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SHIMADEN

Series **SRS11A/12A/13A/14A**

SHIMADEN DIGITAL CONTROLLER



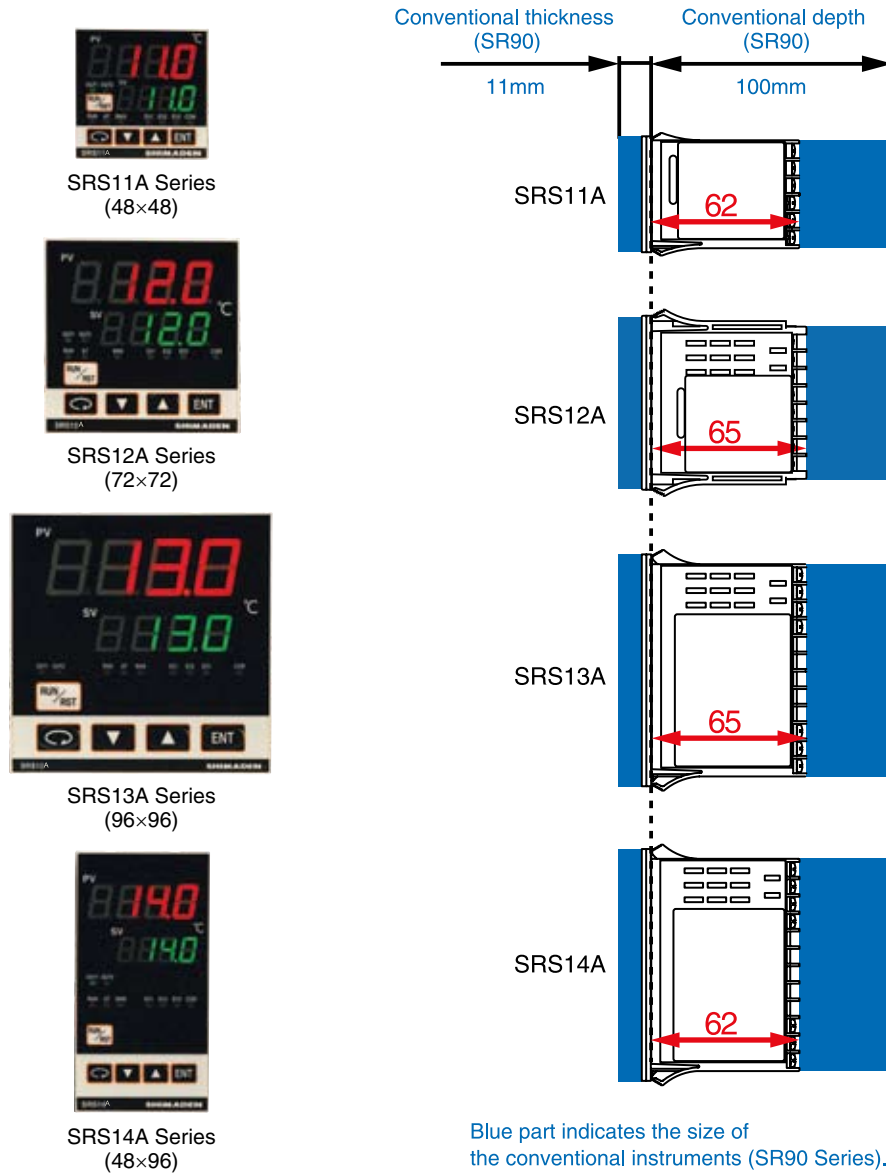
CE approved

RoHS compliance

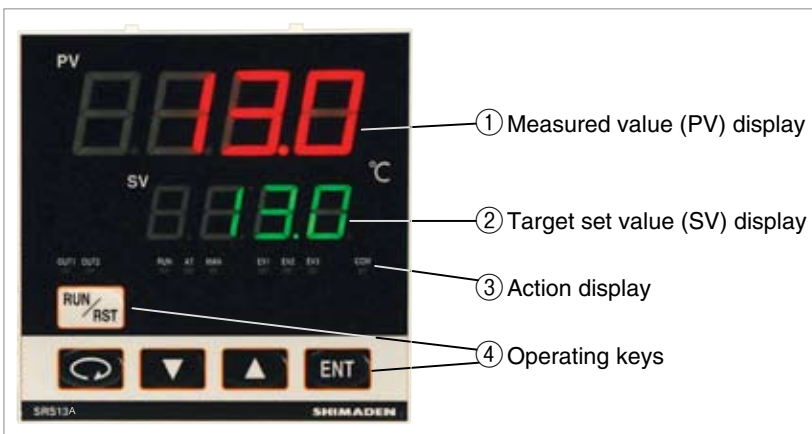
BASIC FEATURES

- Multi-input and multi-range performance**
- Small instrument depths (62mm - 65mm) save space, thus securing a larger installation area.**
- SV setting: 3 points**
- PID Value: 3 types**
- 2-output heating and cooling control available (optional)**
- Total 32 steps Program available (optional)**
(1-4 pattern, 32-8 step)
- RS-485 Interface available (optional)**
(Master/slave function, Modbus/Shimaden Protocol)
- Heater break/heater loop alarm (optional)**
- A wide selection of additional functions (optional) is available to suit various needs.**
- Possible to switch off SV/PV value by key operation**
- Parameter mask (non-display) / lock (key lock) function**

Smaller instrument depths save space and secure a larger and flexible installation area.

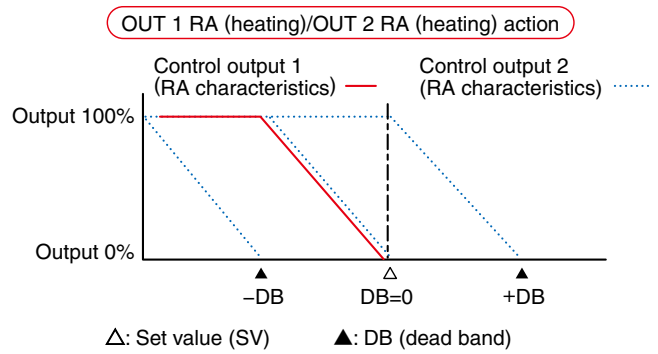
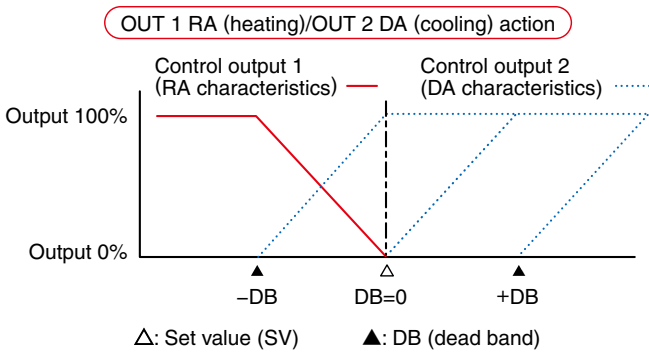


