TECHNOLOGY FOR LIFE

Dometic

DEEP FREEZERS AND PLASMA STORAGE FREEZERS

Biomedical Refrigeration I FR / MF

- Low-temperature storage of plasma and other blood products at –41°C/–35°C
- According to DIN 58375

www.dometic.lu

FR/MF range

Freezers for the low-temperature storage of plasma and other substances under optimum conditions

(according to DIN 58375)

Dometic's Biomedical Freezer range is the perfect solution for a safe storage and handling of temperature-sensitive preparations such as plasma and other blood products in conformity with national and international norms and guidelines.

Models FR 250 G – 750 G are available as 220 V and 115 V version.

DOMETIC SAFETY STANDARD GOLD

DOMETIC GREEN STANDARD

DOMETIC SAFETY STANDARD SILVER

TÜV CERT DIN EN ISO 9001: 2000 Zertifikats-Nr 09 100 5558

TÜV Rheinland GS geprüfte Sicherheit

CE

GMP REINRAUMKLASSIFIZIERUNG CLEAN ROOM CLASSIFICATION

Internal Ex II 3 G EEx nA II T6

EXCERT CERTIFIED ISO 14001:2004

DIN 58375

The Safety Standards developed by Dometic define certain significant technical features of a product. These ensure the safe storage of the preparations as well as the trend-setting safety of the user.

The Dometic Gold Safety Standard efficiently complements the safety requirements of the Dometic Silver Safety Standard and therefore exceeds even the official standards. Gold models are denominated with a “G”.

The Dometic Silver Safety Standard ensures the reliable and safe operation of all Dometic refrigerators and deep freezers. Safety for the stored preparations and the user. Silver models are denominated with a “S”.

The new “green” models (denominated with a “*G*”) convince by their technical optimizations in terms of economy and enviromental protection. Characteristic features are:

- → use of natural gases as refrigerants
- → 40-60% less energy consumption
- → up to 40% less power needed
- → over 80% less heat ejection

In addition, the new “green” models stand out because of improved hold over times thanks to optimized door insulation and drastically reduced noise level for more workplace convenience.

MODEL	FR 110 GG	FR 250 G	FR 410 G	FR 490 G	FR 750 G	MF 110 SG	MF 250 S
DIN 58375 (‘Plasma Storage Facilities’)	■	■	■	■	■	■	■
GMP Clean Room Class A / ISO 5 (ISO EN 14644-1)	■	■	■	■	■	–	–
GMP Clean Room Class B / ISO 6 (ISO EN 14644-1)	–	–	–	–	–	■	■
Dometic Electronic	■	■	■	■	■	■	■
Key-operated power switch (power ON/OFF)	■	■	■	■	■	■	■
Safety door lock	■	■	■	■	■	■	■
Digital temperature indicator (display: 0.1 digits)	■	■	■	■	■	■	■
Controlled fan cooling system for constant temperature and even temperature distribution across the entire refrigerating chamber. Automatic fan switch-off when front door opens	–	■	■	■	■	–	–
Self-contained alarm system with integrated battery takes over the alarm function and temperature value measurements in case of power failure for at least 48 hours	■	■	■	■	■	■	■
Acoustic/visual alarm signal in case of temperature alarm and power failure	■	■	■	■	■	■	■
The alarm history on the operation and control panel stores all the relevant values during a temperature alarm, such as: min., max. and average temperature and also the duration of the alarm	■	■	■	■	■	■	■
Alarm function test: simulation of a temperature rise or drop in order to test the alarm system functionality	■	■	■	■	■	■	■
Control via self-diagnostic system	■	■	■	■	■	■	■
Defrosting (automatic)	–	■	■	■	■	–	–
Defrosting (manual)	■	–	–	–	–	■	■
Door opening alarm	■	■	■	■	■	■	■
Remote transmission alarm signal (via potential-free contact) in case of temperature alarm (change-over contact)	■	■	■	■	■	■	■
Remote transmission alarm signal (via potential-free contact) in case of power failure (change-over contact)	■	■	■	■	■	■	■
Automatic closing of the front door below a door opening angle of 90°	–	■	■	■	■	–	–
Interior made from stainless steel	■	■	■	■	■	–	–
Climate class (ambient temperature range) SN (+10°C to +32°C)	■	■	■	■	■	■	■
Smooth castors with stabilizers for optimum flexibility of movement	–	■	■	■	■	–	–
RS 485 interface for the display of all operating and control functions (hardware and software settings) via DMN monitoring software on a peripheral device (computer)	■	■	■	■	■	■	■
DMN Software package	■	■	■	■	■	■	■
DCU - Dometic Communication Unit	□	□	□	□	□	□	□

