COC 200 - Thermostat-digital timer with 3 outputs for electric ovens, with RTC functions, programmed switch-on and cooking timer function

(E) ENGLISH

1 IMPORTANT

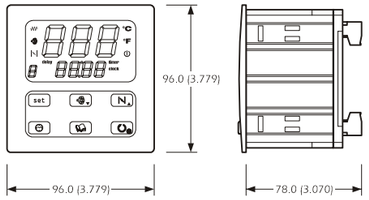
1.1 Important

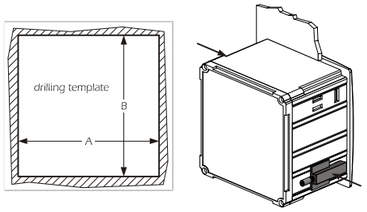
Read these instructions carefully before installation and use and follow all warnings regarding installation and for the electric connection. Keep these instructions with the instrument for future reference.

The instrument must be disposed of in compliance with local Standards relative to the collection of electrical and electronic appliances.

1.2 Dimensions and installation

Panel with supplied brackets with screws; dimensions in mm (in).





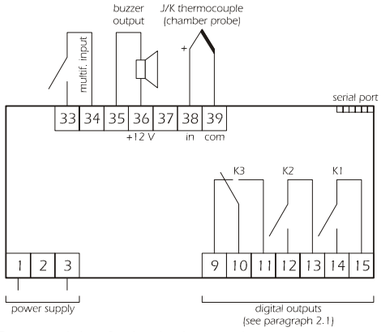
DIMENS.	MINIMUM	TYPICAL	MAXIMUM
A	92.0 (3.622)	92.0 (3.622)	92.8 (3.653)
B	92.0 (3.622)	92.0 (3.622)	92.8 (3.653)

Installation recommendations:

- the thickness of the panel must not exceed 4.0 mm (0.157 in)
- position the brackets as indicated in the drawing in this paragraph, moderate the coupling torque
- make sure that the working conditions (temperature of use, humidity, etc.) lie within the limits indicated in the technical data
- do not install the instrument in proximity of heat sources (resistances, hot air pipes, etc.), appliances with strong magnets (large diffusers, etc.), places subject to direct sunlight, rain, humidity, excessive dust, mechanical vibrations or jerks
- in compliance with Safety Standards, protection against any contact with electrical parts must be assured via correct installation of the instrument. All parts that ensure protection must be fixed in a way that they cannot be removed without the aid of a tool.

1.3 Electric connection

With reference to the wiring diagram, the serial port is the communication port with the supervising system (through a serial interface, via TTL, with MODBUS communication protocol) or with the programming key; the port must not be used for two purposes at the same time.



Recommendations for the electric connection:

- do not operate on the terminal boards using electric or pneumatic screwdrivers
- if the instrument has been taken from a cold place to a hot place, the humidity could condense inside; wait for about one hour before applying power
- check that the power supply voltage, the frequency and the electric operational power of the instrument correspond with those of the local power supply
- disconnect the power supply before performing any type of maintenance
- supply the probe with protection able to isolate it from any contact with metal parts or use isolated probes
- do not use the instrument as a safety device
- for repairs and information regarding the instrument, contact the *Osaka* sales network.

2 PRELIMINARY CONSIDERATIONS

2.1 Preliminary considerations

It is possible to select the utilities managed by the digital outputs (i.e. relays K1, K2 and K3) among a series of four combinations (instrument codes 1, 2, 3 and 4); a fifth combination (instrument code 0) allows to set the utility managed by each output independently.

INSTR CODE	RELAY K1 UTILITY	RELAY K2 UTILITY	RELAY K3 UTILITY
0	can be set (default temperature regulation)	can be set (default airhole)	can be set (default steam injection)
1 (default)	temperature regulation	airhole	alarm
2	temperature regulation	chamber light	cooking timer
3	temperature regulation	chamber light	steam injection
4	temperature regulation	airhole	acoustics

To set the instrument code, see paragraph 4.1; to set the utility managed by each output, see paragraph 4.2.

2.2 Management of the utilities

Temperature regulation.

The output activity mainly depends on the chamber temperature, the work set-point and the parameter r0.

Airhole.

The output is activated in the following conditions:

- before the conclusion of the cooking timer count (of the time established with the parameter c5), for the time established with parameter c6
- in manual mode, for the time established for parameter c7.

