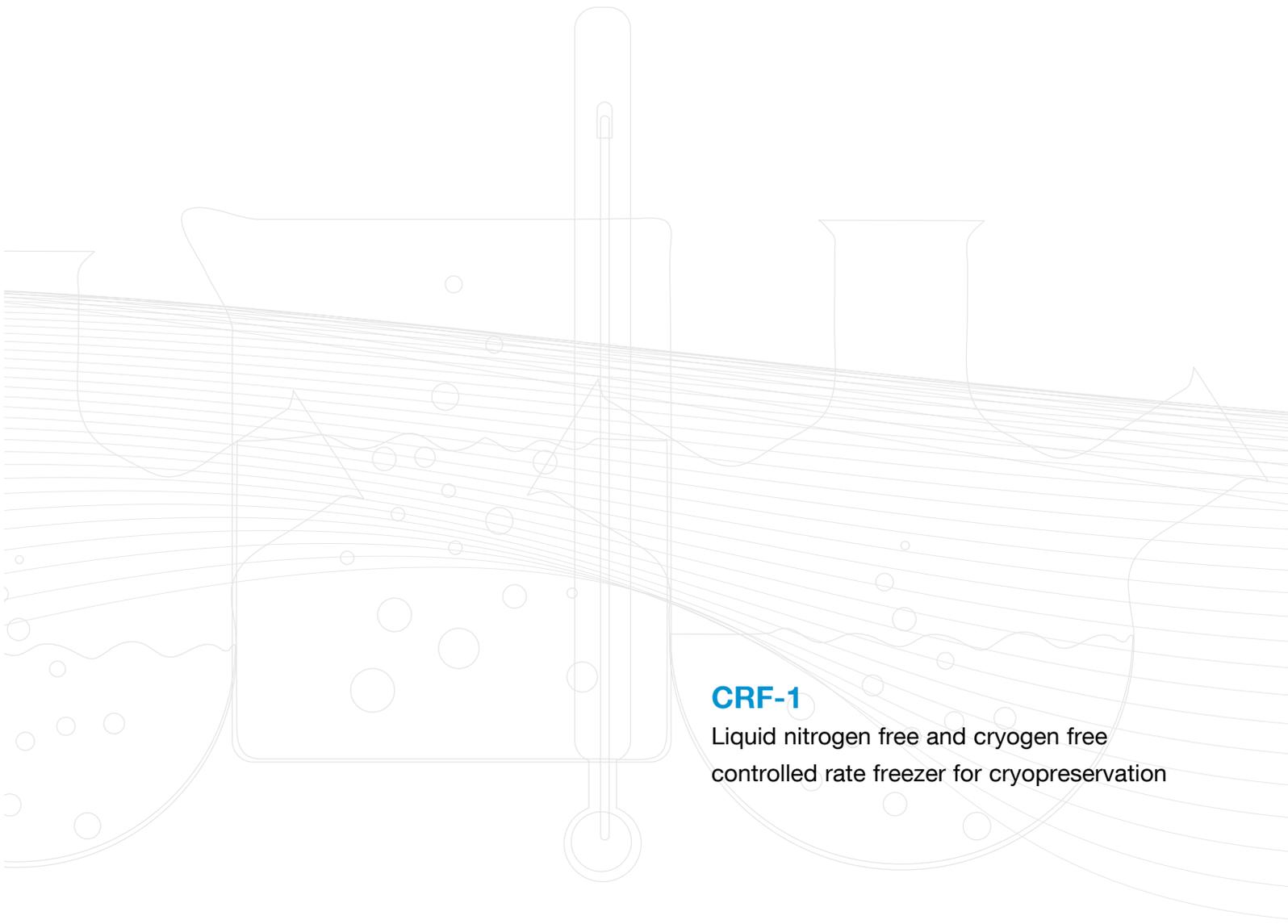


20 Cryopreservation



CRF-1

Liquid nitrogen free and cryogen free
controlled rate freezer for cryopreservation

CRF-1 Controlled Rate Freezer

Liquid nitrogen free and cryogen free controlled rate freezer for research into the cryopreservation of a wide range of material including: embryos, stem cells, mammalian cells, spermatozoa, antibodies, tissue sections and rodent organs. **The CRF-1 brings accuracy, precision and reproducibility to biological cryopreservation.**

Unlike conventional liquid nitrogen based controlled rate cooling equipment, the CRF-1 greatly reduces the risk of contamination and can be used in cleanrooms and barrier facilities. The CRF-1 fits neatly on a bench-top. Its performance in terms of cell viability after freezing is comparable or better than standard liquid nitrogen freezers. As alcohol is not used, there is also a greatly reduced fire risk. The CRF-1 will cool down to -100°C with straws.

