CONTROLLER

MA900/901

MULTI-LOOP DIGITAL TEMPERATURE CONTROLLER

Actual size

RKC INSTRUMENT INC.

8ch

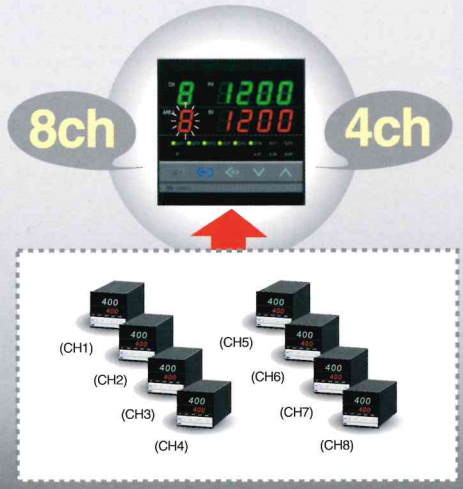
Temperature Control !

96(W) x96 (H) x100(D)mm size

One unit controls a maximum of 8ch/4ch*

***Available for 8ch and 4ch control types**

The MA900 can reduce your panel cutouts and make your panel board smaller.
A maximum of 8 channels of temperature controls are packed into 96x96x100mm case. You can reduce your panel cutouts and make your panel board smaller.

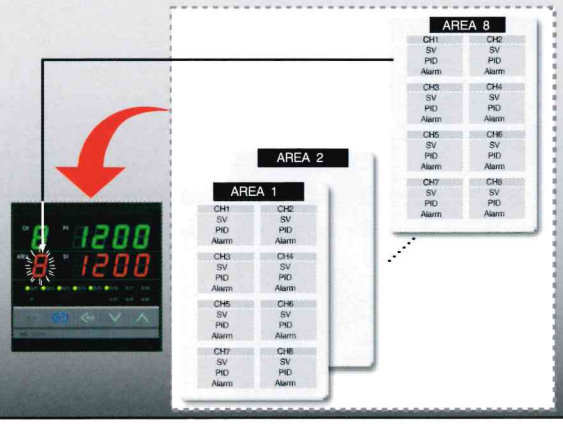


A maximum of 8 recipe values can be set.

"Multi-memory area" function

A maximum of 8 kinds of combinations of temperature set value, PID constant, alarm set value etc for each channel can be registered as "memory area" (recipe).
The change of settings caused by the change of a process and product can be simply done only by switching the "area". The switching of the area by optional external contact input is also available.

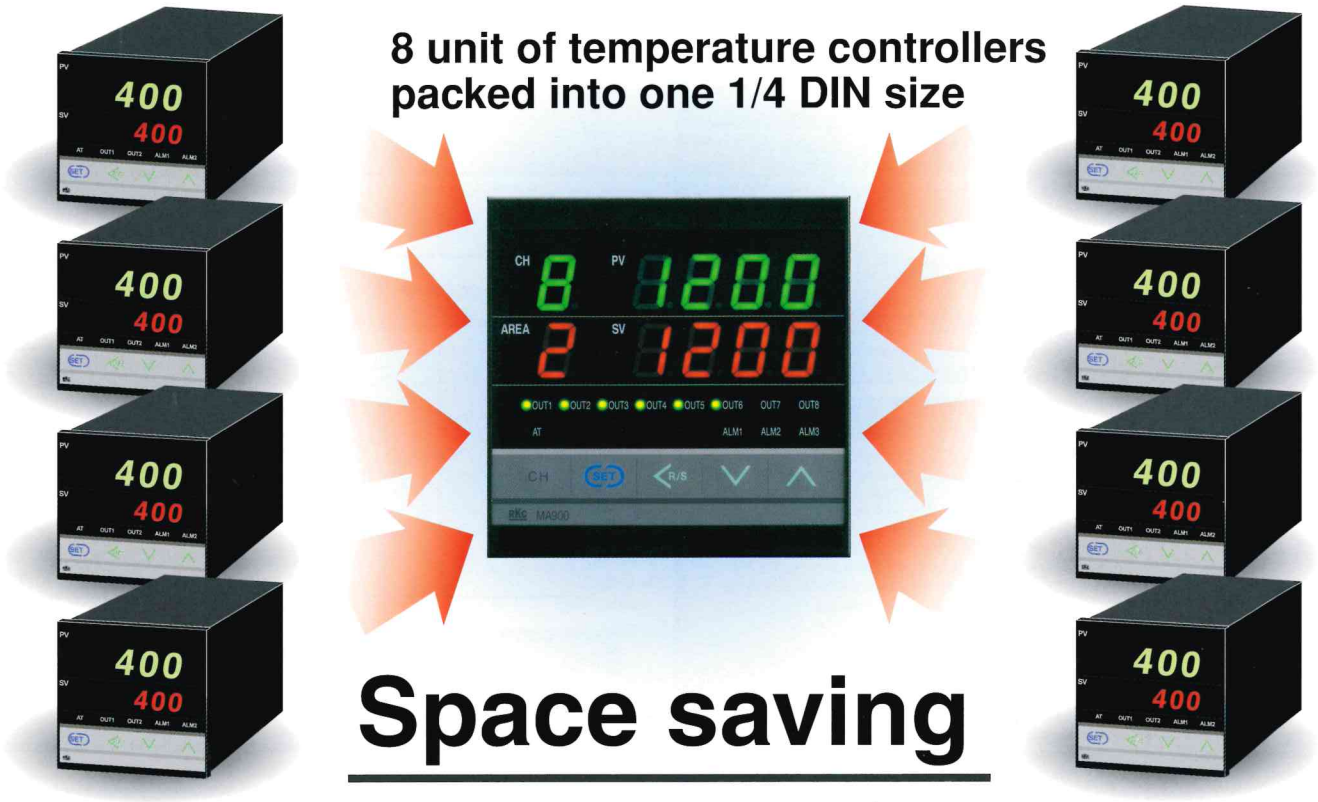
The available parameters for multi memory area:
SV, Alarm set values, PID constants, Anti-reset windup, Overlap/dead band, Setting change rate limiter, Channel used/unused



