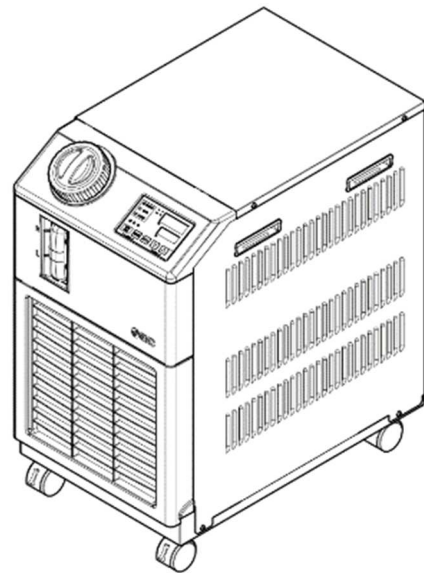




ORIGINAL INSTRUCTIONS

Instruction Manual
Thermo-chiller
HRS040-A-20-T1-X158



The intended use of this product used a built-in pump to circulate a liquid such as water, adjusted to a constant temperature by the refrigeration circuit. This circulating liquid cools parts of customer's machine that generates heat.

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)⁽¹⁾, and other safety regulations.

⁽¹⁾ 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: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots.

- Refer to product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

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

Warning

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

2 Specifications

2.1 Contents of special order

This product has the following changes as special order for the standard thermo-chiller product "HRS040-A-20".

- 1) Circulating fluid setting temperature range: -10 to 40 oC
- 2) Circulating fluid type: Ethylene glycol aqueous solution 50%
- 3) Changed to add high pressure pump.

2 Specification (continued)

2.2 Product Specifications

Model		HRS040-A-20-T1-X158
Cooling method		Air-cooled refrigerated type
Temp. control method		PID control
Temp. range/Temp. stability		°C -10 to 40 / ±0.1 (Note 1.4)
Cooling Capacity (50Hz/60Hz)		W 1000/1000 (Note 3)
Ambient condition	Ambient temperature	°C 5 to 40 (Note 1)
	Ambient humidity	% RH 30 to 70 (No condensation) (Note 1)
	Altitude	m 1000 or less
Atmosphere		No corrosive or flammable gas. Others, please refer to the catalog and operation manual of
Refrigerant		R410A (HFC), 0.53kg
Fluid type		Ethylene glycol aqueous solution 50% (v/v) (Note 5)
Circulating fluid	Pump capacity	MPa 0.11/0.36 (Note 5)
	Flow rate (50Hz/60Hz)	L/min 15/15 (Note 5, 6)
Tank capacity		L Approx. 5
Operation Display Panel		7 segment digital display
Communication function		Contact I/O, Serial RS-485/RS-232C (D-sub9, 1-phase AC200 to 230 (50/60 Hz) Allowable voltage range ±10%
Power supply	Voltage	V
	Breaker	A 20
	Rated operating current	A 8.8/11.2 (Note 3)
	Applicable earth leakage breaker capacity	A 20 (Note 7)
Rated power		CH1 1.7/2.2 (Note 3)
Wetted materials in Circulating fluid line		Stainless steel, Copper brazing (Heat exchanger) Brass, Carbon, SiC, PP, PE, POM, FKM, EPDM, PVC, NBR
Weight		kg 64 (Note 9)
Body Colour		White (SMC standard)
Certification		UL, CE

Notes:
 *1 Use the product in conditions where freezing will not occur.
 *2 Dilute pure ethylene glycol with tap water. Additives such as preservatives cannot be used.
 *3 (1) Operating ambient temperature: 32°C, (2) Circulating fluid temp.: -10°C, (3) Circulating fluid flow rate: Rated flow rate, (4) Circulating fluid: Ethylene glycol aqueous solution 50%.
 *4 Outlet temp. when the circulating fluid flow rate is rated, and the circulating fluid outlet and the return are directly connected. Installation environment and power supply are within specification range and stable.
 *5 The capacity at the circulating fluid outlet when the circulating fluid temp. is -10°C.
 *6 Fluid flow rate to maintain the cooling capacity and the temperature stability. The specification of the cooling capacity and the temperature stability may not be satisfied if the flow rate is lower than rated.
 *7 To be prepared by the customer. Use an earth leakage breaker with a sensitivity of 30mA/200V in power supply specification.
 *8 Dimension between panels. Projection is not included.
 *9 Weight when the circulating fluid is not included.

