Shinko

Digital indicating controller

ACS-13A

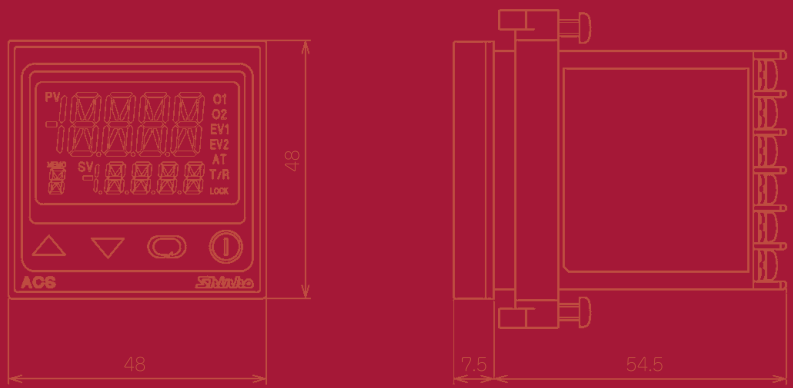
Indicating Controller

Multiple functions in a compact case

ISO9001 ISO14001 (HQ only)

Save space with the shortest depth (56 mm)

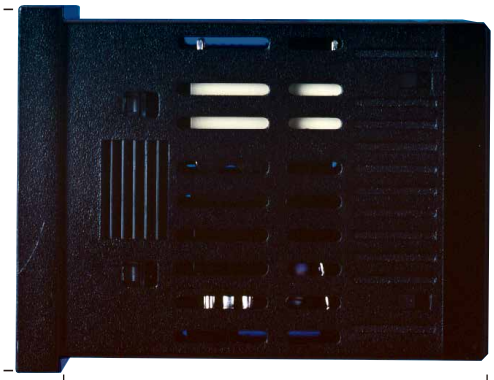
PV color changes in accordance with status



Setting & monitoring from your PC
via USB communication cable

Point 1 Controller with the shortest depth (56 mm)

Higher functions and performance have been achieved with the shortest depth of 56 mm ACS-13A.
This provides cost and space reduction.



Actual size

The shortest depth
56

Please use a gasket to reinforce Drip-proof/Dust-proof function.
Depth of control panel interior when gasket is used: 54.5 mm

Point 2 An easier viewing display with status color indication

The PV display color can be selected from red, green and orange.
The PV display color can also change continuously depending on deviation between PV and SV, which allows easy and distinct status checking.

7 Types of PV Display Color
- Regular status: Green
- Regular status: Red
- Regular status: Orange
- Alarm OFF: Green, Alarm ON: Red
- Alarm OFF: Orange, Alarm ON: Red
- PV color changes continuously : Orange ⟶ Green ⟶ Red
- PV color changes continuously + Alarm ON (Red)

●PV color continuous change mode

PV is higher than [SV+PV color range]

PV is within [SV±PV color range]

PV is lower than [SV−PV color range]

●Alarm color (when setting High/Low limits alarm)

Low limit alarm active　Regular status　High limit alarm active

It is easier to see the SV and PV, using an 11-segment LCD display.

All segments lit　SENS　A1LM

Point 3 Versatile controls, specifications and enhancements

■4-point SV, using external selection (SM option)

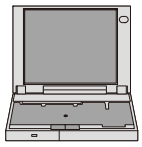
SV memory function, which can switch 4 points of SV using external contact signal, is equipped.
After registering the SVs (from SV1 to SV4), they can be easily switched by external operation.

■3-phase Heater burnout alarm (W3 option)

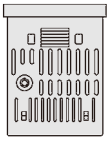
Any trouble in 3-phase heaters such as burnout or deterioration can be detected by connecting 2 CTs (current transformers).
Heater burnout alarm types 20A and 50A are available for both single phase and 3-phase.

