

OC30

Standard Controller

USER GUIDE



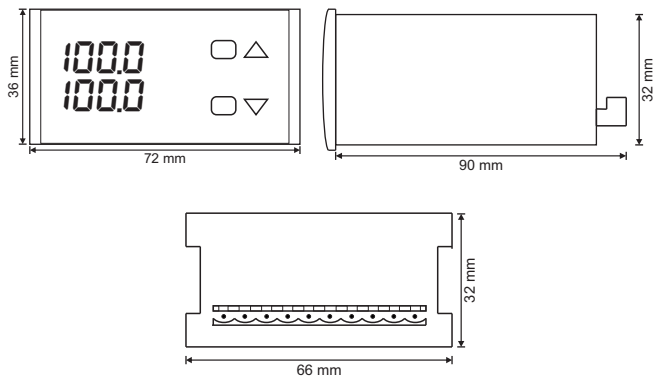
ORDEL



- In the package;
- There is a
- Device.
- User guide.
- When you open the package, visually check whether the type of device complies with the order, whether the above parts are missing and whether the device has been damaged during shipping.
- Read this user manual carefully before using the device. Responsibility for accidents and damages caused by non-compliance with the warnings in this manual belongs to the user.
- This device has been produced for use by educated people in industrial enterprises, it is not suitable for use in homes and similar places for safety reasons.
- Do not use this device in the presence of flammable and explosive gases. It may cause explosion or fire due to electric arc that may occur at the contact points.
- Liquid substances and metal parts must be prevented from entering the device. Otherwise, it may cause accidents such as fire and electric shock.
- There is no fuse and circuit breaker on the device, they must be connected externally by the user.
- In case of malfunction of the device, external measures should be taken to prevent accidents and damages that may occur in the system in which it is located.
- It should be ensured that the sensor and signal cables are away from power cables or switched inductive load cables, or it must be prevented from being electrically affected.
- Before making the device connections, it should be checked whether the supply voltage is suitable for the place where it will be used by looking at the product code.
- Do not energize the device before making the connections related to the device in accordance with the wiring diagram and do not touch the terminals while the device is energized.
- The factory configuration of the device is not suitable for every system, it must be changed by the user according to the needs of the current system.
- Do not modify or try to repair the device, the device should be repaired by authorized service personnel.
- Alcohol, thinner, etc. in cleaning the device. Do not use cleaners containing Clean the device by wiping it with a damp cloth.

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OC30 Model devices are reliable devices designed for applications where temperature control and timing operations must be carried out together, in standard 72x36mm dimensions, manufactured with high technology, compatible with international standards. It offers advanced (PID, ON/OFF) control, high sensitivity, stability and ease of use.

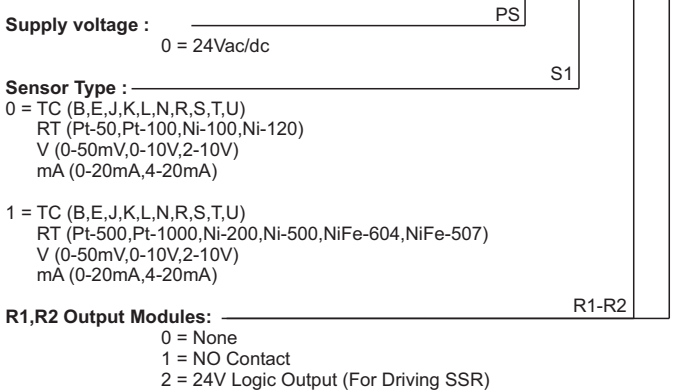


Panel Cutout Dimensions: 66+/-0.5 mm x 32+/-0.5 mm



- Open the slot on the panel according to the dimensions given in the figure above.
- Insert the device into the slot in front of the opened panel.
- Place the device on the panel by placing the clamp of the device, which comes out of the box, into the slots of the device and tighten the screws, if any.

