



MCO-170M

## Multigas Incubators

161 L

### Optimizing cell culture productivity

Ideal for various cell culture needs that require CO<sub>2</sub> and sub-ambient or above-ambient oxygen control.

### Consistent and uniform environment

- Multi-level contamination control with hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) 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 CO<sub>2</sub> control and recovery.
- A solid zirconia oxygen sensor maintains sub-ambient O<sub>2</sub> 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 H<sub>2</sub>O<sub>2</sub> Decontamination Cycle\*

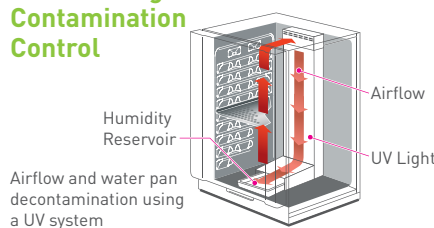
PHCbi's unique high-speed decontamination system uses vaporized H<sub>2</sub>O<sub>2</sub> and UV light to safely clean the chamber in less than three hours. This technology provides 100 % kill rate with at least 6 log reduction of major contaminants\* (e.g. mycoplasma orale, staphylococcus aureus, candida 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 H<sub>2</sub>O<sub>2</sub> decontamination function.

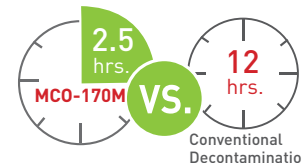
### Germicidal Interior

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 H<sub>2</sub>O<sub>2</sub> 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)



**IR<sub>2</sub>** **Precise CO<sub>2</sub> Control**

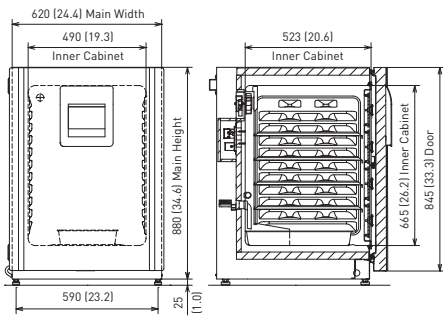
- A single beam dual detector infrared CO<sub>2</sub> system offers unprecedented control accuracy and stability by simultaneously measuring two wavelengths for continuous zero calibration.
- Benefits include ultra-fast recovery without overshoot and accurate CO<sub>2</sub> averages during periods of frequent incubator access with multiple door openings.

**Zirconia O<sub>2</sub> Control**

For the Multigas Incubator, a solid zirconia oxygen sensor maintains sub-ambient O<sub>2</sub> 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**

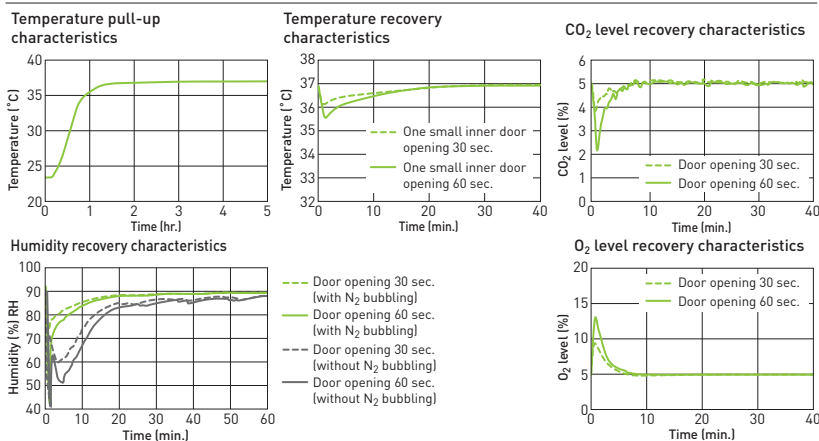
Spacer for double-stacking		Upper unit
		MCO-170AIC (M) MCO-170AICD
Lower unit	MCO-230AIC	MCO-230SB
	MCO-170AIC (M)	MCO-170PS
	MCO-170AICD	MCO-170PS
	MCO-19AIC (M)	MCO-170SB
	MCO-18AC	MCO-170SB
	MCO-20AIC	MCO-230SB
MCO-5AC (M)		—

**Specifications**

	Model No.
110 V-120 V, 60 Hz*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
<b>Contamination Control</b>	
H <sub>2</sub> O <sub>2</sub> Decontamination System	Optional
SafeCell UV System	Optional
inCu-saFe copper enriched stainless interior	Standard
Single Beam, Dual Detector IR CO <sub>2</sub> Sensor   Zirconia O <sub>2</sub> Sensor	Standard
Direct Heat & Air Jacket (DHA) Heating System	Standard
<b>Environmental performance</b>	
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 <sub>2</sub> : 5%, O <sub>2</sub> : 5%, no load)*3
CO <sub>2</sub> control range and deviation	0% to 20% / ±0.15% (23°C ambient, setting 37°C, CO <sub>2</sub> : 5%, O <sub>2</sub> : 5%, no load)
CO <sub>2</sub> sensor platform	Ceramic based, single beam infrared sensor, with dual wavelength measurement for continuous auto-zero calibration
CO <sub>2</sub> sampling, patent pending	No moving parts; airflow pass over in/out ports to sustain continuous sampling
CO <sub>2</sub> calibration	Automatic, continuous zero reference calibration. Optional STD gas auto calibration
O <sub>2</sub> sensor	P.I.D. control system, Zirconia
O <sub>2</sub> control range and deviation	1-18%, 22-80% / ±0.2% (23°C ambient, setting 37°C, CO <sub>2</sub> : 5%, O <sub>2</sub> : 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
<b>Control, monitoring, alarm</b>	
Temperature and CO <sub>2</sub> control	P.I.D. control system setpoint resolution 0.1°C, 0.1%
Data acquisition	Automatic log function of temperature, CO <sub>2</sub> , O <sub>2</sub> , 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
<b>Cabinet design and construction</b>	
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
<b>Energy and CO<sub>2</sub> utilities</b>	
Maximum power consumption   Maximum heat discharge	Maximum 375 W   1030 kJ/h
CO <sub>2</sub> / O <sub>2</sub> gas connection	4mm to 6mm inner diameter tubing
CO <sub>2</sub> gas pressure	0.03 - 0.10 MPa (G) [0.3 - 1.0 Kg/cm <sup>2</sup> G, 14.5psi(G)] from two-stage CO <sub>2</sub> regulator
O <sub>2</sub> gas pressure	0.05 - 0.10 MPa (G) [0.5 - 1.0 Kg/cm <sup>2</sup> G, 14.5psi(G)] from two-stage O <sub>2</sub> regulator
<b>Dimensions, Weights, capacities</b>	
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 <sub>2</sub> O <sub>2</sub> decon board	MCO-170HB
Electric lock	MCO-170EL
H <sub>2</sub> O <sub>2</sub> generator	MCO-HP
H <sub>2</sub> O <sub>2</sub> 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
<b>Optional software product</b>	
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.  
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PHC Corporation, Biomedical Division is certified for: **Environmental management system: ISO14001**

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