



MCO-170M

Multigas Incubators

161 L

Optimizing cell culture productivity

Ideal for various cell culture needs that require CO₂ and sub-ambient or above-ambient oxygen control.

Consistent and uniform environment

- Multi-level contamination control with hydrogen peroxide (H₂O₂) decontamination control, SafeCell UV, inCu-saFe interior & Active Background Contamination control.
- Direct Heat and Air Jacket System for accurate temperature control.
- Dual IR sensor for precise CO₂ control and recovery.
- A solid zirconia oxygen sensor maintains sub-ambient O₂ levels.



Equipped with four inner doors as standard



inCu-saFe Construction for Germicidal Protection

PHCbi offers the exclusive use of inCu-saFe copper-enriched stainless steel alloy interior surfaces to eliminate contamination sources such as mold, spores, and other contaminating spills while providing a noncorrosive environment, and mitigate the effect of airborne contaminants introduced through normal use.



SafeCell UV Decontamination*

Isolated Ultra Violet (UV) lamp decontaminates circulating air and the humidity water reservoir without harming the cultured cells. The new 5,000 hour UV lamp provides long-term maintenance free service without the ozone production. The UV lamp also provides easy access to an effective 24 hour chamber decontamination feature through the touch panel controller.

*The optional MCO-170UVS will add the UV function.



Rapid, Effective and Safe H₂O₂ Decontamination Cycle*

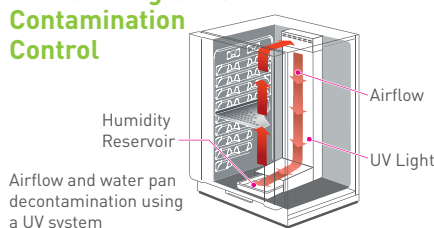
PHCbi's unique high-speed decontamination system uses vaporized H₂O₂ and UV light to safely clean the chamber in less than three hours. This technology provides 100 % kill rate with at least 6 log reduction of major contaminants* [e.g. mycoplasma orale, staphylococcus aureus, candida albicans, etc.]. *based on an independent study

*The optional MCO-170UVS will add the UV function. The optional MCO-170HB and MCO-170EL will add the H₂O₂ decontamination function.

Germicidal Interior

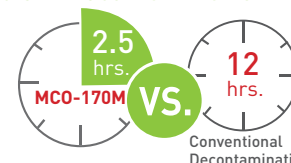
Mycoplasma Stain	Positive Control	Conventional Stainless Steel 304	PHCbi inCu-saFe
Mycoplasma fermentans PG18	Contaminant Growth		No Contaminant Growth
Mycoplasma orale CH19299			
Mycoplasma arginini G230			
Mycoplasma hominis PG21			

Active Background Contamination Control



Airflow and water pan decontamination using a UV system

Efficient Decontamination



Time comparison between the H₂O₂ decontamination process and sterilization at above 180°C [Efficacy evaluation of sterilization techniques utilized by several cell culture incubators]

LCD Touch Panel Controller

A WVGA Color LCD touch panel delivers full control over different protocols. Auto-lock can be set with the optional electric door lock MCO-170EL. The access can be limited, controlled, and traced by setting User-IDs and Passwords.



Responds to gloved finger action

Security



Control Panel with single-user Key Lock. [Standard]

USB port



USB port for easy data transfers

Integrated Tray Catches

Tray catches are integral parts of the chamber, opening up more space for trays by reducing 80 % of the parts to accommodate more culture containers. [comparison with MCO-19M]



MCO-170M's tray catches (integral part of the chamber)



Precise CO₂ Control

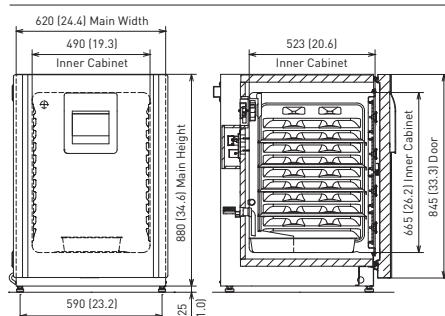
- A single beam dual detector infrared CO₂ system offers unprecedented control accuracy and stability by simultaneously measuring two wavelengths for continuous zero calibration.
- Benefits include ultra-fast recovery without overshoot and accurate CO₂ averages during periods of frequent incubator access with multiple door openings.

