

MPR

Технические характеристики

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Ижевск (3412)26-03-58	Набережные Челны (8552)20-53-41	Севастополь (8692)22-31-93	Череповец (8202)49-02-64
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Россия (495)268-04-70	Киргизия (996)312-96-26-47	Казахстан (7172)727-132	



MPR-1412

MPR Pharmaceutical Refrigerators

+2°C to +23°C

1364 L / 1359 L (R type)

The MPR-1412 (shelves) and MPR-1412R (drawers) pharmaceutical refrigerators deliver stable, reliable temperature control for clinical, pharmaceutical, biomedical storage and processing. Fast recovery following door openings assures safe storage even with frequent access and high ambient conditions and to remove heat loads generated by powered instruments.

Airflow Assures Quick Recovery, Interior Uniformity

Vertical, forced air circulation with dual blowers creates a uniform temperature at all shelf or drawer levels, top to bottom and front to back. Internal shelf or drawer clearances permit positive airflow to help restore temperature to setpoint following door openings, and safely accommodates busy, high traffic demand for access to stored contents in pharmacies, clinics and hospitals.

Precision Temperature Control Protects Inventory

Because many pharmaceuticals are degraded or destroyed if accidentally frozen, it is important that temperature be adjusted to desired setpoint in accordance with drug manufacturers' insert specifications. MPR Series pharmaceutical refrigerators operate over a temperature range of 2°C to 23°C. Actual interior air temperature is displayable in 0.1°C increments.

Choose Your Inventory Management Preference

The MPR Series pharmaceutical refrigerator offers two choices in inventory management. The MPR-1412 includes 4 open-wire shelves strong enough to hold bulk loads. The MPR-1412R is equipped with heavy-duty, fully-extendable painted steel pull-out drawers for more convenient access to the stored product such as large bottles or reagent kits.



Airflow Prevents Temperature Stratification

The top-mounted air circulation blower directs air downward so it goes along the back, side and front of the load-in drawers or shelves. Regardless of location, all products are subjected to the same safe temperature to assure repeatability of stored product viability.



Microprocessor Controls Simplify Operation

A microprocessor controller monitors all functions. Setpoint is factory set at 5°C. A soft key interface allows setpoint adjustment throughout the operating range. Audible and visual warnings indicate door ajar or temperature deviation from setpoint. The large easy-to-read LED display confirms actual temperature.



Adjustable Shelves Offer Flexibility in Storage Options

Open wire shelves (shown) are adjustable to allow for loads of varying heights such as bulk storage or process equipment such as fraction collectors. The Model MPR-1412R with pull-out drawers (not shown) offers a practical solution with additional ergonomic advantages.



Large Capacity Laboratory Refrigerators

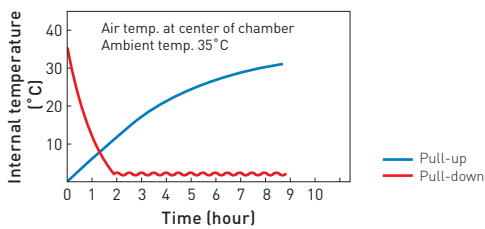
MPR-1412R

Cycle Defrost Function

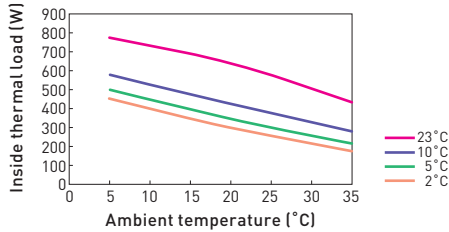
The cycle defrost and evaporator temperature sensor system ensures that defrost occurs only when necessary and automatically, so there is no need to turn off the power for defrosting. Irregular temperature increase during defrost is minimal with no temperature spikes. The evaporation heater also doubles as protection against drops in cabinet temperature caused by a low ambient temperature.

Performance Data

AT35°C Pull-down & Pull-up Temperature

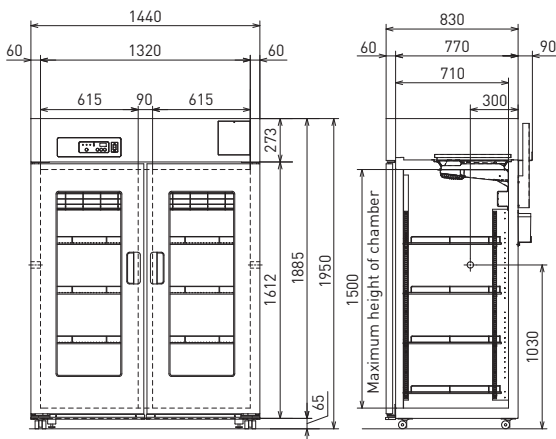


Test of permissible inside thermal load



Dimensions

Unit: mm



Model Number	MPR-1412-PE/1412R-PE		
	MPR-1412-PK, MPR-1412-PR/MPR-1412R-PK, MPR-1412R-PR		
External dimensions (W x D x H) ¹⁾	mm	1440 x 830 x 1950	
Internal dimensions (W x D x H)	mm	1320 x 710 x 1500	
Volume	litres	1364 (MPR-1412) / 1359 (MPR-1412R)	
Net weight	kg	248 (MPR-1412) / 287 (MPR-1412R)	
Performance			
Temperature control range		+2°C to +14°C ²⁾ +2°C to +23°C ³⁾	
Control			
Controller		Microprocessor with non-volatile memory (Safety Lock with keypad)	
Digital temperature display		LED	
Temperature sensor		Thermistor	
Refrigeration			
Cooling method		Forced cool air circulation	
Defrost method		Cycle defrost	
Refrigerant		HFC and HFO combined (CFC-Free)	
Insulation		Rigid polyurethane foamed insulation (CFC-free)	
Construction			
		MPR-1412	MPR-1412R
Exterior material		Painted Steel	
Interior material		Painted Steel	
Outer doors	qty	2, Double pane glass (Self closing)	
Outer door lock		Y	
Shelves	qty	8 wire shelves (polyethylene-coated, 530 x 604 mm, adjustable)	—
Drawers	qty	—	10 solid steel drawers (painted steel, 550 x 530 x 100 mm)
Max. load - per shelf / drawer	kg	50	40
Access port	qty	3	
Access port position		Left / right / top	
Access port diameter	Ø mm	30	
Casters	qty	4	
Interior light		Fluorescent lamp	
Alarms			[V = Visual Alarm, B = Buzzer Alarm, R = Remote Alarm]
Power failure		R (V-B optional) ⁴⁾	
High temperature		V-B-R	
Low temperature		V-B-R	
Door open		V-B	
Electrical and Noise Level			
Power supply	V	PE: 230/240 V, 50 Hz / PK/PR: 220 V, 60 Hz	
Noise level ⁵⁾	dB (A)	48	
Options			
Temperature chart recorder		MTR-0621LH-PE	
- Chart paper		RP-06-PW	
- Recorder housing		MPR-S30-PW	
Circular type recorder		MTR-G04C-PE	
- Chart paper		RP-G04-PW	
- Ink pen		PG-R-PW	
- Recorder housing		MPR-S7-PW	
External mounting power failure alarm		MPR-48B1-PW ⁴⁾	
Blackout panel		MPR-72BP-PW	
Optional Communication Systems			
Digital interface (RS232C/RS485) ⁴⁾		MTR-480-PW	
Ethernet interface (LAN) ⁴⁾		MTR-L03-PW	
Quality Management System			
Certification		ISO 9001	

¹⁾ External dimensions of main cabinet only, excluding external projections - See dimensions drawings on website for full details

²⁾ Air temperature measured at refrigeration compartment centre at AT; -5°C to 0°C, no load

³⁾ Air temperature measured at refrigeration compartment centre at AT; 0°C to 35°C, no load

⁴⁾ Remote alarm comes with optional power failure alarm MPR-48B1-PW (V-B alarm)

⁵⁾ Nominal value - Background noise 20 dB (A)

⁴⁾ Only for MTR-5000 (data acquisition system) users.

• Appearance and specifications are subject to change without notice.

Caution: PHC Corporation guarantees this product under certain warranty conditions. However, please note that PHC Corporation shall not be responsible for any loss or damage to the contents of the product.

