Version : 2021 Rev.0

1200°C Muffle Furnace with Vacuum

SH-FU-1.5MGV / 10MGV / 31MGV

1500°C Muffle Furnace with Vacuum

SH-FU-4.5MHV / 18.7MHV

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Keep this manual on-hand so it can be used by all operators of the unit.
Use the unit only in the way described in this manual.
Failure to follow the instruction in this manual may cause wrong operation.

1. General description

Thank you for purchasing our product. We know that in today's competitive marketplace, customers have many choices when purchasing laboratory equipment.
We appreciate your choosing our quality product. We stand behind our products and want to let you know we are here if you need us.

Before you use the unit, read this entire manual carefully to understand how to install, operate and maintain the unit in a safe manner.
Your satisfaction with the unit will be maximized as you read this manual thoroughly.

Our capable products will satisfy you by the best performance with easy operation.

2. Graphic symbols

BE SURE THAT YOU UNDERSTAND ALL OF THESE SYMBOLS
BEFORE OPERATING THE UNIT.

Important operating and / or maintenance instruction. Read the accompanying text carefully.

This symbol indicates items and procedures that are STRICTY PROHIBITED with regards to the unit.

Potential electrical hazards.

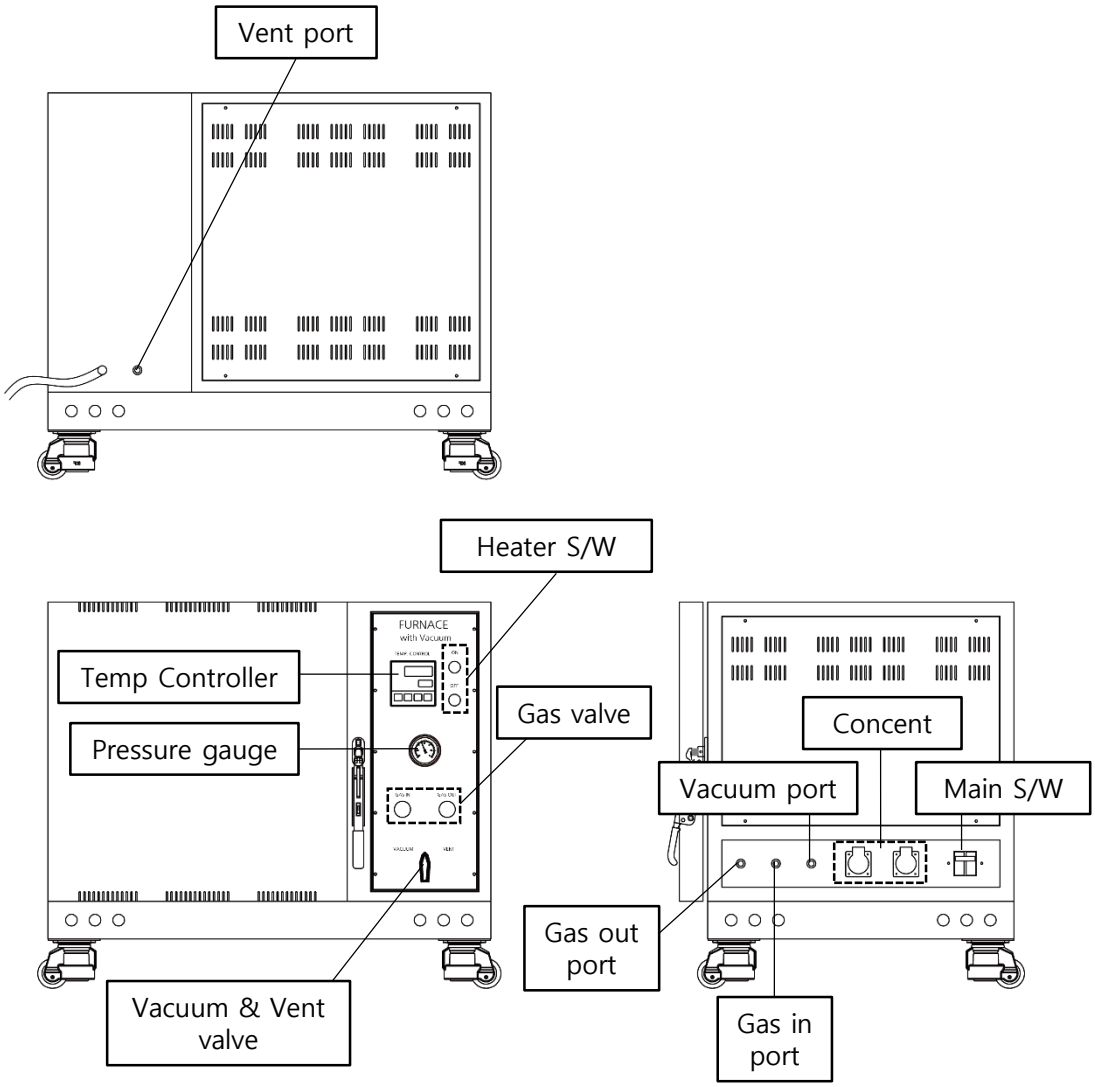
Explosive.

No disassemble.

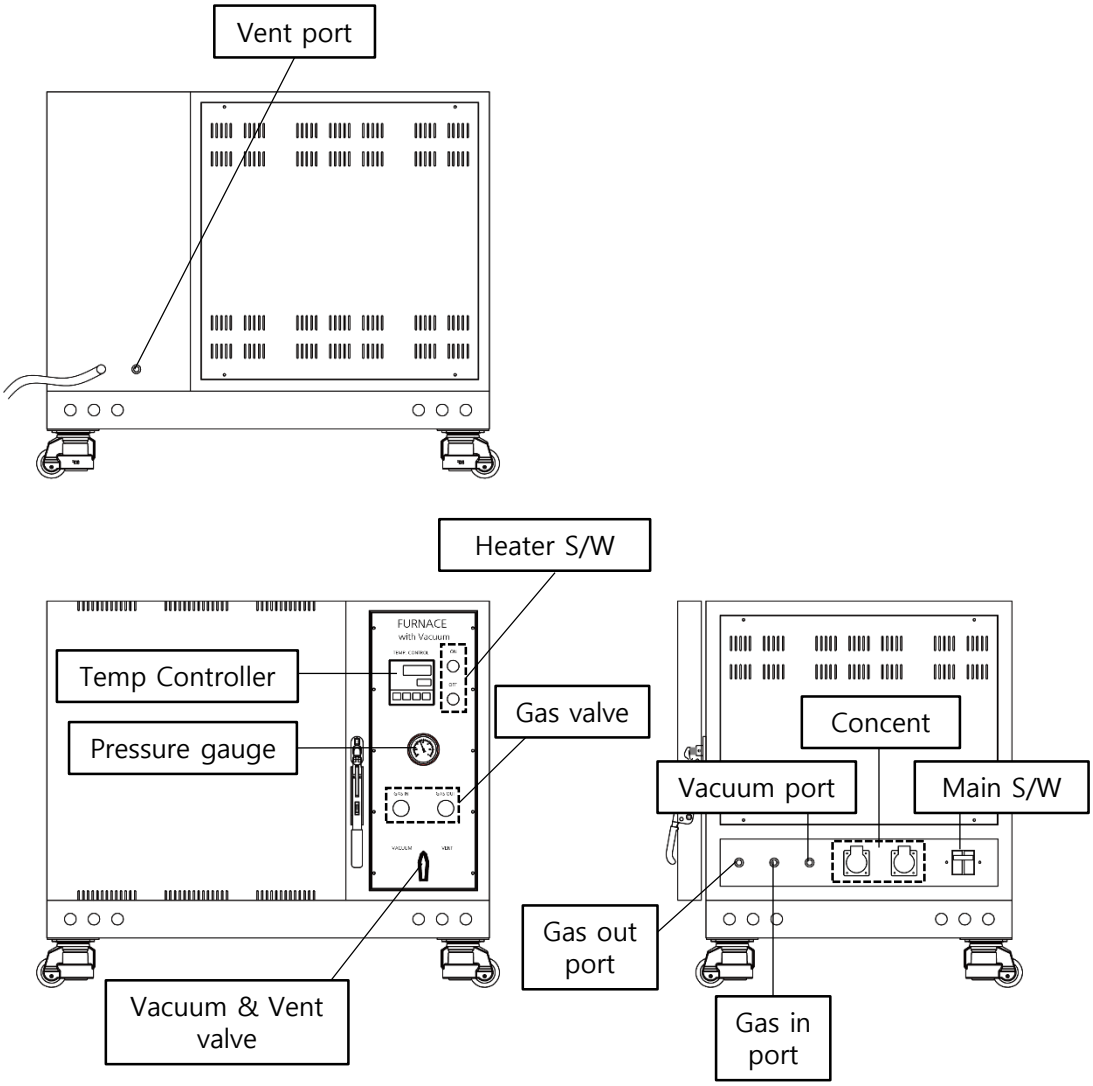
Flammable.

