



**Circulating Fluid Temperature Controller
Series HRS Thermo-Chiller**



Improve the performance and reliability of your machine with our easy to install, high performance, compact recirculating thermochillers

■ Cooling systems and the importance of a reliable system

Today, thermo chillers are used in many industrial processes to help monitor and control the temperature of heat generating devices.

Commonly found in plastic, printing, machine tool, laboratory, diagnostic and laser machine applications, **the ability to maintain a constant temperature, within strict limits**, can have a dramatic effect on **improved output quality, quantity and machine reliability**.

Failure to control heat generation in today's high tech machines **can have serious consequences** including high rejection rates, poor product quality and ultimately loss of bottom line revenue.

SMC thermochillers have been specially developed to help **improve your industrial application** by bringing you a reliable cooling system and **complete peace of mind**.

■ Gain competitive advantage by using a compact, high performance, thermo chiller from SMC

By selecting our HRS range of thermo chillers for your application needs it will help you to achieve **the competitive edge**.

How?

- Series HRS thermo chillers offer **outstanding reliability** ensuring the ideal operating conditions for your process resulting in **increased productivity and maximum machine performance**
- **The impressive temperature stability** achieved by our HRS range will **help to optimise the quality of your process**
- The **compact dimensions** of our HRS range and their ability to be mounted closely to a side panel or wall helps to **ensure that overall machine size can be kept to a minimum**
- Weighing from just 40Kg up to 69Kg (2100W and 4700W capacity respectively) our **lightweight but robust** HRS range will help to **reduce the overall weight of your machine**.

■ Cooling systems and the importance of monitoring the operating conditions

Even when applications seem to be working normally it's still possible for unforeseen or unexpected things to go wrong that can severely disrupt or damage your manufacturing process.

But, thanks to the HRS thermo chillers **advanced control functions**, abnormalities and errors can be quickly detected **before any real damage can occur**.

And, when used in conjunction with other innovative products from the SMC range such as our unique digital flow switch with integrated temperature sensor - Series PF3W or our high performance Series VX fluid valve range, we can provide you with a one-stop-shop service to help you automate your process using our high quality products to meet all your needs.

■ SMC as global supplier : products and worldwide presence

With **sales offices in 78 countries** and **50 Subsidiaries located around the globe**, SMC are recognised as the world's leading experts in pneumatics. Our permanent workforce of over 15,000 employees, which includes more than 1,300 dedicated R&D engineers, is **focused on customer satisfaction** which remains a major driving force for the corporation's continued success.

We can help support you and our products throughout the world.

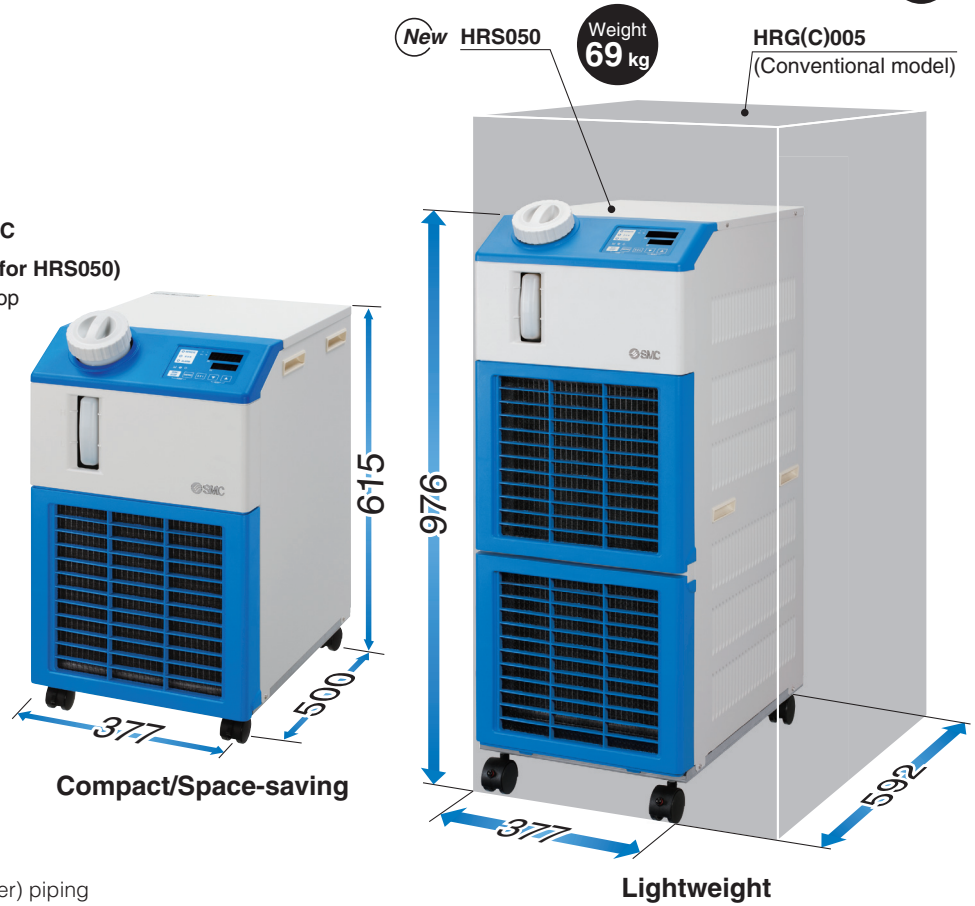
Currently, our product range exceeds **11,000 basic products with more than 600,000 variant options**, however we still continue to develop between 35 -50 new or improved products each year.

