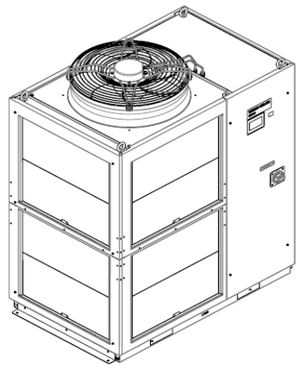
HRS400-TF222-053EN

ORIGINAL INSTRUCTIONS

Instruction Manual
Thermo-Chiller
HRS400-A∗-46-∗



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 generate 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 Product Specification

HRS400-A*-46-*

Model				HRS400-A*-46-*
Cooling method				Air-cooled refrigerated
Refrigerant				R410A (HFC) ; 2088 (GWP)
Quantity of refrigerant			kg	3.7
Control method				PID control
Ambient temperature*1			°C	-5 to 45
Circulating fluid system	Circulating fluid*1*2			Clean water, 15% ethylene glycol aqueous solution, Deionized water
	Set temperature range*1		°C	5 to 35
	Cooling capacity*3		kW	38
	Heating capacity*4		kW	8
	Temperature stability*5		°C	±0.1
	Pump capacity	Rated flow rate (outlet)	L/min	125 (0.45MPa)
		Max. flow rate	L/min	180
		Max. lifiting height	m	68
	Settable pressure range*6		MPa	0.10 to 0.68
	Minimum operating flow rate*7		L/min	40
	Tank capacity		L	60
	Electric conductivity setting range*8		µS/cm	0.5 to 45
	Circulating fluid Outlet and Return port			Rc1 (Symbol F: G1,Symbol N: NPT1)
	Tank drain port			Rc3/4 (Symbol F: G3/4,Symbol N: NPT3/4)
	Autmatic fluid fill function (Standard)	Supply pressure range	MPa	0.2 to 0.5
		Supply fluid temp. range	°C	5 to 35
		Automatic fluid port size		Rc1/2 (Symbol F: G1/2, Symbol N: NPT1/2)
		Over flow port size		Rc1 (Symbol F: G1, Symbol N: NPT1)
	Wetted material			Stainless steel, Copper (Brazing filler metal for the heat exchanger)*9, Brass*9,Bronze*9,PTFE,PU,PBT,FKM, EPDM,PVC, NBR, PE, POM, NR*9, PP*10,fluoropolymer*10
Electric system	Power supply			3-phase 380 to 415VAC(50/60Hz) Allowable voltage range ±10% (No continuous voltage fluctuation)
				3-phase 460 to 480VAC (60Hz) Allowable voltage range +4%, -10% (Max. voltage less than 500V and no continuous voltage fluctuation)
	Earth leakage breaker	Rated current	A	40
		Sensitivity current	mA	30
	Rated operating current*5		A	22
	Rated power consumption*5		kW	14.3
			kVA	15.2
Noise level (Front 1m / Height 1m)*5			dB(A)	71
Accessories				Operation manual (for installation/operation) (English 1, Japanese 1) Y strainer (40 mesh) 25A, Barrel nipple 25A, Anchor bracket 2pcs. (including 6 pcs. of M8 bolts)*7
Weight (dry condition)*12			kg	Approx. 340

Notes:
*1 When the ambient temperature or circulating fluid temperature is 10 °C or below, refer to the Operation Manual "3.2.2 Operation at low ambient temperature or low circulating fluid temperature".
*2 Use fluid for circulating fluid that conforms to: Clean water: Water Quality Standards of the Japan Refrigeration and Air Conditioning Industry Association (JRA GL-02-1994). 15% ethylene glycol aqueous solution: Diluted with clean water, without any additives such as antiseptics. DI water (pure water): Electrical conductivity 1 µS/cm or more (electrical resistivity 1MΩ・cm or less)
*3 (1) Ambient temperature: 32 °C, (2) Circulating fluid: Clean water, (3) Circulating fluid temperature: 20 °C, (4) Circulating fluid flow rate: Rated flow rate, (5) Power supply: 400 VAC
*4 (1) Ambient temperature: 32 °C, (2) Circulating fluid: Clean water, (3) Circulating fluid flow rate: Rated flow rate, (4) Power supply: 400 VAC
*5 (1) Ambient temperature: 32 °C, (2) Circulating fluid: Clean water, (3) Circulating fluid temperature: 20 °C, (4) Load: Refer to the cooling capacity shown in the specification table, (5) Circulating fluid flow rate: Rated flow rate, (6) Power supply: 400 VAC, (7) Piping length: Minimum.
*6 With the pressure control mode that controls the pressure automatically with the inverter.If the pressure control mode is not necessary,use the flow control function or the pump output setting function.
*7 Required flow rate to maintain the cooling capacity. When the flow rate is lower than the rated flow, use a by-pass piping set.
*8 Option D "With electrical conductivity control" only
*9 In the case of option M "Deionized water function", it is not included.
*10 Only in the option "Deionized water function", it is included.
*11 The anchor brackets (including M8 bolt x 6pcs.) are used for fixation with the skid when this product is packed. The anchor bolts are not attached.
*12 The weight will increase by:
- 14kg when option A "Caster-adjuster foot installed" is selected.
- 1kg when option D "With electrical conductivity control" is selected.
- 1kg when option K "Fluid fill port" is selected.

