

# Serie V.I.P.<sup>®</sup> Congelatori -86°C

Integrated Ultra-Low  
Storage Solutions For  
Biosafety, Security  
and Performance

SANYO patented  
V.I.P.<sup>®</sup> Vacuum  
Insulation Panel for  
high density storage

Tre livelli di sicurezza  
contro manipolazioni

High performance,  
quiet-running  
SANYO refrigeration  
compressors



*Model MDF-U72VC shown with optional keyless  
entry system and digital temperature recorder.*

# The Integrated Solution To Ultra-Low Temperature Storage

| V.I.P.® Upright Freezer Selection  | MDF-U32V                       | MDF-U52VC                      | MDF-U72VC                      |
|------------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Temperature Range                  | -50°C to -86°C                 | -50°C to -86°C                 | -50°C to -86°C                 |
| Interior Volume                    | 12 cu.ft./334 liters           | 18 cu.ft./518 liters           | 26 cu.ft./727 liters           |
| Area Footprint, Nominal            | 6.25 sq.ft./0.58m <sup>2</sup> | 7.24 sq.ft./0.68m <sup>2</sup> | 9.51 sq.ft./0.88m <sup>2</sup> |
| Electrical, 60Hz                   | 115V, AC 15 amp                | 208-230V, AC 15 amp            | 208-230V, AC 15 amp            |
| SANYO V.I.P.® Keyless Entry System | optional                       | optional                       | optional                       |

## Enhanced Performance And Reliability

SANYO V.I.P.® Series upright freezers represent the industry's most creative combination of cabinet design, electronics, refrigeration and critical components for enhanced security, better performance, product safety and cost effective operation at -86°C.

## Stronger Security With Three Levels Of Access Restriction

As government and institutional safety guidelines become more aggressive in the wake of global terrorism threats, SANYO products help laboratory managers and clinical investigators comply with emerging rules for access and accountability of stored products. SANYO offers many security features, both standard and optional, to meet a range of inventory access restrictions.

- The optional keyless entry system includes a tamper-resistant lock activated by a PIN number or key.
- The smooth operating, Easy-In / Easy-Out™ outer door latch is designed to be secured with a conventional padlock.
- A universal keyed door lock prevents the outer door from opening.



The SANYO advanced Keyless Entry System enhances the security of stored products by restricting freezer access to authorized personnel only. Entry requires a personal identification number (PIN) or master override key. Factory installed; specify when ordering.



The SANYO ergonomic design features Easy-In / Easy-Out™ door latches that close securely with less power. New SANYO Eagle™ inner door latches provide single-hand access. The outer door latch closes smoothly with a single-hand action over a cam action bearing. The door can be secured with an independent padlock provided by customer.

## Inner Doors Improve Uniformity

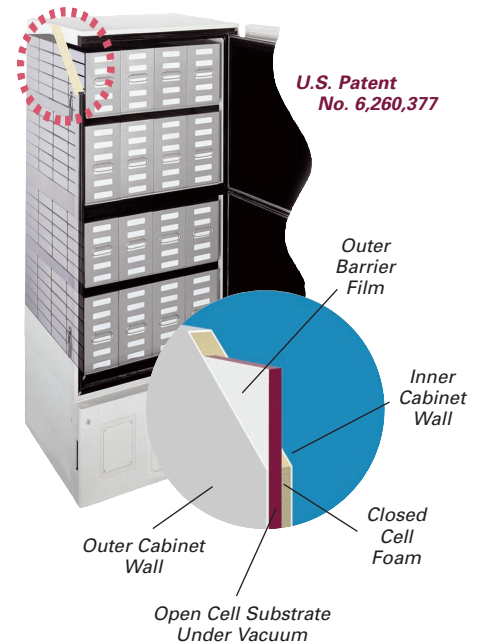
The center shelf forms the base of a convenient and flexible inventory system using conventional racks with boxes, microplates or other storage protocols. Stainless steel shelf and insulated inner-door combinations create choices of interior compartments that can be arranged for long-term, low access biologicals or short-term, frequently accessed material.

- Easy-In / Easy-Out™ SANYO 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.
- Two inner doors are standard, creating two compartments that can be sub-divided with interior shelves.
- Multiple inner door configurations available on MDF-U72VC models permit creation of additional compartments.

