



BIOMEDICAL

# F-90i

## BIOMEDICAL 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.

-5°C  
-25°C



DIMENSIONS		VALUE
Outer Dimension HxWxD		672x595x642
Inner Dimension HxWxD		481x475x495
Weight Gross/Net, kg		54 / 43
Material inner cabinet		ABS
Material outer cabinet		Painted Steel
Insulation thickness		50
Insulation type		Polyurethane with Cyclopentane
Air distribution		Dynamic
Mobility		Standard: Adjustable Feet - Option: Castors
Refrigerant, Type / gram		R600a / 38
Variable Speed Compressor		Yes - Adaptive Cooling Technology
Number of probes		2
CONTROLLER		VALUE
Controller		i-Care, Touch screen
Controller language		EN, DE, FR
USB Connection		Yes
Logging		Data, Alarms & Events
Temperature graph		Yes
High/Low temp. Alarm		Yes
Open door alarm		Yes
Probe failure alarm		Yes
Power failure alarm		Yes
STORAGE		VALUE
Volume, Gross/Net, L		90 / 76
Shelves, Full/Half		1 / 1
Shelf material		Perforated Alu
FEATURES		VALUE
Lock		Yes
LED light		Yes
Battery Backup for Controller, 24h		Yes
No-Frost System™		Yes
Perimeter Heater		Hot gas
Porthole		Yes - Ø 20 mm
Dry Contact		Yes
Reference bottle		No
Door		Standard: Solid
Door Features		Automatic: Closure < 90° - Hold Closure > 90°
Door Reversibility		Yes



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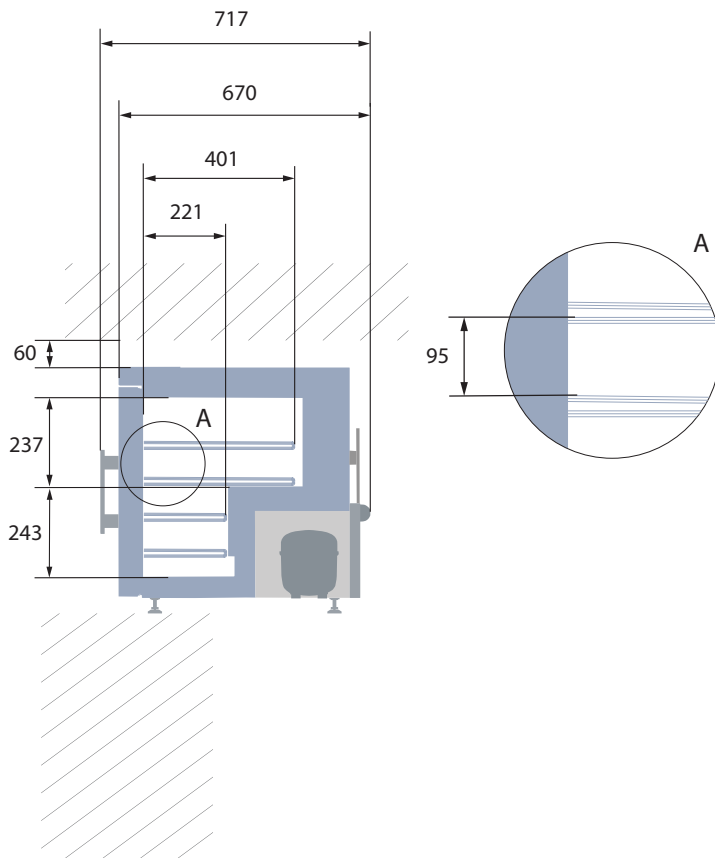
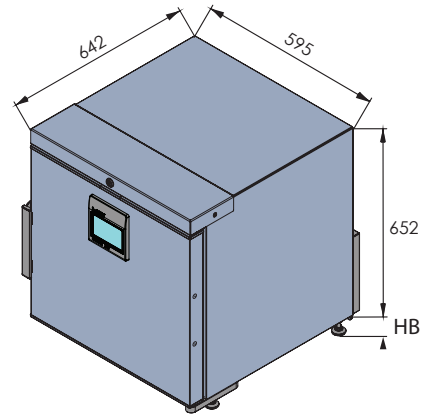
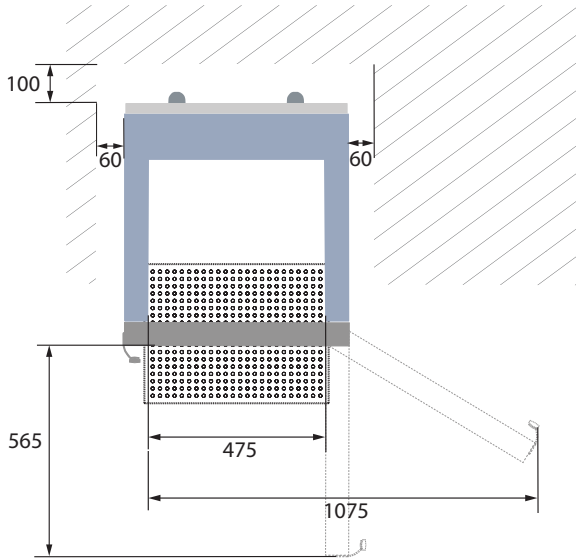
PERFORMANCE	UNIT	VALUE
<b>All data in RT20°C</b>		
Temperature Range	°C	-5 to -25
Uniformity in performance - difference between top and bottom	°C	+/- 1.9
Pull down time	Minutes	69 min to -20°C
Hold over time	Minutes	54 min to -10°C
Noise	dB	40
Energy Saving Mode	kWh/24h	0,94kWh/24h Set -20
Energy Consumption, kWh / 24h	kWh/24h	1,1kWh/24h Set -25
Energy year	kWh/year	40kWh/y Set -25°
Instant Power Consumption	kW	PD 0,120/Stable 0,046
Heat Rejection	W	110
U-Value	W/m <sup>2</sup> K	0.59
COOLING COMPONENTS		VALUE
Refrigerant/Amount (gram)		R600a/38gr
Number of compressors	pcs	1
Variable speed compressor	Yes/No	Yes
Internal air distribution (type of)		Dual Air Stream
Evaporator Fan	Yes/No/Variable	Yes
Condenser Fan	Yes/No/Variable	No
Number of probes	pcs	2
Defrost	Yes/No	Yes - automatic
FEATURES		VALUE
Safety thermostat	y/n/optional	No
Lock	y/n	Yes
LED light	y/n	Yes
Battery Back Up For Controller	y/n/optional	Yes - 24h
Porthole	y/n - Ømm	Yes - Ø 20mm
Dry contact	y/n	Yes
Castors	y/n/optional	Optional
Door	glass/solid	Solid
Reference Bottle	y/n/optional	No
Door closure	y/n/optional	Yes
Door reversibility	y/n	Yes
Automatic Hold 90°C	y/n	Yes
Vacuum valve	y/n	Yes
VIP (Vacum panel)	y/n	No
Perimeter heater		Hot gas loop



