PHCbi Biomedical products are designed to meet the demands of the life science industries by providing reliability, accuracy, and usability to facilitate cutting-edge research and preservation of precious samples.
"PHCbi" is a new brand for our Biomedical business that has globally supported cutting-edge research and healthcare for over 50 years.

Since 1966, when we first launched pharmaceutical refrigerators, we aimed to support cutting-edge research in life sciences. We have provided equipment and services required for sample preservation, bacterial and cell culture as well as maintenance of cleanroom environments.

**Life Science Innovator Since 1966**

<table>
<thead>
<tr>
<th>Year</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>1966</td>
<td>SAR-130M Pharmaceutical Refrigerator</td>
</tr>
<tr>
<td>1977</td>
<td>MDF-390AT -20°C Ultra-Low Temperature Freezer developed</td>
</tr>
<tr>
<td>1991</td>
<td>MDF-1155ATN -80˚C Ultra-Low Temperature Freezer developed</td>
</tr>
<tr>
<td>2008</td>
<td>MDF-U620NX -80°C Ultra-Low Temperature Freezer developed</td>
</tr>
<tr>
<td>2009</td>
<td>MCD-19A/CUY -152˚C Freezer developed</td>
</tr>
<tr>
<td>2012</td>
<td>MDF-DU700VH -85˚C Dual Cooling System Freezer developed</td>
</tr>
<tr>
<td>2014</td>
<td>MCO-19AICUVH World's First H₂O₂/Hydrogen Peroxide Chamber decontamination Function equipped</td>
</tr>
<tr>
<td>2017</td>
<td>MDF-DU700VX High Efficiency Insulation/Efficient Sample Storage and more Efficient Dual Cooling System</td>
</tr>
<tr>
<td>2019</td>
<td>MPR-N450FH Energy saving HFC-Free Pharmaceutical Refrigerator with Freezer</td>
</tr>
</tbody>
</table>

Commitment to Quality PHCbi MONOZUKURI* Way

The most important points that customers demand of our products are quality and reliability. At our factories, we have established the “MONOZUKURI Way” as a theme of action. We carry out various initiatives to improve quality while working to pass on the legacy of traditional Japanese manufacturing technology in a multi-faceted fashion. *MONOZUKURI is the Japanese word for [Craftsmanship]

Our Quality Management System

In our quality management and development process [Quality Management System], we establish a number of checkpoints in the value chain. Staff with various occupational abilities carry out stringent evaluation and improvement of products from the customer’s perspective. This is the system that creates our high level of quality.

Japan Factory (Gunma)

Established in 1959 as the Tokyo Manufacturing Site of Sanyo Electric Co., Ltd., this is our core factory which has the Product Technology Development/Design Department, Quality Assurance Department, and Production Department.

As of April 2018, Over 500 PHC employees engaged in the development, quality assurance, and production of products of PHCbi. Within the facility, we have many environmental testing laboratories, and these are used for stringent product screening with the aim of studying technology development and maintaining quality.

In addition, at the "MONOZUKURI-Dojo (Training)," the purpose is to pass down our legacy for traditional technology. We carry out various kinds of training to improve skills such as brazing capillary tubes of Ultra-low Temperature Freezers, etc., which require a high level of skill.
**Dual Cooling System**
- Dual Cooling System offers ultimate sample protection.
- VIP PLUS vacuum insulation maximises storage capacity.

**Natural Refrigerants**
- Naturally occurring hydrocarbon (HC) refrigerants improve performance and reduce running costs.

**Inverter Compressors**
- Inverter Compressors maximise cooling performance and reduce energy consumption.
- The EZlatch makes access to stored samples even easier.

**EZlatch Easy Access Door Handle**
- The EZlatch makes access to stored samples even easier.

**inCu-saFe Germicidal Interior**
- inCu-saFe germicidal interior prevents contamination.

**Integrated Tray Catches**
- Significantly minimize cleaning time and improves productivity.

**A Full-color LCD Touch Panel**
- Various functions such as logging the temperature history, and setting up passwords and alarms can all be managed on the screen.