Zirconia O₂ Control

For the Multigas Incubator, a solid zirconia oxygen sensor maintains sub-ambient O₂ levels with high degree of precision. It has a long service life and has fast response to door openings.

Dimensions

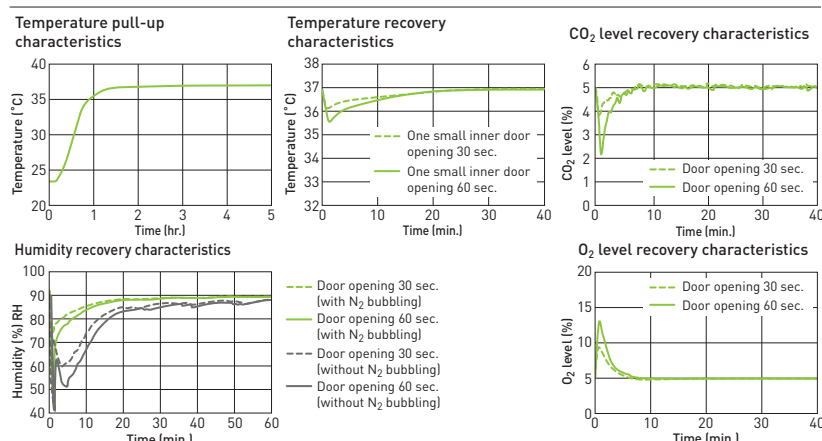
Unit: mm (inch)



Double-stacking Matching Table

Spacer for double-stacking		Upper unit
		MCO-170AIC (M) MCO-170AICD
Lower unit	MCO-230AIC	MCO-230SB
	MCO-170AIC (M)	MCO-170PS
	MCO-170AICD	MCO-170PS
	MCO-19AIC (M)	MCO-170SB
	MCO-18AC	MCO-170SB
	MCO-20AIC	MCO-230SB
MCO-5AC (M)		—

Performance Data



Specifications

Model No.	
110 V–120 V, 60 Hz*1	MCO-170ML-PA*1
220 V, 60 Hz	MCO-170M-PK
220 V–240 V, 50 Hz/60 Hz (CE)	MCO-170M-PE / MCO-170ML-PE*1
Contamination Control	
H ₂ O ₂ Decontamination System	Optional
SafeCell UV System	Optional
inCu-saFe copper enriched stainless interior	Standard
Single Beam, Dual Detector IR CO ₂ Sensor Zirconia O ₂ Sensor	Standard
Direct Heat & Air Jacket (DHA) Heating System	Standard
Environmental performance	
Temperature control range	+5°C above ambient to 50°C*2 (Ambient temperature: 5°C–35°C)
Temperature control uniformity	±0.25°C (23°C ambient, setting: 37°C, CO ₂ : 5%, O ₂ : 5%, no load)*3
CO ₂ control range and deviation	0% to 20% / ±0.15% (23°C ambient, setting 37°C, CO ₂ : 5%, O ₂ : 5%, no load)
CO ₂ sensor platform	Ceramic based, single beam infrared sensor, with dual wavelength measurement for continuous auto-zero calibration
CO ₂ sampling, patent pending	No moving parts; airflow pass over in/out ports to sustain continuous sampling
CO ₂ calibration	Automatic, continuous zero reference calibration. Optional STD gas auto calibration
O ₂ sensor	P.I.D. control system, Zirconia
O ₂ control range and deviation	1–18%, 22–80% / ±0.2% (23°C ambient, setting 37°C, CO ₂ : 5%, O ₂ : 5%, no load)
Airflow	Gentle vertical airflow, continuous with inner door closed
Interior humidity	95% ±5% R.H. at 37°C by natural evaporation with humidifying pan
Control, monitoring, alarm	
Temperature and CO ₂ control	P.I.D. control system setpoint resolution 0.1°C, 0.1%
Data acquisition	Automatic log function of temperature, CO ₂ , O ₂ , Door opening/closing, Alarm, CSV file output
Communication	Remote alarm contacts standard. Optional 4–20mA connection. Optional with RS-232C/RS-485/LAN data ports*4
Cabinet design and construction	
Touch Panel (WVGA full color LCD) and USB data logging	Standard
Exterior cabinet and door	Galvanized steel with baked-on finish
Interior and shelves	Copper-enriched stainless steel
Inner door Outer door	4 tempered glass inner door (Standard) Reversible heated door
Insulation	Styrene Acrylonitrile Copolymer
Access port	Diameter 30mm port with non-VOC silicone stoppers (1 on back side)
Leveling feet	4, Adjustable
Energy and CO₂ utilities	
Maximum power consumption Maximum heat discharge	Maximum 375 W 1030 kJ/h
CO ₂ / O ₂ gas connection	4mm to 6mm inner diameter tubing
CO ₂ gas pressure	0.03–0.10 MPa (G) [0.3–1.0 Kg/cm ² G, 14.5psi(G) from two-stage CO ₂ regulator
O ₂ gas pressure	0.05–0.10 MPa (G) [0.5–1.0 Kg/cm ² G, 14.5psi(G) from two-stage O ₂ regulator
Dimensions, Weights, capacities	
Interior dimensions (W x D x H)	490 x 523 x 665 (mm) / 19.3 x 20.6 x 26.2 (inch)
Exterior dimensions (W x D x H)*5	620 x 730 x 905 (mm) / 24.4 x 28.7 x 35.6 (inch)
Volume	161 Liters [5.7 cu.Ft.]
Shelves	3 supplies as standard (Max.10), 475 (W) x 450 (D) x 12 (H) mm, maximum load 7kg/shelf
Net weight	77 kg (170 lbs.)