NAMES AND FUNCTIONS

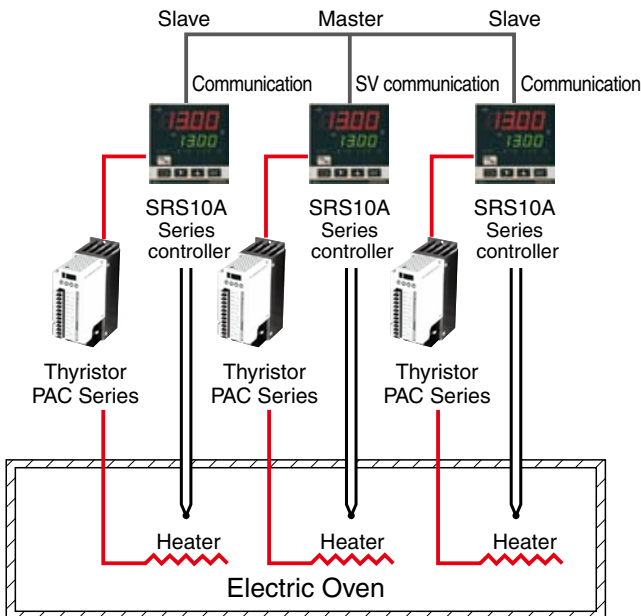


- ① Measured value (PV) display
Displays current PV value.
- ② Target set value (SV) display
Displays current SV value.
- ③ Action display
RUN/AT/MAN/OUT1/OUT2/EV1/EV2/EV3/COM
- ④ Operating keys
 - ...Parameter key
Displays the next screen in various screen groups.
 - ...Down key
Decrements setting values.
 - ...Up key
Increments setting values.
 - ...Enter key
Enters setting values.
 - ...RUN/RST key

■ EXAMPLE OF 2-OUTPUT CONTROL BY SELECTING CONTROL OUTPUT 2



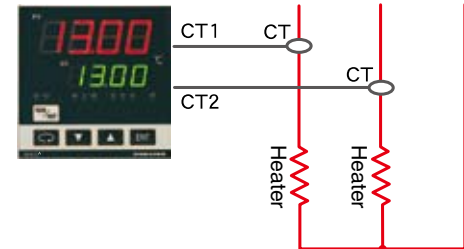
■ EXAMPLE OF TUNNEL FURNACE PROGRAM TEMPERATURE CONTROL



■ CT INPUT (CONTROL LOOP ALARM)

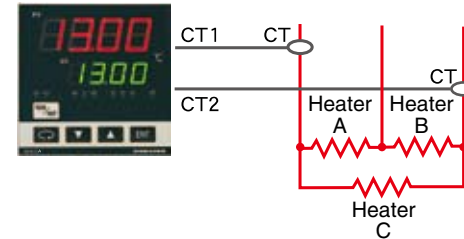
For 2 heating stages

SRS10A Series



For three-phase

SRS10A Series

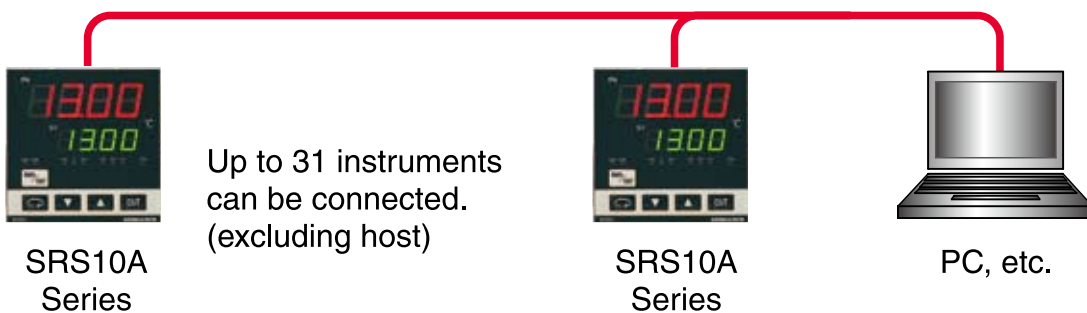


For three-phase

Broken area	A	B	C
CT1	Detectable	Undetectable	Detectable
CT2	Undetectable	Detectable	Detectable

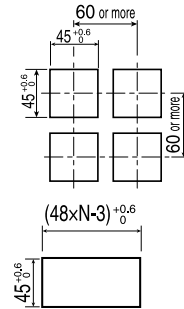
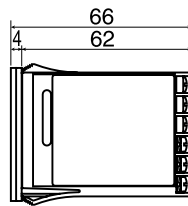
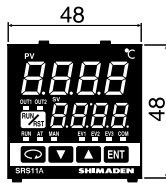
■ COMMUNICATION

Serial communication with PC/sequencer is possible by RS-485.



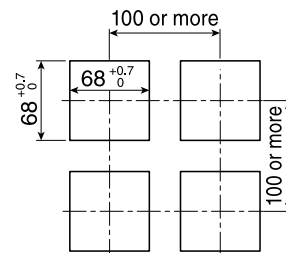
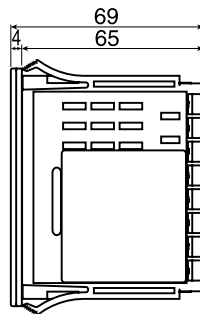
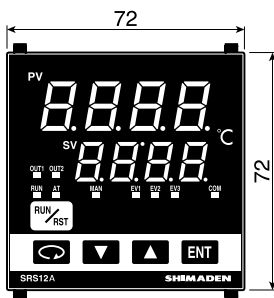
Unit: mm

■ SRS11A

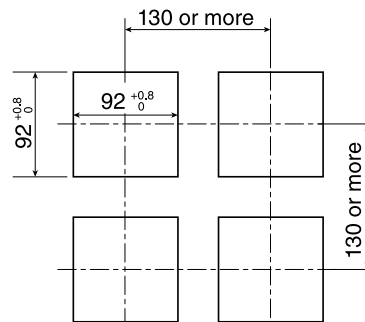
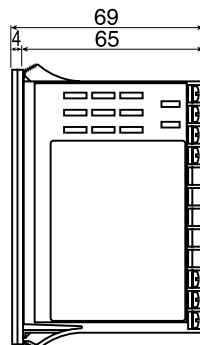


In the case of closely-mounted horizontally
 N=The number of instruments
 (When closely-mounted in series, cold junction compensation accuracy will be $\pm 3^{\circ}\text{C}$.)

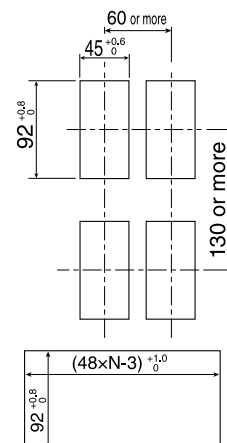
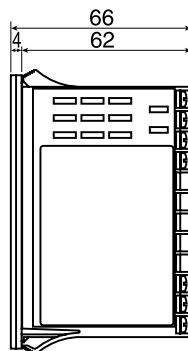
■ SRS12A



■ SRS13A



■ SRS14A



In the case of closely-mounted horizontally
 N=The number of instruments
 (When closely-mounted in series, cold junction compensation accuracy will be $\pm 3^{\circ}\text{C}$.)