**H2O2 Decontamination**
- The unique H2O2 decontamination system delivers fast and validatable decontamination.

**SafeCell UV Lamp**
- The SafeCell UV lamp prevents contamination.

**IR CO2 Sensor**
- The IR CO2 Sensor offers accurate and reliable CO2 measurement.

**Zirconia O2 Sensor**
- The unique Zirconia O2 sensor delivers precise oxygen control.

**Infrared CO2 Sensor**
- The single beam, dual detector IR CO2 Sensor offers continuous calibration for excellent control, accuracy and stability.

**Dual Heat Sterilisation**
- Two independent heaters enable cell culturing to continue uninterrupted during sterilization.

**Ultra-low temperature freezers**
- Ultra-low temperature freezers (-150°C, -86°C)

**Biomedical Freezers**
- Biomedical Freezers (-40°C/-30°C to -20°C)

**Pharmaceutical Refrigerators**
- Pharmaceutical Refrigerators (+4°C)

**Blood Bank Refrigerators**
- Blood Bank Refrigerators (+4°C)

**Biomedical Freezers**
- Various function such as logging the temperature history, and setting up passwords and alarms can all be managed on the screen.

**Inverted CO2 Sensors**
- The single beam, dual detector IR CO2 Sensor offers continuous calibration for excellent control, accuracy and stability.

**Infrared CO2 Sensors**
- Two independent heaters enable cell culturing to continue uninterrupted during sterilization.

**Zirconia O2 Sensors**
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Preservation

TwinGuard

The most secure ultra-low temperature freezers for the storage of high value samples

-86°C

ULT with Dual Cooling

-70°C TwinGuard

Temperature

Chamber temp. (ºC)

-20

-40

-60

-80

-100

0 1 2 3 4 5 6 7 8 9 10 11 12 (hour)

-20

-40

-60

-80

0 1 2 3 4 5 6 7 8 9 10 11 12 (hour)

Pull-up while a power failure

Single compressor operation (kept at approx. -70°C)

Time

When sample security and peace of mind are of paramount importance, put your trust in TwinGuard ultra low freezers.

• An optimal Dual Cooling System provides an unparalleled level of safety and added peace of mind through the use of two independent refrigeration systems.

• ECO mode overlaps refrigeration cycles to reduce energy consumption.

• Advanced space-saving VIP PLUS technology (compared to our conventional models).

• Graphical LCD display with data monitoring and data log exported by USB.

• Available in Upright and Chest models.

EzLatch door handle newly developed based on human engineering

EzLatch is designed for secure door opening/closing with minimum strength as the name suggests and makes access to stored samples easier.

Ultimate Sample Protection

Unlike conventional ultra low freezers, TwinGuard ULT freezers have two independent refrigeration systems to provide the highest levels of sample security. Should one system unexpectedly fail, the other will maintain a temperature in the -70°C range ensuring that the integrity of irreplaceable and potentially life-saving samples are not put at risk.

Safe and Secure Extra-Large Capacity Ultra-Low Freezer with Dual Cooling System

Secure storage with new dual cooling system

The Dual Cooling system is newly designated to securely store valuable biological samples. It consists of two individual compressors to provide a reliable -86°C ultra-low temperature environment. Should unexpected failure occur in one cooling circuit, the other will maintain at least -70°C.

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EzLatch is designed for secure door opening/closing with minimum strength as the name suggests and makes access to stored samples easier.
**Eco operation and Energy saving**

Unlike conventional ultra low freezers, TwinGuard ULT freezers ECO ULT freezers use natural hydrocarbon (HC) refrigerants to provide minimal energy consumption, reduced environmental impact and substantially lower running costs. HC refrigerants have a high latent heat of evaporation making them much more efficient at removing heat from the freezer chamber than conventional refrigerants, resulting in up to a 55% reduction in energy consumption and costs. These refrigerants also have an extremely low Global Warming Potential, helping organizations to meet environmental objectives.

**VIP PLUS**

- **Eco operation and Energy saving**
  - When low electrical running costs and environmental considerations are of paramount importance, put your trust in VIP ECO and PRO ECO ULT freezers.
  - New heat exchanger design for greater surface area contact and overall efficiency.
  - Advanced space-saving VIP PLUS Insulation (compared to our conventional models).
  - Graphical LCD display with data monitoring and data log exported by USB (for MDF-DU502VH/MDF-DU702VH/MDF-DU901VHL).
  - Class IIa Medical Device certified quality (Certification itself for Europe area only to comply with European regulations).