2 Specification - continued

2.2

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

Month \ Year		2021	2022	2023	….	2026	2027	2028	….
Jan	o	Z	Zo	Ao	Bo	….	Eo	Fo	Go	….
Feb	P	ZP	AP	BP	….	EP	FP	GP	….
Mar	Q	ZQ	AQ	BQ	….	EQ	FQ	GQ	….
Apr	R	ZR	AR	BR	….	ER	FR	GR	….
May	S	ZS	AS	BS	….	ES	FS	GS	….
Jun	T	ZT	AT	BT	….	ET	FT	GT	….
Jul	U	ZU	AU	BU	….	EU	FU	GU	….
Aug	V	ZV	AV	BV	….	EV	FV	GV	….
Sep	W	ZW	AW	BW	….	EW	FW	GW	….
Oct	X	ZX	AX	BX	….	EX	FX	GX	….
Nov	y	Zy	Ay	By	….	Ey	Fy	Gy	….
Dec	Z	ZZ	AZ	BZ	….	EZ	FZ	GZ	….

3 How to Order

HRS 400 - A □ - 46 - □

① Cooling capacity

400	38kW

② Cooling method

A	Air-cooled refrigeration

③ Piping thread type

Nil	Rc
F	G (Rc-G thread adapter set is included)
N	NPT (Rc-NPT thread adapter set is included)

④ Power supply

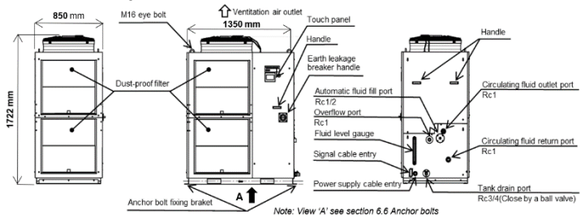
46	AC380~415V (50/60Hz) 3phase AC460~480V (60Hz) 3phase

⑤ Option

Nil	None
A	Caster-adjuster foot installed
D	With electric conductivity control
K	Fluid fill port
M	Applicable to DI water piping

4 Name of Parts and Accessories

4.1 Name of parts and Outline Dimensions

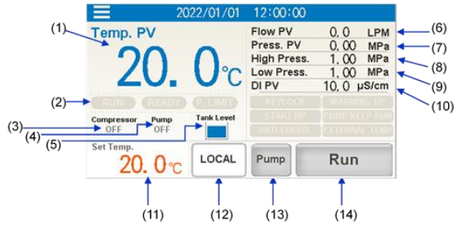


4.2 Accessories

1	Operation manual (English)		1 pc
2	Y strainer (40 mesh) 25A		1 pc
3	Barrel nipple 25A		1 pc
4	For HRS400-AF-46-* G thread adapter set		1 set
	For HRS400-AN-46-* NPT thread adapter set		1 set
5	Anchor brackets (M8 bolts)	--	2 pcs (6 pcs)
6	For option D. DI Filter		1 pc

4 Name of Parts and Accessories

4.3 Display Panel: Operation screen (home screen)



No.	Classification	Item	Description
1	Display value	Circulating fluid temperature	Displays the current temperature of circulating fluid.
2		Operating condition display	It indicates the run and stop status of the product.
3		Compressor	It indicates the run and stop status of the compressor.
4		Pump	It indicates the run and stop status of the pump.
5		Tank fluid Level	Indicates the tank fluid level with three levels: "Sufficient," "low," or "insufficient." Tank Level 「Sufficient」 Blue / Tank Level 「Low」 Yellow / Tank Level 「Insufficient」 Red
6		Circulating fluid flow rate	It indicates the fluid flow rate. This value is not measured by a flowmeter. It should be used as a reference value (rough indication).
7		Circulating fluid discharge pressure	It indicates the discharge pressure.
8		Pressure gauge on high-pressure side of compressor circuit	Displays the pressure gauge on high-pressure side of refrigerant circuit.
9		Pressure gauge on low-pressure side of compressor circuit	Displays the pressure gauge on low-pressure side of refrigerant circuit.
10		Circulating fluid electrical conductivity ∗1	It indicates the electrical conductivity.
11		Circulating fluid set temperature	Displays the circulating fluid temperature.
12	Button	Operation mode	To select an operation mode from the touch panel (LOCAL mode), contact input (DIO mode) or serial communication (SERIAL mode).
13		Independent pump operation	Pump operates independently while the button is pressed.
14		Run/Stop	To run/stop the product.

