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SHIMADEN

Series **SR80**

SHIMADEN DIGITAL CONTROLLER



 approved

PRODUCT FEATURE

- **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**
- **Communication interface RS-232C/RS-485 available**
- **Dust and splash proof front panel Equivalent to IP66**
- **A wide selection of additional functions (optional) is available to suit various needs.**

DIGITAL CONTROLLER

BASIC FEATURES



SR82 (H72×W72 mm)

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

SR83 (H96×W96 mm)

- 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 (H96×W48 mm)

- 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

SPECIFICATIONS

■ DISPLAY

- LED display : Measured value (PV) display/ 7-segment red LED 4 digits
Set value (SV) display / 7-segment green LED 4 digits
- Display accuracy : Within measuring range $\pm (0.25\% \text{ FS} + 1 \text{ digit})$
- Range in which display accuracy is maintained : $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$
- Display resolution : Depends on measuring range (0.001, 0.01, 0.1, 1)
- Sampling cycle : 250 msec. (0.25 sec.)
- Action display/color : 11 types, LED lamp display
 - : 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
 - : Standby 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 digit
 - Ramp unit time : /sec, /min switching by front key operation and communication
 - Ramp rate : $\times 1, \times 0.1$ switching by front key operation and communication

■ INPUT

- Thermocouple : B, R, S, K, E, J, T, N, PLII, C (WRe 5-26), U (DIN 43710), L (DIN 43710), AuFe-Cr
 - Allowable external resistance range : 100Ω maximum
 - Input impedance : 500kΩ minimum
 - Burnout function : Standard feature (up scale)
 - Cold junction temperature compensation accuracy : ± 2°C (within a range from 5 to 45°C)
- R.T.D. : Pt100/JPt100
 - Amperage : About 0.25 mA
 - Allowable range of lead wire resistance : 5Ω maximum / wire
- Voltage (multiple input) : -10 to 10, 0 to 10, 0 to 20, 0 to 50, 10 to 50, 0 to 100mV DC, or -1 to 1, 0 to 1, 0 to 2, 0 to 5, 1 to 5, 0 to 10V DC
 - Input impedance : 500kΩ minimum
- Current : 0 to 20mA, 4 to 20mA DC
 - Receiving impedance : 250Ω
- Sampling cycle : 250 msec. (0.25 sec.)
- PV bias : -1999 to 1999 digit
- PV gain : -19.99 to 19.99%
- PV filter : OFF, 1 to 100 sec.
- Reference contact compensation switching : INT (internal) / EXT (external) switching by front key operation
- Isolation : Insulated from various outputs (not insulated from system, DI (external switching input) and CT input)

■ CONTROL (SR82: 1 output only)

- Control system : One output operation: Expert PID control with auto tuning function
 - RA (reverse characteristics) Heating action
 - DA (due characteristics) Cooling action
- Two output operation (option) : Expert PID + PID (control outputs 1 and 2 individually in action) control with auto tuning function
 - RA (reverse characteristics) Heating action (output 1 side) and cooling (output 2 side)
 - DA (due characteristics) 2-stage heating action (by both of control outputs 1 and 2)
- PID(Control outputs 1 and 2 individually)
 - Control output 1
 - Proportional band (P): : OFF, 0.1 to 999.9% (OFF=ON / OFF action)
 - Integral time (I) : OFF, 1 to 6000 sec. (OFF= with manual reset)
 - Derivative time (D) : OFF, 0 to 3600 sec.
 - Manual reset : -50.0 to +50.0% (valid when I=OFF)
 - ON/OFF hysteresis : 1 to 1000 digit (valid during ON / OFF action)
 - Control output 2 (only when two output option is added)
 - Proportional band (P) : OFF, 0.1 to 999.9% (OFF=ON / OFF action)
 - Integral time (I) : OFF, 1 to 6000 sec.
 - Derivative time (D) : OFF, 0 to 3600 sec.
 - ON/OFF hysteresis : 1 to 1000 digit (valid during ON / OFF action)
 - Dead band : -1999 to 5000 digit
 - Separate setting for SB / SV2 is possible.
Setting range is the same as the one listed above.
- Proportional cycle : (for contact and SSR drive voltage output)
 - Control output 1 : 1 to 120 sec.
 - Control output 2 : 1 to 120 sec.
- AT point setting : 0 to 5000 digit
- Control output characteristics : RA (reverse characteristics) / DA (due characteristics) switchable by front key operation or DI (external switching input) through communication.
- Higher and lower limit output limiter (individually for control outputs 1 and 2)
 - Lower limit side : 0.0 to 99.9%,
 - Higher limit side : 0.1 to 100.0% on condition that lower limit value < higher limit value.
 - Separate setting for SB / SV2 is possible.
Setting range is the same as the one listed above.
- Control output at time of error (individually for control outputs 1 and 2) : 0.0 to 100.0%
- Control output type / rating (common to control outputs 1 and 2)
 - Contact (Y) : 240V AC 2.5A / resistive load
 - SSR drive voltage (P) : 12V ±1.5V DC, load current 30mA maximum.
 - Current (I) : 4 to 20mA DC, load resistance 600Ω maximum.
 - Voltage (V) : 0 to 10V DC, load current 2mA maximum.

