Shimaden, Temperature and Humidity Control Specialists

°C
%RH
SHIMADEN

Series SRP30

SHIMADEN HYBRID CONTOROLLER

SRP33 SRP34

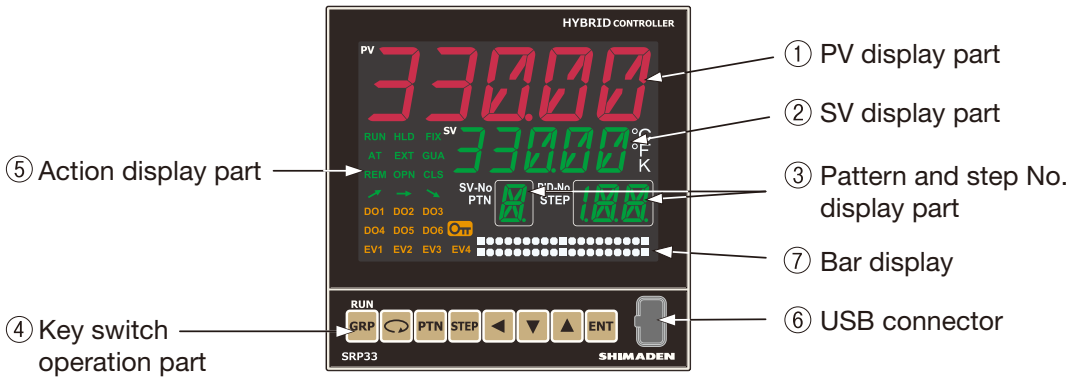
CE approved

BASIC FEATURES

- ☐ *Works as both a high-performance controller and a high-performance program controller*
- ☐ *Adopts a large LCD for SRP33 (display area: 77 (W) × 57 mm (H))*
- ☐ *Improved visibility and expressibility with a large 5-digit and 11-segment display*
- ☐ *Exclusive setup software enables an initial setting on the PC and the set data can be easily transferred to the instrument using the front panel USB port (communication is possible without the controller power source).*
- ☐ *Achieves high precision of 0.1%FS and high resolution of 0.0001*
- ☐ *The fastest sampling cycle is 50 ms (selectable from 50, 100, 200, and 500 ms).*
- ☐ *Multi SV value setting: SV value can be set up to 9 points.*
- ☐ *Multi PID: PID No. 1–9 (9 types)*
- ☐ *Program function: up to 9 patterns and 180 steps*
- ☐ *Dust and splash proof front panel equivalent to IP55*

■ Adopts a large LCD for SRP33 series (display area: 77 (W) × 57 mm (H))

Measured value (PV) 11 segments Red 5-digit LCD
Set value (SV) 11 segments Green 5-digit LCD
OUT1, OUT2, and DEV White/19 dots × two lines Bar display

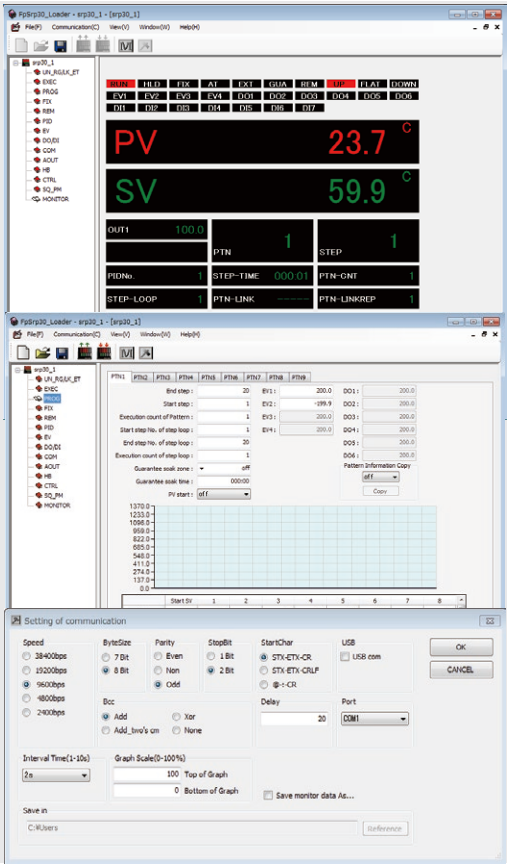


■ Improved visibility and expressibility with a large 5-digit and 11-segment display

7 Segments (previous product)

11 segments

■ Exclusive setup software enables an initial setting on the PC and the set data can be easily transferred to the instrument using the front panel USB port.

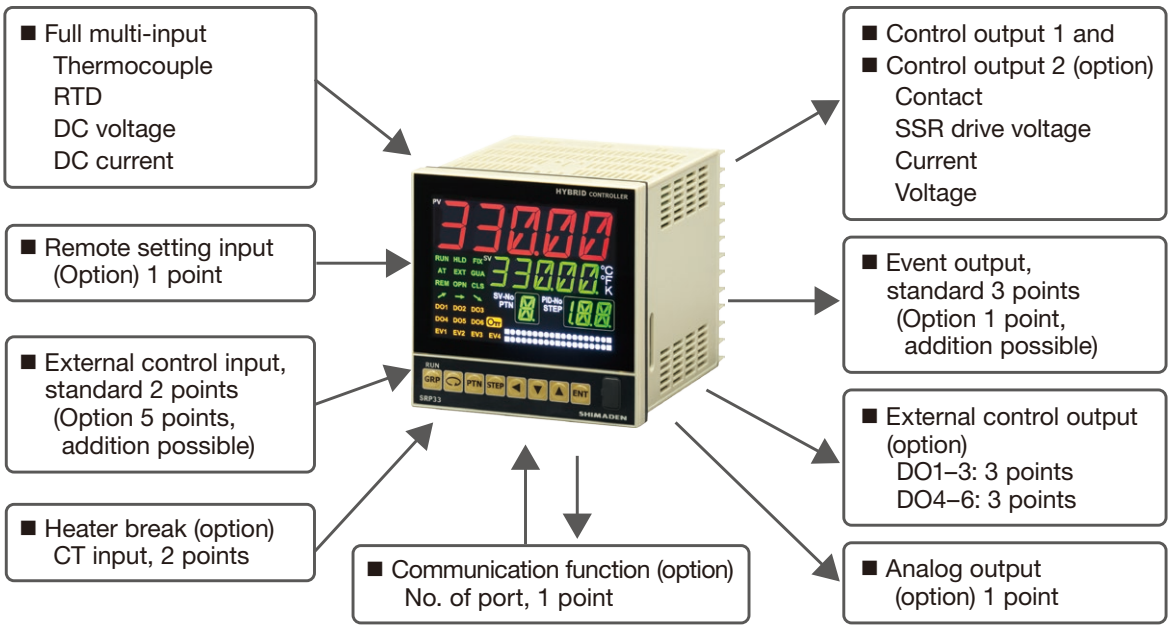


- Exclusive setup software for an easy initial setting
- Various parameters can be read and written.
- Measured logs can be saved as a CSV file format.
- Read/write operation is possible even when the controller is turned off.