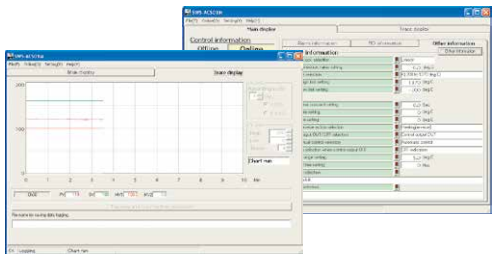
Point 4 User friendly communication: Remote monitoring, data transmission

Standard Console communication function enables 1 to 1 communication between a PC with USB port and the ACS-13A. Various settings and monitoring can be performed using the Console software SWS-ACS01M. SWS-ACS01M is attached to the USB communication cable CMA (sold separately).



USB communication cable CMA





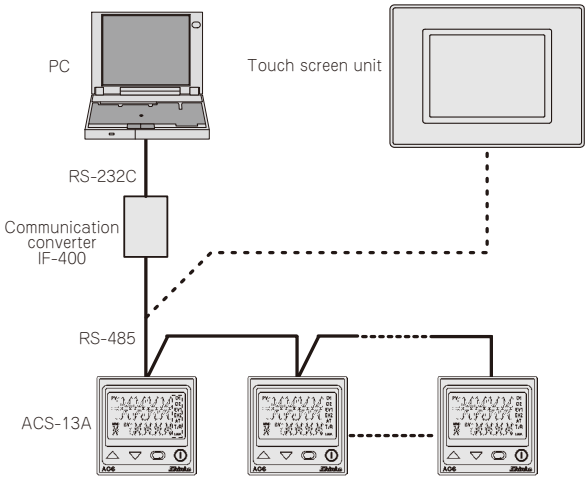
Displays of the Console software (SWS-ACS01M)

■Serial Communication (RS-485) (C5 option)

Serial communication (RS-485) between a PC/Touch screen unit and the ACS-13A enables various settings and remote monitoring. A maximum of 31 units in a centralized control system can be established.
Shinko protocol and Open Network Modbus protocol are usable.

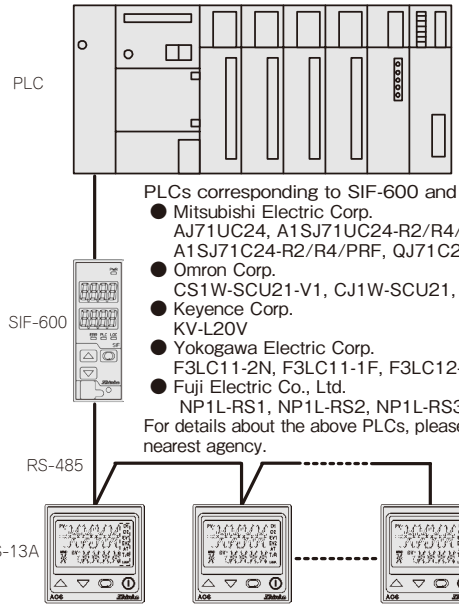
●When monitoring multiple ACS-13A units with a PC or Touch screen unit

By connecting to the Touch screen unit, up to 31 points of temperature control can be easily monitored.
For a PC with RS-232C, a communication converter is required.
Touch screen units corresponding to the ACS-13A are as shown below.
Digital Electronics Corp.: SP series, GP series, LT series
Hakko Electronics Co., Ltd.: V9 series, V8 series, TS series



●When communicating with a PLC and up to 32 units of the ACS-13A

By connecting to a PLC via PLC interface unit SIF-600, up to 32 units of the ACS-13A can be connected.