MULTI-LOOP DIGITAL TEMPERATURE CONTROLLER

MA900/901

The MA900/901 can control up to a maximum of 8 channels in a compact 1/4 DIN size. This 1/4 DIN size (96mm) controller reduces the panel size and panel cutouts. By increasing zone density, the MA900/901 can now make temperature control for 3 to 8 zones affordable in a multi-loop form factor, aiding designers of control equipment to save labor costs, installation costs, electric panel sizes, and operation costs.



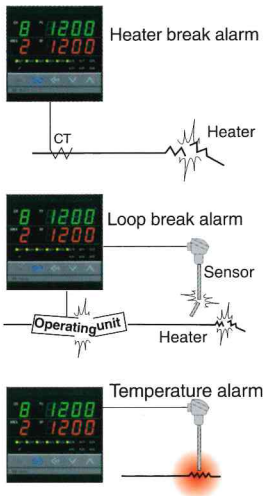
A variety of Optional Functions

Flexible for the use in every kind of applications

Digital communications

- RKC standard communication
- MODBUS communication (RS-232C/422A/485)

Alarm functions



Contact input

Control start/stop
Memory area switching

Waterproof and dustproof protection (Equivalent to IP65)

Specifications

Input

Number of inputs	4 points (MA900), 8 points (MA901)
Input	a) Thermocouple : K,J,E,T,R,S,B,N (JIS/IEC),U,L(DIN) PLII (NBS),W5Re/W26Re (ASTM) Input impedance : Approx.1MΩ b) RTD : Pt100 (JIS/IEC), JPt100 (JIS) c) DC voltage : 0 to 5V DC, 1 to 5V DC, 0 to 10V DC • RTD or DC voltage input is not isolated.
Sampling time	0.5 sec. (MA900), 1 sec (MA901)
Influence of external resistance	Approx. 0.2μV/Ω (Thermocouple input)
Influence of lead resistance	Approx. 0.01[%/Ω] of reading (RTD input) • Maximum 10Ω per wire
Input break action	a) Thermocouple : Up-scale b) RTD : Up-scale c) DC voltage : Down-scale
Input filter	First order lag digital filter Time constant : 1 to 100 sec. (OFF when 0 is set).
PV bias	- span to +span (Within -1999 to 9999)

Performance

Measuring accuracy	a) Thermocouple : ±(0.3% of reading + 1digit) or ±2°C (4°F) (Within either range, whichever is larger) • Accuracy is not guaranteed between 0 and 399°C (0 and 799°F) for type R, S and B. • Accuracy is not guaranteed less than -100.0°C (-158.0°F) for type K, J, T and U. b) RTD : ±(0.3% of reading + 1digit) or ±0.8°C (1.6°F) (Within either range, whichever is larger) c) Voltage : ±(0.3% of span + 1digit)
Insulation resistance	More than 20MΩ (500V DC) between measured terminals and ground More than 20MΩ (500V DC) between power terminals and ground
Dielectric voltage	1000V AC for one minute between measured terminals and ground 1500V AC for one minute between power terminals and ground