**VIP**

- **Excellent reliability and uniformity within an optimal footprint**
  - Unlike conventional ultra low freezers, TwinGuard ULT freezers VIP series contain densely packed, open cell foam insulation under the vacuum panel. This configuration dramatically enhanced the insulation capability of the freezer while reducing the wall thickness from 140mm to 70mm, and achieved nearly 30% more storage capacity than conventional insulated freezers. The VIP Plus achieved 4 times stronger thermal resistance with more rigid foam polyurethane while keeping the same thickness of 70mm.

**Perfomance**

- **VIP PLUS**
  - Large color LCD touchpanel is accurately controlled even with a gloved hand, while the USB port makes transferring logged data of product’s operational status to a PC convenient.

**Innovative V.I.P.* Technology**

VIP is the innovative insulation technology developed by PHC. VIP series contain densely packed, open cell foam insulation under the vacuum panel. This configuration dramatically enhanced the insulation capability of the freezer while reducing the wall thickness from 140mm to 70mm, and achieved nearly 30% more storage capacity than conventional insulated freezers. The VIP Plus achieved 4 times stronger thermal resistance with more rigid foam polyurethane while keeping the same thickness of 70mm.

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**Model No.**

- MDF-DU900H
- MDF-DU900VC
- MDF-DU901VHL
- MDF-DU901VHA

**Temperature Control Range**

- –86°C to –50°C

**Effective Capacity**

- 528 L

**External Dimensions (W x D x H)**

- 1010 x 600 x 1400 mm

**Net Weight**

- 328 kg

---

**Model No.**

- MDF-DU100V
- MDF-DU150V

**Temperature Control Range**

- –86°C

**Effective Capacity**

- 845 L

**External Dimensions (W x D x H)**

- 1150 x 870 x 1993 mm

**Net Weight**

- 382 kg
**Preservation Incubation**

**MDF-1156**
- Model No.: MDF-1156
- Temperature Control Range: –150°C to –125°C
- Effective Capacity: 231 litres
- External Dimensions (W x D x H): 1730 x 765 x 1010 mm
- Internal Dimensions (W x D x H): 760 x 495 x 615 mm
- Net Weight: 318 kg

**MDF-1156ATN**
- ATN: LN2 back-up, Temperature recorder

**MDF-C2156VAN**
- Model No.: MDF-C2156VAN
- Temperature Control Range: –152°C to –130°C
- Effective Capacity: 128 litres
- External Dimensions (W x D x H): 1400 x 800 x 945 mm
- Internal Dimensions (W x D x H): 500 x 450 x 572 mm
- Net Weight: 265 kg

**MDF-C8V1**
- Model No.: MDF-C8V1
- Temperature Control Range: –80°C to –60°C
- Effective Capacity: 84 litres
- External Dimensions (W x D x H): 550 x 685 x 945 mm
- Internal Dimensions (W x D x H): 405 x 490 x 425 mm
- Net Weight: 70 kg

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**Cryogenic Freezers**

The most uniform storage temperatures for cryopreservation solutions:

VIP –86°C / –80°C

**Excellent reliability and uniformity within an optimal footprint**

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**Optional Accessories** (for MDF series)

- **Small Inner Door Kits**
- **Liquid CO2 Backup Kits**
- **Temperature Recorders**

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**Temperature Recorders**

- **2-Month Strip Chart Recorder**
  - Recording range: -100°C to +50°C
- **32-Day Strip Chart Recorder**
  - Recording range: -170°C to +30°C
- **7-Day Circular Chart Recorder**
  - Recording range: -100°C to +40°C

