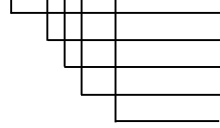# Digital Indicating Controller

Model: **BCS2, BCR2, BCD2**

■ Model

(e.g.) <u>BCS2 R 0 0 — 1 3</u>

Size: 48 x 48 x 68 mm (W x H x D) (Depth of control panel interior 60)
Control output: Relay contact
Power supply: 100 to 240 V AC
Input: Multi-range
Option 1: Event output EV2
Option 2: Event input (2 points) + Heater burnout alarm (20A)

Size	Control Output	Power Supply	Input (*1)	Option 1 (*2)	Option 2 (*2)	Specification	
BCS2						48 x 48 x 68 mm (W x H x D) (Depth of control panel interior 60)	
BCR2						48 x 96 x 68 mm (W x H x D) (Depth of control panel interior 60)	
BCD2						96 x 96 x 68 mm (W x H x D) (Depth of control panel interior 60)	
	R					Relay contact: 1a	
	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		No option needed	
				1		Event output EV2 (*3)	EV2
				2		Heating/Cooling control output OUT2, Non-contact voltage	DS
				3		Heating/Cooling control output OUT2, Direct current	DA
				4		Insulated power output	P24
				5		Event output EV2 + Heating/Cooling control output OUT2 Relay contact (*4)	EV2+ DR
				6		Event output EV2 + Heating/Cooling control output OUT2 Non-contact voltage (*4)	EV2+ DS
				7		Event output EV2 + Heating/Cooling control output OUT2 Direct current (*4)	EV2+ DA
					0	No option needed	
					1	Event input (2 points) + Serial communication + Heater burnout alarm (20A) (*5) (*6)	C5W (20A)
					2	Event input (2 points) + Serial communication + Heater burnout alarm (100A) (*5) (*6)	C5W (100A)
					3	Event input (2 points) + Heater burnout alarm (20A) (*6)	EIW (20A)
					4	Event input (2 points) + Heater burnout alarm (100A) (*6)	EIW (100A)
					5	Event input (2 points) + External setting input + Transmission output (*7)	EIT
					6	Serial communication	C5
					7	Heater burnout alarm (20 A) (*6)	W (20A)
					8	Heater burnout alarm (100 A) (*6)	W (100A)
					9	Event input (2 points)	EI

(*1) Thermocouple, RTD, Direct current and DC voltage can be selected by keypad.

(*2) Only one option can be selected from Option 1 and Option 2 respectively.

(*3) Event output EV1 is standard.

The following outputs can be selected in [Event output EV1/EV2 allocation] by keypad:

Alarm output (12 alarm types and No alarm action), Heater burnout alarm output, Loop break alarm output, Time signal output, Output during AT, Pattern end output, Output by communication command, Heating/Cooling control output OUT2 (for EV2 option only)

Event output EV1/EV2, Heater burnout alarm output and 'Output by communication command' are available only when C5W, EIW, C5 or W option is ordered.

(*4) Available only for BCR2, BCD2.

If EV2+D☐ and EIT options are ordered together, transmission output terminals will be used for EV2 output terminals.

Therefore, Transmission output will be disabled.

(*5) For BCS2, 2 points of Event input are not available.

(*6) For Direct current output type, C5W, EIW or W option cannot be ordered. The CT is sold separately.

(*7) For BCS2, 1 point of Event input is available.

■ Accessories Sold Separately

Model
Terminal cover (for BCS2) (TC-ACS)
Terminal cover (for BCR2) (TC-BCR2)
Terminal cover (for BCD2) (TC-BCD2)
CT for 20A (CTL-6-S-H) (*)
CT for 100A (CTL-12-S36-10L1U) (*)
Tool cable CMD-001
USB cable (CUS-100)

(*) Used for Heater burnout alarm (C5W, EIW, W options)

■ Rating

Rated Scale

Input (TC)	Scale Range		Resolution	Input (RTD)	Scale Range		Resolution
K	-200 to 1370 ℃	-328 to 2498 ℉	1 ℃(℉)	Pt100	-200.0 to 850.0 ℃	-328.0 to 1562.0 ℉	0.1 ℃(℉)
	-200.0 to 400.0 ℃	-328.0 to 752.0 ℉	0.1 ℃(℉)		-200 to 850 ℃	-328 to 1562 ℉	1 ℃(℉)
J	-200 to 1000 ℃	-328 to 1832 ℉	1 ℃(℉)	JPt100	-200.0 to 500.0 ℃	-328.0 to 932.0 ℉	0.1 ℃(℉)
R	0 to 1760 ℃	32 to 3200 ℉	1 ℃(℉)		-200 to 500 ℃	-328 to 932 ℉	1 ℃(℉)
S	0 to 1760 ℃	32 to 3200 ℉	1 ℃(℉)	**Input (DC)**	**Scale Range**		**Resolution**
B	0 to 1820 ℃	32 to 3308 ℉	1 ℃(℉)	4 to 20 mA			
E	-200 to 800 ℃	-328 to 1472 ℉	1 ℃(℉)	0 to 20 mA			
T	-200.0 to 400.0 ℃	-328.0 to 752.0 ℉	0.1 ℃(℉)	0 to 1 V	-2000 to 10000 (*1)		1
N	-200 to 1300 ℃	-328 to 2372 ℉	1 ℃(℉)	0 to 5 V			
PL-Ⅱ	0 to 1390 ℃	32 to 2534 ℉	1 ℃(℉)	1 to 5 V			
C(W/Re5-26)	0 to 2315 ℃	32 to 4199 ℉	1 ℃(℉)	0 to 10 V			

(*1) Decimal point place change and scaling are possible.