∗1 In the case of option D "With electrical conductivity control", to display the value.

5 Transportation, Transfer and Moving

5.1 Moving by forklift and slinging or by casters

⚠ Warning

- The product is a heavy object (Refer to 2.1 Product specification for weights).
- Moving by forklift and slinging should be done by persons who have required licenses.
- Moving the product by casters should be done by 2 persons or more

6 Installation

6.1 Installation

Warning

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

6.2 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.

6.3 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 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.
- Location where condensation forms on the inside electrical parts.
- Do not install subjected to strong high frequencies radiations.
- Do not use in locations at altitudes of 3000m or higher (except for product storage and transport), refer to the Operation Manual.
- Do not install in a location without adequate space for maintenance.

6.4 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.**

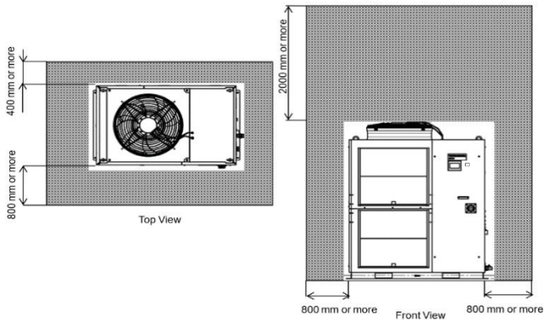
Caution

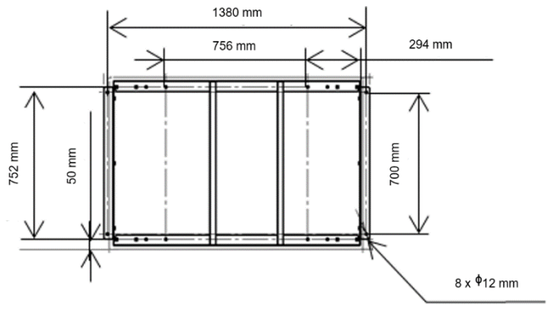
- Have enough space for ventilation for the product. Otherwise, may cause a lack of cooling capacity or/and stoppage of the product.
- Have enough space for maintenance.
- Install the product on a vibration free floor.
- Prepare M10 anchor bolts that are suitable to the floor that the product will be installed. Refer to '**6.6 Anchor bolts**' for outline dimensions for the position of the anchor bolts.

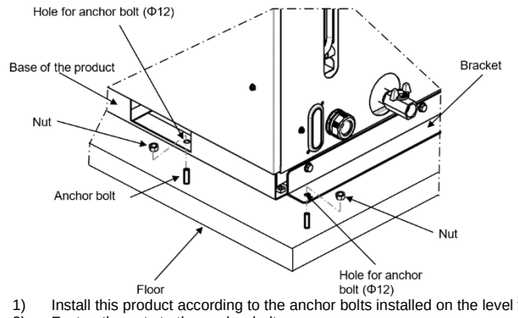
6 Installation - continued

6.5 Recommended install space

6.6 Anchor bolts (dimensions (mm); View A)





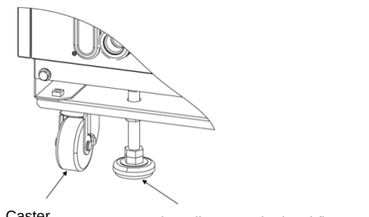


1) Install this product according to the anchor bolts installed on the level floor.
2) Fasten the nuts to the anchor bolts.
3) Make sure that there is no looseness on all the anchor bolts and nuts.
4) SMC Foundations bolt set [IDF-AB500] (SUS M10x50mm) is applicable. Please order separately.

6.6.1 Use the adjuster-foot

Caution

In case of using "Caster Adjuster-foot", be sure to use the adjuster foot to install on the floor. The adjuster foot is not earthquake-proof. If necessary make an earthquake-resistant measure on the customer side.



6 Installation - continued

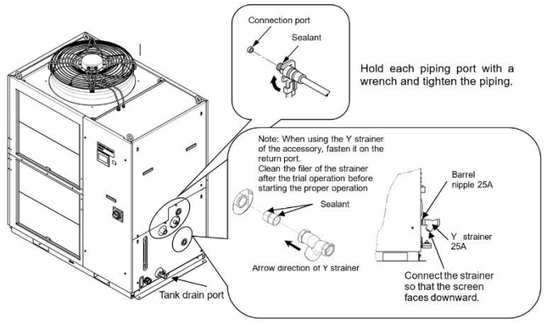
6.7 Piping

Caution

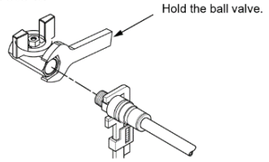
- Before piping make sure to clean up chips, cutting oil, dust etc.
- The piping should be selected with due consideration of temperature and pressure.
- Do not generate a rapid change of pressure by water hammer etc. The product and piping might be damage.
- Hold the piping port firmly with specific wrench when tightening.

