

**Thermo Scientific  
Puffer Hubbard  
High-Performance  
Laboratory Refrigerators  
and Freezers**



***Chromatography***

***Pharmacy***

***Blood Banking***

***Laboratory***

***Plasma***

***Enzyme***

# Thermo Scientific Puffer Hubbard High-Performance Laboratory Refrigerators and Freezers



**When it comes to protecting your valuable laboratory storage, our high-performance refrigerators and freezers deliver the quality and dependability that household or food service units don't provide.**

There are significant differences in levels of performance and reliability across categories of cold storage equipment. The truth is, it takes far less than a major failure of your refrigerator or freezer to wipe out years of research or your valuable inventory.

Mere temperature fluctuations – common in household and food and beverage units – can damage your samples irreparably at any time, without any warning. Unpredictable defrost cycles alone can alter the integrity of your stored materials.

Consumer and commercial appliances are simply not designed (and won't make the claim) to provide the worry-free protection necessary for high-value contents such as blood products, cell cultures, enzymes, vaccines, and pharmaceuticals.

Thermo Scientific Puffer Hubbard high-performance laboratory refrigerators and freezers are purpose-built in every aspect to protect your valuable materials, providing you with both peace-of-mind and a great return on your investment.

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**Researchers worldwide protect more than two billion samples inside Thermo Scientific cold storage equipment.**

*With proven solutions from +4°C refrigerators to -196°C cryogenic freezers and Thermo Scientific glass and consumables, you're free to concentrate on your work without worrying about your valuable samples.*

**Our high-performance cabinets deliver the performance and features that home and common commercial units don't offer:**

- > Advanced microprocessor controlled setpoints for precise temperature regulation**
- > Directional airflow for uniform temperature at all shelf levels**
- > Multi-pane, glass door options (refrigerators only)**
- > Key-operated alarms and setpoint security**
- > Standard 1" access ports**
- > Temperature recording charts to confirm optimal storage parameters**
- > Easy-to-read digital displays**

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# Advanced design features with quality construction, offering years of dependable service

With features ranging from CFC-free blown insulation to industrial strength compressors and advanced defrost systems – no one can match the quality of our cabinet design and construction. New features provide even greater productivity and sample safety, and

a full range of options is available for your unique laboratory requirements.

Each of our refrigerators and freezers is built to meet UL and CE standards for safety.



Clockwise from L to R: undercounter lab freezer, 29.2 pharmacy refrigerator, 51.1 cu. ft. lab refrigerator, 23.3 cu. ft. enzyme freezer



45.8 cu. ft. sliding door, chromatography refrigerator

*An ergonomically designed, full-grip handle is standard on each unit for comfortable sample handling.*



*Mercury-free LED interior lighting offers better visibility for greater sample safety.*



*Cabinet door lock provides enhanced sample protection.*



# APPLICATIONS

*Thermo Scientific Puffer Hubbard cabinets provide the precise temperature environments required by your specific application for optimal sample protection and operating performance:*

<b>Operating Range</b>	<b>+1°C to +8°C</b>	<b>to -20°C</b>	<b>to -30°C</b>
<b>Operating Temperatures</b>			
High-Performance Refrigerators	•		
Chromatography Refrigerators	•		
Blood Bank Refrigerators	•		
Pharmacy Refrigerators	•		
High-Performance Freezers		•	•
Plasma Freezers			•
Enzyme Freezers		•	
<b>Typical Use and Storage Applications</b>			
General Storage	•	•	•
Reagents and Kits	•		
Whole Blood	•		
Plasma			•
Enzymes and Temperature Sensitive Materials		•	
Chromatography Apparatus and Instrumentation	•		
Test Samples	•	•	•
Biologicals	•	•	•
Culture Media	•		
Patient Medication	•	•	
Vaccines	•	•	•
Shelf Life Testing	•		

*For critical storage applications, full alarm models with optional temperature recorders are strongly recommended.*

# Thermo Scientific Microprocessor-Based Controller

## Simplifies operation, improves reliability

### Setpoint Security

Key-operated triple position switch for main power and alarm; locks in temperature and alarm setpoints to minimize setpoint error and prevent tampering

### Instrument-Grade Components

Electronic components and sub-systems are selected for performance and reliability under demanding laboratory conditions

### Service Parameters

Touchpad sequence allows override access to control function defaults for troubleshooting functions

### Modular Control Design

Self-contained control housing integrated into main control panel for efficient maintenance, as required

### Power Failure Icon

Illuminated when main power is interrupted

### Service Required

Illuminated when controller is in programming mode, or if simulated warm or cold conditions fail to occur during alarm test function



### Microprocessor-Based Control

Advanced microprocessor manages setpoint and actual conditions to provide the highest level of security for the stored product

### Automatic Defrost System

Defrost sensor manages automatic defrost cycle (except manual defrost models)

### Graphic Thermometer

Easy to view, shows normal, high or low temperature condition; steady green for normal, flashing top bar for overtemperature, flashing bulb for undertemperature

### Door Ajar

Illuminated when door is left open and alarm is in "active" mode (not available on sliding glass door cabinet)