Input

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

■ Indicating Performance

| Base accuracy		At ambient temperature 23℃ (for a single unit mounting)
	Thermocouple	Within ±0.2% of each input span±1 digit,
		However, R, S inputs, 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 inputs, 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
Effect of ambient temperature		Within 50 ppm/℃ of each input span
Input sampling period		125 ms
Time accuracy		Within ±1.0% of the setting time

■ Control Performance

Control action		• PID control (with auto-tuning function) • PI control 　When derivative time is set to 0 • PD control (with Auto-reset, Manual reset function) 　When integral time is set to 0 • P control (with Auto-reset, Manual reset function) 　When derivative time and integral time are set to 0. • ON/OFF control 　When proportional band is set to 0 (or 0.0)
	OUT1 proportional band	Thermocouple, RTD inputs without decimal point: 0 to Input span [Factory default: 10℃ (20℉)] Thermocouple, RTD inputs with decimal point: 0.0 to Input span Direct current, DC voltage inputs: 0.0 to 1000.0%
	Integral time	0 to 3600 sec (Factory default: 200 sec)
	Derivative time	0 to 1800 sec (Factory default: 50 sec)
	OUT1 proportional cycle	0.5, or 1 to 120 sec (Factory default: Relay contact: 30 sec　Non-contact voltage: 3 sec Direct current: Not available)
	ARW	0 to 100% (Factory default: 50%)
	Manual reset	±Proportional band (Factory default: 0.0) For direct current, DC voltage input, it is possible to set up to '2-digits after decimal point'. If the proportional band exceeds 100.0%, the setting range will be ±100.00%
	OUT1 ON/OFF hysteresis	Thermocouple, RTD inputs: 0.1 to 1000.0℃ (℉) (Factory default: 1.0℃) Direct current, DC voltage inputs: 1 to 10000 (The placement of the decimal point follows the selection)
	OUT1 high limit, OUT1 low limit	0 to 100% (Direct current output: -5 to 105%) (Factory default: OUT1 low limit: 0%, OUT1 high limit: 100%)
Control output		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 　　　　　　　Minimum applicable load: 10 mA 5 V DC 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: Maximum 550 Ω

■ General Structure

Case material, Color		Flame-resistant resin, Black
Panel		Membrane sheet
Dust-proof/Drip-proof		Front panel: IP66,　Rear case: IP20,　Terminal section: IP00
Standards	EN	EN61010-1 (Pollution degree 2, Overvoltage category Ⅱ)
	EC (EMC directive)	EMI: EN61326 Electric-field strength of radiated disturbance: EN55001 Group 1 Class A Terminal noise voltage: EN55011 Group 1 Class A EMS: EN61326
	UL	UL60730 File No. E159038

