Integral nitrogen reservoir cryostat, sample in vacuum

The OptistatDN-V is an integral nitrogen reservoir cryostat providing a controlled low temperature vacuum environment for samples down to 77K. The cryostat is designed to operate as an integral part of an optical measurement system. This cryostat is ideal for experiments requiring a large sample space and a minimum number of windows in the optical beam path thus reducing reflective losses.

Components

A typical OptistatDN-V system consists of:

- OptistatDN-V cryostat
- Sample Holder
- Windows
- ITC temperature controller
- High vacuum pumping system

Optional items:

- Wiring and electrical connections to the sample

Features and benefits:

- Wide temperature range from 77K to 500K
- Superb optical access (f/1) for measurements requiring light detection
- Optimised clear beam transmission (35 mm diameter aperture) allows a large illumination area for measurements involving the detection of low intensity light
- Optimised thermal design provides excellent control and stability of the sample temperature
- Large sample space enabling studies of samples with a wide range of size and geometry
- An extensive range of demountable windows for spectroscopy from near ultraviolet to extreme infrared provides flexibility for current and future applications
- No cold windows enabling the use of any window material above 300K
- 15 hours cryogen hold time, before refill is required providing the convenience of a full working day operation
- The compact design of the OptistatDN-V makes it straightforward to integrate with a wide range of spectrometers

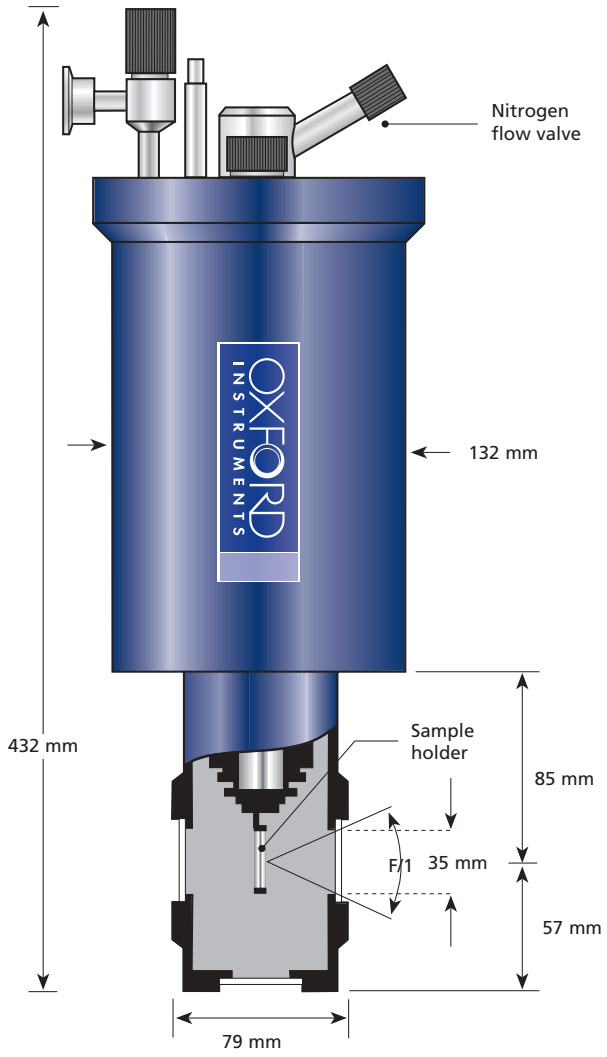
OXFORD INSTRUMENTS

Mode of operation

The OptistatDN-V is very easy to use. A liquid nitrogen reservoir surrounds the upper part of the central sample tube and supplies liquid nitrogen via a capillary tube to a heat-exchanger. During operation, the gravity fed flow of liquid is controlled by a valve, in the exhaust line, on the cryostat top plate.

In a vacuum system, the sample space is evacuated and the sample holder located directly on the heat exchanger. Effective sample cooling is achieved due to good thermal contact between the sample holder and the heat exchanger.

To change the sample, the cryostat is warmed to room temperature, the vacuum released and the outer case removed.



OptistatDN-V cryostat

Optical access:

The design utilises optical windows only in the outer case. As a result the optical transmission is improved as losses due to window absorptions and reflections are reduced.

