

|                 |                    |
|-----------------|--------------------|
| °C              | <b>Series SR80</b> |
| %RH             |                    |
| <b>SHIMADEN</b> |                    |

# SHIMADEN DIGITAL CONTROLLER



## BASIC FEATURES

- High accuracy:  $\pm (0.25\% FS + 1 \text{ digit})$**
- Only SR83 (96 x 96) Large 20 mm bright display**  
**Make reading from long distance and low light location easier.**
- 2-output heating and cooling control available for SR83 (96 x 96) and SR84 (48 x 96)**
- Auto tuning function for both heating and cooling outputs in a high performance individual expert PID control**
- Both RS232C/RS485 and CC-Link are communication interface ready. (CC-Link available only for SR83)**
- Dust and splash proof front panel Equivalent to IP66**
- A wide selection of additional functions (optional) is available to suit various needs.**

□ SR82 (72 x 72)



- Wide range of optional features
- Event output, Remote input, Analog output signal and Communication interface
- Others

□ SR83 (96 x 96)

Large 20 mm bright display (PV)



- Wide range of optional features
- Event output, Remote input, Analog output signal and Communication interface
- For example  
Selectable One control output type or Two control output type.
- Others

□ SR84 (48 x 96)



- Wide range of optional features
- Event output, Remote input, Analog output signal and Communication interface
- For example  
Selectable One control output type or Two control output type.
- Others

■ DISPLAY

- LED display: Measured value (PV) display/  
7-segment red LED 4 digits  
Set value (SV) display/  
7-segment green LED 4 digits  
 $\pm(0.25\% \text{ FS} + 1 \text{ digit})$
- Display accuracy:  $23^\circ\text{C} \pm 5^\circ\text{C}$
- Range in which display accuracy is maintained: Depends on measuring range (0.001, 0.01, 0.1, 1)
- Display resolution: 250 msec. (0.25 sec.)
- Sampling cycle: 11 types, LED lamp display
- Action display/color: Control output: (OUT1, 2)/green  
Event action (EV1, 2, 3)/orange  
Auto tuning action (AT)/green  
Manual control action (MAN)/green  
Set value bias action (SV2/SB)/green  
Remote action (REM)/green  
Stand-by action (STBY)/green  
Communication status (COM/RUN)/green

■ SETTING

- Setting method: By front key switch operation
- Setting range: Same as measuring range (within setting limiter)
- Setting limiter: Higher and lower limits separate setting; free within measuring range (Lower limit < higher limit)
- Set value resolution: Depends on range and scaling (0.001, 0.01, 0.1, 1)
- Setting key type: 6 types - PARA (parameter selection), UP, DOWN, AT, ENT and DISP keys
- Ramp control upon reaching set value: Ascending/descending ramp control
- Ramp setting range: OFF, 1~9999 Units
- Ramp unit time: /sec, /min switching by front key operation and communication
- Ramp rate: x 1, x 0.1 switching by front key operation and communication

■ INPUT

- Thermocouple: B, R, S, K, E, J, T, N, PL II, WRe5-26, {L, U (DIN43710)} K, AuFe-Cr Kelvin unit input
- Allowable external resistance range: 100 $\Omega$  maximum
- Input impedance: 500k  $\Omega$  minimum
- Burnout function: Standard feature (up scale)
- Cold junction temperature compensation accuracy:  $\pm 2^\circ\text{C}$  (within a range from 5 to 45 $^\circ\text{C}$ )
- R.T.D.: Pt100/JPt100
- Amperage: Approx. 0.25mA
- Allowable range of lead wire resistance: 5 $\Omega$  maximum/wire
- Voltage (multiple input): -10~10, 0~10, 0~20, 0~50, 10~50, 0~100mV DC, or -1~1, 0~1, 0~2, 0~5, 1~5, 0~10V DC
- Input impedance: 500k  $\Omega$  minimum
- Current: 0~20mA, 4~20mA DC
- Receiving impedance: 250 $\Omega$
- Sampling cycle: 250 msec. (0.25 sec.)
- PV bias: -1999~1999 Units
- PV filter: OFF, 1~100 sec.

