control activates the circulator, this will start at the PWM value Set by SP1, in this condition, for each further degree of increase in the temperature of the collector respect to the tank, there is a PWM increase of 10%.

Ex: SP1=25% DEL=5°C T.BOILER=50°C

T.Collector 54° = circulator =off

T.Collector 55° = circulator =on PWM=25%

T.Collector 56° = circulator =on PWM=35 %

T.Collector 57° = circulator =on PWM=45%

EP1=OFF When the controller activates the circulator, it will always start at the pwm100% value •CP1 Setting of the operating curve

CP1= 1 the circulator flow rate increases as the signal decreased PWM read on the output terminals, e.g: pwm=0% circulator at maximum, pwm=100% circulator off. **N.B.** to be increases only if circulators designed for application on heating systems are used. •

CP1= 2 (**default**) the flow rate of the circulator increases with the increase of the PWM signal read on the output terminals, eg: pwm=100% circulator at maximum, pwm=0% circulator stopped.

NOTE: The calculated PWM value is always forced to 100% for the first 10 Second s of circulator activation.

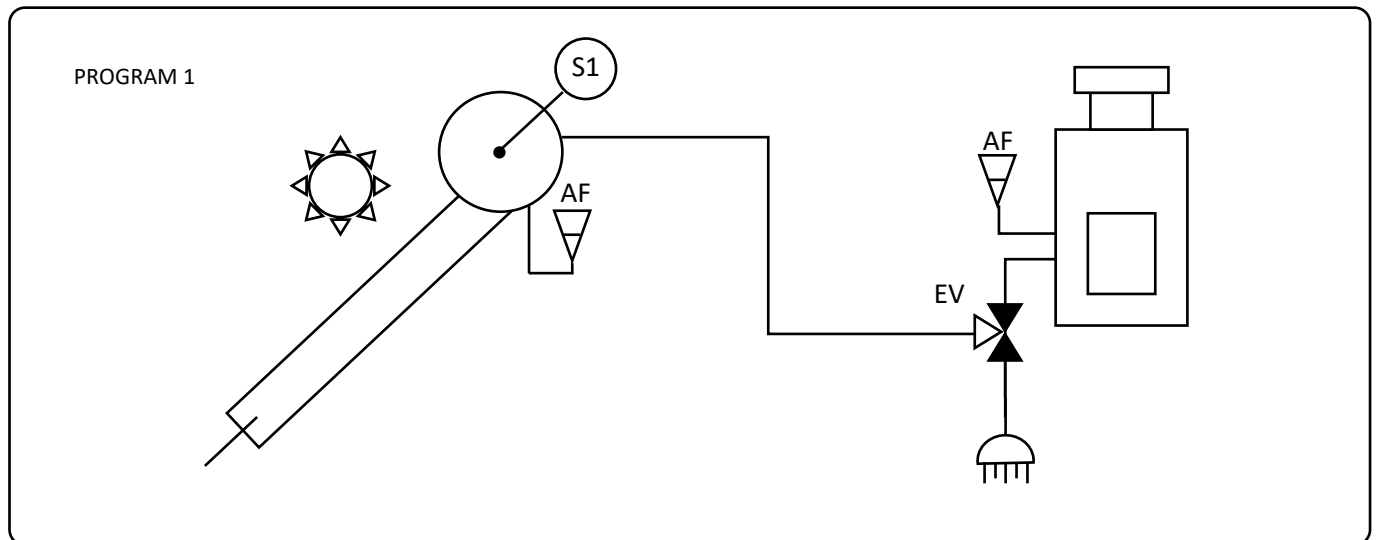
Installation

Although not complicated, installation requires to be carried out by qualified technical personnel. Remember that the device requires a 230-volt mains power supply, therefore there is a risk of electric shock.

Considering that for this product it is necessary to connect to the internet, you need to make sure that the installation point can be reached by an efficient wi-fi signal level.

First make all the electrical connections, then SELECT the required program and intervene on some adjustments in the technical menu if necessary and after general testing you can connect to the wi-fi network as described in the dedicated chapter.

