TO-74IB

Ver.01

TEMPERATURE AND TIME CONTROLLER FOR OVENS

TO741BV01-02B-16191

BEFORE INSTALLING THE CONTROLLER, WE RECOMMEND READING THE INSTRUCTION MANUAL IN FULL TO PREVENT POSSIBLE DAMAGE TO THE PRODUCT.

THROUGH CONTINUOUS DEVELOPMENT, FULL GAUGE CONTROLS RESERVES THE RIGHT TO CHANGE THIS MANUAL INFORMATION AT ANY TIME, WITHOUT PRIOR NOTICE.

1. DESCRIPTION

TO-74IB is comprised of two independent thermostats and a timer for the automation of electric ballast ovens. The instrument provides control of ovens with the dual temperature control, where both the lower (BOTTOM) and upper (TOP) temperatures of the ballast oven can be controlled by the activation of each resistance individually in accordance with the desired setpoint. **TO-74IB** also controls steam injection and lighting in the oven, and has an internal audible alarm (buzzer) that signals, for example, the end of the roasting process. It has a preset editor that allows the configuration of up to 10 presets in advance through the individual adjustment of each desired setpoint, mode of steam activation, and process time (cooking). It has a relative temperature alarm function, absolute or extra range, configurable according to the needs of the user, and also allows the use of an external audible alarm. The ThermON line is developed and produced with high-quality raw materials and stands out for its unique and distinct design, and its intuitive, user-friendly interface to facilitate operation and configuration. It offers a functions lock feature to prevent third parties from changing the parameters, an air-tight front panel that provides high protection against the entry of dirt and moisture and more.

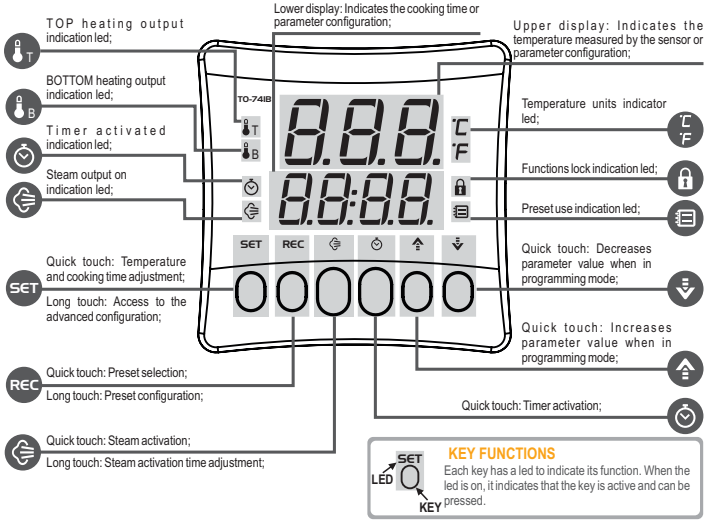
2. MAIN APPLICATIONS

Ballast overs, bakery ovens.

3. TECHNICAL SPECIFICATIONS

Electric power supply	85~265Vca (50-60Hz)	**Approximate consumption**	1VA
Operating temperature	0 to 60ºC		
Control temperature	-10 to 500ºC /14 to 932ºF		
Operating humidity	10 to 90% UR (without condensation)		
Temperature sensor	Type J or K thermocouple (sold separately)		
Resolution	1ºC / 1ºF		
Digital Input	E1: remote timer triggering		
Relay outputs	4 relay outputs: 5 (3)A / 250Vac 1/8HP		
External audible alarm (buzzer) output	12Vcc/30mA (max)		
Product dimensions (mm)	75 x 75 x 100 (WxHxD)		
Opening dimensions (mm)	67.2 x 67.2		

4. INTRODUCTION



5. INSTALLATION CONFIGURATION

Access the installation configuration menu by pressing the SET key for 4 seconds until Func is displayed. After that the message Cod will be displayed and then the SET key must be pressed again (quick touch). Use the ▲ or ▼ keys to enter the **access code 231** and press SET (quick touch) again when ready.

