

CO₂ /O₂ Multi-gas Incubator | MCO-50M

Easier to Clean

The slide-out perforated stainless steel shelves rest securely in integrated shelf channels molded into the left and right sidewalls, eliminating the need for troublesome shelf brackets and clips. Molded shelf channels reduce the amount of interior parts. Perforated shelves promote natural temperature and gas uniformity.

Precision Gas Sensors IR CO₂ and Zirconia O₂

The IR CO₂ sensor offers continuous calibration for excellent control and accuracy. This ceramic sensor is not affected by moderate temperature and humidity changes and is linked to the P.I.D. controller for fast recovery. As CO₂ and pH levels are key components for proper tissue culture, "Real Time" recovery and monitoring of CO₂ levels provide better culture outcomes. A Zirconia O₂ sensor controls oxygen within a 1-18% / 22-80% range.

Reproducibility by Elimination of External Factors

Reduction of interior parts and condensation control by Peltier powered dew stick helps minimise external factors that often complicate efforts to reproduce cell culture and other protocols. Stable temperature is maintained by the Direct Heat and Air Jacket system. CO₂ and O₂ are quickly restored to set-point after door openings, while relative humidity returns to an elevated state to prevent media desiccation.

Model Number		MCO-50M		
External dimensions [W x D x H] ¹⁾	mm	480 x 550 x 585		
Internal dimensions [W x D x H]	mm	370 x 363 x 385		
Volume	litres	50		
Net weight	kg	46		
Performance				
Temperature control range and fluctuation	°C	AT +5 to +50 ²⁾ , ±0.1		
Temperature uniformity ³⁾	°C	±0.25		
CO ₂ setting range and fluctuation ³⁾	%	0 to 20, ±0.15		
O ₂ setting range and fluctuation ³⁾	%	1 to 18, 22 to 80, ±0.20		
Humidity level and fluctuation	% RH	95 ±5 (Natural evaporation with humidifying pan)		
Control				
Temperature sensor		Thermistor		
Sensor	CO ₂ , O ₂	Dual IR, Stabilised Zirconia		
Display		Digital [white graphic OLED] readable to 0.1 increments		
Construction				
Exterior material		Painted steel (rear cover not painted)		
Interior material		Stainless steel copper-enriched alloy		
Insulation material		Styrene Acrylonitrile copolymer		
Heating method		Direct Heat & Air Jacket System		
Outer door	qty	1 (Field reversible door)		
Inner door	qty	1 (tempered glass)		
Shelves	qty	2 x stainless steel copper-enriched alloy		
Shelf dimensions [W x D x H]	mm	353 x 308 x 12		
Max. load-per shelf	kg	7		
Access port	qty	1 (on the back side / Ø 30 mm)		
Alarms (V = Visual Alarm, B = Buzzer Alarm, R = Remote Alarm)				
Power failure		R		
Out of temperature setting		V-B-R		
High temperature		V-B-R		
High/Low gas density		V-B-R		
Door open		V-B		
Electrical and Noise Level		MCO-50M-PA	MCO-50M-PE	MCO-50M-PK
Power supply	V	110-120	220-240	220
Frequency	Hz	60	50/60	60
Power Consumption [230V/50Hz]	kWh/day	1.014 [during cultivation]	0.245 [during decontamination cycle]	
Noise level ⁴⁾	dB [A]	29		
Options				
UV system set		MCO-170UVS-PA / MCO-170UVS-PE		
H ₂ O ₂ decontamination kit ⁵⁾		MCO-50HB-PW		
Electric door lock with password ⁵⁾		MCO-170EL-PW		
H ₂ O ₂ generator ⁵⁾		MCO-50HP-PW (on sale soon)		
H ₂ O ₂ reagent		MCO-5H202-PV		
CO ₂ /N ₂ gas pressure regulator		MCO-010R-PW		
Automatic CO ₂ cylinder changeover system		MCO-50GC-PW		
Tray		MCO-50ST-PW (same as that of standard accessory)		
Double stacking bracket		MCO-170PS-PW (allows for stacking two MCO-50 series incubators)		
Stacking plate		MCO-50SB-PW		
Roller base		MCO-50RB-PW		
Optional Communication Systems				
Digital interface [RS232C/RS485] ⁴⁾		MTR-480-PW		
Ethernet interface [LAN] ⁴⁾		MTR-L03-PW		
Analogue interface [4-20 mA]		MCO-420MA-PW		
Quality Management System		MCO-50M-PA	MCO-50M-PE	MCO-50M-PK
Certification		ISO9001		ISO13485

