Lyostat3

Freeze Drying Microscope

Every freeze-drying formulation has a critical temperature, below which it should be cooled for complete solidification and maintained below during primary drying in order to prevent processing defects. The ***Lyostat*** freeze drying microscope system allows observation of the sample structure during drying and heating so that the exact point of collapse can be determined. Once analysis has been carried out a cycle can be developed that is safe, robust, and cost efficient.

- Real-time image, sample temperature and chamber pressure displayed on screen
- Data archiving and profile plotting capability
- “Image Gallery” enabling comparisons of stored image sequences
- Motorised vacuum control option, to enable specification of exact pressure
- Pre-delivery testing includes validation of complete working system against a published series of standard solutions
- On-site installation includes practical training on operation and interpretation of results
- IQ / OQ packages also available

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Technical specification of *Lyostat3*

Stage and Controller

- Working temperature from -196ºC to +350ºC.
- Controlled heating and cooling rates
- Programmable profile function, allowing several ramping and holding steps
- High purity silver heating/cooling block for good thermal conductivity.
- 100 Ohm platinum resistor sensor for temperature monitoring/control (DIN Class A to 0.1°C).
- Vacuum tight sample chamber to 10^{-3} mbar.
- Port for direct measurement of chamber vacuum.
- Optional vacuum control module.

Liquid Nitrogen Cooling System

- Automatic twin-pump cooling system including 2L Dewar and flexible insulated tubing.
- Twin pumps for faster cooling.
- Direct injection of the coolant into the silver block.

Software

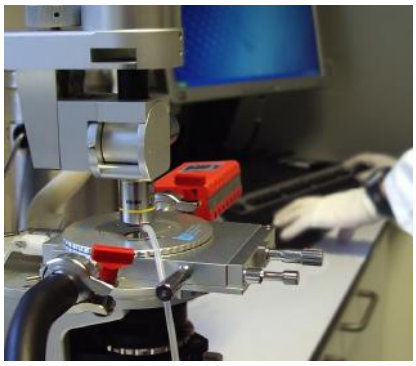
- Software displays the live temperature and stage pressure, active ramp information and allows the user to have full control over the temperature programmer via an RS232 serial link to the PC.
- Online plot information of temperature and pressure can be viewed, saved and exported to third party applications such as Excel.
- A temperature profile consisting of several ramping and holding steps can be created in a simple on-screen data table.
- 21 CFR 11 compliant software available as an option.

Real Time Digital Video and Measurement System

- Capture up to 80GB of information
- Compress gallery images into various picture formats or movies with variable compression codec and playback frame rate

Recommended Optical Systems

(available through BTL)



Imaging Station with flip-top head for ease of sample loading:

- Fewer lenses than compound microscope, for clearer images
- Polarising lens with analyser
- Long working distance condenser
- 100W Light source halogen bulb
- Power supply with variable light intensity adjustment
- Köhler Illumination

Alternative Compound Microscope, comprising:

- Quality robust frame
- Objectives Plan 10x
- C-Mount Video port 1.0x
- Widefield 18mm eyepieces
- Köhler Illumination
- Trinocular head

Existing compound microscopes can be used if one is available. **Lyostat3** has been designed to be compatible with most models of microscope from Olympus, Nikon, Leica and Zeiss, making it a more cost-effective and flexible option.

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