TEMPERATURE CONTROLLERS

1/16 DIN µP BASED CONTROLLERS

- *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*

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.

DATASENSOR
value through detection

DATASENSOR

TECHNICAL DATA

Power supply: .... 12-24 Vac/Vdc ±10% version,
or 80-240 Vac ±10% version

Consumption: .... 5 VA max.

Sensor input: .... selectable between E, J, K, L, R, S, T
termocouples and Pt100Ω/0°C RTDs

Measurement scale: .... selectable in °C or °F degrees with lower and
upper limits, *refer to table 1*

Precision: .... thermocouple measurement ±0,4% f.s.
RTD measurement ±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 action control: .... on/off or PID selection, maximum or
minimum, with AT initial autotuning and ADT
permanent autoadaptive 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 ±0,1 to ±99,9° C/°F)

1st point output type: .... relay SPDT 250 Vac, 5 A version
trans. PNP 12 Vcc ±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 scales	°F scales
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*

stand-by: first intervention inhibition
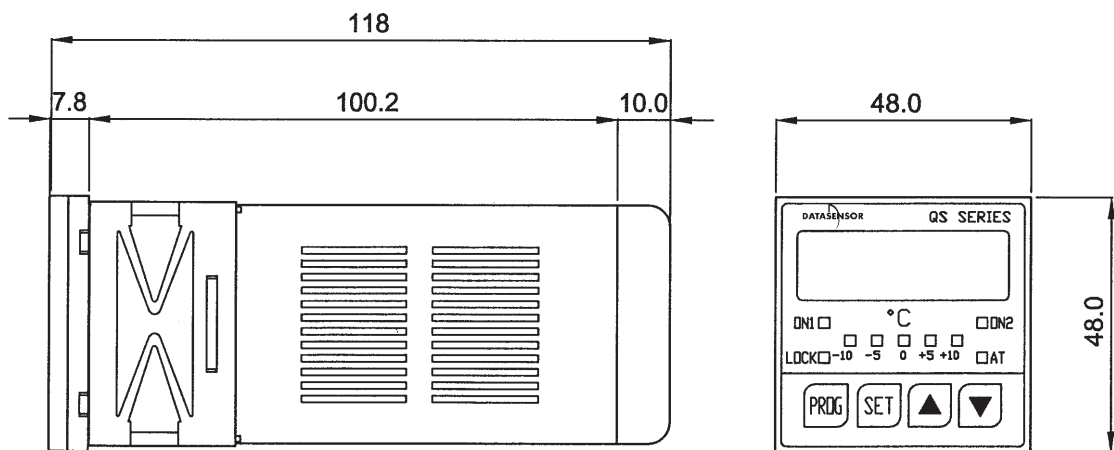
Table 2: ALARM FUNCTIONS

CONNECTIONS

TRANSISTOR OUTPUT

MAIN OUT   POWER SUPPLY

| 6 | 7 | 8 | | 9 | 10 |

Load

(+)   (−)

12 Vdc 20 mA

| 1 | 2 | 3 | | 4 | 5 |

A   b   B

ALARM OUT
250 Vac 3 A max.
resistive load

RELAY OUTPUT

MAIN OUT
250 Vac 5 A max.
resistive load   POWER SUPPLY

| 6 | 7 | 8 | | 9 | 10 |

| 1 | 2 | 3 | | 4 | 5 |

A   b   B

ALARM OUT
250 Vac 3 A max.
resistive load

DIMENSIONS

118

7.8   100.2   10.0

48.0

48.0

DATASENSOR   QS SERIES

°C

ON1   ON2
LOCK −10 −5 0 +5 +10   AT

PROG   SET   ▲   ▼
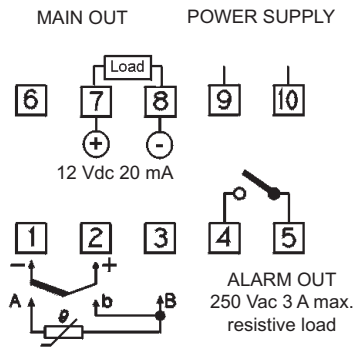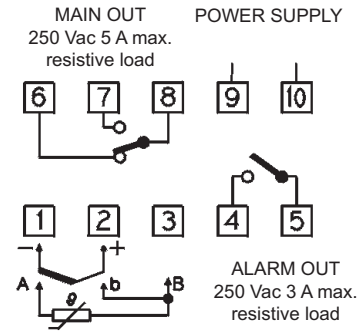
Panel cutout: 45 x 45 mm

mm

MODELS

MODEL	DISPLAY	POWER SUPPLY	MAIN OUTUT	CODE 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

Distributed by:

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