|  |  |
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| <ul style="list-style-type: none"> <li>• Cold junction temperature compensation switching: INT (internal)/EXT (external) switching by front key operation</li> <li>• Isolation: Insulated from various outputs [not insulated from system, DI (external switching input) and CT input]</li> </ul> <p>■ CONTROL (SR82: 1 output only)</p> <ul style="list-style-type: none"> <li>• Control system: One output operation: Expert PID control with auto tuning function<br/>RA (reverse action): Heating action<br/>DA (direct action): Cooling action<br/>Two output operation (option): Expert PID + PID (control outputs 1 and 2 individually in action) control with auto tuning function<br/>RA (reverse action): Heating action (output 1 side) and cooling (output 2 side)<br/>DA (direct action): 2-stage heating action (by both of control outputs 1 and 2)</li> </ul> <ul style="list-style-type: none"> <li>• PID (Control outputs 1 and 2 individually)<br/>Control output 1: Proportional band (P): OFF, 0.1~999.9% (OFF=ON/OFF action)<br/>Integral time (I): OFF, 1~6000 sec. (OFF=with manual reset)<br/>Derivative time (D): OFF, 0~3600 sec.<br/>Manual reset: -50.0 to +50.0% (valid when I=OFF)<br/>ON/OFF hysteresis: 1~1000 unit (valid during ON/OFF action)</li> </ul> <p>Control output 2 (only when two output option is added):</p> <p>Proportional band (P): OFF, 0.1~999.9% (OFF=ON/OFF action)<br/>Integral time (I): OFF, 1~6000 sec.<br/>Derivative time (D): OFF, 0~3600 sec.<br/>ON/OFF hysteresis: 1~1000 Units (valid during ON/OFF action)<br/>Dead band: -1999~5000 Units<br/>Separate setting for SV2 is possible.<br/>Setting range is the same as the one listed above.</p> <ul style="list-style-type: none"> <li>• Proportional cycle: (for contact and SSR drive voltage output)<br/>Control output 1: 1~120 sec.<br/>Control output 2: 1~120 sec.</li> <li>• AT point setting: 0-5000 Units</li> <li>• Control output characteristics: RA (reverse action)/DA (direct action) switchable by front key operation or DI (external switching input) through communication.</li> </ul> <ul style="list-style-type: none"> <li>• Higher and lower limit output limiter (individually for control outputs 1 and 2): Lower limit side: 0.0~99.9%,</li> </ul> | <ul style="list-style-type: none"> <li>Higher limit side: 0.1~100.0% on condition that lower limit value &lt; higher limit value.<br/>Separate setting for SB/SV2 is possible.<br/>Setting range is the same as the one listed above.</li> </ul> <ul style="list-style-type: none"> <li>• Control output at time of error (individually for control outputs 1 and 2): 0.0~100.0%</li> <li>• Control output type/rating (common to control outputs 1 and 2): Contact (Y): 240V AC<br/>2.5A/resistive load<br/>SSR drive voltage (P): 12V ±1.5V<br/>DC, load current 30mA maximum<br/>Current (I): 4~20mA DC, load resistance 600Ω maximum.<br/>Voltage (V): 0~10V DC, load current 2mA maximum</li> </ul> <ul style="list-style-type: none"> <li>• Output resolution<br/>Control output 1: Approx. 0.0125% (1/8000)<br/>Control output 2: Approx. 0.5% (1/200)</li> <li>• Sampling cycle: 250 msec. (0.25 sec.)</li> <li>• Manual control<br/>Manual switching: Front key operation or DI (external switching input) through communication<br/>Manual control output: 0.0-100.0% (out of output limiter range possible)<br/>Setting resolution: 0.1%<br/>Manual ↔ automatic control: Balanceless bumpless (within proportional band, though)</li> <li>• Isolation: Insulated between control output and system and various inputs (not insulated between control output of current, voltage or SSR and analog output)</li> </ul> <p>■ EVENT OUTPUT (optional)</p> <ul style="list-style-type: none"> <li>• Number of event outputs: SR82 - 2<br/>SR83 - 3 (2 when 2 output option is added)<br/>SR84 - 3 (2 when communication option, analog output option and/or 2 output option are added)<br/>(In case of 2 event outputs, EV2 and EV3 are common output with OR.)</li> <li>• Event type: Selectable from 8 types (7 types when heater break alarm option is not added)<br/>A_Hi: Higher limit absolute value alarm<br/>A_Lo: Lower limit absolute value alarm<br/>D_Hi: Higher limit deviation value alarm<br/>D_Lo: Lower limit deviation value alarm<br/>D_i: Higher/lower limit deviation value alarm (within range)<br/>D_o: Higher/lower limit deviation value alarm (out of range)<br/>Sco: Scaleover (input trouble alarm)</li> </ul> |
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|   |  |   |
|---|--|---|
|   | Hb: Heater break alarm (selectable only when heater break alarm option is added)   | • Alarm action: Heater amperage detected by external CT (CT attached). Alarm output ON upon detection of heater break while control output is ON. |
| • Event setting range   | Deviation value alarm<br>Higher limit alarm: -1999~9999 Units<br>Lower limit alarm: -1999~9999 Units<br>Higher/lower limit alarm: 0~9999 Units<br>Absolute value alarm<br>Both higher and lower limits: Within measuring range   | • Alarm output/rating: 0.1~50.0A (Alarm action stops when OFF is set.)  |
| Event setting system:   | By front key operation   | • Setting resolution: 0.1A  |
| • Event action:   | ON/OFF action  | • Current display: 0.0~55.0A  |
| • Event hysteresis:   | 1~1000 Units   | • Display accuracy: Approx. 3% FS (for 50Hz/60Hz sine wave)   |
| • Stand-by/nonstand-by action:  | Selectable from 5 types<br>Alarm action without stand-by<br>Alarm action with stand-by (When power is ON)<br>Alarm action with stand-by (When power is ON, when stand-by is switched to execution)<br>Alarm action with stand-by (When power is ON, when stand-by is switched to execution, including the time when SV is changed)<br>Control action | • Minimum time for action confirmation: ON (OFF) time 250 msec.   |
| • Event action delay:   | OFF, 1~9999 sec.   | • Alarm holding mode: Switchable between holding and not holding on the setting screen.   |
| • Event output/rating:  | Contact 240V AC 1.0A (resistive load)  | • Sampling time: 500 msec. (0.5 sec.)   |
| • Output updating cycle:  | 250 msec. (0.25 sec.)  | • Isolation: Insulated between CT input and various outputs (not insulated from system and other inputs)  |
| ■ ANALOG OUTPUT (optional, not selectable together with communication type (1) and (2)) |  | ■ REMOTE (optional, not selectable together with heater break alarm)  |
| • The number of analog output:  | 1  | • Remote setting: By external analog signal   |
| • Output signal:  | Selectable from 5 types (3 types for instrument with one output)<br>PV: Measured value<br>SV: Set value<br>DEV: Deviation output<br>OUT 1: Control output 1<br>OUT 2: Control output 2 (selectable only when 2 output option is added)   | Switching to remote: By DI (external switching) input (valid only when DI option is added)<br>Remote/local switching function by remote signal    |
| • Output type/rating  | 0~10mV DC/FS Output impedance: 10Ω<br>0~10V DC/FS Load current: 2mA maximum<br>4~20mA DC/FS Load resistance: 300Ω maximum  | • Remote switching point: OFF, 0.1~50.0%  |
| • Output scaling  | PV/SV: Within measuring range (inverted scaling possible)<br>OUT1/OUT2: 0.0~100.0% (inverted scaling possible)<br>DEV: -100.0~100.0% (inverted scaling possible) on condition that Ao_L ≠ Ao_H   | • Remote switching hysteresis: 0.1~10.0%  |
| • Output accuracy:  | ±0.3% FS (to displayed value)  | • Remote scaling: Within measuring range (inverted scaling possible)  |
| • Output resolution:  | 0.01% FS (1/10000)   | Accuracy of setting: ±(0.25% SF + 1 digit)  |
| • Output updating cycle:  | 250 msec. (0.25 sec.)  | Setting signal: 0~10, 1~5V DC (Input impedance: 500k Ω min.)<br>4~20mA DC (Receiving impedance: 250Ω)   |
| • Isolation:  | Insulated from system and various inputs (not insulated from control outputs I, P and V)   | • Remote bias: -1999~1999 units   |
| ■ HEATER BREAK ALARM (optional, not selectable together with REM input)                 |  | • Remote filter: OFF, 1~100 sec.  |
| • Current capacity:   | 30A or 50A CT to be specified when order is placed.  | • Sampling cycle: 500 msec. (0.5 sec.)  |
|   |  | • Isolation: Insulated between remote input and various outputs (not insulated from system and various inputs)                                    |
|   |  | ■ COMMUNICATION (optional, not selectable together with analog output for SR82 and SR84)  |
|   |  | • Communication type (1): RS-232C, RS-485   |
|   |  | • Communication system: RS-232C 3-line half duplex system<br>RS-485 2-line half duplex multiple drop (bus) system                                 |
|   |  | • Synchronization system: Start-stop synchronization system   |
|   |  | • Communication distance: RS-232C maximum 15 m<br>RS-485 maximum 500 m (depending on conditions)  |
|   |  | • Communication speed: 1200, 2400, 4800, 9600, 19200 bps  |