Use the ▲ or ▼ keys to select the desired function. The value can be edited with a quick touch on the SET key. Use the ▲ or ▼ keys to change the value and press the SET key with a quick touch when ready to save the configured value and return to the functions menu. To leave the configuration menu and return to the normal operating mode (temperature indication), press SET (long touch) until ---- is displayed.

5.1 Installation setup table

FUN	FUNCTION	DESCRIPTION	MIN	MAX	UNIT	DEF.
Cod	**Access code (231)**	Required when you want to change installation setup parameters.	0	9999	-	0
i01	**Temperature sensor type**	Defines the type of temperature sensor to be used with the controller.	tc_J	tc_H	-	tc_J
i02	**Temperature units selection**	Selects the temperature units the controller will use for its operation.	ºC	ºF	-	ºC
i03	**Enable external audible alarm (buzzer)**	Enables or disables the external audible alarm (buzzer). If enabled, the internal audible alarm (buzzer) will be disabled.	OFF	ON	-	OFF
i04	**Internal audible alarm (buzzer) volume**	Selects the sound intensity of the internal audible alarm (buzzer). Min = low volume Med = medium volume High = high volume	MIN	HIGH	-	MED

6. OPERATION

The controller will activate the respective heating outputs, keeping them on until the oven reaches the temperature setpoint configured for each thermostat according to the value adjusted in SPb – Setpoint Bottom (Lower) and SPt – Setpoint Top (Upper). The respective heating output will be activated again when the temperature of the thermostat drops below the desired setpoint value minus the hysteresis value adjusted for each thermostat (F04 - BOTTOM or F08 - TOP).

6.1 Temperature views

During the normal operation of the controller, the upper three-digit display will alternate between the display of the sensor caption and the respective temperature measured by the sensor as follows:

The display shows the caption bot and then the respective temperature of that sensor 180 after 1 second.

The display shows the caption top and then the respective temperature of that sensor 180 after 1 second.

The lower four-digit display will show the process time.

7. OPERATIONS - BASIC LEVEL

The controller has easy access to resources that are relevant to the user of the oven.

7.1 Adjustment of oven temperature and timer

To adjust the setpoint values of the oven BOTTOM temperature, TOP temperature or timer, press SET key with a quick touch. Use the ▲ or ▼ keys to adjust the value. To advance and/or terminate the adjustment, press again the SET quick touch on the key .

ADJUSTMENT OF THE LOWER TEMPERATURE OF THE OVEN (SETPOINT BOTTOM):
Defines the temperature of the lower working area of the oven. This parameter can be adjusted between the values defined in F02 - Minimum value allowed to the temperature setpoint (BOTTOM) and F03 - Maximum value allowed to the temperature setpoint (BOTTOM).

ADJUSTMENT OF THE LOWER TEMPERATURE OF THE OVEN (SETPOINT TOP):
Defines the temperature of the lower working area of the oven. This parameter can be adjusted between the values defined in F06 - Minimum value allowed to the temperature setpoint (TOP) and F07 - Maximum value allowed to the temperature setpoint (TOP).

TIMER SETTINGS:
Defines the cooking time. When the time expires, the audible alarm output is switched on intermittently until any key on the controller's front panel is pressed. The timer can be adjusted between 00:01 and 99:59. The time scale is adjusted in parameter F11 - Time base of the timer.

7.2 Steam activation

The steam operating mode is defined in parameter F15 - Steam Operating Mode. Steam activation depends on parameters F17 - Time interval between steam activations, F18 - Minimum temperature to activate the steam (BOTTOM sensor) and F19 - Minimum temperature to activate the steam (TOP sensor), available in the advanced configuration menu. These conditions must be met for the injection of steam in the oven to occur.

Note: These three conditions can be desactivated by selecting 0 no.

7.2.1 Steam activation times

Press the key and hold for 4 seconds to adjust. Use the ▲ or ▼ keys to adjust the value. To confirm, press down on the key with a quick touch.

STEAM OUTPUT ON TIME:
This parameter can be adjusted between 1 and 30 seconds, and the factory default is 5 seconds.

STEAM OUTPUT OFF TIME:
This parameter can be adjusted between 1 and 600 minutes, and the factory default is 3 minutes.
NOTE: *This parameter is available for adjustment when the steam control mode selected is cyclic,* F15 = CYC.

