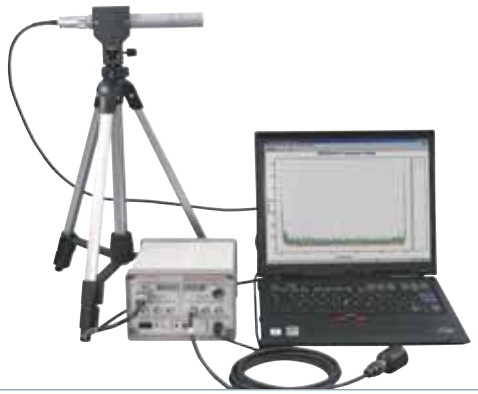
Bartington® Instruments

Spectramag-6

Six-Channel Spectrum Analyser for Magnetic Field and Vibration Surveys

For innovation in magnetic measuring instruments



Spectramag-6

Six-Channel Spectrum Analyser for Magnetic Field and Vibration Surveys

Spectramag-6 is a six-channel, 24-bit data acquisition and spectrum analysis system, designed for use with the Bartington Instruments ***Mag***-03 range of 3-axis fluxgate magnetometers. In addition to magnetometers, the system also has an ICP interface, allowing the connection of a range of accelerometers and microphones.

All six-channels are simultaneously sampled, making the ***Spectramag***-6 ideally suited for recording and analysis of magnetic field and/or vibration data in three axes. Typical applications include magnetic and vibration measurements for pre-installation surveys for MRI systems, electron microscopes and similar sensitive equipment, general magnetic measurements, dual magnetometer differential measurements, site surveys and recording magnetic fields due to 50/60Hz mains supplies.

The system consists of an interface unit and Windows® based PC software. The interface unit is linked to the host PC via a USB2 connection. The software-based nature of the instrument allows for easy upgrading, simply by downloading the latest software version from the internet.

Main Features

- 6-channel, simultaneously sampled, 24 bit data acquisition
- Magnetic Field and Vibration measurement inputs
- Time domain and Frequency domain display, with zoom facility
- 100µs to 10s sample intervals
- Fixed scan length or continuous acquisition mode (sample rate dependent)
- Compatible with all ***Mag***-03 and ***Mag***-01MS magnetometers
- Direct connection of ICP accelerometers or microphones
- Programmable pass/fail test profiles for time & frequency domains
- Software based instrumentation – permits easy upgrades
- Operates under Windows® 98, 2000 or XP
- Operates from mains power or internal, rechargeable battery – use in the field, with a laptop PC

Additional features

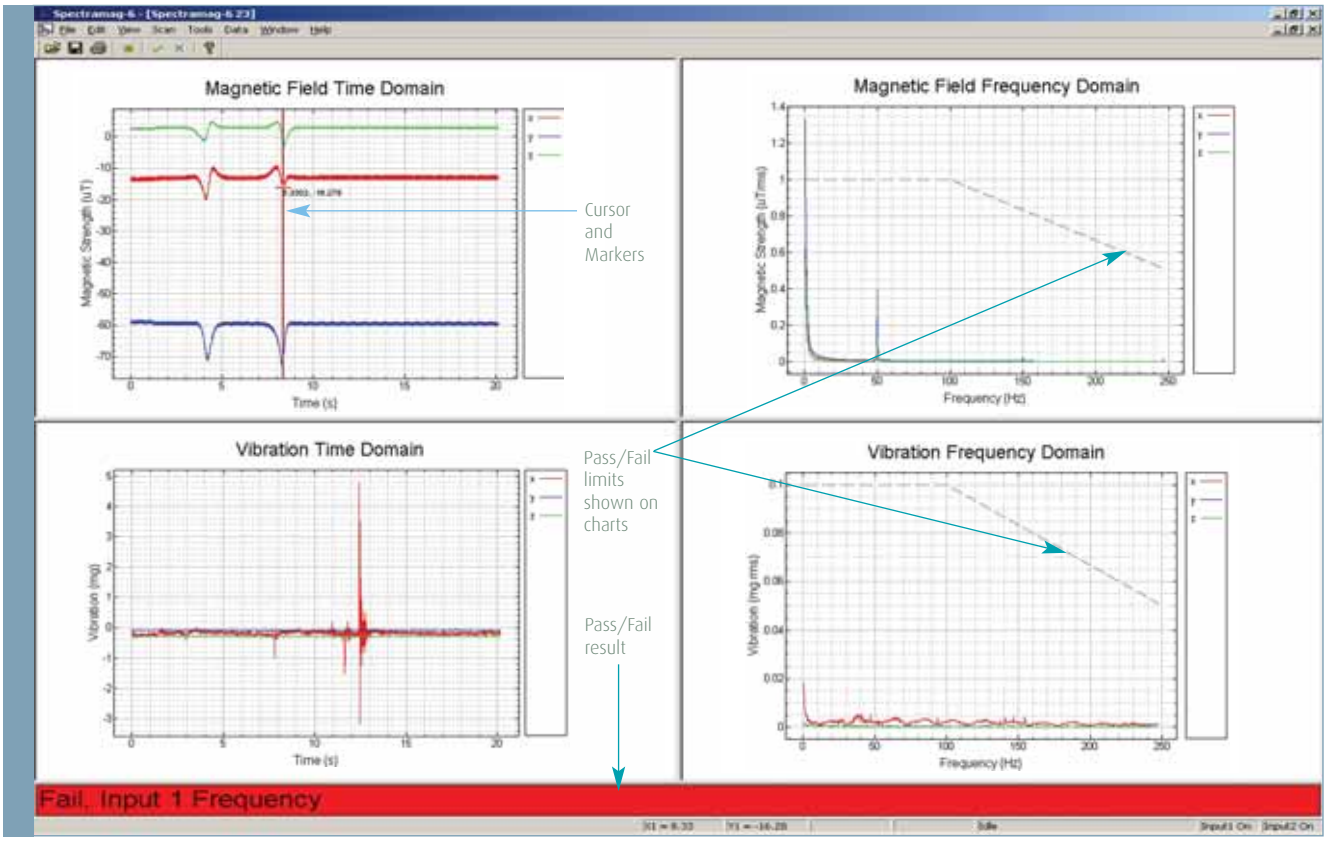
- Averaging for Frequency domain plots,
- Total field magnitude (xyz vector sum)
- Selectable front-end gain amplifier
- Choice of various FFT windowing functions
- Display cursors
- Data can be exported as graphics in bitmap or JPG format, or as time-stamped data values
- Results scaled in engineering units for standard range of sensors.

