

MOV-112 / 212
MOV-112F / 212F
MOV-112S / 212S
MOV-112P / 212P
MOV-313P



Accurate, High-Temperature Equipment for Scientific Research.

Sanyo has always aimed to provide research support equipment that offers complete satisfaction to its users. Inspired by the search for even higher precision and greater flexibility of control, Sanyo presents the new MOV Series.

Microprocessor PID temperature control system guarantees accurate temperature environment

The microprocessor PID (Proportional, Integrated and Differential) temperature control system ensures accurate inside temperature. With less offset or overshoot, precise control is possible. And flexible programming allows up to 3-step temperature patterns. This system provides the high-temperature environment that exactly meets experimentation requirements.

Forced air circulation system ensures stable temperatures accurate to within $\pm 2.5^{\circ}\text{C}$

Fan circulation ensures that deviations in cabinet temperature are kept within

$\pm 2.5^{\circ}\text{C}$ (at 200°C). The MOV Series can be widely used for basic to applied experimentation in the areas of scientific, industrial and environmental testing.

Sheathed heater ensures durability and safety

A sheathed heater is incorporated in the heater section. The heating element is wrapped in a magnesium oxide insulating material and covered with a metal protection tube. With conventional wire heating elements, gases or dust can cause corrosion, resulting in loss of heating capacity and electrical leakage. With its durability and high chemical resistance, the sheathed heater ensures safer, more stable operation without the risk of electrical leakage.



Electric Ovens



MOV-112	97 LITER	40°C~250°C
MOV-112F	90 LITER	40°C~200°C
MOV-112S	90 LITER	40°C~200°C
MOV-112P	90 LITER	40°C~200°C

MOV-212	157 LITER	40°C~250°C
MOV-212F	150 LITER	40°C~200°C
MOV-212S	150 LITER	40°C~200°C
MOV-212P	150 LITER	40°C~200°C

Four models that feature natural convection and forced air circulation systems to create environments for a wide variety of experiments. Designed for ease of use and safety.

Natural convection system (MOV-112/212)

Natural convection is best for drying very small samples and fine particles which would be scattered by a fan. This system can be used for high-temperature applications up to 250°C.

Forced air circulation system (MOV-112F/212F)

Sirocco fan circulation keeps variations in inner cabinet temperature within $\pm 4^\circ\text{C}$ at 200°C. Compared with natural convection, quicker drying is possible. And Sanyo's unique fan motor not only circulates hot air

in the cabinet but also keeps the motor cool, improving the reliability and safety of the motor.

Microprocessor timer function

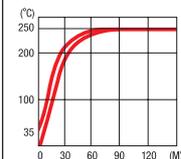
Sanyo has included a microprocessor timer function, so operated times can be set up to a maximum of 99 hours and 59 minutes. The combination of auto start and auto stop provides operating patterns suited to a wide variety of applications. The auto stop operates the timer when the heater is on, or when the set temperature has been reached. A buzzer indicates the end of timer operation.

Performance data

MOV-112

Pull-up characteristics

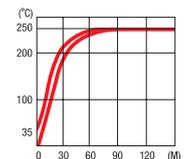
AC 100V/no load, exhaust vent closed.



MOV-212

Pull-up characteristics

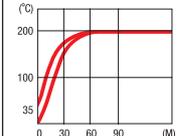
AC 100V/no load, exhaust vent closed.



MOV-112F/S/P

Pull-up characteristics

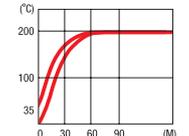
AC 100V/no load, exhaust vent closed.



MOV-212F/S/P

Pull-up characteristics

AC 100V/no load, exhaust vent closed.



Attractive new design

Sanyo believes that laboratory equipment should be attractive as well as functional. The MOV Series features a future-oriented design, with rounded corners, door handles that blend with the main body, and a flat control panel.

User-oriented design for easy operation

The control panel has soft-touch keys and bright, green digital LED display that allows easy confirmation of temperature and remaining operation time. Other

advantages of the design include a soft-latched door handle integrated with the door, an observation window for checking conditions inside the cabinet, two exhaust vents (shared with an access vent) on the top of the unit, and a stainless-steel (SUS-304) interior to guarantee durability and superior resistance to chemicals.



