Guide to Laboratory Equipment

Advanced Products and Technologies for Life Science, Pharmaceutical, Biotechnology, Clinical and Industrial Laboratories

Panasonic... the new name for SANYO

www.panasonic.com/biomedical
Guide to Laboratory Equipment
Advanced Products and Technologies for Life Science, Pharmaceutical, Biotechnology, Clinical and Industrial Laboratories

My Life, My Work, My Choice

Welcome to Panasonic Healthcare Company of North America. Known throughout the world as a leader in consumer electronics and appliances, Panasonic addresses global needs such as energy, food, housing, health and information technology. For over forty years, Panasonic Healthcare has established a reputation as a premier manufacturer of precision biomedical and laboratory equipment. As part of the worldwide Panasonic brand we benefit from our unique Vertical Component Integration approach to product development. This gives us the most advanced technology, controls, construction and performance attributes among many markets.

We combine ideas and innovations from our global network of industrial and consumer products into a complete line of biomedical laboratory products. Through this effort, we offer the industry’s most sophisticated refrigeration compressor design and state-of-the-art electronics to ultra-low and cryogenic freezers, refrigerators, incubators and environmental chambers.

Panasonic products are extensively tested to meet the toughest quality standards in the world for performance, ergonomics and cost of ownership. Every product we build is designed to minimize its carbon footprint through energy savings and environmental stewardship. We understand that our products are used in the most critical applications on the leading edge of medicine, life science, pharmaceutical and agricultural research. We take this responsibility seriously, which is why you can turn to Panasonic laboratory equipment with confidence.
History of Panasonic Biomedical Equipment Development

Core Technologies

Panasonic core technologies, patents and intellectual properties are represented in every product line. Core technologies apply to critical components and processes such as refrigeration compressors, microprocessor electronics and patented VIP® vacuum insulation panels engineered to exact specifications for important applications in the life science, pharmaceutical, biotechnology, clinical and industrial laboratories.

As a result, Panasonic products operate with dependability, safety, energy efficiency and ergonomic sensitivity. Look for these and other proprietary technologies and patents on Panasonic Biomedical laboratory products.

Patented VIP® vacuum insulation panel freezers, U.S. Patent No. 6260377

Twin Guard® Series -86°C independent ultra-low temperature refrigeration systems

SafeCell UV contamination control,
inCu-saFe® germicidal effective copper-enriched stainless steel incubator interior

PI.D. infrared CO₂ system with rapid recovery, dual sensor on Sterisonic GxP Series (MCO-19AIC) only

Hydrogen Peroxide Vapor Decontamination, new feature for the Sterisonic GxP Series (MCO-19AIC) only

Direct Heat and Air Jacket (DHA) incubator heating technology,

Active Background Contamination Control cell culture environment

Panasonic-designed compressors specifically for laboratory refrigeration

Panasonic-brand battery technology

Panasonic-built electronic components
Vertical Component Integration

As a leader in consumer electronics, refrigeration, energy and environmental products, Panasonic offers a robust source of proven technologies deployed throughout a range of biomedical and medical research products.

Pioneering developments in consumer and industrial products are applied to all Panasonic products through the development model of Vertical Component Integration. Because many of our key component parts are designed and built by Panasonic, we offer only the very best, accurately matched components in each Panasonic product.

As Panasonic draws on vast corporate resources to develop laboratory products to meet the needs of contemporary medical and scientific research, the Panasonic philosophy of Vertical Component Integration is expressed in human-oriented, easy-to-use ergonomic products.

Environmentally Friendly Technology

Always a leader in environmentally friendly technology, Panasonic refrigerators use commercially available HFC refrigerants and CFC-free insulation.

Compliance of RoHS, Restriction of Hazardous Substance, on all units.

Panasonic is committed to developing green technologies that provide energy efficiency resulting in lower operational costs with less impact on the environment.
**Serving our Markets**

Panasonic Biomedical products are designed for the most demanding applications in clinical, pharmaceutical, life science, biotechnology and research laboratory markets.

From incubation to preservation and sterilization, Panasonic products continue to evolve from basic laboratory equipment into the sophisticated yet user-friendly instruments used in critical cell management and leading-edge protocols. These include gene and cell therapeutics for *in vivo* treatments, stem and embryonic cell growth and storage, regenerative medicine, bio-manufacturing and more.

At the heart of this evolution are innovative applications of integrated electronics and digital acquisition systems developed to control, monitor, document and validate the performance of our products as well as the safety of the work inside. As multidisciplinary research reveals new solutions in cell manufacturing destined for clinical trials, Panasonic is collaborating with our customers to create products designed to satisfy strict third-party regulatory criteria such as AABB/ANRC, GMPs, GLPs and more.

**Thinking Green**

Panasonic has established a corporate-wide initiative to emphasize the company’s commitment to energy conservation and environmental integration. For Panasonic, thinking green is a threefold approach to environmental, energy and lifestyle considerations. Here, Panasonic is redefining conventional ideas and taking advantage of the company’s expansive technological resources to propose environmentally friendly solutions.

Our commitment to the environment is illustrated by the company’s early and aggressive efforts to revamp and redesign the refrigeration systems upon which so many of our products depend. We were among the first to adopt new, environmentally safe, non-ozone depleting refrigerants without compromising performance. We were the first ultra-low freezer manufacturer to use non-CFC R508 refrigerants, today recognized as the worldwide industry standard and now readily available as a non-proprietary recharge to refrigeration service professionals on the open market. Other Panasonic Biomedical refrigerants such as R134a, R410a (Puron®) and R404a are safe and sourced on the open market as well.

Panasonic Biomedical cabinets are insulated with high-performance HCFC-free insulation and new composite insulation techniques to minimize energy consumption and lower operating costs. Beyond highly competitive first costs, Panasonic Biomedical ultra-low freezers demonstrate the lowest operating costs per cu.ft. (liter) in the worldwide market.

Superior insulation technologies enable our exclusive High-Density Storage valuation to offer the most favorable ratio of useable storage volume per sq.ft. of floor space in the industry, maximizing laboratory space efficiency and reducing overall costs of ownership.
World Class Design. Panasonic refrigeration systems offer superior performance and reliability, even in higher ambient temperatures and in response to frequent door openings. The cooling system also maintains uniform temperatures throughout the freezer, which is especially important when validation is required.
Panasonic Preservation Systems

Every day, laboratories around the world depend on Panasonic freezers for their ultra-low temperature storage, reassured by an industry-leading reputation for performance and reliability.

**VIP® PLUS Space Saving Series**
-80°C Ultra-Low Freezers
- MDF-U56VC
- MDF-U76VC
- MDF-C8V1, Chest

**VIP® Space Saving Series**
-86°C Ultra-Low Freezers
- MDF-U33V
- MDF-U53VA

**Twin Guard® Series**
-86°C Ultra-Low Freezers
- MDF-U500VXC
- MDF-U700VXC

**PRO Series**
Conventionally Insulated
-86°C Ultra-Low Freezers
- MDF-U5486SC, Upright
- MDF-U7486SC, Upright
- MDF-594C, Chest
- MDF-794C, Chest

**VIP® PLUS Space Saving Series**
-150°C Cryogenic Freezer
- MDF-C2156VANC

**-30°C/-35°C Biomedical Freezers**
- MDF-U333
- MDF-U5312
- MDF-U731
- MDF-U731M

**Laboratory Refrigerators**
- MPR-721
- MPR-721R
- MPR-1411
- MPR-1411R

**Pharmaceutical Refrigerators**
- MPR-311DH
- MPR-514
- MPR-514R
- MPR-1014
- MPR-1014R

**Blood Bank Refrigerators**
- MBR-107DH
- MBR-304GR
- MBR-704GR
- MBR-1405GR

**Biomedical Refrigerator with Freezer Combination**
- MPR-215F
- MPR-414F
- MPR-715F

**General Purpose Refrigerators**
- SRR-23GD-MED
- SRR-49GD-MED
- SRR-72GD-MED

**Under-Counter Refrigerators and Freezers**
- SR-L6111W
- SF-L6111W
- SR-L4110W
- SR-L4110WSEC
- HF-5017W
- HF-5017WSEC

**Preservation System Features**
- Cascade Cooling System
- VIP® Vacuum Insulation Panel
- VIP® PLUS Vacuum Insulation Panel
- Insulated Inner Doors
- CPU and Touch Pad
- LCD Digital Display
- Remote Alarm
- Automatic Alarm System
- Power Failure Alarm
- Filterless Design
- Air Filter
- CFC-Free
- Energy Savings
- Quiet, Reliable Compressors
- Service
- Rechargeable Battery

Patented Panasonic refrigerants are non-ozone depleting, non-flammable and environmentally safe in compliance with the Montreal Protocol.
Innovation

Our reputation is built on world-class design and refrigeration systems developed specifically for ultra-low temperature applications. Panasonic has pioneered the development of new technologies for ultra-low temperature storage from the world’s lowest temperature -150°C mechanical freezer, the introduction of application specific HCFC-free refrigerants and the first -86°C freezer with vacuum insulation panel (VIP®).

In 2006, Panasonic introduced the next generation of compressors for ultra-low freezers. Application-specific compressors provide new levels of durability with significantly reduced power consumption, heat output and noise.

Vacuum Insulation Panel (VIP®)

Panasonic was the first company to introduce vacuum insulation panels to ultra-low temperature freezers. The Panasonic range of VIP® freezers typically provide 25% more storage capacity for a given floor area saving valuable laboratory space.

The Panasonic patented VIP® vacuum insulation panel thin-wall composite is a high-efficiency design that yields more interior storage volume in a conventional freezer footprint. The VIP® minimizes energy transfer to and from the ultra-low temperature interior. The composite construction, complete with reflective barrier film and structural closed-cell foam, is used on all walls and the outer door.

This advanced insulation technology offers structural stability to eliminate distortion, and inhibits moisture accumulation that can lead to icing. Aggregate insulation efficiency minimizes compressor cycle run-time to lower energy costs.

Cascade Cooling System

By apportioning the oil cooling function between specially designed Cool Safe compressors, and by cooling the compressor oil to minimize compressor operating temperatures, the Panasonic ultra-low temperature freezer refrigeration system is balanced to decrease component stress, increase system longevity and reliability, and improve temperature uniformity necessary for better cell viability regardless of where the specimen is stored within the chamber.

Quality to Rely On

Panasonic’s Quality Management System is certified to ISO9001 and every Panasonic freezer undergoes at least 100 checks throughout production to ensure the highest quality standards are maintained.

Panasonic freezers are available with a variety of inventory racks to meet specific applications. Freezers can be ordered with full-load inventory systems by selecting one catalog number.

Panasonic-designed Cool Safe refrigeration compressors feature innovative refrigerant feedback processes to reduce compressor temperature, thereby extending compressor life and minimizing heat output.
**VIP® Series Green Product Features**

### Panasonic VIP® Green Initiative Advantages

With a capacity of up to 57,600 two-inch vials in fiberboard boxes, the energy-saving advantages of this efficient Panasonic system extend to lower per-unit storage costs regardless of the preferred inventory configuration.

- Panasonic freezers are designed to support LEED certification associated with the U.S. Green Building Council recommendations.
- Components are compliant with RoHS directives on the use of hazardous materials in electrical and electronic equipment.
- The Panasonic VIP® vacuum insulated panel cabinet design offers high-density storage in a minimal footprint, optimizing available laboratory space and storage volume efficiencies.
- Noise reduction and operating cost efficiencies are integrated into the refrigeration system.
- Heat output is limited to minimize the impact on facility HVAC demands.
- A microprocessor controller oversees the refrigeration system to regulate cooling cycles, reducing energy consumption.
- Cool Safe compressor technology for lower compressor heat internally and externally lower HVAC loads.

