

# OSAKA

versión.:



## OK 48 – 48 A – 482 – 482 A DIGITAL CONTROLLER 48 X 48

2 RELAYS, 1-2 DISPLAYS, PID, AUTOTUNING, SELFTUNING,  
FUOC, SOFT-START, LOOP BREAK ALARM AND DEAD ZONE.

### TECHNICAL CHARACTERISTICS

MECHANICAL DATA	
Housing	Self-extinguishing plastic, UL 94 V0
Dimensions	48x48 mm– depth 98 mm (1/16DIN)
Weight	225 g approx.
Connections	2,5 mm <sup>2</sup> screw terminal block
Mounting	Flush in panel in 45x45 mm hole
Front panel protection	IP 65 mounted in panel with gasket
ELECTRICAL DATA	
Power supply	24, 115, 230 VAC +/- 10%
AC Frequency	50 / 60 Hz
Power consumption	5 VA approx.
CARACTERÍSTICAS DE ENTRADA	
Configuration 1	Thermocouples J, K, - IEC 584-2, Pt 100 – According to IEC 751, OSAKA infrared IRS J and K 0...50 mV, 0...60 mV, 12...60 mV
Configuration 2	Thermocouples J, K, S – IEC 584-2 PTC KTY 81-121 (990 Ω at 25°C) NTC 103AT-2 (10 kΩ at 25°C) OSAKA Infrared IRS J and K 0...50 mV, 0...60 mV, 12...60 mV
Configuration 3	0/4...20 mA
Configuration 4	0/1...5 V, 0/2...10 V
OUTPUT DATA	
Output, 2 switched relays	8A-AC1, 3A-AC3, 250VAC,
Auxiliary power supply output	10 VDC / 20 mA max.
FUNCTIONAL DATA	
Control	ON/OFF, Neutral Zone, PID single and double action
Overall accuracy	+/-0.5% full scale
Sampling rate	8 samples per second
Display resolution	According to the used probe 1/0,1/0,01/0,001
Measurement range	According to the used probe and to the measurement unit
Operating temperature	0...55°C
Operating humidity	30...95 RH% without condensation

**TABLE OF INPUTS / PROBES AND RANGE**

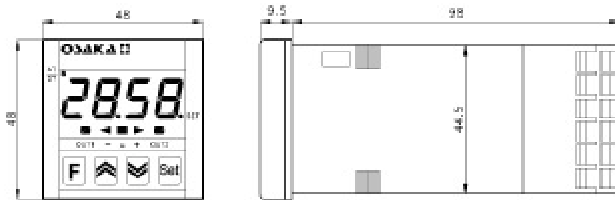
INPUT	Without decimal point	With decimal point
<b>tc J</b> "SEnS" = J	-160 ... 1000 °C - 256 ... 1832 °F	----
<b>tc K</b> "SEnS" = CrAl	-270 ... 1370 °C - 454 ... 2498 °F	----
<b>1 - tc S</b> 2 - "SEnS" = S	1 - -50 ... 1760 °C 2 - -58 ... 3200 °F	----
<b>Pt100 (IEC)</b> "SEnS" = Pt1	-200 ... 850 °C -328 ... 1562 °F	-199.9 ... 850.0 °C -199.9 ... 999.9 °F
<b>PTC (KTY81-121)</b> "SEnS" = Ptc	1 - -55 ... 150 °C 2 - -67 ... 302 °F	1 - -55.0 ... 150.0 °C 2 - -67.0 ... 302.0 °F
<b>NTC (103-AT2)</b> "SEnS" = ntc	-50 ... 110 °C -58 ... 230 °F	-50.0 ... 110.0 °C -58.0 ... 230.0 °F
<b>0..20 mA</b> "SEnS" = 0.20	-1999 ... 9999	-199.9 ... 999.9 - 19.99 ... 99.99 - 1.999 ... 9.999
<b>4..20 mA</b> "SEnS" = 4.20	-1999 ... 9999	-199.9 ... 999.9 - 19.99 ... 99.99 - 1.999 ... 9.999

INPUT	Without decimal point	With decimal point
<b>0 ... 50 mV</b> "SEnS" = 0.50	-1999 ... 9999	-199.9 ... 999.9 - 19.99 ... 99.99 - 1.999 ... 9.999
<b>0 ... 60 mV</b> "SEnS" = 0.60	-1999 ... 9999	-199.9 ... 999.9 - 19.99 ... 99.99 - 1.999 ... 9.999
<b>12 ... 60 mV</b> "SEnS" = 12.60	-1999 ... 9999	-199.9 ... 999.9 - 19.99 ... 99.99 - 1.999 ... 9.999
<b>0 ... 1 V</b> "SEnS" = 0.1	-1999 ... 9999	-199.9 ... 999.9 - 19.99 ... 99.99 - 1.999 ... 9.999
<b>0 ... 5 V</b> "SEnS" = 0.5	-1999 ... 9999	-199.9 ... 999.9 - 19.99 ... 99.99 - 1.999 ... 9.999
<b>1 ... 5 V</b> "SEnS" = 1.5	-1999 ... 9999	-199.9 ... 999.9 - 19.99 ... 99.99 - 1.999 ... 9.999
<b>0 ... 10 V</b> "SEnS" = 0.10	-1999 ... 9999	-199.9 ... 999.9 - 19.99 ... 99.99 - 1.999 ... 9.999
<b>2 ... 10 V</b> "SEnS" = 2.10	-1999 ... 9999	-199.9 ... 999.9 - 19.99 ... 99.99 - 1.999 ... 9.999

