



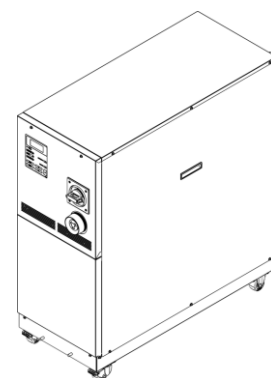
ORIGINAL INSTRUCTIONS

Instruction Manual

Thermo-chiller

HRZF010-WS

HRZF010-W1S



The intended use of this product used a built-in pump to circulate a liquid such as Fluorinated or Ethylene Glycol fluids, adjusted to a constant temperature by a circulate pump and facility water circuit. This circulating fluid cools the 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) <sup>(1)</sup>, and other safety regulations.

- <sup>(1)</sup>ISO 4414: Pneumatic fluid power — General rules and safety requirements for systems and their components.
- ISO 4413: Hydraulic fluid power — General rules and safety requirements for systems and their components
- 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

1 Safety Instructions (continued)

- 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.

	<b>Danger</b>	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
	<b>Warning</b>	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	<b>Caution</b>	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate 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 HRZF010-WS (Fluorinated Fluid Type) Specifications

Model		HRZF010-WS
Cooling Method		Water Cooled Refrigerant
Cooling Capacity (50Hz/60Hz) <sup>1)</sup>	kW	10
Operating Temperature Range	°C	-20 to 90
Temperature Stability <sup>2)</sup>	°C	± 0.1
Circulating Fluid <sup>3)</sup>		Galden® HT135*3 Fluorinert™ FC-3283 (-20 to 40 °C) Galden® HT200*3 Fluorinert™ FC-40 (20 to 90 °C)
Refrigerant		R454C (GWP146) <sup>11)</sup>
Quantity of Refrigerant	kg	1.5
Pump Capacity (50Hz/60Hz) <sup>4)</sup>	MPa	0.72 (At 20L/min)
Main Tank Capacity <sup>5)</sup>	L	Approx. 15
Sub-tank Capacity	L	Approx. 16
Circulating Fluid Port		Rc 3/4
Facility Water	Rated Condition <sup>9)</sup>	°C
Required Flow Rate	Temperature Change Condition Pressure <sup>10)</sup>	MPa
Facility Water Port		Rc 1/2
Power Supply <sup>6)</sup>	3-phase 50/60Hz, AC200/200 to 208V±10%	
Main Breaker Size	A	30
Dimensions <sup>7)</sup>	mm	W380 x D870 x H950
Weight <sup>8)</sup>	kg	165
Communication		Serial RS-485 (Dsub-9pin), Contact signal (Dsub-25pin)

Notes:

- The capacity is derived under the conditions that the circulating fluid temp is 20°C, the facility water temp. is 25°C and that the circulating fluid flow rate is obtained at a specified flow rate of pump capacity.
- This is a system output temperature, with flow rate defined in pump capacity secured, when stabilized with no disturbance. Its upper limit may be violated if an insufficient amount of the circulating fluid is present or a disturbance to flow rate is observed.
- Galden® is a registered trademark of Solvay, and Fluorinert™ is a trademark of U.S. 3M.
- The capacity is derived at the Outlet of this system when the circulating fluid temp. is at 20°C and maximum frequency operation by inverter.
- This is a minimum amount of the fluid for operation of the Thermo Chiller outfitted with internal piping and heat exchanger in this system. Circulating fluid temp.: 20°C
- For circulating fluid containment during line purge back or back flow. This is the volume of free space in Sub-Tank when fluid level is at "High" level. Main-Tank capacity is excluded.
- This is the dimensions of panels, which is derived without protrusions such as a breaker handle.
- This is the mass of the system when it contains no circulating fluid.
- The required flow rate when the cooling capacity load is applied under the condition in \*1.
- Temporarily required flow rate when set temperature is changed under the facility water temp.25°C.
- The value of Regulation (EU) 2024/573 and AIM Act 40 CFR Part 84.

2.2 HRZF010-W1S (Ethylene Glycol Type) Specifications

Model		HRZF010-W1S
Cooling Method		Water Cooled Refrigerant
Cooling Capacity (50Hz/60Hz) <sup>1)</sup>	kW	10
Operating Temperature Range	°C	-20 to 90
Temperature Stability <sup>2)</sup>	°C	± 0.1
Circulating Fluid <sup>3)</sup>		60% Ethylene Glycol Aqueous Solution
Refrigerant		R454C (GWP146) <sup>11)</sup>
Quantity of Refrigerant	kg	1.5
Pump Capacity (50Hz/60Hz) <sup>4)</sup>	MPa	0.40 (At 20L/min)
Main Tank Capacity <sup>5)</sup>	L	Approx. 15
Sub-tank Capacity	L	Approx. 16
Circulating Fluid Port		Rc 3/4
Facility Water	Rated Condition <sup>9)</sup>	°C / MPa
Required Flow Rate	Temperature change Condition Pressure <sup>10)</sup>	MPa
Facility water port		Rc 1/2
Power Supply <sup>6)</sup>	3-phase 50/60Hz AC200/200 to 208V±10%	
Main Breaker Size	A	30
Dimensions <sup>7)</sup>	mm	W380 x D870 x H950
Weight <sup>8)</sup>	kg	165
Communication		Serial RS-485 (Dsub-9pin), Contact signal (Dsub-25pin)

Notes:

- The capacity is derived under the conditions that the circulating fluid temp is 20°C, the facility water temp. is 25°C and that the circulating fluid flow rate is obtained at a specified flow rate of pump capacity.
- This is a system output temperature, with flow rate defined in pump capacity secured, when stabilized with no disturbance. Its upper limit may be violated if an insufficient amount of the circulating fluid is present or a disturbance to flow rate is observed.
- Pure ethylene glycol needs dilution with fresh water before use. Ethylene glycol with additives such as preservatives is NOT available. It not only deteriorates the performance, but also lead to cause failure.
- The capacity is derived at the Outlet of this system when the circulating fluid temp. is at 20°C and maximum frequency operation by inverter.
- This is a minimum amount of the fluid for operation of the Thermo Chiller outfitted with internal piping and heat exchanger in this system. Circulating fluid temp.: 20°C
- For circulating fluid containment during line purge back or back flow. This is the volume of free space in Sub-Tank when fluid level is at "High" level. Main-Tank capacity is excluded.
- This is the dimensions of panels, which is derived without protrusions such as a breaker handle.
- This is the mass of the system when it contains no circulating fluid.
- The required flow rate when the cooling capacity load is applied under the condition in \*1.
- Temporarily required flow rate when set temperature is changed under the facility water temp.25°C.
- The value of Regulation (EU) 2024/573 and AIM Act 40 CFR Part 84.

2 Specifications (continued)

Warning

Special products (-X) might have specifications different from those shown in this section. Contact SMC for specific drawings.

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	2024	2025	2026	...	2029	2030	2031	...
Month	C	D	E	...	H	I	J	...
Jan	o	Co	Do	Eo	...	Ho	Io	Jo
Feb	P	CP	DP	EP	...	HP	IP	JP
Mar	Q	CQ	DQ	EQ	...	HQ	IQ	JQ
Apr	R	CR	DR	ER	...	HR	IR	JR
May	S	CS	DS	ES	...	HS	IS	JS
Jun	T	CT	DT	ET	...	HT	IT	JT
Jul	U	CU	DU	EU	...	HU	IU	JU
Aug	V	CV	DV	EV	...	HV	IV	JV
Sep	W	CW	DW	EW	...	HW	IW	JW
Oct	X	CX	DX	EX	...	HX	IX	JX
Nov	y	Cy	Dy	Ey	...	Hy	Iy	Jy
Dec	Z	CZ	DZ	EZ	...	HZ	IZ	JZ

3 Transportation, Transfer and Moving

Caution

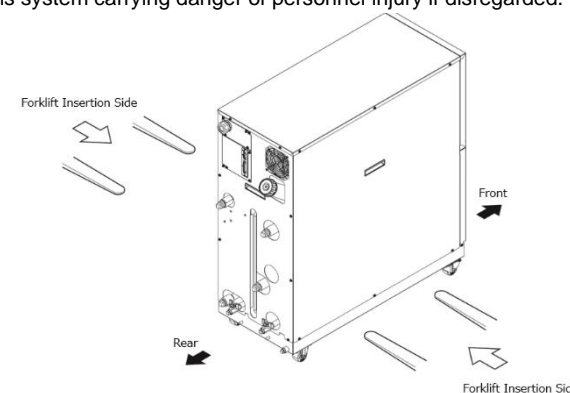
- Do not set this system on its side during transportation.
- Drain the remaining fluid out of the pipe as much as possible. The remaining fluid may spill if disregarded.
- Exercise caution not to damage the panel and piping with the forklift when transporting the system.

3.1 Transporting with a Forklift

Warning

- This product is heavy and requires a forklift to safely move it.
- For transporting with the forklift, be sure to insert the fork into a designed position. Always insert the forks all the way through. Be careful not to hit the casters and adjustable feet.

- Forklift insertion positions are on either left or right side of this system. Do not insert the from the front or the rear.
- Do not set this system on its side for transportation. Potential damage to this system carrying danger of personnel injury if disregarded.



3.2 Transporting with Caster

Warning

This system is heavy, which requires assistance for this work. Exercise caution and look out for sloped surfaces such as ramps, etc.

Caution

Do not grab piping on the back of this system or panel handles when transporting with the casters. Potential damage to piping and panels may occur if disregarded.

4 Installation

4.1 Installation

Warning

- It shall not allow the release of FLAMMABLE REFRIGERANT into areas served by the other circuits if these do not comply with minimum room area limit.
- Product installation should be kept from areas with the potential of flammable gas leak. Ignition may occur if leaked gas is collected around the product.
- This product is NOT designed for outside use. Potential electric shock, fire and product damage may occur if exposed to rain, water, and dust.

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

This product is to be installed on a level floor that can withstand the weight of this product. Potential water leak and personal injury due to system tipping over may occur if disregarded.

4.2 Environment

Warning

- Clean room specifications are not applied to this unit. The pump and ventilating fan installed in this unit generate particles.
- Do not use in an environment where dust, powder, corrosive gases, flammable gases, chemicals, oil, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.
- Do not install in an environment that is subject to abrupt changes in temperature.
- Do not install in an environment that is subject to intense electromagnetic noise (intense electric field, intense magnetic field or surges) or strong high frequencies.
- Do not install in an environment that is subject to static electricity, or condition that discharges static electricity to the system.
- Do not install in an environment that is subject to potential lightning damage.

- Location where ambient temperature is out of the following range:
  - In storage 0 to 50°C (with no water or circulating fluid in piping)
  - In operation 10 to 35°C

- Location where ambient humidity is out of the following range or where condensation forms:
  - In transportation and storage 15 to 85%
  - In operation 30 to 70%
- Do not install where the altitude is 1000m or higher.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.
- Do not install in conditions that apply an external force or weight causing system deformation.
- Do not install if there is no adequate space for maintenance in the installation site.
- Do not install or store on an incline.
- Places where entry is not restricted to unaffiliated persons
- Places such as public hallways and lobbies

Caution

- When installing this product, it is recommended to attach anti-quake bracket.
- Preparation of anchor bolts suitable for floor material is your responsibility. M12-anchor bolts (4 pcs.) are required.