Panasonic is conscious of the need to protect our environment and conserve energy. As a corporate pioneer in life science laboratory equipment and appliances, and as a global source of solutions ranging from energy management to solar power and alternative energies, Panasonic remains committed to providing the best possible laboratory equipment for research and clinical needs.
Green Design and Performance

CFC Free Refrigerants
Panasonic was the first ultra-low freezer manufacturer to employ non-HCFC R508 low-stage refrigerant, now recognized as today’s industry standard and widely available. This non-proprietary refrigerant is available to refrigeration service professionals on the open market.

The high stage refrigeration system is available to refrigeration professionals on the open market as well.

RoHS Compliance
In 2006, RoHS (Restriction of Hazardous Substances) legislation (EU Directive 2003/95/EU) became effective. RoHS relates to the restriction of hazardous substances and reductions in environmental pollution.

Through RoHS legislation the EU and other participating countries are banning toxic substances in electrical equipment such as lead, cadmium, mercury, chromium 6+, PBB and PBDE.

Electrical Standards
All Panasonic products including ultra-low temperature freezers are tested and certified by an NRTL (National Recognized Testing Laboratory) to assure compliance with US and International standards for electrical safety prescribed in 29 CFR 1910.7(d).

Noise Reduction
Ultra-low freezers are often located within research and hospital laboratories or production facilities. Users prefer close proximity for easy access to valuable stored products.

If operating noise from refrigeration compressors is excessive, and/or compounded by installation of multiple freezers in adjacent locations, the working environment is severely compromised.

Panasonic has included advanced noise abatement in all contemporary ultra-low freezers and noise reduction levels are well below those of competitive freezers. Data is available upon request.

Inventory Management
The concept of High Density Storage is enabled by advances in Panasonic Cool Safe compressor design. The cost per 2' box of interior storage space is significantly lower in a Panasonic ultra-low freezer, generating immediate return on investment based on first costs, operating costs and maintenance costs over time.

Additionally, the placement of evaporator surfaces within the cabinet walls achieve exceptional documented ultra-low temperature uniformity, thereby permitting investigators more freedom in placing valuable cell lines and biologicals within the interior cabinet, and assuring uniform cell viability when harvesting products from the ultra-low archive.

The Cool Safe compressor design extend to evaporator tubing surrounding the interior chamber, and the interior chamber is part of the thin-wall composite based on the patented VIP® vacuum insulation panel cabinet, Panasonic can offer more usable storage volume within the same sq.ft. of floor space than competitive models.

Because modern laboratories are energy-intensive, Panasonic has developed a corporate-wide energy savings and environmental impact approach to new product development. VIP® Series freezers offer significant benefits through a balance of refrigeration power, cabinet construction and intelligent control over all functions.
VIP® Series Space Saving -86°C Ultra-Low-Freezers

Panasonic VIP® / VIP® PLUS ultra-low temperature freezers offer the most advanced combination of low-temperature refrigeration, cabinet and control technology in the clinical and life science industry. Space-saving, high-density VIP® PLUS vacuum insulation panel construction allows up to 25% more storage volume in the same or less floor space than conventional freezers.

**Panasonic Heat Exchanger Design Increases Energy Efficiency**

Every traditional ultra-low freezer design utilizes a heat exchanger. By increasing the efficiency of the heat exchanger through an improved new design incorporating more surface area contact at critical points in the refrigeration system, we are able to improve the overall efficiency and reduce compressor running time. This along with other improvements to heat exchange in the refrigeration system translates to a substantial increase in energy efficiency.

**Water Cooled Option (MDF-WCL)**

A water cooled condenser option is available for facilities equipped with water recirculation cooling systems. This option utilizes the cascade refrigeration design to reuse the energy produced by an ultra low freezer while delivering energy-savings and high performance cooling.

Ideal for material storage in repositories, hospitals, clinics and medical research facilities, the water cooled system is designed to significantly reduce energy consumption.

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**VIP® / VIP® PLUS Upright Freezer Selection**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Interior Volume</th>
<th>Exterior (w x f-b x h)</th>
<th>Area Footprint, Nominal</th>
<th>Fiberboard Boxes, 2” high (2ml) in Panasonic Racks</th>
<th>Sample Vials, 2ml (2” box), 100-Cell Dividers</th>
<th>Electrical, 60Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-U33V-PA</td>
<td>11.8 cu.ft.</td>
<td>26.4” x 34.1” x 73.2”</td>
<td>6.25 sq.ft. 0.58 m²</td>
<td>216</td>
<td>21,600</td>
<td>115V, AC, 15 amp</td>
</tr>
<tr>
<td>MDF-U53VA-PA</td>
<td>18.3 cu.ft.</td>
<td>30.3” x 34.4” x 78.3”</td>
<td>7.24 sq.ft. 0.68 m²</td>
<td>352</td>
<td>35,200</td>
<td>115V, AC, 20 amp</td>
</tr>
<tr>
<td>MDF-U56VC-PA</td>
<td>18.6 cu.ft.</td>
<td>30.3” x 34.4” x 78.3”</td>
<td>7.24 sq.ft. 0.68 m²</td>
<td>384</td>
<td>38,400</td>
<td>208/230V, AC, 15 amp</td>
</tr>
<tr>
<td>MDF-U76VC-PA</td>
<td>25.7 cu.ft.</td>
<td>39.8” x 34.4” x 78.3”</td>
<td>9.51 sq.ft. 0.88 m²</td>
<td>576</td>
<td>57,600</td>
<td>208/230V, AC, 15 amp</td>
</tr>
</tbody>
</table>

VIP® units offer lower operational costs than conventionally insulated models. These units also offer high-density ultra-low storage solutions for the laboratory.

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**Patented VIP® / VIP® PLUS Vacuum Insulation Panel**

Combination of multiple high-performance vacuum panels with high-density foam insulation achieves thin-wall profile for maximum interior volume in a compact footprint. Increased cooling capacity improves temperature recovery after door openings.

**Inner Doors Improve Uniformity**

Easy-In/Easy-Out Panasonic Eagle inner door latches feature ergonomic design to seal firmly against the cabinet with one hand. High-strength, insulated inner doors help minimize change in interior temperatures during routine door openings.

**Microprocessor**

Comprehensive setpoint, alarm, monitoring and diagnostic functions supervised by Panasonic-built microprocessor controller with digital display of all input/output function.

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**VIP® / VIP® PLUS**

- **Model Number**
- **Interior Volume**
- **Exterior (w x f-b x h)**
- **Area Footprint, Nominal**
- **Fiberboard Boxes, 2” high (2ml) in Panasonic Racks**
- **Sample Vials, 2ml (2” box), 100-Cell Dividers**
- **Electrical, 60Hz**

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Twin Guard® Series -86°C Ultra-Low Freezers

The Panasonic Twin Guard® Series ultra-low freezers are designed for -86°C storage of high-value biologicals. Ideal for critical material storage in repositories, highly secure BSL4 labs, hospitals, clinics and medical research facilities. The Twin Guard® Series introduces the concept of dual, independent, autocascade refrigeration systems contained within a single cabinet.

### Twin Guard® Series Refrigeration System

The Twin Guard® Series ultra-low freezers avoid conventional cascade refrigeration technology by using two completely independent one-compressor, autocascade cooling systems, each capable of maintaining ultra-low temperatures.

### Integrated LCD Control with Graphical Display

The Twin Guard® Series MDF-U500VXC and MDF-U700VXC are managed by an integrated microprocessor controller with LCD information center to simplify all freezer functions. Uniform ultra-low temperature is achieved through a combination of performance systems supervised by the controller complete with alarm, programming and diagnostic protocols.

### Patented VIP® PLUS Vacuum Insulation Panel

Combination of multiple high-performance vacuum panels with high-density foam insulation achieves thin-wall profile for maximum interior volume in a compact footprint. Increased cooling capacity improves temperature recovery after door openings.

### Inner Doors Improve Uniformity

Easy-In/Easy-Out Panasonic Eagle inner door latches feature ergonomic design to seal firmly against the cabinet with one hand. High-strength, insulated inner doors help minimize change in interior temperatures during routine door openings.

### Reduced Power Consumption

The Panasonic Twin Guard® Series freezers can be set for Normal or EcoMode operation, depending on ambient temperature and load. EcoMode is recommended for 90-95% of applications. Although both refrigeration systems are completely independent, EcoMode establishes an overlapping cycle to significantly reduce energy consumption while optimizing interior uniformity from top-to-bottom and front-to-back for protection of high value materials.

### Twin Guard® Series -86°C Ultra-Low Upright Freezer Selection

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Temperature Range</th>
<th>Interior Volume</th>
<th>Area Footprint (nominal)</th>
<th>Storage (2” / 51 mm boxes)</th>
<th>Storage (3” / 76 mm boxes)</th>
<th>Storage (2ml vials in boxes)</th>
<th>Electrical, 60Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-U500VXC-PA</td>
<td>-50°C to -86°C</td>
<td>18.3 cu.ft. 519 L</td>
<td>8.37 sq.ft. 0.76 m²</td>
<td>352</td>
<td>224</td>
<td>35,200</td>
<td>208/230V NEMA 6-15</td>
</tr>
<tr>
<td>MDF-U700VXC-PA</td>
<td>-50°C to -86°C</td>
<td>25.7 cu.ft. 728 L</td>
<td>9.51 sq.ft. 0.88 m²</td>
<td>576</td>
<td>384</td>
<td>57,600</td>
<td>208/230V NEMA 6-15</td>
</tr>
</tbody>
</table>

The safest ultra-low freezers for long-term storage of ultra-critical biologicals.
MDF-U500VXC
MDF-U700VXC

Twin Guard® Series -86°C Ultra-Low Freezers Featuring Panasonic Dual Independent Refrigeration Systems

The industry’s safest ultra-low storage solution for high value biologicals.

The 18.3 cu.ft. (519 L) MDF-U500VXC and the 25.7 cu.ft. (728 L) MDF-U700VXC VIP® PLUS insulated, includes integrated LCD performance monitor and digital controller for comprehensive system management, data logging, remote communications, alarms, predictive performance and validation. Maintenance-free, filterless design.

- The innovative design utilizing two independent systems allows the unit to continue to run continuously at -65°C or colder in the unlikely event of one compressor failure.
- The combination of additional refrigeration intelligently managed by intuitive microprocessor controls and integrated into Panasonic’s patented VIP® PLUS vacuum panel cabinet make the most efficient use of available floor space.
- Twin Guard® Series freezers significantly increase ultra-low protection while minimizing energy costs through a unique EcoMode function. EcoMode optimizes power consumption by orchestrating run times for each refrigeration system in response to cooling demands.

Ultra-Critical Installations and Applications Overview

<table>
<thead>
<tr>
<th>Application</th>
<th>Sensitivity</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem Cells, Cord Blood, T-Cells, Engineered Tissue, Organ/Tissue, Vaccines, Bone Marrow, Hybridomas, Lymphocytes, Cancer Cells, Clinical Specimens, Fibroblasts, Ova, Sperm</td>
<td>Highly sensitive to temperature fluctuations or uneven storage temperatures at different positions within the interior chamber.</td>
<td>Enhanced temperature uniformity, top-to-bottom, front-to-back, assures stability at all inventory locations.</td>
</tr>
<tr>
<td>BSL4 or Highly Secured Labs</td>
<td>Restricted access to the contained laboratory limits serviceability.</td>
<td>Twin Guard Series extends critical time necessary to react in the event of mechanical failure.</td>
</tr>
</tbody>
</table>
The Safest Ultra-Low Freezer for Long-Term Storage of Ultra-Critical Biologicals

The Panasonic Twin Guard® Series satisfies the industry demand for safe, long-term storage for the most high-valued materials. Two independent refrigeration systems, combined with optional liquid nitrogen or liquid CO2 back-up systems, offer a circle of protection unmatched in the marketplace. Developed for use with conventional inventory racks and boxes, the Twin Guard® Series is ideal for storage of sensitive stem cells, embryos, cell lines, and other rare specimens.