*1 MCO-170ML is for laboratory use. *2 When ambient temperature is 25°C, temperature control range: 30°C–50°C. Regardless of ambient temperature, the maximum of temperature control range is always 50°C. *3 The measurement condition complies with PHC Corporation specified measuring method. *4 Only for MTR-5000 [data acquisition system] users. *5 Exterior dimensions of main cabinet only. See dimension drawings showing handles and other external projections. The optimum performance may not be obtained if the ambient temperature is not above 15°C.

Optional Accessories

	MCO-170M / MCO-170ML
UV system set	MCO-170UVS
H ₂ O ₂ decon board	MCO-170HB
Electric lock	MCO-170EL
H ₂ O ₂ generator	MCO-HP
H ₂ O ₂ reagent	MCO-H2O2
Gas regulator	MCO-010R
Gas auto changer	MCO-21GC
STD gas auto calibration kit	MCO-SG
Tray	MCO-170ST
Half tray	MCO-25ST
Roller base	MCO-170RB
Optional software product	
Interface board; for LAN*	MTR-L03
Interface board; for RS-232C/RS-485*	MTR-480
Interface board	MCO-420MA

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 of the product.
 *Only for MTR-5000 [data acquisition system] users.



Preservation (freezers, refrigerators) and Culturing (incubators) Equipment

The management of the design, development, production, sales support, and servicing of the above.

PHC Corporation, Biomedical Division

1-1-1 Sakada, Oizumi-machi, Ora-gun, Gunma 370-0596, Japan



PHC Corporation, Biomedical Division is certified for:
Environmental management system: ISO14001

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<https://www.phchd.com/apac/biomedical/>

Printed in Japan 3201-2018-04-BB



CO₂ Incubators CO₂ /O₂ Multi-gas Incubators



50 L

Optimising cell culture outcomes and reproducibility

PHCbi CO₂ Incubators provide precise control of CO₂* concentrations and accurate, uniform, and highly responsive temperature control within the chamber. During cell culturing, contamination is prevented by the germicidal interior and optional UV lamp. Time-saving decontamination is realised by H₂O₂ option.

Easier to Clean

The slide-out 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 by up to 70%.

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 and CO₂* setpoints and alarm deviation limits for temperature and CO₂*. A USB data port permits downloading logged performance and event information.

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.



