

## Personal Organic Synthesizer for Functional Material and Pharmaceutical Synthesis

Compact, Energy-saving  
and CFC Free

### SYNGLE MASTER

Model PPX-1000



PPX-1000

※Picture shows optional parts attached

- **Next generation smart single reactor**  
Versatile 150mL scale reaction vessel
- **Cooperative operation of temperature control, stirring control, and reagent dosage**  
Support a wide range of needs from laboratory use to process condition studies
- **Temperature control range -40 to 180°C**  
Aluminum block thermostatic chamber provides a wide range of temperature control
- **High-precision temperature control by cascade control**  
Quick temperature response produced by "heater heating" and "electronic cooling"
- **Equipped with new controller "eReact"**  
4.3-inch color TFT LCD graphically displays operational settings, operational status, and trend graphs

**Batch synthesis and continuous synthesis can be performed  
by combining with optional products such as liquid pumps.**



Check here for  
more information  
on products and  
systems



#### Basic system with stirrer and internal temperature control

This is a basic system that can control internal temperature while stirring using a magnetic stirrer. Stirring with a magnetic stirrer and internal temperature control quickly reach the set temperature. It is also equipped with temperature gradient control to perform highly accurate temperature control.



#### Full system with impeller stirrer, internal temperature control, and dosage control

It is a complete system that can control internal temperature and dosage while stirring with an impeller. The exothermic reaction is carried out through dosage control while removing the reaction heat through powerful stirring using stirring impeller and internal temperature control. Dosage can be performed within the dosage temperature range.



#### A large-scale synthesis system capable of continuous synthesis

This system enables continuous supply of reaction solution while stirring with an impeller, allowing for continuous control of internal temperature and continuous recovery of reaction solution from the outlet nozzle. With continuous stirred-tank reactor (CSTR) operation, large-scale synthesis can be achieved without scaling up the reaction vessel.

# SYNGLE MASTER

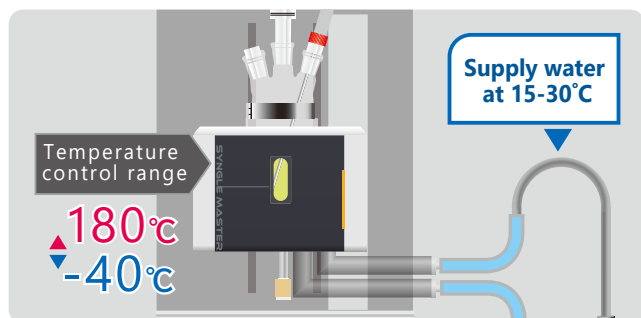
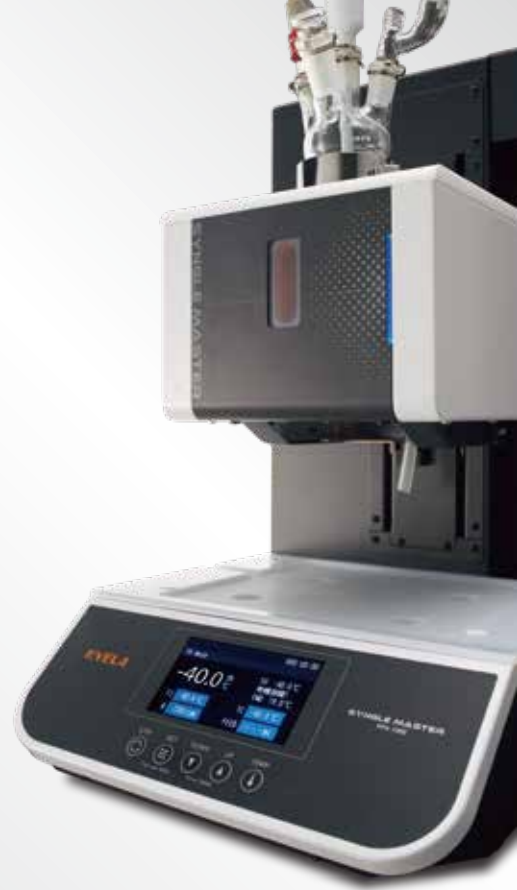
## Personal Organic Synthesizer

Model PPX-1000

### Automated, labor-saving organic synthesis experiments and high-performance temperature control

Single Master is a compact personal synthesizer designed to meet the demands of next-generation synthesis methods in the field of fine chemicals (pharmaceuticals, new materials, electronics, and chemicals) for research and development in organic and process chemistry.