Twin Guard Series -86°C Refrigeration System

The Twin Guard® Series Ultra-Low Freezers avoid conventional cascade refrigeration technology by using two completely independent one-compressor, autocascade cooling systems, each capable of maintaining ultra-low temperatures.

- Each refrigeration circuit includes a closed-loop cold-wall evaporator configured in parallel to the other.
- Independent evaporators and cooling fans assure back up status at all times, eliminating system failure due to sub-component failure in conventional cascade systems configured of mutually dependent high- and low-stage systems.
- In the unlikely event of a compressor failure in one system, the remaining system will automatically maintain a minimum of -65°C for an indefinite period.
- In the event of a facility power failure with optional CO2 or LN2 backup system installed, the freezer will maintain -65°C storage temperature for up to eight hours (CO2 backup system) and -65°C storage temperature for up to 15 hours (LN2 backup system).
- A unique EcoMode deploys both systems in overlapping cycles to maintain -86°C and to reduce energy consumption by as much as 15%.
- Evaporator coils embedded in the patented, high-tech, Panasonic VIP® vacuum-insulated thin-wall cabinet are strategically oriented to deliver the best temperature uniformity at all shelf levels, top-to-bottom and front-to-back.
- New Panasonic-designed Cool Safe refrigeration compressors feature innovative refrigerant feedback processes to reduce compressor temperature, thereby extending compressor life and minimizing heat output.

Integrated LCD control with graphical display. The Twin Guard® Series MDF-U500VXC & MDF-U700VXC are managed by an integrated microprocessor controller with LCD information center to simplify all freezer functions. Uniform ultra-low temperature is achieved through a combination of performance systems supervised by the controller complete with alarm, programming and diagnostic protocols.

Failure Mode Comparison

<table>
<thead>
<tr>
<th>Event</th>
<th>Conventional Freezer No Backup</th>
<th>Conventional Freezer With Backup</th>
<th>Panasonic Twin Guard® Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan Failure</td>
<td>Freezer fails</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Stage Compressor Failure</td>
<td>Freezer fails</td>
<td>Freezer fails, CO2 or LN2 backup system offers short-term protection until contents can be removed and repairs initiated.</td>
<td></td>
</tr>
<tr>
<td>Low Stage Compressor Failure</td>
<td>Freezer fails</td>
<td></td>
<td>No high or low stage used. Two refrigeration systems, each with a single compressor, operate independently in overlapping cycles during normal operation. If one compressor fails internal temperature is maintained indefinitely at -65°C. Optional LN2 or CO2 backup system offers additional protection.</td>
</tr>
</tbody>
</table>
Conventionally Insulated PRO Series -86°C Ultra-Low Freezers (Upright)

Panasonic conventionally insulated PRO series ultra-low freezers provide energy savings while minimizing carbon footprint throughout the laboratory without compromising performance. The conventionally insulated series also maintains internal temperatures as low as -86°C. All models use Panasonic-designed compressors for ultra-low temperature applications. Manufactured with foam-in-place insulation to maximize interior temperature uniformity, they are ideally suited for use in hospitals and laboratories for long-term preservation and storage of blood, specimens and components, as well as material testing.

### Microprocessor Controls
Comprehensive setpoint, alarm, monitoring and diagnostic functions based on Panasonic-built microprocessor controller with digital display of all input/output functions.

### Panasonic-Designed Refrigeration
Designed by Panasonic specifically for rugged ultra-low temperature applications in a laboratory environment; CFC-free refrigerants only. Panasonic refrigeration system delivers uniform temperatures with increased cooling capacity. High performance refrigeration system with foam-in-place cabinet insulation maximizes interior temperature uniformity and protects against fluctuating ambient temperatures.

### Panasonic-Designed Compressors
Cool Safe ultra-low temperature compressor employs a unique orientation of conventional components to reduce discharge temperatures and compressor heat.

### Thinking Green:
Environmentally friendly refrigerants, RoHS compliant and low-noise operation.

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x f-b x h)</th>
<th>Storage (2”/51 mm boxes)</th>
<th>Storage (3”/76 mm boxes)</th>
<th>Storage (2ml vials in boxes)</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-U5486SC-PA</td>
<td>17.1 L</td>
<td>35.0” x 34.4” x 78.3”</td>
<td>384</td>
<td>192</td>
<td>32,000</td>
<td>208/230V NEMA 6-15</td>
</tr>
<tr>
<td>MDF-U7486SC-PA</td>
<td>23.5 L</td>
<td>44.5” x 34.4” x 78.3”</td>
<td>432</td>
<td>336</td>
<td>43,200</td>
<td>208/230V NEMA 6-15</td>
</tr>
</tbody>
</table>

**-86°C Ultra-Low Temperature Freezers:**
- Ideal -86°C freezing environment by means of conventional insulated walls.
- Specially designed compressors for ultra-low temperature applications.
- Microprocessor temperature control with digital input for precise setting and control.
- Built-in temperature and power failure alarms (audible/visible).

**Inner Doors Improve Uniformity**
Double insulation polyurethane walls and easy open, easy close hinged outer door latch. Two independent and insulated inner doors ensure maximum interior chamber uniformity.
MDF Series -80°C to -86°C Ultra-Low Freezers (Chest)

Panasonic MDF series ultra-low temperature freezers maintain internal temperatures as low as -86°C (-123°F). All models use Panasonic-designed compressors for ultra-low temperature applications. Manufactured with foamed-in-place insulation, they are ideally suited for use in hospitals and laboratories for long-term preservation and storage of blood, specimens and components, as well as materials testing.

### Conventionally Insulated MDF Series -86°C Ultra-Low Freezers (Chest)

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x f-b x h)</th>
<th>Storage (2&quot; x 51 mm boxes)</th>
<th>Storage (3&quot; x 76 mm boxes)</th>
<th>Storage (2ml vials in boxes)</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-594C-PA</td>
<td>17.2 487 L</td>
<td>79.1&quot; x 30.3&quot; x 42.1&quot; 2010 x 770 x 1070 mm</td>
<td>351</td>
<td>243</td>
<td>35,100</td>
<td>208/230V NEMA 6-15</td>
</tr>
<tr>
<td>MDF-794C-PA</td>
<td>24.8 702 L</td>
<td>101.2&quot; x 30.3&quot; x 42.1&quot; 2570 x 770 x 1070 mm</td>
<td>507</td>
<td>351</td>
<td>50,700</td>
<td>208/230V NEMA 6-15</td>
</tr>
</tbody>
</table>

### VIP® PLUS Space-Saving Series, -80°C MDF Ultra-Low Freezer (Chest)

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x f-b x h)</th>
<th>Storage (2&quot; x 51 mm boxes)</th>
<th>Storage (3&quot; x 76 mm boxes)</th>
<th>Storage (2ml vials in boxes)</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-C8V1-PA</td>
<td>3.0 85 L</td>
<td>21.6&quot; x 27.0&quot; x 37.2&quot; 550 x 685 x 945 mm</td>
<td>42</td>
<td>30</td>
<td>4,200</td>
<td>115V NEMA 5-15</td>
</tr>
</tbody>
</table>

*Think Green, VIP® offers lower operational costs than conventionally insulated models.*

### Microprocessor Controls

Comprehensive setpoint, alarm, monitoring and diagnostic functions based on Panasonic-built microprocessor controller with digital display of all input/output functions.

### Panasonic-Designed Refrigeration

Designed by Panasonic specifically for rugged ultra-low temperature applications in a laboratory environment; HCFC-free refrigerants only.

### Panasonic-Designed Compressors

High-performance refrigeration system with foam-in-place cabinet insulation maximizes interior temperature uniformity and protects against fluctuating ambient temperatures.

---

**MDF-C8V1 Ultra-Low Temperature VIP® PLUS Freezer:**

- Patented revolutionary vacuum insulation cabinet construction reduces wall thickness and achieves greater storage capacity while decreasing the footprint.
- Comprehensive setpoint, alarm, monitoring and diagnostic functions based on Panasonic-built microprocessor controller with digital LED display.

---

**Thinking Green:** VIP® PLUS offers lower operational costs than conventionally insulated models.
**-150°C Cryogenic Freezer**

Panasonic MDF series cryogenic freezer maintains uniform temperature of -150°C for stable, long-term preservation of cells and tissue.

Panasonic VIP® PLUS Cryogenic -150°C ultra-low temperature freezer achieves more storage capacity than a conventionally insulated freezer without increasing footprint.

### -150°C VIP® PLUS Cryogenic Freezers

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x f-b x h)</th>
<th>Storage (2”/51 mm boxes)</th>
<th>Storage (3”/76 mm boxes)</th>
<th>Storage (2ml vials in boxes)</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-C2156VANC-PA</td>
<td>8.2</td>
<td>68.1” x 30.1” x 39.8”</td>
<td>150</td>
<td>105</td>
<td>15,000</td>
<td>208/230V NEMA 6-15</td>
</tr>
<tr>
<td></td>
<td>231 L</td>
<td>1730 x 765 x 1010 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The newly developed refrigeration system and freezer structure offers a quiet environment.

### Uniform Cryogenic Temperatures
Mechanically refrigerated design promotes better top-to-bottom uniformity than liquid nitrogen vapor-phase storage.

### VIP® PLUS Design
Patented revolutionary vacuum insulation cabinet construction reduces wall thickness and achieves more storage capacity than a conventionally insulated freezer without increasing the footprint.

### Panasonic-Designed Refrigeration
Designed by Panasonic specifically for rugged cryogenic temperature applications in a laboratory environment; CFC-free refrigerants only.

### Microprocessor Temperature Control with Digital Design
Precise setting and temperature control. The temperature inside the freezer can be set and monitored easily by means of precise microprocessor temperature control with an LCD graphic display. Adjustable high/low temperature alarm; power failure alarm; filter check alarm; door ajar alarm; part replacement time notification.

### LCD Control Panel
Alpha-numeric microprocessor controller features a full-alarm package with a status alert monitoring system. The monitoring system records internal temperature up to one month and history of door openings and closings.

### Ideal Alternative to LN₂ Storage Mechanical Preservation
Freezer preservation provides users with numerous advantages; uniform cryogenic storage temperatures, no worries about sample contamination, no liquid supply problems, no danger of sudden liquid eruptions and low operational costs.

### Built-In LN₂ Backup System
Automatically injects LN₂ to maintain temperature during prolonged power outage, (LN₂ tank not included).

### Mechanical Refrigeration
Lowers LN₂ consumption and mitigates safety concerns, reduces cost of ownership, minimizes chance of cross-contamination among stored samples due to vial breakage at extreme temperatures.
-30°C/-35°C Biomedical Freezers (Chest and Upright)

Panasonic MDF series biomedical freezers include chest and upright models designed for short- or intermediate-term storage at temperatures as low as -30°C/-35°C. Constructed with high-performance laboratory and clinical-grade refrigeration systems, these freezers are used in medical, biotechnology and industrial labs for storage of blood components, enzymes, culture media, reagents, specimens and vaccines.

### -30°C Biomedical Freezers (Upright)

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x d x h)</th>
<th>Defrost</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDF-U333-PA</td>
<td>9.7 / 274 L</td>
<td>24.2&quot; x 28.9&quot; x 63.8&quot;</td>
<td>Manual</td>
<td>115V, NEMA 5-15</td>
</tr>
<tr>
<td></td>
<td>single door, single chamber</td>
<td>615 x 733 x 1620 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDF-U5312-PA</td>
<td>17.0 / 482 L</td>
<td>31.5&quot; x 30.4&quot; x 70.9&quot;</td>
<td>Manual</td>
<td>115V, NEMA 5-15</td>
</tr>
<tr>
<td></td>
<td>double door, single chamber</td>
<td>800 x 772 x 1800 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDF-U731*</td>
<td>22.0 / 623 L</td>
<td>30.3&quot; x 32.7&quot; x 77.0&quot;</td>
<td>Auto</td>
<td>115V, NEMA 5-15</td>
</tr>
<tr>
<td></td>
<td>single door, single chamber</td>
<td>770 x 830 x 1955 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDF-U731M*</td>
<td>24.4 / 690 L</td>
<td>30.3&quot; x 32.7&quot; x 77.0&quot;</td>
<td>Manual</td>
<td>115V, NEMA 5-15</td>
</tr>
<tr>
<td></td>
<td>single door, single chamber</td>
<td>770 x 830 x 1955 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Designed for high-performance laboratory and clinical applications.
*Certain models will retain the SANYO logo until further notice.

