

EPRS - 3000

Electron Paramagnetic Resonance Spectrometer



EPCC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

Analytical Technologies Limited

An ISO 9001 Certified Company

www.analyticalgroup.net

►► FEATURES :

EPRS-3000 Spectrometer is a small, compact and easy to handle and maintain device.

The Spectrometer is intended for EPR spectra registration in liquid or solid phases to detect paramagnetic species or free radicals. The main distinctive features of our EPRS-3000 Spectrometer are a compact electromagnet, a microwave bridge. The instrument's high sensitivity and resolution can only be bettered by systems much more expensive and much larger.

The EPRS-3000 Spectrometer is provided with a fully computer controlled system including a comprehensive software package. Built-in frequency meter, magnetic field and temperature sensors, g-factor calculation and a broad dynamic range on the amplifier and the AD converter increase competitive advantages of the Spectrometer and give unique solution for scientific and technological purposes.

►► EPRS-3000 SPECTROMETER HIGHLIGHTS :

- Built-in frequency counter, magnetic field and temperature sensors;
- Computer controlled g-value measurement;
- Optimized magnet field: accuracy, stability and homogeneity;
- Broad dynamic range of amplifier and AD converter;
- User-friendly software EPR Commander 6.0;
- Online technical support.

►► HOW OUR EPRS-3000 IS MADE :

Microwave Bridge.

A reliable solid-state Gunn oscillator, operating at approximately 9.6 GHz, is the heart of the microwave bridge used in the EPRS-3000 Spectrometer. It provides extremely stable frequency and power output. A circulator provides good isolation and low signal loss, and the use of a reference arm allows for balanced detection, enhancing overall system sensitivity. The output frequency, phase, and bias are automatically adjusted whenever the sample is changed.

Microwave Cavity.

The EPRS-3000 Spectrometer uses a rectangular TE₁₀₂ cavity with a center frequency of approximately 9.6 GHz and an unloaded Q of 5,000. Its variable iris aperture matches a wide range of sample holders and dewars, with a maximum diameter of 7.5 mm. Critical coupling of the cavity is accomplished automatically by way of the motor driven iris. Magnetic field in the cavity may be modulated up to 10 gauss peak-to-peak at 100kHz.

Lock-in Amplifier.

A Lock-in Amplifier operates at 100 kHz and performs the signal processing function for the EPRS-3000 Spectrometer. The initial amplification and impedance matching between the microwave detector and the lock-in amplifier is provided by a fixed gain preamplifier in the EPRS-3000's microwave bridge. Gain, phase, and time constant are all controlled by means of the data acquisition software. Signal averaging can also be used to improve the signal to noise ratio for very weak signals.

Field Controller.

The Field Controller sets and maintains the level of magnetic field applied to the sample. Field center point, scan width, and scan duration are all set from the external computer. A Hall-effect probe mounted between the pole pieces maintains the field at the required level.

Electromagnet.

The electromagnet supplied with the EPRS-3000 Spectrometer features three-inch diameter pole caps which provide a field of up to 7,000 gauss. The pole caps are shimmed to provide a homogenous field over the entire sample area of the cavity. The reduced magnet gap of 1 cm results in homogeneity equal to a 4 inch or larger magnet.

Sensitivity	8x10 ¹³ spins / T
Resolution	0,006 mT
Maximum magnetic field	0,7 T
Sweep width	10 ⁻⁴ - 0,65T
Operating Frequency	X-band
Microwave power	0,01 - 250 mW
Microwave tuning	Automatic
Cavity	TE ₁₀₂
Q-unloaded	5000
Dimensions	530 x 420 x 350 mm
Weight	56 kg

►► SOFTWARE :

Data acquisition for EPR (ESR) Spectrometer ESPR-3000 is based upon intuitive drop down menus. User selections are highlighted in the menu toolbox, and dialog boxes appear whenever a keyboard entry is required. Careful consideration was given in the design of the user interface in order to provide an environment which is easy to learn, yet powerful enough for an experienced use.

►► ESPR-3000 SPECTROMETER SOFTWARE FEATURES :

- Spectrometer automatic control;
- Base line correction;
- Spectrum fragmentation;
- Detection of line spectrum parameters;
- Integration and differentiation;
- ASCII exchange possibility;
- Remote access using different network interfaces (LAN, Bluetooth);
- Operation as EPR Analyzer with special applied methods;
- External accessories control (auto sampler, pump, etc.) easy to learn, yet powerful enough for an experienced user

►► FOR YOUR EPSR RESEARCH :

- Variable temperature control systems for wide temperature range;
- Automatic sample changer;
- Continuous-flow system;
- Different X-band accessories (capillaries, tubes etc.).