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**Liquid CO2 Backup Kits**

- **Liquid N2 Backup Kit**

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**Small Inner Door Kits**

- **MDF-5ID-PW** (for MDF-U54V, MDF-U55V)
- **MDF-7ID-PW** (for MDF-U74V)
- **MDF-5ID4-PW/MDF-5ID5-PW** (for MDF-DU502VX, MDF-DU502VXC, MDF-DU502VH)
- **MDF-7ID-PW** (for MDF-DU302VX, MDF-DU502VX, MDF-DU502VXC, MDF-DU502VH)
- **CVK-UB2-PW** (for MDF-DU300H, MDF-U33V, MDF-U54V, MDF-U55V, MDF-U74V, MDF-DU900V, MDF-DU900VC, MDF-C8V1)
- **CVK-UBN2-PW** (for MDF-U33V, MDF-U54V, MDF-U55V, MDF-U74V)
- **CVK-UB4-PW** (for MDF-C8V1, MDF-UBK-PW)
- **CVK-UB5-PW** (for MDF-DC500VX/MDF-DC700VX/MDF-DC700VXC)
- **CVK-UB6B-PW** (for MDF-DU900V, MDF-DU900VC)

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**Temperature Recorders**

- **MTR-85H-PW**
- **MTR-155H-PW**
- **MTR-G85A-PA/MTR-G85C-PW**
- **MTR-C8-PW**
- **MTR-DU700SF-PW**
- **MDF-S3085-PW**

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**Sensor Cover**

- **MTR-CL-PW**
- **MTR-CE-PW**
- **MTR-CE-PW**
- **MTR-CL-PW**
- **MTR-CL-PW**
- **MTR-CL-PW**
- **MTR-CL-PW**
### Biomedical Freezers

**Preservation**

**MDF Biomedical Freezers**

Stable -30°C environment with extensive storage possibilities.

- **MDF-MU 339**
  - Effective Capacity: 479 L
  - Temperature Control Range: -30°C to -20°C
  - Net Weight: 132 kg
  - Internal Dimensions: 420 x 552 x 157 mm
  - Basket: 6 pieces per set

- **MDF-MU 539**
  - Effective Capacity: 504 L
  - Temperature Control Range: -30°C to -20°C
  - Net Weight: 163 kg
  - Internal Dimensions: 649 x 614 x 600 mm
  - Basket: 12 pieces per set

### Biomedical ECO Freezers

Cost-saving and environmentally friendly.

**MDF Biomedical ECO Freezer**

- **MDF-U 731**
  - Effective Capacity: 690 L
  - Temperature Control Range: -30°C to -20°C
  - Net Weight: 155 kg
  - Internal Dimensions: 793 x 770 x 1802 mm
  - Basket: 12 pieces per set

### Optional Accessories (for MDF series)

- **Recorders**
  - 32-Day Strip Chart Recorder
  - Recording range: -30°C to +40°C
  - 9-Day Circular Chart Recorder
  - Recording range: -10° to +40°C

- **Temperature Recorders**
  - MPR-S30 - PW
  - MPR-S7 - PW

- ** baskets**
  - 14 cases are needed to fill the entire cabinet.

**Power to counter frequent door openings**

**MDF Biomedical Freezers**

- **MDF-U 731**
  - Effective Capacity: 763 L
  - Temperature Control Range: -30°C to -20°C
  - Net Weight: 235 kg
  - Internal Dimensions: 790 x 440 x 715 mm

**MDF Biomedical Freezers**

- **MDF-U 5412**
  - Effective Capacity: 426 L
  - Temperature Control Range: -30°C to -20°C
  - Net Weight: 144 kg
  - Internal Dimensions: 614 x 709 x 1620 mm

**MDF Biomedical Freezers**

- **MDF-U 5312**
  - Effective Capacity: 426 L
  - Temperature Control Range: -40°C to -15°C
  - Net Weight: 122 kg
  - Internal Dimensions: 650 x 700 x 1370 mm

**MDF Biomedical Freezers**

- **MDF-U 5312**
  - Effective Capacity: 658 L
  - Temperature Control Range: -30°C to -20°C
  - Net Weight: 213 kg
  - Internal Dimensions: 658 x 607 x 1272 mm

**MDF Biomedical Freezers**

- **MDF-U 5412**
  - Effective Capacity: 804 L
  - Temperature Control Range: -30°C to -20°C
  - Net Weight: 285 kg
  - Internal Dimensions: 650 x 700 x 2070 mm
A stable temperature environment is important for the storage of your precious drugs and samples. However, household refrigerators do not offer a stable temperature environment due to relatively simple construction. PHCbi pharmaceutical, laboratory & blood bank refrigerators employ forced air circulation and sophisticated plenum systems to realize a uniformed temperature throughout the chamber even under a changing ambient temperature environment.

