



ORIGINAL INSTRUCTIONS

Instruction Manual

Thermoelectric Bath

INR-244-757 (Air-cooled)



Refer to Declaration of Conformity for relevant Directives

1 Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution," "Warning" or "Danger." They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)^{*)}, and other safety regulations.

^{*)} ISO 4414: Pneumatic fluid power - - General rules relating to systems.
ISO 4413: Hydraulic fluid power - - General rules relating to systems.

IEC 60204-1: Safety of machinery - -Electrical equipment of machines. (Part 1: General requirements)

ISO 10218-1: Manipulating industrial robots -Safety etc.
This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.

- Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- To ensure safety of personnel and equipment the safety instructions in this manual must be observed, along with other relevant safety practices.

	Caution	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
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	Warning	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
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	Danger	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
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Warning

- **The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**
- Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
- **Only personnel with appropriate training should operate machinery and equipment.**
The product specified here may become unsafe if handled incorrectly.
The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.
- **Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**

1) The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.

1 Safety Instructions - continued

2) When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.

3) Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

- **Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**

1) Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.

2) Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustions and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specification described in the product catalogue.

3) An application which could have negative effects on people, property, or animals requiring special safety analysis.

4) Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

- **Always ensure compliance with relevant safety laws and standards.**
- All electrical work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.

Caution

The product is provided for use in manufacturing industries.
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

2 Specifications

2.1 General Description and Intended Use

This product accurately controls the temperature of a liquid in a bath, adjusted by a thermoelectric device. This can indirectly control temperature of chemical bottles, test tubes, flask, cooling coils (heat exchanger) in a constant temperature bath.

2.2 Product specifications

INR-244-757

Model No.	INR-244-757
Control method	Cooling/heating automatic shift PWM control
Cooling/Heating method	Thermoelectric device
Operating temp. range (°C)	0.0 to 60.0
Temp. stability (°C)	+/-0.03
Cooling capacity (W) ^{*)}	220
Heating capacity (W) ^{*)}	600
Bath Fluid	Application Fluid
	Water (5 to 60°C) Ethylene glycol-water solution must be lower than 40% (0 to 60°C)
Bath Fluid	Bath dimensions (excluding protrusion) (mm)
	W300 x D290 x (Liquid level) H200
Drain port size	CPC coupling PLCD 16004
Power supply	AC100 to 240V ± 10%, Single phase, 50/60Hz 6A (max.)
Overcurrent protection	Circuit protector (acting as a main power switch) with rated current 10A
Serial communication	RS-232C
Alarm output	High / Low temp. alarm, Alarm output signal
	Relay contact output: opened when the alarm occurs 30VDC,2A (resistive load), 30VDC,1A (inductive load)
Temperature sensor	Resistance thermometer sensor, Pt100Q, 3-Connecting wire.
Ambient temp./humidity	10 to 35°C, 35 to 80%RH (no dew condensation)
Ambient air quality	Appropriate environment without corrosive gas, solvent (e.g. thinner) and combustible gas
Dimensions Overall (excluding protrusion) (mm)	W350 x H395 x D460
Weight (dry) (kg)	22
Accessories	Power supply connector: 1pc
	Drain tube: 1pc
	Operation manual: 1pc

Notes:
^{*)} Determined under the following conditions: water as the bath fluid, set temperature 25°C, ambient temperature 25°C, and sealed from outside air with a lid.