## Patented V.I.P.® Insulation Increases Interior Volume By As Much As 30%

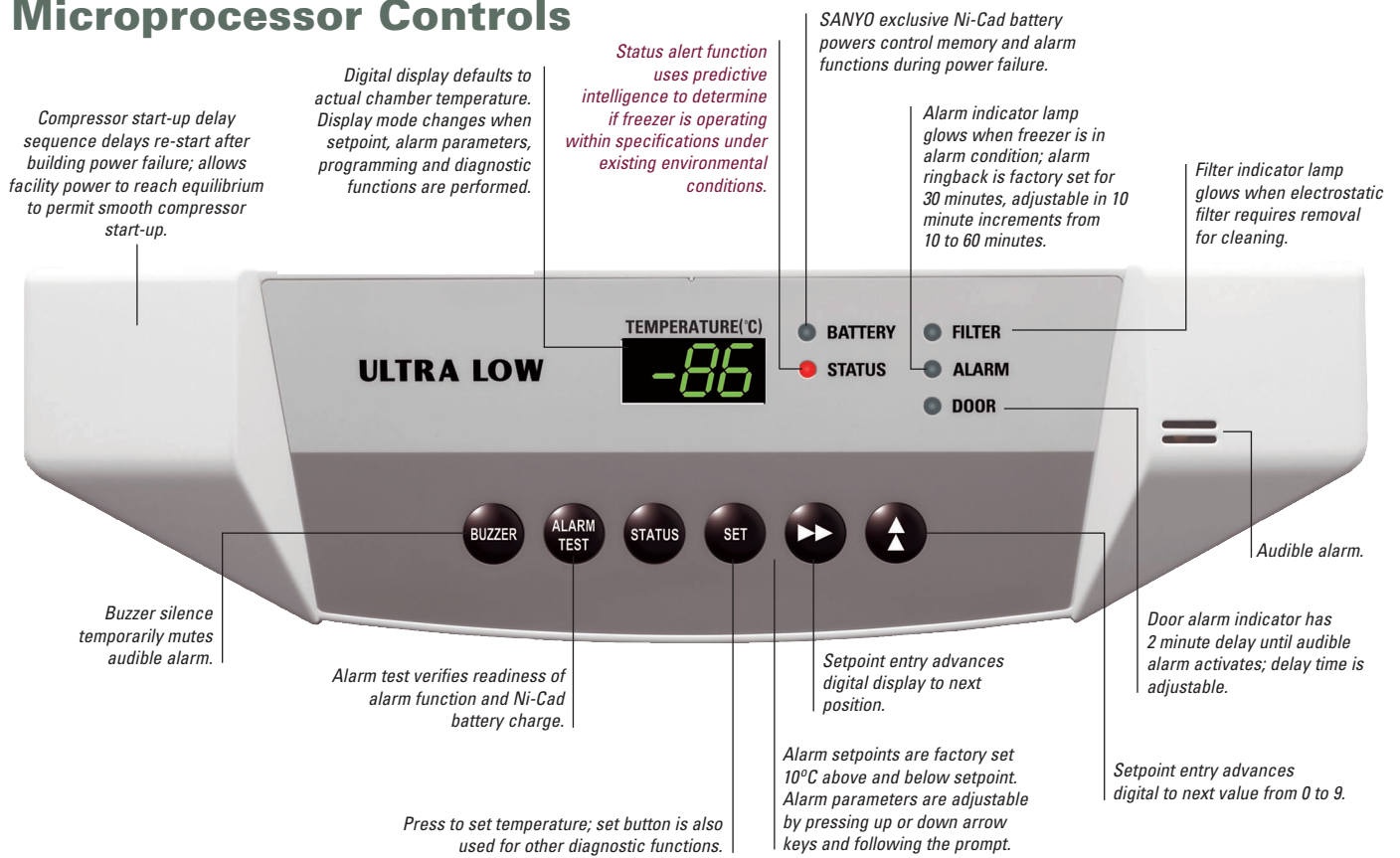
SANYO patented V.I.P.® Vacuum Insulation Panel technology and high-tech, thin profile cabinet walls increase interior volume by as much as 30% for high density storage in a minimal cabinet footprint.

Cellular wall construction combines vacuum insulation with polyurethane foam for structural stability and highest insulation values while reducing wall thickness by as much as 50% over conventional methods.



