Circulating Fluid Temperature Controller
Thermo-chiller Compact Type
Series HRS

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

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

Weight: 69 kg

New HRS050

Comparison with Conventional Model HRG(C)005

<table>
<thead>
<tr>
<th>Series</th>
<th>Width (mm)</th>
<th>Depth (mm)</th>
<th>Height (mm)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRS050</td>
<td>377</td>
<td>592</td>
<td>976</td>
<td>69</td>
</tr>
<tr>
<td>HRG(C)005 (Conventional model)</td>
<td>550</td>
<td>595</td>
<td>1150</td>
<td>120</td>
</tr>
</tbody>
</table>

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

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

* UL standards: Applicable to 60 Hz only
### Specifications

- **Ambient temperature/humidity**: Temperature: 5 to 40°C, Humidity: 30 to 70%

- **Cooling method**: Air-cooled refrigeration

- **Temperature range setting**: 5 to 40°C

- **Circulating fluid setting**: Clear water, 15% ethylene glycol aqueous solution

- **Circulating fluid**: Clear water, 15% ethylene glycol aqueous solution

- **Port size**: Rc3/8

- **Wetted parts material**: Stainless steel, Copper (Heat exchanger brazing), Bronze, Synthetic rubber

- **Power supply**: Single-phase 100 VAC (50/60 Hz), 115 VAC (60 Hz)

- **Allowable voltage range**: ±10%

- **Circuit protector**: 15 A

- **Applicable earth leakage breaker capacity**: 15 A

- **Rated operating current**: 7.5/8.3 A

- **Rated power consumption**: 0.7/0.8 kW

- **Noise level**: 58/55 dB

- **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, Ferric core (for communication) 1 pc.

- **Weight**: 40 kg

Note: There are different values from standard specifications.

### Table

<table>
<thead>
<tr>
<th>Model</th>
<th>HRS012-A-10</th>
<th>HRS012-W-10</th>
<th>HRS018-A-10</th>
<th>HRS018-W-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refrigerant</td>
<td>Air-cooled refrigeration</td>
<td>Air-cooled refrigeration</td>
<td>Water-cooled refrigeration</td>
<td>Water-cooled refrigeration</td>
</tr>
<tr>
<td>Control method</td>
<td>PID control</td>
<td>PID control</td>
<td>PID control</td>
<td>PID control</td>
</tr>
<tr>
<td>Ambient temperature/humidity Note 2</td>
<td>Temperature: 5 to 40°C, Humidity: 30 to 70%</td>
<td>Temperature: 5 to 40°C, Humidity: 30 to 70%</td>
<td>Temperature: 5 to 40°C, Humidity: 30 to 70%</td>
<td>Temperature: 5 to 40°C, Humidity: 30 to 70%</td>
</tr>
<tr>
<td>Temperature range setting Note 3</td>
<td>5 to 40°C</td>
<td>5 to 40°C</td>
<td>5 to 40°C</td>
<td>5 to 40°C</td>
</tr>
<tr>
<td>Circulating fluid Note 4</td>
<td>Clear water, 15% ethylene glycol aqueous solution Note 5</td>
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</tr>
<tr>
<td>Cooling capacity Note 6</td>
<td>1100/1300</td>
<td>1500/1700</td>
<td>1100/1300</td>
<td>1500/1700</td>
</tr>
<tr>
<td>Temperature stability (°C) Note 6</td>
<td>±0.1</td>
<td>±0.1</td>
<td>±0.1</td>
<td>±0.1</td>
</tr>
<tr>
<td>Pump capacity Note 7</td>
<td>0.13/0.18 (at 7 L/min)</td>
<td>0.13/0.18 (at 7 L/min)</td>
<td>0.13/0.18 (at 7 L/min)</td>
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</tr>
<tr>
<td>Rated flow Note 8</td>
<td>7/7</td>
<td>7/7</td>
<td>7/7</td>
<td>7/7</td>
</tr>
<tr>
<td>Tank capacity (L)</td>
<td>Approx. 5</td>
<td>Approx. 5</td>
<td>Approx. 5</td>
<td>Approx. 5</td>
</tr>
<tr>
<td>Port size</td>
<td>Rc1/2</td>
<td>Rc1/2</td>
<td>Rc1/2</td>
<td>Rc1/2</td>
</tr>
<tr>
<td>Wetted parts material</td>
<td>Stainless steel, Copper (Heat exchanger brazing), Bronze, Alumina ceramic, Carbon, Polypropylene, PE, POM, FKM, EPDM, PVC</td>
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</tr>
</tbody>
</table>

