REX-P48
REX-P96

General Description

The REX-P48/96 are powerful programmable ramp/soak controllers that can store up to two program patterns of eight segments per pattern with a 0.3% accuracy. The two patterns can be linked to expand the pattern storage from eight to sixteen segments. These instruments have an easy-to-use front panel designed for both setting functions and data entry. Standard features include at-a-glance program monitoring, multi-level PID, autotuning, Hold, Step, Run and Reset functions and three control modes.

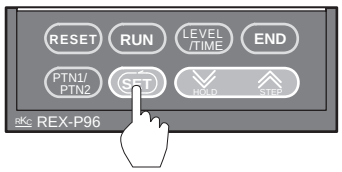
Optional features include temperature alarms, Heat, Cool or Heat/Cool control, external contact input, pattern end output and retransmission output. These instruments are designed for dryers, thermostat chambers, electric furnaces, ovens and textile machinery, or any process requiring time-based temperature control.

Features

- ☆ Easy-to-use front panel
- ☆ 16-segment program storage
- ☆ Fixed set point control
- ☆ Multi-level PID

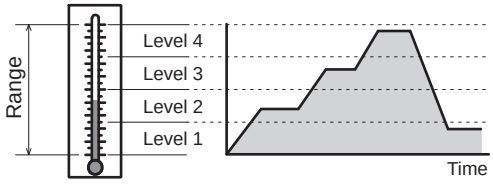
Easy-to-Use Front Panel

The REX-P48/96 ramp/soak controllers have an easy-to-use front panel that can be used for both setting and data entry. Each key is clearly marked to identify the specific function to eliminate operator error when entering or changing patterns.



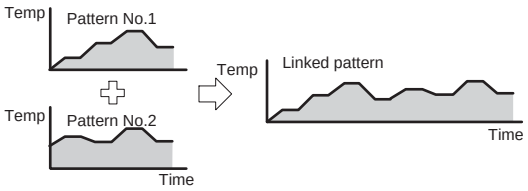
Multi-Level PID

These controllers offer storage of up to four groups of PID variables and the transition from one group to the next is programmable.



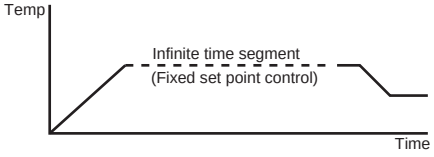
Pattern Link Function

Storage of two program patterns of eight segments per pattern is a standard feature of these instruments. In addition, the two patterns can be easily linked to expand the pattern storage from eight to sixteen segments.



Fixed Set Point Control

By setting a soak segment to infinite time, the controller may be used as a fixed set point controller.



Optional Features

- Pattern end output
- Time signal output
- Retransmission output
- External contact input
  Reset, Run, Hold, Step
- Heat/Cool PID control

Specifications

Input

Input (Universal 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. 0.35μV/Ω
- Input break action : Up-scale

b) RTD : Pt100 (JIS/IEC), JPt100 (JIS)
- Influence of input lead resistance : Approx. 0.0075%/Ω of reading
Maximum 10Ω per wire
- Input break action : Up-scale

Sampling Time
0.5 sec

PV Bias
-1999 (-199.9) to 9999 (999.9)°C [°F]

PV Ratio
0.001 to 9.999

Performance

Measuring Accuracy
± (0.3% of span + 1 digit)
Cold junction temperature error
Within ±1.5°C (between 0 and 50°C [32 and 122°F])
- Accuracy is not guaranteed between 0 and 400°C (0 and 752°F) for type B input.
- Accuracy is not guaranteed between 0 and 32°F for Type N, PLII and W5Re/W26Re.

Segment Time Accuracy
Within ±0.02% of reading

Other Setting
Within ±0.5% of span

Insulation Resistance
More than 20MΩ (500V DC) between measured terminals and ground
More than 20MΩ (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 when linking 2 patterns of 8 segments each.