7.3 Presets

A preset is a set of preconfigured parameter adjustments, like lower setpoint, upper setpoint, value of the timer, and steam operating mode. The controller has 10 presets that can be edited according to the needs of the user. The preset can be selected in a simplified.

7.3.1 Preset selection

Pressing the REC key with a quick touch allows access to the controller's preset menu and then the selection of the desired preset using the keys ▲ or ▼.
REC - QUICK TOUCH: cancel preset selection;
REC - LONG TOUCH: confirm preset selection;
Icon indicates that the preset mode is active.

7.3.2 Preset configuration

To access the preset configuration menu, keep the REC key pressed for 4 seconds. Then use ▲ or ▼ to select the parameter to be adjusted, use the REC key to access the parameter. The value of the parameter can be adjusted using the keys ▲ or ▼ and confirmed by pressing the REC key. To leave the preset menu and return to the normal operating mode (temperature and time indication), keep the REC key pressed (long touch) until ---- is displayed.

7.3.2.1 Preset configuration table

FUN	FUNCTION	DESCRIPTION	MIN	MAX	UNIT	DEF.
rCnF	**Select the preset to be configured**	Selects the number of the preset to be configured. There are 10 presets that can be customized by the user.	1	10	-	1-10
rSPb	**BOTTOM setpoint for the selected preset**	Adjustment of the lower temperature setpoint (BOTTOM) for the preset selected by parameter rCnF.	(F02)	(F03)	ºC (ºF)	180 (356)
rSPt	**TOP setpoint for the selected preset**	Adjustment of the lower temperature setpoint (TOP) for the preset selected by parameter rCnF.	(F06)	(F07)	ºC (ºF)	180 (356)
rtM	**Timer adjustment for the selected preset**	Adjustment of the timer for the preset selected by parameter rCnF.	00:01	99:59	F11	18:00
rUA	**Steam operating mode for the selected preset**	Defines the steam operating mode for the selected preset rCnF: OFF: OFF: does not inject steam. Man: Manual: injects steam when the key is pressed. Aut: Automatic: automatically injects steam after the timer is activated. The steam is activated after the time set in F16 has elapsed. CYC: Cyclic: injects steam in cycles using the times configured in UAon and UAoF.	OFF	CYC	-	MAN

7.4 Functions lock

To enable / disable the functions lock, press the ▲ and ▼ keys and hold for the time configured in parameter F28 - Time for functions lock.
When this configuration is active, the parameters cannot be changed, but they can be viewed. When the lock is active, the parameters available for adjustment are defined in parameter F27 - Functions Lock.
Icon indicates the status of the lock. Icon lit indicates the functions lock is active.

Note: Mode LOC2 of the function lock only allows selection of the number of the active presets, not the configuration of the preset. However, if the preset mode is to be used, at least one preset must be activated before activating the function lock. Otherwise the number of the selected presets will not be allowed.

8. OPERATIONS - ADVANCED LEVEL

8.1 Changing the controller parameters

Access the advanced configuration menu by pressing the SET key for 4 seconds until Func is displayed. When Cod is displayed press the SET key again (quick touch). Use the ▲ or ▼ keys to enter the **access code 123** and press SET (quick touch) again when ready.

Use the ▲ or ▼ keys to select the desired function. The value can be edited with a quick touch on the SET key. Use the ▲ or ▼ keys to change the value and press the SET key with a quick touch when ready to save the configured value and return to the functions menu.
To leave the configuration menu and return to the normal operating mode (temperature and time indication), press SET (long touch) until ---- is displayed.

