

# **T.S.K HOT-AIR GENERATOR C TYPE SERIES**

## **Useful Functions**

- ◆ Thank you for purchasing the TSK Hot Air Generator.
- ◆ This manual contains useful functions for using the hot air generator more conveniently.

**Make each change in a stopped state where the external operation function is canceled (cannot be changed while the external operation function is being set or in operation).**



- 1. Unlock**
- 2. Change temperature alarm mode**
- 3. Heater output upper limit setting**
- 4. Change the outlet temp upper limit setting**
- 5. Sensor indicated temp correction**
- 6. Auto tuning**
- 7. Intermittent operation mode**
- 8. Heater output display**
- 9. Buzzer sound cancellation**

**appxs**

### **TSK Hot-Air Generator**

- TSK-18
- TSK-23・33
- TSK-42・52
- TSK-52HT
- TSK-56
- TSK-62・72
- TSK-82
- TSK-92・102
- TSK-122・132



The content of this useful feature is subject to change without notice. In addition, the figures and displays in this manual do not guarantee the actual specifications. It is prohibited to modify or copy this manual without the permission of the manufacturer.

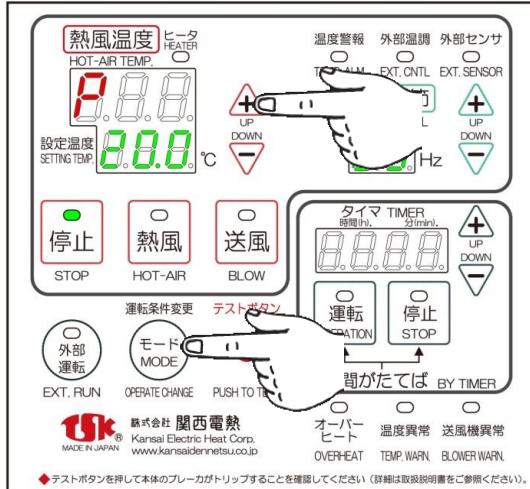
# 1. UNLOCK

※ Change with the external operation function canceled and stopped.

- To use the useful function, you need to change each parameter. Before changing each parameter, unlock the parameter first.

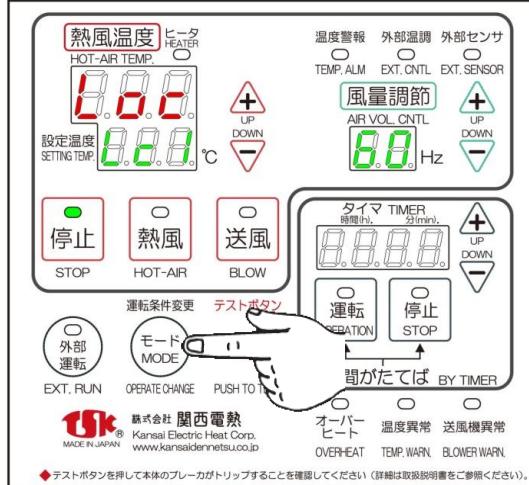
- While holding down the Mode key, press and hold the hot air temperature up key.

"P" is displayed in the hot air temp and "20.0" is displayed in the set temperature section.

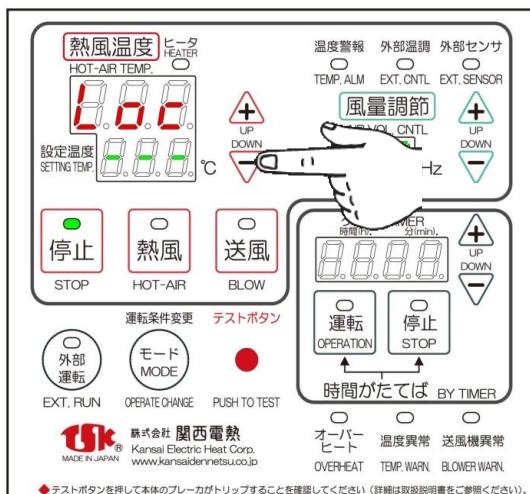


- Press the mode key 6 times.

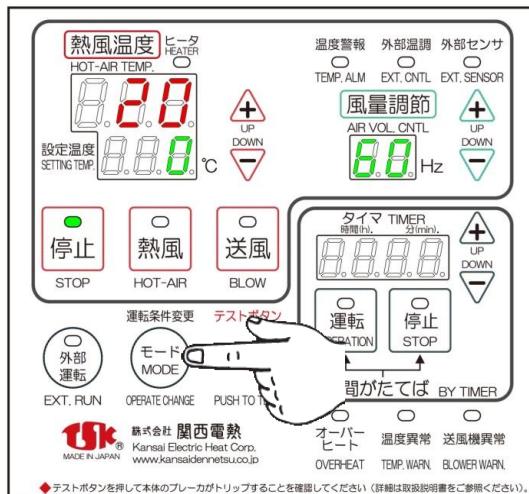
"Loc" is displayed in the hot air temperature section and "Lc1" is displayed in the set temperature section.