- Output resolution
 - Control output 1 : About 0.0125% (1/8000)
 - Control output 2 : About 0.5% (1/200)
- Sampling cycle : 250 msec. (0.25 sec.)
- Manual control
 - Manual switching : Front key operation or DI (external switching input) through communication
 - Manual control output : 0.0 to 100.0% (out of output limiter range possible)
 - Setting resolution : 0.1%
 - Manual automatic control : Balance less bump less (within proportional band, though)
- Isolation : Insulated between control output and system and Various inputs (not insulated between control output of current, voltage or SSR and analog output)

■ EVENT OUTPUT (optional)

- Number of event outputs : SR82 - 2
SR83 - 3 (2 when 2 output option is added)
SR84 - 3 (2 when communication option, analog output option and/or 2 output option are added)
(In case of 2 event outputs, EV2 and EV3 are common output with OR.)
- Event type : Selectable from 8 types (7 types when heater break alarm option is not added)
 - A_Hi : Higher limit absolute value alarm
 - A_Lo : Lower limit absolute value alarm
 - D_Hi : Higher limit deviation value alarm
 - D_Lo : Lower limit deviation value alarm
 - D_i : Higher / lower limit deviation value alarm (within range)
 - D_o : Higher/lower limit deviation value alarm (out of range)
 - Sco : Scaleover (input trouble alarm)
 - Hb : Heater break alarm (selectable only when heater break alarm option is added)
- Event setting range
 - Deviation value alarm : Higher limit alarm -1999 to 9999 digit
Lower limit alarm -1999 to 9999 digit
Higher/lower limit alarm 0 to 9999 digit
 - Absolute value alarm Both higher and lower limits : Within measuring range
 - Event setting system : By front key operation ON/OFF action
- Event hysteresis : 1 to 1000 digit
- Standby/non standby action : Selectable from 5 types
 - Alarm action without standby
 - Alarm action with standby (When power is ON)
 - Alarm action with standby (When power is ON, when standby is switched to execution)
 - Alarm action with standby (When power is ON, when standby is switched to execution, including the time when SV is changed)
 - Control action
- Event action delay : OFF, 1 to 9999 sec.
- Event output/rating : Contact 240V AC 1.0A (resistive load)
- Output updating cycle : 250 msec. (0.25 sec.)

■ HEATER BREAK ALARM (optional, not selectable together with REM input)

- Current capacity : 30A or 50A CT to be specified when order is placed.
- Alarm action : Heater amperage detected by external CT (CT attached).
Alarm output ON upon detection of heater break while control output is ON.
Alarm output ON upon detection of heater loop alarm while control output is OFF.
- Current setting range : 0.1 to 50.0A (Alarm action stops when OFF is set.)
- Setting resolution : 0.1A
- Current display : 0.0 to 55.0A
- Display accuracy : Approx. 3% FS(for 50Hz / 60Hz sine wave)
- Minimum time for action confirmation : ON (OFF) time 500 msec. min
- Alarm output/rating : Contact 240V AC 1.0A (resistive load)
- Alarm action display : "Event" lamp lights during action.
- Alarm holding mode : Switchable between holding and not holding on the setting screen.
- Sampling time : 500 msec. (0.5 sec.)
- Isolation : Insulated between CT input and various outputs (not insulated from system and other inputs)

■ REMOTE (optional, not selectable together with heater break alarm)

- Remote setting : By external analog signal
 - Switching to remote : By key, communication and DI (external switching) input (valid only when DI option is added)
Remote / local switching function by remote signal
- Remote switching point : OFF, 0.1 to 50.0%
- Remote switching hysteresis : 0.1 to 10.0%
- Remote scaling : Within measuring range (inverted scaling possible)
 - Accuracy of setting : $\pm(0.25\% \text{ SF} + 1 \text{ digit})$
 - Setting signal : 0 to 10V, 1 to 5V DC Input impedance: 500k Ω
4 to 20mA DC Receiving impedance: 250 Ω
- Remote bias : -1999 to 1999 digit
- Remote filter : OFF, 1 to 100 sec.
- Sampling cycle : 500 msec. (0.5 sec.)
- Isolation : Insulated between remote input and various outputs (not insulated from system and various inputs)

■ ANALOG OUTPUT (optional, not selectable together with communication type (1) and (2))

- The number of analog output : 1
- Output signal : Selectable from 5 types (3 types for instrument with one output)
 - PV : Measured value
 - SV : Set value
 - DEV : Bias output
 - OUT 1 : Control output 1
 - OUT 2 : Control output 2(selectable only when 2 output option is added)
- Output type/rating : 0 to 10 mV DC/FS Output impedance: 10 Ω
0 to 10 V DC/FS Load current : 2mA maximum
4 to 20 mA DC/FS Load resistance : 300 Ω maximum
- Output scaling
 - PV/SV : Within measuring range(inverted scaling possible)
 - OUT1/OUT2 : 0.0 to 100.0%(inverted scaling possible)
 - DEV : -100.0 to 100.0% (inverted scaling possible) on condition that Ao_L Ao_H
- Output accuracy : $\pm 0.25\% \text{ FS}$ (to displayed value)
- Output resolution : 0.01% FS (1/10000)
- Output updating cycle : 250 msec. (0.25 sec.)
- Isolation : Insulated from system and various inputs (not insulated from control outputs I, P and V)

■ 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
RS-485 2-line half duplex multiple drop (bus) system
- Synchronization system : Start-stop synchronization system
- Communication distance : RS-232C maximum 15m
RS-485 maximum 500m (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 to 99
- Communication memory mode : EEP/RAM/r_E
- Communication BCC : Add/Add two's cmp / XOR / None
- Communication delay time : OFF, 1 to 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

■ 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/standby
 - 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 : No-voltage 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 : No-voltage contact by SB/SV2 selection through DI (external switching) input (in action during closed input)
- Selection of setting : Absolute value setting (SV2)
Deviation value setting (SB)
- Setting range : Absolute value setting : Within measuring range
Deviation value setting : -1999 to 5000 digit
SV2 allows PID and output limit to be set.