Panasonic-Designed Refrigeration
Designed by Panasonic with compressors specifically for storage applications in a laboratory environment.

Microprocessor Controls
Comprehensive setpoint, alarm, monitoring and diagnostic functions supervised by Panasonic-built microprocessor controller with digital display of all input/output function.

Enzyme and Biologics Preservation:
- Storage at -30°C and -20°C easily with constant stable control.
- Uniform temperatures throughout chamber using full cold wall construction.
- Because there is no defrost cycle, the inner chamber temperature offers outstanding uniformity and stability.

High-Performance Refrigeration
Laboratory-quality refrigeration assures stable, uniform temperatures throughout the chamber.

Enzyme and Biologics Preservation (Manual Defrost Models)
Storage at -30°C and -20°C easily with constant stable control. Uniform temperatures are maintained throughout the chamber using full cold wall construction.

General Purpose Storage, Maintenance-Free (Auto-Defrost Models)
Storage at -30°C with auto-defrost and consistent temperature control below -20°C during defrost cycle. Maintenance-free storage with no end user intervention to defrost unit and clean up condensate. Precision temperature uniformity throughout chamber due to forced air circulation with dual fans.
Laboratory Refrigerators

Large capacity laboratory refrigerators offer stable and reliable refrigerated environments for exacting laboratory requirements in clinical, research, pharmaceutical and industrial applications.

### Laboratory Refrigerators

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x f x b x h)</th>
<th>Door (glass)</th>
<th>Shelves (adjustable wire)</th>
<th>Drawers (solid roll-out)</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPR-721-PA</td>
<td>24.2</td>
<td>30.3’ x 32.7’ x 77.0’ x 770 x 830 x 1955 mm</td>
<td>single, swinging</td>
<td>4</td>
<td>—</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MPR-721R-PA</td>
<td>23.7</td>
<td>30.3’ x 32.7’ x 77.0’ x 770 x 830 x 1955 mm</td>
<td>single, swinging</td>
<td>—</td>
<td>5</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MPR-1411-PA</td>
<td>48.2</td>
<td>56.7’ x 32.7’ x 76.8’ x 1440 x 830 x 1950 mm</td>
<td>double, swinging</td>
<td>8</td>
<td>—</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MPR-1411R-PA</td>
<td>48.0</td>
<td>56.7’ x 32.7’ x 76.8’ x 1440 x 830 x 1950 mm</td>
<td>double, swinging</td>
<td>—</td>
<td>10</td>
<td>115V NEMA 5-15</td>
</tr>
</tbody>
</table>

Lab-ready with microprocessor control, alarm and monitoring, casters, access ports and interior lights.

**Forced Air Circulation**

Interior blower fans quickly restore temperature uniformity following routine door openings.

**Adjustable Temperature Control**

Panasonic-built microprocessor controller, temperature range 2°C to 23°C, with comprehensive setpoint, alarm, monitoring and diagnostic functions with digital display of all input/output functions.

**Inventory Control**

Choice of stainless steel roll-out drawers or adjustable wire shelves.

**Panasonic Cycle Defrost**

Unique cycle defrost initiates only as required; maintains internal temperature uniformity during process.

**Panasonic-Designed Compressors**

Designed by Panasonic specifically for demanding laboratory applications.
Pharmaceutical Refrigerators

Panasonic’s MPR series pharmaceutical refrigerators offer a complete and integrated solution for the growing requirements for strict and exact storage temperatures for pharmaceuticals, medicines and temperature-sensitive biologicals. The slim design and optional sliding shelves allow for an ergonomic easy-reach retrieval of your product.

### Pharmaceutical Refrigerators

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x f-b x h)</th>
<th>Door</th>
<th>Wire Shelves</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPR-311DH-PA</td>
<td>12.0 340 L</td>
<td>31.4” x 17.7” x 70.8” 798 x 450 x 1796 mm</td>
<td>dual, sliding glass</td>
<td>adjustable</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MPR-514-PA</td>
<td>17.3 489 L</td>
<td>35.4” x 23.6” x 70.5” 900 x 600 x 1790 mm</td>
<td>dual, sliding glass</td>
<td>adjustable</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MPR-514R-PA</td>
<td>17.2 486 L</td>
<td>35.4” x 23.6” x 70.5” 900 x 600 x 1790 mm</td>
<td>dual, sliding glass</td>
<td>1/2 adjustable, 1/2 roll-out</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MPR-1014-PA</td>
<td>36.6 1037 L</td>
<td>70.9” x 23.6” x 70.5” 1778 x 600 x 1790 mm</td>
<td>dual, sliding glass</td>
<td>adjustable</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MPR-1014R-PA</td>
<td>36.5 1034 L</td>
<td>70.9” x 23.6” x 70.5” 1778 x 600 x 1790 mm</td>
<td>dual, sliding glass</td>
<td>1/2 adjustable, 1/2 roll-out</td>
<td>115V NEMA 5-15</td>
</tr>
</tbody>
</table>

Ergonomic design offers temperature stability with safe, secure and easy inventory management.

**Forced Air Circulation**
Positive airflow quickly restores uniformity following routine door openings.

**Microprocessor Controls**
Comprehensive setpoint, alarm, monitoring and diagnostic functions based on Panasonic-built microprocessor controller with digital display of all input/output functions, adjustable temperature range 2°C to 14°C.

**Panasonic Cycle Defrost**
Unique cycle defrost initiates only as required; maintains internal temperature uniformity during process.

**Panasonic-Designed Compressors**
Designed by Panasonic specifically for rugged ultra-low temperature applications in a laboratory environment; CFC-free refrigerants only.

**Inventory Control**
Stainless steel interior construction with roll-out or adjustable wire shelves.
Blood Bank Refrigerators

Panasonic blood bank refrigerators are designed to create stable, reliable temperature control pre-set to 4°C with precise top-to-bottom temperature uniformity.

### Inner Doors
Plexiglass inner doors offer additional interior chamber temperature protection during door openings.

### Forced Air Circulation
Interior blower fans quickly restore temperature uniformity following routine door openings.

### Temperature Recorder
Built-in recorder provides a permanent record of cabinet pressure.

### Microprocessor Temperature Control
Panasonic-built microprocessor controller with comprehensive alarm, monitoring and diagnostic functions with digital display.

### Panasonic-Designed Refrigeration
Designed by Panasonic with compressors specifically designed for blood bank storage.

### Panasonic Cycle Defrost
Unique cycle defrost initiates only as required; maintains internal temperature uniformity during process.

---

**Blood Bank Refrigerators**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft)</th>
<th>Exterior Dimensions (w x f-b x h)</th>
<th>Bag Capacity (450 ml)</th>
<th>Drawers*</th>
<th>Shelves</th>
<th>Doors* (exterior)</th>
<th>Doors (interior)</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBR-107D-PA</td>
<td>2.8</td>
<td>15.7&quot; x 19.5&quot; x 59.6&quot;</td>
<td>32</td>
<td>—</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td></td>
<td>79 L</td>
<td>400 x 495 x 1514 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MBR-304GR-PA</td>
<td>10.6</td>
<td>23.6&quot; x 26.9&quot; x 72.2&quot;</td>
<td>120</td>
<td>5</td>
<td>—</td>
<td>1</td>
<td>2</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td></td>
<td>300 L</td>
<td>600 x 681 x 1834 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MBR-704GR-PA</td>
<td>21.8</td>
<td>30.0&quot; x 32.7&quot; x 77.0&quot;</td>
<td>360</td>
<td>6</td>
<td>—</td>
<td>1</td>
<td>3</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td></td>
<td>617 L</td>
<td>762 x 831 x 1955 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MBR-1405GR-PA</td>
<td>45.9</td>
<td>56.7&quot; x 32.7&quot; x 76.8&quot;</td>
<td>720</td>
<td>12</td>
<td>—</td>
<td>2</td>
<td>6</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td></td>
<td>1300 L</td>
<td>1440 x 831 x 1950 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* stainless steel roll-out
* swinging glass dual pane w/ lock

Designed to meet AABB and ANRC criteria for safety and performance.
When space is at a premium, Panasonic refrigerator with freezer combination offers convenience and performance in an attractive, space-saving design.

Biomedical Refrigerator with Freezer Combination

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Refrigerator Volume (cu.ft.)</th>
<th>Freezer Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x f-b x h)</th>
<th>Temperature Range (forced air)</th>
<th>Temperature Range (cold air)</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPR-215F-PA</td>
<td>6.2</td>
<td>1.4</td>
<td>21.3” x 21.9” x 70.5” 540 x 557 x 1790 mm</td>
<td>2°C to 14°C</td>
<td>-20°C to -30°C</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MPR-414F-PA</td>
<td>12.0</td>
<td>2.9</td>
<td>31.5” x 23.6” x 71.1” 800 x 600 x 1805 mm</td>
<td>2°C to 14°C</td>
<td>-20°C to -30°C</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MPR-715F*</td>
<td>14.7</td>
<td>6.2</td>
<td>35.4” x 28.1” x 75.2” 900 x 715 x 1910 mm</td>
<td>2°C to 14°C</td>
<td>-20°C to -30°C</td>
<td>115V NEMA 5-15</td>
</tr>
</tbody>
</table>

*Certain models will retain the SANYO logo until further notice.

Panasonic Cycle Defrost
Unique cycle defrost (refrigerator only) initiates only as required; maintains internal temperature uniformity during cycle defrost. Freezer is manual defrost.

Panasonic-Designed Refrigeration
Panasonic-designed compressors allow differential control of individual refrigerator and freezer compartments.

Validatable Storage
Laboratory-grade integrated systems are designed to assure stored product safety.

Microprocessor Controls
Comprehensive setpoint, alarm, monitoring and diagnostic functions based on Panasonic-built microprocessor controller with digital display of all input/output functions.

Validated Storage of Reagents, Pharmaceuticals and Biological Samples:
- Ideal biologic storage environment for precise control and superior temperature and uniformity.
- Microprocessor controller and interior forced air circulation.
- Safe and secured storage behind a keyed locking door.
- Integrated alarm functions.
- One unit with dual temperature zone needs only minimal installation space.
- Four-door design reduces air loss during door openings.
- Double-pane windows with heat reflection film reduces the condensation.
- Calibration adjustment through the control panel is available.
- The MPR series combo units have two separate specially designed compressors and offers quiet operation.

Designed for storage of vaccines and pharmaceuticals in the hospital, laboratory or medical office.

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### Pharmacy Refrigerators

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x f-b x h)</th>
<th>Door</th>
<th>Wire Shelves</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRR-23GD-MED*</td>
<td>21.0 595 L</td>
<td>29.1” x 31.7” x 79.25”</td>
<td>single glass, swing</td>
<td>4 adjustable</td>
<td>115V, NEMA 5-15</td>
</tr>
<tr>
<td>SRR-49GD-MED*</td>
<td>40.0 1133 L</td>
<td>49.6” x 31.7” x 79.25”</td>
<td>double glass, swing</td>
<td>8 adjustable</td>
<td>115V, NEMA 5-15</td>
</tr>
<tr>
<td>SRR-72GD-MED*</td>
<td>61.0 1700 L</td>
<td>74.8” x 31.7” x 79.25”</td>
<td>triple glass, swing</td>
<td>12 adjustable</td>
<td>115V, NEMA 5-15</td>
</tr>
</tbody>
</table>

*Designed for general purpose storage applications in the laboratory.
*Certain models will retain the SANYO logo until further notice.

