

## THE SERIES

The wide range of auxiliary functions available completes the excellent performances offered by the microprocessor-based controllers of the THE series, with standard 48x96 mm format and single and double display versions.

The main PID control action adjusts itself automatically to the optimum parameters with the AT initial autotuning, or with the ADT permanent autoadaptive function; while the auxiliary outputs can be programmed on 16 different alarm functions or fixed points.

The LFA diagnostic function is able to detect failures along the entire regulation loop, from the sensor to the actuator; moreover the regulation can be either automatic (closed loop) or manual (open loop), setting the output percentual value.

The complete programming of the controllers is made through the front panel, with the possibility of including a 3 level software safety lock.



# SENSOR

## HIGHLIGHTS

- Main control output with 1 or 2 auxiliary outputs
- PID action with AT autotuning and ADT autoadaptive functions
- Complete diagnostic of the regulation loop
- Automatic or manual regulation of the output

## APPLICATIONS


### Packaging lines



### Process control



## TECHNICAL DATA

<b>Power Supply</b>	12-24 Vac/Vdc $\pm 10\%$ version or 80-240 Vac $\pm 10\%$ version
<b>Consumption</b>	5 VA max.
<b>Sensor input</b>	selectable between E, J, K, L, R, S, T thermocouples and Pt100W/0°C RTDs
<b>Measurement scale</b>	selectable in °C or °F scales with lower and upper limits, refer to table 1
<b>Precision</b>	thermocouple measurement $\pm 0,4\%$ f.s.
	RTD measurement $\pm 0,3\%$ f.s.
	temperature drift 0,01% f.s. / °C of ambient
	temperature setting and indication $\pm 1$ digit
<b>Data updating</b>	input, output and indication every 500 ms
<b>Data retention</b>	non volatile eeprom memory
<b>Keyboard correction indication</b>	from -99,9 to +99,9 °C/°F
<b>1st point control action</b>	on/off or PID automatic or manual selection, maximum or minimum, with AT initial autotuning and ADT permanent autoadaptive function
<b>Proportional band</b>	20°C (sel. from 1 to 999 °C/°F)
<b>Integral time</b>	120 sec. (sel. from 0 to 960 sec.)
<b>Derivative time</b>	30 sec. (sel. from 0 to 240 sec.)
<b>Cycle time</b>	12 sec. (sel. from 1 to 120 sec.)
<b>On/off hysteresis</b>	$\pm 1$ °C (sel. from $\pm 0,1$ o $\pm 99,9$ °C/°F)
<b>1st point output type</b>	relay SPDT 250 Vac, 5 A version
	trans. PNP 15 Vdc $\pm 20\%$ version
	20 mA short-circuit protection
<b>2nd/3rd point alarm action</b>	selectable alarm setting from -999 to +999 °C/°F respect to 1st point, or fixed point setting on selected scale, refer to table 2
<b>2nd point output type</b>	relay SPDT 250 Vac, 5 A
<b>3rd point output type</b>	relay SPST 250 Vac, 5 A
<b>Auxiliary functions</b>	LFA Loop Failure Alert diagnostic function, digital filter with an average of 10 measures, SW program LOCK with 3 levels
<b>Setting</b>	PROG, SET, UP, DOWN, AUTO/MAN push-buttons
<b>Indicators</b>	4 digit red display (10mm height), 4 digit green display (7mm height) for ED or 5 LED movement bar (ES), yellow ON1 LED, red ON2 LED, red AUX LED, green LOCK, green MAN LED, green AT LED
<b>Connection</b>	terminal block with 15 screw contacts, electronic block extractable from front panel
<b>Electric protection</b>	class 1
<b>Mechanical protection</b>	IP54 - front panel
	IP20 - housing
	IP10 - contacts
<b>Housing material</b>	ABS
<b>Weight</b>	400 g max.
<b>Operating temperature</b>	-10 ... +55°C
<b>Storage temperature</b>	-20 ... +65°C
<b>Reference standard</b>	EN 61010-1
<b>Certifications</b>	



## TABLES

Sensor	°C scale	°F scale
TR int.	-150...450	-200...850
TR dec.	-99,9...450	-99,9...850
TC - E	0...600	0...1100
TC - J	-50...760	-50...1400
TC - K	-100...1250	-150...2300
TC - L	-50...760	-50...1400
TC - S	0...1700	30...3000
TC - R	0...1700	30...3000
TC - T	-100...400	-150...750

Table 1: °C/°F SCALE

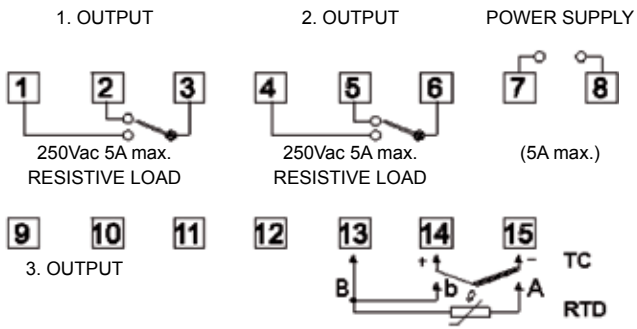
Alarm	Fixed pt	Function
ALx0	FPx0	deactivated
ALx1	FPx1	minimum
ALx2	FPx2	maximum
ALx3	FPx3	neutral zone on
ALx4	FPx4	neutral zone off
ALx5	FPx5	minimum*
ALx6	FPx6	maximum*
ALx7	FPx7	neutral zone on*
ALx8	FPx8	neutral zone off*

