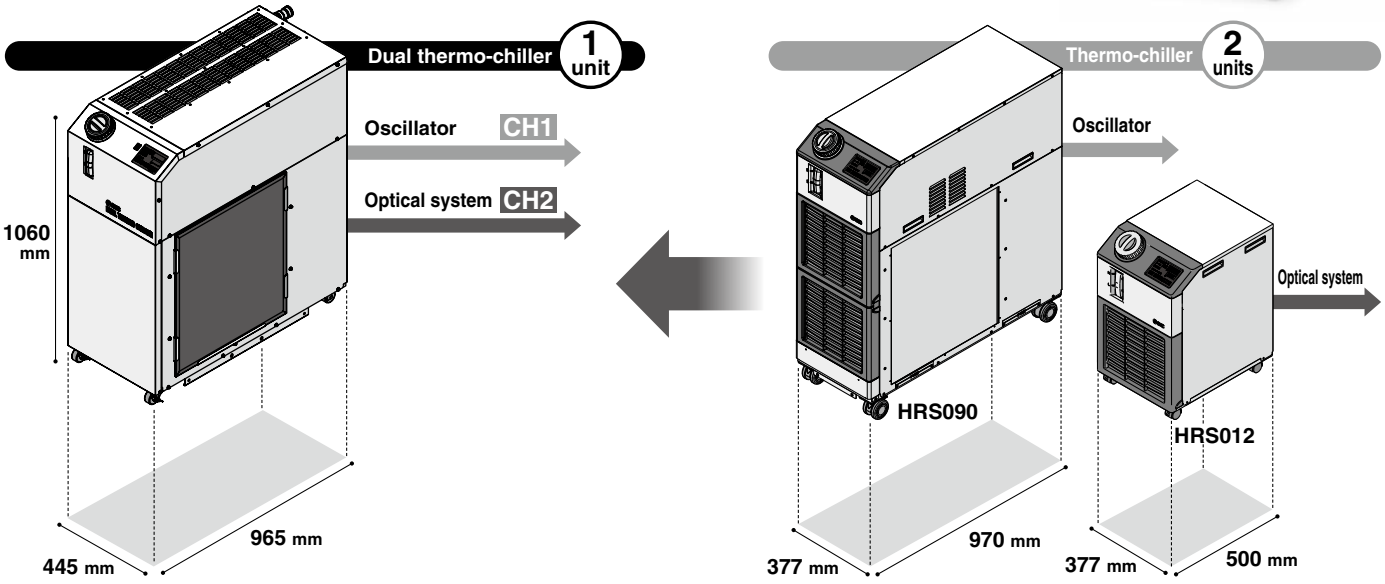
Circulating Fluid Temperature Controller

Thermo-chiller

Compact Dual/Basic Type for Lasers | **Air-cooled Refrigeration**

The temperatures of 2 fluid channel systems can be controlled individually by 1 chiller.

Space saving Footprint reduced by 21%



Energy saving Power consumption reduced by 17%

- 1 refrigerator, fan, and pump
- Uses a heating method that doesn't require a heater

- Cooling capacity (CH1, 2 total) 8.0 kW/9.5 kW (50 Hz/60 Hz)
- Temperature stability ±0.1°C CH1, ±0.5°C CH2
- Set temperature range 15 to 25°C CH1, CH1 temperature + 0 to 15°C CH2
- Water splash-resistant outdoor installation type (IPX4 compliant)
- Low noise function (due to adjustable fan rotation count)
- Increased cooling capacity function (With compressor inverter: Option C)
- Circulating fluid pressure adjustment function (With pump inverter: Option P)

***HRLE* Series**

SMC

Thermo-chiller

Compact Dual/Basic Type for Lasers

HRLE Series

CE

RoHS

Power supply	3-phase 200 VAC (50 Hz) 3-phase 200 to 230 VAC (60 Hz)

Air-cooled refrigeration

How to Order

HRLE 090 − A − 20 − □

Cooling capacity

	CH1, 2 total
090	9.5 kW

Cooling method

A	Air-cooled refrigeration

Power supply

20	3-phase 200 VAC (50 Hz) 3-phase 200 to 230 VAC (60 Hz)