2.3 Production Serial Number Code

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

Year	2021	2022	2023	2024	2025	2026	2027
Month	Z	A	B	C	D	E	F
Jan	o	Zo	Ao	Bo	Co	Do	Eo	Fo
Feb	P	ZP	AP	BP	CP	DP	EP	FP
Mar	Q	ZQ	AQ	BQ	CQ	DQ	EQ	FQ
Apr	R	ZR	AR	BR	CR	DR	ER	FR
May	S	ZS	AS	BS	CS	DS	ES	FS
Jun	T	ZT	AT	BT	CT	DT	ET	FT
Jul	U	ZU	AU	BU	CU	DU	EU	FU
Aug	V	ZV	AV	BV	CV	DV	EV	FV
Sep	W	ZW	AW	BW	CW	DW	EW	FW
Oct	X	ZX	AX	BX	CX	DX	EX	FX
Nov	y	Zy	Ay	By	Cy	Dy	Ey	Fy
Dec	z	Zz	Az	Bz	Cz	Dz	Ez	Fz

3 Name of Parts and Accessories

3.1 Accessories

- Check the enclosed accessories with the delivered Thermo-chiller.

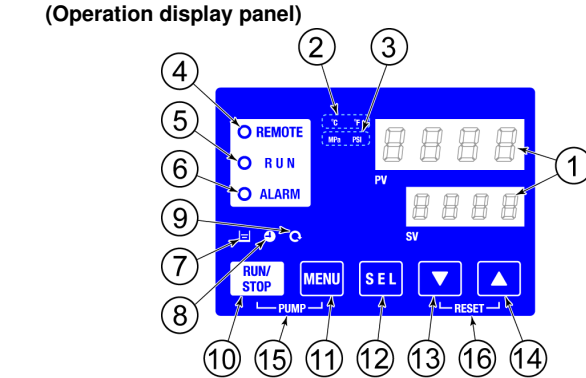
1	Installation and Maintenance Manual (this manual)		1pc.
2	Operation Manual (for standard)		1pc.
3	Operation Manual		1pc.
4	Alarm code list label		1pc.
	Contact I/O command signal connector		1pc.
7	Ferrite core (for communication)		1pc.

* These accessories are not explained in this manual. For details, read the Operation Manual attached.

3 Name of Parts and Accessories (continued)

3.2 Main Parts

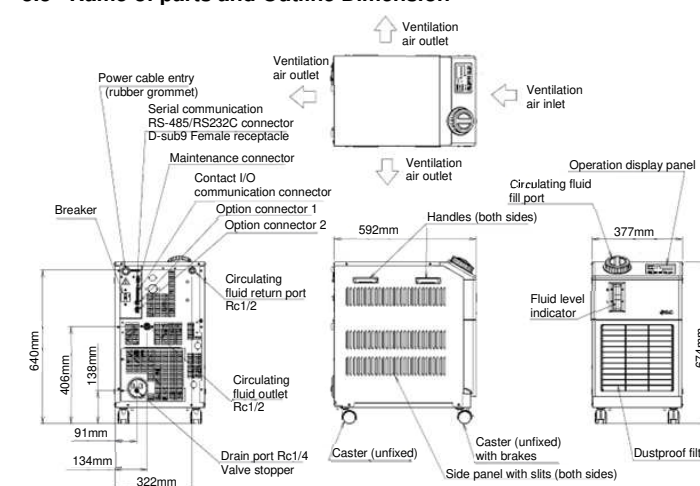
- The names of parts used in this manual are as follows:



No	Description	Function
1	Digital display (7-segment, 4 digits)	PV Displays the temperature and pressure of the circulating fluid and alarm codes. SV Displays the discharge temperature of the circulating fluid and the set values of other menus.
2	[°C] [°F] lamp	Equipped with a unit conversion function. Displays the unit of display temperature (default setting °C).
3	[MPa] [PSI] lamp	Equipped with a unit conversion function. Displays the unit of display pressure (default setting MPa).
4	[REMOTE] lamp*	Enables the remote operation (start and stop) by communication. Lights up during remote operation.
5	[RUN] lamp	Lights up when the product is started and in operation. Goes off when the product is stopped. Flashes during stand-by for stop or anti-freezing function, or independent operation of the pump.
6	[ALARM] lamp	Flashes with buzzer when alarm occurs.
7	[] lamp	Lights up when the surface of the level indicator falls below the LOW level.
8	[] lamp*	Lights up while the run timer or stop timer function is working.
9	[] lamp*	Lights up when the product is in automatic operation.
10	[RUN/STOP] key	Makes the product start or stop.
11	[MENU] key*	Shifts the main menu (display screen of temperature) and secret menu (entry of set values and monitor screen).
12	[SEL] key*	Changes the item in menu and enters the set value.
13	[▼] key	Decreases the set value.
14	[▲] key	Increases the set value.
15	[PUMP] key	Keep the [MENU] and [RUN/STOP] keys pressed down simultaneously. The pump starts running independently to make the product ready for start-up (release the air).
16	[RESET] key	Keep the [▼] and [▲] keys pressed down simultaneously. This will stop the alarm buzzer and reset the [ALARM] lamp.

