Series SRS11A/12A/13A/14A

SHIMADEN DIGITAL CONTROLLER

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.

Series SRS11A/12A/13A/14A

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

Blue part indicates the size of the conventional instruments (SR90 Series).
EXAMPLES OF USE

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

OUT 1 RA (heating)/OUT 2 DA (cooling) action

Output 100%

Output 0%

△: Set value (SV)  △: DB (dead band)

OUT 1 RA (heating)/OUT 2 RA (heating) action

Output 100%

Output 0%

△: Set value (SV)  △: DB (dead band)

■ EXAMPLE OF TUNNEL FURNACE PROGRAM TEMPERATURE CONTROL

Slave

Master

Slave

Communication

Communication

SV communication

Thyristor PAC Series

Thyristor PAC Series

Thyristor PAC Series

SRS10A Series controller

SRS10A Series controller

SRS10A Series controller

Heater

Heater

Heater

Electric Oven

For three-phase

Broken area  A  B  C

CT1 Detectable  Undetectable  Detectable

CT2 Undetectable  Detectable  Detectable

■ CT INPUT (CONTROL LOOP ALARM)

For 2 heating stages

SRS10A Series

For three-phase

SRS10A Series

■ COMMUNICATION

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

SRS10A Series

Up to 31 instruments can be connected. (excluding host)

SRS10A Series

PC, etc.
Series SRS11A/12A/13A/14A

**EXTERNAL DIMENSIONS/PANEL CUTOUT**

**SRS11A**

In the case of closely-mounted horizontally
N=The number of instruments
(When closely-mounted in series, cold junction compensation accuracy will be ±3°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 ±3°C.)
Series SRS11A/12A/13A/14A

**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**
  - ±(0.25% FS+1 digit) excluding cold junction temperature compensation accuracy of thermocouple input
  - Accuracy if set value is lower than -100ºC with K, T, U thermocouples is ±0.7%FS.
  - Accuracy guarantee not applicable to 400ºC and below of B thermocouple.

- **Display accuracy maintaining range**
  - 23ºC±5ºC

- **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 – 600ºC is -240 – 680ºC, range of JPt-200 – 500ºC is -240 – 570ºC.)

- **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**

- **Input resistance**
  - 500kΩ minimum

- **External resistance tolerance**
  - 100Ω maximum

- **Burnout function**
  - Standard feature (up scale)

- **Cold junction compensation accuracy**
  - ±2ºC (between 5 and 45ºC of ambient temperature), ±3ºC if mounted closely

- **R.T.D.**
  - Pt100/JPt100, 3-wire type

- **Amperage**
  - 0.25mA

- **Lead wire tolerance resistance**
  - ±2% maximum/wire (3 lead wires should have the same resistance.)

- **Voltage**
  - mV: -10 – 10, 0 – 20, 0 – 50, 0 – 100mV DC
  - V: -1 – 1, 0 – 1, 0 – 2, 0 – 5, 1 – 5, 0 – 10V DC

- **Input resistance**
  - 500kΩ minimum

- **Input scaling function**
  - Scaling possible for voltage (mV, V) input
  - Scaling range: -9999 – 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**
  - -9999 – 2000 units

- **PV filter**
  - 0 – 99999 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/12V±1.5V DC (maximum load current 30mA)

- **Current/4 – 20mA DC (maximum load resistance 600Ω)**
- **Voltage/0 – 10V 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: ±1.0%FS (5 – 100% output)
- Control output 2: ±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)
- Manual control
  - Output setting range: 0.0 – 100.0% setting resolution: 0.1%
  - Manual ↔ 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)
- 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)→EXE (RUN))
    - 3 Standby 2 (when power is applied, STBY (RST)→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

Time resolution: ±(setting time x 0.005 + 0.25 seconds)

Setting parameter for each step: SV, step time, PID No.

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)
  - SRS12A, 13A, 14A: Maximum 4 points: 3 points (DI1, DI2, DI3) no exclusive selection

- Type of DI assignment
  - Selectable from the following 14 types for each DI.

