



Circulating Fluid Temperature Controller Thermo-chiller Compact Type Series HRS

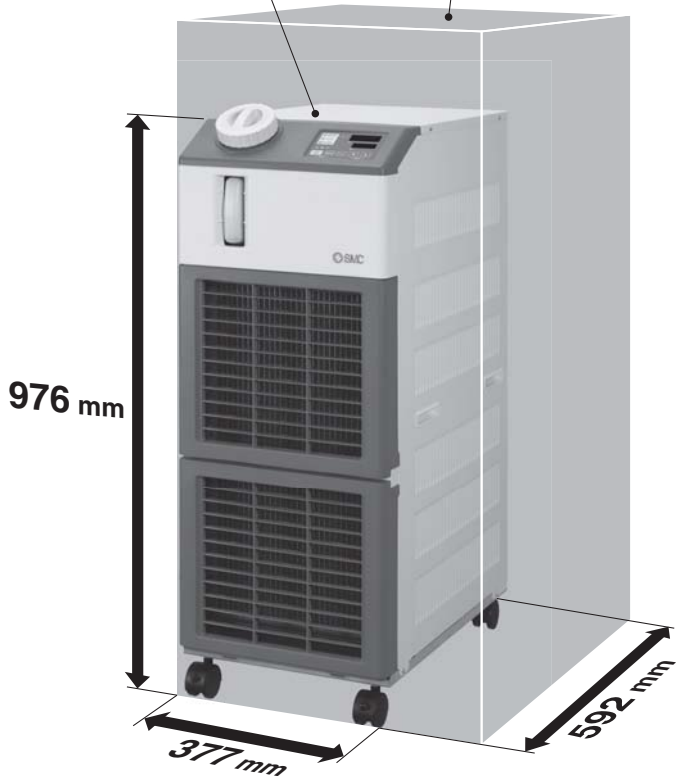
4700 w/5100 W (50/60 Hz) cooling capacity added! (HRS050)

**Compact/
 Space-saving**

Lightweight



New HRS050 **Weight 69 kg** **HRG(C)005**
 (Conventional model)



- Footprint reduced by **32%**
- Volume reduced by **42%**
- Weight reduced by **43%**

Comparison with Conventional Model HRG(C)005

Series	Width (mm)	Depth (mm)	Height (mm)	Weight (kg)
HRS050	377	592	976	69
HRG(C)005 (Conventional model)	550	595	1150	120

Production of HRG(C)005 will be discontinued at the end of March 2011.

- Temperature stability: **±0.1°C**
- Temperature range setting: **5 to 40°C**
- High-lift pump available as standard
 (For HRS050)

Options

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

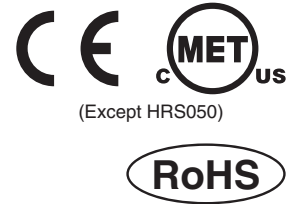
Variations

Model	Cooling capacity (W)	Cooling method	Power supply	International standards
HRS012	1100/1300 (50/60 Hz)	Air-cooled refrigeration Water-cooled refrigeration	Single-phase 100 VAC (50/60 Hz), 115 VAC (60 Hz)	CE/UL*
HRS018	1700/1900 (50/60 Hz)		Single-phase 200 to 230 VAC (50/60 Hz)	
HRS024	2100/2400 (50/60 Hz)		Single-phase 200 to 230 VAC (50/60 Hz)	
New HRS050	4700/5100 (50/60 Hz)	Air-cooled refrigeration	Single-phase 200 to 230 VAC (50/60 Hz)	Scheduled for 2011

* UL standards: Applicable to 60 Hz only

Thermo-chiller Compact Type

Series HRS



How to Order

Single-phase 100/115 VAC

HRS 018 - A - 10 -



Cooling capacity

		CE/UL
012	Cooling capacity 1100/1300 W (50/60 Hz)	●
018	Cooling capacity 1500/1700 W (50/60 Hz)	●

Note) UL standards: Applicable to 60 Hz only

Cooling method

A	Air-cooled refrigeration
W	Water-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
Nil	None
B	With earth leakage breaker
J	With automatic water supply function
M	Applicable to DI water (deionized water) piping

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

Power supply Note)

Symbol	Power supply
10	Single-phase 100 VAC (50/60 Hz) 115 VAC (60 Hz)

Note) UL standards: Applicable to 60 Hz only

Specifications * There are different values from standard specifications.

