

CONTROLLER

Digital Temperature Controller **RZ SERIES**



 Reinforced Insulation

Clear Display

Uses large high intensity LED.
Clear wide view angle provides outstanding visibility



Digital Temperature Controller RZ Series



RZ100
(48x48mm)



Reinforced Insulation

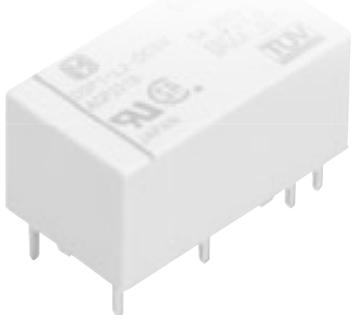
MADE IN JAPAN



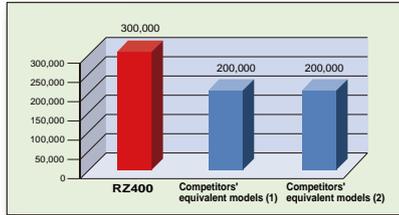
RZ400
(48x96mm)

Long Operation Life

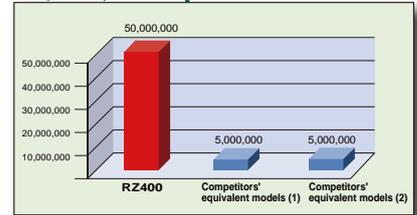
Use of high performance control relay assures long term operation.



Electrical Life (Relay contact output)
: 300,000 operations or more



Mechanical life (Relay contact output)
: 50,000,000 operations or more



· Data when used at a rated value. Depending on the operating conditions, there may be some exceptions that we cannot guarantee.
· Applies to the control output relays mounted on OUT1 and OUT2 of RZ400.
Depending on the operating conditions, there may be some exceptions that we cannot guarantee.

Flexible Output Configuration

This controller can incorporate up to 2 of relay contact output, voltage pulse output, or current output as OUT1 and OUT2, and 1 relay output as OUT3.

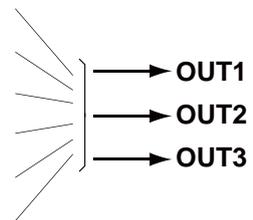
Each of these outputs can be configured to control output (heat or cool), alarm output (alarm 1 or 2), and HBA output (HBA1 or 2).

Output type is freely changeable to meet the requirements of different applications.

Please specify the output type (relay contact, voltage pulse or current) at the time of ordering.



- Heat-side Control Output
- Cool-side Control Output
- Alarm 1 Output
- Alarm 2 Output
- HBA 1 Output
- HBA 2 Output



Output 1 (OUT1) : Relay contact, Voltage pulse, DC current
Output 1 (OUT1) Assignment
: Heat-side Control Output, Cool-side Control Output
Alarm 1/Alarm 2 Output, HBA1/HBA2 Output

Output 2 (OUT2) : Relay contact, Voltage pulse, DC current
Output 2 (OUT2) Assignment
: Heat-side Control Output, Cool-side Control Output
Alarm 1/Alarm 2 Output, HBA1/HBA2 Output

Output 3 (OUT3) : Relay contact
Output 3 (OUT3) Assignment
: Alarm 1/Alarm 2 Output, HBA1/HBA2 Output, Cool-side Control Output
· Relay contact capacity and life of OUT3 is different from the OUT1/OUT2.

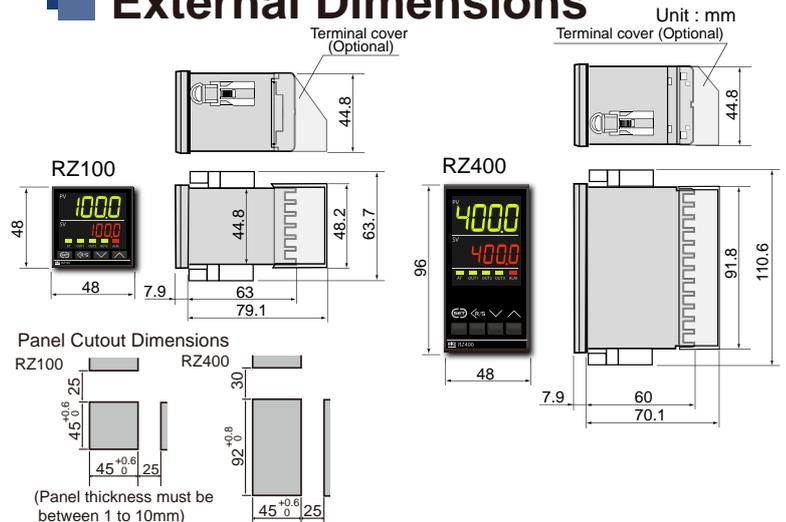
Easy Maintenance

The internal assembly of the RZ Series can be removed from the front.



