

## ■ Preface

Thank you for purchasing our product. Before you start to operate the product, please read the following precautions at first, and use the product safely and carefully.

This Instruction Manual aims to summarize the Instruction Manual (Detailed version). For detailed contents, please refer to the product's original instruction manual (Detailed version) which can be downloaded for free from our website <https://www.shimaden.co.jp>.

## ■ Checking accessories

Make sure that your product package has all of the following items

- SRP30 Series Hybrid controller
- Standard accessories
  - (1) Instruction Manual (A3 size paper ×2)
  - (2) Mounting fixture (w/ 2 screws)
  - (3) Terminal cover
  - (4) Unit decal

## ■ Safety Precautions



## Warning

SRP30 Series Hybrid Controller is control equipment designed and manufactured for industrial use to control temperature, moisture and other physical quantities.

For this reason, please avoid using this for control operations that may have major adverse effects on human life.

Likewise, the client should take responsibility to put in place safety measures in using this product.

Our company is not responsible for accidents that arise because of the client's failure to take adequate safety measures.

- The digital controller should be used so the terminal elements in the control box, etc., are not touched by humans.
- Do not remove the controller from its case or insert your fingers or electric conductors inside the case.  
Doing so could result in electric shock or accident involving death or serious injury.

## ■ Consent on use

The warranty period for SRP30 Series is one year after the purchase. In principle, avoid use of the product under the following places/conditions. Should you use the controller under the following places/situations, be sure to use it with the proper rating and level of performance and make sure to use the controller correctly while taking appropriate safety measures in order to avoid accidents.

- Outside
- Places exposed to chemical contamination, electrical disturbance, and/or mechanical stress
- Places which are not specified as an appropriate installation site in the instruction manual or catalog
- When used for nuclear facilities, air facilities, space facilities, railway facilities, vehicle facilities, medical equipment, and facilities which are controlled by separate regulations
- Facilities in which failure of the product would constitute a danger to human life or property
- When used in application or facilities which require a high level of safety



## Caution

To prevent breakage of and/or damage to peripheral devices, equipment and products as a result of breakdown of this instrument, please use this only after fuse installation, activation of overheating prevention device, and other safety measures. Our company is not responsible for accidents that arise because of the customer's failure to take adequate safety measures.

- The warning mark on the nameplate attached to the case of this instrument is "to strongly remind one not to touch the charging part while it is live because of the risk of electrocution."
- As a means to cut the power supply, please install a switch or breaker to the external power supply circuit connected to the power supply terminal of this instrument  
Please fix the position or the switch or breaker close to this instrument and within easy reach of the operator, and indicate that it is the power breaker of this instrument.



## Caution

- There is no built-in fuse in this instrument, so please fit "a 250 V 1.0A/ medium time-lagged type or time-lagged type" fuse in the power supply circuit attached to the power supply terminal.
- In wiring, make sure to tighten the terminal connection part.
- Please use power voltage and frequency within the rated value.
- Please do not add voltage or current other than the input standard to the input terminal.  
This may shorten the product life span or cause breakage of the instrument.
- In connecting a load to the output terminal, please use voltage and current within the rated value.  
If you exceed this, the rise in temperature may shorten the product life span or cause breakage of the instrument.
- A heat ventilation hole was created in this instrument.  
Take caution not to put metallic foreign objects inside because that can cause breakage of the instrument.  
Also, make sure not to shut the ventilation hole nor allow dust to adhere to it.  
The rise in temperature and failure of insulation may shorten the product life span and cause breakage of the instrument.
- Refrain from repetition of tolerance test for dielectric strength, anti-noise, and anti-surge because it may lead to the deterioration of this instrument.
- Never alter this instrument by yourself nor make an irregular use of it.
- Please use this instrument safely and correctly. To maintain its reliability, make sure to follow all the important points in the Instruction Manual.
- Please do not use a hard or hard-edged object on the front key of this instrument. Make sure to operate that key lightly with your fingertips.
- In cleaning, do not use a solvent like thinner but wipe lightly using a dry cloth.
- It takes 30 minutes for the correct temperature to be displayed once you add a power supply in this instrument. (You have to connect the power supply earlier than the actual time you begin the control operation.)
- To ensure safety and maintain the functions of this device, do not disassemble this device. If this device must be disassembled for replacement or repair, contact your dealer.
- This device is designed for mounting on the panel. Only the device mounted on the front of the panel facing outward is of protection class of IP55. Do not use for the device not facing outward or in environment where water or solids in excess of IEC60529 may get inside.