SANYO patented V.I.P.® vacuum panels are formed individually into a unitized composite of panel sections, sealed with reflective barrier film, arranged within the steel inner and outer walls, then pressure laminated with high-density, closed-cell injected foam to form the high technology freezer wall.

# Microprocessor Controls



The SANYO microprocessor control system is secure, easy to use and comprehensive. Setpoint, alarm parameters and self-diagnostic functions are accessed through a tamper-resistant keypad protocol. Control inputs are managed with convenient push-pad buttons on a unitized, sealed control overlay. The panel is door-mounted and angled for easy access.

| Alarm And Safety Function               | Event   | Visual   | Audible   | Signal To Alarm Contact |
|---|---|--|---|-------------------------|
| Status Alert                            | Abnormal ambient (too high or too low), or abnormal freezer loading (too much warm product at once) | STATUS lamp flashes  | None  | None                    |
| High Temperature                        | Interior chamber warms beyond high temp setpoint  | ALARM lamp flashes; digital display flashes actual chamber temperature | Intermittent tone; time delay of 15 minutes after reaching alarm setpoint avoids false alarms | Yes                     |
| Low Temperature                         | Interior chamber cools beyond low temp setpoint   |  |   |                         |
| Power Failure                           | Loss of power   |  |   |                         |
| Control Temperature Sensor Failure      | Sensor probe disconnect, short-circuit or failure   | ALARM lamp flashes   | Solid tone  | No                      |
| Filter Sensor Failure                   |   |  |   |                         |
| Interstage Refrigeration Sensor Failure |   |  |   |                         |
| Filter Check                            | Clogged or dusty condenser filter   | FILTER lamp flashes  | None  | No                      |
| AutoReturn                              | Touchpad key is not pressed for 90 seconds  | Reverts to chamber temperature display                                 |   |                         |
| Door Alarm                              | Door Open   | OPEN lamp on   | Solid tone sounds after 2 minutes (adjustable)  | Yes                     |

| Maximum Sample Storage Capacity | MDF-U32V | MDF-U52VC | MDF-U72VC |
|---------------------------------|----------|-----------|-----------|
|---------------------------------|----------|-----------|-----------|

| Rack Positions, Standard Configuration |  |  |  |
|--|---|---|--|
|  | 3 columns<br>4 rows   | 4 columns<br>4 rows   | 6 columns<br>4 rows  |

|  | 3 columns<br>4 rows | 4 columns<br>4 rows | 6 columns<br>4 rows |
|--|---------------------|---------------------|---------------------|
| Fiberboard Boxes, 2" high (2ml) in SANYO racks | 216                 | 352                 | 576                 |
| Sample Vials, 2ml (2" box), 100-Cell Dividers  | 21,600              | 35,200              | 57,600              |
| Fiberboard Boxes, 3" high (4ml) in SANYO Racks | 144                 | 224                 | 384                 |
| Sample Vials, 4ml (3" box), 100-Cell Dividers  | 14,400              | 22,400              | 38,400              |
| Standard Microplate with Foil Tape, in Racks   | 1296                | 2112                | 3456                |
| Standard Microplate with Cover Lid, in Racks   | 1008                | 1632                | 2596                |

Note: Maximum storage volume varies according to storage vessel, vial configuration, preservation protocol, laboratory technique and user preference. Contact SANYO for detailed information on inventory racks, boxes and storage options.

| Fully Loaded Inventory Systems | Catalog No | Catalog No | Catalog No |
|--------------------------------|------------|------------|------------|
|--------------------------------|------------|------------|------------|

**Maximum Vial Capacity**

Includes full quantity of storage racks, boxes and dividers

|  |                  |                  |                  |
|--|------------------|------------------|------------------|
| Sliding Drawer Inventory Racks, 2" high boxes (2ml sample) 100-Cell Divider    | FLI-32-SDR-2S100 | FLI-52-SDR-2S100 | FLI-72-SDR-2S100 |
| Sliding Drawer Inventory Racks, 3" high boxes (4ml sample) 100-Cell Divider    | FLI-32-SDR-3S100 | FLI-52-SDR-3S100 | FLI-72-SDR-3S100 |
| Standard Cellular Inventory Racks, 2" high boxes (2ml sample) 100-Cell Divider | FLI-32-SUR-2S100 | FLI-52-SUR-2S100 | FLI-72-SUR-2S100 |
| Standard Cellular Inventory Racks, 3" high boxes (4ml sample) 100-Cell Divider | FLI-32-SUR-3S100 | FLI-52-SUR-3S100 | FLI-72-SUR-3S100 |

| Individual Storage Rack Systems | Catalog No | Catalog No | Catalog No |
|---------------------------------|------------|------------|------------|
|---------------------------------|------------|------------|------------|