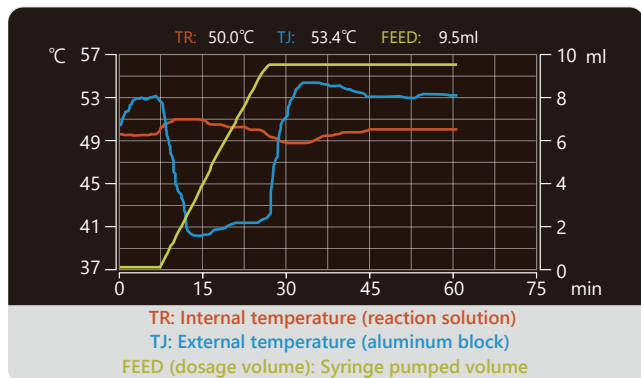
The newly developed aluminum block thermostatic chamber (maximum 150mL) realizes control over a wide temperature range (-40 to 180°C) by supplying tap water. A dedicated controller coordinates temperature and dosage control, allowing advanced reaction control. This improves reproducibility, prevents errors, and also allows researchers to attend to other tasks during experiments.



### Covers a wide range of temperatures

Aluminum block thermostatic chambers equipped with electronic cooling devices provide a wide temperature range of -40 to 180°C with a tap water supply of 15 to 30°C. The chamber can also be operated at night by connecting a cooling water circulator. By circulating water with a temperature setting of 20°C, the temperature can be lowered to -40°C, eliminating the need for brine or antifreeze.

※ For water supply: Please connect with purified water at a temperature of 15-30°C, with a flow rate of 2L/min or higher, and water pressure below 0.06 MPa



### Automatic synthesis functions for researchers

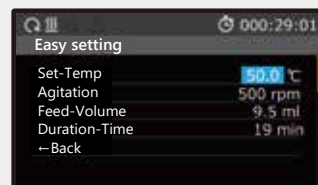
The device is equipped with a function that automatically changes the cooling rate and dosage rate to ensure that the reaction temperature does not deviate from the internal temperature control. If an exothermic reaction occurs, it can be automatically cooled down or the dosage can be temporarily stopped, so it can be operated while researchers are away or at night.



volume) for condition assessment, providing temperature management to data logging functionalities.

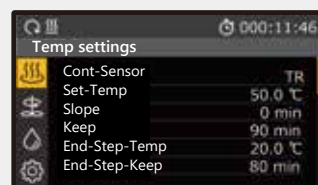
### Control panel

It is equipped with a 4.3-inch color TFT LCD, displaying operational settings, operating status, and trend graphs, allowing for comprehensive monitoring of the system's status. The dedicated controller, "eReact" coordinates the operation of essential reaction parameters (temperature, stirring, dosage



### Easy operation with the integrated controller, "eReact"

Important parameters (temperature, stirrer, and dosage volume) can be easily set by key operation for highly accurate temperature control.



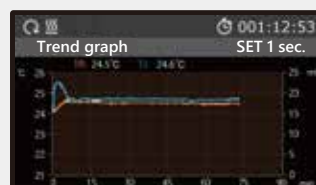
### Easy to operate with simple settings

Only the parameters that are frequently set on a daily basis are displayed in a simplified manner. Fine adjustments and changes to set values can be made quickly with a single key operation.



### Settings can be changed during operation, and the operation status can be managed in an integrated fashion

Current value parameters are displayed during operation. Each parameter is monitored every second, and the operation status can be checked at once.



### Trend graph

A history is created through trend graphs. After an experiment, confirmation of whether the reaction was carried out successfully can be determined by reviewing the temperature and dosage history on the trend graph.

# 【Next-generation Personal Organic Synthesizer】

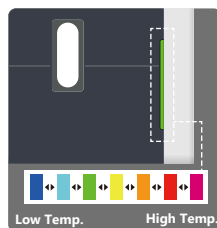
A reactor unit equipped with temperature, stirring, and dosage control, significantly improving the research environment



## ■Related product

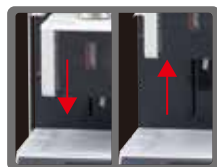
### Plunger pump Model EUI-22-110P

For the plunger pump used during continuous stirred-tank reactor (CSTR) operation, please use the EUI type with communication control capabilities, allowing for the precise control of flow rate (mL/min).



## LED display bar

Separately from the control panel, the temperature status of the controlled object (internal temperature or external temperature) is notified through an LED display. Visually displays the temperature being controlled, and displays an alarm (flashing red/yellow) in the event of an abnormality. During standby, it can also be used as a warning when the temperature is high.