### Under-Counter Refrigerators and Freezers

#### Under-Counter Refrigerators

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x f-b x h)</th>
<th>Temperature</th>
<th>Display</th>
<th>Lock</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR-L6111W-PA</td>
<td>6.1 173 L</td>
<td>23.6” x 26.2” x 34.6”</td>
<td>1°C to 14°C</td>
<td>yes</td>
<td>yes</td>
<td>115V, NEMA 5-15</td>
</tr>
<tr>
<td>SR-L4110W-PA</td>
<td>4.9 139 L</td>
<td>21.4” x 22.8” x 33.8”</td>
<td>4°C</td>
<td>no</td>
<td>no</td>
<td>115V, NEMA 5-15</td>
</tr>
<tr>
<td>SR-L4110WSEC-PA</td>
<td>4.9 139 L</td>
<td>21.4” x 22.8” x 33.8”</td>
<td>4°C</td>
<td>no</td>
<td>yes</td>
<td>115V, NEMA 5-15</td>
</tr>
</tbody>
</table>

*Designed for the demanding standards of clinical, life science, pharmaceutical, biotechnology and industrial laboratories.

#### Under-Counter Freezers

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x f-b x h)</th>
<th>Temperature</th>
<th>Display</th>
<th>Lock</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF-L6111W-PA</td>
<td>5.4 153 L</td>
<td>23.6” x 26.2” x 34.6”</td>
<td>-15°C to -20°C</td>
<td>yes</td>
<td>yes</td>
<td>115V, NEMA 5-15</td>
</tr>
<tr>
<td>HF-S017W-PA</td>
<td>5.0 142 L</td>
<td>21.4” x 25.4” x 33.6”</td>
<td>-20°C</td>
<td>no</td>
<td>no</td>
<td>115V, NEMA 5-15</td>
</tr>
<tr>
<td>HF-S017WSEC-PA</td>
<td>5.0 142 L</td>
<td>21.4” x 25.4” x 33.4”</td>
<td>-20°C</td>
<td>no</td>
<td>yes</td>
<td>115V, NEMA 5-15</td>
</tr>
</tbody>
</table>

*Convenient compact refrigeration in a laboratory environment.
*Cabinet depth measures 24” f-b without display and 26.2” f-b with display.
*Models SR-L4110WSEC and HF-S017WSEC offer additional hasp locks to accommodate a padlock.

### Compact Design

Allows for easy installation under counter, counter top, or within the knee-well of laboratory cabinetry. Door shelves and standard shelving maximize product storage capacity. Some models are stackable.

### Panasonic Refrigeration

Energy-efficient, whisper-quiet operation.

---

**Guide to Laboratory Equipment**
Panasonic Incubation

World Class Design. Panasonic designs and manufactures a range of CO₂ and multi-gas incubators, refrigerated and heated environmental chambers to meet a variety of application and user needs.
Panasonic Incubators

Panasonic designs and manufactures a range of CO₂, multi-gas, heated, and refrigerated incubators to meet a variety of application and user needs.

**CO₂ Laboratory Incubators**
- MCO-5AC
- MCO-18AC
- MCO-36AC
- MCO-18AC(UV)
- MCO-36AC(UV)
- MCO-19AIC
- MCO-38AIC
- MCO-19AIC(UV)
- MCO-38AIC(UV)
- MCO-19AIC(UVH)
- MCO-38AIC(UVH)
- MCO-20AIC
- MCO-40AIC
- MCO-80IC

**CO₂/O₂ Laboratory Incubators**
- MCO-5M
- MCO-5M(UV)
- MCO-19M
- MCO-38M
- MCO-19M(UV)
- MCO-38M(UV)
- MCO-19M(UVH)
- MCO-38M(UVH)

**Heated and Refrigerated Incubators**
- MIR-162
- MIR-262
- MIR-154
- MIR-254
- MIR-554

**Plant Growth Chamber**
- MLR-351H

---

**Relative Humidity**
A removable water pan combined with an independent heater at the base of the incubator provides an efficient, cost-effective method for maintaining elevated humidity levels. The humidifying pan can be easily removed and a water level sensor provides an easy maintenance system.

**Preventative Contamination Control**
Panasonic’s inCu-saFe® and SafeCell UV work in combination to provide effective protection against contamination during culturing without downtime or affecting cultures.

**InCu-saFe® Copper Stainless Steel Alloy**
InCu-saFe® copper-enriched stainless steel alloy combines the corrosion resistance and durability of stainless steel with the germicidal properties of copper. The inCu-saFe® walls and shelves significantly reduce the risk of contamination developing on internal surfaces.

**H₂O₂ Decontamination**
The unique Sterisonic GxP H₂O₂ decontamination system limits downtime to less than three hours when total chamber decontamination is desired. All interior components and CO₂ sampling loop are decontaminated *in situ*, no need for removal and autoclaving and no stress on sensitive electronic components.

---

**CO₂ Control**
Panasonic proprietary single beam, dual detector infrared (IR2) CO₂ sensor delivers precise CO₂ control, quick recovery following door openings, and auto sampling with no moving parts.

**SafeCell UV**
(U.S. Patent 6255103)
Panasonic’s SafeCell UV system with programmable, ozone-free UV lamp decontaminates the chamber air and water in the humidifying pan.

---

**H₂O₂ decontamination vs. high heat decontamination**

- **Panasonic Sterisonic**
- **Brand X**

- 3 Hours = Uptime (Hours)
- 14 Hours = Downtime (Hours)
CO₂ Laboratory Incubators

All Panasonic CO₂ incubators feature patented Direct Heat and Air Jacket temperature control for accurate, uniform temperature control and inCu-saFe® for continuous contamination control. Panasonic laboratory CO₂ incubators feature selected SafeCell UV with exclusive, patented Active Background Contamination Control.

**InCu-saFe® Interior**
Copper alloy stainless steel plenums, shelves and brackets extend contamination control to the chamber interior. Superior contamination control with an anti-bacterial copper alloy stainless steel interior provides germicidal protection and helps eliminate molds, spores and other contaminating spills, kills mycoplasma and provides a noncorrosive environment.

**Sterisonic GxP Series with H₂O₂ Decontamination**
The unique Sterisonic GxP H₂O₂ decontamination system limits downtime to less than three hours when total chamber decontamination with verification is desired.

**P.I.D. Control Sophistication**
Proportional, integral and derivative infrared CO₂ control accelerates recovery and prevents overshoot.

**SafeCell UV Contamination Control**
Narrow bandwidth ultraviolet decontamination *in situ* to help reduce air and water pan contamination without downtime. Panasonic SafeCell UV system continues to protect against contamination during normal operation by combining the passive resistance of copper-enriched stainless steel with UV decontamination of circulated, humidified air. Independent testing confirms that exposure to ultraviolet light at 253.7nm and heat decontamination at +90°C and +140°C are equally effective in decontaminating an incubator interior chamber against organisms selected for testing.

**CO₂ Control Options**
Available with high precision, quick recovery infrared or thermal conductivity CO₂ sensor.

**Direct Heat and Air Jacket Control**
Patented, radiant-wall heating microprocessor controlled in three zones to maintain uniformity and optimum humidity. Unlike traditional water jacket units, the sealed air jacket and foam insulation maintain a uniform temperature and quick temperature recovery after door openings. Air jacket technology requires little maintenance and provides a lightweight unit for easier relocation or repositioning for cleaning.

### CO₂ Laboratory Incubators

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Contamination Control</th>
<th>CO₂ Control</th>
<th>Chamber</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCO-5AC-PA</td>
<td>1.7</td>
<td>Optional SafeCell UV with ultraviolet light, inCu-saFe® copper-enriched stainless steel interior</td>
<td>thermal conductivity</td>
<td>single</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-18AC-PA</td>
<td>6.0</td>
<td>inCu-saFe® copper-enriched stainless steel interior (optional UV)</td>
<td>thermal conductivity</td>
<td>single</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-36AC-PA</td>
<td>12.0</td>
<td>inCu-saFe® copper-enriched stainless steel interior</td>
<td>infrared with P.I.D./R recovery</td>
<td>dual</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-19AIC-PA</td>
<td>6.0</td>
<td>SafeCell UV with ultraviolet light, inCu-saFe® copper-enriched stainless steel interior</td>
<td>infrared with P.I.D./R recovery</td>
<td>single</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-19AICUV-PA</td>
<td>6.0</td>
<td>SafeCell UV with ultraviolet light, inCu-saFe® copper-enriched stainless steel interior, H₂O₂ decontamination</td>
<td>infrared with P.I.D./R recovery</td>
<td>single</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-38AIC-PA</td>
<td>12.0</td>
<td>SafeCell UV with ultraviolet light, inCu-saFe® copper-enriched stainless steel interior</td>
<td>infrared with P.I.D./R recovery</td>
<td>single</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-19AICUVH-PA</td>
<td>6.0</td>
<td>SafeCell UV with ultraviolet light, inCu-saFe® copper-enriched stainless steel interior, H₂O₂ decontamination</td>
<td>infrared with P.I.D./R recovery</td>
<td>single</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-38AICUVH-PA</td>
<td>12.0</td>
<td>SafeCell UV with ultraviolet light, inCu-saFe® copper-enriched stainless steel interior, H₂O₂ decontamination</td>
<td>infrared with P.I.D./R recovery</td>
<td>single</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-20AIC-PA</td>
<td>7.6</td>
<td>SafeCell UV with ultraviolet light, inCu-saFe® copper-enriched stainless steel interior</td>
<td>infrared with P.I.D./R recovery</td>
<td>single</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-40AIC-PA</td>
<td>15.2</td>
<td>SafeCell UV with ultraviolet light, inCu-saFe® copper-enriched stainless steel interior</td>
<td>infrared with P.I.D./R recovery</td>
<td>single</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-80IC-PA</td>
<td>30.1</td>
<td>Optional SafeCell UV with ultraviolet light, inCu-saFe® copper-enriched stainless steel interior</td>
<td>infrared with P.I.D./R recovery</td>
<td>single</td>
<td>115V NEMA 5-20</td>
</tr>
</tbody>
</table>

Combination H₂O₂ decontamination, SafeCell UV Technology and inCu-saFe® interior construction for contamination control and no culturing downtime.
Sterisonic GxP Series Cell Culture CO₂ Incubators

The industry’s most complete cell culture solution for highly regulated applications or conventional incubation.

The Panasonic Sterisonic GxP incubator is designed for a wide array of demanding and highly regulated applications in the biomedical, pharmaceutical, medical research and clinical laboratory.

Representing years of research, development and component testing, the Sterisonic GxP incorporates a collection of mutually functional systems and design attributes to offer a holistic solution to cell culture protocols, from the most sophisticated to more familiar and conventional processes. These include but are not limited to:

• Stem cell research
• Autologous tissue regeneration & regenerative medicine
• In vitro fertilization
• Genomic and proteomic expression
• Esoteric plant and amphibian cell culture
• Genomic and proteomic expression
• Hypersensitive and transgenic cell culture
• Low media volume microplate work

Sterisonic GxP Design
• Elevated humidity, low water level warning. To avoid cell culture desiccation, the Panasonic Sterisonic GxP CO₂ incubator maintains ~95% RH at 37°C.
• Ergonomic cabinet design. With reversible inner and outer doors, a single Panasonic incubator offers the industry’s most flexible installation options.
• Field reversible door. The field-reversible door allows universal installation using the left-hand hinge (standard) or a right-hand hinge modification.
• Inner door and gasket. The inner design is critical to successful contamination control technique.

PREP: 15 min.
Reposition shelves, humidity pan and plenum inside Panasonic chamber. Interior surfaces are exposed.

Start Cycle: 30 min.
Press H₂O₂ start button. Chamber warms to 45°C.

Decontaminate: 10 min.
Panasonic H₂O₂ atomizer creates vapor which is circulated throughout chamber by interior blower.

