SINCE 1889

Yamato

CE

Clean Constant Temperature Oven

Model DE630C

- First Edition -

- Thank you for purchasing "Clean Constant Temperature Oven" of Yamato Scientific Co., Ltd.
- To use this unit properly, read this "Instruction Manual" thoroughly before using this unit.
  Keep this instruction manual around this unit for referring at anytime.

⚠WARNING:
Carefully read and thoroughly understand the important warning items described in this manual before using this unit.

Yamato Scientific Co.,Ltd.

Contents

Explanation

MEANING OF ILLUSTRATED SYMBOLS

Illustrated Symbols

Various symbols are used in this safety manual in order to use the unit without danger of injury and damage of the unit. A list of problems caused by ignoring the warnings and improper handling is divided as shown below.Be sure that you understand the warnings and cautions in this manual before operating the unit.

⚠WARNING! If the warning is ignored, there is the danger of a problem that may cause a serious accident or even fatality.

⚠CAUTION! If the caution is ignored, there is the danger of a problem that may cause injury/damage to property or the unit itself.

Meaning of Symbols


This symbol indicates items that urge the warning (including the caution).
A detailed warning message is shown adjacent to the symbol.


This symbol indicates items that are strictly prohibited.
A detailed message is shown adjacent to the symbol with specific actions not to perform.


This symbol indicates items that should be always performed.
A detailed message with instructions is shown adjacent to the symbol.

Table of Illustrated Symbols

Warning


Warning, generally


Warning, high voltage


Warning, high temperature


Warning, drive train


Warning, explosive

Caution


Caution, generally


Caution, electrical shock


Caution, scald


Caution, no road heating


Caution, not to drench

Caution, water only


Caution, deadly poison

Prohibit


Prohibit, generally


Prohibit, inflammable


Prohibit, to disassemble


Prohibit, to touch

Compulsion


Compulsion, generally


Compulsion, connect to the grounding terminal

Compulsion, install on a flat surface


Compulsion, disconnect the power plug


Compulsion, periodical inspection

Fundamental Matters of "WARNING!" and "CAUTION!"

WARNING!

Do not use this unit in an area where there is flammable or explosive gas

Never use this unit in an area where there is flammable or explosive gas. This unit is not explosion-proof. An arc may be generated when the power switch is turned on or off, and fire/explosion may result. (Refer to page 46" List of Dangerous Substances".)

Always ground this unit

Always ground this unit on the power equipment side in order to avoid electrical shock due to a power surge.

If a problem occurs

If smoke or strange odor should come out of this unit for some reason, turn off the power key right away, and then turn off the circuit breaker and the main power. Immediately contact a service technician for inspection. If this procedure is not followed, fire or electrical shock may result. Never perform repair work yourself, since it is dangerous and not recommended.

Do not use the power cord if it is bundled or tangled

Do not use the power cord if it is bundled or tangled. If it is used in this manner, it can overheat and fire may be caused.

Do not process, bend, wring, or stretch the power cord forcibly

Do not process, bend, wring, or stretch the power cord forcibly. Fire or electrical shock may result.

Substances that can not be used

Never use explosive substances, flammable substances and substances that include explosive or flammable ingredients in this unit. Explosion or fire may occur. (Refer to page 46 "List of Dangerous Substances".)

Do not disassemble or modify this unit

Do not disassemble or modify this unit. Fire or electrical shock or failure may be caused.

Do not touch high-temperature parts

The inside of the body or the door may become hot during and just after operation. It may cause burns.

CAUTION!

During a thunder storm

During a thunderstorm, turn off the power key immediately, then turn off the circuit breaker and the main power. If this procedure is not followed, fire or electrical shock may be caused.

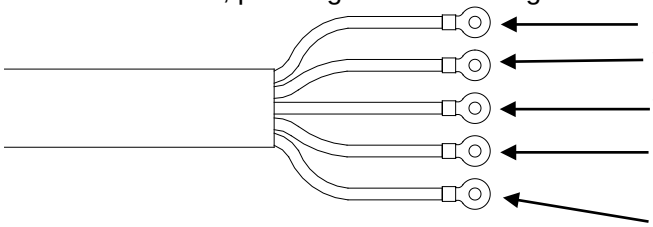
Requirements for Installation

WARNING!

1. Always ground this unit

- DE630C does not have power plug and use 3-phase 380V～ power source.
- Be sure to connect the earth wire (the yellow green cable of power cord) to the grounding conductor or ground terminal to prevent accidents caused by electric leakage.
- Do not connect the earth wire to gas or water pipes. If not, fire disaster may be caused.
- Do not connect the earth wire to the ground for telephone wire or lightning conductor. If not, fire disaster or electric shock may be caused.
- Do not use a branching receptacle, which may cause the heat generation.

- If need to connect power cord, entrust the nearest electrical installation company to install. As for installation, please ground according to the technical standards of electrical equipment.



U: Black line, 3-phase 380V phase line

V: Brown line, 3-phase 380V phase line

W: Black line, 3-phase 380V phase line

N: Blue line, 3-phase 380V neutral line or null line

PE: Yellow green line, grounding wire

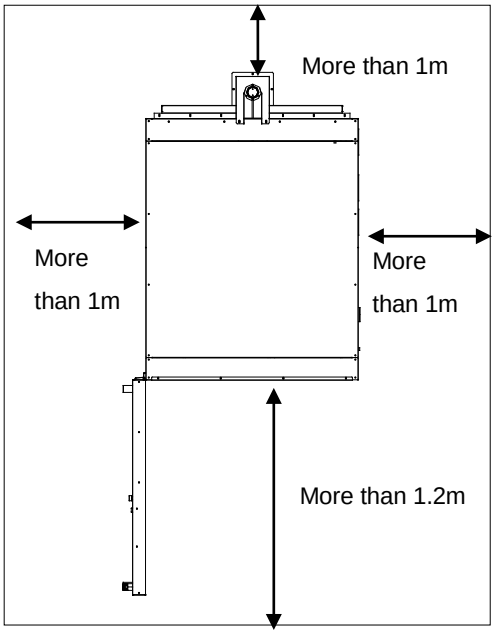
- In order to ensure the correct installation of 3-phase 380V, please have power on after installing power, open the door, press the door detector switch at the lower right of door frame, the differential pressure gauge should indicate at about 100Pa, if lower, the phase line connection order of 3-phase 380V～ power source is wrong and need to change phase.

Requirements for Installation

2. Choose a proper place for installation

- Do not install this unit in a place where:
  - ♦ Rough or dirty surface.
  - ♦ Flammable gas or corrosive gas is generated.
  - ♦ Ambient temperature exceeds 35°C.
  - ♦ Ambient temperature fluctuates violently.
  - ♦ There is direct sunlight.
  - ♦ There is excessive humidity and dust.
  - ♦ There is a constant vibration.

- Install this unit on a stable place with the space as shown below. The exhaust port is set at the back of DE630C, pay attention not to block the exhaust port.

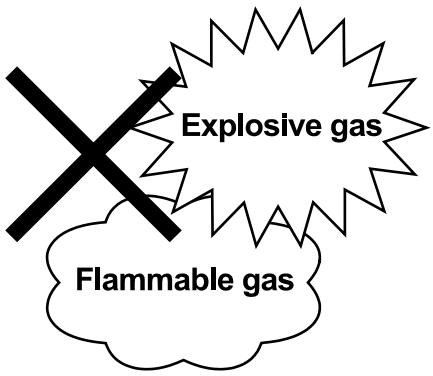


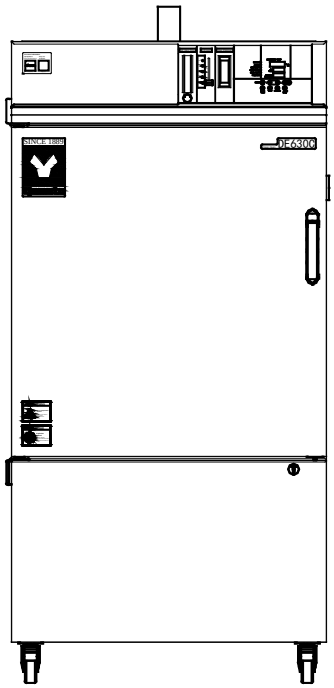
Requirements for Installation

3. Do not use this unit in an area where there is flammable or explosive gas

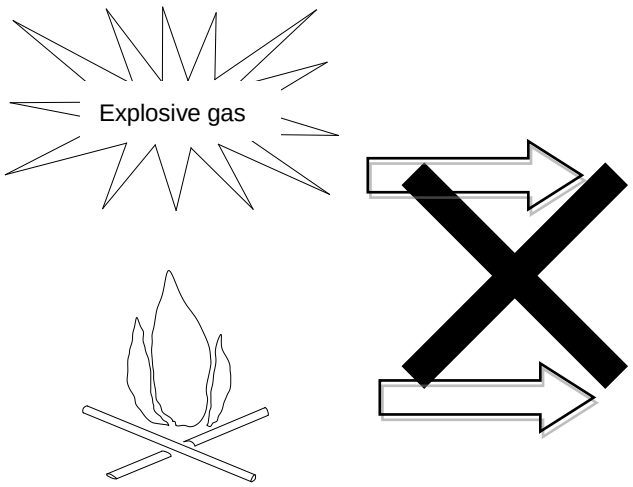
(Refer to page 46 "List of Dangerous Substances".)

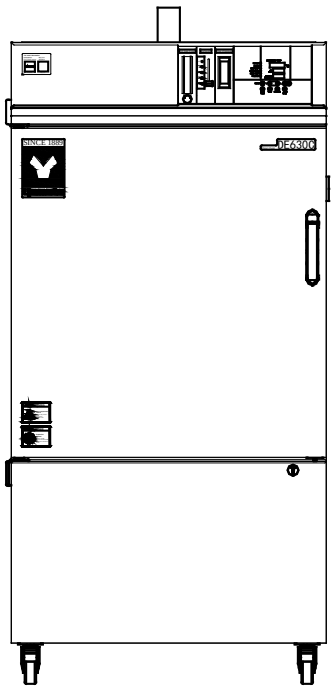
- Never use this unit in an area where there is flammable or explosive gas. This unit is not explosion-proof. An arc may be generated when the power switch is turned ON or OFF, and fire/explosion may result.





- Never use explosive substances, flammable substances and substances that include explosive or flammable ingredients in this unit. Explosion or fire may occur.

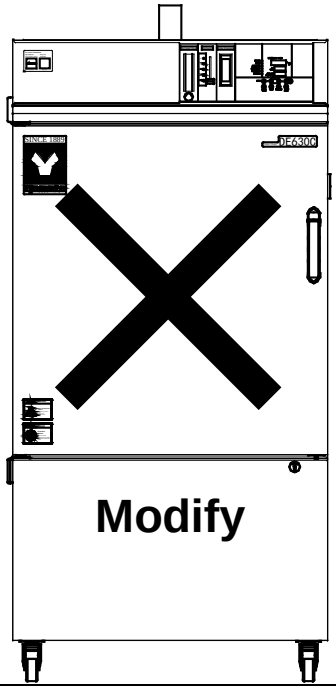




Requirements for Installation

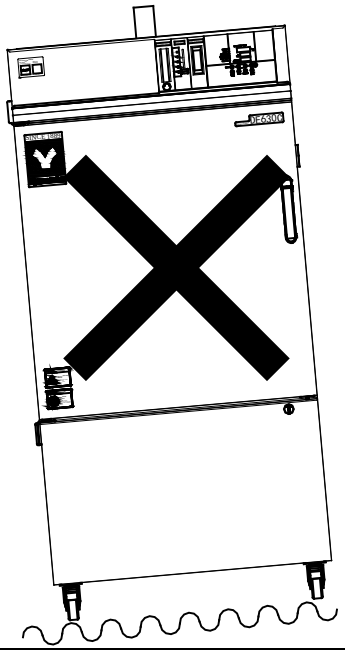
4. Do not modify

- Modification of this unit is strictly prohibited. This could cause a failure.



5. Installation on horizontal surface

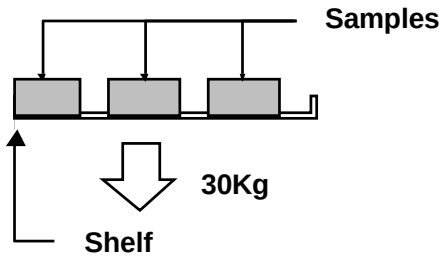
- Set this unit to the flattest place. Setting this unit on rough or slope place could cause the vibration or noise, or cause the unexpectable trouble or malfunction.



⚠CAUTION!

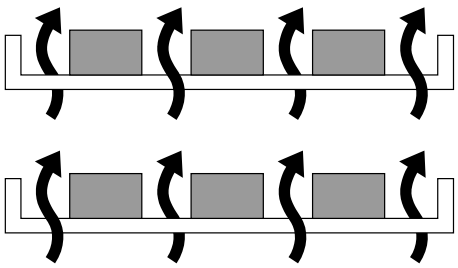
6. Do not make an overload

- The withstand load of shelf is 30kg （uniform load）. Set the samples separately. Do not directly set the samples on the bottom plate of chamber.