- 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)

- 2 points selectable when the type of control output (OUT1, OUT2) is contact or SSR

- 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
  - ±2.0 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
  - ±0.25 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)

- 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 to 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)

- Type 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:
- 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

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CODE</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERIES</td>
<td>SRS11A-</td>
<td>DIN 48x48 Digital Controller</td>
</tr>
</tbody>
</table>

#### INPUT

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CODE</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUT</td>
<td>8</td>
<td>Multi-input</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R.T.D.: Pt100/JPt100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Voltage (mV): -10 – 10, 0 – 10, 0 – 20, 0 – 50, 0 – 100, 10 – 50mV DC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scaling Possible (inverse scaling impossible)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Range: -1999 – 9999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Span: 10 – 10000</td>
</tr>
<tr>
<td>INPUT</td>
<td>6</td>
<td>Voltage (V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-1 – 1, 0 – 1, 0 – 2, 0 – 5, 1 – 5, 0 – 10V DC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Input resistance: Min. 500kΩ</td>
</tr>
</tbody>
</table>

#### CONTROL OUTPUT 1

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CODE</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTROL OUTPUT 1</td>
<td>Y</td>
<td>Contact: 1a, Contact capacity: 240V AC 2A/resistive load</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportional cycle: 1 – 120 sec.</td>
</tr>
<tr>
<td>CONTROL OUTPUT 1</td>
<td>I</td>
<td>Current: 4 – 20mA DC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Load resistance: 600Ω max.</td>
</tr>
<tr>
<td>CONTROL OUTPUT 1</td>
<td>P</td>
<td>SSR drive voltage: 12V±1.5V DC/30mA max.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportional cycle: 1 – 120 sec.</td>
</tr>
<tr>
<td>CONTROL OUTPUT 1</td>
<td>V</td>
<td>Voltage: 0 – 10V DC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Load current: 2mA max.</td>
</tr>
</tbody>
</table>

#### CONTROL OUTPUT 2 (OPTION)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CODE</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTROL OUTPUT 2 (OPTION)</td>
<td>N-</td>
<td>None</td>
</tr>
<tr>
<td>CONTROL OUTPUT 2 (OPTION)</td>
<td>Y-</td>
<td>Contact: 1a, Contact capacity: 240V AC 2A/resistive load</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportional cycle: 1 – 120 sec.</td>
</tr>
<tr>
<td>CONTROL OUTPUT 2 (OPTION)</td>
<td>I-</td>
<td>Current: 4 – 20mA DC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Load resistance: 600Ω max.</td>
</tr>
<tr>
<td>CONTROL OUTPUT 2 (OPTION)</td>
<td>P-</td>
<td>SSR drive voltage: 12V±1.5V DC/30mA max.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportional cycle: 0.5 – 120 sec.</td>
</tr>
<tr>
<td>CONTROL OUTPUT 2 (OPTION)</td>
<td>V-</td>
<td>Voltage: 0 – 10V DC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Load current: 2mA max.</td>
</tr>
</tbody>
</table>

#### POWER SUPPLY

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<tr>
<th>ITEM</th>
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</tr>
</thead>
<tbody>
<tr>
<td>POWER SUPPLY</td>
<td>90-</td>
<td>100 – 240V AC±10%, 50/60Hz</td>
</tr>
<tr>
<td>POWER SUPPLY</td>
<td>08-</td>
<td>24V AC/DC±10%, 50/60Hz</td>
</tr>
</tbody>
</table>

#### PROGRAM FUNCTION (OPTION)

<table>
<thead>
<tr>
<th>ITEM</th>
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</tr>
</thead>
<tbody>
<tr>
<td>PROGRAM FUNCTION (OPTION)</td>
<td>N</td>
<td>None</td>
</tr>
<tr>
<td>PROGRAM FUNCTION (OPTION)</td>
<td>P</td>
<td>Max. 4 patterns Total number of steps: 32</td>
</tr>
</tbody>
</table>

#### EVENT OUTPUT (OPTION)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CODE</th>
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</tr>
</thead>
<tbody>
<tr>
<td>EVENT OUTPUT (OPTION)</td>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>EVENT OUTPUT (OPTION)</td>
<td>1</td>
<td>Event output 2 points (EV1, EV2)</td>
</tr>
</tbody>
</table>

