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

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.

## EZlatch Easy Acces 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 improve productivity.

## Dual IR 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.

## Preservation

<table>
<thead>
<tr>
<th>Client</th>
<th>Typical needs</th>
<th>Storage temperature</th>
<th>Ultra-low temperature freezers</th>
<th>Biomedical Freezers</th>
<th>Pharmaceutical Refrigerators</th>
<th>Blood Bank Refrigerators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Universities, private companies, laboratories/research institutions</td>
<td>-80˚C, -150˚C</td>
<td>5 — 10</td>
<td>11 — 12</td>
<td>13 — 16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preservation of cells, microbes, specimens</td>
<td>-20˚C to -30˚C/-40˚C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hospitals, universities, blood centers</td>
<td>+4˚C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drugs, blood*, reagents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Blood must be preserved in Blood Bank Refrigerator.

## Incubation

<table>
<thead>
<tr>
<th>Client</th>
<th>Typical needs</th>
<th>CO2 Incubators</th>
<th>Cooled Incubators</th>
<th>Climate Chambers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universities, private companies, hospitals</td>
<td>Animal cell incubation (temperature, humidity, gas density)</td>
<td>17 — 20</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>Universities, private companies, hospitals, waterworks (water quality inspection)</td>
<td>Incubation of microorganisms (temperature)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universities, private companies, agricultural experiment stations</td>
<td>Incubation of plants (temperature, illuminance, humidity)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Sterilization

<table>
<thead>
<tr>
<th>Client</th>
<th>Typical needs</th>
<th>Laboratory Autoclaves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universities, private companies, experiment/research institutions, hospitals</td>
<td>Guaranteed sterilization process</td>
<td>22</td>
</tr>
</tbody>
</table>

*Blood must be preserved in Blood Bank Refrigerator.
**Preservation**

**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.

**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.

**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.

**Independent Systems**

Efficient ultra-low cooling is achieved through two independent evaporator circuits surrounding the interior chamber.
VIP ECO

**Cost-saving and environmentally friendly sample storage**

-86°C

<table>
<thead>
<tr>
<th>Model No</th>
<th>Temperature Control Range</th>
<th>Effective Capacity</th>
<th>External Dimensions (W x D x H)</th>
<th>Internal Dimensions (W x D x H)</th>
<th>Net Weight (Approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-DU300H</td>
<td>4°C to -86°C</td>
<td>333 liters</td>
<td>490 x 600 x 1140 mm</td>
<td>320 x 680 x 1100 mm</td>
<td>261 kg</td>
</tr>
<tr>
<td>MDF-DU502VH</td>
<td>4°C to -86°C</td>
<td>528 liters</td>
<td>750 x 870 x 1860 mm</td>
<td>650 x 1380 x 1380 mm</td>
<td>346 kg</td>
</tr>
<tr>
<td>MDF-DU702VH</td>
<td>4°C to -86°C</td>
<td>728 liters</td>
<td>1010 x 870 x 2010 mm</td>
<td>950 x 1520 x 1520 mm</td>
<td>376 kg</td>
</tr>
</tbody>
</table>

VIP Plus

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

-86°C

<table>
<thead>
<tr>
<th>Model No</th>
<th>Temperature Control Range</th>
<th>Effective Capacity</th>
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<th>Net Weight (Approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-DU300V</td>
<td>-50°C to –86°C</td>
<td>519 liters</td>
<td>845 x 600 x 1400 mm</td>
<td>670 x 1350 x 1350 mm</td>
<td>305 kg</td>
</tr>
<tr>
<td>MDF-DU502VH/MDF-DU502VHL</td>
<td>-50°C to –86°C</td>
<td>729 liters</td>
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</table>

**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.

VIP Plus

**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.

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).
- Class IIa Medical Device certified quality (Certification itself for Europe area only to comply with European regulations).