Optional accessories

Tripod and adaptor for ***Mag***-03 magnetometers

Rugged carrying case

Typical Spectramag-6 Display



Modes of use

The six input channels are arranged in 2 groups of 3 inputs, which are independently selected for magnetic or vibration measurements. This allows connection of :

or {
- Two 3-axis magnetometers
- One 3-axis magnetometer and up to three single-axis accelerometers
- Up to six single-axis accelerometers

For MRI pre-installation surveys the ***Mag***-03MS1000 three-axis magnetic field sensor, with a full-scale range of ±1000μT (±10Gauss) and a resolution down to a few nT, is recommended. The ICP® interface provides a 4mA constant current source via a BNC connector and a gain between 1 and 1000 can be selected for vibration measurements down to a few μg.

A minimum system for magnetic field measurement comprises:
Spectramag-6 unit + ***Mag***-03 magnetic field sensor + ***Mag***-03 cable + tripod + ***Mag***-03 tripod adaptor. A Windows® PC with USB2.0 is also required.

Specification

Resolution	24 bit A-D Converter
Input channels	6 selectable in groups of 3 for magnetometer or accelerometer
Input coupling Magnetometers Accelerometers	 DC or AC selectable with 0.01Hz (-3dB) high-pass filter AC with 0.1Hz (-3dB) high-pass filter
Sampling Interval	100µs (min) to 10s (max) Up to 100,000 samples (PC dependent) Continuous sampling mode (slower sample rates only)
Frequency range	0-3.5kHz (-3dB point), reduced to 1kHz for gain of 1000
Input impedance (magnetometer inputs)	1MΩ
ICP® constant current	4mA ± 20% for cables up to 1km in length
Gain control	software selected x1/x10/x100/x1000
Spectrum range	software selected as sample rate or maximum frequency
Output interface	USB2
Software	Windows 98/2000/XP compatible
Controls	power on/off switch
Connectors	2 x Hirose RM15TPD10P fixed plug to magnetic field sensors 6 x BNC sockets for ICP® piezoelectric vibration sensors/microphone preamplifiers 1 x usb to PC 1 x 2.1mm socket for 12V input from mains adaptor for recharging
Frequency domain display options	Amplitude spectrum (RMS) Amplitude spectral density (RMS/√Hz)
Power supply	Internal rechargeable battery with universal mains adaptor for charging
Battery charging time	10 hours for full charge
Battery life (typical)	8 hours
Enclosure	Aluminium
Dimensions (mm)	210 x 170 x 112
Weight (kg)	2.85
Operating temperature	-10°C to +50°C
Storage temperature	-10°C to +70°C
Suitable ICP® vibration sensor	PCB Piezoelectronics type 393A03 (1V/g) low-noise rugged PCB Piezoelectronics type 393B31 (10V/g) low noise rugged
Carrying case dimensions (mm)	610 x 230 x 200
Total weight with carrying case	12kg with *Spectramag*-6, *Mag*-03 magnetometer, 5m cable and tripod.

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