Steam injection.

The output activity depends mainly on parameter t0.

Through the multifunction input it is also possible to activate the output in remote mode.

Alarm.

The output is activated during a temperature alarm.

Chamber light.

The output is activated in manual mode.

Cooking timer.

The output is activated during the cooking timer count.

Acoustics.

The output is activated in the following conditions:

- before the conclusion of the cooking timer count (of the time established with the parameter c9), for the time established with parameter c4
- during an alarm or an error, with continuous contribution.

In spite of the fact that the instrument can manage the 7 utilities stated in this paragraph, there are 3 digital outputs available. Make sure that the desired utility is managed by the instrument (see paragraph 2.1).

3 USER INTERFACE

3.1 Preliminary considerations

The following functioning states exist:

- the "on" state (the instrument is powered and on: the regulators can be on)
- the "programmed switch-on" state (the instrument is powered but switched off via software: the regulators are off and programmed switch-on of the instrument is envisioned)
- the "stand-by" state (the instrument is powered but switched off via software: the regulators are off and programmed switch-on of the instrument is not envisioned)
- the "off" state (the instrument is not powered).

Successively, the term "switch-on" means the passage from the stand-by state to the on state. The term "switch-off" means the passage from the on state to the stand-by state.

When powered, the instrument re-proposes the state that it was in when the power supply was disconnected.

3.2 Selecting the functioning state

To pass from the stand-by state to the on state (and vice versa):

- make sure no procedure is in progress
- press [⏻] for 1s.

To pass from the programmed switch-on state to the on state:

- make sure no procedure is in progress
- press [⏻] for 1s.

To pass from the on state to the programmed switch-on state:

- make sure no procedure is in progress
- press [⏻] and [⏲] for 1s.

To pass from the stand-by state to the programmed switch-on state (and vice versa):

- make sure no procedure is in progress
- press [⏻] and [⏲] for 1s.

3.3 The display

If the instrument is in the on state:

- the upper part of the display will show the quantity established with parameter P5:
  - if P5 = 0, the display will show the chamber temperature
  - if P5 = 1, the display will show the work set-point
- the lower part of the display will show the quantity established with parameter P6:
  - if P6 = 0, the display will show the chamber temperature
  - if P6 = 1, the display will show the work set-point (in this case the "**set**" LED will be on)
  - if P6 = 2, the display will show the value of the cooking timer or its count if the timer is active (in this case the "**timer**" LED will be on); the value of the cooking timer is displayed in the hours:minutes format
  - if P6 = 3, the display will show the day and real time (in this case the "**clock**" LED will be on); the day is displayed in format 1 ... 7 (number 1 corresponds to Monday), the real time in the 24 h format.

See also paragraphs 3.4 and 3.6.

If the instrument is in the programmed switch-on state:

- the upper part of the display will be off:
- the lower part of the display will show the day and time of the next switch-on; the day is displayed in format 1 ... 7 (number 1 corresponds to Monday), the real time in 24 h format (if switch-on is not programmed, the lower part of the display will show "**- - - -**")
- the "**delay**" LED will be on
- the LED ⏻ will be on.

If the instrument is in the stand-by state:

- the upper part of the display will be off:
- the lower part of the display:
  - will be off if parameter c8 is set at 0
  - it will display the real time if parameter c8 is set at 1 (in this case the "**clock**" LED will be on); the real time is displayed in 24 h format
- the LED ⏻ will be on.

3.4 Learning the quantity shown by the upper part of the display during the on state

- make sure no procedure is in progress
- press [I▸] and [⏻] : the upper part of the display will show one of the labels given in the following table for 2 secs:

LABEL	MEANING
Pb	chamber temperature
SP	work set-point

3.5 Temporary setting of the quantity shown by the upper part of the display during the on state

- make sure no procedure is in progress
- press [I▸] and [⏻] for 1s several times: the upper part of the display will show one of the labels given in the table in paragraph 3.4 for 2 secs, after which it will show the corresponding value.

Any power supply cut-off causes the display of the quantity established with parameter P5 to be restored.

3.6 Learning the quantity shown by the lower part of the display during the on state

- make sure no procedure is in progress
- press [◁▷] and [⏻] : the lower part of the display will show one of the labels given in the following table for 2 secs:

LABEL	MEANING
Pb	chamber temperature
SP	work set-point
tine	value of the cooking timer or its count if the timer is active
rtc	day and real time

3.7 Temporary setting of the quantity shown by the lower part of the display during the on state

- make sure no procedure is in progress
- press [◁▷] and [⏻] for 1s several times: the lower part of the display will show one of the labels given in the table in paragraph 3.6 for 2 secs, after which it will show the corresponding value.