MPR Pharmaceutical Refrigerators

+2°C to +23°C

684 L / 671 L (R type)

The MPR-722 (shelves) and MPR-722R (drawers) pharmaceutical refrigerators deliver stable, reliable temperature control for clinical, pharmaceutical, biomedical storage and processing. Fast recovery following door openings assures safe storage even with frequent access and high ambient conditions and to remove heat loads generated by powered instruments.



MPR-722

MPR-722R

Airflow Assures Quick Recovery, Interior Uniformity

Vertical, forced air circulation with blower creates a uniform temperature at all shelf or drawer levels, top to bottom and front to back. Internal shelf or drawer clearances permit positive airflow to help restore temperature to setpoint following door openings, and safely accommodates busy, high traffic demand for access to stored contents in pharmacies, clinics and hospitals.

Precision Temperature Control Protects Inventory

Because many pharmaceuticals are degraded or destroyed if accidentally frozen, it is important that temperature be adjusted to desired setpoint in accordance with drug manufacturers' insert specifications. MPR Series pharmaceutical refrigerators operate over a temperature range of 2°C to 23°C. Actual interior air temperature is displayable in 0.1°C increments.

Choose Your Inventory Management Preference

The MPR Series pharmaceutical refrigerator offers two choices in inventory management. The MPR-722 includes 4 open-wire shelves strong enough to hold bulk loads. The MPR-722R is equipped with heavy-duty, fully-extendable painted steel pull-out drawers for more convenient access to the stored product such as large bottles or reagent kits.



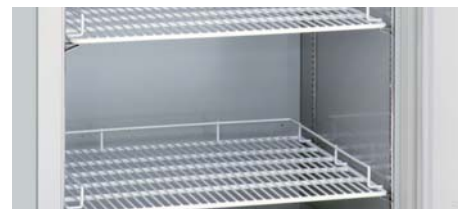
Airflow Prevents Temperature Stratification

The top-mounted air circulation blower directs air downward so it goes along the back, side and front of the load-in drawers or shelves. Regardless of location, all products are subjected to the same safe temperature to assure repeatability of stored product viability.



Microprocessor Controls Simplify Operation

A microprocessor controller monitors all functions. Setpoint is factory set at 5°C. A soft key interface allows setpoint adjustment throughout the operating range. Audible and visual warnings indicate door ajar or temperature deviation from setpoint. The large easy-to-read LED display confirms actual temperature.



Adjustable Shelves Offer Flexibility in Storage Options

Open wire shelves (shown) are adjustable to allow for loads of varying heights such as bulk storage or process equipment such as fraction collectors. The Model MPR-722R with pull-out drawers (not shown) offers a practical solution with additional ergonomic advantages.



Large Capacity Laboratory Refrigerators

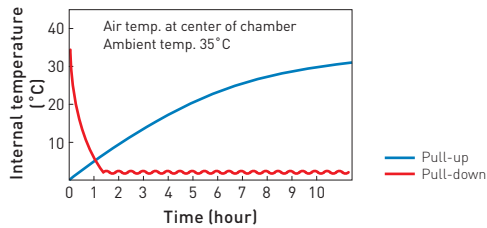
MPR-722

Cycle Defrost Function

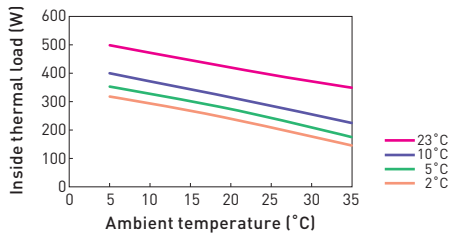
The cycle defrost and evaporator temperature sensor system ensures that defrost occurs only when necessary and automatically, so there is no need to turn off the power for defrosting. Irregular temperature increase during defrost is minimal with no temperature spikes. The evaporation heater also doubles as protection against drops in cabinet temperature caused by a low ambient temperature.

Performance Data

AT35°C Pull-down & Pull-up Temperature

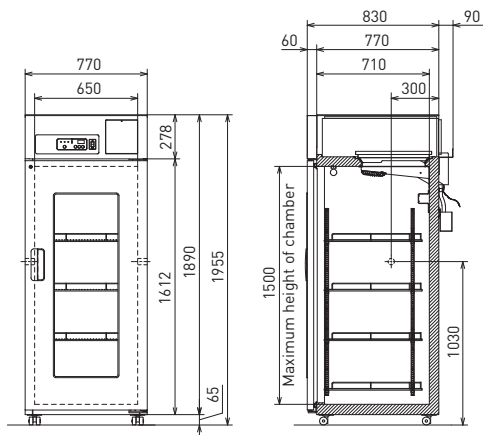


Test of permissible inside thermal load



Dimensions

Unit: mm



Model Number	MPR-722-PE/MPR-722R-PE	
	MPR-722-PK, MPR-722-PR/MPR-722R-PK, MPR-722R-PR	
External dimensions (W x D x H) ¹⁾	mm	770 x 830 x 1955
Internal dimensions (W x D x H)	mm	650 x 710 x 1500
Volume	litres	684 [MPR-722] / 671 [MPR-722R]
Net weight	kg	174 [MPR-722] / 193 [MPR-722R]
Performance		
Temperature control range		+2°C to +14°C ²⁾ +2°C to +23°C ³⁾
Control		
Controller		Microprocessor with non-volatile memory [Safety Lock with keypad]
Digital temperature display		LED
Temperature sensor		Thermistor
Refrigeration		
Cooling method		Forced cool air circulation
Defrost method		Cycle defrost
Refrigerant		HFC and HFO combined [CFC-Free]
Insulation		Rigid polyurethane foamed insulation [CFC-free]
Construction		
		MPR-722
		MPR-722R
Exterior material		Painted Steel
Interior material		Painted Steel
Outer doors	qty	1, Double pane glass [Self closing]
Outer door lock		Y
Shelves	qty	4 wire shelves (polyethylene-coated, 565 x 604 mm, adjustable)
Drawers	qty	5 solid steel drawers [painted steel, 550 x 530 x 100 mm]
Max. load - per shelf / drawer	kg	50 / 40
Access port	qty	3
Access port position		Left / right / top
Access port diameter	Ø mm	30
Casters	qty	4
Interior light		Fluorescent lamp
Alarms (V = Visual Alarm, B = Buzzer Alarm, R = Remote Alarm)		
Power failure		R [V-B optional] ⁴⁾
High temperature		V-B-R
Low temperature		V-B-R
Door open		V-B
Electrical and Noise Level		
Power supply	V	PE: 230/240 V, 50 Hz / PK/PR: 220 V, 60 Hz
Noise level ⁵⁾	dB (A)	48
Options		
Temperature chart recorder		MTR-0621LH-PE
- Chart paper		RP-06-PW
- Recorder housing		MPR-S30-PW
Circular type recorder		MTR-G04C-PE
- Chart paper		RP-G04-PW
- Ink pen		PG-R-PW
- Recorder housing		MPR-S7-PW
External mounting power failure alarm		MPR-48B1-PW ⁴⁾
Blackout panel		MPR-72BP-PW
Optional Communication Systems		
Digital interface [RS232C/RS485] ⁶⁾		MTR-480-PW
Ethernet interface [LAN] ⁶⁾		MTR-L03-PW
Quality Management System		
Certification		ISO 9001

¹⁾ External dimensions of main cabinet only, excluding external projections - See dimensions drawings on website for full details
²⁾ Air temperature measured at refrigeration compartment centre at AT: -5°C to 0°C, no load
³⁾ Air temperature measured at refrigeration compartment centre at AT: 0°C to 35°C, no load
⁴⁾ Remote alarm includes optional power failure alarm MPR-48B1-PW (V-B alarm)

⁵⁾ Nominal value - Background noise 20 dB (A)
⁶⁾ Only for MTR-5000 (data acquisition system) users.
 • Appearance and specifications are subject to change without notice.
Caution: PHC Corporation guarantees this product under certain warranty conditions. However, please note that PHC Corporation shall not be responsible for any loss or damage to the contents of the product.



MPR

Natural Refrigerant Pharmaceutical Refrigerators with Freezer

+2°C to +14°C Refrigerators
-30°C to -20°C Freezers



259 L (R: 179 L / F: 80 L)

Providing a complete storage solution — refrigerator and freezer in one unit. The MPR-N250FH/MPR-N250FSH combine high-performance refrigeration with a -30°C freezing environment within a small footprint for flexible, reliable and convenient sample storage. Natural refrigerants minimise environmental impact for a sustainable storage solution.

