

Large, clear display improves visibility.
At-a-glance controller



Digital Indicating Controller

ACS2

Versatile functions for optimized control

Next generation controller

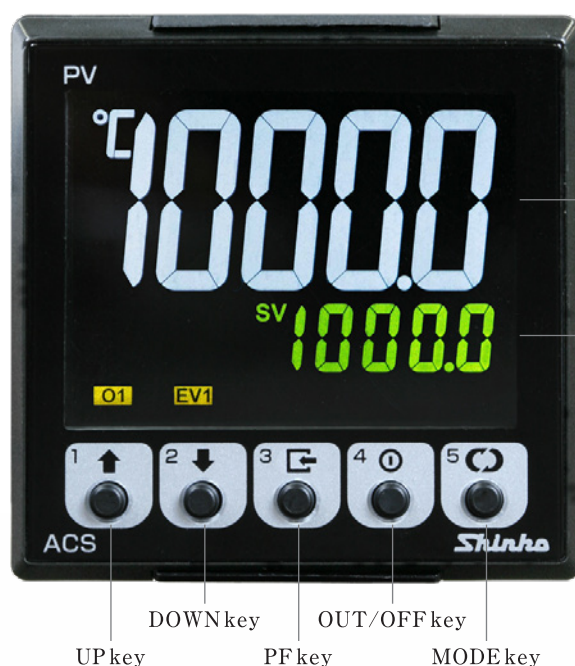
Improved usability

1. Improved visibility

Large white LCD display provides high visibility at the work site.

2. Easy to change setting values

Setting value can be easily changed by adding a digit feed key (PF key).



PV Display

Process value display
7 segment LCD (white)

SV Display

Setting value display
7 segment LCD (green)

3. Adopt multiple instrument power supplies and multiple control outputs

The use of multiple instrument power supplies and control outputs makes it easy to select the type of instrument.

It also helps to reduce the number of management man-hours and inventory.



- Multiple instrument power supplies
AC/DC

- Multiple control outputs
Non-contact voltage output (for SSR drive)/
DC current output (4 to 20 mA DC, 0 to 20 mA DC) / Relay contact output (with optional EV2)

4. Adopt maintenance mode function

Event input, event output, OUT1 output, OUT2 output and transmission outputs can be output as desired. Wiring check and operation check can be performed before operation.

5. Failure prediction maintenance is possible

The console software enables the user to grasp the operating status of the system.

- ① Accumulated heater energizing time
- ② Accumulated energizing time of the unit
- ③ Accumulated number of relay contact open/close cycles

Possible to check error histories (error type, total energizing) in the past 10 times.

6. Easy setting with PC

Various settings can be easily made on your desk by connecting to a PC.

[Tool cable (sold separately) and console software (free of charge) are required.]

Performance Improvement

POINT 1 Input sampling cycle

Selectable from 10 ms (DC current input, DC voltage input only), 50 ms and 125 ms.

This allows control to follow fast responses.

POINT 2 PID block function

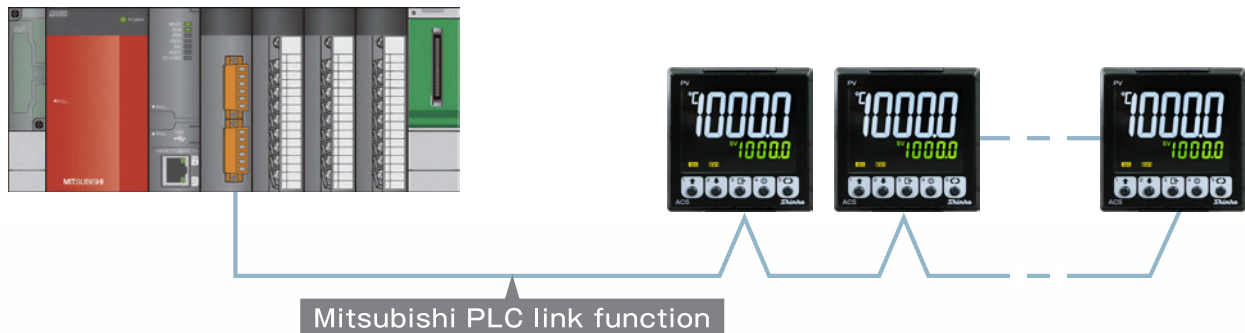
The memory function allows up to 8 pairs of PID blocks to be set.

