Shinko

Programmable Controller

PCA1

Upgraded Model

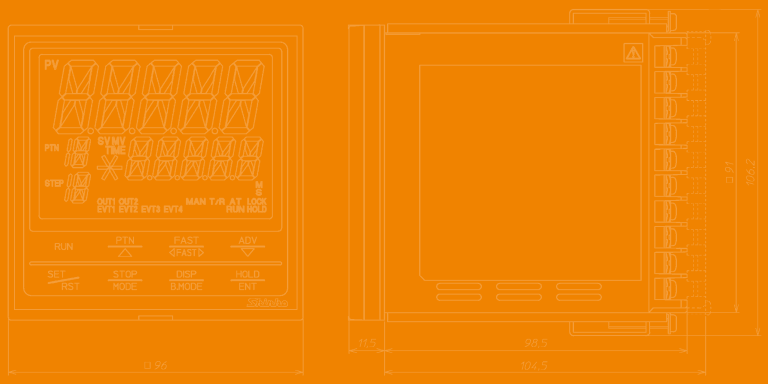
Enhanced Performance and Functions

Programmable Controller

ISO9001 ISO14001 (HQ only)

16-patterns 16-steps, A maximum of 256 programmable steps

Easy status checking using 3-color switching



Easy Setup with a USB Communication Cable (USB powered)

Drip-proof / Dust-proof IP66 (front panel only)

Model

(e.g.) **PCA1 R 0 0- 210**

- Control output :Relay contact
- Power supply :100 to 240 V AC
- Input: Multi-range
- Option 1: Serial communication RS-485
- Option 2: Transmission output (4 to 20 mA DC)
- Option 3: Option 3 not needed

PCA1	Control Output	Power Supply	Input (*1)	Option 1 (*2)	Option 2 (*2)	Option3 (*2)	Specification	
PCA1								
	R						Relay contact: 1a1b	
	S						Non-contact voltage (for SSR drive): 12 V DC±15%	
	A						Direct current: 4 to 20 mA DC	
		0					100 to 240 V AC (Standard)	
		1					24 V AC/DC	
			0 –				Multi-range (*1)	
				0			Option 1 not needed	
				1			Serial communication RS-232C	C
				2			Serial communication RS-485	C5
				3			Time signal output	TS
				4			Serial communication RS-232C+Time signal output	C+TS
				5			Serial communication RS-485+Time signal output	C5+TS
					0		Option 2 not needed	
					1		Transmission output (4 to 20 mA DC)	TA
					2		Transmission output (0 to 1 V DC)	TV
						0	Option 3 not needed	
						1	Heating/Cooling control output OUT2 Relay contact output (*3)	DR
						2	Heating/Cooling control output OUT2 Non-contact voltage output (*3)	DS
						3	Heating/Cooling control output OUT2 Direct current output (*3)	DA

(*1) Thermocouple, RTD, Direct current or DC voltage can be selected by keypad.
(*2) Only one option can be selected from Option 1, Option 2 and Option 3 respectively.
(*3) If Heating/Cooling control (DR, DS or DA option) is ordered, Event output EV2 is not available.

Accessories Sold Separately

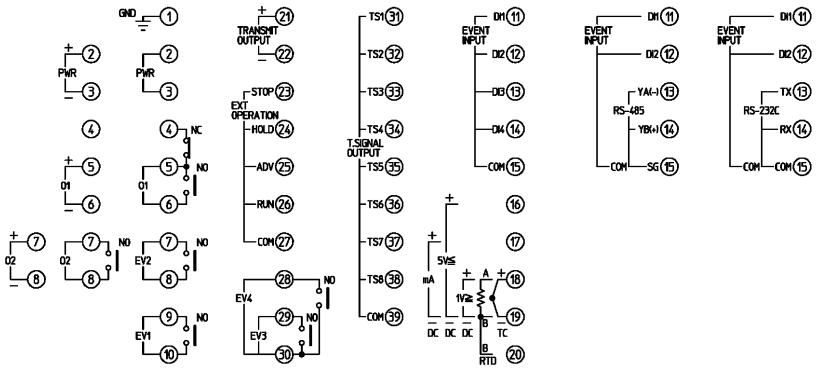
Model
Terminal cover (TC-FCD)
USB communication cable (CMB-001)

Specifications

Input	Thermocouple: K, J, R, S, B, E, T, N, PL-Ⅱ, C (W/Re5-26) External resistance: 100 Ω max. (However, B: 40 Ω max.) RTD : Pt100, JPt100, 3-wire type, Allowable input lead wire resistance: 10 Ω max. per wire (However, Pt100, -100.0 to 100.0 ℃: 5 Ω max. per wire) Direct current : 0 to 20 mA, 4 to 20 mA DC Input impedance: 50 Ω, Allowable input current: 100 mA max. Direct voltage : 0 to 10 mV DC, -10 to 10 mV DC, 0 to 50 mV DC, 0 to 100 mV DC, 0 to 1 V DC Input impedance: 1 MΩ min., Allowable input voltage: 5 V DC max. Allowable signal source resistance: 2 kΩ max. (0 to 1 V DC), 200 Ω max. (0 to 100 mV DC, 0 to 50 mV DC), 40 Ω max. (-10 to 10 mV DC), 20 Ω max. (0 to 10 mV DC) 0 to 5 V DC, 1 to 5 V DC, 0 to 10 V DC Input impedance: 100 kΩ min. Allowable input voltage: 15 V DC max. Allowable signal source resistance: 100 Ω max.