■ standard □ optional – not available

Technical Data

	FR 110 GG	FR 250 G
Gross volume	106 l	246 l
Net volume	104 l	167 l
Storage capacity: plasma bags at 450/200-350 ml (approx.)	54/72	120/160
External dimensions (H x W x D)	820 x 560 x 580 mm	1305 x 850 x 785 mm
External dimensions (with mounted temperature recorder)	–	–
Inner dimensions (H x W x D)	495 x 470 x 455 mm	655 x 680 x 552 mm
Net weight (with standard equipment)	78 kg	153 kg
Set temperature (preset)	–41°C	–41°C
Set temperature (setting range) can be adjusted in steps of 0.1 °C	–20°C to –41°C	–20°C to –41°C
Temperature cold alarm limit (preset)	–45°C	–45°C
Temperature warm alarm limit (preset)	–32°C	–32°C
Control sensor	PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B
Precision (from –80°C to +180 °C)	± 0,2°C	± 0,2°C
Display sensor	PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B
Precision (from –80°C to +180 °C) in reference body / 100 ml DOW corning 200-5CST (Silicon Oil)	± 0,2°C	± 0,2°C
Frequency 220-240V	50 Hz	50 Hz
Frequency 115V	-	60 Hz
Power 220-240V	300 W	500 W
Power 115V	-	475 W
Energy consumption 220-240V	4.00 kWh /24h	6.10 kWh /24h
Energy consumption 115V	-	5.00 kWh /24h
Heat emission 220-240V	142 Kcal/h	430 Kcal/h
Heat emission 115V	-	145 Kcal/h
Compressor running time 220-240V	55%	43%
Compressor running time 115V	-	35%
Noise level (at 1m height & 1m distance) 220-240V	47 dB(A)	58 dB(A)
Noise level (at 1m height & 1m distance) 115V	-	58 dB(A)
Accu data / function time of the control panel when power failure	12V –7 AH / 48 hours	12V –7 AH / 48 hours
Climate class (ambient temperature range)	SN (+10°C to +32°C)	SN (+10°C to +32°C)
Relative humidity at ambient temperature	≤ 75%	≤ 75%
Defrosting technique	manual	automatic (hot gas)
Refrigerant type	R290	Isceon 89
Door insulation (polyurethane)	45 mm PU + 20 mm VIP	100 mm
Casing insulation (polyurethane)	25 mm PU + 20 mm VIP	85 – 95 mm
Hold over time	84 min (from –30°C to –23°C)	210 min (from –40°C to –18°C)
Safety class	I	I
EMC directive	2004 / 108 / EEC	2004 / 108 / EEC
Low voltage directive	2006 / 95 / EEC	2006 / 95 / EEC
GMP – clean room classification	A / ISO 5	A / ISO 5
Material inner body	Stainless steel (V2A – 1.4301)	Stainless steel (V2A – 1.4301)
Material outer casing & door	Galvanized sheet steel (STO2Z-AZ150)	Galvanized sheet steel (STO2Z-AZ150)
Material (Drawers)	Stainless steel (V2A – 1.4301)	Stainless steel (V2A - 1.4301)
Material (Wire Shelves)	Wire DIN172-2, PA11 coated	Wire DIN172-2, PA11 coated
Material (N-Rack)	–	Polycarbonat, transparent
Color outer casing	White (similar to RAL9010)	White (similar to RAL9010)
Color contrasts	Blue (similar to RAL5002)	Blue (similar to RAL5002)
ATEX category III, zone 2, interior	–	–
Interior Equipment & Options (Concerning further information on accessories please see our separate leaflet “Racking & Storage Systems”)		
Separate interior doors in order to minimize the loss of refrigeration	–	2 ■
Standard interior equipment – Drawers	2 ■	1 ■
Standard interior equipment – Wire shelves	–	1 ■
Standard interior equipment – ST-Shelf UF	–	–
RS 485 interface / DMN Software package	■	■
DCU - Dometic Communication Unit	☐	☐
Ambient temperature sensor	☐	☐
Potential-free contact in case of power failure	■	■
Integrated inlet for external sensor (installed by customer)	■	■
Additional reference bottle with reference fluid and fitting	☐	☐
Condenser filter	–	■
Smooth castors with stabilizers	–	■
External water cooling	–	☐
Temperature recorder in the form of a circular chart recorder / recording range: –50°C to 0°C	Integrated for 24h or 7 days ☐	Integrated for 24h or 7 days ☐
Door hinge right	■	■
Door hinge left	☐	☐
Wooden packaging for ocean transport / export	☐	☐