PLCs corresponding to SIF-600 and its manufacturer:
- Mitsubishi Electric Corp.
  AJ71UC24, A1SJ71UC24-R2/R4/PRF, A1SJ71C24-R2/R4/PRF, QJ71C24
- Omron Corp.
  CS1W-SCU21-V1, CJ1W-SCU21, CJ1W-SCU41
- Keyence Corp.
  KV-L20V
- Yokogawa Electric Corp.
  F3LC11-2N, F3LC11-1F, F3LC12-1F
- Fuji Electric Co., Ltd.
  NP1L-RS1, NP1L-RS2, NP1L-RS3, NP1L-RS4

For details about the above PLCs, please contact us or our nearest agency.

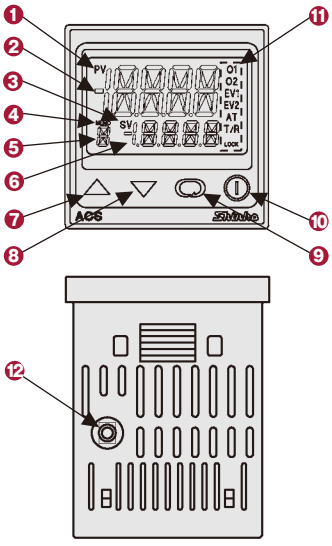
Point 5 Standard Drip-proof/Dust-proof (IP66)

・Can be used in a dust or water splashed environment.

Point 6 Output Rate-of-Change (Standard)

This function is suitable for heaters which are not designed for sudden changes in output. This is suited for controlling heaters such as the Kanthal Super. This also stabilizes control by suppressing output fluctuation.

■Name and functions of the sections



① PV indicator : Lights when the PV is indicated in PV/SV display mode.
② PV display : Indicates the PV (process variable).
③ SV indicator : Lights when the SV is indicated in PV/SV display mode.
④ MEMO indicator: Lights when Set value memory external selection (SM option) is ordered.
⑤ MEMO display : Indicates the Set value memory number.
⑥ SV display : Indicates the SV (desired value).
⑦ Increase key : Increases the numeric value.
⑧ Decrease key : Decreases the numeric value.
⑨ Mode key : Selects a setting mode, or registers the set value.
To register the set (selected) value, press this key.
⑩ OUT/OFF key : Switches control output ON/OFF or Auto/Manual control function.
⑪ Action indicators
01(OUT1): Lights when control output is ON, or when Heating output (D□ option) is ON.
02(OUT2): Lights when Cooling output (D□ option) is ON.
EV1 : Lights when Alarm 1 output is ON.
EV2 : Lights when Alarm 2 output (A2 option) is ON or when Heater burnout alarm (W, W3 option) is ON.
AT : Flashes while AT (auto-tuning) or auto-reset is performing.
T/R : Lights when Serial communication (C5 option) is performing (TX output).
LOCK : Lights when Lock 1, Lock 2 or Lock 3 is selected.
⑫ Console connector: The following operations can be conducted by connecting to the USB communication cable (Model: CMA, sold separately). (1) Reading and setting of SV, PID and various set values, (2) Reading of PV and action status, (3) Function change

■Model

ACS-13A □/□ □, □, □, □					ACS-13A (W48×H48×D62mm)
Control output (OUT1)	R				Relay contact 1a
	S				Non-contact voltage (for SSR drive)
	A				Direct current
Input		M			Multi-input
Power supply voltage					100 to 240V AC*
			1		24V AC/DC
Option				A2	Alarm 2
				C5	Serial communication (EIA RS-485)
				DR	Heating/Cooling control (relay output) OUT2
				DS	Heating/Cooling control (SSR output) OUT2
				SM	Set value memory external selection
				W (20A)	Rated current: Single-phase 20A Heater burnout Alarm
				W (50A)	Rated current: Single-phase 50A Heater burnout Alarm
				W3 (20A)	Rated current: 3-phase 20A Heater burnout Alarm
				W3 (50A)	Rated current: 3-phase 50A Heater burnout Alarm

Designate the specification from the □ columns.

*For the power supply voltage, **100 to 240V AC is standard**, however, when ordering 24V AC/DC, enter "1" after the input code.