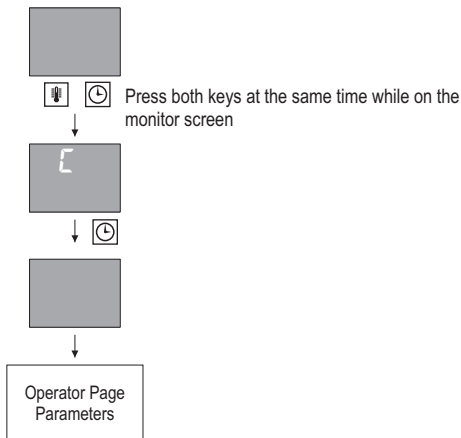
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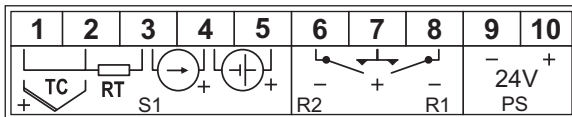
Note : Since one end of each relay is common, both relay outputs must be coded the same type.

For example, if R1 is NO Contact, then R2 should be selected as NO Contact.

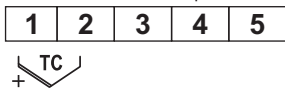
To Switch to Operator Page



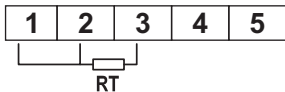
In order to access the operator page parameters, the and keys are pressed together while the device is energized, and the **⌘** parameter appears on the screen. Password must be entered here, if any, otherwise the factory setting is defined as "0".



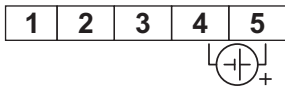
Thermocouple



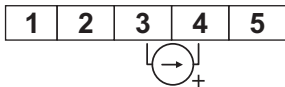
Pt-100



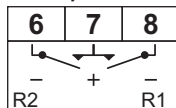
0/2-10V



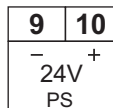
0/4-20mA



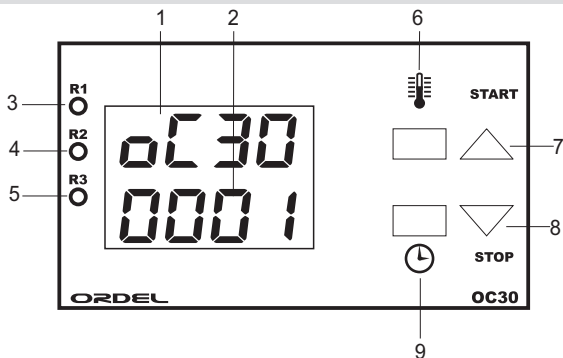
Relay Connection



Device Supply






Supply Voltage (PS)	24 Vac/dc +%-10-%20 Universal
Power Consumption	4W, 6VA
Universal Sensor Input (S1)	Thermocouple = B,E,J,K,L,N,R,S,T,U Resistance Thermometer Current = 0/4-20mA Voltage = 0-50mV, 0/2-10V
Analog Input Impedances	Thermocouple, mV = 10M Ω Current = 10 Ω Voltage = 1M Ω
Relay Outputs (R1,R2)	Contact = 250VAC 10A Logic Output = 24Vdc 20mA
Contact Life	No Load = 10,000,000 Switching 250V 10A Resistive Load: 1.000.000 Switching
Memory	100 Years, 100,000 Renewals
Accuracy	+/- % 0,2
Sampling Time	100 ms
Ambient Temperature	Operation = -10...+55°C Storage = -20...+65°C
Protection Class	Front Panel = Ip54 Rear Panel = Ip20
Dimensions	Width = 72 mm Height = 37 mm Depth = 90 mm
Panel Cut Dimensions	66 +/- 0,5 mm x 32 +/- 0,5 mm






1	TEMPERATURE INDICATOR	Displays oven temperature and error messages.
2	TIME INDICATOR	While timing is in progress, it shows the remaining time and becomes "0" when the time is over.
3	R1 LED	Indicates the status of the first output (R1).
4	R2 LED	Indicates the status of the second output (R2).
5	R3 LED	Indicates the status of the second output (R3).
6	TEMPERATURE SETTING KEY	Used to switch to Temperature-Set mode.
7	UP ARROW KEY	It is used to start the timing operation (START) and to increase the setting values.
8	DOWN ARROW KEY	It is used to terminate the timing operation (STOP) and to decrease the setting values.
9	TIME SETTING BUTTON	Used to switch to Time-Set mode.