■ standard / ☐ optional / – not available

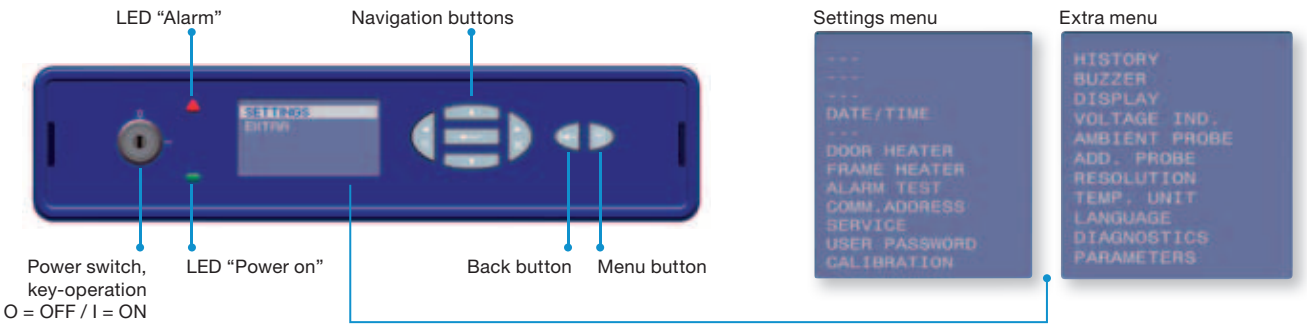
All values were measured at +25°C ambient temperature and without load (with inertial mass).

