

Brand: SMC
Style: Thermo-chiller Air Cooled
Model #: HRS040-AN-20
Size: 14.9"W x 23.5"L x 26.7"H (377mmW x 592mmL x 676mmH)
Voltage: 230V/60Hz/1-phase
Weight: 117lbs (53kg)
Cooling Capacity: 1.2-Ton (4200W)
Set Temperature Range: 40F - 100F (5C-40C)
Rated Flow: 1.85GPM (7LPM)
Max Flow: 10.6GPM (40LPM)
Max Pump Head: 62ft (19m)
Pump output: 0.26HP
Tank size: 1.3gal (5L)
Circuit Protector: 20A
Rated Operating Current: 9.6A
Rated power consumption: 1.9kVA
Noise Level: 66dB
HRS-BP004 SMC Bypass Set included



Included:
• HRS-BP004 SMC
Bypass Set
included

Pricing**

- HRS040-AN-20: \$4,930.00 *

Thermo-chiller Standard Type

Single-phase 200 to 230 VAC

HRS Series



RoHS



How to Order

Air-cooled refrigeration

HRS 018 - A - 20 -

Cooling capacity

| | |
|-----|---|
| 012 | Cooling capacity 1100/1300 W (50/60 Hz) |
| 018 | Cooling capacity 1700/1900 W (50/60 Hz) |
| 024 | Cooling capacity 2100/2400 W (50/60 Hz) |
| 030 | Cooling capacity 2600/3200 W (50/60 Hz) |
| 040 | Cooling capacity 3800/4200 W (50/60 Hz) |
| 050 | Cooling capacity 4700/5100 W (50/60 Hz) |
| 060 | Cooling capacity 4900/5900 W (50/60 Hz) |

* UL Standards: Applicable to only 60 Hz
The pump of 050 and 060 have a mechanical seal and leakage could occur depending on circulating fluid quality. We recommend you to use the particle filter kit, HRS-PF004, as a preventive measure.

Cooling method

A Air-cooled refrigeration

Pipe thread type

| | |
|-----|--|
| Nil | Rc |
| F | G (with PT-G conversion fitting set) |
| N | NPT (with PT-NPT conversion fitting set) |

Option

| Symbol | Option | Applicable model |
|--------|--|-----------------------------------|
| Nil | None | |
| B | With earth leakage breaker | HRS012/018/024 |
| J | With automatic fluid fill function | 030/040/050/060 |
| M | Applicable to deionized water piping ^{*1} | |
| T | High-pressure pump mounted ^{*2} | HRS012/018/024/030/040 |
| G | High-temperature environment specification | HRS012/018/024 |
| W | SI unit only | HRS012/018/024 030/040/050/060 |
| Z | Not UL compliant | HRS040 |

• When multiple options are combined, indicate symbols in alphabetical order.
*1 If using deionized water that is 1 MΩ·cm or more (1 μS/cm or less), please select this option.
*2 The cooling capacity will decrease by about 300 W from the value in the catalog.
The pump has a mechanical seal in it and leakage could occur depending on circulating fluid quality. We recommend you to use the particle filter kit, HRS-PF003, as a preventive measure.

Power supply^{*1}

| Symbol | Power supply |
|--------|--|
| 20 | Single-phase 200 to 230 VAC (50/60 Hz) |

*1 UL Standards: Applicable to only 60 Hz

Specifications

* There are different values from standard specifications. Refer to pages 52 to 54 for details.

| Model | HRS012-A-20 | HRS018-A-20 | HRS024-A-20 | HRS030-A-20 | HRS040-A-20 | HRS050-A-20 | HRS060-A-20 |
|---|---|---|-------------|-------------|-------------|-----------------------------|-----------------------------|
| Cooling method | Air-cooled refrigeration | | | | | | |
| Refrigerant | R407C (HFC) | | | R410A (HFC) | | | |
| Refrigerant charge | kg | 0.35 | 0.36 | 0.36 | 0.57 | 0.53 | 0.65 |
| Control method | PID control | | | | | | |
| Ambient temperature/Humidity/Altitude ^{*1, 12} | Temperature: 5 to 40°C, High-temperature environment specification (option): 5 to 45°C, Humidity: 30 to 70%, Altitude: less than 3000 m | | | | | | |
| Circulating fluid ^{*2} | Tap water, 15% ethylene glycol aqueous solution ^{*4} | | | | | | |
| Set temperature range ^{*1} | 5 to 40 | | | | | | |
| Cooling capacity (50/60 Hz) ^{*3} | W | 1100/1300 | 1700/1900 | 2100/2400 | 2600/3200 | 3800/4200 | 4700/5100 |
| Heating capacity (50/60 Hz) ^{*3} | W | 530/650 | | | 600/640 | 900/1100 | 1100/1400 |
| Temperature stability ^{*5} | °C | ±0.1 | | | | | |
| Rated flow (50/60 Hz) ^{*6, 7} | L/min | 7 (0.13 MPa)/7 (0.18 MPa) | | | | 23 (0.24 MPa)/28 (0.32 MPa) | 23 (0.21 MPa)/28 (0.29 MPa) |
| Maximum flow rate (50/60 Hz) | L/min | 27/29 | | | 34/40 | 31/42 | 29/38 |
| Maximum pump head (50/60 Hz) | m | 14/19 | | | | 50 | |
| Output | W | 200 | | | | 550 | |
| Tank capacity | L | Approx. 5 | | | | | |
| Port size | | Rc1/2 | | | | | |
| Fluid contact material | | Stainless steel, Copper (Heat exchanger brazing), Bronze, Alumina ceramic, Carbon, PP, PE, POM, FKM, EPDM, PVC | | | | | |
| Power supply | | Single-phase 200 to 230 VAC (50/60 Hz) Allowable voltage range ±10% | | | | | |
| Circuit protector | A | 10 | | | 20 | 30 | |
| Applicable earth leakage breaker capacity ^{*8} | A | 10 | | | 20 | 30 | |
| Rated operating current | A | 4.6/5.1 | 4.7/5.2 | 5.1/5.9 | 5.2/6.0 | 7.9/9.6 | 8/11 |
| Rated power consumption (50/60 Hz) ^{*3} | kVA | 0.9/1.0 | 0.9/1.0 | 1.0/1.2 | 1.0/1.2 | 1.6/1.9 | 1.7/2.2 |
| Noise level (50/60 Hz) ^{*9} | dB | 60/61 | | | 62/65 | 64/66 | 65/68 |
| Accessories | | Fitting (for drain outlet) 1 pc. ^{*11} , Input/output signal connector 1 pc., Power supply connector 1 pc. ^{*12} , Operation Manual (for installation/operation) 1, Quick Manual (with a clear case) 1 ^{*12} , Alarm code list sticker 1, Ferrite core (for communication) 1 pc., Power supply cable: Option (sold separately) to be ordered or prepared by the user. | | | | | |
| Weight ^{*10} | kg | 43 | | | 47 | 53 | 69 |