8.2 Parameter table

FUN	FUNCTION	DESCRIPTION	MIN	MAX	UNIT	DEF.
Cod	Access code (123)	Required when you want to change the advanced configuration parameters.	0	9999	-	0
F01	Lower temperature sensor indication offset (BOTTOM)	Allows compensating deviations in the sensor temperature reading of the BOTTOM sensor.	-20 (-4)	20 (36)	°C (°F)	0 (0)
F02	Minimum value allowed to configure the temperature setpoint (BOTTOM)	These parameters serve as the lower and upper thresholds for the adjustment of parameter "SPB"- BOTTOM temperature setpoint. They are used to block temperature adjustment and avoid an improper configuration for the operation of the oven.	-10 (14)	F03	°C (°F)	0 (32)
F03	Maximum value allowed to configure the temperature setpoint (BOTTOM)		F02	500 (932)	°C (°F)	230 (446)
F04	Control differential (Hysteresis) of the lower sensor (BOTTOM)	The temperature difference to switch on the BOTTOM heating output. This function allows defining a temperature interval within which the heating output will remain on.	1 (1)	20 (36)	ºC (ºF)	3 (5)
F05	Lower temperature sensor indication offset (TOP)	Allows compensating deviations in the sensor temperature reading of the TOP sensor.	-20 (-4)	20 (36)	°C (°F)	0 (0)
F06	Minimum value allowed to configure the temperature setpoint (TOP)	These parameters serve as the lower and upper thresholds for the adjustment of parameter "SPT"- TOP temperature setpoint. They are used to block temperature adjustment and avoid an improper configuration for the operation of the oven.	-10 (14)	F07	°C (°F)	0 (32)
F07	Maximum value allowed to configure the temperature setpoint (TOP)		F06	500 (932)	°C (°F)	230 (446)
F08	Control differential (Hysteresis) of the lower sensor (TOP)	The temperature difference to switch on the TOP heating output. This function allows defining a temperature interval within which the heating output will remain on.	1 (1)	20 (36)	ºC (ºF)	3 (5)
F09	Timer trigger mode	Defines the timer triggering mode: man = Manual, through the ⏲ key or E1: Remote timer trigger. In I = Start up, when the controller is powered up. bot = Temperature, upon reaching the working temperature of the BOTTOM sensor. toP = Temperature, upon reaching the working temperature of the TOP sensor. ***NOTE.:*** *In modes In I, bot and toP the ⏲ key or E1: Remote timer trigger only cancels the timer.*	MAN	TOP	-	MAN
F10	Timer counting direction	Defines the direction the timer counts: dEC = time count down; CrE = time count up;	DEC	CRE	-	DEC
F11	Time base of the timer	Defines the time base of the timer: mm:SS = minutes, maximum time 99:59 minutes; HH:mm = hours, maximum time 99:59 hours;	MM:SS	HH:MM	-	MM:SS
F12	Timer reset mode	Defines the timer reset mode, essentially whether the audible alarm will be switched off manually or by time: man = Manually through the ⏲ key or E1: Remote timer triggering; AUt =Automatically according to the time defined in parameter F14.	MAN	AUT	-	MAN
F13	Timer reset time base	Defines the time base when the timer is reset: mm:SS =minutes, maximum time 99:59 minutes; HH:mm =hours, maximum time 99:59 hours;	MM:SS	HH:MM	-	MM:SS
F14	Time to reset the timer (aut. mode)	Defines the time to reset the timer if automatic reset is selected in parameter F12.	0:01	99:59	F13	0:05
F15	Steam working mode	Defines the steam operating mode for the selected preset rCnF: OFF OFF: does not inject steam. man Manual: injects steam when the ✋ key is pressed. AUt Automatic: automatically injects steam after the timer is activated. The steam is activated after the time set in F16 has elapsed. CYC Cyclic: injects steam in cycles using the times configured in UAon and UAoF. **NOTE.:** When the preset mode is active, this configuration is made in menu rUA.	OFF	CYC	-	MAN
F16	Delay to activate the automatic steam	Defines the delay before injecting steam in the oven after the timer is activated. This parameter is valid when automatic steam is adjusted in parameter F15.	1	180	sec.	5
F17	Time interval between steam activations	Defines the minimum time interval between steam activations, i.e. once the steam output is activated, the controller will not activate it again before the time adjusted in this parameter has elapsed. To disable this function, displace the adjustment to the minimum until no is displayed. ***NOTE:*** *This parameter is disregarded when the type of steam selected is cyclic.*	no(0)	30	min.	no(0)
F18	Minimum temperature to activate the steam (BOTTOM sensor)	Defines the minimum temperature in the BOTTOM sensor to allow activating the steam output. To disable this function, displace the adjustment to the minimum until no is displayed.	no(-10) no(14)	500 (932)	ºC (ºF)	no(-10) no(14)
F19	Minimum temperature to activate the steam (TOP sensor)	Defines the minimum temperature in the TOP sensor to allow activating the steam output. To disable this function, displace the adjustment to the minimum until no is displayed.	no(-10) no(14)	500 (932)	ºC (ºF)	no(-10) no(14)
F20	Economy mode - idle time to switch off the light	Defines the time the oven has to be idle before the controller enters Economy Mode (ECO). When the lightbulb output is switched off. Press SET key to leave ECO mode.	no(0)	60	min.	15
F21	Enables temperature alarm	Enables the temperature alarm and selects which thermostat will be associated with the alarm: OFF OFF: alarm will not be enabled; bot Alarm associated with the BOTTOM thermostat: the temperature will be validated as a function of the temperature in the lower sensor of the oven; toP Alarm associated with the TOP thermostat: the temperature will be validated as a function of the temperature in the upper sensor of the oven.	OFF	TOP	-	OFF
F22	Temperature alarm operating mode	Defines the operating mode of the alarm: Ablo Absolute lower alarm; AbH Absolute upper alarm; rELo Relative lower alarm; rEH Relative upper alarm; Outr Relative out of range alarm.	Ablo	Outr	-	Ablo
F23	Alarm setpoint value	Sets the value of the setpoint that will serve as a reference for the temperature alarm according to the alarm operating mode selected in F22.	-10 (14)	500 (932)	ºC (ºF)	0 (32)
F24	Alarm hysteresis	Temperature difference required to deactivate the temperature alarm. This function allows defining a range of desired temperatures to deactivate the alarm.	1 (1)	50 (90)	ºC (ºF)	20 (36)
F25	Time of inhibition of temperature alarm upon power up	Sets the time for which the alarm will not be activated after the controller is powered up. It serves to prevent the alarm from being activated during the period for which the oven is trying to reach the working temperature.	no (0)	60	min.	no (0)
F26	Temperature alarm validation time	Sets the time for which the temperature must remain in the alarm condition to validate the activation of the alarm. This allows avoiding warnings originating from punctual temperature variations.	no (0)	600	sec.	no (0)
F27	Functions lock	Defines the functions lock mode: OFF = functions lock disabled; LOC1 = partial functions lock 1 - prevents advanced configuration parameters from being changed; LOC2 = partial functions lock 2 - prevents controller parameters from being changed, only allowing changing presets; FULL = full functions lock, does not allow any parameter adjustment;	OFF	FULL	-	LOC1
F28	Time for functions lock	Defines the time to lock / unlock the functions. For more information see item 7.4 - Functions Lock.	1	30	seg.	10

