

CONTROL

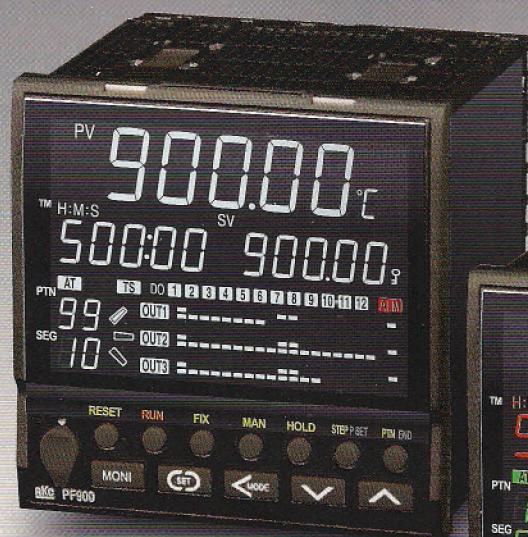


Ramp/Soak Controller

PF900

High-Performance

Process/Temperature Controller



PF901



PF900

Experiencing the Quality & Service Difference



RoHS compliant

RKC RKC INSTRUMENT INC.

Model code

Model and Suffix Code										
Specifications	Hardware coding only									
96 x 96mm DIN sized ramp/soak controller PV: Green, SV: Orange, Pattern: White PF900- PF901-	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
Output 1 (OUT 1) Control output or Output program *1	Relay contact output	M								
	SSR drive voltage pulse output (0/12V DC)	V								
	DC current/voltage output (See output table)	□								
	Triac output	T								
	Open collector output	D								
Output 2 (OUT 2) Control output, Output program, Retransmission output or Digital output *1	None	N								
	Relay contact output	M								
	SSR drive voltage pulse output (0/12V DC)	V								
	DC current/voltage output (See output table)	□								
	Triac output	T								
	Open collector output	D								
Output 3 (OUT 3) Output program, Retransmission output or Digital output *1	None	N								
	SSR drive voltage pulse output (0/12V DC)	V								
	DC current/voltage output (See output table)	□								
	Open collector output	D								
Supply voltage	24V AC/DC		3							
	100 to 240V AC		4							
Digital output	DO: 4 points, Relay: DO 1 to 4			4						
	DO: 12 points, Relay DO 1 to 4, Open collector: DO 5 to 12			C						
CT input or FBR input	None				N					
	CT input: 2 points				T					
	FBR (FeedBack Resistance) input				F					
Communication	None				N					
	COM1:RS-232C COM2:Not supplied • Digital input: 6 points, DI 1 to 6				1					
	COM1:RS-422A COM2:Not supplied • Digital input: 6 points, DI 1 to 6				4					
	COM1:RS-485 COM2:Not supplied • Digital input: 6 points, DI 1 to 6				5					
	COM1:RS-232C COM2:RS-485 • Digital input: 6 points, DI 1 to 6				W					
	COM1:RS-485 COM2:RS-485 • Digital input: 6 points, DI 1 to 6				X					
	COM1:Not supplied COM2:RS-485 • Digital input: 6 points, DI 1 to 6				Y					
	Digital input: 6 points, DI 1 to 6				D					
Quick start code	None				N					
	Specify quick start code 1				1					
	Specify quick start code 1 and 2 (See page 7)				2					
Control Method	No quick start code				No code					
	PID control with AT (Reverse action)				F					
	PID control with AT (Direct action)				D					
	Heat/Cool PID control with AT				G					
	Heat/Cool PID control with AT for extruder (Air cooling type)				A					
	Heat/Cool PID control with AT for extruder (Water cooling type)				W					
	Position proportioning PID control with AT (Reverse action)				Z					
	Position proportioning PID control with AT (Direct action)				C					
Input and range	No quick start code				No code					
	(See Input range Code Table)				□□□					
Instrument version	Version symbol									Y

<Note 1>
If inter-controller communication (master-slave operation) is used, select code: W, X, or Y (that means "with communication 2") for a master device, and 5 or X (communication 1: RS-485) for a slave device.