Control

Control method	a) PID control (with autotuning function) • Available for reverse and direct action. (Specify when ordering.) • ON/OFF, P, PI and PD control are also selectable. ON/OFF action differential gap : 2°C(°F) (Temperature input) 0.2% (Voltage input) b) Heat/Cool PID control (with autotuning function) • Air cooling and water cooling type are available. • Heat/Cool PID control is not available for 8ch type.
Setting range	a) Set value (SV) : Same as input range. b) Heat side proportional band (P) : 0 to span (ON/OFF action when P=0) c) Cool side proportional band (Pc) : 1 to 1000% of heat side proportional band (P) d) Integral time (I) : 1 to 3600 sec. (PD action when I=0) e) Derivative time (D) : 1 to 3600 sec. (PI action when D=0) f) Anti-reset windup (ARW) : 1 to 100% of heat side proportional band (P) (Integral action is OFF when ARW=0) g) Heat side proportional cycle : 1 to 100 sec. (No cycle setting for current output) h) Cool side proportional cycle : 1 to 100 sec. (No cycle setting for current output) i) Deadband/Overlap : - span to +span (Within -1999 to 9999) • Minus setting : Overlap j) Setting change rate limiter : 0 to span/min (OFF when 0 is set)
Operation mode	Available for switching each channel to be normal (control), alarm monitoring (control output OFF, alarm action enabled) and unused.
Output type	a) Relay contact output : 250V AC 3A (resistive load), Form A contact • Electrical life : 300,000 cycles or more (resistive load) b) Voltage pulse output : 0/12V DC (Load resistance : more than 600Ω) c) Current output : 0 to 20mA DC (Load resistance : less than 600Ω) 4 to 20mA DC (Load resistance : less than 600Ω) d) Triac output : Rating : 0.5A (An ambient temperature is less than 40°C) • Measurement terminals and output terminals are not isolated.

Temperature alarms

Number of outputs	Up to 3 points (Includes loop break alarm and heater break alarm) • Alarm 1 output (Standard), Alarm 2, 3 (Optional) • Independent output for each channel of Alarm 3 is optionally available for 4ch type PID control (OUT 5 to 8) , but not available for Heat/Cool control type.
Output type	Relay contact output : Form A contact Rating : 250V AC 1A (Alarm output 1 to 3) (Resistive load) 250V AC 3A (OUT5 to 8) (Resistive load) • Electrical life : 300,000 cycles or more (Rated load)
Alarm type	Deviation High, Deviation Low, Deviation High-Low, Deviation Band, Process High, Process Low, Set value High, Set value Low, FAIL • Hold action is available except for Deviation Band, Set vale, FAIL • Alarm hold action is effective at the time of power-on, switching from STOP to RUN, set value change and switching of the memory area.
Setting range	a) Deviation alarm : -span to +span Within -1999 (-199.9) to 9999 (999.9) b) Process alarm : Same as set value (SV)
Differential gap	2°C(°F) (Temperature input), 0.2% (Voltage input)

Control loop break alarm : LBA

LBA setting time	OFF, 0.1 to 200.0 min. • LBA deadband : 0 to span (Within 9999 or 999.9 digit) (OFF when 0 is set).
Output	LBA output allocated to alarm 1.

Heater break alarm : HBA (Optional)

CT type	CTL-6-P-N, CTL-12-S56-10L-N (Specify when ordering)
Input range	CTL-6-P-N : 0 to 30A CTL-12-S56-10L-N : 0 to 100A
Display range	0.0 to 100.0A
Display accuracy	±5% of input value or ±2A
Output	HBA output allocated to alarm 2.

Contact input (Optional)

Number of input	5 points
Input rating	Non-voltage contact input a) OPEN : 500kΩ or more b) CLOSE : 10Ω or less
Input type	a) RUN/STOP switching : 1 point (OPEN : STOP, CLOSE : RUN) b) Memory area selection : Area selection : 3 points (BCD input 0 to 7) Data set : 1 point

Communications (Optional)

Communication method	Based on RS-232C/RS-422A/RS-485 (Specify when ordering)
Protocol	a) ANSI X3.28(1976) 2.5 A4 b) MODBUS (Specify when ordering)
Communication method	RS-232C : 3-wire system, Point-to-point connection RS-422A : 4-wire system, Multi-drop connection RS-485 : 2-wire system, Multi-drop connection
Communication speed	2400, 4800, 9600, 19200 BPS (Selectable)
Bit configuration	a) Start bit : 1 b) Data bit : 7 or 8 • For MODBUS 8 bit only c) Parity bit : Without, Odd or Even d) Stop bit : 1 or 2
Maximum connection	RS-232C : 1 unit RS-422A/RS-485 : 31 units

Waterproof/Dustproof (Optional)

Waterproof/Dustproof protection : IP65
• Waterproof/Dustproof protection only effective from the front panel mounted installation.

