## **thermo**scientific

## Technical Data Sheet High Performance Chromatography Refrigerator

Revision- 4

Thermo Fisher Scientific, Asheville, North Carolina

	Thermo Fisher Scientific, Asheville, North Carolina						
	Catalog number						
	TSX2305CV						
Specifications	Model Number						
	TSX2305CV - Chroma +5						
AI' at face	Application, Rating and Electrical Data						
Application	Chromatography (non-flammable) Refrigerator						
Storage Volume	650 Liters / 23.0 Cubic Feet 5°C						
Factory Set Point							
Set Point Range / Adjustable Increment	3°C to 7°C / 0.1°C						
Electrical Power / Rated Current	208-230 V 50/60 Hz 1 Phase / 2.3 A (Unit) / 4 A (Internal Outlet)  15A dedicated grounded non-GFCI circuit. Protected by circuit breaker rated for inductive loads						
Building Supply Rating	15A dedicated grounded non-GPCI circuit. Protected by circuit breaker rated for inductive loads  16 Amp (CEE 7/7) / 3.048 Meters (10 feet)						
Power Plug / Power Cord Length	CE, UL, cUL						
Agency Listings	Indoor Use Only						
Indoor / Outdoor Usage	Non-Corrosive, Non-Flammable, Non-Explosive, Good Air Ventilation						
Application Environment	15° C - 32° C (60° F - 90° F)						
Ambient Operating Temperature	Refrigeration Configuration						
Defrice vetion Cyatem	Vapor Compression System						
Refrigeration System  Compressor / Number / Capacity	Hermetic Variable Capacity Compressor / 1 / 286 W						
Condenser Type / Number	Microchannel and Forced-Air Cooled / 1						
Expansion Device	Capillary Tube						
Evaporator Type / Defrost Method	Forced Air Evaporator Coil / Automatic Defrost						
Refrigerant Charge / Flammability	R290, 145 gms, GWP:3 ODP:0 / Flammable						
Reingerant Charge / Flammability	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)						
Connectivity / Remote Outputs	Remote Alarm Contacts, RS485 Output and 4-20 mA Output (optional)						
Adjustable Warm / Cold Alarms	Fully Adjustable						
Power Failure Alarm	Standard						
Electronic Chart Recorder	Optional						
	Dimensions and Construction						
Interior Dimensions (D x W x H)	72.3 cm x 61.0 cm x 147.3 cm (28.5" x 24.0" x 58.0")						
Exterior Dimensions (D x W x H)	96.2 cm x 71.1 cm x 199.7 cm (37.8" x 28.0" x 78.6")						
Insulation	5.08 cm (2.0") High-Density Water-Blown Polyurethane Foam						
Door Perimeter Heater	Yes						
Shelves / Load Limit	(2) Adjustable Half Wire Shelves / Max. Cap. per Shelf: 22.5 kg (50 lbs)						
All-Direction Casters	Standard With Locks						
Shipping Weight	195 kg / 429 lb						
5	Typical Performance Characteristics						
23 cuft Upright Refrigerator, Pull Down and Warm Up	. Test office in all the interest of the content of						
	— MAX — MIN — AVG  Cabinet Load: Unloaded						
19	8 Average Cabinet Temp at 5C Cycle (C): 5.3						
17	Peak Variation from Setpoint (C): +2/-1.6						
	Uniformity (C): 0.8 Stability (C): 2.6						
a de la	Temin Door Opening Recovery to 5C (min) 3						
Ë 11	Duty Cycle at 5C (%): 20						
₽ 9	Cycle (on/off) rate at 5C (min): 2 / 7 Energy Consumption (kw-hr/day): 3.8						
7	2 Heat Rejection Rate (btu/hr): 537						
5	Pull Down Time (to 5C) (min): 24						
0 50 100 150 200	250 0 120 240 360 480 600 720 Warm Up Time (5C to 15C) (min): 198						
Time, minutes	Time, minutes Sound (dBA): 52						

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

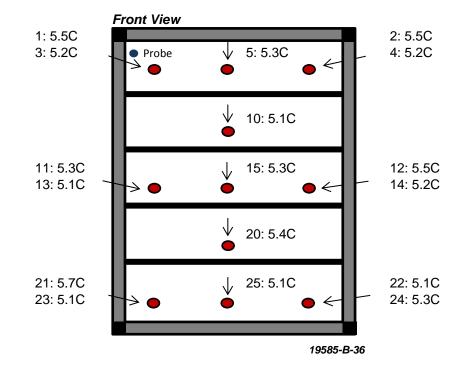
Temperatures are averages during > 20 cycles after reaching a setpoint of 5C

Typical Cabinet Temperature Map Refrigerator 23cuft , 4 Inner-Shelves + Base, Single Outer Door

## **Top View of Shelves**

REAR	M3		M4
		M5	
FRONT	M1		M2
		M10	
	M13		M14
		M15	
	M11		M12
		M20	
	M23		M24
		M25	
	M21		M22

Cabinet Average: 5.3 C
Probe Average: 5.5 C
Peak Variation: +2.0 C / -1.6 C



	M1	M2	M3	M4	M5	M10	M11	M12	M13
Avg	5.5	5.5	5.2	5.2	5.3	5.1	5.3	5.5	5.1
Max	6.7	6.6	6.6	6.6	6.5	6.7	6.6	6.6	6.7
Min	4.3	4.6	3.9	4	4.2	3.5	4.2	4.4	3.4

		M14	M15	M20	M21	M22	M23	M24	M25
	Avg	5.2	5.3	5.4	5.7	5.1	5.1	5.3	5.1
ſ	Max	6.7	6.5	6.6	7	6.5	6.4	6.6	6.8
ſ	Min	3.7	4.2	4.5	4.4	3.8	3.9	4.2	3.4