*1 No condensation should be present.

*2 If tap water is used, use water that is compliant with the Water Quality Standards of the Japan Refrigeration and Air Conditioning Industry Association (JRA GL-02-1994 cooling water system - circulating type - make-up water). Refer to "Specific Product Precautions" for other usable circulating fluids.

*3 ① Ambient temperature: 25°C, ② Circulating fluid temperature: 20°C, ③ Circulating fluid at the rated flow, ④ Circulating fluid: Tap water

Refer to the cooling capacity and heating capacity graphs on pages 39 to 43 for details.

*4 Use a 15% ethylene glycol aqueous solution if operating in a place where the circulating fluid temperature is 10°C or less.

*5 Temperature at the thermo-chiller outlet when the circulating fluid flow is at the rated flow and the circulating fluid outlet and return port are directly connected.

The installation environment and power supply are within the specification range and stable.

*6 The capacity at the thermo-chiller outlet when the circulating fluid temperature is 20°C

*7 The required minimum flow rate for maintaining the cooling capacity or temperature stability. The specification of the cooling capacity and the temperature stability may not be satisfied if the flow rate is lower than the rated flow. (In such a case, use a bypass piping set (sold separately).)

*8 Purchase an earth leakage breaker with a sensitivity current of 30 mA separately. (A product with an optional earth leakage breaker (option B) is also available.)

*9 Front: 1 m, height: 1 m, stable with no load, Other conditions → See *3.

*10 Weight in the dry state without circulating fluids

*11 It is not provided for the HRS050/060.

*12 It is not provided for the HRS040/050/060.

*13 If the product is used at an altitude of 1000 m or higher, refer to "Operating Environment/Storage Environment" (page 72) Item 14 "For altitudes of 1000 m or higher."

Circulating Fluid Temperature Controller

Thermo-chiller

Standard Type



(UL Standards)*1

*1 To be obtained for the HRS040

RoHS

Lightweight/Compact

Temperature stability $\pm 0.1^{\circ}\text{C}$

HRS050/HRS060



Same width for all models: **377 mm**

| Model | Size [mm] | Weight | Cooling capacity (60 Hz) | Set temperature range |
|------------|-----------------------|--------|--------------------------|-----------------------|
| HRS012 | W 377 x H 615 x D 500 | 40 kg | 1300 W | 5 to 40°C |
| HRS018 | | | 1900 W | |
| HRS024 | | | 2400 W | |
| HRS030 | W 377 x H 660 x D 500 | 47 kg | 3200 W | |
| New HRS040 | W 377 x H 676 x D 592 | 53 kg | 4200 W | |
| HRS050 | W 377 x H 976 x D 592 | 69 kg | 5100 W | |
| HRS060 | | 73 kg | 5900 W | |

Compatible with power supplies in Europe, Asia, Oceania, North, Central, and South America

- Single-phase 100 VAC (50/60 Hz), 115 VAC (60 Hz)
- Single-phase 200 to 230 VAC (50/60 Hz)

With heating function

Due to the heating method which uses discharged heat, a heater is unnecessary.