Model		HRS012-A□-10	HRS012-W□-10	HRS018-A□-10	HRS018-W□-10
Cooling method		Air-cooled refrigeration	Water-cooled refrigeration	Air-cooled refrigeration	Water-cooled refrigeration
Refrigerant		R407C (HFC)			
Control method		PID control			
Ambient temperature/humidity <small>Note 2)</small>		Temperature: 5 to 40°C, Humidity: 30 to 70%			
Circulating fluid system	Circulating fluid <small>Note 3)</small>	Clear water, 15% ethylene glycol aqueous solution <small>Note 5)</small>			
	Temperature range setting <small>Note 2)</small> (°C)	5 to 40			
	Cooling capacity <small>Note 4)</small> (50/60 Hz) (W)	1100/1300		1500/1700	
	Temperature stability <small>Note 6)</small> (°C)	±0.1			
	Pump capacity <small>Note 7)</small> (50/60 Hz) (MPa)	0.13/0.18 (at 7 L/min)			
	Rated flow <small>Note 8)</small> (50/60 Hz) (L/min)	7/7			
	Tank capacity (L)	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			
<small>Note 1)</small> Facility water system	Temperature range (°C)	—	5 to 40	—	5 to 40
	Pressure range (MPa)	—	0.3 to 0.5	—	0.3 to 0.5
	Required flow rate <small>Note 12)</small> (50/60 Hz) (L/min)	—	8	—	12
	Inlet-outlet pressure differential of facility water (MPa)	—	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 100 VAC (50/60 Hz), 115 VAC (60 Hz) Allowable voltage range ±10%			
	Circuit protector (A)	15			
	Applicable earth leakage breaker capacity <small>Note 9)</small> (A)	15			
	Rated operating current (50/60 Hz) (A)	7.5/8.3		7.7/8.4	
	Rated power consumption <small>Note 4)</small> (50/60 Hz) (kVA)	0.7/0.8		0.8/0.8	
Noise level <small>Note 10)</small> (50/60 Hz) (dB)	58/55				
Accessories		Fitting (for drain outlet) 1 pc., Input/output signal connector 1 pc., Power supply connector 1 pc., Operation manual (for installation/operation) 1, Quick manual (with a clear case) 1, Alarm code list sticker 1, Ferritic core (for communication) 1 pc.			
Weight <small>Note 11)</small> (kg)		40			

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 15 mA or 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.

How to Order

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)	Scheduled for 2011

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	●	●	●	— Scheduled for 2011

Pipe thread type

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

Option

Symbol	Option
Nil	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 (L)	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							
	Applicable earth leakage breaker capacity ^{Note 9)} (A)	10							
	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

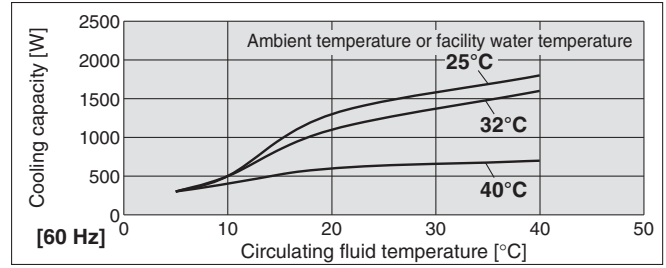
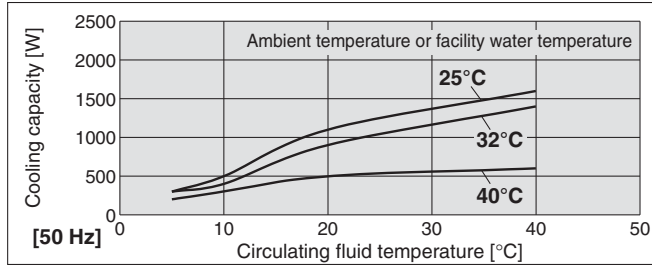
Note 12) Required flow rate when a load for the cooling capacity is applied at a circulating fluid temperature of 20°C, and rated circulating fluid flow rate and facility water temperature of 25°C.