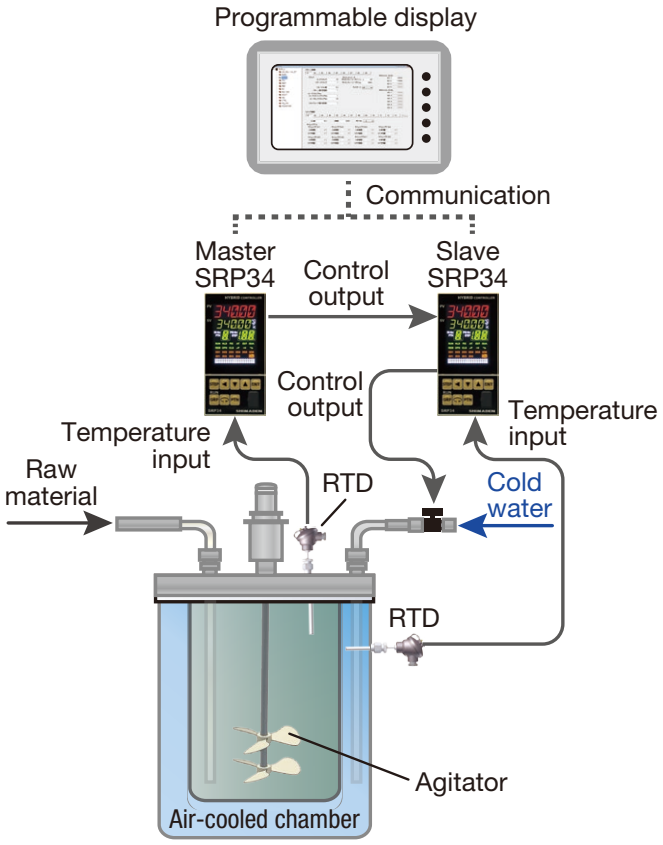
■ Supports operations ranging from general purpose tasks to advanced process control

■ Abundant functions

❍ Achieves high precision of 0.1%FS and high resolution of 0.0001
❍ The fastest sampling cycle is 50 ms: selectable from 50, 100, 200, and 500 ms.
❍ Multi SV value setting: SV value can be set up to 9 points.
❍ Multi PID: PID No. 1–9 (9 types)
❍ Program function: up to 9 patterns and 180 steps



EXAMPLE OF USE



Enlarged view of inside a reactor

■ Display

• Digital display : Measured value (PV) 11-segment LCD Red 5 digits
Set value (SV) 11-segment LCD Green 5 digits
PTN No. 11-segment LCD Green 1 digit
STP No. 11-segment LCD Green 2 digits + 2 segments

	11-segment character height (mm)			
	PV	SV	PTN	STEP
SRP33	20	12	10	10
SRP34	9	7	7	7

• Bar display : White/19 dots × 2 steps
OUT1, OUT2, DEV (deviation), time rate within STEP
Assignable to rate of No. of executions
Bar scaling during DEV is set to 0.1–100.0% of the measuring range.

Bar scaling explanation

Example: Deviation range when bar scaling is 10.0% and the measuring range is 100°C.

Example: Deviation range when bar scaling is 10.0% and the measuring range is 200°C.

• Status display : Action state (status) display of 28 items
Lighting or blinking during status validity

RUN	Green	Lights during action execution, lights out during reset status, blinks during MAN
HLD	Green	Lights during program run temporary stop, blinks during program temporary stop due to input abnormality
FIX	Green	Lights during FIX (constant value control) Mode, lights out during PROG Mode
AT	Green	Blinks during auto-tuning execution, lights during auto-tuning standby
EXT	Green	Lights during external pattern No. switch DI specification, lights out during external pattern No. key specification
GUA	Green	Lights during guarantee soak action execution
REM	Green	Lights during remote SV execution
↗ (Up)	Green	Lights during up-step execution while in program action
→ (Flat)	Green	Lights during flat step execution while in program action
↘ (Down)	Green	Lights during down-step execution while in program action
PTN	White	Lights during Pattern No. display
STEP	White	Lights during Step No. display
SV-No.	White	Lights during display of SV-No. in execution
PID-No.	White	Lights during display of PID-No. in execution
°C	White	Lights when unit is Celsius
°F	White	Lights when unit is Fahrenheit
K	White	Lights when unit is Kelvin
EV1–EV4	Orange	Lights during Event Output
DO1–DO6	Orange	Lights during external control digital output
🔑	Orange	Displays during keylock (lights when the level is 1 or more), parameter cannot be changed

• Display resolution : 0.0001, 0.001, 0.01, 0.1, 1 (Differs according to input range)

• Display accuracy : Measuring range ± (0.1% + 1 digit) (Separately refer to Measuring Range Code Table)
TC input ± (0.1%FS + 1 digit + 1°C)
Pt input ± (0.1%FS + 1 digit + 0.1°C)
mV, V input ± (0.1%FS + 1 digit)
mA input ± (0.1%FS + 1 digit) Depends on accuracy of external resistor 250Ω

• Display cycle : According to sampling cycle (50 ms, 100 ms, 200 ms, 500 ms)

■ Setting

• Local setting : Front panel key switch operation
GRP (RUN), ↺, PTN, STEP, ◀, ▼, ▲, ENT

• Communication setting : Same level as local setting (Latter operation is prioritized)

• Remote setting : Has priority over external analog signal SV setting and communication setting (Available only during FIX Mode)

• DI setting : Level action function has priority over local setting and communication setting. Edge action function is the same level (Latter operation is prioritized).

• PV limiter : Settable within -10–110% of the measuring range (Scaleover point)
* P value is calculated based on measuring range and therefore is not affected by PV limiter.

• SV limiter : Settable within measuring range and PV limiter

• Setting lock : OFF or keylock on level 1 to 3 is possible.