We remain firmly convinced of the benefits of product innovation and continual product improvement including the use of energy efficiency components in all automated manufacturing processes.

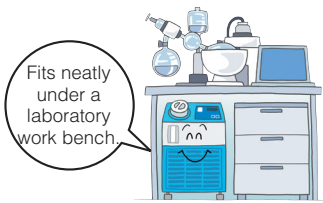
**Circulating Fluid Temperature Controller
Thermo-chiller
Compact Type**



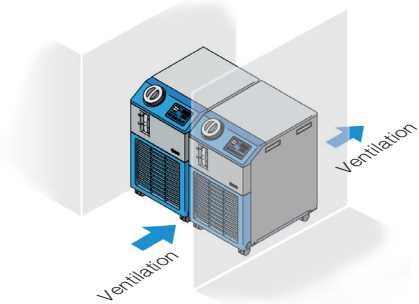
- **Cooling capacity (50 Hz)**
1100 W/1700 W/2100 W/4700 W
- **Lightweight 40 kg / 69 kg**
- **Temperature stability: $\pm 0.1^{\circ}\text{C}$**
- **Temperature range setting: 5 to 40 $^{\circ}\text{C}$**
- **High-lift pump available as standard (for HRS050)**
For applications with higher pressure drop



- **Options**
 - With earth leakage breaker
 - With automatic water supply function
 - Applicable to DI water (deionized water) piping



- **Space Saving**
Installation close to a wall is possible on both sides (except HRS050)



Convenient functions

- Timer operation function
- Low tank level detecting function
- Power failure auto-restart function
- Anti-freezing operation function

Easy maintenance

- Tool-less maintenance of filter

Self diagnosis function and check display

- 31 types of alarm codes

Communication function

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



Single-phase 200 to 230 VAC

HRS 018 - A - 20 -



Cooling capacity

		CE/UL
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)	●
050	Cooling capacity 4700/5100 W (50/60 Hz)	●

Note) UL standards: Applicable to 60 Hz only

Cooling method

Symbol	Cooling method	Applicable model			
		HRS012	HRS018	HRS024	HRS050
A	Air-cooled refrigeration	●	●	●	●
W	Water-cooled refrigeration	●	●	●	—

Pipe thread type

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

Option

Symbol	Option
—	None
B	With earth leakage breaker
J	With automatic water supply function
M	Applicable to DI water (deionized water) piping
T	High-lift pump Note 1)
G	High-temperature environment specifications Note 2)

• When multiple options are combined, indicate symbols in alphabetical order.

Note 1) The cooling capacity reduces about 300 W from the value in the catalog.

For HRS050, high-lift pump is available as standard.

Note 2) Air-cooled 200 V types, HRS012/018/024 only

Not UL-compliant (scheduled for 2011)

Power supply Note)

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

Note) UL standards: Applicable to 60 Hz only

Specifications

* There are different values from standard specifications.

