



# FR/DF SERIES

Freezers



**N-start**

# DF/ FR SERIES

## Freezers

*Our Deep Freezers are designed with N-Smart™ control system to freeze and store materials in hospitals, blood banks, epidemic research institutes, universities, biological pharmaceutical industry, gene engineering, etc.*

### DIRECT AND FAST COOLING

DF and FR devices use DirectFreeze™ technology. By placing the cooling coils inside the cell, the entire cooling power is designed to freeze the samples and store them frozen. In this way, an excellent temperature distribution is achieved.

### FUNCTIONAL AND ROBUST STRUCTURE

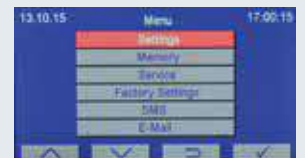
- Independent compartments with insulated doors for decreasing air entry
- Perfect air tightness with soft gasket
- Heated contact surface of gasket to eliminate icing-up.
- Compartment dimensions match commonly used cryoboxes
- Washable air filter for simple maintenance and top performance
- Chamber made of stainless steel for longer life and shelves made of aluminium for faster heat transfer
- Epoxy-polyester powder coated stainless steel outer body
- Foamed-in-place high density polyurethane insulation
- Vibration-free operation that prevents samples from being affected





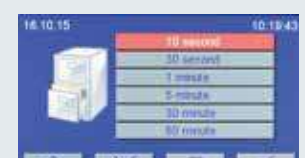
## NEW, POWERFUL AND RELIABLE CONTROL SYSTEM

- Maximum information with highly visible 4,3" colourful LCD display
- Cell temperature
- Set temperature
- Temperature graph
- Current date and time
- Traceable alarm states
- Standard 5 language options (Turkish, English, French, Spanish, Russian)
- Four function keys are versatile and easy to use
- Work and memory data secured by a 4-digit password-protected menu
- Icons that make operations easier
- Screen saver (1 - 300 minutes)



13.10.15 13.10.2015 -1- 16:50:42

Time	Temperature	Time	Temperature
00:00	-78	01:00	-79
02:00	-80	03:00	-80
04:00	-81	05:00	-81
06:00	-81	07:00	-81



### With USB port output;

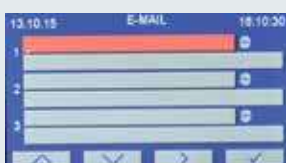
- Software update
- Data recording of the studies can be carried out

### Thanks to the Wi-Fi connection;

- Tracking device values from the phone with N-Mobile™ phone application

### via Ethernet (remote access);

- Access to the device program menu
- Elimination of errors caused by software and user
- Access to temperature values
- Access and control of all analog and digital inputs and outputs on the device
- Calibration to temperature values
- Door open / closed positions can be monitored.



## MAXIMUM SAFETY FOR HIGH-VALUE SAMPLES

The value of the samples stored in the freezer is often higher than the value of the freezer. For this reason, there are many safety features in the instrument for the safety of samples.

- 4-digit password-protected menu
- Screen that turns red in case of any alarm and warns the user with the audible alarm
- Door handle with key lock
- Key operated mains power switch to protect your samples
- Informing by sending e-mail to 5 different addresses in case of all failures with Ethernet output
- Battery-fed alarm system that warns the user both audibly and visually for power failure, high temperature, temperature sensor failure, cooling failure, clogged air filter, door open and other alarm situations that may occur in the device
- On-screen tracking of data for the last 50 errors on the device
- Graphical and numerical tracking of the works of the last 10 years on the screen
- Transfer of data to USB memory
- Standard central and remote alarm output (NüveWarn™ alarm system is used for remote alarm connection)
- Standard RS 232 output (NüveCloser™ software is used for computer connection)
- Optional battery-powered weekly temperature logger
- Send SMS to 5 different phone numbers with optional AlerText™ GSM alarm module
- CD for optional NüveCloser™ software
- Optional NüveWarn™ remote alarm system
- Optional liquid CO<sub>2</sub> supply unit (activated at -60°C) in case of failure (for DF series)



## BEST SOLUTIONS FOR SAMPLE STORAGE

- Racks for the most used boxes and tubes
- Racks with drawers for different samples, such as plasma bags or flasks