7. Do not set samples in close formation

- The temperature in furnace cannot be controlled if too much samples are set there. Make sure to use the shelf and set samples apart each other so as to make the free space of 30% or more to the furnace to acquire accuracy of temperature.



Make the free space of 30% or more

Requirements for Installation

8. Choose a correct power distribution board or receptacle

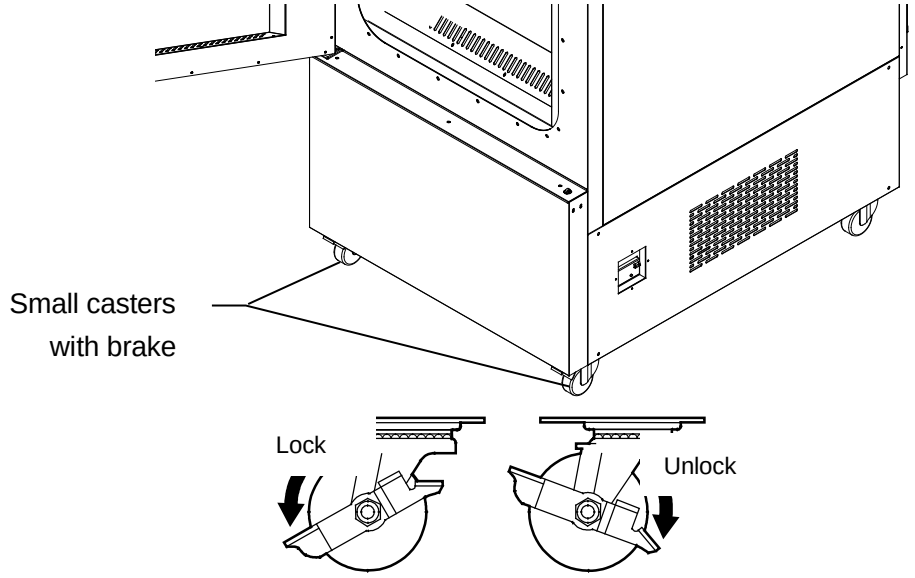
- Choose a correct power distribution board or receptacle that meets the unit's rated electric capacity.

Electric capacity: DE630C 380V～ 6.5A

NOTE:
There could be the case that the unit does not run even after turning ON the power. Inspect whether the voltage of the main power is lower than the specified value, or whether other device(s) uses the same power line of this unit. If the phenomena might be found, change the power line of this unit to the other power line. Please consult your dealer or a local electrical contractor for the connection of devices that use a 3-phase 380V～ power source.

9. Installation

- It may cause injure to a person if this unit falls down or moves by the earthquake and the impact. etc.. To prevent, take measures that the unit cannot fall down, and do not install at a busy place.
- The small casters with brake are set in the front of unit bottom, check if they are locked.



10. First operation

When you operate the unit for the first time at a higher temperature, the unit may generate an odor. This is due to decomposed bonding material contained in heat-insulation material and is not a malfunction of the unit. We recommend operating the unit at the highest temperature once before starting its regular operation.

When it's about to use this unit, our company is not responsible for the production loss due to performance error (output error) and product misoperation (abnormality, etc) of using unit.

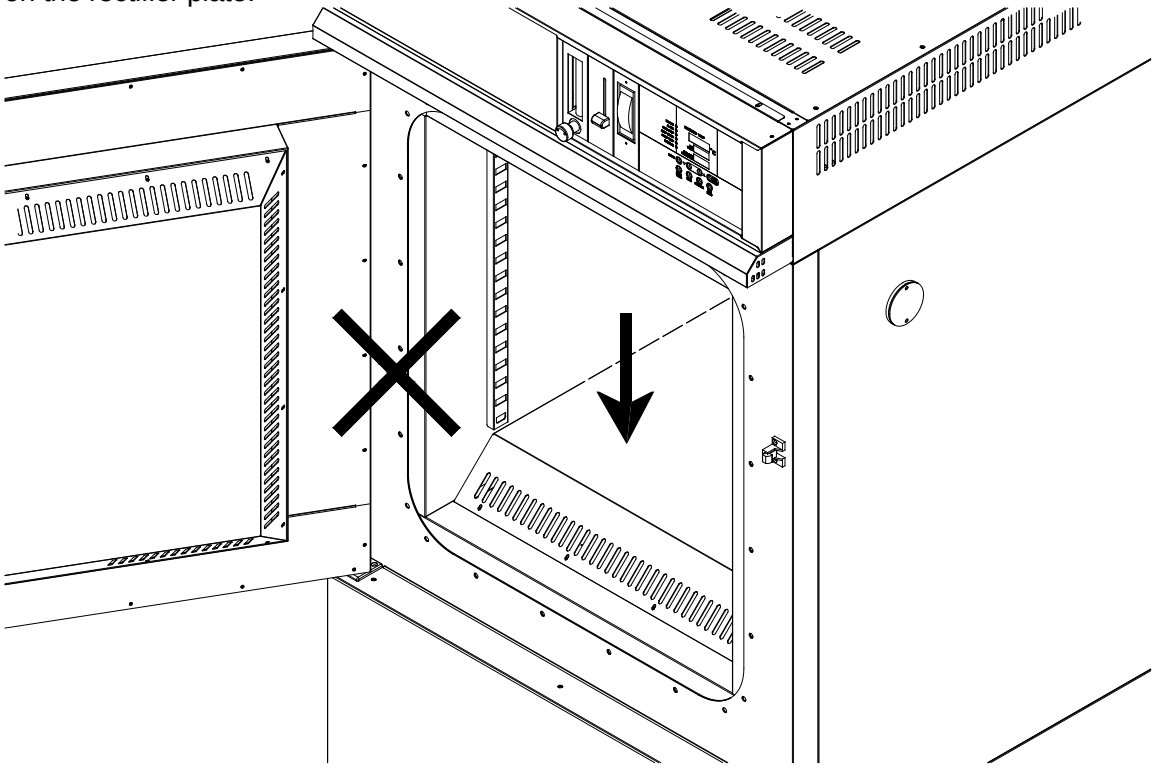
Requirements for Installation

11. Setting of shelf plates and samples.

According to different product models, 2 or 3 shelf plates are attached respectively. Please do not use the shelf plates other than the attached ones to place the samples, otherwise the temperature controller will not work properly. Please set the shelf plates in appropriate positions in the chamber.

A heater is set below the rectifier plate. Therefore, the temperature of rectifier plate and its surroundings will be higher than the set temperature, if place the sample directly on the rectifier plate, there is a risk of overburning sample or causing fire.

According to the shape of samples, if need to remove the shelf plates when using, please leave enough space between the sample and the rectifier plate, never put the sample directly on the rectifier plate.



12. Handling of power code

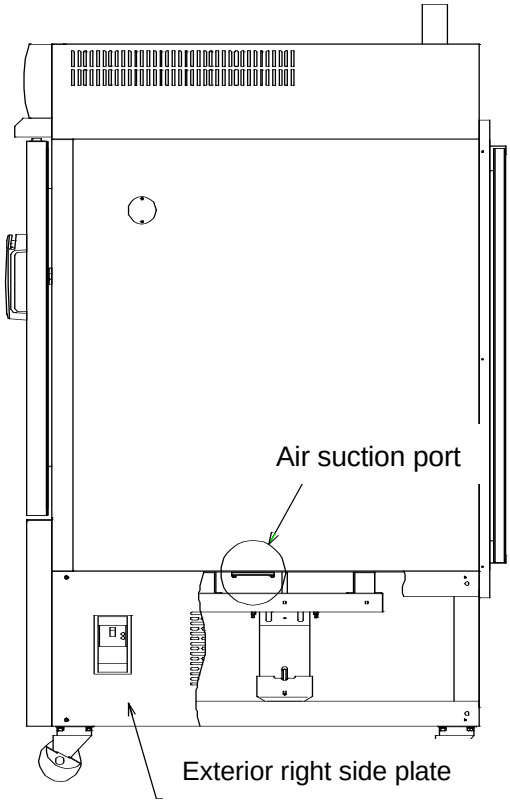
- Do not entangle the power cord. This will cause overheating and possibly a fire.
- Do not bend or twist the power cord, or apply excessive tension to it. This may cause a fire and electrical shock.
- Do not lay the power cord under a desk or chair, and do not allow it to be pinched in order to prevent it from being damaged and to avoid a fire or electrical shock.
- Keep the power cord away from any heating equipment such as a room heater. The cord's insulation may melt and cause a fire or electrical shock.
- If the power cord becomes damaged (cable core exposed, breakage, etc.), immediately turn off the power at the rear of this unit and shut off the main supply power. Then contact your nearest dealer for replacement of the power cord. Leaving it may cause a fire or electrical shock.
- Connect the power plug to the receptacle which is supplied appropriate power and voltage.

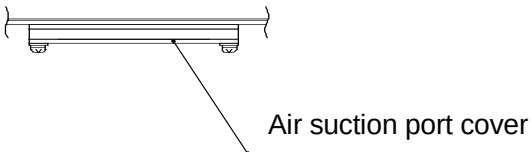
Requirements for Installation

13. Handling of air suction port

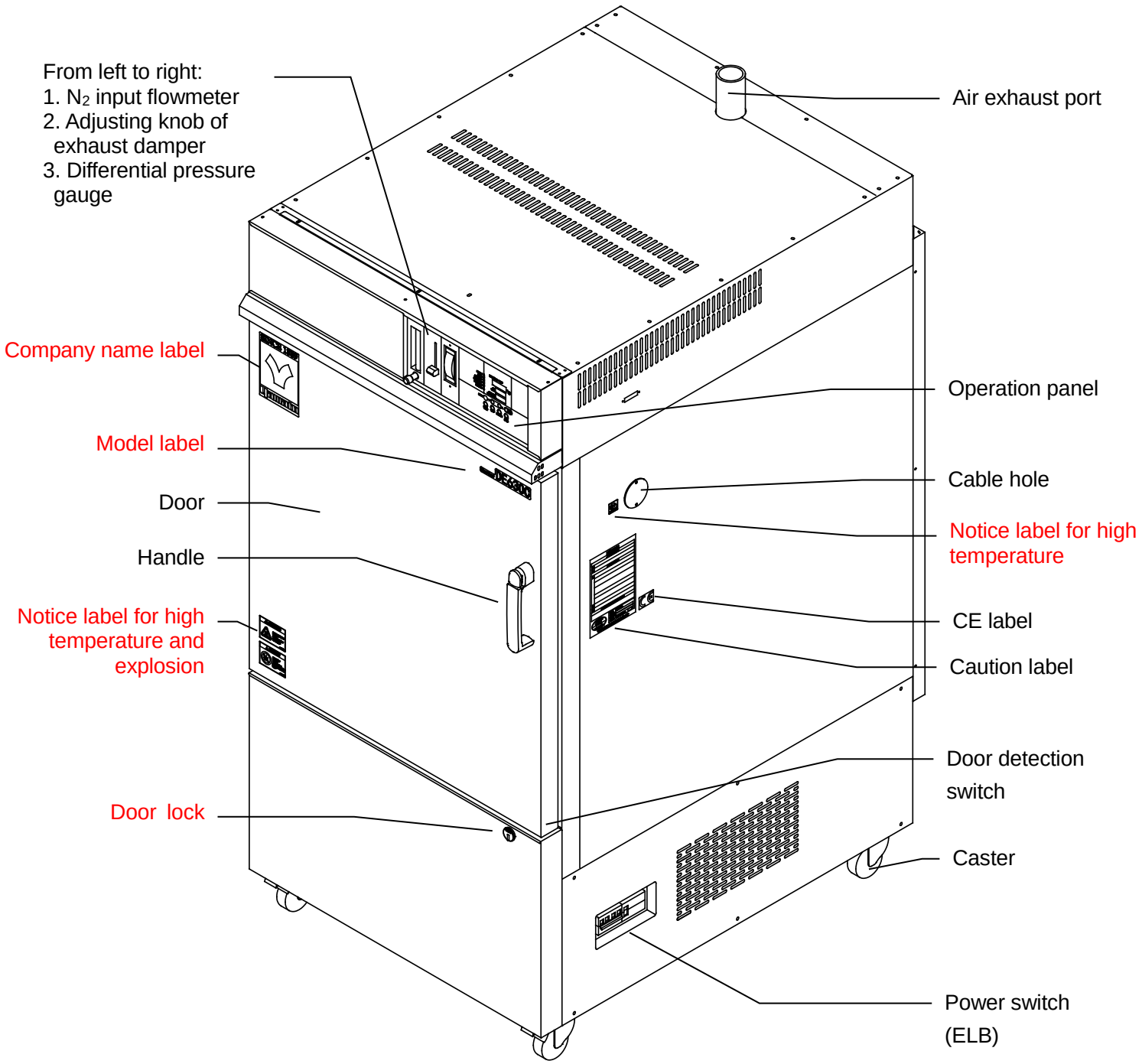
During shipment of product, the air suction port is closed. When need to effectively exhaust air and ventilate, open the cover of air suction port. Follow the sequence as below:

1. Turn off the power of unit and take out the power cord.
2. Remove the 4 mounting screws on the right side of the unit and disassemble the right cover.
3. The covered air suction port is near the center of the motor at the bottom of the chamber (refer to the figure below)，, remove 4 mounting screws and disassemble the cover.
4. Install the right cover as before. Well keep the disassembled air suction port cover and screws.