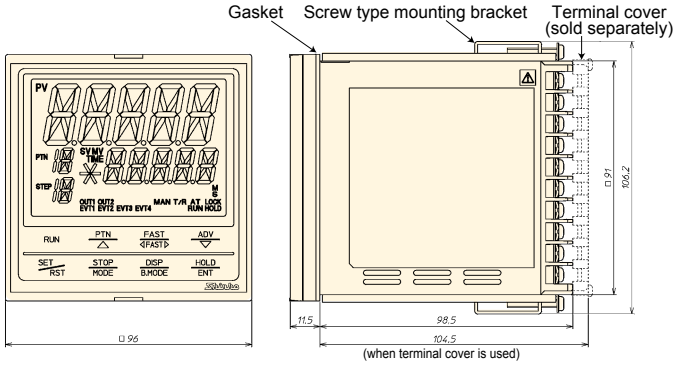
<table>
<tr><td>Basic accuracy</td><td>Thermocouple: Within ±0.2% of each input span ±1 digit
However, R, S input, 0 to 200℃ (32 to 392℉): Within ±6℃ (12℉)
B input, 0 to 300℃ (32 to 572℉): Accuracy is not guaranteed.
K, J, E, T, N input, Less than 0℃ (32℉): Within ±0.4% of input span ±1 digit
RTD : Within ±0.1% of each input span ±1 digit
Direct current : Within ±0.2% of each input span ±1 digit
DC voltage : Within ±0.2% of each input span ±1 digit</td></tr>
<tr><td>Input sampling period</td><td>125 ms</td></tr>
<tr><td>Control output</td><td>Relay contact 1a1b: Control capacity: 3 A 250 V AC (resistive load), 1 A 250 V AC (inductive load cosϕ=0.4)
Electrical life: 100,000 cycles
Non-contact voltage (for SSR drive): 12 V DC±15%
Max. 40 mA (short circuit protected)
Direct current: 4 to 20 mA DC (Resolution: 12000)
Load resistance: Max. 600 Ω</td></tr>
<tr><td>Event output EV1</td><td>Relay contact 1a
Control capacity: 3 A 250 V AC (resistive load), 1 A 250 V AC (inductive load cosϕ=0.4)
Electrical life : 100,000 cycles</td></tr>
<tr><td>Event output EV2</td><td>Relay contact 1a
Control capacity: 3 A 250 V AC (resistive load), 1 A 250 V AC (inductive load cosϕ=0.4)
Electrical life : 100,000 cycles</td></tr>
<tr><td>Event output EV3, EV4</td><td>Relay contact 1a
Control capacity: 3 A 250 V AC (resistive load), 1 A 250 V AC (inductive load cosϕ=0.4)
Electrical life : 100,000 cycles
Event output EV3 and EV4 share one common terminal.</td></tr>
<tr><td>Program performance</td><td>Number of patterns : 16 (Linkable)
Number of steps : 256 (16 steps/pattern)
Number of repetitions: 0 to 9999 times (Repetitions disabled when set to 0.)
Program time range : 0 to 99 hours 59 minutes/step, or 0 to 99 minutes 59 seconds/step
(When ––:––:–– is set: Fixed value control is performed using step SV.)
Wait value : Thermocouple, RTD input without decimal point: ± (0 to 100)℃(℉)
Thermocouple, RTD input with decimal point: ± (0.0 to 100.0)℃(℉)
DC voltage, current input: ± (0 to 1000) (The placement of the decimal point follows the selection.)
(The Wait function is disabled when set to 0 or 0.0.)</td></tr>
<tr><td>Serial communication (optional)</td><td>Communication line : EIA RS-232C (C option), EIA RS-485 (C5 option)
Communication method : Half-duplex communication
Synchronization method: Start-stop synchronization
Communication speed : 9600, 19200, 38400 bps (Factory default: 9600 bps)
Data bit : 7 or 8 (Factory default: 7 bits)
Parity : Even, Odd, No parity (Selectable by keypad) (Factory default: Even)
Stop bit : 1 or 2 (Selectable by keypad) (Factory default: 1)
Data format:
<table>
<tr><th>Communication protocol</th><th>Shinko protocol</th><th>Modbus ASCII</th><th>Modbus RTU</th></tr>
<tr><td>Start bit</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>Data bit</td><td>7</td><td>7 or 8</td><td>8</td></tr>
<tr><td>Parity</td><td>Even</td><td>Even (No parity, Odd) Selectable</td><td>No parity (Even, Odd) Selectable</td></tr>
<tr><td>Stop bit</td><td>1</td><td>1 or 2</td><td>1 or 2</td></tr>
</table>
SV digital transmission: If ‘SV digital transmission’ is selected in [Communication protocol] in Serial communication, SV can be digitally transmitted to Shinko indicating controllers (with Serial communication C5 option).
Update cycle: 250 ms</td></tr>
<tr><td>Time signal output (optional)</td><td>Number of circuits: 8
Open collector : Capacity: 24 V DC, Max. 50 mA</td></tr>
<tr><td>Transmission output (optional)</td><td>Resolution : 12000
Output : TA option : 4 to 20 mA DC (Load resistance: Max. 500 Ω)
TV option: 0 to 1 V DC (Load resistance: Min. 100 kΩ)
Output accuracy: Within ±0.3% of Transmission output span</td></tr>
<tr><td>Heating/Cooling control output (optional)</td><td>If the D□ option is ordered, Event output EV2 will be disabled.
Relay contact 1a (DR option): Control capacity: 3 A 250 V AC (resistive load), 1 A 250 V AC (inductive load cosϕ=0.4)
Electrical life: 100,000 cycles
Non-contact voltage(for SSR drive) (DS option): 12 V DC±15%
Max. 40 mA (short circuit protected)
Direct current (DA option): 4 to 20 mA DC (Resolution: 12000)
Load resistance: Max. 600 Ω</td></tr>
</table>