**Energy Efficient, Balanced Power Smart compressors, natural refrigerants and integrated electronics combine to lower your facility’s operating costs.** Freezer operation is managed by the practical balance of temperature performance and energy management.

VIP Plus

**Reliable controllability and data log function**

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.

**Touch**

**Barrier film bag**
**VIP PLUS**
**Steel**
**Polyurethane foam**

**Exterior**

**Interior**

<table>
<thead>
<tr>
<th>Exterior</th>
<th>Interior</th>
</tr>
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<tbody>
<tr>
<td>Barrier film bag</td>
<td>Polyurethane foam</td>
</tr>
<tr>
<td>VIP PLUS</td>
<td>Steel</td>
</tr>
</tbody>
</table>

**VIP PLUS ECO**

**Eco operation and Energy saving**

VIP ECO ULT Freezer

**Cost-saving and environmentally friendly sample storage**

-86°C

**Conventional model**

<table>
<thead>
<tr>
<th>Model No</th>
<th>Temperature Control Range</th>
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</tbody>
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**VIP PLUS ECO**

**Eco operation and Energy saving**

VIP ECO ULT Freezer

**Cost-saving and environmentally friendly sample storage**

-86°C

**Conventional model**

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<tr>
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<td>729 liters</td>
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<td>1010 x 1520 x 1520 mm</td>
<td>378 kg</td>
</tr>
</tbody>
</table>
Cryogenic Freezers

The most uniform storage temperatures for cryopreservation solutions.

-150 / -152°C

**Optional Accessories**

VIP MDF-794

- Excellent reliability and uniformity within an optimal footprint.
- 2 small inner doors make 1 set. (2 sets are needed if all small inner door options are selected).

**Effective Capacity**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Effective Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-1156ATN</td>
<td>128 L</td>
</tr>
<tr>
<td>MDF-594</td>
<td>231 L</td>
</tr>
<tr>
<td>MDF-794AT</td>
<td>701 L</td>
</tr>
</tbody>
</table>

**Temperature Control Range**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Temperature Control Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-594</td>
<td>-60°C to -80°C</td>
</tr>
<tr>
<td>MDF-594AT</td>
<td>-130°C to -150°C</td>
</tr>
<tr>
<td>MDF-794AT</td>
<td>-130°C to -150°C</td>
</tr>
<tr>
<td>MDF-1156ATN</td>
<td>-130°C to -150°C</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Internal Dimensions (W x D x H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-594</td>
<td>550 x 510 x 945 mm</td>
</tr>
<tr>
<td>MDF-594AT</td>
<td>1280 x 500 x 762 mm</td>
</tr>
<tr>
<td>MDF-794AT</td>
<td>1730 x 765 x 1010 mm</td>
</tr>
<tr>
<td>MDF-1156ATN</td>
<td>2570 x 770 x 1070 mm</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Model No.</th>
<th>External Dimensions (W x D x H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-594</td>
<td>2010 x 770 x 1070 mm</td>
</tr>
<tr>
<td>MDF-594AT</td>
<td>1400 x 800 x 945 mm</td>
</tr>
<tr>
<td>MDF-794AT</td>
<td>2310 x 765 x 1010 mm</td>
</tr>
<tr>
<td>MDF-1156ATN</td>
<td>2570 x 770 x 1070 mm</td>
</tr>
</tbody>
</table>

**Net Weight (Approx.)**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Net Weight (Approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-594</td>
<td>265 kg</td>
</tr>
<tr>
<td>MDF-594AT</td>
<td>335 kg</td>
</tr>
<tr>
<td>MDF-794AT</td>
<td>318 kg</td>
</tr>
<tr>
<td>MDF-1156ATN</td>
<td>301 kg</td>
</tr>
</tbody>
</table>

**LCO2 back-up, Temperature recorder**

**LN2 back-up, Temperature recorder**

**Temperature Recorders**

- 2-month Strip Chart Recorders
- 1-day/7-day/32-day Circular Chart Recorders
- 2-day/7-day/32-day Strip Chart Recorders
### MDF Biomedical Freezers