Convenient functions

Timer operation function/Unit conversion function/Power failure auto-restart function/Anti-freezing operation function

Easy maintenance

Toolless maintenance of filter

Self-diagnosis function and check display

35 types of alarm codes

Communication function

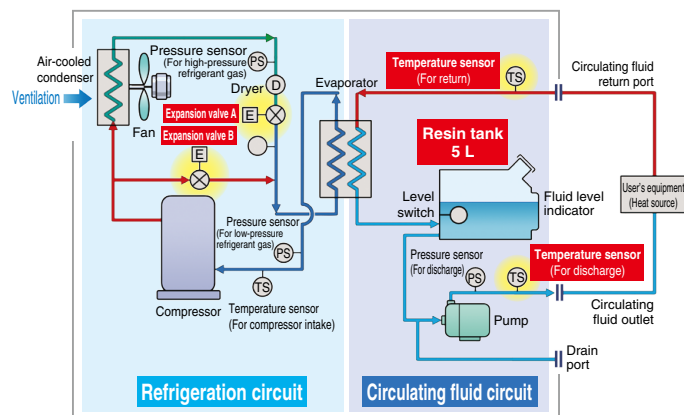
Equipped with serial communication (RS232C/RS485) and contact I/Os (2 inputs and 3 outputs) as standard

Environmentally friendly **R407C** **R410A** as refrigerant

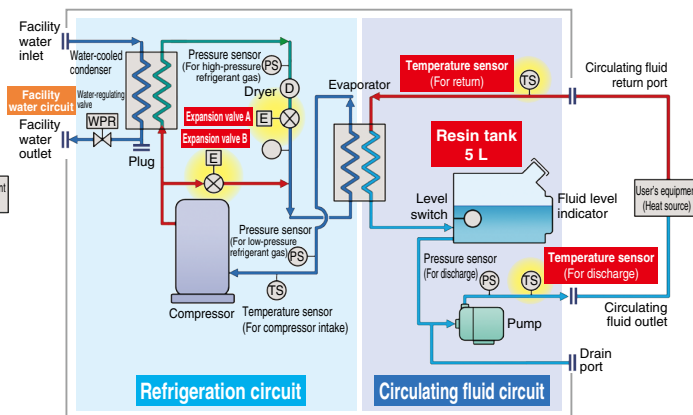
Temperature stability $\pm 0.1^{\circ}\text{C}$ / Compact

A precision temperature control method which utilizes expansion valves and temperature sensors allowed for the realization of a product with a high temperature stability of $\pm 0.1^{\circ}\text{C}$ and a small-size tank.

Air-cooled HRS□-A-□



Water-cooled HRS□-W-□



Refrigeration circuit

- The compressor compresses the refrigerant gas and discharges high-temperature, high-pressure refrigerant gas.
- In the case of air-cooled refrigeration, the high-temperature, high-pressure refrigerant gas is cooled down by fan ventilation in the air-cooled condenser, where it is then liquefied. In the case of water-cooled refrigeration, the refrigerant gas is cooled by the facility water in the facility water circuit in the water-cooled condenser, where it is then liquefied.
- The liquefied high-pressure refrigerant gas expands and its temperature lowers when it passes through expansion valve A, where it vaporizes after receiving heat from the circulating fluid in the evaporator.
- The vaporized refrigerant gas is sucked into the compressor and compressed again.
- When heating the circulating fluid, the high-pressure, high-temperature refrigerant gas is bypassed into the evaporator by expansion valve B to heat the circulating fluid.

Point The combination of the precise control of **expansion valve A** for cooling and **expansion valve B** for heating allows for high temperature stability.

Circulating fluid circuit

- After the circulating fluid discharged from the pump is heated or cooled by the user's equipment, it returns to the thermo-chiller.
- The circulating fluid is controlled to remain at a set temperature by the refrigeration circuit. It will then be discharged to the user's equipment side again by the thermo-chiller.

Point Since the refrigeration circuit is controlled by the signals from **2 temperature sensors (for return and discharge)**, precise temperature control of the circulating fluid can be achieved. Therefore, there is no need for a tank with a large capacity to absorb the circulating fluid temperature difference, as high temperature stability can be achieved even with a **small-size tank**. This also contributes to space saving.

Facility water circuit

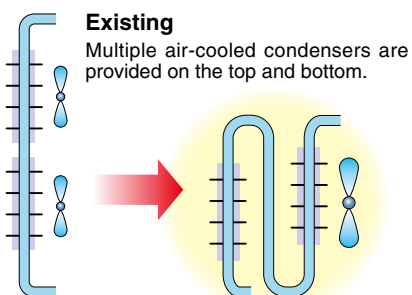
For water-cooled refrigeration HRS□-W-□

- The water-regulating valve opens and closes to keep the refrigerant gas pressure consistent. The facility water flow rate is controlled by the water-regulating valve.

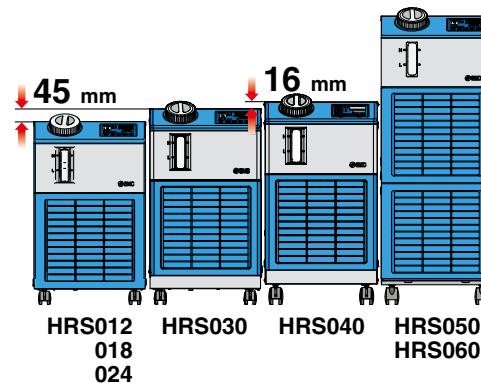
Can be installed with both sides close to a wall

(HRS012/018/024 * Except option G)

