

# Circulating Fluid Temperature Controller Dual Thermo-chiller

## HRZD Series

### Double Inverter Type

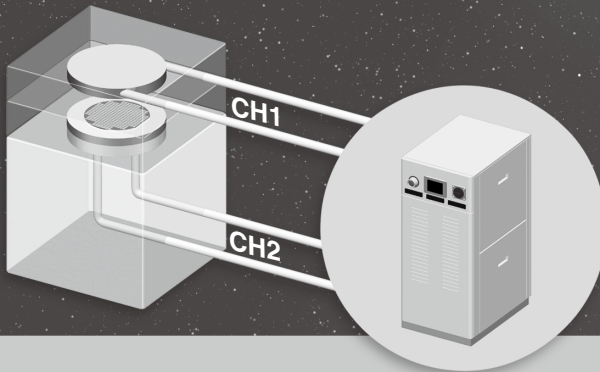


SEMI Standard  
S2-0706, S8-0308, F47-0706

**Temperatures for 2 systems can be controlled separately by one chiller.**



**Example**  
Temperature control of chamber electrode



#### Energy saving

#### Double inverter type

More effective energy-saving is achieved through use of a DC inverter compressor and an inverter pump.

Power consumption:

**Reduced by 84%**

**2.2 kWh/h**

(Existing model: 13.8 kWh/h)

Facility water consumption:

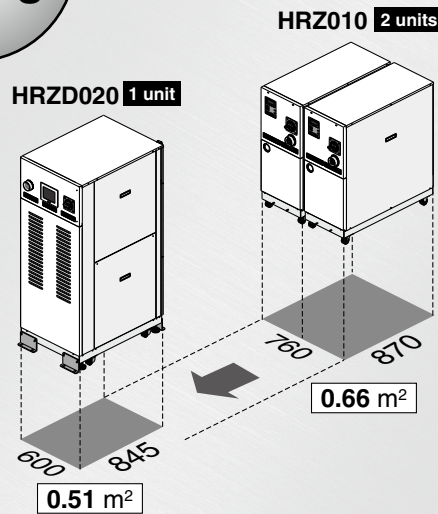
**Reduced by 90%**

**4 L/min** (Existing model: 40 L/min)

Conditions: Circulating fluid temperature  $-10^{\circ}\text{C}$ , Galden<sup>®</sup> HT135 x 20 L/min, Piping 3/4 inch x 4 m, Idling 50%, Process 50% operation with 2 kW user load, 60 Hz

#### Space saving

Footprint reduced by 23%



**Reduced wiring, piping and labor**

Single power cable, single facility water piping system

Switchover from the existing model is also possible.

HRS

HRS-R

HRS090

HRS 100/150

HRS200

HRS090

HRSH

HRSE

HRR

HRL

HRZ

HRZD

HRW

HECR

HEC

HEB

HED

Technical Data

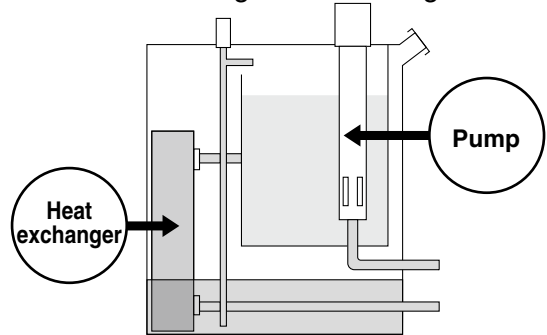
# HRZD Series

- Temperature range setting: **-30 to 90°C**  
(Fluorinated fluid)
- Temperature stability: **±0.1°C**
- Circulating fluid flow range: **10 to 40 L/min**
- Cooling capacity: **Max. 10 kW x 2 ch**
- Type of circulating fluid:  
**Galden® Fluorinert™**  
Ethylene glycol aqueous solution
- Communications: Contact input/output  
(Standard equipment) Serial RS-485/RS-232C  
Analog communication  
(Selectable on the touch panel)

## Leakless

### All in Tank

Accommodation of a pump and a heat exchanger inside the tank can eliminate the external leakage of circulating fluid.