**Inside Temperature of Household Refrigerator**

- Typical Cooling System of Household Refrigerator

During this time, the chamber air temperature rises. In regular refrigerators it is possible for the chamber temperature to fall below 0°C depending on the ambient temperature which may cause the freezing of medicines and medicines. The auto defrost system turns on every 7 – 8 hours.

- Uniform cold air flow distribution throughout the chamber
- Ensure temperature uniformity of big capacity chamber

The cycle defrost system turns on the defrost heater during each off period of the compressor only when needed. This control method prevents large temperature rises.

**Temperature Stability – temperature Uniformity**

- Multi air-flow plenum cooling system

### Outside Dimensions of Main Cabinet Only

- See dimension drawings on flyers showing handles and other external projections.

**Laboratory Refrigerator**

- Sliding Door Type

- Model No.
  - MPR-514
  - MPR-514R
  - MPR-S150H
  - MPR-S163
  - MPR-S300H

**Temperature Control Range**

- -2°C to 14°C

**Effective Capacity**

- (Approx.)

**Net Weight**

- (Approx.)

**Dimension**

- (W x D x H)

*External dimensions of main cabinet only - see dimension drawings on flyers showing handles and other external projections.

**Pharmaceutical Refrigerators**

- Sliding Door Type

- Model No.
  - MPR-514
  - MPR-514R
  - MPR-514H
  - MPR-514L
  - MPR-522

**Temperature Control Range**

- 2°C to 14°C

**Effective Capacity**

- (Approx.)

**Net Weight**

- (Approx.)

**Dimension**

- (W x D x H)

*External dimensions of main cabinet only - see dimension drawings on flyers showing handles and other external projections.

**Laboratory Freezers**

- Swing Door Type

- Model No.
  - MPR-722
  - MPR-722R

**Temperature Control Range**

- 2°C to 23°C

**Effective Capacity**

- (Approx.)

**Net Weight**

- (Approx.)

**Dimension**

- (W x D x H)

*External dimensions of main cabinet only - see dimension drawings on flyers showing handles and other external projections.

**Preservation Incubation**

- Special Cabinet Type

- Model No.
  - MPR-1014
  - MPR-1014R

**Temperature Control Range**

- 2°C to 14°C

**Effective Capacity**

- (Approx.)

**Net Weight**

- (Approx.)

**Dimension**

- (W x D x H)

*External dimensions of main cabinet only - see dimension drawings on flyers showing handles and other external projections.

**Multi Air-Flow Plenum Cooling System**

- Form cold air flow distribution throughout the chamber

- Temperature uniformity of big capacity chamber
Preservation

**MPR Pharmaceutical Refrigerators with Freezer**

Providing a complete storage solution; Refrigerator and freezer in one unit

**Temperature Control Range**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Temperature Control Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPR-N250FH*</td>
<td>4°C to 14°C, -30°C to -20°C</td>
</tr>
<tr>
<td>MPR-N250FSH*</td>
<td>4°C to 14°C, -30°C to -20°C</td>
</tr>
</tbody>
</table>

**Effective Capacity**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Effective Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPR-N250FH*</td>
<td>130 L</td>
</tr>
<tr>
<td>MPR-N250FSH*</td>
<td>130 L</td>
</tr>
</tbody>
</table>

Optional Accessories

- Preservation
- Incubation

**External Dimensions**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>External Dimensions (W x D x H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPR-N250FH*</td>
<td>510 x 640 x 1810 mm</td>
</tr>
<tr>
<td>MPR-N250FSH*</td>
<td>510 x 640 x 1810 mm</td>
</tr>
</tbody>
</table>

**Additional Accessories**

- Additional Shelf for Freezer
- Purity Glass Door
- Inventory Drawer

**MBR Blood Bank Refrigerators**

Robust design for safest storage of whole blood

**External Dimensions**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>External Dimensions (W x D x H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBR-1072DH*</td>
<td>710 x 550 x 1240 mm</td>
</tr>
<tr>
<td>MBR-205GR</td>
<td>700 x 550 x 1240 mm</td>
</tr>
<tr>
<td>MBR-504DH</td>
<td>1000 x 600 x 1835 mm</td>
</tr>
</tbody>
</table>

