



Low Temperature Circulator

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Low Temperature Circulators

Product Line Introduction

CoolAce®

Offers wide range of application like organic synthesizer, evaporator, analytical instruments and industrial machineries.

CCA-1112
Smallest model
450W cooling capacity

CCA-1111 CE
Downsized evaporating
system

CA-1115 series
Best seller offering wide application
Max. 1400W cooling capacity

New



CA-1320
Low height
Can be placed under lab. table.
1050W cooling capacity

PFR+PFP
-40°C Multi purpose bath
360W cooling capacity



Medium and high power

Suitable for middle/large capacity evaporator, semiconductor manufacturing and general machinery.

CA-2600 • 2600S
Medium power model
3000W cooling capacity

CA-3000 • 4000 Series
Large power type
Max. 7800W cooling capacity

Highly precise temp. control

Wide temperature control range from -30°C realizes application to semiconductor production equipment, reaction bath and analytical instruments.

PCC-7000 • 7000S
Programmed constant temp. circulator
Features highly precise temperature control.
Barrel silicone fluid type available.

CTP Series
Constant temp. circulator
Controls external bath
temperature accurately.



Low Temperature Circulator CoolAce® CCA-1112

New version of CoolAce series developed based on the concept of laboratory security / safety and environment friendly.

Compact size realizes installation in fume hood or under lab table.



CCA-1112

Features

- Required installation space is only 205W x 405Dmm.
- -20 ~ 30°C temperature range offers wide application; evaporators, industrial machines, analytical instruments.
- The capacity of CCA-1112 is powerful enough to operate with aspirator + evaporator (water sample) or solvent recovery unit + evaporator (solvent sample).
- Circulation nozzle adopts one touch coupling which is easy to mount/dismount piping and the nozzle direction is freely adjustable.
- Provided with communication function with evaporator to realize synchronized operation with evaporator. The function prevents due condensation by overcooling of evaporator condenser.

Specifications

Product Name	Low Temperature Circulator (CoolAce)
Model	CCA-1112
Cat. No.	259910
Circulation method	Closed loop circulation
Temp. setting range	-20 ~ 30°C (without heater)
Temp. control accuracy	±2°C (-20 ~ 0°C) ±1°C (-10 ~ 30°C)
Cooling capacity	450W (387kcal/h) at liquid temp. 10°C 310W (266kcal/h) at liquid temp. -10°C
Pump max. flow (50/60Hz)	9/10L/min.
Pumphead max. pressure (50/60Hz)	4.2/5.6m
Temp. control	Refrigerator ON • OFF control
Temp. setting & display	Sheetkey input • digital display
Safety functions	Leak/over current braker; Refrigerator overload relay, Refrigerator high pressure switch, Protection timer, Pump thermal protector, Temp. control self diagnosis
Refrigerator • coolant	Air cooling, 450W • R404A
Dimensions (mm) & Weight	205W x 405D x 547H 28kg
Power source	800VA AC100V

System Example (Space saving system)



Product name	Model	Cat. No.
Rotary evaporator	N-1110V-W	243650
Low temp. Circulator	CCA-1112	259910
Solvent recovery unit	DPE-1240C	261420
Diaphragm vacuum pump	NVP-1000	261800
Cooling hose set	ID 9mm 2mx3	112700
Vacuum hose	ID 6 x OD 15mm 5m	119170

Rotary Evaporator 1

Vacuum Pump & Aspirator 2

Organic Synthesizer 3

Freeze Dryer, Spray Dryer 4

Shaker 5

Stirrer 6

Tube Pump 7

Low Temperature Circulator 8

Cold Trap 9

Constant Temperature Bath 10

Incubator 11

Oven 12

Fermentor 13

Low Temperature Circulator **CoolAce®**

CCA-1111 CE

CoolAce series developed based on the concept of laboratory security/safety and environment friendly.

Compact size realizes installation in fume hood or under lab table.