Any power supply cut-off causes the display of the quantity established with parameter P6 to be restored.

3.8 Chamber light switch-on/off

- make sure no procedure is in progress
- press [MIF]

If the chamber light is not managed by any digital output, pressing the [MIF] key will cause the display of the "**no**" indication for 1s in the lower part of the display.

3.9 Buzzer silencing

- make sure no procedure is in progress
- press a key (the first time the key is pressed, the associated effect is not caused).

Pressing the key also causes the deactivation of the acoustic output and the buzzer output.

Using the multifunction input, it is also possible to deactivate the buzzer, the acoustic output and the buzzer output in remote mode.

4 SETTINGS

4.1 Setting the instrument code

To access the procedure:

- make sure that the instrument is in stand-by state and that no procedure is in progress
- press [I▸] and [◁▷] for 4s: the upper part of the display will show "**PA**"
- press [SEL] : the lower part of the display will show the corresponding value
- press [I▸] or [◁▷] within 15s to set "**743**"
- press [SEL]
- press [I▸] and [◁▷] for 4s: the upper part of the display will show "**CFG**".

To modify the instrument code:

- press [SEL] : the lower part of the display will show the corresponding value
- press [I▸] or [◁▷] within 15s
- press [SEL]

To exit the procedure:

- press [I▸] and [◁▷] for 4s.

The modification of the instrument code does not cause the configuration parameters default value to be restored.

4.2 Setting the utility managed by each digital output (only if the instrument code is set at 0)

To access the procedure:

- make sure that the instrument is in stand-by state and that no procedure is in progress
- press [I▸] and [◁▷] for 4s: the upper part of the display will show "**PA**"
- press [SEL] : the lower part of the display will show the corresponding value
- press [I▸] or [◁▷] within 15s to set "**743**"
- press [SEL]
- press [I▸] and [◁▷] for 4s: the upper part of the display will show "**CFG**"
- press [I▸] or [◁▷] to select "**do1**", "**do2**" or "**do3**".

The label meaning is the following:

LABEL	MEANING
do1	utility managed by the first digital output (relay K1)
do2	utility managed by the second digital output (relay K2)
do3	utility managed by the third digital output (relay K3)

To modify the utility managed by an output:

- press [SEL] : the lower part of the display will show the corresponding value.

The meaning of the values is the following:

VALUE	MEANING
0	not used
1	temperature regulation
2	airhole
3	steam injection
4	alarm
5	chamber light
6	cooking timer
7	acoustics

- press [I▸] or [◁▷] within 15s
- press [SEL]

To exit the procedure:

- press [I▸] and [◁▷] for 4s.

If the instrument code is not set at 0, display only is allowed but not the modification of the value corresponding to the utility managed by the output.

4.3 Setting the day and the real time

- make sure that the instrument is in stand-by state and that no procedure is in progress
- press [SEL] and [⏲] : the lower part of the display will show the day of the week and the real time; the indication relative to the day and the "**clock**" LED will flash.

The day is displayed in format 1 ... 7 (number 1 corresponds to Monday), the real time in the 24 h format (hours:minutes).

To modify the day:

- press [I▸] or [◁▷] within 15s
- press [SEL] : the left part of the indication relative to the real time will flash.

To modify the hour:

- press [I▸] or [◁▷] within 15s
- press [SEL] : the right part of the indication relative to the real time will flash.

To modify the minutes:

- press [I▸] or [◁▷] within 15s
- press [SEL] : the "**clock**" LED will switch-off, after which the instrument will exit the procedure.

To go back to previous levels:

- press [⏲] several times during the procedure.

To exit the procedure in advance:

- do not operate for 15s (any modifications will be saved).

4.4 Setting the work set-point

- make sure that the instrument is in on state and that no procedure is in progress
- press [SEL] : the lower part of the display will show "**SP**", the upper part the corresponding value and the LED will flash
- press [I▸] or [◁▷] within 15s; see also parameters r1 and r2
- press [SEL] : the LED will switch-off, after which the instrument will exit the procedure.

To exit the procedure in advance:

- do not operate for 15s (any modifications will be saved).