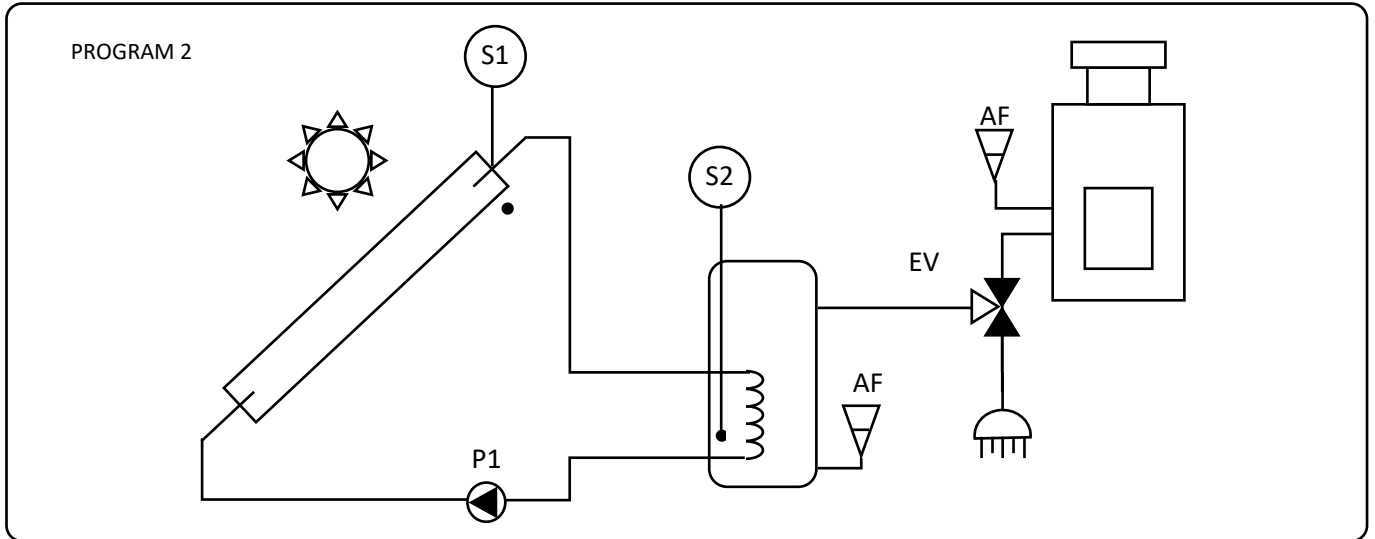
Program 1



TERMINAL BOARD	NAME	CONNECTIONS			
1-2	Line 220 volt				
3-4	Non used				
5-6-7	Clean contacts integration relais (Electrovalve)				
8-9	Not used				
10	Common probe input				
10-11	INPUT PROBE 1				
10-12	NOT used input				
10-13	NOT used input				
PARAMETERS					
DISPLAY	LED	DESCRIPTION	DEFAULT	RANGE	UNIX
DIS	S1	DISPLAY PROBE 1 TEMPERATURE	1	1-3	°C
TEV	EV	AUXILIARY THERMOSTAT OUTPUT	54	20-90	°C

WORKING PRINCIPLE		
IF the condition is true the correspondent output is activated	LOGIC STATE	OUTPUT
IF (S1>=TEv)		EV= on
IF (S1<=TEv-IST)		EV= off