Option

Nil	None
C	With compressor inverter
M	Applicable to DI water piping
P	With pump inverter

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

Specifications

Model				HRLE090-A-20
Cooling method				Air-cooled refrigeration
Refrigerant				R410A (HFC)
Refrigerant charge			kg	2
Control method				PID control
Ambient temperature			°C	2 to 45
Circulating fluid system	Circulating fluid*1			Tap water, Deionized water
	Set temperature range		°C	CH1: 15 to 25, CH2: CH1 + 0 to 15
	Cooling capacity (CH1, 2 total) 50/60 Hz*2		kW	8.0/9.5
	Heating capacity (CH1, 2 total) 50/60 Hz*3		kW	2.0/2.5
	Temperature stability*4		°C	CH1: ±0.1, CH2: ±0.5
	Pump capacity	Rated flow 50/60 Hz*5	L/min	CH1: 25/35, CH2: 2/2
		Max. flow rate 50/60 Hz	L/min	55/65
		Max. pump head	m	50
	Min. operating flow rate 50/60 Hz*6		L/min	CH1: 25/35, CH2: 1/1
	Tank capacity (CH1, 2 total)		L	Approx. 18
	Circulating fluid outlet, circulating fluid return port			CH1: Rc1, CH2: Rc1/2
	Tank drain port			Rc1/4
	Fluid contact material			Stainless steel, Copper (Heat exchanger brazing), Bronze (Pump), Ceramic, Carbon, FKM, PP, PE, POM, PVC, PA, EPDM
Electrical system	Power supply			3-phase 200 VAC (50 Hz) Allowable voltage range ±10% (No continuous voltage fluctuation) 3-phase 200 to 230 VAC (60 Hz) Allowable voltage range ±10% (No continuous voltage fluctuation)
	Earth leakage breaker (Standard)	Rated current	A	30
		Sensitivity current	mA	30
	Rated operating current 50/60 Hz		A	14/17
	Rated power consumption 50/60 Hz		kW(kVA)	4.3/5.3 (4.9/5.8)
Communication function				Contact input/output, Serial communication (RS-485)
Noise level			dB(A)	65
Accessories*7				Operation Manual (for installation/operation) 2 pcs. (English 1 pc./Japanese 1 pc.), Anchor bolt fixing brackets 2 pcs. (includes 4 M8 bolts), Cable accessory (For communication cable)
Weight			kg	140

*1 Use fluid that fulfills the conditions below as the circulating fluid.
Tap water: Standard of The Japan Refrigeration And Air Conditioning Industry Association (JRA GL-02-1994)
Deionized water: Electric conductivity 0.4 μS/cm or higher (Electric resistivity 2.5 MΩ·cm or lower)

*2 ① Ambient temperature: 32°C, ② Circulating fluid: Tap water, ③ Circulating fluid temperature: CH1 20°C/CH2 25°C, ④ Circulating fluid flow rate: Rated flow, ⑤ Power supply: 200 VAC

*3 ① Ambient temperature: 32°C, ② Circulating fluid: Tap water, ③ Circulating fluid flow rate: Rated flow, ④ Power supply: 200 VAC

*4 ① Ambient temperature: 32°C, ② Circulating fluid: Tap water, ③ Circulating fluid temperature: CH1 20°C/CH2 25°C, ④ Circulating fluid flow rate: Rated flow, ⑤ Power supply: 200 VAC, ⑥ Piping length: Shortest, ⑦ Load: Same as the cooling capacity

*5 Circulating fluid discharge pressure = at 0.5 MPa

*6 Fluid flow rate to maintain the cooling capacity and to keep the circulating fluid discharge pressure at 0.5 MPa or less
If the actual flow rate is lower than this, install bypass piping.

*7 The anchor bolt fixing brackets (includes 4 M8 bolts) are used for securing the product to wooden skids when packaging the thermo-chiller.
The anchor bolt is not included.