• Parameter bank : 1 execution bank + 2 backup banks (Total 3)
SRP30 can save all parameters in multiple classes.
The unit for each class is called a bank, and there are 3 banks in all, namely, Execution bank, BK1 bank (backup), and BK2 bank (backup).
Copying of parameters between the execution bank and BK1/BK2 banks is possible.

• Parameter initialization : Initialization of user parameter can be changed by end-user.
* During user parameter initialization, only the bank in use is initialized.

■ Input

Input Common Specifications

• Input range : Full multi-input, Multi-range input

• Scaling : Possible during linear input (Voltage, current) -19999–32000 within span 10–52000

• Decimal point position : Can be set from none, 1/10, 1/100, 1/1000, 1/10000
(With or without a decimal point is selectable for TC and Pt.)

• Sampling cycle : 50 ms, 100 ms, 200 ms, 500 ms

• PV limiter : Settable within the measuring range -10%–110%

• Unit : °C, °F, K switch through front key switch and communication

• PV bias : ± 10000 digits

• PV ratio : 0.500–1.500 times of input value

• PV filter : OFF, 1–100 sec.

• PV input operation : Square root extraction (Only linear input, input low cut 0.0–5.0%FS)

• Multi-bias function : 10-segment Linear Approximation (only linear input) 11 points
PV-MBIAS (PV) 11 points, PV-MBIAS (SV) 11 points

• Scaleover display : Sc_LL, Sc_HH, burnout and others

• Isolation : Uninsulated from System DI, CT and REM, but insulated from other input/output

Thermocouple Input (TC)

• Input type : B, R, S, K, E, J, T, N, PLII, PR40-20, WRe5-26 [L, U (DIN43710)]
Refer to Measuring Range Code Table.

• Display range : Within PV limiter (Provided that minimum temperature does not fall below -273.15°C)
With or without a decimal point is selectable.

• Input resistance : Approx. 500kΩ

• Cold junction temperature compensation : Selection of internal Cold Junction Temperature Compensation/external Cold Junction Temperature Compensation

• Internal cold junction temperature compensation accuracy : ± 1°C (18–28°C range)

• Burnout function : Only upscale

• Lead wire tolerable resistance range : Below 100Ω/1 wire

RTD input

• Input type : Pt100/JPt100 3-wire type Refer to Measuring Range Code Table.

• Display range : Within PV Limiter (Provided that minimum temperature does not fall below -240.0°C)
With or without a decimal point is selectable.
• Lead wire tolerable resistance range : Below 10Ω/1 wire
• Measured current : Approx. 1 mA

Voltage Input (mV)
• Input type : -100–100 mV Refer to Measuring Range Code Table.
• Display : Programming Scaling (Within PV limiter, rounded off to the lowest displayed place from the next lower place)
• Input resistance : Approx. 500kΩ

Voltage Input (V)
• Input type : -10–10 V Refer to Measuring Range Code Table.
• Display : Programming Scaling (Within PV limiter, rounded off to the lowest displayed place from the next lower place)
• Input resistance : Approx. 500kΩ

Current Input (mA)
• Input type : 0–20 mA/4–20 mA Refer to Measuring Range Code Table.
• Display : Programming Scaling (Within PV limiter, rounded off to the lowest displayed place from the next lower place
• Receiving resistance : External resistance (250Ω) necessary

■ Control Mode
Expert PID Control with auto-tuning function
• No. of SV : SV1–9
• No. of PID : 9 classes
• Zone PID : 9 zones OFF, SV, PV The object of each PID zone cannot singly set SV and PV.
• Hysteresis : 0–10000 digits
• Proportional band : OFF, 0.1–999.9% (ON-OFF action when OFF)
• Integral time : OFF, 1–6000 sec. (P or PD action when OFF)
• Derivative time : OFF, 1–3600 sec. (P or PI action when OFF)
• Manual reset : -50.0–50.0% (Valid when I = OFF)
• Dead band (OUT2) : -19999–30000 digits
• Hysteresis mode : Select from the 3 modes below
CENT Mode, SVOF Mode, SVON Mode
• ON-OFF hysteresis : 1–9999 digits (Valid when P = OFF)
• Proportional cycle : 1–3000 sec. 1 sec. step (During contact or SSR drive voltage output)
• Control output characteristics : Reverse/direct selectable
• Output change rate limiter : OFF, 0.1–100.0%/sec.
• Manual output : 0.0–100.0%, 0.1% step
• AT point offset : ± 10000 digits
• Output updating cycle : According to sampling cycle (50 ms, 100 ms, 200 ms, 500 ms)
• Manual control : Balanceless, bumpless action
(Switch through front panel key switch or external control input (DI))
Output setting range 0.0–100.0%
Setting resolution 0.1%

■ Control Output 1
• Contact (Y) : Contact (1a) 240 V AC 2.5 A: resistive load/1 A: inductive load
• SSR drive voltage (P) : 12 V ± 1.5 V DC (Maximum load current 20 mA)
• Current (I) : 4–20 mA DC (Maximum load resistance 600Ω)
• Voltage (V) : 0–10 V DC (Maximum load current 2 mA)
• Output accuracy : ± 0.5%FS (5–100% output/within accuracy maintaining temperature range)
• Output resolution : Approx. 1/50000 (When current/voltage output)
• Isolation : AO and I, P, V of Control Output 1 and 2 are uninsulated, but are insulated from other input and output.

■ Control Output 2 (Option)

- Contact (Y) : Contact (1a) 240 V AC 2.5 A: resistive load/1 A: inductive load
- SSR drive voltage (P) : 12 V ± 1.5 V DC (Maximum load current 20 mA)
- Current (I) : 4–20 mA DC (Maximum load resistance 600Ω)
- Voltage (V) : 0–10 V DC (Maximum load current 2 mA)
- Output accuracy : ± 0.5%FS (5–100% output/within accuracy maintaining temperature range)
- Output resolution : Approx. 1/50000 (When current/voltage output)
- Selection limit : Exclusive selection with EV4
- Isolation : AO and I, P, V of Control Output 1 and 2 are uninsulated, but are insulated from other input and output.