Hot surface or steam.

3. The outward

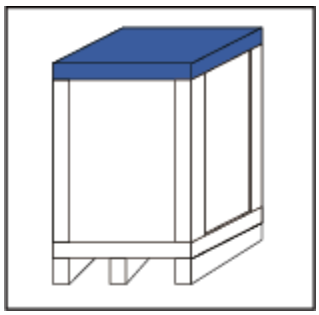


<SH-FU-1.5MGV / 10MGV / 31MGV>

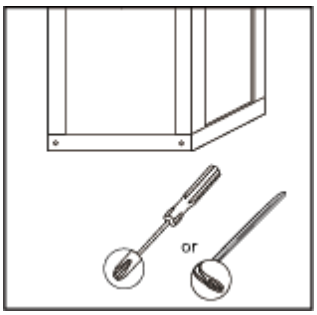


<SH-FU-4.5MHV / 18.7MHV>

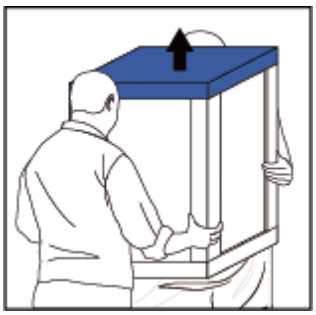
4. Installation



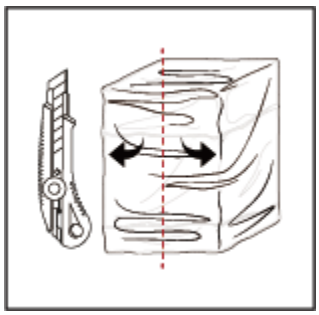
① Once the product is delivered, place the package on a flat location.



② Unscrew the bottom of the box.



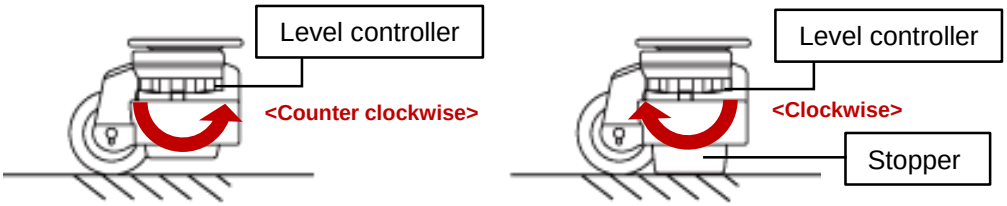
③ Lift the box as shown in the picture.



④ Unwrap the bag.

⑤ Place the equipment on your desired location.

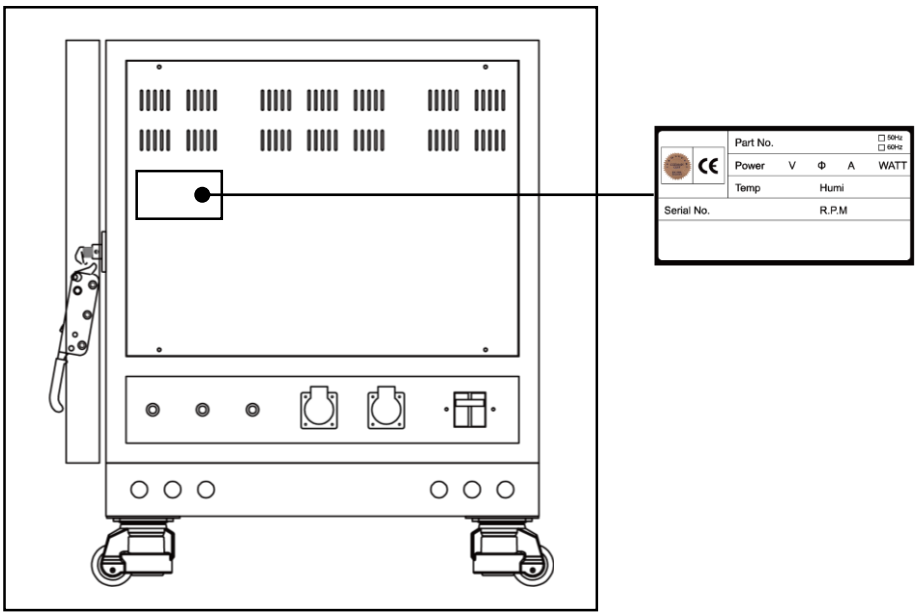
⑥ Lift the remaining plastic up.



<Unlock position>
- When moving equipment

<Lock position>
- When stopping moving equipment or installing

When installing equipment, fix the stopper to the floor by turning the level controller clockwise or counterclockwise.



Serial label shows the electric power specification of the unit.
Connect power and turn on the main switch (E.L.B)

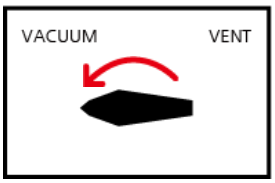
Please do not raise up to high temp at once.
It case to decline durability.
We recommend raise temp under 15℃/min.

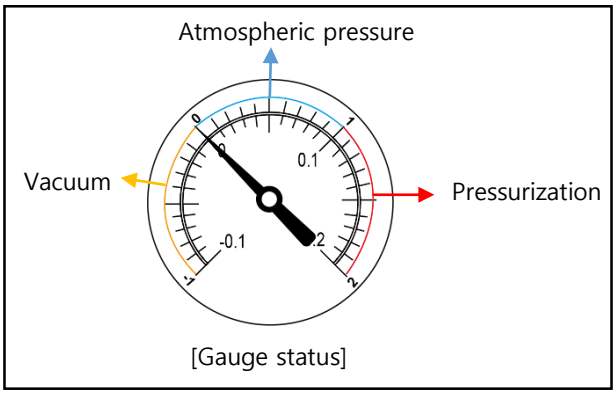
5. Vacuum Setting and Operation

① Connect the input gas to the Gas in port.

