

# **GCS-300 series**



***Communication, Setting value memory  
applied to the 48mm square type.***

***Shinko***



## Model name

GCS-33 □-□/□, □□□□		GCS-330(W48×H48×D96.5mm)	
Temperature alarm(A1)	O A	Not available Available (Output action is selectable by key operation.)	
Control output	R S A	Relay contact : 1a 250Vac 3A (Resistive load), 250Vac 1A (Inductive load cos φ=0.4) Non-contact voltage (For SSR drive) : 12 <sup>+</sup> Vdc Maximum 40mA (Short circuit protected) DC current : 4 to 20mA <sub>dc</sub> Load resistance: Maximum 550 Ω	
Input	E R	Thermocouple : K, J, E (Needs to be specified) RTD : Pt100, JPt100 (Needs to be specified)	
Option	A2	Temperature alarm (A2)	
	C5	Serial communication	RS-485
	W(5A)	Heater burnout alarm	Rated current : 5A
	W(10A)		Rated current : 10A
	W(20A)		Rated current : 20A
	W(50A)		Rated current : 50A
	LA	Loop break alarm	
	SM	Setting value memory (External selection)	
	MR	Multi-range input	
	IP	Dust-proof, Drip-proof specification (IP54)	
TC	Terminal cover		
BK	Color : Black		
BL	Screw type mounting bracket		

When ordering, select the alphanumeric characters from the table above for □. When adding option, punctuate the option code and enter it using "comma".

## Example : When ordering

GCS-33 A-R/E, A2

- Model name
  - Temperature alarm (A1) : When designating alarm output applied.
  - Control output : When designating relay contact output type.
  - Input : When designating thermocouple.
  - Option : When adding temperature alarm (A2).
- Designated input type (Thermocouple K, J, E) can be shipped in rated scale.

## Rated scale

Thermocouple			RTD
K	J	E	Pt100, JPt100
0 to 400°C	0 to 999°C	0 to 600°C	-19.9 to 99.9°C
0 to 999°C	0 to 999°C	0 to 600°C	-199 to 400°C
0 to 999°F	0 to 999°F	0 to 999°F	-199 to 999°F

## Specifications

Display	PV----- Red 3 digits 10(H) × 5.5(W) mm SV----- Green 3 digits 8(H) × 4(W) mm	
Input	Type • Thermocouple----- K, J, E External resistance 100 Ω or less • RTD----- Pt100, JPt100 3-wire system (Resistance per wire: 10 Ω or less) } Needs to be specified Scale----- Refer to the Rated Scale. Resolution • Thermocouple, RTD ----- 1 °C (1°F) • With decimal point----- 0.1 °C (0.1°F)	
Accuracy (Setting · Indication)	Thermocouple ----- Within ±0.3% of full scale ±1digit or within ±2°C (4°F) whichever is greater RTD ----- Within ±0.2% of full scale ±1digit or within ±1°C (2°F) whichever is greater	
Input sampling period	0.25 seconds	
Control action	PID action (With auto-tuning function) Proportional band (P)-----0 to 999(°F) (ON / OFF action when set to 0 or 0.0 [Hysteresis: 0.1 to 99.99(°F)]) Integral time (I)-----0 to 999 seconds (OFF when set to 0) Derivative time (D)-----0 to 300 seconds (OFF when set to 0) Proportional cycle----- 1 to 120 seconds (Not available for direct current output type) • Proportional band setting range when a scale with decimal point is applied 0.0 to 99.9°C	
Control output	• Relay contact----- 1a 250Vac 3A (Resistive load), 250Vac 1A (Inductive load cos φ=0.4) • Non contact voltage ----- 12 <sup>+</sup> Vdc Maximum 40mA (Short circuit protected) • Current -----4 to 20mA <sub>dc</sub> Load resistance: Maximum 550 Ω } Needs to be specified	
Temperature alarm (A1)	Output action and Energized / Deenergized are selectable by key operation. • No alarm • High limit alarm (Deviation setting) : -199 to input range max. value°C (°F), or -19.9 to 99.9°C • Low limit alarm (Deviation setting) : -199 to input range max. value°C (°F), or -19.9 to 99.9°C • High/ low limits alarm (Deviation setting) : ±(0 to input range max. value) °C (°F), or ±(0.0 to 99.9)°C • High/ low limit range alarm (Deviation setting) : ±(0 to input range max. value) °C (°F), or ±(0.0 to 99.9)°C • Process high alarm : input range min. to input range max. • Process low alarm : input range min. to input range max. • High limit alarm with standby (Deviation setting) : -199 to input range max. value°C (°F), or -19.9 to 99.9°C • Low limit alarm with standby (Deviation setting) : -199 to input range max. value°C (°F), or -19.9 to 99.9°C • High/ low limits alarm with standby (Deviation setting) : ±(0 to input range max. value) °C (°F), or ±(0.0 to 99.9)°C Setting accuracy----- Thermocouple input : Within ±0.3% of full scale ±1 digit or within±2°C (4°F) whichever is greater RTD input : Within ±0.2% of full scale ±1 digit or within±1°C (2°F) whichever is greater Action----- ON / OFF action Hysteresis----- 0.1 to 99.9(°F) Output----- Relay contact 1a 250Vac 3A (Resistive load), 250Vac 1A (Inductive load cos φ=0.4)	
Supply voltage	• 100 to 240Vac 50 / 60Hz Allowable voltage fluctuation: 85 to 264Vac • 24Vac/dc 50 / 60Hz 20 to 28Vac/dc	