CCA-1111 CE

Features

- Required installation space is only 232W x 479Dmm.
- -20~30°C temperature range offers wide application; evaporators, industrial machines, analytical instruments.
- The capacity of CCA-1111 CE is powerful enough to operate with aspirator + evaporator (water sample) or solvent recovery unit + evaporator (solvent sample).
- Circulation nozzle adopts one touch coupling which is easy to mount/dismount piping and the nozzle direction is freely adjustable.
- Provided with communication function with evaporator to realize synchronized operation with evaporator. The function prevents dew condensation by overcooling of evaporator condenser.

Specifications

Product Name	Low Temperature Circulator (CoolAce)
Model	CCA-1111 CE
Cat. No.	219959/240358
Circulation method	Closed loop circulation
Temp. setting range	-20~30°C (without heater)
Temp. control accuracy	±2°C (-20~-11°C) ±1°C (-10~30°C)
Cooling capacity	450W (387kcal/h) at liquid temp. 10°C 310W (266kcal/h) at liquid temp. -10°C
Pump max. flow (50/60Hz)	9/10L/min.
Pumphead max. pressure (50/60Hz)	4.2/5.6m
Temp. control	Refrigerator ON • OFF control
Temp. setting & display	Sheetkey input • digital display
Safety functions	Leak/over current braker; Refrigerator overload relay, Refrigerator high pressure switch, Protection timer, Pump thermal protector, Temp. control self diagnosis
Refrigerator • coolant	Air cooling, 400W • R404A
Dimensions (mm) & Weight	232W x 500D x 490H 31kg
Power source	800VA AC100V/1.76kVA AC220V

System Example (Space saving system)



Product name	Model	Cat. No.
Rotary evaporator	N-1200 BVW	243200
Low temp. Circulator	CCA-1111 CE	219959
Diaphragm vacuum pump	DTC-22	230290
Cooling hose set	ID 9mm 2mx3	112700
Vacuum hose	ID 6 x OD 15mm 5m	119170

Low Temperature Circulator **CoolAce**[®]

CA-1115A·1115 CE

New model of the best seller CA-1114 with cooling capacity of 1200W



CA-1115A

Features

- Wide temperature range from -20 ~ 30°C
- Strong cooling capacity of 1200W (1030kcal) at liquid temp. 10°C
- Cooling hose and circulation nozzle can be mounted or dismantled by one touch.
- Circulation nozzle direction freely adjustable 360°
- Complies with RoHS directives.
- Can be connected to two solvent recovery units and two 1L evaporators.

Specifications

Product Name	Low Temperature Circulator (CoolAce)
Model	CA-1115 CE/CA-1115A-1
Cat. No.	259808/249199
Circulation method	Closed loop circulation
Temp. setting range	-20 ~ 30°C
Temp. control accuracy	±2°C
Cooling capacity	1200W (1030kcal/h) at liquid temp. 10°C 950W (820kcal/h) at liquid temp. 0°C 650W (560kcal/h) at liquid temp. -10°C
Pump max. flow (50/60Hz)	12/14L/min.
Pumphead max. pressure (50/60Hz)	9.5/13m
Temp. control	Refrigerator ON • OFF control
Temp. setting & display	Sheetkey input • digital display
Refrigerator • coolant	Air cooling, 675W • R407C
Dimensions (mm) & Weight	340W x 384D x 851H 41kg
Power source	1.26kVA AC115V/2.42kVA AC220V

Option



One touch cooling hose
Tube ID 8.0 x OD 10mm 2m
Cat. No. 244940
Tube ID 8.0 x OD 10mm 5m
Cat. No. 244950



Aspirator
CA-1AS
Cat. No. 210570



Sealed lid
Used for external circulation
Cat. No. 112780



High pressure pump HPP-1100
10L/min, 196kPa (2kg/cm²)
Max. flow rate: 24/26L/min
Motor: 240W
Cat. No. 158750