■ Event Output

- No. of output : Standard 3 points (EV1–EV3) additional (option) 1 point (EV4)
- Constant rating (EV1–EV3) : Contact (1a) 240 V AC 1 A: Resistive load (Common)
  (EV4) Contact (1a) 240 V AC 2.5 A: Resistive load (Common independent)
- Function : non : No action
  Hd : Higher limit deviation alarm
  Ld : Lower limit deviation alarm
  od : Outside higher and lower limit deviation alarm
  id : Inside higher and lower limit deviation alarm
  HA : Higher limit absolute value alarm
  LA : Lower limit absolute value alarm
  o1H : Output 1 higher limit deviation alarm
  o1L : Output 1 lower limit deviation alarm
  o2H : Output 2 higher limit absolute value alarm
  o2L : Output 2 lower limit absolute value alarm
  So : Scaleover
  PV_So : PV scaleover
  RM_So : Remote scaleover
  REM : Remote SV
  FiX : FIX Mode
  At : Auto-tuning
  Run : RUN signal (EXE signal)
  HLd : Hold signal
  GuA : Guarantee soak signal
  StPS : Step signal
  PEnd : Pattern end signal
  EndS : Program end signal
  uP : Up slope signal
  doWn : Down slope signal
  tS1 : Time signal 1
  tS2 : Time signal 2
  tS3 : Time signal 3
  tS4 : Time signal 4
  tS5 : Time signal 5
  tS6 : Time signal 6
  tS7 : Time signal 7
  tS8 : Time signal 8
  Ct1bA : In CT1 heater break alarm output
  Ct1LA : In CT1 heater loop alarm output
  Ct2bA : In CT2 heater break alarm output
  Ct2LA : In CT2 heater loop alarm output
  Ct_bA : 3-phase break alarm (Heater break in either CT1 or CT2)
  Ct_LA : 3-phase circuit alarm (Heater loop in either CT1 or CT2)

- Setting range
  Absolute value : Within measuring range and PV limiter (Both higher and lower limit)

Deviation : -19999–30000 digits (Both higher and lower limit)
Higher and lower limit deviation : 0–30000 digits (Both inside and outside)
• Action : ON-OFF action
• Hysteresis : 1–9999 digits
• Action delay time : OFF, 1–9999 sec.
• Standby action : Separate setting (Separate output) Select from any of 4 types below (When selecting DEV, PV, SV).
1) None
2) Standby 1 (When starting power, when RESET ON → OFF)
3) Standby 2 (When starting power, when RESET ON → OFF, when execution SV is changed)
4) Standby 3 (Does not output when there is input abnormality)
• Latching : Selection from Yes/No
• Output characteristics : Selection from NO/NC
• Output updating cycle : According to sampling cycle (50 ms, 100 ms, 200 ms, 500 ms)
• Isolation : Insulated from all input and output (Uninsulated within EV1–3)
• Selection limit : EV4 is an exclusive selection with respect to Control Output 2.

■ External Control Output (DO) (Option)
• No. of output : 1st option 3 points (DO1–DO3)
2nd option 3 points (DO4–DO6)
• Output type : Darlington open collector output
• Rating : 24 V DC/50 mA maximum ON voltage below 1.5 V
• Function/setting range/ action/hysteresis/ action delay time/ standby action/latching/ output characteristics/ output updating cycle : Same as EV1–4
• Isolation : Insulated from all input and output (Uninsulated within DO1–6)
• Selection limit : DO4–6 is an exclusive selection with respect to CT input and remote setting input.

■ External Control Input (DI)
• No. of input : Standard 2 points (DI1–2) + option 5 points (DI3–7) addition possible
• Input type : Level input, Edge input
• Input rating : Voltage 5 V DC (2.5 mA/1 input)
• Input action : Non-voltage contact or open collector
• Input holding time : According to sampling cycle (50 ms, 100 ms, 200 ms, 500ms)
• Function : non No assignment
Run1 Switch Run/Reset (Level)
Run2 Switch Run/Reset (Edge)
RSt Program forced reset (Level)
HLd Hold processing (Level)
AdV Advance processing (Edge)
FiX FIX Mode (Level)
MAn Manual output (Level)
L_rs Latching total release (Edge)
KLock Keylock 3 (Level)
Ptn3 Start pattern No. 3 bit (Level) 1–7 DI5–DI7 only
FSVNo SV No. 3 bit (Level)
Act1 Output 1 output characteristics (Level)
Act2 Output 2 output characteristics (Level)
REM Remote SV switch (Level)
• Isolation : Uninsulated from system, PV, CT and REM but insulated with respect to other input and output

■ Analog Output (AO) (Option)
• No. of output : 1 point (Option)
• Function : PV, SV, DEV, OUT1, OUT2
• Output rating : 0–10 mV DC/Output resistance 10Ω

0–10 V DC/Load current 2 mA max.
4–20 mA DC/Load resistance 300Ω max.
• Output accuracy : ± 0.1%FS (With respect to display value)
• Output resolution : Approx. 1/45000
• Output updating cycle : According to sampling cycle (50 ms, 100 ms, 200 ms, 500 ms)
• Output scaling : PV, SV Within measuring range
DEV within ± 100.0% [PV-SV]
OUT1, OUT2 within 0.0–100.0%
• Reverse scaling : Possible
• Output limiter : Lower limit 0.0–99.9% Higher limit 0.1–100.0% Lower limit < Higher limit
• Isolation : Uninsulated from Control Output P, I, and V but insulated with respect to other input and output

■ Remote Setting Input (REM) (Option)
• No. of input : 1 point (Option)
• Function : Analog SV setting
• Setting signal : 1–5 V Input resistance Approx. 500kΩ
0–10 V Input resistance Approx. 500kΩ
4–20 mA Receiving resistance 250Ω
• Input accuracy : ± 0.1%FS
• Sampling cycle : According to PV sampling cycle (50 ms, 100 ms, 200 ms, 500 ms)
• Bias : ± 10000 digits
• Scaling : Possible within setting range (Reverse scaling possible)
• Filter : OFF, 1–300 sec.
• Ratio : 0.001–30.000
• Square root extraction : Low-cut range 0.0–5.0%FS
• Direct tracking : Available
• Isolation : Uninsulated from system, PV, DI and CT but insulated with respect to other input and output
• Limitations : Available only during FIX Mode
Exclusive selection with respect to DO4–6, CT input, feedback potentio input