It is also possible to set the work set-point via the SP parameter.

4.5 Setting the configuration parameters

To access the procedure:

- make sure that the instrument is in stand-by state and that no procedure is in progress
- press [I▸] and [◁▷] for 4s: the upper part of the display will show "**PA**"
- press [SEL] : the lower part of the display will show the corresponding value
- press [I▸] or [◁▷] within 15s to set "**-19**"
- press [SEL] or do not operate for 15s
- press [I▸] and [◁▷] for 4s: the upper part of the display will show "**SP**".

To select a parameter:

- press [I▸] or [◁▷]

To modify a parameter:

- press [SEL] : the lower part of the display will show the corresponding value
- press [I▸] or [◁▷] within 15s
- press [SEL] or do not operate for 15s.

To exit the procedure:

- press [I▸] and [◁▷] for 4s or do not operate for 60s (any modifications will be saved).

Cut the instrument power supply off after modification of the parameters.

4.6 Restore the default value of the configuration parameters

- make sure that the instrument is in stand-by state and that no procedure is in progress
- press [I▸] and [◁▷] for 4s: the upper part of the display will show "**PA**"
- press [SEL] : the lower part of the display will show the corresponding value
- press [I▸] or [◁▷] within 15s to set "**743**"
- press [SEL] or do not operate for 15s
- press [I▸] and [◁▷] for 4s: the upper part of the display will show "**CFG**"
- press [I▸] or [◁▷] to select "**dEF**"
- press [SEL] : the lower part of the display will show the corresponding value
- press [I▸] or [◁▷] within 15s to set "**149**"
- press [SEL] or do not operate for 15s: the upper part of the display will show "**dEF**" flashing for 4s, after which "**dEF**" will switch on
- cut the instrument power supply off.

To exit the procedure in advance:

- press [I▸] and [◁▷] for 4s during the procedure (i.e. before setting "**149**": restore will not be carried out).

Make sure that the default value of the parameters is appropriate.

5 PROGRAMMED IGNITION

5.1 Preliminary considerations

Programmed ignition allows to plan the automatic switch-on of the instrument.

On switch-on the instrument will function with the latest settings memorised before being passed to the programmed switch-on state (see paragraph 3.2).

It is possible to plan 14 switch-on hours, the possible combinations of switch-on days are 12.

If there is a power cut at the switch-on time, this will be re-proposed when the power supply is restored.

5.2 Setting programmed ignition

To access the procedure:

- make sure that the instrument is in on state and that no procedure is in progress
- press [SEL] and [⏻] : the upper part of the display will show "**H01**" flashing (it is the label of the first switch-on time), the lower part will show a label relative to a combination of switch-on days and the "**delay**" LED will flash.

The combination of the switch-on days available are the following:

LABEL	COMBINATION OF DAYS
- - -	Never
- 1 -	Monday
- 2 -	Tuesday
- 3 -	Wednesday
- 4 -	Thursday
- 5 -	Friday
- 6 -	Saturday
- 7 -	Sunday
1 - 5	from Monday to Friday
1 - 6	from Monday to Saturday
1 - 7	from Monday to Sunday
6 - 7	Saturday and Sunday

To select a switch-on time:

- press [I▸] or [◁▷] within 15s (e.g. to select "**H07**").

To select a combination of days to which to apply the selected switch-on time (in the example, "**H07**"):

- press [SEL] during flashing of the upper part of the display: the lower part of the display will show a flashing label relative to a combination of days and the upper part will switch-on
- press [I▸] or [◁▷] within 15s (for example to select "**1 - 5**").

To set the selected switch-on time (in the example, "**H07**"):

- press [SEL] during flashing of the lower part of the display: the lower part of the display will show the switch-on time; the left part will flash.

The time is displayed in the 24h format (hours:minutes).

To modify the hour:

- press [I▸] or [◁▷] within 15s
- press [SEL] : the right part of the indication relative to the switch-on time will flash.

To modify the minutes:

- press [I▸] or [◁▷] within 15s
- press [SEL] : the "**delay**" LED will switch-on, after which the instrument will exit the procedure.

To go back to previous levels:

- press [⏲] several times during the procedure.

To exit the procedure in advance:

- press [SEL] and [⏻] or do not operate for 15s (any modifications will be saved).

The temporary modification of an ignition is re-proposed also after a power cut and has exclusive effect on the imminent switch-on and not on those previously set.