**Sliding Drawer Sample Racks For Fiberboard Storage Boxes (Boxes Not Included)**

|  |                          |                         |                          |
|--|--------------------------|-------------------------|--------------------------|
| Sliding Drawer Rack, for 2" high (2ml sample) boxes; holds 6 boxes high x 4 boxes deep |                          | SDR-624-N<br>Capacity 8 | SDR-624-N<br>Capacity 24 |
| Sliding Drawer Rack, for 2" high (2ml sample) boxes; holds 5 boxes high x 4 boxes deep | SDR-524-N<br>Capacity 6  | SDR-524-N<br>Capacity 8 |                          |
| Sliding Drawer Rack, for 2" high (2ml sample) boxes; holds 4 boxes high x 4 boxes deep | SDR-424-N<br>Capacity 6  |                         |                          |
| Sliding Drawer Rack, for 3" high (4ml sample) boxes; holds 4 boxes high x 4 boxes deep |                          | SDR-434-N<br>Capacity 8 | SDR-434-N<br>Capacity 24 |
| Sliding Drawer Rack, for 3" high (4ml sample) boxes; holds 3 boxes high x 4 boxes deep | SDR-334-N<br>Capacity 12 | SDR-334-N<br>Capacity 8 |                          |

**Standard Cellular Inventory Racks for Fiberboard Storage Boxes (Boxes Not Included)**

|   |                          |                         |                          |
|---|--------------------------|-------------------------|--------------------------|
| Inventory Rack for 2" (2ml sample) boxes; 6 boxes high x 4 boxes deep |                          | SUR-624-N<br>Capacity 8 | SUR-624-N<br>Capacity 24 |
| Inventory Rack for 2" (2ml sample) boxes; 5 boxes high x 4 boxes deep | SUR-524-N<br>Capacity 6  | SUR-524-N<br>Capacity 8 |                          |
| Inventory Rack for 2" (2ml sample) boxes; 4 boxes high x 4 boxes deep | SUR-424-N<br>Capacity 6  |                         |                          |
| Inventory Rack for 3" (4ml sample) boxes; 4 boxes high x 4 boxes deep |                          | SUR-434-N<br>Capacity 8 | SUR-434-N<br>Capacity 24 |
| Inventory Rack for 3" (4ml sample) boxes; 3 boxes high x 4 boxes deep | SUR-334-N<br>Capacity 12 | SUR-334-N<br>Capacity 8 |                          |

**Microplate Storage Racks (Plates Not Included)**

|   |                            |                            |                             |
|---|----------------------------|----------------------------|-----------------------------|
| Inventory Rack for microplates, with locking rod; 108 standard plates with cover lid per rack | SUMPR-612-LR<br>Capacity 6 | SUMPR-612-LR<br>Capacity 8 | SUMPR-612-LR<br>Capacity 24 |
| Inventory Rack for microplates, with locking rod; 96 standard plates with cover lid per rack  |                            | SUMPR-611-LR<br>Capacity 8 |                             |
| Inventory Rack for microplates, with locking rod; 60 standard plates with cover lid per rack  | SUMPR-616-LR<br>Capacity 6 |                            |                             |

| Fiberboard Storage Boxes and Dividers | Catalog No | Catalog No | Catalog No |
|---------------------------------------|------------|------------|------------|
|---------------------------------------|------------|------------|------------|

|   |          |          |          |
|---|----------|----------|----------|
| Inventory Box, 2" high (2ml sample) with 100-Cell Divider | B2C-S100 | B2C-S100 | B2C-S100 |
| Inventory Box, 3" high (4ml sample) with 100-Cell Divider | B3C-S100 | B3C-S100 | B3C-S100 |
| Inventory Box, 2" high (2ml sample) Without Divider       | B2C      | B2C      | B2C      |
| Inventory Box, 3" high (4ml sample) Without Divider       | B3C      | B3C      | B3C      |
| Box Divider, 81-Cell                                      | D81      | D81      | D81      |
| Box Divider, 64-Cell                                      | D64      | D64      | D64      |



Sliding Drawer Rack, Catalog No. SDR-624-2S100 shown with 2" (2ml) boxes.