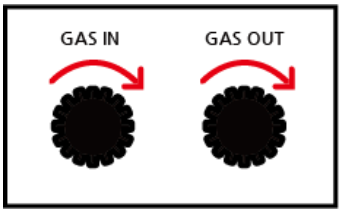
② Connect the Vacuum Pump to the Vacuum port.

③ Turn the Vacuum & Vent valve towards Vacuum.



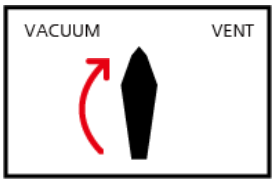


④ Close the Gas valve.



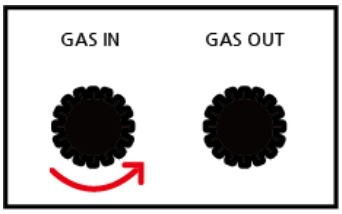
⑤ Operate Vacuum Pump. (Vacuum gauge begins to fall.)

⑥ When the vacuum gauge is completely fallen as shown in the below figure, place the Vacuum & Vent valve in the center.

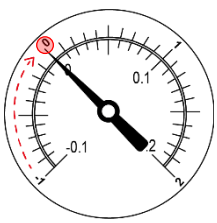


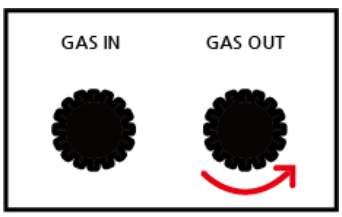
⑦ Turn off Vacuum Pump.

⑧ Open the Gas In valve. (Vacuum gauge begins to rise.)



⑨ When the vacuum gauge reaches atmospheric pressure, open the Gas Out valve.

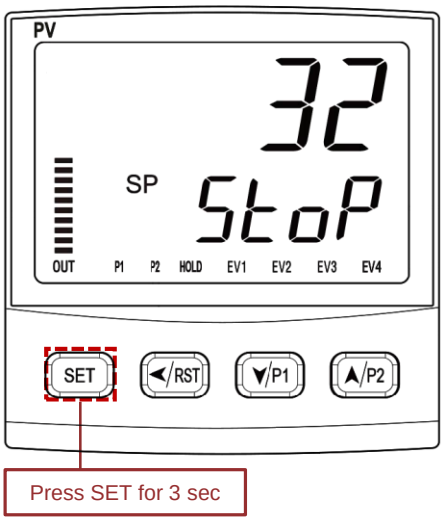




6. Temperature Setting and Operation

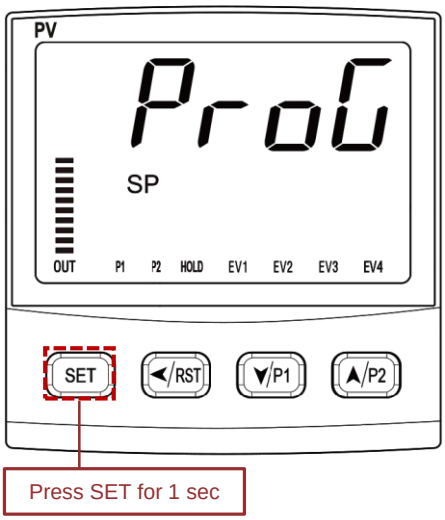
ex) 100℃ for 1 hour, 200℃ for 1 hour.

1)



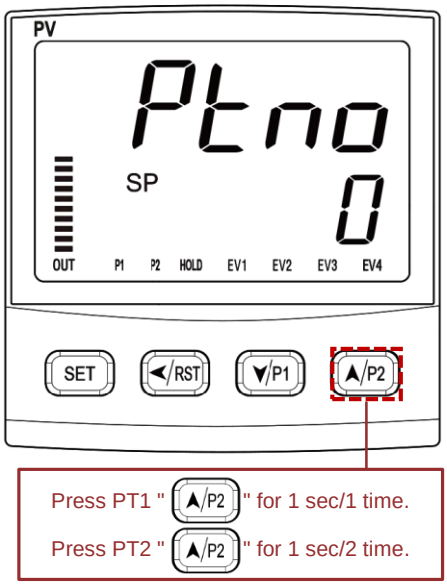
Press SET for 3 sec,
Goes to setting mode.

2)



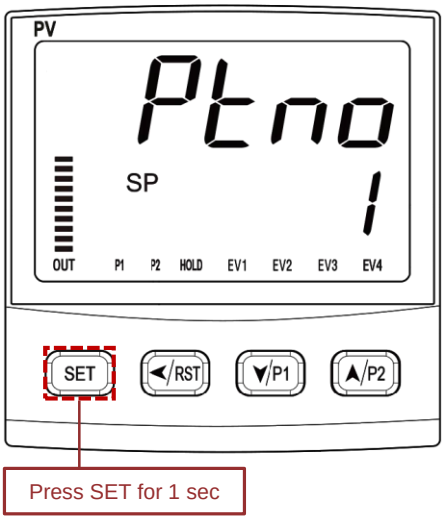
Press SET for 1 sec,
Goes to pattern mode.

3)



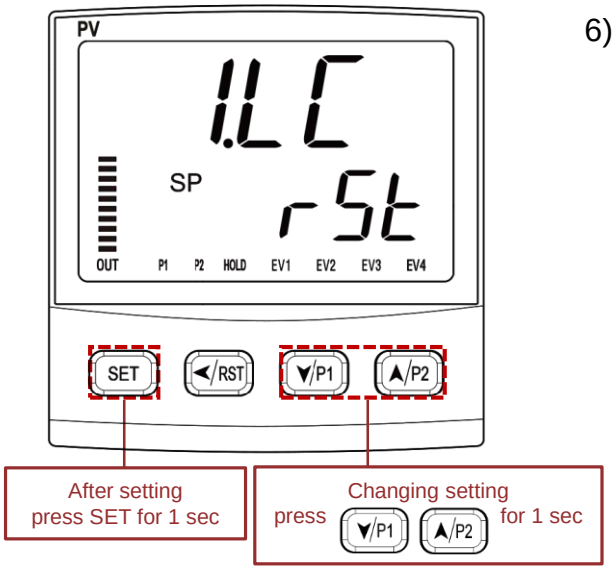
Goes to program pattern setting
each of them.

4)



Goes to program No.1 setting.
No.2 program is ptno 2

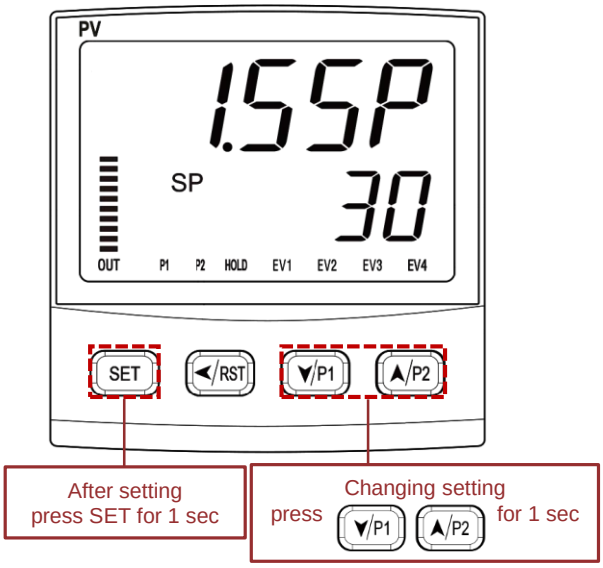
5)



1.LC means program No,
LC means parameter when operating is end.