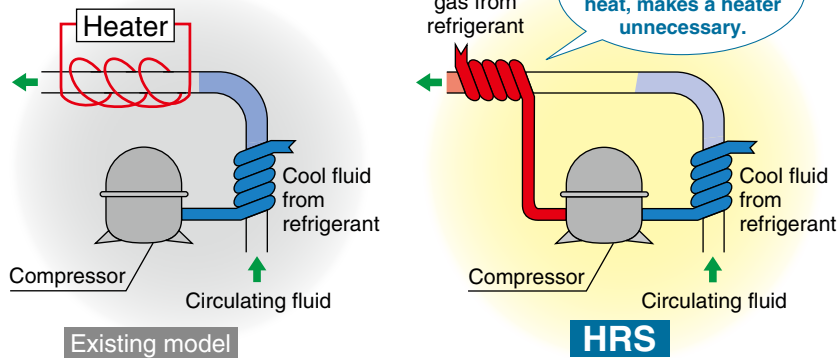
Reduced-height double condenser structure (HRS030/040/060)



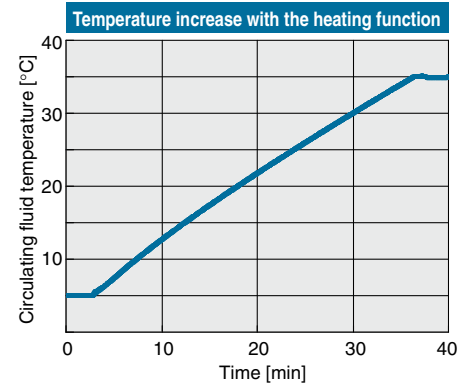
HRS030/040
 A maximum reduction in the height of the product has been achieved while expanding the cooling



With heating function



* This is just an example diagram.



A heater is not required even when the ambient temperature is low.

Simple operation

- Step 1 Press the **RUN/STOP** key.
- Step 2 Adjust the temperature setting with the **▼** / **▲** keys.
- Step 3 Press the **RUN/STOP** key to stop operation. Easy operation

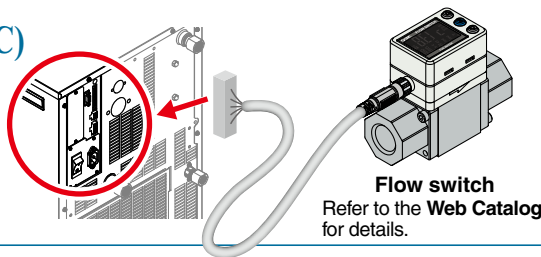


Large digital display


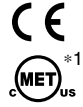



The large digital display (7-segment and 4 digits) and 2-row display provide a clearer view of the current value (PV) and set value (SV).

Power supply (24 VDC) available

Power can be supplied from the connector on the rear side of the HRS to external switches, etc.



Variations

| Model | | Cooling method | Cooling capacity [W] (50/60 Hz) | Single-phase 100 VAC (50/60 Hz) 115 VAC (50/60 Hz) | Single-phase 200 to 230 VAC (50/60 Hz) | Option <div>p. 28</div> | Optional accessories <div>p. 31</div> | International standards |
|---|---|----------------------------|------------------------------------|--|--|--|---|---|
|  | HRS012 | Air-cooled refrigeration | 1100/1300 | ● | ● | <ul style="list-style-type: none">With earth leakage breakerWith automatic fluid fill functionApplicable to deionized water piping | <ul style="list-style-type: none">Anti-quake bracketPiping conversion fitting (For air-cooled, water-cooled, and options)Concentration meterBypass piping setPower supply cableDI filter set | <div> (UL Standards) Refer to pages 11 to 14 for details on applicable models.</div> |
| |  | | HRS018 | 1500/1700 | ● | | | |
| HRS024 | | | 1700/1900 | — | ● | | | |
|  | HRS030 | Water-cooled refrigeration | 2100/2400 | — | ● | <ul style="list-style-type: none">High-pressure pump mounted (* The HRS050/060 cannot be selected.)SI unit onlyHigh-temperature environment specification (* The HRS030/040/050/060 cannot be selected.) | <ul style="list-style-type: none">Electric resistance sensor set/ Electric resistance control setElectric conductivity sensor set/ Electric conductivity control setParticle filter setDrain pan set (With water leakage sensor)Connector coverAnalog gateway unit | |
|  | HRS040 | | 2600/3200 | — | ● | | | |
| | HRS050 | | 3800/4200 | — | ● | | | |
| | HRS060 | | 4700/5100 | — | ● | | | |
| | | | 4900/5900 | — | ● | | <ul style="list-style-type: none">Replacement type dustproof filter setSeparately-installed power transformer | |

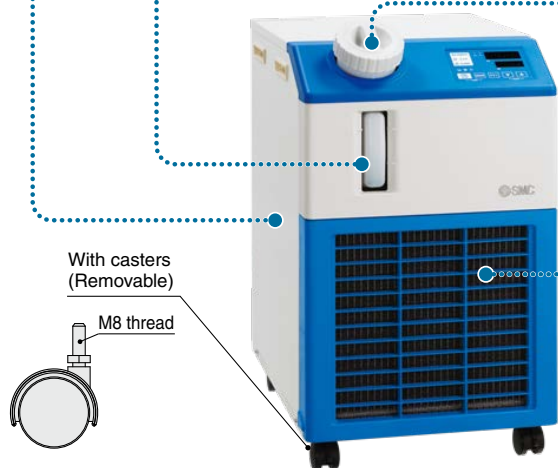
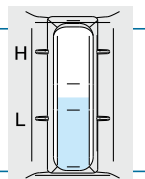
Reduced maintenance hours for the pump

Now with a magnet pump*1

Due to the adoption of a sealless pump, no external leakage of the circulating fluid occurs. Also, periodic checking for pump leakage and replacement of the mechanical seal are not necessary.