- Data bit length: 7 bits, even parity, stop bit 1  
7 bits, even parity, stop bit 2  
7 bits, no parity, stop bit 1  
7 bits, no parity, stop bit 2  
8 bits, even parity, stop bit 1  
8 bits, even parity, stop bit 2  
8 bits, no parity, stop bit 1  
8 bits, no parity, stop bit 2
- Communication address: 1~99
- Communication memory mode: EEPROM/r\_E
- Communication BCC: Add/Add two's cmp/XOR/None
- Communication delay time: OFF, 1~100
- Communication code: ASCII code
- Communication protocol: Shimaden standard protocol
- The number of instruments allowed to be connected: RS-232C 1  
RS-485 32 maximum (depending on conditions; host included)
- Isolation: Insulated between communication signal and various inputs/system/ various outputs
- Communication type (2): Conforming with Mitsubishi Electric Company's CC-Link (only for SR83, simultaneous selection of analog output is not possible)
- Transmission speed: 156K, 625K, 2.5M, 5M, 10Mbps
- Private station: 1
- Communication method: Polling method
- Synchronization method: Frame synchronous method
- Coding system: NRZI system
- Transmission line: Bus (RS-485)
- Transmission format: Conforming with HDLC
- DI (EXTERNAL SWITCHING) INPUT (optional)  
\*DI stands for "Digital Input."
- Number of DI point: 2
- DI input type: Selectable from 8 types (7 types if the remote option is not added.)  
NOP: No operation  
STB: Execution/stand-by  
SB/SV2: Set value bias/set value 2  
AT: Auto tuning  
MAN: Manual  
STP: Ramp temporary stop  
DA: Direct action  
REM: Remote (selectable only when remote option is added)
- DI input rating: Nonvoltage contact, open collector input (about 5V/2mA impress)
- Isolation: Insulated between DI input and various outputs (not insulated from system and various inputs)
- SET VALUE 2 (SV2)/Set Value Bias (SB) (optional)  
(DI option is prerequisite.)
- Action input: Nonvoltage contact by SB/SV2 selection through DI (external switching) input (in action during closed input)
- Selection of setting: Absolute value setting (SV2)

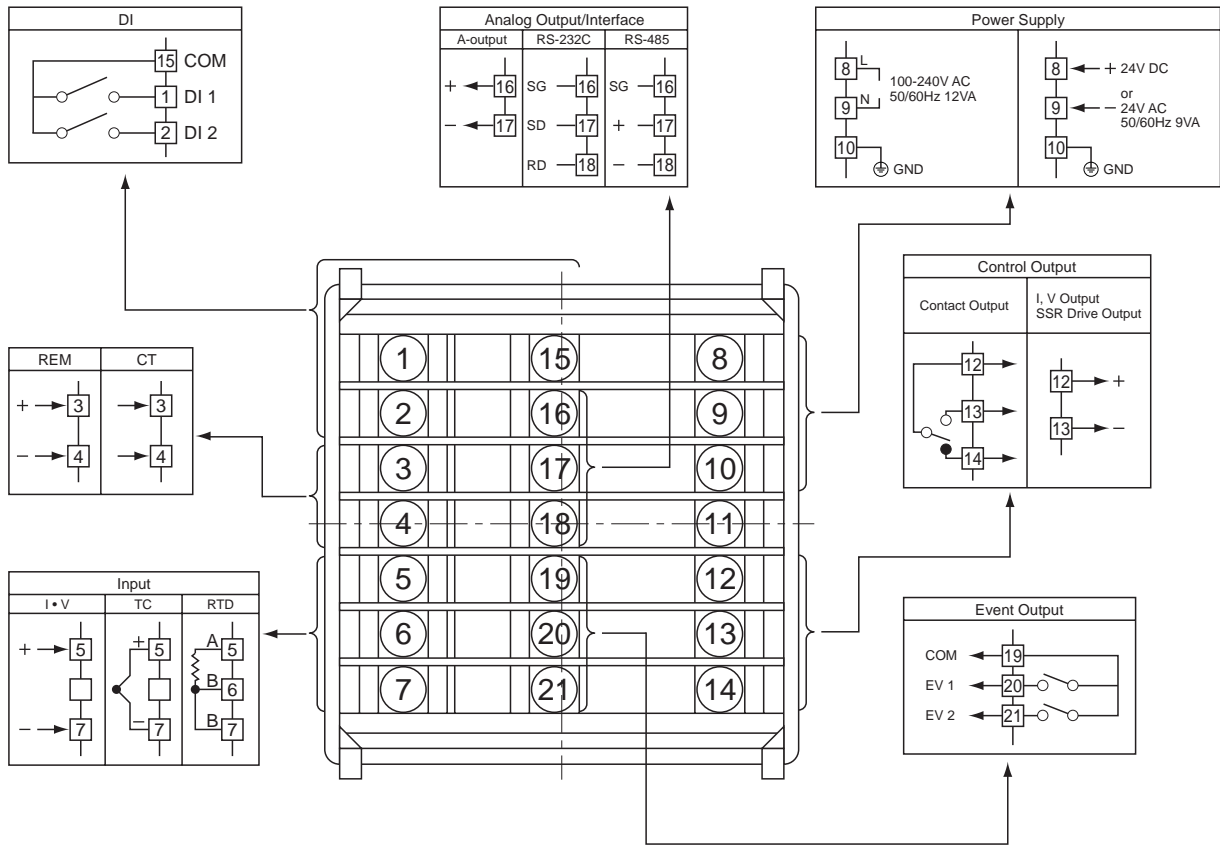
- Setting range: Deviation value setting (SB)  
Absolute value setting:  
Within measuring range  
Deviation value setting:  
-1999~5000 Units  
SV2 allows PID and output limit to be set.
- OTHERS
- Data storage: By non-volatile memory (EEPROM)
- Ambient temperature/humidity ranges for use: -10~+50°C/below 90% RH (on condition that there is no dew condensation)
- Temperature for storage: Between -20 and +65°C
- Power supply: 100V-240V AC±10% (50/60 Hz), 24V AC±10% (50/60Hz), 24V DC±10%.  
(One of the above to be specified)
- Power consumption: 12V A maximum
- Input noise removal ratio: Normal mode 60 dB minimum (50/60 Hz)  
Common mode 140 dB minimum (50/60 Hz)
- Applicable standards: Safety: IEC1010-1 and EN61010-1  
EMC: EN50081-2: 1993 (EMI/Emission)  
EN50082-2, 1995 (EMS/Immunity)
- Insulation resistance: Between input/output terminals and power terminal 500V DC 20M Ω minimum  
Between input/output terminals and protective conductor terminal 500V DC 20M Ω minimum
- Dielectric strength: 1 minute at 2300V AC between input/output terminals and power terminal  
1 minute at 1500V AC between power terminal and protective conductor terminal
- Protective structure: Only front panel has simple dust-proof and drip-proof structure (equivalent to IP66)
- Material of case: PPO resin molding (equivalent to UL94V-1)
- External dimensions: SR82 H72 x W72 x D111 mm (Inside depth of panel: 100 mm)  
SR83 H92 x W92 mm  
SR84 H96 x W96 x D111 mm (Inside depth of panel: 100 mm)  
SR84 H96 x W48 x D111 mm (Inside depth of panel: 100 mm)
- Mounting: Push-in panel (one-touch mount)
- Applicable panel thickness: 1.0~4.0 mm
- Panel cutout size: SR82: H68 x W68 mm  
SR83: H92 x W92 mm  
SR84: H92 x W45 mm
- Weight: SR82: 300g  
SR83: 420g  
SR84: 280g