Program Repeat : 1 - 999 times or continuous

Level Setting : See Input Range Code Table

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°C (°F) or 0.0 to 9.9°C (°F)

Control

Control Method
a) PID control with autotuning
b) Heat/Cool PID control with autotuning

Major Setting Range

Setting range :	Same as input range.
Heat side proportional band :	1(0.1) to setting range (ON/OFF action when P=0)
Cool side proportional band	1 to 1000% of heat side proportional band
Integral time :	1 to 3600sec.(P + D action when I=0)
Derivative time :	1 to 3600sec.(P + I action when D=0)
Differential gap :	0 to 100°C (°F) or 0.0 to100.0°C (°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 C contact, 250V AC 3A (resistive load)
Voltage pulse output :	0/12V DC (Load resistance : More than 600Ω)
Current output :	0 to 20mA or 4 to 20mA DC (Load resistance : Less than 600Ω)

Alarms

Temperature Alarm (Optional)
a) Number of alarms : 2 points
b) Alarm action
Deviation High, Low, High/Low, Band, and Process High, Low alarms, Set value High, Low (In contrast to the Process High or Low alarm, the set value High or Low alarm is activated when the programmed set value goes over or under a preset value.)
c) Alarm differential gap : 0 to 10°C (°F) or 0.0 to 10.0°C (°F)
- Hold function and re-Hold function can be added to deviation High Low and High/Low.
- Energized/de-energized alarm (selectable)

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

Options

External Contact Input

Type :	RESET, RUN, HOLD, STEP
Input method :	Non-voltage contact input
	OPEN : 500kΩ or more
	CLOSE : 10Ω or less

Time Signal Output

Setting range :	00 hr 00 min to 99 hr. 59 min
Storage pattern :	2 times/pattern
Output :	1 point
	Relay contact output, 250V AC 1A (resistive load)

- When "Pattern end output" is selected, "Time signal output " is not available.

Pattern End Output

Setting range :	00 hr 00 min to 99 hr. 59 min
Output :	1 point
	Relay contact output, 250V AC 1A (resistive load)

- When "Time signal output" is selected, "Pattern end output " is not available.

Retransmission Output

Number of outputs :	1 point
Output signal :	0 to 10mV, 0 to 100mV DC (Load resistance : More than 20kΩ)
	0 to 1V, 0 to 5V, 0 to 10V, 1 to 5V DC (Load resistance : More than 1kΩ)
	0 to 20mA, 4 to 20mA DC (Load resistance : Less than 600Ω)
Output type :	Measured value (PV), Set value (SV), Manipulated output value (MV)

General Specifications

Supply Voltage
90 to 264V AC (Including power supply voltage variation)
[Rating : 100 to 240V AC] (50/60Hz common)

Power Consumption
Less than 9VA (100 to 240V AC)

Power Failure Effect
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°C [32 to 122°F] , 45 to 85% RH

Memory Backup : RAM back-up by lithium battery

Net Weight
P48 : Approx. 300g
P96 : Approx. 400g

External Dimensions (W x H x D)
P48 : 48 x 96 x 100mm
P96 : 96 x 96 x 100mm

Compliance with Standards (Optional)

- CE Mark
- UL/cUL Recognized

Model and Suffix Code

Specifications	Model and Suffix Code
Model	REX-P48 (1/8 DIN size) REX-P96 (1/4 DIN size) □ □ □−□ □∗□ □−□ □−□
Control method	PID reverse control with AT: F PID direct control with AT: D Level PID reverse control with AT: L Level PID direct control with AT: M Heat/Cool PID control: W Heat/Cool level PID control: V
Input type	See Input Range Code Table: □
Scale range	See Input Range Code Table: □
Control output (OUT1)	Relay output: M Voltage pulse: V DC current : 0 to 20mA: 7 DC current : 4 to 20mA: 8
Control output (OUT2)	Control action : F, D, L, M: No symbol Relay output: M Voltage pulse: V DC current : 0 to 20mA: 7 DC current : 4 to 20mA: 8
Alarm 1	No alarm: N See Alarm Code Table: □
Alarm 2	No alarm: N See Alarm Code Table: □
Contact input	Not supplied: N Supplied: Y
Output function	Not supplied: N Pattern end output: 1 Time signal output: 2
Analog output	Not supplied: N See Analog Output Code Table: □

• For CE Mark and UL/cUL Approved products, add the suffix of "CE" to the end of the model code.