## Elevation function

The height of the aluminum block thermostatic chamber is adjustable. This allows for adjustment of the solution level during continuous stirred-tank reactor (CSTR) operation, enabling compatibility with continuous reactions. Additionally, solution withdrawal after the reaction can also be performed.



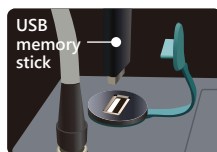
## Liquid leakage tray (Condensation)

In the unlikely event that the reaction vessel breaks and the reaction solution spills out, it protects the equipment from the solvent. It can also be used as a workbench when collecting the reaction solution.



## Control panel

Parameters during operation can be displayed, settings can be changed, and reactions can be stopped, changed, and restarted. Each reaction parameter is monitored every second, so you can check the operating status all at once.



## Data logging and export

Experimental data is automatically recorded to USB memory. History allows information to be shared across the organization and allows for comparisons between experiments.



## Observation window/Aluminum block thermostatic chamber

Through the observation window on the front of the aluminum block thermostatic chamber, the progress of the reaction (color, reaction status, stirring status) can be observed.

## Options



## Impeller stirrer

Three modes of motor speed is available: "Low", "Medium" and "High". Operating counterclockwise (CCW), the "Low" setting is suitable for high-viscosity solution, while the "High" setting, aided by PTFE stirring impeller, creates a large vortex (uplift) in the solvent. This allows for efficient stirring and accommodates high viscosity. Additionally, By installing baffles (optional) within the vessel, you can suppress solvent vortexing, prevent flow in the same direction, and achieve efficient stirring.



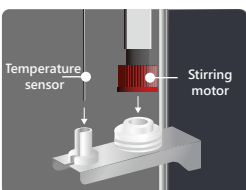
## Temperature sensor

For temperature conditions, the reaction temperature (slope + hold, time) and end temperature (hold, time) can be set. For internal temperature control, it is equipped with the same cascade control as the production equipment, and the reaction temperature (internal temperature, external temperature, isothermal, gradient) and reaction time are controlled with high precision. Additionally, in combination with a syringe pump, reagent addition can be automatically controlled. Dosage can be performed safely while removing reaction heat within the set temperature range.



## Magnetic stirrer

The ferromagnetic magnetic stirrer is also capable of the powerful stirring required for suspension reactions.



## Holder for motor/sensor

Temperature sensors and stirring motors can be temporarily held when changing vessels, etc.



## Syringe pump

To facilitate reagent addition, a syringe pump capable of communication control for dosage control can be used. The syringe pump allows for precise control of the addition amount (total dosage volume, dosage rate, dosage temperature range).



One-piece reaction vessel

Small separable flask set

Vessel with outflow nozzle

The same reaction vessels (one-piece reaction vessel, separable flask, etc.) for the model PPV organic synthesizer Chemistation can be used. By using a vessel with an outflow nozzle, continuous stirred-tank reactor (CSTR) can be carried out. The raw material is dripped onto the solution surface and spread to the bottom of the vessel by impeller stirring. Short paths are prevented by allowing the material to flow out of the vessel from the bottom.



Model		<b>PPX-1000</b>
Cat. No.		<b>283040</b>
Performance	Reaction vessel	Reaction vessel, diameter 60 mm, 1 piece
	Synthesis scale	Max. 150mL (reaction vessel sold separately)
	Temp. control range	Thermostatic chamber temperature: -40.0 to 180.0°C (water-cooled)
	Temp. control accuracy	±0.1°C
	Time setting range	Hold control: 0 to 1440min, ∞, Slope control: 0 to 1440min
Functions	Setting / display	Flat keypad input, 4.3-inch color TFT LCD display
	External temp. control	Thermostatic chamber temperature, Heating/Cooling P.I.D., Control, Slope, Hold
	Options (sold separately)	Internal temp. control PT-1000S, H, T (sold separately) Cascade control, slope + hold + end temperature
		Stirring control PPX-10ST, PPX-10RV-H, M, L (sold separately) Speed feedback control, Rotation direction: CCW
	Options (sold separately)	PPX-10SS (sold separately) Total dosage (mL), Time (min), Temperature range (°C)
		Continuous addition control EUI-22-110P (sold separately) Constant flow rate: 0.01 to 9.99mL/min, Manual
	Safety functions	Leakage/overcurrent protection, Motor overload protection, Self-diagnostic function, Fixed temperature overheat protector
	Language switch	Japanese/English
	Graph / Export	Displays current temperature/Dosage volume, Recording interval: 1 sec. or more
	Configuration	Heating/Cooling Method Heater 200W/Water-cooled Peltier element Max.250W
Configuration	Temperature sensor	Platinum resistance thermometer Pt1000Ω
	Water supply	>2L/min (purified water 15 to 30°C), <0.06MPa, 10.5mm diameter hose port
	Ambient temperature range	15 to 30°C
Outer dimensions/Weight		301(315)Wx444(511)Dx518(526)H (mm) / Approx.23kg
Power input / Supply voltage		8A, 800VA / 100 to 240VAC 50/60Hz

※ Performance values are based on an empty glass reaction vessel, with ambient temperature at 20°C, rated power supply voltage, and when using the model CCA water circulator (tap water, circulation temperature +20°C).