**Preservation**

- **Stable -30°C environment with extensive storage possibilities**

#### MDF-U731M
- **Separate upper/lower compartments**
- **Effective Capacity:** 426 liters
- **Temperature Control Range:** –30 °C

#### MDF-U5412H
- **Effective Capacity:** 482 liters
- **Temperature Control Range:** –30 °C

#### MDF-U5312
- **Effective Capacity:** 504 liters
- **Temperature Control Range:** –30 °C

#### MDF-U443
- **Effective Capacity:** 690 liters
- **Temperature Control Range:** –30 °C

### MDF Biomedical Eco Freezers

**Cost-saving and environmentally friendly**

#### MDF-U5412H
- **Effective Capacity:** 482 liters
- **Temperature Control Range:** –20°C to –40°C

#### MDF-U5312
- **Effective Capacity:** 504 liters
- **Temperature Control Range:** –20°C to –40°C

### MDF Biomedical Freezers

**The ideal freezing environment for preservation**

#### MDF-U5412H
- **Effective Capacity:** 482 liters
- **Temperature Control Range:** –20°C to –40°C

#### MDF-U5312
- **Effective Capacity:** 504 liters
- **Temperature Control Range:** –20°C to –40°C

#### MDF-U443
- **Effective Capacity:** 690 liters
- **Temperature Control Range:** –20°C to –40°C

### Optional Accessories

**Power to counteract frequent door openings**

#### MDF-U5412H
- **External dimensions:** (W x D x H) 649 x 614 x 1262 mm
- **Net Weight:** 132 kg (PT) / 134 kg (PK, PR)

#### MDF-U5312
- **External dimensions:** (W x D x H) 625 x 607 x 1272 mm
- **Net Weight:** 132 kg (PT) / 134 kg (PK, PR)

### Temperature Recorders

#### 32-day Strip Chart Recorder
- **Recording range:** –40°C to +150°C

#### 2-month Strip Chart Recorder
- **Recording range:** –15°C to +50°C

#### 1-day/7-day/32-day Circular Chart Recorder
- **Recording range:** –10°C to +60°C

### Baskets

- **MDF-U5412H**
- **MDF-U5312**
- **MDF-U443**
- **MDF-U5412H**
- **MDF-U5312**
- **MDF-U443**

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**Preservation Incubation Sterilization**
## MPR/MBR

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 refrigerators employ a forced air circulation and sophisticated plenum systems to realize a uniform temperature throughout the chamber even under a changing ambient temperature environment.

### Inside Temperature of Household Refrigerator
- Typical Cooling System of Household Refrigerator

### Temperature Stability – temperature Uniformity
- Multi-air-flow plenum cooling system

- **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.

### MPR Pharmaceutical Refrigerators

#### Sliding Door Type

#### Swing Door Type

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Temperature Control Range</th>
<th>Effective Capacity</th>
<th>External Dimensions (W x D x H)</th>
<th>Internal Dimensions (W x D x H)</th>
<th>Net Weight (Approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPR-1014</td>
<td>2°C to 14°C</td>
<td>158 liters</td>
<td>800 x 465 x 1090 mm</td>
<td>720 x 300 x 725 mm</td>
<td>71 kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPR-1014R</td>
<td>2°C to 14°C</td>
<td>340 liters</td>
<td>800 x 465 x 1800 mm</td>
<td>720 x 350 x 1435 mm</td>
<td>100 kg</td>
</tr>
</tbody>
</table>

