Thermo Scientific Forma FDE Series Ultra-Low Temperature Freezers

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Thermo Scientific™ Forma™ FDE Series Ultra-Low Temperature Freezers

- **H-drive hydrocarbon refrigeration system** provides sustainable performance with reliability you can count on

- **Low peak variation** helps ensure sample temperature protection throughout entire cabinet

- **ENERGY STAR®** certified

- **Fast door opening recovery** in as little as 23 minutes

- **Long warm-up time** from -80°C to -50°C in up to 5 hours

- **Decrease storage footprint** up to 25%

- **5-year** standard warranty

Designed to keep your samples safe

- Worry-free storage; with low peak variation, samples are protected throughout the entire cabinet.[1]

- Secure freezer settings with sample security

- General purpose models for non-diagnostic general laboratory use and FDA Class II Medical Device models for Storage of Blood, Plasma, Tissue, Skin, and Bone[3]

- Backed by our Global Service and Support Team

Limit environmental impact and lower HVAC costs

- Uses as low as 13.7 kWh/day, depending on size

- Less heat emission lowers HVAC costs

- SNAP and EU F-Gas regulation compliant, natural hydrocarbon refrigerants

- Environmentally-friendly, water-blown foam insulation is compliant with SNAP and EU F-Gas regulations

- Manufactured in an award-winning, zero-waste-to-landfill facility

User-friendly and quiet

- New HIC touch screen user interface

- Quiet enough to reside directly in the laboratory; at just 50.5 dBA, the sound is comparable to a home refrigerator.[2]

1. Typical freezer data based on internal testing with freezer setpoint at -80°C and ambient temperature at 20°C. Performance data varies across freezer size and electrical specifications.

2. All data based on internal data unless otherwise noted. Data on file.

3. FDA Class II Models are listed under product code KSE, regulation number 864.9700. This unit is not intended for use in classified hazardous locations, nor to be used for the storage of flammable inventory. Reference: AABB - Technical Manual 17th Ed., page 273,274. STANDARDS FOR TISSUE BANKING 14th Ed., Section E, E3.300, E3.310, Table E3.331. Note for clarity: The 'Bone' is the Osteoarticular Graft, a weight bearing allograft with intact articular surfaces, consisting of a joint with associated soft tissue and bone.

Dependable storage with operational savings and sustainability

User-friendly HIC interface and cabinet

- Easy to use: plug in and go; no setup required

- H-drive Information Center (HIC) combines easy-to-read temperature with simple capacitive touch buttons

- Advanced security features: alarm settings, setpoint security passcode, and padlock-compatible doors

- Egonomic design: single-hand door operation, eye-level display, and shelf-level placement that do not require floor-level loading of racks

- Four inner doors minimize ambient temperature during sample retrieval

Specifications & Ordering Information

Biologics   Molecular Biologics   White blood and plasma   Clinical applications   Get Connected

Upright Freezers (-50°C to -86°C)

General Purpose Model	FDA Class II Model	Capacity		Electrical	Amps / Breaker (Plug type)	Max Shelf Weight lbs. (kg)	Interior Dimensions H x W x D in. (cm)	Exterior Dimensions H x W* x D in. (cm)	Shipping Weight lbs. (kg)
		cu. ft. (L)	Cryoboxes (2 in.)						
FDE60086EA	FDE60086MA	28.8 (816)	600	115V/60Hz	12.7/20 (NEMA 5-20)	245 (111)	51.2 x 34.4 x 28.3 (130.1 x 87.3 x 71.9)	78.0 x 39.6 x 38.5** (198.1 x 100.6 x 97.7)	820 (372)
FDE60086ED	FDE60086MD			208-230V/60Hz	6.2/15 (NEMA 6-15)				
FDE60086EV	FDE60086MV			230V/50Hz	6.1/10 (European)				

*Allowance for handle and hinge, add 4.2 in (10.7cm) to cabinet width
**Doorway width clearance is 34.5 in (87.6cm) for FDE60086

Performance Data

General Purpose Model	FDA Class II Model	Energy Consumption* (kW-hr/day)	Peak Variation from -80°C Setpoint (°C)**	60 Second Door Opening Recovery Time (minutes)	Warm-Up Time (-80°C to -50°C) (minutes)***	Noise Level (dBA)
FDE60086EA	FDE60086MA	13.7	+3.9/-2.9	25	301	50.5
FDE60086ED	FDE60086MD	13.8	+3.9/-3.3	23	290	50.5
FDE60086EV	FDE60086MV	14.6	+2.8/-2.4	24	300	50.5