¹⁾ External dimensions of main cabinet only, excluding handle and other external projections.

²⁾ When set temperature is 37°C, ambient temperature must be 32°C or less. Regardless of ambient temperature, the maximum of temperature control range is always 50°C.

³⁾ The measurement condition complies with PHCbi specified measuring method.

⁴⁾ Nominal value background noise 20 dB(A).

⁵⁾ MCO-50M requires MCO-50HB, MCO-170EL, MCO-50HP and UV option for H₂O₂ decontamination.

⁴⁾ Only for the data acquisition system MTR-5000 user.

• The optimum performance may not be obtained if the ambient temperature is not above 15°C.

• Appearance and specifications are subject to change without notice.

Caution: PHC Corporation guarantees this product under certain warranty conditions. However, please note that PHC Corporation shall not be responsible for any loss or damage to the contents stored in the product.

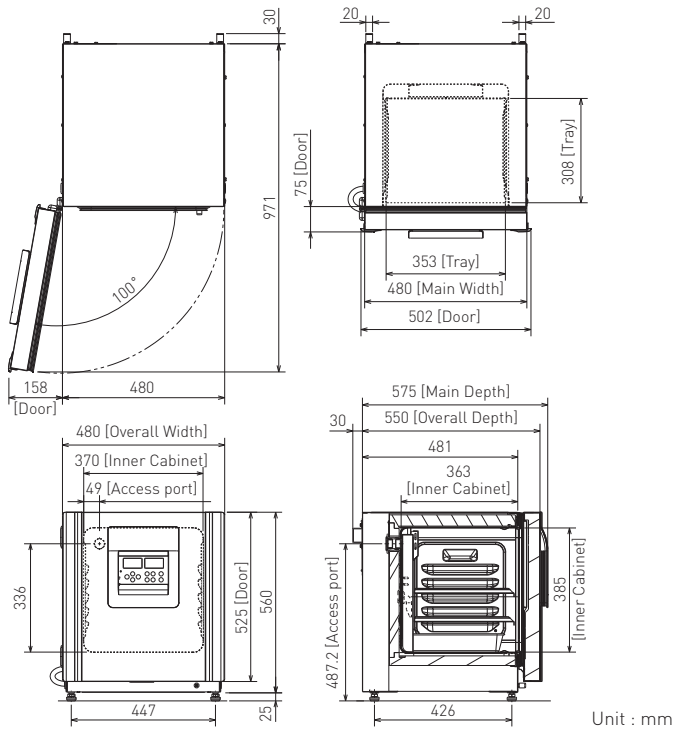


Unified Controller

A central intuitive control panel with graphic user interface simplifies operation and improves visibility of key performance parameters. An OLED input/output display creates an ergonomically-friendly selection of all functions including temperature, CO₂ and O₂ setpoints and alarm deviation limits for temperature, CO₂ and O₂. A USB data port permits downloading logged performance and event information.