If passing from the programmed switch-on state to any other state, the modification will not be re-proposed.

5.4 Exclusion of the next switch-on for the benefit of another already programmed

- make sure that the instrument is in the programmed switch-on state and that no procedure is in progress
- press [SEL] and [⏻] for 1s: the lower part of the display will show the day of the week and the time of the next switch-on, the "**delay**" LED will flash.

The day is displayed in format 1 ... 7 (number 1 corresponds to Monday), the time in the 24 h format.

- press [I▸] within 15s to select another switch-on already programmed
- press [SEL] : the "**delay**" LED will switch-on, after which the instrument will exit the procedure.

To exit the procedure in advance:

- press [SEL] and [⏻] or do not operate for 15s (any modifications will not be saved)

The exclusion of a switch-on is re-proposed also after a power-cut. The switch-ons excluded are re-proposed in the successive day and time circumstances.

If passing from the programmed switch-on state to any other state, the exclusion will not be re-proposed.

6 COOKING TIMER

6.1 Preliminary considerations

The cooking timer allows to start the reverse countdown of a time.

The countdown is shown in the lower part of the display; during the count the "**timer**" LED is on and the timer output is activated.

Before conclusion of the count (of the time established with parameter c9) the buzzer and the acoustic output are activated, for the time established with parameter c4.

Before conclusion of the count (of the time established with parameter c5) the airhole is activated, for the time established with parameter c6.

Using the multifunction input, it is also possible to start/interrupt the cooking timer in remote mode.

6.2 Setting the cooking timer

- make sure that the instrument is in the on state, that the cooking timer count is not in progress and that no procedure is in progress
- press [SEL] and [⏲] : the lower part of the display shows the value of the cooking timer; the left part and the "**timer**" LED will flash.

The value of the cooking timer is displayed in the hours:minutes format.

To modify the hour:
- press [▲] or [▼] within 15s
- press [SET] : the right part will flash.

To modify the minutes:
- press [▲] or [▼] within 15s.

The cooking timer can be set between 00:00 and 24:00 h:min.
- press [SET] : the "**timer**" LED will switch-off, after which the instrument will exit the procedure.

To go back to previous levels:
- press [⏲] several times during the procedure.

To exit the procedure in advance:
- do not operate for 15s (any modifications will be saved).

The cooking timer can also be set when the count is in progress (this modification is temporary, i.e. any power supply cut-off causes the value set with the procedure given at the start of this paragraph to be restored).
If the value is set at 00:00 h:min, the count will be interrupted, the "**timer**" LED will switch-off and the buzzer will be activated for 3 seconds.

6.3 Starting the cooking timer
- press [⏲] during timer setting: the "**timer**" LED will switch on.

Alternatively:
- make sure that the instrument is in on state and that no procedure is in progress
- press [⏲] : the "**timer**" LED will switch on.

6.4 Interrupting the cooking timer
- press [⏲] for 1s: the "**timer**" LED switches off and the buzzer will be activated for 3s.

7 STEAM INJECTION

7.1 Preliminary considerations
The functioning mode of the steam injection depends on parameter t0.
If the parameter t0 is set at 0, pressing the [💧] key causes the injection of steam for the time established with parameter t2 or for the entire duration that the key is pressed. The parameter t1 establishes the minimum time that can pass between the two successive injections.
If the parameter t0 is set at 1, pressing the key [💧] will enable the automatic injection of the steam (in cyclical mode: parameter t2 establishes the duration of the injector switch-on and parameter t1 establishes the duration of switch-off).
Using the multifunction input, it is also possible to cause the same effect by pressing the [💧] key in remote mode.
If the steam injection is not managed by any digital output, pressing the [💧] key will cause the display of the "**no**" indication for 1s in the lower part of the display.

7.2 Quick setting of the parameter t2
- make sure that the instrument is in on state and that no procedure is in progress
- press [SET] and [▲] : the upper part of the display will show "**t2**", the lower part the corresponding value and the LED will flash.

The parameter t2 can be set between 1 and 250 ds.
If steam injection is not managed by any digital output, the lower part of the display will show "**no**" for 1s.
- press [▲] or [▼] within 15s
- press [SET] : the LED will switch-off, after which the instrument will exit the procedure.

To exit the procedure in advance:
- do not operate for 15s (any modifications will be saved).

