

# Biomedical

F-90



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## F-90

### Premium Biomedical -5°C to -25°C Freezer

The new tabletop freezer is great for storing biological samples. Despite a small stature it features up to 90L of safe and reliable storage of samples. This makes it great for customers in need of decentralized or dedicated storage. Featuring our ETR-system™ (Extended temperature Range) this model can operate between -5°C to -25°C allowing for specific temperature adjustment. Fitted with acoustic and visual alarms, a dry contact and logging and extraction of data, you can rest assured that whatever the content, it is safely stored.

- **ETR-system™**
- **Energy Efficient**
- **Very Low Noise**
- **Stable and Uniform Temperature**
- **Flexible Accessory Options**



## F-90 | Gallery



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## F-90 |

Construction	Value
Dimension	652x595x642 mm
Dimension inner	481x475x495 mm
Weight	55 / 44 gross/net
Package weight	11 kg
Material inner cabinet	ABS Kg. gross/net
Material outer cabinet	Painted steel Kg. gross/net
Insulation thickness	50 mm
Type of packaging	Cardboard, EPS, Vinyl bag, Wooden pallet
Mobility	4 x Adjustable feet

## F-90 |

Storage	Value
Volume	90 / 76
Shelves	1
Half shelf	1

## F-90 |

Features	Value
Safety thermostat	<input type="radio"/>
Lock	<input checked="" type="checkbox"/>
LED light	<input checked="" type="checkbox"/>
Battery backup	<input checked="" type="checkbox"/>
Porthole	<input checked="" type="checkbox"/>
Porthole size	20 mm
Dry contact	<input checked="" type="checkbox"/>
Reference bottle	<input type="radio"/>
Door closure	<input checked="" type="checkbox"/>
Door reversibility	<input checked="" type="checkbox"/>
Automatic hold 90°	<input checked="" type="checkbox"/>

## F-90 |

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

## F-90 |

Test	Value
Voltage	220-240 V
Frequency	50 Hz
Max ambient	30 °C
Max Humidity	65 %
Test condition	20

## F-90 |

Operation	Value
Temperature range	-5 to -25 °C
Uniformity in performance	2,3 / -2,2 °C
Pull down time (from test condition to fabric setpoint)	72 Minutes
Hold over time (from fabric SP to 10) empty	54 Minutes
Noise	46 dB
Energy 24 hours	1,2 kWh/24h
Instant Power Consumption	PD 0,072 / Stable 0,058 kW
Heat Rejection	109 W
K-Value	0,58 W/m <sup>2</sup> k

## F-90 |

Cooling components	Value
Refrigerant/amount	R600a / 40g Type & gram
Number of compressors	1
Internal air distribution (Type)	Dynamic
Number of probes	2
Defrost	<input checked="" type="checkbox"/>

## F-90 |

Controller	Value
Controller	Dixell
Controller type	XW757K
USB Connection	Yes
Data connection	MODBUS
Controller abilities	Logging of data & alarms
Controller languages	Digits
Log numbers	35000
Temperature graph in controller	<input type="checkbox"/>



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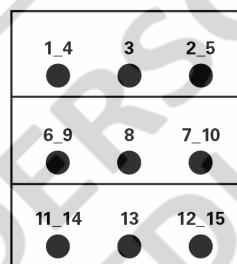
## Temperature mapping

### Test overview

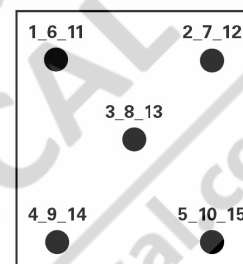
Test type	15-point test
Test environment	Controlled conditions, empty cabinet
Ambient temperature	20°C
Humidity	60%
Set-point	-25°C
Sensors used	25gr tinned brass formed as a cylinder with a diameter of 15,2mm
Installation	Appliance installed according to instruction manual conditions
Refrigerant	R600a

### 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



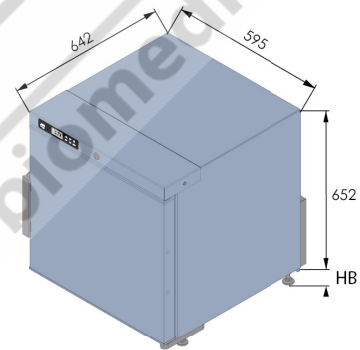
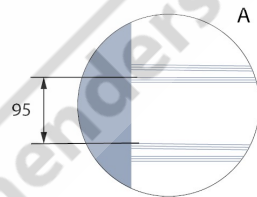
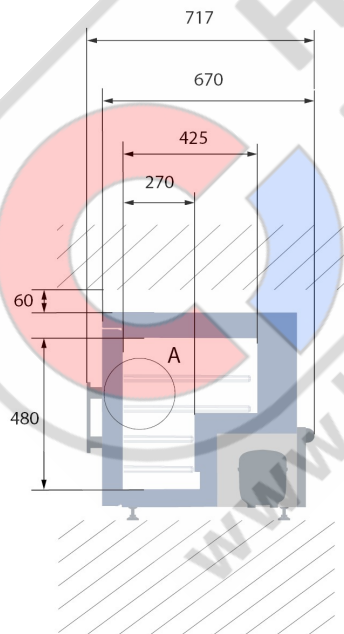
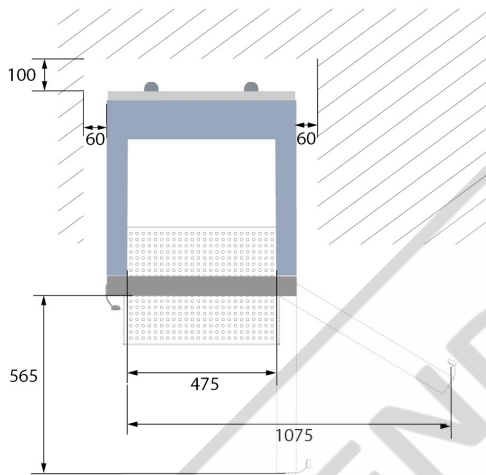
### Typical Performance data

Avg. cabinet temperature	-23,8°C
Peak variation from set-point	+2,3/-2,2°C
Stability in avg.	2,4°C
1 min. door open recovery to -20°C avg. temperature	14 min.
Cycle rate on/off	19,1/4,9 min.
Duty cycle	79%
Energy consumption	1,2 kWh/day
Pull down time to -20°C avg. temperature	72 min.
Hold over time from -25°C to -10°C	54 min.
Sample temperature does not exceed	-15°C

### Warm up & Pull down

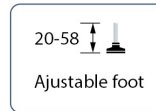
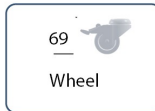


**Dimensions**



All dimensions in millimeters

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







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