- Change the set temperature part to "---" with the down key.



- After changing, press the Mode key once to return to the normal operation status display. This completes unlocking.



※ The lock mode at shipping is "Lc1". "---" unlocks, "Lc2" locks only temperature setting, air volume setting, timer setting, and other settings. If you want to fix the temperature setting, air flow rate setting, and timer setting and prevent erroneous settings, you can change to "Lc2" and use it.

To re-lock after unlocking, change the "---" display in the set temperature section to "Lc1" by the same operation as above.

**It is possible to change each parameter by unlocking, but never change the parameters other than the items described in this manual.  
Changing may cause a dangerous operating condition or malfunction. In addition, please note that we do not guarantee .**

## 2. TEMP ALARM MODE CHANGE

※ operate in a stopped state with the external operation function canceled.

- At the time of shipment, the temperature alarm mode is the upper/lower limit deviation alarm mode with standby. You can change this alarm mode according to your usage.

### Changeable alarm mode

SETTING VALUE	ALARM MODE	Alarm Operation		For outlet temperature setting 150 and temperature alarm setting 50			
		※ Only -50 lower limit deviation alarm and lower limit deviation alarm with standby		The alarm output turns ON in the shaded area.			
	No alarm action 『---』	No alarm action					
	Upper limit deviation alarm 『H』	50	100	150	200	250	300
	Lower limit deviation alarm 『L』	50	100	150	200	250	300
	Upper and lower limit deviation alarm 『HL』	50	100	150	200	250	300
	Upper and lower limit deviation range alarm 『WId』	50	100	150	200	250	300
	Absolute upper limit alarm 『AS』	50	100	150	200	250	300
	Lower limit absolute value alarm 『rAS』	50	100	150	200	250	300
	Upper limit deviation alarm with standby 『HW』	50	100	150	200	250	300
	Lower limit deviation alarm with standby 『LW』	50	100	150	200	250	300
	Upper and lower limit deviation alarm with standby 『HLW』	50	100	150	200	250	300

※ With standby means that when hot air operation starts, even if the hot air temperature (measured value) is within the alarm range, the alarm will not be turned on immediately, but once it goes out of the alarm range and then enters the alarm range again.

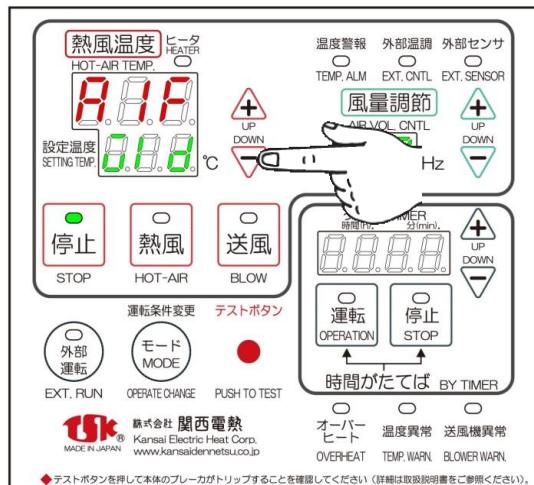
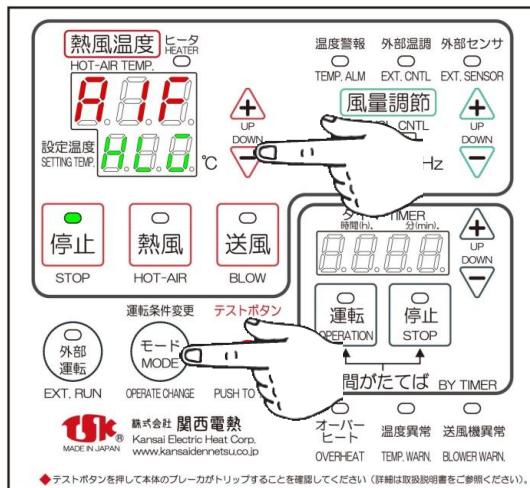
※ Only the lower limit deviation alarm and the lower limit deviation alarm with standby should be set to a negative value.

① After unlocking, hold down the hot air temperature down key while pressing the mode key.

“AIF” is displayed in the hot air temperature section and “HLW” is displayed in the indicated temperature section.

② Change to any alarm mode with the UP/DOWN keys.