Natural Refrigerants and Inverter Technology

Naturally occurring hydrocarbon [HC] refrigerants have minimal effect on the environment and are compliant with environmental legislation for climate control. Combined with inverter technology, these refrigerants also provide more efficient cooling without compromising performance and ambient tolerance and recovery speeds following door openings.

Superior Uniformity

The refrigerator provides superior uniformity throughout. Temperatures remain stable wherever products are stored, even in a fully loaded chamber. The refrigerator is engineered to prevent inadvertent freezing of temperature sensitive vaccines.

Security Control and Monitoring

The microprocessor controller and OLED display are door mounted at eye level. Control buttons allow convenient but secure user control. Refrigerator and freezer temperatures can be displayed in 0.1°C increments simultaneously or individually. Minimum/maximum temperatures are automatically displayed every 12/24 hours. All alarm conditions are displayed and recorded. Data transfer is through a USB port.

Energy-efficient performance



Natural refrigerants, compressors and integrated electronics combine to achieve facility sustainability objectives by minimising any environmental impact without compromising cooling performance, ambient tolerance and recovery speeds following door openings.

Temperature Distribution

Temperature uniformity is maintained at all storage levels even at full load conditions. This provides even, horizontal airflow across the solid adjustable glass shelves at each shelf level to assure optimum temperature uniformity under full load conditions.



Safe & Secure storage



Adjustable audible and visual alarms are standard, along with integrated system diagnostics and predictive performance supervision. The password-protected control panel provides security and minimises risk of accidental changes.

Pharmaceutical Refrigerators with Freezer

With the new platform, the volume of the freezer (-30°C) has increased to 80 L, which is about 105%* larger than the conventional model. By implementing a new platform with improved duct and mechanical layout, storage efficiency increased by 10% per area of storage.

* comparison with MPR-215F.

Ease of Use



Removable glass shelves inside the refrigerator compartment enable easy cleaning. The solid shelf construction allows bottles and vials to be securely positioned. Clear visibility inside the refrigerator compartment is provided by an LED light. Optional containers for the freezer compartment are available for flexible storage solutions.

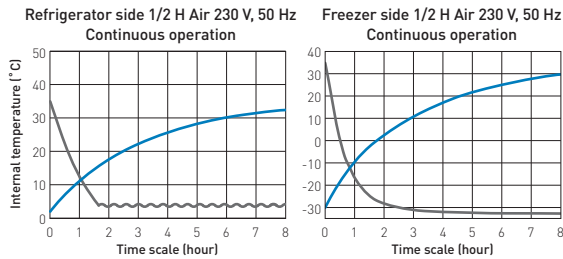
Defrost Methods

The MPR-N250FH/MPR-N250FSH include manual defrost for the freezer compartment. The refrigerator compartment includes automatic defrost which activates electronically when needed. The refrigerator evaporator operates above freezing at all times. This prevents vaccines and lab supplies from freezing.

Performance Data

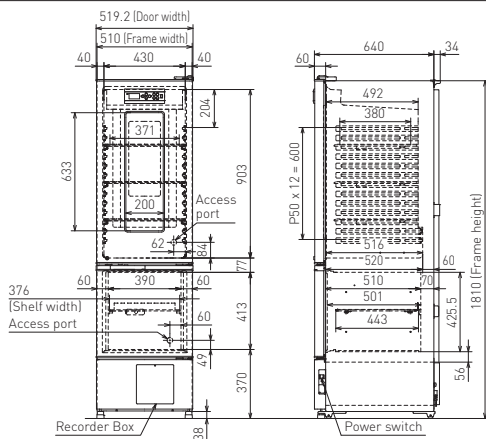
Pull-down & Pull-up Temperature (No load)
AT35°C (Refrigerator/Freezer)

— Pull-down
— Pull-up



Dimensions

Unit: mm



Model Number		MPR-N250FH-PE / MPR-N250FSH-PE	
		MPR-N250FH-PK / MPR-N250FSH-PK	
		MPR-N250FH-PA / MPR-N250FSH-PA	
Dimensions		Refrigerator	Freezer
External dimensions (W x D x H) ¹⁾	mm	510 x 640 x 1810	
Internal dimensions (W x D x H)	mm	430 x 516 x 903	390 x 501 x 413
Volume	litres	179	80
Net weight	kg	95 (FH) / 91 (FSH)	
Performance			
Temperature control range ²⁾	°C	2 to 14	-30 to -20
Control			
Controller		Microprocessor with non-volatile memory	
Display		Digital (White graphic Organic LED), 1°C (increment of 0.1)	
Temperature sensor		Thermistor	
Refrigeration			
Cooling method		Fan forced air circulation	Direct cooling
Defrost method		Cyclical defrost	Manual
Refrigerant		HC refrigerant	
Insulation		Cyclopentane foamed polyurethane	
Construction			
Exterior material		Painted steel (PCM)	
Interior material		ABS Resin	Painted Steel
Outer doors	qty	2 (glass window [1 (FH) / 0 (FSH)])	
Outer door lock		Cylinder lock x1	
Shelves		Tempered glass [3]	Coated steel wires [1]
Max. load - per shelf	kg	20	10
Access port	qty	1	1
Access port position		Back	
Access port diameter	Ø mm	30	
Casters	qty	4	
Interior light		LED	—
Alarms [V = Visual Alarm, B = Buzzer Alarm, R = Remote Alarm, M = Message]			
Power failure ³⁾		R (V-B optional)	
High temperature		V-B-M-R	
Low temperature		V-B-M-R	
Door open		V-B-M	
Electrical and Noise Level			
Power supply	V	PE: 220/230/240 V, 50 Hz / PK: 220 V, 60 Hz / PA: 115 V, 60 Hz	
Noise level ⁴⁾	dB (A)	40	
Options			
Temperature recorders	Continuous strip type - Chart paper - Recorder housing	MTR-0621LH-PE/PA RP-06-PW MPR-S30W-PW	— — —
	Circular type - Chart paper - Ink pen - Recorder housing	MTR-G3504C-PE / MTR-G3504A-PA RP-G3504-PW PG-RB-PW MPR-S7-PW ⁵⁾	— — —
Temperature recorders	Continuous strip type - Chart paper - Recorder housing	— — —	MTR-4015LH-PE/PA RP-40-PW MPR-S30W-PW
	Battery kit for power failure alarm		MPR-48B2-PW ⁶⁾
Optional Communication Systems			
Digital interface (RS232C/RS485) ⁷⁾		MTR-480-PW	
Ethernet interface (LAN) ⁷⁾		MTR-L03-PW	

¹⁾ Exterior dimensions of main cabinet only, excluding external projections - See dimensions drawings on website for full details.

²⁾ Air temperature measured at refrigeration compartment centre and freezer compartment centre, ambient temperature +30°C, no load.

³⁾ Remote alarm includes optional power failure alarm MPR-48B2-PW (B-R alarm).

⁴⁾ Nominal value - Background noise 20dB (A)

⁵⁾ When installing temperature recorder MTR-G3504A, optional mounting hardware is necessary.

⁶⁾ Requires optional battery kit for power failure alarm MPR-48B2-PW

⁷⁾ Only for MTR-5000 (data acquisition system) users.

• Appearance and specifications are subject to change without notice.

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MPR

Natural Refrigerant Pharmaceutical Refrigerators with Freezer

+2°C to +14°C Refrigerators
-20°C to -30°C Freezers



462 L (R: 326 L / F: 136 L)

Providing a complete storage solution — refrigerator and freezer in one unit. The MPR-N450FH/MPR-N450FSH combine high-performance refrigeration with a -30°C freezing environment within a small footprint for flexible, reliable and convenient sample storage. Natural refrigerants minimise environmental impact for a sustainable storage solution.



MPR-N450FH

MPR-N450FSH

Natural Refrigerants and Inverter Technology

Naturally occurring hydrocarbon [HC] refrigerants have minimal effect on the environment and are compliant with environmental legislation for climate control. Combined with inverter technology, these refrigerants also provide more efficient cooling without compromising performance and ambient tolerance and recovery speeds following door openings.

Superior Uniformity

The refrigerator provides superior uniformity throughout. Temperatures remain stable wherever products are stored, even in a fully loaded chamber. The refrigerator is engineered to prevent inadvertent freezing of temperature sensitive vaccines.