PID blocks can be switched according to the control target (process) for optimal control.

POINT 3 Mitsubishi PLC link function

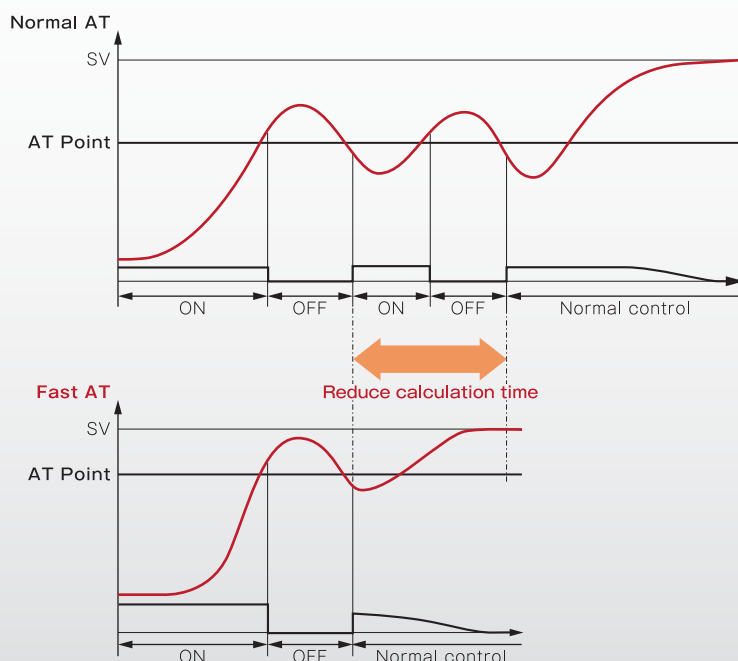
Programless connection to Mitsubishi PLCs "Q series", "R series" and "F series" is possible.

[A compatible 1C frame AnA/AnU common command (QR/QW)]



POINT 4 Fast auto tuning function

Compared with conventional auto tuning, the time required for PID calculation can be significantly reduced.



Various optional functions

Heater burnout alarm and operation end short-circuit alarm can be installed.

This option is also available for DC current type control outputs. Heater burnout alarm can also be detected for phase control systems such as thyristors.

Event outputs can be installed up to 3 points.

This option can be allocated as control outputs in addition to alarm outputs, heater burnout alarm outputs, and loop break alarm outputs.

Event inputs can be installed up to 4 points.

This option can be allocated as set value memory function, OUT/OFF function, Auto/Manual control switching, etc.