Optimal Cell Growth

The inCu-saFe® copper-enriched stainless steel alloy creates an internal germicidal barrier against airborne contaminants. Unlike pure copper, the inCu-saFe® surface will not discolour or corrode due to CO₂* exposure over time. An optional UV lamp automatically destroys airborne contaminants through serial dilution of air that gently circulates through a rear plenum. An optional H₂O₂ vapor nebuliser saves time when total incubator decontamination is required.



Event Management

The microprocessor controller manages all incubator functions and user inputs through an arrow prompted menu. Notifications include actual temperature, actual CO₂*, door status, UV status and deviation alarms. The CO₂ sensor maintains setpoint to within 0.1% and eliminates any need for periodic calibration. With model MCO-50M precision CO₂ and O₂ sensors maintain the set point to within 0.2% or better, and require only minimal calibration.



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* is quickly restored to set-point after door openings, while relative humidity returns to an elevated state to prevent media desiccation.

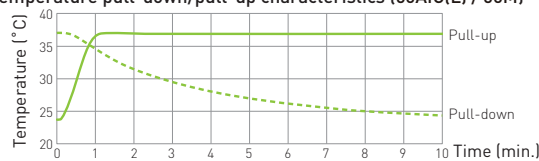
*also O₂ with model MCO-50M

Time-Saving Decontamination

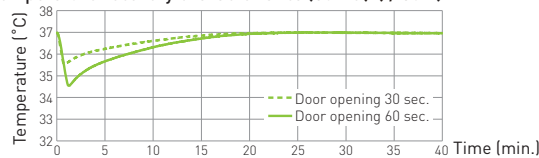
The high-speed decontamination system uses vaporised hydrogen peroxide and UV light. It cleans the chamber of the incubator safely in less than 3 hours, achieving a minimal 6 log reduction of major contaminants.

Performance Data*

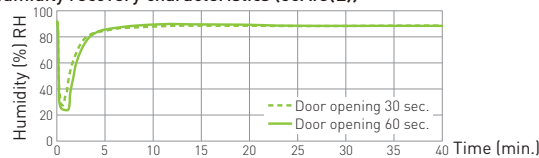
Temperature pull-down/pull-up characteristics (50AIC(L) / 50M)



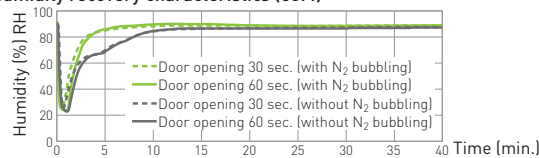
Temperature recovery characteristics (50AIC(L) / 50M)



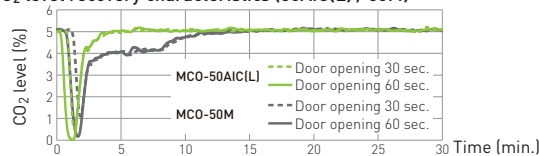
Humidity recovery characteristics (50AIC(L))



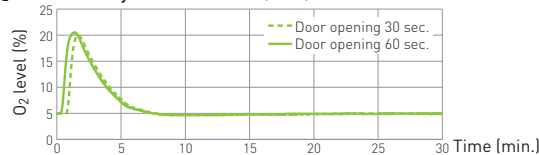
Humidity recovery characteristics (50M)



CO₂ level recovery characteristics (50AIC(L) / 50M)



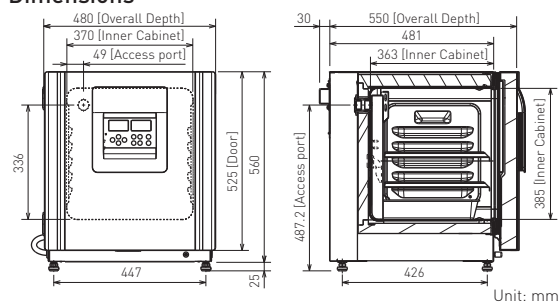
O₂ level recovery characteristics (50M)