■ Display

- Display methods
 - Digital display : Measured value (PV)/7 segments red LED 4 digits, target set value (SV)/7 segments green LED 4 digits
 - SRS11A PV height of character: Approx. 12mm SV height of character: Approx. 9mm
 - SRS12A PV height of character: Approx. 15mm SV height of character: Approx. 12mm
 - SRS13A PV height of character: Approx. 20mm SV height of character: Approx. 13mm
 - SRS14A PV height of character: Approx. 12mm SV height of character: Approx. 9mm
 - Status display : LED lamp display
 - Green: RUN, AT, MAN, OUT1, OUT2, COM
 - Orange: EV1, EV2, EV3
- Display accuracy : $\pm(0.25\% \text{ FS} + 1 \text{ digit})$ Excluding cold junction temperature compensation accuracy of thermocouple input
Accuracy if set value is lower than -100°C with K, T, U thermocouples is $\pm 0.7\% \text{ FS}$.
Accuracy guarantee not applicable to 400°C and below of B thermocouple.
- Display accuracy maintaining range : $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$
- Display resolution : Depends on measuring range and scaling (0.001, 0.01, 0.1, 1)
- Measured value display range : $-10 - 110\%$ of measuring range
(Range of Pt-200 – 600°C is $-240 - 680^{\circ}\text{C}$, range of JPt-200 – 500°C is $-240 - 570^{\circ}\text{C}$.)
- Display updating cycle : 0.25 seconds

■ Setting

- Setting method : By operating 5 keys (PARA, DOWN, UP, ENT, RUN/RST) on the front panel
- Target value setting range : Same as measuring range (within setting limiter)
- Set value limiter : Individual setting for higher and lower limits, any value is selectable within measuring range.
(Lower limit value < Higher limit value)
- Key lock : OFF, 1 – 3 (4 level)
 - OFF: No key lock
 - 1: Only user setting screen group and communication mode can be changed.
 - 2: Only SV and communication mode can be changed.
 - 3: Only key lock can be changed.

■ Parameter mask/lock function : Controls parameter displays/key locks

- Target parameter : STBY/EXE (RST/RUN) switching screen and all parameters except monitor screen
(control for each screen group possible)
- PID screen group : Settings for each PID No. not possible (parameters are set by applying all PID Nos.)
- PROG screen group : Settings for each PTN No. not possible (parameters are set by applying all PROG Nos.)
- STEP screen group : Settings for each STEP No. not possible (parameters are set by applying all STEP Nos.)

■ Input

- Type of input : Selectable from multiple (TC, Pt, mV) and voltage (V)
- Thermocouple : B, R, S, K, E, J, T, N, PLII, WRe5-26, {U, L (DIN43710)}, Metal-chromel (AuFe-Cr)
 - Input resistance : $500\text{k}\Omega$ minimum
 - External resistance tolerance : 100Ω maximum
 - Burnout function : Standard feature (up scale)
 - Cold junction compensation accuracy : $\pm 2^{\circ}\text{C}$ (between 5 and 45°C of ambient temperature), $\pm 3^{\circ}\text{C}$ if mounted closely
- R.T.D. : Pt100/JPt100, 3-wire type
 - Amperage : 0.25mA
 - Lead wire tolerance resistance : 5Ω maximum/wire (3 lead wires should have the same resistance.)
- Voltage
 - mV : $-10 - 10, 0 - 10, 0 - 20, 0 - 50, 10 - 50, 0 - 100\text{mV}$ DC
 - V : $-1 - 1, 0 - 1, 0 - 2, 0 - 5, 1 - 5, 0 - 10\text{V}$ DC
 - Input resistance : $500\text{k}\Omega$ minimum
Current input ($0 - 20, 4 - 20\text{mA}$ DC) is handled through external receiving impedance (250Ω).
- Input scaling function : Scaling possible for voltage (mV, V) input
 - Scaling range : $-1999 - 9999$ units
 - Span : $10 - 10000$ units
 - Position of decimal point : None, 1, 2 and 3 digits on the right of decimal point
- Sampling cycle : 0.25 seconds
- PV bias : $-1999 - 2000$ units
- PV filter : $0 - 9999$ seconds
- PV gain : $-5.00 - +5.00\%$
- Isolation : Not insulated from input, system, DI, and CT input but insulated from others

■ Control

- Control mode
 - With 1 output : Expert PID control with auto tuning function
 - With 2 outputs : Expert PID control with auto tuning function PID (output 1) + PID (output 2)
- Type of control/rating : Contact/1a 240V AC 2A (resistive load) 1.2A (inductive load)
 - SSR drive voltage/ $12\text{V} \pm 1.5\text{V}$ DC (maximum load current 30mA)
 - Current/ $4 - 20\text{mA}$ DC (maximum load resistance 600Ω)
 - Voltage/ $0 - 10\text{V}$ DC (maximum load current 2mA)