2 Specifications - continued

2.3 Performance Graphs

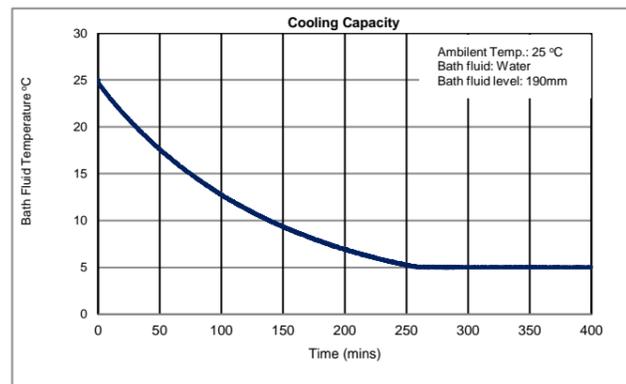


Fig.1 Cooling capacity

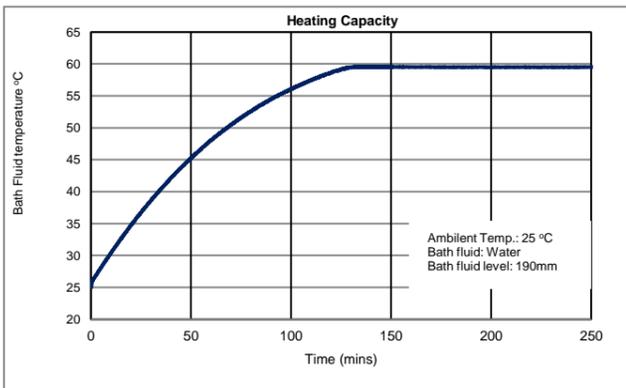


Fig.2 Heating capacity

Calculation of Dew Point Temperature (from psychrometric chart)

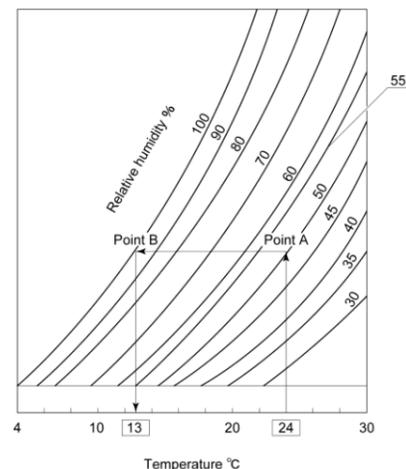


Fig.3 Psychrometric chart

1. Measure the ambient temperature and humidity.
2. Plot the ambient temperature on the X axis, "Temp." (ex. 24°C), and draw a vertical line from there.
3. Find the intersection (A) between the curve with the value closest to the ambient humidity and the straight vertical line.
4. Draw a line parallel to the X axis from intersection A and find the intersection (B) between this line and the curve representing 100% relative humidity.
5. Draw a vertical line to the X axis from intersection B. The temperature at the intersection between this line and the X axis is the dew point (in this example, 13°C). If the temperature falls to this value, the moisture contained in the air will begin to form condensation.

2 Specification - continued

2.4 Connector Specifications

Item	Pin No.	Specification	Style and Part No.
Power supply connector (IEC60320,C14)	N	AC100 to 240V	
	L	AC100 to 240V	
	E	PE	
Communication connector	1	Unused	
	2	RS-232C SD	
	3	RS-232C RD	
	4	Unused	
	5	SG	
	6-9	Unused	
Alarm output connector	1	High/Low Temp. Alarm contact (opened for alarm)	
	2	High/Low Temp. Alarm common	
	3-4	Unused	
	5	Alarm output signal contact (opened for alarm)	
	6	Alarm output signal contact common	
	7-9	Unused	

2.4.1 Relay contact for alarm connector

Item	Specification
Output type	Relay contact output: Opened when an alarm occurs.
Contact rating	30VDC,2A (resistive load) 30VDC,1A (inductive load)
Minimum load	5VDC,10mA
Mechanical life	5 Million cycles or more
Electrical life	0.2 Million cycles or more

2.5 Production Serial Code

The production serial number code printed on the label indicates the month and year of production as per the following table:

Year	2015	2016	2017	...	2021	2022	2023	...
Month	T	U	V	...	Z	A	B	...
Jan	o	To	Uo	Vo	...	Zo	Ao	Bo
Feb	P	TP	UP	VP	...	ZP	AP	BP
Mar	Q	TQ	UQ	VQ	...	ZQ	AQ	BQ
Apr	R	TR	UR	VR	...	ZR	AR	BR
May	S	TS	US	VS	...	ZS	AS	BS
Jun	T	TT	UT	VT	...	ZT	AT	BT
Jul	U	TU	UU	VU	...	ZU	AU	BU
Aug	V	TV	UV	VV	...	ZV	AV	BV
Sep	W	TW	UW	VW	...	ZW	AW	BW
Oct	X	TX	UX	VX	...	ZX	AX	BX
Nov	y	Ty	Uy	Vy	...	Zy	Ay	By
Dec	Z	TZ	UZ	VZ	...	ZZ	AZ	BZ

