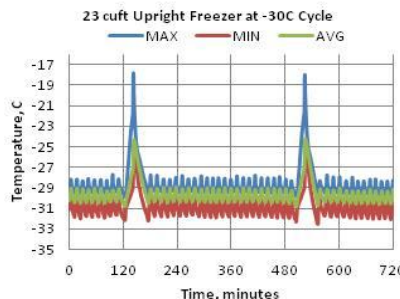
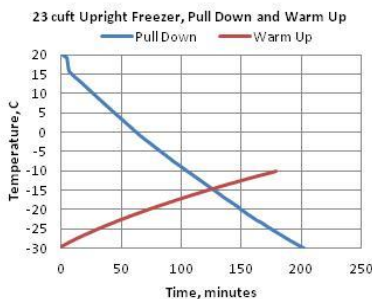




Technical Data Sheet
Thermo High Performance Plasma Freezer
 MODEL RELEASE - 1
 Thermo Fisher Scientific, Asheville, North Carolina

Specifications	Model Number
	TSX2330LV
	Application, Rating and Electrical Data
Application	Plasma (non-flammable) Freezer
Storage Volume	659 Liters/23.3 Cubic Feet
Factory Temperature Setpoint	-30°C
Temperature Setpoint Range	-35°C to -15°C
Electrical Power / Rated Current	208-230V 50/60 Hz 1 Phase / 3.0A
Building Supply Rating	15.0A dedicated non-GFCI grounded circuit. Protected by circuit breaker rated for inductive loads
Power Plug/Power Cord Length	16 Amp (CEE 7/7) / 3.048 Meters (10 feet)
Agency Listings	UL,cUL,FDA,CE
Indoor/Outdoor Usage	Indoor Use Only
Application Environment	Non-Corrosive, Non-Flammable, Non-Explosive, Good Air Ventilation
Ambient Operating Temperature	15° C - 32° C (60° F - 90° F)
Refrigeration Configuration	
Refrigeration System	Vapor compression system
Compressor / Quantity / Capacity*	Hermetic Variable Capacity Compressor / 1 / 525W
Condenser Type/ Quantity	Microchannel and Forced-Air Cooled / 1
Expansion Device	Capillary Tube
Evaporator Type / Defrost Method	Forced Air Evaporator Coil / Automatic Defrost
Refrigerant Charge/Flammability	Environmentally Safe R290 / Flammable
Controller/Electrical System Configuration and Features	
Controller Level	Eye Level
Power Switch	Keyed Off-On - Alarm
Controller Type	IntrLogic Control System: Digital display, Graphic thermometer, Automatic defrost system
Setpoint Security / Programmable	Yes / Yes
Compressor Safe Guard	Current Protection
Control Sensor	Single RTD (1000 ohm shielded Platinum RTD)
Remote Alarm Terminals	Standard
Adjustable Warm/Cold Alarms	Fully Adjustable
Power Failure Alarm	Standard
Electronic Chart Recorder	Optional
Dimensions and Construction	
Interior Dimensions (H x D x W)	1473 H x 725 D x 610 W mm (58 H x 28.6 D x 24 W in.)
Exterior Dimensions (H x D x W)	1994 H x 945 D x 711 W mm (78.5 H x 37.2 D x 28 W in.)
Insulation	5.08 cm (2.0") High Density HFC-blown Polyurethane Foam in cabinet
Door Perimeter Heater	Yes
Shelves / Capacity	(7) Drawers Adjustable In 1" Increments. Max. Cap. per Drawer: 27 kg (60 lbs.)
All-Direction Casters	Yes
Ship Weight	239 kg / 528 lb

Typical Performance Characteristics in 20° C Ambient



Test Unit/Serial Number or MSO Number:	19490-PP-T6
Cabinet Load:	Unloaded
Average Cabinet Temp at -30C Cycle (C):	-29.6
Peak Variation from Setpoint (C):	+12.2 / -2.5
Uniformity (C):	2.2
Stability (C):	8
1-min Door Opening Recovery to -30C (min):	23
Duty Cycle at -30C (%):	72
Cycle (on/off) rate at -30C (min):	11 / 4
Energy Consumption (kw-hr/day):	9.6
Heat Rejection Rate (btu/hr):	1359
Pull Down Time (to -30C) (min):	202
Warm Up Time (-30C to -10C) (min):	179
Sound (dBA):	52