The cooling rate of the CRF-1 is precisely controlled, ensuring accuracy and reproducibility throughout the freezing profile, especially for the important nucleation/seeding phase. This ensures optimal recovery of cells upon thawing. Operation is simple and can be carried out with or without a PC; data can be logged via PC software and cooling profiles are directly displayed on PC screen. Different cooling profiles are available from a drop down menu and customised profiles can be written.



Main applications

The CRF-1 is highly versatile and can be used for the cryopreservation research of a wide range of samples in cryovials, straws, bags, microplates and Matrix-96-well block plates in the following areas:

- Transgenic embryos research
- Stem cell research
- Clinical and research samples, e.g. lymphocytes and tissue cell lines in conventional cryovials
- Various mammalian cells including cardiomyocytes, adipose, liver and muscle
- Cord blood derived stem cells
- Adherent cells and stem cells in microplates
- Cell suspensions in numbered/barcoded arrays
- Robotic integration – the CRF-1 has also successfully been integrated into robotic systems
- Is also suitable for applications in veterinarian IVF

Key benefits/features

- Accurate and reproducible control of cooling rates and sample temperatures
- Easy to use and samples can be nucleated/seeded in-situ
- Linear and non-linear cooling profiles
- Low running costs: estimated at 1% of liquid nitrogen controlled rate freezing
- Temperature remains at -100°C at the end of cycle for straw applications until freezer is switched off
- Uninterruptible Power Supply (UPS): complete cycle run if power fails (supplied as an optional accessory)
- CE marked (laboratory use)
- Servicing and calibration available
- 3 year warranty

Cryopreservation equipment » CRF-1 Controlled Rate Freezer

Product range

The range includes various models which provide optimum performance for a specific common vessel or can accommodate two different types vessels although only one type can be used at a time. The options include;

• CRF-1 H00	Plate for 16 x 0.5ml CBS high security straws
• CRF-1 H01	Plate for 18 x 0.3ml IMV straws
• CRF-1 H02	Plate for 55 x 1.8ml cryovials (0.5ml max fill)
• CRF-1 H03	Flat plate for various items/vessels
• CRF-1 H05	Plate for 1 x SBS microplate
• CRF-1 H06	Plate for 55 x 1.8ml cryovials (1.0ml max fill)
• CRF-1 H07	Plate for 10 x 0.5ml CBS high security straws & 12 x 1.8ml cryovials (0.5ml max fill)
• CRF-1 H08	Plate for 12 x 0.3ml IMV straws & 12 x 1.8ml cryovials (0.5ml max fill)

Accessories

- **Cryopen ice nucleating tool:**
A small nitrous oxide cryosurgical device which uses the rapid expansion of sterile N₂O to induce ice nucleation (“seeding”) in the samples. The gas does not compromise the sterility of the operating environment.
- **Backup electrical supply:**
Uninterruptible Power System (UPS) capable of running the freezer for a 3 hour cycle in the event of an electrical power failure.

Note: The CRF-1 is not a medical device unit.

CRF-1 Controlled Rate Freezer Optional Accessories & Services

CAL CRF-1	Calibration certificate
CRF-1 MAINT 1	1 year maintenance agreement includes clean and test report (excludes repair & replacement of faulty parts)
IQOQ CRF-1	IQOQ Booklet for CRF-1
PQ CRF-1	PQ Booklet for CRF-1
CRF-1 CRYOPEN	Cryopen nucleating tool
CRF-1 CARTRIDGE	Replacement cartridge for Cryopen
CRF-1 UPS	Un-interruptible Power Supply for the CRF-1 for a 3 hour cycle in the event of an electrical power failure. 220-240v operation.