Water bath
Shaking Water bath
Immersion cooler

Unit Water bath

Thermominder SDminiN

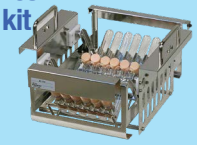
Thermominder SDN-B EXN-B

Thermominder SM-05N/SJ-07N SX-10N/SH-10N SP-12N

Bench-top Shaking Water bath

Personal-11· SDN set EXN set SM set

●Optional accessories Monode kit



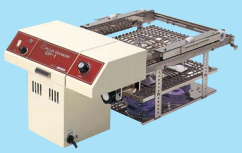
Personal Lt10F· SX set Personal H-10· SH set

Shaking Water bath (Large size)

Water bath Shaker MM-10 Cool bath Shaker ML-10F

Combination type Shaking Water bath

Plus Shaker EP-1



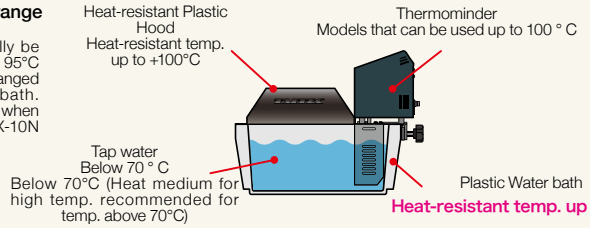
Immersion cooler

Cool pipe series

Unit Water bath

Combination and Temperature range

For example, up to 70°C can actually be used in this combination. Up to approx 95°C can be raised when the water bath changed to stainless steel insulated water bath. Moreover, nearly 100°C can be raised when it can be changed to the model SX-10N (Thermominder set up to 105°C).



Page	Model	Features	Applications
P.114	SDminiN	●Low price	●Various incubations such as Enzyme reaction ●Temporarily Incubation of Culture medium ●Inactivation of Serum
P.115	SDN-B	●Low water level	
	EXN-B	●Low water level, High Temp.accuracy	
P.116	SM-05N	●Economy	
	SJ-07N	●Standard	
	SX-10N	●High Specifications	
	SH-10N	●High Temperature	
	SP-12N	●External Circulation	●Circulation to Capillary of Evaporator

Bench-top Shaking Water baththat can be used for many application

Page	Model	Features	Applications
P.120	Personal-11·SDN set	●Standard	●Small-scale Culture of Microbe such as E. coli ●Various incubations such as Enzyme reaction ●Hybridization
	Personal-11·EXN set	●High Temp. accuracy	
	Personal-11·SM set	●Power saving, Low price	
P.121	MD-1218	●Monode kit for Personal-11	●Shake culture using L-shaped Test tube.
P.122	Personal Lt-10F·SX set	●Low-temperature type	●Cultivation of microbe such as Psychrophilic bacteria ●Various incubations such as Enzyme reaction
	Personal H-10·SH set	●High-temperature type	●Cultivation of microbe such as Thermophilic bacteria ●Various incubations such as Enzyme reaction

"The long seller" Large Integrated type shaking constant temp. bath

Page	Model	Features	Applications
P.124	MM-10	●Standard	●Cultivation of Microbe such as E. coli ●Various incubations such as Enzyme reaction
	ML-10F	●Low-temperature type	●Cultivation of Microbe such as E. coli ●Various incubations such as Enzyme reaction ●Ames test [ML-10F with PU-6, Some Modification required]

Add Shake to Unit Water bath at a low price

Page	Model	Features	Applications
P.126	EP-1	●Shaking unit	●Cultivation of Microbe such as E. coli ●Various incubations such as Enzyme reaction ●Hybridization

Simple cooling singly. Low temp. constant temp. bath by combination.

Page	Model	Features	Applications
P.128	80LF	●Just throwing the tip of cooling pipe in the object for use. ●Cooling pipe made of stainless steel and has movable flexibily. ●Only Cooling function without Temperature control function.	●Combined with Constant temperature Water bath ●Cooling for Trap container and Reaction container. ●Cooling for Samples
	150LF		
	400R		
P.129	250DF		
	800R		

● Protuberances not included in Dimensions. ● Vessels of photo not included.

●Enable to achieve the max (min) temp. by optional combination and them limited conversely (see left figure). "(Substantial) operational temp. ranges show the product singly and temp. range that can be achieved by optional selection.
(*1) The operational temp ranges of product singly are shown when the included plastic water bath C-type (heat resistant temp: 70°C) used. (SDN/EXN-B come with Heat insulation bath B-type and heat resistant temp not problem. 70°C cannot be made due to the heat radiation when hood not used). (*2) SDminiN cannot be combined with coolers such as Cool pipe. Use it inside a low temp room around 4°C when low temp required. Use antifreeze solution when the temp is below 7°C for other models. Please note not recommended to operate at high temp with antifreeze liquid as it is.
(*3)SH-10N compatible with heat medium for high temp. Be sure to use it above 100°C (recommended from above 70°C). As other models not compatible with heat medium for high temp, the upper limit 90°C to 100°C even when heat insulation water bath used.●The higher the heater output, the faster the heating speed.

Settable temp. range	(Realistic)Temperature range			Temp. control accuracy	Heater	Page
	Thermominder only (With the standard accessory Water bath)(*1)	Used with Thermal Insulation water bath and Hood or Lid	Lower limit when immersion cooler added shown in the left (* 2).			
●-20°C to 80°C	●5°C above Room temperature to 70°C	●5°C above Room temp. to 80°C	●Around +10°C	●±0.1°C to	●500W	P.114
●-20°C to 100°C		●5°C above Room temp.to about 95°C	●-20°C	●±0.1 to 0.3°C	●800W	P.115
●-20°C to 100°C		●5°C above Room temp. to about 95°C		●±0.02 to 0.08°C	●800W	
●-20°C to 85°C		●5°C above Room temp. to about 85°C		●±0.1°C to	●500W	P.116
●-20°C to 95°C		●5°C above Room temp. to about 90°C		●±0.1°C to	●700W	
●-20°C to 105°C		●5°C above Room temp. to about 100°C		●±0.05°C to	●1kW	
●-20°C to 180°C		●5°C above Room temp. to 180°C(*3)		●±0.1°Cto	●1kW	
●-20°C to 100°C		●5°C above Room temp. to about 95°C		●±0.1°C to	●1.2kW	

Shaking method	Temperature range	Temp. control accuracy	Cooling function	Page
●Reciprocal	●5°C above Room temperature to 70°C	●±0.1 to 0.3°C		P.120
		●±0.02 to 0.08°C		
		●±0.1°C to		
●Monode	—	—	—	P.121
●Reciprocal	●-10°C to 50°C	●±0.1°C to	√	P.122
	●5°C above Room temperature to 180°C	●±0.1°C to		

Shaking method	Temperature range	Temp. control accuracy	Cooling function	Page
●Reciprocal	●5°C above Room temperature to 80°C	●±0.0 to 0.1°C		P.124
	●0°C to 50°C	●±0.05 to 0.2°C	√	

Shaking method	Temperature range	Temp. control accuracy	Cooling function	Page
●Reciprocal	※Shaking unit only (temp. control unit and water bath required separately)			P.126

Spring net shaking platform in which various vessels can be mounted.

Stainless steel Spring net shaking platform makes it easy to install both either test tubes and flasks. Moreover, each step height including the bottom plate can be changed according to the vessel sizes (except for Monode shaking type).

Temperature range	Cooling capacity	Page
●-10°C to 30°C	●Approx. 150W	P.128
●-15°C to 30°C	●Approx. 290W	
●-30°C to 30°C	●Approx. 370W	
●-45°C to 30°C	●Approx. 130W	P.129
●-75°C to 0°C	●Approx. 150W	

[Immersion cooler]
Cool pipe series

Being easily a low temp. bath by the combination of Thermominder. Rrecommended when water bath size want to be determined freely.

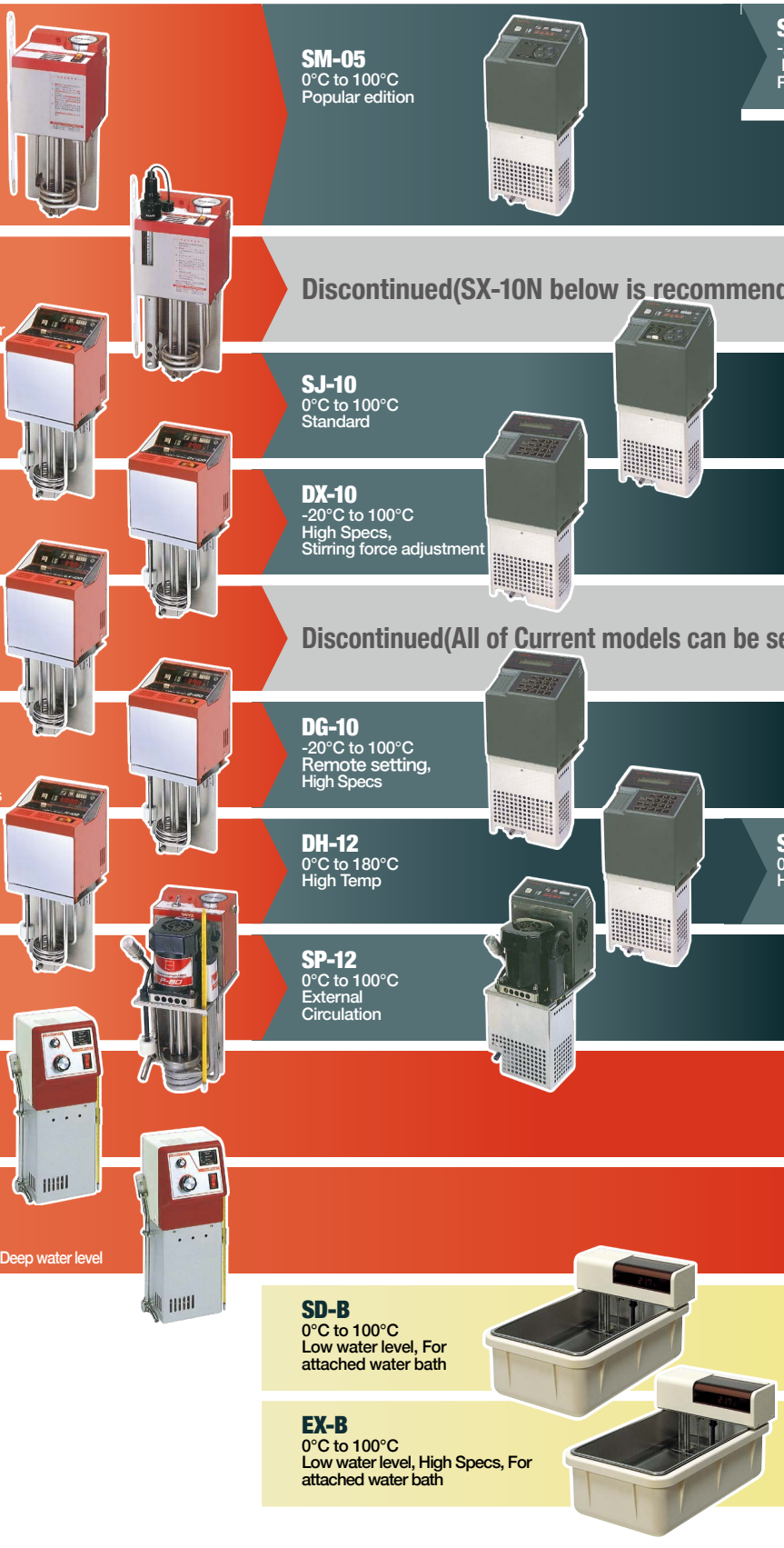
Combination of Immersion cooler and Trap pot (option).