*1 For program or retransmission output, specify voltage or current.
For digital output, specify relay or open collector output.
*2 Heater break alarm (HBA) is not available or current/continuous voltage output.
Loop break alarm (LBA) is not available for heat/cool PID control type.
*3 Position proportional control can be used with/without FBR (feedback resistance) input.

• Control output (OUT1, OUT2) assignment by control action

PID control action:
Control output is produced from OUT1. OUT2 can be used as retransmission output or digital output.
Heat/Cool PID control action:
Heating output is produced from OUT1 and cooling output from OUT2.
Position proportioning PID control action:
Opening output is produced from OUT1 and closing output from OUT2.

EMC SUPPLIES (M) SDN BHD
(Co.No.444081-W)

Output Code Table

Output Type	Code	Output Type	Code
0 to 1V DC *1	3	1 to 5V DC	6
0 to 5V DC	4	0 to 20mA DC	7
0 to 10V DC	5	4 to 20mA DC	8

*1: 0 to 1 V DC output can be specified only for Output 3 (Analog retransmission output).

Input Range Code Table

Thermocouple

Input	Code	Range	Input	Code	Range
K	K : 35	-200.0 to +400.0°C	T	T : 19	-200.0 to +400.0°C
	K : 42	-200.0 to +1372.0°C		T : 13	-200.0 to +200.0°C
	K : 23	0.0 to 1300.0°C		T : 06	0.0 to 400.0°C
	K : 09	0.0 to 400.0°C		T : 16	-200 to +400°C
	K : 41	-200 to +1372°C		T : C2	-328.0 to +752.0°F
	K : 02	0 to 400°C		T : B7	-300.0 to +700.0°F
	K : 06	0 to 1200°C		T : A7	0.0 to 700.0°F
	K : C9	-328.0 to +2502.0°F		T : C9	-328 to +752°F
	K : B4	0.0 to +2400.0°F		S : 04	0.0 to 1700.0°C
	K : A4	0.0 to 800.0°F	S	S : 07	-50.0 to +1768.0°C
J	K : C5	-328 to +2502°F		S : 06	-50 to +1768°C
	J : 27	-200.0 to +400.0°C		S : A8	-58.0 to +3214.0°F
	J : 29	-200.0 to +1200.0°C		S : A5	0.0 to 3200.0°F
	J : 16	0.0 to 1200.0°C		S : A7	-58 to +3214°F
	J : 15	-200 to +1200°C		R : 05	0.0 to 1700.0°C
	J : C9	-328.0 to +2192.0°F		R : 08	-50.0 to +1768.0°C
	J : B5	0.0 to 2100.0°F		R : 07	-50 to +1768°C
	J : B6	0.0 to 800.0°F		R : A8	-58.0 to +3214.0°F
	J : B9	-328 to +2192°F		R : A5	0.0 to 3200.0°F
E	E : 20	-200.0 to +1000.0°C		R : A7	-58 to +3214°F
	E : 17	-200.0 to +200.0°C	B	B : 04	0.0 to 1800.0°C
	E : 08	0.0 to 1000.0°C		B : 03	0 to 1800°C
	E : 06	-200 to +1000°C		B : A9	0.0 to 3200.0°F
	E : B3	-328.0 to +1832.0°F		B : B3	0.0 to 3272.0°F
	E : A6	0.0 to 1800.0°F		B : B2	0 to 3272°F
	E : B1	-328 to +1832°F		N : 05	0.0 to 1300.0°C
				N : 02	0 to 1300°C
				N : A8	0.0 to 2372.0°F
				N : A4	0.0 to 2300.0°F
				N : A7	0 to 2372°F