8.2 Temperature alarm configurations

F21 – Enables high temperature alarm: F21 allows selecting which sensor will be used as temperature reference for the alarm, BOTTOM sensor (lower) or TOP sensor (upper). It is also possible to disable the temperature alarm OFF.

F22 – Temperature alarm operating mode: the operating mode of the temperature alarm has the following options:

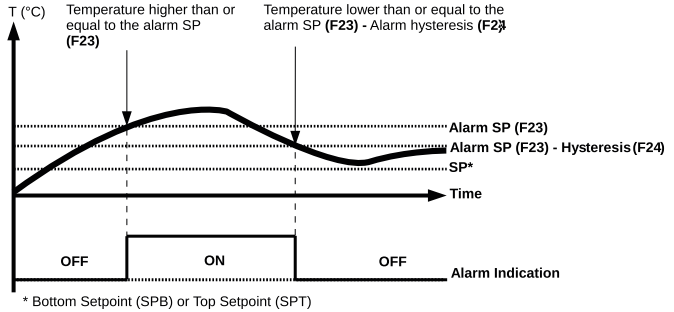
Ablo **Absolute lower alarm:** activated when the temperature measured in the sensor is lower than or equal to the value in F23. The alarm will be deactivated when the temperature is higher than or equal to the value of F23 + F24.

Example: (F23 = 390°C, F24 = 5°C), if temp. = 390°C, activate alarm / if temp. = 395°C, switch alarm off.