* MCO-50AIC(L) Ambient temperature: 23°C, setting: 37°C, CO₂: 5 %, no load

* MCO-50M Ambient temperature: 23°C, setting: 37°C, CO₂: 5 %, O₂: 5 %, no load

Dimensions



Model Number		MCO-50AIC / MCO-50AICL			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	45			46		
Performance							
Temperature control range and fluctuation		AT +5 °C to +50 °C ²⁾ , ±0.1 °C					
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			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-50AICL		MCO-50AIC	MCO-50M		
		-PA	-PE	-PK	-PA	-PE	-PK
Power supply	V	110-120	220-240	220	110-120	220-240	220
Frequency	Hz	60	50/60	60	60	50/60	60
Noise level ⁴⁾	dB [A]	29					
Options							
UV System Set		MCO-170UVS-PA / MCO-170UVS-PE					
H ₂ O ₂ Decontamination Control Board ⁵⁾		MCO-50HB-PW					
Electric Lock ⁵⁾		MCO-170EL-PW					
H ₂ O ₂ Generator ⁵⁾		MCO-50HP-PW					
H ₂ O ₂ Reagent		MCO-5H2O2-PV					
Gas Regulator		MCO-010R-PW					
Gas Auto Changer		MCO-50GC-PW					
Tray (same as that of standard accessory)		MCO-50ST-PW					
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							
Interface Board ⁶⁾ , for LAN		MTR-L03-PW					
Interface Board ⁶⁾ , for RS-232C/RS-485		MTR-480-PW					
Interface Board (4-20mA)		MCO-420MA-PW					
Quality Management System ⁷⁾		MCO-50AICL		MCO-50AIC	MCO-50M		
		-PA	-PE	-PK	-PA	-PE	-PK
Certification		ISO9001		ISO13485	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-50AIC(L) and MCO-50M require MCO-50HB, MCO-170EL, MCO-50HP and UV option for H₂O₂ decontamination.

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

7) MCO-50AICL is for laboratory use.

• 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.



Preservation Equipment, Experimental Environment Equipment, Dispensary Equipment, Culturing Equipment and Drying & Sterilising Equipment for General Laboratory use

The management of the design, development, production and servicing of the above.



Freezers, Refrigerators, Incubators, and Drying and Sterilising Equipment for Medical use

The management of the design, development, production and distribution of the above.



PHC Corporation Biomedical Division is certified for:
Environmental management system:
ISO14001

PHC Corporation, Biomedical Division 1-1-1 Sakada, Oizumi-machi, Ora-gun, Gunma 370-0596, Japan

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Printed in Japan 1307-2021-03-CC

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.

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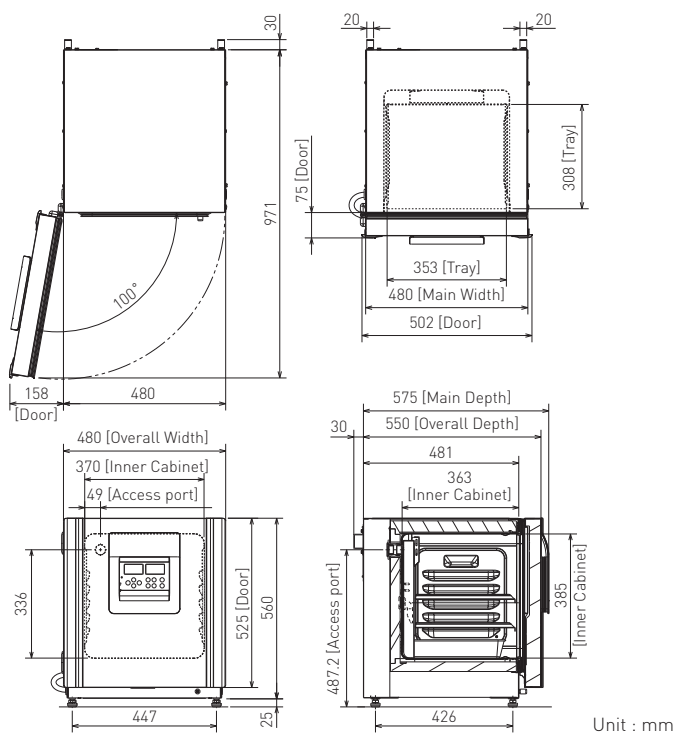


Unified Controller

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.