Note 13) It is not provided for HRS050.

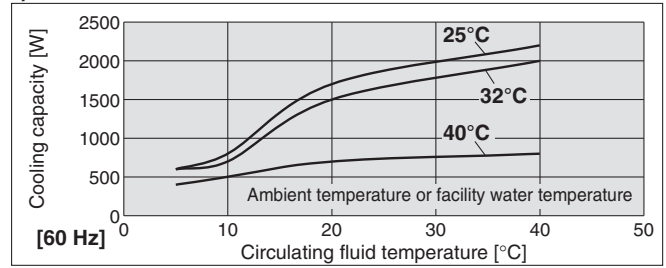
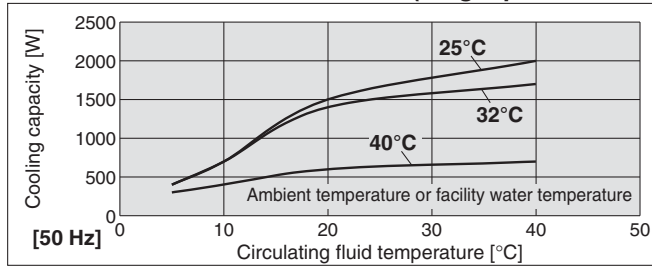
Series HRS

Cooling Capacity

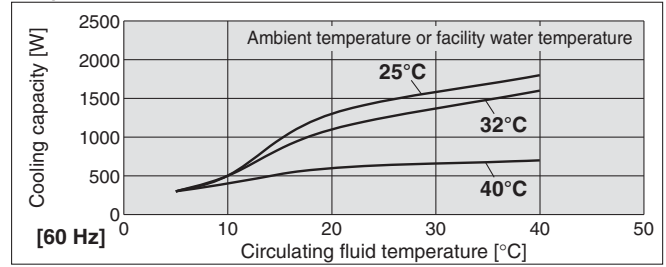
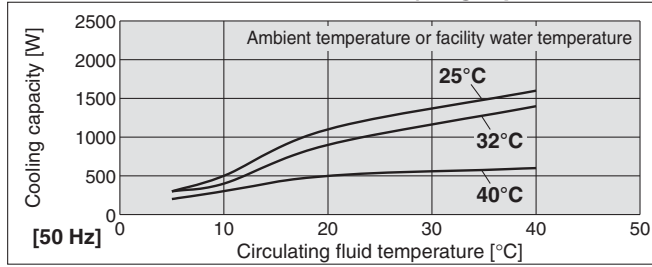
HRS012-A-10/HRS012-W-10 (Single-phase 100/115 VAC)



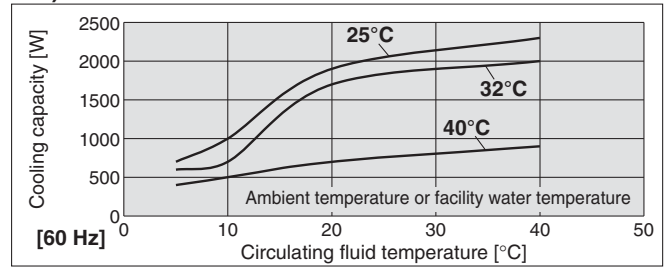
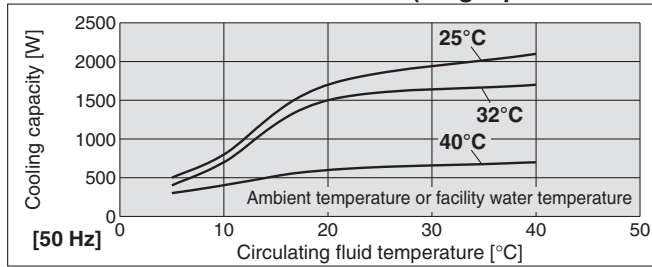
HRS018-A-10/HRS018-W-10 (Single-phase 100/115 VAC)