### MPR Pharmaceutical Refrigerators

#### Sliding Door Type

#### Swing Door Type

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>MPR-514</td>
<td>2°C to 14°C</td>
<td>489 liters</td>
<td>900 x 600 + (58) mm x 1790 mm</td>
<td>800 x 465 x 1300 mm</td>
<td>141 kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPR-514R</td>
<td>2°C to 14°C</td>
<td>486 liters</td>
<td>1440 x 830 x 1950 mm</td>
<td>1320 x 710 x 1500 mm</td>
<td>246 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Temperature Control Range</th>
<th>Effective Capacity</th>
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<th>Internal Dimensions (W x D x H)</th>
<th>Net Weight (Approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPR-1014</td>
<td>2°C to 14°C</td>
<td>174 liters</td>
<td>770 x 830 x 1955 mm</td>
<td>650 x 710 x 1500 mm</td>
<td>174 kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPR-722</td>
<td>2°C to 23°C</td>
<td>684 liters</td>
<td>1440 x 830 x 1950 mm</td>
<td>1320 x 710 x 1500 mm</td>
<td>246 kg</td>
</tr>
</tbody>
</table>

### Model No.

- **MPR-514**: 489 liters, 900 x 600 + (58) mm x 1790 mm, 800 x 465 x 1300 mm, 141 kg, Wire shelves type
- **MPR-722**: 684 liters, 1440 x 830 x 1950 mm, 1320 x 710 x 1500 mm, 246 kg, Wire shelves type
- **MPR-1014**: 174 liters, 770 x 830 x 1955 mm, 650 x 710 x 1500 mm, 174 kg, Wire shelves type

### Electrical Dimensions
- Only one FAN to cool down refrigerator and freezer
- The difference in the temperature between the upper and lower areas of the refrigerator section can be 10°C.

### Temperature Stability
- On one FAN to cool down refrigerator and freezer
- The difference in the temperature between the upper and lower areas of the refrigerator section can be 10°C.
### MPR Pharmaceutical Refrigerators with Freezer

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

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Refrigerator Capacity (W x D x H)</th>
<th>Freezer Capacity (W x D x H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPR-215F</td>
<td>176 liters 540 x 557 x 1794 mm</td>
<td>415 liters 600 x 680 x 1950 mm</td>
</tr>
<tr>
<td>MPR-414F</td>
<td>340 liters 800 x 640 x 1810 mm</td>
<td>340 liters 820 x 680 x 1950 mm</td>
</tr>
<tr>
<td>MPR-414FS</td>
<td>176 liters 540 x 557 x 1794 mm</td>
<td>415 liters 600 x 680 x 1950 mm</td>
</tr>
<tr>
<td>MPR-N450FH, MPR-N450FSH</td>
<td>720 x 516 x 913 mm</td>
<td>720 x 516 x 913 mm</td>
</tr>
</tbody>
</table>

**Temperature Control Range**

- Refrigerator: 2°C to 14°C
- Freezer: -20°C to -30°C

**Effective Capacity** (Approx.)

- Refrigerator: 1301 liters
- Freezer: 800 liters

**Net Weight**

- Refrigerator: 151 kg
- Freezer: 147 kg

---

### Optional Accessories (for MPR/MBR series)

#### Temperature Recorders

- **32-day Strip Chart Recorders**
  - MTR-4015LH-PE
  - MTR-4015LA-PA

- **2-month Strip Chart Recorder**
  - MTR-0621LH-PE
  - MTR-0621LH-PA

- **1-day/7-day/32-day Circular Chart Recorder**
  - MTR-85H-PW

- **32-day Strip Chart Recorder**
  - MTR-0350LA-PA
  - MTR-0350AC-PE

**Recorder Mounting Brackets**

- MPR-430-PW
  - MPR-215F
  - MPR-414F
  - MPR-414FS
  - MPR-N450FH
  - MPR-715F

- MPR-530-PW
  - MPR-513, MPR-533
  - MPR-514, MPR-534
  - MPR-515, MPR-535
  - MPR-516, MPR-536
  - MPR-N450FSH
  - MPR-715F

- MPR-530
  - MPR-513, MPR-533
  - MPR-514, MPR-534
  - MPR-515, MPR-535
  - MPR-516, MPR-536
  - MPR-N450FSH
  - MPR-715F