Finish.
Shelves, humidity pan and plenum are returned to operating position.

Resolv: 90 min.
UV lamp glows for 90 minutes, reducing H₂O₂ to harmless water droplets.

Conventional High Heat Decontamination
• Start Cycle: 90 min.
Interior chamber elevates to high heat.

Decontaminate: 14 hours
Interior chamber remains at high heat.
Control and Monitoring
- The Sterisonic GxP control and information center includes an intuitive pop-up menu, high resolution LCD for inputs, outputs and performance at-a-glance.
- Multi-point data logging offers push-button graphical display. An optional PC or analogue interface permits remote transmission for GMP/GLP protocols as required.
- Precise P.I.D. logic controls and adjusts to all temperature and CO2 setpoints and alarm parameters.

Decontamination
- The unique Sterisonic GxP H2O2 decontamination system limits downtime to less than three hours when total chamber decontamination with verification is desired.
- All interior components and CO2 sampling loop are decontaminated in situ; no need for removal and autoclaving.
- Continuous Active Background Contamination Control fights contamination while cell culture protocols are in process.

CO2 Control
- Panasonic proprietary single-beam, dual detector infrared (IR2) CO2 sensor delivers precise CO2 control, quick recovery following door openings, and auto sampling with no moving parts.

Temperature and Humidity Control
- The patented Direct Heat and Air conditioning system manages setpoint temperature through multiple, variable warming points under microprocessor control.
- The humidity pan is easy to fill, easy to clean; the automatic optical sensor advises of low water level.

The Sterisonic GxP integrated microprocessor controller with LCD graphical display simplifies all incubator functions. Stable temperature and humidity conditions are achieved through a combination of performance systems supervised by the controller complete with alarm, programming, calibration and diagnostic protocols.

A continuous Active Background Contamination Control process helps reduce contamination without downtime. At the base of the plenum an isolated beam of high intensity, ozone-free ultraviolet light destroys contaminants in the air and in the humidity water reservoir, away from active cell cultures.

The patented Direct Heat and Air Jacket heating system distributes proportional energy to the interior chamber through a natural convection air jacket surrounded by a high-density insulation to protect against ambient temperature fluctuations.

Finish.
Incubator must cool from high heat temperatures to near ambient.
CytoGROW Series Cell Culture CO₂ Incubator

Ideal for research and clinical microbiology, the Panasonic CytoGROW CO₂ incubator offers a high-performance solution for mainstream cell culture applications in the research and clinical environment where precise control and contamination resistance is critical.

The CytoGROW Series Advantage At-A-Glance

<table>
<thead>
<tr>
<th>System</th>
<th>Feature</th>
<th>Competitors</th>
<th>Panasonic Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contamination Resistance In Situ</td>
<td>Active Background Contamination Control with InCu-saFe® copper-enriched stainless steel interior</td>
<td>Stainless steel</td>
<td>InCu-saFe® forms integral germicidal barrier against airborne contaminants; stainless steel does not offer a similar latent protection.</td>
</tr>
<tr>
<td>Air and Water Decontamination In Situ</td>
<td>SafeCell UV Protection (Optional)</td>
<td>Not available</td>
<td>SafeCell UV protection located safely below the interior base helps reduce airborne contaminants as they pass over the humidity reservoir surface. Pathogens introduced during door openings are ultimately removed. The Panasonic combination of InCu-saFe® and SafeCell UV minimizes the need for time-consuming, disruptive heat decontamination. Panasonic minimizes downtime for total cleaning when required, with the benefit of continuous, preventive contamination control during normal operation.</td>
</tr>
<tr>
<td>Cabinet Construction</td>
<td>Ease-of-use Direct Heat and Air Jacket design</td>
<td>Composite direct heat or water jacket</td>
<td>The Panasonic CytoGROW series cabinet provides the stability and uniformity of a water-jacketed cabinet without the inconvenience. Panasonic uses sensitivity to ambient temperatures to permit the microprocessor-controlled, multi-zone Panasonic Direct Heat and Air Jacket system to work most efficiently. Panasonic maintains maximum temperature control and uniformity from three independent heating zones on all sides.</td>
</tr>
</tbody>
</table>

Product Overview

CytoGROW series is part of the Panasonic MCO incubator product group that share proven control, construction and functional performance attributes. This relational product line extends the most sophisticated Panasonic operating systems, offering more range of application and better continuity among users in the research and clinical community.

The 6 cu.ft. (170 liter) CytoGROW cabinet integrates Panasonic’s proven package of control, heating, gas control and construction features essential to all incubators. This design approach fulfills a broad range of common applications.

Additionally, the standard CytoGROW cabinet can be enhanced with a selection of options and accessories to meet specific end user needs, offering the industry’s most flexible investment option for current and future incubator needs.
InCu-saFe® Interior Surfaces for Germicidal Protection

The CytoGROW incubators incorporate inCu-saFe® copper-enriched stainless steel alloy interior surfaces within a comprehensive design created to reduce contamination sources and to mitigate the effect of airborne contaminants introduced through normal use.

- Selected to provide natural germicidal protection without rust or corrosion, inCu-saFe® expresses a natural germicidal attribute to prevent the growth of molds, fungi, mycoplasma and bacteria.
- All interior components, including the air management plenum, shelf supports, humidity pan and blower wheel assembly remove easily for autoclaving; no tools required.
- When components are removed, all interior surfaces are exposed for conventional wipe down.
- Large rounded corners and electropolished surfaces are easy to clean.

Effectiveness of inCu-saFe® – Mycoplasma Survival Results

<table>
<thead>
<tr>
<th>Mycoplasma Strain</th>
<th>Negative Control</th>
<th>Conventional Type 304 Stainless Steel</th>
<th>Panasonic InCu-saFe®</th>
<th>Conventional Copper C1100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mycoplasma fermentans PG18</td>
<td>no survival</td>
<td>survival</td>
<td>no survival</td>
<td>no survival</td>
</tr>
<tr>
<td>Mycoplasma orale CH19299</td>
<td>no survival</td>
<td>survival</td>
<td>no survival</td>
<td>no survival</td>
</tr>
<tr>
<td>Mycoplasma arginini G230</td>
<td>no survival</td>
<td>survival</td>
<td>no survival</td>
<td>no survival</td>
</tr>
<tr>
<td>Mycoplasma hominis PG21</td>
<td>no survival</td>
<td>survival</td>
<td>no survival</td>
<td>no survival</td>
</tr>
</tbody>
</table>

Chart summarizes test results with four strains of mycoplasma. Results demonstrate how Panasonic inCu-saFe® copper-enriched stainless steel alloy offers germicidal properties of conventional C1100 copper, while maintaining both corrosion-proof and discoloration-resistant properties of conventional Type 304 stainless steel. Detailed test results are available from Panasonic.

Ergonomic Cabinet Design

With a reversible outer door, a single Panasonic incubator offers the industry’s most flexible installation options available in either single or dual (stacked) cabinet configurations.

- The low profile cabinet with door-mounted control panel permits easy access and display viewing.
- Cabinet knock-outs are predrilled and tapped to eliminate drilling and to simplify remounting of the field reversible door.
- The outer door heater cable is easily switched if a reverse opening is required.
- The heated outer door closes against a soft, easily cleaned magnetic gasket designed to eliminate ambient air shear across the glass inner door, minimizing condensation.
- The outer door includes a universal finger grip at each side.
- A door ajar alarm provides an audible and visual warning if the outer door is left open.
- Pass-through ports accommodate probes or instrumentation leads as required for specialized cell culture protocols. Each chamber includes a port positioned in the interior, upper-left rear wall, with dual silicone (non-VOC) stoppers inside and outside the cabinet for added protection.

ErgoStack Low Profile Design

The CytoGROW cabinet is designed for stacking, allowing one unit to be positioned on top of another, doubling interior volume without additional floor space.

- The low profile cabinet with door-mounted control panel permits easy access and display viewing.
- The combination of stacking and reversible doors offers the industry’s most flexible installation options.
- An optional roller base is recommended for stacked installations to permit mobility if required; see Accessories.
Guide to Laboratory Equipment

**CO₂/O₂ Laboratory Incubators**

Panasonic models MCO-5M/19M/38M series CO₂/O₂ incubators employ multiple sensor technologies to achieve in vitro simulation of the in vivo environment.

**CO₂/O₂ Laboratory Incubators**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x d x h)</th>
<th>Contamination Control</th>
<th>CO₂ Control</th>
<th>O₂ Control</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCO-5M-PA</td>
<td>1.7</td>
<td>19.9” x 21.6” x 22.6”</td>
<td>inCu-saFe® copper-enriched stainless steel interior, optional SafeCell UV with ultraviolet light.</td>
<td>thermal conductivity</td>
<td>infrared with P.I.D./R recovery</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-19M-PA</td>
<td>6.0</td>
<td>24.4” x 28.0” x 35.4”</td>
<td>inCu-saFe® copper-enriched stainless steel interior, optional SafeCell UV with ultraviolet light.</td>
<td>infrared with P.I.D./R recovery</td>
<td>Zirconia sensor with P.I.D./R recovery</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-38M-PA</td>
<td>12.0</td>
<td>24.4” x 28.0” x 70.8”</td>
<td>inCu-saFe® copper-enriched stainless steel interior, optional SafeCell UV with ultraviolet light.</td>
<td>infrared with P.I.D./R recovery</td>
<td>Zirconia sensor with P.I.D./R recovery</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-5MUV-PA</td>
<td>1.7</td>
<td>18.9” x 21.6” x 22.6”</td>
<td>inCu-saFe® copper-enriched stainless steel interior, optional SafeCell UV with ultraviolet light.</td>
<td>thermal conductivity</td>
<td>infrared with P.I.D./R recovery</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-19MUV-PA</td>
<td>6.0</td>
<td>24.4” x 28.0” x 35.4”</td>
<td>inCu-saFe® copper-enriched stainless steel interior, optional SafeCell UV with ultraviolet light and hydrogen H₂O₂ decontamination</td>
<td>infrared with P.I.D./R recovery</td>
<td>Zirconia sensor with P.I.D./R recovery</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-38MUV-PA</td>
<td>12.0</td>
<td>24.4” x 28.0” x 70.8”</td>
<td>inCu-saFe® copper-enriched stainless steel interior, optional SafeCell UV with ultraviolet light.</td>
<td>infrared with P.I.D./R recovery</td>
<td>Zirconia sensor with P.I.D./R recovery</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-19MUVH-PA</td>
<td>6.0</td>
<td>24.4” x 28.0” x 35.4”</td>
<td>inCu-saFe® copper-enriched stainless steel interior, optional SafeCell UV with ultraviolet light and hydrogen H₂O₂ decontamination</td>
<td>infrared with P.I.D./R recovery</td>
<td>Zirconia sensor with P.I.D./R recovery</td>
<td>115V NEMA 5-15</td>
</tr>
<tr>
<td>MCO-38MUVH-PA</td>
<td>12.0</td>
<td>24.4” x 28.0” x 70.8”</td>
<td>inCu-saFe® copper-enriched stainless steel interior, optional SafeCell UV with ultraviolet light and H₂O₂ decontamination</td>
<td>infrared with P.I.D./R recovery</td>
<td>Zirconia sensor with P.I.D./R recovery</td>
<td>115V NEMA 5-15</td>
</tr>
</tbody>
</table>

*For below ambient or enriched (above ambient) oxygen levels in addition to CO₂ control.

**Infrared CO₂ Sensor**
Precise CO₂ control, fast response to door openings. The Panasonic CO₂ IR sensor monitors and controls CO₂ level(s) over a range of 0% to 20%, with control of ±0.15%.

**Inner Doors**
Multiple chamber inner doors minimize loss of balanced interior atmosphere during routine door openings (available on selected models).