3 Name and Function of Parts

3.1 Main Parts

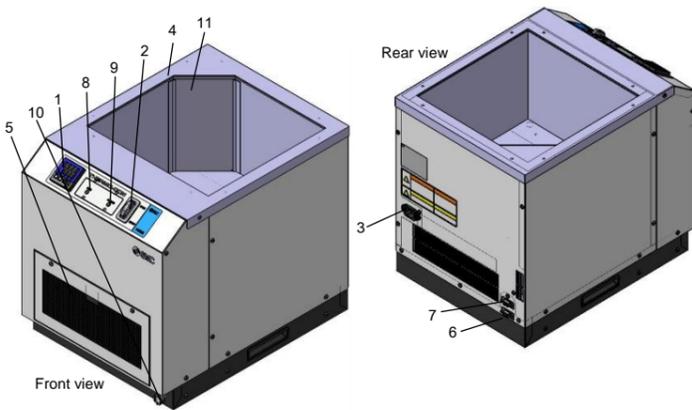
- The names of the parts used in this manual are as follows:

Main Body

No.	Description	Function
1	Operation and display panel	Various displays are shown and settings are input.
2	Circuit protector (Power switch)	Power ON/OFF switch with current protection.
3	Power supply connector (AC)	Connector for the single phase AC (AC100 to 240V) power supply.
4	Liquid Bath	Vessel to store the liquid.
5	Air filter	Filter not to allow dust to enter easily inside.

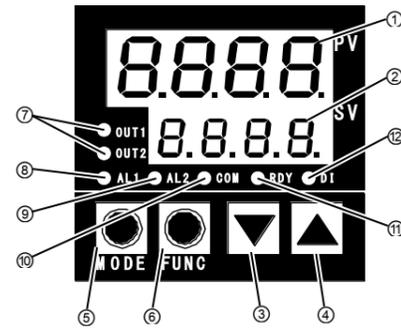
3 Name and Function of Parts - continued

No.	Description	Function
6	Alarm output connector	Connector for the Alarm signal. The relay contact is opened when these alarms are output.
7	Communication connector	Connector for communication with RS-232C.
8	RUN LED (Green)	Lights up while the product is running.
9	ALARM LED (Red)	Lights up when an abnormality occurs.
10	Drain Port	Drain the bath liquid.
11	Strainer (Perforated Metal Φ1)	Filtration of cicurated bath liquid.



3 Name and Function of Parts - continued

3.2 Operational display panel



No.	Description	Detail
①	LED1	Displays monitoring temp.,or mode indication.
②	LED2	Displays target temp.,or set value/mode
③	[▼] key (DOWN key)	Used to change set values
④	[▲] key (UP key)	Used to change set values
⑤	[MODE] key	Used to change screens.
⑥	[FUNC] key	Used to shift digits of SV
⑦	Output LED	OUT1: Lights up during heating. OUT2: Lights up during cooling.
⑧	AL1 LED	Lights up when High / Low Temp. alarm occurs.
⑨	AL2 LED	Unused
⑩	Communication LED	Flashes during communication. It remains on when the communication is not used.
⑪	RDY LED	Lights up when temperature control is stopped.
⑫	DI LED	Unused

4 Transportation

4.1 Moving by persons

Caution

- Transportation, installation, and maintenance including dangerous work must be done by trained personnel with sufficient knowledge and experience of the equipment and the system.

Warning

- The instructions below must be followed because the equipment is heavy and potentially dangerous to transport.
- The product must be transported by more than one person or use of mechanical aids (example: plate truck).
- When transporting the product, always follow the instructions:
 - 1) When lifting the product, lift carefully by the base to prevent dropping or tipping over.
 - 2) Do not lift by the fittings or piping.
 - 3) Never lay this equipment on its side to move it. Pushing it over onto its side will damage the product

5 Function Details

5.1.1 High/Low temperature function

This function generates an alarm when the measured temperature deviates from the set temperature by an amount outside of that defined as the high or low limit deviation. In that case, the **AL1** LED of the controller lights up and the alarm is generated via relay contact to a pin for the High/low Temp. alarm of the alarm output connector. After the measured temperature returns to within the high or low deviation, the alarm will be reset automatically. In its initial setting, the alarm comes on immediately after the power supply is turned on when the temperature at that time deviates from the set temperature by an amount outside of the high or low deviation limit

5 Function Details - continued

5.1.2 Offset function

The temperature sensor can be calibrated by inputting offset (calibration value) between the temperatures of a standard thermometer and the temperature sensor in the product.

5.1.3 Set value memory (EEPROM backup)

Caution

- Any set value input via the communication function is not stored. If they need to be stored, use a storage command.
- The overwrite limit is approx. 0.1 million times. If the setting is performed via the communication function, pay attention to how many times the overwrite has been done.