■ GENERAL SPECIFICATIONS

- Data storage : Non-volatile memory (EEPROM)
- Operating environment
 - Temperature : -10 to 50°C
 - Humidity : 90%RH or less (no dew condensation)
 - Elevation : 2000 m or less
 - Overvoltage category : II
 - Pollution class : 2 (IEC 60664)
- Storage temperature : -20 to 65°C
- Temperature range for maintaining accuracy : 23±5°C
- Power Supply : 100V-240V AC±10% (50/60 Hz),
- Power consumption : 15VA maximum
- Input noise removal ratio : Normal mode 60 dB minimum (50/60 Hz)
Common mode 140 dB minimum (50/60 Hz)
- Applicable standards : Safety standard
IEC 61010-1 and EN 61010-1;
EN IEC 61010-2-30
EMC standard: EN 61326-1
RoHS directive supported
- Insulation resistance : Between input / output terminals and power terminal : 500V DC 20MΩ minimum
Between input / output terminals and protective conductor terminal : 500V DC 20MΩ minimum
- Dielectric strength : 1 minute at 3000V 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 dustproof and drip-proof structure (equivalent to IP66) (Panel thickness :1.2-3.2mm)
- Material of case : PPO PPE resin molding (equivalent to UL94V-1)
- External dimensions : SR82:H72 × W72 × D111mm (Inside depth of panel: 100mm)
SR83:H96 × W96 × D111mm (Inside depth of panel: 100mm)
SR84:H96 × W48 × D111mm (Inside depth of panel: 100mm)
- Mounting : Push-in panel (one-touch mount)
- Applicable panel thickness : 1.0 to 4.0 mm
- Panel cutout size : SR82: H68 × W68mm
SR83: H92 × W92mm
SR84: H92 × W45mm
- Weight : SR82: 300g
SR83: 420g
SR84: 280g

MEASURING RANGE CODES

Input type	Code	Measuring range	Code	Measuring range	
Thermocouple	B *1	01	0 – 1800 °C	15	0 – 3300 °F
	R	02	0 – 1700 °C	16	0 – 3100 °F
	S	03	0 – 1700 °C	17	0 – 3100 °F
	K	04	-100.0 – 400.0 °C	18	-150 – 750 °F
		05	0.0 – 800.0 °C	19	0 – 1500 °F
		06	-200 – 1200 °C	20	-300 – 2200 °F
	E	07	0 – 700 °C	21	0 – 1300 °F
	J	08	0 – 600 °C	22	0 – 1100 °F
	T	09	-199.9 – 200.0 °C	23	-300 – 400 °F
	N	10	0 – 1300 °C	24	0 – 2300 °F
	PLII	11	0 – 1300 °C	25	0 – 2300 °F
	C (WRe 5-26)	12	0 – 2300 °C	26	0 – 4200 °F
	U	13	-199.9 – 200.0 °C	27	-300 – 400 °F
	L	14	0 – 600 °C	28	0 – 1100 °F
	K	*2		29	10.0 – 350.0 K
AuFe–Cr	*3		30	0.0 – 350.0 K	
K	*2		31	10 – 350 K	
AuFe–Cr	*3		32	0 – 350 K	
R.T.D.	Pt100	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	*4 0.00 – 50.00 °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	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	*4 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
Voltage (mV)	-10– 10mV	01	The scaling function allows you to select any value within the following ranges: Scaling range: -1999 to 9999 digit Span: 10 to 5000 digit but lower limit side < higher limit side		
	0– 10mV	02			
	0– 20mV	03			
	0– 50mV	04			
	10– 50mV	05			
	0– 100mV	06			
Voltage (V)	-1– 1V	01			
	0– 1V	02			
	0– 2V	03			
	0– 5V	04			
	1– 5V	05			
	0– 10V	06			
Current (mA)	0– 20mA	01			
	4– 20mA	02			

*1 Thermocouple B: 400 °C and 750 °F or below is not covered by accuracy guarantee.

* 2 Accuracy 10.0 to 30.0 K (10 to 30 K) :±(1.0%FS +1 digit)
30.0 to 70.0 K (30 to 70 K) :±(0.5%FS +1 digit)
70.0 to 350.0 K (70 to 350 K) :±(0.25%FS+1 digit)

* 3 Accuracy 10 to 280 K (10.0 to 280.0 K) :±(0.25%FS+1 digit)
280 to 350 K (280.0 to 350.0 K) :±(0.5%FS +1 digit)

* 4 Accuracy ±(0.3 °C+1 digit)