### Battery Backup

Continuous charge provides full alarm function in case of power failure

### Low Battery Alarm

Illuminated when the alarm system battery backup charge is low

## Automatic and Manual Defrost Selection Guide

							
<b>Cu.Ft. (L)</b>	<b>4.9 (133)</b>	<b>11.5 (326)</b>	<b>23.3 (659)</b>	<b>29.2 (826)</b>	<b>45.8 (1297)</b>	<b>51.1 (1447)</b>	<b>78.8 (2231)</b>
<b>Automatic Defrost Models</b>							
Chromatography Refrigerators		•	•	•	•	•	
High-Performance Lab Refrigerators	•	•	•	•	•	•	•
Blood Bank Refrigerators	•	•	•	•		•	
Pharmacy Refrigerators		•	•	•		•	
High-Performance Lab Freezers, -30°C	•	•	•	•		•	
Plasma Freezers, -30°C	•	•	•	•		•	
<b>Manual Defrost Models</b>							
Enzyme Freezer, -20°C		•					
High-Performance Lab Freezers, -20C		•					

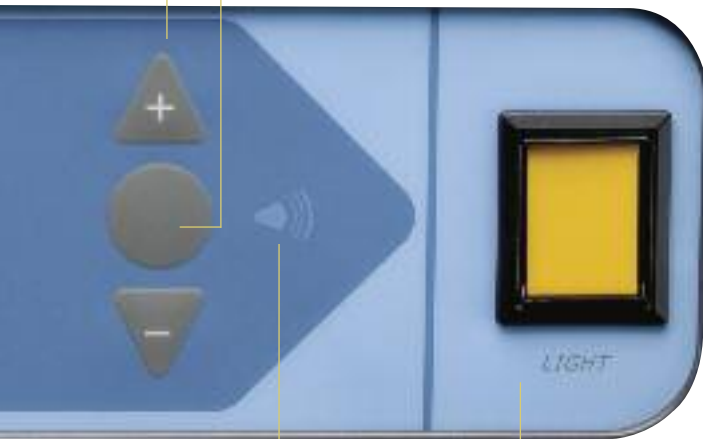


**Touchpad Data Entry**

Increases or decreases setpoint values in programming mode

**Touchpad Scan** Changes main display; also used to access various programming and service functions (alarm mute, recall 6 minutes)

**Alarm Test** Pressing “up” and “scan” buttons creates simulated overtemperature and undertemperature condition and activates audible and visual alarms; display flashes momentarily when test is complete



**Digital Display**

Indicates cabinet temperature during normal operation, flashes during alarm condition or setpoint adjustment. Displays other values with touchpad sequence

**Audible Alarm**

Audible and visual indicators are activated in the event of warm, cold or power loss conditions. Mute will silence audible alarm with 6 minute ring back interval; display remains flashing

**Interior Light Switch**

Enables interior lighting system (on glass door cabinets)

Additional features include:

- **Light switch** is flush-mounted for ergonomic, easy operation
- **International icon-based controls and displays**, enhanced for easy universal recognition
- **Setpoint security with key-operated master switch** to control all power for added safety
- **Graphic thermometer** tracks and confirms proper operation at-a-glance
- **Service Required** alarm alerts users when preventative maintenance is necessary for optimum performance

## Thermo Scientific Puffer Hubbard Chromatography Refrigerators



Our chromatography refrigerators are designed for a variety of applications requiring close temperature control, full access to chromatography instrumentation, and easy set-up of instrumentation and apparatus within the chamber.

**Additional features include:**

- *Two access ports, 2" diameter with hinged covers*
- *Positive forced-air circulation maintains temperature uniformity*
- *Set of four 2" casters: two locking and two regular*
- *One duplex vapor-proof interior outlet*

## Chromatography Refrigerators

Temperature Range: +1°C to +8°C, factory preset to +4°C (auto defrost)

Model No.	Cu.Ft. (L)	Voltage (Hz)	Amps/Breaker (Plug)	Door	Full Adjustable Shelves	Half Adjustable Shelves	Int. Dimensions* H x D x W inches (mm)	Ext. Dimensions* H x D x W inches (mm)	Ship Weight lb (kg)
FC423A FC423D	23.3 (659)	115 (60) 208/230 (60)	9.4/15 (P1) 6.0/15 (P4)	single, glass	0	2	58.0 x 29.0 x 24.0 (1473 x 737 x 610)	79.2 x 36.4 x 28.0 (2012 x 925 x 711)	425 (193)
FC430A FC4304D	29.2 (826)	115 (60) 208/230 (60)	9.4/15 (P1) 6.0/15 (P4)	single, glass	0	2	58.0 x 29.0 x 30.0 (1473 x 737 x 762)	79.2 x 36.4 x 34.0 (2012 x 925 x 864)	435 (197)
FC445A FC445D	45.8 (1297)	115 (60) 208/230 (60)	15.0/20 (P2) 8.5/15 (P4)	double, sliding, glass	4	2	58.0 x 26.0 x 52.5 (1470 x 660 x 1330)	79.1 x 34.5 x 56.5 (2010 x 838 x 1440)	670 (304)
FC450A FC450D	51.1 (1447)	115 (60) 208/230 (60)	15.0/20 (P2) 8.5/15 (P4)	double, glass	4	2	58.0 x 26.0 x 52.5 (1473 x 660 x 1334)	79.1 x 34.5 x 56.5 (2009 x 876 x 1435)	580 (263)
FC475A FC475D	78.8 (2231)	115 (60) 208/230 (60)	16.0/20 (P2) 10.5/15 (P4)	triple, glass	8	2	58.0 x 29.0 x 81.0 (1473 x 737 x 2057)	79.2 x 36.4 x 85.0 (2012 x 925 x 2159)	965 (438)

\* Published interior volumes are nominal; useable cu.ft. (L) capacities may be offset by shelves, drawers, blower coils, or cabinet protrusions. For specific cabinet dimensions and allowances, or for verification of clearance tolerances, contact our sales representative. Product performance may be affected by ambient temperature conditions, humidity conditions, sample loading preferences, and frequency of door openings. Contact our sales representative for specific inquiries regarding your application.