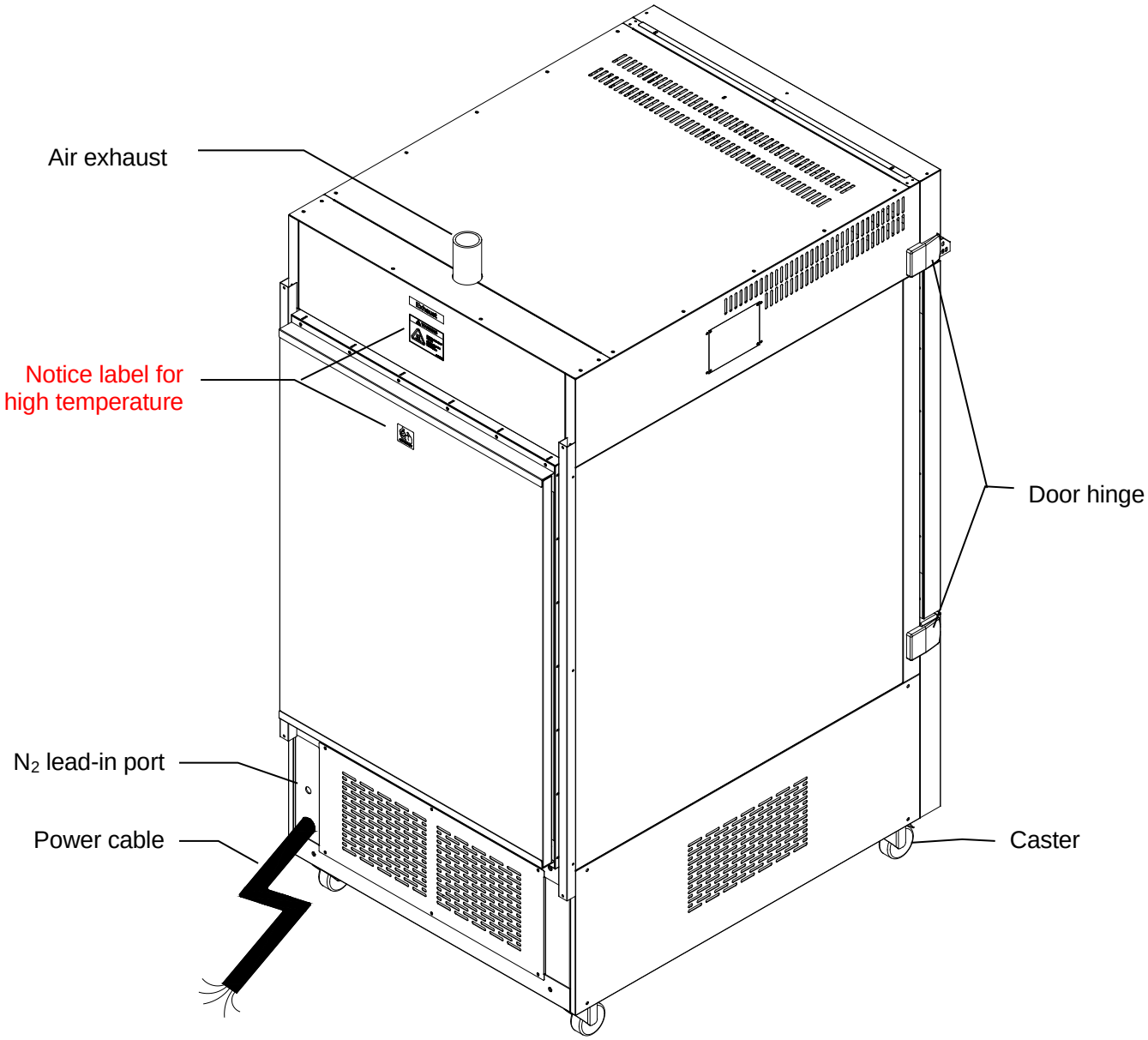


Main Unit

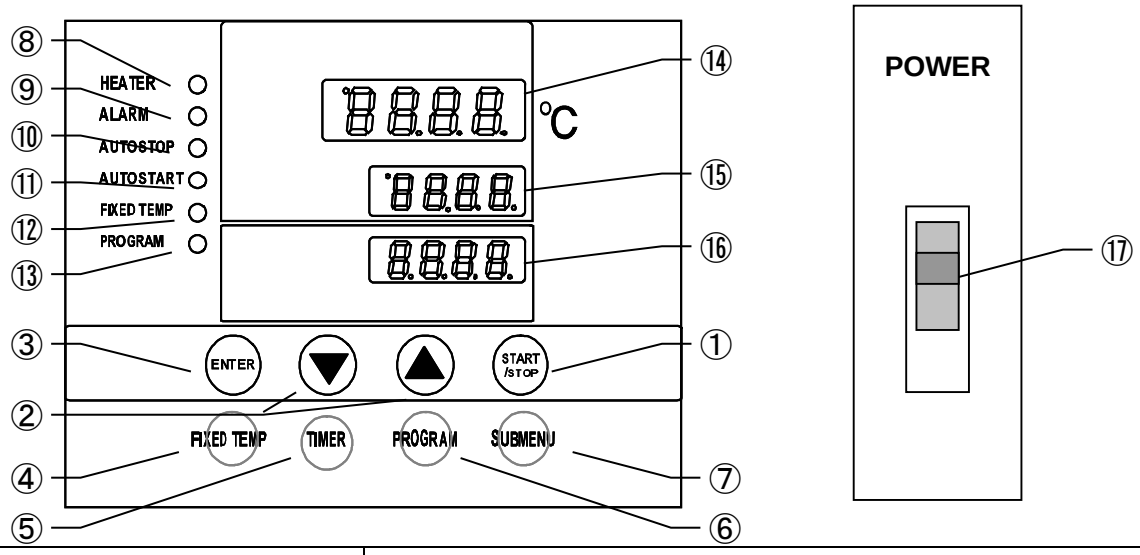

From left to right:
1. N_2 input flowmeter
2. Adjusting knob of exhaust damper
3. Differential pressure gauge
Air exhaust port
Company name label
Operation panel
Model label
Cable hole
Door
Notice label for high temperature
Handle
Notice label for high temperature and explosion
CE label
Caution label
Door detection switch
Door lock
Caster
Power switch (ELB)

Main Unit

DE430C/630C，DT430C/630C



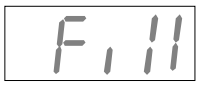
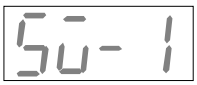
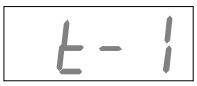
Operation Panel



①	START/STOP Key：	Start/stop the operation.
②	▲▼ Key：	Use for rising UP/lowering DOWN the setting value.
③	ENTER Key：	Settle the inputted value.
④	FIXED TEMP Key：	Choose the fixed temperature operation.
⑤	TIMER Key：	Choose the timer operation (Quick Auto Stop/Auto Stop/Auto Start).
⑥	PROGRAM Key：	Choose the program operation or program creation mode. (3 types and 6 modes programs)
⑦	SUBMENU Key：	Use for setting the overheating prevention temperature, calibration offset temperature, key lock function, or program repeat function.
⑧	HEATER Lamp：	Light while the heater works.
⑨	ALARM Lamp：	Light up when an error occurs. (Buzzer sounds simultaneously.)
⑩	AUTO STOP Lamp：	Blink while setting quick auto stop timer or auto stop timer. Light while quick auto stop timer or auto stop timer is running.
⑪	AUTO START Lamp：	Blink while setting auto start timer. Light while auto start timer is running.
⑫	FIXED TEMP Lamp：	Blink while setting fixed temperature operation. Light while fixed temperature operation is running.
⑬	PROGRAM Lamp：	Blink while setting program operation. Light while program operation is running.
⑭	Measurement Temperature Display：	Display the measured temperature, setting character, alarm information.
⑮	Setting Temperature Display：	Display the setting temperature, setting value for timer mode, remaining time.
⑯	Overheating Prevention Temperature Display：	Display the setting temperature for overheating prevention device.
⑰	Power Switch： (circuit breaker)	Turn ON/OFF the main power.

Characters of the Controller

The characters VS6 controller shows are as follows:

Character	Identifier	Name	Purpose
	**FiX**	Fixed Temperature Setting Mode	Used for starting the fixed temperature operation.
	**Sv**	Temperature Setting	Used for setting the temperature.
	**AStP**	Timer Setting Mode Display	Represents the setting of quick auto stop or auto stop operation.
	**AStr**	Timer Setting Mode Display	Represents the setting of auto start operation.
	**tim**	Time Setting	Used for setting the time.
	**PrG3**	Program Type	Used for choosing program type from 1 to 3. (Refer to Page 30 " Program creation".)
	**PAt**	Program Pattern	Used for choosing program pattern. (Refer to Page 30 " Program creation".)
	**End**	Time Up	Displays when the timer operation is completed (Refer to Page 23)
	**Sv-1**	Program Temperature Setting	Used for setting the temperature for each step in the program. (Sv-1 to Sv-30 is shown.)
	**t-1**	Program Time Setting	Used for setting the time for each step in the program. (t-1 to t-30 is shown.)
	**PS-3**	Step Number to be Repeated	Used for choosing the step number to be repeated under the program operation with repeat function. (Refer to Page 33 “Use program repeat function".)
	**Pc-2**	Repeating Times	Used for setting the repeating times under the program operation with repeat function. (Refer to Page 33 “Use program repeat function".)
	door	Door open	Display the door is opened (Refer to Page 36 “Door open pause function")

Characters of the Controller

	**cAL**	Calibration Offset Setting	Used for inputting the calibration offset temperature. (Refer to Page 37 "Use calibration offset function".)
	**oH**	Overheating Prevention Setting	Used for setting temperature for overheating prevention device. (Refer to Page 21 "Setting of Overheating Prevention Device".)
	**LocK**	Key Lock	Locks the keys on control panel to protect from unnecessary operation. (Refer to Page 37 "Use lock function".)

* Also refer to Page 18 "Operation Mode and Function List".

Operation Mode and Function List

All the operation mode of this unit is as follows;

No.	Name	Description	Page
1.	Fixed Temperature Operation	Pressing the FIXED TEMP key enters into the fixed temperature operation setting mode. Pressing it again enters into the temperature setting mode. The "▲▼" are used to set temperature. Pressing the START/STOP key starts or stops operation.	P. 22
2.	Quick Auto Stop Operation	This operation is used to specify the period up to automatic stop during operation. The period up to operation stop can be set by pressing the TIMER key during fixed temperature operation. The "▲▼" are used to set the time. Pressing the START key starts the quick auto stop operation, activates the timer function and stops the operation automatically after specified period.	P. 23
3.	Auto Stop Operation	This operation is used to specify the automatic stop time in the fixed temperature operation. Pressing the TIMER key displays "AS t p". The setting temperature "SV" can be set by pressing the ENTER key. The operation time "tim" can be set by pressing it again. Pressing the START/STOP key starts the auto stop operation.	P. 25
4.	Auto Start Operation	This operation is used to specify the period up to automatic start after power on. Pressing the TIMER key displays "AS t r". The setting temperature "SV" can be set by pressing the ENTER key. The operation time "tim" can be set by pressing it again. Pressing the START/STOP key starts the auto start operation.	P. 27
5.	Program Operation	This operation is used to change the temperature according to the setting temperature and time. Pressing the PROGRAM key displays "PrG1". Press it again to select the program mode. Press the ENTER key to select the pattern "PA t". Press the ENTER key to display "End". Input the number of patterns to be used. Input the temperature and time of patterns "SV-n" and "t-n" respectively.	P. 29

NOTE) This unit is impossible to be changed the mode during the operation. If the mode requires to be changed, stop the operation.