Security Control and Monitoring

The microprocessor controller and OLED display are door mounted at eye level. Control buttons allow convenient but secure user control. Refrigerator and freezer temperatures can be displayed in 0.1°C increments simultaneously or individually. Minimum/maximum temperatures are automatically displayed every 12/24 hours. All alarm conditions are displayed and recorded. Data transfer is through a USB port.

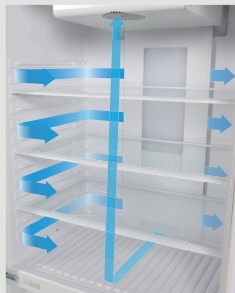
Energy-efficient performance



Natural refrigerants, compressors and integrated electronics combine to achieve facility sustainability objectives by minimising any environmental impact without compromising cooling performance, ambient tolerance and recovery speeds following door openings.

Temperature Distribution

The refrigerator includes a high performance refrigeration system with a forced air, back wall plenum. This provides even, horizontal airflow across the solid, adjustable glass shelves at each shelf level. A uniform freezer temperature is maintained through a cold wall refrigeration system with natural circulation.



Safe & Secure storage



Adjustable audible and visual alarms are standard, along with integrated system diagnostics and predictive performance supervision. The password-protected control panel provides security and minimises risk of accidental changes.

Pharmaceutical Refrigerators with Freezer

With the new platform, the volume of the freezer (-30°C) has increased to 136 L, which is about 60%* larger than the conventional model. By implementing a new platform with improved duct and mechanical layout, storage efficiency increased by 10% per area of storage.

* comparison with MPR-414F.

Ease of Use



Removable glass shelves inside the refrigerator compartment enable easy cleaning. Clear visibility inside the refrigerator compartment is provided by an LED light. Optional containers

for the freezer compartment are available for flexible storage solutions.

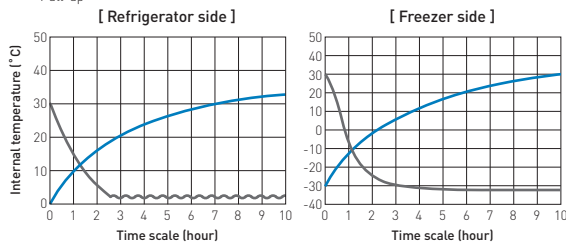
Defrost Methods

The MPR-N450FH/MPR-N450FSH include manual defrost for the freezer compartment. The refrigerator compartment includes automatic defrost which activates electronically when needed. The refrigerator evaporator operates above freezing at all times. This prevents vaccines and lab supplies from freezing.

Performance Data

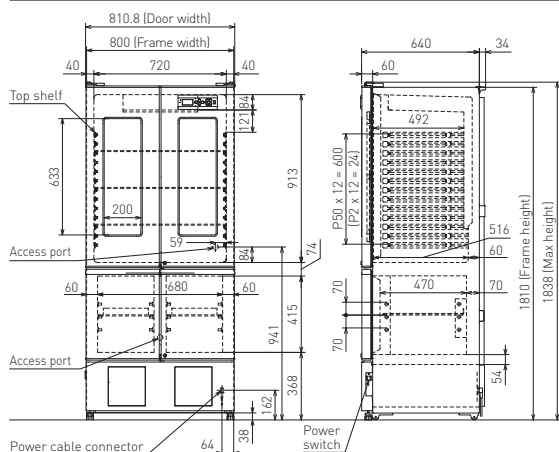
AT30°C Pull-down & Pull-up Temperature (No load)

— Pull-down (220/230/240 V, 50 Hz)
— Pull-up



Dimensions

Unit: mm



Model Number	MPR-N450FH-PE / MPR-N450FSH-PE		
	MPR-N450FH-PA / MPR-N450FSH-PA		
	MPR-N450FH-PK / MPR-N450FSH-PK		
Dimensions	Refrigerator	Freezer	
External dimensions (W x D x H) ¹⁾	mm	800 x 640 x 1810	
Internal dimensions (W x D x H)	mm	720 x 516 x 913	680 x 470 x 415
Volume	litres	326	136
Net weight	kg	129 (FH) / 121 (FSH)	
Performance			
Temperature control range ²⁾	°C	2 to 14	-20 to -30
Control			
Controller		Microprocessor with non-volatile memory	
Display		Digital (White graphic OLED), 1°C (increment of 0.1)	
Temperature sensor		Thermistor	
Refrigeration			
Cooling method		Fan forced air circulation	Direct cooling
Defrost method		Cyclical defrost	Manual
Refrigerant		HC refrigerant	
Insulation		PUF	
Construction			
Exterior material		Painted Steel	
Interior material		ABS Resin	Painted Steel
Outer doors	qty	4 (glass window [2(FH)]/0([FSH])	
Outer door lock		Y	Y
Shelves	qty	Tempered glass (3)	Coated steel wires (2)
Max. load - per shelf	kg	25	15
Access port	qty	R (1) / F (1)	
Access port position		Back	
Access port diameter	Ø mm	30	
Castors	qty	4	
Interior light		LED	
Alarms (V = Visual Alarm, B = Buzzer Alarm, R = Remote Alarm, M = Message)			
Power failure ³⁾		R ³⁾	
High temperature		V-B-M-R	
Low temperature		V-B-M-R	
Door open		V-B-M	
Electrical and Noise Level			
Power supply	V	PE: 220/230/240 V, 50 Hz / PA: 115 V, 60 Hz / PK: 220 V, 60 Hz	
Noise level ⁴⁾	dB (A)	41	
Options			
Temperature recorders		-	-
Temperature chart recorders		MTR-0621LH-PE/PA	-
- Chart paper		RP-06-PW	-
- Recorder housing		MPR-S30-PW	-
Circular type chart recorders		MTR-G3504C-PE/MTR-G3504A-PA	
- Chart paper		RP-G3504-PW	
- Ink pen		PG-RB-PW	
- Recorder housing		MPR-S7-PW ⁵⁾	-
Continuous strip type chart recorder		-	MTR-4015LH-PE/PA
- Chart paper		-	RP-40-PW
- Recorder housing		-	MPR-S30-PW
Battery kit for power failure alarm		MPR-48B2-PW	
Containers inside freezer		-	MPR-45FSC-PW
Blackout panel		MPR-45BP-PW	-
Optional Communication Systems			
Digital interface [RS232C/RS485] ⁶⁾		MTR-480-PW	
Ethernet interface [LAN] ⁶⁾		MTR-L03-PW	

PUF = Rigid polyurethane foamed insulation

¹⁾ Exterior dimensions of main cabinet only, excluding external projections - See dimensions drawings on website for full details.

²⁾ Air temperature measured at refrigeration compartment centre and freezer compartment centre, ambient temperature +30°C, no load.

³⁾ Remote alarm includes optional power failure alarm MPR-48B2-PW (B-R alarm).

⁴⁾ Nominal value - Background noise 20dB (A)

⁵⁾ When installing temperature recorder MTR-G3504A, optional mounting hardware is necessary.

⁶⁾ Only for MTR-5000 (data acquisition system) users. Appearance and specifications are subject to change without notice.

Caution: PHC Corporation guarantees this product under certain warranty conditions. However, please note that PHC Corporation shall not be responsible for any loss or damage to the contents stored in the product.



Pharmaceutical Refrigerator with freezer

415 L (Ref) / 176 L (Frz)

Providing a complete storage solution; refrigerator and freezer in one unit. The MPR-715F combines high-performance refrigeration with a -30°C freezing environment within a small footprint for flexible, reliable and convenient sample storage.

Optimum Temperature Distribution

Fan-forced air circulation system in the refrigerator offers better uniformity and fast recovery of temperature after routine door openings to minimise fluctuations.

Excellent Stability

A unique defrost system in the refrigerator operates only short cycles as required to prevent unnecessary temperature spikes. The freezer compartment is manually defrosted for stable temperature performance.

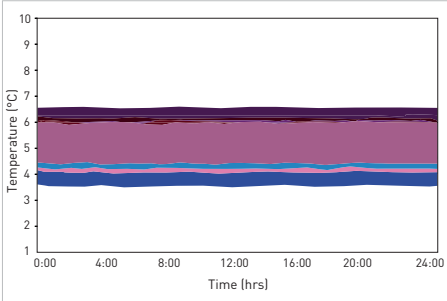
Precise Control & Monitoring

Microprocessor controller, combined with accurate sensors, maintains precise temperatures within the refrigerator and freezer, while a comprehensive alarm system alerts of any temperature deviations.