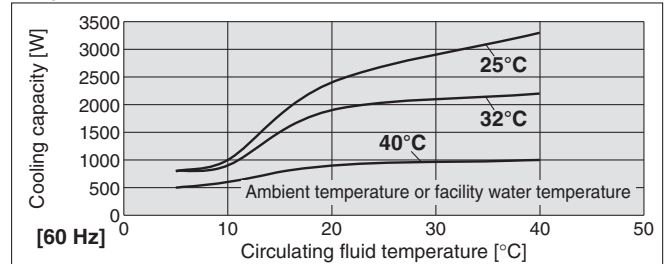
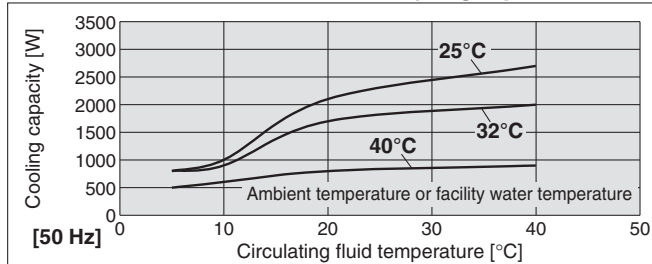
HRS012-A-20/HRS012-W-20 (Single-phase 200 to 230 VAC)



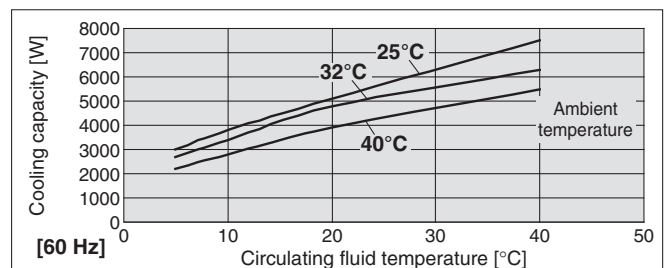
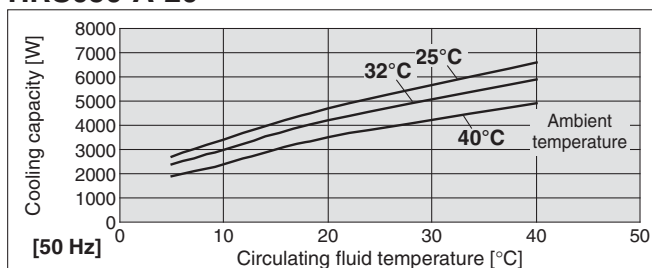
HRS018-A-20/HRS018-W-20 (Single-phase 200 to 230 VAC)



HRS024-A-20/HRS024-W-20 (Single-phase 200 to 230 VAC)

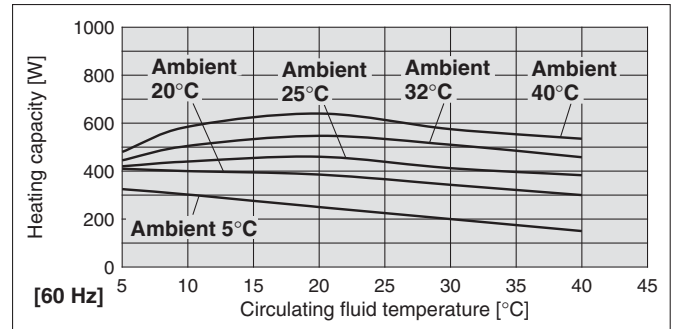
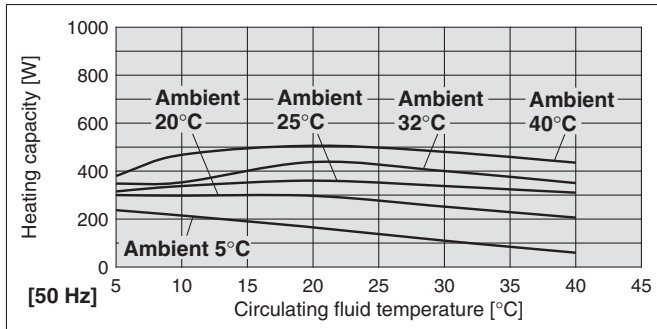


