

## REX-P24



### General Description

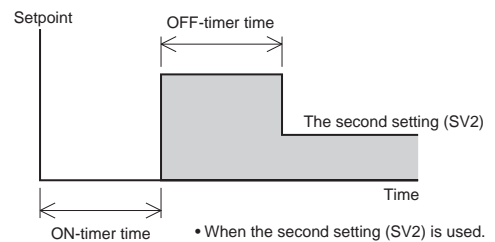
The REX-P24 is user-friendly and economical ramp/soak controller packed in 1/16 DIN size. The REX-P24 has three modes, ramp/soak control with 2 patterns and 8 segments, control with timer function, and fixed set point control. The mode can be selected by key operation. The REX-P24 is well suited for dryers, thermostat chambers, electric or small bench furnaces, ovens, and textile machinery.

### Features

- ☆ Three control modes: ramp/soak, control with timer, fixed set point
- ☆ 2 patterns and 8 segments (ramp/soak mode)
- ☆ Timer function for control start and control stop, and 2 set points
- ☆ Four sets of PID

#### Control with timer function

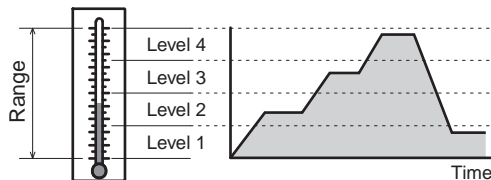
Timer function is useful in combination with 2 set points. This allows you to set when to start control, when to stop control at SV1 and change SV1 to SV2. The time is set by hours and minutes.



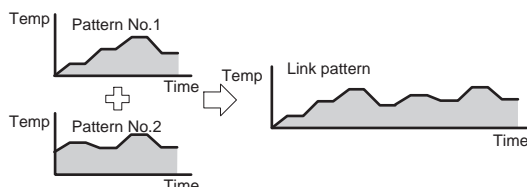
#### Program temperature control mode

2 patterns with 8 segments can be stored. Patterns can be linked so that 16-segment program is possible. The REX-P24 can store four sets of PID. This is useful when the characteristics of the control object varies with temperature.

##### Four sets of PID



##### Pattern link



#### Fixed set point control mode

The REX-P24 can be used as a simple single loop controller. This function is useful in combination with other control modes, especially when testing machines.

# Ramp/Soak Temperature Controller REX-P24

## Specifications

### Inputs

#### Input

- a) Thermocouple : K, J, R, S, B, E, T, N (JIS/IEC), PLII (NBS)  
W5Re/W26Re (ASTM), U, L (DIN)
- Influence of external resistance : Approx. 0.35 $\mu$ V/ $\Omega$
  - Input break action : Up-scale
- b) RTD : Pt100 (JIS/IEC), JPt100 (JIS)
- Influence of input lead resistance : Approx. 0.0075%/ $\Omega$  of reading
    - Maximum 10 $\Omega$  per wire
  - Input break action : Up-scale

#### Sampling time

0.5 sec

#### PV bias

-1999(-199.9) to 9999(999.9) $^{\circ}$ C[ $^{\circ}$ F]

#### PV ratio

0.1 to 999.9%

### Performance

#### Measuring accuracy

$\pm$  (0.3% of span + 1 digit)

Cold junction temperature error

Within  $\pm$ 1.5 $^{\circ}$ C (between 0 and 50 $^{\circ}$ C [32 and 122 $^{\circ}$ F])

- Accuracy is not guaranteed between 0 and 400 $^{\circ}$ C (0 and 752 $^{\circ}$ F) for type B input.
- Accuracy is not guaranteed between 0 and 32 $^{\circ}$ F for type N, PLII and W5Re/W26Re.