**Recorder Mounting Brackets**

- MPR-430-PW
  - MPR-215F
  - MPR-414F
  - MPR-414FS
  - MPR-N450FH
  - MPR-715F

- MPR-530-PW
  - MPR-513, MPR-533
  - MPR-514, MPR-534
  - MPR-515, MPR-535
  - MPR-516, MPR-536
  - MPR-N450FSH
  - MPR-715F

**External mounting power failure alarm**

- MPR-48B1-PW

- MPR-48B2-PW
  - (for MPR-N450FSH, MPR-N450FH)

---

### MBR Blood Bank Refrigerators

Robust design for safest storage of whole blood

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Refrigerator Capacity (W x D x H)</th>
<th>Freezer Capacity (W x D x H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBR-1072H</td>
<td>72 liters 800 x 640 x 1810 mm</td>
<td>622 liters 680 x 550 x 1500 mm</td>
</tr>
<tr>
<td>MBR-305GR</td>
<td>213 liters 770 x 550 x 1600 mm</td>
<td>622 liters 680 x 550 x 1500 mm</td>
</tr>
<tr>
<td>MBR-505GR</td>
<td>129 liters 650 x 490 x 1240 mm</td>
<td>622 liters 680 x 550 x 1500 mm</td>
</tr>
</tbody>
</table>

**Temperature Control Range**

- Refrigerator: 2°C to 14°C
- Freezer: –20°C to –30°C

**Effective Capacity**

- Refrigerator: 425 liters
- Freezer: 425 liters

**Net Weight (Approx.)**

- Refrigerator: 121 kg
- Freezer: 121 kg

---

**Recording Range**

- Refrigerator: -10°C to +40°C
- Freezer: -100°C to +40°C
MCO CO₂ Incubators

Optimising cell culture outcomes and reproducibility

MCO-170AICUV/MCO-170AICUVL
MCO-170AIC/MCO-170AICL
MCO-170AICUVH/MCO-170AICUVHL

Ambient temp. +5°C to 50°C

Increase in cleaning and storage efficiency with Integrated Tray Catches

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.

Compared to current products, the required cleaning time and task are approx. 1/5.

Interior components of MCO-170AIC

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.

Interior components: 5

In 2 hours and half (approx.)

H₂O₂ Decontamination

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.

Approx. 25% more storage

4 additional 100ø dishes can be set up

Solving issues in dry heat sterilisation

Dual Heat Sterilisation

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.

Approx. 11hrs at 180°C

*Compared to MCO-19AIC
**PHCbi measurement. Decontamination time differs depending on time required for cabinet cleaning and interior parts installation.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>MCO-170AIC</th>
<th>MCO-170AICUV/MCO-170AICUVL</th>
<th>MCO-170AICUVH/MCO-170AICUVHL</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>
</tr>
<tr>
<td>CO₂ Setting Range</td>
<td>0% to 25%</td>
<td>0% to 25%</td>
<td>0% to 25%</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>
</tr>
<tr>
<td>Interior Volume</td>
<td>165 L</td>
<td>49 litres</td>
<td>49 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>
</tr>
<tr>
<td>Internal Dimensions (W x D x H)</td>
<td>495 x 523 x 665 mm</td>
<td>495 x 523 x 665 mm</td>
<td>495 x 523 x 665 mm</td>
</tr>
<tr>
<td>Net Weight (Approx.)</td>
<td>79 kg (MCO-170AIC), 80 kg (MCO-170AICUV)</td>
<td>79 kg (MCO-170AIC), 80 kg (MCO-170AICUV)</td>
<td>79 kg (MCO-170AIC), 80 kg (MCO-170AICUV)</td>
</tr>
</tbody>
</table>

* External dimensions of each cabinet do not include dimension drawings of items such as handles and other external projections.