Indication Structure

BCS2   BCR2   BCD2
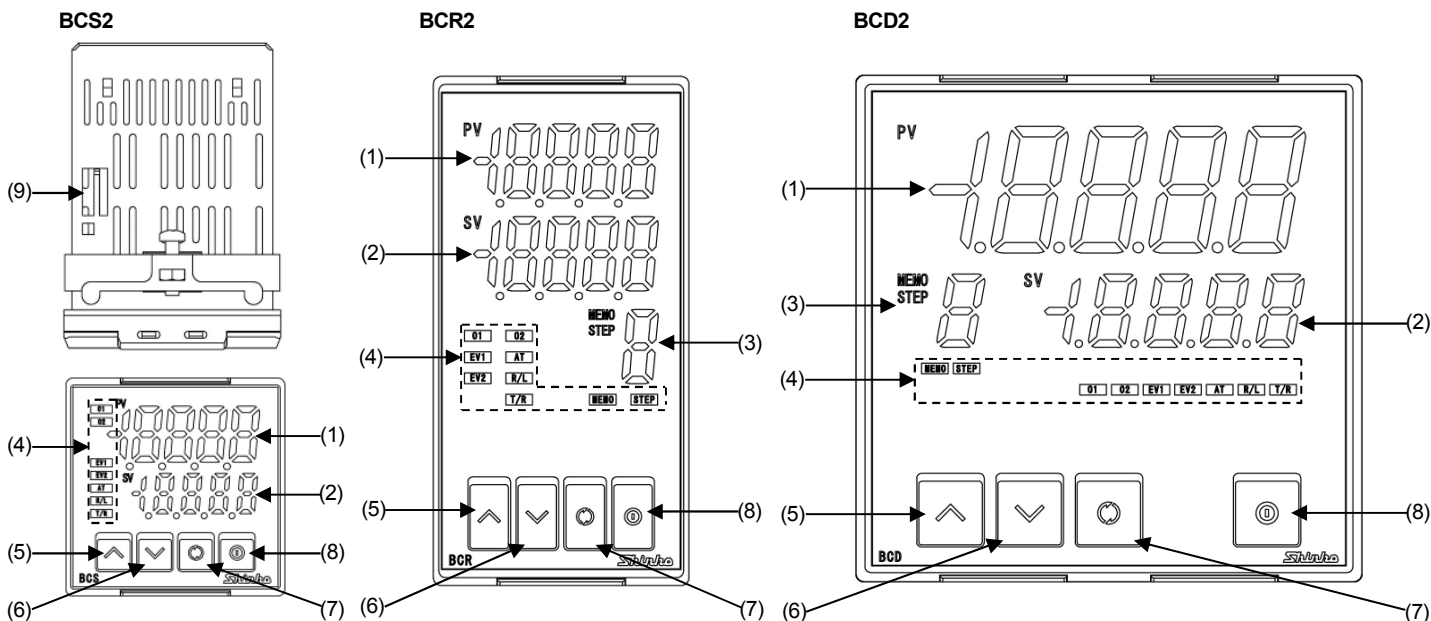
Display

(1)	PV Display	Indicates the PV (process variable) or setting characters in setting mode.
(2)	SV Display	Indicates the SV (desired value) or set data in setting mode. In Monitor mode, indicates MV (manipulated variable), remaining step time (Program control), step number (Program control) (*), or Set value memory number (Fixed value control) (*). (*): For BCS2 only
(3)	MEMO/STEP Display	Indicates Set value memory number or Step number (Program control). (BCR2, BCD2)

Action Indicator

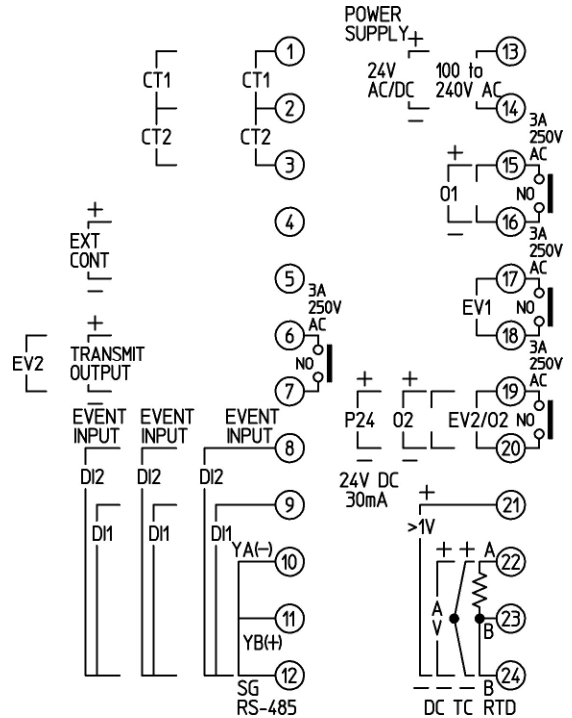|		
(4)	O1	Lights up when control output OUT1 is ON. For direct current output type, flashes corresponding to the MV in 125 ms cycles.
	O2	Lights up when control output OUT2 (EV2, DS, DA, EV2+D☐ options) is ON. For direct current output type, flashes corresponding to the MV (manipulated variable) in 125 ms cycles.
	EV1	Lights up when Event output 1 is ON.
	EV2	Lights up when Event output 2 (EV2, EV2+D☐ options) is ON. Turns off when 019 is selected in [Event output EV2 allocation].
	AT	Flashes while AT, 'AT on startup' or Auto-reset is performing.
	R/L	Lights up while in Remote action (EIT option).
	T/R	Lights up during Serial communication (C5W option) TX (transmitting) output.
	MEMO	Lights up when Set value memory number is indicated. (BCR2, BCD2)
	STEP	Lights up when Step number (Program control) is indicated. (BCR2, BCD2)

Keys, Connector

(5)	UP key	Increases the numeric value. If this key is pressed for 1 second during program operation, the unit proceeds to the next step (Advance function).
(6)	DOWN key	Decreases the numeric value.
(7)	MODE key	Selects the setting mode, and registers the set data. In RUN mode, if this key is pressed for 3 seconds, the unit moves to Monitor mode.
(8)	OUT/OFF key	OUT/OFF function: Turns the control output ON or OFF. Auto/Manual control: Switches the Auto/Manual control. Program control: Starts or stops the Program control.
(9)	Console connector	Tool cable connector is at the top of the instrument (BCS2, BCR2, BCD2). By connecting the tool cable (CMD-001, sold separately), the following operations can be conducted from an external computer using the Console software SWC-BCx01M. • Reading and setting of SV, PID and various set values • Reading of PV and action status • Function change