Optional Inkless, seven day, graphic, chart recorder

**Control Panel:**  
Keyed on/off switch with set point security

Microprocessor control system with audio and visual alarms

Bright, digital temperature display

Environmentally friendly, mercury-free LED interior lighting

Epoxy-coated, wire open shelves, adjustable in 1" increments

**Doors:**  
Robust, spring-loaded, self closing doors with 90° stay-open feature (sliding glass on 45 cu. ft. model)

Lockable doors for added sample security

Safety glass, double-pane doors



Cabinets shown: 78.8 cu. ft. triple-door (FC475) and 45.8 cu. ft. sliding door (FC445) chromatography refrigerators

## Thermo Scientific Puffer Hubbard Blood Bank Refrigerators



Our blood bank refrigerators are designed to meet strict requirements established by the AABB and FDA for storage of whole blood and blood components.

The complete selection of +4°C refrigerators feature simplified push-button alarm test functions and reliable, field-proven refrigeration systems.

**Additional features include:**

- 1" insulated access port standard
- Positive forced-air circulation maintains temperature uniformity
- Set of four 2" casters: two locking and two regular

## Blood Bank Refrigerators

Temperature Range: +1°C to +8°C, factory preset to +4°C (auto defrost)

Model No.	Cu.Ft./L (Blood Bag Capacity)**	Voltage (Hz)	Amps/ Breaker (Plug)	Cabinet	Door	Drawers	Int. Dimensions* H x D x W inches (mm)	Ext. Dimensions* H x D x W inches (mm)	Ship Weight lb (kg)
PBB404A PBB404D PBB404V PBB404W	4.9/133 (48)	115 (60) 208/230 (60) 230 (50) 230 (50)	8.0/15 (P1) 6.0/15 (P4) 6.0/15 (P7) 6.0/15 (P8)	undercounter	single, solid	2	20.0 x 20.0 x 20.0 (500 x 500 x 500)	33.4 x 26.0 x 24.0 (864 x 660 x 610)	220 (100)
PBB1204A PBB1204D PBB1204V PBB1204W	11.5/326 (120)	115 (60) 208/230 (60) 230 (50) 230 (50)	9.4/15 (P1) 6.0/15 (P4) 6.0/15 (P7) 6.0/15 (P8)	space saver	single, glass	6	52.4 x 21.75 x 20.0 (1331 x 562 x 508)	73.6 x 29.5 x 24.0 (1869 x 749 x 610)	320 (145)
PBB2304A PBB2304D PBB2304V PBB2304W	23.3/659 (288)	115 (60) 208/230 (60) 230 (50) 230 (50)	9.4/15 (P1) 6.0/15 (P4) 6.0/15 (P7) 6.0/15 (P8)	upright	single, glass	7	58.0 x 29.0 x 24.0 (1473 x 737 x 610)	79.2 x 36.4 x 28.0 (2012 x 925 x 711)	470 (213)
PBB3004A PBB3004D PBB3004V PBB3004W	29.2/826 (360)	115 (60) 208/230 (60) 230 (50) 230 (50)	9.4/15 (P1) 6.0/15 (P4) 6.0/15 (P7) 6.0/15 (P8)	upright	single, glass	6	58.0 x 29.0 x 30.0 (1473 x 737 x 762)	79.2 x 36.4 x 34.0 (2012 x 925 x 864)	505 (227)
PBB5004A PBB5004D PBB5004V PBB5004W	51.1/1447 (576)	115 (60) 208/230 (60) 230 (50) 230 (50)	15.0/20 (P2) 8.5/15 (P4) 8.5/15 (P7) 8.5/15 (P8)	upright	double, glass	14	58.0 x 29.0 x 52.5 (1473 x 737 x 1334)	79.2 x 36.4 x 56.5 (2012 x 925 x 1435)	640 (290)

\* Published interior volumes are nominal; useable cu.ft. (L) capacities may be offset by shelves, drawers, blower coils, or cabinet protrusions. For specific cabinet dimensions and allowances, or for verification of clearance tolerances, contact our sales representative. Product performance may be affected by ambient temperature conditions, humidity conditions, sample loading preferences, and frequency of door openings. Contact our sales representative for specific inquiries regarding your application.

\*\* Nominal capacity based on 450 mL whole blood bags.



*Inkless, seven day, graphic, chart recorder*

**Control Panel:**  
*Keyed on/off switch with set point security*

*Microprocessor control system with audio and visual alarms*

*Bright, digital temperature display*

*Environmentally friendly, mercury-free LED interior lighting*

*Full extension, adjustable stainless steel drawers*

**Doors:**  
*Spring-loaded, self closing doors with 90° stay-open feature*

*Lockable doors for added sample security*

*Safety glass, double-pane doors*



Cabinets shown: 51.1 cu. ft. double door (PBB5004) and 11.5 cu. ft. single door (PBB1204) blood bank refrigerators

## Thermo Scientific Puffer Hubbard Pharmacy Refrigerators



Available in four sizes, our pharmacy refrigerators deliver stable temperature control over a range of +1°C to +8°C. They can be configured easily for accurate storage and retrieval of pharmacy products, and feature full extension stainless steel roll-out drawers.