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 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 of 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.
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**

**Symbol**

- **A** - **20**

**Cooling capacity**

- **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)

**Cooling method**

- **HRS012**
- **HRS018**
- **HRS024**
- **HRS050**

**Pipe thread type**

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

### Specifications

- **Ambient temperature/humidity**
  - Temperature: 5 to 40°C, High-temperature environment specifications (option): 5 to 45°C, Humidity: 30 to 70%

- **Circulating fluid**
  - Clear water, 15% ethylene glycol aqueous solution

- **Temperature range setting**
  - 5 to 40°C

- **Cooling capacity**
  - 1100/1300 W (50/60 Hz)
  - 1700/1900 W
  - 2100/2400 W
  - 4700/5100 W

- **Temperature stability**
  - ±0.1°C

- **Pump capacity (MPa)**
  - 0.13/0.18 (at 7 L/min)

- **Rated flow rate (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

- **Temperature range**
  - 5 to 40°C

- **Pressure range (MPa)**
  - 0.3 to 0.5
  - 0.3 to 0.5
  - 0.3 to 0.5

- **Rated flow rate (L/min)**
  - 8
  - 12
  - 14

- **Power supply**
  - Single-phase 200 to 230 VAC (50/60 Hz)
  - Allowable voltage range ±10%

### Accessories

- Fitting (for drain outlet) 1 pc.
- Input/output signal connector 1 pc.
- Power supply connector 1 pc.
- Operation manual (for installation/operation) 1 pc.
- Quick manual (with a clear case) 1 pc.
- Alarm code list sticker 1 pc.
- Ferritic core (for communication) 1 pc.

### Weight (kg)

- 43

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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 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 rate is rated flow, and the circulating fluid outlet and return port are directly connected.
Note 7) The capacity of the Thermo-chiller outlet when the circulating fluid temperature is 20°C.
Note 8) 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 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.
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)


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

HRS050-A-20
**Heating Capacity**

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

- Ambient 5°C
- Ambient 20°C
- Ambient 25°C
- Ambient 32°C
- Ambient 40°C

- Heating capacity [W]
- Circulating fluid temperature [°C]

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

- Ambient 5°C
- Ambient 20°C
- Ambient 25°C
- Ambient 32°C
- Ambient 40°C

- Heating capacity [W]
- Circulating fluid temperature [°C]

**Pump Capacity**

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

- Outlet 60 [Hz]
- Outlet 50 [Hz]
- Return port

- Lifting height [m]
- Pressure [MPa]
- Circulating fluid rate [LPM]

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

- Outlet 60 [Hz]
- Outlet 50 [Hz]
- Return port

- Lifting height [m]
- Pressure [MPa]
- Circulating fluid rate [LPM]

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

- Outlet 60 [Hz]
- Return port

- Lifting height [m]
- Pressure [MPa]
- Circulating fluid rate [L/min]

**Required Facility Water Flow Rate**

**HRS012-W-10**, **HRS018-W-20**, **HRS024-W-20**

- Facility water flow rate [L/min]
- Facility water inlet temperature [°C]

*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

Ventilation air inlet (Air-cooled only) ➔ Ventilation air outlet (Air-cooled only)

Circulating fluid fill port lid
Operation display panel
Handle
Caster (unfixed) with locking lever
Caster (unfixed)

Circulating fluid return port
Rc1/2

Drain port with O-ring sealing plug

Power switch
Power entry

Circulating fluid outlet
Rc1/2

Valve stopper

Ventilation air inlet
Ventilation air outlet

Ventilation air outlet

Serial communication (RS-485/RS-232C) connector
D-sub female receptacle

Contact input/output communication connector

Optional connector 1
Optional connector 2

Maintenance connector

Facility water outlet
Rc3/8
Facility water inlet
Rc3/8

Water-cooled refrigeration

HRS050

Ventilation air inlet ➔ Ventilation air outlet

Circulating fluid fill port lid
Operation display panel
Handle
Caster (unfixed) with locking lever
Caster (unfixed)

Circulating fluid outlet
Valve stopper

Ventilation hole (Grommet with membrane)

Vents

Power entry

Serial communication (RS-485/RS-232C) connector
D-sub female receptacle

Contact input/output communication connector

Optional connector 1
Optional connector 2

Maintenance connector

Circulating fluid return port
Rc1/2

Model no. label

Circulating fluid outlet
Rc1/2

Drain port Rc1/4 (Valve stopper)

Dimensions

HRS012/018/024

HRS050

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