| ITEMS  | CODE  |  | SPECIFICATIONS   |   |
|--|-------|--|--|---|
| SERIES   | SR82- |  | MPU-Based Auto-Tuning PID Digital Controller<br>DIN H72 × W72 mm                           |   |
| INPUT  | 1     |  | Thermocouple   | User-selectable inputs and ranges   |
|  | 2     |  | R.T.D.   | User-selectable ranges  |
|  | 3     |  | DC Voltage   | User-selectable 0~10, 10~50, -10~10, 0~20, 0~50, 0~100mV DC linear inputs                     |
|  | 4     |  | DC Current   | User-selectable 4~20, 0~20mA DC linear inputs   |
|  | 6     |  | DC Voltage   | User-selectable 0~1, 1~5, -1~1, 0~2, 0~5, 0~10V DC linear inputs                              |
| CONTROL OUTPUT 1   | Y-    |  | Contact  | PB Cycle: 1~120 seconds, Contact Capacity: 240V AC 2.5A / resistive load, 1A / inductive load |
|  | I-    |  | Current  | 4~20mA DC<br>Load resistance: 600 Ω Max.  |
|  | P-    |  | SSR Voltage  | PB Cycle 1~120 seconds, Output rating: 12V ±1.5V DC 30mA Max.                                 |
|  | V-    |  | Voltage  | 0~10V DC<br>Maximum load current: 2mA Max.  |
| CONTROL OUTPUT 2   | N-    |  | None   |   |
| POWER SUPPLY   | 90-   |  | 100~240V AC ±10% 50/60Hz   |   |
|  | 10-   |  | 24V AC ±10% 50/60Hz  |   |
|  | 02-   |  | 24V DC ±10%  |   |
| EVENT OUTPUT (2 points)<br>[OPTION]  | 0     |  | None   |   |
|  | 1     |  | Contact output, Contact capacity: 240V AC 1A / resistive load                              |   |
|  | 2     |  | Contact output + Heater break alarm (with 30A CT)  | Selectable only for Y or P Control output   |
|  | 3     |  | Contact output + Heater break alarm (with 50A CT)  |   |
| REMOTE INPUT<br>(Not selectable together with Heater break alarm function) [OPTION]  | 00    |  | None   |   |
|  | 14    |  | Current 4~20mA DC<br>Receiving resistance: 250 Ω   | Non-Isolated input  |
|  | 15    |  | Voltage 1~5V DC<br>Input resistance: 500k Ω Min.   |   |
|  | 16    |  | Voltage 0~10V DC<br>Input resistance: 500k Ω Min.  |   |
| ANALOG OUTPUT<br>(Not selectable together with Interface function) [OPTION]          | 0     |  | None   |   |
|  | 3     |  | Voltage 0~10mV DC, Output resistance: 10 Ω   |   |
|  | 4     |  | Current 4~20mA DC, Load resistance: 300 Ω Max.   |   |
|  | 6     |  | Voltage 0~10V DC, Load current: 2mA Max.   |   |
| INTERFACE FUNCTION<br>(Not selectable together with Analog output function) [OPTION] | 0     |  | None   |   |
|  | 5     |  | RS-485   |   |
|  | 7     |  | RS-232C  |   |
| EXTERNAL INPUT CONTROL SIGNAL / SET VALUE BIAS [OPTION]                              | 0     |  | None   |   |
|  | 1     |  | Control input 2 points, Non-voltage contact, Open collector input (about 5V / 2mA impress) |   |
| REMARKS  | 0     |  | Without  |   |
|  | 9     |  | With (Please consult before ordering.)   |   |