** Compared to MCO-19AIC

---

** Integrated H₂O₂ Decontamination System

** Integrated H₂O₂ Decontamination Tray Catches

** Integrated Dual Heat Sterilisation System

** Integrated Integrated Tray Catches

---

** Integrated Tray Catches
**Optional Accessories (for MCO series)**

- **Stacking Kits**
  - MCO-170AIC series
  - MCO-170AICL series
  - MCO-170AC series
  - MCO-170ACL series

- **Roller Bases**
  - MCO-170PS-PW
  - MCO-170SB-PW

- **Roller bottle rack mount**
  - MCO-230RB-PW
  - MCO-170RB-PW
  - MCO-80RB-PW

**Other Options (for MCO series)**

- **Gas regulator**
- **CO₂ gas tank switcher**
- **H₂O₂ decon board**
- **H₂O₂ reagent**
- **Auto water supply system**
- **Interface board**

**Multi-Gas Incubators**

- **MCO-170ML**
- **MCO-170M**
- **MCO-170AC**
- **MCO-170AIC**
- **MCO-230AIC**
- **MCO-80AIC**

**Temperature Control Range**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>MCO-170ML/MCO-170M</th>
<th>MCO-SM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior Volume</td>
<td>161 litres</td>
<td>49 litres</td>
</tr>
<tr>
<td>Chamber Humidity</td>
<td>161 litres</td>
<td>49 litres</td>
</tr>
<tr>
<td>CO₂ Setting Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature Control Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal Dimensions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>External Dimensions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Preservation**

- Incubation
- Sterilization

**Ambient temp. +5°C to 50°C**
**Incubation**

**MIR Cooled Incubators**

- All-round performance

**Temperature Control Range**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>MIR-H154</th>
<th>MIR-H254</th>
<th>MIR-H554</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior Dimension (W x D x H)</td>
<td>700 x 580 x 1018 mm</td>
<td>700 x 580 x 1018 mm</td>
<td>840 x 320 x 1670 mm</td>
</tr>
<tr>
<td>Interior Dimension (W x D x H)</td>
<td>620 x 368 x 1088 mm</td>
<td>620 x 368 x 1088 mm</td>
<td>440 x 350 x 1160 mm</td>
</tr>
<tr>
<td>Net Weight (Approx.)</td>
<td>79 kg</td>
<td>79 kg</td>
<td>195 kg</td>
</tr>
</tbody>
</table>

**Ambient temp.**

- -10°C to 60°C

---

**MIR Heated Incubators**

- Intuitive and easy operable Heated Incubators

**Temperature Control Range**

- Ambient temp. +5°C to 60°C
- Ambient temp. +5°C to 80°C

---

**MLR Climate Chambers**

**Versatile Climate Chambers**

**Humidity control function (only for H type)** suited for raising plants

**Sterilization**

**MLS Portable Laboratory Autoclaves**

Convenient sterilisation on demand offers great flexibility

---

**MLR-352**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>MLR-352</th>
<th>MLR-352H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Control Range</td>
<td>6°C to 90°C (Light off)</td>
<td>5°C to 90°C (Light off)</td>
</tr>
<tr>
<td>Humidity Control Range</td>
<td>10°C to 50°C (Light on)</td>
<td>10°C to 50°C (Light on)</td>
</tr>
<tr>
<td>Interior Volume</td>
<td>60 litres</td>
<td>294 litres</td>
</tr>
<tr>
<td>Effective Internal Capacity</td>
<td>55 to 85% RH (Light on)</td>
<td>—</td>
</tr>
<tr>
<td>External Dimensions (W x D x H)</td>
<td>760 x 700 x 1835 mm</td>
<td>520 x 490 x 1135 mm</td>
</tr>
<tr>
<td>Internal Dimensions (W x D x H)</td>
<td>740 x 750 x 1450 mm</td>
<td>520 x 460 x 1100 mm</td>
</tr>
<tr>
<td>Net Weight (Approx.)</td>
<td>226 kg</td>
<td>235 kg</td>
</tr>
</tbody>
</table>