## ■ Wiring



## Caution

- Do not turn on electricity during wiring work. There is a danger of getting an electric shock.
- Do not touch terminals and other live parts after wiring while the electricity is on.

Take caution on the following points while doing wiring work.

- Wiring must be according to "1-5 SRP30 Series Rear Terminal Arrangement," and make sure not to create an incorrect wiring.
- Crimping terminal matches M3 screw. Please use one with no more than 6.2 mm width.
- In the case of thermocouple input, use a compensating lead wire that is compatible with thermocouple type.
- In the case of RTD input, the resistance value of each line of the lead wire should be no more than 10Ω, and the three lines have to have identical resistance value.
- Do not course input signal line through the same conduit tube or duct as a high-voltage power line.
- For static induction noise, use of a shield wire (single point grounding) is effective.
- For electromagnetic induction noise, twisting the input wire at short, equal intervals is effective.
- The cross-section area of the power supply wiring should be no less than 1 mm<sup>2</sup>. For this you should use a power line or cable whose capacities are equivalent to those of 600 V PVC insulated wire.
- For ground wiring, use a power line that is no less than 2 mm<sup>2</sup> and use a grounding terminal no more than 100Ω.
- Countermeasure against lightning surge will be required for signal line over 30m.
- If this device is considered as being susceptible to noise caused by the power supply, attach a noise filter to prevent abnormal functioning.  
Install a noise filter onto a grounded panel, and make the wire connecting the noise filter output and the power supply terminal on this controller as short as possible.

## ■ Precautions for Installation Site



## Caution

Please do not use this in any of the following places.

It may cause breakage of or damage to the instrument, and in certain instances, may cause fire.

- In places which generate inflammable gas, caustic gas, dust or smoke, or which are filled with these substances.
- In places exposed to water drops, direct sunlight, or radiant heat from other equipment.
- In places where ambient temperature is no more than -10°C or above 50°C.
- In places prone to water condensation or where humidity is no less than 90%.
- Near high-frequency equipment.
- Near a high-voltage power circuit and in sites that are prone to inductive interference.
- In places prone to strong vibration and shock.
- In places with an altitude of more than 2,000 m.
- Outdoor

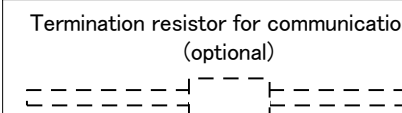
## ■ ORDERING INFORMATION

Compare the specification code on the case with the following to make sure it is the product you ordered.