Tighten fittings to the specified tightening torque.

Description	Port size	Recommended tightening torque	Recommended piping specifications
Circulating fluid outlet port	Rc1	36 to 38Nm	1.0 MPa or more
Circulating fluid return port	Rc1	36 to 38Nm	1.0 MPa or more
Automatic fluid fill port	Rc1/2	20 to 25Nm	1.0 MPa or more (Automatic fluid fill pressure: 0.2 to 0.5 MPa)
Overflow port	Rc1	36 to 38Nm	ID 25 mm or more
Tank drain port	Rc3/4	28 to 30Nm	ID 19 mm or more



When piping the drain port, hold the ball valve of the drain port with a wrench not a rote it.



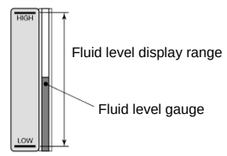
6.8 Filling of Circulating Fluid

Caution

- When the set circulating fluid temperature and/or the ambient temperature is lower than 10°C, use 15% aqueous solution of Ethylene Glycol. Tap water may freeze in the Thermo-chiller, leading to malfunction. Additives such as antiseptics cannot be used.
- If deionized water is used, the conductivity should be 1μS/cm or higher (Electrical resistivity: 1MΩ·cm and lower).
- Confirm that the fluid level is between "High" and "Low" level of the fluid level gauge.
- Connect the piping from the overflow port to the sump pit to drain the excessive fluid from the tank.
- Check drain port is closed by the valve to prevent the supply circulating fluid from draining out.

6.8.1 Auto fluid-fill function

1) Open the fluid supply valve that is connected to the automatic water fill port.
2) Fluid supply starts and stop automatically with ball tap in the tank.

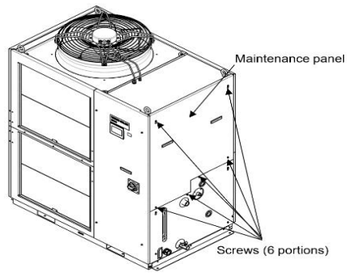


Fluid level gauge

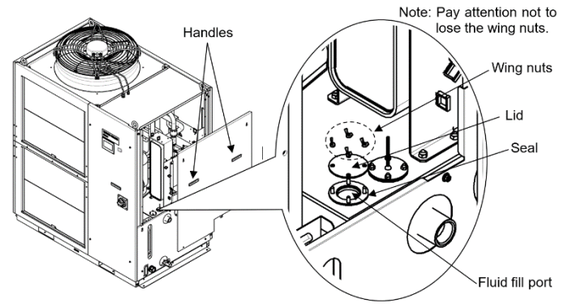
6 Installation - continued

6.8.2 Fill of fluid without using the auto fluid-fill function

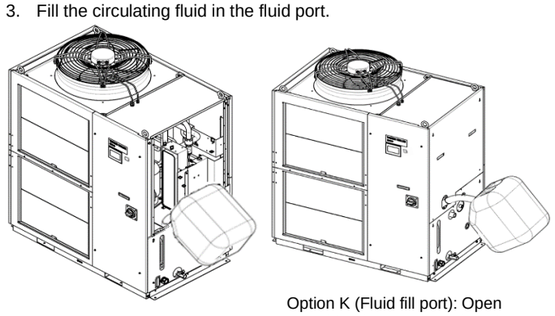
1. Remove the screws to remove the right-side upper panel.



2. Hold the handle and pull the upper right-side panel and remove panel. Remove the wing nuts (x4) on top of the tank and remove the lid.



3. Fill the circulating fluid in the fluid port.



Option K (Fluid fill port): Open cap of the fluid port and fill with circulating fluid.

6.9 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.

6 Installation - continue

6.9.1 Preliminary Preparation for Wiring

Prepare the power supply shown in the following table.