Two Temperatures, One Unit

Secure storage at both freezing and refrigerated temperatures within a minimal footprint is an ideal solution for installation in smaller spaces.



Usability with Performance

PHCbi refrigerators are designed specifically for laboratory applications, with precise performance even under demanding conditions.



Safe & Secure Storage

Multiple safety systems such as high / low temperature audible and visual alarms, remote alarm, door open alarm and keyed door locks.

Pharmaceutical Refrigerator with freezer



Optimized for Superior Usability

One unit with dual temperature zones requires minimal installation space. Four-door design reduces air loss during door opening and makes efficient use of space in front of the unit.

PHCbi Design

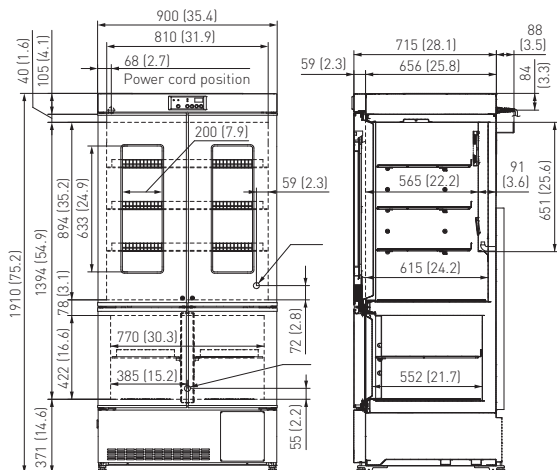
Refrigeration systems within both compartments are specially designed for demanding scientific and laboratory storage. Compressors are application specific, components are carefully matched and systems are laid out to ensure high-performance cooling with ultimate reliability.

Quiet operation

Two specially designed compressors offer quiet operation for installation in busy working environments without disruption.

Dimensions

Unit : mm (inch)



Model Number		MPR-715F-PA	MPR-715F-PE
External dimensions (W x D x H) ¹⁾	mm	900 x 715 x 1910	
Internal dimensions (W x D x H)	mm	810 x 615 x 894 (Ref) / 770 x 552 x 422 (Frz)	
Volume	litres	415 (Ref) / 176 (Frz)	
Net weight	kg	170	
Performance			
Cooling performance ²⁾	°C	+2 / -30	
Temperature setting range	°C	+2 to +14 (Ref) / -35 to -15 (Frz)	
Temperature control range ²⁾	°C	+2 to +14 (Ref) / -30 to -20 (Frz)	
Control			
Controller		Microprocessor, non-volatile memory	
Display		LED	
Temperature sensor		Thermistor	
Refrigeration			
Cooling method		Fan forced air circulation (Ref) / Direct (Frz)	
Defrost method		Cyclical defrost (Ref) / Manual (Frz)	
Refrigerant		HFC and HFO combined	
Insulation material		PUF	
Insulation thickness	mm	40 (Ref) / 60 (Frz)	
Construction			
Exterior material		Painted Steel	
Interior material		Painted steel (Ref) / Painted steel (Frz)	
Outer door	qty	4	
Outer door lock	qty	2	
Shelves	qty	3 (Ref) / 2 (Frz)	
Max. load - per shelf	kg	25 (Ref) / 15 (Frz)	
Access port	qty	2	
Access port position		Back	
Access port diameter	∅ mm	30	
Casters		4	
Interior light		LED (Ref)	
Alarms (V = Visual Alarm, B = Buzzer Alarm, R = Remote Alarm)			
Power failure ³⁾		V-B-R	
High temperature		V-B-R	
Low temperature		V-B-R	
Door open		V-B	
Electrical and Noise Level		MPR-715F-PA	MPR-715F-PE
Power supply	V	115	220 / 230 / 240
Frequency	Hz	60	50
Noise level ⁴⁾	dB (A)	43	
Options			
Temperature recorders			
- Circular type		MTR-G3504A-PA	MTR-G3504C-PE
		- Chart paper: RP-G3504-PW - Ink pen: PG-RB-PW - Recorder housing: MPR-S7-PW	
- Continuous strip type		MTR-0621LH-PA (Ref) / MTR-4015LH-PA (Frz)	MTR-0621LH-PE (Ref) / MTR-4015LH-PE (Frz)
		- Chart paper: RP-06-PW (Ref) / RP-40-PW (Frz) - Recorder housing: MPR-S30-PW	
Battery mounting box		MPR-48B1-PW	
Optional Communication Systems			
Ethernet interface (LAN) ⁵⁾		MTR-L03-PW	
Digital interface (RS232C/RS485) ⁵⁾		MTR-480-PW	

1) Exterior dimensions of main cabinet only, excluding handle and other external projections.

2) Air temperature measured at refrigerator / freezer centre, ambient temperature 30°C, no load.

3) with MPR-48B1 installed.

4) Nominal value - Background noise 20 dB(A).

5) Only for MTR-5000 (data acquisition system) users.

Caution: PHC Corporation guarantees the product under certain warranty conditions.

PHC Corporation in no way shall be responsible for any loss of content or damage to content.



MPR-S500H

MPR-S500RH

MPR Pharmaceutical Refrigerators with Natural Refrigerants

+2°C to +14°C



554 L (H) / 550 L (RH)

Uniform storage temperature for the most demanding applications

MPR Pharmaceutical Refrigerators offer a complete solution for the most demanding requirements for storage of pharmaceuticals, medicines, vaccines, and other temperature-sensitive applications.

Natural Refrigerants and Inverter Technology

Hydrocarbon [HC] refrigerants have minimal effect on the environment and are compliant with environmental legislation for climate control. Combined with inverter technology, these refrigerants also provide more efficient cooling without compromising cooling performance, ambient tolerance and recovery time following door openings.

OLED Control Panel

The microprocessor controller and OLED display have good visibility and intuitive operation. Control buttons allow convenient but secure user control. Refrigerator temperature can be displayed in 0.1°C increments. Minimum/maximum temperatures are automatically displayed every 12/24 hours. All alarm conditions are displayed and recorded.

User-friendly Design

The ergonomic design of the MPR Pharmaceutical Refrigerators provides a clear view of stored items through the large glass door. The slim, hassle-free sliding glass door allows for easy retrieval of products, without the concern for swinging door clearance. Users can prevent unauthorized access by utilizing the keylock on the door.



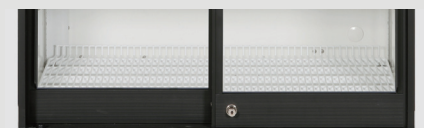
Energy-efficient performance

Natural refrigerants, compressors and integrated electronics combine to achieve facility sustainability objectives by minimising any environmental impact without compromising cooling performance, ambient tolerance and recovery time following door openings.



Safe & Secure storage

Adjustable audible and visual alarms are standard, along with integrated system diagnostics and predictive performance supervision. The password-protected control panel provides security and minimises risk of accidental changes. If desired, alarm and operating history can be uploaded through the USB port.



Enhanced sliding glass door

The sliding glass door is meticulously designed to increase energy efficiency and safeguards stored items against heat transfer through the window. The thermal glass door is constructed from a double glass pane where argon gas is used to fill the 12 mm gap. Together with the air vents near the sliding glass door rail, it prevents the formation of moisture.

Pharmaceutical Refrigerators with Natural Refrigerants

Shelves & Racks

The lineup consists of MPR-S500H equipped with regular shelves on both sides, and MPR-S500RH with racks on the right side (shelves on the left side).