- Control output resolution : Control output 1: approx. 0.008% (1/13000)
Control output 2: approx. 0.008% (1/13000)
- Output accuracy : Control output 1: $\pm 1.0\%$ FS (5 – 100% output)
Control output 2: $\pm 2.0\%$ FS (5 – 100% output)
- Control output 1
 - Proportional band (P) : OFF, 0.1 – 999.9%FS (ON/OFF action by OFF)
 - Integral time (I) : OFF, 1 – 6000 seconds (P or PD action by OFF)
 - Derivative time (D) : OFF, 1 – 3600 seconds (P or PI action by OFF)
 - Target value function : OFF, 0.01 – 1.00
 - ON/OFF hysteresis : 1 – 999 units (Effective when P=OFF)
 - Manual reset : -50.0 – 50.0% (Effective when I=OFF)
 - Output limiter : Lower limit 0.0 – 99.9%, higher limit 0.1 – 100.0% (Lower limit value<Higher limit value)
 - Proportional cycle : 1 – 120 seconds (for contact and SSR drive voltage output)
 - Control output 2 (option)
 - Proportional band (P) : OFF, 0.1 – 999.9%FS (ON/OFF action by OFF)
 - Integral time (I) : OFF, 1 – 6000 seconds (P or PD action by OFF)
 - Derivative time (D) : OFF, 1 – 3600 seconds (P or PI action by OFF)
 - Target value function : OFF, 0.01 – 1.00
 - ON/OFF hysteresis : 1 – 999 units (Effective when P=OFF)
 - Dead band : -1999 – 5000 units
 - Output limiter : Lower limit 0.0 – 99.9%, higher limit 0.1 – 100.0% (Lower limit value<Higher limit value)
 - Proportional cycle : 1 – 120 seconds (for contact and SSR drive voltage output)
 - Manual control
 - Output setting range : 0.0 – 100.0% setting resolution: 0.1%
 - Manual \leftrightarrow auto switching : Balanceless bumpless (within proportional range)
 - Soft start : Set individually for output 1 and output 2
OFF, 1 – 120 seconds
 - AT point : SV value in execution
 - Control output characteristic : RA (reverse action characteristic)/DA (direct action characteristic) switching by front key or communication
Set individually for output 1 and output 2
RA (reverse action characteristic): heating action
DA (direct action characteristic): cooling action
 - Isolation : Contact output isolated from all
Analog output not insulated from SSR drive voltage, current and voltage output but insulated from others
(Control output 1 and 2 not insulated other than contact output)
- **Event output (option, 3 points maximum)**
- Number of output points : 3 points maximum (EV1, EV2, EV3)
However, EV3 is exclusive selection from control output 2 and DI4.
 - Types : Selectable from the following 20 types for EV1, EV2 and EV3:
no assignment, higher limit deviation alarm, lower limit deviation alarm, outside higher/lower limit deviation alarm, inside higher/lower limit deviation alarm, higher limit absolute value alarm, lower limit absolute value alarm, scaleover, EXE signal (RUN signal), output 1 inverted output (Contact output only), heater 1 break/loop alarm, heater 2 break/loop alarm, step signal, pattern signal, program end signal, hold signal, program signal, upslope signal, downslope signal, guarantee soak signal
 - Event setting range
 - Absolute values : Within measuring range (both higher limit and lower limit)
 - Deviations : -1999 – 2000 units (both higher limit and lower limit)
 - Higher/lower limit deviations : 0 – 2000 units (within/outside)
 - Event action : ON/OFF action
 - Hysteresis : 1 – 999 units
 - Standby action : Selectable from following 4 types
 - 1 Without standby action
 - 2 Standby 1 (when power is applied, STBY (RST) \rightarrow EXE (RUN))
 - 3 Standby 2 (when power is applied, STBY (RST) \rightarrow EXE (RUN), execution SV is changed.)
 - 4 Control mode (without standby action: no alarm is output at the time of abnormal input.)
 - Output type/rating : Contact (EV1, EV2/ 1a x 2 points common EV3/ 1a independent)/ 240V AC 2A (resistive load)
 - Output updating cycle : 0.25 seconds
 - Latching function : Alarm action holding function (can be assigned for deviation alarm/absolute value alarm and heater break alarm)
ON (effective)/OFF (not effective) selection
Unlatched by key operation, DI or communication when latching
 - Output characteristic : Selectable from NO and NC
 - Isolation : Isolated from all
- **Programming function (option)**
- No. of pattern : Maximum 4 patterns (can be set to 1, 2 and 4)
 - No. of step : Maximum 8 steps (4 patterns), 16 (2 patterns), 32 (1 pattern)
Total number of steps = 32
 - No. of PID type : Maximum 3

- Time setting : 0 minutes 0 seconds – 99 minutes 59 seconds/1 step or 0 hours 0 minutes – 99 hours 59 minutes/1 step
- Setting resolution : 1 minute or 1 second
- Time accuracy : $\pm(\text{setting time} \times 0.005 + 0.25 \text{ seconds})$
- Setting parameter for each step : SV, step time, PID No.
- No. of pattern execution : Maximum 9999
- PV start : ON/OFF
- Hold : Possible either by front panel key input, external control input or communication
- Advance : Possible either by front panel key input, external control input or communication
- Power failure compensation : None (setting contents are maintained and elapsed time, execution step and number of execution are reset.)
- Guarantee soak zone : OFF, 1 – 999 units

■ **External control input (DI) (option)**

- Number of input points
 - SRS11A : Maximum 4 points: Exclusive selection with 3 points CT input (DI1, DI2, DI3)
Exclusive selection with 1 point (DI4), control output 2 and event output (EV3)
 - SRS12A, 13A, 14A : Maximum 4 points: 3 points (DI1, DI2, DI3) no exclusive selection
Exclusive selection with 1 point (DI4), control output 2 and event output (EV3)
- Type of DI assignment : Selectable from the following 14 types for each DI.
No assignment, EXE1 (RUN1) (control execution/suspension), EXE2 (RUN2) (control execution/suspension), MAN (manual output), AT (auto tuning), ESV2 (SV external selection 2 bit), ACT1 (output 1 output characteristics), ACT2 (output 2 output characteristics), PROG (programming), HLD (hold), ADV (advance), PTN2 (start pattern selection 2 bit), PTN3, (start pattern selection 3 bit), L_RS (unlatching)
- Action input : Non-voltage contact or open collector (level action) Approx. 5V DC 1mA maximum
- Input minimum holding time : 0.25 seconds
- Isolation : Not insulated from DI input, system, and CT input but insulated from others

■ **CT input (option)**

- Types of current detection target : Assignable for OUT1 and OUT2
- Current detection method : By CT sensor (sold separately)
- Current capacity : 30A/50A
- Current setting range : OFF, 0.1 – 50.0 A (alarm action off when set to OFF)
- Setting resolution : 0.1A
- Current display range : 0.0 – 55.0A
- Display accuracy : $\pm 2.0 \text{ A}$ (for sine wave 50 Hz)
- Alarm action : Heater break detection when control output ON: Alarm output ON
Heater loop alarm detection when control output OFF: Alarm output ON
- Alarm output : Assignable for event output (EV1, 2, 3)
- Minimum time for action confirmation : $\pm 0.25 \text{ seconds}$ for both ON and OFF (each 0.5 second)
- Alarm maintain mode : Selectable from latching function ON (effective)/OFF (non-effective)
- Standby action : Selection of "OFF" or "ON" (1, 2, 3) (Standby when power applied only)
- Sampling cycle : 0.25 seconds
- Isolation : Not insulated from CT input, input, system and DI but insulated from others

■ **Communication function (option) : Exclusive selection with analog output for SRS11A**

- Type of communication : EIA standard RS-485
- Communication system : 2-line half duplex start-stop synchronization system
- Communication speed : 1200, 2400, 4800, 9600, 19200, 38400 bps
- Data format : Selectable from 7E1, 7E2, 7N1, 7N2, 8E1, 8E2, 8N1, 8N2
- Communication delay time : 1 – 100 (x 0.512 msec)
- Max. number of connections : 32 including host
- Communication address : 1 – 255
- Communication code : ASCII, MODBUS RTU binary code only
- Communication protocol : Shimaden standard protocol / MODBUS ASCII, RTU
- Other : Start character and BCC operating method can be selected.
- Communication memory mode : Selectable from EEP, RAM and r_E
- Communication master mode : Can be used as master device when using multiple units
- Start slave address setting : Broadcast, 1 – 255
- End slave address setting : Start address – start address +30
- Write-in data address setting : 0000H – FFFFH
- Communication distance : Max. 500 m (differs according to conditions)
- Isolation : Isolation for all

■ **Analog output (option) : Exclusive selection with communication for SRS11A**

- Number of output points : 1 point
- Types of output : Selectable from measured value, target set value (execution SV), control output 1 and control output 2