RTD

Input	Code	Range	Input	Code	Range
Pt100	D : 34	-100.00 to +150.00°C	PLII (NBS)	A : 06	0.0 to 1390.0°C
	D : 35	-200.0 to +850.0°C		A : 05	0.0 to 1300.0°C
	D : 21	-200.0 to +200.0°C		A : 02	0 to 1390°C
	D : 25	-200.0 to +600.0°C		A : A7	0.0 to 2534.0°F
	D : 36	-200 to +850°C		A : A5	0.0 to 2300.0°F
	D : C9	-328.0 to +1562.0°F		A : A2	0 to 2534°F
	D : B8	-300.0 to +1200.0°F		W : 04	0.0 to 2300.0°C
	D : D2	-328 to +1562°F		W : 06	0.0 to 1200.0°C
	P : 29	-100.00 to +150.00°C		W : 03	0 to 2300°C
	P : 21	-200.0 to +200.0°C	W5Re/W26Re (ASTM)	W : A8	0.0 to 4200.0°F
JPt100	P : 26	-200.0 to +600.0°C		W : A6	0.0 to 2200.0°F
	P : 30	-200.0 to +640.0°C		W : A2	0 to 4200°F
	P : 10	0.0 to 500.0°C		L : 04	0.0 to 900.0°C
	P : 31	-200 to +640°C		L : 05	0 to 900°C
				L : A6	0.0 to 1600.0°F
				L : B1	0.0 to 1652.0°F
				L : A3	0 to 1652°F
				U : 04	0.0 to 600.0°C
				U : 08	0 to 600°C
				U : B1	0.0 to 1100.0°F

DC Current • voltage

Input	Code	Range
0 to 10mV	1 : 01	
0 to 100mV	2 : 01	
0 to 1V	3 : 01	
0 to 5V	4 : 01	
0 to 10V	5 : 01	
1 to 5V	6 : 01	
0 to 20mA	7 : 01	
4 to 20mA	8 : 01	
-100 to +100mV	9 : 01	
-1 to +1V	9 : 02	
-10 to +10mV	9 : 03	
-10 to +10V	9 : 04	
-5 to +5V	9 : 05	

-19999 to +32000
(Programmable)
Factory set value:
0.0 to 100.0%

Quick start code 2

- Quick start code 2 tells the factory to ship with each parameter preset to the values detailed as specified by the customer. Quick start code is not necessarily specified when ordering, unless the preset is requested. These parameters are software selectable items and can be re-programmed in the field via the manual.

Specifications	Quick start code 2 (Initial setting code)	①	②	③	④	⑤	⑥	⑦
① Digital input allocation	See Digital Input Allocation table							
② Digital output 1 type	See Digital output code table							
③ Digital output 2 type	See Digital output code table							
④ Digital output 3 type	See Digital output code table							
⑤ Digital output 4 type	See Digital output code table							
⑥ CT types	No CT1 and CT2							N
	CT1 : CTL-6-P-N, CT2 : No use							P
	CT1 : CTL-12-S56-10L-N, CT2 : No use							S
	CT1 : CTL-6-P-N, CT2 : CTL-6-P-N							T
⑦ Communication 1	No communication 1 (COM1)							N
	ANSI/RKC standard protocol							1
	MODBUS protocol							2

* COM2 is used exclusively for inter-controller communication.

- Default setting value of Digital output type
- Digital output 1 : Deviation High
- Digital output 2 : Deviation Low with Hold
- Digital output 3 : Time signal 1
- Digital output 4 : Pattern end output

*1 Heater break alarm (HBA) is not available for current/continuous voltage output.

*2 Loop break alarm (LBA) is not available for heat/cool PID control type.

Digital output code table (Programmable)

Event types	Code
No event	N
Deviation High	A
Deviation Low	B
Deviation High/Low (Common high/low setting)	C
Band (Common high/low setting)	D
Deviation High with Hold	E
Deviation Low with Hold	F
Deviation High/Low with Hold (Common high/low setting)	G
Process High	H
Process Low	J
Process High with Hold	K
Process Low with Hold	L
Heater Break Alarm (HBA) 1 *1	P
Heater Break Alarm (HBA) 2 *1	Q
Loop Break Alarm (LBA) *2	R
FAIL	S
FBR Input Abnormality	T
Band (Individual high and low settings)	U
Set value High	V
Set value Low	W
Deviation High/Low (Individual high and low settings)	X
Deviation High/Low with Alarm Hold (Individual high and low settings)	Y
MV value High	1
MV value Low	2
Cool side MV value High	3
Cool side MV value Low	4
Time signal 1	5
Time signal 2	6
Time signal 3	7
Time signal 4	8
Pattern end output	9