Combination of Thermominder, Immersion cooler and Stainless steel thermal insulation water bath.

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Correspondence table of Unit Water bath "Thermminder" series

Released in 1982	1993 - 1996	after 1997
Released in 1982 **Mini-80** 10°C to 80°C Popular edition	**SM-05** 0°C to 100°C Popular edition	**SDmini** -20°C to 80°C Dedicated for Plastic Water bath
Released in 1980 **Ace-80** 0°C to 80°C Temp. control with Electromagnetic Contactor	Discontinued(SX-10N below is recommended, while it	
Released in 1988 **Jr-100** 0°C to 100°C Standard	**SJ-10** 0°C to 100°C Standard	
Released in 1988 **Dx-100** 0°C to 100°C High Specs	**DX-10** -20°C to 100°C High Specs, Stirring force adjustment	
Released in 1988 **Lt-100** -50°C to 50°C Enables Low temp. setting, High Specs	Discontinued(All of Current models can be set from -20 °C.)	
Released in 1988 **G-100** 0°C to 100°C Remote setting, High Specs	**DG-10** -20°C to 100°C Remote setting, High Specs	
Released in 1988 **H-100** 0°C to 180°C High Temp	**DH-12** 0°C to 180°C High Temp	**SH-12** 0°C to 180°C High Temp
Released in 1980 **P-80** 10°C to 100°C External Circulation	**SP-12** 0°C to 100°C External Circulation	
Released in 1988 **C-630** 0°C to 100°C External Circulation, High Specs, Deep water level		
Released in 1988 **C-650** 0°C～+105°C External Circulation, High Specs, Deep water level		
	SD-B 0°C to 100°C Low water level, For attached water bath	
	EX-B 0°C to 100°C Low water level, High Specs, For attached water bath	



•The models on the most right (model name shown in yellow) are currently being produced. Refer them to replace the old models with new ones.
•The color of bands of background are imaged with the body color of actual product. Refer to them when identify the model you have.

● Protuberances not included in Dimensions. ● Vessels of photo not included.

from First-generation models to Latest models

1999	2000 - 2010	2011 to the present
		SDminiN -20°C to 80°C Correspond to Plastic Water bath A andStainless steel Thermal insulation Water bath F -->P.114
	SM-05R -20°C to 80°C Correspond to optional accessories water bath	**SM-05N** -20°C to 85°C Correspond to optional accessories water bath -->P.116
is not equipped with Electromagnetic Switch.)		
	SJ-10R -20°C to 80°C Standard	**SJ-07N** -20°C to 95°C Standard -->P.116
	SX-10R -20°C to 100°C High Specs, Stirring force adjustment	**SX-10N** -20°C to 105°C High Specs, Stirring force adjustment -->P.116
Discontinued(The equivalent model is EXN-B below.)		
		SH-10N -20°C to 180°C High Temp -->P.116
	SP-12R -20°C to 100°C External Circulation	**SP-12N** -20°C to 100°C External Circulation -->P.116
Discontinued(The equivalent product is SX-10N above.)		
		Discontinued (The equivalent model is SP-12N above.)
		SDN-B -20°C to 100°C Low water level, For included water bath -->P.115
		EXN-B -20°C to 100°C EX-B + Remote setting etc.

USER'S VOICE
This table helps you when upgrading from an old one to a current one.

•The temp. range shown are the "Settable temp. range". Immersion cooler etc. required for temp. control below RT (25°C).

"Operational temp. range" and "Settable temp. range" might be narrow due to a performance of corresponded optional accessories.

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Thermominder SDminiN

Even water level 45 mm from the bottom of bath can be used. With the included Plastic Water bath easy to use. Optional Thermal insulation Water bath can be combined.

Optional Combination Examples --> P.119

Features

- Low water level 45mm suitable for small vessels
- Simple operation system with Operation OFF Timer
- Optional Heat-resistant Plastic Hood and Thermal insulation Water bath available

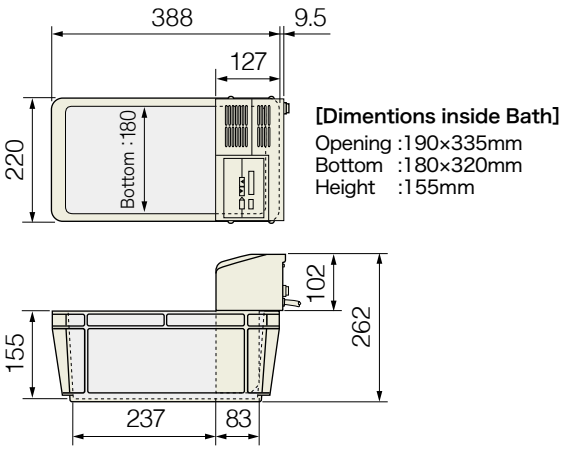
Applications

- Various incubations such as Enzyme reaction
- Temporarily Incubation of Culture medium
- Inactivation of Serum

Model	SDminiN
Temperature range (*1)	5°C above RT(*2) to 80°C
Settable temp. range (*3)	-20°C to 80°C
Temp. control accuracy (*4)	±0.1°C to
Stirring method in Bath	Jet flow
Temperature display	Digitally (Changeable Preset/Current value)
Timer	Buzzer notification for Preset time Operation OFF *Setting range: 1min to 99h59min (Both model)
Other functions	Buzzer notification when Preset temp. reached, Automatic tuning
Minimum Water level	45mm from the bottom of bath
Heater	500W (Time proportional output variable)
Safe devices/ protections	Circuit protector, Fuse, Dry-heating protection with float, Heater protection cover, Sensor error, Short circuit, High/Low temp.-sample protection, Water level alarm, Non-volatile memory error, Automatic tuning error, Alarm setting error
Power failure	Switchable Automatic/Manual recovery
Dimentions inside Bath	180(W)×237(D)×155(H)mm (Occupancy Dim.: 190W x 83D x 147Hmm)
Main unit dimensions	220(W)×127(D)×235(H)mm (When Bath C-type used: 220W x 398D x 262Hmm)
Weight	Approx. 3kg
Power supply/ consumption	AC100V/5.5A 75Wh at 37°C (46Wh when Hood used)(*5)
Standard accessories	1 x Plastic Water bath C-type (*2)

(*1) Max. temperature might not be reached when optional Hood not used or depending on the usage conditions. As it is dangerous due to steam when using high temp. with tap water, recommended to use our specified Heat medium for High temp.(See 117 page).
(*2) As Max. Heat-resistant temperature of bath C-type up to 70°C, use optional stainless steel insulated bath F-type above 70°C.
(*3) Not equipped with cooling function. Used together with our Chiller/Coolnit, Immersion cooler etc. at below RT (25°C).
(*4) The value under the conditions of RT (25°C), AC 100 V/50Hz, Capacity 6 liters water, Preset temp. 37°C and No heat load.
(*5) The reference value when Plastic Water bath C-type and optional Heat-resistant Plastic Hood PF-SDM at each preset temp. used under the condition of *4.

Dimensions SDminiN with Plastic Water bath C-type



Optional accessories : Heat-resistant Plastic Hood

Heat-resistant Plastic Hood PF-SDM
Plastic Water bath C
Combination Examples

Description/Model	Remarks
Heat-resistant Plastic Hood PF-SDM	Heat-resistant temp. 100°C. Low power consumption with reduce evaporation. Dedicated for this SDminiN.

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Thermominder SDN-B/EXN-B

Even water level 45 mm from the bottom of bath can be used. Thermal insulation tray included. EXN-B equipped with Temp. control accuracy with two decimal places and Timer function.

Optional Combination Examples --> P.120

Features

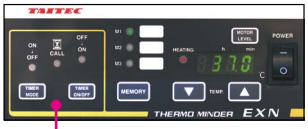
- Low water level 45mm suitable for small vessels
- Simple operation system with Temperature memory
- Comes with Stainless steel Insulation tray (Water bath)

Applications

- Various incubations such as Enzyme reaction
- Temporarily Incubation of Culture medium
- Inactivation of Serum

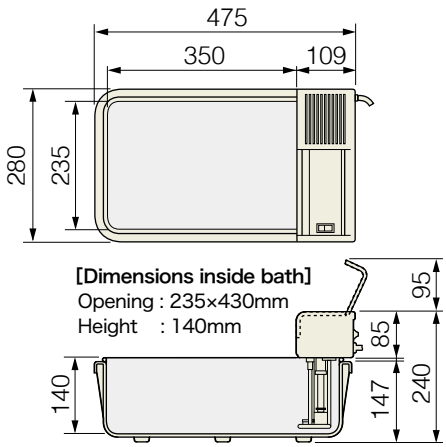
SDN-B

EXN-B



EXN-B with Timer function. 3 steps simple program operation with temperature memory in combination.

Dimensions (Common)



Model	SDN-B	EXN-B
Temperature range (*1)	5°C above RT to 70°C	
Settable temp. range (*2)	-20°C to +100°C	
Temp. control accuracy (*3)	±0.1°C to ±0.3°C	±0.02°C to ±0.08°C
Stirring method in Bath	Jet flow	Jet flow (4-level control)
Temperature display	Digitally (Changeable Preset/Current value)	
Temperature memory	3pc	
Timer	-	Buzzer notification for Preset time Operation OFF Each Setting range: 1min to 99h59min
Other functions	Buzzer notification when Preset temp. reached Automatic tuning	Buzzer notification when preset temp. reached Simple program (3 steps) Safety device output, Temp. input/output (*4) Automatic tuning
Minimum Water level	45mm from the bottom of bath	
Heater	800W	
Safe devices/ protections	Circuit protector, Fuse, Dry-heating protection with float, Sensor error, Short circuit, High/Low temp. sample protection, Water level alarm, Non-volatile memory error, Automatic tuning error, Alarm setting error	
Power failure	Switchable Automatic/Manual recovery	
Dimentions inside Bath	230(W)×350(D)×140(H)mm	
Main unit dimensions	280(W)×109(D)×215(H)mm (When Thermal insulation tray B-type used: 280W x 475D x 240Hmm)	
Weight	Approx. 3kg (6kg: Thermal insulation tray B-type included)	
Power supply/ consumption	AC100V/8.5A, 105Wh at 37°C	
Standard accessories	1 x Thermal insulation bath B-type (*5)	

(*1) Max. temp. might not be reached when optional Hood not used or depending on the usage conditions. As it is dangerous due to steam when using high temp. with tap water, recommended to use our specified Heat medium for High temp. (See 117 page)
(*2) Not equipped with cooling function. Used together with our Chiller/Coolnit, Immersion cooler etc. at below RT (25°C). Use our specified Antifreeze fluid (Thermal medium for Low temp. See 117page) when preset temp. below 7°C. The components life might be shortened when those used at the upper limit temp. that can be set. That of EXN-B is actual measured value due to (0.01 unit).
(*3) The value under the conditions of RT (25°C), AC100V/50Hz, Capacity 6 liters water, Preset temp. 37°C and No heat load with Thermal insulation tray B-type.
(*4) Otptional Signal cable CA-671 required to output. Ask us for Temperature Input.
(*5) Thermal insulation bath B-type sold singly.