#### Segment time accuracy

Within  $\pm$ 0.02% of reading

#### Other setting

Within  $\pm$ 0.5% of span

#### Insulation resistance

More than 20M $\Omega$  (500V DC) between measured terminals and ground

More than 20M $\Omega$  (500V DC) between power terminals and ground

#### Dielectric strength

1000V AC for one minute between measured terminals and ground

1500V AC for one minute between power terminals and ground

### Program

Storage program pattern : Max. 2 patterns (8 segments per pattern)

Storage segments : Max. 16 segments  
(Possible to link, 8 segments x 2 patterns)

Program repeat : 1 - 999 times or continuous

Level setting : See input range

Time setting : 00 hr 00 min to 99 hrs 59 min

PID constant section : 4 levels (For level PID control)

Start mode : Zero start or PV start (selectable)

Wait zone : Up, down 0 to 99 $^{\circ}$ C ( $^{\circ}$ F) or 0.0 to 9.9 $^{\circ}$ C ( $^{\circ}$ F) at going up or down

### Timer

#### Timer methods

- Control start delay timer
- Control stop timer
- Control start delay/stop timer

#### Timer setting

00 hr 00 min to 99 hr. 59 min

#### Second set value (SV2)

SV2 is the control set value used after the Off-timer time reaches 0. (SV2 can be off.)

### Control

#### Control method

- PID control with autotuning

#### Major setting range

- Setting range : Same as input range.
- Proportional band : 1(0.1) to setting range  
(ON/OFF action when P=0)
- Integral time : 1 to 3600sec.(PD action when I=0)
- Derivative time : 1 to 3600sec.(PI action when D=0)
- Differential gap : 0 to 100 $^{\circ}$ C ( $^{\circ}$ F) or 0.0 to 100.0 $^{\circ}$ C ( $^{\circ}$ F)  
(When used with ON/OFF action)
- Output limiter high : -5.0 to +105.0%
- Output limiter low : -5.0 to +105.0%

#### Control output

- Relay output : Form A contact, 250V AC 3A (resistive load)
- Voltage pulse output : 0/12V DC  
(Load resistance : More than 600 $\Omega$ )
- Current output : 0 to 20mA or 4 to 20mA DC  
(Load resistance : Less than 600 $\Omega$ )

### Options

#### Contact output function

Number of points : 2 points

##### a) Temperature alarm

Alarm action

Deviation high, low, high/low, band, and process high, low alarms

Set value high, low

Alarm differential gap : 0 to 10 $^{\circ}$ C ( $^{\circ}$ F) or 0.0 to 10.0 $^{\circ}$ C ( $^{\circ}$ F)

- Hold function can be programmed.

##### b) Pattern end output (Ramp/soak mode)

Setting time : 00 hr 00 min to 99 hr. 59 min

##### c) Time signal output (Ramp/soak mode)

Setting time : 00 hr 00 min to 99 hr. 59 min

Storage pattern : 2 patterns

##### d) Time-up output (Timer mode)

Setting time : 00 hr 00 min to 99 hr. 59 min

#### Alarm output

Relay output, Form A contact 250V AC 1A (resistive load)

#### External contact input

Type of control mode

a) Fixed set point control mode : STOP, START

b) Ramp/soak mode : RESET, RUN

c) Timer mode : RESET, START

Input method : Non voltage contact input

OPEN : 500k $\Omega$  or more

CLOSE : 10 $\Omega$  or less

### General specifications

#### External Dimensions (W x H x D)

48 x 48 x 100mm

#### Supply voltage

90 to 264V AC (Including supply voltage variation)

[Rating : 100 to 240V AC] (50/60Hz common)

#### Power consumption

Less than 6 VA (100 to 240V AC)

#### Effect by power failure

A power failure of 20ms or less will not affect the control action.

If the power failure is shorter than 2 seconds, the autotuning function (if used) will be canceled but the program continues. If the power failure is longer than 4 seconds, the controller returns to its initial status (start mode).

Operating environments : 0 to 50 $^{\circ}$ C [32 to 122 $^{\circ}$ F] , 45 to 85% RH

Memory backup : RAM back-up by lithium battery

#### Net weight

Approx. 180g

# Ramp/Soak Temperature Controller REX-P24



## Model and Suffix Code

Specifications	Model and Suffix Code										
Model	REX-P24 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> * <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>										
Control method	PID control with AT (reverse action) PID control with AT (direct action) Level PID control with AT (reverse action) Level PID control with AT (direct action)							F			
							D				
							L				
							M				
Input type	See input range code table <input type="checkbox"/>										
Scale range	See input range code table <input type="checkbox"/>										
Control output	Relay output Voltage pulse DC current : 0 to 20mA DC current : 4 to 20mA							M			
							V				
							7				
							8				
Contact input	Not supplied Supplied									N	
									Y		
Contact output 1	No contact output 1 See contact output code table									N	
										<input type="checkbox"/>	
Contact output 2	No contact output 2 See contact output code table									N	
										<input type="checkbox"/>	
Waterproof / dustproof (NEMA4X)	Not supplied Waterproof / dustproof spec. (Dedicated cover is used.)										N
											Y

■ For REX-P24 with CE mark, UL and CSA approval, please add the suffix of "/CE" at the end of the model code.