AbHi **Absolute upper alarm:** activated when the temperature measured in the sensor is higher than or equal to the value in F23. The alarm will be deactivated when the temperature is lower than or equal to the value of F23 - F24, as shown in **Figure 1**.

Example: (F23 = 215°C, F24 = 10°C), if temp. = 215°C, activate alarm / if temp. = 205°C, switch alarm off.

Figure 1 - Absolute upper alarm

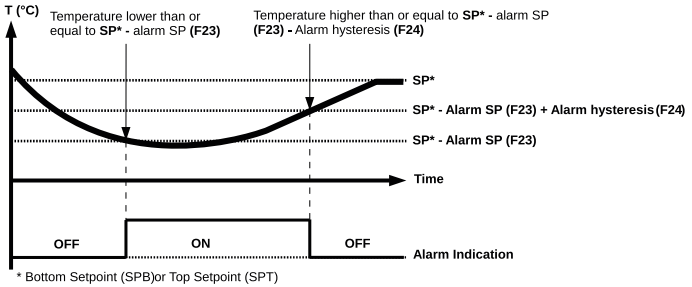


* Bottom Setpoint (SPB) or Top Setpoint (SPT)

rELo **Relative lower alarm:** activated when the temperature measured in the sensor is lower than or equal to the configured setpoint value (SPB or SPT) minus the value in F23. The alarm will be deactivated in accordance with the value configured for the alarm hysteresis (F24) as shown in **Figure 2**.

Example: (SPB = 250°C, F23 = 15°C, F24 = 10°C).
If temp. = 235°C (SPB-F23), activate alarm. If temp. = 245°C (SPB-F23)+F24, switch alarm off.

Figure 2 - Relative lower alarm



* Bottom Setpoint (SPB)or Top Setpoint (SPT)

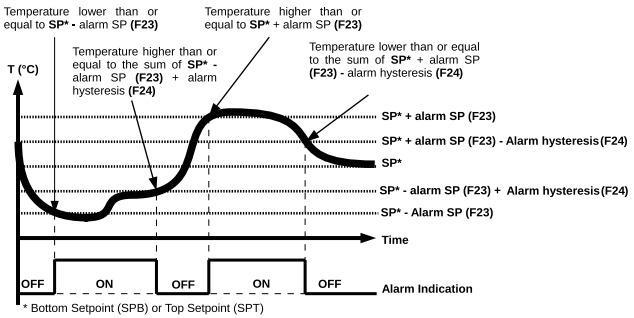
rEHi **Relative upper alarm:** activated when the temperature measured in the sensor is higher than or equal to the setpoint value (SPB or SPT) plus the value in F23. The alarm will be deactivated in accordance with the value configured for the alarm hysteresis (F24).

Example: (SPB = 300°C, F23 = 10°C, F24 = 5°C).
If temp. = 310°C (SPB+F23), activate alarm. If temp. = 305°C (SPB+F23)-F24, switch alarm off.

Outr **Relative out of range alarm:** Activated when the temperature measured by the sensor is out of the specified range, i.e. if the measured temperature is higher than or equal to the setpoint value (SPB or SPT) plus the value in F23 and/or lower than or equal to the configured setpoint value (SPB or SPT) minus the value in F23. The alarm will be deactivated in accordance with the value configured for the alarm hysteresis (F24), as shown in **Figure 3**.

Example: (SPB = 200°C, F23 = 10°C, F24 = 5°C).
If temp. = 210° C (SPB+F23), activate alarm above the range related to the setpoint. If temp. = 205°C (SPB+F23)-F24, switch off alarm above the range related to the setpoint.
If temp. = 190°C (SPB-F23), activate alarm below the range related to the setpoint / if temp. = 195°C (SPB-F23)+F24, switch off alarm below the range related to the setpoint.

Figure 3 - Out of range alarm



* Bottom Setpoint (SPB) or Top Setpoint (SPT)

8.3 Temperature alarm operation

When the controller is in temperature alarm condition, the display will show a message identifying the type of alarm that is occurring right after the display of the sensor caption associated with the alarm, as shown in the example:
If the alarm is associated with the BOTTOM thermostat and configured as absolute lower alarm: The message [bot] will be displayed for 1 second and then the message [ALo] indicating a lower type alarm is occurring that is associated with the bottom sensor. After the alarm message is displayed for a few seconds, the temperature measured in the sensor will be displayed.