When ordering options, punctuate them with a comma.

- If A2 option is specified, DR or DS option cannot be ordered.
- If If C5 option is specified, SM option cannot be ordered.
- If D□ option is specified, A2, W or W3 option cannot be ordered.
- If W or W3 option is specified, DR or DS option cannot be ordered.
- For direct current output type, W or W3 option cannot be ordered.

■Rated range (Full multi-range)

Input type		Input range	
Thermocouple	K	−200 to 1370 ℃	−320 to 2500 °F
		−200.0 to 400.0℃	−320.0 to 750.0 °F
	J	−200 to 1000 ℃	−320 to 1800 °F
	R	0 to 1760 ℃	0 to 3200 °F
	S	0 to 1760 ℃	0 to 3200 °F
	B	0 to 1820 ℃	0 to 3300 °F
	E	−200 to 800 ℃	−320 to 1500 °F
	T	−200.0 to 400.0℃	−320.0 to 750.0 °F
	N	−200 to 1300 ℃	−320 to 2300 °F
	PL-Ⅱ	0 to 1390 ℃	0 to 2500 °F
	C(W/Re5-26)	0 to 2315 ℃	0 to 4200 °F
RTD	Pt100	−200 to 850 ℃	−320 to 1500 °F
		−200.0 to 850.0℃	−320.0 to 1500.0°F
	JPt100	−200 to 500 ℃	−320 to 900 °F
		−200.0 to 500.0℃	−320.0 to 900.0 °F
Direct current	4 to 20mA DC	−2000 to 10000	
	0 to 20mA DC		
DC voltage	0 to 1V DC		
	0 to 10V DC		
	1 to 5V DC		
	0 to 5V DC		

- For Direct current and voltage input, scaling and decimal point place change are possible.

