



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*

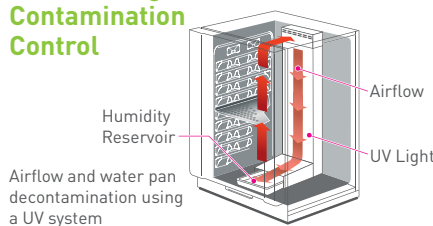
PHCbi's unique high-speed decontamination system uses vaporized H₂O₂ and UV light to safely clean the chamber in less than three hours. This technology provides 100 % kill rate with at least 6 log reduction of major contaminants* (e.g. mycoplasma orale, staphylococcus aureus, candida albicans, etc.).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

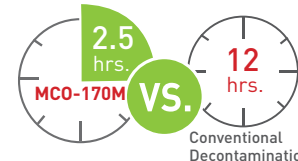
Germicidal Interior

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

Active Background Contamination Control



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)



IR₂ Precise CO₂ Control

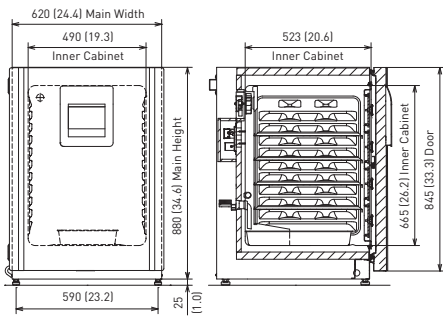
- A single beam dual detector infrared CO₂ system offers unprecedented control accuracy and stability by simultaneously measuring two wavelengths for continuous zero calibration.
- Benefits include ultra-fast recovery without overshoot and accurate CO₂ averages during periods of frequent incubator access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

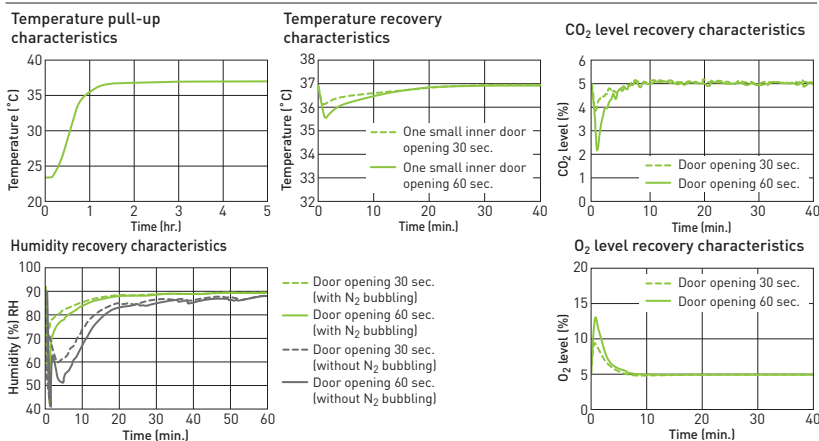
Spacer for double-stacking		Upper unit
		MCO-170AIC (M) MCO-170AICD
Lower unit	MCO-230AIC	MCO-230SB
	MCO-170AIC (M)	MCO-170PS
	MCO-170AICD	MCO-170PS
	MCO-19AIC (M)	MCO-170SB
	MCO-18AC	MCO-170SB
	MCO-20AIC	MCO-230SB
MCO-5AC (M)		—

Specifications

		Model No.
110 V–120 V, 60 Hz		MCO-170ML-PA
220 V, 60 Hz		MCO-170M-PK
220 V–240 V, 50 Hz/60 Hz (CE)		MCO-170M-PE / MCO-170ML-PE
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 Remote alarm contacts standard. Optional 4–20mA connection.
Communication		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		Expandable polystyrene beads
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.

Performance Data



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-H202
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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