■ Terminal Arrangement

BCS2
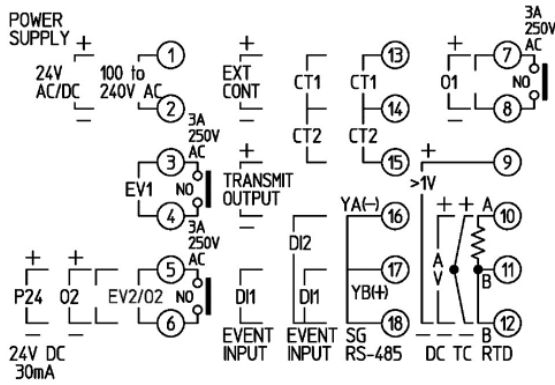
BCR2, BCD2

POWER SUPPLY	100 to 240 V AC or 24 V AC/DC
EV1	Event output 1
EV2	Event output 2 (EV2, EV2+D☐ options)
O2	Control output OUT2 (EV2, DS, DA, EV2+D☐ options)
P24	24 V insulation voltage (P24 option)
O1	Control output OUT1
TC	Thermocouple input
RTD	RTD input
DC	Direct current, DC voltage inputs
CT1	CT input 1 (C5W, EIW, W option)
CT2	CT input 2 (C5W, EIW, W option)
RS-485	Serial communication RS-485 (C5W, C5 option)
EVENT INPUT	Event input DI1 (BCS2: EIW, EIT, EI options, BCR2/BCD2: C5W, EIW, EIT, EI options)
	Event input DI2 (BCS2: EIW, EI options, BCR2/BCD2: C5W, EIW, EIT, EI options)
EXT CONT	External setting input (EIT option)
TRANSMIT OUTPUT	Transmission output (EIT option) or Event output EV2 (EV2+D☐ option)
	For BCR2, BCD2, if EV2+D☐ and EIT options are ordered together, transmission output terminals will be used for EV2 output terminals. Therefore, Transmission output will be disabled.

■ Standard Functions

EV1 Output

Output	Relay contact: 1a Control capacity: 3 A 250 V AC (resistive load)
	1 A 250 V AC (inductive load $\cos\phi$=0.4)
	Electrical life: 100,000 cycles
	Minimum applicable load:10 mA 5 V DC

Alarm Action

Alarm type	High limit alarm, Low limit alarm, High/Low limits alarm, High/Low limits independent, High/Low limit range, High/Low limit range independent, Process high alarm, Process low alarm, High limit with standby alarm, Low limit with standby alarm, High/Low limits with standby, High/Low limits with standby independent.
	Energized/De-energized action are applied to the above alarms, totaling 24 alarm types. No alarm action can also be selected。
Action	ON/OFF action
Hysteresis	0.1 to 1000.0℃ (℉) (Factory default: 1.0℃)
	Direct current, DC voltage inputs: 1 to 10000 (The placement of the decimal point follows the selection)
Output	EV1 or EV2 output for which Alarm output (000 to 012) is selected in [Event output EV1/EV2 allocation].
Alarm value 0 Enabled/Disabled	If 'Enabled' is selected in [Alarm value 0 Enabled/Disabled], the following alarm type activates even if alarm value is set to 0 (zero): High limit alarm, Low limit alarm, High/Low limits alarm, High/Low limits independent alarm, High/Low limit range alarm, High/Low limit range independent alarm, High limit with standby alarm, Low limit with standby alarm, High/Low limits with standby alarm, High/Low limits with standby independent alarm.

Loop Break Alarm

Setting range	Loop break alarm time: 0 to 200 minutes
	Loop break alarm span: TC, RTD inputs: 0 to 150℃（℉）, 0.0 to 150.0℃（℉）
	Direct current, DC voltage inputs: 0 to 1500 (The placement of the decimal point follows the selection)
Output	EV1 or EV2 output for which Loop break alarm (014) is selected in [Event output EV1/EV2 allocation].

Simplified Converter Function

For Direct current output type, the BCx2 can be used as a simplified converter.
Converts each input value to '4 to 20 mA DC', and outputs it).

■ Optional Functions

Event Input (Option code: C5W, EIW, EIT, EI)

If 'Set value memory function' is selected in [Event input DI1/DI2 allocation], SV1 to SV4 can be switched.	
Event input	2 points [For the BCS2, if the C5W option is ordered, Event input (2 points) is not available.
	If the EIT option is ordered, Event input (1-point) is available.]
Circuit current when closed	Approx. 16 mA

EV2 Output (Option code: EV2)

Same as standard EV1 output

Heater Burnout Alarm (Option code: C5W, EIW, W)

If C5W or EIW option is ordered, Heater burnout alarm is disabled for direct current output type.	
For direct current output type, the W option cannot be ordered	
Rated current	20A, 100A (Must be specified)
	Single-phase: Detects burnout with CT1 input
	3-phase: Detects burnout with CT1 and CT2 inputs
Setting range	20A: 0.0 to 20.0 A (Off when set to 0.0)
	100A: 0.0 to 100.0 A (Off when set to 0.0)
Setting accuracy	±5% of rated current
Action point	Set value
Action	ON/OFF action
Output	EV1 or EV2 output for which Heater burnout alarm (013) is selected in [Event output EV1/EV2 allocation].

Heating/Cooling Control Output (Option code: DS, DA, EV2)

OUT2 proportional band	Thermocouple, RTD input without decimal point: 0 to Input span [Factory default: 10℃ （20℉)]
	Thermocouple, RTD input with decimal point: 0.0 to Input span
	DC voltage, current inputs: 0.0 to 1000.0%
Integral time (I)	Same as that of OUT1
Derivative time (D)	Same as that of OUT1
OUT2 proportional cycle	0.5 sec, or 1 to 120 sec [Factory default: DS option: 3 sec, EV2 option (When 019 is selected in [Event output EV2 allocation]): 30 sec, Direct current (DA option): Not available]
Overlap/Dead band setting range	Thermocouple, RTD inputs: -200.0 to 200.0℃（℉）,
	Direct current, DC voltage inputs: -2000 to 2000 (The placement of the decimal point follows the selection)
OUT2 ON/OFF hysteresis	Thermocouple, RTD inputs: 0.1 to 1000.0℃（℉) (Factory default: 1.0℃)
	Direct current, DC voltage inputs: 1 to 10000 (The placement of the decimal point follows the selection)
OUT2 high limit, OUT2 low limit	0 to 100% (Direct current output: -5 to 105%) (Not available for ON/OFF control)
	(Factory default: OUT2 low limit: 0%, OUT2 high limit: 100%)
OUT2 cooling method	(1) Air cooling (linear characteristics) (Factory default: Air cooling)
	(2) Oil cooling (1.5th power of the linear characteristics)
	(3) Water cooling (2nd power of the linear characteristics)
Output	Relay contact 1a: EV2 option: When 019 is selected in [Event output EV2 allocation]
	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. 550 Ω