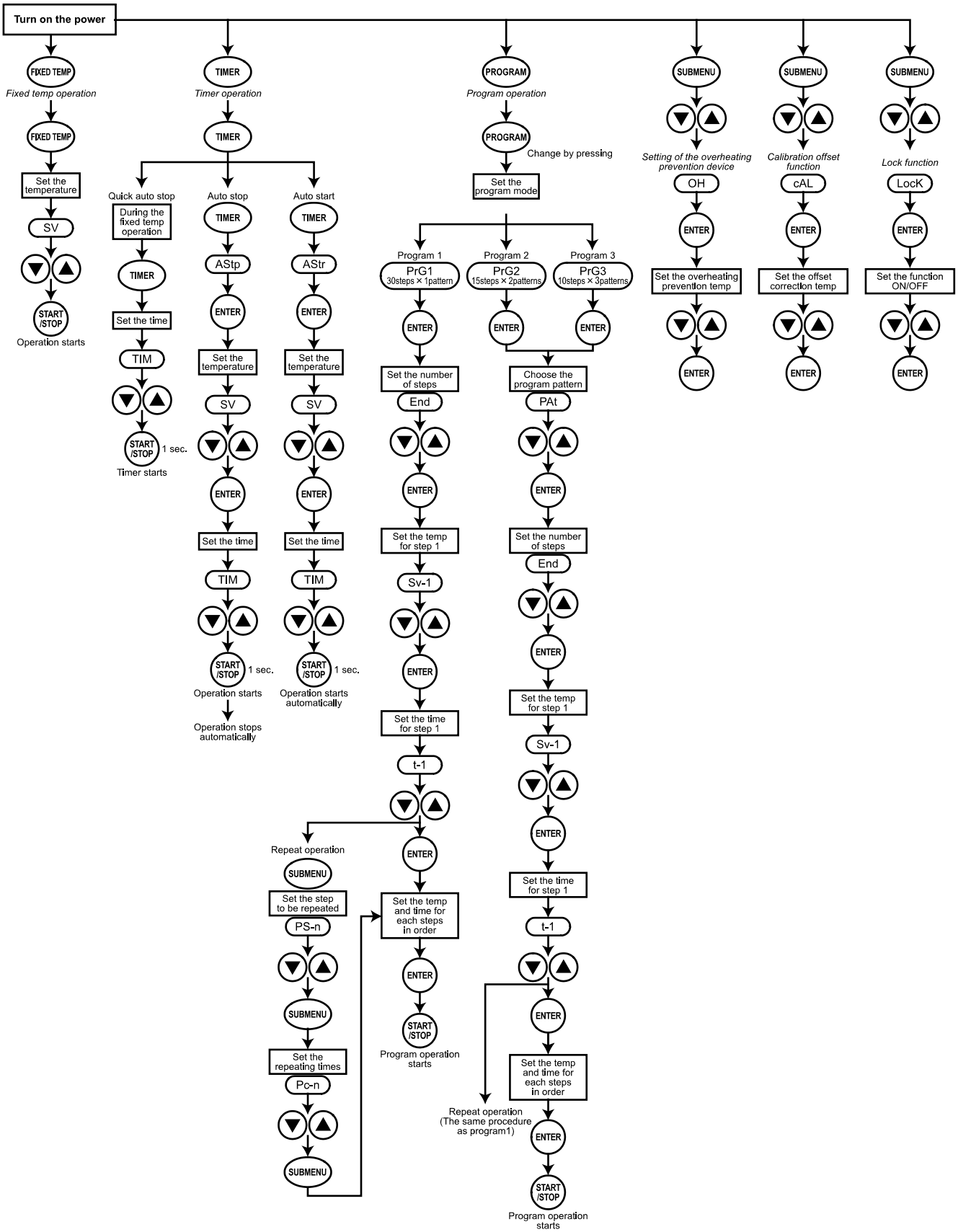
Operation Mode and Function List

The operation function of this unit is as follows;

No.	Name		Description	Page
1.	Overheating prevention function	Auto overheating prevention function	This function is set to be automatically activated (auto reset) when the temperature exceeds the setting temperature by 12℃.	P. 21
		Overheating prevention device	Though the device shares power source, display, and key input with the controller, it has independent temperature measurement circuit, CPU, sensor and output circuit. Overheating prevention temperature can be set using the operation panel. The unit stops operation when the device is activated. The unit starts operation again when the POWER switch is pressed again (manual reset).	
2	Door open pause function		When the door is opened, the heater and fan in the chamber will stop working and try their best to prevent the clean high temperature gas in the chamber from exchanging a lot with the low temperature dirty air outside the chamber. Maintain the clean class and temperature in the chamber as much as possible even when the door is opened.	P. 36
3	Calibration offset function		This calibration offset function is for calibrating the difference occurred between the required in- furnace temperature and control temperature (sensor temperature) of the controller. This unit can be calibrated toward either plus side or minus side of the whole temperature range.	P. 37
4	Overheating prevention temperature calibration function		The temperature of overheating prevention device is automatically corrected when the temperature of controller is collected.	-
5	Recovery at power failure		The unit starts operation with the same condition as just before power failure if it occurs during operation. Press the START/STOP key to start the unit again.	-
6	Setting value locking		This function locks the established operation status. It can be set and cancelled with the SUBMENU key.	P. 37

Operation Mode, Function Setting Key, and Characters

The operation mode setting and function setting use the key operation and characters show in the following figure.



Setting of Overheating Prevention Device

The unit has the overheating prevention device (manual reset) that consists of independent temperature measurement circuit, CPU, sensor and output circuit (it shares power source, display, and key input with the controller) in addition to the automatic overheating prevention function (auto reset) in the controller.

Setting range/function

The unit has failsafe functions against overheating. One of them is built in the controller and previously set at factory shipment so to be automatically activated when the temperature exceeds the setting temperature of temperature controller by 12℃, where the heater repeats on and off.

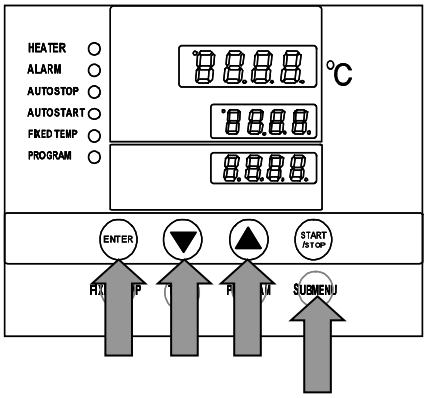
The other is united with the controller, which can be set by operating the keys on the controller.

The setting range of latter is from 0℃ to max set temperature of main controller + 50℃.

In case the temperature in furnace exceeds the setting temperature of controller to reach to that of overheating prevention device, the circuit is shut off and "Er19" is displayed with blinking on the screen of controller with buzzer sound.

If the device is once activated,"Er19"continues to be displayed until the power is newly turned on.

Temperature setting procedure



1. Turn on the power (turn on the breaker in front)

- The default value is displayed for about four seconds after turning on the power. The screen then displays the initial setting. The current temperature in furnace, operation mode character and setting temperature of overheating prevention device are displayed on respective screens.

2. Set the temperature for overheating prevention

① Press the SUBMENU key.

② Press the "▼▲" several times to select the setting character of overheating prevention temperature "OH".

③ Press the ENTER key. The current setting temperature is displayed with blinking on the setting temperature screen.

Note: To prevent improper operation, set the value 20℃ or more over the setting temperature of controller.

④ Select the value using the "▼▲"and then press the ENTER key. This completes the setting.

Notes:

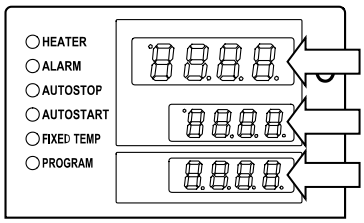
- The standard setting temperature of device is "the maximum setting temperature of unit plus 20℃" or "setting temperature plus 20℃". If the unit performs improper operation, increase it 5℃ more.
- The setting range of overheating prevention device is from 0℃ to max set temperature of main controller + 50℃. Improper setting of temperature may cause inoperative of unit, malfunction of device, e.g. it is activated during increasing in temperature in furnace, or unexpected accidents such as fire disaster. To prevent such matters, set a proper value. **The temperature of DE630C is set to 280℃ at factory shipment.**
- The purpose of overheating prevention device is to protect the unit from overheating. It does not intend to protect the samples, or to protect them from the accident caused by the use of explosive or inflammability.

Fixed Temperature Operation

Fixed temperature operation procedure

1. Turn on the power (turn on the breaker in front)

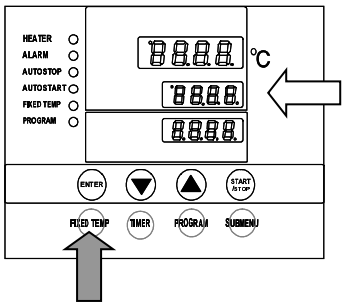
❖ The default value is displayed for about four seconds after turning on the power. The screen then displays the initial setting. The current temperature in furnace, operation mode character and setting temperature of overheating prevention device are displayed on respective screens.



Measurement temperature screen:
Displays the current temperature in furnace.

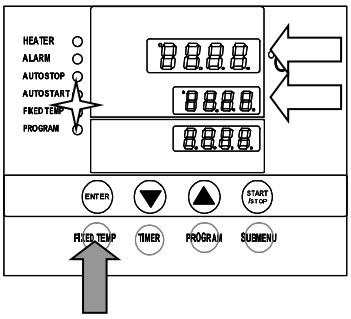
Setting temperature screen:
Displays the operation mode character. (Refer to Page 16)

Overheating prevention screen:
Displays the setting temperature of overheating prevention device



2. Select the operation mode

- Press the FIXED TEMP key to display "FIX", which indicates the fixed temperature operation, on the center display screen.



3. Set the temperature

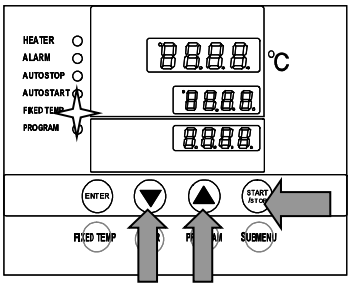
- Press the FIXED TEMP key again.
- The setting temperature screen displays the character "SV" which indicates the temperature setting. Also it displays the current setting temperature with blinking. The FIXED TEMP lamp blinks, too.
- Set the temperature by pressing the "▼▲".

4. Start operation

- Press the orange START/STOP key for about one second. The unit starts operation and the blinking FIXED TEMP lamp lights on.

5. Stop operation

- Press the orange START/STOP key for about one second. The unit stops operation and the FIXED TEMP lamp lights off. The screen returns to the initial setting screen.

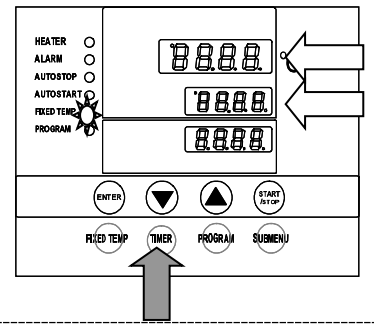


To correct or check setting…

Press the FIXED TEMP key again to correct or check the setting.
Changing the setting temperature during operation is also possible by pressing the FIXED TEMP key.

Quick Auto Stop Operation

Quick auto stop operation procedure



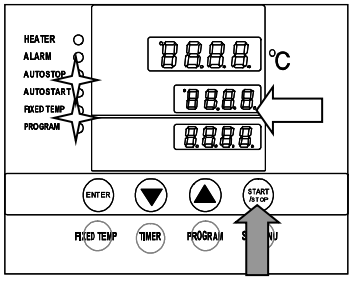
This operation is used to specify the period up to automatic stop, i.e., sets the auto stop timer during operation.

1. Set the time up to stop during fixed temperature operation

- Check that the FIXED TEMP lamp lights on and that the unit is under operation.
- Press the TIMER key.
- The measurement temperature display screen displays the character "tim", which indicates the timer setting. The setting temperature display screen displays the current setting time with blinking.
- Select the time by pressing the "▼▲".

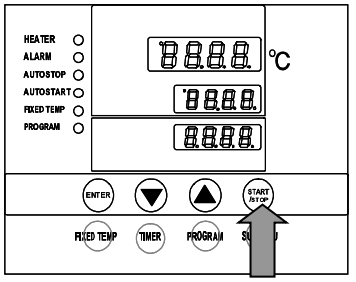
Timer function:

- The maximum setting time is "999hours and 50 minutes ".
- The time can be set in increments of a minute under 99 hours and 59 minutes.
- It can be set in increment of ten minutes over 100 hours.
- The "▼▲"can change the setting time quickly when it is pressed continuously. Press them discontinuously when fine adjustment is needed.



2. Start timer operation

- Press the START/STOP key for one second after deciding the time.
- Timer operation starts with the FIXED TEMP and AUTO STOP lamps lighting on.
- The timer is activated at the point when the START/STOP key is pressed.



3. Stop/terminate timer operation

- The operation stops automatically at setting time.
- Buzzer continues to sound for about five minutes at operation stop.
- The setting temperature screen displays the character "End", which indicates termination of operation, with the FIXED TEMP and AUTO STOP lamps lighting on. Press the START/STOP key to terminate the timer operation mode. The screen returns to the initial setting screen.