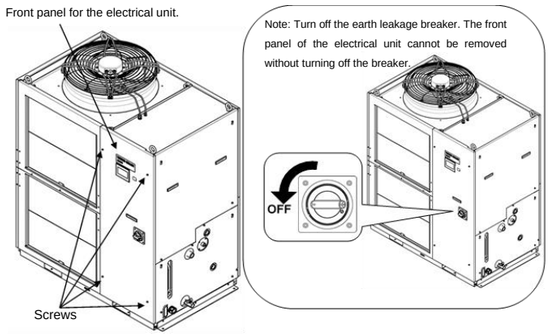
For the connection between the product and power supply, use the power supply cable and earth leakage breaker shown below:

Model	Power supply voltage	Terminal block screw diameter	Recommend crimp terminal	Cable specification*1	Earth leakage breaker	
					Rated current [A]	Sensitivity of leak current [mA]
HRS400-A-46	3-phase 380 to 415V AC (50Hz/60Hz) 3-phase 460 to 480V AC(60Hz)	M5	R5.5-5	4 corexAWG10 (4coresx 5.5mm²) including ground	40	30

•**1** Cable specifications are the examples when using the product at a continuous allowable operating temperature of 70°C, with an operating voltage of 600 V and two kinds of plastic insulated wires at an ambient temperature of 30°C. Please select the proper size cables according to the actual condition.

6.9.2 Wiring of Power Supply

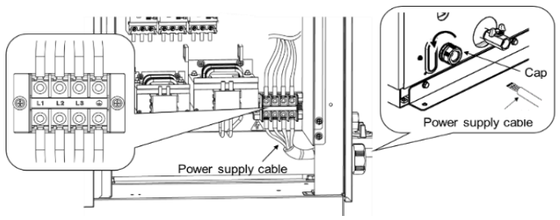
1) Turn off the breaker handle.
2) Remove 4 screws to remove the front panel.
3) Hold the handle and pull up the front panel of the electrical unit and remove.



4) Loosen the power cable outlet cap and insert the power cable.
5) Connect the power supply cable and ground cable as shown below:

Warning

- Connect an over current protection to the power cable connected to the equipment to avoid hazard.

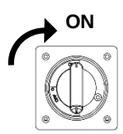


7 Start, Stop and Temperature Settings

7.1 Preliminary Preparation for Start-up

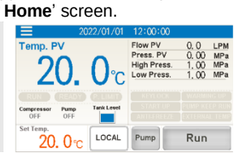
7.1.1 Supply of Power

1) Turn on the breaker handle.



2) The '**Start-up**' screen first appears on the touch panel and then switches to the '**Operation / Home**' screen.

Start-up screen

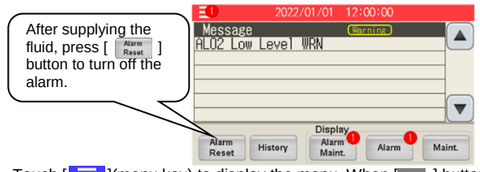


Operation / Home screen

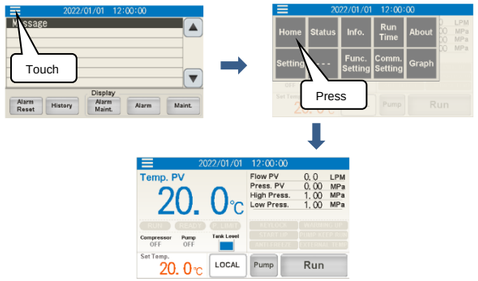
7 Start, Stop and Temperature Settings - continue

7.1.2 Preparation of circulating fluid

1) Touch [Pump] button on the touch panel. Pump operates independently while pressing the [Pump] button.
[Pump] button (blue) lights up during independent pump operation. The circulating fluid is then supplied to user's device and the piping to bleed the air inside the piping.
2) If the fluid level in the tank drops, an alarm is activated and "AL02 Low Level WRN" is displayed on the screen.
3) Supply circulating fluid in the range between HIGH and LOW to turn off the alarm. After supplying the circulating fluid, press [Alarm Reset] button to turn off the alarm. The displayed alarm will be turned off.

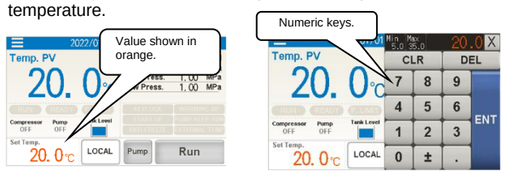


4) Touch [☰](menu key) to display the menu. When [Home] button is pressed, the home screen will be displayed.



7.1.3 Temperature Setting

1) Press the [SP] value on the touch panel (home screen) to display numeric keys to set the circulating fluid set temperature. Enter the set temperature.

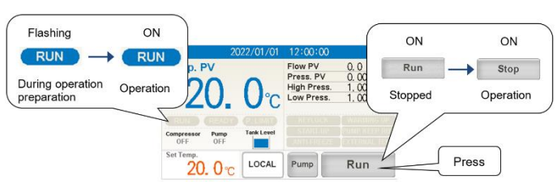


7.1.4 Starting the product

1) Press [Run] button on the home screen.