General Specifications

Supply voltage	a) AC type : 90 to 264V AC (50/60Hz common) [Including supply voltage variation] (Rating 100 to 240V AC) b) 24V AC type : 21.6 to 26.4V AC (50/60Hz common) [Including supply voltage variation] (Rating 24V AC) c) 24V DC type : 21.6 to 26.4V DC [Including supply voltage variation] (Rating 24V DC)
Power consumption	a) AC type : Maximum 14VA at 100V AC Maximum 20VA at 240V AC b) 24V AC type : Maximum 11VA c) 24V DC type : Maximum 330mA
Power failure	A power failure of 30 ms or less will not affect the control action. If power failure of more than 30 ms occurs, controller will restart.
Memory backup	Backed up by non-volatile memory. Number of writing : Approx. 100,000 times Data retaining period : Approx. 10 years
Ambient temperature	0 to 50°C (32 to 122°F)
Ambient humidity	45 to 85% RH
Weight	Approx. 560g
External dimensions	96 (W) X 96 (H) X 100 (D)mm (1/4 DIN)
Operating environment	Free from corrosive and flammable gas and dust.
Other conditions	Free from external noise, vibration, shock and exposure to direct sunlight.

Compliance with Standards

• CE Mark, UL Recognized, CSA Certified, C-Tick Mark

● Specifications for MA900 series

The MA900 series has 2 types, MA900 (4-channel type) and MA901 (8-channel type).
Please select your model, MA900 or MA901 referring to the following table, as some functions are limited to be selected according to the models.

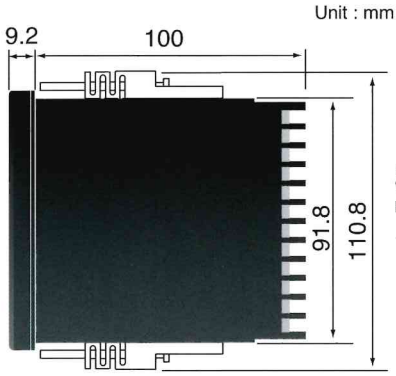
YES : Available, NO: Not available

Model	MA900	MA901
Number of channels	4 ch	8 ch
Sampling time	0.5 sec	1 sec
Heat/Cool control	See note 1	NO
Independent output of Alarm 3	See note 1	NO
Heater break alarm	YES	See note 2
Contact input	YES	See note 3
Communications	YES	See note 3

Note :
1 Heat/Cool and Independent output of Alarm 3 can not be selected together.
2 If this option is selected, contact input and communications are not available.
3 If this option is selected, heater break alarm is not available.

External Dimensions

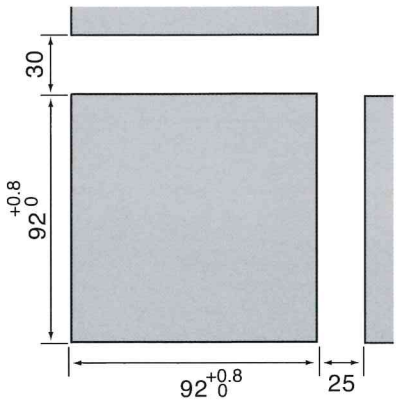
Unit : mm

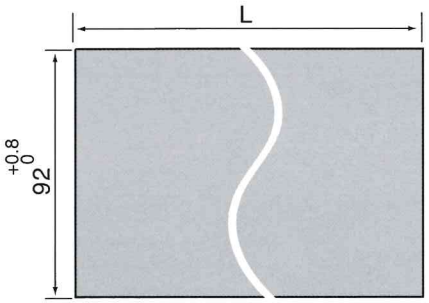


For mounting of the controllers, panel thickness must be between 1 to 10mm. When mounting multiple controllers close together, the panel strength should be checked to ensure proper support..

• Dustproof and waterproof are not effective when controllers are closely mounted.

