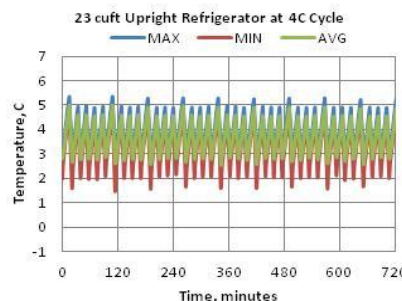
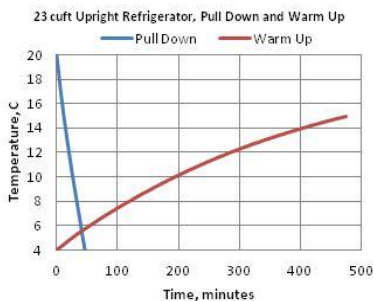




Technical Data Sheet
Thermo High Performance Blood Bank Refrigerator
 MODEL RELEASE - 1
 Thermo Fisher Scientific, Asheville, North Carolina

Specifications	Model Number
	TSX2304BV
	Application, Rating and Electrical Data
Application	Blood Bank (non-flammable) Refrigerator
Storage Volume	650 Liters/23 Cubic Feet
Factory Temperature Setpoint	4°C
Temperature Setpoint Range	3°C to 7°C
Electrical Power / Rated Current	208-230V 50/60 Hz 1 Phase / 2.3A
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 / 286W
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	Standard
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 932 D x 711 W mm (78.5 H x 36.7 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	251 kg / 554 lb

Typical Performance Characteristics in 20° C Ambient



Test Unit Series Number or MSO Number:	19490-BA-T11
Cabinet Load:	Unloaded
Average Cabinet Temp at 4C Cycle (C):	3.7
Peak Variation from Setpoint (C):	+1.3 / -2.5
Uniformity (C):	0.7
Stability (C):	2.8
1-min Door Opening Recovery to 4C (min):	6
Duty Cycle at 4C (%):	30
Cycle (on/off) rate at 4C (min):	6 / 13
Energy Consumption (kw-hr/day):	4.3
Heat Rejection Rate (btu/hr):	616
Pull Down Time (to 4C) (min):	47
Warm Up Time (4C to 15C) (min):	475
Sound (dBA):	52

- Performance is nominal and individual units may vary.
- Freezer performance will differ due to product amount, product size and operating conditions.
- 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.

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

Temperatures are averages during > 12
hours of cycle after reaching setpoint of 4 C