■Standard specifications

Display	PV display --------- 11-segment Backlight LCD Red/ Green /Orange, Character size, 12.0 x 5.4mm (H x W) SV display --------- 11-segment Backlight LCD Green, Character size, 6.0 x 3.5mm (H x W) MEMO display ---- 11-segment Backlight LCD Green, Character size, 4.8 x 2.8mm (H x W) Indicators---------- Backlight Orange
Input	Thermocouple ---- K, J, R, S, B, E, T, N, PL- Ⅱ, C (W/Re5-26) External resistance: 100Ω max., however, B input: 40Ω max. RTD---------- Pt100, JPt100: 3-wire type (Allowable input lead wire resistance: 10Ω max. per wire) Direct current------ 0 to 20 mA DC, 4 to 20 mA DC: Input impedance: 50Ω , Allowable input current: 50 mA DC max. DC voltage--------- 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 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: 100Ω max.
Accuracy (Setting･Indication)	Thermocouple---------- Within ±0.2% of each input span ±1digit, or within ±2℃ (4°F), whichever is greater However, R, S input, the range is 0 to 200℃ (32 to 392°F): Within ±6℃ (12°F) B input, the range is 0 to 300℃ (32 to 572°F): The accuracy is not guaranteed. K, J, E, T, N input, less than 0℃ (32°F): Within ±0.4% of input span ±1digit RTD---------- Within ±0.1% of each input span±1digit, or within ±1℃ (2°F), whichever is greater Direct current, DC voltage -- Within ±0.2% of each input span±1digit
Input sampling period	250 ms
Control output (OUT1)	Relay contact ----------1a, control capacity: 3 A 250 V AC (resistive load), 1 A 250 V AC (inductive load cosø=0.4), Electrical life: 100,000 cycles Non-contact voltage --12 V DC ±15% Max. 40 mA DC (short circuit protected) Direct current ----------4 to 20 mA DC Load resistance: Max. 550Ω
Control action	The following actions can be selected by keypad. (Factory default: PID) PID (with auto-tuning function), PI, PD (with auto-reset function), P (with auto-reset function), ON/OFF OUT1 proportional band (P) --------- 0 to 1000℃ (2000°F), 0.0 to 1000.0℃ (1999.9°F), or 0.0 to 100.0%(ON/OFF control when set to 0 or 0.0) Integral time (I) ---------- 0 to 1000 seconds (OFF when set to 0) Derivative time (D) ---------- 0 to 300 seconds (OFF when set to 0) OUT1 ON/OFF action ---------- When the proportional band is set to 0 or 0.0 OUT1 proportional cycle ---------- 1 to 120 seconds (Not available for Direct current output type) ARW ---------- 0 to 100% OUT1 ON/OFF action hysteresis --- 0.1 to 100.0℃ (°F) or 1 to 1000 OUT1 high limit ---------- 0 to 100% (Direct current: -5 to 105%) OUT1 low limit ---------- 0 to 100% (Direct current: -5 to 105%)
Alarm 1 output	Alarm types can be selected by keypad. (Factory default: No alarm action) ・No alarm action ・High limit alarm (Deviation setting) Setting range: −(Input span) to Input span ・Low limit alarm (Deviation setting) Setting range: −(Input span) to Input span ・High/Low limits alarm (Deviation setting) Setting range: 0 to Input span ・High/Low limit range alarm (Deviation setting) Setting range: 0 to Input span ・Process high alarm Setting range: Input range low limit value to Input range high limit value ・Process low alarm Setting range: Input range low limit value to Input range high limit value ・High limit with standby alarm (Deviation setting) Setting range: −(Input span) to Input span ・Low limit with standby alarm (Deviation setting) Setting range: −(Input span) to Input span ・High/Low limits with standby alarm (Deviation setting) Setting range: 0 to Input span Setting accuracy----- Same as indication accuracy Action---------- ON/OFF action Hysteresis---------- 0.1 to 100.0℃ (°F) or 1 to 1000 Output---------- Relay contact 1a, Control capacity: 3 A 250 V AC (Resistive load), Electrical life: 100,000 cycles
Supply voltage	100 to 240 V AC 50/60 Hz (Allowable voltage fluctuation range: 85 to 264 V AC) 24 V AC/DC 50/60 Hz (Allowable voltage fluctuation range: 20 to 28 V AC/DC)
Power consumption	Approx. 8VA
Insulation resistance	10 MΩ min., 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
Environment	Ambient temperature: 0 to 50℃ Ambient humidity: 35 to 85 %RH (non-condensing),Drip-proof/Dust-proof IP66 (for front panel only)
Safety standards	UL: Power input rating 100-240 V AC, 24 V AC/DC File No. E159038
Case (Material, Color)	Material: Flame resistant resin Color: Black
Mounting method	Mounting frame (Mountable control panel thickness: 1 to 5 mm)
Setting method	Sheet key input
External dimensions	W48 x H48 x D62 mm (Depth of control panel interior when the gasket is used: 54.5 mm)
Weight	Approx. 120g
Attached functions	Power failure countermeasure, Self-diagnosis, Automatic cold junction temperature compensation (only for thermocouple), Burnout, Input error indication, Indication range, Control range, Warm-up indication, Auto/Manual control switching, Console communication
Accessories included	Mounting frame 1 piece, Gasket A (Front mounted to the ACS-13A) 1 piece Instruction manual (A3 unfolded, English/Japanese) 1 copy CT (Current transformer): CTL-6-S-H: 1 piece [W (20A) option], CTL-12-S36-10L1U: 1 piece [W (50A) option] CTL-6-S-H: 2 pieces [W3 (20A) option], CTL-12-S36-10L1U: 2 pieces [W3 (50A) option]
Accessories sold separately	Terminal cover (TC-ACS), USB communication cable CMA (to which the Console software SWS-ACS01M is attached)