Panel Cutouts





(Close horizontal mounting)
• Up to 6unit

$L=96Xn-4\,^{+0.8}_{0}$

n : Number of controllers
(2=<n=<6)

Model and Suffix Code

● MA900 (4ch type)

Specifications	Model and Suffix Code	
	4ch Digital Contorller	MA900 − 4 □ □ □ □−□ □−□ * □ □ □−□ □/ □/ □
Control method	PID control with AT (reverse action)	F
	PID control with AT (direct action)	D
Input and range	See Input and Range Code Table	□ □ □
OUT1 (Control output)	Relay contact output	M
	Voltage pulse output	V
	Current output : 0 to 20mA DC	7
	Current output : 4 to 20mA DC	8
	Triac output	T
OUT2 [1] (Alarm 3 independent output)	No output	N
	Relay contact output	M
Power supply voltage	24V AC/DC	3
	100 to 240V AC	4
Alarm 1	See Alarm 1 Code Table (Standard)	□
Alarm 2 [1,2]	No alarm	N
	Heater break alarm (CTL-6-P-N)	P
	Heater break alarm (CTL-12-S56-10L-N)	S
	See Alarm 2 · 3 Code Table	□
Alarm 3 [1]	No alarm	N
	See Alarm 2 · 3 Code Table	□
Contact input	No contact input	N
	Contact input (RUN/STOP, Area select · Data set)	D
Communication	No Communication	N
	RS-232C (RKC standard)	1
	RS-422A (RKC standard)	4
	RS-485 (RKC standard)	5
	RS-485 (MODBUS)	6
	RS-422A (MODBUS)	7
	RS-232C (MODBUS)	8
Waterprrof/Dustproof	Not supplied	N
	Waterproof/Dustproof	1
Instrument version	Version symbol	Y

[1] Alarm output is common to all channels. But alarm 3 is available for optional independent output for each channel. When you select optional alarm 3, specify output type (M) for output 2. (Except FAIL alarm)
[2] Heater break output is not available when output 1 (control output) is current output (7, 8).

● MA900 (4ch type, Heat/Cool PID control)

Specifications	Model and Suffix Code	
	4ch Digital controller	MA900 − 4 □ □ □ □−□ □−□ * □ □ □−□ □/ □/ □
Control method	Heat/Cool PID control with AT (water cooling)	W
	Heat/Cool PID control with AT (air cooling)	A
Input and Range	See Input and Range Code Table	□ □ □
OUT 1 (Heat output)	Relay contact output	M
	Voltage pulse output	V
	Current output : 0 to 20mA DC	7
	Current output : 4 to 20mA DC	8
	Triac output	T
OUT 2 [1] (Cool output)	Relay contact output	M
	Voltage pulse output	V
	Current output : 0 to 20mA DC	7
	Current output : 4 to 20mA DC	8
	Triac output	T
Power supply voltage	24V AC/DC	3
	100 to 240V AC	4
Alarm 1 [2]	See Alarm 1 Code Table (Standard)	□
Alarm 2 [2]	No alarm	N
	Heater break alarm (CTL-6-P-N)	P
	Heater break alarm (CTL-12-S56-10L-N)	S
	See Alarm 2 · 3 Code Table	□
Alarm 3 [2]	No alarm	N
	See Alarm 2 · 3 Code Table	□
Contact input	No contact input	N
	Contact input (RUN/STOP, Area select · Data set)	D
Communication	No communication	N
	RS-232C (RKC standard)	1
	RS-422A (RKC standard)	4
	RS-485 (RKC standard)	5
	RS-485 (MODBUS)	6
	RS-422A (MODBUS)	7
	RS-232C (MODBUS)	8
Waterproof/Dustproof	Not supplied	N
	Waterproof/Dustproof	1
Instrument version	Version symbol	Y

[1] Alarm output is common to all channels.
[2] Heater break output is not available when output 1 (control output) is current output (7, 8).

● MA901 (8ch type)

Specifications	Model and Suffix Code	MA901−8 □ □ □ □−□ □−□*□ □ □−□ □/□/□
	8ch Digital controller	
Control method	PID control with AT (reserve action)	F
	PID control with AT (direct action)	D
Input and Range	See Input and Range Code Table	□ □ □
OUT 1 (Control output : CH1 to 4)	Relay contact output	M
	Voltage pulse output	V
	Current output : 0 to 20mA DC	7
	Current output : 4 to 20mA DC	8
	Triac output	T
OUT 2 (Control output: CH5 to 8)	Relay contact output	M
	Voltage pulse output	V
	Current output : 0 to 20mA DC	7
	Current output : 4 to 20mA DC	8
	Triac output	T
Power supply voltage	24V AC/DC	3
	100 to 240V AC	4
Alarm 1 [1]	See Alarm 1 Code Table (Standard)	□
Alarm 2 [1,2,3]	No alarm	N
	Heater break alarm (CTL-6-P-N)	P
	Heater break alarm (CTL-12-S56-10L-N)	S
	See Alarm 2 and 3 Code Table	□
Alarm 3 [1]	No alarm	N
	See Alarm 2 and 3 Code Table	□
Contact input [3]	No contact input	N
	Contact input (RUN/STOP, Area select • Data set)	D
Communication [3]	No communication	N
	RS-232C (RKC standard)	1
	RS-422A (RKC standard)	4
	RS-485 (RKC standard)	5
	RS-485 (MODBUS)	6
	RS-422A (MODBUS)	7
	RS-232C (MODBUS)	8
Waterproof/Dustproof	Not supplied	N
	Waterproof/Dustproof	1
Instrument version	Version symbol	Y