- Output signal/rating : Current 4 – 20 mA DC (max. load resistance 300Ω)
Voltage 0 – 10V DC (max. load current 2 mA)
Voltage 0 – 10mV DC (output resistance 10Ω)
- Output scaling : Within measuring range or output range (Inversed scaling possible)
- Output accuracy : ±0.3%FS (for display value)
- Output resolution : Approx. 0.008% (1/13000)
- Output updating cycle : 0.25 seconds
- Output limiter : Lower limit 0.0 – 99.9%, higher limit 0.1 – 100.0% (Lower limit value<Higher limit value)
- Isolation : No isolation with control output P, I and V

■ **General specifications**

- Data storage : Non-volatile memory (EEPROM)
- Ambient conditions for operations
 - Temperature : -10 – 50°C
 - Humidity : Max. 90%RH (no dew condensation)
 - Elevation : Max. 2000 m above sea level
 - Category : II
 - Pollution class : 2
- Storage temperature : -20 – 65°C
- Supply voltage : 100 – 240V AC±10%, 50/60Hz or 24V AC/DC±10%
- Input/noise removal ratio : Normal mode 50dB minimum (50/60 Hz)
- Insulation resistance : Between input/output terminals and power terminal Min. 500V DC, 20 MΩ
- Dielectric strength : Between input/output terminals and power terminal, 2300V AC, 1 minute
- Power consumption
 - SRS11A : Max. 11VA for 100 – 240V AC
6VA for 24V AC
4W for 24V DC
 - SRS12A, 13A, 14A : Max. 14VA for 100 – 240V AC
8VA for 24V AC
6W for 24V DC
- Applicable standards EMC : EN61326-1: 2006 EN61326-2-3: 2006
Safety : IEC61010-1 and EN61010-1: 2001
- Material of case : PC resin molding (UL94V-0)
- External dimensions : SRS11A: H48 × W48 × D66 mm (in panel 62mm)
SRS12A: H72 × W72 × D69 mm (in panel 65mm)
SRS13A: H96 × W96 × D69 mm (in panel 65mm)
SRS14A: H96 × W48 × D66 mm (in panel 62mm)
- Panel thickness : 1.0 – 3.5 mm
- Panel cutout : SRS11A: H45 × W45 mm
SRS12A: H68 × W68 mm
SRS13A: H92 × W92 mm
SRS14A: H92 × W45 mm
- Weight : SRS11A: Approx. 120 g
SRS12A: Approx. 190 g
SRS13A: Approx. 220 g
SRS14A: Approx. 160 g

ORDERING INFORMATION

Series SRS11A/12A/13A/14A

ITEM	CODE		SPECIFICATIONS
SERIES	SRS11A-		DIN 48x48 Digital Controller
INPUT	8	Multi-input	Thermocouple: B, R, S, K, E, J, T, N, PLII, WRe5-26, {U, L (DIN43710)}, AuFe-Cr R.T.D.: Pt100/JPt100 Voltage (mV): -10 – 10, 0 – 10, 0 – 20, 0 – 50, 0 – 100, 10 – 50mV DC
		6	Voltage (V)
CONTROL OUTPUT 1	Y		Contact: 1a, Contact capacity: 240V AC 2A/resistive load Proportional cycle: 1 – 120 sec.
	I		Current: 4 – 20mA DC Load resistance: 600Ω max.
	P		SSR drive voltage: 12V±1.5V DC/30mA max. Proportional cycle: 1 – 120 sec.
	V		Voltage: 0 – 10V DC Load current: 2mA max.
CONTROL OUTPUT 2 (OPTION)	N-		None
	Y-		Contact: 1a, Contact capacity: 240V AC 2A/resistive load Proportional cycle: 1 – 120 sec.
	I-		Current: 4 – 20mA DC Load resistance: 600Ω max.
	P-		SSR drive voltage: 12V±1.5V DC/30mA max. Proportional cycle: 0.5 – 120 sec.
	V-		Voltage: 0 – 10V DC Load current: 2mA max.
	Additional event output	E-	
Additional external control input signal (DI)	D-		Additional external control input 1 point (DI4)
POWER SUPPLY	90-		100 – 240V AC±10%, 50/60Hz
	08-		24V AC/DC±10%, 50/60Hz
PROGRAM FUNCTION (OPTION)	N		None
	P		Max. 4 patterns Total number of steps: 32
EVENT OUTPUT (OPTION)	0		None
	1		Event output 2 points (EV1, EV2)
ANALOG OUTPUT/ COMMUNICATION FUNCTION (OPTION)	0		None
	3		0 – 10mVDC Output resistance: 10Ω
	4		4 – 20mADC Resistive load: 300Ω max.
	6		0 – 10VDC Load current: 2mA max.
	5		RS-485 (Shimaden standard protocol, MODBUS protocol)
EXTERNAL INPUT CONTROL SIGNAL (DI)/ CT INPUT (OPTION)/ Note: CT sold separately	0		None
	1		CT input 2 points Note: Available only when control output 1 or 2 is Y or P.
	2		Control input 3 points (DI1, DI2, DI3)
REMARKS	0		Without
	9		With

OPTIONAL ACCESSORIES

Name	Code	Remarks
CT	QCC01	CT for 30A (CTL-6-S)
CT	QCC02	CT for 50A (CTL-12-S36-8)
Shunt resistor	QCS002	250Ω ±0.1% External receiving impedance for current input
Terminal cover	QCR001	For SRS11A

ORDERING INFORMATION

Series SRS11A/12A/13A/14A

ITEM	CODE		SPECIFICATIONS
SERIES	SRS12A-		DIN 72x72 Digital Controller
	SRS13A-		DIN 96x96 Digital Controller
	SRS14A-		DIN 96x48 Digital Controller
INPUT	8	Multi-input	Thermocouple: B, R, S, K, E, J, T, N, PLII, WRe5-26, {U, L (DIN43710)}, AuFe-Cr R.T.D.: Pt100/JPt100 Voltage (mV): -10 – 10, 0 – 10, 0 – 20, 0 – 50, 0 – 100, 10 – 50mV DC
	6	Voltage (V)	-1 – 1, 0 – 1, 0 – 2, 0 – 5, 1 – 5, 0 – 10V DC Input resistance: Min. 500k Ω
CONTROL OUTPUT 1	Y		Contact: 1a, Contact capacity: 240V AC 2A/resistive load Proportional cycle: 1 – 120 sec.
	I		Current: 4 – 20mA DC Load resistance: 600 Ω max.
	P		SSR drive voltage: 12V \pm 1.5V DC/30mA max. Proportional cycle: 1 – 120 sec.
	V		Voltage: 0 – 10V DC Load current: 2mA max.
CONTROL OUTPUT 2 (OPTION)	N-		None
	Y-		Contact: 1a, Contact capacity: 240V AC 2A/resistive load Proportional cycle: 1 – 120 sec.
	I-		Current: 4 – 20mA DC Load resistance: 600 Ω max.
	P-		SSR drive voltage: 12V \pm 1.5V DC/30mA max. Proportional cycle: 1 – 120 sec.
	V-		Voltage: 0 – 10V DC Load current: 2mA max.
	Additional event output	E-	
Additional external control input signal (DI)	D-		Additional external control input 1 point (DI4)
POWER SUPPLY	90-		100 – 240V AC \pm 10%, 50/60Hz
	08-		24V AC/DC \pm 10%, 50/60Hz
PROGRAM FUNCTION (OPTION)	N		None
	P		Max. 4 patterns Total number of steps: 32
EVENT OUTPUT (OPTION)	0		None
	1		Event output 2 points (EV1, EV2)
ANALOG OUTPUT (OPTION)	0		None
	3		0 – 10mVDC Output resistance: 10 Ω
	4		4 – 20mADC Resistive load: 300 Ω max.
	6		0 – 10VDC Load current: 2mA max.
CT INPUT (OPTION)/ Note: CT sold separately	0		None
	1		CT input 2 points Note: Available only when control output 1 or 2 is Y or P.
EXTERNAL INPUT CONTROL SIGNAL (DI) (OPTION)	0		None
	2		Control input 3 points (DI1, DI2, DI3)
COMMUNICATION FUNCTION (OPTION)	0		None
	5		RS-485 (Shimaden standard protocol, MODBUS protocol)
REMARKS	0		Without
	9		With