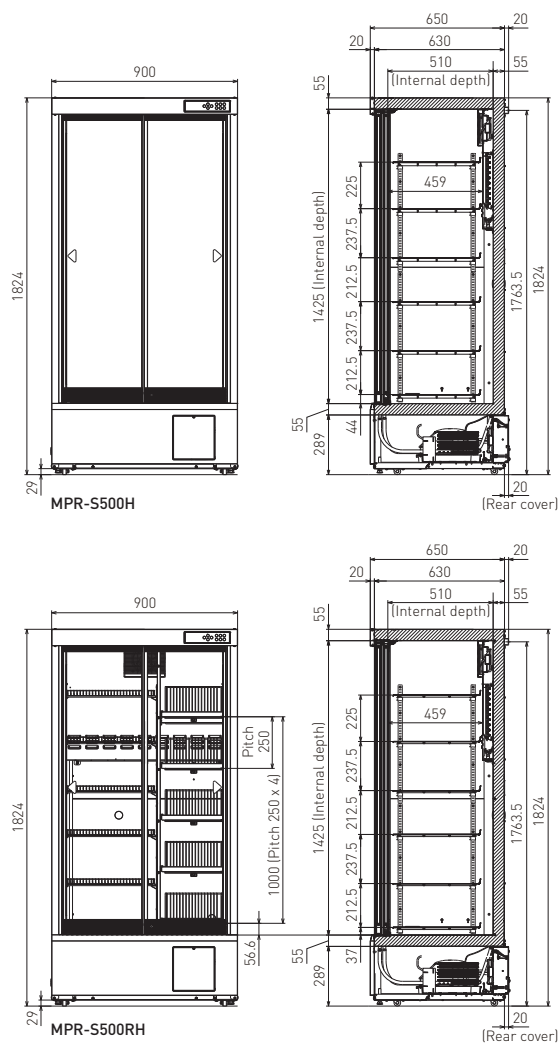
LED Interior Light

The LED interior light automatically turns on/off in conjunction with the door opening/closing. It can also be controlled from the control panel.



Dimensions

Unit : mm



Model Number	MPR-S500H-PE/MPR-S500H-PK MPR-S500H-PA	MPR-S500RH-PE/MPR-S500RH-PK MPR-S500RH-PA
External dimensions (W x D x H) ¹⁾	mm	900 x 650 x 1824
Internal dimensions (W x D x H)	mm	800 x 510 x 1425
Volume	litres	554
Net weight	kg	140 [PE] / 140 [PK] / 139 [PA] 146 [PE] / 146 [PK] / 145 [PA]
Performance		
Temperature control range ²⁾	°C	+2 to +14
Control		
Controller	Microcomputer control system	
Display	Digital display (lin 1°C, 0.1°C increments)	
Temperature sensor	Thermistor sensor	
Refrigeration		
Cooling method	Forced cool air circulation	
Defrost method	Cyclical defrost + forced defrost	
Refrigerant	R-600a	
Insulation	Rigid polyurethane foamed-in place	
Construction		
Exterior material	Painted Steel	
Interior material	Painted Steel	
Outer doors	qty	x2 (Highly insulated double glass door with tempered glass)
Outer door lock	Y	
Shelves	qty	x6 (Hard steel wire on polyethylene coating)
Dimensions	mm	W781 x D420 W430 x D420
Max. load - per shelf	kg	50 20
Access port	qty	2
Access port position	Back	
Access port diameter	Ø mm	30
Casters	qty	x4
Interior light	LED x12	
Accessories		
Key	qty	x2
Alarms (V = Visual Alarm, B = Buzzer Alarm, M = Message, R = Remote Alarm)		
Power failure ³⁾	R ³⁾	
High temperature	V-B-M-R	
Low temperature	V-B-M-R	
Door open	V-B-M	
Electrical and Noise Level		
Power supply	V / Hz	PE: 220, 230, 240/50 PK: 220/60 PA: 115/60
Noise level ⁴⁾	dB (A)	42
Options		
Temperature chart recorders	PE & PK: MTR-0621LH-PE PA: MTR-0621LH-PA	
- Chart paper	RP-06-PW	
- Recorder housing	MPR-S30W-PW	
Circular type chart recorders	PE & PK: MTR-G04C-PE, PA: MTR-G04A-PA	
- Chart paper	RP-G04-PW	
- Ink pen	PG-R-PW	
- Recorder housing	MPR-S7-PW	
Battery kit for power failure alarm	MPR-48B2-PW	
Name card holder	MPR-50CH-PW MPR-50RCH-PW	
Optional Communication Systems		
Digital interface (RS232C/RS485) ⁵⁾	MTR-480-PW	
Ethernet interface (LAN) ⁵⁾	MTR-L03-PW	
Quality Management System		
Certification	ISO9001	

¹⁾ Exterior dimensions of main cabinet only, excluding external projections - See dimensions drawings on website for full details.

²⁾ Air temperature measured at refrigeration compartment center, ambient temperature +35°C, no load.

³⁾ Remote alarm includes optional power failure alarm MPR-48B2-PW (V-B-M-R alarm).

⁴⁾ Nominal value - Background noise 20dB (A)

⁵⁾ Only for MTR-5000 (data acquisition system) users.

• Appearance and specifications are subject to change without notice.

Caution: PHC Corporation guarantees this product under certain warranty conditions. However, please note that PHC Corporation shall not be responsible for any loss or damage to the contents stored in the product.



MPR Pharmaceutical Refrigerators with Natural Refrigerants

+2°C to +14°C



165 L / 345 L

Uniform storage temperature for the most demanding applications

MPR Pharmaceutical Refrigerators offer a complete solution for the most demanding requirements for storage of pharmaceuticals, medicines, vaccines, and other temperature-sensitive applications.

Natural Refrigerants and Inverter Technology

Hydrocarbon [HC] refrigerants have minimal effect on the environment and are compliant with environmental legislation for climate control. Combined with inverter technology, these refrigerants also provide more efficient cooling without compromising cooling performance, ambient tolerance and recovery time following door openings.

OLED Control Panel

The microprocessor controller and OLED display have good visibility and intuitive operation. Control buttons allow convenient but secure user control. Refrigerator temperature can be displayed in 0.1°C increments. Minimum/maximum temperatures are automatically displayed every 12/24 hours. All alarm conditions are displayed and recorded.

User-friendly Design

The ergonomic design of the MPR Pharmaceutical Refrigerators provides a clear view of stored items through the large glass door. The slim, hassle-free sliding glass door allows for easy retrieval of products, without the concern for swinging door clearance. Users can prevent unauthorized access by utilizing the keylock on the door.



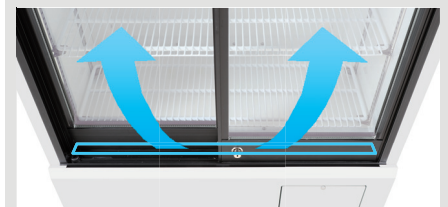
Energy-efficient performance

Natural refrigerants, compressors and integrated electronics combine to achieve facility sustainability objectives by minimising any environmental impact without compromising cooling performance, ambient tolerance and recovery time following door openings.



Safe & Secure storage

Adjustable audible and visual alarms are standard, along with integrated system diagnostics and predictive performance supervision. The password-protected control panel provides security and minimises risk of accidental changes. If desired, alarm and operating history can be uploaded through the USB port.



Enhanced sliding glass door

The sliding glass door is meticulously designed to increase energy efficiency and safeguards stored items against heat transfer through the window. The thermal glass door is constructed from a double glass pane where argon gas is used to fill the 12 mm gap. Together with the air vents near the sliding glass door rail, it prevents the formation of moisture.

Pharmaceutical Refrigerators with Natural Refrigerants

Defrost Methods

Both models feature automatic defrost which activates electronically when needed. The refrigerator evaporator operates above freezing at all times. This prevents vaccines and lab supplies from freezing.

LED Interior Light

The LED interior light automatically turns on/off in conjunction with the door opening/closing. It can also be controlled from the control panel.



