Thermo Scientific
Forma Flamable Storage – HP Lab Refrigerator and Freezer

PART 1 – GENERAL

1.1 DESIGN AND PERFORMANCE CRITERIA

A. High performance laboratory refrigerator manufactured to operate in a temperature range of +1C to +8C, factory set at +4C. Must be available in 115V/60 Hz or 208-230V/60 Hz. Or

B. Refrigerator (or freezer) must be constructed of 2" non-CFC foamed-in-place polyurethane insulation with solid door(s)

C. Refrigerator (or freezer) shall have self closing door with magnetic gasket

D. Refrigerator (or freezer) shall be painted with high-impact, scratch resistant powder coat finished interior and exterior to ensure long term viability and maximum interior temperature uniformity.

E. Door allows one-handed opening and closing and must include door key lock

F. Refrigerator (or freezer) shall have adjustable epoxy-coated wire shelving

G. Refrigerator shall have a 1 inch access ports as standard feature

H. Refrigerator (or freezer) shall have manual defrost

I. Refrigerator shall "dry" remote alarm contacts for remote alarm monitoring

1.2 SUBMITTALS

A. Submit complete submittal package of product literature, manual, and drawings. Incomplete submittals are not acceptable, will be considered non-responsive, and will be returned without review.

1.3 QUALITY ASSURANCE

A. High performance refrigerators must be built to, and contain the registration mark for UL, cUL, (60 Hz models) and CE (50 Hz models) standards for safety and performance.

1.4 QUALIFICATION

A. Manufacturer – Company must have 10 years documented experience in the construction of high performance laboratory refrigerators.

B. High performance refrigerators – Shall be registered for UL, cUL, (60 Hz models) and CE (50 Hz models) standards.

1.5 WARRANTY

A. Manufacturer's warranty against defects in material and workmanship covering parts must be available for a period of 2 years covering parts and labor. (2 yr parts only for international)
B. Standard exceptions for air filters, batteries, and gaskets shall apply.
C. Extended manufacturer's warranty options should be available at additional charge if required

PART 2 – PRODUCT

2.1 MANUFACTURERS

A. Thermo Scientific

2.2 Forma flammable storage high performance refrigerator and freezer

A. Model FFMS2305A (refrigerator) or FFMS2320A (freezer) – 23.3 cu ft capacity

2.3 Forma flammable storage high performance refrigerator and freezer

1. Exterior Dimensions (H x W x D)
    a. Model FFMS2305A/FFMS2320A – 78.6" x 28" x 37"

2. Interior Dimensions (H x W x D)

    a. Model FFMS2305A/FFMS2320A – 58" x 24" x 29"

2.3 Forma flammable storage high performance refrigerator and freezer control requirements

A. Microprocessor controller must monitor in one degree C increments, with the digital display

B. Eye level information center for "At-a-glance" monitoring and ease of setting controls (except small 4.9 cu ft)

C. Must have high and low temperature alarms, door ajar alarm, power fail alarm, alarm test, and low battery alarm
D. Battery back-up for temperature alarm monitoring system
E. Keyed security lock for power, temperature and alarm settings

2.4 – OPTIONS AND ACCESSORIES

A. Options
a. 4 – 20 mA output
b. Factory installed chart recorder

B. Accessories

a. Shelf kit
b. Chart paper
c. Alarm delay module
d. Remote alarms
e. Seismic restraint kit
f. Telephone dialing system

PART 3 – EXECUTION

1.01 INSTALLATION

A. Install equipment level and plumb, according to manufacturer's written instructions.

1. Verify utility services are in required locations and are ready for use before installation of equipment.
2. Install equipment with access and maintenance clearances that comply with manufacturer's written installation instructions and requirements of authorities having jurisdiction.
3. Complete equipment assembly where field assembly is required.
4. Connect equipment to utilities.
5. Remove all packing materials from the site.