

thermo scientific



Thermo Scientific Forma FDE Series -40°C Ultra-Low Temperature Freezers

ThermoFisher
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Thermo Scientific™ Forma™ FDE Series -40°C 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
- **Fast door opening recovery** in as little as 18 minutes
- **Long warm-up time** from -40°C to -20°C in up to 6 hours
- **Three capacities:** 400, 500 and 600 2-inch boxes
- **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
- Backed by our Global Service and Support Team

Limit environmental impact and lower HVAC costs

- Uses as low as 4.4 kWh/day, depending on size
- Less heat emission lowers HVAC costs
- Natural refrigerants compliant with EU F-Gas regulation: R290
- Environmentally-friendly, water-blown foam insulation
- 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 48 dBA, the sound is comparable to a home refrigerator.²

1. Typical freezer data based on internal testing with freezer setpoint at -40°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.

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
- Ergonomic 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



Upright Freezers (-10°C to -40°C)

General Purpose Model	Capacity		Electrical	Amps / Breaker (Plug type)	Max Shelf Weight kg	Interior Dimensions H x W x D cm	Exterior Dimensions H x W* x D cm	Shipping Weight kg
	Liters	Cryoboxes 5 cm						
FDE40040FD	549	400	208-230V/60Hz	3.4/15 (NEMA 6-15)	75	130.1 x 58.8 x 71.9	198.1 x 71.9 x 97.7	292
FDE40040FV			230V/50Hz	3.2/10 (European)				
FDE50040FD	682	500	208-230V/60Hz	4.0/15 (NEMA 6-15)	93	130.1 x 73.0 x 71.9	198.1 x 86.4 x 97.7**	304
FDE50040FV			230V/50Hz	3.4/10 (European)				
FDE60040FD	816	600	208-230V/60Hz	4.0/15 (NEMA 6-15)	111	130.1 x 87.3 x 71.9	198.1 x 100.6 x 97.7**	348
FDE60040FV			230V/50Hz	3.4/10 (European)				

*Allowance for handle and hinge, add 10.7 cm to cabinet width

**Doorway width clearance is 87.6 cm for FDE50040 and FDE60040



Performance Data

General Purpose Model	Energy Consumption* (kW-hr/day)	Peak Variation from -40°C Setpoint (°C)**	1-min Door Opening Recovery to -38.5°C (min)***	Warm-Up Time (-40°C to -20°C) (min)****	Sound (dBA)
FDE40040FD	4.4	+3.4 / -1.5	18	314	52
FDE40040FV	4.4	+3.2 / -1.6	19	309	51
FDE50040FD	5.1	+2.2 / -2.2	25	318	48
FDE50040FV	5.3	+1.8 / -2.2	22	328	51
FDE60040FD	5.9	+1.5 / -1.9	25	362	49
FDE60040FV	6.2	+1.7 / -1.9	29	339	48

*Energy Consumption: Typical data - internal testing with freezer setpoint at -40°C and 20°C ambient temperature

**Peak Variation from Setpoint: Typical data - internal testing with freezer setpoint at -40°C and 20°C ambient temperature

***Door opening recovery: Typical data - internal recovery testing is to -38.5°C. During the door opening all inner and outer doors are opened for 60 seconds.

****Warm Up Time: Typical data - internal testing with empty freezer setpoint at -40°C and ambient temperature at 20°

For specific model performance data, please refer to the individual technical specification sheet for the desired model.

Thermo Scientific™ Forma™ FDE Series -40°C Ultra-Low Temperature Freezers

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

Description	Installation	For Model Series		
		FDE40040	FDE50040	FDE60040
LN₂ Backup System Maintains temperature down to -80°C with liquid nitrogen.	Factory	LN4567	LN4567	LN4567
	Field	FLN456LED* FLN456LEV**	FLN456LED* FLN456LEV**	FLN456LED* FLN456LEV**
CO₂ Backup System Maintains temperature down to -67°C with CO ₂ .	Factory	CO4567	CO4567	CO4567
	Field	FCO456LED* FCO456LEV**	FCO456LED* FCO456LEV**	FCO456LED* FCO456LEV**
Chart Recorder (Inkless) Seven-day inkless recorder Range: -115° to +50°C (+5°C resolution) Dia.: 6" (15.2cm)	Factory	N/A	CR4567	CR4567
	Field	N/A	FCR500LE	FCR600LE
Chart Recorder (Ink) Seven day ink recorder Range: -100° to +38°C (+2°C resolution) Dia.: 6" (15.2 cm) <i>Models for FDE40040 are stand alone.</i>	Factory	N/A	CRP4567	CRP4567
	Field	6383-6D* 6383-6V** 6383-6W***	FCRP500LE	FCRP600LE
Stainless Steel Freezer Interior	Factory	SS34567	SS34567	SS34567
Twist Lock Plug NEMA L6-15P for 208-230V/60Hz	Factory	US230V15ATL	US230V15ATL	US230V15ATL
	Field	TL230V15A	TL230V15A	TL230V15A
Twist Lock Plug NEMA L6-20P for 208-230V/60Hz	Factory	US230V20ATL	US230V20ATL	US230V20ATL
	Field	TL230V20A	TL230V20A	TL230V20A