After setting, press the Mode key 9 times to return to the normal operation status display.



※ After changing the temperature alarm, lock again and then operate.

### 3. Change the heater output upper limit setting

※ Operate in a stopped state with the external operation function canceled.

- You can set the upper limit (%) of the heater output. With this setting, the power consumption per hour of the heater can be limited. As a result, the rise time of the temperature inside the furnace becomes slower, and the initial power consumption can be suppressed. (The factory setting is 100%)

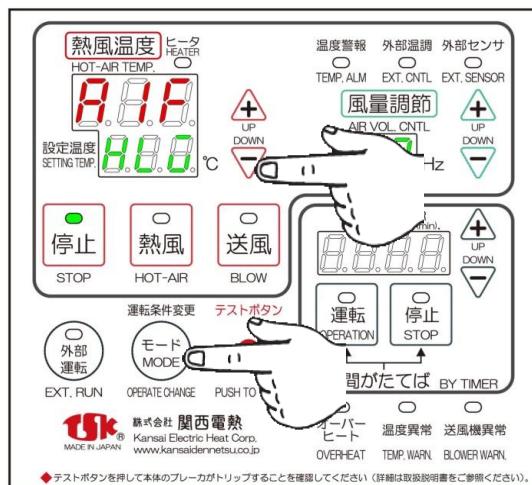
例：When the upper limit of the heater output is set to 80 (%) in a hot air generator with a heater capacity of 10 kW, the maximum power consumption of the hot air generator is 8 kW/h. (However, the heater is always ON/OFF control of 10kW).

※ When the temperature of the hot air generator is stable, the hot air generator is operating with the minimum power consumption by the temperature control of the hot air generator regardless of the output upper limit setting, so it is not necessary to set the upper limit value.

※ Please note that the hot air generator may not reach the desired temperature by setting the upper limit of the heater output.

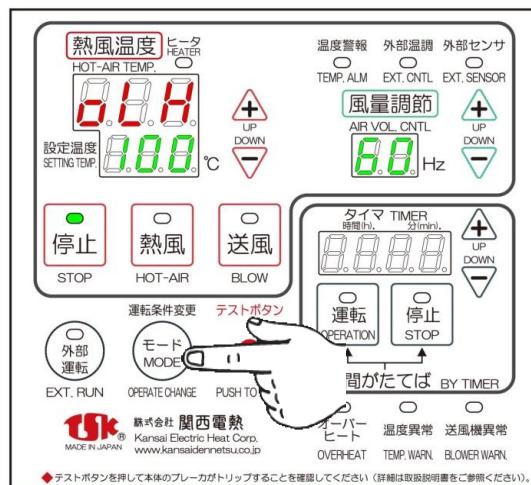
- ① After unlocking, hold down the hot air temperature down key while pressing the mode key.

"AIF" is displayed on the hot air temp and "HLW" is displayed on the set temp section.



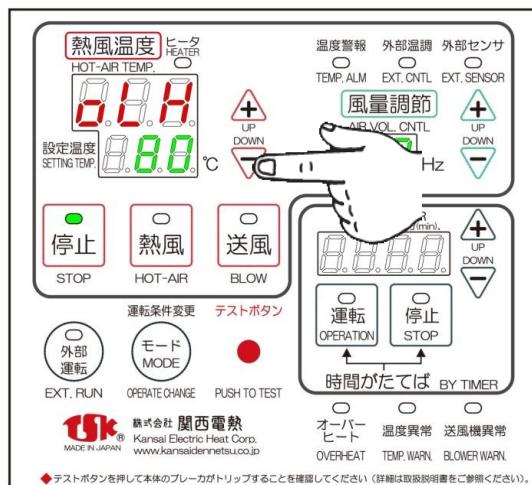
- ② Press mode key 4 times

"OLH" is displayed in the hot air temperature section and "100" is displayed in the set temperature section.



- ③ Change it to the desired upper limit (%) with the up/down keys.

After setting, press the mode key four times to return to the normal operation status display.



- ※ After changing the heater output upper limit setting, lock again and then operate.