■ Standard specifications

Input	Thermocouple (TC) : K, J, R, S, B, E, T, N, PL-II(ASTM E1751M-15), C(JIS C 1602-2015) External resistance: 100 Ω or less (However, B input: External resistance, 40 Ω or less) Resistance temperature detector (RTD) : Pt100, 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 (Shunt resistor) Allowable input current: 50 mA DC or less, Protection circuit forward voltage: 0.9 V DC 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 DC voltage (V DC) : 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
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 DC (short circuit protected) Direct current : 4 to 20 mA DC, 0 to 20 mA DC (Resolution: 12000) Allowable load resistance: 550 Ω or less DC voltage : 0 to 1 V DC, 0 to 5 V DC, 1 to 5 V DC, 0 to 10 V DC (Resolution: 12000) Allowable load resistance: 1 kΩ or more Open collector output (NPN) : Allowable load current 100 mA or less, Load voltage 30 V DC or less
Event output	Output points : 1 point, 2 points (option EV2), 3 points (option EV3) 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
Power supply voltage	100 to 240 V AC, 50/60 Hz Allowable fluctuation range: 85 to 264 V AC 24 V DC Allowable fluctuation range: 24 V DC ±10 % 48 V DC Allowable fluctuation range: 48 V DC ±10 %
Power consumption	110 to 240 V AC Max. 15 VA 24 V DC Max. 7 W 48 V DC Max. 7 W
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
Ambient temperature	-10 to 55 °C (Non-condensing, No icing)
Ambient humidity	35 to 85 %RH (Non-condensing)
Environmental specification	RoHS directive compliant
Base accuracy	At ambient temperature 23 °C (for a single unit mounting) Thermocouple Within ±0.2 % of each input span ±1 digit However, below 0 °C (32 °F) of K, J, E, T, N input is within ±0.4 % of each input span 0 to 200 °C (32 to 392 °F) of R or S input is within ±6 °C (12 °F). 0 to 300 °C (32 to 572 °F) of B input is outside the guaranteed accuracy range. RTD Within ±0.1 % of each input span ±1 digit Direct current/DC voltage input Within ±0.2 % of each input span ±1 digit Direct current/DC voltage output Within ±0.3 % of each output span ±1 digit
Input sampling period	10 ms (Valid only for current/voltage input), 50 ms, 125 ms
Weight	Approx. 120 g
Size	48×48×68 mm (W×H×D) (Depth of control panel interior 60 mm)
Mounting	Flush (Thickness of appropriate panel 1 to 5 mm)
Case material, Color	Flame-resistant resin, Black
Panel	Polycarbonate sheet
Dust-proof/ Drip-proof	Front panel: IP66
Display	PV Display : Character size 15.2 x 6.0 mm(HxW) SV Display : Character size 5.8 x 2.8 mm(HxW) MEMO/STEP Display : Character size 5.8 x 2.8 mm(HxW) Temperature unit Display : Character size 4.0 x 3.4 mm(HxW)
Control action	•2-DOF PID control •Fast-PID control (P-D control) •ON/OFF control •Slow-PID control •Gap-PID control Proportional band : Except when Fast-PID control is selected Thermocouple, RTD input (without decimal point) : 1 to Input span °C(°F) Thermocouple, RTD input (with decimal point) : 0.1 to Input span °C(°F) Direct current/DC voltage input: 0.1 to 1000.0 % When Fast-PID control is selected Thermocouple, RTD input (without decimal point) : 0 to Input span °C(°F) Thermocouple, RTD input (with decimal point) : 0.0 to Input span °C(°F) Direct current/DC voltage input: 0.0 to 1000.0 % Integral time : Except when Slow-PID control is selected 0 to 10000 sec (Factory default: 200 sec) 0.0 to 1999.9 sec Change setting by selecting integral/derivative decimal point position When Slow-PID control is selected 1 to 10000 sec(Factory default: 200 sec) 0.1 to 1999.9 sec Change setting by selecting integral/derivative decimal point position (Factory default: no decimal point) Derivative time : 0 to 10000 sec (Factory default: 50 sec) 0.0 to 1999.9 sec Change setting by selecting integral/derivative decimal point position (Factory default: no decimal point) OUT1 proportional cycle : 0.1 to 120.0 sec (Factory default: Relay contact: 30.0 sec, Non-contact voltage/Open collector: 3.0 sec, Direct current/DC voltage: Not available) OUT1 high limit, : 0.0 to 100.0 % OUT1 low limit : Direct current/DC voltage output: -5.0 to 105.0 % (However, for outputs other than 4 to 20 mA and 1 to 5 V, outputs of 0% or less are not output.) (Factory default: OUT1 low limit: 0.0 %, OUT1 high limit: 100.0 %) OUT1 ON/OFF : Thermocouple, RTD inputs: 0.1 to 1000.0 °C(0.1 to 1800.0 °F) DC input: 1 to 10000 hysteresis (The placement of the decimal point follows the selection)
EV1 Output	Output will be turned ON or OFF depending on the Event condition selected in the event output allocation selection. When enable is selected in output latch selection, output ON will be held even if event output becomes event condition that turns from ON to OFF.
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. (Factory default: No alarm action) Action : ON/OFF action Output : Event output which is selected for alarm output in the event output allocation selection Hysteresis : 0.1 to 1000.0 °C (0.1 to 1800.0 °F) Direct current, DC voltage inputs: 1 to 10000 Alarm action delay timer setting : 0 to 10000 sec
Loop Break Alarm	Loop break alarm time : 0 to 200 minutes Loop break alarm band setting : 0 to 150 °C (0 to 270 °F) or 0.0 to 150.0 °C (0.0 to 270.0 °F) DC input: 0 to 1500 Loop break alarm dead band : 0 to 150 °C (0 to 270 °F) or 0.0 to 150.0 °C (0.0 to 270.0 °F) DC input: 0 to 1500
Attached Functions	SV ramp, Auto/Manual control, Sensor correction coefficient, Sensor correction, Program control function, Power failure countermeasure, Self-diagnosis, Automatic cold junction temperature compensation, PV filter time constant setting, Moving average count setting, Overscale, Underscale, Sensor error, Cold junction error, Internal bus error, Warm-up indication, Console communication, Integrated contact open/close count measurement function, Integrated energizing time measurement function, Heater energizing accumulated time measurement function, Error history, Firmware update, Non-volatile IC memory saving selection, Set value lock
Accessories included	Mounting frame 1 piece, Instruction manual (excerpt) 1 copy