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

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

DIGITAL CONTROLLER

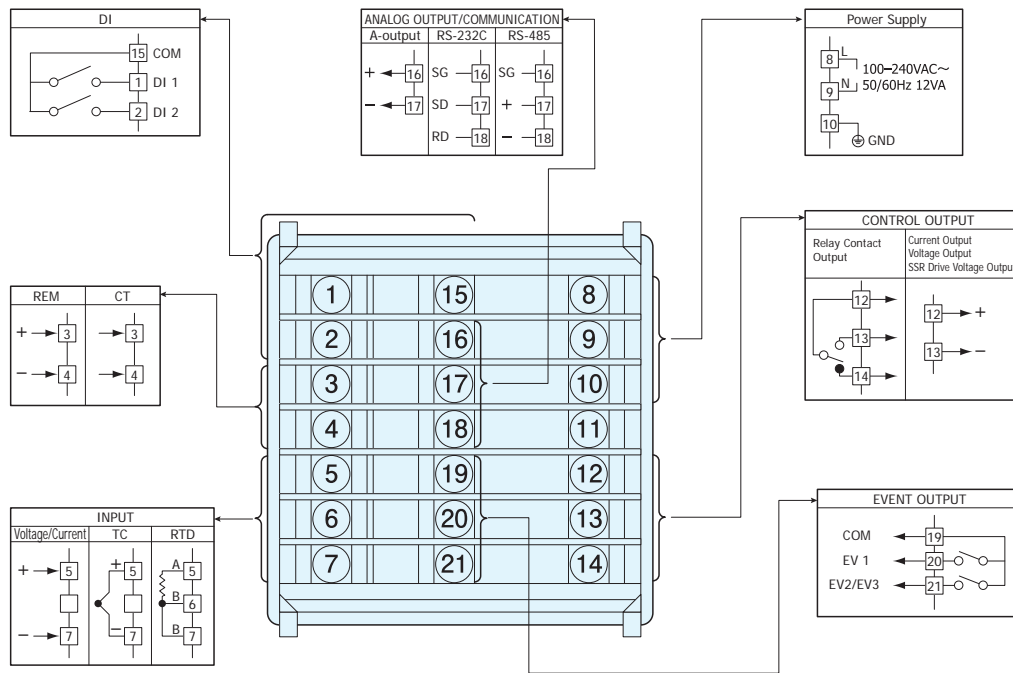
ORDERING INFORMATION

●SR82

ITEMS	CODE	SPECIFICATIONS	
SERIES	SR82-	MPU-Based Auto-Tuning PID Digital Controller DIN H72 × W72 mm	
INPUT	1	Thermocouple	: User-selectable inputs and ranges Input resistance : 500 kΩ minimum External resistance tolerance : 100 Ω maximum
	2	R.T.D.	: User-selectable inputs and ranges Amperage: 0.25 mA Lead wire tolerance resistance: 5 Ω maximum/wire (3 lead wires should have the same resistance.)
	3	Voltage	: 0 to 10, 10 to 50, -10 to 10, 0 to 20, 0 to 50, 0 to 100mV DC Input resistance: 500 kΩ minimum Multi-input
	4	Current	: 4 to 20, 0 to 20mA DC Receiving impedance: 250Ω
	6	Voltage	: 0 to 1, 1 to 5, -1 to 1, 0 to 2, 0 to 5, 0 to 10V DC Input resistance: 500 kΩ minimum Multi-input
CONTROL OUTPUT 1	Y-	Contact / PB Cycle: 1 to 120 sec., Contact Capacity: 240V AC 2.5A: resistive load, 1A: inductive load	
	I-	Current / 4 to 20mA DC Load resistance: 600 Ω max.	
	P-	SSR drive voltage / PB Cycle 1 to 120 sec., Output rating: 12V ±1.5V DC 30mA Max.	
	V-	Voltage / 0 to 10V DC Maximum load current: 2mA Max.	
CONTROL OUTPUT 2	N-	None	
POWER SUPPLY	90-	100 to 240V AC ±10% 50/60Hz	
EVENT OUTPUT (2 points)	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
	3	Contact output + Heater break alarm (with 50A CT)	Control output
REMOTE INPUT (Not selectable together with Heater break alarm function)	00	None	
	14	Current 4 to 20mA DC Receiving resistance: 250 Ω	Non-Isolated input
	15	Voltage 1 to 5V DC Input resistance: 500kΩ Min.	
	16	Voltage 0 to 10V DC Input resistance: 500kΩ Min.	
ANALOG OUTPUT (Not selectable together with Interface function)	0	None	
	3	Voltage 0 to 10mV DC, Output resistance: 10Ω	
	4	Current 4 to 20mA DC, Load resistance: 300Ω Max.	
	6	Voltage 0 to 10V DC, Load current: 2mA Max.	
COMMUNICATION FUNCTION (Not selectable together with Analog output function)	0	None	
	5	RS-485	
	7	RS-232C	
EXTERNAL INPUT CONTROL SIGNAL / SET VALUE BIAS	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