Base for high pressure pump CA-10
Cat. No. 180520

Rotary Evaporator

1

Vacuum Pump & Aspirator

2

Organic Synthesizer

3

Freeze Dryer • Spray Dryer

4

Shaker

5

Stirrer

6

Tube Pump

7

Low Temperature Circulator

8

Cold Trap

9

Constant Temperature Bath

10

Incubator

11

Oven

12

Fermentor

13

Low Temperature Circulator CoolAce® CA-1320

Built-in, compact circulator



CA-1320

Features

- CA-1320 is designed as a compact CoolAce. The unit can be placed under laboratory table thanks to low height and is helpful in effectively using limited laboratory space.
- Various safety functions are incorporated such as self-diagnosis, refrigerator overload relay and refrigerator protection timer.
- Alarm signal outlet is available (option).
- Though compact in size, the capacity of CA-1320 is powerful enough to cool two 1L evaporators and aspirators simultaneously or two 1L evaporators and two solvent recovery units.

Specifications

Product Name	Low Temperature Circulator (CoolAce)
Model	CA-1320
Cat. No.	249180
Circulation method	Closed loop
Temp. setting range	-20 ~ 20°C
Temp. control accuracy	±2°C
Cooling capacity	1050W (903kcal/h) at liquid temp. 10°C 800W (688kcal/h) at liquid temp. 0°C 600W (516kcal/h) at liquid temp. -10°C
Pump max. flow (50/60Hz)	12/14L/min.
Pumphead max. pressure (50/60Hz)	9.5/13m
Temp. control	Refrigerator ON • OFF control
Temp. setting & display	Sheetkey input • digital display
Refrigerator • coolant	Air cooling, 650W • R407C
Dimensions (mm) & Weight	460W x 430D x 570H 48kg
Power source	1.1kVA AC100V

Low Temperature Circulation Bath PFR-1000, PFR-1000+PFP-1000



PFR-1000 + PFP-1000

Features

- PFR-1000 is a low temperature, multi use bath at -45°C.
- By adding optional circulation pump PFP-1000, the unit can be used also as low temperature circulator from -40°C ~ -20°C.
- Large capacity bath (14L) in compact size (Effective size 180Wx330Dx180Hmm).
- Combined with optional pre-freezer PFM-1000, the unit will serve also as a spare freezing bath.
- Timer function is provided (Auto start, Auto stop).

Specifications

	Low Temperature Bath	Low Temperature Circulator
Product Name	PFR-1000	PFR-1000 + PFP-1000
Model	197410/197418	197410 + 197430
Cat. No.		
Temp. setting range	-45 ~ -20°C	-40 ~ -20°C
Cooling capacity		360W at -20°C, 310W at -30°C
External circulation (50/60HZ)	-	Max. flow 8/12L/min, max pressure 3/4m at 0.03/0.04MPa
Temp. control		Refrigerator ON-OFF control
Temp. setting & display		Sheetkey input • digital display
Dimensions (mm) & Weight	320W x 550D x 920H 49kg	320W x 550D x 1100H 53kg
Power source	800VA AC100V/1.76kVA AC220V	900VA AC100V/1.98kVA AC220V

Low Temperature Circulator CoolAce®

CA-2600·2600S

Medium power (3000W), multifunctional low temp. circulator



CA-2600S

Features

- Thanks to the big capacity of 3000W, the unit implements wide field of application from large capacity evaporators to analytical instruments, machining tools and semiconductor manufacturing equipment that contain high heat generating components.
- Multiple safety functions are provided to meet wide application field.
External temperature sensor outlet, recorder signal outlet, refrigerator self diagnosis (mal function, abnormal temperature, sensor brake etc.).
- Wide temperature control range from -10°C~RT with high accuracy of $\pm 2^\circ\text{C}$.
- Using sealed lid (option), external circulation is possible.