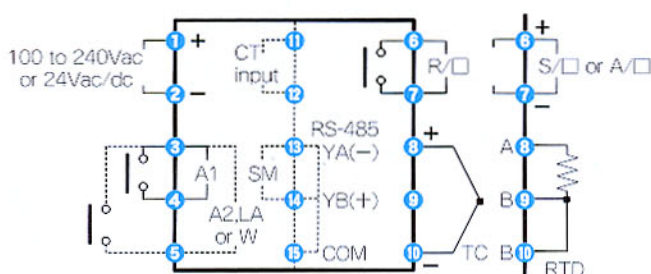
Power consumption	Approx. 8VA
Insulated resistance	10MΩ or greater at 500 Vdc
Dielectric strength	When output type is current output or non contact voltage output, insulation test between communication terminal and output terminal must not be carried out. Between input terminal and ground, Between input terminal and power terminal ----- 1.5kVac for 1min Between power terminal and ground ----- 1.5kVac for 1min Between output terminal and ground, Between output terminal and power terminal ----- 1.5kVac for 1min
Environment	Ambient temperature: 0 to 50°C Ambient humidity: 35 to 85%RH (Non-condensing)
Case, Base	Flame resisting resin Color: Light gray
Mounting method	Flush Mounting bracket: One-touch type Panel thickness: Within 1 to 3mm
Setting system	Membrane sheet key
Weight	Approx. 130g
Attached function	Sensor correction, Setting value lock, Power failure countermeasure, Self-diagnosis, Automatic cold junction compensation (only thermocouple), Sensor burnout alarm, Input abnormality