**Additional features include:**

- 1" insulated access port standard
- Positive forced-air circulation maintains temperature uniformity
- Set of four 2" casters: two locking and two regular
- Environmentally friendly, mercury-free LED interior lighting

## Pharmacy Refrigerators

Temperature Range: +1°C to +8°C, factory preset to +4°C (auto defrost)

Model No.	Cu.Ft. (L)	Voltage (Hz)	Amps/Breaker (Plug)	Cabinet	Door	Drawers	Int. Dimensions* H x D x W inches (mm)	Ext. Dimensions* H x D x W inches (mm)	Ship Weight lb (kg)
RX423A RX423D	23.3 (659)	115 (60) 208/230 (60)	9.4/15 (P1) 6.0/15 (P4)	upright	single, glass	6	58.0 x 29.0 x 24.0 (1473 x 737 x 610)	79.2 x 36.4 x 28.0 (2012 x 925 x 711)	470 (213)
RX430A RX430D	29.2 (826)	115 (60) 208/230 (60)	9.4/15 (P1) 6.0/15 (P4)	upright	single, glass	6	58.0 x 29.0 x 30.0 (1473 x 737 x 762)	79.2 x 36.4 x 34.0 (2012 x 925 x 864)	505 (227)
RX450A RX450D	51.1 (1447)	115 (60) 208/230 (60)	15.0/20 (P2) 8.5/15 (P4)	upright	double, glass	12	58.0 x 29.0 x 52.5 (1473 x 737 x 1334)	79.2 x 36.4 x 56.5 (2012 x 925 x 1435)	640 (290)

\* Published interior volumes are nominal; useable cu.ft. (L) capacities may be offset by shelves, drawers, blower coils, or cabinet protrusions. For specific cabinet dimensions and allowances, or for verification of clearance tolerances, contact our sales representative. Product performance may be affected by ambient temperature conditions, humidity conditions, sample loading preferences, and frequency of door openings. Contact our sales representative for specific inquiries regarding your application.



*Environmentally friendly,  
mercury-free LED interior lighting*

**Doors:**

*Spring-loaded, self closing doors  
with 90° stay-open feature*

*Lockable doors for added sample security*

*Safety glass, double-pane doors*



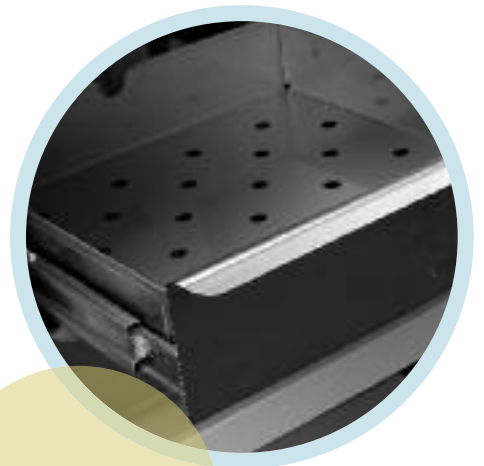
*Optional, inkless,  
seven day, graphic,  
chart recorder*

**Control Panel:**

*Keyed on/off switch  
with set point security*

*Microprocessor control  
system with audio and  
visual alarms*

*Bright, digital  
temperature display*



*Adjustable stainless  
steel drawers*

# Thermo Scientific Puffer Hubbard High-Performance Lab Refrigerators & Freezers

## REFRIGERATORS

Our selection of high performance, laboratory refrigerators is available in a wide range of cabinet sizes to fit virtually any application need. Each refrigerator combines advanced microprocessor temperature control with the highest quality cabinet construction and alarm systems. Positive-forced air circulation maintains temperature uniformity to protect your valuable samples and inventory.

## FREEZERS

Our high performance, laboratory freezers are designed for medical and scientific applications requiring storage of reagents, pharmaceuticals, biologicals, and other commonly used laboratory materials. A range of models offers cabinet sizes to fit your specific space needs and storage volume requirements, from undercounter units to full size models.

### Additional features included in both refrigerators and freezers:

- 1" insulated access port standard
- Positive forced-air circulation maintains temperature uniformity
- Set of four 2" casters: two locking and two regular
- Environmentally friendly, mercury-free LED interior lighting (lab refrigerators only)
- Adjustable shelves

## Laboratory Refrigerators

Temperature Range: +1°C to +8°C, factory preset to +4°C (auto defrost)

Weight inches (mm)	Cu.Ft. lb (kg)	Voltage Model No.	Amps/ (L)	(Hz)	Door	Shelves	Int. Dimensions* H x D x W Door	Ext. Dimensions* H x D x W Shelves	Ship inches (mm)
LR44A	4.9 (133)	115 (60) 208/230 (60)	8.0/15 (P1) 6.0/15 (P4)	undercounter	single, solid	3	20.0 x 20.0 x 20.0 (508 x 508 x 508)	33.4 x 26.0 x 24.0 (850 x 660 x 610)	220 (100)
LR412A	11.5 (326)	115 (60) 208/230 (60)	9.4/15 (P1) 6.0/15 (P4)	space saver	single, solid	4	52.4 x 21.75 x 20.0 (1331 x 553 x 508)	73.6 x 29.4 x 24.0 (1869 x 748 x 610)	280 (127)
LR423A LR423D	23.3 (659)	115 (60) 208/230 (60)	9.4/15 (P1) 6.0/15 (P4)	upright	single, solid	4	58.0 x 29.0 x 24.0 (1473 x 737 x 610)	79.2 x 37.2 x 28.0 (2012 x 945 x 711)	370 (168)
LR430A LR430D	29.2 (826)	115 (60) 208/230 (60)	9.4/15 (P1) 6.0/15 (P4)	upright	single, solid	4	58.0 x 29.0 x 30.0 (1473 x 737 x 762)	79.2 x 37.2 x 34.0 (2012 x 945 x 864)	435 (197)
LR445A LR445D	45.8 (1297)	115 (60) 208/230 (60)	15.0/20 (P2) 8.5/15 (P4)	upright	double, sliding glass	8	58.0 x 26.0 x 52.5 (1473 x 660 x 1334)	79.1 x 34.5 x 56.5 (2009 x 876 x 1435)	670 (304)
LR450A LR450D	51.1 (1447)	115 (60) 208/230 (60)	15.0/20 (P2) 8.5/15 (P4)	upright	double, solid	8	58.0 x 29.0 x 52.5 (1473 x 737 x 1334)	79.2 x 37.2 x 56.5 (2012 x 945 x 1435)	585 (265)
LR475A LR475D	78.8 (2231)	115 (60) 208/230 (60)	16.0/20 (P2) 10.5/15 (P4)	upright	triple, solid	12	58.0 x 29.0 x 81.0 (1473 x 737 x 2057)	79.2 x 37.2 x 85.0 (2012 x 945 x 2159)	805 (365)