Serial Communication (Option code: C5W, C5)

Communication line	EIA RS-485
Communication method	Half-duplex communication
Synchronization method	Start-stop synchronization
Communication speed	9600, 19200, 38400 bps Selectable by keypad (Factory default: 9600 bps)
Data bit/Parity	Data bit: 7, 8 Parity: Even, Odd, No parity (Selectable by keypad) (Factory default: 7 bits/Even)
Stop bit	1, 2 (Selectable by keypad) (Factory default: 1)
Response delay time	0 to 1000 ms (Factory default: 10 ms) Response from the controller can be delayed after receiving command from the host computer.
Data format	(see table below)

Communication protocol	Shinko protocol	Modbus ASCII	Modbus RTU
Start bit	1	1	1
Data bit	7	7 or 8	8
Parity	Yes (Even)	Yes (Even, Odd) No parity	Yes (Even, Odd) No parity
Stop bit	1	1 or 2	1 or 2

External Setting Input (Option code: EIT)

Setting signal	4 to 20 mA DC
Allowable input	50 mA DC or less
Input impedance	50 Ω or less
Input sampling period	125 ms

Transmission Output (Option code: EIT)

Converting the value (PV, SV, MV, DV) to analog signal every 125 ms, outputs the value in current. (Factory default: PV transmission)	
Resolution	12000
Output	4 to 20 mA DC (Load resistance, Max. 550 Ω)
Output accuracy	Within $\pm 0.3\%$ of transmission output span

Insulated Power Output (Option code: P24)
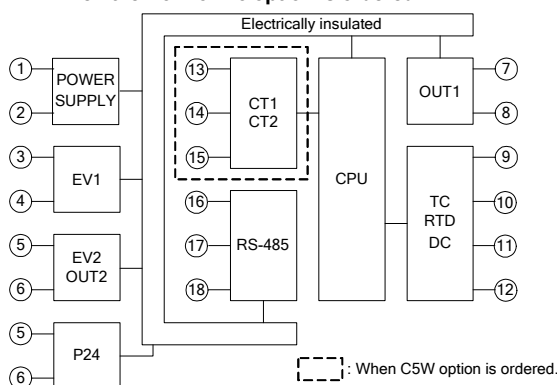
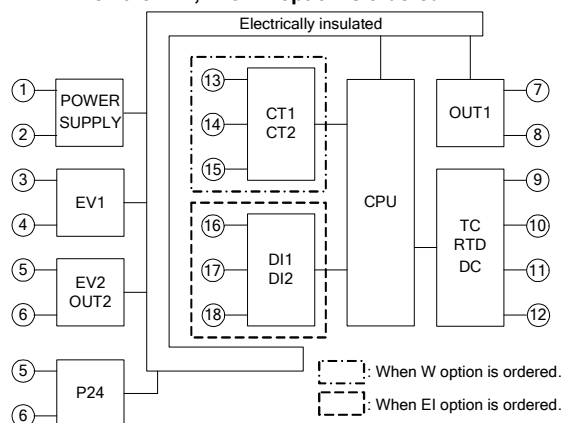|	
Output voltage	24 ± 3 V DC (when load current is 30 mA DC)
Ripple voltage	Within 200 mV DC (when load current is 30 mA DC)
Max. load current	30 mA DC

■ Insulation, Dielectric Strength

Circuit Insulation Configuration
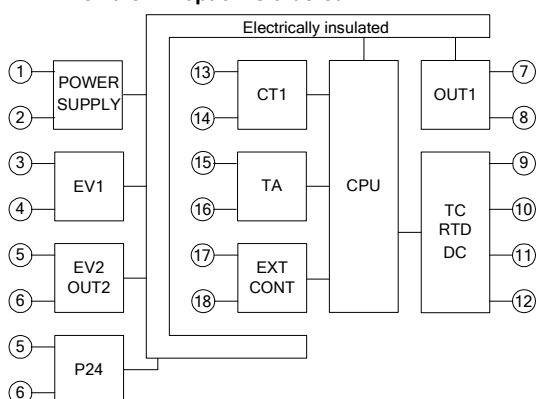
BCS2

When the C5W or C5 option is ordered

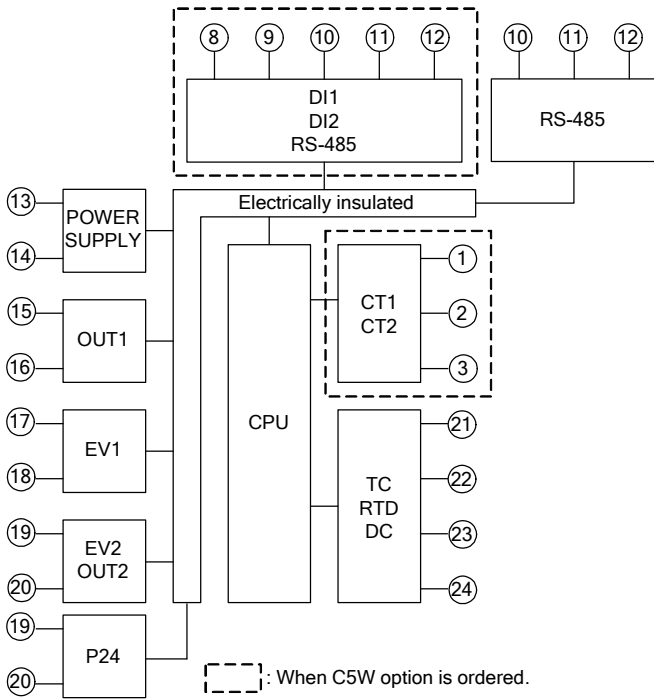**When the EIW, EI or W option is ordered**