*1 For products with the high-pressure pump option and for the HRS050/060, a mechanical seal pump is used.

Easy to check the circulating fluid level

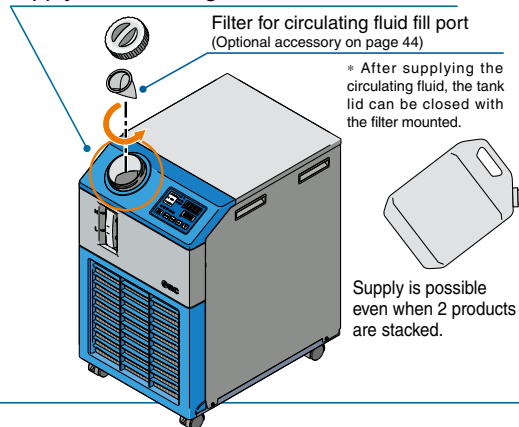


With casters (Removable)

M8 thread

Shaped for easy supply of circulating fluid

The angled supply port facilitates the easy supply of circulating fluid.



Supply is possible even when 2 products are stacked.

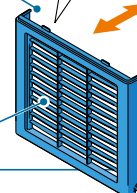
Toolless inspection and cleaning of air-cooled condenser

Dustproof filter

Integrated with the grill of the front panel
 Mounting and removal can be performed with ease.

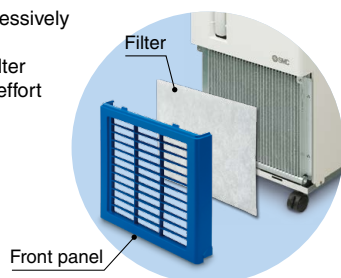
Easy to remove dust, cutting chips, etc., stuck to the dustproof net with a brush or air blow

Easy to mount/ remove due to magnetic construction



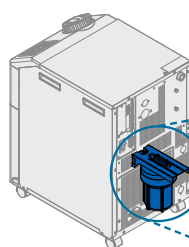
Replacement type dustproof filter set (p. 42)

Suitable for use in excessively dusty atmospheres
 The disposable type filter reduces the time and effort required for cleaning.



Particle filter set (p. 40)

Removes foreign matter in the circulating fluid
 Effective in preventing foreign matter from entering the user's equipment and chiller



- Prevents pump malfunction
- Prevents the water-cooled condenser performance from falling

Convenient functions (Refer to the Operation Manual for details.)

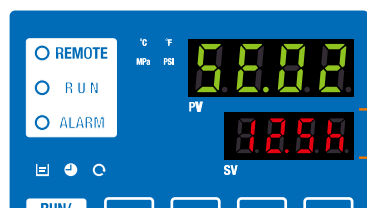
Timer operation function

Timer for ON and OFF can be set in units of 0.5 h up to 99.5 h.

Ex.) Can be set to stop on Saturday and Sunday and restart on Monday morning

Ex. SE.02 "ON timer"

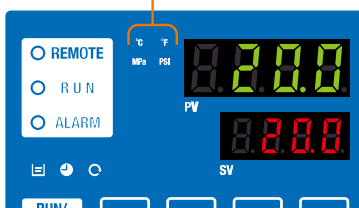
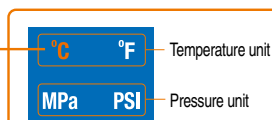
Timer The time remaining can be checked.



Unit conversion function

Temperature and pressure units can be changed.

Orange indicator lights up.



Power failure auto-restart function

Automatic restart after stoppage due to power failure, etc., is possible without pressing the RUN/STOP key, and remote operation is also possible.

Anti-freezing operation function

If the circulating fluid approaches its freezing point, for example, on a cold winter night, the pump operates automatically, and the heat generated by the pump warms the circulating fluid, preventing freezing.

Key-lock function

Can be set in advance to protect the set values from being changed by pressing keys by mistake.

Function to output a signal for completion of preparation

Notifies by communication when the temperature reaches the pre-set temperature range

Independent operation of the pump

The pump can be operated independently while

Self-diagnosis function and check display

Display of 35 types of alarm codes For details, refer to page 26.

Operation is monitored at all times by the integrated sensor.

Should any error occur, the self-diagnosis result is displayed by the applicable alarm code (35 types).

This makes it easier to identify the cause of the alarm.