Terminal Arrangement

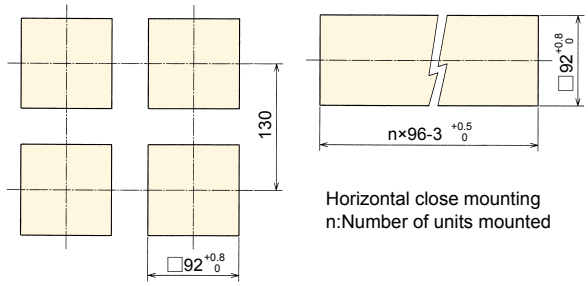


GND	Grounding
PWR	Power supply 100 to 240 V AC or 24 V AC/DC For a 24 V AC/DC power source, ensure polarity is correct when using direct current (DC).
O1	Control output OUT1
O2	Control output OUT2 (DR, DS or DA option)
EV1	Event output EV1
EV2	Event output EV2
EV3	Event output EV3
EV4	Event output EV4
EVENT INPUT	Event input
RS-485/RS-232C	Serial communication RS-485 (C5 option) or RS-232C (C option)
TC	Thermocouple input
RTD	RTD input
DC 1V≧	DC voltage input: 0 to 10 mV DC, -10 to 10 mV DC, 0 to 50 mV DC, 0 to 100 mV DC, 0 to 1 V DC
DC 5V≦	DC voltage input: 0 to 5 V DC, 1 to 5 V DC, 0 to 10 V DC
DC mA	Direct current input: 0 to 20 mA DC, 4 to 20 mA DC
TRANSMIT OUTPUT	Transmission output (TA or TV option)
EXT OPERATION	External operation input: STOP, HOLD, ADV, RUN
T.SIGNAL OUTPUT	Time signal output (TS option)

External Dimensions (Scale: mm)



Panel Cutout (Scale: mm)



Horizontal close mounting
n:Number of units mounted

Caution

If horizontal close mounting is used for the controller, Drip-proof/Dust-proof IP66 may be compromised, and all warranties will be invalidated.

SAFETY PRECAUTIONS

- To ensure safe and correct use, thoroughly read and understand the manual before using this instrument.
- This instrument is intended to be used for industrial machinery, machine tools and measuring equipment. Verify correct usage after consulting purpose of use with our agency or main office. (Never use this instrument for medical purposes with which human lives are involved.)
- External protection devices such as protection equipment against excessive temperature rise, etc. must be installed, as malfunction of this product could result in serious damage to the system or injury to personnel. Also proper periodic maintenance is required.
- This instrument must be used under the conditions and environment described in the manual. Shinko Technos Co., Ltd. does not accept liability for any injury, loss of life or damage occurring due to the instrument being used under conditions not otherwise stated in this manual.

Caution with respect to Export Trade Control Ordinance

To avoid this instrument from being used as a component in, or as being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment, etc.), please investigate the end users and the final use of this instrument.
In the case of resale, ensure that this instrument is not illegally exported.

- This catalog is as of May 2018 and its contents are subject to change without notice.
- Photos used in this catalog do not show unit in operating status.
- If you have any inquiries, please consult us or our agency.

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