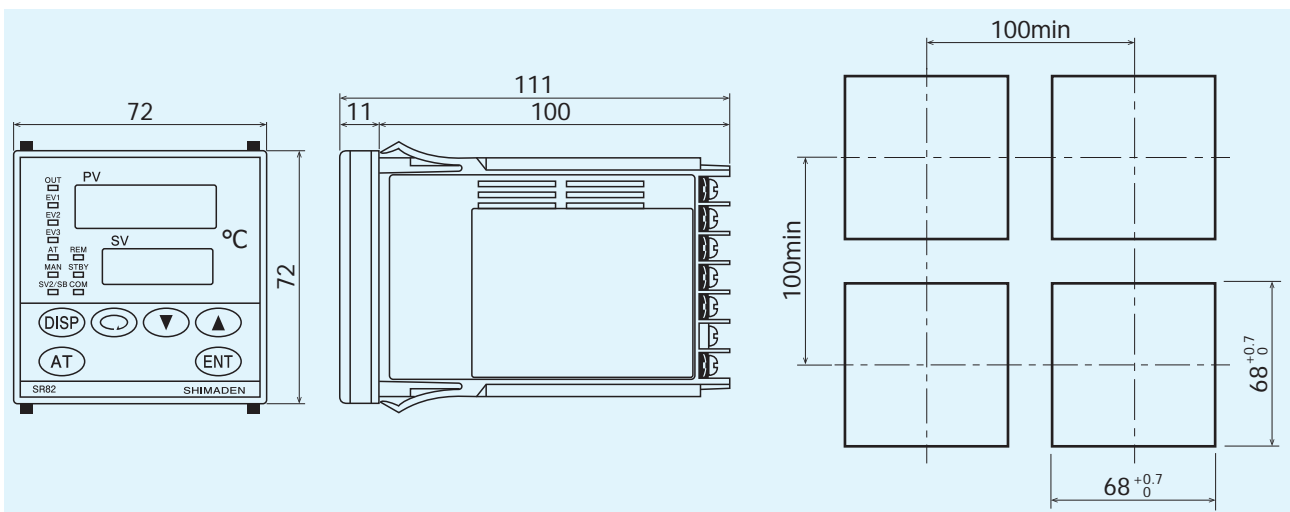
●SR82



Crimp-type terminals fit M3.5 screws.

EXTERNAL DIMENSIONS & PANEL CUTOUT

●SR82



(Unit : mm)