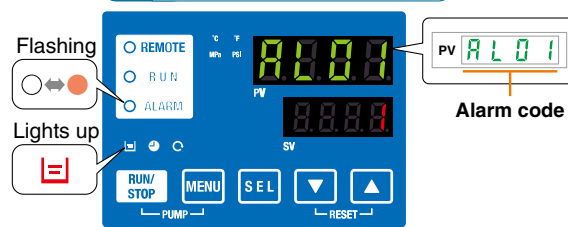
Can be used before requesting service

Changeable alarm set values

| Setting item | Set value |
|--|--------------------|
| Circulating fluid discharge temperature rise | 5 to 48°C |
| Circulating fluid discharge temperature drop | 1 to 39°C |
| Circulating fluid discharge pressure rise | 0.05 to 0.75 MPa*1 |
| Circulating fluid discharge pressure drop | 0.05 to 0.18 MPa*1 |

*1 Set values vary depending on the model.

Ex. AL01 “Low level in tank”

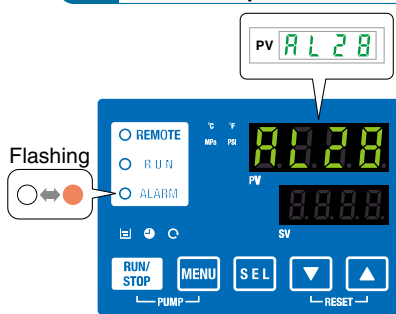


Alarm codes can be used for the notification of upcoming recommended maintenance.

The codes notify you when it's time to check the pump and fan motor. Helpful for facility maintenance

* A fan motor is not used in water-cooled refrigeration.

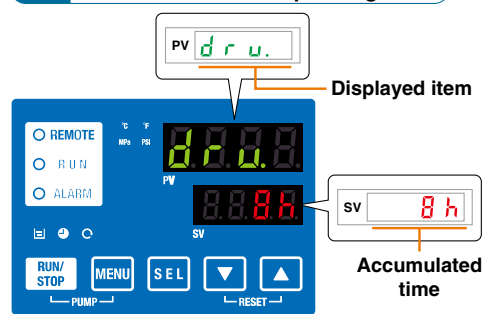
Ex. AL28 “Pump maintenance”



Check display

The internal temperature, pressure, and operating time of the product are displayed.

Ex. drv. “Accumulated operating time”



| Displayed item |
|---|
| Circulating fluid outlet temperature |
| Circulating fluid return temperature |
| Compressor gas temperature |
| Circulating fluid outlet pressure |
| Compressor gas discharge pressure |
| Compressor gas return pressure |
| Accumulated operating time |
| Accumulated operating time of pump |
| Accumulated operating time of fan motor*1 |
| Accumulated operating time of compressor |

*1 These are displayed only for air-cooled refrigeration.

Communication function

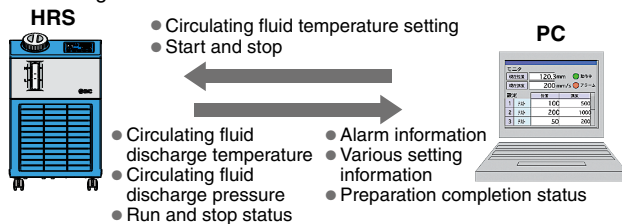
Serial communication (RS232C/RS485) and contact I/Os (2 inputs and 3 outputs) are equipped as standard.

This allows for communication with the user's equipment and system construction, depending on the application.

A 24 VDC output can be also provided and is available for use with flow switches (SMC's PF2W, etc.).

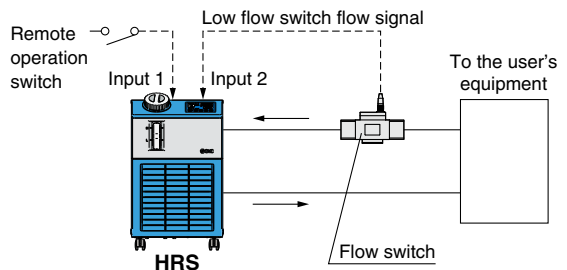
Ex. 1 Remote signal I/O through serial communication

Remote operation is enabled (to start and stop operation) through serial communication.



Ex. 2 Remote operation signal input

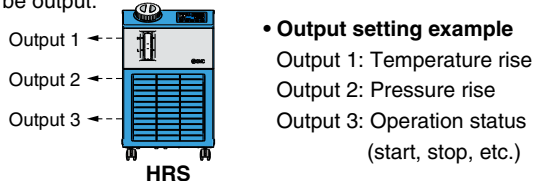
One of the contact inputs is used for remote operation and the other is used to monitor the flow of a flow switch. This is where their alarm outputs are taken in.



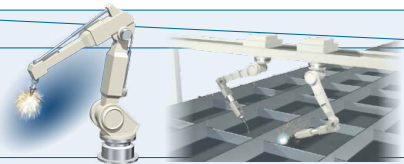

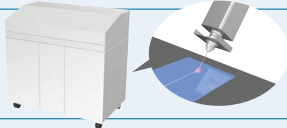




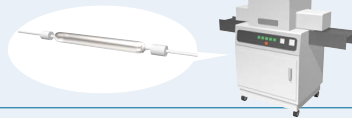
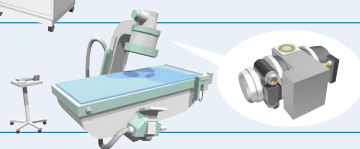
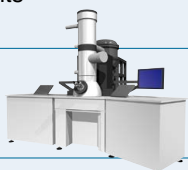
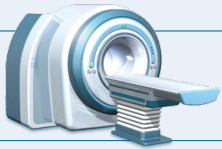
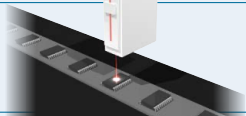

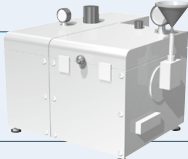
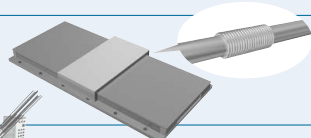
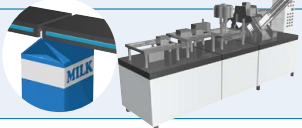
Power for flow switches (24 VDC) can be supplied by the thermo-chiller.