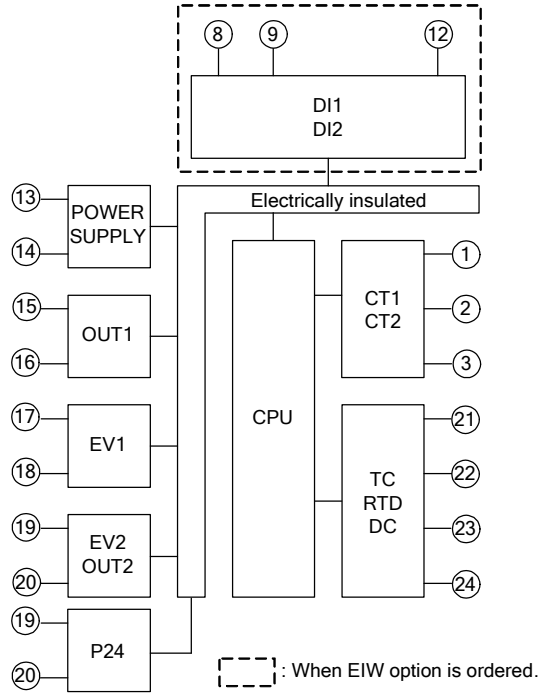**When the EIT option is ordered**

If OUT1 is a non-contact voltage output or direct current output, and if OUT2 is a non-contact voltage output or direct current output, OUT1 is not electrically insulated from OUT2.
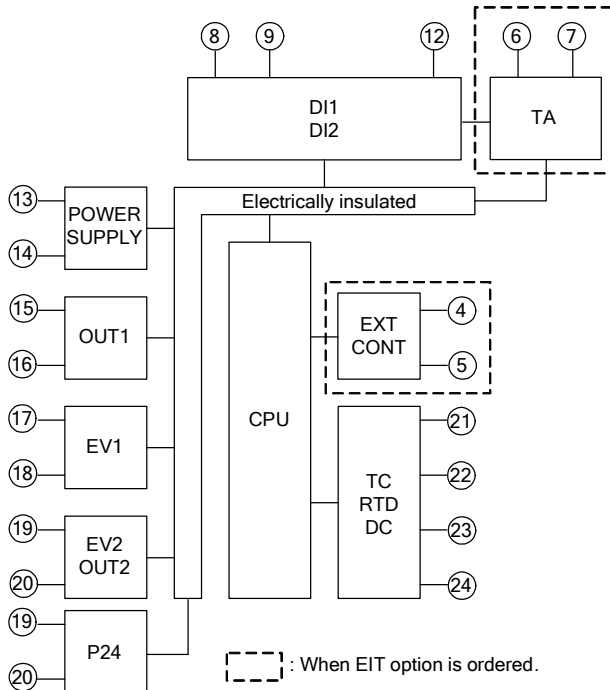
BCR2, BCD2

When the C5W or C5 option is ordered

⑧ ⑨ ⑩ ⑪ ⑫   ⑩ ⑪ ⑫

DI1
DI2
RS-485

RS-485

⑬ ⑭ POWER SUPPLY

Electrically insulated

CPU

CT1
CT2 → ① ② ③

⑮ ⑯ OUT1

⑰ ⑱ EV1

TC
RTD
DC → ㉑ ㉒ ㉓ ㉔

⑲ ⑳ EV2 OUT2

⑲ ⑳ P24

┌ ─ ┐ : When C5W option is ordered.

When the EIW or W option is ordered

⑧ ⑨ ⑫

DI1
DI2

⑬ ⑭ POWER SUPPLY

Electrically insulated

CPU

CT1
CT2 → ① ② ③

⑮ ⑯ OUT1

⑰ ⑱ EV1

TC
RTD
DC → ㉑ ㉒ ㉓ ㉔

⑲ ⑳ EV2 OUT2

⑲ ⑳ P24

┌ ─ ┐ : When EIW option is ordered.

When the EIT or EI option is ordered

⑧ ⑨ ⑫   ⑥ ⑦

DI1
DI2

TA

⑬ ⑭ POWER SUPPLY

Electrically insulated

CPU

EXT CONT → ④ ⑤

⑮ ⑯ OUT1

⑰ ⑱ EV1

TC
RTD
DC → ㉑ ㉒ ㉓ ㉔

⑲ ⑳ EV2 OUT2

⑲ ⑳ P24

┌ ─ ┐ : When EIT option is ordered.

If OUT1 is a non-contact voltage output or direct current output, and if OUT2 is a non-contact voltage output or direct current output, OUT1 is not electrically insulated from OUT2.