HRS050-A-20

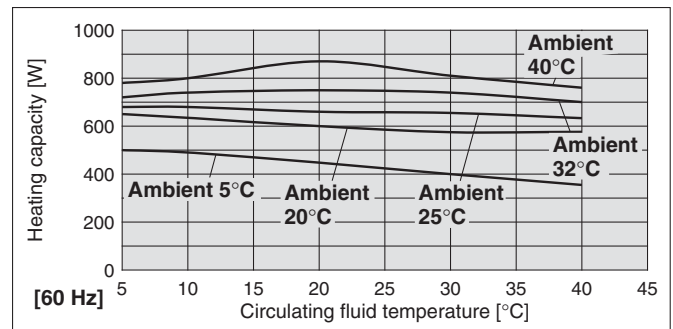
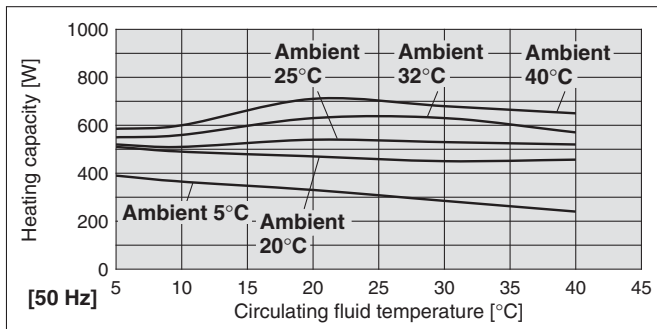


Heating Capacity

HRS⁰¹²₀₁₈-A_W-10 (Single-phase 100/115 VAC)

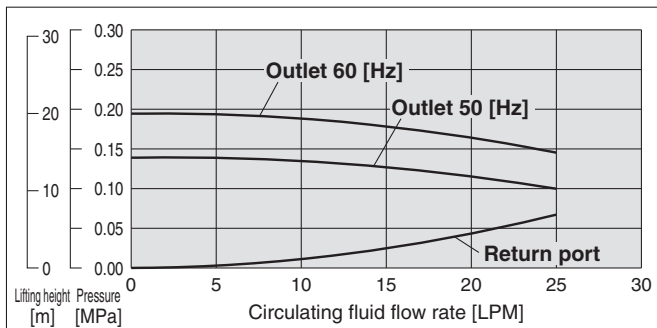


HRS⁰¹²₀₁₈-A_W-20 (Single-phase 200 to 230 VAC)