**Internal Dimensions**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Internal Dimensions (W x D x H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBR-1072DH*</td>
<td>340 L</td>
</tr>
<tr>
<td>MBR-205GR</td>
<td>320 x 260 x 700 mm</td>
</tr>
<tr>
<td>MBR-504DH</td>
<td>622 L</td>
</tr>
</tbody>
</table>

**Inventory Drawer**

- For MBR-1072DH, MBR-205GR, MBR-504DH

**Net Weight**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Net Weight (Approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBR-1072DH*</td>
<td>179 kg</td>
</tr>
<tr>
<td>MBR-205GR</td>
<td>179 kg</td>
</tr>
<tr>
<td>MBR-504DH</td>
<td>186 kg</td>
</tr>
</tbody>
</table>

Robust design for safest storage of whole blood

**Performance**

- Chart Recorder
- Inventory Drawer

**Additional Features**

- 32-Day Strip Chart Recorder
- 7-Day Circular Chart Recorder

**External Mounting Power Failure Alarm**

- Battery box

**Name Card Holder**

- MPR-250SF-PW

**Light Shielding Plate**

- MPR-250SF-PW

**Additional Shell for Freezer**

- MPR-250SF-PW

**Shading Glass Door**

- MPR-504SF-PW

**Container for Freezer**

- MPR-450SF-PW

**Battery Box**

- MPR-450SF-PW
MCO CO₂ Incubators

Optimising cell culture outcomes and reproducibility

Ambient temp. +5°C to 50°C

The unit employs an integrated tray structure without shelf supports thereby reducing the number of interior components by approximately 80%* and significantly saving cleaning time needed when changing cells for incubation.

Increase in cleaning and storage efficiency with Integrated Tray Catches

Compared to current products, the required cleaning time and task are

1/5

Interior components of MCO-170AIC

Interior components of MCO-19AIC

Tray space has increased by approximately 25%* while using virtually the same installation space used in conventional models. Four more 100ø dishes can be set up than when using conventional models.

In 2 hours and half (approx.)

H₂O₂ Decontamination

Solving issues in dry heat sterilisation

Dual Heat Sterilisation

The high-speed decontamination system using H₂O₂, that is also used for in regenerative medicine equipment can complete the entire decontamination process in approximately 135 minutes (about 2 hours including preparation time), enhancing work efficiency for researchers and enabling complete decontamination within the unit.

No more problems during dry heat sterilisation: such as interior components removal during sterilisation; temperature/CO₂ density composition before restart; impacts to temperature when stacking two boxes; and current consumption.

**H₂O₂ measurement. Decontamination time differs depending on time required for cabinet cleaning and interior parts installation.

* Standard for Model No. Including UV  
*2 Standard for Model No. Including UVH

<table>
<thead>
<tr>
<th>Model No.</th>
<th>MCO-170ACL</th>
<th>MCO-170AC</th>
<th>MCO-170ACL</th>
<th>MCO-170AC</th>
<th>MCO-170ACL</th>
<th>MCO-170AC</th>
<th>MCO-19ACL</th>
<th>MCO-19AC</th>
<th>MCO-19ACL</th>
<th>MCO-19AC</th>
<th>MCO-19ACL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Control Range</td>
<td>Ambient temperature +5°C to 50°C (AT +5°C to 35°C)</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
</tr>
<tr>
<td>CO₂ Setting Range</td>
<td>0% to 20%</td>
<td>0% to 20%</td>
<td>0% to 20%</td>
<td>0% to 20%</td>
<td>0% to 20%</td>
<td>0% to 20%</td>
<td>0% to 20%</td>
<td>0% to 20%</td>
<td>0% to 20%</td>
<td>0% to 20%</td>
<td>0% to 20%</td>
</tr>
<tr>
<td>Chamber Humidity</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
<td>95 ±5% R.H.</td>
</tr>
<tr>
<td>Interior Volume</td>
<td>165 litres</td>
<td>165 litres</td>
<td>165 litres</td>
<td>165 litres</td>
<td>165 litres</td>
<td>165 litres</td>
<td>165 litres</td>
<td>165 litres</td>
<td>165 litres</td>
<td>165 litres</td>
<td>165 litres</td>
</tr>
<tr>
<td>External Dimensions (W x D x H)</td>
<td>490 x 523 x 665 mm</td>
<td>490 x 523 x 665 mm</td>
<td>490 x 523 x 665 mm</td>
<td>490 x 523 x 665 mm</td>
<td>490 x 523 x 665 mm</td>
<td>490 x 523 x 665 mm</td>
<td>490 x 523 x 665 mm</td>
<td>490 x 523 x 665 mm</td>
<td>490 x 523 x 665 mm</td>
<td>490 x 523 x 665 mm</td>
<td>490 x 523 x 665 mm</td>
</tr>
<tr>
<td>Net Weight (Approx.)</td>
<td>74 kg</td>
<td>74 kg</td>
<td>74 kg</td>
<td>74 kg</td>
<td>74 kg</td>
<td>74 kg</td>
<td>74 kg</td>
<td>74 kg</td>
<td>74 kg</td>
<td>74 kg</td>
<td>74 kg</td>
</tr>
</tbody>
</table>