#### ANALOG OUTPUT/COMMUNICATION FUNCTION (OPTION)

<table>
<thead>
<tr>
<th>ITEM</th>
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<tbody>
<tr>
<td>ANALOG OUTPUT/COMMUNICATION FUNCTION (OPTION)</td>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>ANALOG OUTPUT/COMMUNICATION FUNCTION (OPTION)</td>
<td>3</td>
<td>0 – 10mVDC Output resistance: 10Ω</td>
</tr>
<tr>
<td>ANALOG OUTPUT/COMMUNICATION FUNCTION (OPTION)</td>
<td>4</td>
<td>4 – 20mADC Resistive load: 300Ω max.</td>
</tr>
<tr>
<td>ANALOG OUTPUT/COMMUNICATION FUNCTION (OPTION)</td>
<td>6</td>
<td>0 – 10VDC Load current: 2mA max.</td>
</tr>
<tr>
<td>ANALOG OUTPUT/COMMUNICATION FUNCTION (OPTION)</td>
<td>5</td>
<td>RS-485 (Shimaden standard protocol, MODBUS protocol)</td>
</tr>
</tbody>
</table>

#### EXTERNAL INPUT CONTROL SIGNAL (DI)/CT INPUT (OPTION)/Note: CT sold separately

<table>
<thead>
<tr>
<th>ITEM</th>
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<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTERNAL INPUT CONTROL SIGNAL (DI)/CT INPUT (OPTION)</td>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>EXTERNAL INPUT CONTROL SIGNAL (DI)/CT INPUT (OPTION)</td>
<td>1</td>
<td>CT input 2 points Note: Available only when control output 1 or 2 is Y or P.</td>
</tr>
<tr>
<td>EXTERNAL INPUT CONTROL SIGNAL (DI)/CT INPUT (OPTION)</td>
<td>2</td>
<td>Control input 3 points (DI1, DI2, DI3)</td>
</tr>
</tbody>
</table>

#### REMARKS

<table>
<thead>
<tr>
<th>ITEM</th>
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</tr>
</thead>
<tbody>
<tr>
<td>REMARKS</td>
<td>0</td>
<td>Without</td>
</tr>
<tr>
<td>REMARKS</td>
<td>9</td>
<td>With</td>
</tr>
</tbody>
</table>

### Optional Accessories

<table>
<thead>
<tr>
<th>Name</th>
<th>Code</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT</td>
<td>QCC01</td>
<td>CT for 30A (CTL-6-S)</td>
</tr>
<tr>
<td>CT</td>
<td>QCC02</td>
<td>CT for 50A (CTL-12-S36-8)</td>
</tr>
<tr>
<td>Shunt resistor</td>
<td>QCS002</td>
<td>250Ω ±0.1% External receiving impedance for current input</td>
</tr>
<tr>
<td>Terminal cover</td>
<td>QCR001</td>
<td>For SRS11A</td>
</tr>
</tbody>
</table>
### ORDERING INFORMATION

#### SERIES
- SRS12A-: DIN 72x72 Digital Controller
- SRS13A-: DIN 96x96 Digital Controller
- SRS14A-: DIN 96x48 Digital Controller

#### INPUT
<table>
<thead>
<tr>
<th>ITEM</th>
<th>CODE</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERIES</td>
<td>SRS12A-</td>
<td>DIN 72x72 Digital Controller</td>
</tr>
<tr>
<td>SERIES</td>
<td>SRS13A-</td>
<td>DIN 96x96 Digital Controller</td>
</tr>
<tr>
<td>SERIES</td>
<td>SRS14A-</td>
<td>DIN 96x48 Digital Controller</td>
</tr>
<tr>
<td>INPUT 8</td>
<td>Multi-input</td>
<td>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 Input resistance: Min. 500kΩ Scaling Possible (inverse scaling impossible) Range: -1999 ~ 9999 Span: 10 ~ 10000</td>
</tr>
<tr>
<td>INPUT 6</td>
<td>Voltage (V)</td>
<td>-1 ~ 1, 0 ~ 1, 0 ~ 2, 0 ~ 5, 1 ~ 5, 0 ~ 10V DC</td>
</tr>
</tbody>
</table>

