■ TMS

PLASTICS THERMAL CONTROLLER

CE c(UL)us IP 65 / NEMA 4X

- **SMART TUNE - PID CONTROL**
- UNIVERSAL, 3 WIRE - TC, RTD
- 3 RELAY/ SSR UNIVERSAL OUTPUTS
- 2 INDEPENDENT SET POINT RAMP UP/ DOWN PROFILES
- SOFT START- POWER LIMITER
- CT INPUT
- LOAD CURRENT DISPLAY WITH OUTPUT FAILURE ALARM
- IP 65 AND NEMA 4X FRONT PROTECTION

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PRODUCT SPECIFICATIONS

Case:	PC/ABS black
Self-extinguishing degree:	V-0 according to UL - VDE CSA.
Front protection:	designed and tested for IP 65 (*) and NEMA 4X (*) for indoor locations (when panel gasket is installed). (*) Tests were performed in accordance with CEI 70-1 and NEMA 250-1991 STD.
Dimensions:	48x96mm, depth 89mm
Power supply:	- from 100 to 240V AC - 50/60Hz (-15% to +10% o the nominal value) or - 24V AC/DC (±10% of the nominal value).
Common mode rejection ratio:	> 120dB @ 50/60Hz.
Normal mode rejection ratio:	> 60dB @ 50/60Hz.
Temperature drift:	< 200ppm/°C (RJ excluded) < 400ppm/°C for RTD input with -19.9/99.9°C range.
Reference junction accuracy:	0.1°C/°C .
Insulation resistence:	>100MΩ according to IEC 1010-1
Insulation voltage:	1500V according IEC 348.
EMC/Safety:	this instrument is marked CE. It conforms to council directives 89/336/EEC (reference harmonized standard EN-50081-2 and EN-50082-2), 73/23/EEC and 93/68/EEC (reference harmonized standard EN61010-1).
Installation category:	II.
Sampling time:	500mSec.
Accuracy:	±0.2% of the input span or ±1°C (@ 25°C ambient temperature).
Operating temperature:	from 0 to +50°C.
Storage temperature:	from –20 to +70°C.
Humidity:	from 20% to 85% RH non condensing.

MEASURING INPUTS

Thermocouples

Line resistance:	max. 100Ω with error <±0.1% of the input span.
Engineering unit:	°C or °F programmable.
Reference junction:	automatic compensation of the ambient temperature from 0 to +50°C.
Burn-out:	up scale or down scale programmable.
Calibration:	according IEC 584-1 and DIN 43710 - 1977 (TC type L).

Standard range table

TC type	°C	°F
L	0 / +800	0 / +999
J	0 / +800	0 / +999
K	0 / +999	0 / +999
N	0 / +999	0 / +999

RTD

Input type:	Pt 100 3 wire connection.
Measuring current:	150μA.
Line resistance:	automatic compensation up to 20Ω/wire with error < ±0.1% of the input span for range -19.9 to 99.9°C. no measurable error for all other ranges.
Engineering units:	°C or °F programmable.
Burn-out:	open circuit indication. On RTD input, a special test is provided to signal OVERRANGE when input resistance is less than 15Ω (Short circuit sensor detection).
Calibration:	according to DIN 43760.

Standard range table

RTD type	°C	°F
Pt 100	-199 / 500	-199 / +999
Pt 100	-19.9 / +99,9	-

Current transformer input

Ranges:	10A, 25A, 50A, 100A.
Indication:	in engineering units.
Resolution:	0.1A for 10A range; 1A for all the other ranges.
Active period:	NO or NC programmable (logic level 1 or 0 for SSR output).
Minimum period duration:	50 mSec.
	note: the "heater break-down" alarm function is available for the main output only.

OUTPUTS

Output 1 - Heating type

Relay:	with SPDT contact; contact rating 3A/250V AC on resistive load.
Logic voltage:	for SSR drive:
	logic level 1: 24V ±20% @ ; 1mA ; 14V ±20% @ 20mA
	logic level 0: < 0.5V.
	(The selection between relay or SSR is made by internal jumper).