* External dimensions of each cabinet only - see dimension drawings on parts showing handles and other external projections.

*1 Standard for Model No. Including UV  
*2 Standard for Model No. Including UVH

Compared to MCO-19AIC

** Approx. 25% more storage

4 additional 100ø dishes can be set up

100ø 20 dishes

Tray from MCO-170AIC

Tray from MCO-19AIC

Interior components: 5

Interior components: 26

Approx. 80% fewer interior components

Approx. 25% more storage

4 additional 100ø dishes can be set up

100ø 20 dishes

100ø 16 dishes

In 2 hours and half (approx.)

H₂O₂ Decontamination

Solving issues in dry heat sterilisation

Dual Heat Sterilisation

The high-speed decontamination system using H₂O₂, that is also used for in regenerative medicine equipment can complete the entire decontamination process in approximately 135 minutes (about 2 hours including preparation time), enhancing work efficiency for researchers and enabling complete decontamination within the unit.

No more problems during dry heat sterilisation: such as interior components removal during sterilisation; temperature/CO₂ density composition before restart; impacts to temperature when stacking two boxes; and current consumption.

**H₂O₂ measurement. Decontamination time differs depending on time required for cabinet cleaning and interior parts installation.

* Compares MCO-170ACL to MCO-19ACL

**PHCbi measurement. Decontamination time differs depending on time required for cabinet cleaning and interior parts installation.
Optional Accessories

- **Stacking Kits**
  - MCO-170PS-PW
  - MCO-220SB-PW
  - MCO-220S-B-PW
  - MCO-230S-B-PW
  - MCO-50S-B-PW
  - MCO-80S-B-PW

- **Roller Bases**
  - MCO-170BB-PW [for MCO-170AC series]
  - MCO-50BB-PW [for MCO-170AC series]
  - MCO-230BB-PW [for MCO-230AC series]
  - MCO-230S-B-PW [for MCO-230AC series]
  - MCO-80BB-PW [for MCO-80IC series]

- **Roller Bottle Rack**
  - MCO-506M
  - MCO-230M

**Other Options**

- **CO₂ Gas Tank Switcher**

- **Gas Regulator**
  - MCO-802-PW [for MCO-170AC series, MCO-230AC series, MCO-170M series, MCO-230M series]

- **STD Gas Auto Calibration Kit**

- **Tray (same as the standard accessory)**
  - MCO-20ST-PW [for MCO-230AIC series]

- **Tray (Reinforced Tray)**
  - MCO-220ST-PW [for MCO-230AIC series]

- **Half Tray**
  - MCO-50ST-PW [for MCO-50AIC series]

- **H₂O₂ Decontamination Control Board**

- **UV System Set**
  - MCO-170UVS-PW [for MCO-170AIC series, MCO-170AC series, MCO-170M series, MCO-50AIC series, MCO-50M series]

- **H₂O₂ Generator**
  - MCO-HP-PW [for MCO-170AIC series, MCO-170AC series, MCO-170M series]

- **Electric Door Lock**
  - MCO-210EL-PW [for MCO-230AIC series]

- **Small Door**
  - MCO-35ST-PW [for MCO-170AIC series, MCO-230AIC series]