DIGITAL CONTROLLER

ORDERING INFORMATION

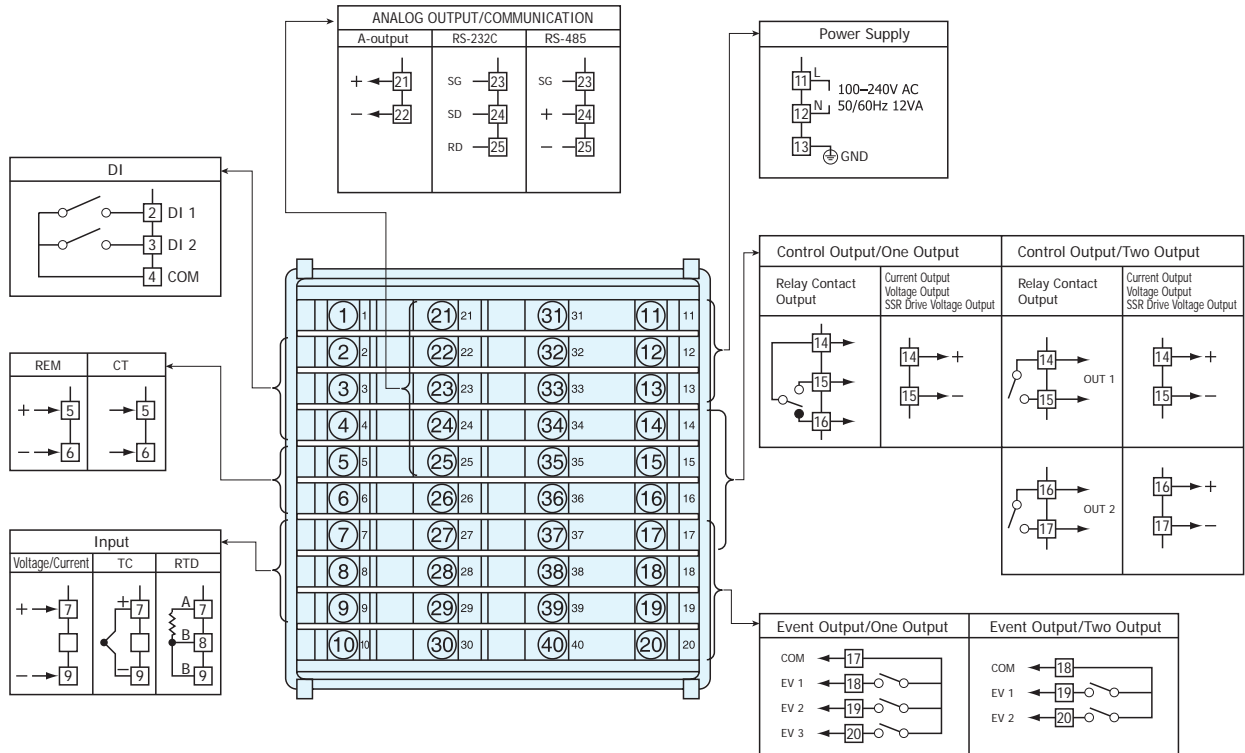
●SR83

ITEMS	CODE	SPECIFICATIONS	
SERIES	SR83-	MPU-Based Auto-Tuning PID Digital Controller DIN H96 × W96 mm	
INPUT	1	Thermocouple	: User-selectable inputs and ranges Input resistance : 500 kΩ minimum External resistance tolerance : 100 Ω maximum
	2	R.T.D.	: User-selectable inputs and ranges Amperage: 0.25 mA Lead wire tolerance resistance: 5 Ω maximum/wire (3 lead wires should have the same resistance.)
	3	Voltage	: 0 to 10, 10 to 50, -10 to 10, 0 to 20, 0 to 50, 0 to 100mV DC Input resistance: 500 kΩ minimum Multi-input
	4	Current	: 4 to 20, 0 to 20mA DC Receiving impedance: 250Ω
	6	Voltage	: 0 to 1, 1 to 5, -1 to 1, 0 to 2, 0 to 5, 0 to 10V DC Input resistance:500 kΩ minimum Multi-input
CONTROL OUTPUT 1	Y-	Contact / PB Cycle: 1 to 120 sec., Contact Capacity: 240V AC 2.5A: resistive load, 1A: inductive load	
	I-	Current / 4 to 20mA DC Load resistance: 600 Ω max.	
	P-	SSR drive voltage / PB Cycle 1 to 120 sec., Output rating: 12V ±1.5V DC 30mA Max.	
	V-	Voltage / 0 to 10V DC Maximum load current: 2mA Max.	
CONTROL OUTPUT 2	N-	None	
	Y-	Contact / PB Cycle: 1 to 120 seconds, Contact Capacity: 240V AC 2.5A / resistive load, 1A / inductive load	
	I-	Current / 4 to 20mA DC, Load resistance: 600 Ω Max.	
	P-	SSR Drive Voltage / PB Cycle: 1 to 120 seconds, Output rating: 12V ±1.5V DC 30mA Max.	
POWER SUPPLY	90-	100 to 240V AC ±10% 50/60Hz	
	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
EVENT OUTPUT (3 points) (2 points when 2 output option is added)	3	Contact output + Heater break alarm (with 50A CT)	Control output
	00	None	
	14	Current 4 to 20mA DC Receiving resistance: 250 Ω	Non-Isolated input
	15	Voltage 1 to 5V DC Input resistance: 500kΩMin.	
16	Voltage 0 to 10V DC Input resistance: 500kΩMin.		
REMOTE INPUT (Not selectable together with Heater break alarm function)	0	None	
	3	Voltage 0 to 10mV DC, Output resistance: 10Ω	
	4	Current 4 to 20mA DC, Load resistance: 300ΩMax.	
	6	Voltage 0 to 10V DC, Load current: 2mA Max.	
ANALOG OUTPUT	0	None	
	3	Voltage 0 to 10mV DC, Output resistance: 10Ω	
	4	Current 4 to 20mA DC, Load resistance: 300ΩMax.	
COMMUNICATION FUNCTION	6	Voltage 0 to 10V DC, Load current: 2mA Max.	
	0	None	
	5	RS-485	
EXTERNAL INPUT CONTROL SIGNAL / SET VALUE BIAS	7	RS-232C	
	0	None	
REMARKS	1	Control input 2 points, Non-voltage contact, Open collector input (about 5V / 2mA impress)	
	0	Without	
	9	With (Please consult before ordering.)	

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

TERMINAL ARRANGEMENT

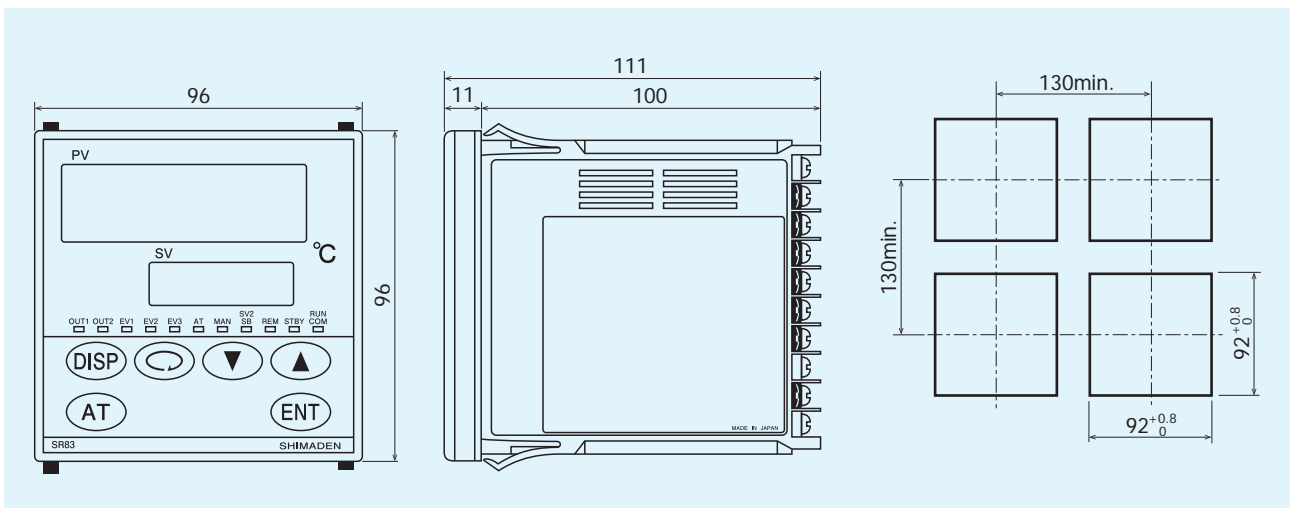
●SR83



Crimp-type terminals fit M3.5 screws.

EXTERNAL DIMENSIONS & PANEL CUTOUT

●SR83



(Unit : mm)