Quick Auto Stop Operation

Change the set temp. and set time, confirm the set value

If need to change the set temp. during quick auto stop operation, press FIXED TEMP key to enter the setting mode.

If need to change the set time during quick auto stop operation, press TIMER key to enter the setting mode.

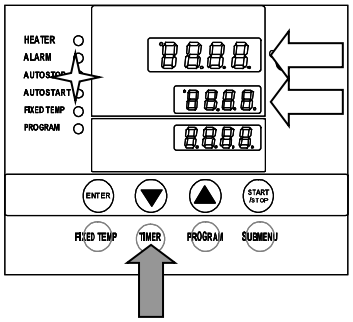
① After changing the time, press TIMER.
The remaining time on the timer is the time subtracting the elapsed time.
For example: set timer as 1hr30min, conduct quick auto stop operation, after 20min, change the set time to be 2hr, set it by TIMER, the remaining time is 1hr40min.

② After changing the time, press START/STOP for 1sec.
The quick auto stop operation proceeds again as per the changed time.
For example: set timer as 1hr30min, conduct quick auto stop operation, after 20min, change the set time to be 2hr, press START/STOP to set, the remaining time is 2hr.

Press ▼ key, switch over to display the set temp., operation mode and remaining time of set temp. displayer.

Auto Stop Operation

Auto stop operation procedure



This operation is used to specify the automatic stop time in the fixed temperature operation.

1. Set stop time

① Press the TIMER key on the initial screen.
Press the TIMER key again. The setting temperature display screen displays the character "AstP", which indicates the auto stop operation, with blinking.

② Press the ENTER key.
The measurement temperature screen displays the character "SV", which indicates the temperature setting. The setting temperature screen displays the current setting temperature with blinking. The AUTO STOP lamp blinks, too.

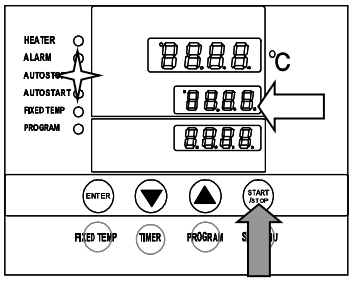
③ Set the temperature using the "▼▲".

④ Press the ENTER key again.
The measurement temperature display screen displays the character "tim", which indicates the timer setting. The setting temperature display screen displays the current setting time with blinking.

⑤ Set the time using the "▼▲".

Timer function:

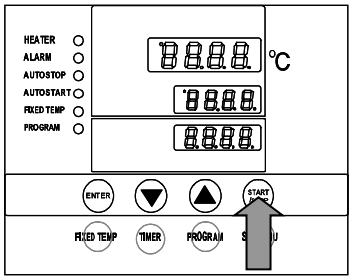
- The maximum setting time is "999hours and 50 minutes ".
- The time can be set in increments of a minute under 99 hours and 59 minutes.
- It can be set in increment of ten minutes over 100 hours.
- The "▼▲"can change the setting time quickly when it is pressed continuously. Press them discontinuously when fine adjustment is needed.



2. Start timer operation

- Press the START/STOP key for one second after deciding the time.
- Timer operation starts with the AUTO STOP lamp lighting on.
- The timer is activated at the point when the temperature in furnace (measurement temperature) reaches to the setting temperature.

Auto Stop Operation



3. Stop/terminate timer operation

- The operation stops automatically at setting time.
- Buzzer continues to sound for about five minutes at operation stop.
- The setting temperature screen displays the character "End", which indicates termination of operation, with the FIXED TEMP and AUTO STOP lamps lighting on. Press the START/STOP key to terminate the timer operation mode. The screen returns to the initial setting screen.

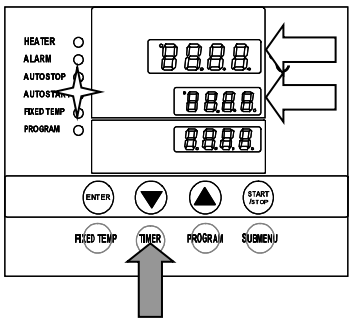
To correct or check setting…

Changing the setting temperature or time during operation is possible by pressing the TIMER key. Use the "▼▲" to change the setting value. Press the ENTER key respectively after changing the setting.

Press the "▼" to display the setting temperature, operation mode and residual time on the setting temperature screen.

Auto Start Operation

Auto start operation procedure



This operation is used to specify the period up to automatic start after power on.

1. Set start time

① Press the TIMER key on the initial screen.
Press the TIMER key again. The setting temperature display screen displays the character "Astr", which indicates the auto start operation, with blinking.

② Press the ENTER key.
The measurement temperature screen displays the character "SV", which indicates the temperature setting. The setting temperature screen displays the current setting temperature with blinking. The AUTO START lamp blinks, too.

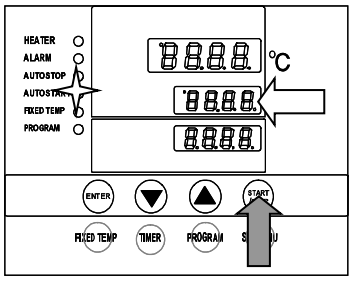
③ Set the temperature using the "▼▲".

④ Press the ENTER key again.
The measurement temperature display screen displays the character "tim", which indicates the timer setting. The setting temperature display screen displays the current setting time with blinking.

⑤ Set the time using the "▼▲".

Timer function:

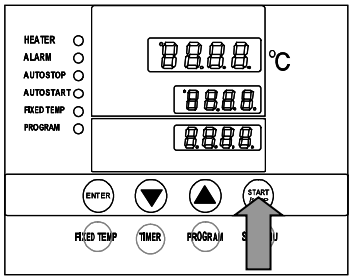
- The maximum setting time is "999 hours and 50 minutes ".
- The time can be set in increments of a minute under 99 hours and 59 minutes.
- It can be set in increment of ten minutes over 100 hours.
- The "▼▲"can change the setting time quickly when it is pressed continuously. Press them discontinuously when fine adjustment is needed.



2. Start timer operation

- Press the START/STOP key for one second after deciding the time.
- Timer operation starts with the AUTO START lamp lighting on.

Auto Start Operation



3. Stop/terminate timer operation

- The operation starts automatically at setting time.
- Press the START/STOP key for one second to stop or terminate operation. The screen returns to the initial setting screen.

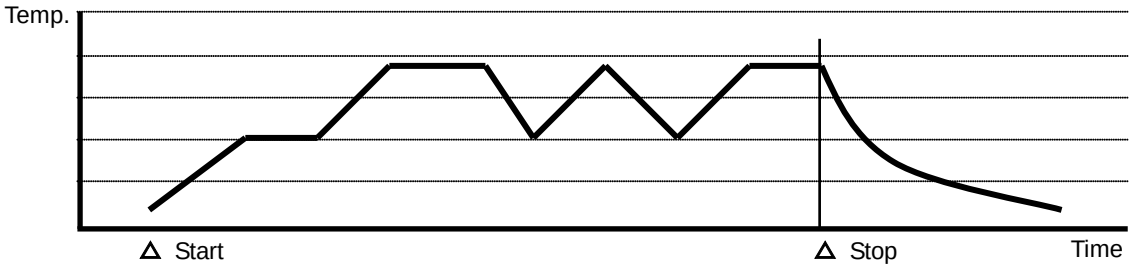
To correct or check setting…

Changing the setting temperature or time during operation is possible by pressing the TIME”key. Use the "▼▲" to change the setting value. Press the ENTER key respectively after changing the setting. They are not changeable after the unit starts operation. In this case, stop the operation by pressing the START/STOP key, then set the value again.

Press the "▼" to display the setting temperature, operation mode and residual time on the setting temperature screen.

Program Operation

This operation is used to change the temperature according to the setting temperature and time.



Program types

Six patterns of program types maximum can be input.

PrG1	**-**	1 program pattern using 30 steps maximum can be created.
PrG2	**PAt1**	2 program patterns using 15 steps maximum can be created.
	PAt2	
PrG3	**PAt1**	3 program patterns using 10 steps maximum can be created.
	PAt2	
	PAt3	

Before inputting program…

Input program patterns before program operation.

① Check the number of steps in a created program and their setting temperature/time. Refer to page 27.

② Check the temperature rise/fall capability of the unit. Set the time within the capability above. Suppose, for instance, that in the unit which has capability of increasing or decreasing temperature by 50℃ within 15 minutes, about 30 minutes is needed to increase or decrease temperature by 100℃ from current temperature

Repeat function:

Repeat function is useful in case the operation uses the program repeating the same program steps. Refer to page33 for the function.

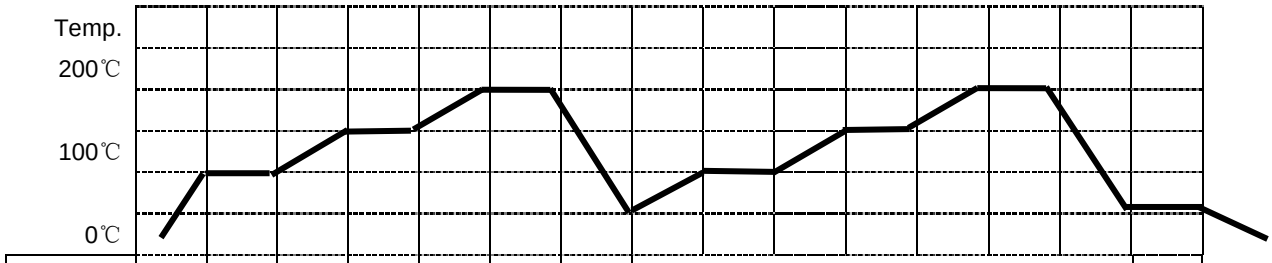
③ Check if the controller has sufficient free pattern for the number of steps to be created. The steps, however, using the repeat function mentioned above are not counted.

Program Operation

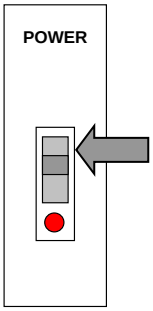
Program creation

The program pattern below is explained as an example.

1. Program pattern example



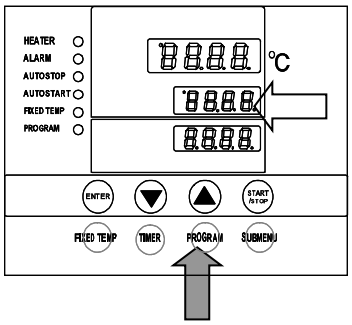
Step	1	2	3	4	5	6	7	← Repeat function → The number of steps is not counted.	8
Temp.(℃)	100	100	150	150	200	200	50		50
Time(min.)	0.25	0.30	0.15	1.30	0.25	3.00	2.30		3.00



2. Turn on the power

- Turn on the power switch of the unit.
- The display on the controller lights on.
- The initial screen is displayed for about four seconds, then the measurement temperature (temperature in furnace) is displayed.

❖ The initial screen displays the software version information, sensor used and setting temperature of overheating prevention device.



3. Select program mode/program pattern

① Press the PROGRAM key once.
The measurement temperature display screen displays the previous program mode.
Press the PROGRAM key again to display the next program mode.

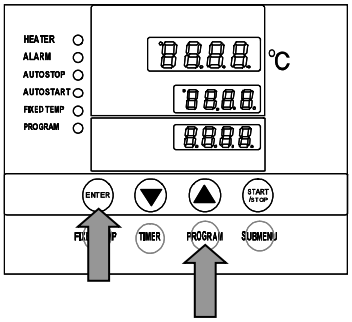
② Select the mode and press the ENTER key.

- When PrG1 is selected, the measurement temperature display screen displays "End".
- When PrG2 is selected, the measurement temperature display screen displays the program pattern "PAt1". For the pattern of PrG2, select "1" or "2" using the "▲▼". Press the ENTER key again. The measurement temperature display screen displays "End".
- When PrG3 is selected, the measurement temperature display screen displays "PAt1". For the pattern of PrG3, select "1", "2" or "3" using the "▲▼". Press the ENTER key again. The measurement temperature display screen displays "End".

❖ Any of PrG1. PrG2 or PrG3 can be selectable in the program example above, where 8 steps maximum are used.

Program Operation

The example shown below explains the method of program registration using PrG3.



4. Register program

① Select PrG3 referring to 3 mentioned above..

② Input the number of steps, temperature and time for respective steps using the program creation sheet.

③ Press the ENTER key. The PA t 1 is displayed with blinking.
("End" is displayed if PrG1 is selected. In this case, go to ⑥)

④ Select the unused pattern from among Pat1, Pat2 and Pat3 using the "▲▼".

⑤ Press the ENTER key. "End" is displayed and the step number is also displayed with blinking.