■ Heater Break Alarm (Option)
• CT input : 2 points (Option) common
• Alarm action : During heater break detection when Control Output is ON, Alarm ON
(Heater current when ON ≤ set current)
During heater loop abnormality detection when Control Output is OFF, Alarm ON
(Heater current when OFF ≥ set current)
• Hysteresis : 0.2 A
• Current detection : Through attached CT (Exclusive CT attached/single phase or 3-phase)
• Detection source selection : Select either OUT1 or OUT2 (Provided that output is either Y or P)
• Sampling time : According to sampling cycle (50 ms, 100 ms, 200 ms, 500 ms)
• Minimum action confirmation time : 0.2 sec. or above (200 msec.) (Both when Control Output is ON and OFF)
• Current display : 0.0–55.0 A
• Display accuracy : 3%FS (Sine wave 50 Hz)
• Output destination : Assigned to EV and DO output
• Isolation : Uninsulated with respect to system, other CT input, PV, DI, and REM, and insulated with respect to other input and output
• Limitations : Addable only when either Control Output 1 or Control Output 2 is Y or P
Exclusive selection with respect to DO4–6 and feedback potentio input, as well as remote setting input
• Recommended external CT attachment : QCC01, QCC02 (Sold separately)

■ Communication Function (Option)
• No. of port : 1 point (Option)
• Communication type : RS-232C, RS-485
• Communication system : RS-232C 3-line half duplex system
RS-485 2-line half duplex multidrop (bus) system

- Synchronization system : Start-stop synchronization system
- Communication distance : RS-232C/Max. length 15 m RS-485/Max. length 500 m (Differs according to connection conditions)
- Communication speed : 2400, 4800, 9600, 19200, 38400 bps
- Communication address : 1–255
- Communication memory mode : EEP/RAM/r_E
- Communication delay time : 1–500 ms step 1 ms
- No. of communication unit : RS-232C 1 unit/RS-485, possible up to 255 units (Depends on connection conditions)
  * Node for connecting 255 units of RS-485 should all be the SRP30 series.
- Terminal resistor : RS-232C/not used, RS-485/120Ω attached externally
- Master function : Available (SV value RUN/RST)
- Isolation : All input and output are insulated.

Shimaden Standard Protocol

ASCII Code	Data length	7, 8 bit
	Parity	Even number, odd number, none
	Stop bit	1, 2 bit
	Control code	STX_ETX_CR/STX_ETX_CRLF/@_:_CR
	Communication	
	BCC	Add/Add two's cmp/XOR/None

MODBUS ASCII Mode

ASCII Mode	Data length	7 bit fixed
	Parity	Even number, odd number, none
	Stop bit	1, 2 bit
	Control code	_CRLF
	Error check	LRC check
	Function code	03H data read
		06H data write

MODBUS RTU Mode

Binary Mode	Data length	8 bit fixed
	Parity	Even number, odd number, none
	Stop bit	1, 2 bit
	Control code	none
	Error check	CRC check
	Function code	03H data read
		06H data write

■ Front Panel Loader Communication

- Interface : USB 2.0 Micro B connector (Standard)
- Compatible OS : Windows XP/Vista/7/10
- Synchronization system : Start-stop synchronization system
- Communication speed : 38400 bps
- Data format : 8 bit, without Parity, 1 stop bit fixed
- Communication BCC : Add fixed
- Communication protocol : Shimaden Standard Protocol
- Communication code : ASCII Code
- Control code : STX_ETX_CR
  * To connect to PC, micro USB cable (QCUS001) (A male connector ↔ micro B male connector) is necessary (Sold separately).

■ Program Function

- Setting system : Front panel key switch or communication
- No. of pattern : Maximum 9 patterns
- No. of step : Maximum 180 steps (Initial value 10 steps)
- Step time : 0 min. 0 sec.–300 min. 0 sec. or 0 hr. 0 min.–300 hrs. 0 min.
- No. of pattern executions : Maximum 30000 repetition possible

- No. of step loop : Maximum 30000 repetition possible
- Pattern link setting : Maximum 10 patterns connectable
  Maximum 30000 times executable
- Link execution setting : Maximum 30000 repetition possible
- Time accuracy : ± (Set time x 0.02% + 0.1 sec.)
- Step setting items : SV, Step time, PID No.
- Power failure compensation : With/without selectable
- SV setting : Same as measuring range
- Time setting : 0–300 hrs. 0min./step or 0–300 min. 0 sec./step
- Advance function : Skip step currently executed and proceed to next step
- Hold function : Temporary stop of time progress
- Time signal setting
  (Per step) : No. of registration: Maximum 8 points, assigned to Event Output and DO
  : Time: 0–300 hrs. 0 min./step or 0–300 min. 0 sec./step
  resolution: 1 min. or 1 sec.
- Guarantee soak : Zone setting range: 0–10000 digits
  Time setting range: 0–300 hrs. 0 min./step or 0–300 min. 0 sec./step

■ General Specifications

- Data storage : By non-volatile memory (EEPROM)
- Operating ambient
  temperature/humidity range : -10–55°C/90% RH or below (No dew condensation)
  Derating from 50°C
- Storage temperature : -20–65°C
- Pollution class : Category II
- Supply voltage : 100–240 V AC ± 10% (50/60 Hz)
- Power consumption : SRP33: Maximum 18 VA
  SRP34: Maximum 15 VA
- Input noise removal ratio : Normal Mode: 50 dB or above (50/60 Hz)
  Common Mode: 120 dB or above (50/60 Hz)
- Applicable standard : Safety: IEC61010-1 and EN61010-1
  EMC: EN61326
  RoHS: EN50581
- Power supply
  short-break time : Within 50 ms, normal action continuation (When 200 V AC)
- Insulation resistance : Input-output terminal and power terminal interval: 500 V DC 20MΩ or above
  Power terminal and grounding terminal interval: 500 V DC 20MΩ or above
- Dielectric strength : Input-output terminal and power terminal interval: 3000 V AC 1 min. (Faradic current 5 mA)
  Power terminal and grounding terminal interval: 1500 V AC 1 min. (Faradic current 5 mA)
- Type of protection : Front panel Dust-proof and Drip-proof front panel (IP55 equivalent)
- Material of case : Resin mold (UL94V-1 equivalent)

- External dimensions/
  panel cutout/applicable
  panel thickness/weight :

	External dimensions (panel depth)	Panel cutout	Applicable panel thickness	Weight
SRP33	H96 × W96 × D111 (100) mm	H92 × W92 mm	1–8 mm	Approx. 410 g
SRP34	H96 × W48 × D111 (100) mm	H92 × W45 mm		Approx. 280 g

- Mounting : Panel flush mounting (Installed with metal fitting)

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* Windows XP/Vista/7/10 are registered trademarks of Microsoft Corporation.