Specifications

Product Name	Low Temperature Circulator (CoolAce)	Low Temperature Circulator (CoolAce)
Model	CA-2600(220V)	CA-2600S
Cat. No.	197110	188319/199410
Circulation method	Closed loop circulation	
Temp. setting range	-10 ~ 35°C	
Temp. control accuracy	$\pm 2^\circ\text{C}$	
Cooling capacity	3000W (2580kcal/h) at liquid temp. 20°C 2500W (2150kcal/h) at liquid temp. 10°C	
Pump max. flow (50/60Hz)	23.5/27L/min.	
Pumphead max. pressure (50/60Hz)	9.5/13m	
Temp. control	Capillary tube volume change + Refrigerator ON • OFF control	
Temp. setting & display	Sheetkey input • digital display	
Emergency stop button	-	Provided
Refrigerator • coolant	Air cooling, 1.1kW • R404A	
Dimensions (mm) & Weight	450W x 515D x 1010H 98kg	
Power source	3kVA AC200V	1.725kVA AC115V/6kVA AC200V

Option



High Pressure Pump HPP-2100

Pressure level similar to tap water outlet (10L/min. 196kPa (2kg/cm²)) can be obtained. In case standard pump pressure is too low because of pressure loss in flow line, this pump is effective.

High pressure pump base for HPP-2100

Cat. No. 199440



External temp. sensor STP-300

Cat. No. 196730



Sealed Lid for open bath

Cat. No. 112780

Specifications

Product Name	High Pressure Pump
Model	HPP-2100
Cat. No.	158770
Pump max. flow (50/60Hz)	24/26L/min
Pumphead max. pressure (50/60Hz)	24/34m
Flow volume (water)	10/20L/min at 0.2MPa (2kgf/cm)
Motor	250W
Dimensions (mm)	252W x 220D x 515H
Power source	500VA AC200V 3Φ

Output lead wire ROL-100
Cat. No. 114230

Pressure switch CA-PS4
Cat. No. 199420

Flow rate switch CA-FS2 (2~30L/min)
Cat. No. 199430

Remote control lead wire RC-110
Cat. No. 234340

Pressure gauge CA-P
Cat. No. 161240

Flow meter CA-F (2~30L/min)
Cat. No. 161250

Rotary Evaporator 1

Vacuum Pump Aspirator 2

Organic Synthesizer 3

Freeze Dryer, Spray Dryer 4

Shaker 5

Stirrer 6

Tube Pump 7

Low Temperature Circulator 8

Cold Trap 9

Constant Temperature Bath 10

Incubator 11

Oven 12

Fermentor 13

Low Temperature Circulator CoolAce®

CA-3000 • 4000 Series

High power CoolAce series



CA-3110 • 4110

CA-3110S • 4110S

CA-3310 • 4310

CA-3310S • 4310S

Features

- Highly powerful cooling capacity makes the unit recommendable for use at production site where air-conditioning effect at summertime is not sufficient.
- High pressure pump is provided to secure enough pressure even in high ratio pressure losing flow line. Relief valve is provided within pump so that pressure loss will not affect stirring efficiency.
- Temperature recording outlet, alarm signal outlet and external temp. sensor outlet are provided as standard to satisfy requirement for use as built-in unit.
- In addition, emergency stop button, remote control outlet, level meter and pressure gauge for refrigerant are provided for built-in requirement in machinery and semiconductor industry.
- Various usages are possible such as cooling the condenser of large scale evaporators, power supply and heat generating parts of electron microscopes, secondary cooling of helium compressors.
- Automatic water supply function and overflow outlet are provided.