Model		HRS012-A□-20	HRS012-W□-20	HRS018-A□-20	HRS018-W□-20	HRS024-A□-20	HRS024-W□-20	HRS050-A□-20	
Cooling method		Air-cooled refrigeration	Water-cooled refrigeration	Air-cooled refrigeration	Water-cooled refrigeration	Air-cooled refrigeration	Water-cooled refrigeration	Air-cooled refrigeration	
Refrigerant		R407C (HFC)							R410A (HFC)
Control method		PID control							
Ambient temperature/humidity Note 2)		Temperature: 5 to 40°C, High-temperature environment specifications (option): 5 to 45°C, Humidity: 30 to 70%							
Circulating fluid system	Circulating fluid Note 3)	Clear water, 15% ethylene glycol aqueous solution Note 5)							
	Temperature range setting Note 2) (°C)	5 to 40							
	Cooling capacity Note 4) (50/60 Hz) (W)	1100/1300		1700/1900		2100/2400		4700/5100	
	Temperature stability Note 6) (°C)	±0.1							
	Pump capacity Note 7) (50/60 Hz) (MPa)	0.13/0.18 (at 7 ℓ/min)							0.24 (at 23 ℓ/min) 0.32 (at 28 ℓ/min)
	Rated flow Note 8) (50/60 Hz) (ℓ/min)	7/7							23/28
	Tank capacity	Approx. 5							
	Port size	Rc1/2							
Wetted parts material		Stainless steel, Copper (Heat exchanger brazing), Bronze, Alumina ceramic, Carbon, Polypropylene, PE, POM, FKM, EPDM, PVC							
Facility water system Note 1)	Temperature range (°C)	—	5 to 40	—	5 to 40	—	5 to 40	—	
	Pressure range (MPa)	—	0.3 to 0.5	—	0.3 to 0.5	—	0.3 to 0.5	—	
	Required flow rate Note 12) (50/60 Hz) (ℓ/min)	—	8	—	12	—	14	—	
	Inlet-outlet pressure differential of facility water (MPa)	—	0.3 or more	—	0.3 or more	—	0.3 or more	—	
	Port size	Rc3/8							
Wetted parts material		Stainless steel, Copper (Heat exchanger brazing), Bronze, Synthetic rubber							
Electrical system	Power supply	Single-phase 200 to 230 VAC (50/60 Hz) Allowable voltage range ±10%							
	Circuit protector (A)	10							20
	Applicable earth leakage breaker capacity Note 9) (A)	10							20
	Rated operating current (50/60 Hz) (A)	4.6/5.1		4.7/5.2		5.1/5.9		8/11	
	Rated power consumption Note 4) (50/60 Hz) (kVA)	0.9/1.0		0.9/1.0		1.0/1.2		1.7/2.2	
Noise level Note 10) (50/60 Hz) (dB)	60/61							65/68	
Accessories	Fitting (for drain outlet) 1 pc. Note 13), Input/output signal connector 1 pc., Power supply connector 1 pc. Note 13), Operation manual (for installation/operation) 1, Quick manual (with a clear case) 1 Note 13), Alarm code list sticker 1, Ferritic core (for communication) 1 pc. Note 13)								
Weight Note 11)	(kg)							43	69

Note 1) For water-cooled refrigeration

Note 2) It should have no condensation.

Note 3) If clear water is used, use water that conforms to Water Quality Standards of the Japan Refrigeration and Air Conditioning Industrial Association (JRA GL-02-1994 cooling water system - circulating type - make-up water).

Note 4) ① Ambient temperature: 25°C, ② Circulating fluid temperature: 20°C, ③ Rated circulating fluid flow rate, ④ Circulating fluid: Clear water, ⑤ Facility water temperature: 25°C

Note 5) Use a 15% ethylene glycol aqueous solution if operating in a place where the circulating fluid temperature is 10°C or less.

Note 6) Outlet temperature when the circulating fluid flow is rated flow, and the circulating fluid outlet and return port are directly connected. Installation environment and the power supply are within specification range and stable.

Note 7) The capacity at the Thermo-chiller outlet when the circulating fluid temperature is 20°C.

Note 8) Required flow rate for cooling capacity or maintaining the 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.

Note 9) Purchase an earth leakage breaker with current sensitivity of 30 mA separately. (A product with an optional earth leakage breaker (option B) is also available.)

Note 10) Front: 1 m, height: 1 m, stable with no load, Other conditions → Note 4)

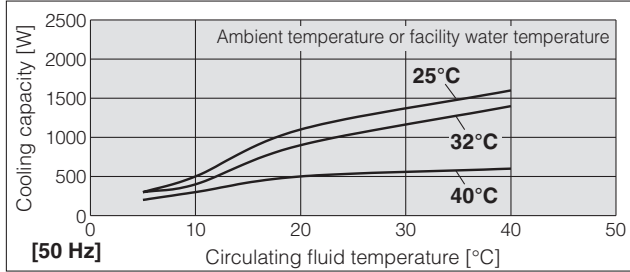
Note 11) Weight in the dry state without circulating fluids

Note 12) Required flow rate when a load for the cooling capacity is applied at a circulating fluid temperature of 20°C, and rated circulating fluid flow rate and facility water temperature of 25°C.