*These lamps and keys are not used in this manual. For details, read the Operation Manual attached.

3.3 Name of parts and Outline Dimension



4 Transportation, Transfer and Moving

- 1) Be sure to unlock the caster (only at the front wheel). There is no lock function with the rear casters.
- 2) Push the left and right panels with the handle and move.
- 3) Use corners when pushing the front or rear panel. Pushing at the centre can deform the panel.

5 Installation

5.1 Installation

Warning

- Do not install the product unless the safety instructions have been read and understood.

5.2 Types of Hazard Labels

Warning

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

Warning related to Electricity

	This symbol stands for a possible risk of electric shock.
--	---

Warning related to High Temperatures

	This symbol stands for a possible risk of hot surface and burns.
--	--

Warning related to Rotating Objects

	This symbol stands for a possible risk of cutting fingers or hand, or entanglement by rotating fan (For air-cooled type).
--	---

Warning related to other General Dangers

	This symbol stands for general danger.
--	--

5.3 Environment

Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use the product in an area of high temperature and humidity which cannot be exhausted, or where it is exposed to corrosive substances. Cooling failure can result.
- Do not use the product outdoors. If the product is exposed to rain or water splash it may cause electrical shock, fire or failure.
- Do not use in an explosive atmosphere.
- Do not install in a location exposed to direct sunlight and radiant heat.
- Do not install in a location subjected to vibration or impact.
- Do not install subjected to strong electromagnetic noise (intense electric field, intense magnetic field, or surges).
- Do not install subjected to static electricity, or conditions where static electricity can discharge to the product.
- Do not install subjected to strong high frequencies radiation.
- Do not use in locations at altitudes of 3000m or higher (except for product storage and transport), refer to the Operation Manual section '3.2.1 Environment'.
- Do not install in a location without adequate space for maintenance.

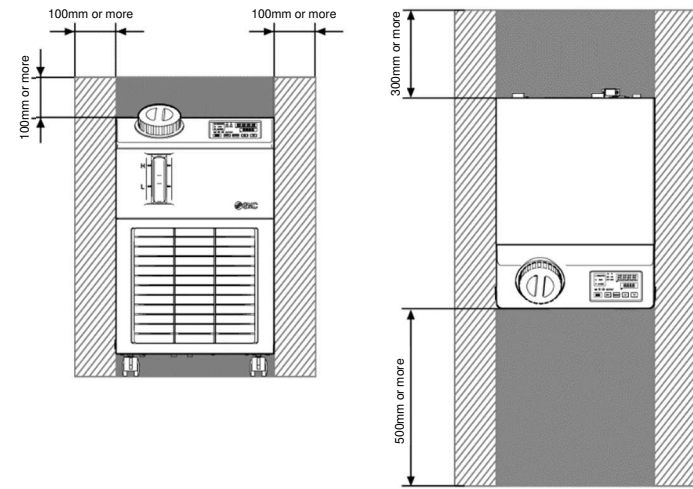
5.4 Mounting

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.

- 1) Select a hard flat and level surface suitable to support the weight of the product and which will reduce the effect of vibration.
- 2) 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. After moving into position, lock the front caster wheels again.

5 Installation (continued)



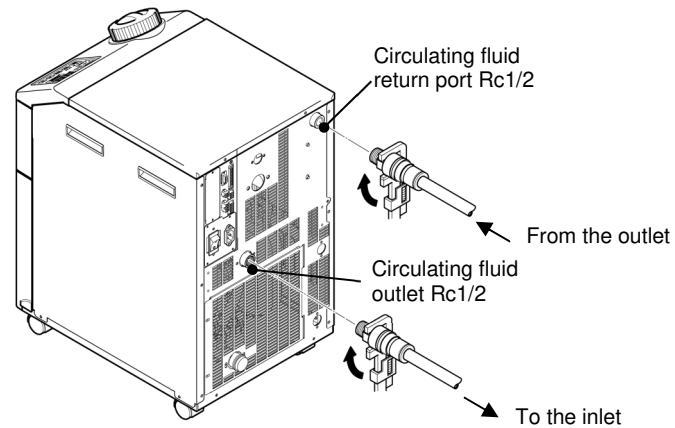
5.5 Piping

Caution

- Before piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fittings, ensure sealant material does not enter inside the port. When using seal tape, leave 1.5 to 2 threads exposed on the end of the pipe/fitting.
- Tighten fittings to the specified tightening torque.