OPTIONAL ACCESSORIES

Name	Code	Remarks
CT	QCC01	CT for 30A (CTL-6-S)
CT	QCC02	CT for 50A (CTL-12-S36-8)
Shunt resistor	QCS002	250 Ω \pm 0.1% External receiving impedance for current input
Terminal cover	QCR002	For SRS12A (3 pcs./set)
	QCR007	For SRS13A, SRS14A (2 pcs./set)

Input Type		Code	Measuring range						
Thermo-couple	B	01 *1	0	–	1800 °C	0	–	3300 °F	
	R	02	0	–	1700 °C	0	–	3100 °F	
	S	03	0	–	1700 °C	0	–	3100 °F	
	K	04 *2	-199.9	–	400.0 °C	-300	–	750 °F	
		05	0.0	–	800.0 °C	0	–	1500 °F	
		06	0	–	1200 °C	0	–	2200 °F	
	E	07	0	–	700 °C	0	–	1300 °F	
	J	08	0	–	600 °C	0	–	1100 °F	
	T	09 *2	-199.9	–	200.0 °C	-300	–	400 °F	
	N	10	0	–	1300 °C	0	–	2300 °F	
	PLII *3	11	0	–	1300 °C	0	–	2300 °F	
	WRe5-26 *4	12	0	–	2300 °C	0	–	4200 °F	
	U *5	13 *2	-199.9	–	200.0 °C	-300	–	400 °F	
	L *5	14	0	–	600 °C	0	–	1100 °F	
	Kelvin	K	15 *6	10.0	–	350.0 K	10.0	–	350.0 K
		AuFe-Cr	16 *7	0.0	–	350.0 K	0.0	–	350.0 K
		K	17 *6	10	–	350 K	10	–	350 K
		AuFe-Cr	18 *7	0	–	350 K	0	–	350 K
R.T.D.	Pt100	30	-100.0	–	350.0 °C	-150.0	–	650.0 °F	
		31	-200	–	600 °C	-300	–	1100 °F	
		32	-100.0	–	100.0 °C	-150.0	–	200.0 °F	
		33	-50.0	–	50.0 °C	-50.0	–	120.0 °F	
		34	0.0	–	200.0 °C	0.0	–	400.0 °F	
	JPt100	35	-200	–	500 °C	-300	–	1000 °F	
		36	-100.0	–	100.0 °C	-150.0	–	200.0 °F	
		37	-50.0	–	50.0 °C	-50.0	–	120.0 °F	
		38	0.0	–	200.0 °C	0.0	–	400.0 °F	
	Pt100	39	-100.0	–	350.0 °C	-150.0	–	650.0 °F	
		40	-199.9	–	550.0 °C	-300	–	1000 °F	
		41	0.0	–	350.0 °C	0.0	–	650.0 °F	
	JPt100	42	0.0	–	550.0 °C	0	–	1000 °F	
		43	-199.9	–	500.0 °C	-300	–	1000 °F	
		44	0.0	–	350.0 °C	0.0	–	650.0 °F	
45		0.0	–	500.0 °C	0	–	1000 °F		
Voltage (mV)	-10 – 10	71	Measuring range can be set by scaling function within the following range. Initial value: 0.0 – 100.0 Scaling range: -1999 – 9999 units Span: 10 – 10,000 units						
	0 – 10	72							
	0 – 20	73							
	0 – 50	74							
	10 – 50	75							
	0 – 100	76							
Voltage (V)	-1 – 1	81	Decimal point position: None, 1/2/3 digits following decimal point Lower limit value is less than higher limit value. NOTE: For current input, install input terminals of the specified receiving impedance (250Ω) and use code 84 (0 – 20 mA) or 85 (4 – 20 mA).						
	0 – 1	82							
	0 – 2	83							
	0 – 5	84							
	1 – 5	85							
	0 – 10	86							

Thermocouple: B, R, S, K, E, J, T, N: JIS/IEC

R.T.D. Pt100: JIS/IEC JPt100

*1 Thermocouple B: Accuracy guarantee not applicable to 400°C or below.

*2 Thermocouple K, T, U: Accuracy of those readings below -100.0°C is 0.75% FS.

*3 Thermocouple PLII: Platinel

*4 Thermocouple WRe5-26: ASTM E988-96

*5 Thermocouple U, L: DIN 43710

*6. Thermocouple K (Kelvin) accuracy

Temperature range

10.0 – 30.0 K (2.0%FS + [CJ error X 20] K + 1K)

30.0 – 70.0 K (1.0%FS + [CJ error X 7] K + 1K)

70.0 – 170.0 K (0.7%FS + [CJ error X 3] K + 1K)

170.0 – 270.0 K (0.5%FS + [CJ error X 1.5] K + 1K)

270.0 – 350.0 K (0.3%FS + [CJ error X 1] K + 1K)

*7. Thermocouple Metal-chromel (AuFe-Cr) (Kelvin) accuracy

Temperature range

0.0 – 30.0 K (0.7%FS + [CJ error X 3] K + 1K)

30.0 – 70.0 K (0.5%FS + [CJ error X 1.5] K + 1K)

70.0 – 170.0 K (0.3%FS + [CJ error X 1.2] K + 1K)

