Programmable Low Temperature Precision Bath (Pro-cool bath)

NCB-3100 · 3200 · 3300
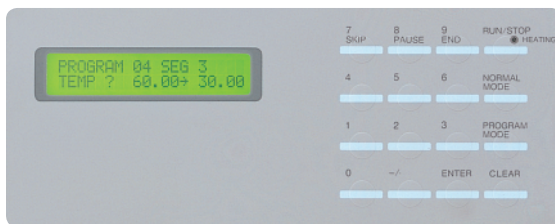

+80℃
−30℃

NCB-3100   NCB-3200   NCB-3300

■Operation unit

PROGRAM 04 SEG 3
TEMP ? 60.00→ 30.00

Many program functions for various purposes

■ Wide range temperature control with the precision at ±0.03℃

■ The temperature trend data can be logged and analyzed feeding out to PC .

■ Provide programs of up-rising and down falling with precise control. Seven program patterns (Max.10 segments per pattern) are available, and patterns can be spliced one another.

■ The post operation at the end of the program, can be selected from three endings, Terminate after the end, preservation of the end temperature and back to start.

Model			NCB-3100	NCB-3200	NCB-3300
Product code No.			**112450**	**112460**	**112470**
Performance	Temperature control range / precision		**-30℃～80℃ / ±0.03℃**		
	Cooling capacity (at liquid temperature)	20℃	**370W (318kcal/h)**	**480W (412kcal/h)**	**610W (524kcal/h)**
		-10℃	**220W (189kcal/h)**	**350W (301kcal/h)**	**420W (361kcal/h)**
	Temperature fall slope		1.1℃ or below/min. (40→0℃)	**0.3℃ or below/min.**	**0.3℃ or below/min.**
			0.5℃ or below/min. (5→—15℃)		
			0.4℃ or below/min. (-15→-30℃)		
	External circulation ability		Maximum discharge 6.7L/min (50Hz, water), Maximum pump head 2.9m (50Hz, water)		
Function	Temperature control (sensor)		P.I.D control, SSR output (platinum resistance temperature detector JPt 100Ω)		
	Temperature setting / Display		Numeric keypad input type, Least input digit: 0.01℃, Digital display		
	Programming functions		1. Fixed value operation (Normal mode), 2. Auto start, 3. Auto stop (1 min. to 99 hrs. and 59min.), 4. 7 patterns of user programs (Max 10 segments / pattern, 1 min. to 99 hrs. and 59 min / segment)		
	Safety functions		Self-diagnostic function (water level decrease, sensor malfunction, SSR defect, overheating, heater breaking, cooling defect, power failure alarm, program slope defect), Breaker for electrical leakage and overcurrent, Refrigerator overload relay		
	External input / output		RS-232C connecting terminal, External temperature sensor terminal		
System	Heater		1.2kW (SUS 316L)		
	Refrigerator/Coolant		Air cooling type, Output 450W / R404A	Air cooling type, Output 400W / R407C	Air cooling type, Output 400W / R404A
	Cooling coil		SUS304		
	Inner bath stirring		Water jet type		
Specification	Nozzle for external circulation		Closed loop circulation, Discharge port: OD 10.5 mm hose nozzle (Rc1/4. with stop valve), Return port: OD 10.5 mm house nozzle (Rc1/4)		
	Material of bath		SUS304		
	Bath inside dimensions(mm) / capacity		250W×295D×180H / 13L	320W×405D×180H / 23L	430W×517D×180H / 41L
	Bath effective dimensions(mm)		215W×135D×160H	280W×240D×160H	400W×354D×160H
Surrounding temperature range			5-30℃		
Outside dimensions			620(635)W×390(440)D×464H	393W×511D×793H	510(525)W×627(667)D×898H
Weight			about 46 kg	about 48 kg	about 59 kg
Power input / voltage			20A, 2kVA / AC 100V, 50/60Hz with no plug		

※The above performance is yielded at RT 20°C, at liquid temperature of 40°C, at rated power supply voltage of 50 Hz, using water, at no load. ※Thermal media specialized for low temperatures range is required in case of the usage below 10 ℃.   The temperature control range is -30 to 70°C at surrounding temperature of 20°C without putting a lid on. (NCB-3300)
※Dimensions shown in parentheses include projections.

Power plug is not supplied.

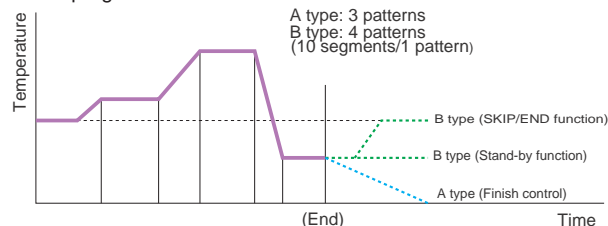## Interface with PC & External Circulation

Self-diagnosis function is on board.
Stop the control and inform by alarm upon detection of abnormality in the unit. Stop valve nozzle is equipped for extra-tank circulation. Temperature control of external units is also possible by using optional temperature sensor.