Setting the Temperature Value:

 The key is pressed. When "----" appears on the time display, the value on the temperature display is set to the desired temperature value with the  ,  keys.


Setting the Time Value:

 The key is pressed. When "----" appears on the temperature display, the value in the time display is set to the desired time value with the  ,  keys.


**Setting the Delay Time (dLY) :**

When the key is pressed twice, dly appears on the upper display on the screen. The desired waiting time is entered on the lower screen.


Starting the Timing Process:

To start the timing process, it is sufficient to press the  (**START**) Key or to turn off the Warning-Contact. When the timing process starts, the "SN" led flashes at 1s intervals. However, if there is an **Error-Message (See Page-11)** on the temperature display, the timing process cannot be started.

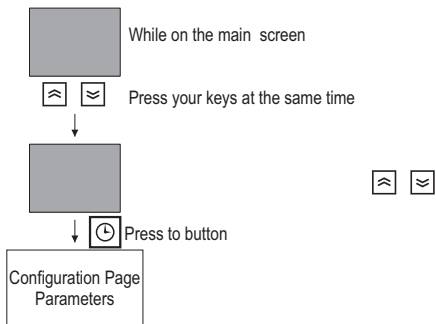
Termination of the Timing Process:

To terminate the timing process, it is sufficient to press the  (**STOP**) Key or to turn on the Warning-Contact.

Other Settings:

For other settings, the Operator-Level screen is accessed by pressing the and keys together. Parameters can be changed by entering  Operator Code. Descriptions of these parameters are given on the next page.

To Switch to the Configuration Page



Screen

Explanation

Par.01---



Security password to login to the configuration page. If a password is defined, the menu cannot be accessed without entering the password. The password is defined as (0) in the factory setting. In case of forgetting, the menu can be accessed by entering 5647.

Setting Options : 1999 - 9999

Par.02---



Used to restore factory settings. To do this, take this parameter to **ON** position and press keys together before and after this parameter is on the screen. When this process is done correctly, the device is reset and turned off and on again. Factory settings will be restored.

Par.03---



The decimal degree of measurement. When this parameter is changed, the set and hysteresis values should be checked.

Setting Options : 0 - 1

Par.04---



Determines the universal analog input type.

Setting Options : Table 1

Table-1

AI1.T	Sensor Type	Standard	Temperature Range	
			(°C)	(°F)
TC-B	Type B Thermocouple	IEC584-1	60, 1820	140, 3308
TC-E	Type E Thermocouple	IEC584-1	-200, 840	-328, 1544
TC-J	Type J Thermocouple	IEC584-1	-200, 1120	-328, 1562
TC-K	Type K Thermocouple	IEC584-1	-200, 1360	-328, 2480
TC-L	Type L Thermocouple	DIN43710	-200, 900	-328, 1652
TC-N	Type N Thermocouple	IEC584-1	-200, 1300	-328, 2372
TC-R	Type R Thermocouple	IEC584-1	-40, 1760	104, 3200
TC-S	Type S Thermocouple	IEC584-1	-40, 1760	104, 3200
TC-T	Type T Thermocouple	IEC584-1	-200, 400	-328, 752
TC-U	Type U Thermocouple	DIN43710	-200, 600	-328, 1112
Rt	Pt100 Resistance Thermometer	IEC751	-200, 840	-328, 1544

Par.05---



Sensor disconnect.