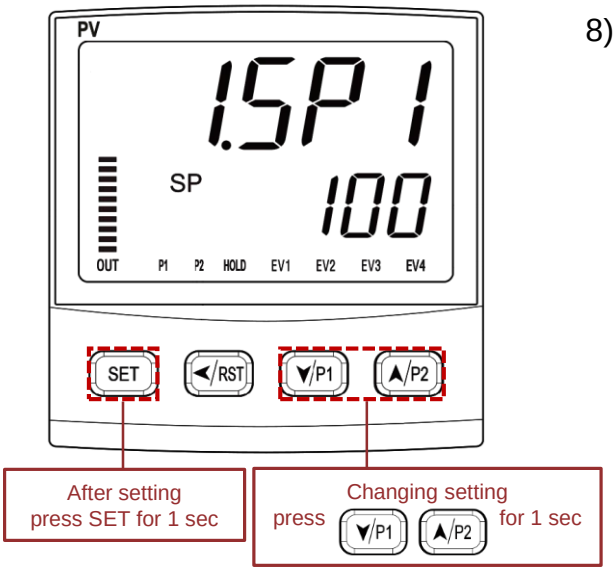
RST-Stop operating after last segment
HOLD-Keep temp of last segment
PTH1-Endless loop of No.1 program
PTH2-Endless loop of No.2 program

6)



Setting "0" is no effect for operating.

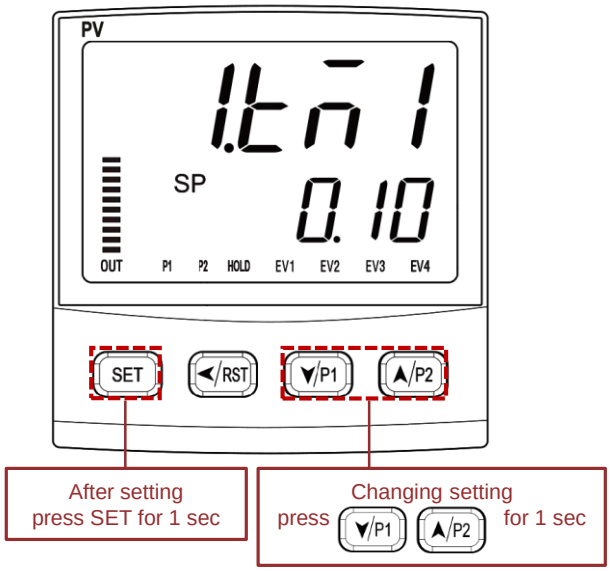
7)



SP1 is setting parameter for
1st testing temp.

ex) 1st testing temp is 100℃
※ Heating time is depending on heating value
If you setting time more shorten the overshoot
will be increased.

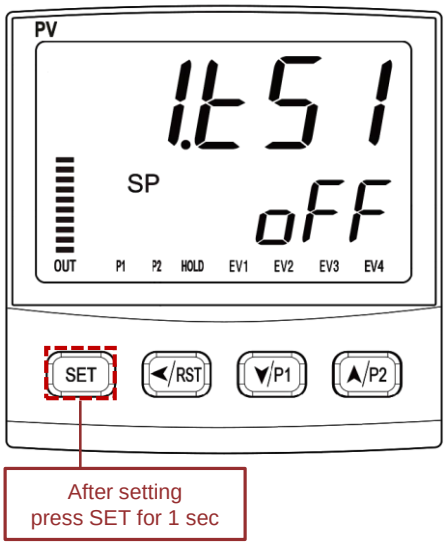
8)



Time1 is setting parameter for heating time.

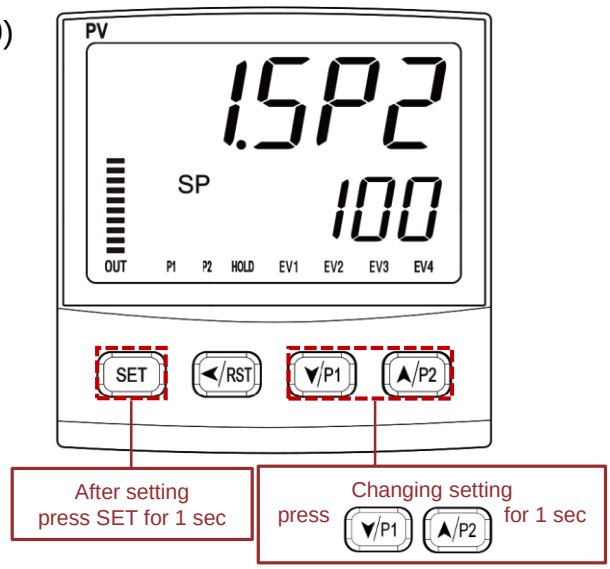
ex) Set heating from 30℃ to 100℃
for 10min.

9)



TS1(Time Signal) is setting for usage of function.
Only use in case of using controller EV.

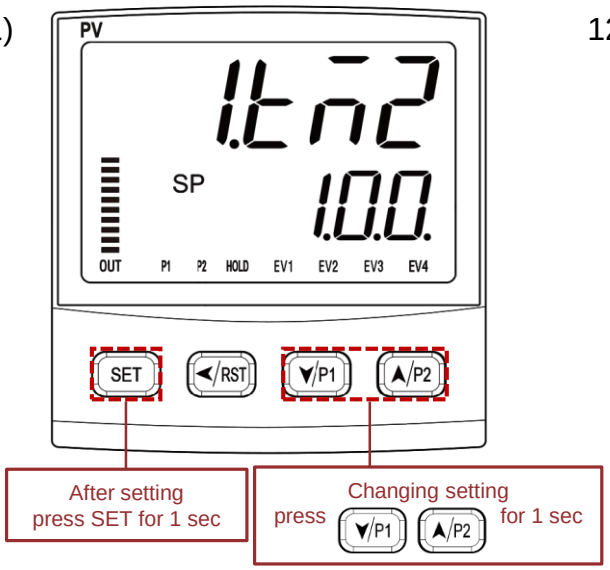
10)



SP2 is setting parameter for keep
section of 1st testing temp.

ex) Setting 100℃ for 1st test.

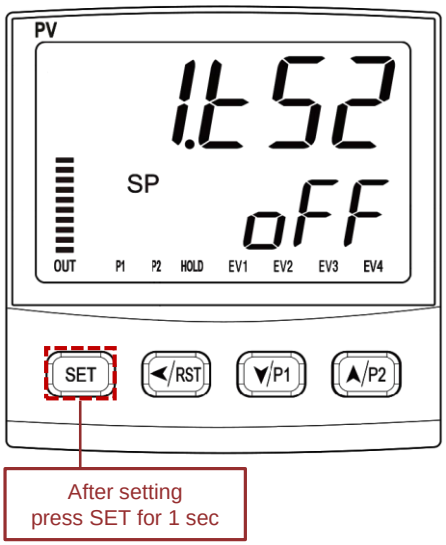
11)



Time2 is setting parameter for keeping
time of SP2.