- **Auto Water Supply System**
  - MCO-8AS-PW [for MCO-80IC series]

- **H₂O₂ Reactant**

- **Interface Board**
  - MCO-2102-L-PW [for MCO-230AIC series, MCO-230AC series]

- **Interface Board (10 mA Transmitter)**
**Incubation**

MIR Cooled Incubators

All-round performance

**MIR-154**

93 litres

580 x 595 x 820 mm

450 x 460 x 450 mm

50 kg

**MIR-H163**

Temperature Control Range

Ambient temp. +5°C to 60°C

Humidity Control Range

50 — 95% RH

**MIR-254**

153 litres

730 x 645 x 870 mm

600 x 510 x 500 mm

67 kg

**MIR-H263**

Temperature Control Range

Ambient temp. +5°C to 80°C

Humidity Control Range

50 — 95% RH

**MIR-554**

294 litres

760 x 700 x 1835 mm

520 x 490 x 1135 mm

226 kg

**MIR-352H**

Temperature Control Range

0°C to 50°C

Humidity Control Range

50 — 95% RH

This holds an ultrasound humidifier controlled by a PID controller, making it able to control the humidity of an area of 60 — 90% RH (fluorescent light off). Furthermore, it is able to humidify the chamber with the L-shaped humidifying pipe installed at the bottom of the chamber.

**Optional Accessories**

- **Stacking Kit**
  - MIR-154SB-PW (for MIR-154, MIR-254)
  - MIR-554BP-PW (for MIR-554)
- **Inner Door**
  - MIR-154ID-PW (for MIR-154)
  - MIR-254BP-PW (for MIR-254)
- **Hasp Lock Kit**
  - MIR-LP-PW (for MIR-154, MIR-254)
- **Hasp Lock Kit**
  - MIR-LP-PW (for MIR-154, MIR-254)
  - MIR-L15-PK (for MIR-154, MIR-254, MIR-554)
  - MIR-L15-PE (for MIR-154, MIR-254, MIR-554)
  - MIR-L15-PA (for MIR-154, MIR-254, MIR-554)
- **Interface Board**
  - MTR-L03-PW or MTR-480-PW (for MLR-352, MLR-352H)
  - MTR-5000 (data acquisition system) users.

**MLR Climate Chambers**

Versatile Climate Chambers

**MLR-352**

Temperature Control Range

5°C to 50°C (Light OFF)

10°C to 50°C (Light ON)

Humidity Control Range

60 to 90% RH (Light OFF)

55 to 85% RH (Light ON)

**MLR-352H**

Temperature Control Range

0°C to 50°C (Light OFF)

10°C to 50°C (Light ON)

**Optional Accessories**

- **Stacking Kit**
  - MIR-154SB-PW (for MIR-154, MIR-254)
  - MIR-554BP-PW (for MIR-554)
- **Inner Door**
  - MIR-154ID-PW (for MIR-154)
  - MIR-254BP-PW (for MIR-254)
- **Hasp Lock Kit**
  - MIR-LP-PW (for MIR-154, MIR-254)
- **Hasp Lock Kit**
  - MIR-L15-PK (for MIR-154, MIR-254, MIR-554)
  - MIR-L15-PE (for MIR-154, MIR-254, MIR-554)
  - MIR-L15-PA (for MIR-154, MIR-254, MIR-554)
- **Interface Board**
  - MTR-L03-PW or MTR-480-PW (for MLR-352, MLR-352H)
  - MTR-5000 (data acquisition system) users.

**MIR Heated Incubators**

Intuitive and easy operable Heated Incubators

**MIR-154**

123 litres

600 x 500 x 1018 mm

108 kg

**MIR-254**

238 litres

700 x 580 x 1618 mm

195 kg

**MIR-554**

406 litres

800 x 832 x 1810 mm

235 kg

**MIR-154**

Temperature Control Range

-10°C to 60°C

Humidity Control Range

50 — 95% RH

**MIR-254**

Temperature Control Range

-10°C to 60°C

Humidity Control Range

50 — 95% RH

**MIR-554**

Temperature Control Range

-10°C to 60°C

Humidity Control Range

50 — 95% RH

* External dimensions of main cabinet only - see dimension drawings on flyers showing handles and other external projections.