Scheduled to acquire UL Standards (60 Hz)

RoHS

Power supply	3-phase 380 to 415 VAC (50/60 Hz) 3-phase 460 to 480 VAC (60 Hz)

Air-cooled refrigeration

How to Order

HRLE 090 − A − 40 − □

Cooling capacity

	CH1, 2 total
090	9.5 kW

Cooling method

A	Air-cooled refrigeration

Power supply

40	3-phase 380 to 415 VAC (50/60 Hz) 3-phase 460 to 480 VAC (60 Hz)

Option

Nil	None
C	With compressor inverter
M	Applicable to DI water piping
P	With pump inverter

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

Specifications

Model				HRLE090-A-40
Cooling method				Air-cooled refrigeration
Refrigerant				R410A (HFC)
Refrigerant charge			kg	2
Control method				PID control
Ambient temperature			°C	2 to 45
Circulating fluid system	Circulating fluid*1			Tap water, Deionized water
	Set temperature range		°C	CH1: 15 to 25, CH2: CH1 + 0 to 15
	Cooling capacity (CH1, 2 total) 50/60 Hz*2		kW	8.0/9.5
	Heating capacity (CH1, 2 total) 50/60 Hz*3		kW	2.0/2.5
	Temperature stability*4		°C	CH1: ±0.1, CH2: ±0.5
	Pump capacity	Rated flow 50/60 Hz*5	L/min	CH1: 25/35, CH2: 2/2
		Max. flow rate 50/60 Hz	L/min	55/65
		Max. pump head	m	50
	Min. operating flow rate 50/60 Hz*6		L/min	CH1: 25/35, CH2: 1/1
	Tank capacity (CH1, 2 total)		L	Approx. 18
	Circulating fluid outlet, circulating fluid return port			CH1: Rc1, CH2: Rc1/2
	Tank drain port			Rc1/4
	Fluid contact material			Stainless steel, Copper (Heat exchanger brazing), Bronze (Pump), Ceramic, Carbon, FKM, PP, PE, POM, PVC, PA, EPDM
Electrical system	Power supply			3-phase 380 to 415 VAC (50/60 Hz) Allowable voltage range ±10% (No continuous voltage fluctuation) 3-phase 460 to 480 VAC (60 Hz) Allowable voltage range +4%, −10% (Max. voltage less than 500 V and no continuous voltage fluctuation)
	Applicable earth leakage breaker*8	Rated current	A	20
		Sensitivity current	mA	30
	Rated operating current 50/60 Hz		A	6.8/8.2
	Rated power consumption 50/60 Hz		kW(kVA)	4.3/5.3 (4.9/5.8)
Communication function				Contact input/output, Serial communication (RS-485)
Noise level			dB(A)	67
Accessories*7				Operation Manual (for installation/operation) 2 pcs. (English 1 pc./Japanese 1 pc.), Anchor bolt fixing brackets 2 pcs. (includes 4 M8 bolts), Cable accessory (For communication cable)
Weight			kg	140

*1 Use fluid that fulfills the conditions below as the circulating fluid.
Tap water: Standard of The Japan Refrigeration And Air Conditioning Industry Association (JRA GL-02-1994)
Deionized water: Electric conductivity 0.4 μS/cm or higher (Electric resistivity 2.5 MΩ·cm or lower)

*2 ① Ambient temperature: 32°C, ② Circulating fluid: Tap water, ③ Circulating fluid temperature: CH1 20°C/CH2 25°C, ④ Circulating fluid flow rate: Rated flow, ⑤ Power supply: 400 VAC

*3 ① Ambient temperature: 32°C, ② Circulating fluid: Tap water, ③ Circulating fluid flow rate: Rated flow, ④ Power supply: 400 VAC

*4 ① Ambient temperature: 32°C, ② Circulating fluid: Tap water, ③ Circulating fluid temperature: CH1 20°C/CH2 25°C, ④ Circulating fluid flow rate: Rated flow, ⑤ Power supply: 400 VAC, ⑥ Piping length: Shortest, ⑦ Load: Same as the cooling capacity

*5 Circulating fluid discharge pressure = at 0.5 MPa

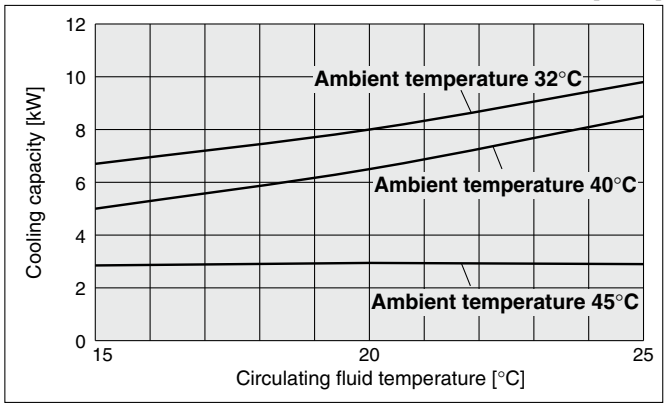
*6 Fluid flow rate to maintain the cooling capacity and to keep the circulating fluid discharge pressure at 0.5 MPa or less
If the actual flow rate is lower than this, install bypass piping.