## 4. Change the outlet temp upper limit setting \*Change with the external operation function canceled and stopped.

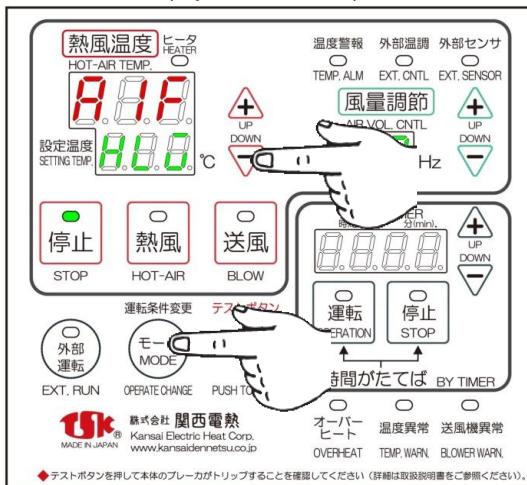
- When using an external sensor, the discharge temperature is controlled by the upper limit temperature of the hot air generator as a discharge port temperature limiter. You can change this upper limit setting on this unit. The maximum discharge temperature of the hot air generator can be limited by setting it to any temperature (the factory setting is 350°C).

《This is useful in such cases》

- When you want to control the temp inside the furnace and at the same time control the outlet temp of the hot air generator below the maximum operating temp of the piping
- When you want to control both the drying temperature in the furnace or both the heating temperature and the maximum supply temperature to the target
- The temp of the external sensor and the upper limit temp of the hot air generator's outlet are controlled by the temp that reaches the set value earlier. Therefore, if the difference between the external sensor temp setting and the discharge upper limit temp setting is small, control may be performed at the outlet port upper limit temp before the external sensor temp rises, and the target temp may not be reached.
- The temp display of the hot air generator is only the temp of the external sensor, not the outlet port upper limit temperature. If you want to display the temp at the upper limit of the outlet, install a separate temp controller and use the external temp adjustment function of the service terminal.

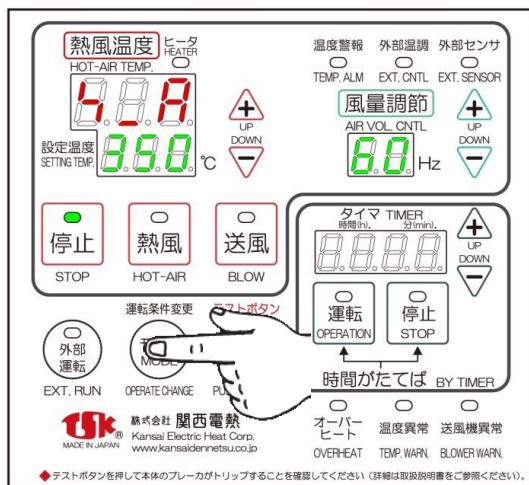
① After unlocking, hold down the hot air temperature down key while pressing the mode key.

"AIF" is displayed in the hot air temperature section and "HLW" is displayed in the set temperature section.



② Press the mode key 6 times.

"S.A" is displayed in the hot air temperature section and "350" is displayed in the set temperature section.



③ Change to any temperature with the Up/Down keys.

After setting, press the Mode key 3 times to return to the normal operation status display.



The changed discharge temperature upper limit set temperature controls the outlet temperature of the hot air generator when an external sensor is used, and is not the temperature of the safety circuit that stops the hot air generator due to a temperature abnormality. (Even if this change is made, the upper limit set temperature of the outlet temperature for abnormal temperature is not changed.) Therefore, the safety circuit will not operate at this changed temperature.

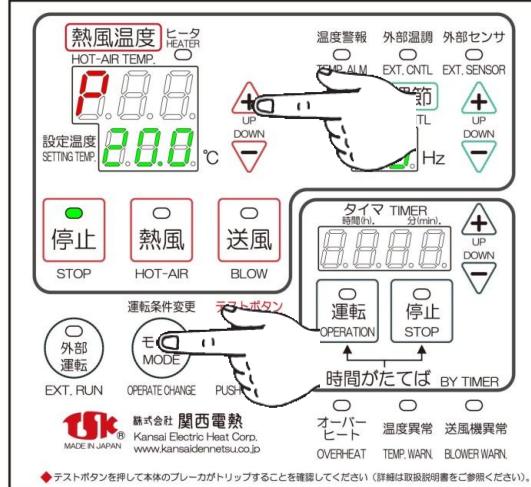
- After changing the discharge temperature upper limit setting, lock again and then operate.

## 5. SENSOR INDECATED TEMP CORRECTION

※ Change with the external operation function canceled and stopped.

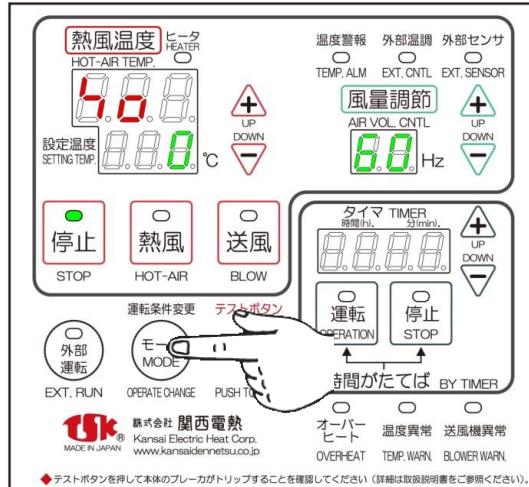
- Use it when hot air operation or when using an external sensor, when it is necessary to forcefully match the temperature indicated by the customer's temperature sensor with the hot air temperature of the hot air generator.