■ Optional Functions

Event Input (Option code: EI)	4 points EI1 to EI4 are added as event inputs. For options other than option C5W, 2 points, EI1 and EI2, are added at the same time. The event which is allocated by the event input allocation selection is executed depending on the ON (closed) or OFF (open) status. Input points : 4 points Input type : Contact input Circuit current when closed : Approx. 2.3 mA Reading judgment time : 40 ms to 40 ms + within the range of input sampling cycle
EV2, EV3 Outputs (Option code: EV2, EV3)	Same as standard EV1 output. For option EV3, the COM is common.
Heater Burnout Alarm [Option code: C5W (20A), C5W (100A), W (20A), W (100A)]	When allocated to multiple EVT outputs, the set values are common. Rated current : 20 A, 100 A (Must be specified) Setting range : 20 A: 0.0 to 20.0 A (Off when set to 0.0) 100 A: 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 : The event output allocated by the event output allocation selection is turned ON or OFF.
Heating/Cooling Control [Option code: EV2, O2 (SSR/A)]	Control parameter Cooling proportional band (Pc) : 0 to Input span °C (°F) DC input is 0.0 to 1000.0 %. *When 0 or 0.0 is set, ON/OFF control is used. Cooling integral time (Ic) : 2-DOF PID control, Fast-PID control: 0 to 10000 seconds (Factory default: 200 seconds) 0.0 to 1999.9 seconds Change the setting by selecting the integral/derivative decimal point position. Slow-PID control 1 to 10000 seconds (Factory default: 200 seconds) 0.1 to 1999.9 seconds Change the setting by selecting the integral/derivative decimal point position. Cooling derivative (Dc) : 0 to 10000 seconds (Factory default: 50 seconds) 0.0 to 1999.9 seconds Change the setting by selecting the integral/derivative decimal point position. Cooling proportional cycle : 0.1 to 120.0 seconds (Factory default: Relay contact: 30 sec, Non-contact voltage (for SSR drive): 3.0 sec, Direct current/DC voltage: Not (available) Cooling output high limit, output low limit : 0.0 to 100.0 % Direct current/DC voltage: -5.0 to 105.0 % (However, for outputs other than 4 to 20 mA, outputs of 0 % or less are not output) (Factory default: OUT2 low limit: 0.0 %, OUT2 high limit: 100.0 %) Cooling ON/OFF hysteresis : 0.1 to 1000.0 °C(0.1 to 1800.0 °F) DC input: 1 to 10000 Cooling control parameter Overlap/Deadband : Setting range : -100.0 to 100.0 °C(-180.0 to 180.0 °F) DC input : -1000 to 1000 Cooling action mode selection : Air cooling Linear characteristic (Factory default) Oil cooling (1.5th power of the linear characteristics) Water cooling (2nd power of the linear characteristics)
External Setting Input (Option code: EA)	When Remote is selected by Remote/Local switching (keypad operation, EI input), external analog signal will be SV. SV adds external analog signal to remote bias value. (However, not available for program control, Range of external setting input low limit to external setting input high limit) Setting signal : 4 to 20 mA DC Allowable input : 50 mA DC or less Input impedance : 50 Ω or less Input sampling period : 100 ms
Transmission Output (Option code: TA, TV)	Converting the value (PV, SV, MV) to analog signal every 125 ms, outputs the value in current. (Factory default: PV transmission) Resolution : 12000 Output : 4 to 20 mA DC (Allowable load resistance: 550 Ω or less) 0 to 1V DC (Allowable load resistance: 1 kΩ or more) 0 to 10V DC (Allowable load resistance: 1 kΩ or more) Output accuracy : Within ±0.3 % of transmission output span Outputs Transmission output low limit if Transmission output high limit and low limit value are the same.
Insulated Power Output (Option code: P24)	Output voltage : 24 V ±3 V DC (when load current is 10 mA DC) Ripple voltage : Within 200 mV DC (when load current is 10 mA DC) Max. load current : 10 mA DC
Serial Communication (Option code: C5W, C5)	Following operations can be performed from the external PC. (1) Reading and setting of SV, PID, and various set values (2) Reading of PV and action status (3) Function change Communication line : EIA RS-485 Communication method : Half-duplex communication Communication speed : 9600, 19200, 38400, 57600, 115200 bps Selectable by keypad (Factory default: 9600 bps) Data bit/Parity : Data bit: 7, 8 bits Parity: Even, Odd, No parity Selectable by keypad (Factory default: 7 bits/Even) Stop bit : 1, 2 bits Selectable by keypad (Factory default: 1 bit) Communication protocol : Shinko protocol, Modbus RTU, MC protocol, SVTC Selectable by keypad (Factory default: Shinko protocol) Instrument number : 0 to 95 (Factory default: 0) When MC protocol is selected, set 1 for master and 2 to 8 for slave. Set value digital transmission : When set value digital transmission is selected in the communication protocol selection for serial communication, set values can be transmitted digitally in combination with a digital indicating controller [with serial communication (Option C5, C5W)]. SVTC bias setting : Digital external setting of the ACS2 (effective in selecting Shinko standard protocol) receives digital setting value from program controller (Option SVTC). Setting range: Conversion value equivalent to ±20 % of input span Response delay time : Response from the controller can be delayed after receiving command from the host computer. Setting range: 0 to 1000 ms (Factory default: 10 ms) PLC link function : When MC protocol is selected in communication protocol selection, PLC link function (Programless communication function) can be used. It is a function that serially connects the PLC Q series (manufactured by Mitsubishi Electric Corp.) and this instrument, and reads and writes various data to and from PLC registers using the communication protocol of the PLC. Communication protocol uses "QW" "QR" commands, and supports the PLC that can use A compatible 1C frame AnA/AnU common command (QR/QW). Remote output : When 18 : remote output is selected in the event output allocation selection, output can be forcibly turned ON or OFF from the Host.