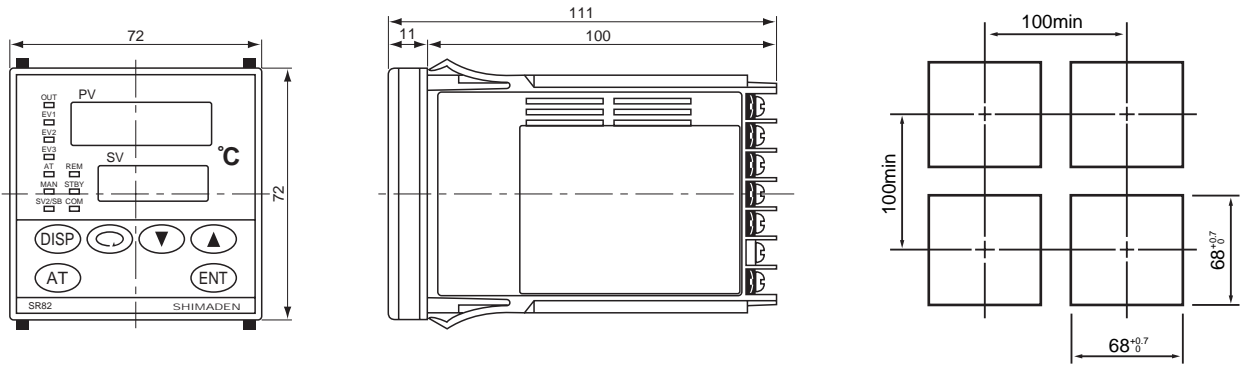
# TERMINAL ARRANGEMENT

Series **SR80**

• SR82



# EXTERNAL DIMENSIONS & PANEL CUTOUT

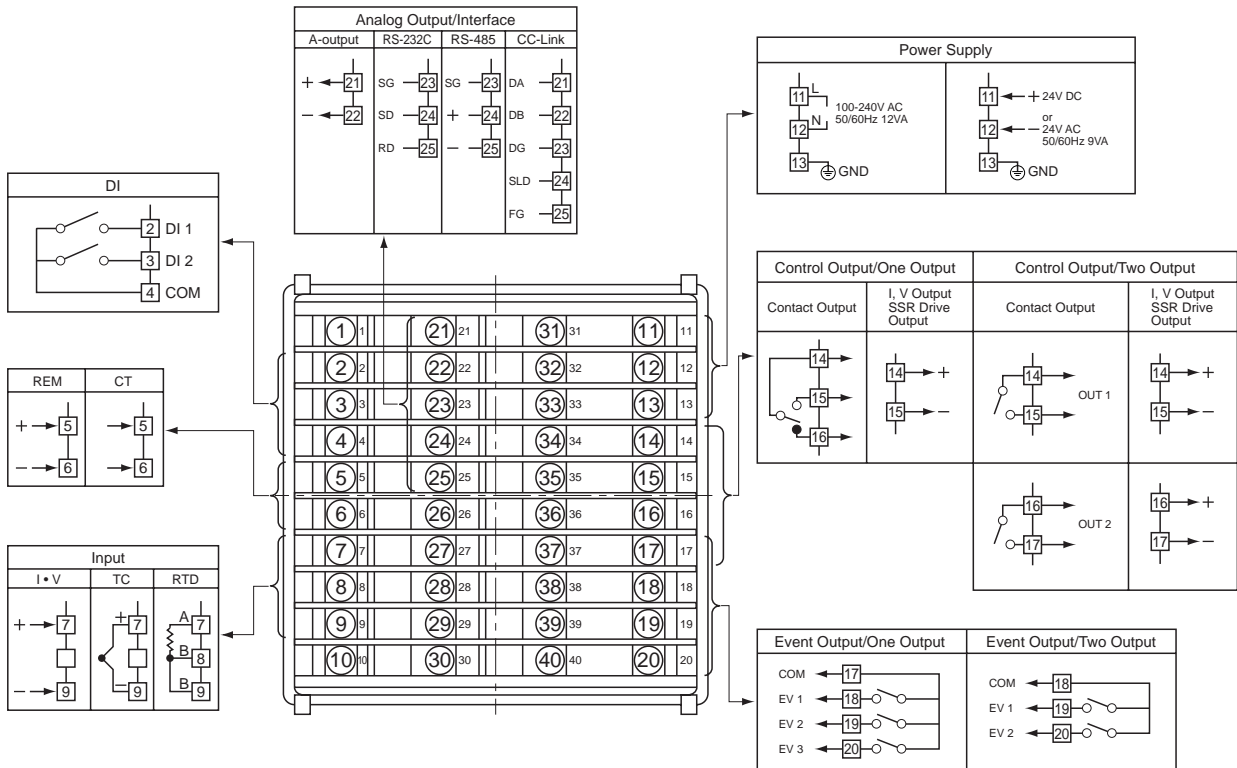


(Unit : mm)