Digital Input allocation table

Code	DI1	DI2	DI3	DI4	DI5	DI6	DI7	DI8	DI9	DI10	DI11
0	Pattern No. Selection					Pattern No. Set	RESET	RUN	STEP	HOLD	Pattern No. Selection
1	Pattern No. Selection					Pattern No. Set	RESET	RUN	STEP	Pattern No. Selection	
2	WAIT release	WAIT release	WAIT release	WAIT release	WAIT release	WAIT release	Pattern No. Selection				Pattern No. Set
3	WAIT release	WAIT release	WAIT release	WAIT release	WAIT release	WAIT release	Pattern No. Selection				Pattern No. Set
4	WAIT release	WAIT release	WAIT release	WAIT release	WAIT release	WAIT release	RESET	RUN	STEP	HOLD	Direct/Reverse selection
5	WAIT release	WAIT release	WAIT release	WAIT release	WAIT release	WAIT release	RESET	RUN	STEP	HOLD	Pattern No. Selection (Increment)

Example of Model Code and Quick start code

Specifications

Input: Thermocouple PR40-20, Max.1800°C, resolution 0.1°C
 Control: Heating control (Output: 4 to 20mA DC)
 Digital output: 4 points (Relay contact output)
 Digital output 1: Deviation high, Digital output 2: Pattern end output
 Digital output 3: Time signal 1 output, Digital output 4: Time signal 2 output
 Retransmission output: 0 to 10V DC
 Time signal output: 8 points (open collector)
 Digital input: WAIT release + Pattern No. Selection, (With Pattern No. Set)
 Communication: RS-232C (MODBUS) + Inter-controller communication

Model code PF900-8N5-□*4NW2-FF01

① OUT1 (Heat output): 4 to 20mA DC Code: 8
 ② OUT2 (Cool output): None Code: N
 ③ OUT3 (Retransmission): 0 to 10V DC Code: 5
 ④ Supply voltage: Relay (event) 4 points (DO1 to 4) Code: 4
 ⑤ Digital output: None Code: N
 ⑥ CT/FBR input: None Code: N

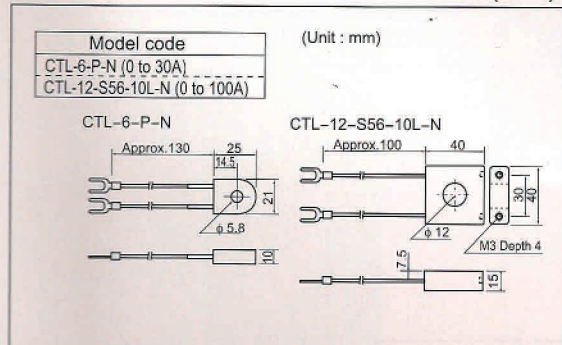
⑩ Input/Scale range: PR20-40 0.0 to 1800.0°C
 Code: F01
 ⑨ Control action: PID with AT (reverse)
 Code: F
 ⑧ Specify quick start code
 Code: 2
 ⑦ Communication/Digital input:
 COM1: RS-232C, COM2: Inter-controller
 DI: 6 points (DI1 to 6)
 Code: W * DI7 to 11 as standard

Initial setting code 2-A956-N2

① Digital input: WAIT release, PTN.No Select, PTN.No.Set Code: 2
 ② Digital output 1: Deviation high Code: A
 ③ Digital output 2: Pattern end output Code: 9
 ④ Digital output 3: Time signal 1 Code: 5
 ⑤ Digital output 4: Time signal 2 Code: 6
 ⑦ COM1 protocol: MODBUS
 Code: 2
 ⑥ CT type: None
 Code: N