1 Alarm output is common to all channels.
2 Heater break alarm and communication/contact input cannot be specified on the same hardware.
3 Heater break output is not available when either of output 1 or 2 is current output.

Input and Range Code Table

Thermocouple input

Input	Code	Range
K (JIS/IEC) [1]	K 01	0 to 200℃
	K 02	0 to 400℃
	K 03	0 to 600℃
	K 04	0 to 800℃
	K 05	0 to 1000℃
	K 06	0 to 1200℃
	K 07	0 to 1372℃
	K 08	-199.9 to +300.0℃
	K 09	0.0 to 400.0℃
	K 10	0.0 to 800.0℃
	K 13	0 to 100℃
	K 14	0 to 300℃
	K 17	0 to 450℃
	K 20	0 to 500℃
	K 29	0.0 to 200.0℃
	K 37	0.0 to 600.0℃
	K 38	-199.9 to +800.0℃
	K A1	0 to 800℉
	K A2	0 to 1600℉
	K A3	0 to 2502℃
	K A4	0.0 to 800.0℉
	K A9	20 to 70℉
	K B2	-199.9 to +999.9℉
J (JIS/IEC) [1]	J 01	0 to 200℃
	J 02	0 to 400℃
	J 03	0 to 600℃
	J 04	0 to 800℃
	J 05	0 to 1000℃
	J 06	0 to 1200℃
	J 07	-199.9 to +300.0℃
	J 08	0.0 to 400.0℃
	J 09	0.0 to 800.0℃

Input	Code	Range
J (JIS/IEC) [1]	J 10	0 to 450℃
	J 22	0.0 to 200.0℃
	J 23	0.0 to 600.0℃
	J 30	-199.9 to +600.0℃
	J A1	0 to 800℉
	J A2	0 to 1600℉
	J A3	0 to 2192℉
	J A6	0 to 400℉
	J A9	-199.9 to +999.9℉
	J B6	0.0 to 800.0℉
R (JIS/IEC) [2]	R 01	0 to 1600℃
	R 02	0 to 1769℃
	R 04	0 to 1350℃
	R A1	0 to 3200℉
	R A2	0 to 3216℉
S (JIS/IEC) [2]	S 01	0 to 1600℃
	S 02	0 to 1769℃
	S A1	0 to 3200℉
	S A2	0 to 3216℉
B (JIS/IEC) [2]	B 01	400 to 1800℃
	B 02	0 to 1820℃
	B A1	800 to 3200℉
	B A2	0 to 3308℉
E (JIS/IEC)	E 01	0 to 800℃
	E 02	0 to 1000℃
	E A1	0 to 1600℉
	E A2	0 to 1820℉
PLII (NBS)	A 01	0 to 1300℃
	A 02	0 to 1390℃
	A 03	0 to 1200℃
	A A1	0 to 2400℉
	A A2	0 to 2534℉

Input	Code	Range
N (JIS/IEC)	N 01	0 to 1200℃
	N 02	0 to 1300℃
	N 06	0.0 to 800.0℃
	N A1	0 to 2300℉
	N A2	0 to 2372℉
	N A5	0.0 to 999.9℉
T (JIS/IEC) [1]	T 01	-199.9 to +400.0℃
	T 02	-199.9 to +100.0℃
	T 03	-100.0 to +200.0℃
	T 04	0.0 to 350.0℃
	T A1	-199.9 to +752.0℉
	T A2	-100.0 to +200.0℉
	T A3	-100.0 to +400.0℉
	T A4	0.0 to 450.0℉
	T A5	0.0 to 752.0℉
W5Re/W26Re (JIS/IEC)	W 01	0 to 2000℃
	W 02	0 to 2320℃
	W A1	0 to 4000℉
U (DIN) [1]	U 01	-199.9 to +600.0℃
	U 02	-199.9 to +100.0℃
	U 03	0.0 to 400.0℃
	U A1	-199.9 to +999.9℉
	U A2	-100.0 to +200.0℉
	U A3	0.0 to 999.9℉
L (DIN)	L 01	0 to 400℃
	L 02	0 to 800℃
	L A1	0 to 800℉
	L A2	0 to 1600℉