\* Published interior volumes are nominal; useable cu.ft. (L) capacities may be offset by shelves, drawers, blower coils, or cabinet protrusions. For specific cabinet dimensions and allowances, or for verification of clearance tolerances, contact our sales representative. Product performance may be affected by ambient temperature conditions, humidity conditions, sample loading preferences, and frequency of door openings. Contact our sales representative for specific inquiries regarding your application.



Optional, inkless, seven day, graphic, chart recorder

**Control Panel:**  
Keyed on/off switch with set point security

Microprocessor control system with audio and visual alarms

Bright, digital temperature display

**Doors:**  
Spring-loaded, self closing doors with 90° stay-open feature

Lockable doors for added sample security

Optional glass doors (lab refrigerators)

Cabinets shown:  
23.3 cu. ft. single door (LR423) lab refrigerator and 51.1 cu. ft. double door (IUF3050) lab freezer

## Laboratory Freezers

Temperature Range: -30°C (auto defrost)

Weight inches (mm)	Cu.Ft. lb (kg)	Voltage Model No.	Amps/ (L)	(Hz)	Breaker (Plug)	Adjustable Cabinet	Int. Dimensions* H x D x W Door	Ext. Dimensions* H x D x W Shelves	Ship inches (mm)
IUF3004A	4.9 (133)	115 (60) 208/230 (60)	8.0/15 (P1) 6.0/15 (P4)	undercounter	single, solid	3	20.0 x 20.0 x 20.0 (508 x 508 x 508)	34.0 x 28.9 x 24.0 (864 x 734 x 610)	220 (100)
IUF3012A	11.5 (326)	115 (60) 230 (50)	8.0/15 (P1) 8.0/15 (P7)	space saver	single, solid	4	52.4 x 21.0 x 20.0 (1331 x 533 x 508)	73.6 x 30.0 x 24.0 (1869 x 762 x 610)	280 (127)
IUF3023A IUF3023D	23.3 (659)	115 (60) 208/230 (60)	16.0/20 (P2) 12.0/15 (P4)	upright	single, solid	4	58.0 x 29.0 x 24.0 (1473 x 737 x 610)	79.2 x 37.2 x 28.0 (2012 x 945 x 711)	425 (193)
IUF3030A IUF3030D	29.2 (826)	115 (60) 208/230 (60)	16.0/20 (P2) 12.0/15 (P4)	upright	single, solid	4	58.0 x 29.0 x 30.0 (1473 x 737 x 762)	79.2 x 37.2 x 34.0 (2012 x 945 x 864)	445 (202)
IUF3050A IUF3050D	51.1 (1447)	115 (60) 208/230 (60)	16.0/20 (P2) 12.0/15 (P4)	upright	double, solid	8	58.0 x 29.0 x 52.5 (1473 x 737 x 1334)	79.2 x 37.2 x 56.5 (2012 x 945 x 1435)	600 (272)

Temperature Range: -20°C (manual defrost)

Model No.	Cu.Ft. (L)	Voltage (Hz)	Amps/ Breaker (Plug)	Cabinet	Door	Adjustable Shelves	Int. Dimensions* H x D x W inches (mm)	Ext. Dimensions* H x D x W inches (mm)	Ship Weight lb (kg)
IGL2023A IGL2023D	23.3 (659)	115 (60) 208/230 (60)	13.5/20 (P2) 5.6/15 (P4)	upright	single, solid	4	58.0 x 29.0 x 24.0 (1473 x 737 x 610)	79.2 x 37.2 x 28.0 (2012 x 945 x 711)	425 (193)

# Thermo Scientific Puffer Hubbard Plasma Freezers



Our pre-set -30°C plasma freezers are designed to meet AABB and FDA standards for safety and performance in plasma storage. Sample security and protection are especially critical when storing plasma.

Our units feature setpoint security with master switch control, plus a clearly visible temperature display and audio/visual alarm systems to assure proper operating conditions.

Five different models are available to meet your particular storage volume and lab space requirements.