7.3 Activation of the injector in manual mode (only if parameter t0 is set at 0)
- make sure that the instrument is in on state and that no procedure is in progress
- press [💧] : the LED will switch-on and the injector will be activated, both for the time established with parameter t2 or for the entire duration that the key is pressed.

The injector must not be deactivated in manual mode.

7.4 Enabling of automatic steam injection (only if parameter t0 is set at 1)
- make sure that the instrument is in on state and that no procedure is in progress
- press [💧] : the LED will switch-on and the injector will be activated in cyclical mode according to that established with parameters t1 and t2 (until the key is pressed again).

8 AIRHOLE

8.1 Preliminary considerations
The airhole is activated in the following conditions:
- before the conclusion of the cooking timer count (of the time established with the parameter c5), for the time established with parameter c6
- in manual mode, by pressing the [▲] , key for the time established with parameter c7.

If the airhole is not managed by any digital output, pressing the [▲] key will cause the display of the "**no**" indication for 1s in the lower part of the display.

8.2 Quick setting of the parameter c7
- make sure that the instrument is in on state and that no procedure is in progress
- press [SET] and [▲] : the upper part of the display will show "**c7**", the lower part the corresponding value the left part and the LED will flash.

The parameter c7 is visualised in the minutes:seconds format.
To modify the minutes:
- press [▲] or [▼] within 15s
- press [SET] : the right part will flash.

To modify the seconds:
- press [▲] or [▼] within 15s.

The parameter c7 can be set between 00:00 and 60:00 min:s.
If the airhole is not managed by any digital output, the lower part of the display will show "**no**" for 1s.
- press [SET] : the LED will switch-off, after which the instrument will exit the procedure.

To go back to previous levels:
- press [⏲] several times during the procedure.

To exit the procedure in advance:
- do not operate for 15s (any modifications will be saved).

8.3 Activation of the airhole in manual mode
- make sure that the instrument is in on state and that no procedure is in progress
- press [▲] : the LED will switch on and the airhole will be activated, both for the time established with parameter c7.

8.4 Deactivation of the airhole in manual mode
- make sure no procedure is in progress
- press [▲] : the LED will switch-off.

9 SIGNALS

9.1 Signals

LED	MEANING
	temperature regulation LED if it is on, the output for the regulation of the temperature will be activated if it flashes, the work set-point modification is in progress (with the procedure indicated in paragraph 4.4)
	steam injection LED if it is on: - and the parameter t0 is set at 0, steam injection will be in progress - and the parameter t0 is set at 1, steam injection will be in enabled if it flashes, rapid setting of parameter t2 is in progress (see paragraph 7.2)
	airhole LED if it is on, the airhole will be activated in manual mode if it flashes: - the airhole will be activated due to the effect of the conclusion of the cooking timer count (parameter c6) - rapid setting of parameter c7 is in progress (see paragraph 8.2)
°C	degrees Celsius LED if it is on, the unit of measurement of the temperatures will be degrees Celsius (parameter P2)
°F	degrees Fahrenheit LED if it is on, the unit of measurement of the temperatures will be degrees Fahrenheit (parameter P2)
	on/stand-by LED if it is on, the instrument is in the programmed switch-on state or in the stand-by state
delay	programmed switch-on LED if it is on, the instrument is in the programmed switch-on state if it is flashing, setting of the programmed switch-on day and time is in progress
timer	cooking timer LED if it is on, the quantity shown by the lower part of the display will be the value of the cooking timer or its count if the timer will be activated if it flashes: - cooking timer setting is in progress - the cooking timer count will be in progress but the lower part of the display will be showing another quantity
clock	real time LED if it is on, the quantity displayed by the lower part of the display will be the real time if it is flashing, setting of the day and real time is in progress
set	work set-point LED if it is on, the quantity shown by the lower part of the display will be the work set-point value

10 INDICATIONS

10.1 Indications

INDICAT.	MEANING
decrease time c9	the time established with parameter c9 is missing... 1 second to the conclusion of the cooking timer count
00:00	flashing: the cooking timer count has ended
no	the function requested is not managed by any digital output

