



Universal input : 8 thermocouples, Pt100, 0/4~20 mA

1 / 2 setpoints

Isolated 0/4~20 mA or 0~10 V DC control / retransmission output

85~265 V AC SMPS or 20~35 V DC

Functions : PID / Time proportional / ONOFF control (Relay 1), ONOFF control (Relay 2)

Autotuning for PID parameters

Accuracy : 0.1% of full scale 1 C, typical

Sensor break indication

Plug-in design

SPECIFICATIONS All specifications at ambient of 25 C, unless specified otherwise

INPUT

Input types

Thermocouple B, E, J, K, N, R, S, T
RTD Pt100
Linear input 4~20 mA, 0~20 mA
Load resistance for 0/4~20 mA input 250 Ω, internally provided

Transmitter supply

22 V DC, nominal, 30 mA max

Range limits

See Table 1

Accuracy

See Table 1

Cold junction compensation

Automatic

Temperature coefficient of accuracy

0.5% of span / 25 °C

Unit

Pt100, Thermocouple °C (For °F, contact us)
Linear EU

INDICATION

Display

Upper : 4 digit, 7 segment 0.3" (7.6 mm) red LED display
 Lower : 4 digit, 7 segment 0.3" (7.6 mm) green LED display
 2 LEDs for relay status

Status indication

OUTPUTS

No. of relays

1/2 electromagnetic relays

Relay contact type

NO-C-NC (RLY1)
 NO-C (RLY2)

Relay contact rating

5A / 230 V AC, resistive

SSR drive

12 V DC drive signal for external SSR

Control/Retransmission output

Current or voltage

Current output

4~20 mA / 0~20 mA isolated from input

Maximum load for current output

600 ohms

Voltage output

0~10 V DC isolated from input

Load for voltage output

>10 Kohms

Mutual isolation between input/output/supply

1 KV AC / 1 minute

PID CONTROL

PID parameter values

Determined by 'Autotune' (value not available to user)
 For 'Heat' type of applications (single output)

PID control type

PROGRAMMABLE PARAMETERS

Setpoint

Full range (See Table 1)

Resolution

User selectable
 0.1, 1

High scale

Full range (See Table 1)

Low scale

Full range (See Table 1)

Hysteresis / Band

0.1 to 99.9

Bias

-99.9 to 99.9

Current output

a) Retransmission b) Control

Control functions

PID / Time Proportional Control (TPC) / ONOFF Control (RLY1)
 ONOFF Control (RLY2)

Cycle time for TPC

1 ~ 99 seconds

Relay logic

a. Heat
 b. Cool
 c. Full scale high alarm
 d. Full scale low alarm

OTHER

Keyboard

Tactile, 3 keys

Enclosure construction

Plug-in (circuit removable without affecting terminal wiring)

Dimensions (in mm)

48(W) x 48(H) x 100(D)

Mounting

Panel mount

Panel cutout

44 x 44 mm

Supply voltage

a) 85~265 V AC, 50/60 Hz
 b) 20~35 V DC

Power consumption

c) 24 V AC 10%, 50/60 Hz

Operating ambient temperature

4 watts maximum

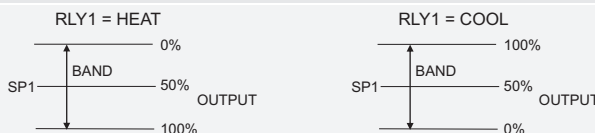
Relative humidity

0 ~ 50°C
 Below 90%, non condensing

RELAY LOGIC



ONOFF CONTROL (Relay1, Relay2)



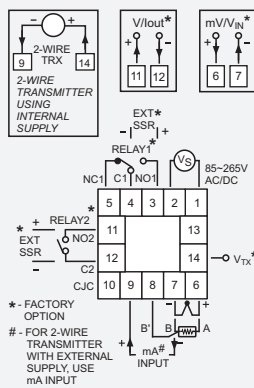
TIME PROPORTIONAL CONTROL (Relay1 only)

TABLE 1

SENSOR / INPUT	RANGE LIMITS (°C / EU)		RANGE IN WHICH ACCURACY IS SPECIFIED		TYPICAL ACCURACY AT 30 °C (°C / EU)	WORST CASE ACCURACY (°C / EU)
	LOW SCALE	HIGH SCALE	LOW SCALE	HIGH SCALE		
Iron / Constantan (J)	-99	760	0	760	± 1	± 3
Chromel / Alumel (K)	-99	1350	-50	1200	± 1	± 3
Pt / Pt - 13% Rh (R)	0	1760	0	1760	± 2	± 5
Pt / Pt - 10% Rh (S)	0	1760	0	1760	± 2	± 5
Copper / Constantan (T)	-99	400	-50	400	± 1	± 3
Nicrosil / Nilil (N)	-99	1300	-50	1200	± 1	± 3
Pt - 6% Rh / Pt - 30% Rh (B)	400	1820	400	1820	± 3	± 5
Chromel / Constantan (E)	-99	900	0	800	± 1	± 3
Pt100, 3-wire	-99	850	-50	850	± 0.5 *	± 2.0
Linear 0~20 mA, 4~20 mA	-1999	9999	-1999	9999	± 5 EU	± 20 EU

* ± 0.1°C in the range -50 to +400 °C

CONNECTION DIAGRAM



ORDERING INFORMATION

2166 A

A	Configuration		
	SSR drive	Relay	Analog output
00	0	2	0
01	0	1	1
02	1	1	0

The following ordering options are available on request. Minimum order quantity and/or minimum order value may apply.

Option	Details
1. Analog output	0~10 V DC
2. Supply voltage	24 V DC
3. Supply voltage	24 V AC

OTHER LOW COST PRODUCTS

TEMPERATURE CONTROLLER EC48

48x48x100 2 SETPOINTS



TEMPERATURE CONTROLLER TC48

48x48x100 2 SETPOINTS ANALOG OUTPUT



TEMPERATURE CONTROLLER TC96

96x96x100 2 SETPOINTS ANALOG OUTPUT



TEMPERATURE CONTROLLER EC96

96x96x100 2 SETPOINTS



PID CONTROLLER P96

96x96x100 2 SETPOINTS



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