**Zirconia O₂ Control**
Non-depleting design for precise O₂ control with fast response to door openings. The maintenance-free zirconia solid-state sensor has a high degree of precision, a long service life and does not require fine adjustment. Through accurate determination of the chamber O₂ level the microprocessor injects either nitrogen gas or oxygen as required.

**PI.D. Control Sophistication**
Proportional, integral and derivative infrared CO₂ control accelerates recovery and prevents overshoot.

**MCO-19M**

**Professional Cell Culture Multi-Gas Incubator:**
- Continuous contamination control with inCu-saFe® interior and SafeCell UV technologies.
- PI.D. controls for fast recovery of temperature, CO₂ and O₂ levels.
- Fast humidity level recovery by N₂ gas bubbler.

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Cooled Incubator | MCO-CL

Sterisonic GxP Series Integrated Cooling Option

The industry’s most complete cell culture solution for highly regulated applications or conventional incubation. Now with an integrated cooling option for +18°C to +30°C applications, while allowing for safe, effective two-hour in situ H₂O₂ decontamination for fastest turn-around.

- Panasonic’s integrated cooling option provides unmatched temperature stability and control which can only be achieved with our patented Direct Heat and Air Jacket that surrounds the inner walls with a natural convection airflow.

- This cooling option maintains high relative humidity and provides precise temperature control for a wide range of applications.

- The unique cooling coil design allows for superior temperature uniformity and temperature recovery during door openings. In addition, the MCO-CL permits H₂O₂ decontamination of interior components for GMP applications and protocols. The internal cooling system can be decontaminated as well during the H₂O₂ cycle for those units equipped with this option.

### Integrated Cooling Option Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Range</td>
<td>+18°C to +50°C, distribution ±0.25°C, variation ±0.1°C</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>5°C to +50°C, 95% ± 5% RH; 20°C to 25°C &gt; 80% RH; 18°C &gt; 70% RH</td>
</tr>
<tr>
<td></td>
<td>Includes temperature mapping results for individual unit per serial number</td>
</tr>
<tr>
<td>Components</td>
<td>Stainless Steel Cooling Coil, Quick Interconnection Lines, 6 L, Refrigerated Water Bath &amp; Circulator (Optional/Not Included)</td>
</tr>
</tbody>
</table>

Applies to MCO-19AIC(UVH)-PA, MCO-19AIC(UV)-PA, MCO-19AIC-PA, MCO-19M(UVH)-PA, MCO-19M(UV)-PA, MCO-19M-PA
**MCO-80IC**

**Reach-In CO₂ Incubator**

Panasonic’s large capacity, reach-in CO₂ incubator has the capacity and flexibility to grow with your culturing needs while providing a precise and repeatable temperature, humidity and CO₂ environment.

The MCO-80IC is ideal for culturing large volumes of biological samples, performing short-term studies, and working with large volume cell culture apparatus. It includes Panasonic’s exclusive incubator technologies such as inCu-saFe® interiors, UV decontamination option, infrared (IR) CO₂ sensor with P.I.D. control, and features exceptionally low CO₂ gas consumption.

**Usability**

- 30.1 cu.ft. (851L) large capacity cabinet allows flexibility in usage.
- Cabinet will accommodate a roller bottle apparatus, 5 bottles wide x 7 bottles high (requires mounting ramp kit).
- Full view, double paneled glass door allows easy observation of cultured samples (black-out tinting is also optional).
- Large LED digital display and keypad for greater visibility and ease of setup.

**Superior CO₂ and Temperature Control**

- IR CO₂ sensor with P.I.D. micro-processor control and forced air circulation system delivers fast CO₂ recovery characteristics.
- Exceptionally low CO₂ gas consumption rates, less than half of similar competitive units.
- P.I.D. temperature control with deviation of ±0.1°C.

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**Temperature Recovery**

Panasonic MCO-80IC

Recovery after a 30 second door opening for the Panasonic MCO-80IC.

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**CO₂ recovery after a 60 second door opening**

for the SANYO MCO-80IC

---

**CO₂ recovery after a 60 second door opening**

for the competitor

---

Faster CO₂ recovery and lower CO₂ consumption after 60 second door opening.
**Horizontal Laminar Airflow System**

Panasonic’s reach-in incubator’s cross-shelf directed air flow system promotes optimum temperature uniformity throughout the chamber and contributes to quick temperature recovery after door openings. Utilizing Panasonic’s exclusive inCu-saFe®, germicidal, copper-enriched stainless steel.

- Access ports (each side, 40mm).
- **Humidified air minimizes potential for cell culture media desiccation.**
- **Perforated sidewall panels right (pressure) and left (negative pressure) assure a positive, gentle airflow from right to left.**
- **Optional Shaker shelves with additional support available in 2 or 3 shelf configurations.**
- **Horizontal airflow maintains accurate temperature and CO₂ control and uniformity at all shelf levels, top-to-bottom, front-to-back.**
- **Optional SafeCell UV decontamination system provides decontamination of the humidity reservoir.**

**Optional UV Decontamination and Humidity Selection**

Panasonic’s patented Safe Cell UV decontamination system is employed to decontaminate the humidifying water reservoir and help eliminate contamination concerns. The unit can be set to both nominal (above 80% RH) and high humidity setpoints (above 90% RH).

Humidity reservoir heaters are located on the outside walls of the reservoir and are not as susceptible to corrosion and scaling from water as competitive systems are. An optional autofill secondary tank (Model MCO-80AS) system is also available to ensure continuous water supply to the humidity reservoir.

This system employs a large tank (4.8 gal./18 L), with electronic water level sensor and autofill solenoid valve.

**Anti-Contamination Measures**

- Interior, plenums and shelving constructed of Panasonic’s exclusive inCu-saFe®, germicidal, copper-enriched stainless steel.
- Optional UV decontamination system for humidity reservoir.
- Extra heaters positioned around the outer glass door to eliminate condensation.
Heated and Refrigerated Incubators

Panasonic MIR series incubators are designed for general laboratory applications requiring fixed setpoint or cycling temperature control. A selection of five cabinet sizes offers programmed operation and integrated alarms for a wide temperature range.

### Heated and Refrigerated Incubators

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x f-b x h)</th>
<th>Heated</th>
<th>Refrigerated</th>
<th>Programmable Temperature</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIR-162-PA</td>
<td>3.3/ 93 L</td>
<td>22.8” x 23.4” x 32.3”/ 580 x 595 x 820 mm</td>
<td>yes</td>
<td>—</td>
<td>5°C above ambient to 80°C</td>
<td>115V/ NEMA 5-15</td>
</tr>
<tr>
<td>MIR-262-PA</td>
<td>5.4/ 153 L</td>
<td>28.7” x 25.4” x 34.3”/ 730 x 645 x 870 mm</td>
<td>yes</td>
<td>—</td>
<td>5°C above ambient to 80°C</td>
<td></td>
</tr>
<tr>
<td>MIR-154-PA</td>
<td>4.3/ 123 L</td>
<td>27.6” x 22.8” x 40.1”/ 700 x 580 x 1018 mm</td>
<td>yes</td>
<td>yes</td>
<td>-10°C to 60°C</td>
<td>115V/ NEMA 5-15</td>
</tr>
<tr>
<td>MIR-254-PA</td>
<td>8.4/ 238 L</td>
<td>27.6” x 22.8” x 63.7”/ 700 x 580 x 1618 mm</td>
<td>yes</td>
<td>yes</td>
<td>-10°C to 60°C</td>
<td></td>
</tr>
<tr>
<td>MIR-554-PA</td>
<td>14.3/ 406 L</td>
<td>31.5” x 32.8” x 71.3”/ 800 x 832 x 1810 mm</td>
<td>yes</td>
<td>yes</td>
<td>-10°C to 60°C</td>
<td></td>
</tr>
</tbody>
</table>

Programmable for multifunction laboratory applications.

**Programmable**

Multiple setpoints and cycling of refrigerated incubators for a variety of laboratory functions.

**P.I.D. Controller**

Microprocessor-based P.I.D. (proportional, integral, derivative) control with digital input, full-function alarm and monitoring.

**LCD Controller**

The new LCD controller improves user interface for better programming and control.

**Energy Savings:** In addition to a microprocessor-controlled high efficient heater output and compressor ON/OFF, a renewal control program and low-heat emission inner chamber fan are newly adopted to allow high-energy saving operation over a wider range of ambient environments.
Plant Growth Chamber

The model MLR series humidified plant growth chamber has a temperature range of 0°C to 50°C, with programmable lighting for diurnal protocols in plant and insect cell culture applications.

### Plant Growth Chamber

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Volume (cu.ft.)</th>
<th>Exterior Dimensions (w x f-b x h)</th>
<th>Temperature Range (lamp off)</th>
<th>Temperature Range (lamp on)</th>
<th>Humidity Control Range</th>
<th>Lighting Range</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLR-351H-PA</td>
<td>10.4</td>
<td>29.9” x 27.6” x 72.2” 760 x 700 x 1835 mm</td>
<td>5°C to 50°C</td>
<td>10°C to 50°C</td>
<td>55% to 90% RH</td>
<td>0 to 20,000 lux</td>
<td>115V NEMA 5-20</td>
</tr>
</tbody>
</table>

For simulation of cyclical environment conditions.

### Microprocessor P.I.D. Control

Allows accurate, reproducible and flexible programming of all performance parameters with optimal energy management; comprehensive security monitoring and alarm functions are standard. The temperature inside the incubator can be set and monitored easily by means of precise microprocessor temperature control with an LCD graphic display.

### Forced Air Circulation

Maximizes temperature uniformity at all shelf levels.

### Ergonomic Design

Slim-profile cabinet offers sophisticated performance in minimal space.

### LCD Controller

The new LCD controller improves user interface for better programming and control.

### Programmable

Nine user programmable steps allow simulation of environmental conditions; 15 variable intensity fluorescent lamps create uniform lighting.
**MHE-PF4025CW-PA (Positive Pressure System)**
**MHE-UN4025CW-PA (Negative Pressure System)**

The Panasonic CPWS features a cost effective, space-saving solution for GMP and GTP compliant regenerative medicine and cell therapy research. The CPWS also minimizes the expense of a cleanroom laboratory.

**Panasonic Integrated Cell Processing Work Station**
- Minimizes Cleanroom Expense
- Self-Contained
- Space-Saving
- Quick to Acquire and Install
- GMP Compliant for Aseptic Process
- User Friendly
- Energy Efficient, Green Design

The Panasonic CPWS work station is designed to deliver efficient, cost-effective and GMP compliant cell therapy research and manufacturing capability without the expense and inconvenience of a class 10,000 cleanroom. The CPWS offers significant advantages over conventional hard wall cleanroom construction.

- The CPWS is less expensive than a cleanroom.
- It is quicker to acquire and place into operation.
- The small footprint increases options for location and orientation.
- The user-friendly glove box design eliminates gowning and improves operator comfort and convenience.
- Operating costs are lower than cleanroom costs.
- Work is easily suspended and resumed without the need to de-gown and re-gown, improving user comfort.
- Fast decontamination and change-over improve productivity, increase throughput and deliver quicker return on investment.
- Recordkeeping and process documentation are easier to manage.

Components and operating systems are configured around a central work station with a HEPA filtration and air management system designed to deliver Class 100 air to the work surface within the glove box.
- Central barrier isolator
- Pass box interchange
- Integrated H₂O₂ decontamination system
- Optional cell observation system with microscope and monitor
- Optional centrifuge integrated into the work surface
- Optional CO₂ incubator with docking collar
- The optional incubator and optional centrifuge operate within a Class 100 environment.

**Applications**
The Panasonic CPWS enables a broader access to cell therapy research related to both minimally manipulated and non-minimally manipulated cell products by lowering the cost of entry, extending the process to the widest range of applications, and minimizing operating expenses when compared to a conventional cleanroom environment.