- 1) Performance is nominal and individual units may vary.
- 2) Freezer performance will differ due to product amount, product size and operating conditions.
- 3) Continuous product enhancements may, without notice, result in amendments or omissions to this specification. Thermo Scientific cannot accept responsibility for damage, injury, loss or expenses resulting from misapplication of the information herein.

* Manufacturer measured compressor capacity taken at -35C/40C(evap./cond.temp) at 4500 rpm condition.

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Typical Cabinet Temperature Map
Freezer 23 cuft Unit, 7 Inner-Drawers, Single Outer Door

Temperatures are averages during > 12
hours of cycle after reaching setpoint of -30 C

Top View of Shelves

MA3		MA4
	MA5	
MA1		MA2

MA10

MA15

MA18		MA19
	MA20	
MA16		MA17

MA25

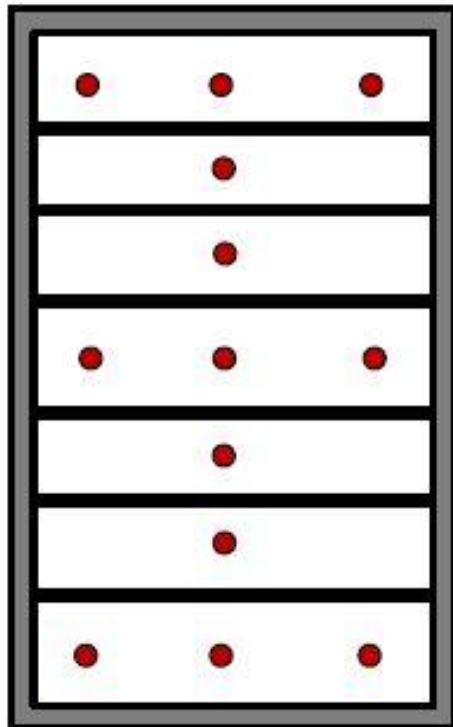
MA30

MA33		MA34
	MA35	
MA31		MA32

REAR

FRONT

Front View