Thread	Tightening Torque (N.m)
Rc 3/8	22 to 24
Rc 1/2	28 to 30
Rc 3/4	28 to 30

- 1) Connect the circulating fluid return port with the user's machine outlet.
- 2) Connect the circulating fluid discharge port with the user's machine inlet.



5.6 Filling of Circulating Fluid

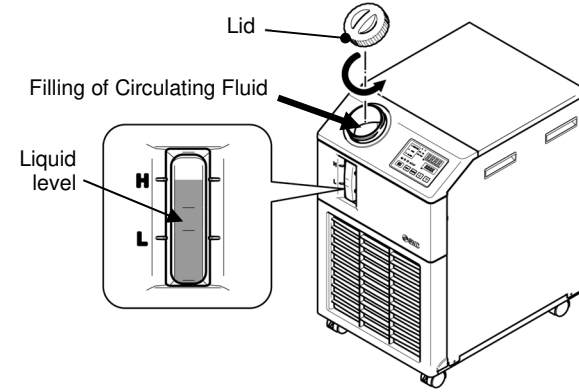
Caution

- When the temperature of the circulating fluid is set to lower than 10°C, use a 15% aqueous solution of Ethylene Glycol. Tap water may freeze in the Thermo-chiller, leading to malfunction.
- If using Ethylene Glycol, refer to the suppliers Material Safety Data Sheet (MSDS) and wear Personal Protective Equipment (PPE) as appropriate.

- 1) Check the drain port is plugged or closed by the valve to prevent the supplied circulating fluid from draining out.
- 2) Turn the lid for the circulating fluid fill port counter clockwise to open and fill the circulating fluid up to "H" of the level indicator scale.

5 Installation (continued)

After filling to the specified level, turn the lid clockwise to close.



5.7 Wiring of 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.
- When panel is removed or mount, be sure to wear protective shoes and gloves to prevent injury with the edge of the panel.

5.7.1 Preliminary Preparation for Wiring

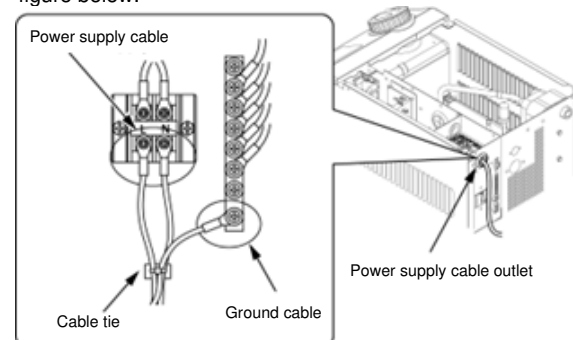
- 1) Prepare the cable and individual socket or earth leakage breaker shown in the table below.
- 2) Strip the sheath from both ends of the cable.
- 3) Disassemble the power supply connector (supplied as an accessory) and mount one end of the cable to the L, N and E terminals and reassemble the power supply connector.
- 4) Connect the other end of the cable to a plug or crimped terminal that is connectable to the secondary side of the earth leakage breaker.

Model	Power supply voltage	Cable qty. x size	Recommended earth leakage breaker		
			Rated voltage [V]	Rated current [A]	Sensitivity of leak current [mA]
HRS040-A-20-T1-X158	1-phase 200-230V AC (50/60Hz)	3 cores x3.5mm ² [12 AWG] (including ground)	200, 230	20	30

Terminal block screw diameter: M4. Recommended crimp terminal: 5.5-4.

5.7.2 Wiring of Power Supply

- 1) Remove six screws to remove the upper panel.
- 2) Pull the upper panel towards the back of the product and lift it to remove.
- 3) Connect the power supply cable and earth cable as shown in the figure below.

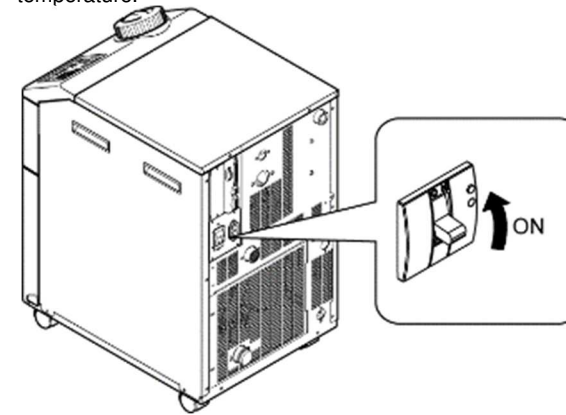


6 Start, Stop and Temperature Settings

6.1 Preliminary Preparation for Start-up

6.1.1 Supply of Power

- 1) Turn on the power switch.
⇒ The initial screen (HELLO screen) is displayed for approx. 8 seconds on the operation display panel. Then the display changes to the main screen, which displays the circulating fluid outlet temperature.