## Additional features include:

- 1" insulated access port standard
- Positive forced-air circulation maintains temperature uniformity
- Set of four 2" casters: two locking and two regular
- Inkless, seven day, graphic, chart recorder
- Adjustable stainless steel drawers

## Plasma Freezers

Temperature Range: -30°C (auto defrost)

Model No.	Cu.Ft./L (Plasma Box Capacity)**	Voltage (Hz)	Amps/ Breaker (Plug)	Cabinet	Door	Drawers	Int. Dimensions* H x D x W inches (mm)	Ext. Dimensions* H x D x W inches (mm)	Ship Weight lb (kg)
PPL430A PPL430D PPL430V PPL430W	4.9/133 (78)	115 (60) 208/230 (60) 230 (50) 230 (50)	8.0/15 (P1) 6.0/15 (P4) 6.0/15 (P7) 6.0/15 (P8)	undercounter	single, solid	2	20.0 x 20.0 x 20.0 (508 x 508 x 508)	33.4 x 26.0 x 24.0 (850 x 660 x 610)	220 (100)
PPL1230A PPL1230V PPL1230W	11.5/26 (273)	115 (60) 230 (50) 230 (50)	8.0/15 (P1) 8.0/15 (P7) 8.0/15 (P8)	space saver	single, solid	7	52.4 x 21.0 x 20.0 (1331 x 533 x 508)	73.6 x 30.0 x 24.0 (1869 x 762 x 610)	365 (166)
PPL2330A PPL2330D PPL2330V PPL2330W	23.3/659 (532)	115 (60) 208/230 (60) 230 (50) 230 (50)	16.0/20 (P2) 12.0/15 (P4) 12.0/15 (P7) 12.0/15 (P8)	upright	single, solid	7	58.0 x 29.0 x 24.0 (1473 x 737 x 610)	79.2 x 37.2 x 28.0 (2012 x 945 x 711)	425 (193)
PPL3030A PPL3030D PPL3030V PPL3030W	29.2/826 (665)	115 (60) 208/230 (60) 230 (50) 230 (50)	16.0/20 (P2) 12.0/15 (P4) 12.0/15 (P7) 12.0/15 (P8)	upright	single, solid	7	58.0 x 29.0 x 30.0 (1473 x 737 x 762)	79.2 x 37.2 x 34.0 (2012 x 945 x 864)	580 (263)
PPL5030A PPL5030D PPL5030V PPL5030W	51.1/1447 (1064)	115 (60) 208/230 (60) 230 (50) 230 (50)	16.0/20 (P2) 12.0/15 (P4) 12.0/15 (P7) 12.0/15 (P8)	upright	double, solid	14	58.0 x 29.0 x 52.0 (1473 x 737 x 1334)	79.2 x 37.2 x 56.5 (2012 x 945 x 1435))	600 (272)

\* Published interior volumes are nominal; useable cu.ft. (L) capacities may be offset by shelves, drawers, blower coils, or cabinet protrusions. For specific cabinet dimensions and allowances, or for verification of clearance tolerances, contact our sales representative. Product performance may be affected by ambient temperature conditions, humidity conditions, sample loading preferences, and frequency of door openings. Contact our sales representative for specific inquiries regarding your application.

\*\* Nominal capacity based on 250 mL plasma boxes.





*Inkless, seven day, graphic, chart recorder*

**Control Panel:**  
*Keyed on/off switch with set point security*

*Microprocessor control system with audio and visual alarms*

*Bright, digital temperature display*

**Doors:**  
*Spring-loaded, self closing doors with 90° stay-open feature*

*Lockable doors for added sample security*



Cabinets shown: 51.1 cu. ft. double door (PPL5030), undercounter (PPL430) and 23.3 cu. ft. single door (PPL2330) plasma freezers

## Thermo Scientific Puffer Hubbard Enzyme Freezers

Our manual defrost -20°C upright freezers are designed for storage applications in which even slight intermittent coil warming during auto defrost cycles cannot be tolerated. Models feature gravity convection air systems for maximum temperature stability without blowers or fans.



*Optional, inkless, seven day, graphic chart recorder*

**Control Panel:**  
*Keyed on/off switch with set point security*

*Microprocessor control system with audio and visual alarms*

*Bright, digital temperature display*

*Easily accessible inventory system*

**Doors:**  
*Spring-loaded, self closing doors with 90° stay-open feature*

*Lockable doors for added sample security*

*Smooth, ergonomic handle*

**Additional features include:**

- *1" insulated access port standard*
- *Set of four 2" casters: two locking and two regular*
- *Gravity convection air systems offer maximum stability without blower or fan*

### Enzyme Freezers

Temperature Range: -20°C (manual defrost)

Model No.	Cu.Ft. (L)	Voltage (Hz)	Amps/Breaker (Plug)	Cabinet	Door	Shelves	Int. Dimensions* H x D x W inches (mm)	Ext. Dimensions* H x D x W inches (mm)	Ship Weight lb (kg)
IEN2320A	23.3	115 (60)	13.5/20 (P1)	upright	single,	9	58.0 x 29.0 x 24.0	79.2 x 37.2 x 28.0	425 (193)
IEN2320D	(659)	208/230 (60)	5.6/15 (P4)		solid		(1473 x 737 x 610)	(2012 x 945 x 711)	
IEN2320V		230 (50)	5.6/15 (P7)						
IEN2320W		230 (50)	5.6/15 (P8)						

\* Published interior volumes are nominal; useable cu.ft. (L) capacities may be offset by shelves, drawers, blower coils, or cabinet protrusions. For specific cabinet dimensions and allowances, or for verification of clearance tolerances, contact our sales representative. Product performance may be affected by ambient temperature conditions, humidity conditions, sample loading preferences, and frequency of door openings. Contact our sales representative for specific inquiries regarding your application.