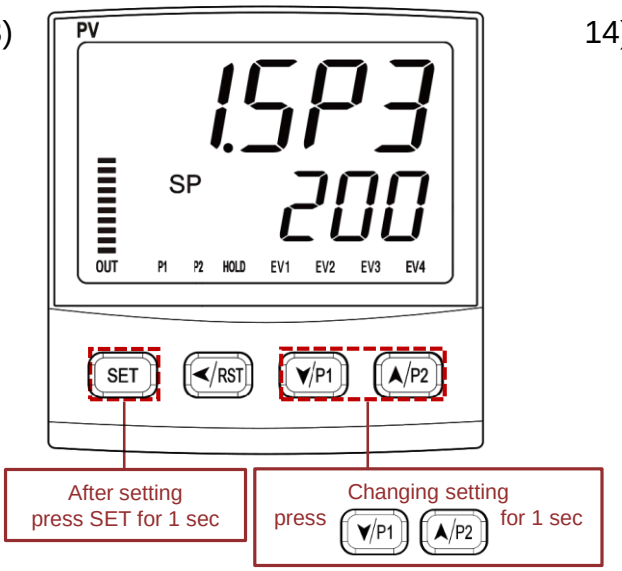
ex) Keep 100℃(SP2) for 1hour.

12)



TS2 is setting for usage of function.
Only use in case of using controller EV.

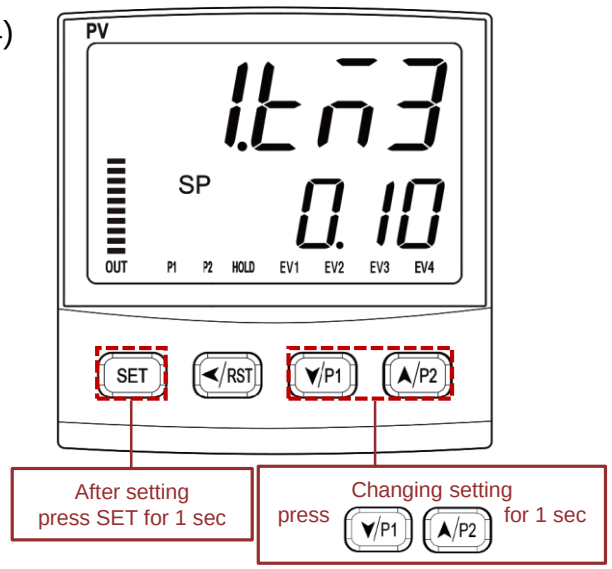
13)



SP3 is setting parameter for
keep section of 2nd testing Temp.

ex) Setting 100℃ of 2nd test.

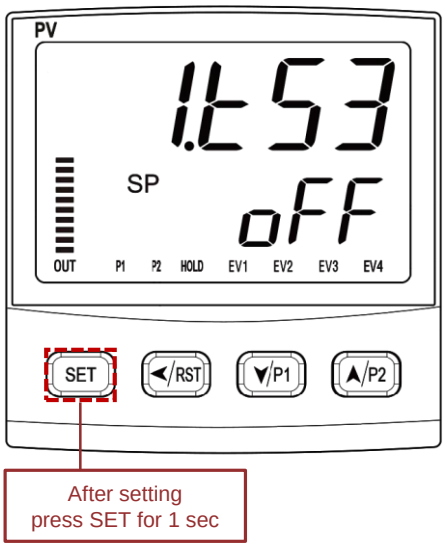
14)



Time3 is setting parameter for
heating time of SP3(Time:Min).

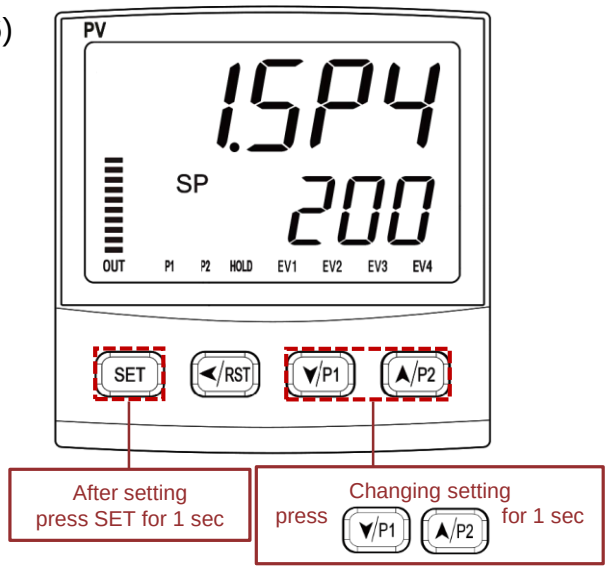
ex) Setting from 100℃(SP2) to
200℃(SP3) for 10min

15)



TS3 is setting for usage of function
only use in case of using controller EV(event).

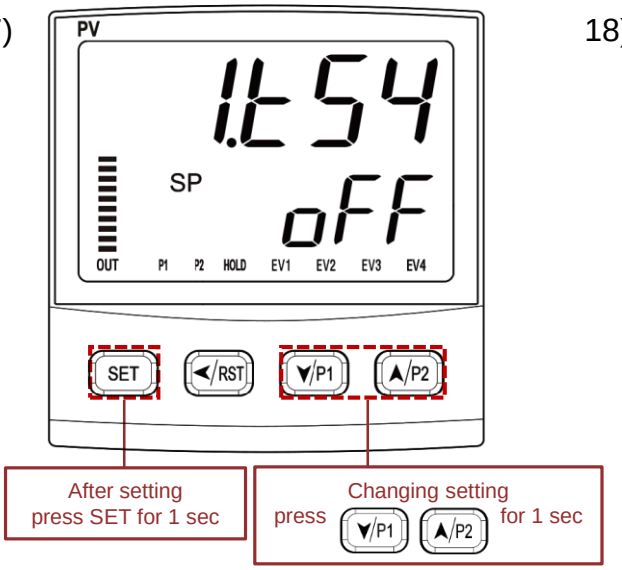
16)



SP4 is setting parameter for keep
section of 1st testing Temp.

ex) Setting 2nd testing temp with 200℃.

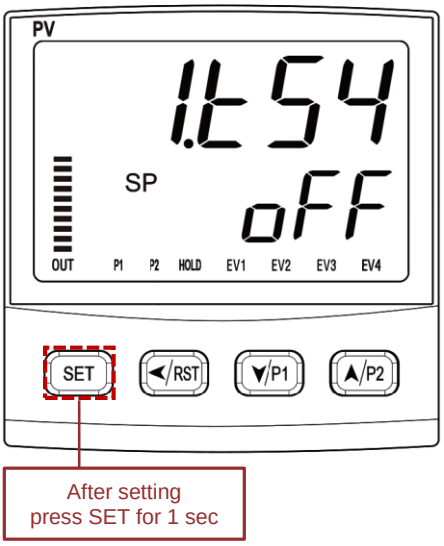
17)



Time4 is setting parameter for keeping time of SP4.