DIGITAL CONTROLLER

ORDERING INFORMATION

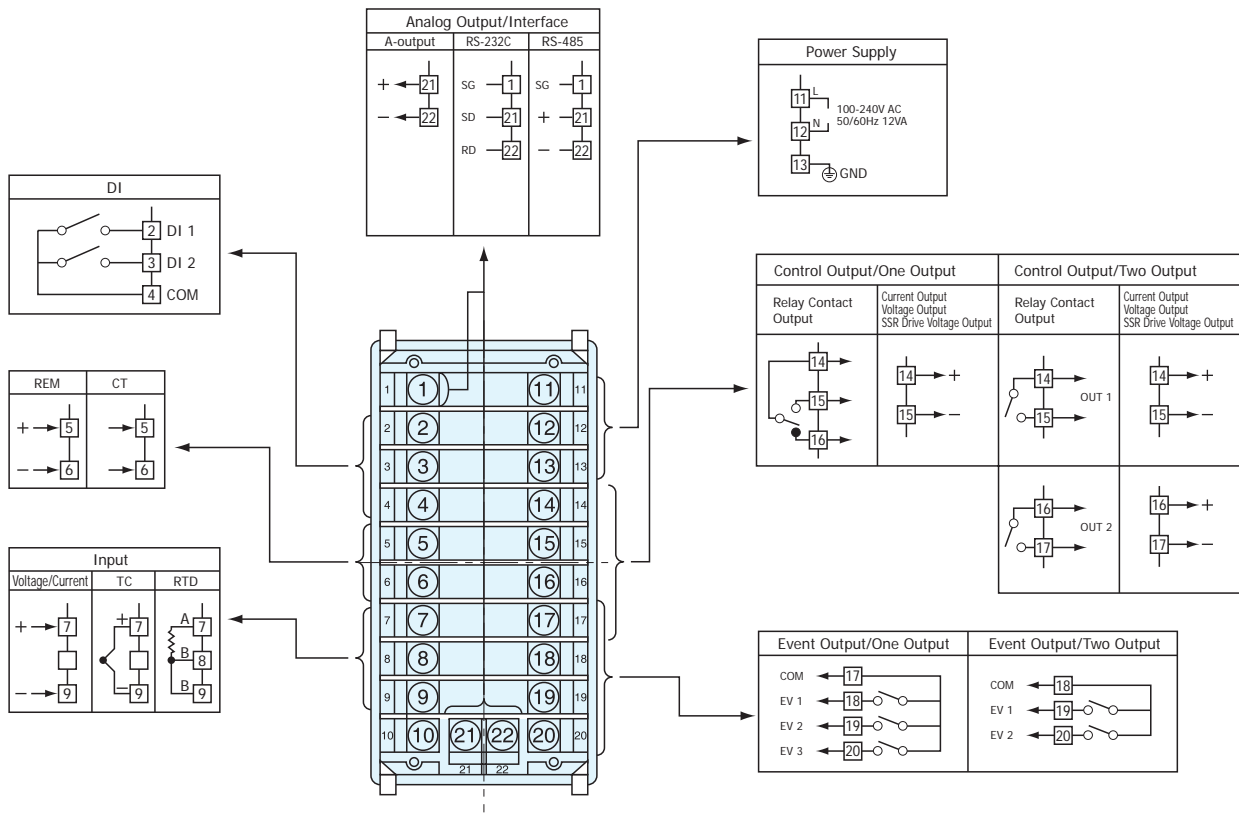
●SR84

ITEMS	CODE	SPECIFICATIONS	
SERIES	SR84-	MPU-Based Auto-Tuning PID Digital Controller DIN H96 × W48 mm	
INPUT	1	Thermocouple	: User-selectable inputs and ranges Input resistance : 500 kΩ minimum External resistance tolerance : 100 Ω maximum
	2	R.T.D.	: User-selectable inputs and ranges Amperage: 0.25 mA Lead wire tolerance resistance: 5 Ω maximum/wire (3 lead wires should have the same resistance.)
	3	Voltage	: 0 to 10, 10 to 50, -10 to 10, 0 to 20, 0 to 50, 0 to 100mV DC Input resistance: 500 kΩ minimum Multi-input
	4	Current	: 4 to 20, 0 to 20mA DC Receiving impedance: 250Ω
	6	Voltage	: 0 to 1, 1 to 5, -1 to 1, 0 to 2, 0 to 5, 0 to 10V DC Input resistance: 500 kΩ minimum Multi-input
CONTROL OUTPUT 1	Y-	Contact / PB Cycle: 1 to 120 sec., Contact Capacity: 240V AC 2.5A: resistive load, 1A: inductive load	
	I-	Current / 4 to 20mA DC Load resistance: 600 Ω max.	
	P-	SSR drive voltage / PB Cycle 1 to 120 sec., Output rating: 12V ±1.5V DC 30mA Max.	
	V-	Voltage / 0 to 10V DC Maximum load current: 2mA Max.	
CONTROL OUTPUT 2	N-	None	
	Y-	Contact / PB Cycle: 1 to 120 seconds, Contact Capacity: 240V AC 2.5A / resistive load, 1A / inductive load	
	I-	Current / 4 to 20mA DC, Load resistance: 600 Ω Max.	
	P-	SSR Drive Voltage / PB Cycle: 1 to 120 seconds, Output rating: 12V ±1.5V DC 30mA Max.	
POWER SUPPLY	90-	100 to 240V AC ±10% 50/60Hz	
	0	None	
EVENT OUTPUT (3 points) (2 points when 2 output option is added)	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
	3	Contact output + Heater break alarm (with 50A CT)	Control output
REMOTE INPUT (Not selectable together with Heater break alarm function)	00	None	
	14	Current 4 to 20mA DC Receiving resistance: 250 Ω	Non-Isolated input
	15	Voltage 1 to 5V DC Input resistance: 500kΩMin.	
	16	Voltage 0 to 10V DC Input resistance: 500kΩMin.	
ANALOG OUTPUT	0	None	
	3	Voltage 0 to 10mV DC, Output resistance: 10Ω	
	4	Current 4 to 20mA DC, Load resistance: 300ΩMax.	
	6	Voltage 0 to 10V DC, Load current: 2mA Max.	
COMMUNICATION FUNCTION	0	None	
	5	RS-485	
	7	RS-232C	
EXTERNAL INPUT CONTROL SIGNAL / SET VALUE BIAS	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.)	