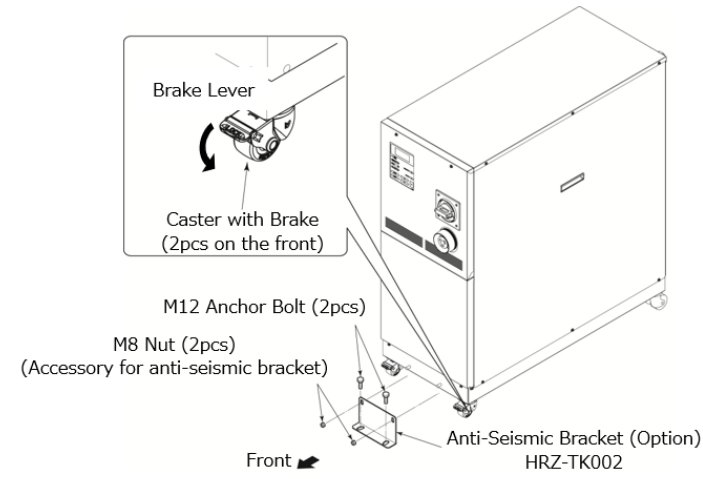
4.2.1 Procedure to install anti-quake bracket

- Transfer system to the installation site.
- Lock the brakes on casters (2pcs. On the front).
- Using a 13-mm open and wrench, attach the anti-seismic brackets to the front and back.

Caution

- Drain pan port is assigned to the bottom on the back of the system. Exercise caution not to damage the drain pan port when attaching the seismic bracket.

**4 Installation (continued)**



**4.3 Wiring**

**Warning**

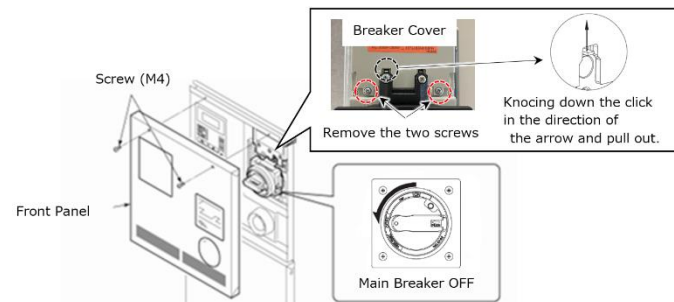
- Only designated personnel are allowed to install wiring.
- Be sure to turn OFF the power prior to wiring to assure safety. Do not do any wiring when the system is energized.
- The system wiring requires not only a thorough connection with the designated cable but also securing to prevent loose connection. Poor connection and securing may cause electric shock, heat sports, fire, or communication errors.
- Be sure to supply the power to this system according to specifications.
- Supply pure AC power. Potential malfunction may occur if a rectified AC with voltage rise (dv/dt) at zero crossing exceeds 40V /200µ sec.
- Always establish a connection to a ground for safety.
- Be sure that no ground connection is made to a water pipe, gas pipe and lighting rod.

**4.3.1 Wiring Installation**

Item	Cable Specification	
	Size (recommended)	10AWG x 4-conductor
Power cable	Crimp Contact (recommended)	Breaker: R5. 5-8 Earth bar: R5. 5-8
	Torque (recommended)	Breaker: 6 N • m Earth bar: 12.5 N • m
Main Breaker		30A

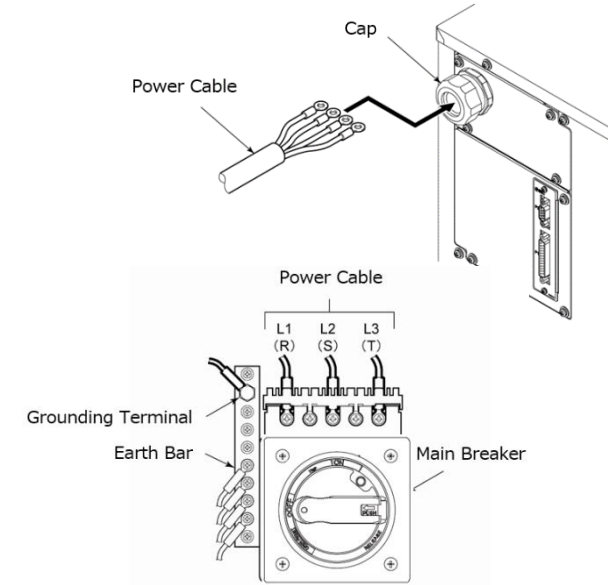
**4.3.2 Procedures for wiring installation**

1. Turn OFF the power breaker on the customer side (primary side), and then use the assigned procedures to perform lockout/tagout.
  - Connection of the power cable with this system must be established first. Do not connect the cable with the factory side at this point.
2. Turn OFF the main breaker of this system.
3. Undo the screws (2 pcs.) to remove the front panel.
4. Undo the screws (2 pcs.) to remove the breaker cover.
  - Make sure the breaker is at the 'Off' position.
  - Otherwise, the removal of the front panel is not possible.



**4 Installation (continued)**

5. Loosen the cap at the power cable access (strain relief) and insert the power cable.
6. Connect the power cables to the breaker terminal, correct phase rotation is required.
7. Connect the ground terminal (M8) of the power cable to the earth bar. Use a 13-mm open end wrench. Recommended torque: 12.5 N•m.
8. Attach the breaker cover to the breaker.
9. Attach front panel.
10. Connect the power cable to the power breaker on the customer/primary side.
11. Connect the communication cables with P1 and P2.