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

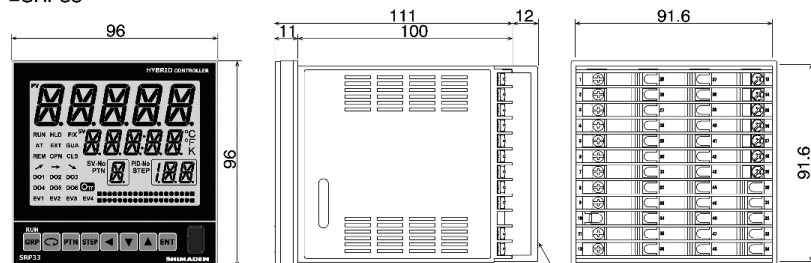
\*1 Selectable only when adding DO1-3

\*2 Selectable only when control output 1 or 2 includes Y or P

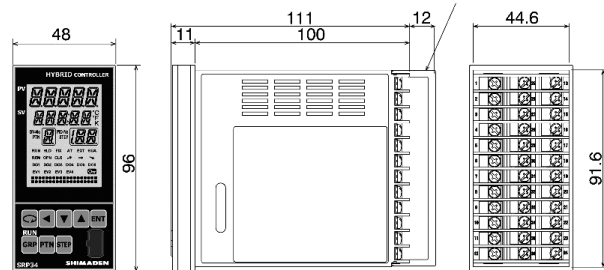


## ■ External Dimensions

## ■ SRP33

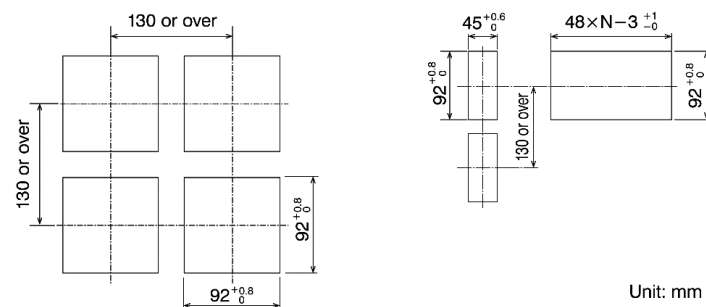


## ■ SRP34



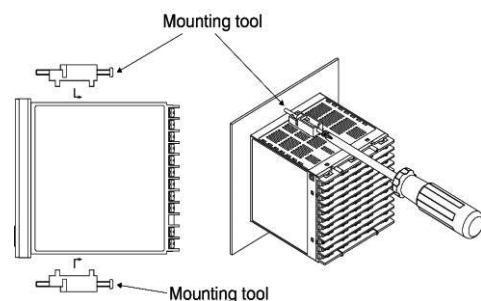
Unit: mm

## ■ Panel Cutout Dimensions



Unit: mm

## ■ Mounting



## Caution

Do not disassemble this instrument to maintain safety and product functions. If it is necessary to disassemble the instrument to replace parts or repair it, please contact your nearest Shimaden dealer.

Be sure to install this product with the attached gasket. In case if the gasket is broken or falls off, please replace it with the designated one.

Follow the procedure below to mount this device on a panel.

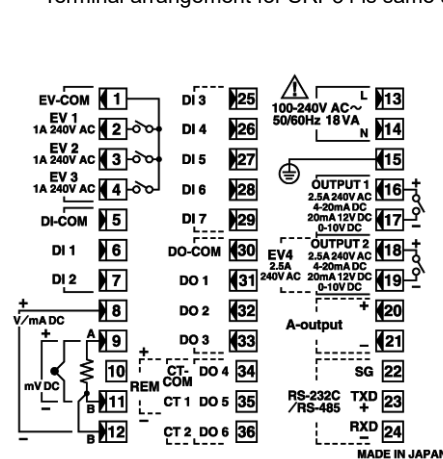
1. Prepare the mounting holes, referring to the panel cutout (1-2 (2)). The mounting panel applicable thickness is 1.0 to 8.0 mm.
2. Push the instrument from the panel front.
3. Insert mounting tool on the top and bottom of the instrument, and fix it by tightening the screw from the rear.

4. Excessively tightening the mounting screw can deform the case or cause damage. Please be careful not to tighten the screw too much.
5. After installation and wiring, please place into the terminal cover.

## ■ Standard (Representative Example SRP33)

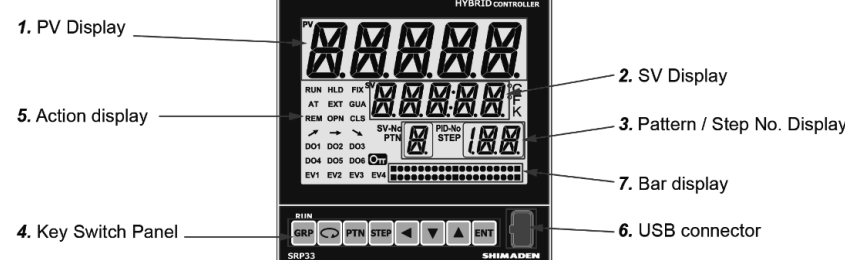
\* For current input (0 · 0 mA, 4 · 0 mA), connect a shunt resistor (QCS002) that is sold separately between terminal Nos. 8 · 2.

\* Terminal arrangement for SRP34 is same as that for SRP33.



EXT					
1	EV-COM	25	DI3	13	Power (L)
2	EV1	26	DI4	14	Power (N)
3	EV2	27	DI5	15	PE
4	EV3	28	DI6	16	OUT1+
5	DI-COM	29	DI7	17	OUT1-
6	DI1	30	DO-COM	18	OUT2+ EV4
7	DI2	31	DO1	19	OUT2- EV4
8		32	DO2	20	AO+
9	mV+ A	33	DO3	21	AO-
10	CJ	34	DO4 CT-COM/REM+	22	SG
11	mV- B	35	DO5 CT1 REM-	23	TXD +
12	B V- mA-	36	DO6 CT2	24	RXD -

## ■ Names and Functions of Front Panel



## 1. PV Display

It displays measured value (PV value).  
It displays a message when error (scaleover, etc.) occurs.