* D = 208-230V/60Hz (NEMA 6-15 plug)

**V = 230V/50Hz (European plug)

***W = 230V/50Hz (UK plug)



Accessories

Description	For Model Series		
	FDE40040	FDE50040	FDE60040
Air Filter (Replacement)	AF34567LE	AF34567LE	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	6903	6903
Battery Backup (Replacement)	400159	400159	400159
Chart Paper, for Inkless Recorder, 50/Pack	N/A	6185	6185
Chart Paper, for Ink Recorder, 50/Pack	17020	17020	17020
Cryo Gloves, Medium	4425	4425	4425
Cryo Gloves, Large	4426	4426	4426
Seismic Restraint Kits	TF-ULT400	TF-ULT500	TF-ULT600
Shelf Kits: Include One Shelf and Clips	SK400	SK500	SK600



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Racks for Boxes and Microplates

Racks for 5 cm Boxes

Catalog No.	Description	Dimensions H x W x D cm	Storage Capacities	For Model Series		
				FDE40040	FDE50040	FDE60040
 920090	Sliding Drawer Rack	30.2 x 14 x 68.3	Boxes/Rack	25	25	25
			Racks/Shelf	4	5	6
			Racks/Freezer	16	20	24
			Boxes/Freezer	400	500	600
 1950520	Adjustable Side Access Rack	29.5 x 13.7 x 67.9	Boxes/Rack	25	25	25
			Racks/Shelf	4	5	6
			Racks/Freezer	16	20	24
			Boxes/Freezer	400	500	600




Racks for 7.62 cm Boxes

Catalog No.	Description	Dimensions H x W x D cm	Storage Capacities	For Model Series		
				FDE40040	FDE50040	FDE60040
 920091	Sliding Drawer Rack	30.2 x 14 x 68.3	Boxes/Rack	15	15	15
			Racks/Shelf	4	5	6
			Racks/Freezer	16	20	24
			Boxes/Freezer	240	300	360
 1950521	Adjustable Side Access Rack for 3 in. boxes	29.5 x 13.7 x 67.9	Boxes/Rack	15	15	15
			Racks/Shelf	4	5	6
			Racks/Freezer	16	20	24
			Boxes/Freezer	240	300	360

Racking Shelf Kits

Description	Storage Capacities	For Model Series		
		FDE40040	FDE50040	FDE60040
	Catalog No.	RSK400SD4	RSK500SD4	RSK600SD4
Sliding Drawer Racks with Boxes for One Shelf (12.7 x 12.7 x 5 cm Boxes with 100-Count Cell Dividers)	Racks Included	4	5	6
	Boxes Included	100	125	150

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Catalog No.	Description	Dimensions H x W x D cm	Storage Capacities	For Model Series		
				FDE40040	FDE50040	FDE60040
 1950592	Side Access Rack with Locking Rod	30.2 x 14 x 65.3	Plates/Rack	147	147	147
			Racks/Shelf	4	5	6
			Racks/Freezer	16	20	24
			Plates/Freezer	2,352	2,940	3,528
 1950523	Side Access Microplate Rack	30.2 x 14 x 65.3	Plates/Rack	105	105	105
			Racks/Shelf	4	5	6
			Racks/Freezer	16	20	24
			Plates/Freezer	1,680	2,100	2,520
 1950642	Sliding Drawer Microplate Rack	30.2 x 14 x 66.3	Plates/Rack	35	35	35
			Racks/Shelf	4	5	6
			Racks/Freezer	16	20	24
			Plates/Freezer	560	700	840