*Energy Consumption: Typical data - internal testing with freezer setpoint at -80°C and 20°C ambient temperature
**Peak Variation from Setpoint: Typical data - internal testing with freezer setpoint at -80°C and 20°C ambient temperature
***Warm Up Time: Typical freezer data based on internal testing with empty freezer setpoint at -80°C and ambient temperature at 20°C

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Options (Field installations must be performed by a qualified professional)

Description	Installation	Model Series FDE60086
LN₂ Backup System Maintains temperature down to -80°C with liquid nitrogen.	Factory	LN4567
	Field	FLN456LEA* FLN456LED** FLN456LEV***
CO₂ Backup System Maintains temperature down to -67°C with CO₂.	Factory	CO4567
	Field	FCO456LEA* FCO456LED** FCO456LEV***
Chart Recorder (Inkless) Seven-day inkless recorder Range: -115° to +50°C (+5°C resolution) Dia.: 6 in. (15.2cm)	Factory	CR4567
	Field	FCR600LE
Chart Recorder (Ink) Seven-day ink recorder Range: -100° to +38°C (+2°C resolution) Dia.: 6 in. (15.2cm)	Factory	CRP4567
	Field	FCRP600LE
Stainless Steel Freezer Interior	Factory	SS34567
Water-Cooled Condenser Option	Factory	WC34567****
Twist Lock Plug NEMA L5-20P for 115V/60Hz	Factory	US125V20ATL
	Field	TL125V20A
Twist Lock Plug NEMA L6-15P for 208-230V/60Hz	Factory	US230V15ATL
	Field	TL230V15A
Twist Lock Plug NEMA L6-20P for 208-230V/60Hz	Factory	US230V20ATL
	Field	TL230V20A

*A = 115V/60Hz (NEMA 5-20 plug)
**D = 208-230V/60Hz (NEMA 6-15 plug)
***V = 230V/50Hz (European plug)
**** WC34567 not available on 115V/60Hz models

Accessories

Description	Model Series FDE60086
Air Filter (Replacement)	AF34567LE
Alarm Delay Module Eliminates nuisance alarms due to intermittent or transitory conditions. (The alarm conditions must exist for a user-defined period before the signal is broadcast.)	6903
Battery Backup (Replacement)	400159
Chart Paper, for Inkless Recorder, 50/Pack	6185
Chart Paper, for Ink Recorder, 50/Pack	17020
Cryo Gloves, Medium	4425
Cryo Gloves, Large	4426
Seismic Restraint Kits	TF-ULT600
Shelf Kits: Include One Shelf and Clips	SK600

Thermo Scientific™ Forma™ FDE Series Ultra-Low Temperature Freezers

Racks for Boxes and Microplates

Racks for 2 in. (5cm) Boxes

Catalog No.	Description	Dimensions H x W x D in. (cm)	Storage Capacities	Model Series FDE60086
920090	Sliding Drawer Rack	11.9 x 5.5 x 26.9 (30.2 x 14 x 68.3)	Boxes/Rack	25
			Racks/Shelf	6
			Racks/Freezer	24
			Boxes/Freezer	600
1950520	Adjustable Side Access Rack	11.6 x 5.4 x 26.75 (29.5 x 13.7 x 67.9)	Boxes/Rack	25
			Racks/Shelf	6
			Racks/Freezer	24
			Boxes/Freezer	600

Racks for 3 in. (7.62cm) Boxes

Catalog No.	Description	Dimensions H x W x D in. (cm)	Storage Capacities	Model Series FDE60086
920091	Sliding Drawer Rack	11.9 x 5.5 x 26.9 (30.2 x 14 x 68.3)	Boxes/Rack	15
			Racks/Shelf	6
			Racks/Freezer	24
			Boxes/Freezer	360
1950521	Adjustable Side Access Rack for 3 in. boxes	11.6 x 5.4 x 26.75 (29.5 x 13.7 x 67.9)	Boxes/Rack	15
			Racks/Shelf	6
			Racks/Freezer	24
			Boxes/Freezer	360

Racking Shelf Kits

Description	Storage Capacities	Model Series FDE60086
	Catalog No.	RSK600SD4
Sliding Drawer Racks with Boxes for One Shelf (5 x 5 x 2 in. Boxes with 100-Count Cell Dividers)	Racks Included	6
	Boxes Included	150

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Racks for Standard or Deepwell Microplates