Start the operation:

- The operating condition display [Run] flashes during the operation preparation.
- The [Run] button switches to the [Stop] button as soon as operation starts.
- The display turns on [RUN] when it starts operating.



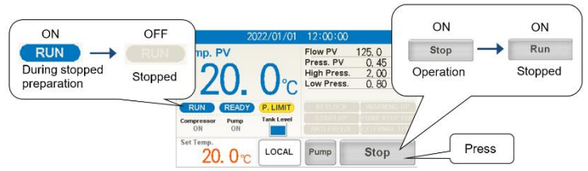
7 Start, Stop and Temperature Settings – continue

7.1.5 Stop of the Product

Press [Stop] button on the home screen.

Stop the operation:

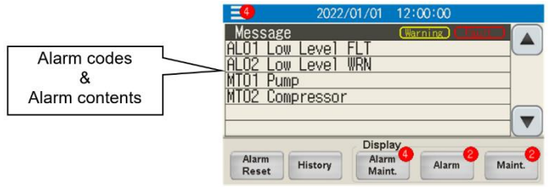
- The operating condition display [Run] flashes during the stop preparation period.
- The operating condition display switches from [Stop] to [Run] as soon as the stop preparation starts.
- [RUN] display turns off when it has stopped running.



8 Alarms

The product makes notification in the order shown below when any alarm is generated.

1) The screen automatically moves to the "Information" screen and displays alarm codes with their contents. (Refer Operation manual section "5.4.4 Information screen " for the operation method of "Information" screen.).



2) When an alarm occurs, this product operates in two ways depending on the content of the alarm:

- Operation continuation alarm: When an alarm occurs, this product continues to operate. The alarm content will display "**WRN**".
- Operation stop alarm: When an alarm occurs, this product stops. The alarm content will display "**FLT**".

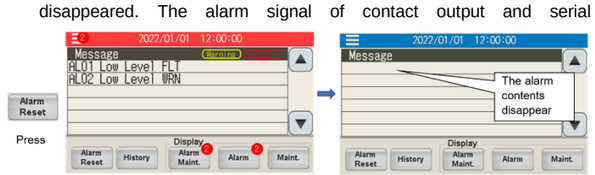
8.1 Reset of alarm

Caution

- Before resetting the alarm, read the "Causes and Remedies" of "Troubleshooting" and eliminate the cause as explained. Otherwise, the same alarm may be repeated.

- Press the button [Alarm Reset]
- The alarm is reset.

Confirm that the alarm content on the "Information" screen has disappeared. The alarm signal of contact output and serial



communication turns off.

9 Maintenance

9.1 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.

9 Maintenance - continue

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

9.2 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.
- When using tap water ensure that it satisfies the water standard shown in the Operation Manual.
- When deionized water is used, the conductivity should be 1.0 μS/cm or higher (Electrical resistivity: 1 MΩ·cm or lower).

9.3 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	
Installation condition	Check the installation conditions of the product.	Check that there is no heavy object on the product or excessive force appying to the piping.
		Temperature should be within the specification range of the product.
		Make sure the ventilation grilles are not obstructed. (For air-cooled type)
Fluid leakage	Check the connected part of piping	Check that there is no fluid leakage from the connected parts of the piping.
Amount of circulating fluid	Check the fluid level indicator.	Fluid level should be between "HIGH" and "LOW" levels of the fluid level gauge.
Touch panel	Check the indications on the display.	The display on the screen is clear.
Circulating fluid temperature	Check on the touch panel.	There should be no problem during operation.
Circulating fluid discharge pressure	Check on the touch panel.	There should be no problem during operation.
Circulating fluid flow rate	Check on the touch panel.	There should be no problem for operation. If flow rate has become smaller, check for any clogging of the Y-strainer and clean it.
Operating conditions	Check the operation condition.	• There should be no abnormality with noise, vibration, smell, or generation of smoke. • That the alram has not occurred.

9.4 Monthly Check

Cleaning of air vent (Air-cooled type)

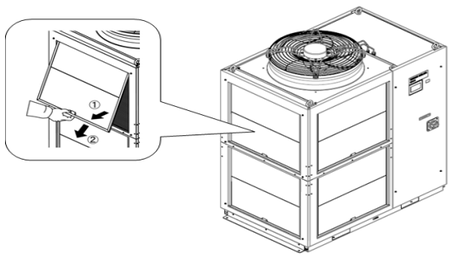
Caution

- 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.

9 Maintenance - continue

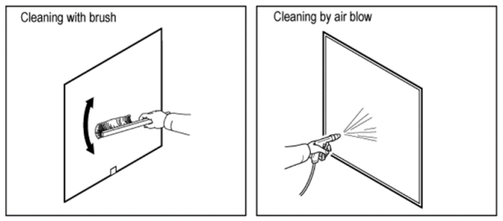
9.4.1 Removal of the Dustproof Filter

1) The dust-proof filters are installed on the front and left side of the product. In total there are four filters with the same shape.
2) The dustproof filters can be removed as shown in the below drawing. Care should be taken not to deform or scratch the air-cooled condenser.