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

TERMINAL ARRANGEMENT

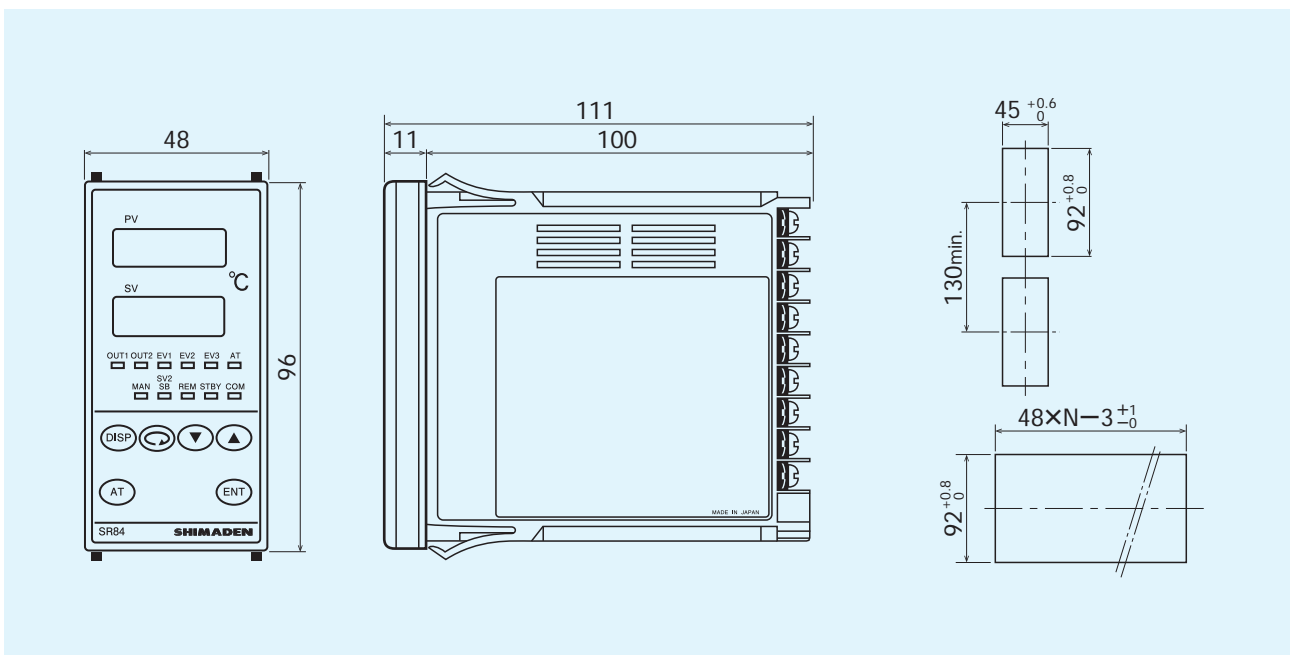
●SR84



Crimp-type terminals fit M3.5 screws.

EXTERNAL DIMENSIONS & PANEL CUTOUT

●SR84

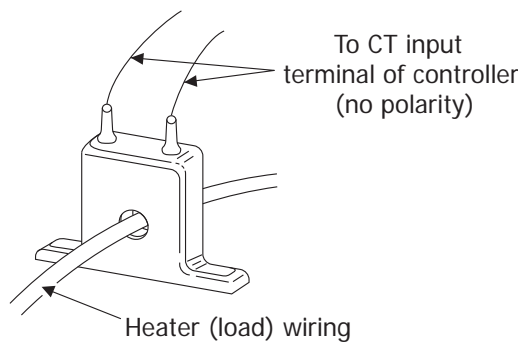


(Unit : mm)

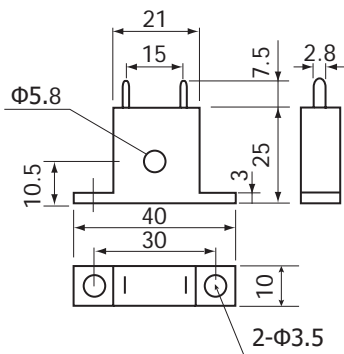
OPTIONAL ACCESSORIES

Name	Code	Remarks
CT	QCC01	CT for 30A
CT	QCC02	CT for 50A
Shunt resistor	QCS002	250Ω External receiving impedance for current input
Terminal cover	QCR002	For SR82 (3 pcs./set)
	QCR003	For SR83 (3 pcs./set)
	QCR004	For SR84 (Single mounting, ⊕B Tight M2.3×6 2pcs.)
	QCR007	For SR84 (Close contact mounting, ⊕B Tight M2.3×6 4pcs.)

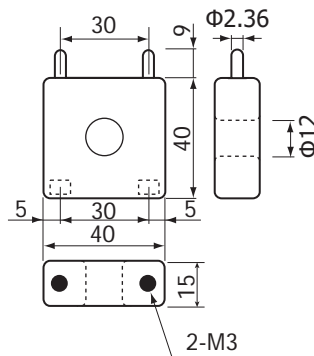
ACCESSORIES REQUIRED FOR CT INPUT



● CT FOR 30A (QCC01)



● CT FOR 50A (QCC02)



Unit: mm

■ The contents of this material are subject to change without notice.

 WARNING	<p>* Be sure to follow the instruction manual when operating this device.</p> <p>* This device is designed for industrial use to control temperature, humidity and other physical values. Avoid using it for control of devices upon which human life is dependent.</p> <p>* If the possibility of loss or damage to your system or property as a result of failure of any parts 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.</p>
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Head Office & Saitama Factory
 ISO 9001/ISO14001 Certification Obtained

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