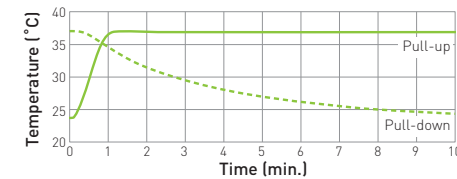
Dimensions



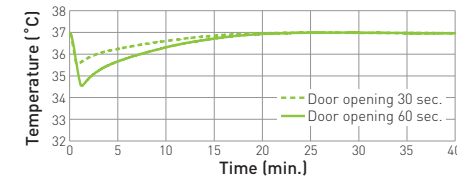
Performance Data

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

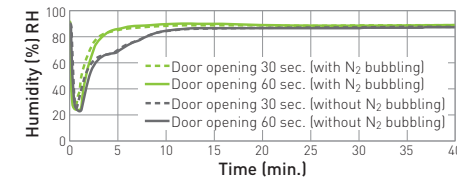
Temperature pull-down/pull-up characteristics



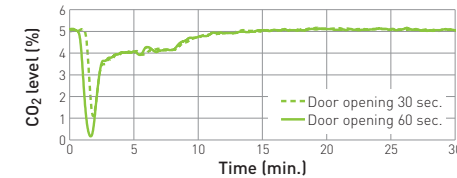
Temperature recovery characteristics



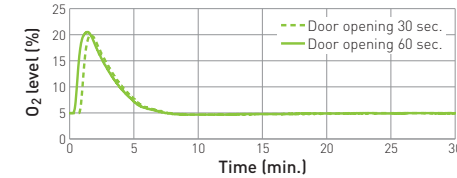
Humidity recovery characteristics



CO₂ level recovery characteristics

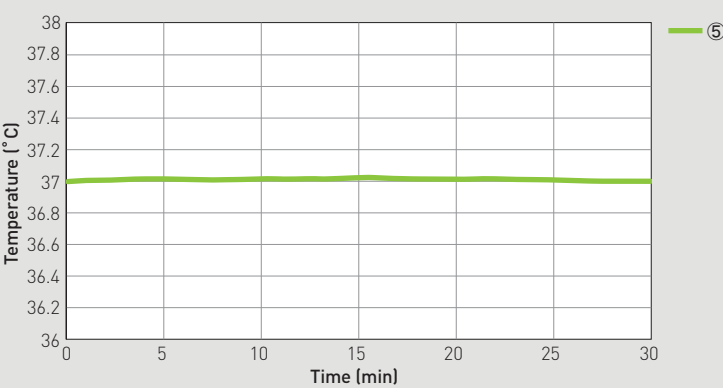


O₂ level recovery characteristics



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

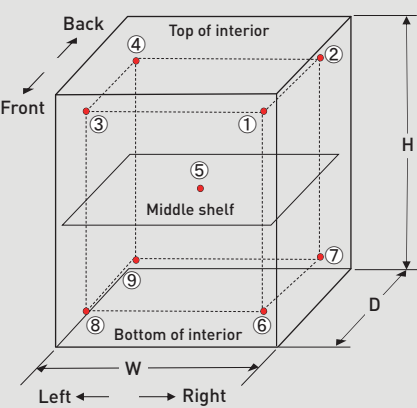
Load: Unloaded

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:1000>	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.
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CO₂ /O₂ Multi-gas Incubators | MCO-170M/MCO-170ML

InCu-saFe® Construction for Germicidal Protection

PHCbi offers the exclusive use of inCu-saFe® copper-enriched stainless steel alloy interior surfaces to eliminate contamination sources such as mold, spores, and other contaminating spills while providing a noncorrosive environment, and to mitigate the effect of airborne contaminants introduced through normal use.

SafeCell UV Decontamination*

Isolated Ultra Violet (UV) lamp decontaminates circulating air and the humidity water reservoir without harming the cultured cells. The 5,000 hour UV lamp provides long-term maintenance free service without the ozone production. The UV lamp also provides easy access to an effective 24 hour chamber decontamination feature through the touch panel controller.