■ Accessories Sold Separately

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

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

Model

ACS2	□	□	□	□	□	Specification
Control output (*1)	R (*5)					Relay contact: 1 a
						Non-contact voltage (for SSR drive): 12 V DC $\pm 15\%$
	M (*1)					Direct current: 4 to 20 mA DC
						Direct current: 0 to 20 mA DC
	V					DC voltage: 0 to 1 V
	1					DC voltage: 0 to 5 V
	2					DC voltage: 1 to 5 V
	3					DC voltage: 0 to 10 V
	C					Open collector
Power supply	0					100 to 240 V AC, 24 V DC, 48 V DC
Input		M				Multi-range
Option 1		0				No option needed
		1			EV2	Event output EV2 (*1)
		2			EV3	Event output EV3 (*2)
		3			O2 (SSR/A)	Heating/Cooling control O2 (SSR/A) (*4)
		4			P24	Insulated power output (*6)
Option 2		0				No option needed
		1			C5W (20 A)	Serial communication + Heater burnout (20 A)
		2			C5W (100 A)	Serial communication + Heater burnout (100 A)
		3			W (20 A)	Heater burnout (20 A) (*3)
		4			W (100 A)	Heater burnout (100 A) (*3)
		5			TA	Transmission output (4-20 mA) (*3)
		6			TV	Transmission output (0-1 V) (*3)
		7			TV	Transmission output (0-10 V) (*3)
		8			EA	External setting input (*3)
		9			C5	Serial communication (*3)
		A			EI	Event input 4 points

*1 When OUT1 is selected in the event output EV2 allocation selection, it becomes output multi, and SSR output, current output, and relay output can be selected.

*2 Common of 3 event outputs is common.