9.4.2 Cleaning of Filter

1) Clean the dust filter with a long-bristled brush or by air purging.
2) Mount the dustproof filter in reverse order of removal.



10 Troubleshooting

10.1 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.

Alarm Code list and Troubleshooting

Alarm Code	Alarm Description / Sub Code	Default Setting: Operation	Default Setting: Threshold	Cause/Remedy (Press the reset key after eliminating the cause.)
AL01	Low Level FLT	FLT	--	The circulating fluid level of CH1 has decreased. Refilling circulating fluid.
AL02	Low Level WRN	WRN		
AL06	Fan Inverter	FLT	--	Check that there is no abnormality with the power supply system (example: ground fault, short-circuit, voltage fluctuation, abnormal interphase voltage, open phase, surge).
AL09	High Temp. FLT	FLT	55°C	• Check that the ambient temperature and heat load satisfy the specifications and that the circulating fluid flow rate is more than the minimum flow rate. • Please review the setting value.
AL10	High Temp.	OFF*1	45°C*3	
AL11	Low Temp.	OFF*1	5°C*3	• Check the effect of ambient temperature. • Please review the setting value.
AL12	TEMP READY ALARM	OFF*1	±1°C*3	• There may be causes such as large load fluctuation and flow rate fluctuation. • Please review the setting value.
AL17	HX In High Temp. FLT	FLT	60°C	• Check that the circulating fluid flow rate is more than the minimum flow rate. • Check that the heat load is within the specified range.
AL18	Press. Sensor	FLT*1	--	• Short-circuit or broken wire of the pressure sensor. Ask for the service.
AL19	High Press.	FLT*1	0.50 MPa*3	• Check that there is no bending, collapse, or clogging with the external piping.
AL20	Low Press.	FLT*1	0.03 MPa*3	• Restart the thermo-chiller and check if the pump runs.
AL28*4	High Electric conductivity	WRN*2	45.0μS/cm*3	Replace DI filter.
AL29	No Power Supply	FLT	--	Shut off the power to this product and restart it without connecting the USB port.
AL30	Digital input 1	FLT*1	--	Contact input has been detected.
AL31	Digital input 2	FLT*1	--	

10 Troubleshooting - continue

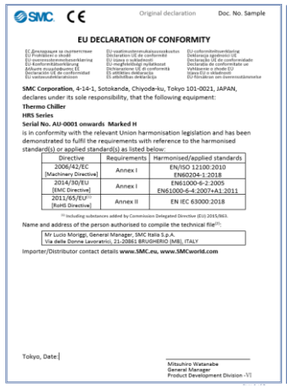
Alarm Code	Alarm Description / Sub Code	Default Setting: Operation	Default Setting: Threshold	Cause/Remedy (Press the reset key after eliminating the cause.)
AL34	Communication	WRN*1	--	No request message from the host computer. Try to send the request message again.
AL35	Ambient Temp.	OFF*2	2°C / 45°C	Check the environment.
AL36	Maintenance			
	1 Pump maintenance	OFF*2	20,000h	"Maintenance reminder" has occurred. Please maintain the corresponding part.
	2 Compressor maintenance		30,000h	
	3 Fan maintenance		30,000h	
	4 Dust-proof filter maintenance		500h*3	
	7 Battery maintenance		Abnormal occurrence	
	8 Maintenance of circulating fluid discharge pressure sensor			
	11 DI filter maintenance*4		500h*3	
AL37	Refrigeration Circuit			
	1 High compressor intake temp.	FLT	60°C	Refrigerant circuit failed. • Check that the ambient temperature, heat-load satisfy the specifications. • Check that the circulating fluid flow rate is more than the minimum flow rate. • Ask for the service.
	2 Low compressor intake temp.		-10°C	
	3 Super heat temp.		0°C	
	5 Refrigeration circuit high press. rise		--	
	6 Refrigeration circuit high press. drop			
	8 Refrigeration circuit low press. drop			
	9 Refrigeration circuit low press. rise			
	11 Compressor running failure			
	12 Compressor discharge temp. rise			
AL38	Sensor			
	1 Circulating fluid temp. sensor.	FLT	--	• Short-circuit or broken wire of the sensor. • Ask for the service
	2 Heat exchanger inlet temp. sensor.			
	3 Compressor discharge temp. sensor.			
	4 Compressor intake temp. sensor.			
	6 Ambient temp. sensor.			
	9 Refrigeration circuit high press. sensor			
	10 Refrigeration circuit low press. sensor			
	15 DI sensor*4			
AL39	Controller			
	1 EEPROM error	FLT		Controller failed. Shut off the power and restart the product. If it does not return to normal, ask for service.
	2 Internal communication error			
	3 FRAM error			
	5 Ref. memory error			
	6 Cir. memory error			
AL40	Compressor Inverter	FLT	--	Check that there is no abnormality with the power supply system (e.g., ground fault, short-circuit, voltage fluctuation, abnormal interphase voltage, open phase, surge).
AL41	Compressor Inverter Comm.			
AL42	Pump Inverter			
AL43	Pump Inverter Comm.			