❖ "End" is a character which indicates the total step number to be used. "8" will be input here.

⑥ INPUT "8", which is the total step number to be used here, using the "▲▼".

⑦ Press the ENTER key. The character "SV-1", which indicates the setting temperature of the first step, is displayed. The current setting temperature is also displayed with blinking.

⑧ Set the temperature of the first step using the "▲▼".

⑨ Press the ENTER key. The character "t-1", which indicates the setting time of the first step, is displayed. The current setting time is also displayed with blinking.

❖ Before setting the time, check the temperature rise/fall capability of unit.

❖ For example, about 60 minutes is needed to increase the temperature from room temperature to 210℃. It takes about 1 minute to increase the temperature by 3℃. Add an extra considering the temperature stability time.

❖ The setting time of timer in respective steps is 999 hours and 50 minutes maximum.

⑩ After the time is set, press the ENTER key.

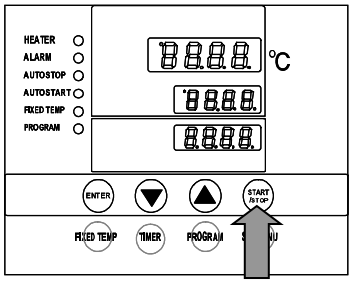
⑪ The character "SV-2", which indicates the setting temperature of the second step, is displayed. In the same way, input the temperature and time for respective steps using the program creation sheet.
The different method is necessary where program repeat function is used. In this case, press the SUBMENU key after setting the time (t-7 in the example) in the step where the repeat operation is to be used (Step 7 in the example). This enters to the repeat function setting mode.

❖ Follow the "Use program repeat function" in page 29 for the input method of program repeating function.

⑫ The screen returns to the initial setting screen after the setting of temperature and time in the final step is completed.

Verification run: Make sure to check the setting temperature and time by operating the unit without load before performing actual run with samples.

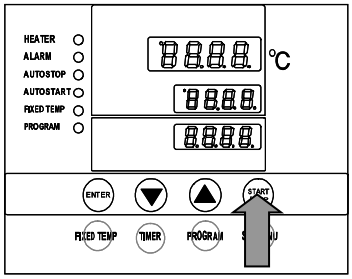
Program Operation



5. Start program operation

- Press the START/STOP key for about one second. The program operation previously set starts.
- The PROGRAM lamp lights on and the setting temperature screen displays the step currently under operation.

❖ Press the "▼" to check the setting temperature and residual time of step currently under operation on the setting temperature screen.



6. End program operation

- Buzzer continues to sound for about five minutes at operation stop.
- The measurement temperature screen displays the character "END", which indicates the termination of program.
- Press the START/STOP key to return to the initial screen.

Timer function:

- The maximum setting time is "999 hours and 50 minutes".
- The time can be set in increments of a minute under 99 hours and 59 minutes.
- It can be set in increment of ten minutes over 100 hours.
- The "▼▲"can change the setting time quickly when it is pressed continuously. Press them discontinuously when fine adjustment is needed.

To correct or check setting…

Press the FIXED TEMP key to correct the created program or to check the setting value. The screen returns to the former one, where correction or check is possible.

Last screen is displayed when the FIXED TEMP key is once pressed.

Note: Correction or check should be made on the program setting screen.

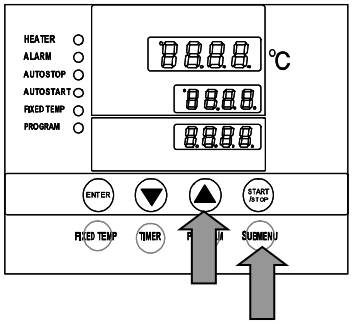
Wait operation in program operation

The succeeding step does not start in case the measurement temperature does not reach to, or exceeds the setting temperature when a program goes to the next step in program operation. This unit, however, is previously set to carry out the next step if the measurement temperature is within ±3℃ of the setting temperature.

Program Operation

Use program repeat function

This section explains how to register the program repeat (repeating a program pattern) in program operation.



This section explains the registration procedure of program using repeat function in "4. Register program" above.

The procedure sets the step number to be repeated "PS-n" and repeating times "Pc-n"(n: step number)

① Press the SUBMENU key in stead of the ENTER key after setting the time (t-7 in the example) in the step where the repeat operation is to be used (Step 7 in the example). This enters to the repeat function setting mode.

② The measurement temperature screen displays the character "PS-n", which indicates the step to be repeated in the program pattern. The measurement temperature screen indicates "PS-7" in the example because repeat function is used at the seventh step. The step number 1 to 7 can be input in the setting temperature display screen. Enter the number (1 in the example) using the "▲▼".

③ Press the SUBMENU key.
The measurement temperature screen displays the character "Pc-n", which indicates the repeating times. Enter the value of repeating times （2 in the example） with the "▲▼".

④ The screen goes to that for the next step when the SUBMENU key is pressed again.
The screen to input the Sv-8 is displayed next in the example.

To correct or check setting…

Correction of setting during the repeat setting mode is impossible.
To correct or check the setting, end the setting of step currently input. Press the FIXED TEMP key after the temperature setting screen for the next step appears. The screen returns to the former one and re-setting is possible.

Note: Correction or check should be made on the program setting screen.

Program Operation

Programming Preparation Form 1

(Please use this form by making copies)

Register with:	PrG1 PrG2 PrG3	PAt1 PAt2 PAt3	No.	
Project Name			Date	
			Programmer	

Program Pattern

																				30
																				29
																				28
																				27
																				26
																				25
																				24
																				23
																				22
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																				8
																				7
																				6
																				5
																				4
																				3
																				2
																				1
400˚C					300˚C					200˚C					100˚C					Step No.

Program Operation

Programming Preparation Form 2

(Please use this form by making copies)

Register with:	PrG1 PrG2 PrG3	PAt1 PAt2 PAt3	No.	
Project Name			Date	
			Programmer	

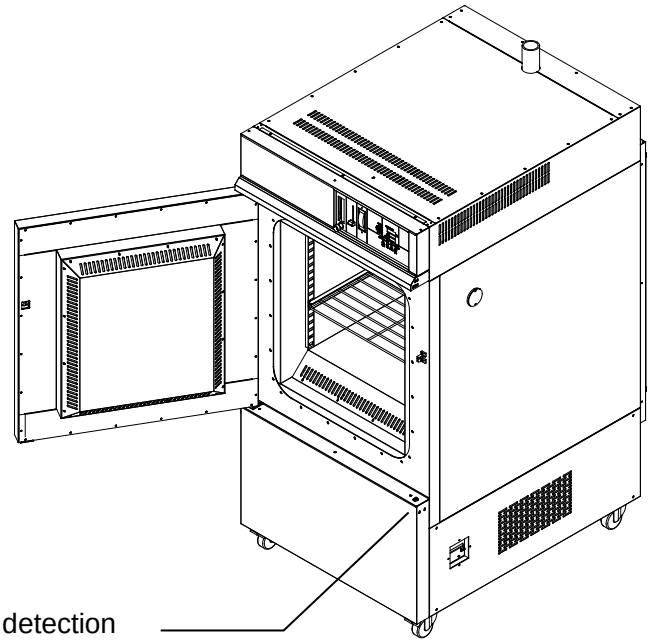
Input Value

	Temperature (℃)	Time (min.)	Repeat Function
Step 1		:	To/Times
Step 2		:	/
Step 3		:	/
Step 4		:	/
Step 5		:	/
Step 6		:	/
Step 7		:	/
Step 8		:	/
Step 9		:	/
Step 10		:	/
Step 11		:	/
Step 12		:	/
Step 13		:	/
Step 14		:	/
Step 15		:	/
Step 16		:	/
Step 17		:	/
Step 18		:	/
Step 19		:	/
Step 20		:	/
Step 21		:	/
Step 22		:	/
Step 23		:	/
Step 24		:	/
Step 25		:	/
Step 26		:	/
Step 27		:	/
Step 28		:	/
Step 29		:	/
Step 30		:	/

Door open pause function

Door open pause function

When the door is opened, the heater and fan in the chamber will stop working and try their best to prevent the clean high temperature gas in the chamber from exchanging a lot with the low temperature dirty air outside the chamber. Maintain the clean class and temperature in the chamber as much as possible even when the door is opened.



Open the door in standby mode

①When in standby mode after power-on, the door is closed, and the door detection switch detects that the door is closed. The circulating fan in the chamber runs to clean the air in the chamber and maintain the clean class in the chamber.

②Once the door is opened (the door detection switch does not detect the door), the controller will judge that the door is opened and will forcibly stop the operation of circulating fan. The setting temperature displayer of controller will display door, prompt that the door is opened.

③After the door is closed, the door detection switch detects that the door is closed, and the circulating fan in the chamber resumes operation.

Open the door in running state

①When running, the door is closed, and the door detection switch detects that the door is closed, and the equipment is in normal operation.

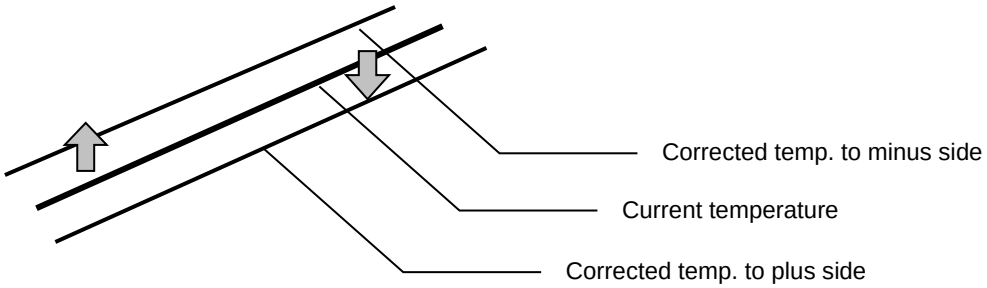
②Once the door is opened (the door detection switch does not detect the door), the controller will judge that the door is opened and will immediately stop the operation of circulating fan and heater, all timers will pause. The setting temperature displayer of controller will display door, prompt that the door is opened.

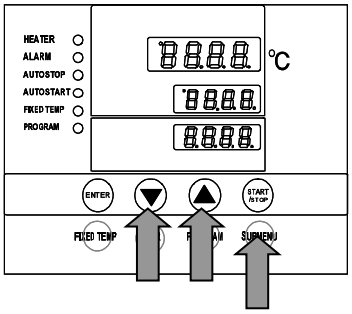
③After the door is closed, the door detection switch detects that the door is closed, and returns to the state before the door is opened. All timers continue to time until the end of operation.

Other Functions

Use calibration offset function

Calibration offset is a function which corrects the difference between the temperature in furnace and that of controller (sensor temperature) if arises. The function parallel corrects the difference either to the plus or minus side within the whole temperature range of unit. The function can be set or cancelled by the SUBMENU key.





① Start operation with the target setting temperature. Check the temperature in furnace (temperature of sample) with a thermograph after it is stabilized.

② Check the difference between the setting temperature and that in furnace (temperature of sample).

③ Press the SUBMENU key. Select the character "cAL", which indicates the calibration offset, using the "▲▼", and then press the ENTER key.

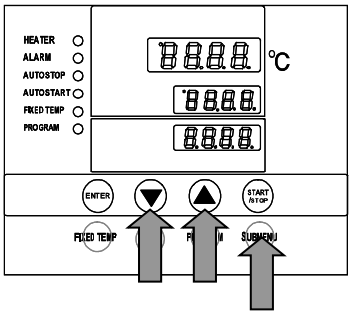
④ Input the difference using the "▲▼" and then press the ENTER key. This completes the setting.

❖ The setting range of offset correction temperature is +99℃ to plus side and -99℃ to minus side respectively.
When it is set to the minus side, the temperature on the measurement temperature display screen falls by the setting temperature, while the temperature on furnace rises.
When it is set to the minus side, the temperature on the measurement temperature display screen rises by the setting temperature, while the temperature on furnace falls.

❖ The unit has two-point correction function, which performs offset between low-temperature zone and high-temperature zone. Please consult our local branch office when carrying out validation of temperature controller.

Use lock function

This function locks the operation status previously set. The function can be set or cancelled by the SUBMENU key.



① Press the SUBMENU key. Select the character" "Lock", which indicates the lock of setting value, using the "▲▼", and then press the ENTER key.

② The setting temperature screen displays "oFF". The setting value is locked when it is turned to "on" using the "▲".

③ Press the SUBMENU key again to cancel the lock. Select the character" "Lock", which indicates the lock of setting value, using the "▲▼", and then press the ENTER key. Select "oFF" with the "▼" and then press the ENTER key to cancel the function.

❖ All keys other than the START/STOP and SUBMENU keys are lock when the lock function is on.

WARNING!

If a problem occurs

If smoke or strange odor should come out of this unit for some reason, turn off the power key right away, and then turn off the circuit breaker and the main power. Immediately contact a service technician for inspection. If this procedure is not followed, fire or electrical shock may result. Never perform repair work yourself, since it is dangerous and not recommended.