FR 410 G	FR 490 G	FR 750 G	MF 110 SG	MF 250 S
				
408 l	489 l	738 l	108 l	247 l
319 l	395 l	620 l	104 l	228 l
240/320	300/400	450/525	69/69	220/290
1735 x 850 x 785 mm	1950 x 850 x 785 mm	1990 x 910 x 985 mm	900 x 595 x 630 mm	1830 x 595 x 605 mm
–	–	–	1075 x 595 x 630 mm	1990 x 595 x 605 mm
1085 x 680 x 552 mm	1300 x 680 x 552 mm	1352 x 730 x 760 mm	685 x 410 x 430 mm	1440 x 445 x 413 mm
188 kg	207 kg	258 kg	47 kg	85 kg
–41°C	–41°C	–41°C	–35°C	–35°C
–20°C to –41°C	–20°C to –41°C	–20°C to –41°C	–20°C to –35°C	–20°C to –35°C
–45°C	–45°C	–45°C	–40°C	–40°C
–32°C	–32°C	–32°C	–30°C	–30°C
PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B
± 0,2°C	± 0,2°C	± 0,2°C	± 0,2°C	± 0,2°C
PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B
± 0,2°C	± 0,2°C	± 0,2°C	± 0,2°C	± 0,2°C
50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
60 Hz	60 Hz	60 Hz	-	-
500 W	500 W	600 W	135 W	215 W
475 W	475 W	500 W	-	-
7.40 kWh /24h	7.80 kWh /24h	7.10 kWh /24h	1.70 kWh /24h	2.50 kWh /24h
5.50 kWh /24h	6.00 kWh /24h	8.10 kWh /24h	-	-
430 Kcal/h	430 Kcal/h	515 Kcal/h	53 Kcal/h	185 Kcal/h
200 Kcal/h	215 Kcal/h	265 Kcal/h	-	-
55%	57%	50%	46%	48%
49%	52%	62%	-	-
58 dB(A)	58 dB(A)	58 dB(A)	41 dB(A)	44 dB(A)
58 dB(A)	58 dB(A)	58 dB(A)	-	-
12V –7 AH / 48 hours	12V –7 AH / 48 hours	12V –7 AH / 48 hours	12V –7 AH / 48 hours	12V –7 AH / 48 hours
SN (+10°C to +32°C)	SN (+10°C to +32°C)	SN (+10°C to +32°C)	SN (+10°C to +32°C)	SN (+10°C to +32°C)
≤ 75%	≤ 75%	≤ 75%	≤ 75%	≤ 75%
automatic (hot gas)	automatic (hot gas)	automatic (hot gas)	manual	manual
Isceon 89	Isceon 89	R507	R290	R404a
100 mm	100 mm	85 mm	90 mm	70 mm
85 – 95 mm	85 – 95 mm	90 mm	58 – 92 mm	75 – 80 mm
210 min (from –40°C to –18°C)	210 min (from –40°C to –18°C)	210 min (from –40°C to –18°C)	72 min (from –35°C to –23°C)	66 min (from –35°C to –18°C)
I	I	I	I	I
2004 / 108 / EEC	2004 / 108 / EEC	2004 / 108 / EEC	2004 / 108 / EEC	2004 / 108 / EEC
2006 / 95 / EEC	2006 / 95 / EEC	2006 / 95 / EEC	2006 / 95 / EEC	2006 / 95 / EEC
A / ISO 5	A / ISO 5	A / ISO 5	B / ISO 6	B / ISO 6
Stainless steel (V2A – 1.4301)	Stainless steel (V2A – 1.4301)	Stainless steel (V2A – 1.4301)	Polystyrene (PS)	Styrene (SAN)
Galvanized sheet steel (STO2Z-AZ150)	Galvanized sheet steel (STO2Z-AZ150)	Galvanized sheet steel (STO2Z-AZ150)	Galvanized sheet steel (STO2Z-AZ-150)	Galvanized sheet steel (STO2Z-AZ-150)
Stainless steel (V2A – 1.4301)	Stainless steel (V2A – 1.4301)	Stainless steel (V2A – 1.4301)	Polystyrene (PS)	Styrene (SAN)
Wire DIN172-2, PA11 coated	Wire DIN172-2, PA11 coated	Wire DIN172-2, PA11 coated	–	–
Polycarbonat, transparent	Polycarbonat, transparent	Polycarbonat, transparent	–	–
White (similar to RAL9010)	White (similar to RAL9010)	White (similar to RAL9010)	White (similar to RAL9010)	White (similar to RAL9010)
Blue (similar to RAL5002)	Blue (similar to RAL5002)	Blue (similar to RAL5002)	Blue (similar to RAL5002)	Blue (similar to RAL5002)
–	–	–	conform	conform
4 ■	5 ■	**Version 1** 5 ■ / **Version 2** 5 ■	–	–
2 ■	3 ■	3 ■ / –	3 ■	7 ■
2 ■	2 ■	2 ■ / –	–	–
–	–	– / 5 ■	–	–
■	■	■	■	■
□	□	□	□	□
□	□	□	□	□
■	■	■	■	■
■	■	■	■	■
□	□	□	–	–
■	■	■	–	–
■	■	■	–	–
□	□	□	–	–
Integrated for 24h or 7 days □	Integrated for 24h or 7 days □	Integrated for 24h or 7 days □	Mounted for 24h or 7 days □	Mounted for 24h or 7 days □
■	■	■	■	■
□	□	□	□	□
□	□	□	□	□

Dometic Electronic

The new and innovative Dometic Electronic (operation and control panel) assures thanks to its password protected settings menu optimum protection for your stored preparations.

The menu structure of the modern and user-friendly graphic display offers a simple and intuitive utilization.