#### ■ Components (related products)



#### ⑦ Plunger pump (Model EUI-22-110P)

Pumping: Double plunger system,  
Flow range: 0.01 to 9.99mL/min, Cat. No. 278550  
PPX-EUI communication cable (with RS485/RS232C converter) Cat. No. 284100

#### Components



<b>① Temperature sensor (Pt1000Ω)</b>		
Stainless steel, 3.2mm diameter	Model PT-1000S	Cat. No. 283050
Hastelloy C, 3.2mm diameter	PT-1000H	283060
Teflon® coated, 2.9mm dia. tip molding	PT-1000T	283070
<b>② Impeller unit</b>		
Speed range, Max. shaft torque	Model	Cat. No.
[High] 125 to 1000rpm, 19.6mN·m	PPX-10RV-H	283080
[Middle] 32 to 250rpm, 68.6mN·m	PPX-10RV-M	283090
[Slow] 8 to 63rpm, 196mN·m	PPX-10RV-L	283100
<b>③ Stirrer unit</b>		
Speed range	Model	Cat. No.
100 to 2000rpm	PPX-10ST	283110
<b>④ Syringe pump unit</b>		
Material: PTFE, PCTFE, Glass	Model PPX-10SS	Cat. No. 283120
※ Sold separately: Solvent bottle set (150mL) Cat. No. 273570		
<b>⑤ Motor &amp; sensor holder</b>		
Installation: Motor, Temperature sensor	Model PPX-10HLD	Cat. No. 283130
<b>⑥ Support rod</b>		
Common for left and right side, 1 piece	Model PPX-10SR	Cat. No. 283140

#### Parts



Product	Specification (1 piece)	Cat. No.
⑧ Drip-proof cover	150mL, φ60 Common vessel	283700
⑨ One-piece	150mL, φ60, 3 ports (Main: NS14, Side: NS19, NS14)	228040
⑩ Reaction vessel	150mL, φ60, 4 ports (Main: NS14, Side: NS19, NS14×2)	228050
⑪ Small separable flask set	150mL, φ60, 3 ports (Main: NS14, Side: NS19, NS14)	251070
⑫	150mL, φ60, 4 ports (Main: NS15, Side: NS19, NS15x2) 150mL	251080
⑬ Vessel part	Vessel with outflow nozzle, 1/4-28UNF	283150
⑭ Flat plate baffle	φ60 for essel part, PTFE, 4 piece flat plate	283710
⑮ Powerful stirring bar	Teflon® coated, ST-3F: Oval, φ14x25Lmm	206430
⑯ Stirring impeller	φ60 for separable flask, length: 273mm, PTFE	254300
⑰ Stirring impeller	φ60 for one-piece reaction vessel, length: 231mm, PPS/PTFE	228130
⑱ Temp. sensor holder	For tilt-insertion type, for φ3.2 sheath tubes, 1/4-28UNF, GL14	283690
⑲	For Teflon® coated cable type, 1/4-28UNF, GL14	256740
⑳ Compact condenser	NS14/23	240120
㉑ Dimroth condenser	NS15/25	272040
Pressure reducing valve	Fixed pressure, 0.05 to 0.06 MPa, 10.5 mm OD	283810
Braid silicone hose	φ9.5 to 16.5mm, 2m	283790
㉒ Stopper	NS15/25, round head	283720
	NS19/38, round head	283730
㉓ Stopper	NS14/23, hexagonal head (10 pieces)	217290
	NS19/26, hexagonal head (10 pieces)	228100
㉔ Keck clip	NS14, NS15 common, metal (10 pieces)	217300
	NS19, NS20 common, metal (10 pieces)	228090
㉕ Screw thread	NS15/25, GL14	283750
	NS14/23, GL14, (10 pieces)	217220
㉖ Y-shaped tube	NS15/25, GL14	272050
	NS14/23, GL14	283740
㉗ Stirring seal	NS15/25	218800
	NS14/23	228120

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※The appearance and specifications of the products are subject to change without notice.

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