Catalog No.	Description	Dimensions H x W x D in. (cm)	Storage Capacities		Model Series FDE60086
1950592	Side Access Rack with Locking Rod	11.9 x 5.5 x 25.7 (30.2 x 14 x 65.3)	Plates/Rack	147
			Racks/Shelf	6
			Racks/Freezer	24
			Plates/Freezer	3,528
1950523	Side Access Microplate Rack	11.9 x 5.5 x 25.7 (30.2 x 14 x 65.3)	Plates/Rack	105
			Racks/Shelf	6
			Racks/Freezer	24
			Plates/Freezer	2,520
1950642	Sliding Drawer Microplate Rack	11.9 x 5.5 x 26.9 (30.2 x 14 x 68.3)	Plates/Rack	35
			Racks/Shelf	6
			Racks/Freezer	24
			Plates/Freezer	840

Boxes and Dividers

Catalog No.	Description	# of Dividers	Quantity	Color
5026-0909	Thermo Scientific™ Nalgene™ polycarbonate 2 in. (5.08cm) box for 1.2 to 2mL vials	81	24/Case	White
5954	2 in. (5.08 cm) Fiberboard Box	0	12/Pack	White
820002	2 in. (5.08 cm) Fiberboard Box	81	1	White
820109	2 in. (5.08 cm) Fiberboard Box	100	1	White
5956	3 in. (7.62 cm) Fiberboard Box	0	12/Pack	White
820003	3 in. (7.62 cm) Fiberboard Box	81	1	White
1950878	2 in. (5.08 cm) Fiberboard Box	0	12/Pack	Multiple
1950879	2 in. (5.08 cm) Fiberboard Box	0	12/Pack	Pink
1950880	2 in. (5.08 cm) Fiberboard Box	0	12/Pack	Red
1950881	2 in. (5.08 cm) Fiberboard Box	0	12/Pack	Yellow
1950882	2 in. (5.08 cm) Fiberboard Box	0	12/Pack	Green
1950883	2 in. (5.08 cm) Fiberboard Box	0	12/Pack	Blue
1950884	2 in. (5.08 cm) Fiberboard Box	0	12/Pack	Black

Fiberboard Dividers

Catalog No.	Description	Quantity/Pack
5958	Grid Dividers, Hold 100 x 12 mm Tubes/Vials	12
6212	Grid Dividers, Hold 81 x 13 mm Tubes/Vials	12
5960	Grid Dividers, Hold 64 x 14 mm Tubes/Vials	12
5959	Grid Dividers, Hold 49 x 16 mm Tubes/Vials	12

Thermo Scientific™ Forma™ FDE Series Ultra-Low Temperature Freezers

Catalog No.	Description	Quantity
377267	Thermo Scientific™ Nunc™ 1.8 mL Screw-Top Round-Bottom Vials with Internal Threading	1,800/Case

Sliding Drawer Racks for Matrix and Cryobank Tubes

Racks work with all Thermo Scientific™ Matrix™ and Nunc™ Cryobank Tubes

			Model Series FDE60086
200 µL Capacity Tubes			
3747, 3748, 4988	Matrix 500 µL 2D Internally Threaded Universal Tubes Box Dimensions: 3.365 x 5.03 x 1.082 in. (8.5 x 12.8 x 2.75 cm)	Rack Model No.	1950787
		Freezer Rack Dimensions W x H x D	5.5 x 11.9 x 26.96 in. (14 x 30.3 x 68.5 cm)
		Tubes/Box	96
		Boxes/Rack	56
		Racks/Shelf	6
		Racks/Freezer	24
		Tubes/Freezer	129,024
500 µL Capacity Tubes			
3734, 3735, 4898	Matrix 500 µL 2D Open Top Tubes Box Dimensions: 3.365 x 5.03 x 1.022 in. (8.5 x 12.8 x 2.6 cm)	Rack Model No.	1950787
		Freezer Rack Dimensions W x H x D	5.5 x 11.9 x 26.96 in. (14 x 30.3 x 68.5 cm)
3736, 3737, 4899	Matrix 500 µL 2D Internally Threaded Universal Tubes with Installed DuraSeal™ Seal Box Dimensions: 3.365 x 5.03 x 1.082 in. (8.5 x 12.8 x 2.75 cm)	Tubes/Box	96
		Boxes/Rack	56
		Racks/Shelf	6
		Racks/Freezer	24
		Tubes/Freezer	129,024
374086, 374087 (including color options)	Nunc Cryobank 500 µL Internally Threaded Tubes Box Dimensions: 3.365 x 5.03 x 1.394 in. (8.5 x 12.8 x 3.5 cm)	Rack Model No.	1950791
		Freezer Rack Dimensions W x H x D	5.5 x 11.9 x 26.96 in. (14 x 30.3 x 68.5 cm)