- Minimally manipulated products are associated with cell washing, enrichment, selection, HSC (PB, BM, CB), cancer therapies and other under GTP requirements.
- Non-minimally manipulated products are associated with expanded, differentiated or transformed cells (DC, MSC, ESC, TC) in cancer centers, biotech labs, stem cell institutes and contract manufacturing facilities operating under GMP requirements.
- GMPs (Good Manufacturing Practices) are mandated to ensure that drug development and manufacturing is safe, quality controlled for repeatability and thoroughly documented.
- GMPs typically require expensive hard wall laboratories and laboratory suites using biological safety cabinets in Class 10,000 cleanrooms surrounded by a Class 100,000 room.
Integrated Cell Processing Work Station (CPWS)

Panasonic CPWS Benefit vs. Conventional Cleanroom (Closed System vs. Open System)

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Panasonic CPWS Barrier Isolator</th>
<th>Cleanroom with Biological Safety Cabinets</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Closed system, requires only Class 100,000 air</td>
<td>Open system, requires significant investment and maintenance of background environment, Class 10,000 air</td>
</tr>
<tr>
<td>Planning and Lead Time</td>
<td>Minimal; Cost of Class 100,000 room plus CPWS</td>
<td>High; Cost of Class 10,000 cleanroom plus Class 100 one or more Class 100 biological safety cabinets</td>
</tr>
<tr>
<td>Space/Footprint Allowance</td>
<td>Minimal footprint in existing space</td>
<td>Dedicated new/retrofit facility with significant requirement for HVAC, filtration, air showers</td>
</tr>
<tr>
<td>Validation Costs</td>
<td>Minimal; Requires Class 100,000 only.</td>
<td>High; Requires both Class 100 and Class 100,000.</td>
</tr>
<tr>
<td>Operation Cost</td>
<td>Low</td>
<td>High; Repeated decontamination and maintenance costs. Higher consumables cost</td>
</tr>
<tr>
<td>Implementation</td>
<td>Weeks</td>
<td>Months or Years</td>
</tr>
<tr>
<td>Ergonomics and User Comfort</td>
<td>No second gowning required. Central barrier isolator with ergonomically angled front permits easy access through glove ports. Reduces stress on workforce.</td>
<td>Conventional first and second gowning, external air supply, interlock doors/air showers</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Elimination of hazardous fumes for decontamination permits diverse applications. Elimination of depolymerizing formaldehyde, formalin and other toxic chemicals permits transition between applications seamlessly.</td>
<td>Inflexible</td>
</tr>
<tr>
<td>Throughput</td>
<td>Expanded. Quick changeover extends use, optimizes return on investment. Component integration streamlines workflow while enhancing aseptic processing.</td>
<td>Limited due to product changeover criteria</td>
</tr>
</tbody>
</table>

**Barrier Isolator**

The barrier isolator forms the central component to the work station and contains the primary operating systems required to establish and maintain aseptic conditions to meet GMP criteria.

- The barrier completely isolates the interior work product from the operator.
- The barrier isolator creates a closed Class 100 environment, eliminating the need for biological safety cabinets in a cleanroom.
- Isolator interior air is 100% Class 100 total circulation; no recirculated air is used.
- The polished stainless steel glove box interior is designed for maximum exposure of all interior surfaces subject to H₂O₂ decontamination.
- Before commissioning and initial use, the isolator front can be opened on a hinged frame for installation of instrumentation or other devices larger than the interchange pass box opening.
- The HEPA filter and airflow system is mounted on top of the isolator.
- The internal airflow system is designed to create a positive pressure to mitigate the possibility of inflow contamination.
- Viability of the containment area is not delegated to third-party cleanroom contractors who are hired to decontaminate.

**Ergonomics and Safety**

Because second gowning is not required, user comfort and productivity is significantly improved. The workplace routine, including breaks, are unencumbered by the need to leave and re-enter a cleanroom, bleach and/or shower.

- The inconvenience and expense of cumbersome containment suits with air and vacuum hoses is eliminated. If working with BL3 agents, the buddy system is not required.
- The barrier eliminates the potential for room contamination from blood or other aerosols. Workflow is not impacted by routine colds.
- Glove ports permit easier handling of red bag materials when required.
- A 6° angled front includes three glove ports to permit access to all interior surfaces.
- The interior cabinet includes independent interior fluorescent lamps to supplement ambient light.
**H₂O₂ Decontamination System**
- The manually initiated, automatically sequenced H₂O₂ decontamination system offers a fast, safe and proven decontamination process to enhance the performance of the CPWS by allowing more frequent turnover of segregated cell lines.
- The validated H₂O₂ system generates an H₂O₂ vapor that permeates all exposed surfaces from the central interchange pass box nebulizer containing a replaceable bottle of enriched hydrogen peroxide.
- When deployed, the H₂O₂ vaporization sequence decontaminates the pass box, work station interior, centrifuge and CO₂ incubator exterior and docking gaskets.
- Once the vaporization is complete, the H₂O₂ program implements a dwell period to ensure that proper exposure times are maintained for a wide range of pathogens (contact Panasonic for independent test results).
- At the end of the pre-programmed dwell period a resolution process eliminates fumes and toxic residuals.

**Isolator Interchange**
- The interchange pass box allows safe access to the work area for supplies, instruments, devices, sterile media and labware.
- When materials are brought into the work station they are first positioned inside the interchange for H₂O₂ decontamination.
- Decontamination is manually initiated and automatically sequenced once started.
- When the H₂O₂ vaporization process is complete, the inner door is opened and the transfer is completed.
- Door interlocks permit simultaneous opening to protect the barrier isolator.

**CO₂ Incubator**
The modular CO₂ incubator is an adaptation of the full-performance Panasonic MCO-5AC(IS). This incubator is designed for precise temperature and CO₂ control with elevated relative humidity to minimize cell desiccation.
- By using multiple, detachable CO₂ incubators, the CPWS can manage multiple protocols through complete product segregation, thereby assuring aseptic conditions and eliminating any possibility of cross-contamination or mishandling of patient-specific cells.
- The incubator attaches to a docking collar adjacent to the barrier isolator.
- Once attached, the barrier isolator undergoes a 2-hour H₂O₂ decontamination process before the incubator door is opened. This process decontaminates the work area, incubator face, centrifuge and pass-thru interchange.
- The H₂O₂ effectively decontaminates the CO₂ connection.
- When work is complete, the incubator is sealed, detached and moved to a user-defined staging location on a wheeled cart.

**Centrifuge**
The centrifuge is installed beneath the interior work surface and accessible under aseptic conditions without removing cells from the protected environment.
- The position and orientation of the centrifuge assures thorough decontamination during the H₂O₂ vaporization cycle.
- The integrated design eliminates the requirement for additional floor space in a GMP environment.
- A variety of fixed and swinging rotors are available.
- Centrifuge controls are located external to the work area at the front of the centrifuge module.
Panasonic Sterilization

**World Class Design.** Accurate, high-temperature equipment for scientific research. Panasonic has always aimed to provide research support equipment that offers complete satisfaction to its users.
Panasonic Sterilization

Researchers waste valuable time and energy when limited to using a centralized building autoclave. Installation and maintenance of central autoclaves are not only costly but time consuming. The MLS autoclave series is designed for individual lab use and can be conveniently moved from one lab to another.

Top-Loading Portable Autoclaves

Panasonic MLS series top-loading autoclaves are a popular method of sterilization for today’s research laboratories. Self-contained and easy to use, these reliable energy-saving autoclaves are ideal for a wide range of applications, including liquid culture media preparation, labware and waste sterilization. Designed to meet good laboratory practice criteria in biotechnology, pharmaceutical and clinical laboratories. Panasonic MLS series portable autoclaves deliver high pressure steam with speed, efficiency and reliability, for research lab usage only.

Top-Loading Portable Autoclaves

MLS-3751L
MLS-3781L

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Effective Capacity (cu.ft.)</th>
<th>Exterior Dimensions (w x f-b x h)</th>
<th>Maximum Temp.</th>
<th>Baskets (included)</th>
<th>Flask Capacity (1L)</th>
<th>Cross Section</th>
<th>Voltage, Power Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLS-3751L-PA</td>
<td>1.8</td>
<td>18.8” x 24.9” x 29.4”</td>
<td>135°C</td>
<td>2</td>
<td>14.6” (37cm) 371 mm</td>
<td></td>
<td>115V NEMA L5-30</td>
</tr>
<tr>
<td>MLS-3781L-PA</td>
<td>2.6</td>
<td>18.8” x 24.9” x 38.0”</td>
<td>135°C</td>
<td>3</td>
<td>14.6” (37cm) 371 mm</td>
<td></td>
<td>208/230V NEMA L6-30</td>
</tr>
</tbody>
</table>

Easy mobility for sterilization on demand.

Microprocessor Controls
Assures correct temperature and is accurately maintained and easily operated with one-touch operation. Sterilizing temperature is controlled by the microprocessor within +2°C of the set temperature in the range of 115°C to 135°C.

Process Voice Notification
The MLS series includes a voice notification of the system process. Each step of the process is notified via a pre-recorded voice message, allowing the end user to hear the process as it is happening.

Programmable
Allows maximum flexibility in ramp up, dwell, ramp down and cool-off protocols.

Compact Design
Maximizes use of available lab floor space, stores easily when not in use.

Low-Profile and Ergonomic Design
Simplifies access, easy to load and unload.

Swing-Up Lid
Opens chamber for 100% access; eliminates side space requirement.

Printer
Optional process printer for batch documentation.
Product Service and Uptime Assurance

Your Panasonic experience with product safety, reliability and performance is supported by a multi-national network of factory-trained service professionals located in all markets we serve. The serviceability of Panasonic Healthcare products is inherent to all Panasonic product designs and originates in our research and development department. Combined with customer feedback and detailed documentation of field performance, Panasonic product developers incorporate real-world applications into product systems and operating parameters.

From ambient temperature and humidity fluctuations to broad electrical voltage tolerances, Panasonic Healthcare products are expected to withstand demands in the newest of facilities as well as older labs. Central to our product development efforts is the concept of “predictive performance,” a matrix of electronics and control functions that sense component operation in real time, compare performance to accepted norms and report exceptions long before normal wear and tear causes an interruption. As a result, many Panasonic Healthcare products include self-diagnostic features that permit authorized service technicians to determine how and when service calls are required.

As Panasonic continues to apply improvements in compressor and electronics to all products, life cycle costs can be extended and downtime minimized. Panasonic service specialists are trained to perform remote and on-site diagnostics, repair and replace worn components and offer preventative maintenance programs suitable to your needs and budget. Panasonic Healthcare also offers training to selected facility biomedical engineers and service staff for authorized in-warranty and post-warranty repairs.

Because Panasonic Healthcare products are sold and serviced worldwide, products acquired in one country under grant or facility-sharing programs are easily supported if moved to facilities in the next city or around the world.

Validation Services

Panasonic offers a wide range of high-quality validation services for all our equipment. These services include on-site validation, custom validation support packages, factory acceptance testing, and NIST traceable calibration.

Choosing Panasonic as an equipment supplier and validation consultant can greatly reduce the time and cost involved with new equipment.

Unique Services Panasonic Offers:

• On-site consultation
• Specialized documentation for each individual unit
• Customized testing procedures based on personalized customer requirements
• No charge for documentation when service is purchased
• Quality documents complying with 21 CFR traceable standards
• Free archiving of unexecuted testing protocols

Pre-Delivery and On-Site Services

Pre-delivery services include factory acceptance testing, calibration, and temperature mapping. On-site services include installation qualification, operational qualification, performance qualification, calibration and temperature mapping.

Panasonic Connect

Panasonic’s customer-driven service program guarantees local attention from qualified Panasonic service representatives, whenever and wherever you need it.

• New Unit Installation and Training
• Preventative Maintenance
• Warranty and Non-Warranty Repairs
• Calibration/Validation Services
• Refurbishment and Reconditioning
• Customized Service and Warranty Programs
• Loaner Units When Needed
• In-Stock Parts for Immediate Delivery

Prices and conditions may vary by market.