

Kryo 360



The **Kryo 360** incorporates all of the critical features expected from a high class biological freezer. The $-180\text{ }^{\circ}\text{C}$ end temperature **ensures sample integrity during transfer to storage** whilst the flexibility of the system is ideal for the more complex and demanding protocols associated with the most advanced cryopreservation techniques.

The high capacity LNP4 active nitrogen pump offers both faster cooling rates and a large reservoir, offering the **reassurance of an extended hold time** at the protocol end temperature. The system sample capacity is sufficient for the busiest laboratory and the state of the art compact design will enhance the most modern facility.

The MRV controller system has been created to offer **multiple protocols** whilst remaining simple to programme and operate, and both during and after a run offers the widest range of displayed information, alphanumerically and graphically via the easy view display and as a print out on the integral full view printer.

Validation is a high priority and the MRV offers password controlled access on multiple user levels, time and date stamping, programme preview and verification before running and data storage for the last 10 runs for subsequent printing. User calibration with associated hard copy is featured and PC connection compatible with the comprehensive **Delta T™ software** application is standard.

The system has been fitted with **numerous safety features**. These help protect against power failure and PC failure when running with software. Processor or system problems are controlled and the system restarts to protect samples - for example all control and data systems are separated, the controller can be removed from the operating freezer with no loss of programme integrity; data storage and run processing are completed on isolated electronic systems.

The Planer Kryo 360 - 1.7 or 3.3 fully featured biological freezers for cryopreservation of critical cell lines

- Controller displays demand, sample and chamber temperatures, programme stage and current temperature graphic
- Menu driven controller, simple to programme and operate
- Horizontal or vertical operation
- Compact design
- Standard operating features:-
 - ◆ Start above ambient
 - ◆ Controlled heating
 - ◆ Data Printing (integral printer)
 - ◆ Comms port for PC connection
 - ◆ Fast cooling rates
 - ◆ Multiple safety features

SPECIFICATION OVERVIEW

- Chamber volume: 1.7 or 3.3 litres
- Straw capacity: (60 or 120) x 0.25 ml straws in 15 positions radially located
- Ampoule capacity: (30 or 60) x 2 ml ampoules in 15 positions radially located
- Lower temperature limit: $-180\text{ }^{\circ}\text{C}$
- Cooling rates: -0.01 to $-50\text{ }^{\circ}\text{C}/\text{min}$
- Controlled heating rates: 0.01 to $10\text{ }^{\circ}\text{C}/\text{min}$
- System controller: MRV
- PC Software: Delta T™ Lite (Upgradable to DeltaT or DeltaT-iQ)

SYSTEM REQUIREMENTS

5 psi or 22 psi Liquid Nitrogen Supply

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TECHNICAL SPECIFICATION - Kryo 360

System Specification

Range	+40 °C to -180 °C
Heating rate	0.01 °C/min to 10 °C/min
Cooling rate	-0.01 °C/min to -50 °C/min
Controller accuracy	±0.3 °C measured on a hold at 0 °C
Storage temperature	-10 °C to +50 °C
Storage humidity	5 % to 95 % relative humidity non-condensing
Operating temperature	5 °C to 40 °C
Operating humidity	5 % to 90 % relative humidity non-condensing

Controller Specification

Dimensions	80 mm high x 220 mm wide x 350 mm deep
Weight (approx.)	2.6 kg
Display	240 x 64 LCD with CCFL backlight
Printer	320/640 dot thermal printer
Keypad	20 key membrane keypad
Programmable Cooling Rate Range	-0.01 °C/min to -99.9 °C/min
Number of profiles	10
Steps per profile	32
Number of stored runs	10

Chamber Specification

Weight (kg)	14.4 or 14.7
Capacity (litres)	1.7 or 3.3
Chamber dimensions	1.7L Chamber: Internal 200 mm x 150 mm diameter External 450 mm high x 300 mm wide x 420 mm deep 3.3L Chamber: Internal 400 mm x 150 mm diameter External 450 mm high x 300 mm wide x 420 mm deep
0.25 ml straws	60 or 120
0.5 ml straws	45 or 90
2 ml ampoules	30 or 60
50 cc blood bags	-
250 cc blood bags	-
500 cc blood bags	-
Power requirements (inc. MRV Controller)	115V~ 50/60Hz 600VA / 230V~ 50/60Hz 600VA

Recommendation of additional equipment	5 psi System	System Pump - LNP4-C System Dewar - MVLAB 30
	22 psi System	System Cylinder - MVEUROCYL230SB Phase Separator - MVPHASE
(Alternative)	22 psi System	Vacuum Jacketed Pipe Work System Phase Separator - MVPHASE