## CONTROL OF PROGRAMMATION

CONTROL ON / OFF	DEAD ZONE	
<p>This type of control works on the outputs depending on the Set Point, on the functioning mode and on the differentials programmed. The functioning is correct when it's programmed a negative differential in case of heating control and a positive differential in case of refrigeration control. The functioning of the regulator can be modified through the parameter of output delay and through the Dynamic Set Point function.</p>	<p>The operation with Dead zone is used for the control of facilities that possess an element that causes a positive increment (e.g. Heating, etc.) and an element that causes a Negative increment (Coolant, etc.). The regulator behaves in the following way: it turns off the output when the process value reaches the Set and it activates the 1rEG output when the process value is smaller than [SP-HSEt], or it lights the 2rEG output when the process value is bigger than [SP+HSEt].</p>	
SINGLE AND DOBLE ACTION PID	AUTOTUNING	SELFTUNING
<p>The Single action PID is a control that is carried out when it is wanted to control a process, of heat or cold. The Double Action PID control works on the outputs 1rEG and 2rEG depending on the active Set Point "SP" and on the instrument's PID algorithm with two degrees of freedom..</p>	<p>The AUTO-TUNING function permits the calculation of thePID parameters by means of a FAST type tuning cycle and, at the end of this operation, the parameters are stored into the instrument's memory and remain constant during control.</p>	<p>The SELF-TUNING function (rule based "TUNE-IN") instead allows control monitoring and the continuous calculation of the parameters during control.</p>
FUOC	SOFT-START	LOOP BREAK ALARM
<p>This parameter allows the variable overshoots at the start up of the process or at the changing of the Set Point to be avoided</p>	<p>The Soft-Start function only works through PID control and allows the limitation of control power when the instrument is switched on, for a programmable period of time. This is useful when the actuator, driven by the instrument, may be damaged excess power supplied when the application is not yet in the normal rating. (ex. for certain heating elements).</p>	<p>The Loop Break alarm is available on all the instruments, which intervenes when, for any reason (short-circuit of a thermocouple, thermocouple inversion, load interruption), the loop control is interrupted.</p>
INSTRUMENTS PROGRAMMING DEVICE "COPY KEY"		
<p>The COPY KEY is a device which allows the memorisation and the transfer of the software configuration of the OSAKA instruments expressly predisposed. The device it's mainly useable for the serial programming of the instruments which need to have the same parameters configuration or to keep a copy of the programming of and instrument and allow its rapid retransmission.</p>		

## MECHANICAL DIMENSIONS (mm)

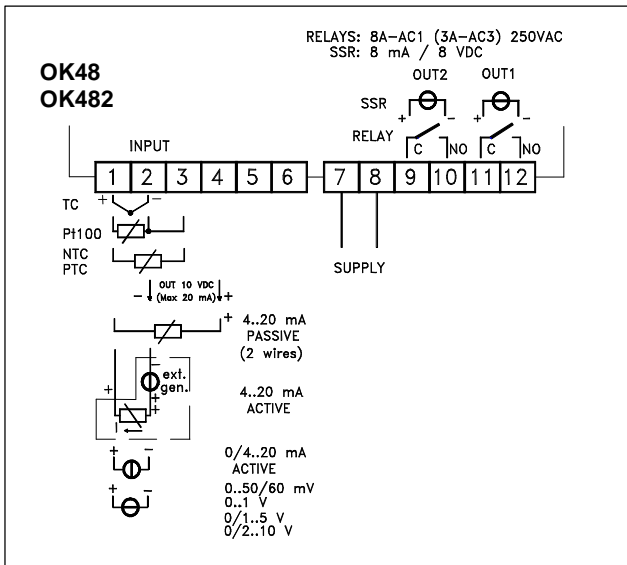


## FRONT PANEL DESCRIPTION



<b>1 – Key SET</b>	This is used to access the programming parameters and to confirm selection.	<b>7 – Led Set</b>	when flashing, it indicates access to the programming mode...
<b>2 - Key DOWN</b>	This is used to decrease the values to be set and to select the parameters.	<b>8 – Led AT/ST</b>	indicates that the Self-tuning function is activated (light on) or that Auto-tuning (flashing ) is in progress.
<b>3 – Key UP</b>	This is used to increase the values to be set and to select the parameters. Outside the programming mode it permits visualisation of the output control power.	<b>9 – Led – Shift index</b>	indicates that the process value is lower than the one programmed on par. "AdE".
<b>4 – Key F</b>	This is a key with a function programmable by par. "USrb". It can be set to : Activate Auto-tuning and Self-tuning functions, swap the instrument to manual control, silence the alarm, change the active Set Point, deactivate control.	<b>10 – Led = Shift index</b>	indicates that the process value is within the range [SP+AdE ... SP-AdE]
<b>5 – Led OUT 1</b>	indicates the state of output OUT1.	<b>11 - Led + Shift index</b>	indicates that the process value is higher than the one set on par. "AdE".
<b>6 – Led OUT 2</b>	indicates the state of output OUT2		

## CONNECTIONS DIAGRAMS



## CERTIFICATS

CE Conformity: CEE EMC 89/36 (EN 50081-1, EN 50082-1)  
CEE LT 73/23 and 93/68 (EN 61010-1)