

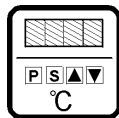
THQ SERIES

The microprocessor-based controllers of the THQ series are characterised by remarkable regulation precision, in particular in heat-sealing and thermoforming operations typical of the automatic packaging.

The AT initial autotuning and the ADT permanent autoadaptive functions can both be activated through the PID control action, responding excellently to frequent or fast system variations, as for example in process start and stop.

The panel with single or double display allows the setting of all the controller's values and configurations, such as sensor input, control action and alarm functions, with the possibility to lock the programming on three different safety levels.

The exclusive LFA diagnostic function is able to detect failures along the entire regulation loop, for example thermocouples short-circuit or heating resistance breaking.

**HIGHLIGHTS**

- Excellent measurement precision and regulation stability
- 9 sensors, 4 control actions, 16 alarms all keyboard configurable
- PID action with AT autotuning and ADT autoadaptive functions
- LFA diagnostic function of the regulation loop

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 degrees 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 selection, maximum or minimum, with AT initial autotuning and ADT permanent autoadaptive functions

FUNCTIONS

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 $\pm 0,1$ to $\pm 99,9$ °C/°F)
1st point output type	relay SPDT 250 Vac, 5 A version
	trans. PNP 12 Vcc $\pm 20\%$ version
	20 mA short-circuit protection
2nd 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 SPST 250 Vac, 3 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 push-buttons
Indicators	4 digit red display (10mm height), 4 digit green display (7mm height) QD vers. or 5 LED movement bar (QS), yellow ON1 LED, red ON2 LED, green LOCK LED, green AT LED
Connection	terminal block with 10 screw contacts, electronic block extractable from panel
Electric protection	class 1
Mechanical protection	IP54 - front panel
	IP20 - housing
	IP10 - contacts
Housing material	ABS
Weight	175 g max.
Operating temperature	-10 ... +55°C
Storage temperature	-20 ... +65°C
Reference standard	EN 61010-1
Certifications	CE

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

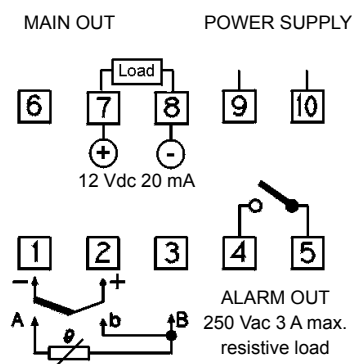
Alarm	Fixed pt	Function
AL20	FP20	deactivate
AL21	FP21	minimum
AL22	FP22	maximum
AL23	FP23	neutral zone on
AL24	FP24	neutral zone off
AL25	FP25	minimum*
AL26	FP26	maximum*
AL27	FP27	neutral zone on*
AL28	FP28	neutral zone off*

Table 2: ALARM FUNCTION

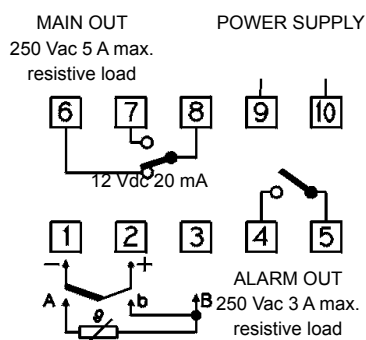
*stand-by: first intervention inhibition

CONNECTIONS

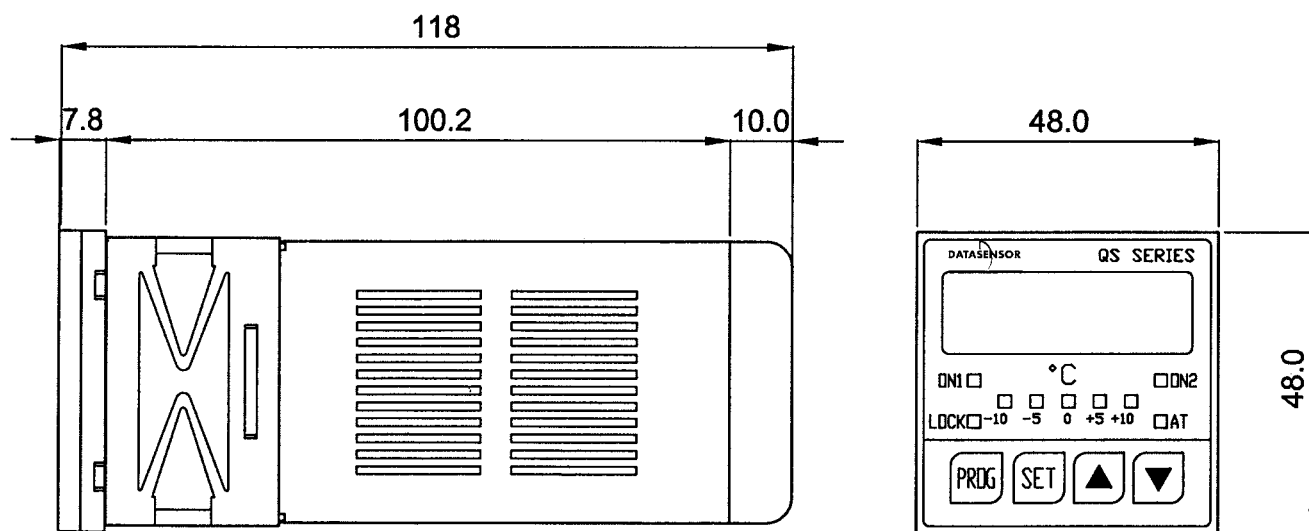
TRANSISTOR VERSION



RELAY VERSION



DIMENSIONS



mm

Panel cutout: 45 x 45 mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	DISPLAY	POWER SUPPLY	MAIN OUTPUT	ORDER N°
QS-00	single	12 ... 24 Vdc/Vac	relay	974021000
QS-01	single	12 ... 24 Vdc/Vac	transistor	974021010
QS-10	single	80 ... 240 Vac	relay	974021020
QS-11	single	80 ... 240 Vac	transistor	974021030
QD-00	double	12 ... 24 Vdc/Vac	relay	974031000
QD-01	double	12 ... 24 Vdc/Vac	transistor	974031010
QD-10	double	80 ... 240 Vac	relay	974031020
QD-11	double	80 ... 240 Vac	transistor	974031030



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