Optional accessories : Heat-resistant Plastic Hood

Heat-resistant Plastic Hood
PF-B
Combination Examples

Shaking Water bath
Personal-11
Combination Examples

Description/Model	Remarks
Heat-resistant Plastic Hood PF-B	Low power consumption with reduce evaporation. Designed for these SDN-B and EXN-B.
Shaking Water bath Personal-11	The water bath equipped with shaking function. See 120page for details.

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Thermominder SM-05N/SJ-07N/SX-10N/SH-10N/SP-12N

Five models: Economy, Standard, High Specs, High Temp. and External Circulation. Select the most suitable model according to your purpose. Each Power consumption example is described for each models (See below).

Optional Combination Examples --> P.119 Shaking Water bath "Personal-11 SM Set" --> P.120

Economy SM-05N
With Heat resistant Plastic Hood (sold separately)

Standard SJ-07N

High Specs SX-10N

High Temp SH-10N

External Circulation SP-12N

Features

- Comes with Plastic Water bath. Heat insulation Water bath available as option.
- Combined with optional cooler to be Low temp. Water bath.
- Corresponds to High temp. [SH-10N], External circulation [SP-12N]

Applications

- Various incubations such as Enzyme reaction
- Temporarily Incubation of Culture medium and Serum
- Circulation to Capillary of Evaporator [SP-12N]

Type	Economy	Standard	High Specifications	High Temperature	External Circulation
Model	**SM-05N**	**SJ-07N**	**SX-10N**	**SH-10N**	**SP-12N**
Temperature range (*1)	5°C above RT to 85°C	5°C above RT to 95°C	5°C above RT to 105°C	5°C above RT to 180°C	5°C above RT to 100°C
Settable temp. range (*2)	-20°C to 85°C	-20°C to 95°C	-20°C to 105°C	-20°C to 180°C	-20°C to 100°C
Temp. control accuracy (*3)	±0.1°C to		±0.05°C to	±0.1°C to	
External Circulation volume	-				Max. 6.2 L/min (*4)
Stirring method in Bath	Jet flow (Weak)	Jet flow (Controllable)		Jet flow	Jet flow (Controllable)
Temperature memory	-		1pc	-	
Timer	Buzzer notification for Preset time, Operation OFF, Temp. memory interlock (= Temp. transition timer, only for SX-10N) Setting range: 1min to 99h59min (Each model)				
Other functions	Buzzer notification when preset temp. reached, Automatic tuning, Safety device output (SM-05N excluded. Alarm out cable AOC-2 required to output.)				
Min. Water level	55mm from the bottom of bath		80mm from the bottom of bath	70% to 80% of Bath water capacity maintained	
Heater	500W (Time proportional output variable)	700W (Time proportional output variable)	1000W (Time proportional output variable)	1000W (Time proportional output variable)	1200W (Time proportional output variable)
Safe devices/ protections	Circuit protector, Fuse, Dry-heating protection with float, Heater protection cover, Sensor error, Short circuit, High/Low temp. sample protection, Water level alarm, Non-volatile memory error, Automatic tuning error, Alarm setting error				
Power failure	Switchable Automatic/Manual recovery				
Dimensions inside Bath	130(W)×66(D)×135(H)mm			130(W)×75(D)×137(H)mm	130(W)×85(D)×145(H)mm
Main unit dimensions	130(W)×135(D)×304(H)mm			130(W)×165(D)×302(H)mm	130(W)×164(D)×315(H)mm
Weight	Approx. 3.4kg			Approx. 5kg	
Power supply/ consumption	AC100V/5.5A, 41Wh at 37°C (*5)	AC100V/7.5A, 41Wh at 37°C (*5)	AC100V/10.5A, 41Wh at 37°C (*5)	AC100V/11A, 81Wh at 37°C (*6)	AC100V/13A, 167Wh at 37°C (*6)
Standard accessories	1 x Microtube Floater, 1 x Plastic Water bath C-type (*7)				

(*1) Max. temp. might not be reached when optional Hood not used or depending on the usage conditions. Recommended to use our specified Heat medium for High temp (See 117, 118 page) when using tap water at high temp. as dangerous due to the steam.
(*2) Not equipped with cooling function. Used together with our Chiller/Coolnit, Immersion cooler etc. at below RT (25°C). Use our specified Antifreeze fluid (Heat medium for Low temp. See 118 page) when preset temp. below 7°C. The components life might be shortened when those used at the upper limit temp. that can be set.
(*3) The value under the conditions of RT (25°C), AC100V/50Hz, Capacity 6 liters water, Preset temp. 37°C and No heat load. That of SX-10N is an actual measured value due to "0.01 unit".
(*4) The value varies depending on the inner dia, length of hose and hydraulic head.
(*5) The reference value when Stainless steel Thermal insulation Water bath F-type and Optional Hood PF-SDM used under the condition of *3. The power consumption increases by approx. 20% to 50% when Optional Hood not used.
(*6) The reference value when Stainless steel Thermal insulation Water bath F-type used under the condition of *3.
(*7) As Heat-resistant temp. of Plastic Water bath C-type is 70°C, use Optional Stainless steel Thermal insulation Water bath.

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Optional accessories ①

Optional Combination Examples -->P.119

The combination of Thermominders with Water baths and Hood/Lids

Water bath		Used with Water bath					Applicable Hood/Lids	Used with Water bath and Hood/Lids				
Description/Model	Min. Inner Dim. and Capacity (Water level 75%)	SM-05SN	SJ-07N	SX-10N	SH-10N	SP-12N	Model/Product name	SM-05SN	SJ-07N	SX-10N	SH-10N	SP-12N
Plastic Water bath A -type (*1)	333 x 533 x 200Hmin Approx. 28L	(*2)	√	√	√	√	—	—	—	—	—	—
Plastic Water bath B -type (*1)	295 x 450 x 160Hmin Approx. 17L	√	√	√	√	√	—	—	—	—	—	—
Plastic Water bath C -type (*1)	180 x 320 x 155Hmin Approx. 7L	√	√	√	√	√	Heat-resistant Plastic Hood PF-C	√	√	√		
Stainless steel Thermal insulation Water bath A -type	300x 400 x 200Hmin Approx. 18L	√	√	√	√	√	Stainless steel-made Flat lid A/B (SM/SJ/SX)	√	√	√		
		√	√	√	√	√	Stainless steel-made Top lid A/B (SM/SJ/SX)	√	√	√		
		√	√	√	√	√	Stainless steel-made Flat lid A/B (SH)				√	
		√	√	√	√	√	Stainless steel-made Top lid A/B (SH)				√	
Stainless steel Thermal insulation Water bath B -type	300 x 400 x 150Hmin Approx. 14L	√	√	√	√	√	Stainless steel-made Flat lid A/B (SM/SJ/SX)	√	√	√		
		√	√	√	√	√	Stainless steel-made Top lid A/B (SM/SJ/SX)	√	√	√		
		√	√	√	√	√	Stainless steel-made Flat lid A/B (SH)				√	
		√	√	√	√	√	Stainless steel-made Top lid A/B (SH)				√	
Stainless steel Thermal insulation Water bath D	355 x 600 x 155Hmin Approx. 25L	√	√	√		√	Stainless steel-made Flat lid D (SM/SJ/SX)	√	√	√		
		√	√	√		√	Stainless steel-made Top lid D (SM/SJ/SX)	√	√	√		
		√	√	√	(*3)	√	Stainless steel-made Flat lid D (SH)				√	
		√	√	√		√	Stainless steel-made Top lid D (SH)				√	
Stainless steel Thermal insulation Water bath E -type	300 x 500 x 155Hmin Approx. 17L	√	√	√	√	√	Stainless steel-made Flat lid E (SM/SJ/SX)	√	√	√		
		√	√	√	√	√	Stainless steel-made Top lid E (SM/SJ/SX)	√	√	√		
		√	√	√	√	√	Stainless steel-made Flat lid E (SH)				√	
		√	√	√	√	√	Stainless steel-made Top lid E (SH)				√	
Stainless steel Thermal insulation Water bath F -type (*4)	192 x 330 x 155Hmin Approx. 7L	√	√	√	√	√	Heat-resistant Plastic Hood PF-C	√	√	√		

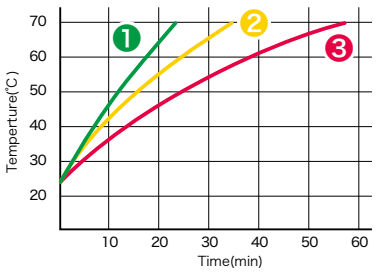
(*1) Heat-resistant temperature 70°C (*2) Temp. reaching time to 37°C or more might be slow due to the heater output capacity to water bath volume. (*3) Using together Optional stirring unit recommended (130 page) to stir the sample fully in the water bath. (*4) Comes with Drain cock (Outer dia. 14mm for -10°C to 80°C). Other drain cocks required when used in other temp. range.
•Stainless steel-made Flat Lid/Top lid made to order. •Lid of water bath for SN-12 customized to order. Ask us for details.

← Plastic Water bath (Left: Type-A, Right: Type-B)

Stainless steel Thermal insulation Water bath F -type with Heat-resistant Plastic Hood PF-C

Stainless steel Thermal insulation Water bath A -type with Top lid

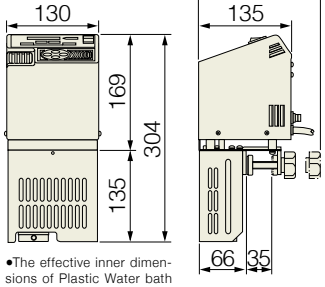
Temperature rising time (25°C --> 70°C)



Ambient temperature: 25°C
Plastic Water bath C-type (Tap water 6L)
①SX-10N: Approx. 24min (SH-10N/SP-12N same as ❶)
②SJ-07N: Approx. 35min
③SM-05N: Approx. 57min

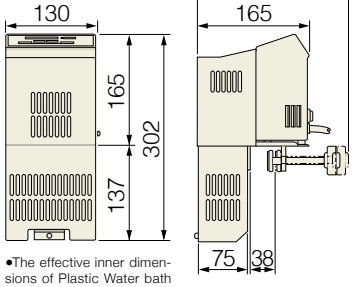
SM-05N/SJ-07N/SX-10N/SH-10N/SP-12N

SM/SJ/SX



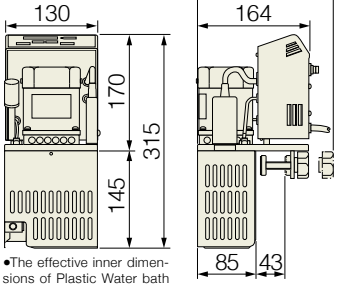
•The effective inner dimensions of Plastic Water bath C-type with this unit attached are 180 x approx 250mm.

SH-10N



•The effective inner dimensions of Plastic Water bath C-type with this unit attached are 180 x approx 240mm.

SP-12N



•The effective inner dimensions of Plastic Water bath C-type with this unit attached are 180 x approx 230mm.

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Optional accessories ②(SM-05N／SJ-07N／SX-10N／SH-10N／SP-12N)

"ThermominderSM-05N/SJ-07N/SX-10N/SH-10N/SP-12N"-->P.116

Spring net stand

Example of use

Model	Dimensions	Applicable Water bath
A2	270×270×140Hmm	Stainless steel Thermal insulation Water bath A/B, Plastic Water bath A/B
B2	280×320×140Hmm	
C	140×240×140Hmm	Stainless steel Thermal insulation Water bathA/B/F (*Stainless steel Thermal insulation Water bathF can't be used with Type-c and SP-12N sets.) Plastic Water bath A/B/C Thermal insulation TrayB(For SDN-B/EXN-B,See page 129 for details.)