## 2. Display

It displays target set value (SV value).

## 3. Pattern/Step No. Display

The following content is displayed.

## 4. Key Switch Panel

- GRP** Group Key: Set screen group move is executed.  
(On the basic screen, RUN is executed by pressing **ENT** simultaneously.)
- ↺** Parameter Key: screen move is executed within every screen group.
- PTN** Pattern Key: Change of Set Pattern No. is done within the Pattern Setting Screen Group.  
Change of Pattern No. to be executed is done.
- STEP** Step Key: Change of set Step No. is done within Step Setting Screen Group.
- ◀** Shift Key: Digit move for setting is done.
- ▼** Down Key: Subtraction of each screen set value is done.
- ▲** Up Key: Addition of each screen set value is done.
- ENT** Entry Key: Confirmation of each screen set value is done.

## 5. Action Display

RUN	Green	Lights during control execution. Blinks during manual output. Lights out during reset.
HLD	Green	During program mode, lights when the program is on temporary stop. Blinks when the program is on temporary stop due to input abnormality.
FIX	Green	Lights during FIX mode. Lights out during program mode.
AT	Green	Blinks during auto-tuning execution, and lights when on standby. Lights when switching external Pattern No. and when specifying external SV No. and DI. Lights out when specifying key.
GUA	Green	Lights during execution of guarantee soak.
REM	Green	Lights during execution of Remote.
↕	Green	Lights during program operation and up-step execution.
↕	Green	Lights during program operation and flat-step execution.
↕	Green	Lights during program operation and down-step execution.
DO1	Orange	Lights during DO1 operation.
DO2	Orange	Lights during DO2 operation.
DO3	Orange	Lights during DO3 operation.
DO4	Orange	Lights during DO4 operation.
DO5	Orange	Lights during DO5 operation.
DO6	Orange	Lights during DO6 operation.
EV1	Orange	Lights during EV1 operation.
EV2	Orange	Lights during EV2 operation.
EV3	Orange	Lights during EV3 operation.
EV4	Orange	Lights during EV4 operation.
🔑	Orange	Lights when displaying a parameter that cannot be changed due to keylock, etc.
PTN	White	Lights when displaying Pattern No.
STEP	White	Lights when displaying Step No.
SV-No.	White	Lights when displaying SV No.
PID-No.	White	Lights when displaying PID No.
°C	White	Lights when specifying Celsius.
°F	White	Lights when specifying Fahrenheit.
K	White	Lights when specifying Kelvin.

## 6. USB Connector

The front panel is fitted with a standard USB terminal. Communication between computer and USB can be done using a loader software. The SRP30 loader software and USB driver can be downloaded free of charge from our company website <https://shimaden.co.jp>.