· Similar construction for RZ100.

External Dimensions



Main Specifications

Input

Input type	Thermocouple K, J, T, E, S, R, B, N (JIS/IEC) PLII (NBS), W5Re/W26Re (ASTM), U, L (DIN) RTD Pt100 (JIS/IEC), JPt100 (JIS) • 3-wire system • Universal inputs.
Sampling time	0.25sec
Influence of external resistance	0.2μV/Ω (Thermocouple input)
Influence of lead resistance	0.02% of reading/Ω (RTD input) • Maximum 10Ω per wire
Current transformer (CT) input (Optional)	(1) Number of inputs : 2 points (2) Input range : CTL-6-P-N 0.0 to 30.0 A CTL-12-S56-10L-N 0.0 to 100.0 A

Performance

Measuring accuracy table

Input Type	Range	Accuracy
K, J, T, E, PLII ^{*1} U, L	Lower than -100°C (-148°F) -100 to 500°C (-148 to 932°F) 500°C (932°F) or higher	± (2.0°C [3.6°F] + 1 digit) ± (1.0°C [1.8°F] + 1 digit) ± (0.2% of Reading + 1 digit)
N, R, S W5Re/W26Re ^{*2}	Lower than 0°C (32°F) 0 to 1000°C (32 to 1832°F) 1000°C (1832°F) or higher	± (4.0°C [7.2°F] + 1 digit) ± (2.0°C [3.6°F] + 1 digit) ± (0.2% of Reading + 1 digit)
B	Lower than 400°C (752°F) 400 (752°F) or higher	± (7.0°C [126°F] + 1 digit) ± (2°C [3.6°F] + 1 digit)
Pt100, JPt100	Lower than 200°C (392°F) 200°C (392°F) or higher	± (0.4°C [0.7°F] + 1 digit) ± (0.2% of Reading + 1 digit)

*1 : Accuracy is not guaranteed for less than -100°C.

*2 : Accuracy is not guaranteed for less than 400°C (752°F) for Input Type R, S, B and W5Re/W26Re.

Cold junction temperature compensation error ±0.5°C (-10 to +55°C (14 to 131°F))

Control

Control method	PID control (With autotuning) • P, PI, PD, ON/OFF control selectable • Direct action/Reverse action is selectable Heat/Cool type PID control (With autotuning)
Setting range	a) Proportional band : 1(0.1) to span (°C, °F) • Within 9999(999.9)°C (°F) (ON/OFF control when P = 0) b) Integral time : 1 to 3600 sec (PD control when I = 0) c) Derivative time : 1 to 3600 sec (PI control when D = 0) d) Cool side proportional band : 1 to 1000% of heat side proportional band * Invalidity when P=0. * Only cooling side ON/OFF control is not available. e) Anti-Reset Windup(ARW) : 1 to 100% of heat side proportional band (Integral action is OFF when ARW = 0) f) Proportional cycle time : 1 to 100 sec
Additional function	Fine tuning, Startup tuning, Auto tuning, RUN/STOP

Output

Number of outputs	Up to 3 points (OUT1 to OUT3)
Output function	Control output, Alarm output, HBA (Heater break alarm) output
Output type	Relay contact output (1) [OUT1,2 of RZ400 : Control output] a) Contact type : 1a contact b) Contact rated : 250V AC 3A, 30V DC 1A (Resistive load) c) Electric life : 300,000 operations or more (Rated load) d) Mechanical life : 50,000,000 operations or more Relay contact output (2) [OUT1,2 and 3 of RZ100 : Control output, OUT3 of RZ400 : Control output] a) Contact type : 1a contact b) Contact rated : 250V AC 3A, 30V DC 1A (Resistive load) c) Electric life : 100,000 operations or more (Rated load) d) Mechanical life : 20,000,000 operations or more Relay contact output (3) [RZ100 and RZ400 : Alarm output, HBA output] a) Contact type : 1a contact b) Contact rated : 250V AC 1A, 30V DC 0.5A (Resistive load) c) Electric life : 150,000 operations or more (Rated load) d) Mechanical life : 20,000,000 operations or more Voltage pulse output : 0/12V DC (Load resistance : More than 500Ω) Current output : 4 to 20mA DC, 0 to 20mA DC (Load resistance : Less than 500Ω)

Event (Alarm)

Event type	(Optional) Temperature alarm, HBA(Heater break alarm), LBA (Control loop break alarm)
Temperature alarm type	Process high, Process low, Deviation high, Deviation low, Deviation high/low, Band, Set value high, Set value low, LBA (Control loop break alarm), RUN status monitor
Additional function	a) Energized/de-energized action is configurable. b) Delay timer : 0 to 600 sec c) Interlock (latch) function is configurable.