Table 2: ALARM FUNCTION

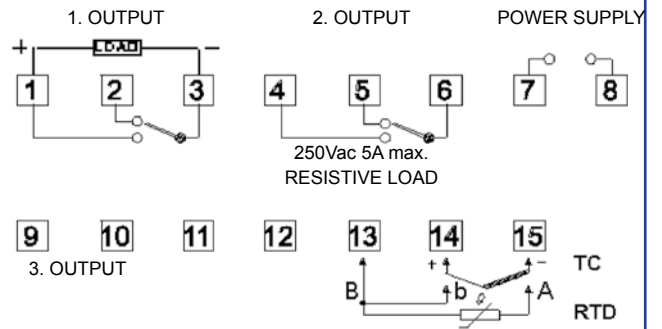
\*stand-by: first intervention inhibition

**CONNECTIONS**

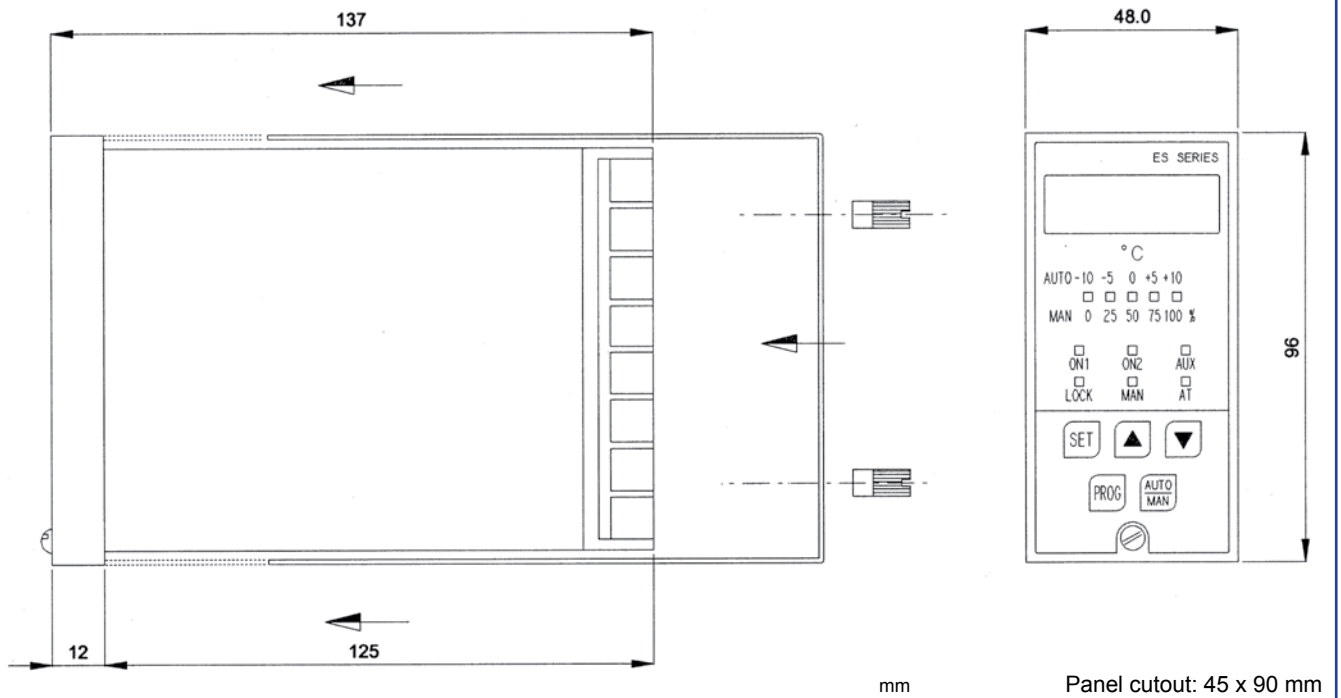
**RELAY VERSION**



**TRANSISTOR VERSION**



**DIMENSIONS**



## MODEL SELECTION AND ORDER INFORMATION

MODEL	DISPLAY	POWER SUPPLY	MAIN OUTPUT	POINTS	ORDER N°
ES-000	single	12 ... 24 Vdc/Vac	relay	2	975021000
ES-010	single	12 ... 24 Vdc/Vac	transistor	2	975021010
ES-100	single	80 ... 240 Vac	relay	2	975021020
ES-110	single	80 ... 240 Vac	transistor	2	975021030
ES-001	single	12 ... 24 Vdc/Vac	relay	3	975201060
ES-011	single	12 ... 24 Vdc/Vac	transistor	3	975201070
ES-101	single	80 ... 240 Vac	relay	3	975201110
ES-111	single	80 ... 240 Vac	transistor	3	975201120
ED-000	double	12 ... 24 Vdc/Vac	relay	2	975031000
ED-010	double	12 ... 24 Vdc/Vac	transistor	2	975031010
ED-100	double	80 ... 240 Vac	relay	2	975031020
ED-110	double	80 ... 240 Vac	transistor	2	975031030
ED-001	double	12 ... 24 Vdc/Vac	relay	3	975151070
ED-011	double	12 ... 24 Vdc/Vac	transistor	3	975151080
ED-101	double	80 ... 240 Vac	relay	3	975151120
ED-111	double	80 ... 240 Vac	transistor	3	975151130

The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.