**4.4 Piping**

**Caution**

- The circulating fluid and facility water piping, carefully consider the suitability for operating pressure, temperature circulating fluid and facility water. If the operating performance is not sufficient, the piping may burst during operation.
- Before connecting piping make sure to clean up chips, cutting oil, moisture, dust, and other particles. Apply air blow to the parts before using. The presence of particles, oil or moisture in the circulating fluid circuit causes insufficient cooling or foaming of the circulating fluid in the tank.
- When installing piping or fittings, ensure sealant material does not enter inside the port. When using seal tape, leave 1 thread exposed on the end of the pipe/fitting.
- Tighten fittings to the specified tightening torque.
- Consider the suitability for the operating pressure and temperature of the circulating fluid and facility water, to minimise risk of pipes bursting during operation.
- Do not use corrosive materials such as aluminium and iron for fluid contact parts, like piping, as this may lead to clogging or leakage in the circulating fluid and facility water circuits and other problems. Provide protection against corrosion when using this product.
- Always insulate external circulating piping, as this may affect cooling performance.
- When using fluorinated liquid as the circulating fluid, do not use pipe tape as leakage may occur. We recommend that you use the following sealant: SMC Part No. HRZ-S0003 (Silicone sealant)
- The total capacity of circulating fluid required by external piping should remain under the capacity of the sub tank.
- Be sure to choose a circulating fluid pipe capable of letting the fluid flow at the rated flow rate or better. See "Pump performance" defined in the operation manual, appendix 8.1.1 "System specification" for the flow rate rating.
- The flow rate of the facility water is automatically adjusted depending on using conditions. The facility water outlet temperature can be up to 60°C.

**4 Installation (continued)**

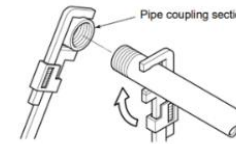
- Install valves in circulating fluid piping for flow rate adjustment and maintenance. As the value of flow rate displayed on the screen will be less than proper value when flow rate is excessive, flow rate adjustment should be started with the valves shut.
- Do not return the circulating fluid to the unit by installing a pump in the user system.
- Make sure of the locations of ports for the circulating fluid supply, return, facility water inlet, outlet and their corresponding connections are correct.
- Do not give an impact when the piping connector section is fixed or tightened. It may damage the piping or cause leakage.
- Have a drip pan available in case of a fluid leak.

**4.4.1 Pipe Diameter**

Pipe	Diameter	Recommended torque
Facility water inlet	Rc1/2	28 to 30 N • m
Facility water outlet	Rc1/2	28 to 30 N • m
Circulating fluid supply	Rc3/4	60 to 65 N • m
Circulating fluid return	Rc3/4	60 to 65 N • m
Tank drain port	Rc3/8 (with valve)	Piping not necessary
Sub-tank drain port	Rc3/8 (with valve)	Piping not necessary
Drain pan port	Rc3/8	Piping not necessary

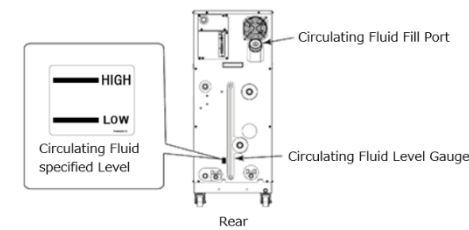
**4.4.2 Procedure for piping installation**

Secure the pipe coupling section with a pipe wrench and provide proper tightening to the pipe.



**4.4.3 Supply of circulating fluid**

- Remove the circulating fluid fill cap and fill the circulating fluid until it reaches its specified level.
- The circulating fluid specified level is a ranged between "HIGH" and "LOW".
- Be sure to tighten the cap after fluid supply to avoid evaporation loss.



- If the circulating fluid is supplied over the specified level, follow the procedure provided in the operation manual section 7.3.1 "Draining of circulating fluid out of tank" to drain excess fluid until it reaches the specified level.

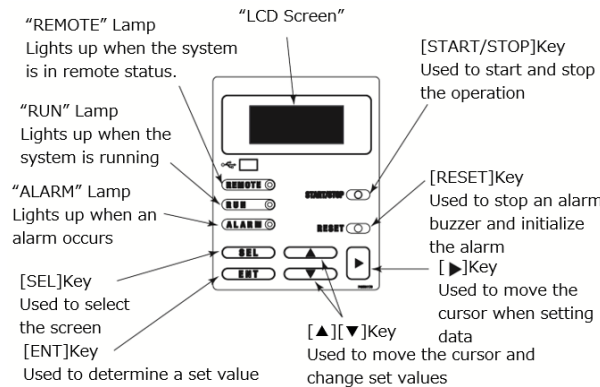
Note: Level between "HIGH" and "LOW" represents liquid in normal running conditions. The fluid level will start to drop, so additional fluid must be added until it is at the specified level.

- When the circulating fluid is an ethylene glycol aqueous solution Always check the concentration of the circulating fluid.
  - Normal concentration: 55 to 60%

**5 Start, Stop and Temperature Settings**

**5.1 Operation Display Panel**

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



**5 Start, Stop and Temperature Settings (continued)**

**5.2 Power On**

- Turn on the breaker handle. The model and revision number of the system should be visible on the LCD display.
- This screen is displayed for approximately 5 seconds and switches automatically to "Status screen 1".
- The "Alarm Display screen" is displayed if error occurs in this system.

**5.3 System Startup and Shutdown**

**5.3.1 System startup:**

- Press the [START/STOP] key on the operation display panel.
- The [RUN] lamp on the operation display panel comes on, and the "System Information screen" is flashing. The screen then changes to the "Status screen 1", which initiates system operation.

**5.3.2 System shutdown:**

- Press the [START/STOP] key on the operation display panel.
- The "System Information screen" is flashing on the LCD screen, and the [RUN] lamp comes on. The screen is returned to the "Setting screen 1", which prompts the [RUN] lamp to go out.

**5.4 Different Modes and LED Screen**

There are many screens and mode that they system has. Using keys on the display panel, you can change the mode and information displayed. The LED screen can display up to four lines of text, in the following format. Please refer to the operation manual section 5.3 "Operation Screen" for the full flow chart and details of the screens.