Setting Options : Lo - Hc





Par.06		Temperature Unit <hr/> Setting Options : °C - °F
Par.07		Temperature error recovery value. According to the (+) or (-) value entered in this parameter, it adds or subtracts the value read from the sensor and displays it on the screen. <hr/> Setting Options : +00 - 100 Unit °C
Par.08		Filter time constant. <hr/> Setting Options : 0.1 - 10.0 Unit : Second
Par.09		It determines the type of "R1" Relay output module. <hr/> Setting options: Table 2-3

Table-2

0	OFF	Not used
1	ROC	On / Off Heating Output
2	DOC	On / Off Cooling Output
3	AHA	Absolute Up Deviation Alarm
4	ALA	Absolute Down Deviation Alarm
5	HDA	Relative Up Deviation Alarm
6	LDA	Relative Down Deviation Alarm
7	OBA	Out of Band Alarm
8	IBA	In-Band Alarm
9	PPC	"+" Direction Control Output
10	NPC	Control Output in "-" Direction
11	OPN	Open Valve
12	CLS	Shut Valve
13	APR	If within the approach band
14	ODV	If outside the approach band
15	RUN	If time goes on
16	LTU	In last time unit
17	EOP	From the expiry of time










Table-3




Alarm Type	Short	Graphic Display
ON/OFF Heating	ROC	
ON/OFF Cooling	DOC	
Absolute Up Deviation Alarm	AHA	
Absolute Down Deviation Alarm	AIA	
Relative Up Deviation Alarm	HDA	
Relative Down Deviation Alarm	LDA	
Out of Band Alarm	OBA	
In-Band Alarm	IBA	









The **CSP** value in the table is the Control Set Point. **ASP** value is its own set value of Digital-Output which is set as alarm (set.1, set.2).

In the table, “**1**”= means alarm, “**0**”= means no alarm.



The areas shown as shaded are the **Hysteresis** region and its width is as much as the HYS value.

Par.10		Output lock of "R1" Relay. If used as an alarm. If this parameter is selected Enb , when the relay is energized, the relay will be locked and will not release until the STOP key is pressed. Setting Options : d b b - Enb
Par.11		It determines the type of "R2" Relay output module. Setting Options : Table 2-3
Par.12		Output lock of "R2" Relay. If used as an alarm. If this parameter is selected Enb , when the relay is energized, the relay will be locked and will not release until the STOP key is pressed. Setting Options: d b b - Enb
Par.13		It determines the type of "R3" Relay output module. Setting Options : Table 2-3
Par.14		Output lock of "R3" Relay. If used as an alarm. If this parameter is selected Enb , when the relay is energized, the relay will be locked and will not release until the STOP key is pressed. Setting Options: d b b - Enb
Par.15		It determines the lower limit of all set values. Setting Options : 1999 - 5 P H L Unit °C
Par.16		It determines the upper limit of all set values. Setting Options: 5 P L L - 9999 Unit °C
Par.17		Control form. Outputs reverses control. Setting Options: r E U (Reverse) - d C r (Straight)
Par.18		Continuous control. It enables the temperature control to start as soon as the device is energized, and to control it continuously, without starting. It separates temperature control and time control. Setting Options : o n - o f f

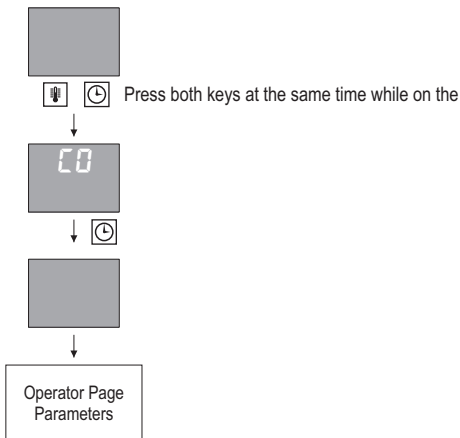
Par.21		Sets the unit of time in the device.
		Setting Options : 5EE (second) - nLn (Minute) - Hour (Hour)
Par.22		Energized
		Setting Options : Cnt (continues from where it left off) -brP(stays on hold)
Par.24		If only positive PID control is active, it determines the one-way (+) control output lower limit.
		Setting Options : 00 - 5oñr Unit %