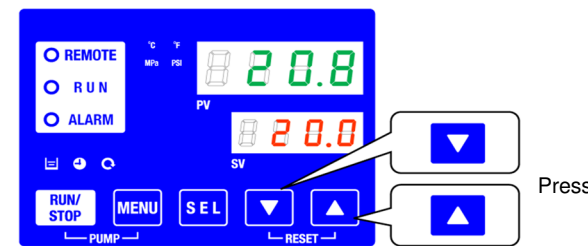


6.1.2 Air Release

- 1) Press the [PUMP] key ([RUN/STOP] key and [MENU] key simultaneously). The [RUN] lamp flashes and only the pump continues to operation. This operation allows the discharge of the circulating fluid and enables checking leakage from the piping and air release.
- 2) At this time, the fluid level can lower and cause the alarm "AL01; Low tank level", which will lead to the stop of the product.
- 3) In that case, check that there is no leakage from the user's piping, fill the circulating fluid as specified in "5.6 Filling of Circulating Fluid" and take necessary actions in "7. Alarms".
- 4) Repeat steps 1) to 3) until the alarm ("AL01; Low tank level") is no longer generated and all air is released from the circuit.

6.1.3 Temperature Setting

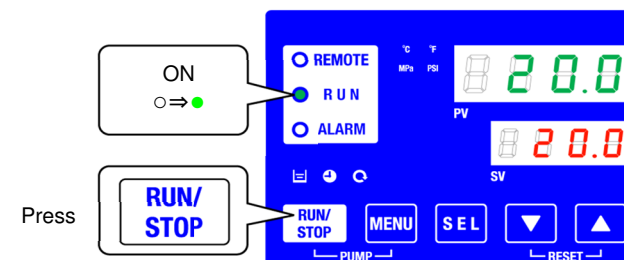
- 1) Press the [▼] and [▲] keys to change the SV to the required value.



Example: "Set value of circulating fluid discharge temperature" 20.0°C (Default value)

6.2 Starting the Product

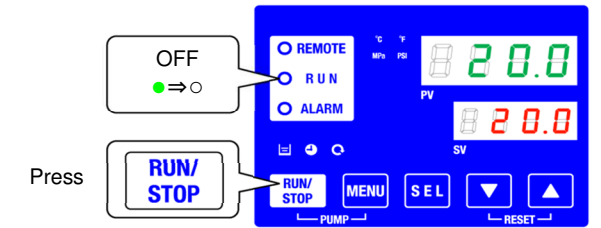
- 1) Keep the [RUN/STOP] key pressed for approx. 2 seconds.
⇒ The [RUN] lamp lights up (in green) and the product starts running. The circulating fluid discharge temperature (PV) is controlled to the set temperature (SV).



6 Start, Stop and Temperature Settings (continued)

6.3 Stopping the Product

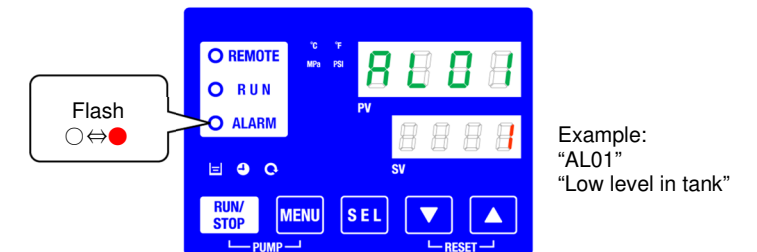
- 1) Keep the [RUN/STOP] key pressed for approx. 2 seconds.
⇒ The [RUN] lamp flashes (in green) and continues the operation until the product is ready to stop. After approx. 10 seconds, the [RUN] lamp goes off and the product stops.