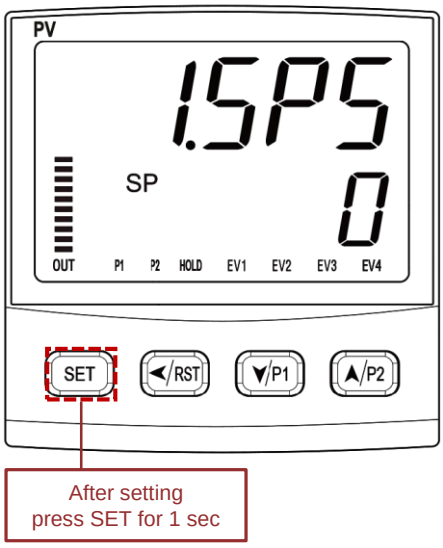
ex) Setting : Keep 200℃(SP4) for 1 hour.

18)



TS4 is setting parameter for usage of function.
Only use in case of using controller EV(event).

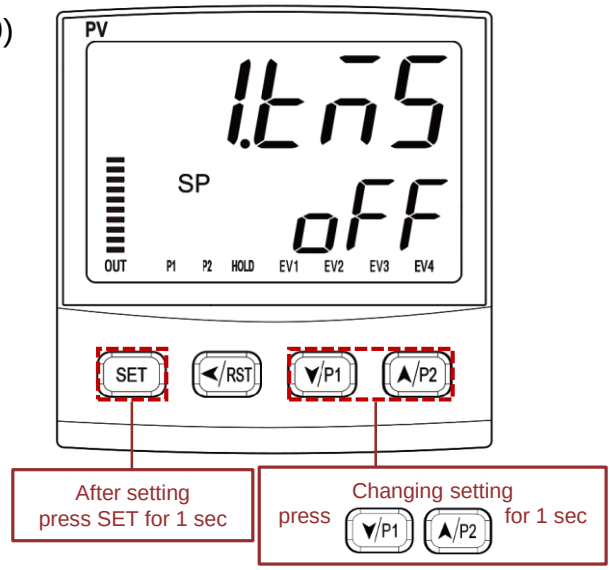
19)



After "OFF" in parameter time,
There is no more parameter.

ex) SP1~SP9 figure / SP10~SP15 Alphabet
SP10→SPA, SP11→SPB, SP12→SPC
SP13→SPD, SP14→SPE, SP10→SPF

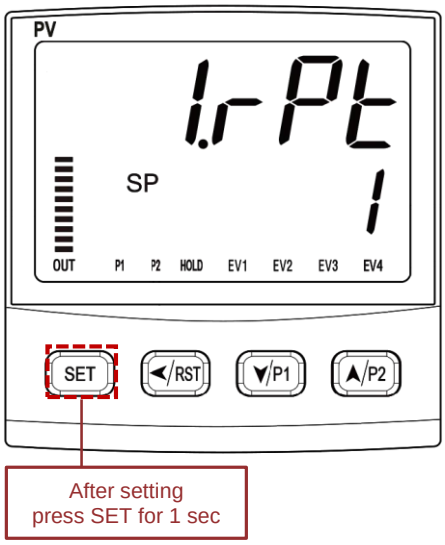
20)



In case of set time as "OFF",
There is no more parameter from
SP6 to SPF(15).

ex) If you input time, parameter is created.

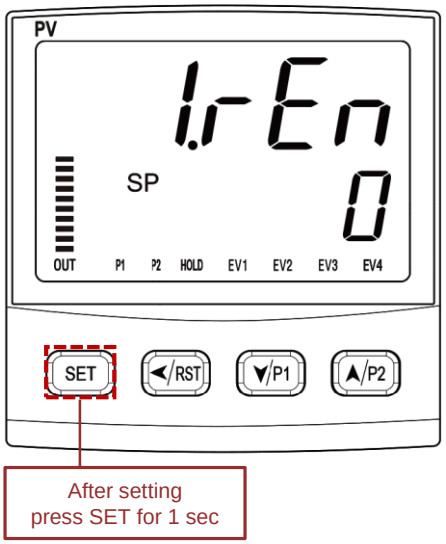
21)



RPT is repeat mode of section,
available setting 1~999.
※ Initial value "1" (Do not change).

You don't need to use repeat function
please set as "1"

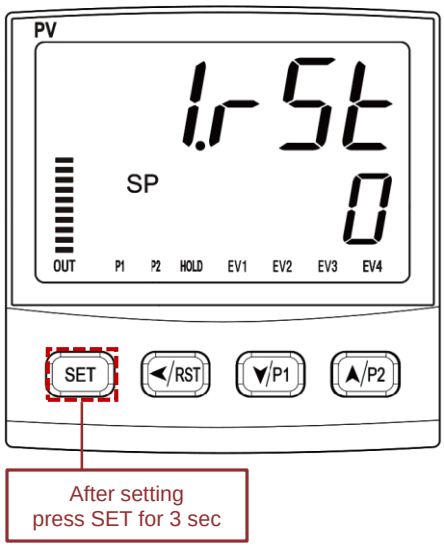
22)



REN is setting setting last segment No of repeat mode. But you don't need to use repeat function. So please set as "0".

※ Initial value "0" (Do not change).

23)

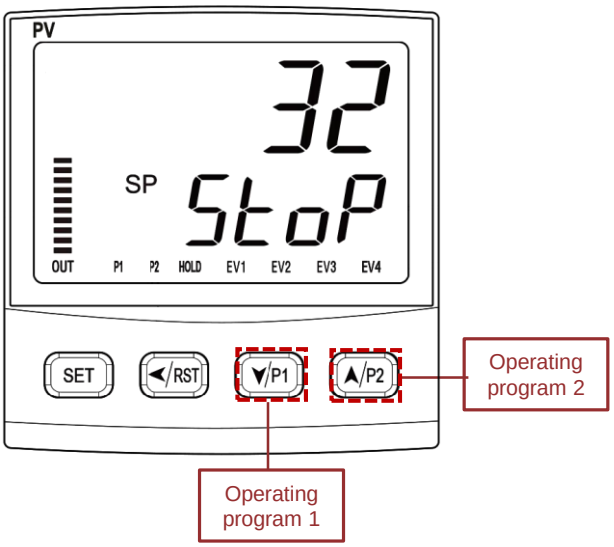


RST is setting setting last segment No of repeat mode. But you don't need repeat function. So please set as "0".

※ Initial value "0" (Do not change).

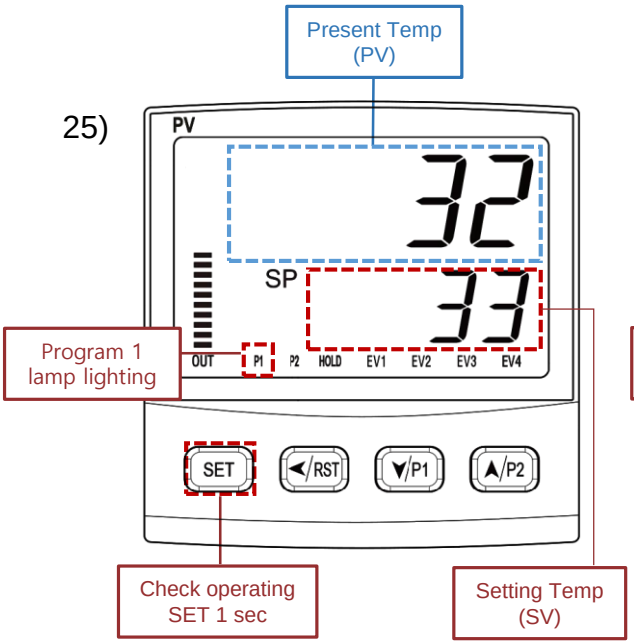
Press SET for 3 sec after setting.
It goes to stand by mode.