#### 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: 1 ~ 120 sec.
- V- Voltage: 0 ~ 10V DC Load current: 2mA max.

#### 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 (OPTION)
- 0 None
- 3 0 ~ 10mVDC Output resistance: 10Ω
- 4 4 ~ 20mADC Resistive load: 300Ω 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

<table>
<thead>
<tr>
<th>Name</th>
<th>Code</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT</td>
<td>QCC01</td>
<td>CT for 30A (CTL-6-5)</td>
</tr>
<tr>
<td>CT</td>
<td>QCC02</td>
<td>CT for 50A (CTL-12-S36-8)</td>
</tr>
<tr>
<td>Shunt resistor</td>
<td>QCS002</td>
<td>250Ω ±0.1% External receiving impedance for current input</td>
</tr>
<tr>
<td>Terminal cover</td>
<td>QCR002</td>
<td>For SRS12A (3 pcs./set)</td>
</tr>
<tr>
<td></td>
<td>QCR007</td>
<td>For SRS13A, SRS14A (2 pcs./set)</td>
</tr>
<tr>
<td>Input Type</td>
<td>Code</td>
<td>Measuring range</td>
</tr>
<tr>
<td>------------</td>
<td>------</td>
<td>-----------------</td>
</tr>
<tr>
<td>B</td>
<td>01</td>
<td>0 – 1800 °C</td>
</tr>
<tr>
<td>R</td>
<td>02</td>
<td>0 – 1700 °C</td>
</tr>
<tr>
<td>S</td>
<td>03</td>
<td>0 – 1700 °C</td>
</tr>
<tr>
<td>K</td>
<td>04</td>
<td>-199.9 – 400.0 °C</td>
</tr>
<tr>
<td>05</td>
<td>0.0 – 800.0 °C</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>0 – 1200 °C</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>07</td>
<td>0 – 700 °C</td>
</tr>
<tr>
<td>J</td>
<td>08</td>
<td>0 – 600 °C</td>
</tr>
<tr>
<td>T</td>
<td>09</td>
<td>-199.9 – 200.0 °C</td>
</tr>
<tr>
<td>N</td>
<td>10</td>
<td>0 – 1300 °C</td>
</tr>
<tr>
<td>PLII</td>
<td>11</td>
<td>0 – 1300 °C</td>
</tr>
<tr>
<td>WR5e-26</td>
<td>12</td>
<td>0 – 2300 °C</td>
</tr>
<tr>
<td>U</td>
<td>13</td>
<td>-199.9 – 200.0 °C</td>
</tr>
<tr>
<td>L</td>
<td>14</td>
<td>0 – 600 °C</td>
</tr>
<tr>
<td>K</td>
<td>15</td>
<td>10.0 – 350.0 °C</td>
</tr>
<tr>
<td>AuFe-Cr</td>
<td>16</td>
<td>0.0 – 350.0 °C</td>
</tr>
<tr>
<td>K</td>
<td>17</td>
<td>10 – 350 °C</td>
</tr>
<tr>
<td>AuFe-Cr</td>
<td>18</td>
<td>0 – 350 K</td>
</tr>
<tr>
<td>Pt100</td>
<td>30</td>
<td>-100.0 – 350.0 °C</td>
</tr>
<tr>
<td>Pt100</td>
<td>31</td>
<td>-200.0 – 600.0 °C</td>
</tr>
<tr>
<td>Pt100</td>
<td>32</td>
<td>-100.0 – 100.0 °C</td>
</tr>
<tr>
<td>Pt100</td>
<td>33</td>
<td>-50.0 – 50.0 °C</td>
</tr>
<tr>
<td>Pt100</td>
<td>34</td>
<td>0.0 – 200.0 °C</td>
</tr>
<tr>
<td>Pt100</td>
<td>35</td>
<td>-200 – 500 °C</td>
</tr>
<tr>
<td>Pt100</td>
<td>36</td>
<td>-100.0 – 100.0 °C</td>
</tr>
<tr>
<td>Pt100</td>
<td>37</td>
<td>-50.0 – 50.0 °C</td>
</tr>
<tr>
<td>Pt100</td>
<td>38</td>
<td>0.0 – 200.0 °C</td>
</tr>
<tr>
<td>Pt100</td>
<td>39</td>
<td>-100.0 – 350.0 °C</td>
</tr>
<tr>
<td>JPt100</td>
<td>40</td>
<td>-199.9 – 550.0 °C</td>
</tr>
<tr>
<td>JPt100</td>
<td>41</td>
<td>0.0 – 350.0 °C</td>
</tr>
<tr>
<td>JPt100</td>
<td>42</td>
<td>0.0 – 550.0 °C</td>
</tr>
<tr>
<td>JPt100</td>
<td>43</td>
<td>-199.9 – 500.0 °C</td>
</tr>
<tr>
<td>JPt100</td>
<td>44</td>
<td>0.0 – 350.0 °C</td>
</tr>
<tr>
<td>JPt100</td>
<td>45</td>
<td>0.0 – 500.0 °C</td>
</tr>
</tbody>
</table>