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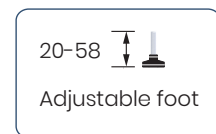
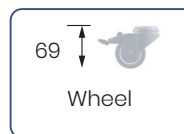


### DIMENSIONS

Height, mm	631
Width, mm	630
Depth, mm	675
Depth incl. handle, mm	745

All measurements in mm.

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



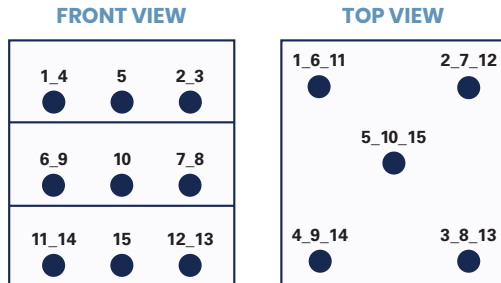


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### SENSOR POSITION



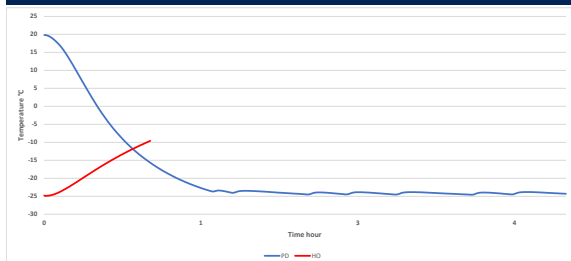
### MODEL F-90i

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

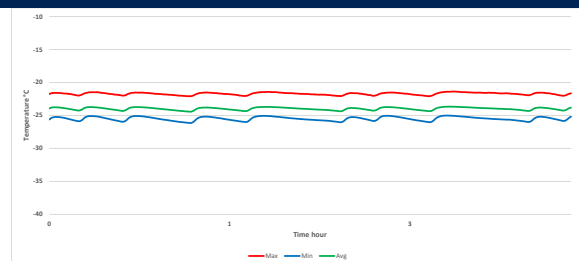
### SENSOR TEMPERATURE

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

### WARM UP & PULL DOWN



### CYCLIC OPERATION



### TYPICAL PERFORMANCE IN AMBIENT 20°C – EMPTY CABINET

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