### RACKS FOR CRYOBBOXES

Freezer Model	Catalogue No	Rack for boxes Box Dimensions	No. of cryoboxes per racks	No. of rack per freezer	Total no. of cryoboxes per freezer	Max. total tube capacity
DF/FR 290	A 08 206	135x135x50 mm Cardboard box (with 10x10 separator)	20	9	180	18.000
	A 08 137	133x133x52 mm PP box (with 9x9 separator)	20	9	180	14.580
	A 08 151	133x133x75 mm PP box (with 9x9 separator)	16	9	144	11.664
DF/FR 490	A 08 206	135x135x50 mm Cardboard box (with 10x10 separator)	20	16	320	32.000
	A 08 137	133x133x52 mm PP box (with 9x9 separator)	20	16	320	25.920
	A 08 151	133x133x75 mm PP box (with 9x9 separator)	16	16	256	20.736
DF 590	A 08 207	135x135x50 mm Cardboard box (with 10x10 separator)	25	16	400	40.000
	A 08 200	133x133x52 mm PP box (with 9x9 separator)	25	16	400	32.400
	A 08 198	133x133x75 mm PP box (with 9x9 separator)	20	16	320	25.920

### DRAWERS FOR PLASMA

Freezer Model	Catalogue No	Rack Type	Drawer Dimensions (mm)	No. of rack per Freezer	Total no. of drawers per freezer
DF/FR 290	A 08 240	Rack with two drawers	197x530x137	6	12
	A 08 241	Rack with three drawers	197x532x94	6	18
DF/FR 490	A 08 152	Rack with two drawers	260x530x143	8	16
	A 08 150	Rack with three drawers	260x530x95	8	24
DF 590	A 08 196	Rack with two drawers	260x665x143	8	16
	A 08 197	Rack with three drawers	260x665x95	8	24



## TECHNICAL SPECIFICATIONS

	FR 290	FR 490	DF 290	DF 490	DF 590
Capacity (litres)	261	461	261	461	560
Maximum Tube Capacity, pcs	18.000	32.000	18.000	32.000	40.000
Independent Compartments / Insulated Inner Door (pcs)	3/3	4/4	3/3	4/4	4/4
Operating Temperature Limits	-25°C/-41°C		-55°C/-86°C*		
Temperature Program Range	-20°C/-45°C*		-45°C/-90°C*		
Temperature Alarm Range	Set temperature $\pm$ 5°C/10°C		Set temperature $\pm$ 5°C/25°C		
Power Failure and Door Open Alarm	Audible and visual				
Cooling System	DirectFREEZE™ direct cooling				
Control System	N-Smart™ control system with programmable microprocessor				
Display	4.3" Colourful LCD Display				
Temperature Homogeneity	$\pm$ 3°C** (at -40°C)		$\pm$ 3°C** (at -80°C)		
Temperature Stability	$\pm$ 0.5°C** (at -40°C)		$\pm$ 0.5°C** (at -80°C)		
Remote and Central Alarm (NC Contact) Output	For all alarm situations				
Alarm Back-up	12 hours with auto-charging battery				
Noise Level	<65 dB				
Insulation (CFC Free)	High density injected polyurethane (130 mm)				
Gasket Structure	Heated gasket surface				
Refrigerant Gas (CFC Free)	R404a		R 507a- R 508b		
Internal Material	Stainless steel				
External Material	Epoxy-polyester Powder Coated Stainless Steel				
Wheel System	4 wheels, 2 fixing feet				
Power Rating	900 W		1600 W		
Power Supply	230 V - 50 Hz				
Internal Dimensions (WxDxH) mm	420x630x995	555x630x1320	420x630x995	555x630x1320	555x765x1320
External Dimensions (WxDxH) mm	680x975x1715	830x980x2020	680x975x1715	830x980x2020	830x1120x2020
Package Dimensions (WxDxH) mm	780x1030x1870	1020x1030x2140	780x1030x1870	1020x1030x2140	970x1210x2180
Net/Packaged Weight, kg	207/228	268/301	235/257	297/330	314/350

\*At 16°C Ambient Temperature

\*\* Measured from the sample

### FACTORY FITTED OPTIONS

DF XXX Y Weekly temperature chart recorder 0°C / -100°C

FR XXX Y Weekly temperature chart recorder 0°C / -50°C

### OPTIONS

A 08 191 AlerText™ GSM alarm module (Sim card not included)

K 13 009 NüveWarn™ Remote alarm system (with 10 m cable)

A 08 195 NüveCloser™ Software

A 08 231 NüveCloser™ Multi software (connection to up to 15 devices)

A 08 135 CO<sub>2</sub> Supply unit (Tube and regulator not included) (For DF series)

A 08 170 Regulator for liquid CO<sub>2</sub> tube

A 08 070 Spare pen for chart recorder

A 08 160 Diagram paper for chart recorder 0°C / -100°C (100 pcs) (for DF series)

A 08 134 Diagram paper for chart recorder 0°C / -50°C (100 pcs) (for FR series)



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ISO 9001: 2015

ISO 13485: 2016

ISO 45001: 2018