Insulation resistance	10 MΩ or more, at 500 V DC
Dielectric strength	Between input terminal and power terminal: 1.5 kV AC for 1 minute
	Between output terminal and power terminal: 1.5 kV AC for 1 minute
	Between output terminal (P24) and power terminal: 500 V AC for 1 minute

■ Attached Functions

Sensor correction coefficient, Sensor correction, Set value lock, Auto/Manual control, Auto/Manual after power ON, SV ramp, SV Rise rate/Fall rate, Step time unit, Program start temperature, Program control start type, Power restore action, Pattern end output, Power failure countermeasure, Self-diagnosis, Automatic cold junction temperature compensation, Indication range/Control range, Input error (Overscale, Underscale), Burnout, Warm-up indication, Console communication

Simplified Program Control

Number of patterns	1
Number of steps	9
Number of repetitions	0 to 10000
Program time range	00:00 to 99:59 Unit: Hours:Minutes or Minutes:Seconds (Factory default: Hours:Minutes)
Setting range	Scaling low limit value to Scaling high limit value (Factory default: 0℃)
Time accuracy	Within ±1.0% of the setting time
Wait value	0 to 20% of input span (For direct current, DC voltage inputs: 0 to 20% of scaling span)

■ Error Code

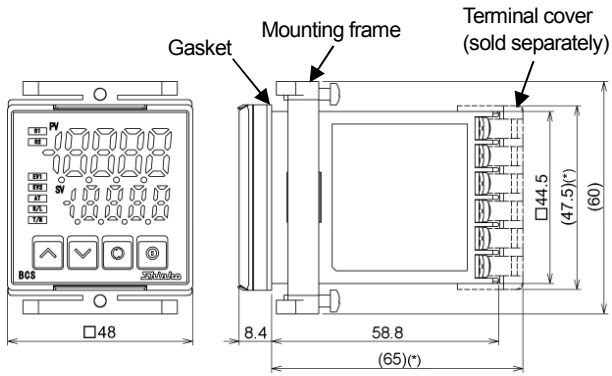| Error Code	Error Contents	Occurance Status
E_01 (*1)	Non-volatile IC memory (EEPROM) is defective.	When power is turned ON
E_02 (*1)	Data writing error when power failure occurs	When power is turned ON
E_05 (*2)	When input value exceeds input range high limit value (Scaling high limit value for DC input)	During usual operation
E_06 (*2)	When input value drops below input range low limit value (Scaling low limit value for DC input)	During usual operation
E_07 (*2)	Input burnout, or input value is outside the control range or indication range.	During usual operation
E_10	Hardware malfunction, or in error status. Errors cannot be solved.	During usual operation
E_20 (*1)	Indicated after 4 hours have passed since AT or 'AT on startup' is performed. For 'AT on startup', delay time and slope cannot be measured correctly.	After AT or 'AT on startup' is performed

(*1) Errors can be cancelled with the MODE key.

(*2) Error codes are displayed when 'Enabled' is selected in [Error indication Enabled/Disabled].
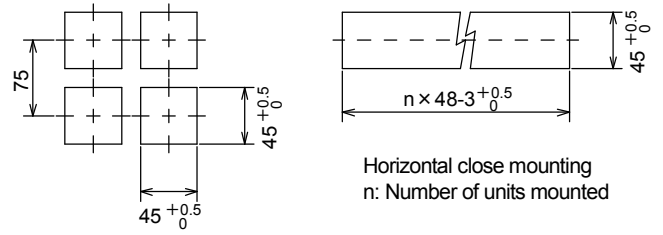
■ Other