8.3.1 Audible alarm inhibiting

During an alarm condition, the controller will activate the buzzer and show a message on the display in accordance with the type of alarm that is occurring, to indicate that the temperature is out of the desired range.
When this happens, the audible alarm can be inhibited by pressing the ⇩ key for 5 seconds while the temperature and timer are being displayed, until the message [inH] [bu22] is displayed indicating that the buzzer has been inhibited by the user.
Once the audible alarm has been inhibited, the buzzer will only be activated again when a new alarm condition is detected. However, the message with the type of alarm will continue to be displayed as long as the controller remains in alarm condition.
Note: If the controller is in [ECO] mode when the temperature alarm condition occurs, the buzzer must be inhibited by pressing the key SET first to exit the economy mode, and only then by pressing the ⇩ key for 5 seconds to inhibit the buzzer.

9. SIGNALING

9.1 Programming signaling

LOC On — **Functions lock active**
Does not allow adjusting the parameter.
To deactivate functions lock see item 7.4 - Functions lock.

no Cod — **Parameter adjustment denied**
Enter access code in parameter [Cod] to adjust the parameter value.

EAS ProG — **Receiving paramenters by EasyProg* (programming key)**
Updating the parameter table via EasyProg*.
*** sold separately**

9.2 Alarm signaling

AH1 — **Absolute or relative temperature alarm is above the specified range**
Indication only on the upper display.

ALo — **Absolute or relative temperature alarm is below the specified range**
Indication only on the upper display.

Aor — **Relative temperature alarm is out of the specified range**
Indication only on the upper display.

9.3 Process signaling

If the controller detects an error that interferes in the operation of the system, the controller switches off the outputs, switches on the audible alarm intermittently, and indicates the detected failure on the display. To leave error mode, the controller must be switched off, the fault corrected, and the controller switched on again.

Er1 ECAL — **Providence:**
Contact Full Gauge Controls.

Er2 pppp — **Providence:**
Reconfigure the function values.

Er3 tbot — **Reason:** BOTTOM temperature sensor disconnected or out of the specified range.
Providence: Check sensor connections and operation.

Er4 ttoP — **Reason:** TOP temperature sensor disconnected or out of the specified range.
Providence: Check sensor connections and operation.

9.4 Other signaling

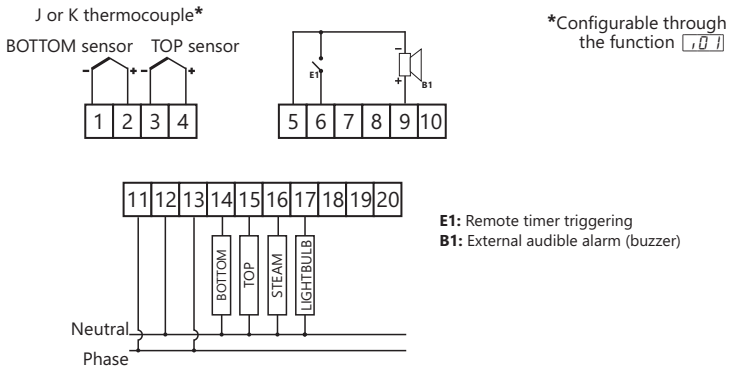
ECO — Controller in Economy mode. The controller was idle for the time adjusted in F20 - Economy Mode. To leave this mode, press SET or open the oven door.
Note: *This message is displayed alternately with the oven temperature.*

10. INSTALLATION

10.1 Electrical connections

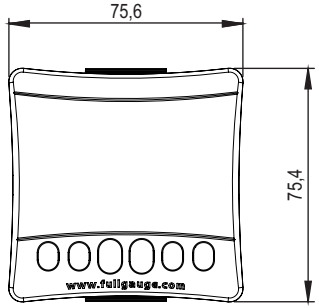
PRODUCT INSTALLATION PRECAUTIONS:
- Before performing any procedure on this instrument, disconnect it from the power grid;
- Ensure that it has adequate ventilation, avoid installation on control panels containing devices that could cause it to operate outside its specified temperature range;
- Install the product away from sources that may generate electromagnetic disturbances, such as: motors, contactors, relays, electrovalves, etc;