5.1.4 Alarm stop function

The product stops operation when a serious abnormality occurs. The ALARM LED lights up and the alarm signal is output via relay contact from the alarm output connector. The alarm can be reset by turning ON/OFF the AC Power.

The alarm occurs typically caused by following case: -

- ① Overheating of Liquid Tank (Thermostat is activated).
- ② Overheating of Heatsink (Thermostat is activated).
- ③ Lowering of Controller output voltage.
- ④ Lowering Bath Liquid level.

5.1.5 Controller alarm

When an error in the controller occurs, the product stops operation and display following error code. The error can be reset by the AC power ON/OFF. In case it cannot be reset by the AC power ON/OFF, it must require the product repair.

Table1: Indication of alarms on operation and display panel

Indicator	Alarm Description
	Shown when a temperature sensor is opened.
	Shown when a temperature sensor is short circuited.
	Shown when the Controller has a memory error.
	Shown when the Controller has an A/D conversion error.

5.1.6 Serial communication function

This product has a serial communication function conforming to communication protocol.

The contents of then serial communication on this product are as follows: -

- 1) Setting and reading of target temperature.
- 2) Reading of measured temperature.
- 3) Setting and reading of offset value.
- 4) Storage command of set value (Any set value input via the communication function is stored in the volatile memory. If they need to be stored in non-volatile memory, use a storage request command.)

6 Installation

6.1 Installation

Warning

- Do not install the product unless the safety instructions have been read and understood.
- Keep enough open space to access any AC power switch and cable connections.
- Keep enough ventilation for fluid vapour.
- This product should be installed on a vibration-free stable level place.
- The mounting orientation of this product is horizontal.
- Place the product in a flat area which can handle its weight and take measures to prevent the tipping of the product. If installed improperly, the product might leak water or topple, resulting in injury.

6.2 Environment

Warning

- Do not use in an environment where the product is directly exposed to water, oil, corrosive gases, chemicals, and, salt water or steam.
- Do not install the product in a location where the air inlet and air outlet vents are blocked. Also do not use the product in a sealed enclosure.
- Do not use in an explosive atmosphere.
- Do not mount the product in a location where it can be exposed to prolonged sunlight. Use a protective cover.
- Do not mount the product in a location where it is subject to strong vibrations and/or shock. Check the product specifications.
- Do not use the product where it can be exposed to strong electrical or magnetic emissions.
- Do not mount the product in a location where it is exposed to noise sources (such as discharging equipment, large relay and thyristor).
- Do not mount the product in a location with an altitude of more than 2000m.
- Do not mount the product where it is exposed to materials such as silicone, which may generate harmful gas.
- Install the product in a location where the ambient temperature range is between 10 to 35°C and the relative humidity range is between 35 to 80%. No dew condensation is allowed on the unit.

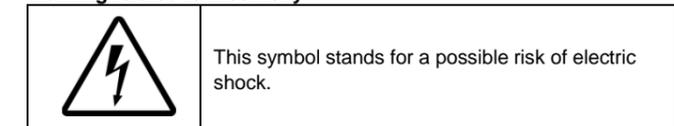
- Do not mount the product in a location exposed to radiant heat.

6.3 Types of Hazard Labels

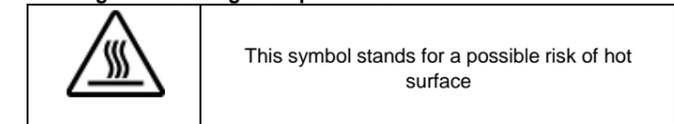
Warning

- The product has various potential hazards and they are marked with warning labels. Continued.

Warning related to Electricity



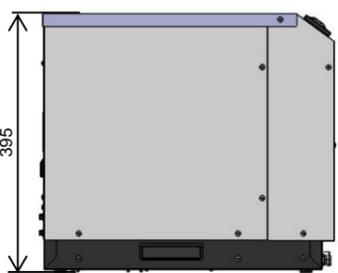
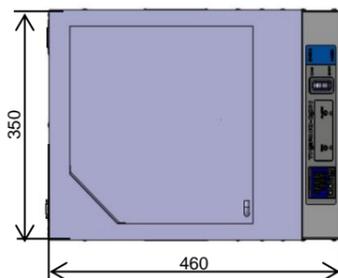
Warning related to High Temperatures



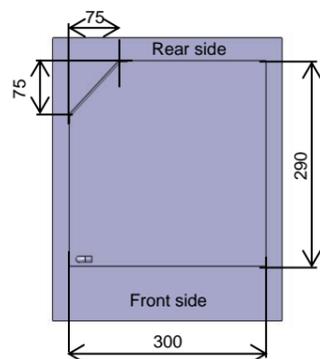
6.4 Clean Room Installation

Caution

This product uses a fan and generates dust. When set-up and operated in a clean room, take appropriate preliminary measures for dust. Before piping make sure to clean up chips, cutting oil, dust etc.