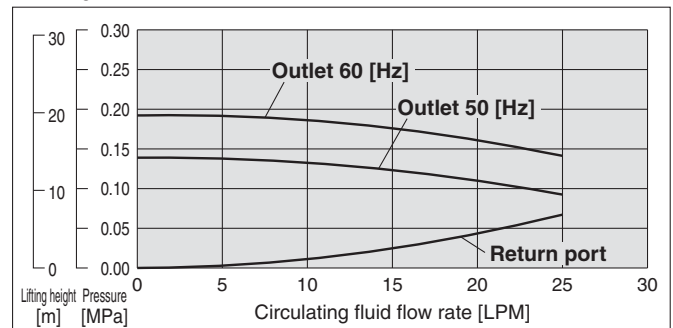


Pump Capacity

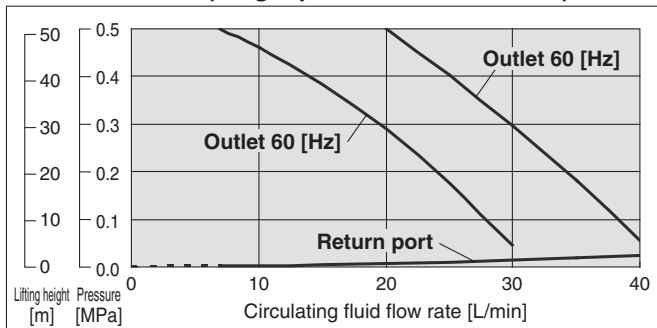
HRS⁰¹²₀₁₈-A_W-10 (Single-phase 100/115 VAC)



HRS⁰¹²₀₂₄-A_W-20 (Single-phase 200 to 230 VAC)

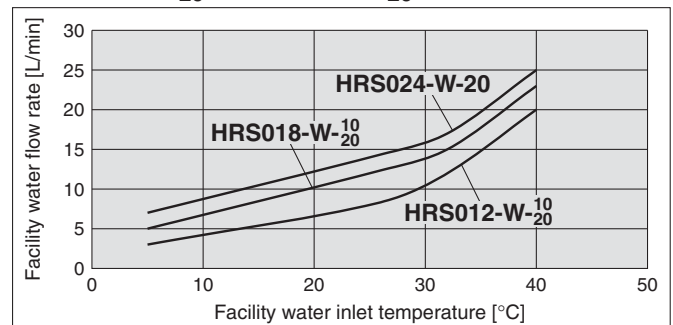


HRS050-A-20 (Single-phase 200 to 230 VAC)