Ex. 3 Alarm and operation status (start, stop, etc.) signal output

The alarm and status generated in the product are assigned to 3 output signals based on their contents, which can then be output.



Application Examples

| | Heat source | Automotive | Light electrical appliance | Food | Machinery | Medical | Semiconductor | Laser |
|---|-----------------------------|------------|----------------------------|------|-----------|---------|---------------|-------|
|  Arc welding machines | Torch | ● | | | ● | | | |
|  Resistance welding machines | Tip | ● | ● | | ● | | | |
|  Laser welding machines | Oscillator | ● | ● | | ● | | ● | |
|  Laser beam machines | Oscillator/ Power supply | | | | | | | ● |
|  Fiber lasers Oscillators Transmission cable connectors | | | | | | | | ● |
|  Secondary battery manufacturing processes | Welded portion | | | | | | | ● |
|  Additive manufacturing | | | | | | | | ● |
|  UV curing devices | Lamp | ● | ● | ● | | ● | | |
|  X-ray instruments | | | ● | | | ● | ● | |
|  Electronic microscopes | Lens | | ● | | | ● | ● | |
|  MRIs | | | | | | ● | | |
|  Laser markers | Oscillator | ● | ● | ● | | ● | ● | ● |
|  Ultrasonic wave inspection machines | Oscillator | ● | ● | | ● | | | ● |
|  Crushing equipment | Blade | | | ● | | | | |
|  Linear motors | Motor | ● | | | ● | | | |
|  Packaging lines (food) | Dies/ Welded portions | | | ● | | | | |

Application Examples

| | Heat source | Automotive | Light electrical appliance | Food | Machinery | Medical | Semiconductor | Laser |
|---|-----------------------------------|------------|----------------------------|------|-----------|---------|---------------|-------|
| Atomizing devices (food and cosmetics) | Sample/ Device | | | ● | ● | | | |
| Mold cooling | Mold | ● | ● | ● | | ● | | |
| Machining centers | Spindle | | | | ● | | | |
| Injection molding | | | | | ● | | | |
| Temperature control of adhesive and paint materials | Paint material/ Welding materials | ● | ● | ● | | | | |
| Cooling of vacuum pumps | Pump | ● | | | | | ● | |
| Shrink fit machines | Workpiece | ● | | | ● | | | |
| Gas cylinder cabinets | | | | | | | ● | |
| Testers | | | ● | | | | ● | |
| Concentrating equipment | Test liquid | | | ● | | ● | | |
| Reagent cooling equipment | Reagent | | | ● | | ● | ● | |
| Cleaning machines | Cleaning solution | | ● | | | | ● | |
| Printing machines | Roller | | ● | ● | ● | | | |
| Chamber electrodes | Electrode | | | | | | ● | |
| High-frequency induction heating equipment | Power supply/ Heating coil | ● | | | ● | | | |

Global Supply Network







SMC has a comprehensive network in the global market.

We now have a presence of more than 500 branch offices and distributors in 83 countries and regions worldwide, such as Asia, Oceania, North/Central/South America, and Europe. With this global network, we are able to provide a global supply of our substantial range of products and high-quality customer service. We also provide full support to local factories, foreign manufacturing companies, and Japanese companies in each country.