RTD input

Input	Code	Range
Pt100 (JIS/IEC)	D 01	-199.9 to +649.0℃
	D 02	-199.9 to +200.0℃
	D 03	-100.0 to +50.0℃
	D 04	-100.0 to +100.0℃
	D 05	-100.0 to +200.0℃
	D 06	0.0 to 50.0℃
	D 07	0.0 to 100.0℃
	D 08	0.0 to 200.0℃
	D 09	0.0 to 300.0℃
	D 10	0.0 to 500.0℃
	D A1	-199.9 to +999.9℉
	D A2	-199.9 to +400.0℉
	D A3	-199.9 to +200.0℉
	D A4	-100.0 to +100.0℉
	D A5	-100.0 to +300.0℉
	D A6	0.0 to 100.0℉
	D A7	0.0 to 200.0℉
	D A8	0.0 to 400.0℉
	D A9	0.0 to 500.0℉
JPt100 (JIS)	P 01	-199.9 to +649.0℃
	P 02	-199.9 to +200.0℃
	P 03	-100.0 to +50.0℃
	P 04	-100.0 to +100.0℃
	P 05	-100.0 to +200.0℃
	P 06	0.0 to 50.0℃
	P 07	0.0 to 100.0℃
	P 08	0.0 to 200.0℃
	P 09	0.0 to 300.0℃
	P 10	0.0 to 500.0℃

Voltage DC input

Input	Code	Range
0 to 5V	4 01	0.0 to 100.0
0 to 10V	5 01	0.0 to 100.0
1 to 5V	6 01	0.0 to 100.0

1 Accuracy is not guaranteed less than -100.0˚C (-158.0˚F) for type K, J, T and U.
2 Accuracy is not guaranteed between 0 and 399˚C (0 and 799˚F) for type R, S and B.
3 DC voltage input can be used for the input of 0 to 20mA (in case of 0 to 5 V) and 4 to 20mA (1 to 5 V) by attaching 250Ω shunt resistor (sold separately) to input terminal. (The model of shunt resistor: KD100-55)

Alarm 1 Code Table

(Standard)

A	Deviation High	B	Deviation Low	C	Deviation High-Low	D	Deviation Band
E	Deviation High with Hold	F	Deviation Low with Hold	G	Deviation High-Low with Hold	H	Process High
J	Process Low	K	Process High with Hold	L	Process Low with Hold	M	FAIL
R	Loop break alarm[1]	V	Set value High	W	Set value Low		

1 Loop break alarm is not available with Heat/Cool PID control type.

Alarm 2・3 Code Table

(Option)

A	Deviation High	B	Deviation Low	C	Deviation High-Low	D	Deviation Band
E	Deviation High with Hold	F	Deviation Low with Hold	G	Deviation High-Low with Hold	H	Process High
J	Process Low	K	Process High with Hold	L	Process Low with Hold	M	FAIL
V	Set value High	W	Set value Low				

Accesary

Name	Model code
Current transformer for heater break alarm	CTL-6-P-N (0 to 30A)
	CTL-12-S56-10L-N (0 to 100A)

Rear Terminals

● MA900 (4ch type)

No.	Description
1, 2	AC100 - 240V / AC24V, DC24V — Power supply
3, 4	Alarm 1 output
5, 6	Output 1 (OUT1) (1) Relay contact (2) Voltage pulse/Current (3) Triac
7, 8	Output 1 (OUT2) (1) Relay contact (2) Voltage pulse/Current (3) Triac
9, 10	Output 1 (OUT3) (1) Relay contact (2) Voltage pulse/Current (3) Triac
11, 12	Output 1 (OUT4) (1) Relay contact (2) Voltage pulse/Current (3) Triac
49, 50	Alarm 2 output (Option)
51, 52	Alarm 3 output (Option)
53, 54	Output 2 (OUT5) (1) Relay contact (2) Voltage pulse/Current (3) Triac
55, 56	Output 2 (OUT6) (1) Relay contact (2) Voltage pulse/Current (3) Triac
57, 58	Output 2 (OUT7) (1) Relay contact (2) Voltage pulse/Current (3) Triac
59, 60	Output 2 (OUT8) (1) Relay contact (2) Voltage pulse/Current (3) Triac
37, 38	DI — Contact input (RUN/STOP) (Option)
39, 40, 41, 42, 43	COM, DI 1, DI 2, DI 4, DI SET — Contact input (Memory area) (Option)
44, 45, 46, 47, 48	SG, T(A), T(B), R(A), R(B), T/R(A), T/R(B), SG, SD, RD — Communications (1) RS-422A (2) RS-485 (3) RS-232C (Option)
25, 26, 27, 28, 29, 30	COM, CT1, CT2, COM, CT3, CT4 — CT input for heater break alarm (Option)
31, 32, 33, 34, 35, 36	
13, 14, 15	CH1 sensor input (1) Thermocouple (2) RTD (3) Voltage
16, 17, 18	CH2 sensor input (1) Thermocouple (2) RTD (3) Voltage
19, 20, 21	CH3 sensor input (1) Thermocouple (2) RTD (3) Voltage
22, 23, 24	CH4 sensor input (1) Thermocouple (2) RTD (3) Voltage