ORDERING INFORMATION

ITEM	CODE	SPECIFICATIONS
SERIES	SRP33-	96 x 96 DIN size Hybrid controller — TC, RTD, mV, V, mA Full multi input (mA is input by externally attached resistor) DI2 points, EV3 points, USB Communication standard equipment
	SRP34-	48 x 96 DIN size Hybrid controller — TC, RTD, mV, V, mA Full multi input (mA is input by externally attached resistor) DI2 points, EV3 points, USB Communication standard equipment
CONTROL OUTPUT 1	Y	Contact: 1a contact capacity 240 V AC 2.5 A/resistive load, 1 A/inductive load
	I	Current: 4–20 mA DC, Load resistance: 600Ω or below
	P	SSR drive voltage: 12 V ± 1.5 V DC, Load current: 20 mA or below
	V	Voltage: 0–10 V DC, Load current: 2 mA or below
CONTROL OUTPUT 2 (OPTION)	N -	Without
	Y -	Contact: 1a contact capacity 240 V AC 2.5 A/resistive load, 1 A/inductive load
	I -	Current: 4–20 mA DC, Load resistance: 600Ω or below
	P -	SSR drive voltage: 12 V ± 1.5 V DC, Load current: 20 mA or below
	V -	Voltage: 0–10 V DC, Load current: 2 mA or below
	E -	EV4 Contact, 1a contact capacity, 240 V AC 2.5 A/resistive load, 1 A/inductive load
EXTERNAL CONTROL INPUT (DI) (OPTION)	0	Without
	1	5 points (DI3–7) *3
ANALOG OUTPUT (AO) (OPTION)	0	Without
	3	Voltage: 0–10 mV DC, Output resistance: 10Ω
	4	Current: 4–20 mA DC, Load resistance: 300Ω or below
	6	Voltage: 0–10 V DC, Load current: 2 mA or below
EXTERNAL CONTROL OUTPUT (DO) (OPTION)	0	Without
	1	3 points (DO1–3) Darlington open collector output: 24 V DC 50 mA
ADDITIONAL DO/CT/REM (OPTION)	0	Without
	1	Additional DO3 points (DO4–6) Darlington open collector output: 24 V DC 50 mA *1
	2	CT input 2 points, amperage display 0.0–55.0 A *2
	4	Remote setting input 4–20 mA DC/receiving impedance 250Ω (Uninsulated)
	5	Remote setting input 1–5 V DC/input resistance approximately 500kΩ (Uninsulated)
	6	Remote setting input 0–10 V DC/input resistance approximately 500kΩ (Uninsulated)
CCMMUNICATION (OPTION)	0	Without
	5	RS-485 — Shimaden standard protocol/MODBUS communication protocol
	7	RS-232C — Shimaden standard protocol/MODBUS communication protocol
REMARKS	0	Without
	9	With

*1 Selectable only when adding DO1–3
*2 Selectable only when control output 1 or 2 is Y or P
*3 Necessary when selecting SV and patterns by DI

ITEMS SOLD SEPARATELY

Name of Item	Model	Description
Shunt resistor	QCS002	250Ω ± 0.1% External receiving impedance during current input
Relay unit	AP2MC	Open collector output is converted into contact output. 2 built-in circuits
CT	QCC01	CT (CTL-6-S) for 30 A
CT	QCC02	CT (CTL-12-S36-8) for 50 A
Micro USB cable (2 m)	QCUS001	A male connector/Micro B male connector
SV No. selector	KA251	BIN Code Switch selection can be made from SV1 to SV10.

■ Micro USB cable (2 m, ferrite core attached)

Model: QCUS001

* A ferrite core is attached to the USB cable for noise prevention.
* Please use a USB cable designated by Shimaden.

■ Relay unit Model: AP2MC

(Open collector output is converted into contact output. 2 built-in circuits)

■ SV No. selector Model: KA251

(BIN Code Switch selection can be made from SV1 to SV10)

■ Shunt resistor Model: QCS002

(250Ω ± 0.1% External receiving impedance during current input)

MEASURING RANGE CODES

Input Type				Code	Measuring Range	
					Centigrade (°C)	Fahrenheit (°F)
Full Multi Input	Thermocouple	B	*1	01	0.0 – 1800.0 °C	0 – 3300 °F
		R		02	-50.0 – 1700.0 °C	0 – 3100 °F
		S		03	0.0 – 1700.0 °C	0 – 3100 °F
		K	*2	04	-200.0 – 400.0 °C	-300.0 – 750.0 °F
				05	0.0 – 1370.0 °C	0.0 – 2500.0 °F
		E	*2	06	-200.0 – 1000.0 °C	-300.0 – 1800.0 °F
		J	*2	07	-200.0 – 1200.0 °C	-320.0 – 2200.0 °F
		T	*2, 7	08	-270.0 – 400.0 °C	-450.0 – 750.0 °F
		N		09	0.0 – 1300.0 °C	0.0 – 2300.0 °F
		PL II		10	0.0 – 1300.0 °C	0.0 – 2300.0 °F
		PR40-20	*3	11	0.0 – 1800.0 °C	0 – 3300 °F
		WRe5-26		12	0.0 – 2300.0 °C	0 – 4200 °F
		U	*2, 3	13	-200.0 – 400.0 °C	-300.0 – 750.0 °F
		L		14	0.0 – 600.0 °C	0.0 – 1100.0 °F
	Kelvin	K	*4	15	10.0 – 350.0 K (Kelvin)	10.0 – 350.0 K (Kelvin)
		AuFe-Cr	*5	16	0.0 – 350.0 K (Kelvin)	0.0 – 350.0 K (Kelvin)
	RTD	Pt100	*7	31	-200.0 – 850.0 °C	-300.0 – 1500.0 °F
				32	-100.00 – 100.00 °C	-150.00 – 200.00 °F
				33	-19.999 – 32.000 °C	0.00 – 80.00 °F
				34	-199.99 – 300.00 °C	-300.0 – 600.0 °F
		JPt100		41	-200.00 – 500.00 °C	-300.0 – 1000.0 °F
				42	-100.00 – 100.00 °C	-150.00 – 200.00 °F
				43	-19.999 – 32.000 °C	0.00 – 80.00 °F
				44	-199.99 – 300.00 °C	-300.0 – 600.0 °F
	Voltage (mV)	-10–20 mV		71	Initial value: 0.0–100.0 Input scaling setting range: -19999–32000 digits *6 Span: 10–52000 digits Decimal point position: Without, lower than decimal point 1, 2, 3, 4 digits Lower limit value < Higher limit value	
		0–50 mV		72		
		-100–100 mV		73		
	Voltage (V)	-1–2V		81		
		0–5V		82		
		1–5V		83		
		-10–10 V		84		
	Current (mA)	0–20 mA		91		
		4–20 mA		92		