7 Alarms

Caution

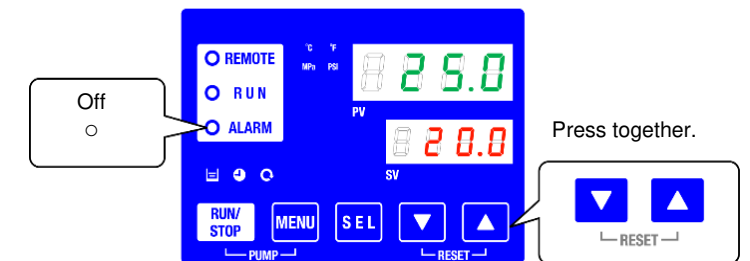
- Should some error occur, the [ALARM] lamp flashes (in red) and the buzzer sounds to inform the user of the 'Error'.
- The alarm code will be displayed on the operation panel so that the cause can be checked on "see Troubleshooting".
- Before resetting the alarm, read the "Causes and Remedies" of "Troubleshooting" and eliminate the cause explained there. Otherwise, the same alarm may be repeated.



- As accessories, the clear cover (for this manual) and alarm code list label are enclosed. Stick the label to the panel to check the contents of alarm codes.

7.1 Resetting of alarm

- 1) Press the [RESET] key ([▼] and [▲] keys simultaneously).
⇒ The buzzer and then [ALARM] lamp (red) go off.



8 Maintenance

8.1 General Maintenance

Warning

- 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.
- Do not touch the fins directly when cleaning the dustproof filter. It might cause injury.
- Remount all panels removed for inspection or cleaning. As this might cause injury or electric shock if the product is operated without the panels.

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.

8 Maintenance (continued)

- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

8.2 Control of Circulating Fluid Quality

Warning

- Use specified circulating fluids only. If other fluids are used, they may damage the product or result in dangerous hazards.
 - Refer to 2.2 Product specifications for specified circulating fluid.
- Clean the tank, circulating fluid circuit, and change the circulating fluid in the tank if any problems are found during the regular check. Even if no problems are found, it is recommended to change the fluid once every 3 months in case evaporation of the fluid causes concentration of impurities.

8.3 Daily Check

Caution

- Check each item of "Daily checklist", and if any error is seen, stop the operation of the product and turn off the user's power supply, and service the product.

Daily checklist

Item	Description of checking	Description of checking
Installation condition	Check the installation conditions of the product.	There is no heavy object on the product or excessive force on the piping. Temperature and humidity are within the specified range of the product.
Fluid leakage	Check the connected part of piping	There is no circulating fluid leakage from the connected part of piping.
Fluid amount	Check the liquid level indicator.	The circulating fluid must enter between the scales of "H" and "L".
Operation panel	Check the display.	The numbers on the display are clear.

Operation panel	Check the function.	The [RUN/STOP] and [MENU], [SEL], [▼], [▲] buttons operate properly.
Circulating Fluid temperature	Check on the operation panel.	There is no problem for use.
Operating conditions	Check the operation condition.	There is no abnormal noise, vibration, smell and smoke.

8.4 Monthly Check

Caution

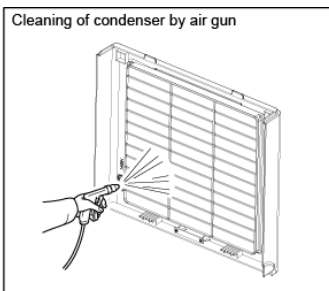
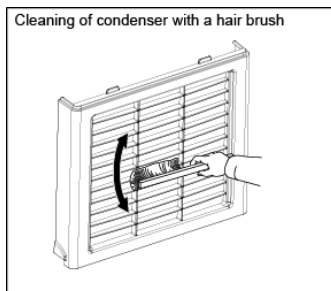
- If the air ventilation of the product have clogged with dust or debris, heat radiation performance reduces. This results in the reduction of cooling performance, and may stop the operation because the safety device is triggered. Shut off the power supply of the product when performing cleaning, maintenance or inspection. Otherwise, it might cause electric shock, injury or burn, etc.
- Replace all panels removed for inspection or cleaning. It might cause injury or electric shock if it is operated with the panel removed or opened.

8.4.1 Removal of the Dustproof Filter

- The dustproof filter is installed at the lower part of the front face of the thermo-chiller. It is mounted with a magnet. Pull out the lower part of the side surface of the dustproof filter.
- When the magnet comes off, pull the dustproof filter downwards to remove. Care should be taken not to deform or scratch the air-cooled condenser.

8.4.2 Cleaning of Filter

- Clean the dust filter with a long bristled brush or by air purging.



- Mount the dustproof filter in reverse order of removal.

8 Maintenance (continued)

8.5 Inspection every 3 Months

Item	Description of checking	Description of checking
Power Supply	Check the power supply voltage.	Make sure the supply voltage is within the specification range.
Circulating fluid	Replace the circulating fluid (ethylene glycol 50%) periodically.	<ul style="list-style-type: none"> Ensure that the circulating fluid has not been contaminated and that there is no algae growth. Circulating fluid inside the tank must be clean and there must not be foreign matter inside. Use clean water or pure water for the ethylene glycol solution. It is recommended to replace the circulating fluid every 3 months when periodic maintenance is performed.