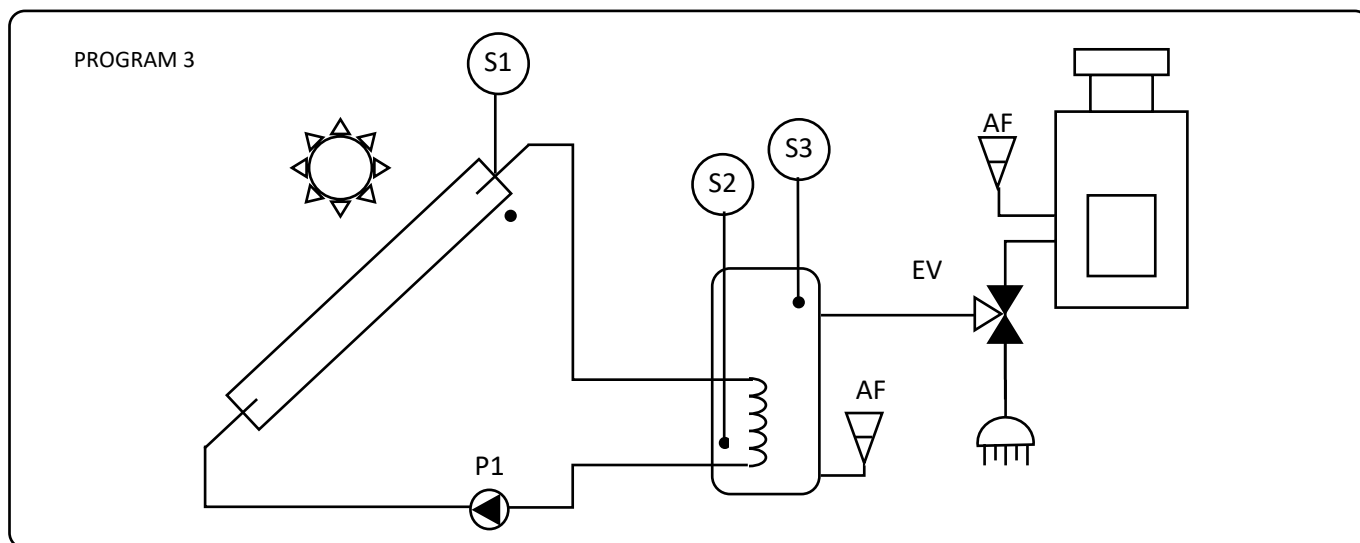
Program 2



TERMINAL BOARD	NAME	CONNECTIONS			
1-2	Line 220 volts				
3-4	Circulator power supply output				
5-6-7	Integration relay clean contacts (Solenoid valve)				
8-9	Pwm signal output				
10	Common probes input				
10-11	PROBE INPUT 1				
10-12	PROBE INPUT 2				
10-13	NOT USED INPUT				
PARAMETERS					
DISPLAY	LED	DESCRIPTION	DEFAULT	RANGE	UNIT
DIS	S1-S2	TEMPERATURE DISPLAY REFERENCE TO INCREASED PROBE	1	1-3	°C
TEV	EV	THERMOSTAT AUXILIARY OUTPUT	54	20-90	°C
DEL		PROBE DIFFERENTIAL DELTA (TECHNICAL MENU)	2	2-20	°C
TSb		BOILER SAFETY TEMPERATURE (technical menu)	90	65-150	
TSC		MANIFOLD SAFETY TEMPERATURE (technical menu)	130	100-150	°C

WORKING PRINCIPLE		
IF the condition is true the correspondent output is activated	LOGIC STATE	OUTPUT
IF (S1 >= TSC)	OVERTEMP_S1	
IF (S2 >= TSI)	OVERTEMP_S2	
IF ((S1 >25) E (S1 >= (S2+DEL)) E (OVERTEMP_S2=OFF) E (OVERTEMP_S1=OFF)))		P1
IF (S2 >= TEv)		EV= on
IF (S2 <= TEv-IST)		EV= off

Program 3



TERMINAL BOARD	NAME	CONNECTIONS			
1-2	Line 220 volts				
3-4	Circulator power supply output				
5-6-7	Integration relay clean contacts (Solenoid valve)				
8-9	Pwm signal output				
10	Common probes input				
10-11	PROBE INPUT 1				
10-12	PROBE INPUT 2				
10-13	PROBE INPUT 3				
PARAMETERS					
DISPLAY	LED	DESCRIPTION	DEFAULT	RANGE	UNIT
DIS	S1-S2-S3	TEMPERATURE DISPLAY REFERENCE TO INCREASED PROBE	1	1-3	°C
TEV	EV	AUXILIARY OUTPUT THERMOSTAT	54	20-90	°C
DEL		PROBE DIFFERENTIAL DELTA (TECHNICAL MENU))	2	2-20	°C
Tsb		BOILER SAFETY TEMPERATURE (technical menu)	70	65-150	
TSC		MANIFOLD SAFETY TEMPERATURE (technical menu)	130	100-150	°C

WORKING PRINCIPLE		LOGIC STATE	OUTPUT
IF the condition is true the correspondent output is activated			
IF (S1 >= TSC)		OVERTEMP_S1	
IF (S2 >= TSI)		OVERTEMP_S2	
IF ((S1 >25) E (S1 >= (S2+DEL)) E (OVERTEMP_S2=OFF) E (OVERTEMP_S1=OFF))			P1
IF (S3 >= TEv)			EV= on
IF (S3 <= TEv-IST)			EV= off

WIFI working description

The control unit is equipped with a Wifi communication device thanks to which it is possible to monitor the measured temperatures and adjust the intervention temperature of the solenoid valve thermostat as desired.