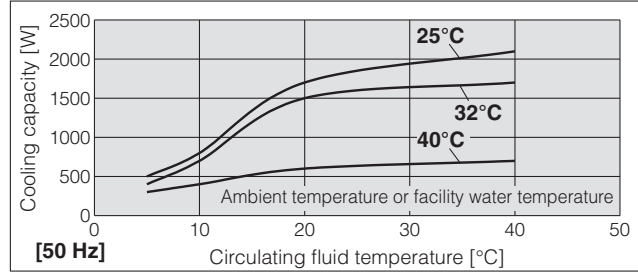
Note 13) It is not provided for HRS050.

Cooling Capacity

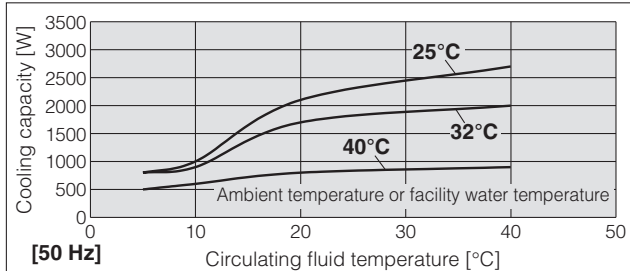
HRS012-A-20/HRS012-W-20



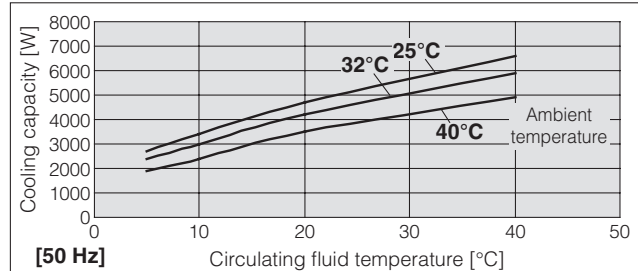
HRS018-A-20/HRS018-W-20



HRS024-A-20/HRS024-W-20

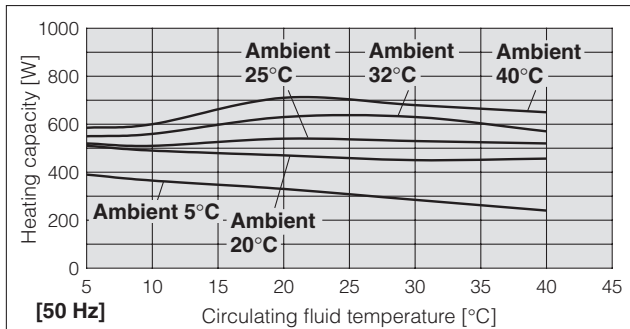


HRS050-A-20



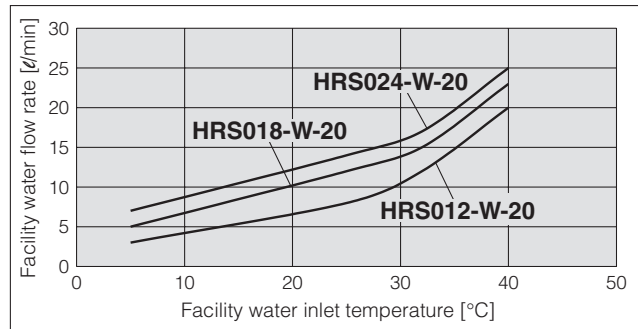
Heating Capacity

HRS⁰¹²₀₁₈₋₀₂₄-A-W-20



Required Facility Water Flow Rate

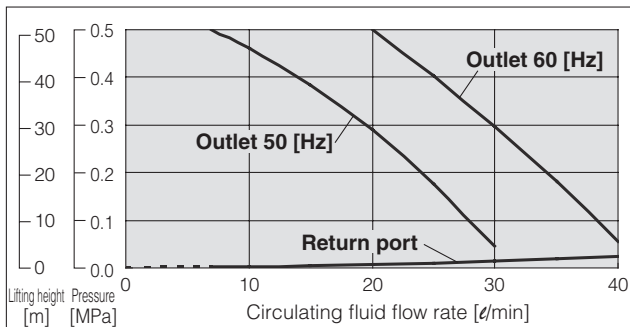
HRS012-W-20, HRS018-W-20, HRS024-W-20



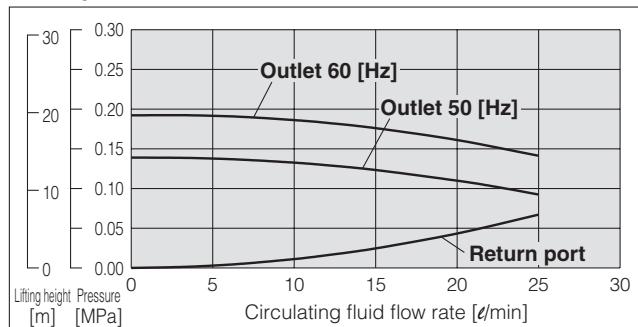
* This is the facility water flow rate at the circulating fluid rated flow rate and the cooling capacity listed in the "Cooling Capacity" specifications.

Pump Capacity

HRS050-A-20



HRS⁰¹²₀₁₈₋₀₂₄-A-W-20



Related product.....

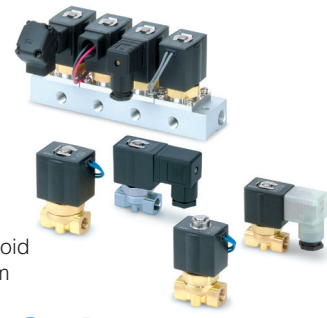
Series PF3W

3-colour display digital flow switch for water with temperature sensor



Series VX

Direct operated 2 port solenoid valve for air, water, oil, steam



www.smc.eu

SMC Temperature Control Equipment Guide

Note) This table is a guide to select models. Refer to individual catalogues for detailed specifications.

		Series	Features	Temperature range	Max. cooling capacity	Temperature stability	Pump capacity	Applicable fluid
Chiller (Circulating Fluid Temperature Controller)	Water-cooled	◆ High-performance chiller Thermo-chiller Series HRZ Series HRZ (Built-in inverter) 	<ul style="list-style-type: none"> Wide temperature range High precision temperature control with fast temperature response: adaptable to short cycles and continuous changes in process conditions Error diagnosis, external communications... Ideal for semiconductor industry 	-20 to 40°C 20 to 90°C -20 to 90°C	15 kW	±0.1°C	6 to 40 ℓ/min	Fluorinated fluid Clear water Deionized water Ethylene glycol aqueous solution
				-20 to 90°C	10 kW		10 to 40 ℓ/min	