Shelves

Rollout Doors

Glass Doors

Enzyme Storage Bins

*Productive use of your refrigerator or freezer can be enhanced with options and accessories specifically designed to improve utility and convenience. Many accessories are factory installed and must be specified with your original order. Field installed accessories may require the services of a factory authorized technician.*

**Note that some options and accessories may affect refrigerator or freezer performance; for more information contact your Sales Representative.**

### **Voltages and Serial Numbers**

Serial number tags on all of our Puffer Hubbard units provide model numbers and voltage information needed for accurate selection of accessories ordered for field installation.

It is recommended that accessories be ordered when your refrigerator or freezer is ordered. Factory-installed accessories allow proper set-up without power-down or emptying the cabinet.

### **Glass Doors**

Solid doors are standard on most refrigerators unless otherwise specified. Dual-pane glass doors are optional and must be specified when ordering. Contact your sales representative for information on heated glass doors.

### **Shelves**

Additional epoxy-coated, open-wire shelves are designed to fit individual cabinets; shelves are available in full- and half-sizes. Undercounter models use full-size only.

### **Rollout Drawers**

Optional stainless steel drawers, offered as an alternative to standard open wire shelving are adjustable with full extension. Drawers are factory installed and must be specified when ordering cabinet.

### **Temperature Recorders**

Optional 6" (152 mm) chart, 7-day temperature recorders use pressure sensitive chart paper; one box of 50 charts included. Built-in recorders must be specified when ordering. Recorders are standard on 11.5 cu. ft. (326 L) and larger blood bank refrigerators and plasma freezers.

### **Enzyme Storage Bin**

Bins are supplied standard on Model IEN-2320 Enzyme Freezer. Additional bins are useful for storage and inventory management. Formed of high impact ABS plastic, off-white. Labels not included.

### **Digital Temperature Monitor**

Simple, accurate and cost-effective, the digital temperature and power monitor provides both alarm/monitoring and digital temperature display in a single, self-contained unit. Standard features include high alarm, alarm mute and chirp, audio delay timer, remote alarm contacts (SPDT), Ni-Cad battery backup, and low voltage AC power supply, 120V, AC.

- The monitor can be installed on or adjacent to any refrigerator or freezer
- Activates an audible and visual warning in case of power failure or overtemperature condition
- Choose from single probe digital models or multiple probe, microprocessor-based models
- Temperature range is -100°C to +25°C
- Probe size 1.25"L x 0.25" diameter (32 mm x 6 mm)

### **Alarm Delay Module**

The alarm delay eliminates nuisance alarms due to intermittent or transitory conditions such as lightning or brief power outages. The adjustable delay requires an alarm condition to exist continuously for a pre-determined time (adjustable) before a signal is released to a central alarm/ monitoring system or telephone dialer.

- Adjustable delay from 0.5 to 32 minutes
- Red alarm indicator light remains flashing after transient condition is corrected; requires manual reset
- Signals chronic alarm conditions which may indicate impending component failure; allows time for inspection or corrective maintenance
- Inserts variable time interval between detection of alarm condition and transmission of signal
- Includes accurate digital timing circuit adjustable from 0.5, 1, 2, 4, 8, 18, or 32 minutes
- Operates independent of line power; built-in battery and alarm test function uses customer supplied 9V battery