---

**MLR-352H**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>MLR-352H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Control Range</td>
<td>0°C to 50°C (Light off)</td>
</tr>
<tr>
<td>Humidity Control Range</td>
<td>—</td>
</tr>
<tr>
<td>Interior Volume</td>
<td>294 litres</td>
</tr>
<tr>
<td>Effective Internal Capacity</td>
<td>—</td>
</tr>
<tr>
<td>External Dimensions (W x D x H)</td>
<td>760 x 700 x 1835 mm</td>
</tr>
<tr>
<td>Internal Dimensions (W x D x H)</td>
<td>—</td>
</tr>
<tr>
<td>Net Weight (Approx.)</td>
<td>226 kg</td>
</tr>
</tbody>
</table>

---

**MIR-154**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>MIR-154</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Control Range</td>
<td>-10°C to 60°C (AT 0°C to 35°C)</td>
</tr>
<tr>
<td>Interior Volume</td>
<td>123 litres</td>
</tr>
<tr>
<td>Exterior Dimension (W x D x H)</td>
<td>700 x 580 x 1018 mm</td>
</tr>
<tr>
<td>Internal Dimension (W x D x H)</td>
<td>620 x 368 x 1088 mm</td>
</tr>
<tr>
<td>Net Weight (Approx.)</td>
<td>78 kg</td>
</tr>
</tbody>
</table>

**MIR-254**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>MIR-254</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Control Range</td>
<td>-10°C to 60°C (AT 0°C to 35°C)</td>
</tr>
<tr>
<td>Interior Volume</td>
<td>238 litres</td>
</tr>
<tr>
<td>Exterior Dimension (W x D x H)</td>
<td>700 x 580 x 1018 mm</td>
</tr>
<tr>
<td>Internal Dimension (W x D x H)</td>
<td>620 x 368 x 1088 mm</td>
</tr>
<tr>
<td>Net Weight (Approx.)</td>
<td>108 kg</td>
</tr>
</tbody>
</table>

**MIR-554**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>MIR-554</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Control Range</td>
<td>-10°C to 60°C (AT 0°C to 35°C)</td>
</tr>
<tr>
<td>Interior Volume</td>
<td>406 litres</td>
</tr>
<tr>
<td>Exterior Dimension (W x D x H)</td>
<td>800 x 832 x 1810 mm</td>
</tr>
<tr>
<td>Internal Dimension (W x D x H)</td>
<td>640 x 550 x 1160 mm</td>
</tr>
<tr>
<td>Net Weight (Approx.)</td>
<td>195 kg</td>
</tr>
</tbody>
</table>

---

**0°C to 50°C**

**MLS-3751L**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>MLS-3751L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Internal Capacity</td>
<td>50 litres</td>
</tr>
<tr>
<td>External Dimensions (W x D x H)</td>
<td>470 x 620 x 748 mm</td>
</tr>
<tr>
<td>Chamber Dimensions (dia. x depth)</td>
<td>298 x 415 mm</td>
</tr>
<tr>
<td>Net Weight (Approx.)</td>
<td>61 kg</td>
</tr>
</tbody>
</table>

**MLS-3751L**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>MLS-3751L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Internal Capacity</td>
<td>50 litres</td>
</tr>
<tr>
<td>External Dimensions (W x D x H)</td>
<td>470 x 620 x 748 mm</td>
</tr>
<tr>
<td>Chamber Dimensions (dia. x depth)</td>
<td>298 x 415 mm</td>
</tr>
<tr>
<td>Net Weight (Approx.)</td>
<td>61 kg</td>
</tr>
</tbody>
</table>

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*External dimensions of main cabinet only - see dimension drawings on flyers showing handles and other external projections.*
* Not all products are available in all countries. Please inquire at the closest dealer for more information
* The information contained in this brochure is as of October 2019.
* Appearance and specifications are subject to change without notice

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