*The optional MCO-170UVS will add the UV function.

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.

Model Number		MCO-170M-PK	MCO-170ML-PE	MCO-170ML-PA
External dimensions (W x D x H) ¹⁾	mm	490 x 523 x 665		
Internal dimensions (W x D x H)	mm	620 x 730 x 905		
Volume	litres	161		
Net weight	kg	77		
Performance				
Temperature control range and fluctuation	°C	AT +5 to +50 ²⁾		
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	3 x stainless steel copper-enriched alloy		
Shelf dimensions (W x D x H)	mm	475 x 450 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-170M-PK	MCO-170ML-PE	MCO-170ML-PA
Power supply	V	220	220-240	110-120
Frequency	Hz	60	50/60	60
Power Consumption (230V/50Hz)	kWh/day	2.021 (during cultivation) 0.493 (during decontamination cycle)		
Noise level ⁴⁾	dB [A]	25		
Options				
UV system set		MCO-170UVS-PA / MCO-170UVS-PE		
H ₂ O ₂ decontamination kit ⁵⁾		MCO-170HB-PA / MCO-170HB-PE		
Electric door lock with password ⁵⁾		MCO-170EL-PW		
H ₂ O ₂ generator ⁵⁾		MCO-HP-PW		
H ₂ O ₂ reagent		MCO-H2O2-PV		
CO ₂ /N ₂ gas pressure regulator		MCO-010R-PW		
STD gas auto-calibration kit		MCO-SGP-PW		
Automatic CO ₂ cylinder changeover system		MCO-21GCP-PW		
Tray		MCO-170ST-PW (same as that of standard accessory)		
Double stacking bracket		MCO-170PS-PW		
Stacking plate		MCO-170SB-PW		
Roller base		MCO-170RB-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 ⁷⁾		MCO-170M-PK	MCO-170ML-PE	MCO-170ML-PA
Certification		ISO13485		ISO9001

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

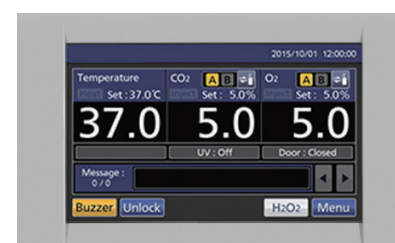
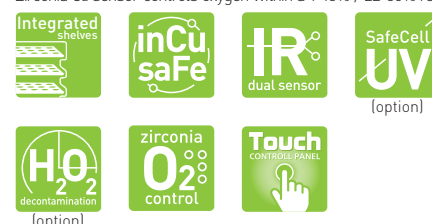
6) Only for the data acquisition system MTR-5000 user.

7) MCO-170ML is for laboratory use.

• 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.

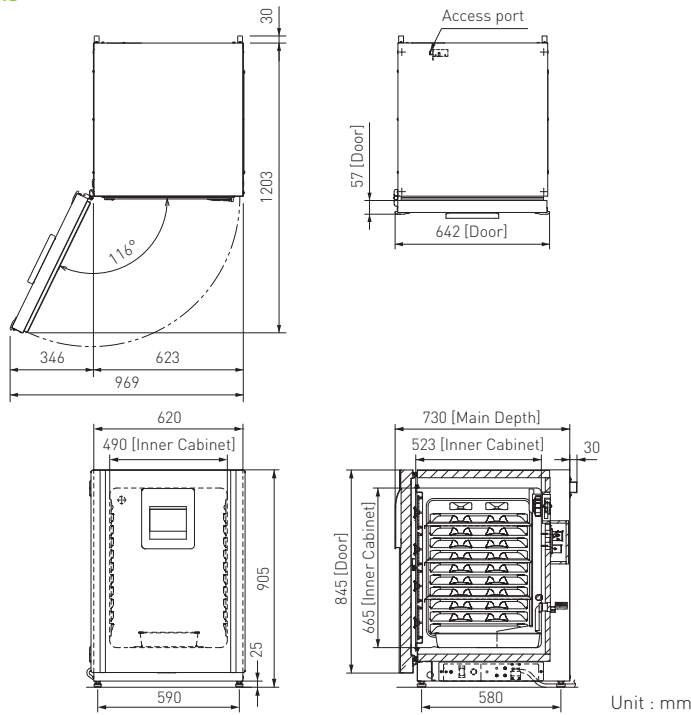


Reliable controllability and data log function.