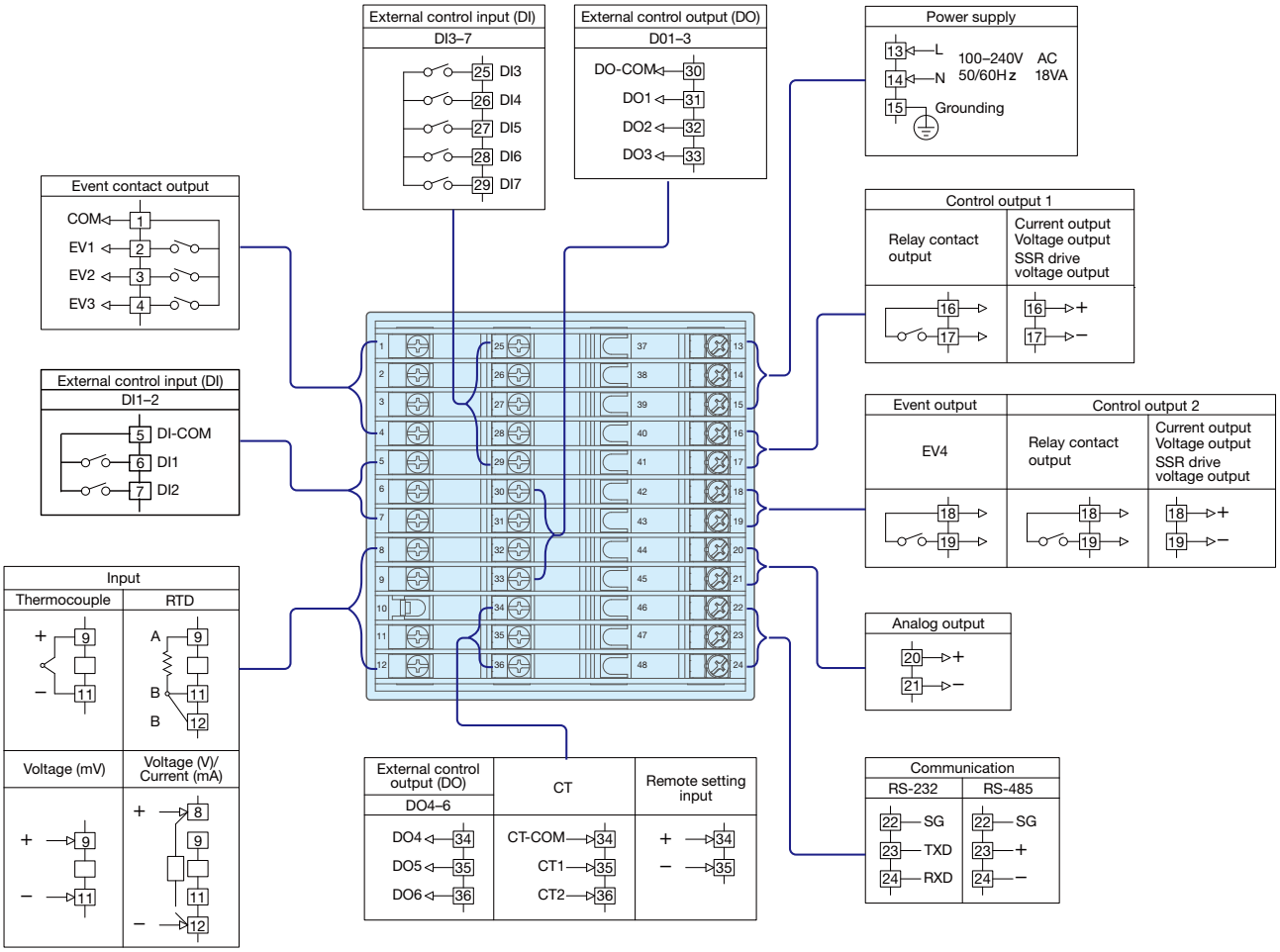
Within the measuring range -10%–+110%, setting PV limiter (scaleover point) possible

*1 B 400°C or 750°F or below is outside accuracy.
*2 K (Celsius, Fahrenheit), E, J, T, U -100°C or -148°F or below has accuracy of ± (0.5%FS + 1 digit).
*3 PR40-20, U thermocouple accuracy ± (0.3%FS + 1°C)
*4 K (Kelvin) Accuracy
10.0–30.0 K: ± (1.0%FS + 1 digit) Provided lead wire resistance is 10Ω or below
31.0–70.0 K: ± (0.30%FS + 1 digit) Provided lead wire resistance is 10Ω or below
71.0–350.0 K: ± (0.25%FS + 1 digit) Provided lead wire resistance is 10Ω or below
*5 AuFe-Cr Accuracy ± (0.25%FS + 1 K)
*6 If lower limit exceeds -19999 or higher limit exceeds 32700 digits, scaleover is displayed.
*7 If -273.15 °C or -459.67°F or below, scaleover is displayed (-459.67°F or below).
However, if Pt is 240.0°C or below (-400°F or below) scaleover is displayed.

(Note) If without specifications, measuring range at the time of factory shipment is set as follows.

Input	Standard/Rated value	Measuring range (Range)
Thermocouple	JIS K	0.0–1370.0°C

■ Standard (Representative Example SRP33)

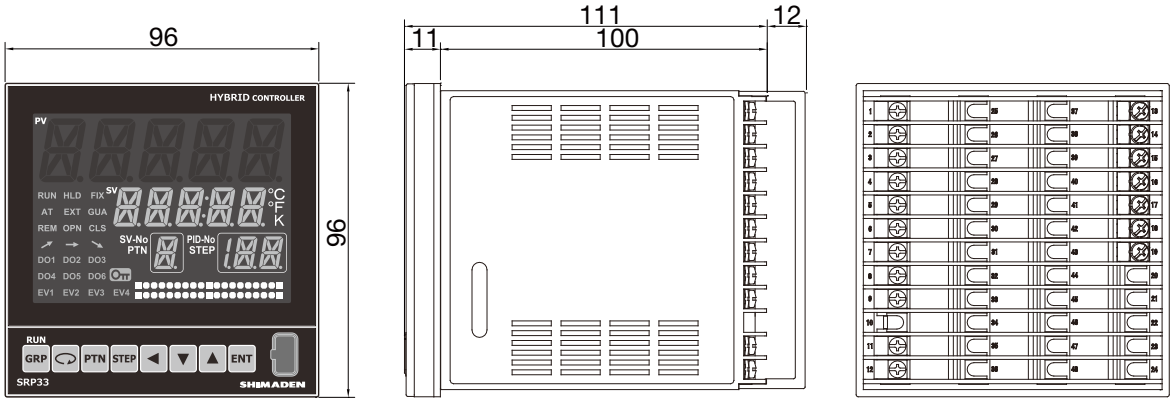


Terminal screw: M3 screw (No more than 6.2 mm width)