External Temperature Sensor STP-200
Product code No.**113620**

■User program

Temperature

A type: 3 patterns
B type: 4 patterns
(10 segments/1 pattern)

B type (SKIP/END function)

B type (Stand-by function)

A type (Finish control)

(End)　　　　　　　　　Time

As User programs, we have A type (3 patterns) which stops the control at the end of the program and B type (4 patterns) which keeps the final temperature even after ending the program by stand-by function.
For repeated experiments, if you use B type, you can keep the temperature by driving SKIP/END function during stand-by operation and changing back to the default. The program runs repeatedly when you set a new sample and press the key again.
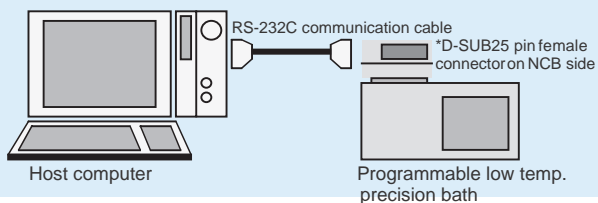
Options

Clamp Set:
Pole, holder and clamp are included so that you can fix flask etc.
Product code No.**164500**

POINT Remote Control & Data Processing by Using Supplied Exclusive Software

Simplified measuring/controlling software ESMon2018
You can control temperature remotely through RS-232C communication cable using PC and process the trend data.
※Only normal mode is available, and the program mode is not supported.

RS-232C communication cable

*D-SUB25 pin female connector on NCB side

Host computer
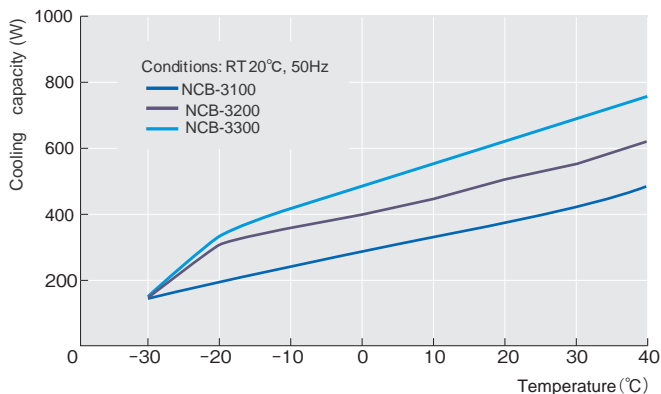
Programmable low temp. precision bath

ESMon2018 Operation Environment

Supported OS: Microsoft Windows®7/10
CPU 　　　　　: Pentium or above (recommend Pentium III 800MHz or above)
Hard disk 　　 : 15MB or more of free space is required.
　　　　　　　　　More space is necessary when you record the data.
Memory 　　　 : 128MB or more is recommended though it depends on OS.
Communication Interface: Serial interface (COM1 etc.) is necessary. Please use
　　　　　　　　　Please use commercial "USB-serial conversion cable"
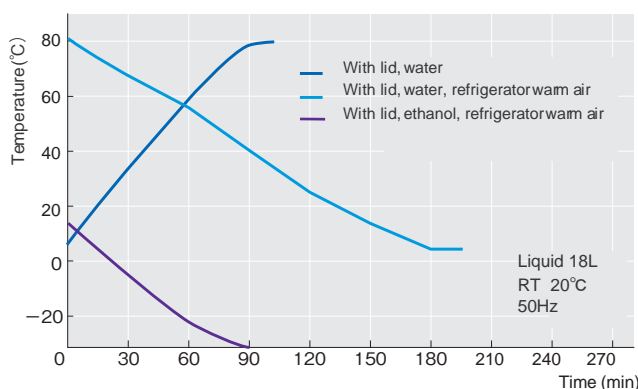　　　　　　　　　etc. when you use PC without serial interface.
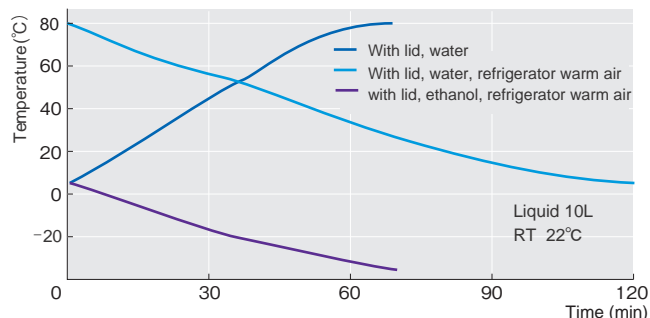
Data

■ Cooling Capacity Curve

Conditions: RT 20℃, 50Hz
NCB-3100
NCB-3200
NCB-3300

Cooling capacity (W) / Temperature（℃）

■ Heating & Cooling Time
NCB-3200

With lid, water
With lid, water, refrigerator warm air
With lid, ethanol, refrigerator warm air

Liquid 18L
RT 20℃
50Hz

Temperature（℃） / Time (min)

■ Heating & Cooling Time
NCB-3100

With lid, water
With lid, water, refrigerator warm air
with lid, ethanol, refrigerator warm air

Liquid 10L
RT 22℃

Temperature（℃） / Time (min)

■ Heating & Cooling Time
NCB-3300

Liquid 35L
RT 20℃
50Hz

With lid, water
With lid, water, refrigerator warm air
With lid, methanol, refrigerator warm air

Temperature（℃） / Time (min)