Available options



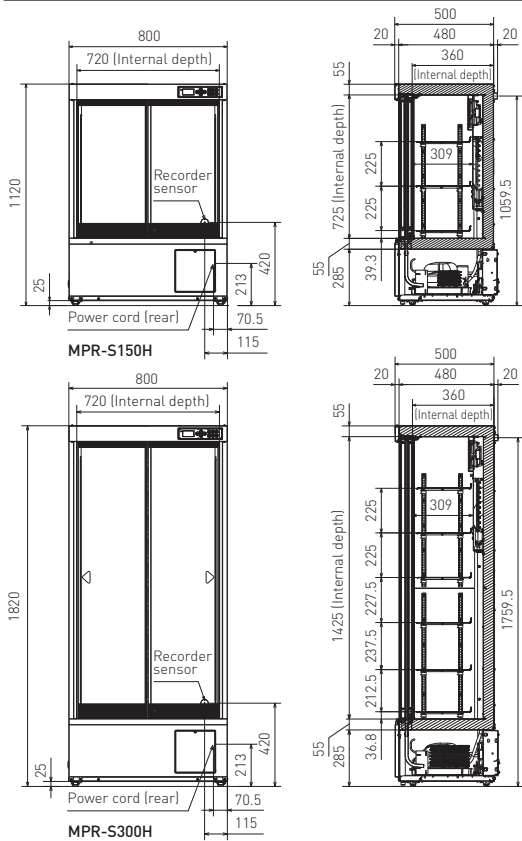
MPR-31RR
Wire shelves (left), Sliding racks (right)



MPR-150GH
Shading glass door

Dimensions

Unit : mm



Model Number	MPR-S150H-PE MPR-S150H-PK	MPR-S300H-PE MPR-S300H-PK	MPR-S300H-PA	
External dimensions (W x D x H) ¹⁾	mm	800 x 500 x 1120	800 x 500 x 1820	
Internal dimensions (W x D x H)	mm	720 x 360 x 725	720 x 360 x 1425	
Volume	litres	165	345	
Net weight	kg	73	105	104
Performance				
Temperature control range ²⁾	°C	2 to 14		
Control				
Controller	Microprocessor with non-volatile memory			
Display	Digital (White graphic OLED), 1°C (increment of 0.1)			
Temperature sensor	Thermistor			
Refrigeration				
Cooling method	Fan forced air circulation			
Defrost method	Cyclical defrost + forced defrost			
Refrigerant	HC refrigerant			
Insulation	PUF (Rigid polyurethane foamed insulation)			
Construction				
Exterior material	Painted Steel			
Interior material	Painted Steel			
Outer doors	qty	2 (Highly insulated double glass door with tempered glass)		
Outer door lock	Y			
Shelves	qty	3 coated steel wires	6 coated steel wires	
Dimensions	mm	W697 x D270		
Max. load - per shelf	kg	20		
Access port	qty	1		
Access port position	Back			
Access port diameter	∅ mm	30		
Casters	qty	4 [2 levelling feet]		
Interior light	LED			
Accessories				
Key	set	x 1		
Alarms (V = Visual Alarm, B = Buzzer Alarm, M = Message, R = Remote Alarm)				
Power failure ³⁾		R ³⁾		
High temperature		V-B-M-R		
Low temperature		V-B-M-R		
Door open		V-B-M		
Electrical and Noise Level				
Power supply	V / Hz	PE: 220, 230, 240/50 PK: 220/60	115/60	
Noise level ⁴⁾	dB [A]	38		
Options				
Temperature chart recorders		MTR-0621LH-PE	MTR-0621LH-PA	
- Chart paper		RP-06-PW		
- Recorder housing		MPR-S30-PW		
Circular type chart recorders		MTR-G04C-PE	MTR-G04A-PA	
- Chart paper		RP-G04-PW		
- Ink pen		PG-R-PW		
- Recorder housing		MPR-S7-PW		
Battery kit for power failure alarm		MPR-48B2-PW		
Shading glass door		MPR-150GH for MPR-S150H, MPR-300GH for MPR-S300H		
Shelves & Sliding racks		-	MPR-31RR-PW (for lower right side) MPR-31LR-PW (for lower left side) ⁵⁾	
Optional Communication Systems				
Digital interface (RS232C/RS485) ⁴⁾		MTR-480-PW		
Ethernet interface (LAN) ⁴⁾		MTR-L03-PW		
Quality Management System				
Certification		ISO9001		

¹⁾ Exterior dimensions of main cabinet only, excluding external projections - See dimensions drawings on website for full details.
²⁾ Air temperature measured at refrigeration compartment centre and freezer compartment centre, ambient temperature +35°C, no load.
³⁾ Remote alarm includes optional power failure alarm MPR-48B2-PW (V-B-M-R alarm).
⁴⁾ Nominal value - Background noise 20dB [A]

⁵⁾ Must be used in combination with MPR-31RR.
⁴⁾ Only for MTR-5000 (data acquisition system) users.
 • Appearance and specifications are subject to change without notice.
Caution: PHC Corporation guarantees this product under certain warranty conditions. However, please note that PHC Corporation shall not be responsible for any loss or damage to the contents stored in the product.

MPR Sliding Door Pharmaceutical Refrigerators

MPR-S163 Pharmaceutical Refrigerator

Effective capacity 158L

Temperature range 2°C to 14°C



Features

Uniform storage temperature for the most demanding applications

The MPR-S163 (former KM-RS16A1E) Pharmaceutical Refrigerator is compact but has a large capacity for reliable storage of pharmaceutical and medical supplies. The Medi-Cool lineup of medical refrigerators that are equipped with advanced cooling and electronic technology to provide precise temperature for the ideal preservation of medical supplies.

Manufactured and distributed by PHCbi, all our Laboratory Refrigerators / Pharmacy Fridges / Vaccine Fridges / lab fridges are designed to meet the most exacting standards required of a specialist laboratory Refrigerator. Effective, reliable temperature control, quiet operation, ease of use and ergonomic design are just a few of the features you can expect as standard from a PHCbi Refrigerator.

Environmentally-friendly

CFC-Free

PHCbi refrigerators feature commercially available CFC-free, HFC refrigerants and CFC-free insulation.

RoHS Compliant

On July 1, 2006, the RoHS legislation (EU Directive 2002/95/EU) came into effect. RoHS is the restriction of hazardous substances to reduce the amount of pollution to the environment. Toxic substances in electrical equipment such as lead, cadmium, mercury, chromium 6+, pbb and PBDE, which can do serious harm to the environment, have been banned. The MPR Pharmaceutical Refrigerators are compliant with these regulations.

Benefits

- Superior cooling performance.
- Energy efficient.
- PHCbi refrigerators feature commercially available CFC-free, HFC. refrigerants and CFC-free insulation.
- RoHS Compliant.
- Uniform Storage Unaffected by Ambient Temperature.
- Effective Temperature Control.
- Space Saving Design.
- Self diagnostic functions and parts replacement notifications

Features

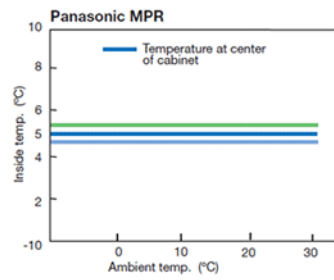
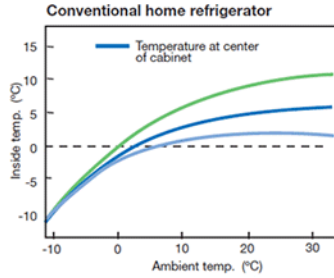
- Alarm and safety devices
- Ridged wire shelves with zinc plated finish
- Microprocessor temperature control
- Fan-forced air circulation
- Cycle Defrost System
- Digital Temperature Display
- Door Open Alarm
- Adjustable high and low temperature alarm (+/- 2 ~ +/- 14°C)
- Adjustable door alarm delay time (0 ~ 15 minutes)

- Optional power failure alarm with remote alarm contacts
- Adjustable auto recovery function of alarm buzzer

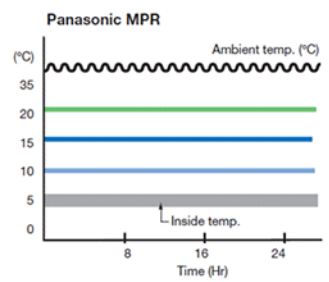
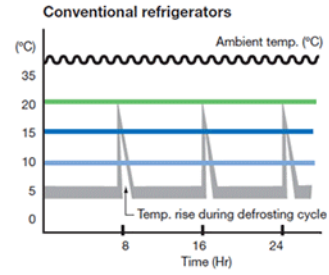
Performance

Performance data MPR-161D(H) / MPR-311D(H)

Relationship between the inside temperature and ambient temperature



Comparison with conventional refrigerators



Product Photos



Specifications

External Dimensions (W x D x H)	800 x 465 x 1090 mm
Internal Dimensions (W x D x H)	720 x 300 x 725 mm