Tank internal Dimensions



Tank depth: 200mm

6 Installation - continued

6.5 Pollution Degree

Caution

This product is suitable for environments with a pollution degree of 1 or 2.

The pollution degree is a classification from 1 to 4 degrees depending on the pollution present in the air.

Table2: Pollution degree classification

Degree 1	There is no pollution or only dry and nonconductive pollution occurs. An example of an environment of this degree is a clean room or a place using an air cleaner.
Degree 2	Normally, only nonconductive pollution occurs. The pollution may become conductive temporarily because of dew condensation. An example of an environment of this degree is a place where electric equipment can operate normally, such as a working office or a control panel.
Degree 3	Conductive pollution or dry and nonconductive pollution which can become conductive when dew condensation occurs. An example of an environment of this degree is a factory.
Degree 4	Conductive pollution that holds its conductivity due to conductive dust, rain or snow. An example of an environment of this degree is the outdoors.

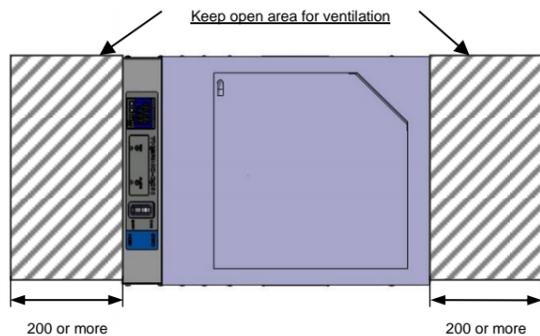
6.6 Mounting

Warning

- The Installer / End User is responsible for carrying out a noise risk assessment on the equipment after installation and taking appropriate measures as required.

- Select a hard flat and level surface suitable to support the weight of the product and which will reduce the effect of vibration.
- Install the product so the operation panel is easily visible and accessible, electrical and fluid connections can be easily made at

the rear of the product and the air inlet and outlet vents are clear of obstructions.



6.7 Wiring of the Power Supply cable

Warning

- The electrical facilities should be installed and wired in accordance with local laws and regulations of each country and by the person who has knowledge and experience.
- Check the power supply. Operation with voltages, capacities, frequencies and cable sizes other than those specified can cause heat, fire and electrical shock.
- Wire with an applicable cable size and terminal.
- Be sure to shut off the user's power supply. Wiring with the product energized is strictly prohibited.

Caution

- Use an individual socket or earth leakage breaker.
- Be sure to provide grounding. Incomplete grounding can cause failure and electrical shock.

6 Installation - continued

6.8 Wiring

Warning

- The electrical facilities should be installed and wired in accordance with local laws and regulations of each country and by the person who has knowledge and experience.
- IEC protection class of the product is Class I. Resistance for ground must be 100ohm or less. Grounding can be provided via the PE line of the power supply cable.
- Do not use the same ground being used by equipment that generates strong electrical magnetic noise or high frequencies.
- Check the power supply. Operation with voltages, capacities, frequencies and cable sizes other than those specified can cause heat, fire and electrical shock.
- Be sure to shut off the user's power supply. Wiring with the product energized is strictly prohibited.

Caution

- Use an individual socket or earth leakage breaker.
- Be sure to provide grounding. Incomplete grounding can cause failure and electrical shock.

6.8.1 Power Source Specification

Table 3: Electrical power supply specification

Model	Power supply voltage	Rated current [A]	Sensitivity of leak current [mA]	Cable
INR-244-757	1-phase AC 100~240V (50/60Hz)	6	30	2-wire + GND (PE)

6.8.2 Cable and power supply connector

The power cable and connector are to be prepared by others.