About output 2 (OUT5 to 8)
- It becomes Cool side output for CH1 to CH4 in Heat/Cool control specification.
- It can be used as independent channel output for Alarm 3 in PID control specification. (Specify when ordering)

● MA901 (8ch type)

No.	Description
1, 2	AC100 - 240V / AC24V, DC24V — Power supply
3, 4	Alarm 1 output
5, 6	Output 1 (OUT1) (1) Relay contact (2) Voltage pulse/Current (3) Triac
7, 8	Output 1 (OUT2) (1) Relay contact (2) Voltage pulse/Current (3) Triac
9, 10	Output 1 (OUT3) (1) Relay contact (2) Voltage pulse/Current (3) Triac
11, 12	Output 1 (OUT4) (1) Relay contact (2) Voltage pulse/Current (3) Triac
49, 50	Alarm 2 output (Option)
51, 52	Alarm 3 output (Option)
53, 54	Output 2 (OUT5) (1) Relay contact (2) Voltage pulse/Current (3) Triac
55, 56	Output 2 (OUT6) (1) Relay contact (2) Voltage pulse/Current (3) Triac
57, 58	Output 2 (OUT7) (1) Relay contact (2) Voltage pulse/Current (3) Triac
59, 60	Output 2 (OUT8) (1) Relay contact (2) Voltage pulse/Current (3) Triac

<Heater break alarm type>

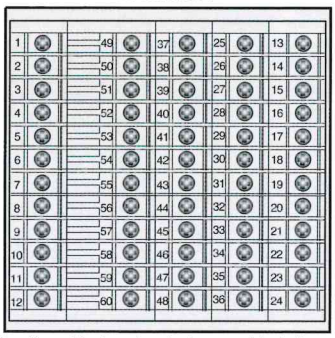
No.	Description
37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48	COM, CT1, CT2, COM, CT3, CT4, COM, CT5, CT6, COM, CT7, CT8 — CT input for heater break alarm (Option)
25, 26, 27	CH5 sensor input (1) Thermocouple (2) RTD (3) Voltage
28, 29, 30	CH6 sensor input (1) Thermocouple (2) RTD (3) Voltage
31, 32, 33	CH7 sensor input (1) Thermocouple (2) RTD (3) Voltage
34, 35, 36	CH8 sensor input (1) Thermocouple (2) RTD (3) Voltage
13, 14, 15	CH1 sensor input (1) Thermocouple (2) RTD (3) Voltage
16, 17, 18	CH2 sensor input (1) Thermocouple (2) RTD (3) Voltage
19, 20, 21	CH3 sensor input (1) Thermocouple (2) RTD (3) Voltage
22, 23, 24	CH4 sensor input (1) Thermocouple (2) RTD (3) Voltage

<Contact input・Communications type>

No.	Description
37, 38	DI — Contact input (RUN/STOP) (Option)
39, 40, 41, 42, 43	COM, DI 1, DI 2, DI 4, DI SET — Contact input (Memory area) (Option)
44, 45, 46, 47, 48	SG, T(A), T(B), R(A), R(B), T/R(A), T/R(B), SG, SD, RD — Communications (1) RS-422A (2) RS-485 (3) RS-232C (Option)

Heater break alarm and communication/contact input cannot be specified on the same hardware.

<MA900/901>



- Use the solder less terminal appropriate to the screw size.
  Screw size : M3 X 6

Safety Warning	
	•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. •When installing this product, avoid the following: ¥Direct exposure to sunlight.
	• An ambient temperature lower than 0˚C or higher than 50˚C • Areas subject to high humidity. Ambient humidity should not be lower than 45% or higher than 85%RH • Direct contact with water. • Corrosive environments. • Hazardous areas containing explosive or flammable gases. • Vibration or shock. • Areas subject to electrical noise caused by inductive interference, static electricity or magnetic fields.

RKC INSTRUMENT

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