Alarm and safety functions

A comprehensive range of alarm and safety devices is included as standard in the MOV Series including a remote alarm terminal.

Malfunction Monitor (Self diagnosis function)

Should a malfunction occur, it is diagnosed and indications are given on the digital display.

High-temperature Ovens



MOV-313P

223 LITER

40°C~300°C

MOV-112 /212
MOV-112F /212F
MOV-112S /212S
MOV-112P /212P
MOV-313P

Sanyo has added high-temperature ovens to the popular MOV Series. These models are new-generation programmable ovens for a wide range of applications.

Flexible programming to fulfill experimentation and research needs

In response to trends in advanced research, Sanyo has included a flexible programming function for setting 3-step temperature patterns. Programs can be set for a maximum of 99 hours and 59 minutes. And the combination of automatic start, automatic stop and slope control makes programming easier.

Temperature slope control allows complex programming

To meet the requirements of thermal denaturation tests of ceramics or plastics, these ovens incorporate a slope control. With this function, the heating-up time can be freely set, so the necessary temperature slope can be programmed in accordance with the experiment.

MOV-313P: For higher temperatures and greater capacity.

Temperatures up to 300°C can be precisely controlled for many different applications, including industrial tests, ageing tests, high-temperature tests and thermal denaturation tests during materials development.

Space-saving, large-capacity, economical upright type

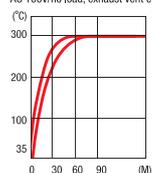
The upright model is only 615mm deep, allowing more effective use of space. With a maximum power consumption of 2.6kW, this model saves energy too.

Performance data

MOV-313P

Pull-up characteristics

AC 100W/no load, exhaust vent closed,



Dry Heat Sterilizers

Constant Temperature Environments for Dry Heat Sterilizing and Efficient Laboratory Work (MOV-112S/212S).

MOV Series models provide many advantages:

- PID precision temperature control is adjustable to within $\pm 1^{\circ}\text{C}$
- The built-in sheathed heater offers superior durability and safety
- Forced air circulation keeps cabinet temperatures even to within $\pm 4^{\circ}\text{C}$
- The new microprocessor timer provides correct sterilizing time

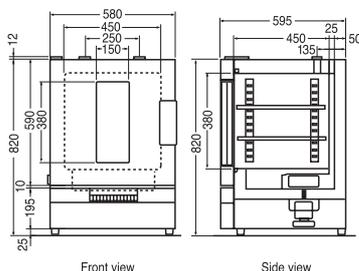
Ovens / Sterilizers

Specifications

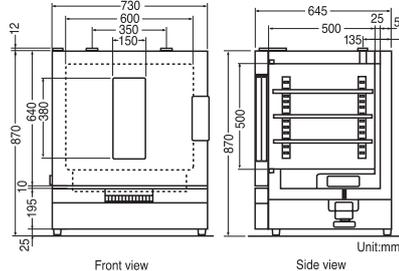
High temperature Ovens			
Model No.	MOV-112P	MOV-212P	MOV-313P
External dimensions (W x D x H)	580 x 595 x 820mm	730 x 645 x 870mm	890 x 615 x 1025mm
Internal dimensions (W x D x H)	450 x 450 x 450mm	600 x 500 x 500mm	570 x 465 x 840mm
Effective capacity	90 L	150 L	223 L
Exterior finish	Baked acrylic finish on galvanized steel		
Interior finish	Stainless-steel plate (SUS-304)		
Insulation	Glass wool		Rock wool
See-through window	Reinforced triple glass window (t = 5mm)		-
Shelves	Stainless-steel plate, stainless-steel wire (adjustable)		
	2	3	4
Air exhaust vent	Two on top plate (32mm inside dia.)		One on top plate (32mm inside dia.)
Heating system	Forced air circulated system		
Temperature control system	Microprocessor PID control		
Sensor	Thermo couple		
Temperature setting	Digital setting (adjustable range: $\pm 1^\circ\text{C}$)		
Timer	Auto start, Auto stop, Slope control, 3-step program 00:00 ~ 99:59/one step. Max. 99 repetition		
Temperature/Timer display	Digital LED display		
Heater (Sheathed heater)	1.1kW	1.2kW	2.5kW
Interior fan	Sirocco fan dia. 149mm		Turbo fan dia. 180mm
Exterior fan	Propeller fan 107mm		
Power source	50/60Hz, cord approx. 2m		
Max. power consumption	Approx. 1.1kW	Approx. 1.2kW	Approx. 2.6kW
Temperature range	40°C ~ 200°C		40°C ~ 300°C
Temperature controllability	± 0.5 deg.		
Temperature uniformity	± 2.5 deg. (at 200°C)		± 3.0 deg. (at 200°C)
Weight	50kg	66kg	97kg
Alarm and safety function	Overcurrent breaker, alarm for automatic set temperature (set point +10°C), independent overheating protection circuit, overtemperature safety system for control section (triggered at 65°C), self diagnosis, memory backup, jack for remote control alarm, serial communications.		Overcurrent breaker, self diagnosis, alarm buzzer, protective thermistor at control section, jack for remote control alarm, double independent heat protector (electronic system), memory backup, serial communications.

