

# ELECTRON SPIN RESONANCE AND NUCLEAR MAGNETIC RESONANCE (ESR-NMR) ES-3029



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## ►► Principle and Working :

In this set-up, the ESR of an unpaired electron of DPPH is studied. Study of NMR is carried out by using samples such as glycerine, teflon and polystyrene. The applied magnetic field is varied to determine the frequency at which the resonance occurs. Included coil pair is used here to obtain the variable magnetic field. The control panel provides the voltage-control, power to the ESR/NMR probes and coil pair and processes the signal to be obtained in the oscilloscope. ESR Basic Set, ESR Supplementary Sheet, Analogue Oscilloscope & HF Patch Chord are required to conduct the experiments listed under the heading of ESR. NMR Basic Set, NMR Supplementary Sheet, Analogue Oscilloscope & HF Patch Chord are required to conduct the experiments listed under the heading of ESR.

Item Name	ESR	NMR
ESR/NMR	Basic Set	1
NMR Supplementary	Set	1
ESR Supplementary	Set	1
HF Patch Cord	2	2

### ESR/NMR Basic Set ATL-89021



SPECIFICATIONS	
<b>Basic unit</b>	
Dimensions	165x105x135 mm <sup>3</sup> approx.
Weight	1.25 kg approx.
<b>Magnetic coils</b>	
Windings	500 each
Magnetic field	0 – 3.37 mT
Connectors	Coaxial power connectors
Dimensions	20 mm x 74 mm diam. approx.
Weight	0.2 kg approx.
<b>Control console</b>	
Probe input	4-pin Lemo socket
Coil connectors	Sawtooth current source, 0–250mA, 50ms, pair of co-axial connectors
Magnetic output	Proportional to coil current, 0-1 V, BNC
Signal output	Resonance signal, 0-1 V, BNC socket
Frequency range	45 to 75 MHZ approx.(ESR) 10 to 15 MHz approx. (NMR)
Dimensions	170x105x45 mm <sup>3</sup> approx.
Weight	0.5 kg approx.
ESR/NMR Basic Set includes a basic unit, pair of coils, control panel & Plug-in power supply, 12 V AC.	

### ESR Supplementary Set ATL-188501

SPECIFICATIONS	
A	ESR probe-head with radio frequency coil.
B	A sample of DPPH (2,2-diphenyl-1 picrylhydrazyl).
C	An empty control sample tube for comparison.
D	Two mounting rings.
E	Two mounting cylinders.



### Analog Oscilloscope 35 MHZ 2CH ATL-11175



## Electromagnet ATL-541

SPECIFICATIONS	
Operation mode	CH1, CH2, -CH1, ALT, CHOP, ADD, XY
Band width	30MHz
Rise time	< 11.7ns
Deflection coefficient	5mV/div, -20V/div, 12 steps
Input Impedance	1M ohm/25pF
Time coefficient	50ns/div, -200ms/div, 21 steps
Operation mode	Auto, Normal, TV
Trigger source	CH1, CH2, ALT, LINE, EXT
Trigger coupling	DC, AC, LFR, HFR, TVV, TVH
Screen size	80mm x 100mm
Supply voltage	230V, 50Hz

## NMR Supplementary Set ATL-189021



SPECIFICATIONS	
Connections	Four-pin lemo plug
Magnetic Field	approx. 300 mT
A	NMR probe-head with radio frequency coil.
B	A permanent magnet giving a highly uniform field.
C	A sample of glycerine.
D	A sample of polystyrene.
E	A sample of Teflon.
F	An empty control sample tube for comparison.
G	Two mounting discs.

## HF Patch Cord ATL-11255



SPECIFICATIONS	
Impedance	50 Ohm
Connector	BNC to BNC
Length	1m
Shielded patch cords for low-loss, low-capacitance transmission of high-frequency signals; equipped at either end with a BNC plug.	

## ►► Regulatory compliances



## ►► Corporate Social Responsibility

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