Thermo Scientific™ Forma™ FDE Series Ultra-Low Temperature Freezers

Sliding Drawer Racks for Matrix and Cryobank Tubes

Racks work with all Thermo Scientific™ Matrix™ and Nunc™ Cryobank Tubes

			Model Series FDE60086
750 µL Capacity Tubes			
3731, 3732, 4896	Matrix 750 µL 2D Open Top Tubes Box Dimensions: 3.365 x 5.03 x 1.55 in. (8.5 x 12.8 x 3.9 cm)	Rack Model No.	1950791
		Freezer Rack Dimensions W x H x D	5.5 x 11.9 x 26.96 in. (14 x 30.3 x 68.5 cm)
3729, 4896	Matrix 750 µL 2D Tubes with Installed DuraSeal Seal Box Dimensions: 3.365 x 5.03 x 1.55 in. (8.5 x 12.8 x 3.9 cm)	Tubes/Box	96
		Boxes/Rack	42
		Racks/Shelf	6
		Racks/Freezer	24
		Tubes/Freezer	96,768
1 mL Capacity Tubes			
374088, 374089 (including color options)	Nunc Cryobank 1 mL Internally Threaded Tubes Box Dimensions: 3.365 x 5.03 x 1.92 in. (8.5 x 12.8 x 4.9 cm)	Rack Model No.	1950642
		Freezer Rack Dimensions W x H x D	5.5 x 11.9 x 26.96 in. (14 x 30.3 x 68.5 cm)
		Tubes/Box	96
		Boxes/Rack	35
		Racks/Shelf	6
		Racks/Freezer	24
		Tubes/Freezer	80,640
3740, 3741, 3742 (including color options)	Matrix 1 mL 2D Internally Threaded Screw Top Tubes Box Dimensions: 3.365 x 5.03 x 2.3 in. (8.5 x 12.8 x 5.8 cm)	Rack Model No.	1950799
		Freezer Rack Dimensions W x H x D	5.5 x 11.9 x 26.96 in. (14 x 30.3 x 68.5 cm)
		Tubes/Box	96
		Boxes/Rack	28
		Racks/Shelf	6
		Racks/Freezer	24
		Tubes/Freezer	64,512

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Sliding Drawer Racks for Matrix and Cryobank Tubes

Racks work with all Thermo Scientific™ Matrix™ and Nunc™ Cryobank Tubes

			Model Series FDE60086
1.4 mL Capacity Tubes			
3791, 3792, 4890	Matrix 1.4 mL 2D Open Top Tubes Box Dimensions: 3.365 x 5.03 x 1.92 in. (8.5 x 12.8 x 4.9 cm)	**Rack Model No.**	**1950642**
		Freezer Rack Dimensions W x H x D	5.5 x 11.9 x 26.96 in. (14 x 30.3 x 68.5 cm)
3801, 4890	1.4 mL 2D Tubes with Installed DuraSeal Seal Box Dimensions: 3.365 x 5.03 x 1.92 in. (8.5 x 12.8 x 4.9 cm)	Tubes/Box	96
		Boxes/Rack	35
3711, 3112, 4890	Matrix 1.4 mL Human Readable Open Top Tubes Box Dimensions: 3.365 x 5.03 x 1.92 in. (8.5 x 12.8 x 4.9 cm)	Racks/Shelf	6
		Racks/Freezer	24
		Tubes/Freezer	80,640
1.8 to 2 mL Capacity Tubes			
374500, 374501	Nunc 1.8 mL Externally Threaded Universal Tubes Box Dimensions: 3.365 x 5.03 x 2.15 in. (8.5 x 12.8 x 5.5 cm)	**Rack Model No.**	**1950642**
		Freezer Rack Dimensions W x H x D	5.5 x 11.9 x 26.96 in. (14 x 30.3 x 68.5 cm)
374221, 374223	Nunc Cryobank 2 mL Internally Threaded Tubes Box Dimension: 3.365 x 5.03 x 2.15 in. (8.5 x 12.8 x 5.5 cm)	Tubes/Box	48
		Boxes/Rack	35
		Racks/Shelf	6
		Racks/Freezer	24
		Tubes/Freezer	40,320
5 mL Capacity Tubes			
374220, 374222	Nunc Cryobank 5 mL Internally Threaded Tubes Box Dimensions: 3.365 x 5.03 x 3.78 in. (8.5 x 12.8 x 9.6 cm)	**Rack Model No.**	**1950819**
		Freezer Rack Dimensions W x H x D	5.5 x 11.9 x 26.96 in. (14 x 30.3 x 68.5 cm)
		Tubes/Box	48
		Boxes/Rack	21
		Racks/Shelf	6
		Racks/Freezer	24
		Tubes/Freezer	24,192

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