Required Facility Water Flow Rate

HRS012-W-¹⁰₂₀, HRS018-W-¹⁰₂₀, HRS024-W-20

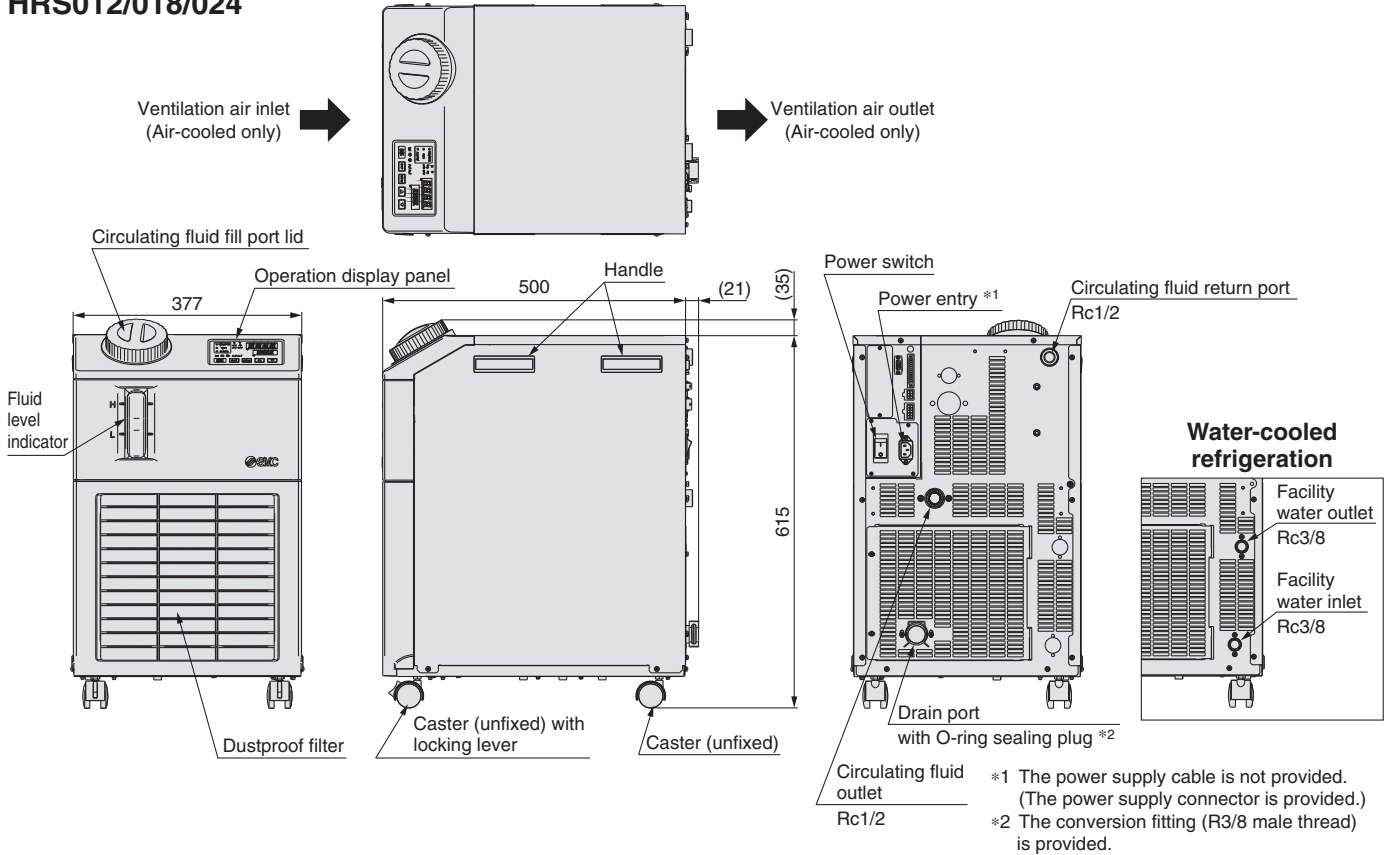


* This is the facility water flow rate at the circulating fluid rated flow rate and the cooling capacity listed in the "Cooling Capacity" specifications.

