Varian Inova 500 NMR Spectrometer

Oxford 500/51 Superconducting Magnet Specifications

The 500 MHz magnet system comprises a fully persistent 11.74 Tesla high-homogeneity superconducting magnet, and a low-loss cryostat with a 51 mm room temperature bore.

Project no: 70369
Cryostat no: Family Type 4

Magnet Operating Data

Central field:	11.744 Tesla
Current for central field:	103.46 Amps
Overfield current:	120 mAmps
Field current ratio:	0.11351 Tesla/Amp
Room temp bore diameter:	51 mm
Switch "open" resistance:	10 ohms
Switch heater resistance:	100 ohms
Switch heater current:	60 mAmps
Distance between cryostat base plate & magnet centre line:	391 mm
Distance between Oxford RT Shim coil mounting flange & magnet centre line:	403 mm
Required spacer length for Oxford RT Shim coil:	12 mm

Cryogenic Performance

Liquid helium evaporation rate:	less than 15cc/hr
Helium refill volume:	54.5 litres
Helium refill interval:	150 days minimum
Liquid nitrogen evaporation rate:	less than 200 cc/hr
Nitrogen refill volume:	84 litres
Nitrogen refill interval:	17 days minimum

Unity Inova NMR Overview

The UNITY *INOVA* NMR spectrometer system is designed for liquids as well as for solids, imaging, and microimaging applications. Built-in modularity permits easy selection of configurations for the experimental requirements of a specific laboratory and simplifies upgrades. A user can configure UNITY*INOVA* NMR spectrometer with eight

full rf channels, four waveform generator modules, pulsed field gradient, full solid-state NMR capabilities, imaging, microimaging, and still have room for expansion.

The UNITY*INOVA* NMR spectrometer currently operates at proton frequencies of 200, 300, and 400 MHz with superconducting magnet bores of 54 and 89 mm; 500, 600, and 750NB MHz with superconducting magnet bores of 51 mm; and 800 MHz with superconducting magnet bores of 62mm. Standard liquids probes accept sample tube diameters of 5 and 10 mm. Special purpose probes are available, including solid-state NMR, pulsed field gradient, and bioproton nanoprobes.

A UNITY*INOVA* spectrometer intended for liquids operation has three major groups of components:
• *Magnet* and *magnet console interface* – Include the probe, upper barrel, preamplifiers and related electronics, and air supply controls.
• *NMR console* – Includes rf and digital cardcages, frequency synthesizers, amplifiers, and power supplies. A liquids system is typically housed in two cabinets. Solid-state NMR or microimaging requires additional cabinets.
• *Host computer system* – Includes a Sun workstation with networking capabilities, keyboard, mouse, color monitor, hard disk drives, and tape units for data storage. The remote status display is usually considered part of this group.

System Options
A UNITY *INOVA* NMR spectrometer can be equipped with a wide variety of optional equipment to perform special experiments or extend the capabilities of the spectrometer, including:
• Additional disk or tape drives for increased data storage
• Additional printers and plotters for color and higher-resolution data output
• Additional rf channels
• RF waveform generation on one or more rf channels
• Pulsed field gradient module
• Solids NMR accessories, such as rf power amplifiers, pneumatics, and tachometer box
• Microimaging probes and field gradient amplifiers for the probes
• LC-NMR accessory
• Sample changers
• Magnetic shield for display monitor
• Antivibration systems
• Deuterium decoupling accessory
• Deuterium decoupling channel
• Automated deuterium gradient shimming mode