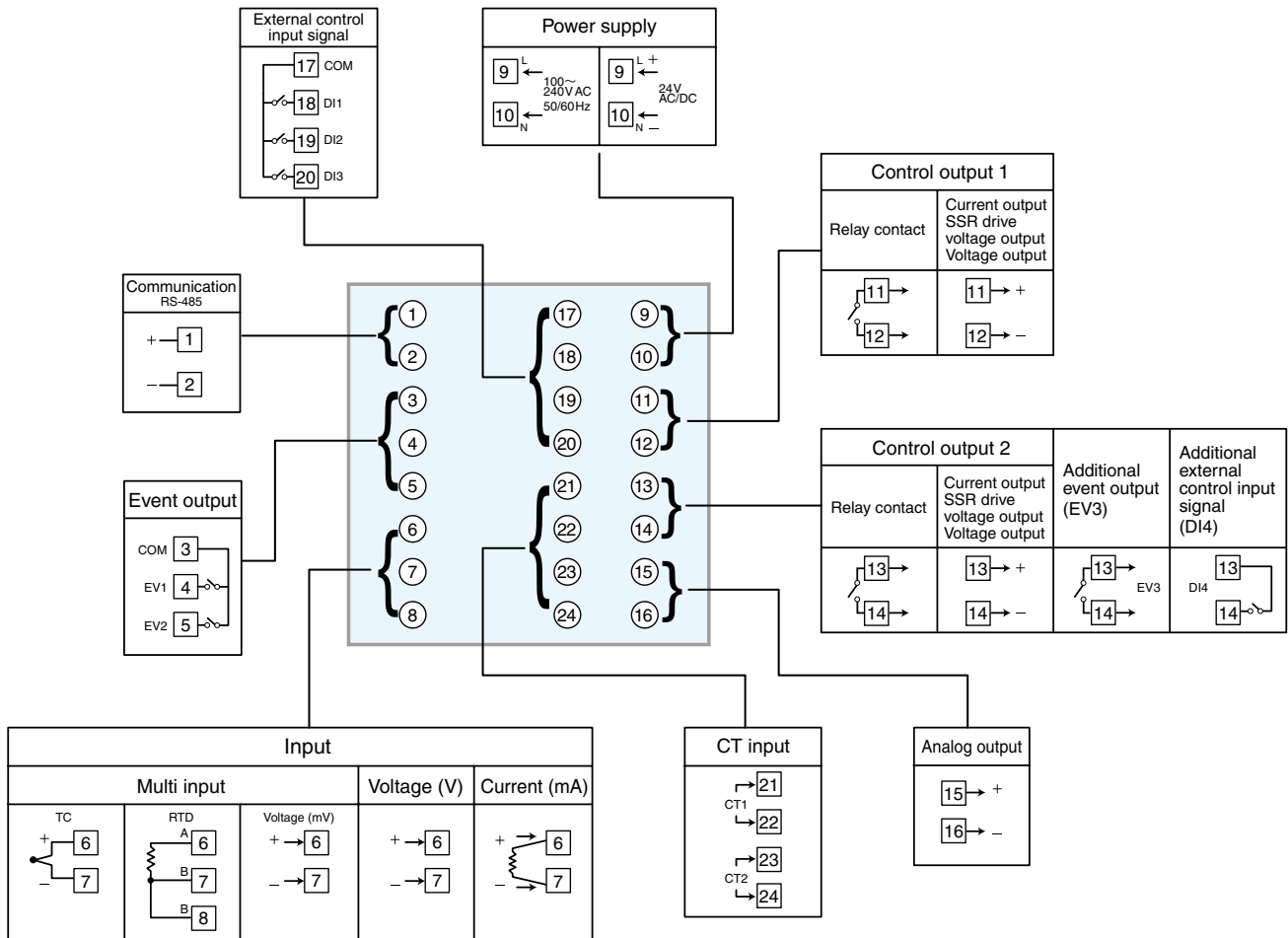
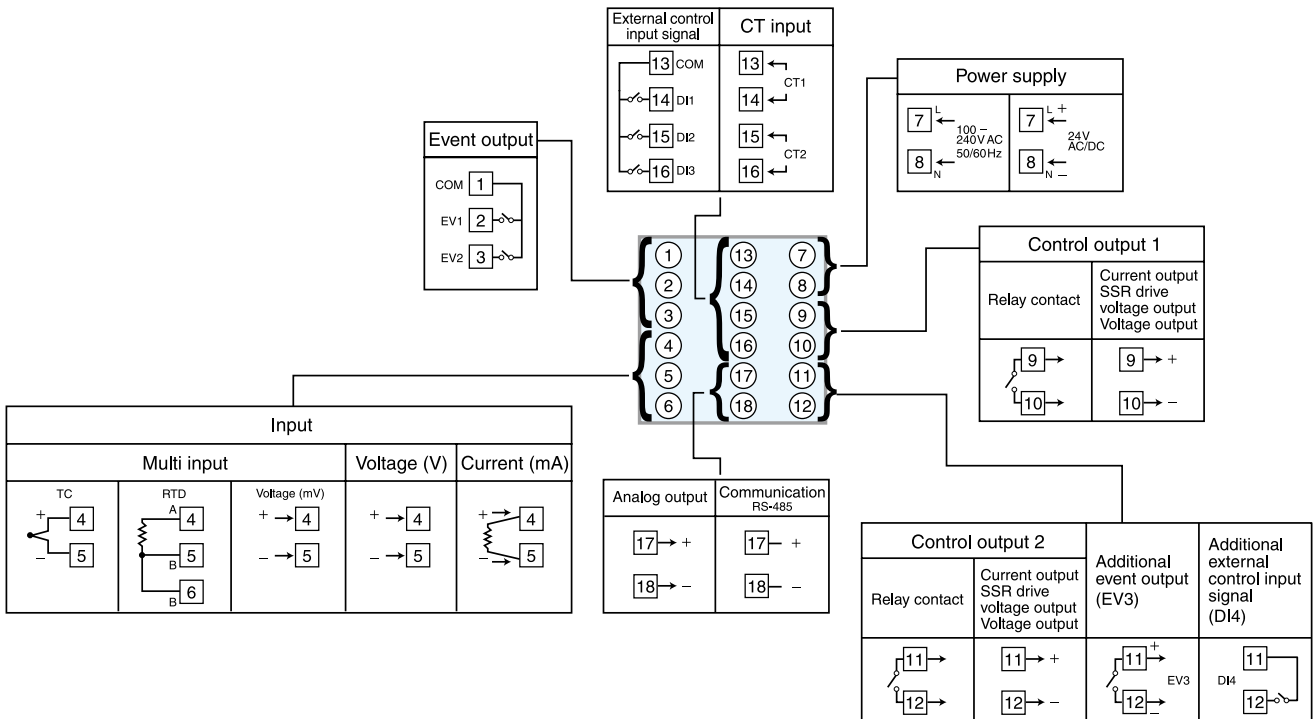
170.0 – 280.0 K (0.3%FS + [CJ error X 1] K + 1K)