**5.4.1 Status Screens**

Cycle through screens 1 to 4 by pushing the [▼] and [▲] keys.

Status Screen 1		Description
1	TEMP PV	Discharge temperature of the circulating fluid (A value derived according to the offset <sup>1</sup> if applied)
2	TEMP SV	Set value of circulating fluid discharge temperature
3	RTN FLOW	Return flow rate of the circulating fluid
4	PRESS	Discharge pressure of the circulating fluid

<sup>1</sup> - See in operation manual "8.4 Offset Function" on offset features

TEMP PV	23.6 °C	← 1
TEMP SP	25.0 °C	← 2
RTN FLOW	20.0 LPM	← 3
PRESS	0.50 MPa	← 4

Status Screen 2		Description
1	TEMP PV	Discharge temperature of the circulating fluid
2	TEMP SP	Set circulating fluid temperature
3	<<TEMP READY>>	Displays the BAND/READY [Displayed when set value conditions are satisfied] <sup>1</sup>
4	TEMP BAND	Set value of BAND range <sup>1</sup>

<sup>1</sup> - See in operation manual "8.5 BAND/READY"

TEMP PV	23.6 °C	← 1
TEMP SP	25.0 °C	← 2
<<TEMP READY>>		← 3
TEMP BAND	1.0 °C	← 4

Status Screen 3		Description
1	OFFSET	The current mode <sup>1</sup>
2	OFFSET	Set offset

<sup>1</sup> - See in operation manual "8.4 Offset Function" on offset features

OFFSET	OFF	← 1
OFFSET	0.0 °C	← 2

Status Screen 4		Description
1	DI PV	Circulating fluid electric resistivity.
2	DI SP	Set value of circulating fluid electric resistivity.
3	DI ACC	Accumulated time that the solenoid valve in DI circuit is activated.
4	DI SV	Open/close status of solenoid valve in DI circuit.

Note: This screen displays only if a DI Control Kit (optional) is provided.

**5 Start, Stop and Temperature Settings (continued)**

DI PV	0.0 MΩ	← 1
DI SP	0.0 MΩ	← 2
DI ACC	0h	← 3
DI SV	OFF	← 4

**5.4.2 Alarm Display Screen**

In case of an alarm, the screen will switch to the alarm display screen. It will display the alarm code and message.

***ALARM*** ↓	
11: Reservoir	High Temp WRN

**5.4.3 Menu Screen**

Press [SEL] key when on a status screen to change it to the menu screen. Press the [▼] and [▲] keys to select the item. Press the [ENT] key to switch to the selected screen. Press [SEL] to return to the status screens.

No.	Item	Descriptions
1	SETTING	Switches to the "Setting screen" with the press of the [ENT] key.
2	REMOTE/LOCAL	Switches to the "Mode Selection screen" with the press of the [ENT] key.
3	MAINTENANCE	Switches to the "Maintenance screen 1" with the press of the [ENT] key.

<MENU>	
1. SETTING	← 1
2. REMOTE MODE	← 2
3. MAINTENANCE	← 3

**5.4.4 Setting Screen**

Press the [▼] and [▲] keys to select the item. Press the [ENT] key to switch to the selected screen. Press [SEL] to return to the menu screen

No.	Item	Setting Range
1	CONTROL SET	Switches to the "Control Setting Screen 1" with the press of the [ENT] key.
2	ALARM SET	Switches to the "Alarm Setting Screen 1" with the press of the [ENT] key.
3	INITIAL	Switches to the "Initial Setting Screen 1" with the press of the [ENT] key.

<SETTING>	
1. CONTROL SET	← 1
2. ALARM SET	← 2
3. INITIAL SET	← 3

**5.4.5 Setting Screen**

Press the [▼] and [▲] keys to select the item. Press the [ENT] key to switch to the selected screen. Press [SEL] to return to the menu screen

No.	Item	Setting
1	MODE	LOCAL
	SER REMOTE	System start/stop, and TEMP SP value setting are available only through serial RS-485 communication.

<REMOTE MODE>	
MODE: LOCAL	← 1

**5.4.6 Control Setting Screen**

Press the [▼] and [▲] keys to select the item. Press the [ENT] key to switch to the selected screen. Press [SEL] to return to the menu screen

No.	Item	Description	Setting Range	Default
1	TEMP SP	Allows the setting of circulating fluid discharge temperature.	-20.0 to 90.0 °C	25.0 °C
2	OFFSET	Allows the setting of OFFSET value <sup>1</sup>	-20.0 to 20.0 °C	0.0 °C
3	PUMP SP	Pump frequency setting screen <sup>2</sup>	10.0 to 40.0 LPM	20.0 LPM
			0.10 to 1.00 MPa	0.10 MPa

<sup>1</sup> - See in operation manual "8.4 Offset Function" on offset features.

<sup>2</sup> - See in operation manual "5.3.12 Control Setting Screen" for parameter settings.

<CONTROL SET>	
TEMP SP	25.0 °C ← 1
OFFSET	0.0 °C ← 2
PUMP SP	20.0 LPM ← 3

**5 Start, Stop and Temperature Settings (continued)**

**5.4.7 Alarm Setting Screen**

[▲] or [▼] key is used for selecting "Item." And pressing [ENT] key enabling changing the set point. Use the [▲] or [▼] key to change the set point value. Press [SEL] to return to the setting screen.

No.	Item	Description	Setting Range	Default
1	HI TEMP	Allows the setting of temperature to generate "11:Reservoir High Temp. WRN". Alarm is raised when circulating fluid temperature exceeds the set value.	-20.0 to 95.0 °C	93.0 °C
2	LO TEMP	Allows the setting of temperature to generate "32:Reservoir Low Temp. WRN". Alarm is raised when circulating fluid temperature falls below the set value.	-25.0 to 90.0 °C	-25.0 °C

Note: See in operation manual "5.3.14/15 Alarm Setting Screens" for further parameter settings.