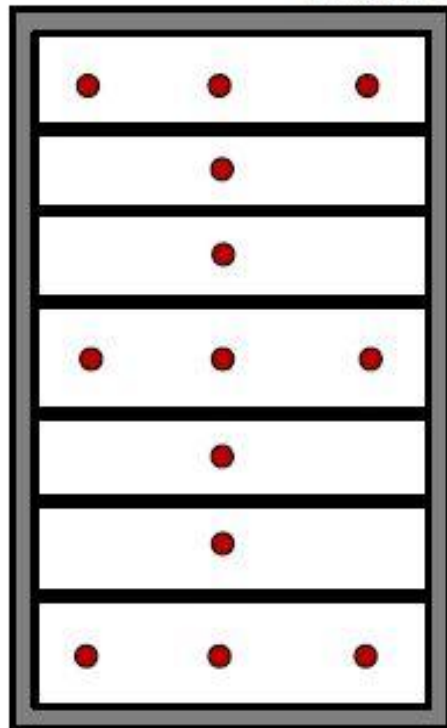
Top View of Shelves

MA3	MA5	MA4
MA1		MA2
MA10		
MA15		
MA18	MA20	MA19
MA16		MA17
MA25		
MA30		
MA33	MA35	MA34
MA31		MA32

REAR

FRONT

Front View

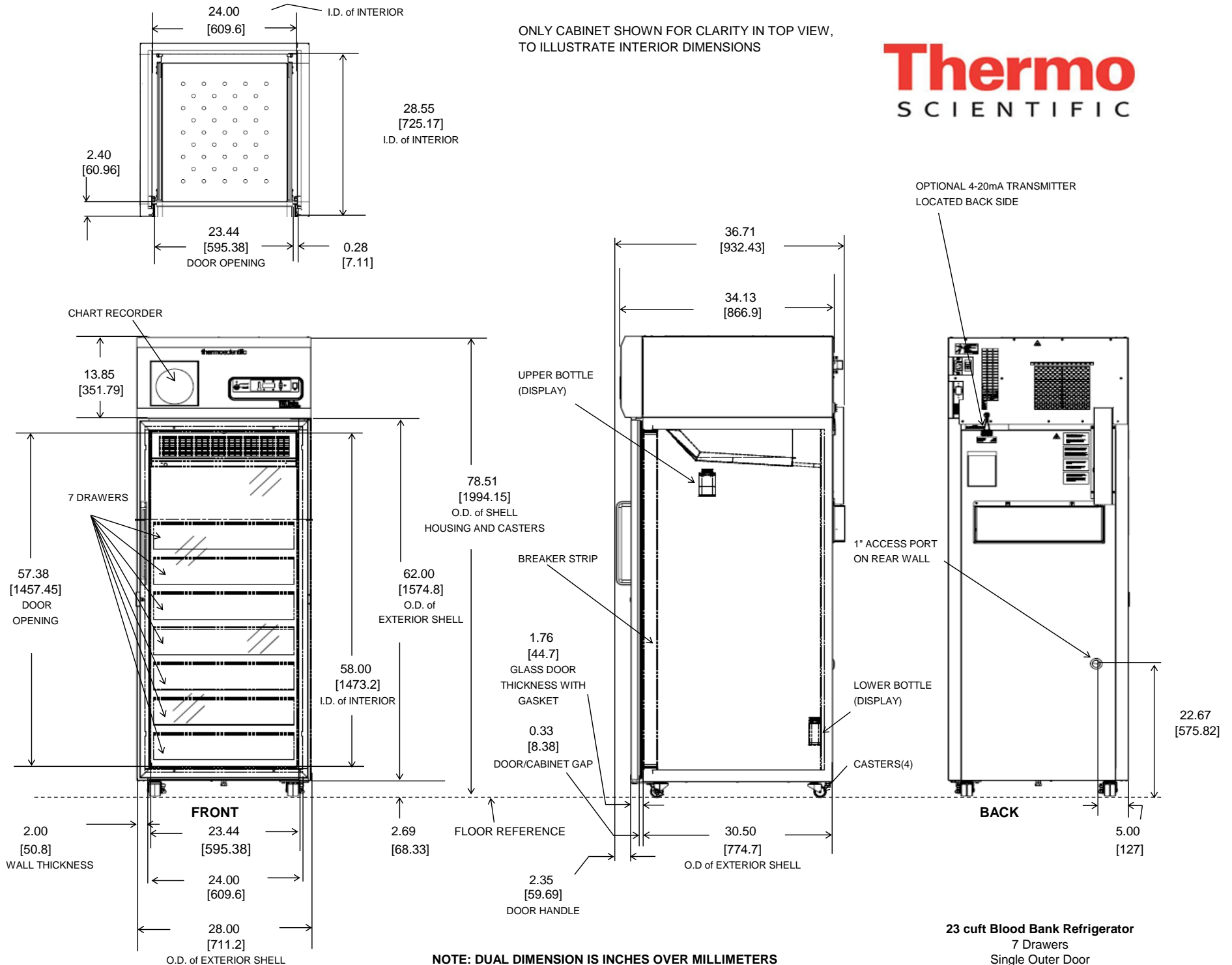


19490-BA-T11

	MA1	MA2	MA3	MA4	MA5
Avg	3.7	3.7	3.8	3.8	3.8
Max	5.1	5.2	5.2	5.2	5.2
Min	2.0	2.2	1.5	1.9	1.8
	MA10	MA15			
Avg	3.7	3.8			
Max	4.8	4.8			
Min	2.8	3.2			
	MA18	MA17	MA18	MA19	MA20
Avg	3.7	3.8	3.8	3.8	3.7
Max	4.7	4.9	4.9	5.1	4.9
Min	3.1	3.1	2.4	2.7	2.9
	MA25	MA30			
Avg	3.7	3.6			
Max	5.1	5.0			
Min	2.5	2.5			
	MA31	MA32	MA33	MA34	MA35
Avg	3.5	3.8	3.6	3.7	3.6
Max	5.2	5.2	5.3	5.2	5.3
Min	2.0	2.5	1.5	2.3	1.8

Cabinet Average: 3.7 C
Probe Average: 4.3 C
Peak Variation: +1.3 C / -2.5 C

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



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

23 cuft Blood Bank Refrigerator
7 Drawers
Single Outer Door
Top Mount Controls