	Water radiation	◆ High-performance chiller Thermo-chiller Series HRW (Water-cooled) 	<ul style="list-style-type: none"> Energy saving: reduction of facility water and power consumption by using direct heat exchanger No compressor, refrigerant free High temperature stability, error diagnosis, external communications... Ideal for semiconductor industry 	20 to 90°C	30 kW	±0.3°C	10 to 50 ℓ/min	Fluorinated fluid Clear water Deionized water Ethylene glycol aqueous solution
Bath	Water-cooled/Air-cooled	◆ High-precision chiller Thermo-con Series HEC 	<ul style="list-style-type: none"> High precision temperature control Peltier system Simple, compact, light-weight and low vibration body Wide power supply voltage range High precision temperature control without refrigerant for the manufacture of semiconductors, medical/pharmaceutical equipment... 	10 to 60°C	1.2 kW	±0.01°C	3 to 23 ℓ/min	Clear water Fluorinated fluid
		◆ High-precision bath Thermoelectric Bath Series HEB 		<ul style="list-style-type: none"> High precision temperature control Peltier system Compact, low noise and low vibration design Exclusively developed dual tank construction to provide consistent temperature at any position in the bath (vessels with chemicals, cooling coils ...) 	-15 to 60°C	140 W	±0.01°C	N/A
	Temperature Control System for Chemicals	◆ Fluoro-resin temperature control system for chemicals Chemical Thermo-con Series HED 	<ul style="list-style-type: none"> Direct temperature control of chemicals via PFA heat exchanger Compatible with a wide range of chemicals Compact and light-weight design 	10 to 60°C	750 W	±0.1°C	N/A	Deionized water Chemical



HRS-LEAF01-UK

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Hungary	+36 23511390	www.smc.hu	office@smc.hu	Switzerland	+41 (0)523963131	www.smc.ch	info@smc.ch
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