Immersion cooler

Enables temp. control below RT (25°C). by throwing Cool Pipe into water bath.

Description/Model	Cool Pipe 80LF/150LF
Applications	Makes Thermominder a Low temp. constant bath.
Main Specs	Temperature range:-10/-15°C to +30°C Cooling capacity :about 150/290W(When Liquid temp and Electrical frequency is 10°C and 50Hz.)

●80LF shown ●See page 142 for details.

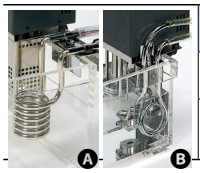
Pipe clamp

Fixes cooling pipe, pipe of Immersion cooler to water bath.

Product	Pipe clamp
Applications	Fixes cooling pipe, pipe of Immersion cooler to water bath.
Clamping width	Adjustable for 5.35 mm or 25.60 mm by replacing the pressing plate according to the thickness of water bath.

Cooling Pipe

Enables temp. control below RT (25°C). by installing it in water bath to circulate cooling water.



Description/Model	Cooling Pipe A/B
Applications	Temp. control below RT (25°C) of Thermominder
Main Specs	A:For maintaining around 5°C B:For maintaining RT (25°C)

●Installation example of Water bath and Thermominder.

Energy saving effect of Lid

Enable power consumption saving by covering the lid onto Unit water bath.

Temp.(℃)	Power Consumption (Wh) for SM/SJ/SX	
	Without Lid	With Lid
37	80	41
55	184	109
70	343	182

USER'S VOICE

Power consumption reduces by nearly 40% just by covering the lid onto Unit.

Heat medium for Low temp./Heat medium for High temp.

Use it if necessary when Immersion cooler used together or an operation at high temp.

Product ／ Model	Remarks
Showbrine blue	Heat medium for Low temp.(Antifreeze) 20kg, One (1) Can. Recommended for temp. below 7°C.
Silicone oil MA-50	Heat medium for High temp.18kg, One (1) Can. Kinetic viscosity50mm²/s(at 25°C), Focuses Temp. accuracy, Recommended for temp. above 70°C
Silicone oil MA-100	Heat medium for High temp.18kg, One (1) Can. Kinetic viscosity100mm²/s(at 25°C), Focuses Low evaporation, Recommended for temp. above 70°C

●See page 199 for details on Heat medium for Low temp. and page 200 for details on Heat medium for High temp.

Physical properties of Silicone oil

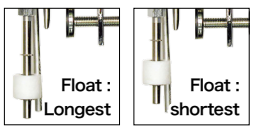
Silicone oil is excellent in thermal and oxidation stability and is flame retardant with high flash points. As the vapor pressure very low and the amount of evaporation loss small it does not contaminate the work environment and suitable for long-time operation at high temp. Has feature that can be easily being warm and cool it as its specific heat is about One third of water.

USER'S VOICE

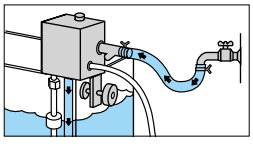
Thermal conductivity about One forth compared to water but Eight times as much as air so it can be expected being more effective than air bath.

●Automatic water supply Unit : Level Keeper UB-2

Supplies water automatically to the preset water level when water level drops.



Water level can be set from 40 to 75 mm from upper surface of bath by adjusting the float.



Use a pressure-resistant hose and secure it with the included hose band so that the hose does not come off under water pressure.

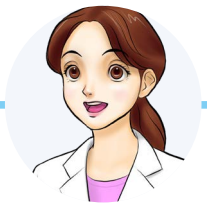
Model	UB-2
Max. Operable differential pressure	Below 1.0MPa (10kg/cm²)
Heat-resistant temp.	-10 to +70°C (Water supply temp. Up to +40°C)
Control method	Water supply: Solenoid valve, Water level: Float
Dimentions inside Bath	70 ×35mm(Clampable width within 30mm)
Water level adjustment width/Water supply port	40 to 75mm(Upper surface of bath), Outer dimensions10mm/14mm
Power supply	AC100V / 0.1A
Standard accessories	Hose band ×1

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Optional Combination Examples of Thermminder

Please select a combination of Thermominder, Water bath, Lid, Cooler, Heat medium etc. according to the target temperature range from Low temp. to High temp.

"ThermominderSDminiN" -->P.114 "ThermominderSM-05N/SJ-07N/SX-10N/SH-10N/SP-12N" -->P.116 "Cool Pipe150LF"-->P.128



Combination Examples (1)

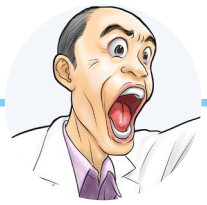
I want energy saving and compact one as much as possible as I often use at 37°C!!

Configuration
①Unit Water bath / Thermominder / SDminiN
②Plastic Water bath C *Included in SDminiN
③Heat-resistant Plastic Hood / PF-C

Combination Examples (2)

I want to use an one for Food quality inspection (44.5°C) !!

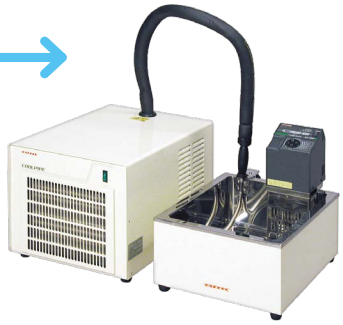
Configuration
①Unit Water bath / Thermominder / SJ-07N
②Stainless steel Thermal insulation Water bath A Approx. 18L (Water level 75%)
③Stainless steel-made Top lid A/B

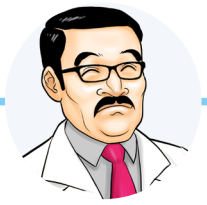


Combination Examples (3)

I want to use as much capacity in the bath as possible while keeping water temp. around 0°C!!

Configuration
①Unit Water bath / Thermominder / SX-10N
②Immersion cooler / Cool Pipe / 150LF
③Stainless steel Thermal insulation Water bath B Approx. 14L (Water level 75%)
④Pipe clamp
⑤Heat medium for Low temp. /Showbrine blue





Combination Examples (4)

I want to automatically supply water to prevent the bath to boil dry when operating at 37°C for a long time!!

Configuration
①Unit Water bath / Thermominder / SM-05N
②Automatic Water supply Unit Level Keeper / UB-2
③Stainless steel Thermal insulation Water bath B Approx. 14L (Water level 75%)

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Personal-11 SDN/EXN/SM Set

Versatile Bench-top Water bath equipped with Reciprocal shaking. Unique Monode shaking platform for shaking L-shaped test tubes available as an option.

"Thermominder SDN/EXN-B" --> P.115 "Thermominder SM-05N" --> P.116

※The lid cannot used when Monod Kit combined.

Personal-11 SDN Set

※The lid cannot used when Monod Kit combined.

Personal-11 EXN Set Combined with Monode Kit (Option)

Personal-11 SM Set

Features

- Thermominder and Personal (Shaking water bath) come as a set.
- Easy to remove included shaking platform and inner tank.
- Reciprocal shaking, Shaking width adjustment, Monode shaking (Option).

Applications

- Small-scale Culture of Microbe such as E. coli
- Various incubations such as Enzyme reaction
- Hybridization

Model		Personal-11 SDN Set Thermominder SDN comes as a set	Personal-11 EXN Set Thermominder EXN comes as a set	Personal-11 SM Set Thermominder SM comes as a set (*1)
Thermominder	Temperature range (*2)	5°C above RT to 70°C (Preset/Current temp. displayed simultaneously in SDN/EXN.Switch. Switchable Preset/Current temp display in SM.)		
	Settable temp. range (*3)	-20°C to 100°C		-20°C to 85°C
	Temp. control accuracy (*4)	±0.1°C to 0.3°C	±0.02°C to 0.08°C	±0.1°C to
	Temperature memory	3		-
	Timer (*5)	-	Buzzer notification for Preset time, Operation OFF/Operation ON	Buzzer notification for Preset time, Operation OFF
	Other functions	Buzzer notification when preset temp. reached, Automatic tuning	Buzzer notification when preset temp. reached Simple Program (3 Steps), Safety device output (*6), Temp. input/output (*6), Automatic tuning	Buzzer notification when preset temp. reached, Automatic tuning
	Heater	800W		500W
	Safe devices/ protections	Circuit protector, Fuse, Dry-heating protection with float, Heater protection cover (SM-05N), Sensor error, Short circuit, High/Low temp. Sample protection, Water level alarm, Non-volatile memory error, Automatic tuning error, Alarm setting error, Switchable Automatic/Manual recovery when power failure		
	Power supply	AC100V/8.5A		AC100V/5.5A
	Standard accessories	-		1 x Microtube Floater, 1 x Plastic Water bath C-type (*7)
Personal	Shaking method	Reciprocal shaking, Shaking speed: 20 to 160r/min (displayed digitally), Shaking width: 10 to 40mm (Stepless variable, Default 30mm)		
	Platform dimensions	220×310mm		
	Other functions	1 x Elapsed time indicator (0.1 to 999.9h, with Automatic reset), 1 x Service outlet for Thermominder		
	Bath inside dim./volume	235(W)×430(D)×140(H)mm, Approx. 11L (80% Water level) (*8)		
	Power supply	AC100V/0.5A (9A: with SDN)	AC100V/0.5A (9A: with EXN)	AC100V/0.5A (6A: with SM-05)
	Standard accessories	1 x Spring net Shaking Platform, 1 x Clamp Spacer		
Dimensions/weight		300(W)×495(D)×336(H)mm, Approx. 19kg		300(W)×527(D)×420(H)mm, Approx. 19.4kg

(*1) Can be combined with SJ-07N and SX-10N.
(*2) Max. temp. might not be reached when optional Hood not used or depending on the usage conditions.
(*3) Max. usable temp. in Personal-11 is 70°C. The components life might be shortened when the unit used above 70°C. Both Thermominder and Personal not equipped with cooling function. Used together with Personal Lt-10F (122 page) at below RT (25°C).
(*4) The value under the conditions of RT (25°C), AC100V/50Hz, 80% Water level, Preset temp. 37°C and No heat load. Only EXN Measured value.
(*5) Each setting range is 1min to 99h59min.
(*6) Otptional Signal cable CA-671 required to output. Ask us for Temperature Input.
(*7) This also serves as a packing box whereas not used together with Personal-11 Set.
(*8) The proper volume is 7L to 9L when shaking with the capacity (max. number) such as Centrifuge tubes and max. 500mL of Erlenmeyer flasks at 120 to 160r/min.

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Optional accessories

If you want larger capacity (Num. of vessels) of Monode Shaking.-->P.124 If you want Monode shaking in Air bath-->P.134, 135

Product configuration〜Each part easily detachable〜

Temp. control part
【Thermominder SDN/EXN etc】

Shaking part
【Personal-11】

Shaking platform

Water bath

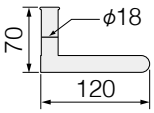
Personal-11 equipped with Service outlet on the lower right of back.