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

| Voltage (mV) | 10 – 10 | 71 |
|             | 0 – 10  | 72 |
|             | 0 – 20  | 73 |
|             | 0 – 50  | 74 |
|             | 0 – 100 | 76 |
|             | -10 – 10| 81 |
|             | 0 – 1   | 82 |
|             | 0 – 2   | 83 |
|             | 0 – 5   | 84 |
|             | 1 – 5   | 85 |
|             | 0 – 10  | 86 |

| Voltage (V) | 0 – 10V DC | 0.0 – 100.0 no legend |

**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 WR5e-26: ASTM E988-96

*5 Thermocouple U: L. DIN 43710

*6 Thermocouple K (Kelvin) accuracy

**Temperature range**

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Measuring range</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0 – 30.0 K</td>
<td>2.0%FS + [CJ error X 20] K + 1K</td>
</tr>
<tr>
<td>30.0 – 70.0 K</td>
<td>1.0%FS + [CJ error X 7] K + 1K</td>
</tr>
<tr>
<td>70.0 – 170.0 K</td>
<td>0.7%FS + [CJ error X 3] K + 1K</td>
</tr>
<tr>
<td>170.0 – 270.0 K</td>
<td>0.5%FS + [CJ error X 1.5] K + 1K</td>
</tr>
<tr>
<td>270.0 – 350.0 K</td>
<td>0.3%FS + [CJ error X 1] K + 1K</td>
</tr>
</tbody>
</table>

**JPt100**

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Measuring range</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0 – 30.0 K</td>
<td>0.7%FS + [CJ error X 3] K + 1K</td>
</tr>
<tr>
<td>30.0 – 70.0 K</td>
<td>0.3%FS + [CJ error X 1.2] K + 1K</td>
</tr>
<tr>
<td>70.0 – 170.0 K</td>
<td>0.3%FS + [CJ error X 1.2] K + 1K</td>
</tr>
<tr>
<td>170.0 – 270.0 K</td>
<td>0.3%FS + [CJ error X 1] K + 1K</td>
</tr>
<tr>
<td>270.0 – 350.0 K</td>
<td>0.5%FS + [CJ error X 1] K + 1K</td>
</tr>
</tbody>
</table>

**JPt100**

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Measuring range</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0 – 30.0 K</td>
<td>0.7%FS + [CJ error X 3] K + 1K</td>
</tr>
<tr>
<td>30.0 – 70.0 K</td>
<td>0.3%FS + [CJ error X 1.2] K + 1K</td>
</tr>
<tr>
<td>70.0 – 170.0 K</td>
<td>0.3%FS + [CJ error X 1.2] K + 1K</td>
</tr>
<tr>
<td>170.0 – 270.0 K</td>
<td>0.3%FS + [CJ error X 1] K + 1K</td>
</tr>
<tr>
<td>270.0 – 350.0 K</td>
<td>0.5%FS + [CJ error X 1] K + 1K</td>
</tr>
</tbody>
</table>

**NOTE:** For current input, install input terminals of the specified receiving impedance (250 Ω) 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:
Series SRS11A/12A/13A/14A

OPTIONAL TERMINAL COVER

QCR001
QCR002
QCR007

SRS11A
SRS12A
SRS13A & SRS14A
**Warning**

- The SRS 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.

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**ISO9001/ISO14001**

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**Temperature and Humidity Control Specialists**

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