*7 The anchor bolt fixing brackets (includes 4 M8 bolts) are used for securing the product to wooden skids when packaging the thermo-chiller.
The anchor bolt is not included.

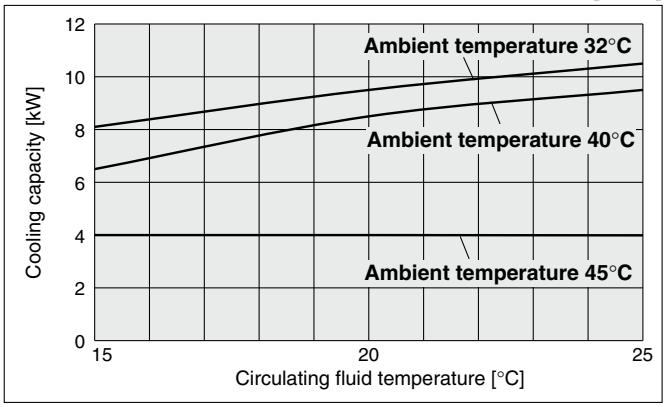
*8 To be prepared by the customer

Cooling Capacity

HRLE090-A-20/40 [50 Hz]



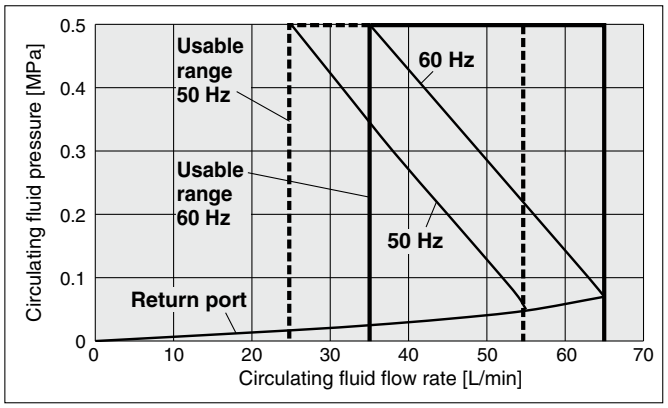
HRLE090-A-20/40 [60 Hz]



* The cooling capacity is the sum of the capacities of CH1 and CH2.
* The ambient temperature of 32°C is at 60% fan output (default setting).
* The ambient temperatures of 40°C and 45°C are at 100% fan output. (The noise level rises by approx. 3 dB(A) from the rated condition.)