Interface: USB 2.0 Micro B connector

Communication condition: Fixed

Communication Rate: 38400 bps

Communication Data Length: 8 bit

Parity : None

Stop bit: 1 bit

Communication Protocol: Shimaden Standard Protocol

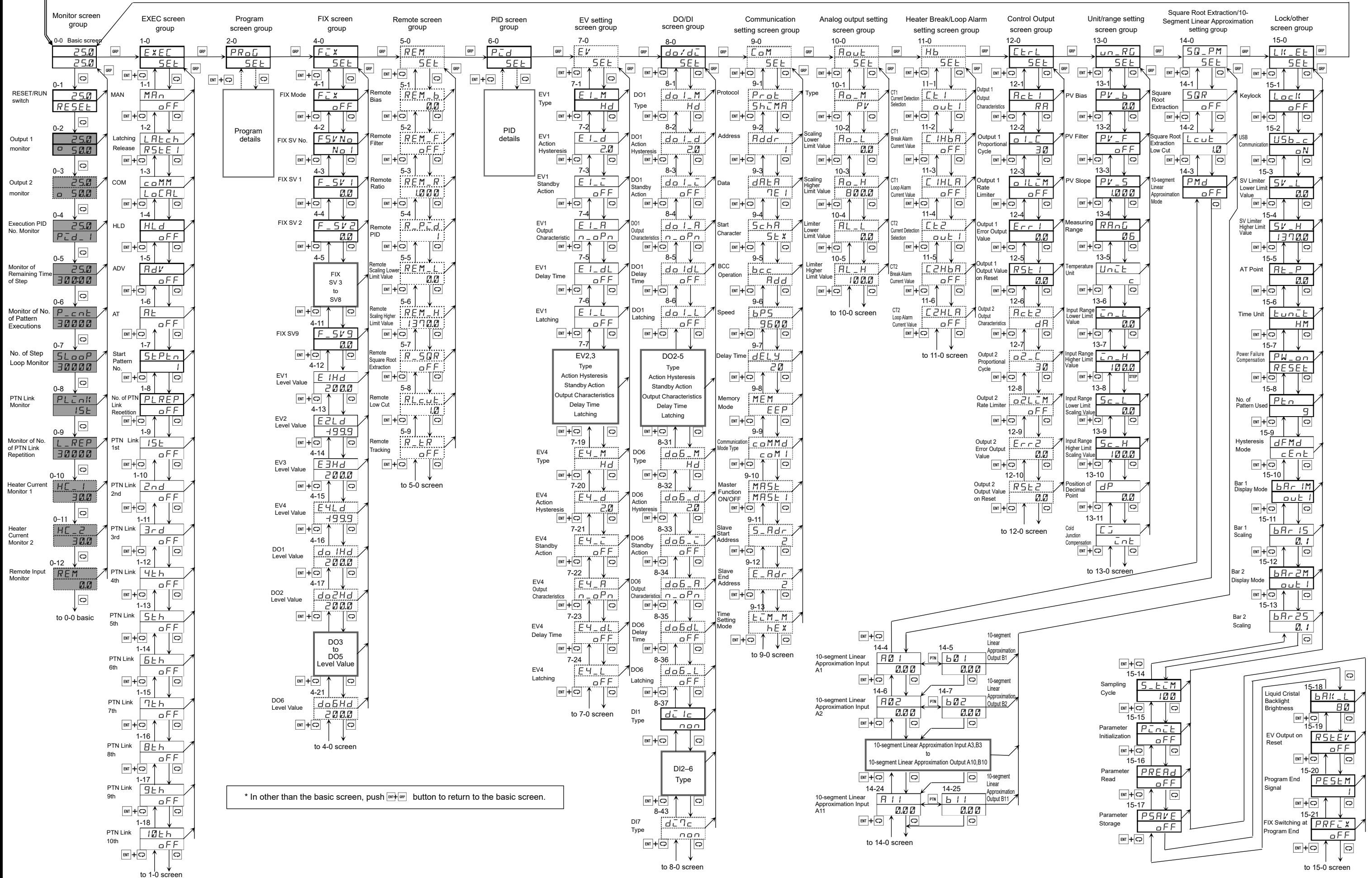
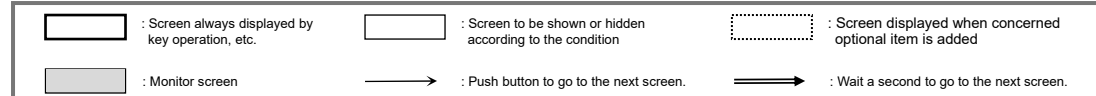
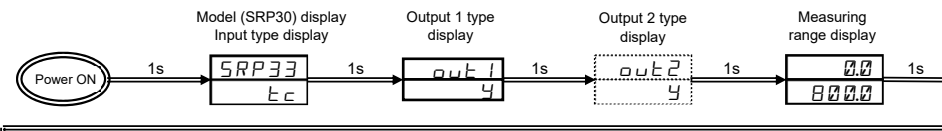
## 7. Bar Display

Displays Output 1, Output 2, deviation, step time and execution frequency rate.