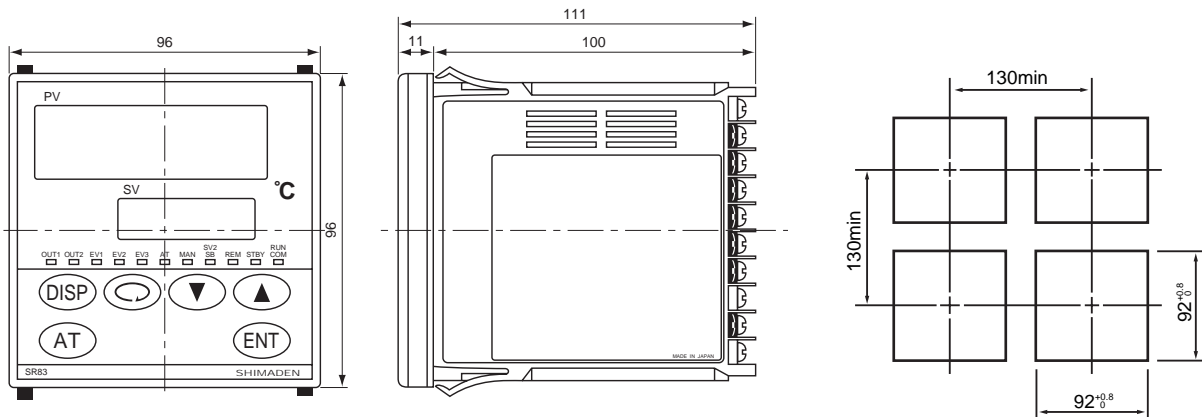
| ITEMS   | CODE  |  | SPECIFICATIONS  |
|---|-------|--|---|
| SERIES  | SR83- |  | MPU-Based Auto-Tuning PID Digital Controller<br>DIN H96 × W96 mm  |
| INPUT   | 1     |  | Thermocouple User-selectable inputs and ranges  |
|   | 2     |  | R.T.D. User-selectable ranges   |
|   | 3     |  | DC Voltage User-selectable 0~10, 10~50, -10~10, 0~20, 0~50, 0~100mV DC linear inputs                                  |
|   | 4     |  | DC Current User-selectable 4~20, 0~20mA DC linear inputs  |
|   | 6     |  | DC Voltage User-selectable 0~1, 1~5, -1~1, 0~2, 0~5, 0~10V DC linear inputs   |
| CONTROL OUTPUT 1  | Y-    |  | Contact PB Cycle: 1~120 seconds, Contact Capacity: 240V AC 2.5A / resistive load, 1A / inductive load                 |
|   | I-    |  | Current 4~20mA DC Load resistance: 600 Ω Max.   |
|   | P-    |  | SSR Voltage PB Cycle 1~120 seconds, Output rating: 12V ±1.5V DC 30mA Max.   |
|   | V-    |  | Voltage 0~10V DC Maximum load current: 2mA Max.   |
| CONTROL OUTPUT 2 [OPTION]   | N-    |  | None  |
|   | Y-    |  | Contact PB Cycle: 1~120 seconds, Contact Capacity: 240V AC 2.5A / resistive load, 1A / inductive load                 |
|   | I-    |  | Current 4~20mA DC Load resistance: 600 Ω Max.   |
|   | P-    |  | SSR Voltage PB Cycle: 1~120 seconds, Output rating: 12V ±1.5V DC 30mA Max.  |
| POWER SUPPLY  | 90-   |  | 100~240V AC ±10% 50/60Hz  |
|   | 10-   |  | 24V AC ±10% 50/60Hz   |
|   | 02-   |  | 24V DC ±10%   |
| EVENT OUTPUT (3 points)<br>(2 points when 2 output option is added) [OPTION]  | 0     |  | None  |
|   | 1     |  | Contact output, Contact capacity: 240V AC 1A / resistive load   |
|   | 2     |  | Contact output + Heater break alarm (with 30A CT)   |
|   | 3     |  | Contact output + Heater break alarm (with 50A CT)   |
| REMOTE INPUT<br>(Not selectable together with Heater break alarm function) [OPTION]   | 00    |  | None  |
|   | 14    |  | Current 4~20mA DC Receiving resistance: 250 Ω   |
|   | 15    |  | Voltage 1~5V DC Input resistance: 500k Ω Min.   |
|   | 16    |  | Voltage 0~10V DC Input resistance: 500k Ω Min.  |
| ANALOG OUTPUT<br>(Not selectable together with CC-Link function) [OPTION]   | 0     |  | None  |
|   | 3     |  | Voltage 0~10mV DC, Output resistance: 10 Ω  |
|   | 4     |  | Current 4~20mA DC, Load resistance: 300 Ω Max.  |
|   | 6     |  | Voltage 0~10V DC, Load current: 2mA Max.  |
| INTERFACE FUNCTION<br>(When CC-Link function is selected, simultaneous selection of Analog output is not possible) [OPTION] | 0     |  | None  |
|   | 5     |  | RS-485  |
|   | 7     |  | RS-232C   |
|   | 8     |  | CC-Link (Conforming with Mitsubishi Electric Company's CC-Link) (Not selectable together with Analog output function) |
| EXTERNAL INPUT CONTROL SIGNAL / SET VALUE BIAS [OPTION]   | 0     |  | None  |
|   | 1     |  | Control input 2 points, Non-voltage contact, Open collector input (about 5V / 2mA impress)                            |
| REMARKS   | 0     |  | Without   |
|   | 9     |  | With (Please consult before ordering.)  |

Note: Selection together with ANALOG OUTPUT and INTERFACE FUNCTION (RS485 or RS232C) is possible.