Upon completing the installation of the control unit and the completion of all the functioning tests it is possible to proceed with the connection operations to the wifi network.

LED connection indicator

The LED menu item is present in the control unit technical menu. This allows you to activate a flash of one or more LED dots at the base of the display.

Module Status, on the data entered, it is not possible to access the indicated of the router is not active

CONDITIONS	DOT POINT	Description
In Pairing	1.23	Short flashing of the left LED every 2 Second s
Connected	123.	Short flashing of the right LED every 2 Second s
Updating	1.2.3.	Medium duration simultaneous flashing of all three LEDs
Wifi error	123.	Fast flashing of the right LED
LED not enabled	Not available	If the LED technical parameter is Set to =0, the wifi led indicator is disabled

Menu wifi

The control unit has a dedicated menu for the WiFi functions. It is increased by pressing the **menu** and **return** keys together for 5 increased . The following table schematically shows this menu.

MENU WIFI ITEMS	CHAIN TEXT RESPONSE	MEANING	ACTIONS
WIFI STATE	Connected	Internet connection on	
	Ap radio	Wifi module ready to be associated with a wifi network	
	Updating	Wifi module being updated	
	Starting up	Radio module starting up	
	Not connected	Not connected or configuration error, go to ERROR WIFI	
ERROR WIFI ERROR	No error	No error p	
	Wifi not found	Basing on the the data entered, it is not possible to access the indicated network	Repeat pairing procedure
	Wrong parameters	Error in the parameters entered	Repeat pairing procedure
	DHCP OFF	Router does not assign IP address	Enable DHCP in the Router and repeat the pairing process
	DNS Service not responding	Router DNS non active	Check DNS nel Router
	Update error	An error occurred during the wifi module update procedure	Check the home internet connection and wait for the problem to be automatically resolved
	NTP not responding	The clock and date update Service is not responding	Wait for the problem to be resolved automatically
	AP busy	Too many pairing connections to the device	Close the App on all mobile phones in the home and repeat the pairing procedure
Cloud not responding	The cloud Service is temporarily unavailable	Wait for the problem to be resolved automatically	
	Id num	Technical error code	If the error does not resolve, switch off the power correct for 15 increased and try again.
PAIRING ON		The wifi module is ready to be associated with a wifi network	
PAIRING OFF		The wifi module has already has a configuration, which could also be non-functional.	To prepare the control unit for a new configuration, press the + key, a 60-Second countdown will start within which it is necessary to pair with the smartphone
	60 Second countdown	Maximum waiting time for pairing from the App.	

ASSOCIATION WITH COELTE APP

COELAPP is the COELTE application for devices with wifi module from Coelte.

The app is available for free download in the Android and Apple stores.

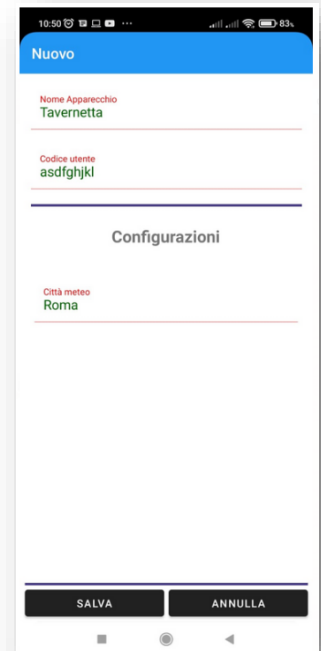
After installing the app on your smartphone, an empty address book page will be shown.

Before proceeding with the configuration, only if you are using an iPhone, you must deactivate the use of your **SIM' card's Mobile Data**. Check that you are connected to your WiFi network with the SmartPhone (**only the 2.4 GHz networks are allowed**).