Capacity of Vessels Example

Spring net shaking platform (Spring pitch15mm)	ϕ11mm Test tube (vertical)	187
	Centrifuge tube (30°C tilted) 50ml	12
	Erlenmeyer flask 100mL	8
	Erlenmeyer flask 200mL	6
	Erlenmeyer flask 250mL	5
	Erlenmeyer flask 300mL	5
	Erlenmeyer flask 500mL	3
Monode kit (Corresponds to SDN/EXN set)	Optional L-shaped Test tube (See below)	12

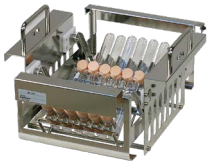
L-shaped Test tube and Monod Shaking

Monod shaking is the most effective shaking motion in culture using L-shaped Test tubes. We offer L-shaped Test tubes with the dimensions on the left and Shaking platform suitable for it.



Option for Personal-11 SDN/EXN Set

Heat-resistant Plastic Hood PF-PExample for use



Monod kit MD-1218

Option for Personal-11 SM Set

Combination example of Stainless steel Roof lid and Asbestos Timer unit.

Related products:WTB-Shaker

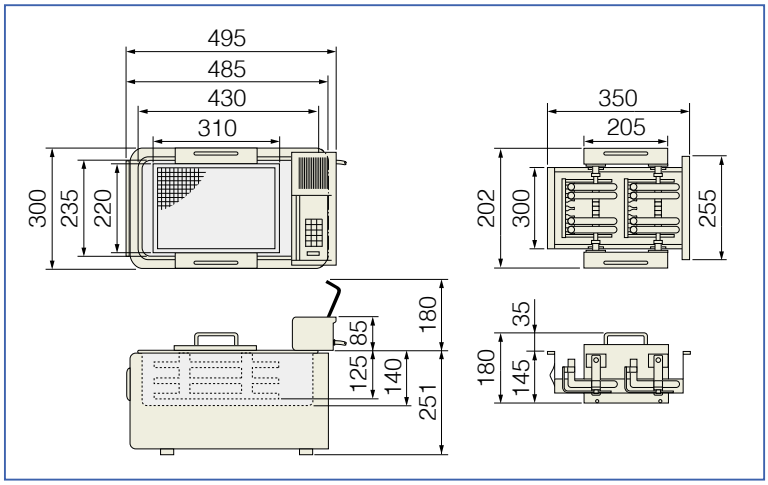
Further compact-size "WTB-ShakerUnit" that is CFC-free and can cool. --> P.121

Description/Model	Remarks
Heat-resistant Plastic Hood / PF-P	Suppresses evaporation and Reduce power consumption. It can not be used when Monod kit MD-1218 below installed. Used by replacing it with Monode Shaking platform for 12pcs x L-shaped Test tube and Spring net Shaking platform of Personal-11.
Monode kit / MD-1218(*)	Used by replacing it with Monod Shaking platform for 12pcs x L-shaped Test tube and Spring net Shaking platform of Personal-11.
L-shaped Test tube (incl. 10)	ϕ18 ×120×70mm

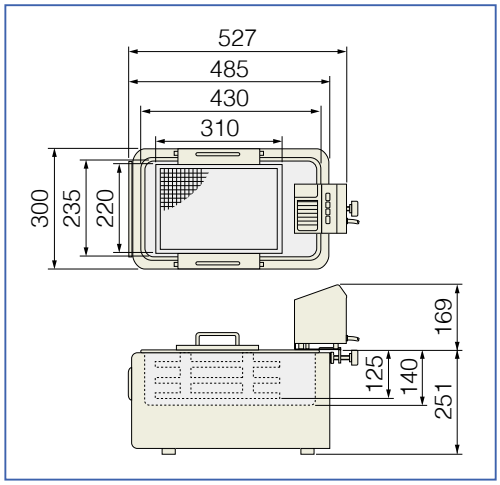
(*)Suppresses evaporation and Reduce power consumption.

Description/Model	Remarks
Stainless steel-made Top lid	Suppresses evaporation and Reduce power consumption.
Automatic Water supply Unit Level Keeper / UB-2	Supplies water when water level in the bath drops below the preset.
Cooling pipe B-type	For Cooling water circulation. Enables it use below RT .
Asbestos Timer unit B-type	For automatically turning Shaking ON and OFF. For Preparation of samples for X-ray analysis of Asbestos.

Personal-11 SDN/EXN Set, MD-1218



Personal-11 SM set



● Protuberances not included in Dimensions. ● Vessels of photo not included.

Personal Lt-10F-SX Set/Personal H-10-SH Set

Versatile Bench-top Water bath equipped with Reciprocal shaking. 2 models for Low temp. and for High temp. For Cultivation of Particular Microbe and Preparation of Analysis samples.

"Thermominder SX-10N/SH-10N" --> P.116

Personal H-10-SH set

Personal Lt-10F-SX Set

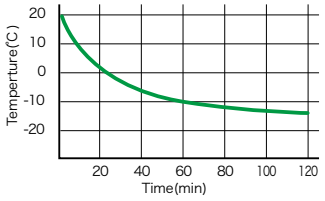
Features

- Benchtop Shaking water bath with -10°C to 80°C.
- Reciprocal shaking, Shaking width adjustable
- Silicone oil can be used for High temp. type

Applications

- Cultivation of Psychrophilic bacteria and Thermophilic bacteria
- Various incubations such as Enzyme reaction
- Preparation of X-ray analysis samples of Asbestos (Option)

Falling temperatu time (20°C --> -10°C)

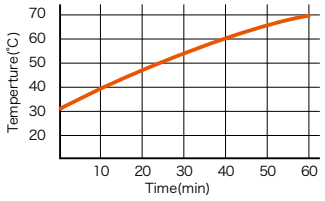


Personal Lt-10F-SX Set

Ambient temperature: 25°C
Liquid volume: 11L Methanol (*)
Result: Approx. 60 minutes

(*) Not recommended to use as antifreeze as it is dangerous due to flammable.

Rising temperatu time (30°C --> 70°C)



Personal Lt-10F-SH Set

Ambient temperature: 25°C
Liquid volume: 11L Water (*)
Result: Approx. 60 minutes

Model		Personal Lt-10F-SX Set Personal Lt-10F and Thermominder SDN come as a set	Personal H-10-SH Set Personal H-10 and Thermominder EXN come as a set
Thermominder	Temperature range (*1)	-10°C to 50°C	5°C above RT to 180°C
	Settable temp. range (*2)	-20°C to 105°C (5°C to 105°C in SX-10N used singly)	-20°C to 180°C
	Temp. control accuracy (*3)	±0.1°C to (±0.05°C in SX-10N used singly)	±0.1 to
	Temperature memory	1	-
	Timer (*4)	Buzzer notification for Preset time, Operation OFF, Temperature transition	Buzzer notification for Preset time, Operation OFF/Operation OFF
	Other functions	Buzzer notification when preset temp. reached, Automatic tuning, Safety device output (Alarm out cable AOC-2 required to output.)	
	Heater	1000W (Time proportional output variable)	
	Safe devices/protections	Circuit protector, Fuse, Dry-heating protection with float, Heater protection cover, Sensor error, Short circuit, High/Low temp. Sample protection, Water level alarm, Non-volatile memory error, Automatic tuning error, Alarm setting error, Switchable Automatic/Manual recovery	
	Power supply	AC100V/10.5A	AC100V/11A
	Standard accessories	1 x Microtube Floater, 1 x Plastic Water bath C-type (*5)	
Personal	Shaking motion	Reciprocal shaking	
	Shaking speed/width	20 to 160r/min (Digitally display), 10 to 40mm (Stepless variable, Default 30mm)	20 to 160r/min (Digitally display), 10 to 30mm (Stepless variable, Default 30mm)
	Platform dimensions	220×310mm	
	Other functions	1 x Elapsed time indicator (0.1 to 999.9h, with Automatic reset), 1 x Service outlet for Thermominder	
	Compressor	75W	-
	Bath inside dim./volume	235(W)×430(D)×140(H)mm, Approx. 11L (80% Water level, Approx. 10L: Combined with Thermominder or Platform) (*6) In Personal Lt-10F-SX Set the water bath cannot be detached and equipped with drain hole (unit rear). In Personal H-10-SH Set the water bath can be detached. and W/D drain.	
	Power supply	AC100V/4.5A (15A: with SX-10N)	AC100V/0.5A (11.5A: with SH-10N)
	Standard accessories	1 x Dedicated Spring net Shaking platform	
Dimensions/weight		381(W)×545(D)×559(H)mm, Approx. 30kg	336(W)×575(D)×457(H)mm, Approx. 22kg

(*1) Max. temp. might not be reached when optional Hood not used or depending on the usage conditions.
(*2) Use antifreeze when below 7°C and heat medium for high temp. when above 70°C. See the right page for our specified heat medium.
(*3) The value under the conditions of RT (25°C), AC100V/50Hz, 80% Water level, Preset temp. 37°C and No heat load.
(*4) Each setting range is 1min to 99h59min.
(*5) This also serves as a packing box whereas not used together with Personal-11 Set.
(*6) The proper volume is 7L to 9L when shaking with the capacity (max. number) such as Centrifuge tubes and max. 500mL of Erlenmeyer flasks at 120 to 160r/min.

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Optional accessories

Each Detachable part

Personal Lt-10F is equipped with a drain hole as the water bath inside it cannot be removed due to its construction (Water bath inside Personal Lt-10F and Drain cock on the back are shown in left figure). Water bath inside Personal H-10 can be removed.

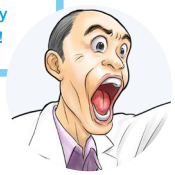
Capacity of Vessels Example

Spring net shaking platform (Spring pitch15mm)	ϕ11mm Test tube (vertical)	187
	Centrifuge tube (30°C tilted) 50ml	12
	Erlenmeyer flask 100mL	8
	Erlenmeyer flask 200mL	6
	Erlenmeyer flask 250mL	5
	Erlenmeyer flask 300mL	5
	Erlenmeyer flask 500mL	3

Optional accessories

USER'S VOICE

The lid plays an important role for energy saving when at High or Low temp. operated!!



Personal Lt-10F SX set
Stainless steel-made Top lid
+Asbestos Timer unit
Combination Examples

USER'S VOICE

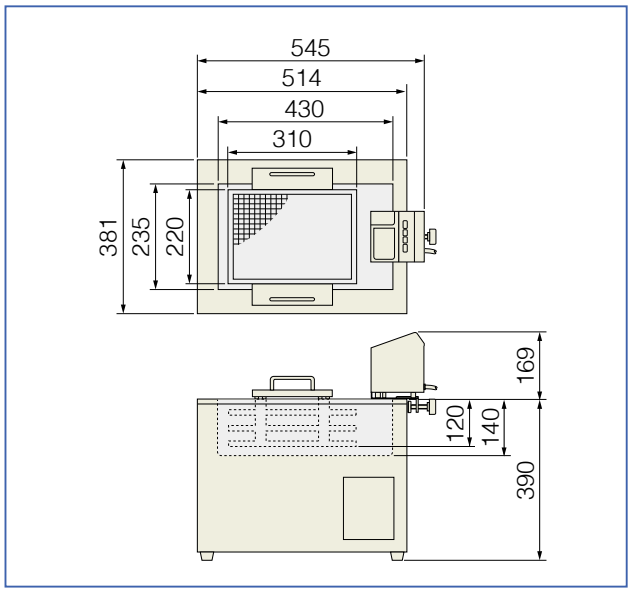
High temp. type also useful for culturing Hyperthermophiles slants (Slant medium).