Substances that cannot be used

Never use explosive substances, flammable substances and substances that include explosive or flammable ingredients in this unit. Explosion or fire may occur. (Refer to page 51 "List of Dangerous Substances".)

CAUTION!

Do not step on this unit

Do not step on this unit. It will cause injury if this unit fall down or break.

Do not put anything on this unit

Do not put anything on this unit. It will cause injury if fall.

During a thunder storm

During a thunderstorm, turn off the power key immediately, then turn off the circuit breaker and the main power. If this procedure is not followed, fire or electrical shock may be caused.

When open/close door…

Do not get close to the traveling range of door when opening or closing it. It may hit your hands or head and result in an injury.

Keep door close during operation.

- The heater is heated abnormally if the door is left opened during operation. Make sure to operate the unit with the door closed.
- Do not leave the door open after operation in order to cool down the samples quickly. The heat in furnace may cause deformation of control panel or breakdown of control devices.

Do not use corrosive sample

Stainless steel SUS304 is used for interior; however, it may be corroded by strong acid etc. And the door packing made of silicon rubber may be corroded by some kind of solvent, e.g. alkaline, oil, halogen etc. Do not use the sample includes those substances.

Use under proper temperature range

Operational temperature range of DE630C is Room temp. ＋30℃～260℃.

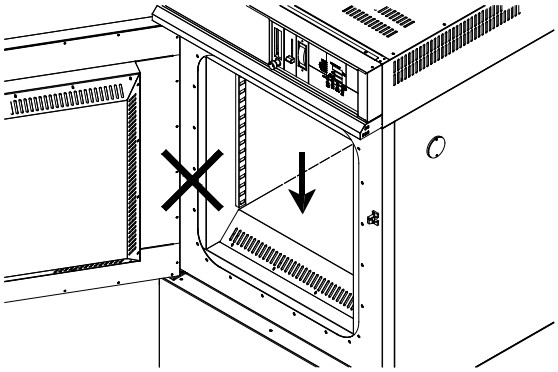
Never set the temperature out of range.

Setting of sample

Since the withstand load of the attached shelf plate is about 30kg per one plate, do not set heavier sample than 30kg. When setting several sample, set them as dispersed as possible. Too much sample setting could cause the improper control of the temperature. For keeping the proper temperature, keep more than 30% space against whole size of the shelf plate, and set the sample.

Please do not place the samples on the bottom of chamber.

If the samples are directly placed on the bottom of chamber, it will not only cause the poor machine performance, but also cause the chamber temperature to be abnormally high, resulting in accidents. Therefore, do not place the samples directly on the bottom of chamber.
There are attached shelf plates for placing samples, please install the shelf plates on the interior shelf brackets.



Open the door during operation

The door of this unit can be opened briefly during operation below 100℃. Before operation, please wear thick cotton gloves or take other safety measures for heat insulation. The firefighting devices should be set around the unit, use them when failure or misoperation occurs.

After door open, heating and air circulation stop, because door open would cause heat loss in the chamber, and outer particles would also enter into the chamber due to free movement, so the time of door open/close and putting/taking out samples should be as short as possible. Inner door plate, inner chamber walls, shelf plates and samples are high-temperature, do not contact them with human body without any safety measures for heat insulation.

Never open the door over 100℃, the high temperature from chamber would damage the temperature controller above the door.

Do not touch high-temperature parts during operation

During operation or after door close, do not touch door and exhaust port to avoid scald.

Do not put foreign matters in the chamber

Do not insert metals or flammable matters into the vent hole or exhaust port, or else scald, fire or electric shock may occurs.

Recovering after power failure

When power is supplied after a power failure, the device automatically starts operation again with the same state as just before the power failure. It is danger that the device starts unattached operation after a power failure. We recommend for you to turn off the switch of this unit if a power failure occurs during operation.

Double stacking

Use the specified fittings included in the optional accessory for double stacking.

Do not make direct double stacking.

Suggest to use metal exhaust pipe to connect the exhaust port to outdoor

Because hot air and waste gas due to baking samples would be exhausted from the exhaust port, we suggest to use metal pipe to connect the exhaust port to outdoor when installing. If the waste gas need to be treated, please consider to set a treatment equipment.

Handling Precautions

Treat samples with moisture

When treating samples with moisture, please turn on the exhaust damper to heat and remove water. If there is water attaching inside the device, it may cause electric shock, unit failure or HEPA filter aging.

Do not conduct treatment of humid samples.

Samples treatment

Convection circulation is adopted in order to ensure uniform temperature distribution. When treating powder or small objects, make sure the samples would not fly apart. Because combustible material or metal entering heater may result in fire or electric shock.

If the sample quantity or heat load is larger, the temperature rise time may become longer. Please confirm proper quantity as per demand. Moreover, when treating febrile samples (only limited to those samples not cause explosion, fire), the temperature display may be unstable.

After installing

It may cause injure to a person if this unit falls down or moves by the earthquake and the impact. etc.. To prevent, take measures that the unit cannot fall down.

Daily Inspection and Maintenance

Warning

- Be sure to pull out the power cord except under special circumstances before trying to do inspection and maintenance works.
- Start these works after the device has returned to the normal temperature.
- Never try to disassemble the unit.

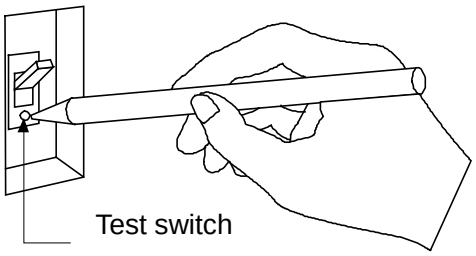
Caution

- Please use the cleanroom wiper, alcohol and neutral detergent to wipe the stains on the metal surface. Irritating substances such as gasoline, kerosene and banana oil are strictly prohibited, because they may cause deformation, deterioration and discoloration.
- Do not use any liquid to contaminate, splash or spray the filter, otherwise the filter will fail.
- Do not clean the filter and sealing strip with any object, otherwise the filter will be damaged.
- Do not disassemble the filter during equipment spot inspection or maintenance, otherwise the filter and sealing material will be damaged.
- When the filter is seriously blocked, do not clean it. Contact your agent or our business department to replace with a new filter.

Every month

●Please inspect the ELB performance regularly.

- Power on to test
- Firstly, turn ELB on
- Then, use a tip (like pencil tip) to press the test switch of ELB. If ELB breaks off, it's normal.



HEPA filter replacement

● Please inspect the filter regularly and replace in time.
At room temperature, operate with door open (the temperature controller is standby, press the door detector switch after door open), if the differential pressure gauge indication is higher than the following values, HEPA filter need replacement.

	50Hz zone	60Hz zone
DE630C	200Pa	230Pa

When not using this unit for long term / When disposing

⚠CAUTION!

When not using this unit for long term…

- Turn off the power and disconnect the power cord.

⚠WARNING!

When disposing…

- Keep out of reach of children.
- Remove the door and driving parts.
- Treat as large trash.

Environmental protection should be considered

We request you to disassemble this unit as possible and recycle the reusable parts considering to the environmental protection. The feature components of this unit and materials used are listed below.

Component Name	Material
Major mechanism part components	
Exterior	Cold rolled steel plate with coating
Interior	Stainless steel SUS304
Heat insulation material	Aluminum silicate wool board
HEPA filter	Glass fiber filter paper
Door packing	Foam silicon rubber
Handle	Aluminum alloy, epoxy resin coating
Hinge	Zinc alloy
Marker	PET resin film
Major electric parts	
Heater	Stainless steel pipe heater SUS304
Motor	Steel plate, copper wire, resin coated wire and other
Circuit boards	Board, condenser, resistor, transformer and other
Power cord, Wiring and others	Synthetic rubber or resin coated wiring materials

Safety Device and Error Code

This unit has an automatic diagnosis function built in the controller and safety devices independent of the controller. The table below shows the cause and the solution method when the safety device operates.

Error Code:

When an abnormal condition occurs, an error code appears and the alarm lamp lights in the controller, the buzzer sounds simultaneously. Record the error code and turn off the power of device immediately.

Safety Device	Notify	Cause/Solution
Sensor trouble detection	"**ALARM**" lamp lights on, "**Er.01**" appears	• Temperature sensor is broken or disconnected. • Make a call for service.
SSR short circuit	"**ALARM**" lamp lights on, "**Er.02**" appears	• SSR short circuit • Make a call for service.
Heater disconnection	"**ALARM**" lamp lights on, "**Er.03**"appears	• Heater disconnection • Make a call for service.
The contact fusion of the main relay is abnormal	"**ALARM**" lamp lights on, "**Er.10**"appears	• The contact fusion of the main relay is abnormal • Please contact the customer service center.
Memory error	"**ALARM**" lamp lights on, "**Er.15**" appears	• Failure in internal memory. • Make a call for service.
Internal communication error	"**ALARM**" lamp lights on, "**Er.17**" appears	• Failure in internal communication or temperature inputting circuit. • Make a call for service.
Overheating	"**ALARM**" lamp lights on, "**Er.19**" appears	• Overheating prevention device is in operation. • Confirm the set temperature of the overheating protection device. • If the state does not recover, make a call for service.
Circulating fan overheat	"**ALARM**" lamp lights on, "**Er.20**" appears	• Circulating fan is overloaded • If the state does not recover, make a call for service.
Measurement temperature error	"**ALARM**" lamp lights on, "**----**" appears	• Measurement value is out of display range. • Make a call for service.

Trouble Shooting

If any of the symptoms below occurs:

Symptom	Check
Turning the ELB to on will not activate the unit.	* If the power cord is connected to the power supply securely. * If power outage is not occurring.
Temperature does not rise.	* If the set temperature is below that in the device. * If the door is closed in place. * If the power supply voltage has declined. * If the ambient temperature is not low. * If cooling load inside the chamber is too large. * If the exhaust port is opened.
Temperature fluctuates during operation.	* If the set temperature is appropriate. * If the power supply voltage has declined. * If ambient temperature fluctuates widely. * If the load inside the chamber is getting large.
Displayed temperature differs from the measurement.	* If the calibration offset setting is not other than “0”. Set it to “0.” Confirm settings in on page 37.

In the case if the error other than listed above occurred, turn off the power switch and primary power source immediately. Contact the shop of your purchase or nearest Yamato Scientific Chongqing.

When requesting a repair

When requesting a repair

If any trouble occurs, immediately stop operation, turn the ELB off, pull out the power plug and contact your dealer or our sales office.

Information necessary for requesting a repair

- ◆Model name of the product
- ◆Serial number
- ◆Date (y/m/d) of purchase

} Confirm on the warranty card or the nameplate installed on the unit.

- ◆Description of trouble （as in detail as possible）

Be sure to indicate the warranty card to our service representative.

Warranty card (attached separately)

- Warranty card is given by your dealer or one of our sales offices and please fill in your dealer, date of purchase and other information and store securely.

- Warranty period is one full year from the date of purchase. Repair service for free is available according to the conditions written on the warranty card.
- For repairs after the warranty period consult your dealer or one of our sales offices. Paid repair service is available on your request when the product's functionality can be maintained by repair.

Minimum holding period of repair parts

The minimum holding period of repair parts for this product is seven years after end of production.
Repair parts here refer to parts necessary for maintaining performance of the product.