<ALARM SET>	
HI TEMP	93.0 °C ← 1
LO TEMP	-25.0 °C ← 2

**5.4.8 Maintenance Setting Screen**

[▲] or [▼] key is used for selecting "Item." And pressing [ENT] key enabling changing the set point. Use the [▲] or [▼] key to change the set point value. Press [SEL] to return to the setting screen.

No.	Item	Description
1	VALVE OPEN	Switches to the "Maintenance Item Screen 3" with the press of the [ENT] key.
2	ALRAM HISTROY	Switches to the "Maintenance Item Screen 4" with the press of the [ENT] key.
3	RUNNING DATA	Switches to the "Maintenance Item Screen 5" with the press of the [ENT] key.

Note: See in operation manual "5.3.26-32 Maintenance Setting Screens" for further parameter settings.

**5.4.9 System Information Screen**

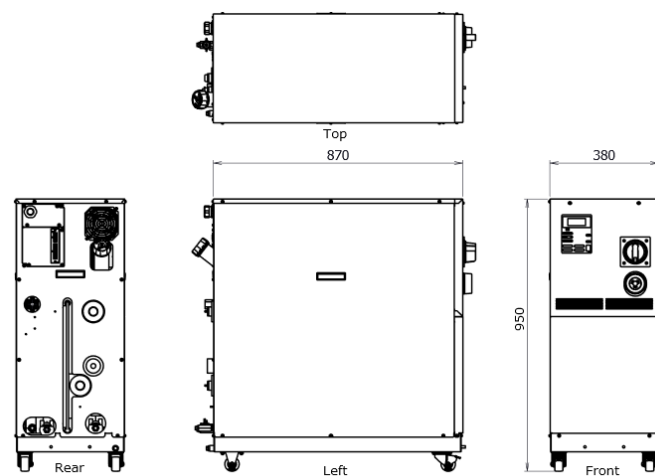
The "System Information Screen", as shown above, may be displayed upon system Start/Stop.

<INFORMATION>	
CPRSR Down Mode,	Running Stop ← 1

No.	Item	Description
1	INITIALIZE MODE (CONTROL VALVE) (RESERVOIR)	Operation preparation mode after turn-On the main breaker. System operation is disabled if this message is displayed. <b>CONTROL VALVE:</b> Positioning of the electronic expansion valve is performed. <b>RESERVOIR:</b> The circulating fluid flows in this system through the internal pump.
	Pump Up Mode Running Start	If your piping is supplied with an insufficient amount of the circulating fluid at system startup, the circulating pump in this system activated (repeating ON/OFF) to replenish piping with the circulating fluid. Continuous operation is initiated once piping is replenished with the fluid.
	CPRSR Down Mode. Running Stop	Compressor operation remains for approx. 20 seconds after circulating pump stop for the protection of the compressor at the time of system shutdown.

**6 Outline Dimensions**

**6.1 Dimensions of HRZF010-W#S**



**7 Alarms and Troubleshooting**

**7.1 Error Message**

The following are to be performed in the event of an error in the system:

- The "ALARM" lamp comes on.
- Alarm buzzer comes on.
- The "Alarm Display screen" is displayed on the LCD screen.
- Error signal is issued through external communication.

**7.2 Troubleshooting**

The procedure for error recovery varies with alarm types:

- Alarm Code 01 to 21,24,25,29,32: Eliminate the error cause. Press the [RESET] key on the operation display panel or power cycle the main breaker to enable error recovery to take effect.
- Alarm Code 22: Eliminate the error cause and power cycle the main breaker to enable error recovery to take effect.
- Alarm Code 23: Automatic error recovery is implemented upon elimination of the error.
- Alarm Code 24: This is an alarm for accessories (optional). No alarm of this type is issued if the system is outfitted with no accessories.

Alarm code list and Troubleshooting:

Code	Error Message	Operation Condition	Cause	Remedies
01	Water Leak Detect FLT	Stop	The fluid is pooled at the base of this system.	Check for fluid leak.
03	RFGT High Press FLT	Stop	The pressure of the refrigerant circuit exceeded the specified value (2.5MPa).	Check that facility water is being supplied to this system.
04	CPRSR Overheat FLT	Stop	The temperature in the compressor was excessive (110 °C).	Check that facility water is being supplied to this system.
05	Reservoir Low Level FLT	Stop	An insufficient amount of the circulating fluid is observed in the tank.	Replenish the circulating fluid.
06	Reservoir Low Level WRN	Continued	An insufficient amount of the circulating fluid is observed in the tank.	Replenish the circulating fluid.
07	Reservoir High Level WRN	Continued	An excessive amount of the circulating fluid is observed in the tank.	Drain the circulating fluid.

**7 Alarms and Troubleshooting (continued)**

Code	Error Message	Operation Condition	Cause	Remedies	
21	Controller Error FLT	Stop	An error was detected in the control system. See below "Alarm 21 CODE List"	'Contact the system supplier for request of inspection and repair.	
22	Memory Data Error FLT	Stop	An error was detected in data stored in the controller of this system.	· Re-tum ON the main breaker to recover from the error. · Contact the system supplier for request of inspection and repair.	
23	Communication Error	CODE 0001	Continued	An interruption of serial communication occurred in this system.	Contact the system supplier for request of inspection and repair.
		CODE 8000	Continued	An interruption of serial communication occurred between this system and your system.	Check for disconnection of the communication connector from this system.
24	DI Low Level WRN	Continued	The DI level of the re-circulating liquid lowered than your set value (Optional). <Setting range> : 0.0 to 2.0MΩ <Factory default> : 0.0MΩ	· Lower the setting for resistivity. · Replacement of the DI filter is required	
25	Pump Inverter Error FLT	Stop	An error was detected in the inverter for circulating pump.	Contact the system supplier for request of inspection and repair.	
28	CPRSR INV Error FLT	Stop	An error was detected in the inverter for compressor.	Contact the system supplier for request of inspection and repair.	