■Optional specifications

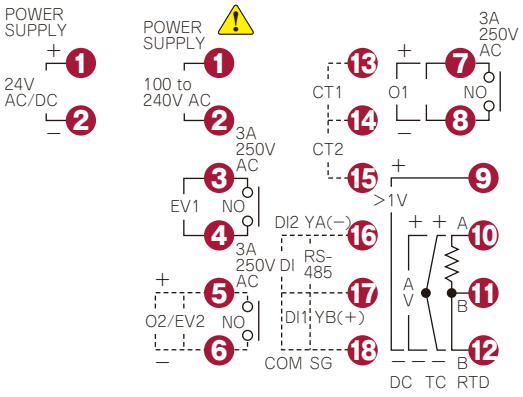
When ordering, please specify an option code according to the user's needs.

Alarm 2 output [A2 option]	Alarm type, setting range and output type, etc. are the same as those of Alarm 1. See Alarm 1 output section. If this option is ordered, Heating/Cooling control (D□ option) cannot be ordered. This option and Heater burnout alarm (W, W3 option) utilize common output terminals.
Heater burnout alarm [W, W3 option] (CT included)	Rating ---------- Single-phase 20 A [W(20A)], Single-phase 50 A [W(50A)], 3-phase 20 A [W3(20A)], 3-phase 50 A [W3(50A)] Must be specified. Setting range--------- Rated current 20 A [W(20A), W3(20A)]: 0.0 to 20.0 A Rated current 50 A [W(50A), W3(50A)]: 0.0 to 50.0 A Setting accuracy ---- Within ±5% of the rated value Action ---------- ON/OFF action Output ---------- Relay contact 1a, Control capacity: 3A 250V AC (resistive load), Electrical life: 100,000 cycles If this option is ordered, Heating/Cooling control (D□ option) cannot be ordered.
Heating/Cooling control [D□ option]	Heating control action: Same as the control output (OUT1) Cooling control action OUT2 proportional band (P) --- 0.0 to 10.0 times OUT1 proportional band (ON/OFF action when set to 0.0) OUT2 integral time (I) ----------Same as that of OUT1 OUT2 derivative time (D) -------Same as that of OUT1 OUT2 proportional cycle --------1 to 120 seconds Overlap/Dead band ----------Thermocouple, RTD: -100.0 to 100.0℃ (°F) Direct current, voltage: -1000 to 1000 (The placement of the decimal point follows the selection.) OUT2 hysteresis ----------0.1 to 100.0℃ (°F), or 1 to 1000 OUT2 cooling method---------- One cooling method can be selected from Air cooling (linear characteristic), Oil cooling (1.5th power of the linear characteristic) and Water cooling (2nd power of the linear characteristic) by keypad. Output ---------- Relay contact 1a, Control capacity: 3A 250V AC (resistive load), Electrical life: 100,000 cycles Non-contact voltage 12 V DC±15% Max. 40 mA DC (short circuit protected) If this option is ordered, Alarm 2 (A2 option) and Heater burnout alarm (W, W3 option) cannot be ordered.
Serial communication [C5 option]	Various operations (such as Reading and setting of various set values, Reading of PV and action status and Function change) can be performed from an external PC. Communication line ---------- EIA RS-485 Communication method---------- Half-duplex communication Synchronization method ---------- Start-stop synchronization Communication speed ---------- 2400/4800/9600/19200 bps (Selectable by keypad) Data bit /Parity ---------- Data bit: 7 or 8, Parity: Even/Odd /No parity (Selectable by keypad) Stop bit ---------- 1 or 2 (Selectable by keypad) Communication protocol --------- Shinko protocol/Modbus ASCII/Modbus RTU (Selectable by keypad) Number of connectable units --- Max. 31 units per host computer Communication error detection --Parity, checksum, LRC (Modbus ASCII), CRC-16 (Modbus RTU) Data format

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

	If this option is ordered, Set value memory external selection (SM option) cannot be ordered.
Set value memory external selection [SM option]	SV1, SV2, SV3 or SV4 can be selected by the external contact. The MEMO display indicates the selected memory number. Contact input terminal DI2 can be used for 'Set value memory external selection' or for 'OUT/OFF external selection' in [Contact input function] in Setup mode. If 'Auto/Manual control function' is selected in [OUT/OFF key function] in Setup mode, externally Auto/Manual control can be switched. Circuit current when closed: Approx. 12 mA If this option is ordered, Serial communication (C5 option) cannot be ordered.