Par.25		<p>If only positive PID control is active, it determines the one-way (+) control output upper limit.</p> <p>Setting Options : 50ñr - 1000 Unit %</p>
Par.26		<p>If only positive PID control is active, one-way (+) control output determines M.R value.</p> <p>Setting Options : 50LL - 50HL Unit %</p>
Par.27		<p>If only positive PID control is active, it determines the upper limit of the control output when the set value is "0".</p> <p>Setting Options : OFF(Close) , 0.1 - 1000 Unit %</p>
Par.28		<p>If negative PID control is active, it determines the bidirectional (+/-) control output lower limit.</p> <p>Setting Options : 1000 - doñr Unit %</p>
Par.29		<p>If negative PID control is active, it determines the upper limit of bidirectional (+/-) control output.</p> <p>Setting Options : doñr - 1000 Unit %</p>
Par.30		<p>If negative PID control is active, bidirectional (+/-) control output M.R value.</p> <p>Setting Options : doLL - doHL Unit %</p>
Par.31		<p>Auto-Tune Set Point: Temperature value at which auto-tune operation will be performed (A temperature value corresponding to approximately half of the heater power should be selected).</p> <p>Setting Options : t - 9999 Unit °C</p> <p>NOTE: One of the outputs must be set to PID in order to perform Auto-Tune.</p>
Par.32		<p>P = Proportional Band</p> <p>Setting Options : 1 - 9999 Unit °C</p> <p>NOTE: If PID control is active.</p>

- Par.33**--- **P** = Proportional Band
Setting Options: 1 - 9999 *Unit °C*
NOTE: If PID control is active.
- Par.34**--- **I** = Integral Time
Setting Options: 1 - 9999 *Unit Second*
NOTE: PID kontrol aktif ise.
- Par.35**--- **D** = Derivative Time
Setting ;Options: 1 - 9999 *Unit Second*
NOTE: If PID control is active.
- Par.36**--- **Control Period:** It determines the refresh time of the analog control output as well as the on/off frequency of the pulse output.
Setting Options: 1 - 250 *Unit Second*
NOTE: If PID control is active.

Par.41		Sets the password to enter the operator page screen.
		<i>Setting Options: 1999 - 9999</i>
Par.42		Sets the password to enter the configuration page screen.
		<i>Setting Options: 1999 - 9999</i>






To Switch to Operator Page




In order to access the operator page parameters, the  and  keys are pressed together while the device is energized, and the  parameter appears on the screen. Password must be entered here, if any, otherwise the factory setting is defined as "0".


Screen

Explanation

Par.43		<p>Operator Password: It is used to prevent the access of the operator page parameters by an unauthorized user. If a password is defined, these menus cannot be accessed without entering the password.</p> <p><i>Setting Options: 1999 - 9999</i></p>
Par.44		<p>It is used when the temperature is desired to progress in the form of a ramp. It starts when the start is given and when the target reaches the set, it remains constant in this set. If a value is entered for this parameter, the <i>RPPr</i> parameter should be <i>oFF</i></p> <p><i>Setting Options: oFF (Close) 0 - 100</i> <i>Unit Minute</i></p>
Par.45		<p>If it is desired that the time starts counting when the process value reaches the set value and does not stop until the time expires, this parameter should be set to <i>oN</i>. When this parameter is <i>oN</i>, the <i>RPPr</i> parameter should be <i>oFF</i></p> <p><i>Setting Options: oN - oFF</i></p>
Par.46		<p>Approach Value: The timing process is paused and the time indicator flashes until the difference between the set value and the process value decreases to this value.</p> <p><i>Setting Options : oFF =Kapalı 1 - 9999</i> <i>Unit °C</i></p>
Par.47		<p>Hysteresis: It is the hysteresis value used in ON/OFF control and Auto-Tune operation. (For Auto_Tune operation, the smallest value greater than system instability should be selected.)</p> <p><i>Setting Options: 1 - 9999</i> <i>Unit °C</i></p>

After the K_P and R_L parameters are set to the desired value, while the R_L parameter is on the screen

Auto-tune operation is started by pressing the  button together before and after. While the process is in progress, the message R_L flashes on the time display. When the process is finished, the P , I , D and ξP parameters are set to their new values.