Volume	158 litres
Net Weight	71 kg
Temperature Setting Range	+2 to +14 °C
Temperature Control Range	+2 to +14 °C
Controller	Microprocessor
Display	LED
Temperature Sensor	Thermistor
Cooling Method	Forced air circulation
Defrost Method	Cyclical defrost (plus forced defrost)
Refrigerant	
Insulation Material	PUF
Exterior Material	Painted steel
Interior Material	Stainless steel
Outer Doors	2 sliding doors
Outer Door Lock	Y
Shelves	
Drawers	
Max. Load - Per Shelf/Drawer	20 kg
Max. Load - Total	40 kg
Access Port	1
Access Port Position	Back
Access Port Diameter	30
Casters	2
Interior Light	LED
Power Failure	V-B-R (Optional)
High Temperature	V-B-R
Low Temperature	V-B-R
Door Open	V-B
Power Supply	Local
Noise Level	35 dB [A]

Accessories

Temperature recorders	
Temperature chart recorder	MTR-0621LH-PH

chart paper

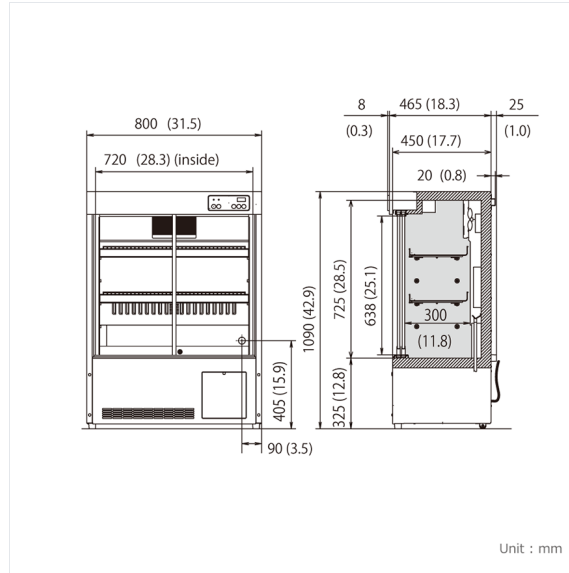
RP-06-PW

Price

MPR-S163

The price might vary in country. Please send the inquiry form for getting quotation.

Dimensions



MPR Sliding Door Pharmaceutical Refrigerators

MPR-S313 Pharmaceutical Refrigerator

Effective capacity 340L

Temperature range 2°C to 14°C



Features

Uniform storage temperature for the most demanding applications

The MPR-S313 (former KM-RS34A1E) Pharmaceutical Refrigerator is compact but has a large capacity for reliable storage of pharmaceutical and medical supplies. The Medi-Cool lineup of medical refrigerators that are equipped with advanced cooling and electronic technology to provide precise temperature for the ideal preservation of medical supplies.

Manufactured and distributed by PHCbi, all our Laboratory Refrigerators / Pharmacy Fridges / Vaccine Fridges / lab fridges are designed to meet the most exacting standards required of a specialist Pharmaceutical Refrigerator. Effective, reliable temperature control, quiet operation, ease of use and ergonomic design are just a few of the features you can expect as standard from a PHCbi Refrigerator.

Environmentally-friendly

CFC-Free

PHCbi refrigerators feature commercially available CFC-free, HFC refrigerants and CFC-free insulation.

RoHS Compliant

On July 1, 2006, the RoHS legislation (EU Directive 2002/95/EU) came into effect. RoHS is the restriction of hazardous substances to reduce the amount of pollution to the environment. Toxic substances in electrical equipment such as lead, cadmium, mercury, chromium 6+, PBB and PBDE, which can do serious harm to the environment, have been banned. The MPR Pharmaceutical Refrigerators are compliant with these regulations.

Benefits

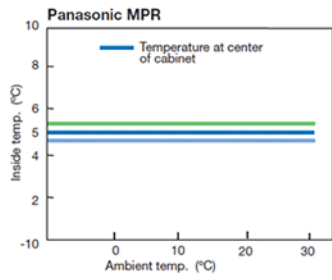
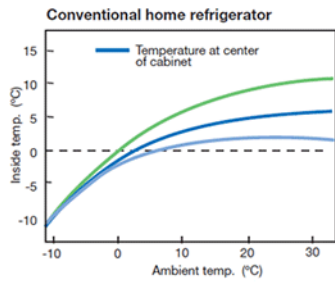
- Superior cooling performance.
- Energy efficient.
- PHCbi refrigerators feature commercially available CFC-free, HFC refrigerants and CFC-free insulation.
- RoHS Compliant.
- Uniform Storage Unaffected by Ambient Temperature.
- Effective Temperature Control.
- Space Saving Design.

Features

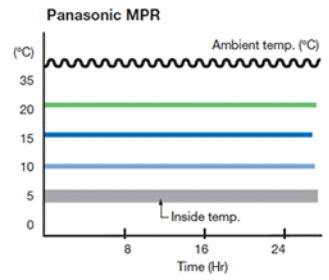
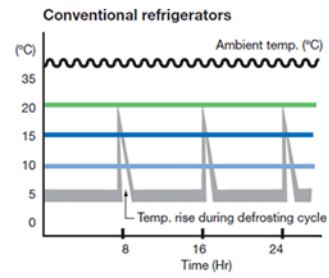
- Alarm and safety devices
- Ridged wire shelves with zinc plated finish
- Microprocessor temperature control
- Abnormal Temperature Alarm and Safety Devices
- Fan-forced air circulation
- Cycle Defrost System
- Digital Temperature Display
- Door Open Alarm

Performance data MPR-161D(H) / MPR-311D(H)

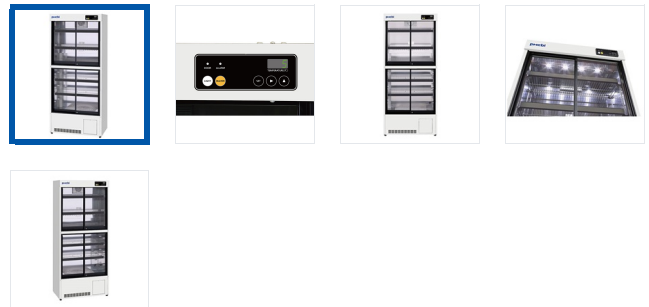
Relationship between the inside temperature and ambient temperature



Comparison with conventional refrigerators



Product Photos



Specifications

External Dimensions (W x D x H)	800 x 465 x 1800 mm
Internal Dimensions (W x D x H)	720 x 350 x 1435 mm
Volume	340 litres
Net Weight	100 kg

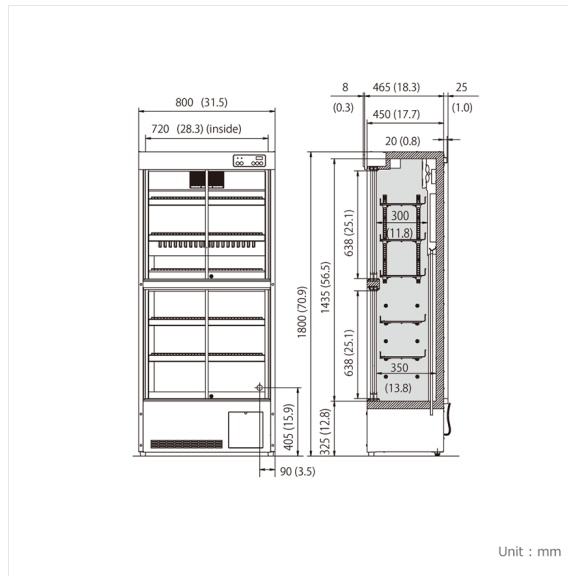
Temperature Setting Range	+2 to +14 °C
Temperature Control Range	+2 to +14 °C
Controller	Microprocessor
Display	LED
Temperature Sensor	Thermistor
Cooling Method	Forced air circulation
Defrost Method	Cyclical defrost (plus forced defrost)
Refrigerant	
Insulation Material	PUF
Exterior Material	Painted steel
Interior Material	Stainless steel
Outer Doors	4 sliding doors
Outer Door Lock	Y
Shelves	
Drawers	
Max. Load - Per Shelf/Drawer	20 kg
Max. Load - Total	100 kg
Access Port	1
Access Port Position	Back
Access Port Diameter	30
Casters	2
Interior Light	LED
Power Failure	V-B-R (Optional)
High Temperature	V-B-R
Low Temperature	V-B-R
Door Open	V-B
Power Supply	Local
Noise Level	40 dB [A]

Accessories

Temperature recorders	
Temperature chart recorder	MTR-0621LH-PH
chart paper	RP-06-PW

Price

Dimensions



По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231	Казань (843)206-01-48	Новокузнецк (3843)20-46-81	Смоленск (4812)29-41-54
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