Code	Error Message	Operation Condition	Cause	Remedies
08	Temp. Fuse Cutout FLT	Stop	The circulating fluid tank was raised in temperature. Thermal fuse cutout temperature: 98°C.	Check the load specification. Replacement of the thermal fuse is required. Call the supplier for service.
09	Reservoir High Temp. FLT	Stop	The temperature of the circulating fluid exceeded the specified value. <Specified value> : 95 °C	Check the load specification.
10	Return High Temp WRN	Continued	The temperature of the circulating fluid exceeded the specified value. <Setting range> : HRZF010-WS : 110 °C HRZF010-W1S:100 °C	Check the circulating fluid flow rate, load specification.
11	Reservoir High Temp. WRN	Continued	The temperature of the circulating fluid exceeded your set value. <Setting range> : -20.0 to 95.0 °C <Factory default> : 93.0 °C	Reset the setting temperature.
12	Return Low Flow FLT	Stop	The flow rate of the circulating fluid falls below specified value. <Specified value> : 6L/min	· Check that the external valve is opened. · Prepare a thicker external pipe or install bypass piping.
13	Return Low Flow WRN	Continued	The flow rate of the circulating fluid falls below your set value. <Specified value> : 8.0 to 40.0L/min <Factory default> : 8.0L/min	Reset the setting flow rate.
19	FAN Motor Stop WRN	Continued	The ventilating fan came to a stop.	Check that the air vent on the back of the system is not blocked off.
20	Internal Pump Time Out WRN	Continued	The internal pump was under conditions of continuous operation over a specified time. <Specified time> : 10min	Check for fluid leak from circulating fluid piping in your system.

Code	Error Message	Operation Condition	Cause	Remedies
29	RFGT Low Press FLT	Stop	The refrigerant pressure falls below the specified value. <Specified value> : 0.1MPa	Contact the system supplier for request of inspection and repair.
32	Reservoir Low Temp. WRN	Continued	The temperature of the circulating fluid falls your set value. <Setting range> : -25.0 to 90.0 deg. C <Factory default> : - 25.0 deg. C	Reset the setting temperature.

**Alarm 21 CODE List**

Alarm No.	Error Message	CODE	Operation Condition	Cause	Remedies
21	Controller Error FLT	0001	Stop	Internal board communication error.	Contact the system supplier for request of inspection and repair.
		0002		Discharge temperature sensor error.	
		0004		Internal temperature sensor error.	
		0008		Return temperature sensor error.	
		0020		Internal temperature sensor error.	
		0040		Internal temperature sensor error.	
		0200		Circulating liquid pressure sensor error.	
		0800		Refrigeration circuit pressure sensor error.	
		1000		Refrigeration circuit pressure sensor error.	
		2000		Pump inverter communication error.	
		4000		Compressor inverter communication error.	
6000	Inverter communication error.				

## 8 Maintenance

### 8.1 General maintenance

#### Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous.
- Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly, and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

### 8.2 Water Quality Management

#### Caution

Only designated circulating fluid is permitted to use for this system. Potential system failure and fluid leak may occur if disregarded, which results in electric shock, ground fault, and freeze. Be sure to use fresh water (tap water) compliant with water quality standards in the table below for ethylene glycol aqueous solution and facility water. See operation manual section '7.1 Water Quality Management' for full details.

### 8.3 Inspection and cleaning

#### Warning

- Do not touch any electrical parts with wet hands. Keep wet hands away from electrical parts. Potential electric shock can occur if disregarded.
- Keep this system from water. Potential electric shock or fire can occur if disregarded.
- If the inspection and cleaning require the removal of the panel, be sure to re-attach the panel upon completion. Potential personal injury or electric shock

may occur if operated with the panel opened or removed.

#### 8.3.1 Daily Inspection

Inspection item	Inspection method	
Installation condition	Check of the condition of system installation	No heavy object is placed on this system. This system should not be subjected to external force. Temperature and humidity fall within the specified range.
Fluid leak	Check of the piping connector section	No leak of facility water and circulating fluid from the piping connector section
Fluid level	Reading of the level of the circulating fluid	Level falls within the circulating fluid specified level between "High" and "Low".
Operation display panel	Display check	Clarity of letters and numbers on the LCD display should be assured.
	Function check	[RUN] lamp is ON.
Circulating fluid temperature	Confirm the reading on the LCD screen	Temperature should be within setpoint.
Refrigerant pressure	Reading of the refrigerant pressure gauge	Value of "HI PRESS" See operation manual "Error! Reference source not found.age Error! Bookmark not defined." should be in the range.
Discharge pressure of circulating fluid	Confirm the reading on the LCD screen	Reading should not have deviated much from last inspection.
Circulating fluid flow rate	Confirm the reading on the LCD screen	Reading should not have deviated much from last inspection.
Operating condition	Operating condition check	No abnormal noise, vibration, odour, and smoke
Facility water	Check of the facility water	Temperature, flow rate and pressure fall within the specified range.
Circulating fluid supply port cap	Check by providing manual tightening	No looseness

## 8 Maintenance (continued)

### 8.3.2 Quarterly Inspection

#### Warning

Quarterly inspection requires an advance lockout/tagout of this system. See section 7.2.2 in the operation manual.

Inspection item	Inspection method
Circulating fluid	Circulating fluid is to be drained for check. Fluid should be free of particles, moisture <sup>1</sup> and foreign substances.
	For ethylene glycol solution, confirm that the concentration falls within the specified range.
	Recommended to replace the water.
Facility water	Facility water quality should fall within the standards specified.
Ventilation hole and electrical parts	No particles and dust should be present.