Specifications

Product Name	Low Temperature Circulator (CoolAce)							
Model	CA-3110	CA-3110S	CA-4110	CA-4110S	CA-3310	CA-3310S	CA-4310	CA-4310S
Cat. No.	199760	200080	199780	200100	199770	200090	199790	200110
Circulation method	Closed loop							
Temp. setting range	5 ~ 25°C							
Temp. control accuracy	±2°C							
Cooling capacity	4500W (3870kcal/h) 3500W (3010kcal/h)		6000W (5160kcal/h) 4800W (4128kcal/h)		5600W (4816kcal/h) 4400W (3784kcal/h)		7800W (6708kcal/h) 6400W (5504kcal/h)	
Pump max. flow (5-/60Hz)	37/44L/min							
Pumphead max. pressure	52/55m (50/60Hz)							
Temp. control	Capillary tube volume change + Refrigerator ON • OFF control							
Temp. setting & display	Sheetkey input • digital display							
Refrigerator • coolant	Air cooling, 1.5kW • R407C		Air cooling, 2.2kW • R407C		Water cooling, 1.5kW • R407C		Water cooling, 2.2kW • R407C	
Emergency stop button	-	Yes	-	Yes	-	Yes	-	Yes
Refrigerant pressure gauge	-	Yes	-	Yes	Yes	Yes	Yes	Yes
Level meter	-	Yes	-	Yes	-	Yes	-	Yes
Remote control outlet	-	Yes	-	Yes	-	Yes	-	Yes
Dimensions (mm)	600W x 750D x 1400H							
Weight	162kg		179kg		162kg		171kg	
Power source	4kVA AC200V 3Φ		6kVA AC200V 3Φ		4kVA AC200V 3Φ		6kVA AC200V 3Φ	

Low Temperature Circulator CTP Series

For use with external open water bath (max, 50L)
Circulation in closed loop also possible (option)



Features

- Circulation with external open bath or with external closed bath is possible.
- Max. 50L bath capacity. (CTP-3000)
- For small volume circulation, 1L/min. circulation is possible by attaching bypass line (option).
- Circulation with closed flow line is also possible (option).

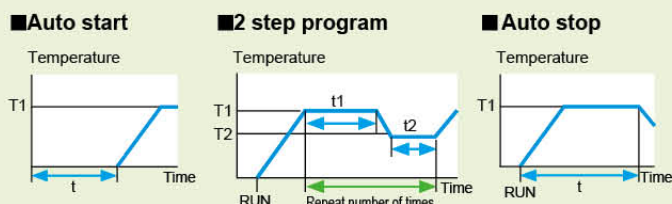
Model selection guide

Water temp.	Bath capacity	
	10°C	12L
20°C	28L	50L
30°C	16L	28L
Model	CTP-1000	CTP-3000

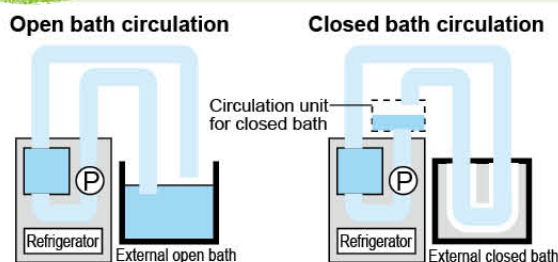
Specifications

Product Name	Low Temperature Circulator	
	CTP-1000	CTP-3000
Model	CTP-1000	CTP-3000
Cat. No.	204880	204890
Circulation method	External circulation	
Temp. setting range	-10~80°C	-20~80°C
Temp. control accuracy	±0.2°C	±0.1°C
Cooling capacity W(kcal/h)	200W (170kcal/h) at 10°C	360W (310kcal/h) at 10°C
Pump max. flow (50/60Hz)	8/10L/min	15/18L/min
Pumphead max. pressure	5/7m (50/60Hz)	
Temp. control	Micro processor P.I.D control, SSR output	
Timer functions	Auto start/stop, Two step program	
Temp. setting & display	Sheet key input • digital display	
Dimensions (mm) & Weight	324W x 397D x 482H 35kg	250W x 480D x 805H 44kg
Power source	1.05kVA AC100V	1.3kVA AC100V