Boxes and Dividers

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

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

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Vials and Tubes

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

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

		For Model Series	FDE40040	FDE50040	FDE60040
200 µL Capacity Tubes					
3747, 3748, 4988	Matrix 200 µL 2D Internally Threaded Universal Tubes Box Dimensions: 8.5 x 12.8 x 2.75 cm	Rack Model No.	1950787	1950787	1950787
		Freezer Rack Dimensions W x H x D	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm
		Tubes/Box	96	96	96
		Boxes/Rack	56	56	56
		Racks/Shelf	4	5	6
		Racks/Freezer	16	20	24
		Tubes/Freezer	86,016	107,520	129,024
500 µL Capacity Tubes					
3734, 3735, 4898	Matrix 500 µL 2D Open Top Tubes Box Dimensions: 8.5 x 12.8 x 2.6 cm	Rack Model No.	1950787	1950787	1950787
		Freezer Rack Dimensions W x H x D	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm
3736, 3737, 4899	Matrix 200 µL 2D Internally Threaded Universal Tubes with Installed DuraSeal™ Seal Box Dimensions: 8.5 x 12.8 x 2.75 cm	Tubes/Box	96	96	96
		Boxes/Rack	56	56	56
		Racks/Shelf	4	5	6
		Racks/Freezer	16	20	24
		Tubes/Freezer	86,016	107,520	129,024
374086, 374087 (including color options)	Nunc Cryobank 500 µL Internally Threaded Tubes Box Dimensions: 8.5 x 12.8 x 3.5 cm	Rack Model No.	1950791	1950791	1950791
		Freezer Rack Dimensions W x H x D	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm
3743, 3744, 3745 (including color options)	Matrix 500 µL 2D Internally Threaded ScrewTop Tubes Box Dimensions: 8.5 x 12.8 x 4.4 cm	Tubes/Box	96	96	96
		Boxes/Rack	42	42	42
		Racks/Shelf	4	5	6
		Racks/Freezer	16	20	24
		Tubes/Freezer	64,512	80,640	96,768

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

		For Model Series	FDE40040	FDE50040	FDE60040
750 µL Capacity Tubes					
3731, 3732, 4896	Matrix 750 µL 2D Open Top Tubes Box Dimensions: 8.5 x 12.8 x 3.9 cm	Rack Model No.	1950791	1950791	1950791
		Freezer Rack Dimensions W x H x D	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm
3729, 4896	Matrix 750 µL 2D Tubes with Installed DuraSeal Seal Box Dimensions: 8.5 x 12.8 x 3.9 cm	Tubes/Box	96	96	96
		Boxes/Rack	42	42	42
		Racks/Shelf	4	5	6
		Racks/Freezer	16	20	24
		Tubes/Freezer	64,512	80,640	96,768
1 mL Capacity Tubes					
374088, 374089 (including color options)	Nunc Cryobank 1 mL Internally Threaded Tubes Box Dimensions: 8.5 x 12.8 x 4.9 cm	Rack Model No.	1950642	1950642	1950642
		Freezer Rack Dimensions W x H x D	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm
		Tubes/Box	96	96	96
		Boxes/Rack	35	35	35
		Racks/Shelf	4	5	6
		Racks/Freezer	16	20	24
		Tubes/Freezer	53,760	67,200	80,640
3740, 3741, 3742 (including color options)	Matrix 1 mL 2D Internally Threaded Screw Top Tubes Box Dimensions: 8.5 x 12.8 x 5.8 cm	Rack Model No.	1950799	1950799	1950799
		Freezer Rack Dimensions W x H x D	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm
		Tubes/Box	96	96	96
		Boxes/Rack	28	28	28
		Racks/Shelf	4	5	6
		Racks/Freezer	16	20	24
		Tubes/Freezer	43,008	53,760	64,512

Sliding Drawer Racks for Matrix and Cryobank Tubes

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

		For Model Series	FDE40040	FDE50040	FDE60040
1.4 mL Capacity Tubes					
3791, 3792, 4890	Matrix 1.4 mL 2D Open Top Tubes Box Dimensions: 8.5 x 12.8 x 4.9 cm	Rack Model No.	1950642	1950642	1950642
		Freezer Rack Dimensions W x H x D	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm
3801, 4890	1.4 mL 2D Tubes with Installed DuraSeal Seal Box Dimensions: 8.5 x 12.8 x 4.9 cm	Tubes/Box	96	96	96
		Boxes/Rack	35	35	35
3711, 3112, 4890	Matrix 1.4 mL Human Readable Open Top Tubes Box Dimensions: 8.5 x 12.8 x 4.9 cm	Racks/Shelf	4	5	6
		Racks/Freezer	16	20	24
		Tubes/Freezer	53,760	67,200	80,640
1.8 to 2 mL Capacity Tubes					
374500, 374501	Nunc 1.8 mL Externally Threaded Universal Tubes Box Dimensions: 8.5 x 12.8 x 5.5 cm	Rack Model No.	1950642	1950642	1950642
		Freezer Rack Dimensions W x H x D	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm
374221, 374223	Nunc Cryobank 2 mL Internally Threaded Tubes Box Dimension: 8.5 x 12.8 x 5.5 cm	Tubes/Box	96	96	96
		Boxes/Rack	35	35	35
		Racks/Shelf	4	5	6
		Racks/Freezer	16	20	24
		Tubes/Freezer	53,760	67,200	80,640
5 mL Capacity Tubes					
374220, 374222	Nunc Cryobank 5 mL Internally Threaded Tubes Box Dimensions: 8.5 x 12.8 x 9.6 cm	Rack Model No.	1950819	1950819	1950819
		Freezer Rack Dimensions W x H x D	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm
		Tubes/Box	48	48	48
		Boxes/Rack	21	21	21
		Racks/Shelf	3	4	5
		Racks/Freezer	12	16	20
		Tubes/Freezer	12,096	16,128	20,160

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