# Options & Accessories Ordering Guide

		4.9 cu. ft. (133 L)	11.5 cu. ft. (326 L)	23.3 cu. ft. (659 L)	29.2 cu. ft. (826 L)	45.8 cu. ft. (1297 L)	51.1 cu. ft. (1447 L)	78.8 cu. ft. (2231 L)
<b>Shelves</b>								
epoxy-coated, full size	Cat. No.	7125	7125	6696	6695	6696	6696	6696
epoxy-coated, half size	Cat. No.	n/a	n/a	6698	6697	6698	6698	6698
<b>Door Options</b>								
LH swing, solid	Cat. No.	7119	6995	6997	6999	n/a	n/a	n/a
LH swing, glass	Cat. No.	n/a	6996	6998	7000	n/a	n/a	n/a
LH swing, heated glass	Cat. No.	n/a	7073	7075	7087	n/a	n/a	n/a
RH swing, solid		standard	standard	standard	standard	n/a	n/a	n/a
RH swing, glass	Cat. No.	7118	7066	7012	7013	n/a	n/a	n/a
RH swing, heated glass	Cat. No.	n/a	7074	7086	7088	n/a	n/a	n/a
LH/LH swing, solid	Cat. No.	n/a	n/a	n/a	n/a	n/a	7001	n/a
LH/LH swing, glass	Cat. No.	n/a	n/a	n/a	n/a	n/a	7067	n/a
LH/LH swing, heated glass	Cat. No.	n/a	n/a	n/a	n/a	n/a	7089	n/a
RH/RH swing, solid	Cat. No.	n/a	n/a	n/a	n/a	n/a	7068	n/a
RH/RH swing, glass	Cat. No.	n/a	n/a	n/a	n/a	n/a	7069	n/a
RH/RH swing, heated glass	Cat. No.	n/a	n/a	n/a	n/a	n/a	7090	n/a
LH/RH swing, solid	Cat. No.	n/a	n/a	n/a	n/a	n/a	standard	n/a
LH/RH swing, glass	Cat. No.	n/a	n/a	n/a	n/a	n/a	7014	n/a
LH/RH swing, heated glass	Cat. No.	n/a	n/a	n/a	n/a	n/a	7091	n/a
LH/LH/LH swing, solid	Cat. No.	n/a	n/a	n/a	n/a	n/a	n/a	7070
LLH/RH/RH swing, solid	Cat. No.	n/a	n/a	n/a	n/a	n/a	n/a	standard
LH/RH/RH swing, glass	Cat. No.	n/a	n/a	n/a	n/a	n/a	n/a	7015
<b>Roll-Out Drawers - Complete Set</b>								
Refrigerator	Cat. No. (qty)	7129 (2)	7445 (5)	6699 (6)	6704 (6)	n/a	6700 (12)	6701 (18)
Freezer	Cat. No. (qty)	7129	7446 (7)	6699 (6)	6704 (6)	n/a	6700 (12)	6701 (18)
Additional Refrigerator and Freezer (Single Drawers)	Cat. No.	7122	7122	6702	6725	n/a	6702	6702
<b>Casters (2" casters standard)</b>								
3" casters (76 mm), set of 4	Cat. No.	6041-1	6041-1	6041-1	6041-1	6694	6041-1	6041-1
<b>Finishes (adds 1" or 25 mm to unit height)</b>								
Stainless steel interior	Cat. No.	7116	6199-3A	6115	6709	6711	6116	6117
<b>Temperature Recorders</b>								
Built-in, factory installed	Cat. No.	n/a	6183-7	6183-7	6183-7	6183-7	6183-7	6183-7
Free-standing, customer installed (frz)	Cat. No.	6383-7	6383-7	6383-7	6383-7	6383-7	6383-7	6383-7
Free-standing, customer installed (ref)	Cat. No.	6199-3	6199-3	6199-3	6199-3	6199-3	6199-3	6199-3
<b>Surge Suppressor</b>								
specify voltage with order	Cat. No.	6402	6402	6402	6402	6402	6402	6402
<b>4-20 Milliamp Transmitter</b>								
For Refrigerator	Cat. No.	6907-1	6907-1	6907-1	6907-1	6907-1	6907-1	6907-1
For Freezer	Cat. No.	4706	4706	4706	4706	4706	4706	4706
<b>Deluxe Electronic Remote Alarm</b>								
Requires dedicated phone line	Cat. No.	6224TA	6224TA	6224TA	6224TA	6224TA	6224TA	6224TA
<b>Remote Alarm Module</b>								
Specify refrigerator or freezer voltage with order	Cat. No.	5612-A	5612-A	5612-A	5612-A	5612-A	5612-A	5612-A
<b>Alarm Delay Module</b>								
Specify refrigerator or freezer voltage with order	Cat. No.	6903	6903	6903	6903	6903	6903	6903
<b>Digital Temperature Monitor</b>								
Specify refrigerator or freezer voltage with order	Cat. No.	6898	6898	6898	6898	6898	6898	6898
<b>Enzyme Storage Bin</b>								
Labels not included	Cat. No.	n/a	n/a	6736	n/a	n/a	n/a	n/a

*This catalog is divided into sections according to general product application. Because most controllers allow adjustable setpoints, all temperatures are listed as design operating temperatures and typically represent the lowest or coldest temperature of a temperature range.*

**Electrical Information**

Thermo Scientific Puffer-Hubbard refrigerators and freezers are designed to meet UL, CUL, and CE criteria for safety and performance. All connections must comply with local electrical codes.

- Selection charts for each standard model list voltage, rated amperage, recommended circuit breaker size, and NEMA (National Electrical Manufacturers’ Association, USA) electrical plug information
- Most refrigerators and freezers are supplied with line cord plugs, which require corresponding receptacles illustrated on the line cord plug reference chart to the right
- Site preparation requires availability of the proper receptacle; a dedicated circuit is required
- Special voltage selections may be available at extra cost and must be specified when ordering
- For questions regarding site preparation, installation and electrical connection, contact your sales representative



**Certification of Calibration**

Control, alarm and temperature recording systems are systematically calibrated at the factory for accurate performance. An optional Certificate of Calibration to an NIST (National Institute of Standards and Technology, formerly National Bureau of Standards) traceable instrument includes a Model Number and Serial Number Certificate (single point calibration). Multiple point calibration is also available. Calibration certificates must be requested when ordering; for details contact your sales representative.

**Validation Testing Program**

Validation testing services in advance of shipment can accelerate in-house FDA Installation Qualification (IQ) and Operation Qualification (OQ) programs. Validation services include documentation and performance reports, compressor and subsystem component specifications, microprocessor flow diagrams, software specifications and more. For more details, contact your sales representative.

**Ordering Information**

Your sales representative will assist you with choosing the correct refrigerator or freezer for your application.

- Each model number is voltage specific. For clarity, please include the voltage of your selected refrigerator or freezer when ordering
- When ordering your refrigerator or freezer, please consider current or future accessory requirements such as temperature recorders, extra shelves and alarm/ monitoring systems
- Many accessories are factory installed and must be specified when ordering

**Line Cord Plug Reference**

Models with this code	have this plug	require this receptacle	NEMA Reference	
			Plug	Receptacle
P1			5-15P	5-15R
P2			5-20P	5-20R
P3			5-30P	5-30R
P4			6-15P	6-15R
P5			6-20P	6-20R
P6			6-30P	6-30R
P7 European				
P8 British				

*Refrigerators and freezers supplied with line cord plugs (P) require corresponding receptacles illustrated in the Line Cord Plug Reference. Catalog selection charts list each standard model with voltage, rated amperage, recommended circuit breaker size and NEMA electrical plug information.*

*Thermo Scientific Puffer Hubbard  
high-performance laboratory  
refrigerators and freezers are  
purpose-built in every aspect to  
protect your valuable materials,  
providing you with both  
peace-of-mind and a great  
return on your investment.*





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