Personal H-10 SH set
Stainless steel-made Top lid
Combination Examples

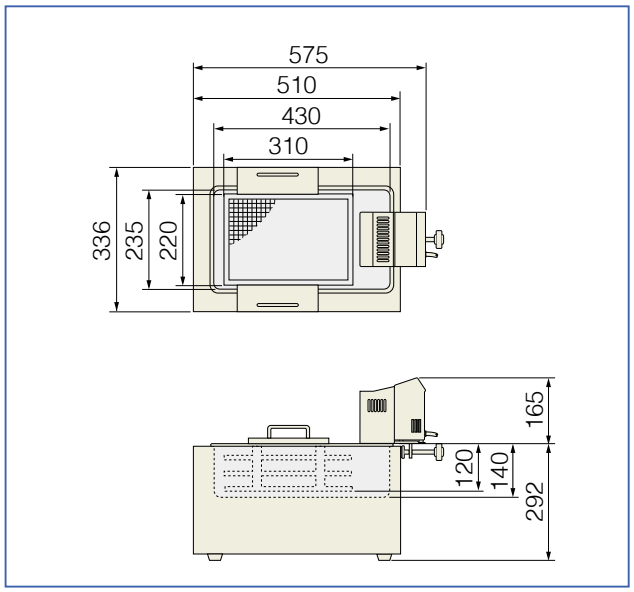
Personal Lt-10F equipped with Service outlet on the lower left of back and Personal H-10 equipped with that on the lower right of back.

Description/Model	Remarks
Stainless steel-made Top lid	Suppresses evaporation and Reduce power consumption.
Automatic water supply unit : Level Keeper / UB-2	Supplies water when water level in the bath drops below the preset.
Cool Pipe B	For Cooling water circulation. Enables it use below RT (25°C).
Asbestos Timer unit B	For automatically turning Shaking ON and OFF. For Preparation of samples for X-ray analysis of Asbestos (for Lt-10F SX Set)
Heat medium for Low temp.(Antifreeze) / Showbrine blue (20kg)	Use it when below 7°C.
Heat medium for High temp. Silicone oil / MA-50 (18kg)	Kinetic viscosity50mm²/s(at 25°C), Focuses Temp. accuracy, Recommended for temp. above 70°C
Heat medium for High temp. Silicone oil / MA-100 (18kg)	Kinetic viscosity100mm²/s(at 25°C), Focuses Low evaporation, Recommended for temp. above 70°C

Personal Lt-10F SX set



Personal H-10 SH set



● Protuberances not included in Dimensions. ● Vessels of photo not included.

Water bath Shaker MM-10/Cool bath Shaker ML-10F

Shaking baths with High temp. accuracy that used in various testing and research fields. Corresponds to Ames test with Monod shaking and Program operation as option.

MM-10

ML-10F

Features

- Low-temperature type available. Draining easily.
- Reciprocal shaking, Shaking width adjustment, Monode shaking as option
- Possible for Program operation as option

Applications

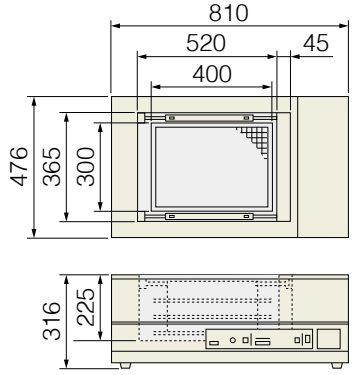
- Cultivation of Microbe such as E. coli
- Various incubations such as Enzyme reaction
- Ames test [ML-10F with PU-6, Some Modification required]

Model	MM-10	ML-10F
Temperature range (*1)	5°C above RT to 80°C	0°C to 50°C
Temp. control accuracy (*2)	±0.02°C to 0.1°C	±0.05°C to 0.2°C
Shaking motion/Speed range/Amplitude	Reciprocal shake, 20 to 160r/min, 10 to 40mm (Stepless variable)	
Temperature display	Digitally (Changeable Preset/Current value)	
Platform dimensions	400 x 300mm	
Stirring method in Bath	Jet flow	
Other functions	Temperature checking monitor. Remote temperature setting terminal (0V to 5 V input, Enables Temp. program control with optional Program unit PU-5 etc.). (*3) Drain hole (right side of the unit).	
Heater/Compressor	Heater: 1300W	Heater: 800W, Compressor: 125W
Safe devices/protections	Earth Leakage Circuit Breaker, Sample protection (High temp.),Water level alarm, Sensor error	
Bath inside dim./volume	520(W)×365(D)×225(H)mm, Approx. 25L (60% Water level)	530(W)×365(D)×225(H)mm, Approx. 35L (80% Water level)
Dimensions/Weight	810(W)×476(D)×316(H)mm, Approx. 45kg	983(W)×486(D)×338(H)mm, Approx. 62kg
Power supply	AC100V/1.5A	
Standard accessories	1 x Dedicated Spring net Shaking platform, 1 x Drain hole filter	

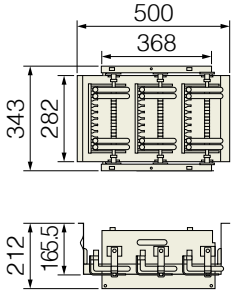
(*1) Max. temp. might not be reached when optional Hood not used or depending on the usage conditions. Use heat medium for high temp. when above 70°C. See the right page for our specified heat medium.
(*2) The value under the conditions of RT (25°C), AC100V/50Hz, 60 to 80% Water level, Preset temp. 37°C. That is an actual measured value due to "0.01 unit".
(*3) Can be corresponded to Program unit PU-6 that enables the program control for temp. and shaking by a modification of this unit. Helps streamline Ames test.

Dimensions

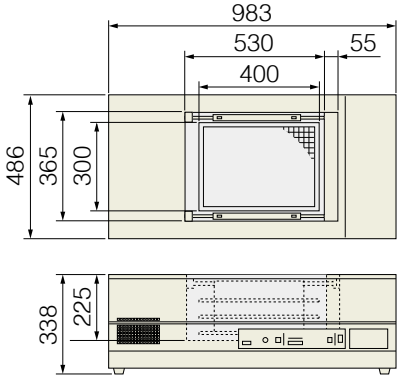
MM-10



MD-3018
Monode kit
See right page for details.



ML-10F



● Protuberances not included in Dimensions. ● Vessels of photo not included.

Optional accessories

●Capacity of Vessels in included Spring net shaking platform

Vessels	Capacity
ϕ16mm Test tube (vertical)	204
Erlenmeyer flask 50mL	24
Erlenmeyer flask 100mL	20
Erlenmeyer flask 200mL	12
Erlenmeyer flask 250mL / 300mL	9
Erlenmeyer flask 500mL	6
Erlenmeyer flask 1L	3
Erlenmeyer flask 2L	2
Sakaguchi flask 500mL	6

●Mountable number of Clamps (Option)

Above 300mL Clamps comes with Spring and Above 500 mL comes with Octagonal rubber sheet.

Vessels		Model	Number
Erlenmeyer flask	50mL	CF-0050	35
	100mL	CF-0100	18
	200mL	CF-0200	12
	250mL	CF-0250	9
	300mL	CF-0300	9
	500mL	CF-0500	6
	1L	CF-1000	4
	2L	CF-2000	2
Sakaguchi flask	500mL	SF-0500	6

●Other Optional accessories

Monode

Monode kit MD-3018

MD-3018Example for use

Program Unit PU-6

Program Unit PU-5

Description/Model	Remarks
Stainless steel-made Top lid for M series	Suppresses evaporation and Reduce power consumption.
Monode kit MD-3018	Monode Shaking platform below of 30pcs x L-shaped. Enables to adjust the angle of shaking by replacing it with Spring net Shaking platform.
L-shaped Test tube (incl. 10)	ϕ18 ×120×70mm
Program Unit PU-5	Enables Program control of Temp.
Program Unit PU-6	Enables Program control of Temp. and Shaking (Some processing required separately for use in combination).
Heat medium for Low temp.(Antifreeze) / Showbrine blue (20kg)	Use it when below 7°C.
Heat medium for High temp. Silicone oil MA-50	Kinetic viscosity50mm^2/s(at 25°C), Focuses Temp. accuracy, Recommended for temp. above 70°C
Heat medium for High temp. Silicone oil MA-100	Kinetic viscosity100mm^2/s(at 25°C), Focuses Low evaporation, Recommended for temp. above 70°C

Application examples in Ames test

MM-10/ML-10F optimum for Preculture of Microbes.

Since Temp. control accuracy ± 0.02 to 0.1°C (ML-10F ±0.05 to 0.2°C) it enables Preculture of Microbes that meets GLP standard (= Keeps the temp. 37°C within ± 0.5°C).

USER'S VOICE

The combined PU-6 and ML-10F with some processing uses for Ames test conveniently.

ML-10F

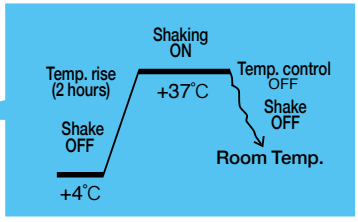
PU-6

Increases efficiency using with Program Unit!

Enables Automatic execution of Shaking ON-OFF and Temp. transition from storage temp (4°C) to the culture finished. e.g. It can be set before going home so that you can conduct the experiment immediately after the next morning.

USER'S VOICE

Various other programs can be apparently set up.



Energy-saving Constant temp. Chamber recommended for Main Culture.

Use "Invitro box iB-130" (page 138) for "Sprinkling it on Min Glucose Agar plate medium 37°C after Preincubation of Specimen liquid and Microbes by mixing" and "Incubation for 48 hours". This unit also contributes to energy saving in laboratory facilities by Three-position temp. control method.

USER'S VOICE

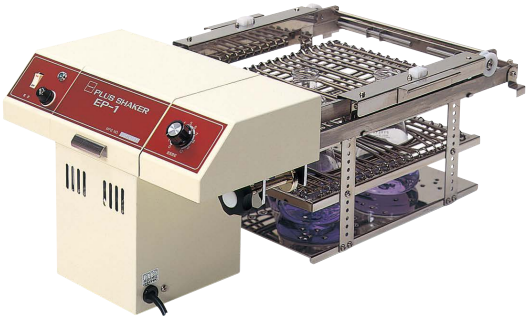
Since air volume for air circulation in the chamber can be arbitrarily adjusted recommended to weaken air volume if drying of agar plate is concerned.

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Plus Shaker EP-1

Combined with Thermominer becomes a Shaking Water bath at low cost. Possible for combined with Plastic Water bath A/B-type and Stainless steel Heat Thermal insulation Water bath E type.

"Thermominder SM-05N/SJ-07N/SX-10N/SH-10N/SP-12N" --> P.116



Features

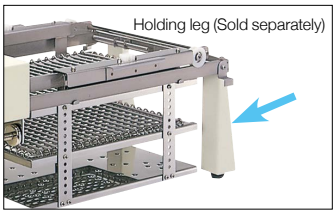
- Combined with Water bath for use
- Can be used singly with Optional holding leg.
- Comes with Spring net shaking platform. Can be used with Clamps together.

