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OFFER

For advanced upgrade of old X-Band EPR Spectrometers manufactured by "Radiopan", Varian, Jeol, Bruker and Wroclaw University of Technology

Introduction: A workers group of the Wroclaw University of Technology, earlier collaborating with the company "Radiopan" have been researched modern units for EPR spectrometer: digital magnetic field controller, digital EPR signal receivers and microwave frequency counter. The new units are very suitable for an advanced upgrade of old EPR spectrometers as well as for building a new spectrometer. The new units are fully PC controlled via the popular USB interface which makes possible an automation of EPR experiments. The step of automation mainly depends on it which new units are installed in the spectrometer. The special PC program EPR System for Windows 2000/XP to control of the upgraded spectrometer been designed. With new units it is possible to build a special EPR spectrometer with two independent receiving channels (1kHz and 100kHz) with two-chamber cavity. A two-channel EPR spectrometer is very suitable for intensity measurements in relation to reference sample.

I. Computer System of EPR Spectra Recording and Processing

The system includes:

- Digital Magnetic Field Controller (needed)
- Control program EPR System (needed)
- Digital Receiver 100kHz (option) or existing (analogue) EPR signal receiver or any analogue or digital homodyne receiver with modulation amplifier
- High efficiency (>95%) electromagnet power supply (option)

Technical data:

Field Controller MS-10S

Field 0 – B_{max} ($B_{max} \leq 1.59999T$) or $-B_{max} - +B_{max}$ with true zero crossing (option)

Resolution, instability 10uT, $<5 \times 10^{-6}$

Sweep range, sweep period 0.1 - 1000mT, 4, 8, 16, 32, 64, 128,.... 16384s, fast sweep – 0.5s

Sweep resolution and sweep mode 12 bit, symmetrical saw-tooth, triangular, point-to-point

Built-in ADC (synchronized with sweep) for EPR 1 signal 12 bit (8us), 0 - +/-5V

Digital input (synchronized with sweep) for EPR 1 and EPR 2 signal 12 bit

Digital Receiver DR-100k

Frequency, modulation amplitude 100kHz/1kHz, 0.1uT - 1mT

Gain, time constant 100 - 5×10^6 , 10ms - 30s

Phase shift, DC shift 0 – 360deg, 0 – +/-125% of full scale

Installing. The field controller MS-10S and digital receiver DR-100k are built in S-19" cabinet and can be easily be placed in typical 19" rack. In the case of Radiopan spectrometer the controller and receiver can be placed in spectrometer console after removing of unused old units.

Program EPR System: makes possible a full PC control of the EPR spectrometer fitted with new units: digital field controller and digital 100kHz/1kHz receiver. Additionally, the EPR System cooperates with other instruments fitted with typical computer interfaces: NMR magnetometer, temperature controller, microwave frequency counter etc.

The most important features of the program:

- setting of conditions of the EPR spectra registration: central magnetic field, magnetic field sweep range, sweep mode, sweep time, 100kHz and 1kHz modulation amplitude, receiver gain, time constant, choice of single or multiple measurement,
- registration of EPR signals with automatic saving of registration conditions,
- single and multiple registration with automatic giving of records names, multiple registration with simultaneous accumulation and averaging,
- advanced mathematical processing of registered spectra: smoothing, integration, differentiation, approximation, multiplying spectra through the constant and through the function etc.

Price:

to the negotiation

Delivery time: standard version

up to 6 months

Advanced version

up to 8 months

II. Two-Channel EPR System for Spectra Intensity Measurement in Relation to Reference Sample

The System includes:

- Digital Magnetic Field Controller MS-10S with control program EPR System (needed)
- Digital Receiver 100kHz DR-100k (option) or existing (analogue) EPR signal receiver or any analogue or digital homodyne receiver with modulation amplifier
- Digital Receiver 1kHz DR-1k (needed)
- Double Rectangular Cavity TE₁₀₄ Mode (needed)

Installing: The field controller MS-10S and digital receiver DR-100k are built in S-19" cabinet and can be easily be placed in typical 19" rack. In the case of Radiopan spectrometer the controller and both receivers can be placed in spectrometer console after removing of unused old units.

Price

Delivery time Standard version

Advanced version

to the negotiation

up to 6 months

up to 8 months

III. Two Axis Goniometer with very small own signal (10% of full scale at gain of 1×10^6 and $B_m = 1\text{mT}$)

IV. An example of Two-Channel X-Band EPR Spectrometer

A block diagram of Two-Channel EPR Spectrometer (with goniometer) is shown in picture.