10.1.1 Oven: Electric

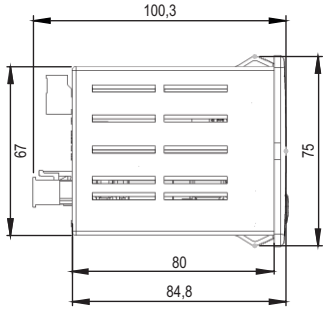


11. DIMENSIONS

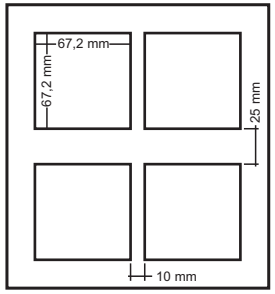
front view



Side view

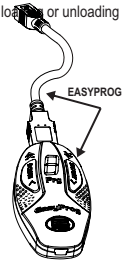


Panel openings



12. EasyProg* - version 2 or later

It is an accessory the main function of which is to store the parameters of controllers. At any time you can load new parameters of a controller and unload them on a production line (of the same controller), for example.
It is provided with three types of connections for loading or unloading the parameters:
- Serial RS-485: It is connected by RS-485 network to the controller (only for those controllers provided with RS-485).
- USB: It is connected to the computer by USB port, using the Sitrad Preset Editor.
- Serial TTL: The controller may be connected directly to EasyProg by Serial TTL connection.



***Sold separately**

ENVIRONMENTAL INFORMATION

PACKAGING:
Materials used in the packaging of the Full Gauge Controls products are 100% recyclable. Be sure to dispose of using specialized recycling facilities.
PRODUCT:
The components used in the Full Gauge Controls controllers may be recycled and reused if disassembled by specialized companies.
DISPOSAL:
Do not incinerate or dispose of the controllers that reached the end of their service life in household waste. Be sure to comply with the existing legislation in your area relating to disposal of electronic waste. In the event of doubt, please contact Full Gauge Controls.

WARRANTY - FULL GAUGE CONTROLS

Products manufactured by Full Gauge Controls, as of May 2005, have a ten (10)-year warranty directly with the factory and one (1) year before the reseller network, counted as of the date of consigned sale as stated on the invoice. After this said year before the reseller network, the warranty shall continue to be executed if the instrument is sent directly to Full Gauge Controls. The products are warranted in case of defects in workmanship making them unsuitable or inadequate to the intended applications. The warranty is limited to maintenance of instruments manufactured by Full Gauge Controls, disregarding other kinds of expenses, such as indemnity for damages caused to other equipment.

EXCEPTIONS TO WARRANTY

The Warranty does not cover expenses incurred for freight and/or insurance for sending the products with signs of defect or malfunctioning to the provider of technical support services. The following events are also excluded from warranty: natural wear and tear of parts, external damages caused by falls or inadequate packaging of products.

INVALIDATION OF WARRANTY

The product warranty shall lose validity, automatically, if:
- The instructions for use and assembly contained in the technical description and the installation procedures described in Standard NBR5410 are not followed;
- The product is submitted to conditions beyond the limits specified in its technical description;
- The product is violated or repaired by a person not integrating the technical team of Full Gauge Controls;
- The damages are due to a fall, blow and/or impact, water damage, overload and/or atmospheric discharge.

USE OF WARRANTY

For using the warranty, the customer should send the adequately packaged product, along with the respective Invoice to Full Gauge Controls. The customer will bear the freight cost for sending of the products. Also, as much information as possible with regard to the defect verified should be sent, in order to facilitate the analysis, the testing and the performance of the service.
Those processes and any product maintenance shall only be performed by the Technical Support Services of Full Gauge Controls, at the Company headquarters - Rua Júlio de Castilhos, 250 - CEP 92120-030 - Canoas - Rio Grande do Sul – Brazil.
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