Press the + icon to add a device.

Then it will be necessary to enter:

- a name for the device (eg: Tavernetta stove), it can be different for all users who use the app for the same device.) ;
- make sure that your smartphone does not add empty spaces in the text fields, neither before nor after entering the device name;
- a user code must be the same for all users using the same device;
- make sure that your smartphone does not add empty spaces in the text fields, neither before nor after entering the users code;
- City weather, enter the name of your country and city to use the local weather Service;
- Press save
- At this point, when the pop-up appears, click on **TO CONFIGURE**;



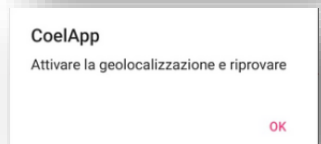
CoelApp
Il device è già configurato o è da configurare?

GIÀ CONFIGURATO DA CONFIGURARE

CoelApp

Is the device already been set up or it must be set up ?

- Depending on your device , a message may appear requesting authorization to access the Coeltewifi network. Permissions must be provided for the various requests. If the message does not appear and there are problems connecting the smartphone to the device, check in the mobile Settings menu that the Coeltewifi App has the necessary authorisations;
- At this point a pop-up may appear with a request to activate the geolocation, then go to the Settings of your mobile phone and activate the geolocation and then re-launch the pairing procedure;
- TYPE the password of your wifi network and press ok making sure that no special characters are entered in the password;



Another pop-up will appear



Set the device in pairing mode and presso Ok to continue

- then access the technical menu on the control unit and reach the third Pairing item ;
- **PAIRING ALREADY ACTIVE**
- if **Pairing_on** appears, the device is already in pairing mode;
- therefore it is possible to press ok on the app;
- a pop-up message will follow with request to connect to the "Co.El.TeWiFi" network, accept;

- the pairing procedure is complete, press ok on the new message that will appear on the smartphone;
- Before being able to use the device with the app, just wait a few minutes for the connections and Services; necessary for operation to be established and registered;
- It is possible to find out the connection status by going back to the WIFI STATUS item in the wifi;

NON ACTIVE PAIRING

- While if the device has been previously used, the third item in the WIFI menu will show **Pairing off** ;
- press the + button on the control unit, immediately after a 60-Second countdown will appear; within this time, press ok on the smartphone;
- after a few Seconds of waiting, the message Waiting will appear with a 59-Second countdown timer within which it will be necessary to press OK on the app;
- as already described above, a pop-up message will follow with a request to connect to the “Co.El.TeWiFi” network, accept;
- the pairing procedure is complete, press ok on the new message that will appear on the smartphone;
- Before being able to use the device with the app, just wait a few minutes for the connections and Services necessary for operation to be established and registered;
- It is possible to know the connection status by returning to the WIFI STATUS item of the wifi menu;

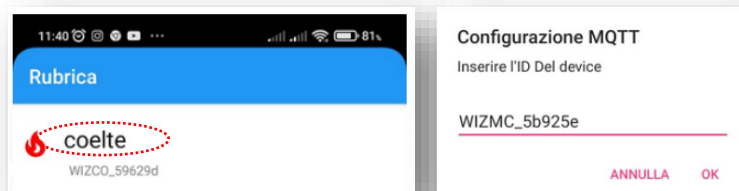
ASSOCIATION OF A NEW SMARTPHONE WITH A DEVICE ALREADY CONFIGURED

Install CoelApp on your smartphone, and click on the + icon on the address book page then:

- a name for the device (e.g.: Tavernetta stove), can be different for all users who use the app for the same device.);
- **user code**, enter the same user code used in the configuration;
- City weather, enter the name of your country and city to use the local weather Service;
- Press save
- At this point, on the pop-up displayed, click on ALREADY CONFIGURED
- You will be asked to enter the device ID. The id can be copied from another paired device to the app address book ;

At this point, click on **ALREADY CONFIGURED** in the pop-up displayed

- You will be asked to enter the device ID. The id can be copied from another paired device to the app address book



MQTT set up
Insert device ID

- Click OK after entering the id

Screens and CoelApp elements

What is shown on the display is what is shown in the photos below for the three different programs in the different conditions of the circulator and the hot water solenoid valve

