

Biomedical

F-90i






F-90i

-5°C to -25°C Freezer

With the smallest footprint, this unit is perfect for storing biomedical content in a room with limited space. The unit can be placed on a table for easy access in your work environment.

Featuring the ETR-System™ (*Extended Temperature Range*) the unit can operate within -20°C to -86°C, giving you flexibility to adjust the cooling to your specific needs, or to save energy reducing both operation costs & carbon emission. Our biomedical appliances offer a reliable solution for users seeking industry leading cooling performance and high operation stability.

-  **Complexity made simple**
-  **Adaptive Cooling Technology™**
-  **Info center**



F-90i | Gallery



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Construction	Value
Dimension	672x595x642 mm
Dimension inner	481x475x495 mm
Weight	54 / 43 gross/net
Package weight	11 kg
Material inner cabinet	ABS Kg. gross/net
Material outer cabinet	Painted steel Kg. gross/net
Insulation type	Polyurethane with cyclopentane
Insulation thickness	50 mm
Type of packaging	Cardboard, EPS, vinyl bag, wooden pallet
Mobility	4x adjustable feet

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Storage	Value
Volume	90 / 76
Shelves	1
Half shelf	1

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Features	Value
Lock	✓
LED light	✓
Battery backup	✓
Porthole	✓
Porthole size	20 mm
Dry contact	✓
Door closure	✓
Door reversibility	—
Automatic hold 90°	✓
Vacuum valve	✓

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Alarms	Value
High / Low temperature	✓
Open door	✓
Power failure	✓
Probe failure	✓

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Test	Value
Voltage	220 V
Frequence	50 / 60 Hz
Max ambient	35 °C
Max Humidity	65 %
Test condition	20

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Operation	Value
Temperature range	-5 to -25 °C
Unifromity in performance	1,9 °C
Pull down time (from test condition to fabric setpoint)	69 Minutes
Hold over time (from fabric SP to critical point)	54 Minutes
Noise	40 dB
Energy 24 hours	1,1 kWh/24h
Energy year	401 kWh/anno
Instant Power Consumption	PD 0,120 / Stable 0,046 kW
Heat Rejection	110 W
K-Value	0,59 W/m ² k

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Cooling components	Value
Refrigerant/amount	R600a / 38 Type & gram
Number of compressors	1
Variable speed compressor	✓
Internal air distribution (Type)	Dual air stream
Evaporator fan	✓
Condensor fan	—
Number of probes	2
Defrost	✓

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Controller	Value
Controller	i-CARE
USB Connection	Yes
Data connection	MODBUS
Controller abilities	Logging of data & alarms, touch screen
Controller languages	EN, DE, FR
Log numbers	More than a year
Temperature graph in controller	✓

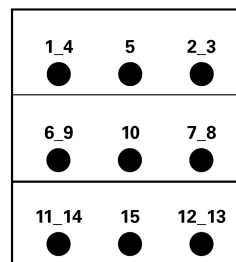
Temperature mapping

Test overview

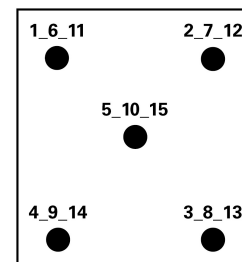
Test type	15-point test
Test environment	Controlled conditions, empty cabinet
Ambient temperature	20°C
Humidity	60%
Set-point	-25°C
Sensors used	25gr tinned brass formed as a cylinder with a diameter of 15,2mm
Installation	Appliance installed according to instruction manual conditions
Refrigerant	R600a