8.6 Inspection every 6 months

Caution

- It is impossible to prevent the leakage from the mechanical seal completely because of its structure. Although the leakage is described as 3cc/hr or less (reference value) based on JIS standards.
- The recommend lifetime of the mechanical seal before needing replacement is 6000 to 8000 hours (usually 1 year).

8.6.1 Check for water leakage from pump

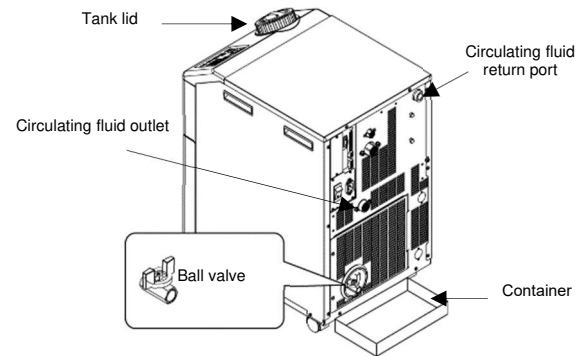
- Remove the panel and check the mechanical seal of the pump for excessive leakage. If the leakage is found, replace the mechanical seal. Order the mechanical seal described in '12.9 Consumable parts'.

8.7 Draining of the Circulating Fluid

Warning

- Stop the customer device and release the residual pressure before discharging the circulating fluid.
- Before discharging the facility water, in case of water-cooled refrigerated type, stop the equipment for the facility water, or stop the facility water circuit to release the residual pressure.

- Place a container with a capacity of approx. 10L underneath the drain outlet.



- Remove the tank lid.
- Open the ball valve to discharge the circulating fluid.
- Confirm that a enough circulating fluid has been drained from the user's machine and piping and apply air purge from the circulating fluid return port.
- After discharging the circulating fluid in the tank, close the ball valve and refit the tank lid.

8.8 Consumable Parts

Description	Part No.	Remark
Dustproof filter	HRS-S0001	For spare
Mechanical seal set	HRG-S0211	For pump maintenance

9 Troubleshooting

9.1 Troubleshooting

The troubleshooting method depends on which alarm has been generated. Refer to the "Alarm code list and Troubleshooting".

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.

9 Troubleshooting (continued)

Alarm Code list and Troubleshooting

Code	Description	Operation	Cause/Remedy (Press the reset key after eliminating the cause.)
AL01	Low level in tank	Stop ^{*1}	The fluid level has fallen below the level indicator. Fill the circulating fluid.
AL02	High circulating fluid discharge temp.	Stop	<ul style="list-style-type: none"> Ensure that the circulating fluids flow is 5 L/min. or more. Reduce the ambient temperature or heat load. Wait until the temperature decreases.
AL03	Circulating fluid discharge temp. rise	Continued ^{*1}	Check the ambient temperature condition and the temperature of supplied circulating fluid.
AL04	Circulating fluid discharge temp.	Continued ^{*1}	Check the ambient temperature condition and the temperature of supplied circulating fluid.
AL05	High circulating fluid return temp.	Stop	<ul style="list-style-type: none"> Ensure that the circulating fluids flow is 5 L/min. or more. Check the heat load are within the specified range.
AL06	High circulating fluid discharge pressure	Stop	Check the user's piping for bends, squash and foreign matters.
AL07	Abnormal pump operation	Stop	Restart and check the pump is operating.
AL08	Circulating fluid discharge pressure rise	Continued ^{*1}	Check the user's piping for bends, pinching or blockage by foreign matters.
AL09	Circulating fluid discharge pressure drop	Continued ^{*1}	<ul style="list-style-type: none"> Restart and check the pump is operating. Ensure that the tank level is within the appropriate range.
AL10	High compressor intake temp.	Stop	Check the temperature of the circulating fluid returning to the product.
AL11	Low compressor intake temp.	Stop	<ul style="list-style-type: none"> Check the circulating fluid flows. Check the circulating fluid in the evaporator is not frozen. Use a 15% ethylene glycol aqueous solution if operating with a set temperature lower than 10°C.
AL12	Low super heat temperature	Stop	Reduce the ambient temperature or heat load
AL13	High compressor discharge pressure	Stop	Reduce the ambient temperature or heat load
AL15	Refrigerant circuit pressure (high pressure side) drop	Stop	<ul style="list-style-type: none"> Check the ambient temperature is within the specified range. It is possible that refrigerant is leaking. Ask for the service. Reduce the ambient temperature or heat load.
AL16	Refrigerant circuit pressure (low pressure side) rise	Stop	Reduce the ambient temperature or heat load.