① After unlocking, press and hold the hot air temperature up key while pressing the mode key. "P" is displayed in the hot air temperature section and "20.0" is displayed in the set temperature section.



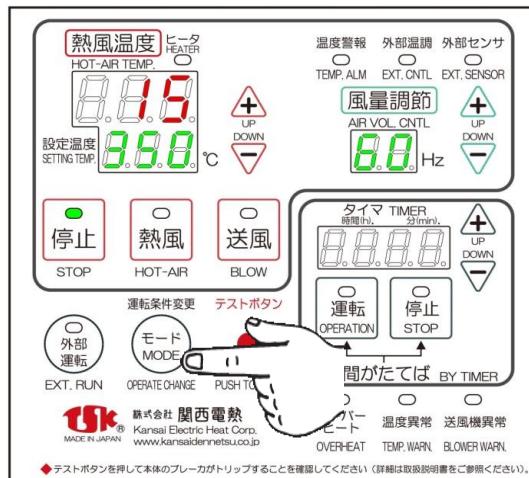
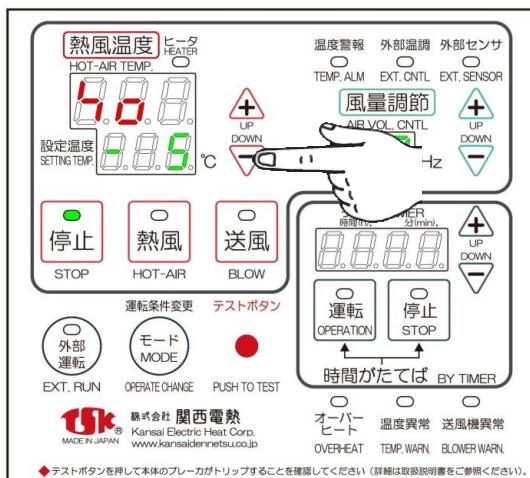
③ Set an arbitrary temperature within the range of 20°C to -20°C with the UP/DOWN key.

② Press the mode key four times. "So" is displayed in the hot air temperature section and "0" is displayed in the set temperature section.



④ After setting, press the Mode key 3 times to return to the normal operation status display.

The set temperature is added to and subtracted from the actual instruction temperature of the hot air generator sensor and displayed in the hot air temperature section.



※ After correcting the temperature indicated by the sensor, lock it again and then operate.

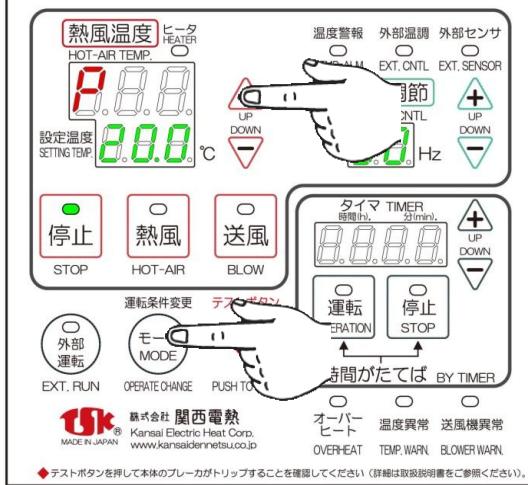
Note : If you perform positive temperature compensation and operate at the maximum temperature of the hot air generator, the safety circuit will not operate and abnormal heating will occur, which is extremely dangerous.

## 6. AUTO TUNING

※ Change with the external operation function canceled and stopped.

- If the hot air temperature fluctuates with respect to the set temperature during hot air operation or when using an external sensor, the indicated temperature may be stabilized by auto tuning.

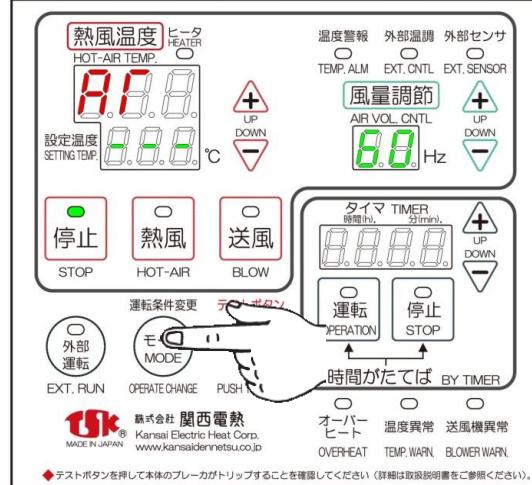
- ① After unlocking, press and hold the hot air temperature up key while pressing the mode key.  
"P" is displayed in the hot air temperature section and "20.0" is displayed in the set temperature section.