Sensor position

Front View



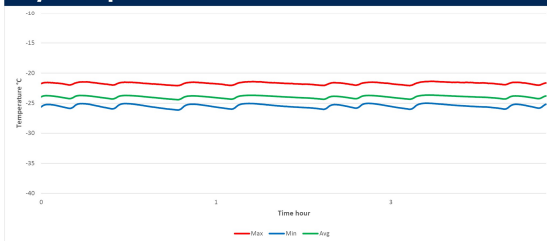
Top View



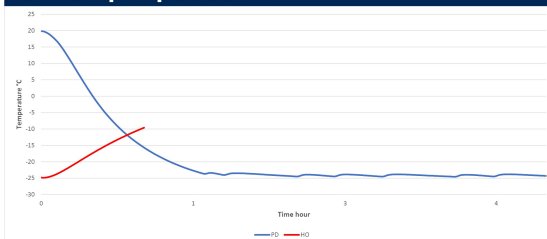
Sensor temperature

Sensor position	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15
Max.	-22	-22,4	-22,9	-21,5	-22,6	-22,4	-23,5	-23,5	-22,4	-23,4	-22,6	-23,5	-23,6	-22,5	-23,5
Avg.	-22,9	-23,3	-24,1	-22,2	-23,2	-23,4	-24,3	-24,3	-23,5	-24,4	-23,6	-24,6	-24,7	-23,3	-24,6
Min.	-24	-24,6	-25,3	-23,1	-24	-24,6	-25,2	-25,3	-24,8	-25,5	-24,8	-25,9	-25,9	-24,4	-26

Cyclic operation



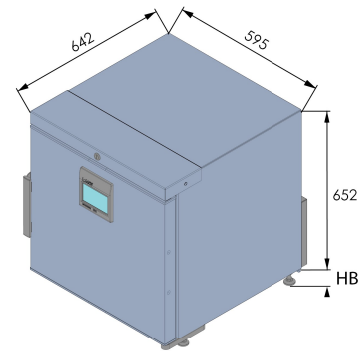
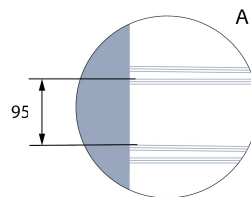
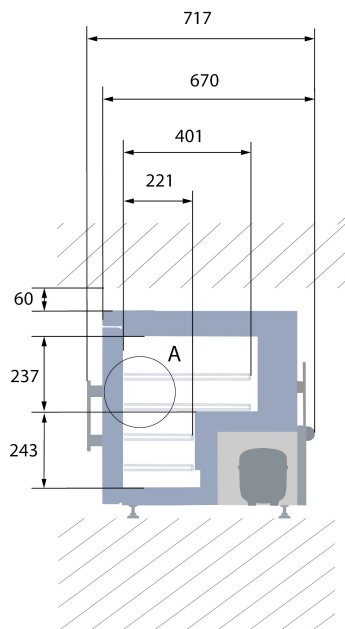
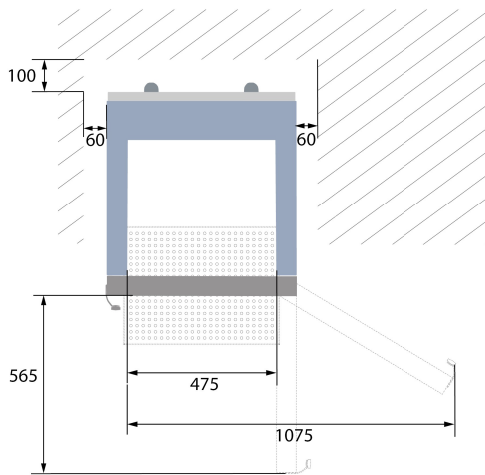
Warm up & pull down



Typical performance data

Avg. cabinet temperature	-24°C
Peak variation from set-point	1,9°C
Stability in avg.	0,3°C
1 min. door open recovery to -20°C avg. temperature	9 min.
Cycle rate on/off	5,1/13,9 min.
Duty cycle	25,2%
Energy consumption - Normal mode	1,1 kWh/day
Energy consumption - Energy saving mode (-20)	0,94 kWh/day
Pull down time to -20°C avg. temperature	69 min.
Hold over time from -25°C to -10°C	54 min.
Sample temperature does not exceed	-15°C
Heat rejection	100

Dimensions



All dimensions in millimeters

HB: Height of base (HB is ajustastable when given value is xx-xx)