Input Range Code Table

Thermocouple (Field-programmable)

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 (Field-programmable)

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

Alarm Code Table

Code	Type
A	Deviation High
B	Deviation Low
C	Deviation High/Low
D	Band Alarm
E	Deviation High with Alarm Hold
F	Deviation Low with Alarm Hold
G	Deviation High/Low with Alarm Hold
H	Process High

Code	Type
J	Process Low
K	Process High with Alarm Hold
L	Process Low with Alarm Hold
Q [1]	Deviation High with Alarm Re-hold
S [1]	Deviation Low with Alarm Re-hold
T [1]	Deviation High/Low with Alarm Re-hold
V	Set value High
W	Set value Low

[1] On alarm Re-hold function : The alarm will become effective after it has first entered non-alarm range, when alarm set values are changed.

Analog Output Code Table

Code	Type
1	0 ~ 10mV DC
2	0 ~ 100mV DC
3	0 ~ 1V DC
4	0 ~ 5V DC
5	0 ~ 10V DC
6	1 ~ 5V DC
7	0 ~ 20mA DC
8	4 ~ 20mA DC

External Dimensions and Rear Terminals

Unit : mm

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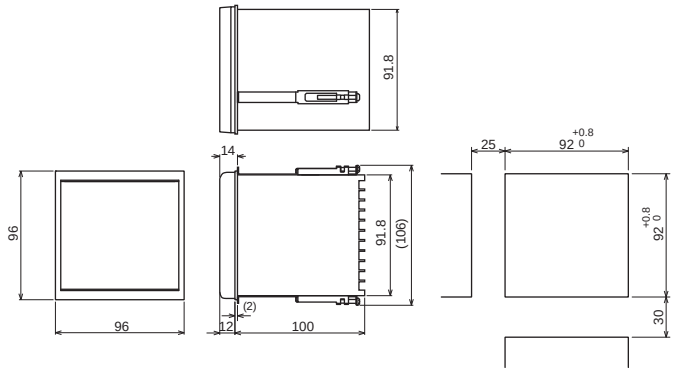

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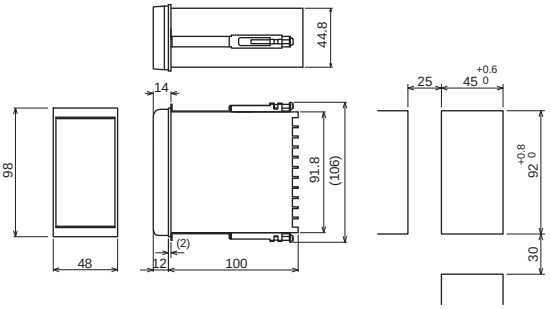

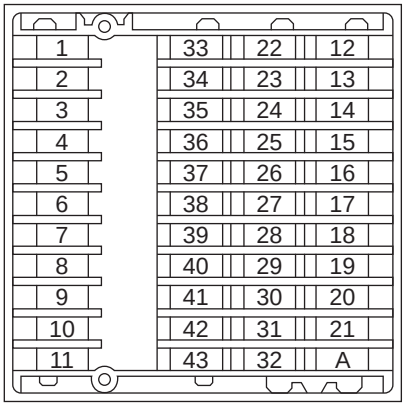

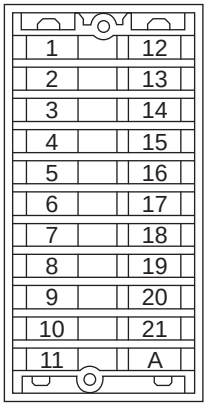

No.	Description	
1 2	AC 100 to 240V	Power supply
3 4 5 6	Alarm 1 NO Alarm 2 NO TS or END NO	Alarm output Time signal, Pattern end signal output Relay contact output
7 8	(1) C NO	Control output : OUT2 (1) Relay contact output (2) Voltage DC/Current DC
9 10 11	(1) C NO NC	Control output : OUT1 (1) Relay contact output (2) Voltage DC/Current DC

No.	Description	
12 13	+ −	Analog output
14 15 16 17 18	DI COM RESET RUN STEP HOLD	Contact input RESET RUN STEP HOLD
19 20 21	A + B − B	Measured input (1) Thermocouple (2) RTD
A		