Electric Ovens				Dry Heat Sterilizers		
Model No.	MOV-112F	MOV-212F	MOV-112	MOV-212	MOV-112S	MOV-212S
External dimensions (W x D x H)	580 x 595 x 820mm	730 x 645 x 870mm	580 x 595 x 820mm	730 x 645 x 870mm	580 x 595 x 820mm	730 x 645 x 870mm
Internal dimensions (W x D x H)	450 x 450 x 450mm	600 x 500 x 500mm	450 x 450 x 450mm	600 x 500 x 500mm	450 x 450 x 450mm	600 x 500 x 500mm
Effective capacity	90 L	150 L	97 L	157 L	90 L	150 L
Exterior finish	Baked acrylic finish on galvanized steel					
Interior finish	Stainless-steel plate (SUS-304)					
Insulation	Glass wool					
See-through window	Reinforced triple glass window (t = 5mm)					
Shelves	Stainless-steel plate, stainless-steel wire (adjustable)					
	2	3	2	3	2	3
Air exhaust vent	Two on top plate (32mm inside dia.)					
Heating system	Forced air circulated system		Natural convection system		Forced air circulated system	
Temperature control system	Microprocessor PID control					
Sensor	Thermo couple					
Temperature setting	Digital setting (adjustable range: $\pm 1^\circ\text{C}$)					
Timer	Auto start, Auto stop 00:00 ~ 99:59/one step. Max. 99 repetition					
Temperature/Timer display	Digital LED display					
Heater (Sheathed heater)	1.1kW	1.2kW	1.1kW	1.3kW	1.1kW	1.2kW
Interior fan	Sirocco fan dia. 149mm		-		Sirocco fan dia. 149mm	
Exterior fan	Propeller fan 107mm		-		Propeller fan 107mm	
Power source	50/60Hz, cord approx. 2m					
Max. power consumption	Approx. 1.1kW	Approx. 1.2kW	Approx. 1.1kW	Approx. 1.3kW	Approx. 1.1kW	Approx. 1.2kW
Temperature range	40°C ~ 200°C		40°C ~ 250°C		40°C ~ 200°C	
Temperature controllability	± 1 deg.		-		-	
Temperature uniformity	$\pm 4^\circ\text{C}$ (at 200°C)		$\pm 10^\circ\text{C}$ (at 200°C)		$\pm 4^\circ\text{C}$ (at 200°C)	
Weight	50kg	66kg	47kg	63kg	50kg	66kg
Alarm and safety function	Overcurrent breaker, alarm for automatic set temperature (set point +10°C), independent overheating protection circuit, overtemperature safety system for control section (triggered at 65°C), self diagnosis.					

MOV-112/112F/112S/112P



MOV-212/212F/212S/212P



MOV-313P