## Option

Temperature alarm [A2] [A2]	<p>Output action and Energized / Deenergized are selectable by key operation.</p> <ul style="list-style-type: none"> <li>No alarm</li> <li>High limit alarm (Deviation setting) : -199 to input range max. value°C (°F), or -19.9 to 99.9°C (°F)</li> <li>Low limit alarm (Deviation setting) : -199 to input range max. value°C (°F), or -19.9 to 99.9°C (°F)</li> <li>High/ low limits alarm (Deviation setting) : ±(0 to input range max. value)°C (°F), or ±(0.0 to 99.9)°C (°F)</li> <li>High/ low limit range alarm (Deviation setting) : ±(0 to input range max. value)°C (°F), or ±(0.0 to 99.9)°C (°F)</li> <li>Process high alarm : input range min. to input range max.</li> <li>Process low alarm : input range min. to input range max.</li> <li>High limit alarm with standby (Deviation setting) : -199 to input range max. value°C (°F), or -19.9 to 99.9°C (°F)</li> <li>Low limit alarm with standby (Deviation setting) : -199 to input range max. value°C (°F), or -19.9 to 99.9°C (°F)</li> <li>High/ low limits alarm with standby (Deviation setting) : ±(0 to input range max. value)°C (°F), or ±(0.0 to 99.9)°C (°F)</li> </ul> <p>Setting accuracy-----Thermocouple input : Within±0.3% of full scale ±1 digit or within±2°C (4°F) whichever is greater RTD input : Within±0.2% of full scale ±1 digit or within±1°C (2°F) whichever is greater</p> <p>Action-----ON / OFF action Hysteresis-----0.1 to 99.9°C (°F) Output-----Relay contact 1a 250Vac 3A (Resistive load), 250Vac 1A (Inductive load cos φ=0.4)</p>																					
Serial communication [C5]	<p>Operates from the external computer</p> <p>Communication interface-----EIA RS-485</p> <p>Communication contents ----- Various setting status changes and the values reading of GCS-300 series</p> <p>Code form ----- ASCII</p> <p>Connectable units ----- A maximum of 31 units per host computer</p> <p>Data transfer rate -----9600bps (2400 / 4800 / 19200bps changeable by key operation)</p> <p>Communication system ----- Half-duplex start stop synchronous</p> <p>Error detection ----- Parity check, Checksum</p>																					
Heater burnout alarm [W]	<p>Watches the heater current with CT (current transformer), and detects the heater burnout</p> <p>Rating ----- 5A, 10A, 20A or 50A (specified)</p> <p>Setting accuracy----- Within±5% of heater rated current</p> <p>Control output ----- Relay contact 1a 250Vac 3A (Resistive load), 250Vac 1A (Inductive load cos φ=0.4)</p> <p>Output self holding----- Not available</p> <p>Accessories-----CT (For single phase: 1 piece)</p>																					
Loop break alarm [LA]	<p>Detects Heater burnout, Sensor burnout, and Abnormal at operation end.</p> <p>Setting range : Loop break alarm time ----- 0 to 200 minutes : Loop break alarm span ----- 0 to 150°C (°F)</p> <p>Output-----Relay contact 1a 250Vac 3A (Resistive load), 250Vac 1A (Inductive load cos φ=0.4)</p>																					
Setting value memory (External selection) [SM]	<p>Main setting value 1 and 2 can be changed by external contact.</p> <p>Contact open for Main setting value 1, contact closed for main setting value 2</p> <p>Sensor type scale range and unit of temperature----- Refer to the table below.</p>																					
Multi-range input [MR]*	<table border="1"> <thead> <tr> <th colspan="2">Sensor</th> <th colspan="2">Scale (Maximum) unit</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Thermocouple</td> <td>K</td> <td>0 to 999°C</td> <td>0 to 999°F</td> </tr> <tr> <td>J</td> <td>0 to 600°C</td> <td>0 to 999°F</td> </tr> <tr> <td>E</td> <td>-199 to 400°C</td> <td>-199 to 999°F</td> </tr> <tr> <td rowspan="2">RTD</td> <td>Pt100, JPt100</td> <td>-19.9 to 99.9°C (decimal point available only for °C scale)</td> <td></td> </tr> <tr> <td>Pt100, JPt100</td> <td></td> <td></td> </tr> </tbody> </table>	Sensor		Scale (Maximum) unit		Thermocouple	K	0 to 999°C	0 to 999°F	J	0 to 600°C	0 to 999°F	E	-199 to 400°C	-199 to 999°F	RTD	Pt100, JPt100	-19.9 to 99.9°C (decimal point available only for °C scale)		Pt100, JPt100		
Sensor		Scale (Maximum) unit																				
Thermocouple	K	0 to 999°C	0 to 999°F																			
	J	0 to 600°C	0 to 999°F																			
	E	-199 to 400°C	-199 to 999°F																			
RTD	Pt100, JPt100	-19.9 to 99.9°C (decimal point available only for °C scale)																				
	Pt100, JPt100																					
Dust-proof, Drip-proof [IP]	<p>Dust-proof, Drip-proof specification (IP54)</p> <p>Mount the controller vertically to strengthen the Dust-proof, Drip-proof specification. Mounting bracket is screw type.</p> <p>Dust-proof, Drip-proof specification can be strengthened further with Front cover (soft type, FC-48-S) which is sold separately.</p>																					
Terminal cover [TC]	<p>Electrical shock protecting terminal cover</p> <p>(Be sure to designate this option, when there is a probability to be touched the back of the controller during power on.)</p>																					
Color: Black [BK]	Color: Black (Face plate: Dark gray)																					
Screw type mounting bracket [BL]	Standard specification is one-touch type, but screw type mounting bracket will be one of accessories by adding this option Panel thickness: within 1 to 15mm																					

\* : Multi-range input type model (Input type: M) which is equivalent to the model with [Option MR] and of which input type is multi-range specification is also available.  
For further information contact our branch office or sales shop.

## Terminal arrangement



- R/□ : Relay contact output
- S/□ : Non contact DC voltage output
- A/□ : DC current output
- A1 : Temperature alarm(A1)
- A2 : Temperature alarm(A2)
- W : Heater burnout alarm
- LA : Loop break alarm
- SM : Setting value memory(External selection)
- RS-485 : Serial communication

Dotted line indicates options. When options are not designated, there are no indicated terminals.