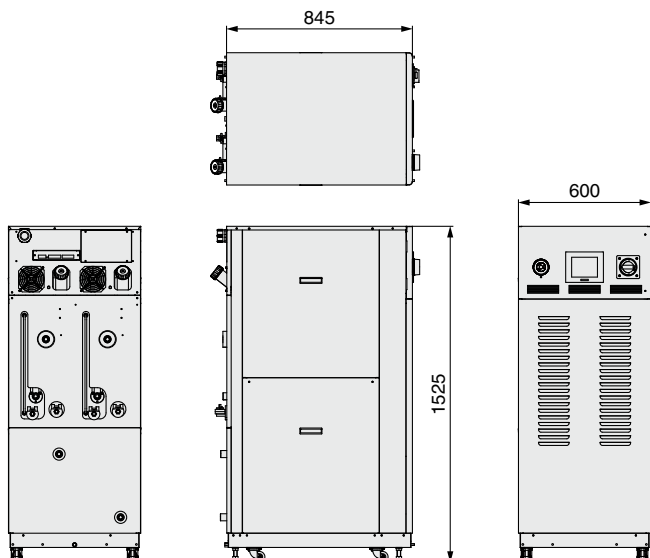


## Specifications (Fluorinated Fluid Type)

Model	HRZD020-WS-WS	
Channel	1	2
Cooling method	Water-cooled refrigeration	
Cooling capacity*1 kW	9.5 (Circulating fluid temperature at 20°C)	9.5 (Circulating fluid temperature at 20°C)
Temperature range setting °C	-30 to 90	-30 to 90
Temperature stability °C	±0.1*2	±0.1*2
Circulating fluid flow range*3 L/min	10 to 40	10 to 40
Circulating fluid*4	-30 to 40°C: Galden® HT135 Fluorinert™ FC-3283 20 to 90°C: Galden® HT200 Fluorinert™ FC-40	
Refrigerant	R404A (HFC)	R404A (HFC)
Refrigerant charge kg	2.9	2.9
Pump capacity*5 MPa	Max. 0.72 (at 20 L/min) With flow control function by inverter	Max. 0.72 (at 20 L/min) With flow control function by inverter
Main tank capacity*6 L	Approx.15	Approx.15
Sub-tank capacity*7 L	Approx.16	Approx.16
Circulating fluid connection port size (Outlet/Return port)	Rc3/4	Rc3/4
Facility water °C/MPa	10 to 35/0.3 to 0.7	
Facility water required flow rate*8 L/min	15 (Facility water temperature at 25°C)	15 (Facility water temperature at 25°C)
Facility water connection port size (Inlet/Outlet)	Rc1/2 (Single system for Channel 1, 2)	
Power supply	3-phase, 50/60 Hz, 200/200 to 208 VAC ±10%	
Main breaker capacity A	60	
Dimensions*9 mm	W600 x D845 x H1525	
Weight*10 kg	380	
Communications	Serial RS-485/RS-232C (D-sub 9 pin), Contact input/output, Analog input/output (D-sub 25 pin)	

- \*1 Values of facility water at 25°C, circulating fluid flow rate 20 L/min. Values when the heat generation source is directly connected to the circulating fluid circuit in this product. Common for 50/60 Hz.
- \*2 Values may go beyond the specified range depending on the operating condition.
- \*3 Depending on the piping specifications of the user system, it may not be controlled by the set value.
- \*4 GALDEN® is a registered trademark, belonging to the Solvay Group or its corresponding owner. Fluorinert™ is a trademark of 3M.
- \*5 Circulating fluid temperature at 20°C, Capacity at the outlet on this product. Common for 50/60 Hz.
- \*6 Minimum volume required for operating this product only. (Circulating fluid temperature at 20°C, including volume for the piping and the heat exchanger inside this product)
- \*7 Preliminary space volume without main tank capacity. Use for collecting circulating fluid inside the external piping or for preliminary injection.
- \*8 Required flow rate during the temperature drop. Possible to operate this product at approx. 1 to 2 L/min when there is no load.
- \*9 Dimensions between panels, not including the dimensions of protrusion such as a breaker handle.
- \*10 Weight in the dry state without circulating fluids

## Dimensions



### Refrigerant with GWP reference

Refrigerant	Global warming potential (GWP)	
	Regulation (EU) No 517/2014 (Based on the IPCC AR4)	Revised Fluorocarbons Recovery and Destruction Law (Japanese law)
R134a	1,430	1,430
R404A	3,922	3,920
R407C	1,774	1,770
R410A	2,088	2,090

- \* This product is hermetically sealed and contains fluorinated greenhouse gases (HFC). When this product is sold on the market in the EU after January 1, 2017, it needs to be compliant with the quota system of the F-Gas Regulation in the EU.
- \* See specification table for refrigerant used in the product.