### Input range code

#### Thermocouple

Input	Code	Range
K	K : 22	-199.9 – 999.9°C
	K : 16	-200 – 1372°C
	K : B2	-199.9 – 999.9°F
	K : B3	-330 – 2500°F
J	J : 14	-199.9 – 999.9°C
	J : 15	-200 – 1200°C
	J : A9	-199.9 – 999.9°F
	J : B1	-330 – 2192°F
T	T : 01	-199.9 – 400.0°C
	T : A1	-199.9 – 752.0°F

Input	Code	Range
R	R : 02	0 – 1769°C
	R : A2	0 – 3216°F
S	S : 02	0 – 1769°C
	S : A2	0 – 3216°F
B	B : 02	0 – 1820°C
	B : A2	0 – 3308°F
E	E : 06	-200 – 1000°C
	E : A5	-330 – 1832°F
N	N : 02	0 – 1300°C
	N : A2	0 – 2372°F

Input	Code	Range
PLII	A : 02	0 – 1390°C
	A : A2	0 – 2534°F
W5Re / W26Re	W : 02	0 – 2320°C
	W : A4	0 – 4208°F
U	U : 08	0 – 600°C
	U : A4	0 – 1100°F
L	L : 05	0 – 900°C
	L : A2	0 – 1600°F

#### RTD

Input	Code	Range
JPt100	P : 20	-199.9 – 510.0°C
	P : B6	-199.9 – 950.0°F
Pt100	D : 20	-199.9 – 660.0°C
	D : A1	-199.9 – 999.9°F

### Contact output code

Code	Type
A	Deviation High
B	Deviation Low
C	Deviation High/Low
D	Deviation band
E	Deviation High with hold
F	Deviation Low with hold

Code	Type
G	Deviation High/Low with hold
H	Process High
J	Process Low
K	Process High with hold
L	Process Low with hold
Q	Deviation High with re-hold *

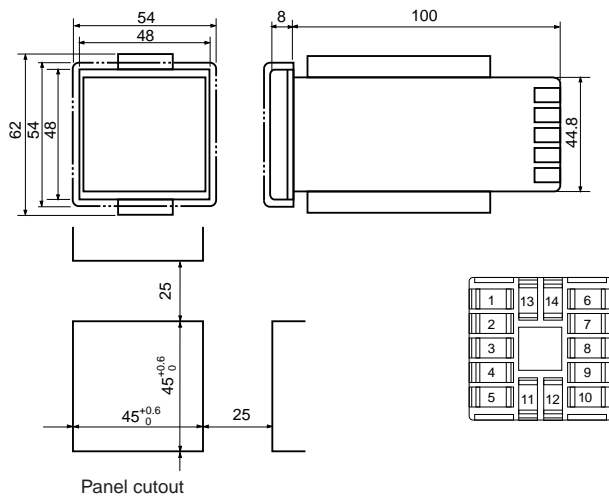
Code	Type
S	Deviation Low with re-hold *
T	Deviation High/Low with re-hold *
V	Set value High
W	Set value Low
Y	Time signal output
Z	Pattern end/Timer end output

\* Alarm re-hold function : The alarm becomes effective after it has first entered non-alarm range, when alarm set values are changed.

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## External Dimensions and Rear Terminals

Unit : mm



No.	Description
1	External output
2	DO 1 Relay contact output
3	DO 2 Relay contact output
4	Control output (1) Relay contact output (2) Voltage/Current
5	

No.	Description
6	AC 100 to 240V Power supply
7	
8	A Measured input
9	B (1) TC input (2) RTD input
10	B (1) (2)

No.	Description
13	Contact input 2
14	

No.	Description
11	Contact input 1
12	

\* Double-dotted line shows the front cover conforming to NEMA 4X.  
The panel thickness shall be 1 to 10 mm.