- ③ Change "—" to "AT" with the UP/DOWN key.

- ② Press the mode key 5 times.

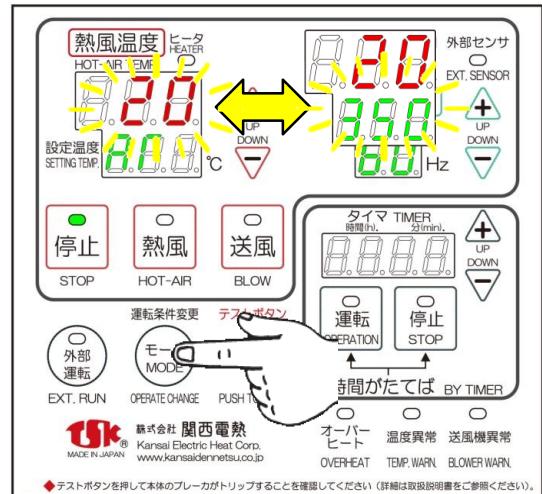
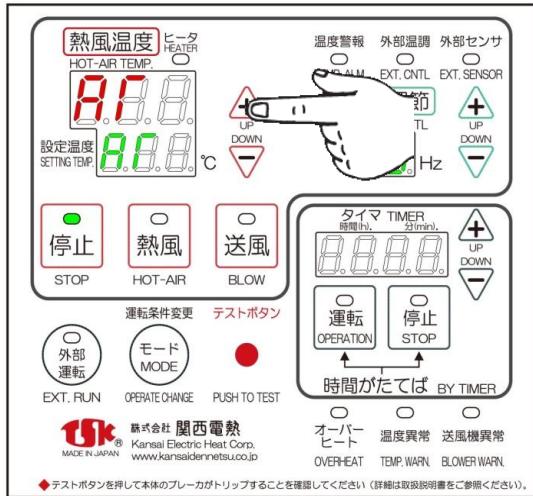
"AT" is displayed in the hot air temperature section and "—" is displayed in the set temperature section.



- ⑤ Press the hot air switch to start hot air operation.

"AT" and the set temperature will flash alternately in the set temperature section to start the temperature rise. After the auto-tuning ends, the blinking stops and the normal hot-air operation mode is set.

- ④ After setting, press the Mode key twice to return to the normal operation status display.  
"AT" and the set temperature will blink alternately in the set temperature section.



※ After setting auto tuning in ④, if 3 minutes or more has been stopped and the fan operation switch is pressed, the auto tuning setting becomes invalid and returns to the normal operation state.

※ Please contact us if the hot air temperature varies even after auto tuning.

※ After completing the auto-tuning, lock it again and then operate.

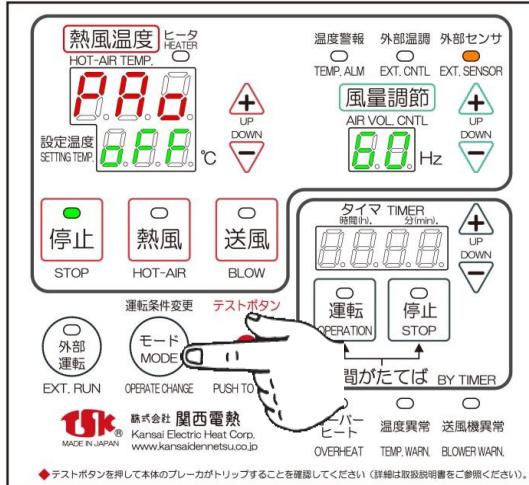
## 7. INTERMITTENT OPERATION MODE

※ Change with the external operation function canceled and stopped.