#### Caution

Moisture trapped in the fluorinated fluid freezes in the heat exchanger element and piping, which may lead to system failure.

### 8.4 Storage

The following should be performed for system long-term storage.

- Drain circulating fluid.
- Drain facility water.
- Cover the system with a plastic sheet for storage.

### 8.5 Draining of Circulating Fluid out of Tank

#### Warning

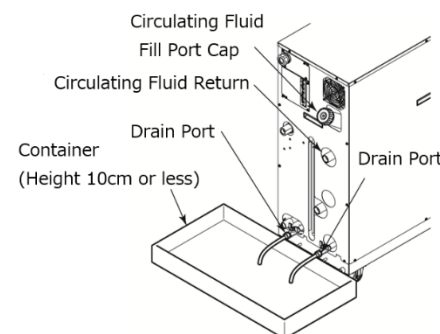
- If the recovered circulating fluid is contaminated by foreign substances, completely remove them. Do not reuse contaminated fluid.
- Potential insufficient cooling, system failure and froth in the circulating fluid may occur if disregarded.
- Recovered circulating fluid must be sealed in a container to prevent contamination from moisture or foreign substances.
- Store in a cool, dark place.

#### Caution

- Use the clean container for circulating fluid recovery. Reuse of the recovered circulating fluid with contaminated will cause insufficient cooling and system failure.

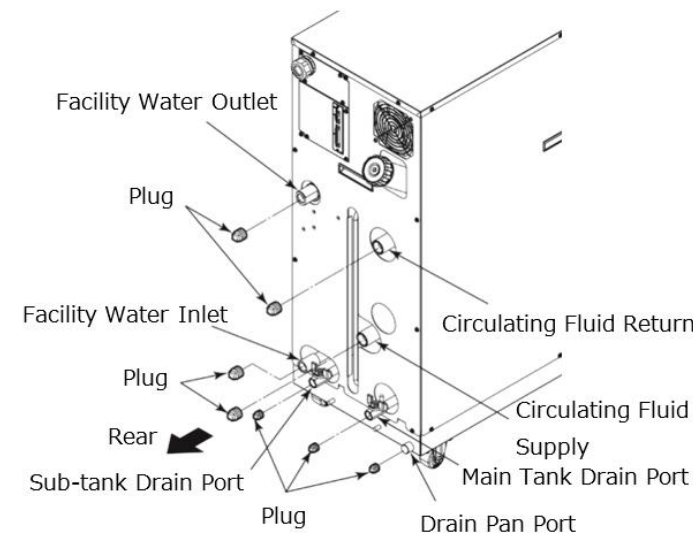
- Be sure to wait until the circulating fluid obtains room temperature for its draining. Potential burns and dew intrusion may occur if disregarded.

- Prepare the container for circulating fluid recovery at the back of this system.
- Connect the drain hoses to the tank drain ports. Insert the tip of the hose into the container.
  - Prepare a drain hose (Rc3/8-diameter) on your responsibility.
- Remove the cap of the circulating fluid port.
- Open the valves of the tank drain ports to drain the circulating fluid.
- Apply air purge from the circulating fluid return to push the circulating fluid remaining in the heat exchange back in the tank and drain it.



- Upon completion of fluid draining, close the valves of the tank drain ports.
- Add plugs to seal off ports on the rear of this system.

## 8 Maintenance (continued)

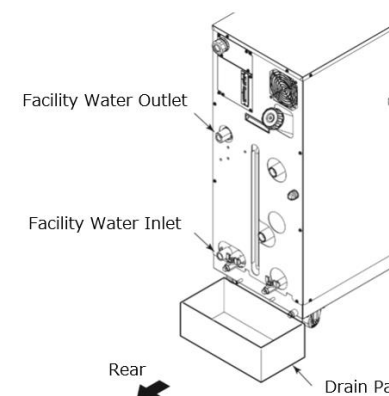


#### Caution

Be sure to drain the facility water only when it is at room temperature. Trapped fluid inside the system can still be hot. Potential burns can occur if disregarded.

#### 8.5.1 Draining of Facility Water

- Place the drain pan underneath the piping connections on the rear of this system.
  - A 7L-capacity or bigger drain pan is required.
- Remove facility water piping.
  - Remove the joints such as unions if present.
- Drain the facility water using the facility water outlet port.



### 8.6 Periodic Replacement Parts

Replacement of consumables listed in the following table is recommended. Contact the system supplier for request of part replacements.

Part	Recommended replacement cycle
Internal Pump	Every 3 years
Circulating pump	Every 3 years
Ventilation fan	Every 3 years
Inverter cooling fan	Every 3 years

Note: A replacement cycle may vary with your operation conditions.

## 9 Limitations of Use

### 9.1 Limited warranty and disclaimer/compliance requirements

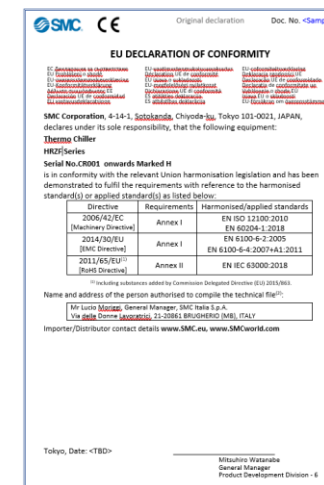
Refer to Handling Precautions for SMC Products.

## 10 Product Disposal

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

## 11 Declaration of Conformity

Below is a sample Declaration of Conformity (DoC) used in this product.



## 12 Contacts

Refer to [www.smcworld.com](http://www.smcworld.com) or [www.smc.eu](http://www.smc.eu) for your local distributor/importer.

# SMC Corporation

URL : <https://www.smcworld.com> (Global) <https://www.smc.eu> (Europe)  
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