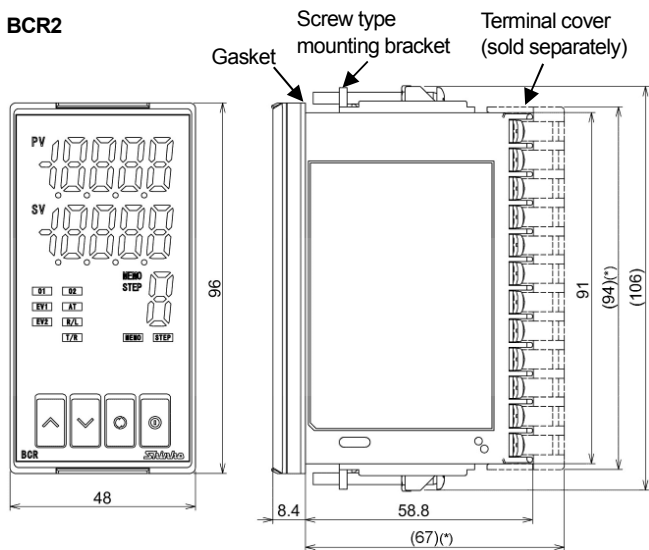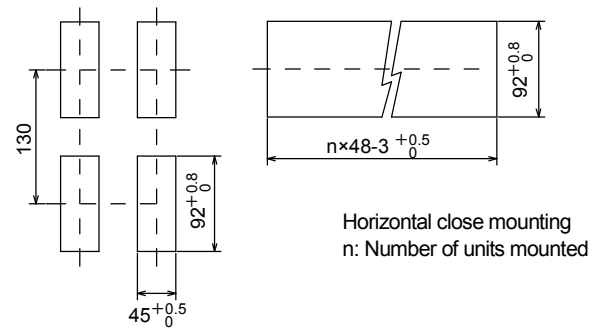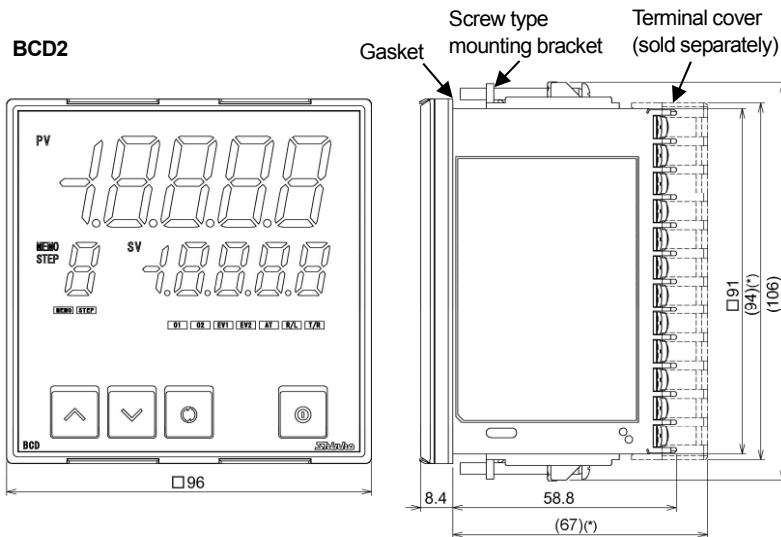|		
Power supply voltage (Must be specified when ordering)	100 to 240 V AC, 50/60 Hz, Allowable fluctuation range 85 to 264 V AC 24 V AC/DC, 50/60 Hz, Allowable fluctuation range 20 to 28 V AC/DC	
Power consumption	100 to 240 V AC	Approx. 8 VA max. (When the maximum number of options are added: Approx. 11 VA max.)
	24 V AC	Approx. 5 VA max. (When the maximum number of options are added: Approx. 8 VA max.)
	24 V DC	Approx. 5 W max. (When the maximum number of options are added: Approx. 8 W max.)
Rush current	100 to 240 V AC	Max. 14 to 34 A
	24 V AC	Max. 34 A
	24 V DC	Max. 34 A
Ambient temperature	-10 to 55℃ (Non-condensing, No icing)	
Ambient humidity	35 to 85 %RH (Non-condensing)	
Weight	BCS2: Approx. 110 g BCR2: Approx. 160 g BCD2: Approx. 220 g	
Accessories included	Mounting frame 1 piece (BCS2), Screw type mounting bracket 1 set (BCR2, BCD2), Instruction manual (excerpt) 1 copy	
Accessories sold separately	Terminal cover, CT (CTL-6-S-H) for Heater burnout alarm 20 A, CT (CTL-12-S36-10L1U) for Heater burnout alarm 100 A, Tool cable CMD-001	
Environmental specification	RoHS directive compliant	
Instruction manual	Please download the full Instruction Manual and Communication Instruction Manual from Shinko website: http://www.shinko-technos.co.jp/e/	

■ Dimensions (Scale: mm)

BCS2

Gasket · Mounting frame · Terminal cover (sold separately)

8.4 · 58.8 · (65)(*)

44.5 · (47.5)(*) · (60)

□48

Panel cutout (Scale: mm)

75 · 45 $^{+0.5}_{0}$ · 45 $^{+0.5}_{0}$

45 $^{+0.5}_{0}$ · n × 48-3 $^{+0.5}_{0}$

Horizontal close mounting
n: Number of units mounted

BCR2

Gasket · Screw type mounting bracket · Terminal cover (sold separately)

PV
SV
MEMO STEP
O1 · O2
EV1 · AT
EV2 · R/L
T/R
MEMO · STEP

96 · 48

8.4 · 58.8 · (67)(*)

91 · (94)(*) · (106)

Panel Cutout (Scale: mm)

130 · 92 $^{+0.8}_{0}$ · 92 $^{+0.8}_{0}$

45 $^{+0.5}_{0}$ · n×48-3 $^{+0.5}_{0}$

Horizontal close mounting
n: Number of units mounted

BCD2

Gasket · Screw type mounting bracket · Terminal cover (sold separately)

PV
MEMO STEP · SV
MEMO STEP
O1 · O2 · EV1 · EV2 · AT · R/L · T/R

□96

8.4 · 58.8 · (67)(*)

91 · (94)(*) · (106)

Panel cutout (Scale: mm)

130 · 92 $^{+0.8}_{0}$

□92 $^{+0.8}_{0}$

n×96-3 $^{+0.5}_{0}$

Horizontal close mounting
n: Number of units mounted

(*) When the terminal cover is used

CMD-001 (sold separately)

10.5

200 ±3 · 60

34

Communication indicator
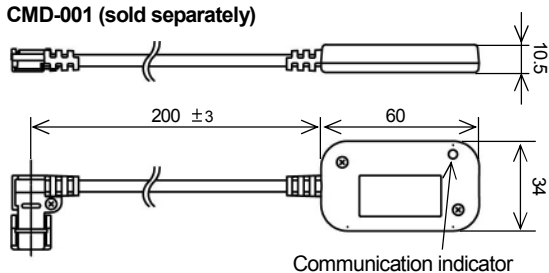
When connecting the USB cable CUS-100 (sold separately)

2000

Tool cable CMD-001 · USB cable CUS-100

CUS-100: microUSB type B – USB Type A   Full length 2 m
(Commercially available USB cable can be used.)