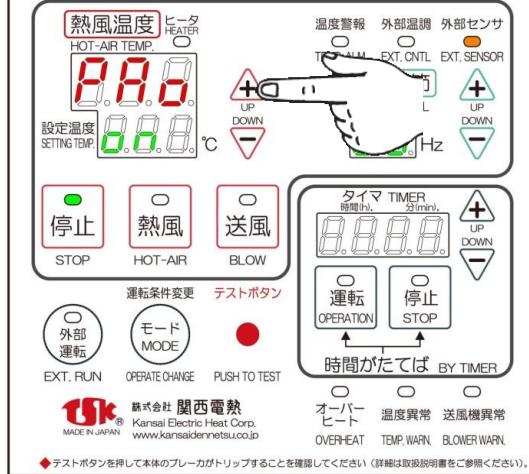
- When using an external sensor to control the temperature of a constant temperature oven, the hot air generator will be stopped when the temperature inside the constant temperature oven reaches the set temperature. Also, the temperature inside the oven will be  $-5^{\circ}\text{C}$  to the set temperature. When the temperature reaches  $10^{\circ}\text{C}$  (arbitrary setting), the operation of the hot air generator is restarted. Energy saving operation is possible.

① In the stopped state, release the lock, connect the external sensor, set the external sensor operation, and continue to press the mode key.

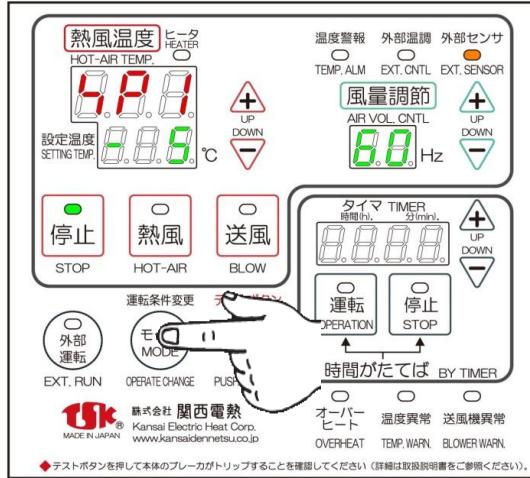
"A1" is displayed in the hot air temperature section, but keep pressing until "PAo" is displayed. "OFF" is displayed in the set temperature section.



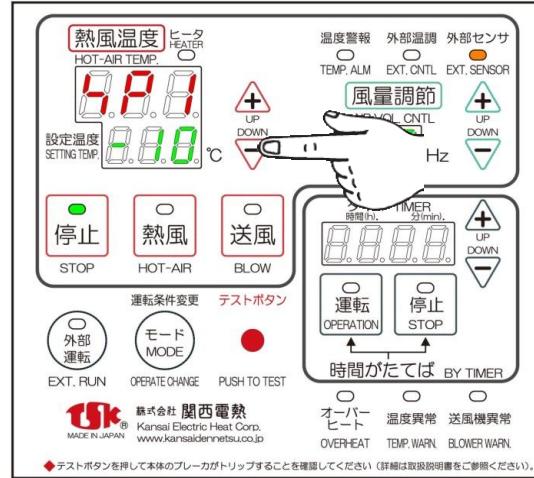
② Change "oFF" to "on" with the up key.



③ Press the Mode key once to display "SP1" on the hot air temperature section and "-5" on the set temperature section.



④ Use the up/down keys to set the arbitrarily value of the set temperature within the range of  $-5$  to  $-10^{\circ}\text{C}$



⑤ After setting, press the Mode key once to return to the original stopped state, then set the temperature and air volume and start hot air operation.

When the hot air operation is started and the sensor temperature in the thermostat reaches the set value, the hot air generator stops operation. After that, if the temperature in the bath falls to the temperature set above ( $-5^{\circ}\text{C}$  to  $-10^{\circ}\text{C}$ ), the hot air generator restarts operation and then continues this intermittent operation.

※ After completing the setting, lock again and then operate.

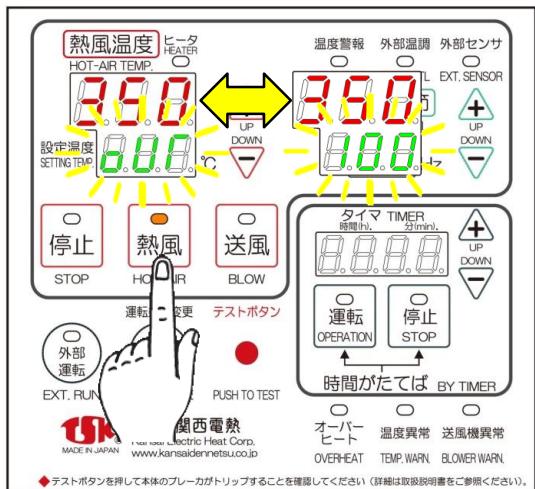
## 8. HEATER OUTPUT DISPLAY

※Change with the external operation function canceled and stopped.

- The current heater output can be displayed and confirmed while the hot air generator is operating. Please use it for specified heat quantity data.

- ① Press and hold the hot air switch during hot air operation.

"OUT" and the current heater output (%) are displayed alternately in the set temperature section.