Communication

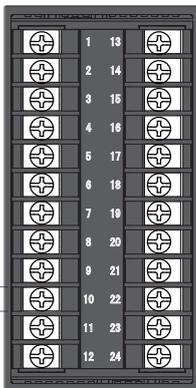
Communication method	(Optional) • Loader communication : Standard RS-485
Protocol	a) ANSI X3.28 sub-category 2.5A4 (RKC standard) b) MODBUS-RTU
Loader communication	ANSI X3.28 sub-category 2.5A4 (RKC standard)

General Specifications

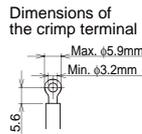
Supply voltage	85 to 264V AC (50/60Hz common) Rating : 100 to 240V AC
Power consumption	RZ100 : 5.1VA (100V), 7.6VA (240V), RZ400 : 5.9VA (100V), 8.4VA (240V)
Rush current	Less than 5.6A (100V), Less than 13.3A (240V)
Insulation resistance	More than 20MΩ (500V DC) between measured terminals and ground
Dielectric voltage	2300V AC for 1 minute
Ambient temperature	-10 to 55°C (14 to 131°F)
Ambient humidity	5 to 95%RH (Non condensing) • Absolute humidity : MAX.W.C29.3g/m3 dry air at 101.3kPa
Weight	RZ100 : 115g, RZ400 : 165g
Water/Dust proof (Optional)	IP66

Rear Terminals

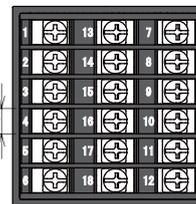
RZ400



No	Contents	No	Contents
1	L Power supply	13	Communication SG
2	100 to 240V AC	14	T/R(A) RS-485
3	N	15	T/R(B)
4	Output 2 (OUT2)	16	/
5	(1) Relay contact		
6	(2) Voltage pulse		
7	(3) Current		
8	Output 1 (OUT1)	17	/
9	(1) Relay contact		
10	(2) Voltage pulse		
11	(3) Current		
12	Output 3 (OUT3) Relay contact	18	/
13	A Measuring input		
14	B		
15	T.C. RTD		
16	CT2	22	CT1/2 input
17	CT1	23	
18	COM	24	



RZ100



No	Contents	No	Contents	No	Contents
1	L Power supply	13	Communication SG	7	/
2	100 to 240V AC	14	T/R(A) RS-485		
3	N	15	T/R(B)		
4	Output 2 (OUT2)	16	CT2		
5	(1) Relay contact	17	CT1	9	Output 3 (OUT3) Relay contact
6	(2) Voltage pulse	18	COM	10	A Measuring input
7	(3) Current			11	B
8	Output 1 (OUT1)			12	T.C. RTD
9	(1) Relay contact				
10	(2) Voltage pulse				
11	(3) Current				

Accessories (Sold separately)

Terminal Cover



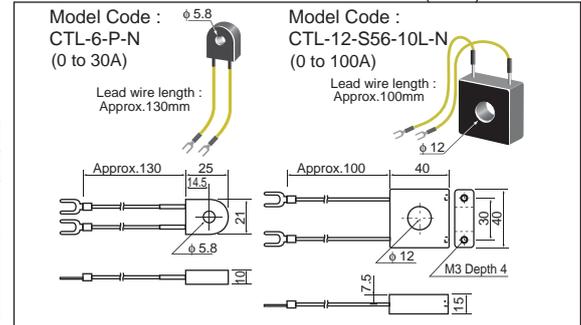
Model Code : KCA100-517 (RZ100)
Model Code : KFB400-58 (RZ400)

Front Cover



Model Code : KRB100-36A (RZ100)
Model Code : KRB400-36 (RZ400)
*1: Soft cover (Silicone rubber) type is available. Only for RZ100. Model Code : KRB100-315(1)

Current transformer for heater break alarm (HBA)



- Before operating this product, read the instruction manual carefully to avoid incorrect operation.
- This product is intended for use with industrial machines, test and measuring equipment. It is not designed for use with medical equipment.
- If it is possible that an accident may occur as a result of the failure of the product or some other abnormality, an appropriate independent protection device must be installed.

Caution for the export trade

All transactions must comply with laws, regulations, and treaties.

Caution for imitated products

As products imitating our product now appear on the market, be careful that you don't purchase these imitated products. We will not warrant such products nor bear the responsibility for any damage and/or accident caused by their use.

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