Pump Capacity

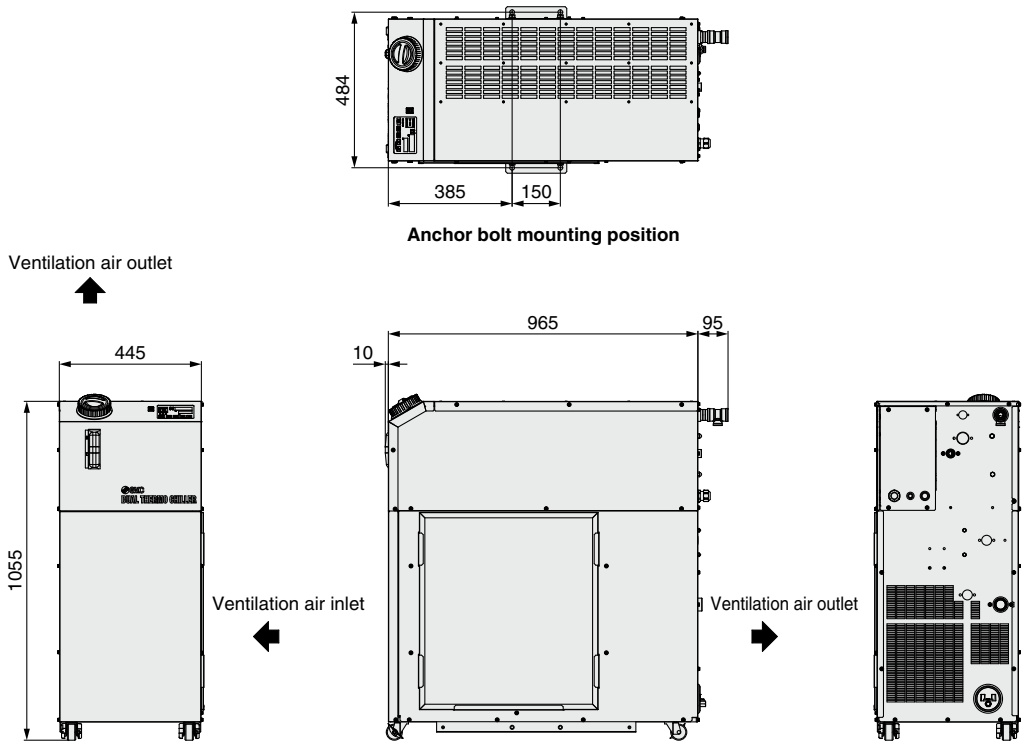
HRLE090-A-20/40



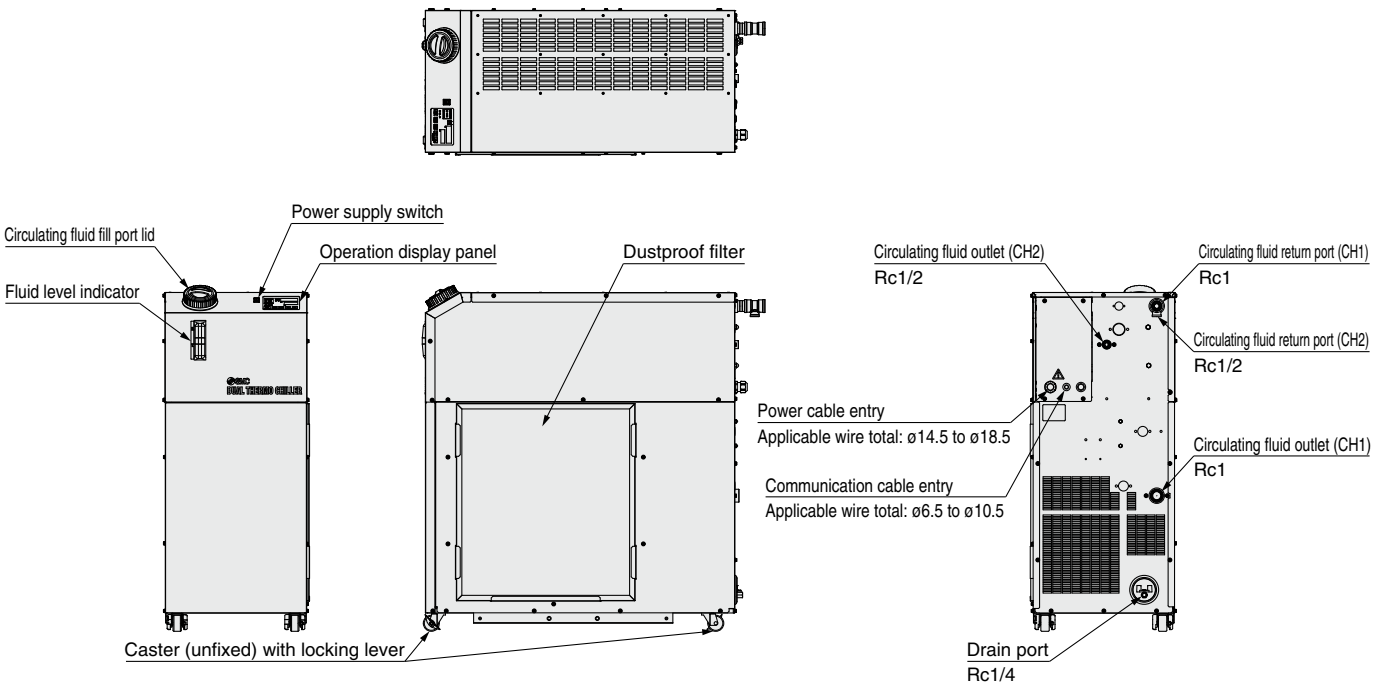
* The pump capacity is the capacity of CH1 when 2 L/min are applied to CH2.