Table 4: Cable and Connector specification

Cable and Connector	Specifications (for your system)
Cable	3 wires (14AWG), includes ground
Power supply connector	IEC60320 (C-13 equivalent) 10A cable mount female connector

6.8.3 Preparation and wiring of power supply cable

- Strip the sheath from both ends of the cable, referring to the following table.
- Disassemble the power supply connector. Crimp one end of the cable to L, N, E inside of the connector, then reassemble the power supply connector.
- Connect the other end of the cable to a plug or terminals (e.g. crimped terminal).

Table 5 power supply connector

Cable quantity and size, 3 cores, 14AWG (include earth)	Power Source Specification	
	AWG14(L)	AC100-240V
	AWG14(N)	AC100-240V
	AWG14(E)	Earth

6.9 Filling of Bath Fluid

6.9.1 Preparation of Bath Fluid

Caution

- Do not use tap water or hard water. As this will cause the internal pump to failure and the performance deterioration by generation of scale.
- If using Ethylene Glycol (EG), refer to the suppliers Material Safety Data Sheet (MSDS) and wear Personal Protective Equipment (PPE) as appropriate.
- High concentration EG can cause temperature control error or system failure.

6 Installation - continued

Table 4: Bath fluids

Bath fluid	Working temp. range	Remarks
Water	5 ~ 60°C	Use distilled water or clean water.
Ethylene glycol aqueous solution	0 ~ 60°C	Concentration of EG must be lower than 40%

6.1.1.1 Tank capacity

Tank capacity: 17 Litres

6.2 Filling the Bath

Caution

- Do not operate the unit without bath fluid, as this will damage the internal pump.
- Do not use in such a manner that the bath fluid will overflow or splashes during operation.

- Make sure the drain port plugged.
- Fill the bath with the fluid to a maximum level of 50 mm below the top of the tank.

7 Operation

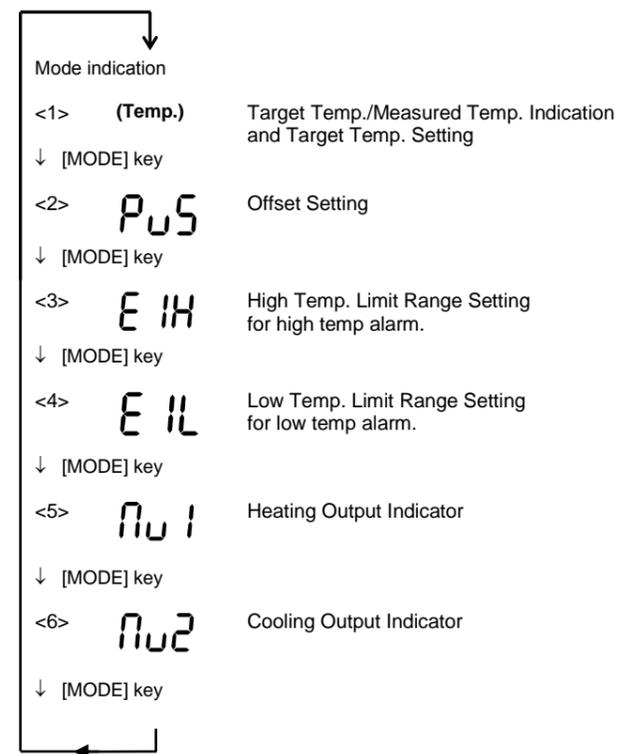
7.1 Turning ON Power

Caution

If an alarm occurs after the power supply is turned on, check the indicated content of the alarm and turn off the power supply to find the cause so that appropriate measures can be taken.

- Make sure that Main Power Switch is OFF. Turn ON the power breaker on primary side (tool side)
- Turn ON Main Power Switch.
- Controller will indicate the current bath fluid temperature after approx. 6 sec.

When the power supply is turned on, the product is in operation mode. The target temperature is shown as well as the current measured temperature. Each presses of the [MODE] key changes the operation mode display as follows: -



7 Operation - continued

7.2 Detail of Operation Mode

<1> Target Temp. / Measured Temp. Indication and Target Temp. Setting.



Function	Sets target temperature. Set with [▲] or [▼] key Indicates current temperature on PV and target temperature on SV.
Setting range	0 to 60.0 deg.C
Initial value	25.0 deg.C

<2> Offset Setting



Function	Sets the offset (compensating) value of the PV. Set with [▲] or [▼] key Example. If 0.5 is set, the temperature is actually controlled to a value that is lower by 0.5 deg.C.
Setting range	-1.0 to 1.0 deg.C (Please use it in this setting range.)
Initial value	Refer to the controller correction value of Inspection Record.