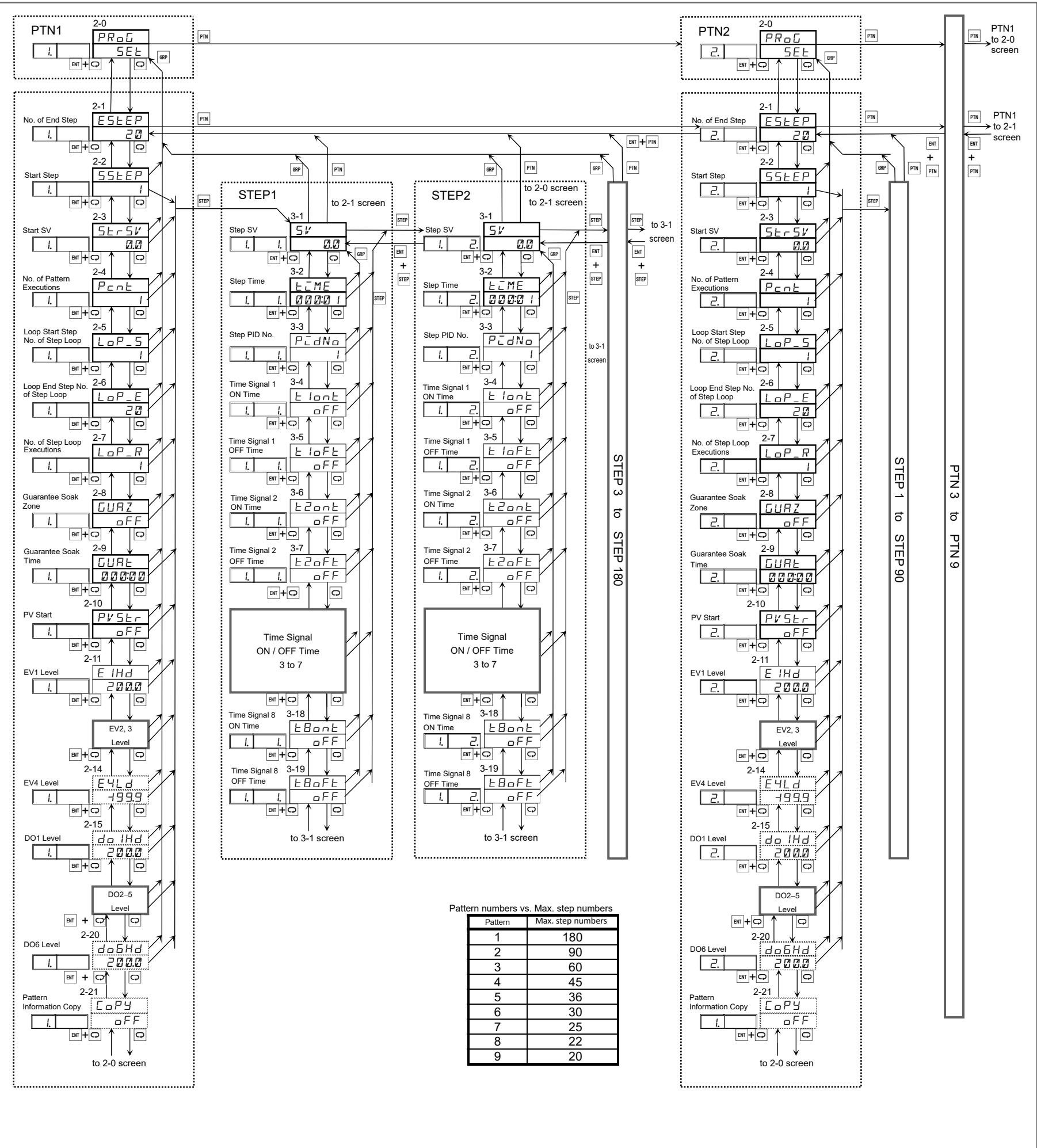
## ■ Error Display

Display	Cause	Request
E - EEP	EEPROM abnormality	If the message is displayed, repair or replacement is necessary, so immediately shut the power supply OFF and contact your nearest Shimaden dealer.
E - Ad 1	Input 1 A/D abnormality	
E - Ad 2	CT/REM AD abnormality	
Sc - LL	Dropped below scaleover point (lower limit).	If any of the messages are displayed, please check input. If there is no abnormality in either input or heater wire, there may be other causes for the abnormal state so please contact your nearest Shimaden dealer.
Sc - HH	Increased higher than scaleover point (higher limit). Breakage of thermocouple. Breakage of RTD A.	
b - - - -	1 or 2 lines of RTD B are broken. Or all RTD lines are broken.	
CJ - LL	If thermocouple input cold junction compensation (-20°C) is abnormal on the lower limit side.	Check ambient temperature. If ambient temperature is OK, please contact your nearest Shimaden dealer.
CJ - HH	If thermocouple input cold junction compensation (+80°C) is abnormal on the higher limit side.	
CE - LL	Heater current detection circuit or CT is abnormal.	Check heater current and CT wiring. If heater current and CT wiring are OK, please contact your nearest Shimaden dealer.
CE - HH	Heater current exceeds 55.0 A	

# Sequence Diagram



Program screen group



PID screen group