Note:
*1 : Selectable from "OFF" / "WRN" / "FLT"
*2 : Selectable from "OFF" / "WRN"
*3 : The setting value can be changed.
*4 : Setting the electrical conductivity control only when option ‘D’ is selected.

Content of Failure	Cause	Remedy
Touch panel displays nothing.	The breaker of the user’s power supply or/and the breaker is not turned ON.	Turn ON the breaker.
	The breaker of this product is broken.	Replace the breaker.
	No power supply. (e.g. Breaker(s) in the power supplying route has not been turned ON.)	Supply the power.
	The breaker for the user’s facility or the optional breaker has tripped due to short-circuit or leakage of electricity.	Repair the short-circuited part or the electricity leaking part.
	The DC power supply has failed.	Replace the DC power.
The product does not operate after pressing the [Run / Stop] button.	Communication setting has been turned ON.	Check the setting of the operation mode.

11 Declaration of Conformity

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



SMC CE — Original declaration — Doc. No. Sample

EU DECLARATION OF CONFORMITY

SMC Corporation, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN, declares under its sole responsibility, that the following equipment:

Thermo Chiller
HRS Series
Serial No. AU-0001 onwards Marked H

is in conformity with the relevant Union harmonisation legislation and has been demonstrated to fulfil the requirements with reference to the harmonised standard(s) or applied standard(s) as listed below:

Directive	Requirements	Harmonised/applied standards
2006/42/EC [Machinery Directive]	Annex I	EN/ISO 12100:2010 EN60204-1:2018
2014/30/EU [EMC Directive]	Annex I	EN61000-6-2:2005 EN61000-6-4:2007+A1:2011
2011/65/EU*1 [RoHS Directive]	Annex II	EN IEC 63000:2018

*1 Including substances added by Commission Delegated Directive (EU) 2015/863.

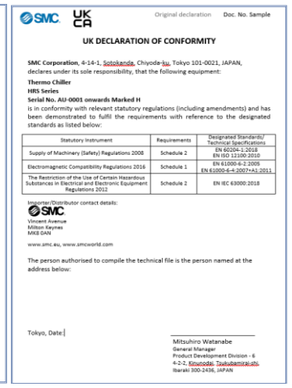
Name and address of the person authorised to compile the technical file*2:

Mr Lucio Morigi, General Manager, SMC Italia S.p.A.
Via delle Donne Lavoratrici, 21-20861 BRUGHERIO (MB), ITALY

Importer/Distributor contact details www.SMC.eu, www.SMCworld.com

Tokyo, Date

Mitsuhiro Watanabe
General Manager
Product Development Division - VI



SMC UK CA — Original declaration — Doc. No. Sample

UK DECLARATION OF CONFORMITY

SMC Corporation, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN, declares under its sole responsibility, that the following equipment:

Thermo Chiller
HRS Series
Serial No. AU-0001 onwards Marked H

is in conformity with relevant statutory regulations (including amendments) and has been demonstrated to fulfil the requirements with reference to the designated standards as listed below:

Statutory Instrument	Requirements	Designated Standards/ Technical Specifications
Supply of Machinery (Safety) Regulations 2008	Schedule 2	EN 60204-1:2018 EN ISO 12100:2010
Electromagnetic Compatibility Regulations 2016	Schedule 1	EN 61000-6-2:2005 EN 61000-6-4:2007+A1:2011
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012	Schedule 2	EN IEC 63000:2018

Importer/Distributor contact details:

SMC
Vincent Avenue
Milton Keynes
MK8 0AN

www.smc.eu, www.smcworld.com

The person authorised to compile the technical file is the person named at the address below:

Tokyo, Date

Mitsuhiro Watanabe
General Manager
Product Development Division - 6
4-2-2, Kinugodai, Tsukubamirai-shi, Ibaraki 300-2496, JAPAN

12 Limitations of Use

12.1 Limited warranty and disclaimer/compliance requirements

Refer to Handling Precautions for SMC Products.

Caution

Refer to ‘Section 2.1 Product Specification’ for the product limitations of use.

13 Product Disposal

This product shall 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.

14 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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