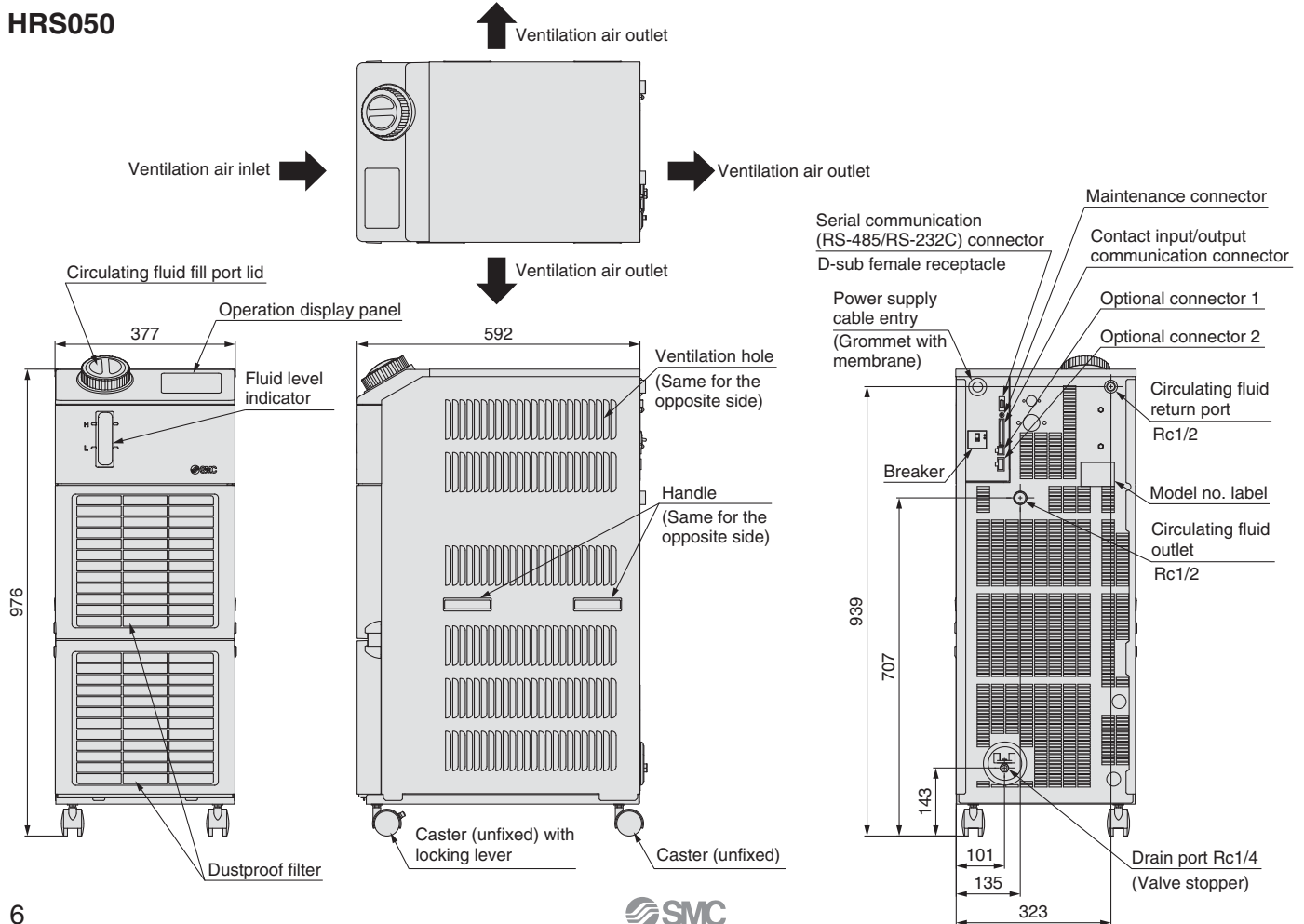
Series HRS

Dimensions

HRS012/018/024



HRS050



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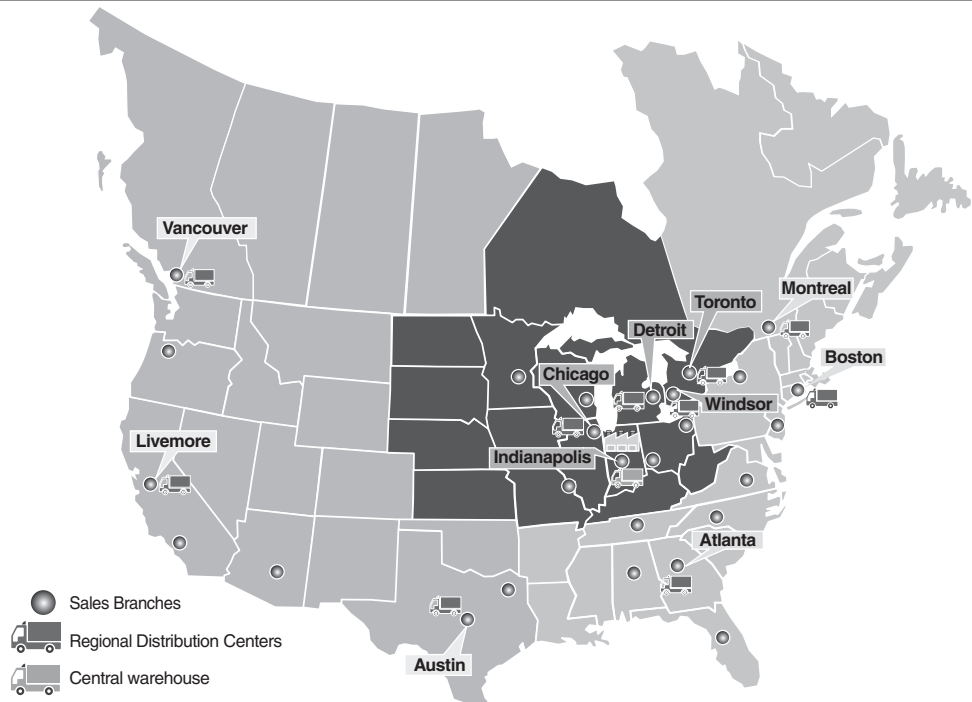
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