• SR83



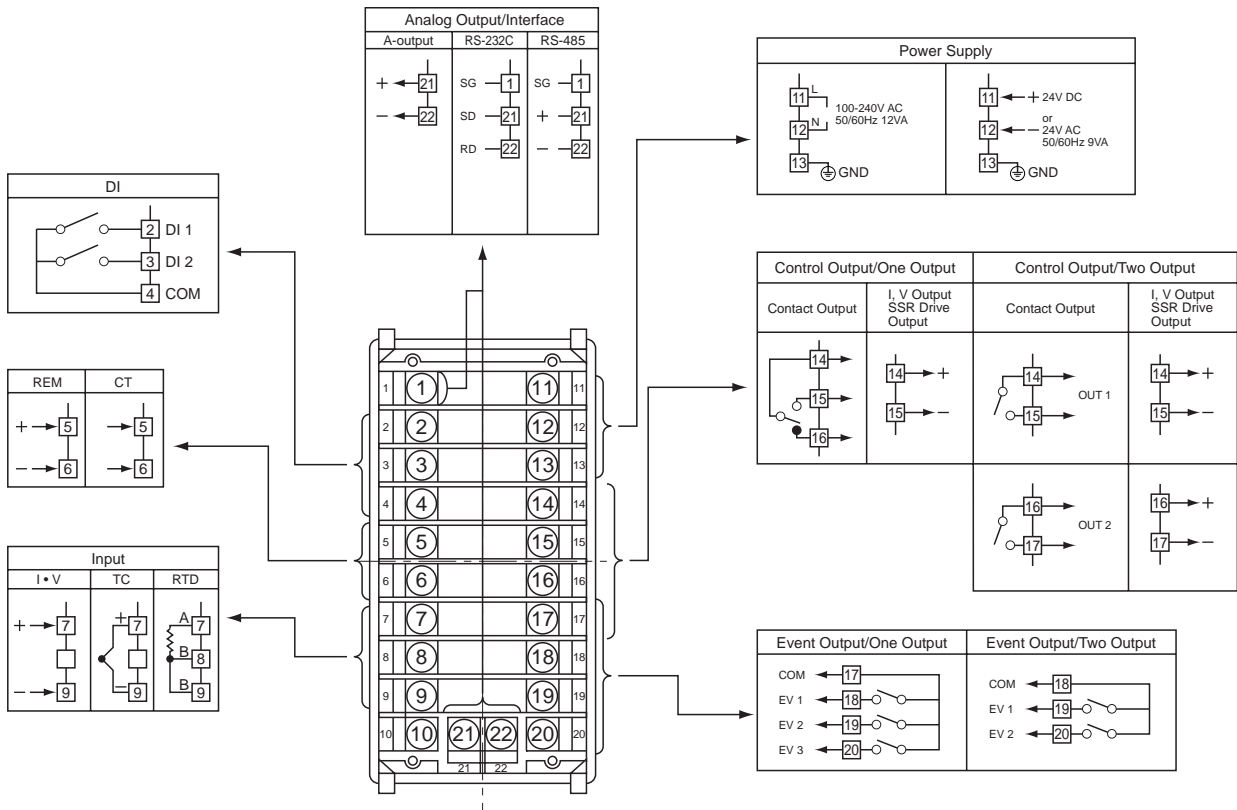
# EXTERNAL DIMENSIONS & PANEL CUTOUT



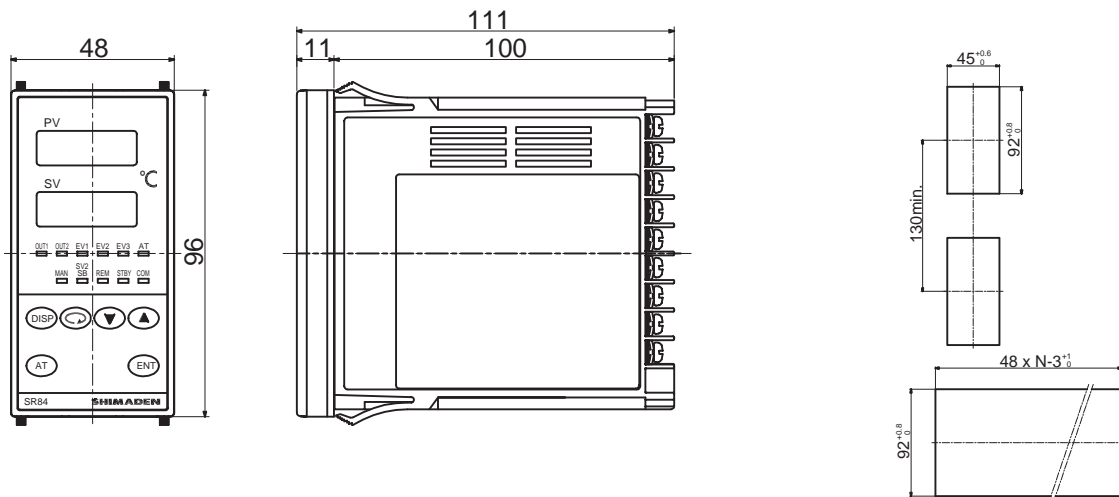
(Unit : mm)

| ITEMS   | CODE  |  | SPECIFICATIONS  |
|---|-------|--|---|
| SERIES  | SR84- |  | MPU-Based Auto-Tuning PID Digital Controller<br>DIN H96 × W48 mm                                      |
| INPUT   | 1     |  | Thermocouple User-selectable inputs and ranges  |
|   | 2     |  | R.T.D. User-selectable ranges   |
|   | 3     |  | DC Voltage User-selectable 0~10, 10~50, -10~10, 0~20, 0~50, 0~100mV DC linear inputs                  |
|   | 4     |  | DC Current User-selectable 4~20, 0~20mA DC linear inputs  |
|   | 6     |  | DC Voltage User-selectable 0~1, 1~5, -1~1, 0~2, 0~5, 0~10V DC linear inputs                           |
| CONTROL OUTPUT 1  | Y-    |  | Contact PB Cycle: 1~120 seconds, Contact Capacity: 240V AC 2.5A / resistive load, 1A / inductive load |
|   | I-    |  | Current 4~20mA DC Load resistance: 600 Ω Max.   |
|   | P-    |  | SSR Voltage PB Cycle: 1~120 seconds, Output rating: 12V ±1.5V DC 30mA Max.                            |
|   | V-    |  | Voltage 0~10V DC Maximum load current: 2mA Max.   |
| CONTROL OUTPUT 2 [OPTION]   | N-    |  | None  |
|   | Y-    |  | Contact PB Cycle: 1~120 seconds, Contact Capacity: 240V AC 2.5A / resistive load, 1A / inductive load |
|   | I-    |  | Current 4~20mA DC Load resistance: 600 Ω Max.   |
|   | P-    |  | SSR Voltage PB Cycle 1~120 seconds, Output rating: 12V ±1.5V DC 30mA Max.                             |
| POWER SUPPLY  | 90-   |  | 100~240V AC ±10% 50/60Hz  |
|   | 10-   |  | 24V AC ±10% 50/60Hz   |
|   | 02-   |  | 24V DC ±10%   |
| EVENT OUTPUT (3 points) (2 points when 2 output option is added) [OPTION]         | 0     |  | None  |
|   | 1     |  | Contact output, Contact capacity: 240V AC 1A / resistive load   |
|   | 2     |  | Contact output + Heater break alarm (with 30A CT)   |
|   | 3     |  | Contact output + Heater break alarm (with 50A CT)   |
| REMOTE INPUT (Not selectable together with Heater break alarm function) [OPTION]  | 00    |  | None  |
|   | 14    |  | Current 4~20mA DC Receiving resistance: 250 Ω   |
|   | 15    |  | Voltage 1~5V DC Input resistance: 500k Ω Min.   |
|   | 16    |  | Voltage 0~10V DC Input resistance: 500k Ω Min.  |
| ANALOG OUTPUT (Not selectable together with Interface function) [OPTION]          | 0     |  | None  |
|   | 3     |  | Voltage 0~10mV DC, Output resistance: 10 Ω  |
|   | 4     |  | Current 4~20mA DC, Load resistance: 300 Ω Max.  |
|   | 6     |  | Voltage 0~10V DC, Load current: 2mA Max.  |
| INTERFACE FUNCTION (Not selectable together with Analog output function) [OPTION] | 0     |  | None  |
|   | 5     |  | RS-485  |
|   | 7     |  | RS-232C   |
| EXTERNAL INPUT CONTROL SIGNAL / SET VALUE BIAS [OPTION]                           | 0     |  | None  |
|   | 1     |  | Control input 2 points, Non-voltage contact, Open collector input (about 5V / 2mA impress)            |
| REMARKS   | 0     |  | Without   |
|   | 9     |  | With (Please consult before ordering.)  |