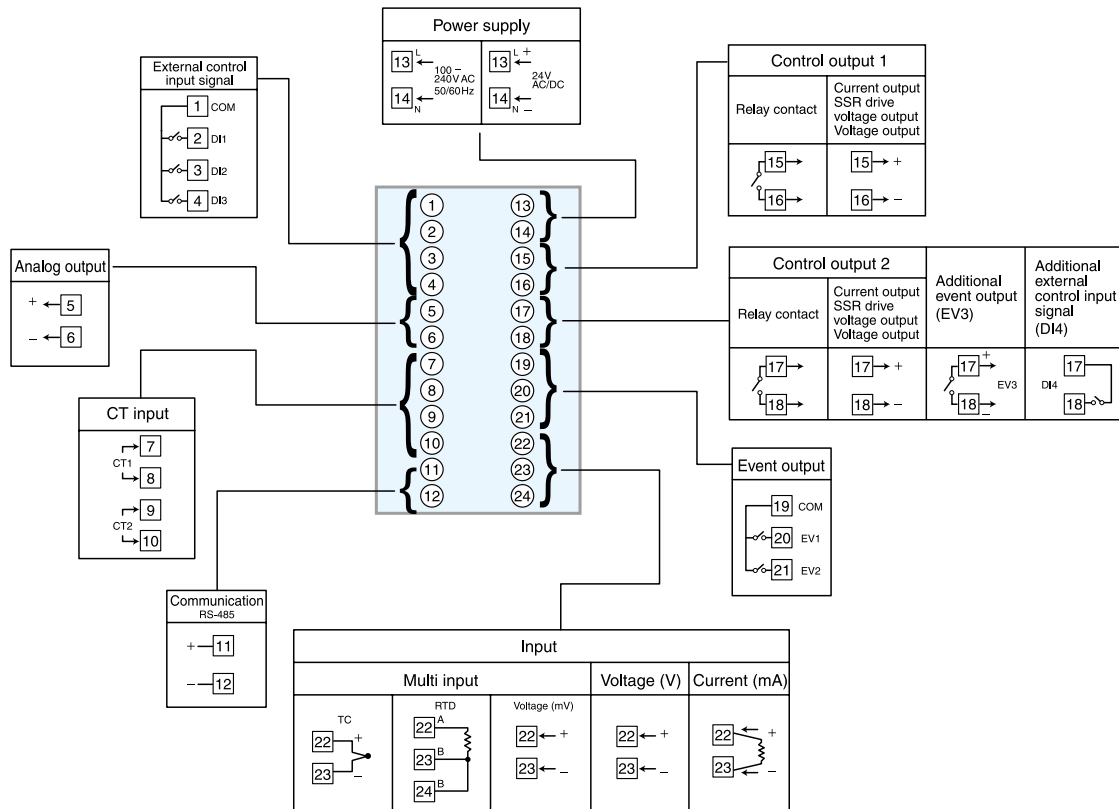
280.0 – 350.0 K (0.5%FS + [CJ error X 1] K + 1K)

NOTE: For current input, install input terminals of the specified receiving impedance (250Ω) and use code 84 (0 – 20 mA) or 85 (4 – 20 mA).

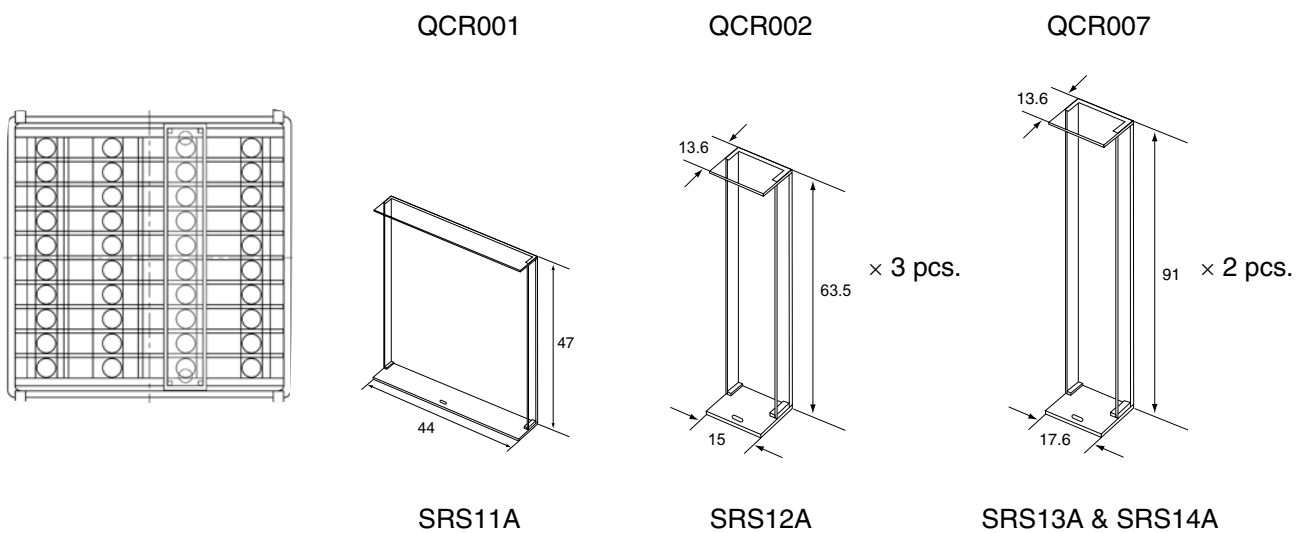
NOTE: Unless otherwise specified, the measuring range will be set as follows when shipped from the factory:

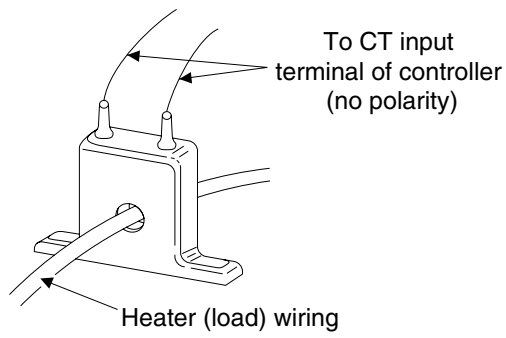
Input	Standard/rating	Measuring range
Multi-input	K thermocouple	0.0 – 800.0 °C
Voltage (V)	0 – 10V DC	0.0 – 100.0 no legend



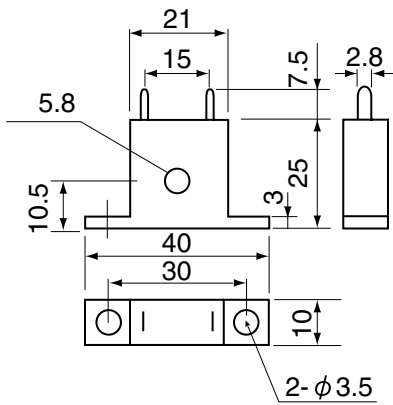


OPTIONAL TERMINAL COVER

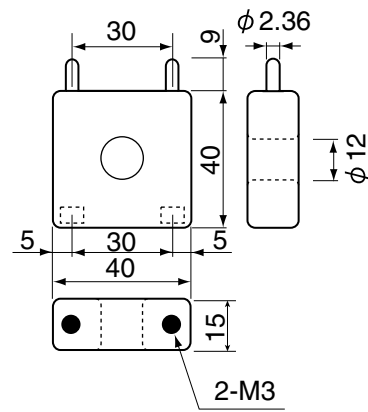




● CT FOR 30A (QCC01)



● CT FOR 50A (QCC02)



Unit: mm