Specification

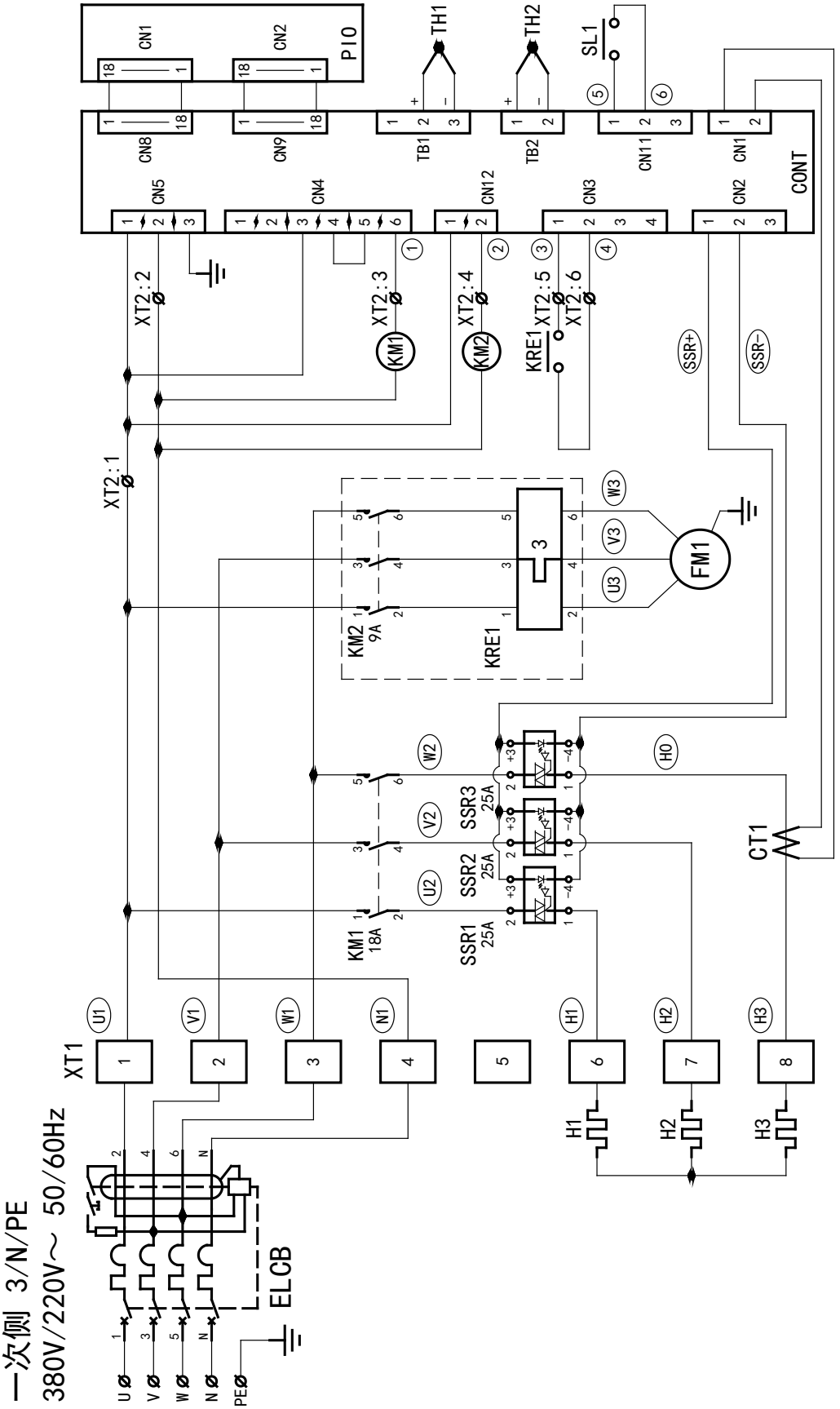
Model		DE630C
Temperature		5℃ to 35℃（Indoor use only）
Relative humidity		≤85%RH
Altitude		Up to 2,000 meters
System		Forced convection circulation
Performance ※1	Temp. operating range	RT＋30℃～260℃
	Temp. adjusting accuracy	±0.3℃ (at 260℃, exhaust port fully closed)
	Temp. distribution accuracy	±2.5℃ (at 260℃, exhaust port fully closed)
	Temp. rise time	Approx. 70min (RT～260℃)
	Clean class	Keep clean class 100 at stable temp.
Structure	Exterior	Cold rolled steel plate with coating
	Interior	Stainless steel plate
	Heat insulation material	Aluminum silicate wool board
	Heater	Stainless steel heating tube
	Heater	3.6kW
	Motor	370W 1pc
	Exhaust hole	ID 60mm top
	Cable hole	ID 30mm right side
	Differential pressure gauge	0～500Pa
	HEPA filter	High temp. resistance HEPA filter (dust collection rate: 0.3 μm particle collection rate: more than 99.95%)
Control parts	Controller	VS6 type program controller
	Control system	PID control for heater output by microcomputer
	Setting system	Digital setting by menu key and up/down keys
	Display system	Measured temp. display: green 4-line LED digital display
		Set temp. display: red 4-line LED digital display
	Time	1min-99hr59min and 100hr-999.5hr (with timing function)
	Time resolution	1min and 10min
	Operation mode	Fixed temperature, Quick auto stop, Auto stop, Auto start, Program operation
	Program mode	3 modes 30 segments, program circulation function
	Sensor	The sensors of control and overheat protector are the same type
	Additional functions	Lock function, Auto recovering after power failure, Calibration offset, Pause function for door open
Safety device	Self-diagnosis functions	Failure of temp. sensor, heater, display, measured temp., SSR short circuit, auto overheat prevention, internal communication, main relay and circulating fan overheating
	Safety device	Circuit breaker, Overheating prevention device (controller all-in-one electronic type)
Spec.	External dimensions (W×D×H mm) ※2	600×600×600
	Internal dimensions (W×D×H mm) ※2	850×1145×1738
	Capacity	216L

Model		DE630C
Spec.	Load capacity of shelf plates	30kg/pc
	Shelf bracket steps	17 steps
	Shelf bracket pitch	30mm
	Power supply	380/220V～ 3N/TN-S 50/60Hz 6.5A
	Weight	Approx. 270kg
Accessories	Shelf plate	Stainless steel SUS304
		3 pcs
	Shelf bracket	6 pcs
	Instruction manual, warranty	One copy for each

※1 The performance under the condition of 3-phase 380/220V～ power source, RT 23℃±5℃, humidity 65％RH±20％, unloaded and exhaust port fully closed.

※2 Exclude bulges.

DE630C


一次侧 3/N/PE
380V/220V~ 50/60Hz
ELCB
XT1
XT2:1
XT2:2
XT2:3
XT2:4
XT2:5
XT2:6
KM1
KM2
KRE1
SSR1
SSR2
SSR3
FM1
CT1
TH1
TH2
SL1
PIO
CONT
TB1
TB2
CN1
CN2
CN3
CN4
CN5
CN8
CN9
CN11
CN12
H1
H2
H3
SSR+
SSR−

Symbol	Part name	Symbol	Part name	Symbol	Part name
QR	Earth leakage breaker (30mA)	M	Liquid sending pump drive motor	AD	Analog input module
XD	AC power distribution wiring terminal block	PLC	Programmable controller	DA	Analog output module
SF	Panel power switch	HMI	Touch screen	(MAD)	Analog input and output module
2GQ	Heat dissipation fan	LAN	Network switch	X	Outlet temperature sensor quick plug
FA	Fuse	2X,3X	Network interface socket for online use	3XD	Temperature output terminal block
2XD	Service socket	KA	Intermediate relay	3BT	Granulation temperature sensor
KF	Heating control main relay	KH	Pulse jet nozzle solenoid valve	2/3KA	Lifter up/down relay
BE	Heater current inductive switch	2KH	Pneumatic cleaning nozzle	4KA	Stirring start relay
KFX	Solid state relay	3KH	GAS connection solenoid valve	5KA	Spray/granulation switching relay
EB,2EB	Heating pipe	4KH	Spray solenoid valve	2M	Lifter motor (including capacitance C)
2KF	Blower control main relay	BG	Nozzle detection switch	3M	Stirring motor (including capacitance 2C)
2BE	Blower current transmitter	BT	Inlet temperature sensor (Pt100)	2BG	Granulation function detection switch
TR	Solid state voltage regulator	2BT	Outlet temperature sensor (Pt100)	3BG	Lifter lowest limit switch
GQ	Blower	3BE	Inlet temperature transmitter	4BG	Lifter highest limit switch
TB	DC power supply (DC24V)	4BE	Outlet temperature transmitter	5～7BG	Lifter in place limit switch
QCS	Liquid sending pump driver	BB	Overheat protector		

DE630C replacement parts

Symbol	Part Name	Specification	Manufacturer	Code No.
TH1, 2	Sensing line	T0304.01-30 K type Double DT630C	YSJ	H010901002
CONT	VS6 control board	VS6	YSJ	B011401053
PIO	VS display board	VS	YSJ	B011402007
	Signal cable	UL20861-18N*300mm	YSJ	B011299041
KM1	AC contactor	LC1-D18M7C	YSJ	A011003002
KM2	AC contactor	LC1-D09M7C	YSJ	A011003001
KRE	Thermal relay	LRD07C	YSJ	A011005011
SSR1～3	Solid state relay	KS15/D-38Z25-L	YSJ	A011006023
FM1	Motor	DT630C_01_01-13	YSJ	A011602004
SL1	Micro switch	Z-15GQ21-B	YSJ	A011505001
	Lock	C-104	YSJ	B080702001
ELB	Earth leakage breaker	iC65N-4P-C10A	YSJ	A010404003
		Vigi iC65 ELE 4P 40A 30mA AC	YSJ	A010499008
	HEPA filter	1FU-600-HDC1-30Y	YSC	B040300028
H1～3	Heater	DE630C_01_03-13	YSJ	H010901035

List of Dangerous Substances

Never use explosive substances, flammable substances and substances that include explosive or flammable ingredients in this unit.

EXPLOSIVE

EXPLOSIVE:	Ethylene glycol dinitrate (nitro glycol), Glycerin trinitrate (nitroglycerine), Cellulose nitrate (nitrocellulose), and other explosive nitrate esters
	Trinitrobenzene, Trinitrotoluene, Trinitrophenol (picric acid), and other explosive nitro compounds
	Acetyl hidroperoxide (peracetic acid), Methyl ethyl ketone peroxide, Benzyl peroxide, and other organic peroxides

FLAMMABLE

IGNITING:	Lithium (metal), Potassium (metal), Sodium (metal), Yellow phosphorus, Phosphorus sulfide, Red phosphorus, Celluloid compounds, Calcium carbide, Lime phosphate, Magnesium (powder), Aluminum (powder), Powder of metals other than magnesium and aluminum, Sodium hydrosulfite
OXIDIZING:	Potassium chlorate, Sodium chlorate, Ammonium chlorate, and other chlorate
	Potassium perchlorate, Sodium perchlorate, Ammonium perchlorate, and other perchlorate
	Potassium peroxide, Sodium peroxide, Barium peroxide, and other inorganic peroxide
	Potassium nitrate, Sodium nitrate, Ammonium nitrate, and other nitrate
	Sodium chlorite and other chlorites
	Calcium hypochlorite and other hypochlorites
INFLAMMABLE LIQUID:	Ethyl ether, Gasoline, Acetaldehyde, Propylene chloride, Carbon disulfide, and other flammable substances having a flash point of lower than -30℃
	Normal hexane, ethylene oxide, acetone, benzene, methyl ethyl ketone, and other flammable substances having a flash point of -30℃ or higher but lower than 0℃
	Methanol, Ethanol, Xylene, Pentyl acetate (amyl acetate), and other flammable substances having a flash point of 0℃ or higher but lower than 30℃
	Kerosene, Light oil (gas oil), Oil of turpentine, Isopentyl alcohol (isoamyl alcohol), Acetic acid, and other flammable substances having a flash point of 30℃ or higher but lower than 65℃
FLAMMABLE GAS:	Hydrogen, Acetylene, Ethylene, Methane, Propane, Butane, and other flammable substances which assume a gaseous state at 15℃ and 1 atm

※ Install the product according to the following: (Confirm separately for optional items or special specifications)

Model	Serial number	Date	Installation mgr. (company name)	Installation mgr.	Judgment

No.	Item	Implementation method	TOC No. Reference page of the operating instruction manual	Judgment
Specifications				
1	Included items	Check for number of staffs against the included item field	10. Specifications field P43	
2	Installation	・ Visual check of environmental conditions Caution: Take care for environment	2. Before operating the unit ・ On the installation site P4	
		・ Securing a space		
Operation-related matters				
1	Source voltage	・ Measure the user side voltage (outlet) with a tester ・ Measure voltage during operation (shall meet the standard) Caution: Always use a plug that meets the specification for attaching to the ELB.	2. Before operating the unit ・ Be sure to connect the ground wire. P4 ・ Power supply is …. P7 10.Specifications ・ Specification-power supply P43	
2	Operation start	・ Starts operation Performs fixed value operation, auto stop operation or auto start operation	2. Before operating the unit P4-8 ・ Installation procedures… 4. Operating procedures P14-34	
Description				
1	Operational descriptions	Explain operations of each component according to the operational instructions	4. Operating procedures P14-34 ・ Operating procedures 1. Safety precautions～13.List of dangerous materials P1-48	
2	Error codes	Explain the customer about error codes and procedures for release according to the operational instructions	8. Troubleshooting ～ 9. After sales service and warranty P40-42	
3	Maintenance and inspection	Explain operations of each component according to the operational instructions	6. Maintenance procedures P38 ・ Daily inspection/ maintenance	
4	Completion of installation Record items	・ Fill in the installation date and the installation mgr. on the nameplate of the main unit ・ Fill in necessary information items to the warranty card and hand it over to the customer ・ Explanation of the route for after-sales service	9. After sales service and warranty P42	

Responsibility

Please follow the instructions in this document when using this unit. Yamato Scientific has no responsibility for the accidents or breakdown of device if it is used with a failure to comply.
Never conduct what this document forbids. Unexpected accidents or breakdown may result in.

Note

- The contents of this document may be changed in future without notice.
- Any books with missing pages or disorderly binding may be replaced.

Instruction Manual for

Clean Constant Temperature Oven
DE630C
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