Large colour LCD touchpanel is accurately controlled even with a gloved hand, while the USB memory port makes transferring logged data of product's operational status to a PC convenient.



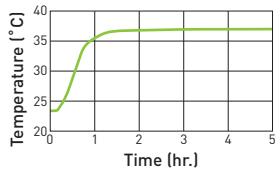
Dimensions



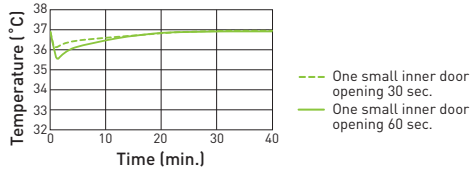
Performance Data

AT23°C, SV37°C, CO₂: 5 %, O₂: 5 %, 220V/50Hz, no load

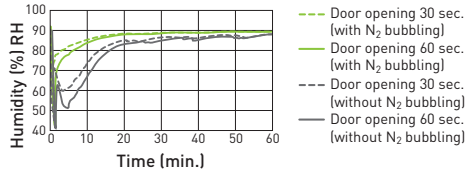
Temperature pull-up characteristics



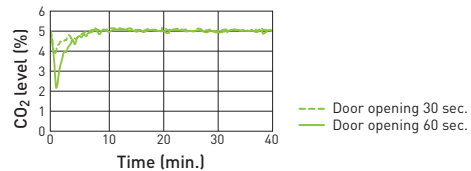
Temperature recovery characteristics



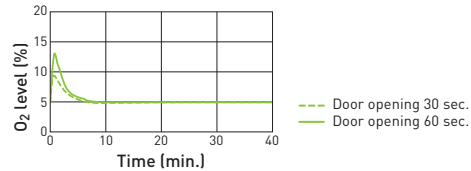
Humidity recovery characteristics



CO₂ level recovery characteristics

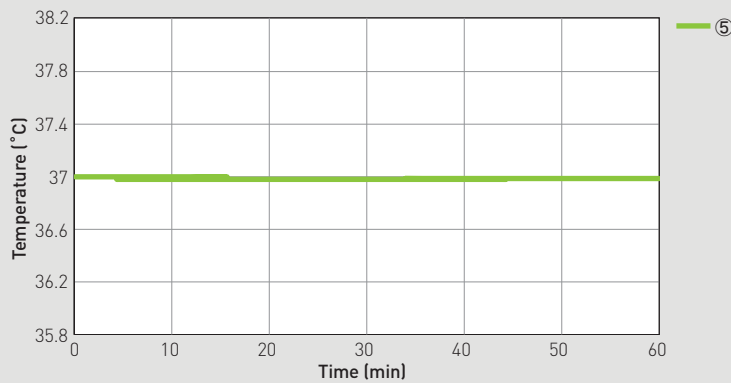


O₂ level recovery characteristics



Temperature Stability

Condition: SV37°C, AT23°C, CO₂ 0%, O₂ 20%, 230V/50Hz, no load



Internal Temperature Uniformity [Reference Data]

Distribution data

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

Conditions

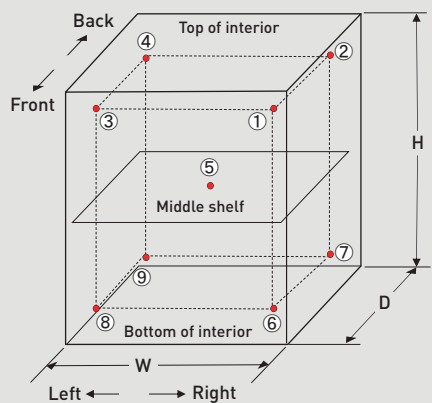
Load: Unloaded

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:1000>	37.30	37.03	37.16	36.94	36.99	36.96	37.00	36.99	36.94

Temperature uniformity - 9 points measuring



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