<3> High temperature limit range setting



Function	Sets the high temperature limit value. Set with [▲] or [▼] key Input the differential from target temp. for high temp. alarm. AL1 LED lights up and the alarm signal output when alarm.
Setting range	0 to 10.0 deg.C
Initial value	1.5 deg.C

<4> Low temperature limit range setting



Function	Sets the lower temperature limit value. Set with [▲] or [▼] key Please input the value of the width of the lower temperature. It is output to the alarm output connector (AL1 LED).
Setting range	0 to 10.0 deg.C
Initial value	1.5 deg.C

<5> Heating Output Indicator



Function	Indicates the heating ratio
Display range	0 to 100%

<6> Cooling Output Indicator



Function	Indicates the cooling ratio
Display range	0 to 100%

8 Troubleshooting

8.1 Troubleshooting

The troubleshooting method depends on which alarm has been generated.

Warning

In the event of an unexpected problem or malfunction, switch off the product and investigate the cause. If the cause of the problem cannot be determined, do not use the product, but contact SMC for assistance.

8.2 Alarms

8.2.1 Alarms Indications

(Lit) 7seg. LED	Content of alarm	Alarm Output Singal	High / Low temp. alarm	LED (Display)	Unit Status	Reset
Normal status	High temp. alarm Occurs when the bath fluid temp is higher than the alarm set point.	Contact opened	ON	AL1	Normal operation	Automatic
Normal status	Low temp. alarm Occurs when the bath fluid temp is lower than the alarm set point.	Contact opened	ON	AL1	Normal operation	Automatic
Normal status	Lowing of controller output voltage Occurs when the internal DC power supply has trouble.	Contact opened	-	ALARM	Control stop 1	Restart the power supply
Normal status	Thermostat alarm Occurs when temp of heat exchanger is abnormally high.	Contact opened	-	ALARM	Control stop 1	Restart the power supply

8 Troubleshooting - continued

Code	Cause	Countermeasure
ALARM LED (red) light up.	High-level electric noise has been applied to the power supply line, ground line and/or signal line.	Move the product to an environment with less noise and restart. If no failure occurs, the noise caused the alarm.
	The power supply voltage to the product not correct.	Confirm that the power supply voltage is 100 to 240VAC.
	Malfunction of the internal DC power supply	If the trouble cannot be solved even after the power supply is restarted 3 or 4 min. after, contact SMC for repair.
	The internal temperature of the controller is high, and the protection circuit of the power supply activated.	Check that the air ventilation.
Err0	The bath liquid has been excessively heated.	Confirm that the bath liquid is not excessively heated. Confirm that the bath liquid level is not too low.
	The EEPROM of Controller is broken due to high-level electric noise.	If the trouble cannot be solved even after cycling the power supply, contact SMC for repair.
Err1	The writing time to the EEPROM exceeds 0.1 million.	If the trouble cannot be solved even after cycling the power supply, contact SMC for repair.
	The EEPROM of the controller is broken due to high-level electric noise.	If the trouble cannot be solved even after cycling the power supply, contact SMC for repair.

9 Maintenance - continued

- It is recommended to prepare spare units to minimize downtime due to those repair and maintenance services.
- Drain the fluid from the product when it is returned for the repair and maintenance service. If the fluid is left inside, an accident and damage can result during transportation.
- Do not make any modifications.
- Do not disassemble the product, unless required by installation instructions.
- If fluid other than water is used, wash the bath with water or DI water before returning the product to SMC. Products that have not been washed may not be accepted at the factory.
- Do not operate switches, etc. with wet hands and do not touch the electrical parts such as the power supply plug. It might cause electric shock.
- Do not splash water directly on the product and do not wash with water. It might cause electric shock and fire, etc.

Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- Before performing maintenance, turn off the power supply. After installation and maintenance, turn on power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.

9.2 Regular Maintenance

- Check the bath liquid at least once a day
- Check the strainer and filter clogging in regular interval

9.2.1 Draining the Bath Fluid

Caution

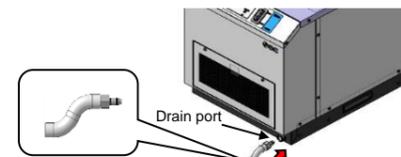
- Draining without stopping the product might cause dry run of the internal pump.
- Take care not to splash the bath liquid on the inside of the product and the connectors when draining. If water splashes on the connector or the product body, wipe them off and allow them to dry sufficiently to

prevent electrical shock, a short circuit, or ignition.

