

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.



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

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



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

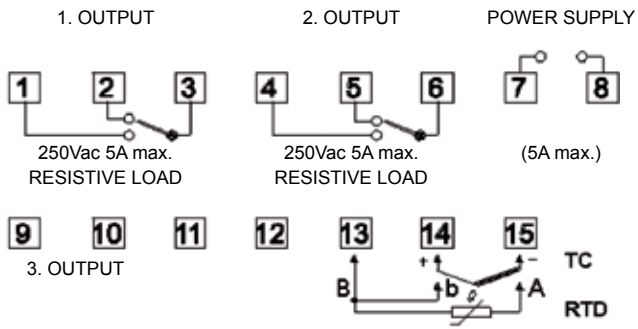
| Alarm | Fixed pt | Function |
|-------|----------|-------------------|
| ALx0 | FPx0 | deactivated |
| ALx1 | FPx1 | minimum |
| ALx2 | FPx2 | maximum |
| ALx3 | FPx3 | neutral zone on |
| ALx4 | FPx4 | neutral zone off |
| ALx5 | FPx5 | minimum* |
| ALx6 | FPx6 | maximum* |
| ALx7 | FPx7 | neutral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

Table 2: ALARM FUNCTION

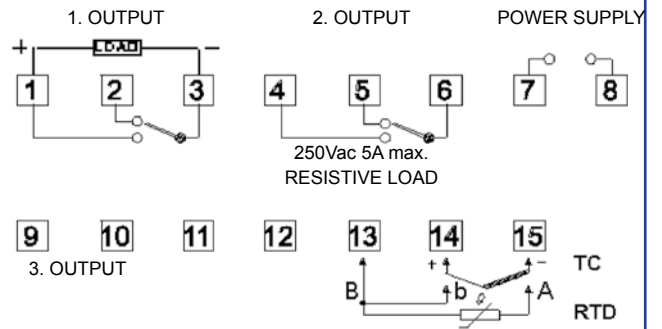
*stand-by: first intervention inhibition

CONNECTIONS

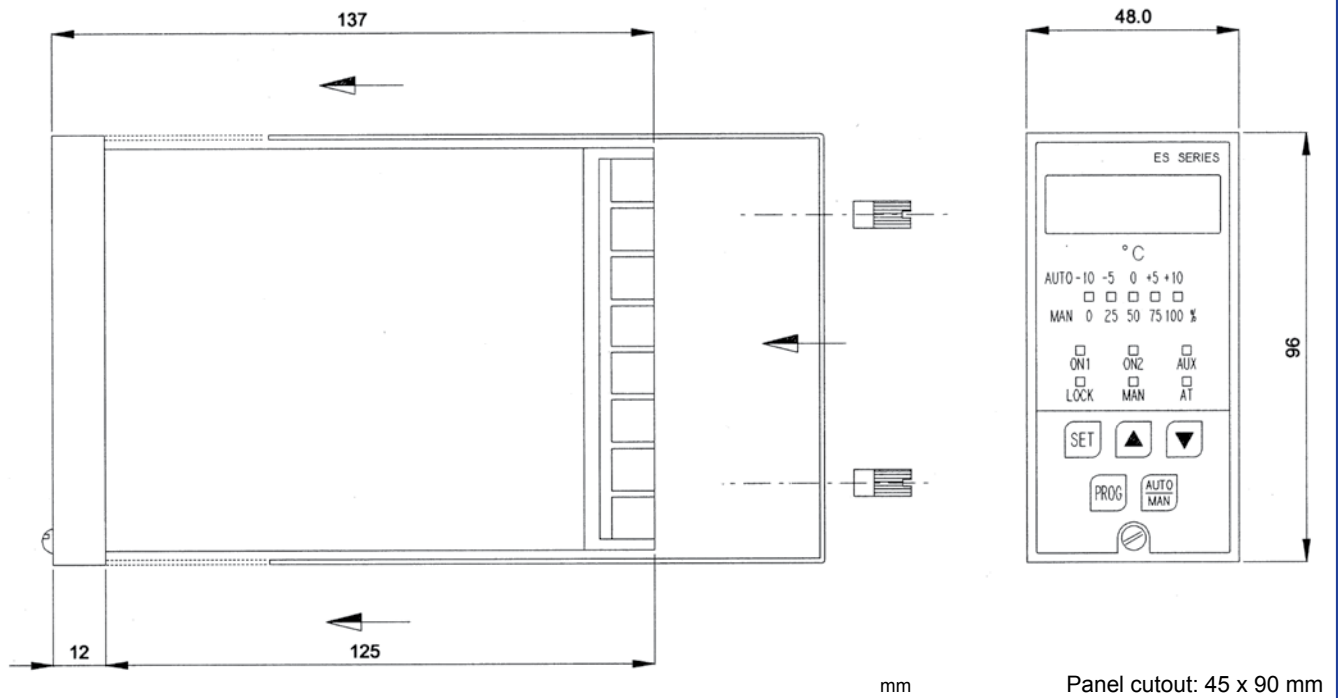
RELAY VERSION



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.