11 ALARMS

11.1 Alarms

CODE	MEANING
AL	temperature alarm Remedies: - check the chamber temperature - see parameters A1 and A3 Consequences: - the alarm output will be activated - the acoustics output and the buzzer output will be activated
PF1	power supply cut-off alarm during cooking timer count with duration shorter than the time established with parameter r13 Remedies: - press a key to restore the normal display - check the causes that brought about the power supply cut-off Main consequences: - the count will continue until the instrument is powered - the acoustics output and the buzzer output will be activated
PF2	power supply cut-off alarm during cooking timer count with duration longer than the time established with parameter r13 Remedies: - press a key to restore the normal display - check the causes that brought about the power supply cut-off Main consequences: - the count will be interrupted - the acoustics output and the buzzer output will be activated

When the cause of the alarm disappears, the instrument restores normal functioning, except for the power supply cut-off alarm during the cooking timer count (codes "**PF1**" and "**PF2**") which requires a key to be pressed.

12 INTERNAL DIAGNOSTICS

12.1 Internal diagnostics

CODE	MEANING
Pr1	chamber probe error Remedies: - see parameter P0 - check probe integrity - check the instrument-probe connection - check the chamber temperature Main consequences: - the temperature regulation output will be deactivated - the acoustics output and the buzzer output will be activated
rtc	clock error Remedies: - set the day and real time again Main consequences: - the programmed switch-on will not be available - the acoustics output and the buzzer output will be activated

When the cause of the alarm disappears the instrument restores normal functioning, except for clock error (code "**rtc**") that requires the day and real time to be set.

13 TECHNICAL DATA

13.1 Technical data
Container: grey self-extinguishing.
Front panel protection rating: IP 54.
Connections: removable terminal boards (power supply, inputs and outputs), 6-pole connector (serial port).
Temperature of use: from 0 to 55 °C (from 32 to 131 °F; 10 ... 90% relative humidity without condensate).
Power supply: 115 ... 230 VAC, 50/60 Hz, 5 VA (approx) or 24 VAC, 50/60 Hz.
Keeping the clock data in a power-cut: 24 h with battery charged.
Battery charging time: 2 min without interruptions (the battery is charged by the instrument power supply).
Alarm buzzer: incorporated.
Measurement inputs: 1 (chamber probe) for J/K thermocouple.
Digital inputs: 1 (multifunction) or NO/NC contact (potential-free contact, 5 V 1 mA).
Range of measurement: from -99 to 800 °C (from-99 to 999 °F) for J thermocouple, from -99 to 999 °C (from -99 to 999 °F) for K thermocouple.
Resolution: 1 °C/1 °F.
Digital outputs: 3 relays:
- **relay K1:** 8 A res. @ 250 VCA (NO contact)
- **relay K2:** 8 A res. @ 250 VCA (NO contact)
- **relay K3:** 8 A res. @ 250 VCA (contact in exchange).

The utility managed by each output depends on the instrument code (see paragraph 2.1).
Other outputs: buzzer output (12 V, max. 20 mA); the output is activated during alarms and errors, with continuous contribution.
Serial port: port for the communication with the supervising system (through a serial interface, via TTL, with MODBUS communication protocol) or with the programming key.