The heater output is displayed in %.

『Eg』 When the heater output of 80 (%) is displayed on a hot air generator with a heater capacity of 10 kW, the power consumption of the hot air generator at this time is 8 kW/h (however, the heater is always ON/OFF at 10 kW). .

- ※ There is No need to unlock.
- ※ Press the Mode key once to return to the normal operation status display.

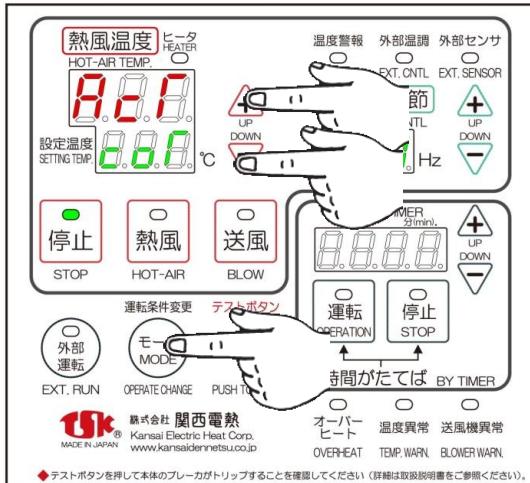
## 9. BUZZER SOUND CANCELLATION

※Change with the external operation function canceled and stopped.

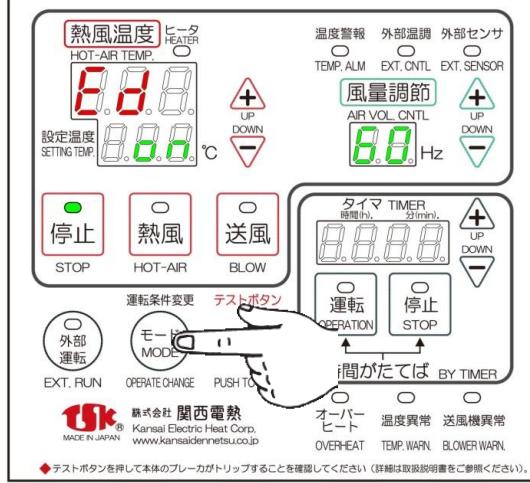
- Set when pressing each switch and when you want to cancel the buzzer sound when each abnormality occurs. (ONLY TSK-52HT, TSK-62~132)

① Unlock and hold down the mode switch while stopped, and simultaneously press the hot air temperature up and down keys.

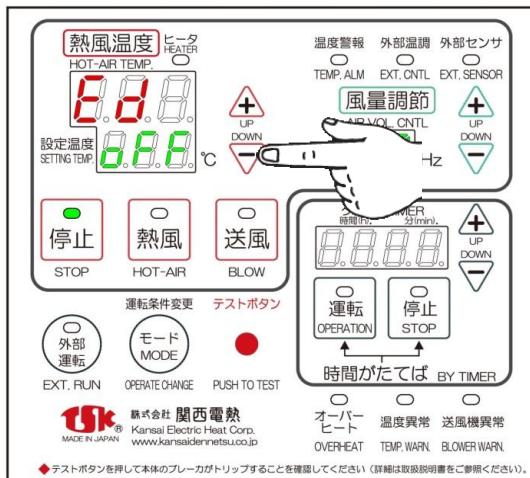
“AcT” is displayed in the hot air temperature section and “coT” is displayed in the set temperature section.



② Press the Mode key 3 times to display "Eb" in the hot air temperature section and "on" in the set temperature section.



③ After changing "on" to "off" with the hot air temperature down key, press the mode switch twice to return to the display of the stopped state.



This will cancel the buzzer sound when pressing each switch.

※ After changing the setting, lock again and then operate.

# 10. APPENDIX

## ◆ External operation mode cancel

The conditions for releasing the external operation mode during operation in the external operation mode are as follows.

- When the stop switch on the operation panel of the main unit or the remote controller (option) is pressed.
- When the test button on the control panel of the main unit or the remote controller (option) is pressed
- When the breaker (NFB) of the main unit is turned off to stop the operation and then the breaker of the main unit is turned on again (except for TSK-18).
- When all abnormalities occur except the temperature alarm.  
※ It will also be canceled if the intake temperature exceeds the upper limit during hot air operation, or when the temperature changes to the air blowing operation due to an abnormal temperature inside the hot air generator.
- When an inverter low voltage error occurs when the factory power supply is momentarily shut down due to a power failure (excluding TSK-18).

『When the external operation mode is not released』

- When the primary power supply is turned off and then turned on again to stop the operation  
(1 minute or more until the primary power supply is turned on)
- When the temperature alarm is set and the temperature alarm occurs



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