AL17	Refrigerant circuit pressure (low pressure side) drop	Stop	Check the circulating fluid flows.
AL18	Compressor overload	Stop	Leave for 10 minutes and restart, and check the compressor is operating.
AL19 ^{*2}	Communication error ^{*2}	Continued ^{*1}	The request message from the host computer has not arrived. Send it again.
AL20	Memory error	Stop	Written data is different from read data. Ask for the service of RAM.
AL21	DC line fuse cut	Stop ^{*1}	DC circuit fuse of the communication connector for the contact input/output is short circuited. Ask for the service of the fuse of the DC circuit. Confirm there is no incorrect wiring or load of 500mA or larger.
AL22	Circulating fluid discharge temp. sensor failure	Stop	The temperature sensor is short-circuited or opened.
AL23	Circulating fluid return temp. sensor failure	Stop	Ask for the service of the temperature sensor.
AL24	Compressor intake temp. sensor failure	Stop	
AL25	Circulating fluid discharge pressure sensor failure	Stop	
AL26	Compressor discharge pressure sensor failure	Stop	The pressure sensor is short-circuited or opened. Ask for the service of the pressure sensor.
AL27	Compressor intake pressure sensor failure	Stop	
AL28	Maintenance of pump	Continued	The timing of a periodical check is informed. Recommended to ask for the check and service of the pump, fan motor and compressor
AL29	Maintenance of fan motor	Continued	
AL30	Maintenance of compressor	Continued	
AL31 ^{*2}	Contact input1 signal detection ^{*2}	Stop ^{*1}	Contact input is detected.
AL32 ^{*2}	Contact input 2 signal detection ^{*2}	Stop ^{*1}	

*1 "Stop" or "Continued" are default setting. The user can change them to "Continued" / "Stop". For details, read the Operation Manual attached.

*2 "AL19, AL31, AL32" is disabled in the default setting. When this function needs to be enabled, refer to the Operation Manual attached.

9 Troubleshooting (continued)

9.2 Other Errors

The causes and remedies for failures that are not indicated by alarm numbers as shown in 'Alarm code list and Troubleshooting' table.

Content of Failure	Cause	Remedy
The operation panel displays nothing	The power supply switch is not turned on.	Turn on the power supply switch.
	Failure of power supply switch	Replace the power supply switch.
	No power supply. (Breaker is not on)	Supply the power.
The [RUN] LED does not light up even when the [RUN/STOP] switch is pressed.	Trip of breaker due to short-circuit and current leakage	Repair the short-circuit or current leaking part.
	Communication mode is set.	Check the presence of communication setting.
	Failure of the [RUN] LED	Replace the controller.
	Failure of the [RUN/STOP] switch	Replace the controller.

10 Limitations of Use

10.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

Caution

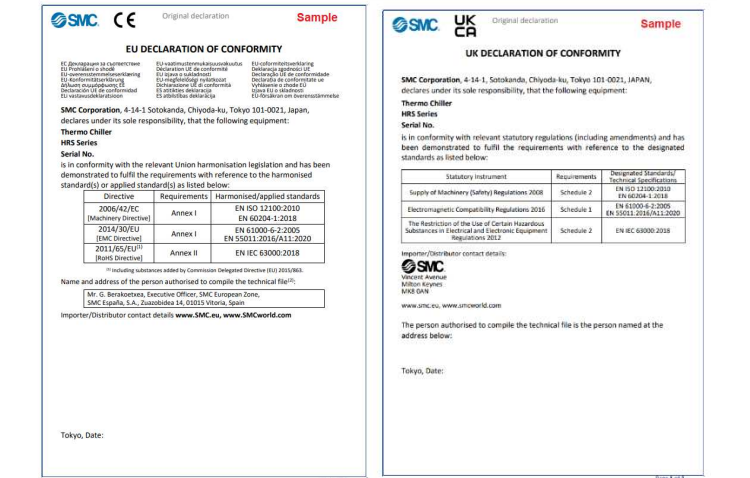
Refer to 'Section 2. Specifications' for the product limitations of use.

11 Product Disposal

This product should not be disposed of as municipal waste. Check your local regulations and guidelines to dispose this product correctly, in order to reduce the impact on human health and the environment.

12 Declaration of Conformity

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



13 Contacts

Refer to www.smcworld.com or www.smc.eu for your local distributor/importer.

SMC Corporation

URL : <https://www.smcworld.com> (Global) <https://www.smc.eu> (Europe)
 SMC Corporation, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan
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