## SANYO Refrigeration Delivers Uniform Temperature

The SANYO cascade refrigeration system uses SANYO-built compressors designed for high-performance, reliability and peace of mind.

Refrigeration components are carefully selected and matched for optimum operation under demanding laboratory environments.

- Interior design with insulated inner doors maintains maximum top-to-bottom temperature uniformity at all shelf levels.
- Increased cooling capacity improves temperature recovery after door openings.
- Quieter operation is achieved through condenser fan blade design, noise abatement insulation and anti-vibration mounts.
- Voltage boost and surge protection devices permit dependable operation over wider power ranges and environmental conditions.



SANYO is a pioneer in development of consumer products worldwide. As a result, SANYO Electric Biomedical products include many innovative features such as patented vacuum insulation panels, keyless entry systems, quiet-running refrigeration compressors and intuitive microprocessor electronics available through our exclusive Vertical Component Integration™ program. This powerful corporate technology transfer capability, plus modern robotic manufacturing and quality assurance processes, guarantees that only the very best components are used in each SANYO product.



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



# Integrated Solutions to Ultra-Low Temperature Freezers

**1.** SANYO patented V.I.P.<sup>®</sup> Vacuum Insulation Panel cabinet construction offers superior insulation with maximum use of interior space.

**2.** Optional keyless entry system (not shown) enhances security of stored product by restricting access to authorized users only.

**3.** Easy-In / Easy-Out<sup>™</sup> outer door latch closes smoothly with a single-hand action over a cam action bearing; door can be secured with independent padlock provided by customer.

**4.** Universal keyed door lock provides additional level of security.

**5.** Microprocessor-based controller includes comprehensive setpoint, alarm, monitoring and diagnostic functions.

**6.** Remote alarm contacts can be connected to independent monitoring system.

**7.** Circular chart temperature recorder (optional) installs easily in pre-engineered mounting space.

**8.** Insulated inner doors help maintain interior temperature during routine openings. Two inner doors, shown, are standard. Multiple inner door configurations for flexible storage options are available; see Accessories.

**9.** Easy-In / Easy-Out<sup>™</sup> SANYO Eagle<sup>™</sup> inner door latches feature ergonomic design to close firmly with one hand.

**10.** Front access to washable, electrostatic condenser filter for routine condenser air filter cleaning.

**11.** High impact recessed casters simplify installation.

**12.** Seismic restraints secure cabinet to building superstructure to meet local codes.

**13.** SANYO-built compressors specifically designed for low temperature use offer maximum reliability.

**14.** Multiple access ports permit independent probes, instrumentation or liquid CO<sub>2</sub> back-up system inject tubes.

**15.** Environmentally safe CFC/HCFC-free refrigerants.

**16.** Internal voltage and power management systems assure component protection and best operation efficiencies.



The optional Digital Temperature Recorder\* mounts on the cabinet door. The recorder is programmable to capture and store non-corruptible data points for downloading to an independent data management system to meet criteria outline in U.S. FDA 21 CFR Part 11 directives. An independent probe is placed in the chamber interior.

Digital Recorder meets  
**US FDA 21CFR**  
Part II Criteria For  
Electronic Records

Model MDF-U72VC offers large volume storage, multiple security systems, high performance refrigeration and microprocessor-based controller for comprehensive storage solutions in research, pharmaceutical, clinical and industrial applications.

\* Manufactured by Elpro, Switzerland

## Model And Specification

### Patented V.I.P. Cabinet Construction

|                                    |  |
|------------------------------------|--|
| Insulated Inner Door               | steel-framed, high impact plastic with foamed-in-place insulation                  |
| Inner Door Configuration, Standard | two  |
| Door Gaskets                       | multi-point compression gaskets  |
| Condenser Filter, Easy Cleaning    | electrostatic filter standard, front accessible for easy access, no tools required |
| Rounded Interior Corners           | simplify cleaning  |
| Shelf Brackets                     | incrementally adjustable   |
| Casters                            | high-impact multi-wheel  |
| Seismic Restraints                 | standard; hard connection to facility wall   |
| Access Ports                       | multiple ports allow use of injection tubes, probes, leads, instrumentation        |

The MDF-U72VC includes two inner doors, standard. Easy-In / Easy-Out™ inner doors are available in half sets of two, permitting partitioning of interior. Two smaller doors per set.