►► APPLICATION :

Chemistry: oxidation and reduction processes, kinetics of radical reactions, spin trapping, organometallic complex, catalysis and reaction of polymerization, petrol chemistry;

Physics: magnetic susceptibility, magneto-optic properties, transition metal, conduction electrons in conductors and semiconductors, defects in crystals, recombination at low temperature, nanostructure;

Life sciences: free radicals and antioxidants, enzyme reactions, photosynthesis, metalloprotein, photochemical generation of radicals, NO in biological systems Industrial;

Research: degradation effects, polymer properties, defects in diamond and optical fibers, Impurities/defects in semiconductors;

Food dosimetry; oil & gas water quality control; brewery lag time; processing control; alanine and EPR dosimetry.

HPLC Servicing, Validation, Trainings and Preventive Maintenance :

HPLC Servicing :HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.

Trainings :We also take up preventive Maintenance to reduce downtime of HPLC's Trainings.

AMC's/CMC :AMC's/CMC :We offer user training both in-House and at customer sites on HPLC principles, operations, trouble-shooting.

Validations :Validations :We have protocols for carrying out periodic Validations as per GLP/GMP/USFDA norms.

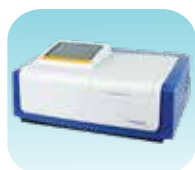
Instruments :Instruments :We offer instruments/Renting Services Modules like pumps,detector etc. on Rent.



About Analytical Technologies

Analytical Technologies is synonymous for offering technologies for doing analysis and is the Fastest Growing Global Brand having presence in at least 96 countries across the global. Analytical Technologies Limited is an ISO:9001 Certified Company engaged in Designing, Manufacturing, Marketing & providing Services for the Analytical, Chromatography, Spectroscopy, Bio Technology, Bio Medical, Clinical Diagnostics, Material Science & General Laboratory Instrumentation. Analytical Technologies, India has across the Country operations with at least 4 Regional Offices, 6 Branch Offices & Service Centers. Distributors & Channel partners worldwide.

Our Products & Technologies



UV/VIS
Spectro 2080+
Double Beam



Infra FTIR



Optima Gas
Chromatograph
3007



Optima Gas
Chromatograph
2979 Plus



Flash
Chromatograph



Atomic Absorption
Spectrophotometer



Liquid Partical
Counter



Optical Emission
Spectrophotometer



DSC/TGA



Semi Auto Bio
Chemistry Analyzer



HEMA 2062
Hematology
Analyzer



Micro Plate
Reader/Washer



URINOVA 2800
Urine Analyzer



Total Organic
Carbon 3800



Fully Automated
CLIA



NOVA-2100
Chemistry Analyzer



PCR/Gradient PCR/
RTPCR



TOC
Analyzer



Laser Particle
Size Analyzer



Ion Chromatograph



Water purification
system

Regulatory compliances



Corporate Social Responsibility

Analytical Foundation is a nonprofit organization (NGO) found for the purpose of:



Analytical
Foundation

1. Research & Innovation Scientist's awards/QC Professional Award : Quality life is possible by innovation only and the innovation is possible by research only, hence ANALYTICAL FOUNDATION is committed to identify such personalities for their contributions across various field of Science and Technology and awarding them yearly. To participate for award, send us your details of research / testing / publication at Info@analyticalfoundation.org

2. Improving quality of life by offering YOGA Training courses, Work shops/Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXYFY human minds,souls and body by means of yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

Reach us @



HPLC Solutions MultipleLabs Analytical Bio-Med Analytical Distributors Analytical Foundation (Trust)

Corporate & Regd. Office:
Analytical House, # E67 & E68,
Ravi Park, Vasna Road, Baroda,
Gujarat 390 015. INDIA

T: +91 265 2253620
+91 265 2252839
+91 265 2252370
F: +91 265 2254395

E: info@hplctechnologies.com
info@multiplelabs.com
info@analyticalgroup.net
info@analyticalbiomed.com

W. www.analyticalgroup.net
www.hplctechnologies.com
www.multiplelabs.com
www.ais-india.com

Sales & Support Offices:
across the country :
Distributors & Channel
partners World Wide

Note : Company reserves rights to add/delete/modify the contents / technical specifications of the catalogue without prior notice.