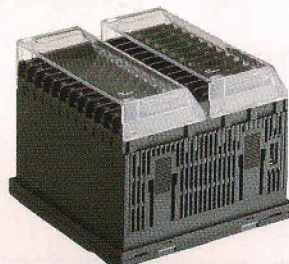
Accessories (Sold separately)

● Current transformer for heater break alarm (HBA)

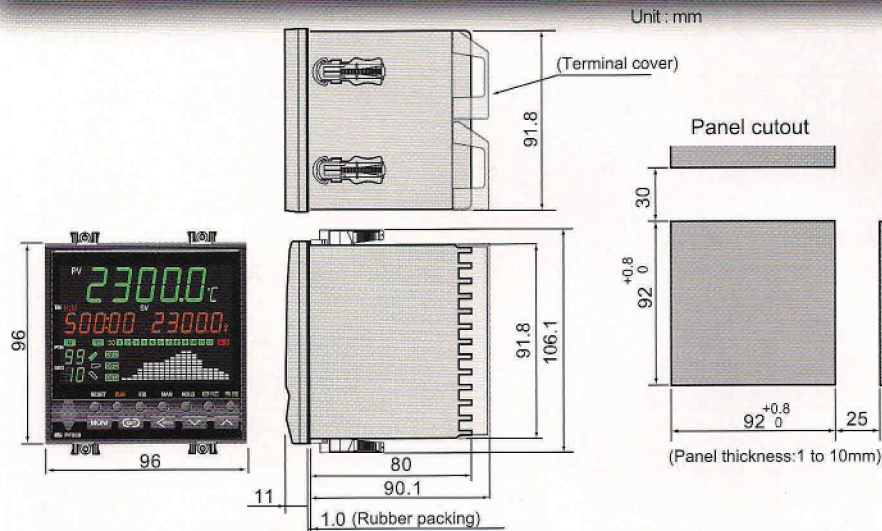


● Terminal Cover

(two pieces necessary)
Model code: KFB400-58

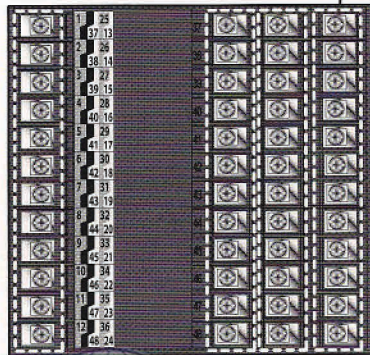


External Dimensions



Rear Terminals

- Please use M3 solderless terminal with width smaller than 5.9mm.
- Unused terminals are not supplied with screws.



No.	Functions	Standard
13	COM	
14	DI 7 RESET	Digital inputs (DI 7 to 11)
15	DI 8 RUN	
16	DI 9 STEP	
17	DI 10 HOLD	
18	DI 11	
19	COM CT1	
20	CT2	
21	CT1, CT2 inputs	
22	A	
23	B	
24	(1) (2) (3)	

No.	Functions
1	AC L
2	DC
3	COM
4	DO4
5	DO3
6	COM
7	DO2
8	DO1
9	Output 2 (OUT2)
10	Output 1 (OUT1)
11	Output 2 (OUT2)
12	Output 1 (OUT1)

No.	Functions
37	COM (-)
38	DO5
39	DO6
40	DO7
41	DO8
42	COM (-)
43	DO9
44	DO10
45	DO11
46	DO12
47	Output 3 (OUT3)
48	Output 3 (OUT3)

No.	Functions
25	SG COM1
26	SG COM2
27	SG COM1
28	SG COM2
29	SG COM1
30	COM
31	DI 1
32	DI 2
33	DI 3
34	DI 4
35	DI 5
36	DI 6

*1: To use communication 2 (inter-controller communication), please specify RS-232C or RS-485 for communication 1.



- 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: Avoid imitated products

Imitation of RKC products are appearing in the marketplace. RKC will not warrant such products nor bear the responsibility for any damage and/or accident caused by their use and urge caution when making your purchase.

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