- Please confirm the bath light is at safe temperature when you drain the liquid.

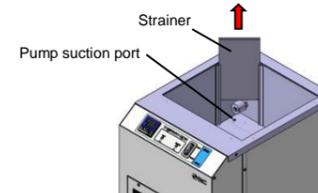
- Stop the product (cut the power supply).
- Connect the drain tube (accessory) to the drain port and drain the fluid.

Note: The drain tube is supplied and attached as a loose item.



9.2.2 Check the strainer and clean the bath

- Remove the debris that the strainer has captured.
- Clean the bath.
- Confirm there is no debris in the pump suction port.
- The strainer can be set in the bath at time during operation.



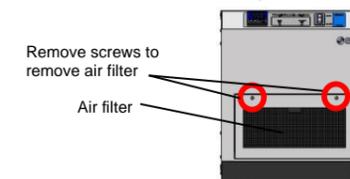
9.2.3 Cleaning the Air Filter

Caution

- Keep air filter clean as performance decreases with dust build up.
- Recommend the removal of dust once every three months.

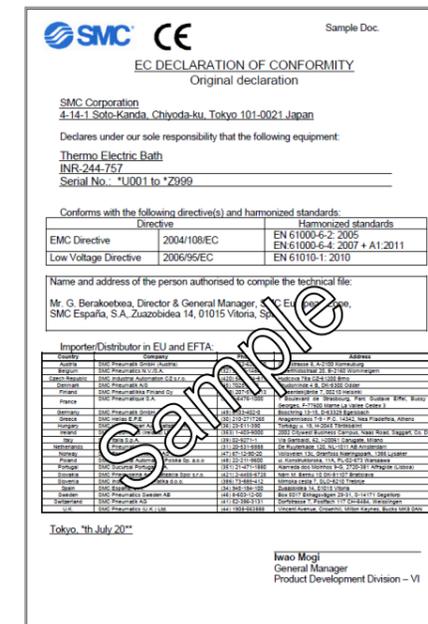
9 Maintenance - continued

- Remove debris that the air filter has captured.



10 Declaration of Conformity

Below is a sample Declaration of Conformity (DoC) used for this product. An actual DoC will be supplied with each product.



(Lit) 7seg. LED	Content of alarm	Alarm Output Singal	High / Low temp. alarm	LED (Display)	Unit Status	Reset
Normal status	Low level alarm Occurs when liquid level is low.	Contact opened	-	ALARM	Control stop 1	Restart the power supply
Err0	Memory error Occurs when there is an issue on the EEPROM of the controller.	-	-	-	Control stop 2	Replace the controller
Err1	Controller error Occurs when there is an issue on the controller.	-	-	-	Control stop 2	Replace the controller
	High temp. sensor value Occurs when the bath fluid temp is abnormally high, or the temp sensor is disconnected.	Contact opened	ON	AL1	Control stop 2	Restart the power supply
	Low temp. sensor value Occurs when the bath fluid temp is abnormally low, or the temp sensor is short-circuited.	Contact opened	ON	AL1	Control stop 2	Restart the power supply

Note: -
- Control stop 1: Temperature control and pump are stopped.
- Control stop 2: Only temperature control is stopped.

Code	Cause	Countermeasure
	The temperature sensor is broken (or the cable is disconnected).	Check if the cable is disconnected. If the trouble cannot be solved even after no disconnection is confirmed, confirm there is no broken wire. If the wire is broken, contact SMC for repair.
	The temperature sensor is short-circuited.	Confirm that the temp sensor and its cable are short-circuited. If they are short-circuited, contact SMC for repair.
The operation and display panel does not light up, or the display disappears.	Incorrect AC voltage	Confirm that the power supply voltage is 100 to 240ACV.
	The circuit protector of this product or GFCI which is installed on primary side of the unit has been tripped.	Confirm that an instantaneous power supply cutoff has not occurred at frequent rate. Confirm that a ground leakage has not occurred. If the trouble cannot be solved even after the power supply is restarted, contact SMC for repair.

9 Maintenance

9.1 General Maintenance

Warning

- The repair and maintenance service of this unit are performed only at SMC factory. SMC does not provide on-site repair or maintenance service in a national or overseas situation.

11 Contacts

Country	Company	Address
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URL : [http:// www.smworld.com](http://www.smworld.com) (Global) <http:// www.smceu.com> (Europe)
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