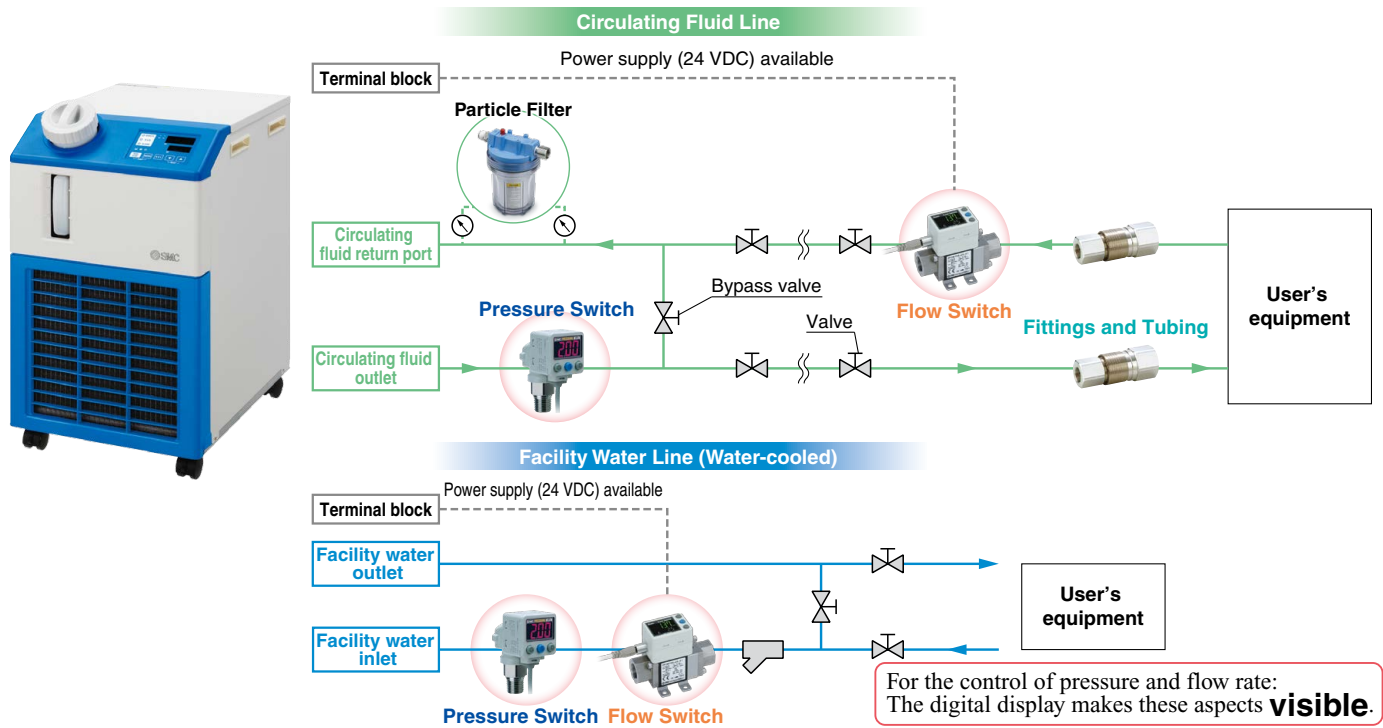


SMC Thermo-chiller Variations

Lots of variations are available according to the users' requirements.

| Series | Temperature stability [°C] | Set temperature range [°C] | Cooling capacity [kW] | | | | | | | | | | | | | Environment | International standards |
|---|----------------------------|----------------------------|-----------------------|-----|-----|---|---|---|---|---|----|----|----|----|----|---------------------------|--|
| | | | 1.2 | 1.8 | 2.4 | 3 | 4 | 5 | 6 | 9 | 10 | 15 | 20 | 25 | 28 | | |
|  HRSE Basic type | ±2.0 | 10 to 30 | ● | ● | ● | | | | | | | | | | | Indoor use | CE (Only 230 VAC type) |
|  HRS Standard type | ±0.1 | 5 to 40 | ● | ● | ● | ● | ● | ● | ● | | | | | | | Indoor use | CE (Only 60 Hz) |
|  HRS090 Standard type | ±0.5 | 5 to 35 | | | | | | | | ● | | | | | | Indoor use | CE (400 V as standard) |
|  HRS100/150 Standard type | ±1.0 | 5 to 35 | | | | | | | | | ● | ● | | | | Outdoor installation IPX4 | CE (400 V as standard) |
|  HRSH090 Inverter type | ±0.1 | 5 to 40 | | | | | | | | ● | | | | | | Indoor use | CE (400 V as standard, 200 V as an option) (Only 200 V as an option) |
|  HRSH Inverter type | ±0.1 | 5 to 35 | | | | | | | | | ● | ● | ● | ● | ● | Outdoor installation IPX4 | CE (400 V as standard, 200 V as an option) (Only 200 V as an option) |

Circulating Fluid/Facility Water Line Equipment



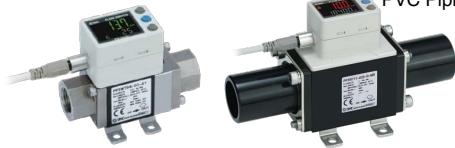
Flow Switch: Monitors the flow rate and temperature of the circulating fluid and facility water

Refer to the [Web Catalog](#) for details.

3-Color Display Digital Flow Switch for Water **PF3W**
 Integrated with temperature sensor

3-Color Display Electromagnetic Type Digital Flow Switch **LFE**

Digital Flow Switch for Deionized Water and Chemical Liquids **PF2D**
 4-Channel Flow Monitor **PF2□200**



Pressure Switch: Monitors the pressure of the circulating fluid and facility water

Refer to the [Web Catalog](#) for details.



2-Color Display High-Precision Digital Pressure Switch **ISE80**



Pressure Sensor for General Fluids **PSE56□, 57□**
 Pressure Sensor Controller **PSE200, 300, 300AC**

Particle Filter



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Fittings and Tubing

Refer to the [Web Catalog](#) for details.

S Coupler **KK**



S Coupler/Stainless Steel (Stainless Steel 304) **KKA**



Metal One-touch Fittings **KQB2**



Stainless Steel 316 One-touch Fittings **KQG2**



Stainless Steel 316 Insert Fittings **KFG2**



Fluoropolymer Fittings **LQ**



Tubing **T□**



| Series | Material |
|------------|------------------------------------|
| T | Nylon |
| TU | Polyurethane |
| TH | FEP (Fluoropolymer) |
| TD | Modified PTFE (Soft fluoropolymer) |
| TL | Super PFA |
| TLM | PFA |