The OptistatDN-V has excellent optical access (f/1). The large acceptance angle makes it ideal for light collection measurements (for example in luminescence and Raman studies). The large clear access (35 mm) is important for small signal measurements that benefits from a large illumination area (for example in FTIR and UV/ Visible absorption spectroscopy).

Up to five sets of windows can be provided (four radial; one axial).

The choice of windows is greater for vacuum loading cryostats for operation above 300K because the window is separated from cold temperatures by an isolating vacuum. All windows are demountable and may be exchanged at a later date for measurements over different regions of the optical spectrum. Oxford Instruments offers an extensive range of window materials permitting spectroscopic measurements from ultra violet to extreme infrared (including THz applications).
We can also provide 'wedge' (non-parallel faces) windows and anti-reflection coatings, to limit the reflection of windows.

Automated operation

Oxford Instruments Object Bench software included with the ITC temperature controller provides the opportunity to automate data acquisition. The PC based software takes measurements from any independent instrument (with computer interface) at different user defined temperatures. This is an ideal configuration for routine measurement programmes.

Electrical access

For electrical measurements, wires may be terminated at pins above the sample holder and/or on wired coax connectors. This provides maximum flexibility for different experimental configurations. Please contact us to discuss particular requirements.

Other configurations

Please contact us to discuss options to meet specific experimental configurations that may not be satisfied by our standard options.

System components

Cryostat basic components:

OPTIDN-V	OptistatDN-V, vacuum space, 20 mm sample space.
SH3	Optical sample holder
or SH1	Plain sample holder

Window options:

OQO	Spec B window
OWO	Spec WF window
OZQO	Z-cut Quartz window .
OSO	Sapphire window
OMO	Mylar window
OKO	KRS5 window
OCO	Calcium fluoride window
OZO	Zinc Selenide window

Blanks will be fitted to ports which are not fitted with windows. Orientation of windows should be specified at time of order.

Electrical connections:

LX10	Wired 10 pin seal
CX1	Wired miniature coax connector

Temperature controller options:

ITC601PT	Temperature controller (One channel, RS232 Computer interface)
ITC503	Temperature controller (Upgradable to 3 channels, RS232 and GPIB computer interface)
CC1	3m cryostat cable - 10 pin connector.

Pumps:

HVP	High vacuum pumping station to pump the sample space.

Other options:

SKDNV	Spares kit (Orings, clamps…)

Specifications

Sample holder dimensions (mm)	20 mm wide x 50 mm long
Temperature range (K)	77-500 K
Temperature stability (K)	+- 0.1 K (measured over 10 min period)
Cool down from ambient to 77 K(mins)	20
Liquid nitrogen capacity (L)	1.2
Hold time at 77 K (hours)	>= 15
Sample change time (mins)	60
Cryostat weight (kg)	5

Oxford Instruments Superconductivity

UK
Tubney Woods, Abingdon
Oxfordshire OX13 5QX
Tel: +44 (0)1865 393 200
Fax: +44 (0)1865 393 333

China
Rm. 14-F, No.1 Plaza
No.800 Nanjing East Road
Shanghai 200001
Tel: +86 21 63608530/1/2/3
Fax: +86 21 63608535

Germany
Otto-von Guericke Ring 10
D-65205 Wiesbaden
Tel: +49 6122 937 171
Fax: +49 6122 937 175

Italy
Via Leone Tolstoi 86
20098 San Giuliano
Milanese
Milan
Tel: +39 02 98 2215
Fax: +39 02 98 2414

Japan
Haseman Building
2-11-6 Tomioka, Koto-ku
Tokyo 135-0047
Tel: +81 03 5245 3261
Fax: +81 03 5245 4472

Spain
Avda Mata Piñonera, 2
28700 San Sebastian de los Reyes
Madrid
Tel: +34 91 659 0740
Fax: +34 91 654 6794

U.S.A.
130A Baker Ave. Ext.
Concord, MA 01742-2121
Tel: +1 978 369 9933
Fax: +1 978 369 6616

E-mail:
superconductivity@oxinst.co.uk

Visit our web site at
www.oxford-instruments.com

THE QUEEN'S AWARDS FOR ENTERPRISE: INNOVATION 2003

Reference No: DF OI668 0205

UK sites of Oxford Instruments Superconductivity Limited, operate a Quality Management System approved to the requirements of BS EN ISO 9001.

Certificate No Q4118

OXFORD INSTRUMENTS