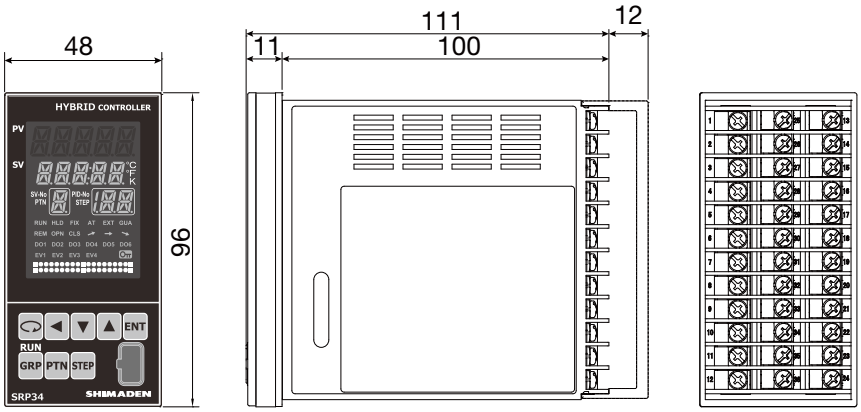
* For current input (0–20 mA, 4–20 mA), connect a shunt resistor (QCS002) that is sold separately between terminal Nos. 8–12.
* Terminal arrangement for SRP34 is same as that for SRP33.

External Dimensions

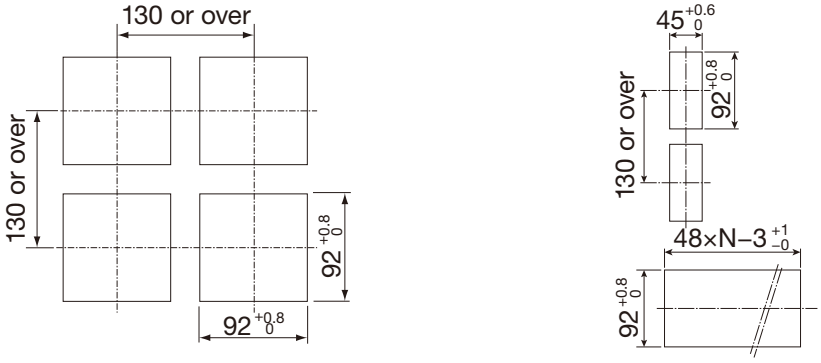
■ SRP33



■ SRP34

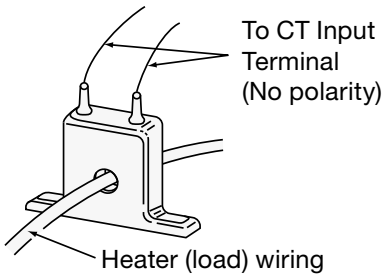


Panel Cutout

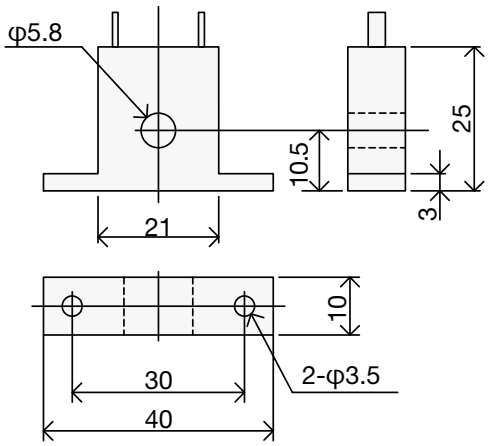


In case of horizontal contact mounting
N = No. of instruments
(When performing continuous contact mounting, cold junction compensation accuracy becomes ± 2°C.)

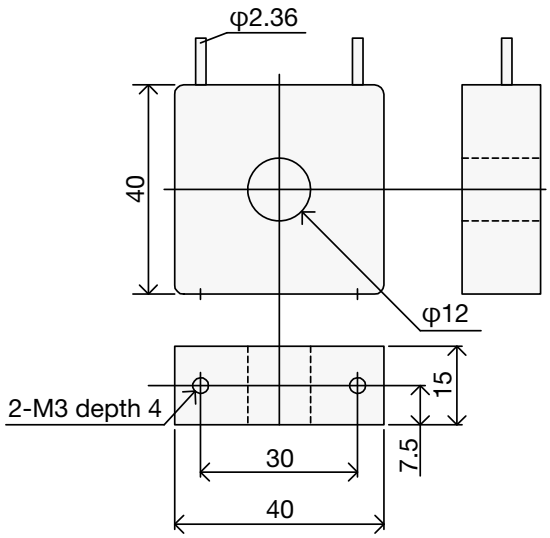
● CT-wiring example



■ QCC01 (CTL-6-S) for 0–30 A



■ QCC02 (CTL-12-S36-8) for 0–50 A



⚠ Warning

- The SRP30 series is designed for the control of temperature, humidity and other physical values of general industrial equipment. (It is not to be used for any purpose which regulates the prevention of serious effects on human life or safety.)

⚠ Caution

- If the possibility of loss or damage to your system or property as a result of failure of any part of the process exists, proper safety measures must be made before the instrument is put into use so as to prevent the occurrence of trouble.

ISO9001/ISO14001 certified

(The contents of this brochure are subject to change without notice.)

Temperature and Humidity Control Specialists

SHIMADEN CO.,LTD.

Head Office: 2-30-10 Kitamachi, Nerima-Ku, Tokyo 179-0081 Japan
Phone: +81-3-3931-7891 Fax: +81-3-3931-3089
E-MAIL: exp-dept@shimaden.co.jp URL: http://www.shimaden.co.jp

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