Dimensions

HRLE090-A-20/40



Parts Description



HRLE Series
Options

C Option symbol

With Compressor Inverter

HRLE090−A−□−C

With compressor inverter

The compressor inverter increases the cooling capacity of the 50 Hz area to that of the 60 Hz area. (Refer to the 60 Hz graph under “Cooling Capacity” on page 3.)

∗ No change in external dimensions

M Option symbol

Applicable to DI Water Piping

HRLE090−A−□−M

Applicable to DI water piping

The contact materials of the circulating fluid circuit are made from non-copper materials.

Applicable model	HRLE090-A-□-M
Contact materials of circulating fluid	Stainless steel (including heat exchanger brazing), SiC, Carbon, PA, PP, PE, POM, FKM, EPDM, PVC, PTFE

∗ No change in external dimensions

P Option symbol

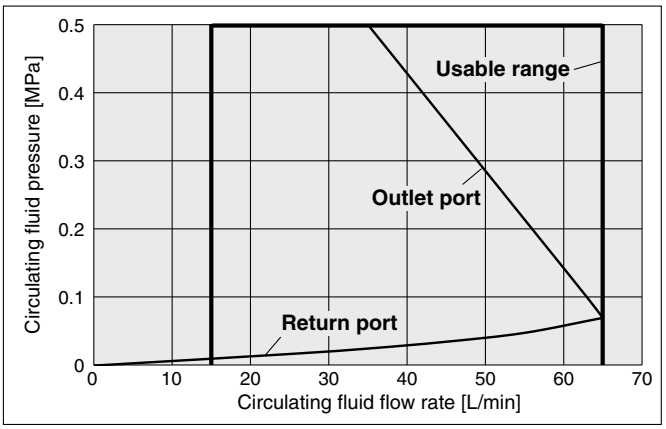
With Pump Inverter

HRLE090−A−□−P

With pump inverter

The pump inverter increases the pump capacity of the 50 Hz area to that of the 60 Hz area.
Pressure setting is also available, allowing for auto control to any pressure without the need for valve position adjustments.

∗ No change in external dimensions



∗ The pump capacity is the capacity of CH1 when 2 L/min are applied to CH2.

HRLE Series
Optional Accessories

Optional Accessories List

No.	Description	Part no.	Applicable model
①	**G thread conversion fitting set**	**HRL-EP003**	Converts the piping connection port from Rc to G
		HRL-EP011	Select the HRL-EP011 when using the HRL-JK001.
②	**NPT thread conversion fitting set**	**HRL-EP004**	Converts the piping connection port from Rc to NPT
		HRL-EP012	Select the HRL-EF012 when using the HRL-JK001.
③	**Bypass piping set**	**HRL-BP001**	When the circulating fluid flow rate falls below the min. required flow rate, the temperature stability declines. The min. required flow rate can be secured by connecting bypass piping.
④	**Electric conductivity control set**	**HRL-DI001**	This set can be used to display and control the electric conductivity of the circulating fluid.
⑤	**Particle filter set**	**HRL-PF001**	Allows you to remove foreign matter from CH1
		HRL-PF002	Allows you to remove foreign matter from CH2
⑥	**Handle**	**HRS-S0600**	A handle for the HRL-PF001 used for filter vessel removal
		HRR-S0079	A handle for the HRL-PF002 used for filter vessel removal
⑦	**Filter for circulating fluid fill port**	**HRS-PF007**	Prevents foreign matter from entering the tank when supplying the circulating fluid
⑧	**Automatic water fill setting**	**HRL-JK001**	Automatically refills the tank when the circulating fluid level decreases
⑨	**Ball valve set (With pressure gauge)**	**HRL-BB001**	Allows you to adjust the circulating fluid pressure and flow rate

⚠ **Safety Instructions**	Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.