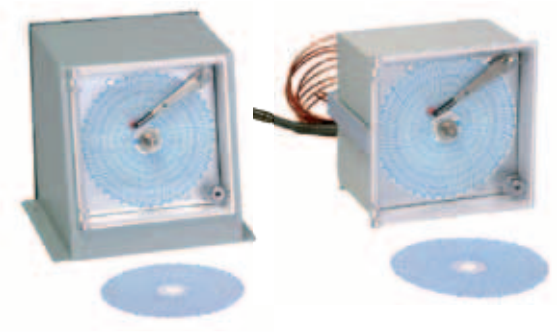
The new Dometic Electronic also offers:

- A wide range of adjustment and diagnostic facilities as well as additional protection / warning operations (via external alarm operations, histories and individual display signals).
- An optional PT 100 sensor inlet to show the sensor’s temperature data on the display as well as forwarding and further processing via a 4 ... 20 mA outlet.
- An optional 4...20 mA outlet to transmit temperature data of a sensor connected to the electronic.
- Connection facilities for additional (optional) temperature sensors.
- DMN (Dometic Monitoring Network) and the (optional) DCU (Dometic Communication Unit) allows illustration of texts on the product’s display.

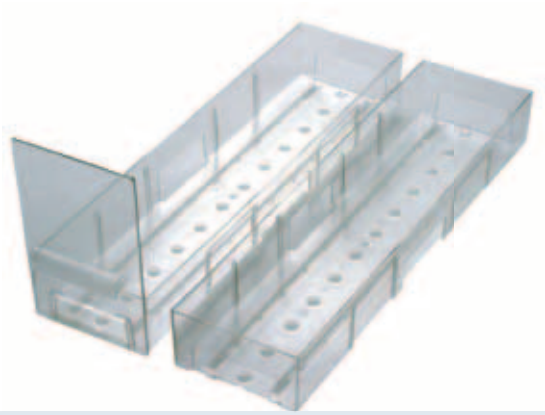
Equipment / Options (extract)

Rack 750 for the storage of plasma bags
(optional, for FR model range 250 G – 750 G)

ST-Rack for the storage of plasma bags
(optional, for FR model range 250 G – 750 G)

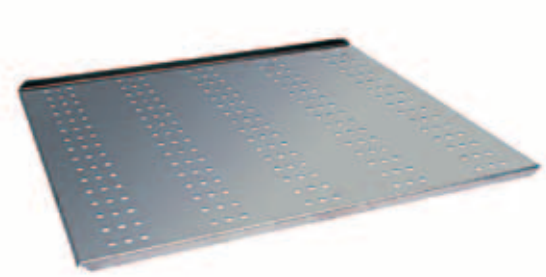


Temperature recorder (in form of a circular chart recorder) (optional, within the mounted casing for MF model range, integrated for FR model range)

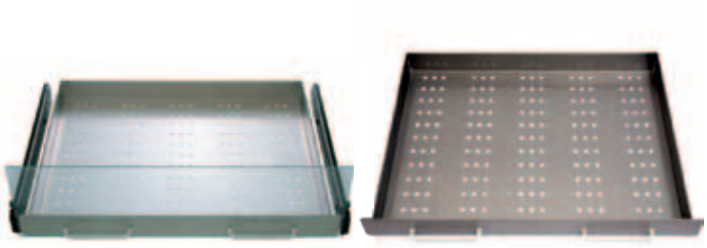


N-Racks with/without Front Cover can be subdivided into compartments
(optional, for FR model range 250 G - 750 G)

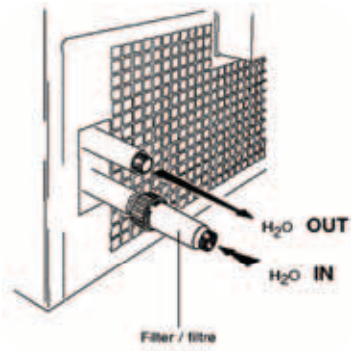
Remote temperature and power failure alarm