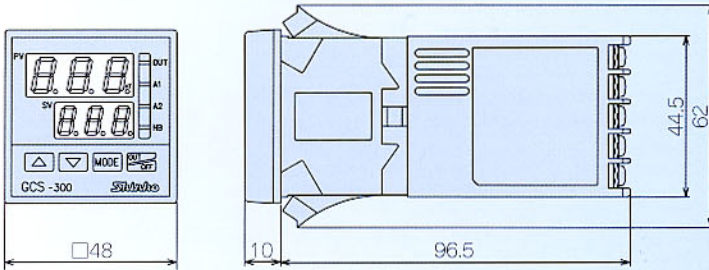




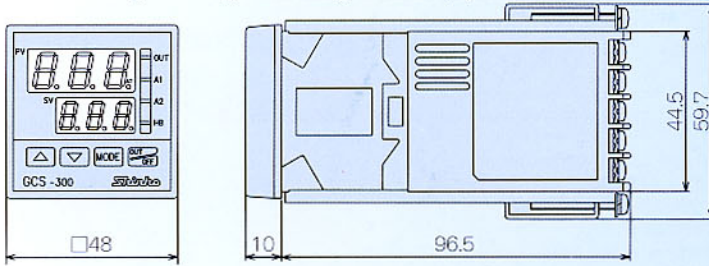
- [Options A2, C5, SM, W, LA], these options cannot be applied together at the same time. (Only one of the options can be added.)  
However, [Option A2] and [Option LA] can be applied together at the same time and in this case output becomes common output.
- When using one-touch type mounting bracket, panel thickness must be within 1 to 3mm.
- When using screw type mounting bracket, panel thickness must be within 1 to 15mm.
- Since the case is made of resin, tightening the screw unnecessarily may lead to deformation of the mounting bracket and case. Tighten the screw around 0.12N·m.

### External dimension drawing

When using one-touch type mounting bracket (Standard)

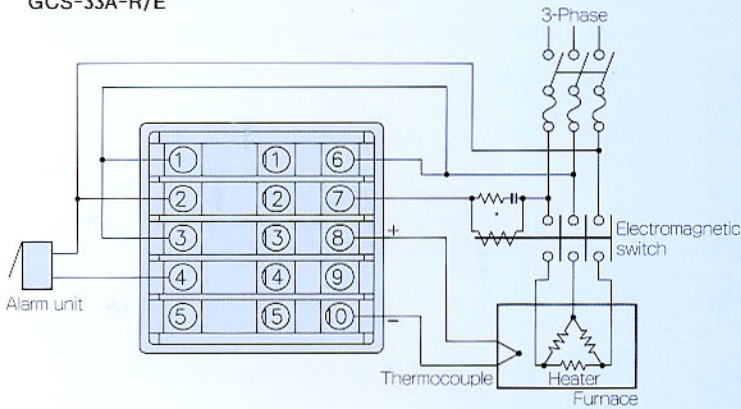


When using screw type mounting bracket (Option : BL)



### Wiring connection

GCS-33A-R/E



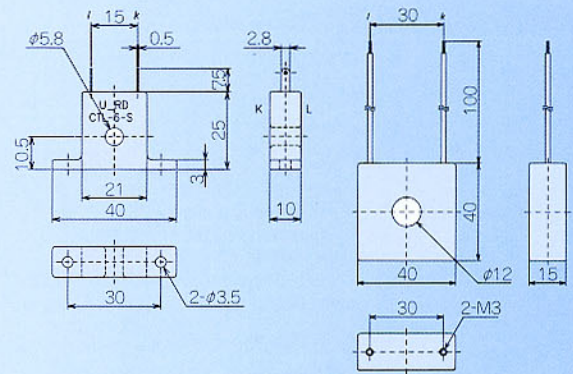
\*: To prevent the unit from harmful effects of unexpected level noise, it is recommended that a surge absorber be installed between the electromagnetic switch coils.

- This catalog is as of October 2002, specifications are subject to change without notice.
- When inquiring, please consult our agency or the shop where you purchased the unit.

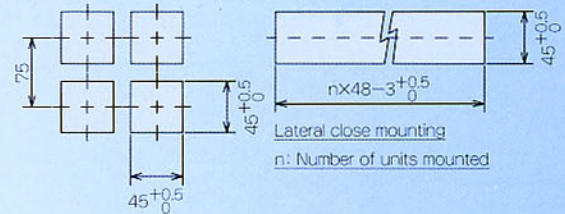
### CT dimension drawing

CTL-6-S (For 5A, 10A, 20A)

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

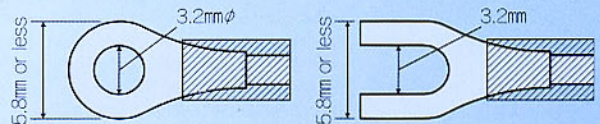


### Panel cutout drawing



### Recommended terminal

Use the solderless terminal with insulated sleeve which is adjustable to the M3 screw as shown below. Designate torque between 0.6N·m to 1.0N·m



## SHINKO TECHNOS CO., LTD. OVERSEAS DIVISION

Reg. Office : 1-2-48, Ina, Minoo, Osaka, 562-0015, Japan  
 Mail Address: P. O. Box 17, Minoo, Osaka, Japan  
 Tel : 81 - 727 - 21 - 2781  
 Fax : 81 - 727 - 24 - 1760  
 URL : <http://www.shinko-technos.co.jp>  
 E-mail : [overseas@shinko-technos.co.jp](mailto:overseas@shinko-technos.co.jp)