24)



Finish setting program
press program button for 1 sec to start.

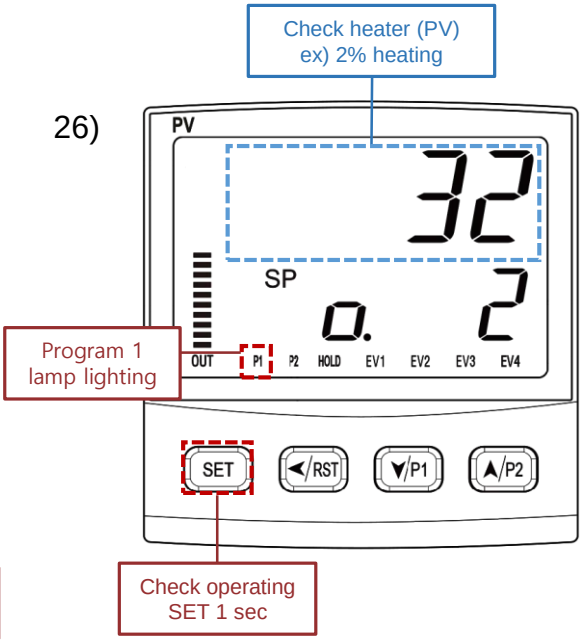
25)



Yellow light on PRG1 show SV on SP.

※ Program operating START!

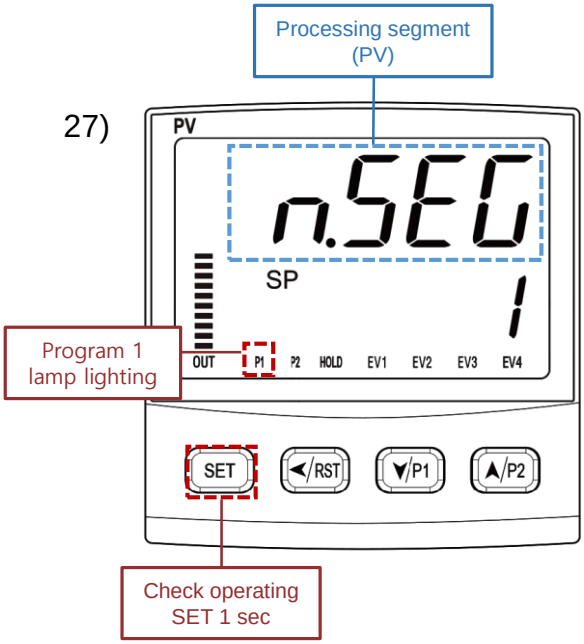
26)



Press SET for 1 sec to check
present operating showing on SP.

※ PV 2% heating.

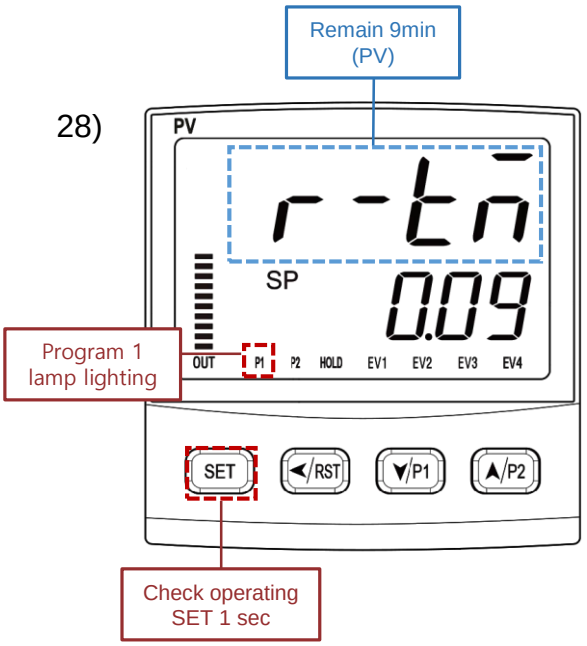
27)



Press SET for 1 sec to check present operating showing on SP.

※ On going process of segment1.

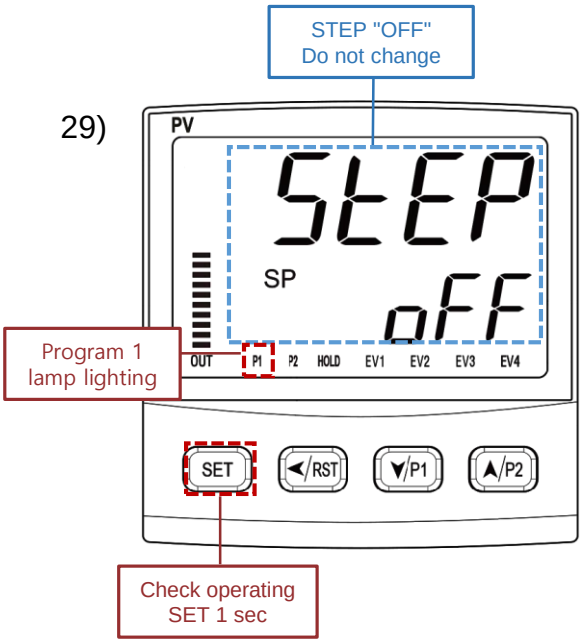
28)



Press SET for 1 sec to check present operating showing on SP.

※ Remain 9 min of operating segment.

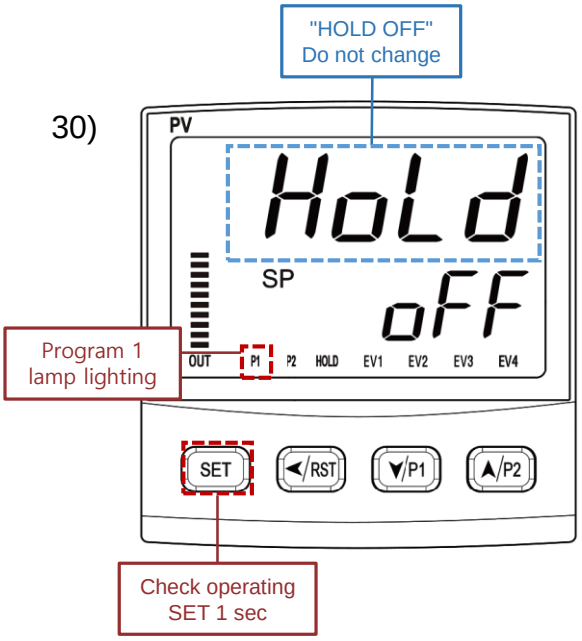
29)



Press SET for 1 sec to check present operating showing on SP.