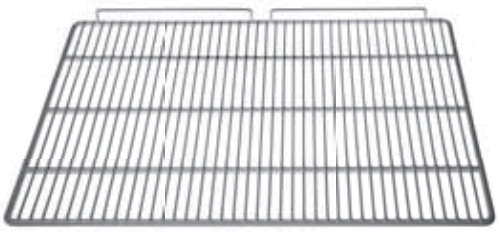
ST-Cover for Wire Shelf/ ST-Shelf
(optional, for FR model range 250 G - 750 G)



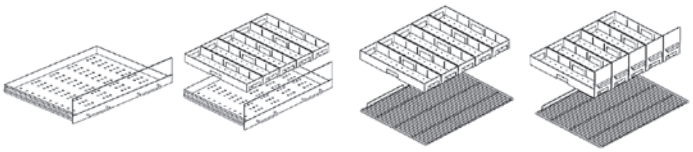
ST-Drawers with/without Front Cover, on telescopic runners with safety stop (optional, for FR model range)



Water cooling, external (ex factory)
(optional, for FR model range 250 G - 750 G)



Wire Shelf



Loading options

02/2011

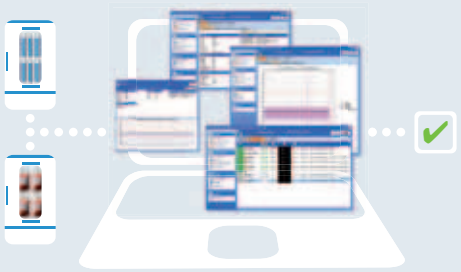
DMN – Dometic Monitoring Network

Universal software for collection, long-term recording and visualization of temperature data.

- → Complete activity list (password protected).
- → Integrated event and activity history of all appliance components.
- → Graphical visualisation of all temperature curves.
- → Connection to existing or third-party appliances via network technology (LAN, WLAN, WAN).
- → Simultaneous data monitoring and recording.
- → Possibility for specific and individually configurable alarm forwardings, e. g. via email, SMS (with optional GSM module) or via DECT.
- → Simple and intuitive utilization.
- → Essential price advantage compared to a traditional circular chart recorder and its spare parts.
- → Free of charge for all Dometic Gold & Silver ranges
- → Real-time temperature output for third-party software

Your essential advantages:

- Access to the data within your entire network via one central database
- Economy of time and money as regular changes of recorder paper, ink and battery is not necessary.



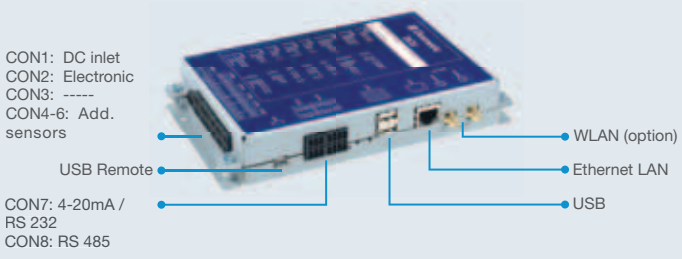
DCU – Dometic Communication Unit

Hardware module that notes all operating conditions and passes them through to a central data base – via local network, on which devices are connected.

- → Interface connection of Dometic appliances to an existing network.
- → The DCU offers direct connection to the Ethernet, even wireless, to the serial BUS RS 485, as well as to the central building control system (4 ... 20 mA).
- → Possibility of connection of actors (4 ... 20 mA out).
- → Digital IN/OUT (customer-specific use of these connections is programmable).
- → The integrated USB port allows stored data to be written to an external memory stick.
- → Recording and storage of relevant data of the appliance.
- → The DCU replaces the paper temperature recorder.
- → The DCU works with all Gold electronics from 2000 on
- → All data are recorded and saved in the data base of the DMN and are available for analysis at any time.
- → Possibility of connection of several additional self-sufficient temperature sensors (up to 4 PT1000 & 2 PT100).

Your essential advantages:

- One integrative system for collecting all temperature relevant appliances and ambients.
- Many different connection facilities allow flexible upgrades for individual projects.



DMN & DCU in combination offer a highly flexible system that is adaptable to specific customer requirements
→ Complete & legally safe documentation of temperature data
→ Comprehensive applications and diagnostic possibilities

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