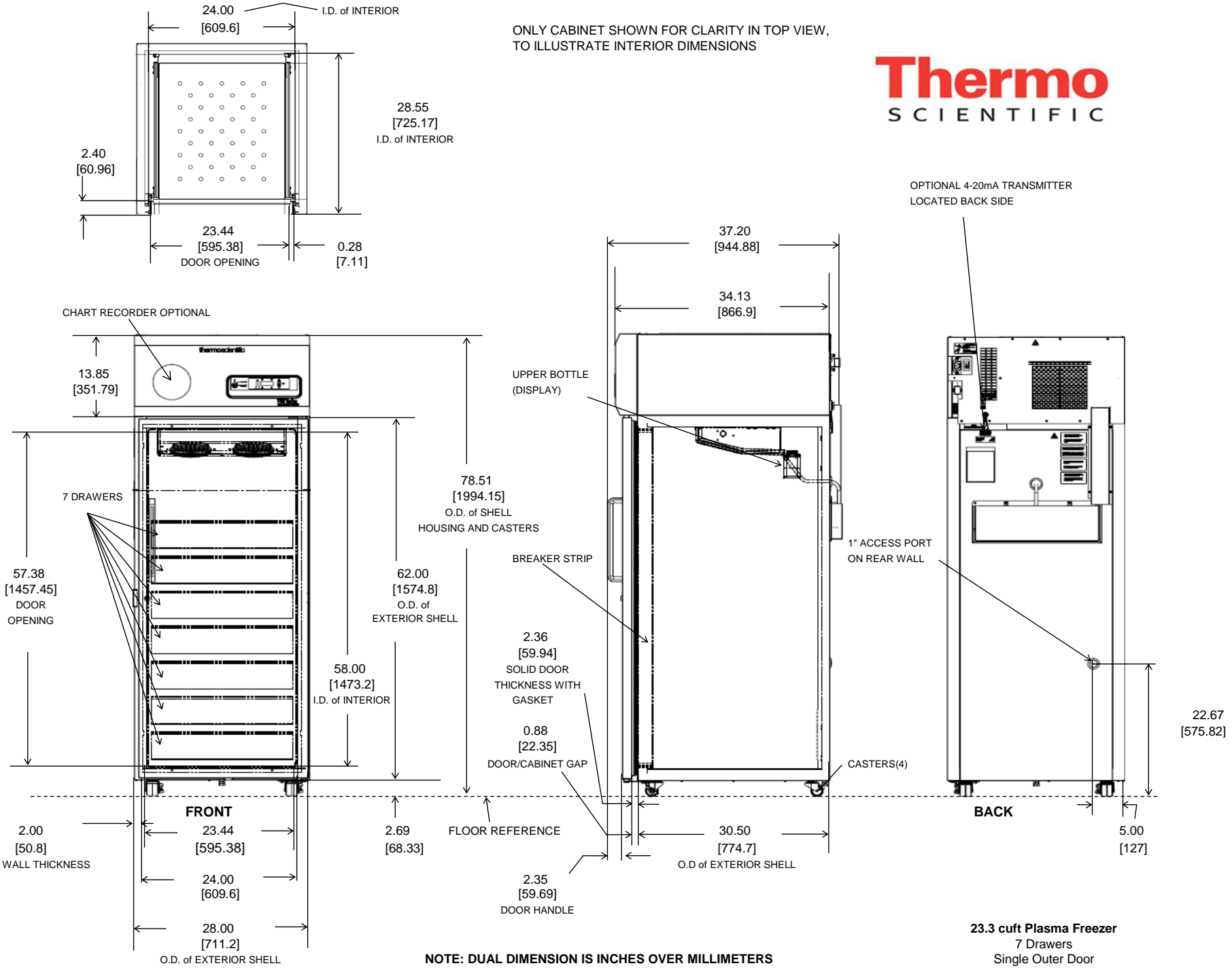
19490-PP-T6

	MA1	MA2	MA3	MA4	MA5
Avg	-30.2	-29.5	-30.3	-30.2	-30.1
Max	-18.2	-19.5	-17.9	-17.8	-19.5
Min	-32.3	-31.5	-32.5	-32.2	-32.1
	MA10	MA15			
Avg	-29.2	-30.1			
Max	-21.6	-24.8			
Min	-30.6	-31.2			
	MA16	MA17	MA18	MA19	MA20
Avg	-29.7	-30.0	-30.1	-30.1	-29.9
Max	-25.6	-25.2	-24.4	-24.6	-25.5
Min	-30.7	-31.0	-31.3	-31.2	-30.9
	MA25	MA30			
Avg	-29.8	-29.0			
Max	-25.5	-25.2			
Min	-30.8	-29.9			
	MA31	MA32	MA33	MA34	MA35
Avg	-29.2	-29.5	-29.2	-29.7	-29.4
Max	-25.4	-24.3	-24.6	-23.9	-25.1
Min	-30.2	-30.7	-30.3	-30.9	-30.5

Cabinet Average: -29.6 C
Probe Average: -27.3 C
Peak Variation: +12.2 C / -2.5 C

ONLY CABINET SHOWN FOR CLARITY IN TOP VIEW,
TO ILLUSTRATE INTERIOR DIMENSIONS

OPTIONAL 4-20mA TRANSMITTER
LOCATED BACK SIDE



NOTE: DUAL DIMENSION IS INCHES OVER MILLIMETERS
DO NOT USE FOR ENGINEERING PURPOSES. SUBJECT TO CHANGE WITHOUT NOTICE.

23.3 cu ft Plasma Freezer
7 Drawers
Single Outer Door
Top Mount Controls