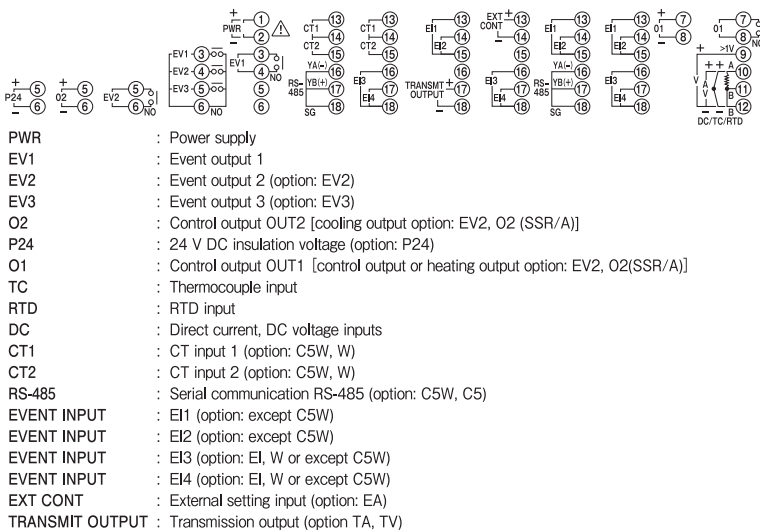
*3 For options other than C5W and EI, 2 event inputs are added simultaneously.

*4 When O2 is selected, SSR output and current output can be selected for the cooling side output. However, the cooling output of the relay output is not available.
If you want to use the cooling output as a relay output, select OUT2 in the event output EV2 allocation selection.

*5 To use the heating side of the heating/cooling control with relay output, select R.

*6 To use isolated power supply output with relay output, select R.

Terminal arrangement

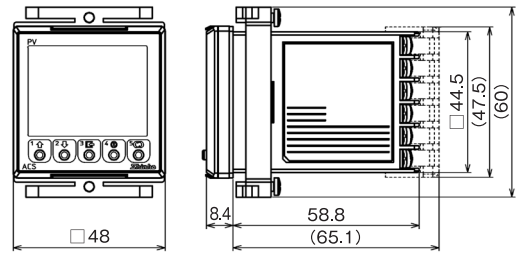


Rating

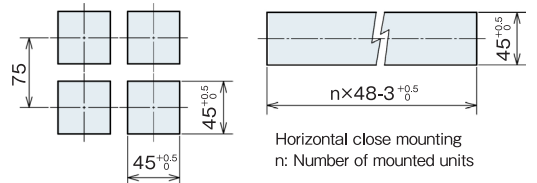
Input (TC)	Scale Range	Resolution
K	-200 to 1370 °C	-328 to 2498 °F
	-200.0 to 800.0 °C	-328.0 to 1472.0 °F
	-200.0 to 400.0 °C	-328.0 to 752.0 °F
J	-200 to 1000 °C	-328 to 1832 °F
	-200.0 to 400.0 °C	-328.0 to 752.0 °F
	0 to 1760 °C	32 to 3200 °F
R	0 to 1760 °C	32 to 3200 °F
S	0 to 1760 °C	32 to 3200 °F
B	0 to 1820 °C	32 to 3308 °F
E	-200 to 800 °C	-328 to 1472 °F
T	-200.0 to 400.0 °C	-328.0 to 752.0 °F
N	-200 to 1300 °C	-328 to 2372 °F
PL-II	0 to 1390 °C	32 to 2534 °F
C (W/Re5-26)	0 to 2315 °C	32 to 4199 °F
Input (RTD)	Scale Range	Resolution
Pt100	-200.0 to 850.0 °C	-328.0 to 1562.0 °F
	-200 to 850 °C	-328 to 1562 °F
	-100.0 to 100.0 °C	-148.0 to 212.0 °F
Input (DC)	Scale Range	Resolution
4 to 20 mA (Built-in shunt resistor)	-19999 to 19999 (*)	1
0 to 20 mA (Built-in shunt resistor)	-19999 to 19999 (*)	1
4 to 20 mA (Externally mounted shunt resistor)	-19999 to 19999 (*)	1
0 to 20 mA (Externally mounted shunt resistor)	-19999 to 19999 (*)	1
0 to 1 V	-19999 to 19999 (*)	1
0 to 5 V	-19999 to 19999 (*)	1
1 to 5 V	-19999 to 19999 (*)	1
0 to 10 V	-19999 to 19999 (*)	1

(*) : Decimal point place change and scaling are possible. (Factory default: 0 to 10000)

Dimensions (Scale: mm)



Panel cutout (Scale: mm)



- 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 with our agency or main office regarding the purpose of use. (Never use this instrument for medical purposes in which human lives are involved.)
 - External protection devices such as protection equipment against excessive temperature rise, etc. must be installed, as a 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 being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment), 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 current as of June 2025, and its contents are subject to change without notice.
- The photos in this catalog do not show actual usage.
- If you have any inquiries, please consult us or our agency.

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