Dimensions

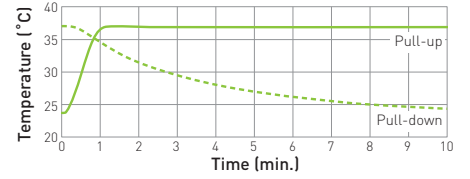


Unit : mm

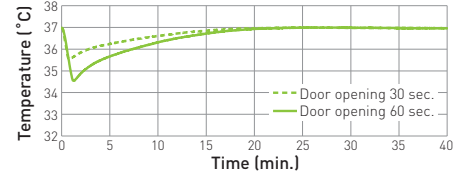
Performance Data

AT23°C, SV37°C, CO₂: 5 %, O₂: 5 %, 230V/50Hz, no load

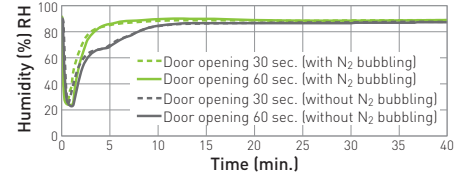
Temperature pull-down/pull-up characteristics



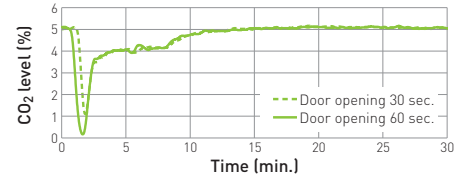
Temperature recovery characteristics



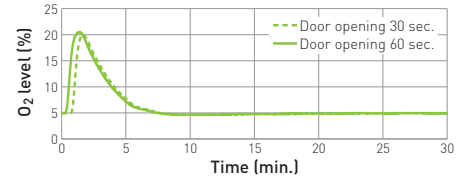
Humidity recovery characteristics



CO₂ level recovery characteristics

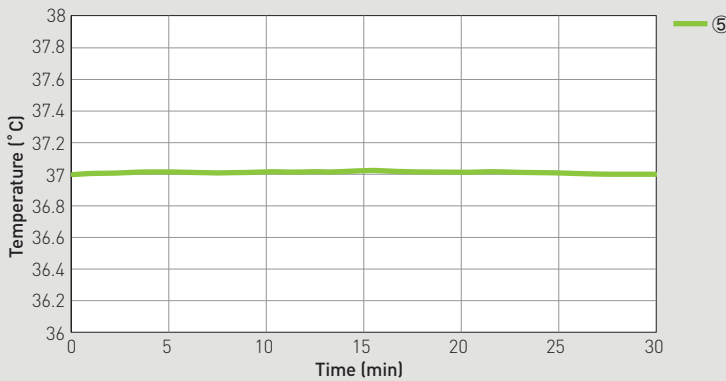


O₂ level recovery characteristics



Temperature Stability

Condition: SV37°C, AT23°C, CO₂ 0%, O₂ 20%, 220V/50Hz, no load



Internal Temperature Uniformity (Reference Data)

Distribution data

Temperature of the cycle in each area (SV37°C, air temperature)

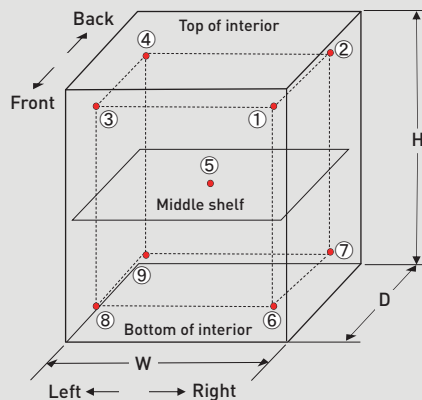
Conditions

Load: Unloaded

Ambient temperature 23°C, CO₂ 0%, O₂ 20%, 220V/50Hz Unit: °C

	①	②	③	④	⑤	⑥	⑦	⑧	⑨
Chamber temp. at nine point (Ave.) <Pt:100Ω>	37.14	37.07	37.06	37.01	37.00	37.07	36.99	36.95	37.01

Temperature uniformity - 9 points measuring



(Note) Disclaimer

- Specification may change without notice. • The performance data was measured by inhouse test data of PHC. • The Performance data is a reference data and not guaranteed.
- Not all the products available in all countries.