Point! Multiple Programs

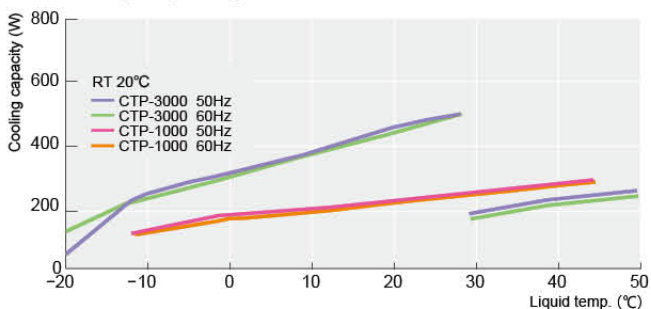


Point! Open or closed bath circulation

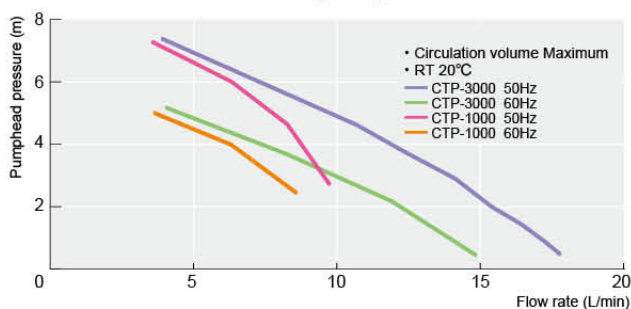


Data

Cooling capacity



External circulation capacity



Rotary Evaporator 1

Reagent Pump & Aspirator 2

Organic Synthesizer 3

Freeze Dryer - Spray Dryer 4

Shaker 5

Stirrer 6

Tube Pump 7

Low Temperature Circulator 8

Cold Trap 9

Control Temperature Bath 10

Incubator 11

Oven 12

Fermentor 13

Heating Bath Circulator HS-1000·HS-1



Features

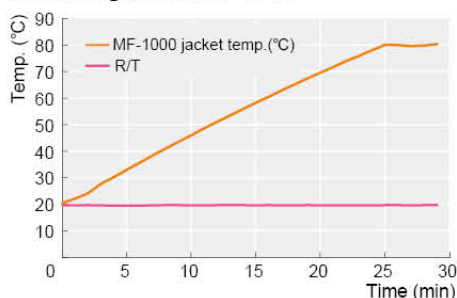
- Hot water circulator suitable for low powered (900W at 40°C) device.
Applicable to closed loop system.
- Recommended for use with Flash Evaporator MF-1000 (HS-1000).
- Compact size which can be installed in fume hood.
- 1.1kW heater realizes high heating capacity (HS-1000).
- Direction of circulation nozzle can be easily changed and one touch hose connection is realized (HS-1000).
- Recommended for use with Flash Evaporator MF-10 • F-70. 2kW heater realizes stable hot water supply at flow rate 22.5L/min (HS-1).

Specifications

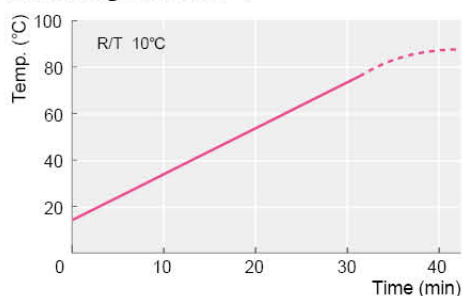
Product Name	Heating Bath Circulator	
Model	HS-1000	HS-1
Cat. No.	248990	113880
Circulation system	Closed loop circulation	
Circulation water temperature	RT+15°C~90°C	
Temp. control accuracy	±1.5°C	±2°C
Max. Flow rate (50/60Hz)	9/10L/min	22.5L/min
Max. Head pressure (50/60Hz)	3.9/5.4m	9.5m
Temp. control	Heater ON-OFF	Volume setting + Heater ON-OFF
Heater	1.1kW	1.3kW+0.75kW
Bath dimensions (mm) & capacity	162Wx260Dx142H 6L	ID260 x 260H 13.5L
Dimensions (mm) & Weight	210W x 310D x 430H 10.5kg	384W x 314D x 455H 19kg
Power source	1.25kVA AC100V	2.6kVA AC100V

Data

■ Heating curve HS-1000



■ Heating curve HS-1



System Example



Product name	Model	Cat. No.
Flash Evaporator	MF-1000	248980
Heating Bath Circulator	HS-1000	248990
Automatic Injector	AFB-1000	261380
Vacuum Controller	NVC-2300B	257260
Vacuum Pump	NVP-1000	261800
Cooling Water Circulator	NCA-1000	261580