For four-door configuration order two sets.  
Catalog No. MDF-72ID



Quantity Required: 1 1 2

### General Specification

|                                  | MDF-U32V                       | MDF-U52VC                      | MDF-U72VC                      |
|----------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Temperature Range (Ambient 30°C) | -50°C to -86°C                 | -50°C to -86°C                 | -50°C to -86°C                 |
| Interior Volume                  | 12 cu.ft./334 liters           | 18 cu.ft./518 liters           | 26 cu.ft./727 liters           |
| Area Footprint, Nominal          | 6.25 sq.ft./0.58m <sup>2</sup> | 7.24 sq.ft./0.68m <sup>2</sup> | 9.51 sq.ft./0.88m <sup>2</sup> |

### Dimensions and Weights

|                   | MDF-U32V   | MDF-U52VC  | MDF-U72VC   |
|-------------------|--|--|---|
| Interior          | 19.3"W x 23.6"D x 44.9"H<br>490mm x 599mm x 1140mm | 24.8"W x 23.6"D x 54.3"H<br>629mm x 599mm x 1379mm | 34.25"W x 23.6"D x 55.1"H<br>869mm x 599mm x 1399mm |
| Exterior          | 26.4"W x 34.1"D x 73.2"H<br>670mm x 866mm x 1859mm | 30.3"W x 34.4"D x 78.3"H<br>769mm x 873mm x 1988mm | 39.8"W x 34.4"D x 79.1"H<br>1010mm x 873mm x 2009mm |
| Net Weight, Empty | 569 lbs/258kg                                      | 660 lbs/299kg                                      | 750 lbs/340kg                                       |

### Refrigeration System, CFC/HCFC-Free Refrigerants

|                          | MDF-U32V | MDF-U52VC | MDF-U72VC |
|--------------------------|----------|-----------|-----------|
| High Stage Compressor    | 1/2 HP   | 1 HP      | 1 1/2 HP  |
| Low Stage Compressor     | 3/4 HP   | 1 1/2 HP  | 1 1/2 HP  |
| Built-In Voltage Booster | N/A      | standard  | standard  |
| Sound Abatement          | standard | standard  | standard  |

### Electrical

|                          | MDF-U32V   | MDF-U52VC      | MDF-U72VC      |
|--------------------------|------------|----------------|----------------|
| Single Phase AC Power    | 115V, 60Hz | 208-230V, 60Hz | 208-230V, 60Hz |
| Recommended Breaker      | 15 amp     | 15 amp         | 15 amp         |
| NEMA Plug Reference      | 5-15P      | 6-15P          | 6-15P          |
| NEMA Receptacle Required | 5-15R      | 6-15R          | 6-15R          |

### Cabinet Accessories

|                                |   |
|--------------------------------|---|
| Keyless Entry System           | Interlocking system with numeric pad, locking mechanism, hardware and override key. Factory installed; specify when ordering. Catalog No. MDF-7DL                   |
| Digital Temperature Recorder   | Hamster™ digital temperature recorder. Fully programmable. Includes software. Catalog No. Hamster ET2   |
| Liquid CO2 Back-Up System      | Factory installed; specify when ordering. Catalog No. CVK-UB2(I)  |
| Liquid Nitrogen Back-Up System | Factory Installed; specify when ordering. Catalog No. CVK-UBN2  |
| Chart Recorder                 | Factory installed; specify when ordering. Circular chart.<br>– For Model MDF-U32V, Catalog No. MTR-G85A.<br>– For Models MDF-U52VC, MDF-U72VC, Catalog No. MTR-G85C |
| Chart Paper                    | Package of 50 charts. Catalog No. RP-G85  |
| Replacement Pen                | Catalog No. PG-R  |



SANYO V.I.P.® Series freezers offer high-density storage that effectively reduces the volumetric unit costs of low-temperature freezers.



SANYO Electric Biomedical Co., Ltd., as a member of SANYO Electric Group, has received ISO9001 and ISO14001 Certification for its environmental management system.

SANYO products are built to meet Entela criteria for product safety and performance.



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CO<sub>2</sub> And Multi-Gas Incubators • Cryogenic and Ultra-Low Temperature Freezers  
Lab Freezers and Refrigerators • Autoclaves

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OW6971 • V.I.P.32/52/72 USA • 4/04