※ STEP OFF-Do not change

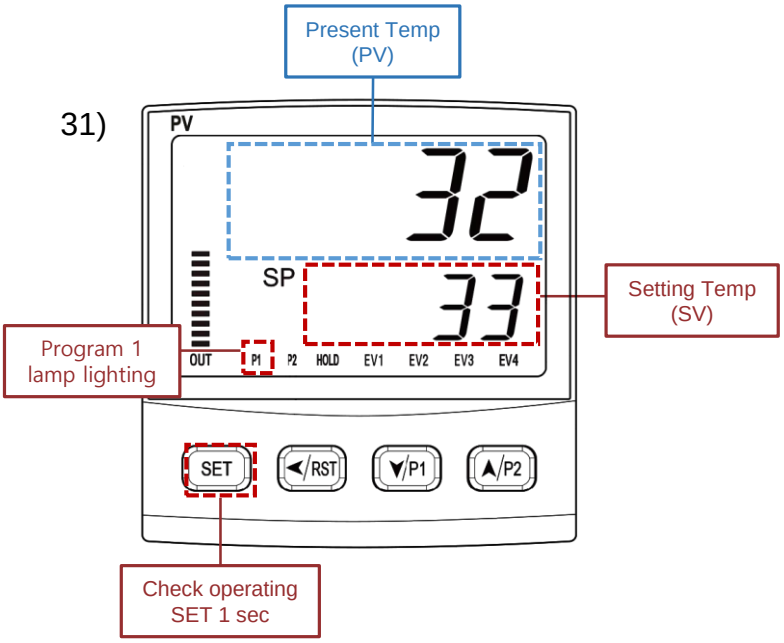
30)



Press SET for 1 sec to check present operating showing on SP.

※ HOLD OFF-Do not change

31)

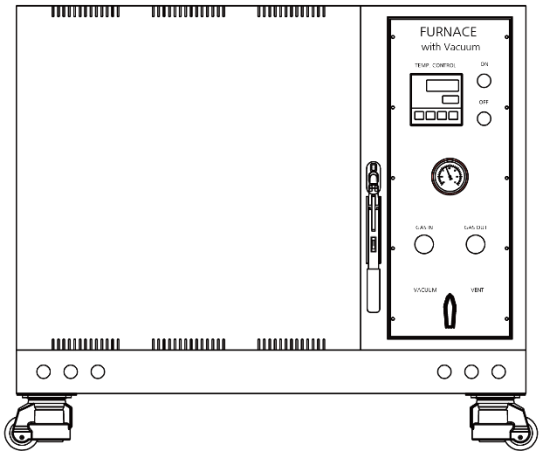


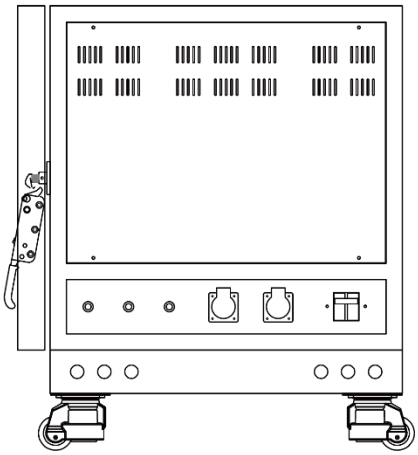
Out lamp is light is on and off during operating and heating.

※ EV1, EV2, EV3-Assistant
AT-Auto Tuning
HOLD-Temp hold

7. Specifications (SH-FU-1.5MGV / 10MGV / 31MGV)

1200°C Muffle Furnace with Vacuum

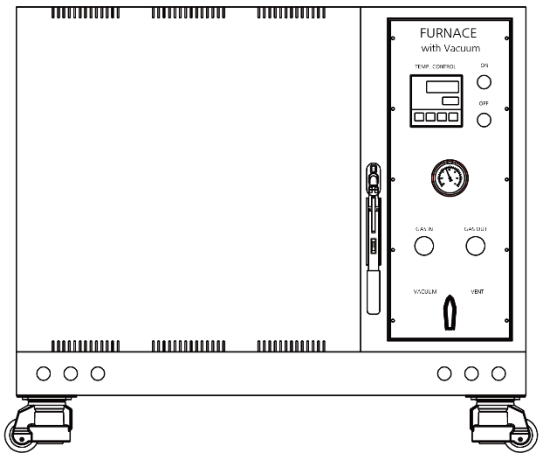


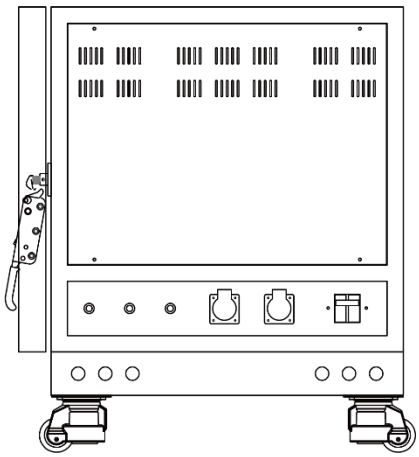


Model	SH-FU-1.5MGV	SH-FU-10MGV	SH-FU-31MGV
Max Temp	1200℃ (2192℉)		
Temp Controller	Programmable Controller(SP590)		
Heater Capa	1100 W	3000 W	6000 W
Capa	1.5L	10L	31L
Dimension Internal (W×D×H)	115x115x115mm	215x215x215mm	315x315x315mm
	4.53x4.53x4.53"	8.46x8.46x8.46"	12.40x12.40x12.40"
Dimension External (W×D×H)	530x490x730 mm	630x590x830mm	730x690x930mm
	20.87x19.29x28.74"	24.80x23.23x32.68"	28.74x27.17x36.61"
Material External	Steel Plate with powder heating coated		
Heater Element	KANTHAL A-1 (Ceramic heating)		
Insulation	Ceramic Board & Wool (Ceramic fiber)		
Electrical Requirements 120V, 50/60Hz, 1Φ	9.2 A	N/A	N/A
Cat. No.	FU3MG120		
Electrical Requirements 230V, 50/60Hz, 1Φ	4.8A	13.03A	26.1 A
Cat. No.	FU1.5MGV230	FU10MGV230	FU131MGV230
Electrical Requirements 230V, 50/60Hz, 3Φ	N/A	N/A	15.1 A
Cat. No.			FU131MGV230-3
Electrical Requirements 380V, 50/60Hz, 3Φ	N/A	N/A	9.1 A
Cat. No.			FU131MGV380-3

7. Specifications (SH-FU-4.5MHV / 18.7MHV)

1500°C Muffle Furnace with Vacuum





Model	SH-FU-4.5MHV	SH-FU-18.7MHV
Max Temp	1500℃ (2732℉)	
Temp Controller	Programmable Controller(SP590)	
Sensor	R type	
Heater Capa	3300 W	10000 W
Capa	4.5 L	18.7 L
Dimension Internal (W×D×H)	150x200x150mm	250x300x250mm
	5.91x7.87x5.91"	9.84x11.81x9.84"
Dimension External (W×D×H)	630x590x830mm	730x690x930mm
	24.80x23.23x32.68"	28.74x27.17x36.61"
Material External	Steel Plate with powder heating coated	
Heater Element	SIC	
Insulation	Ceramic Board & Wool (Ceramic fiber)	
Electrical Requirements 230V ,50/60Hz, 1Φ	14.4A	N/A
Cat. No.	FU4.5MHV230	
Electrical Requirements 380V ,50/60Hz, 3Φ	N/A	15.2A
Cat. No.		FU18.7MHV380-3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