In order to cancel the Auto-Tune operation, the  (STOP) key must be pressed while the R_L message is displayed.

NOTE: One of the outputs must be set to PPC in order to perform Auto-Tune.

OC30 Series devices can work with many different sensor types and each output can be used for a separate alarm or control. Therefore, before the OC440 can be used, the input/output types and basic functions must be optimally adjusted. OC30 series devices have one Analog-Input as standard. In addition, two Digital-Output and one Analog-Output can be added optionally. Analog-Input types, Analog-Output types and functions, Digital-Output functions are determined by separate parameters. These parameters are within the Configuration-Level.

It is used to measure the Analog-Input Temperature-Value. The type of sensor to be connected to this input is determined by the parameter "b iL" (Table-1).

The unit of Temperature-Value is determined by the EU parameter as °C or °F and parameters directly related to the Temperature-Value use this unit.

The decimal degree of Temperature-Value and other parameters whose unit is EU, that is, the number of digits after the point, is called "dP" for short and is determined by the parameter "dP". Each time the "dP" parameter is changed, these parameters must be reset, as the dot will change in all parameters with EU units.

In case the Temperature Sensor is broken or the sensor cables are broken, what the Process-Value will be is determined by the "b iBL" parameter.

Each of the Digital-Outputs on the device can be used for different alarm and control purposes. Each Digital-Output has its own parameter that determines its function (r iF, r zF).. The options for these parameters are as in Table-2-3. Descriptions of on/off-Control and Alarm-Types are given on the next page. Alarm-Set-Values of Digital-Outputs defined as alarms are determined by bEt. i, bEt.z Parameters.

If any Digital-Output is set as Alarm, if this alarm condition is realized and lost again, whether the alarm will be locked or not is determined by the Alarm-Lock parameter of that output (r iL, r zL)The alarm lock can only be reset by the user when an output with "Enb" is set to an alarm state.

If Servo-Motorized-Valve-Control is to be done, the function of one of the Digital-Output or Relays should be "oPn" and the function of the other one should be "cLb", and these outputs should be used to open and close the valve.

It can be used for Analog-Output, PID-Control-Output or Retransmission processes, which can be optionally added to the device. The function of this Analog-Output is determined by the "o iF" parameter (Table-4). The Retransmission-Scale is the one determined by the parameters "o iLL" and "o iHL" The type of Analog-Output is determined by the "o iL" parameter (Table-5).

If we briefly say output for each of the Analog-Output and Digital-Outputs, the functions selected for these outputs automatically determine the Control-Type. Therefore, if Standard-PID-Control is to be used, it is sufficient to define the output to be used as Positive-PID-Control-Output (PPC). As another example, if PID-Heat/Cool-Control is to be made, one of the outputs must be defined as Positive-PID-Control-Output (PPC) and another output as Negative-PID-Control-Output (nPC).

For PID-Control, the direction of the control is determined by the "CF" Parameter. If this parameter is selected as "dLr", the Output-Value will increase as the Process-Value increases, but if it is selected as "rEu", the Output-Value decreases as the Process-Value increases. In short, "rEu" should be selected if a control is to be made for heating purposes, and "dLr" if a control is to be made for cooling purposes.

Error Message	Meaning
-SB-	Sensor connections are broken.
-Uf-	Process value is below sensor scale.
-Of-	The process value is above the sensor scale.
nn	The process value is too high to be displayed on the screen.
-vv-	The process value is too low to be displayed on the screen.



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