14 WORK SET-POINT AND CONFIGURATION PARAMETERS

14.1 Work set-point

	MIN.	MAX.	U.M.	DEF.	WORK SET-POINT
	r1	r2	°C/°F (1)	150	work set-point

14.2 Configuration parameters

PARAM.	MIN.	MAX.	U.M.	DEF.	WORK SET-POINT
SP	r1	r2	°C/°F (1)	150	work set-point
PARAM.	MIN.	MAX.	U.M.	DEF.	MEASUREMENT INPUTS
CA1	-25/-50	25/50	°C/°F (1)	0	chamber probe offset
P0	0	1	- - - -	0	type of probe 0 = J 1 = K
P2	0	1	- - - -	0	temperature unit of measurement (2) 0 = °C 1 = °F
P5	0	1	- - - -	0	quantity shown by the upper part of the display during the on state or during normal functioning 0 = chamber temperature 1 = work set-point
P6	0	3	- - - -	2	quantity shown by the lower part of the display during the on state or during normal functioning 0 = chamber temperature 1 = work set-point 2 = value of the cooking timer or its count if the timer is active 3 = day and real time
PARAM.	MIN.	MAX.	U.M.	DEF.	MAIN REGULATOR
r0	1	99	°C/°F (1)	5	work set-point differential
r1	0	r2	°C/°F (1)	50	minimum work set-point
r2	r1	999	°C/°F (1)	350	maximum work set-point
r12	0	1	- - - -	0	restraint between the output state for the regulation of the temperature and the cooking timer 1 = YES - the temperature regulation output remains off if the cooking timer count is not in progress
r13	0	240	min	240	duration of a power supply cut-off duration that occurs during a cooking timer count exceeding which the count is interrupted (3)
PARAM.	MIN.	MAX.	U.M.	DEF.	STEAM INJECTION
t0	0	1	- - - -	0	steam injection functioning mode 0 = pressing the [💧] key causes the injection of steam for the time established with parameter t2 or for the entire duration that the key is pressed. The parameter t1 establishes the minimum time that can pass between the two successive injections. 1 = pressing the [💧] key enables automatic injection of the steam in cyclical mode (parameter t2 establishes the switch-on duration of the injector and parameter t1 establishes switch-off duration)
t1	0	250	s	1	if t0 = 0, minimum time that passes between two successive injections if t0 = 1, injector switch-off duration
t2	1	250	ds (4)	10	if t0 = 0, minimum injection duration if t0 = 1, injector switch-on duration
PARAM.	MIN.	MAX.	U.M.	DEF.	VARIOUS
c4	-1	120	s	15	duration of buzzer activation and of the acoustic output on conclusion of the cooking timer count; see also c9 (5) (6) -1= the buzzer and the acoustic output must be deactivated in manual mode by pressing a key
c5	0	60	min	20	time that passes between the activation of the airhole and the conclusion of the cooking timer count, see also c6
c6	0	60	min	20	duration of the activation of the airhole at conclusion of the cooking timer count, see also c5
c7	00:00	60:00	min:s	00:30	duration of the activation of the airhole in manual mode
c8	0	1	- - - -	1	showing the real time in the lower part of the display during the stand-by state 1 = YES
c9	0	120	s	10	time that passes between the activation of the buzzer and the acoustic output and the conclusion of the cooking timer count, see also c4
PARAM.	MIN.	MAX.	U.M.	DEF.	TEMPERATURE ALARMS
A1	0	999	°C/°F (1)	0	temperature above which the temperature alarm is activated, se also A3 (7)
A2	0	240	min	0	temperature alarm delay
A3	0	2	- - - -	0	type of temperature alarm 0 = no alarm 1 = absolute (i.e. A1) 2 = relative to the work set-point (i.e. "work set-point + A1")
PARAM.	MIN.	MAX.	U.M.	DEF.	DIGITAL INPUTS
i5	0	3	- - - -	0	effect caused by the activation of the multifunction input 0 = no effect 1 = STAR/INTERRUPTION OF THE COOKING TIMER - the activation of the input will cause the cooking timer to start and the successive activation will cause its interruption 2 = BUZZER, ACOUSTIC OUTPUT AND BUZZER OUTPUT DEACTIVATION - the activation of the input will cause deactivation of the buzzer, the acoustic output and the buzzer output (activate the input again to deactivate these utilities again) 3 = STEAM INJECTION - in this case: - if t0 = 0, the activation of the input causes the injection of steam for the time established with parameter t2 or for the entire duration that the key is pressed (parameter t1 establishes the minimum time that can pass between the two successive injections) (8) - if t0 = 1, the activation of the input will enable automatic steam injection (in cyclical mode; parameter t2 establishes the duration of the switch-on of the injector and parameter t1 establishes the duration of switch-off) until the input is activated again (8)
i6	0	1	- - - -	0	type of contact of the multifunction input 0 = NO (input active with closed contact) 1 = NC (input active with open contact)
PARAM.	MIN.	MAX.	U.M.	DEF.	SERIAL NETWORK (MODBUS)
LA	1	247	- - - -	247	instrument 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

(1) the unit of measurement depends on parameter P2
(2) **set the parameters relative to the regulators appropriately after modification of parameter P2**
(3) if the power supply cut-off is shorter than the time established with parameter r13, the count will also continue when the instrument is not powered
(4) ds = tenths of second
(5) the buzzer and the acoustic output are activated before the conclusion of the cooking timer count (of the time established with the parameter c9), for the time established with parameter c4
(6) if the cooking timer is interrupted (with the procedure given in paragraph 6.4 or by activation of the malfunction input), the duration of buzzer activation and of the acoustic output and the flashing duration of the 00:00 indication will be 3 seconds
(7) the parameter differential is 10 °C/18 °F
(8) pressing the [💧] key causes the associated effect.

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