Output 2
Cooling or Alarm 1 type

Relay:	output with SPST contact; contact rating 2A/250V AC on resistive load.
Logic voltage:	for SSR drive.
	- logic level 1: 24V ±20% @ ; 14V ±20% @ 20mA.
	- logic level 0: < 0.5V.
	(The selection between relay or SSR is made by internal jumper).

Output 3
Alarm 2 or Heater break-down

Output type (optional):	relay SPST.
Contact rating:	2A/250V AC (on resistive load) NO contact only.

Output programmability

1) Heating + alarm 1 + alarm 2
2) Heating + cooling + alarm 2
3) Heating + alarm 1 + heater break-down
4) Heating + cooling + heater break-down
5) Heating + alarm 1
6) Heating + cooling

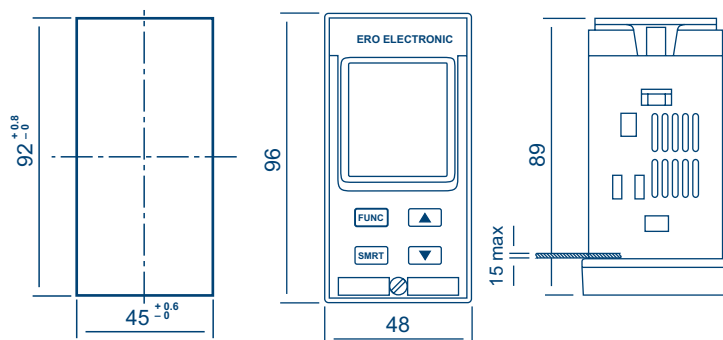## CONTROL PARAMETERS

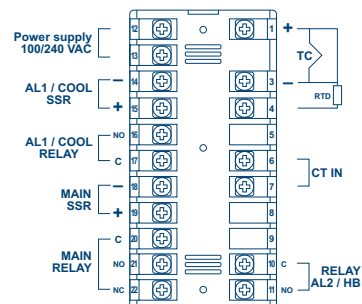|	
Proportional band:	-for 1 control output; programmable from 1.0% to 99.9% of the selected input span.
	-for 2 control outputs; programmable from 1.5% to 99.9% of the selected input span.
	Setting PB = 0 the control action becomes ON/OFF.
Hysteresis (for ON/OFF control action):	from 0.1% to 10.0% of the input span.
Integral time:	from 10 seconds to 20 minutes or excluded.
Derivative time:	from 0 to 9 minutes and 59 seconds or excluded.
Heating cycle time:	from 1 to 200 seconds.
Cooling cycle time:	from 1 to 200 seconds.
Relative cooling gain:	from 0.20 to 1.00.
Overlapping/dead band:	from -20% to 50%.
Programmable ramp for set point changes:	from 1 to 100 units/minute.

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HOW TO ORDER

MODEL	INPUT	CONTROL ACTION	OUTPUT 1 (Heating)	OUTPUT 2 (Cooling or Alarm 1)	OPTIONS	POWER SUPPLY	CUSTOMISATION
TMS	4 TC and RTD programmable	3 PID + SMART	1 + Relay or SSR drive programmable	1 + Relay or SSR drive programmable	0 no provided 1 Alarm 2 2 Alarm 2 / Heater breakdown alarm	3 from 100 to 240V AC - 50/60Hz 5 24V AC/DC	000 Std ERO Label N00 Neutral version
TMS	**4**	**3**	**1**	**1**			

DIMENSIONS AND PANEL CUT - OUT

$92^{+0.8}_{-0}$ 96   89   15 max

$45^{+0.6}_{-0}$ 48

ERO ELECTRONIC

FUNC ▲

SMRT ▼

REAR TERMINAL BLOCK

Power supply 100/240 VAC
AL1 / COOL SSR
AL1 / COOL RELAY
MAIN SSR
MAIN RELAY
TC
RTD
CT IN
RELAY AL2 / HB

HOW TO ORDER CURRENT TRANSFORMER

MODEL	PRIMARY CURRENT	
CTR current transformer	1 10A 2 25A 4 50A 5 100A	
CTR		

DIMENSIONS

5.5   27   5.5   2
9   19   48   20
8   38   8
20
4   30   4
10   10
Hole φ2.9
Depth mm.9

A170.CAT.TMS.00E