■Terminal arrangement

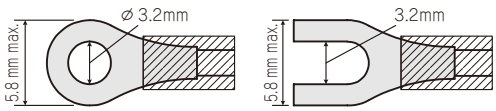


POWER SUPPLY	
EV1	Alarm 1 output
O2/EV2	Cooling output (D□ option), Alarm 2 output (A2 Option) or Heater burnout alarm output (W, W3 option)
O1	Control output or Heating output (D□ option)
DC	Direct current or DC voltage input (For DC voltage input, + side terminal number differs depending on the voltage input.)
TC	Thermocouple input
RTD	RTD input
CT1	CT input 1 (W, W3 option)
CT2	CT input 2 (W3 option)
DI	Contact input (SM option)
RS-485	Serial communication RS-485 (C5 option)

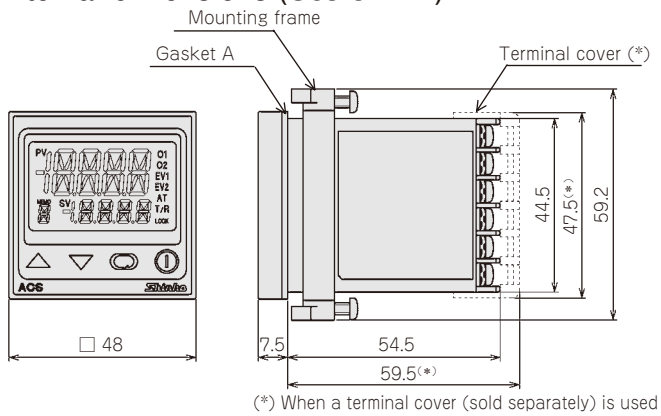
- This controller does not have a built-in power switch, circuit breaker and fuse. It is necessary to install a power switch, circuit breaker and fuse near the controller.
- For a 24 V AC/DC power source, do not confuse polarity when using direct current (DC).

■Solderless terminal

Use a solderless terminal with an insulation sleeve in which an M3 screw fits. Tightening torque should be 0.63 N·m.

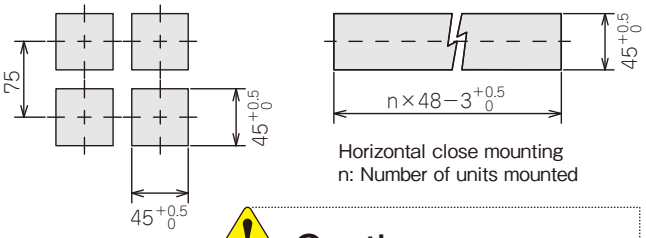


■External dimensions (Scale: mm)



(*) When a terminal cover (sold separately) is used

■Panel cutout (Scale: mm)

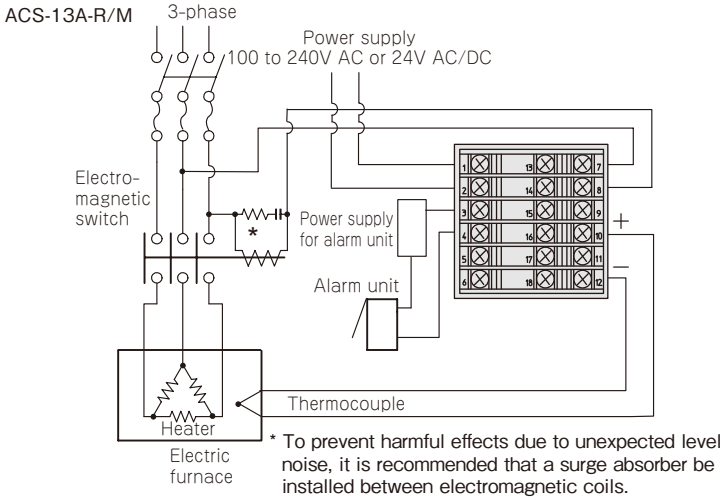


Horizontal close mounting
n: Number of units mounted

Caution:

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

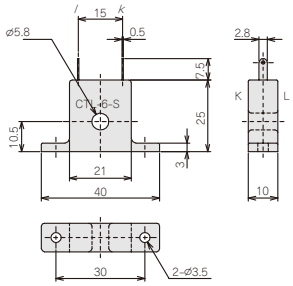
■Wiring example



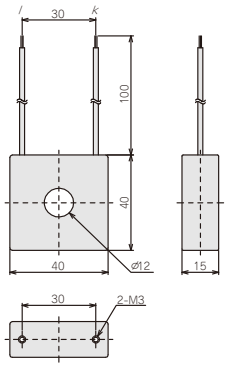
* To prevent harmful effects due to unexpected level noise, it is recommended that a surge absorber be installed between electromagnetic coils.

■CT dimensions (Scale: mm)

CTL-6-S-H (For 20A)

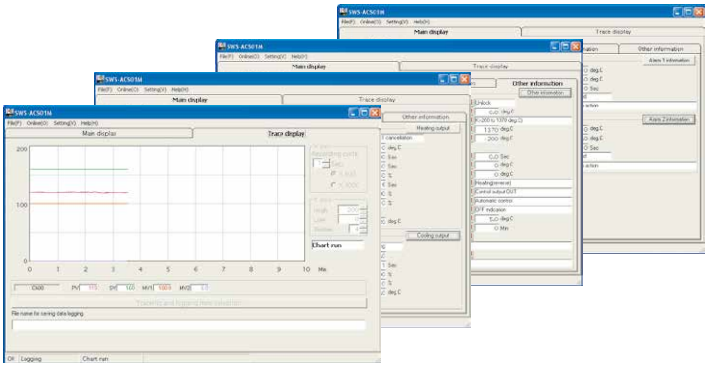


CTL-12-S36-10L1U (For 50A)

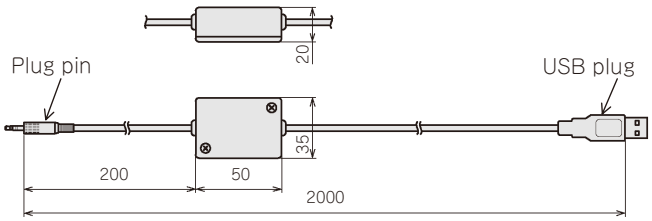


■Console software SWS-ACS01M included

Using the Console software (SWS-ACS01M) with an USB communication cable CMA (sold separately), parameters setting, logging and monitoring of the controller can be performed by connecting to the USB port of the PC.



■USB communication cable CMA (Sold Separately) (Scale: mm)



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 purpose-of-use consultation with our agency or main office. (Never use this instrument for medical purposes with which human lives are involved.)
- External protection devices such as protective 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. Proper periodic maintenance is also 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 the 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 March 2018 and its contents are subject to change without notice.
- If you have any inquiries, please consult us or our agency.

SHINKO TECHNOS CO., LTD.
OVERSEAS DIVISION

Reg. Office : 2-5-1, Senbahigashi, Minoo, Osaka, 562-0035, Japan
Tel : + 81 - 72 - 727 - 6100
Fax : + 81 - 72 - 727 - 7006
URL : http://www. shinko-technos. co. jp/e/
E-mail : overseas @ shinko-technos. co. jp/e/

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