Applications

- Cultivation of Microbe such as E. coli
- Various incubations such as Enzyme reaction
- Hybridization

Model	EP-1
Shaking motion	Reciprocal shaking
Shaking speed/width	20 to 160r/min, 0 to 30mm (Stepless variable)
Platform dimensions	275 x 351mm
Applicable Water tank	Plastic Water bath A/B-type Stainless steel Heat Thermal insulation Water bath E type.
Dimentions inside Bath	280(W)×385(D)×140(H)mm
Clampable thickness	Below 50mm
Dimensions/Weight	330(W)×575(D)×250(H)mm, Approx. 14kg
Power supply	AC100V/1A

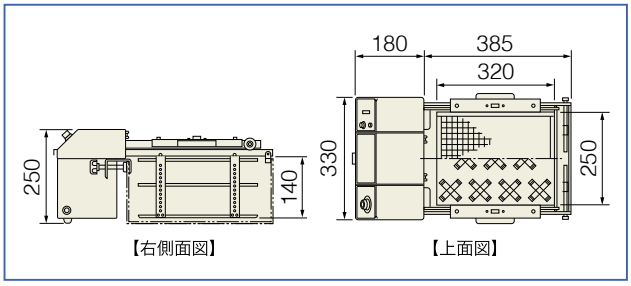
•Use this unit below 80°C (Up to 70°C when used together with Plastic Water bath A/B-type)



Capacity

Vessel	Size	Spring net Shaking platform	When Clamps (Sold separately) used
Test tube	ϕ11mm	221pcs	-
Erlenmeyer flasks	100mL	12pcs	13pcs
	200mL	8pcs	11pcs
	250mL	6pcs	8pcs
	300mL	6pcs	8pcs
	500mL	4pcs	6pcs

Dimensions

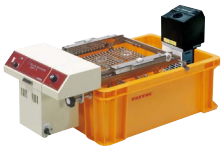


Optional parts: Holding leg, Clamps, Combination Shaking Water bath

Model	Remarks
Holding leg for Plus Shaker	Used when not attached to water bath, 1pc
Clamp CF-0100	For 100mL Erlenmeyer flasks, 1pc
Clamp CF-0200	For 200mL Erlenmeyer flasks, 1pc
Clamp CF-0250	For 250mL Erlenmeyer flasks, 1pc
Clamp CF-0300	For 300mL Erlenmeyer flasks, 1pc
Clamp CF-0500	For 500mL Erlenmeyer flasks, 1pc
Plastic Water bath A-type	Inner dim. 333 x 533 x 200Hmm, Up to 70°C
Plastic Water bath B-type	Inner dim. 295 x 450 x 160Hmm, Up to 70°C
Stainless steel Heat Thermal insulation Water bath E type	Inner dim. 300 x 500 x 155Hmm

"ThermominderSM-05N/SJ-07N/SX-10N/SH-10N"-->P.116

EP-1 + SM-05N + Plastic Water bath A	EP-1 + SJ-07N + Plastic Water bath A
Temperature range:5°C above RT to 70°C	Temperature range:5°C above RT to 70°C



EP-1 + SX-10N + Plastic Water bath A	EP-1 + SH-10N + Stainless steel Thermal insulation Water bath E
Temperature range:5°C above RT to 70°C	Temperature range:5°C above RT to 80°C

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Program Unit PU-5/PU-6

Enables Temperature transition and Program operation of Shaking ON/OFF with our Water baths, Incubator shaker and Chillers for Open circuit in combination.

"Bioshaker BR-300LF/3000LF Series" --> P.024 to 027/032 to 033 "Cool bath Shaker ML-10F" --> P.124 "Coolnit CL Series" --> P.171

Features

- PU-5 for Temperature Program
- PU-6 for Temperature and Shaking ON/OFF Program
- Enables Remote control (wired) for the target product

PU-5

PU-6

Applications

- Program operation for Shaking water bath ML-10F
- Program operation for Incubator shaker BR-300LF
- Program operation for Chillers for Open circuit CL-80R etc.

Conforming products for Program Unit

"Bioshaker" BR-300LF/3000LF Series --> P.032

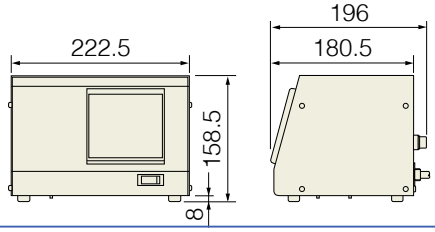
"Chillers for Open circuit CL-80R" --> P.171

"Cool bath Shaker ML-10F" --> P.124

USER'S VOICE

Even if our other units without program function this unit enables them to do Program operation. Although it is wired it can be operated from a distance.

Dimensions

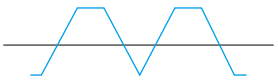


Example of Temperature program pattern

PU-6 enables Automatic operation (*) combining Shaking ON/OFF with such as Temperature program below.

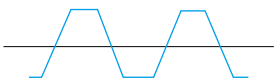
1. Repeats the reaction temperature and storage temperature.

Trapezoidal pattern



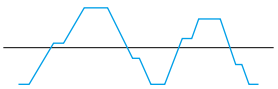
2. Temperature condition as Day and Night assumed.

Trapezoidal pattern



3. Stepwise temperature rise and fall and holding.

Multistage trapezoidal pattern



(*)Some processing is required separately for connection to perform automatic operation of Shaking ON/OFF with PU-6. Ask us for details.

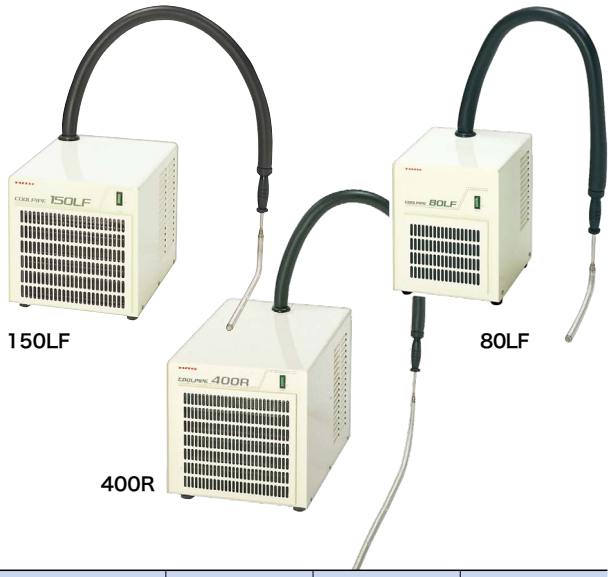
Model		PU-5	PU-6
Temperature program	Number of Storage pattern	2	
	Number of Storage segment	8 segments/patterns	
	Max. Number of segment	16	
	Number of Pattern connection	2	
	Number of Repeat	1 to 999 or Infinite	
	Preset time range	0 to 99h59min	
	Functions	Weight zone, Holding, Step	
	Output	DC 0V to 5V	
Time signal	Number of Storage pattern	-	1
	Number of Storage	-	ON-OFF: Twice (2) per each
	Preset time range	-	0 to 99h59min
	Output	-	AC100V/Max. 15A (Resistance load)
Dimensions		223(W)×181(D)×159(H)mm	
Standard accessories		1 x Pt Temperature Sensor, 1 x Connecting cable	

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Cool Pipe 80LF/150LF/400R

Just throwing the tip of cooling pipe in the object for use. For making Thermominder a Low temp. constant bath and Cooling for trapping vessels for Concentrator.

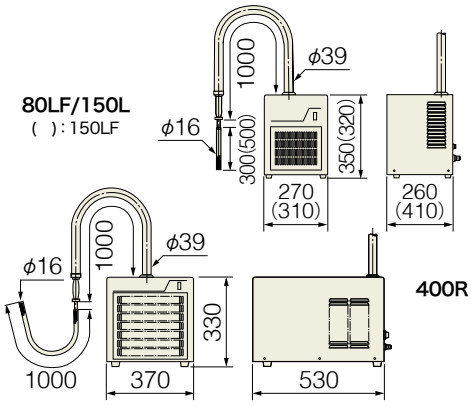
Unit water bath "Thermominder" in combination --> P.119 Related products such as Temperature control units --> P.130



Model	80LF	150LF	400R
Temperature range (*1)	-10°C to 30°C	-15°C to 30°C	-30°C to 30°C
Cooling capacity (*2)	Approx. 150W	Approx. 290W	Approx. 370W
Condenser (Air-cooled) output	80W	150W	400W
Cooling Pipe Structure	Stainless steel Flexible tube		
Pipe Immersing part dim.	ϕ16mm×330mm	ϕ16mm×500mm	ϕ16mm×1000mm
Pipe Thermal insulation length	1m		
Unit Dimensions (W x D x H)	270×260×350mm	310×410×320mm	370×530×330mm
Weight	Approx. 21kg	Approx. 28kg	Approx. 36kg
Power supply	AC100V/2.5A	AC100V/4A	AC100V/6A

(*1) Not equipped with Temperature control function. Use Thermominder etc. together with if necessary. The Min. temp. might not be reached depending on the ambient temperature.
(*2) The value under the conditions of ambient temp. 25°C and liquid temp 10°C at 50 Hz.
• When using a temperature controller the temp controller that controls the heater recommended to protect the refrigerator.
• Use a heater with capacity larger than cooling capacity of this product when using together Thermominder etc.
• Use an antifreeze that does not corrode Stainless steel, Chemically and Thermally stable and a viscosity of below 30mm2/s (specific gravity 1.0) in within operational temp. range
• Do not bend Cooling pipe extremely (Min bending radius 50 mm for fixed bending). Might crack and cause gas leakage if bent it forcibly. Do not immerse the heat insulation part of Cooling pipe (part that black insulation material is wound) in liquid.
• Cannot be used with Seawater.

Dimensions



Features

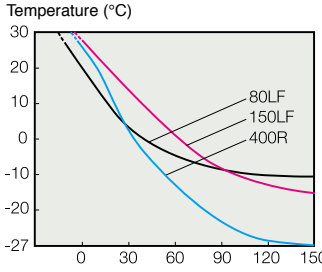
- Just throwing the tip of cooling pipe in the object for use.
- Cooling pipe made of stainless steel and has movable flexibily.
- Only Cooling function without Temperature control function.

Applications

- Combined with Constant temperature Water bath
- Cooling for trapping vessels and Reaction container.
- Cooling for Samples

Cooling curve and Cooling capacity curve

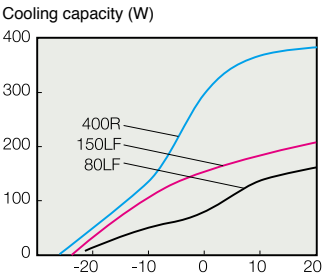
Cooling curve



Heat medium: Antifreeze 80% Aqueous solution (50% Aqueous solution in 150LF)
Liquid volume: 10L
Power supply: AC100V, 50Hz
RT: 24°C on average

Actual measured values under each described condition and not Guaranteed values.

Cooling capacity curve



Heat medium: Antifreeze 80% Aqueous solution (50% Aqueous solution in 150LF)
Liquid volume: 10L
Water bath:
Stainless steel Thermal insulation Water bath
Stirrer: Stirrer unit
Power supply: AC100V, 50Hz
RT: 24°C on average

Actual measured values under each described condition and not Guaranteed values.

Heat medium :Antifreeze is "Showbrine Blue". See below for details.