• SR84



## EXTERNAL DIMENSIONS & PANEL CUTOUT



(Unit : mm)

| Input type   | Code                | Measuring range   | Code   | Measuring range |                   |
|--------------|---------------------|-------------------|--|-----------------|-------------------|
| Thermocouple | *1 B                | 0 ~ 1800 °C       | 15   | 0 ~ 3300 °F     |                   |
|              | R                   | 0 ~ 1700 °C       | 16   | 0 ~ 3100 °F     |                   |
|              | S                   | 0 ~ 1700 °C       | 17   | 0 ~ 3100 °F     |                   |
|              | K1                  | -100.0 ~ 400.0 °C | 18   | -150 ~ 750 °F   |                   |
|              | K2                  | 0.0 ~ 800.0 °C    | 19   | 0 ~ 1500 °F     |                   |
|              | K3                  | -200 ~ 1200 °C    | 20   | -300 ~ 2200 °F  |                   |
|              | E                   | 0 ~ 700 °C        | 21   | 0 ~ 1300 °F     |                   |
|              | J                   | 0 ~ 600 °C        | 22   | 0 ~ 1100 °F     |                   |
|              | T                   | -199.9 ~ 200.0 °C | 23   | -300 ~ 400 °F   |                   |
|              | N                   | 0 ~ 1300 °C       | 24   | 0 ~ 2300 °F     |                   |
|              | PLII                | 0 ~ 1300 °C       | 25   | 0 ~ 2300 °F     |                   |
|              | WRe5-26             | 0 ~ 2300 °C       | 26   | 0 ~ 4200 °F     |                   |
|              | U                   | -199.9 ~ 200.0 °C | 27   | -300 ~ 400 °F   |                   |
|              | L                   | 0 ~ 600 °C        | 28   | 0 ~ 1100 °F     |                   |
|              | K                   |                   | 29   | 10.0 ~ 350.0 K  |                   |
|              | AuFe-Cr             |                   | 30   | 0.0 ~ 350.0 K   |                   |
| K            |                     | 31                | 10 ~ 350 K   |                 |                   |
| AuFe-Cr      |                     | 32                | 0 ~ 350 K  |                 |                   |
| R.T.D.       | Pt100 (New) JIS/IEC | 01                | -200 ~ 600 °C  | 17              | -300 ~ 1100 °F    |
|              |                     | 02                | -100.0 ~ 100.0 °C  | 18              | -150.0 ~ 200.0 °F |
|              |                     | 03                | -100.0 ~ 300.0 °C  | 19              | -150 ~ 600 °F     |
|              |                     | 04                | -50.0 ~ 50.0 °C  | 20              | -50.0 ~ 120.0 °F  |
|              |                     | 05                | 0.0 ~ 50.0 °C  | 21              | 0.0 ~ 120.0 °F    |
|              |                     | 06                | 0.0 ~ 100.0 °C   | 22              | 0.0 ~ 200.0 °F    |
|              |                     | 07                | 0.0 ~ 200.0 °C   | 23              | 0.0 ~ 400.0 °F    |
|              |                     | 08                | 0.0 ~ 500.0 °C   | 24              | 0 ~ 1000 °F       |
|              | JPt100 (Old) JIS    | 09                | -200 ~ 500 °C  | 25              | -300 ~ 1000 °F    |
|              |                     | 10                | -100.0 ~ 100.0 °C  | 26              | -150.0 ~ 200.0 °F |
|              |                     | 11                | -100.0 ~ 300.0 °C  | 27              | -150 ~ 600 °F     |
|              |                     | 12                | -50.0 ~ 50.0 °C  | 28              | -50.0 ~ 120.0 °F  |
|              |                     | 13                | 0.00 ~ 50.00 °C  | 29              | 0.0 ~ 120.0 °F    |
|              |                     | 14                | 0.0 ~ 100.0 °C   | 30              | 0.0 ~ 200.0 °F    |
|              |                     | 15                | 0.0 ~ 200.0 °C   | 31              | 0.0 ~ 400.0 °F    |
|              |                     | 16                | 0.0 ~ 500.0 °C   | 32              | 0 ~ 1000 °F       |
| mV           | -10 ~ 10            | 01                | The scaling function allows you to select any value within the following ranges:<br><br>Scaling range: -1999~9999 count<br>Span: 10~5000 count<br>but lower limit side < higher limit side |                 |                   |
|              | 0 ~ 10              | 02                |  |                 |                   |
|              | 0 ~ 20              | 03                |  |                 |                   |
|              | 0 ~ 50              | 04                |  |                 |                   |
|              | 10 ~ 50             | 05                |  |                 |                   |
|              | 0 ~ 100             | 06                |  |                 |                   |
| V            | -1 ~ 1              | 01                | *1 Thermocouple B: 400 °C and 750 °F or below is not covered by accuracy guarantee.  |                 |                   |
|              | 0 ~ 1               | 02                |  |                 |                   |
|              | 0 ~ 2               | 03                |  |                 |                   |
|              | 0 ~ 5               | 04                |  |                 |                   |
|              | 1 ~ 5               | 05                |  |                 |                   |
|              | 0 ~ 10              | 06                |  |                 |                   |
| mA           | 0 ~ 20              | 01                |  |                 |                   |
|              | 4 ~ 20              | 02                |  |                 |                   |

Note: The following codes represent the respective factory-set measuring ranges.

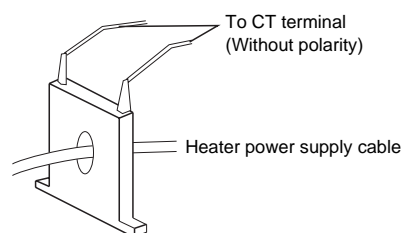
| Input        | Standard/rating | Code | Measuring range |
|--------------|-----------------|------|-----------------|
| Thermocouple | JIS K           | 05   | 0.0 ~ 800.0 °C  |
| R.T.D.       | JIS Pt100       | 07   | 0.0 ~ 200.0 °C  |
| Voltage (mV) | 0 ~ 10mV DC     | 02   | 0.0 ~ 100.0     |
| Voltage (V)  | 1 ~ 5V DC       | 05   | 0.0 ~ 100.0     |
| Current (mA) | 4 ~ 20mA DC     | 02   | 0.0 ~ 100.0     |

Note: If you change a measuring range code, all measuring ranges related to data such as SV value, event set values, PID are initialized.

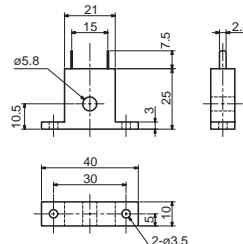
Note: When a type code of event, remote input or analog output is changed, all data related to it are initialized.

## ACCESSORY REQUIRED FOR HEATER BREAK ALARM FUNCTION

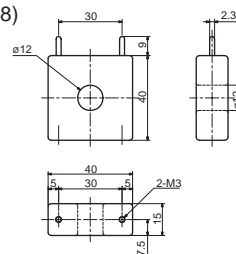
- CT wiring



- 30A (CTL-6-S)



- 50A (CTL-12-S36-8)



(Unit : mm)

### Warning

- The SR80 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.



ISO 9001

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

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