Optional accessorie/Related products

See 130 page for details on products below

Model	Descriptions
Temperature control Unit TU-100N	Controls Immersion Heater: ±0.1°C to 0.5°C
Temperature control Unit TU-200N	Controls Cooling pipe and/or Immersion Heater: ±2.0°C
Immersion Heater	5 types available by material and capacity (W).
Circulating pump Unit JP-40	Circulates water in the bath to outside of the bath.
Stirring Unit	Stirring for small-scale water inside the bath.
Heat medium for Low temp. Showbrine Blue	20kg/Can; for below 7°C.

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Cool Pipe 250DF/800R

Usability same as 80LF/150LF/400R while these enable Ultra Low temperature. Coolability of 250DF is to -45°C and that of 800R is to -75°C.

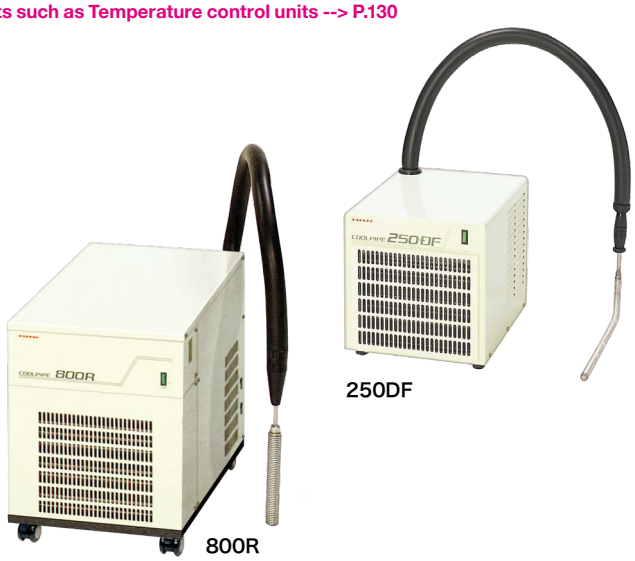
Unit water bath "Thermominder" in combination --> P.119 Related products such as Temperature control units --> P.130

Features

- Unitary refrigeration that to -45°C
- Cascade refrigeration that to -75°C
- Other features are compatible with 80LF/150LF/400R.

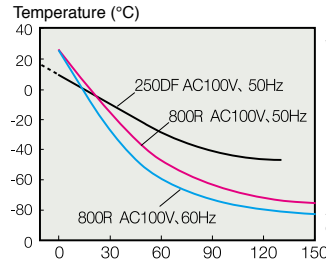
Applications

- Combined with Constant temperature Water bath
- Cooling for trapping vessels and Reaction container.
- Cooling for Samples 800R



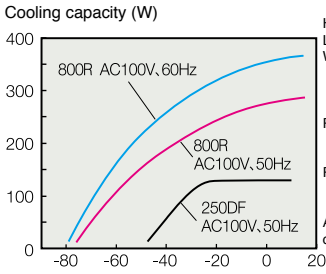
Cooling curve and Cooling capacity curve

Cooling curve



Heat medium: Methanol 100%
Liquid volume: 6L
Water bath:
250DF: Stainless steel
Thermal insulation Water bath
800R:Stainless steel Thermal insulation bottle
Power supply:
250DF: AC100V, 50Hz
800R: AC100V, 50/60Hz
RT:
250DF: 24°C on average
800R: 26°C on average
Actual measured values under each described condition and not Guaranteed values.

Cooling capacity curve



Heat medium: Methanol 100%
Liquid volume: 6L
Water bath:
250DF: Stainless steel
Thermal insulation Water bath
800R:Stainless steel Thermal insulation bottle
Power supply:
250DF: AC100V, 50Hz
800R: AC100V, 50/60Hz
RT:
250DF: 24°C on average
800R: 26°C on average
Actual measured values under each described condition and not Guaranteed values.

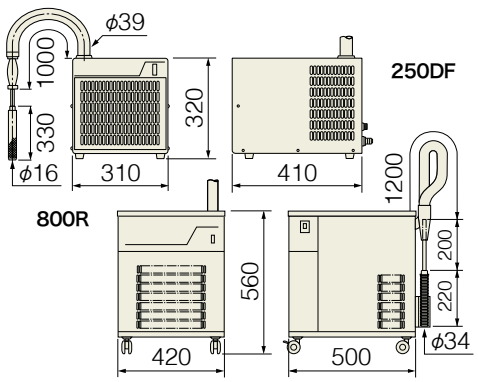
Methanol was used for the experiment purpose so not recommended to use it in actual.

Model	250DF	800R
Temperature range (*1)	-45°C to 30°C	-75°C to 0°C
Cooling capacity	Approx. 130W (*2)	Approx. 150W (*3)
Condenser (Air-cooled) output	250W	2 x 400W
Cooling Pipe structure	Stainless steel Flexible tube	
Pipe Immersing part dim.	ϕ16mm×330mm	ϕ34mm×220mm
Pipe Thermal insulation length	1m	1.2m
Unit Dimensions (W x D x H)/ Weight	310×410×320mm, Approx. 30kg	420×500×560mm, Approx. 70kg
Power supply	AC100V/6A	AC100V/17A (*4)

(*1) Not equipped with Temperature control function. Use Thermominder etc. together with if necessary. The Min. temp. might not be reached depending on the ambient temperature.
(*2) The value under the conditions of ambient temp. 25°C and liquid temp. 10°C at 50 Hz.
(*3) The value under the conditions of ambient temp. 25°C and liquid temp. -40°C at 50 Hz.Do not use this product (Upper limit 0°C) when setting temp. exceeding 0°C using Thermominder etc. together.
(*4) Breaker connection of AC100V and 20A recommended. Other than Single phase 100V might cause failure.

- When using a temperature controller the temp controller that controls the heater recommended to protect the refrigerator.
- Use a heater with capacity larger than cooling capacity of this product when using together Thermominder etc.
- Use an antifreeze that does not corrode Stainless steel, Chemically and Thermally stable and a viscosity of below 30mm2/s (specific gravity 1.0) in within operational temp. range. Our antifreeze (Showbrine Blue) cannot be used at Min. temp. of both 250DF/800R so ask us for details.
- Do not bend Cooling pipe extremely (Min bending radius 50 mm for fixed bending). Might crack and cause gas leakage if bent it forcibly. Do not immerse the heat insulation part of Cooling pipe (part that black insulation material is wound) in liquid.
- Cannot be used with Seawater.

Dimensions



Optional accessories/Related products

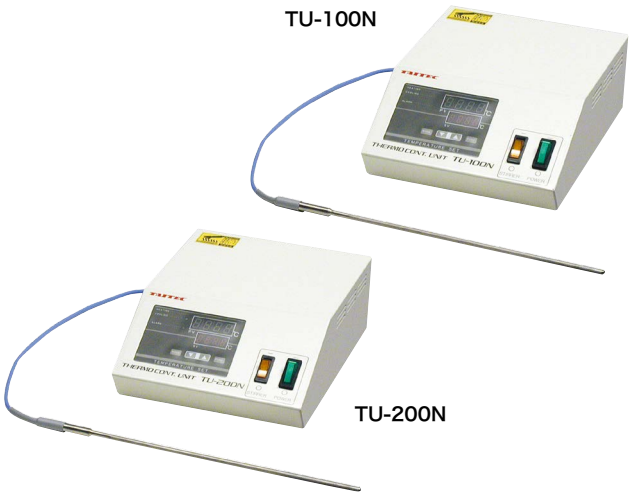
See 130 page for details on products below

Model	Description
Temperature control Unit TU-100N	Controls Immersion Heater: ±0.1°C to 0.5°C
Temperature control Unit TU-200N	Controls Cooling pipe and/or Immersion Heater: ±2.0°C
Immersion Heater	5 Models available by material and capacity (W).
Circulating pump Unit JP-40	Circulates water in the bath to outside of the bath.
Stirring Unit	Stirring for small-scale water inside the bath.
Heat medium for Low temp. Showbrine Blue	20kg/Can; for below 7°C. Note: This cannot be used at Min temp of both 250DF/800R due to its freezing point (Concentration 80% at around -40°C).

● Protuberances not included in Dimensions. ● Vessels of photo not included.

Temperature control Unit TU-100N/TU-200N

Supports an equipment without temperature control function such as Immersion Cooler. Makes it a Low temp. water bath if use it together with Cool pipe.



Features

- Dedicated for Heating control. Precision temperature control [100N]
- Controls Heater and Refrigerator alternately. Rough Temp. control [200 N]
- Enables also Operation for Stirring Unit and Circulation Unit.

Applications

- Precision control for Immersion Heater [100N]
- Roughly controls Immersion Heater and Cool pipe [200N]
- Keeps samples warm and cool inside a constant temperature bath.

TU-100N: Immersion Heater

Controls precisely with connecting the power cord of optional Immersion Heater to the outlet of heater in this unit. Continuous operation with another power supply when use Cool pipe together.

TU-200N: Immersion Heater and Cool Pipe connected

Operates alternately with connecting optional Immersion Heater to the outlet of heater in this unit and optional Cool Pipe to the outlet of compressor in this unit. Equipped with the outlet of Stirring Unit also.

Model	TU-100N	TU-200N
Temperature range	-100°C to 100°C	
Temp. control accuracy (*)	±0.1°C to 0.5°C	±2.0°C
Temperature controller	Type K Thermocouple (PID Control)	Type K Thermocouple (ON-OFF Control)
Temperature control	Heating	Heating/Cooling alternately
Temp. setting method	UP/DOWN Key	
Temperature display	Digitally	
Outlet for Heater	Max. 1200W	Max. 1200W (alternately with Compressor)
Outlet for Compressor	-	Max. 600W (alternately with Heater)
Outlet for Stirring unit	Max. 50W (Circulating Pump unit can also be connected)	
Safe devices/protections	Earth Leakage Circuit Breaker, High temperature	
Unit Dimensions (W x D x H)	180×235×90mm	
Power supply	AC100V/Max. 15A	
Standard accessories	Titanium protective tube temperature sensor	

(*) The value under the conditions that the proper combination and arrangement taken at ambient temp. 25°C. Temp accuracy might be changed depending on ambient temp., preset temp., water bath capacity, with/without or strength of stirring, heat medium, heater, sensor and position of stirrer.

Option: Immersion Heater Throwing this into the water bath for use


Copper made

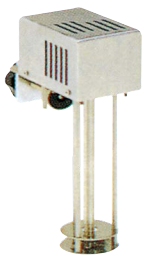
Product
Immersion Heater (500W, Copper made)
Immersion Heater (1400W, Copper made)


Titanium made

Product
Immersion Heater (300W, Titanium made)
Immersion Heater (500W, Titanium made)
Immersion Heater (1000W, Titanium made)

•For heating sea water, titanium made immersion heater is recommended.

Option: Stirring unit Stirring for small-scale water inside the bath.



Product	Stirring Unit
Motor	AC Motor (3W)
Clampable thickness	Maximum 50mm
Dimentions inside Bath	72 x 72 x 180Hmm
Unit Dimensions	72 x 138 x 255Hmm
Power supply	AC100V/0.5A

Option: Circulating pump Unit Circulates water in the bath to outside of the bath.

Model	JP-40
Motor	AC Motor (40W)
Clampable thickness	Maximum 35mm
Circulating nozzle outter dia.	ϕ10mm
Circulating capacity (50/60Hz)	Max. Pump head: 4.5/5.7m Max. Flow rate: 10/11.5mL
Dimentions inside Bath	123 x 108 x 150Hmm
Unit Dimensions	123 x 221 x 289Hmm
Power supply	AC100V/1A

● Protuberances not included in Dimensions. ● Vessels of photo not included.