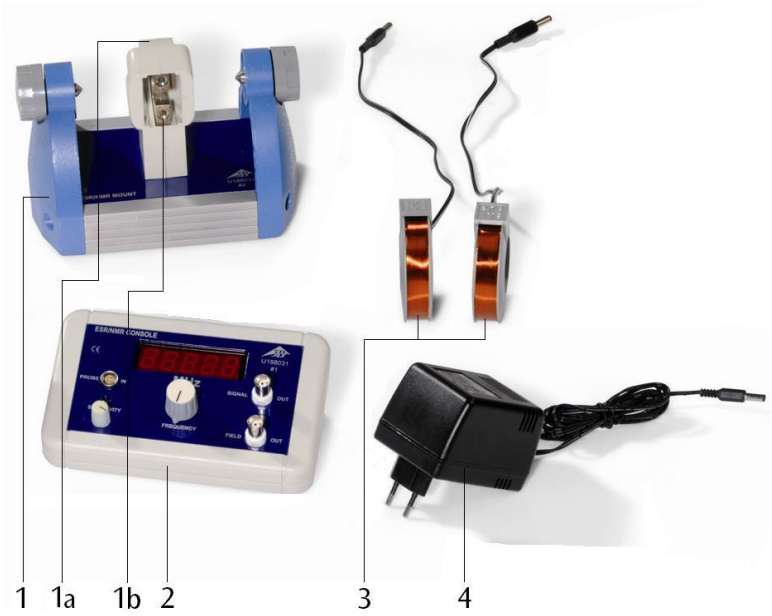
ESR/NMR Basic Set

1000637 (115 V, 50/60 Hz)
1000638 (230 V, 50/60 Hz)

Instruction sheet

10/15 ALF



1 Basic unit
1a Sample holder
1b Test probe holder
2 Control console
3 Pair of magnetic coils
4 Plug-in power supply

1. Description

The basic equipment set for ESR/NMR experiments is used in conjunction with the ESR supplementary set (1000640) to investigate electron spin resonance (ESR) in DPPH (diphenyl picryl hydrazyl) and with the NMR supplementary set (1000642) to study nuclear magnetic resonance (NMR) in glycerine, polystyrene and Teflon.

Resonances can be observed as a result of transitions induced by high frequencies due to changes in an external magnetic field. Resonance absorption curves can be viewed using a simple dual-channel oscilloscope or with the 3B NET*log*™ unit.

The ESR/NMR basic set numbered 1000637 is designed for 115 V (±10 %) mains voltage supplies, while 1000638 is for 230 V (±10 %).

2. Equipment supplied

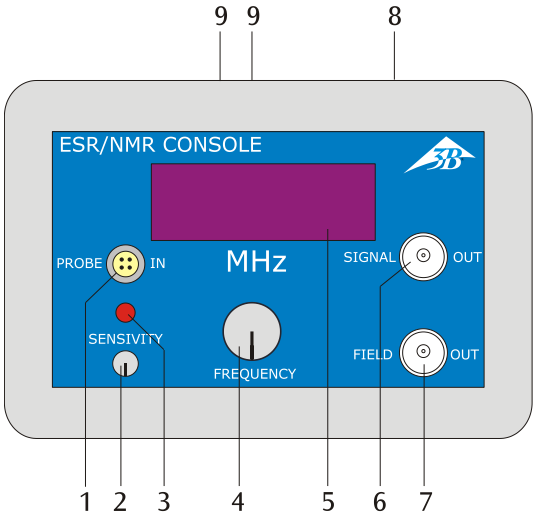
1 Basic unit
1 Pair of magnetic coils
1 Control console
1 Plug-in power supply, 12 V AC (230 V, 50/60 Hz)
or
1 Plug-in power supply, 12 V AC (115 V, 50/60 Hz)

The basic unit also has a mechanism for accommodating samples, as well as one for an ESR or NMR test probe (from 1000640 or 1000642) and others for a pair of magnetic coils and a permanent magnet (from 1000642).

The control console provides control and power-supply voltages for the test probe being used and for the pair of coils. It also provides a suitable signal for an oscilloscope and displays the value of the high-frequency signal in Hertz.

The pair of magnetic coils allows an adjustable magnetic field to be generated at the sample location.

3. Control console panel



1 Connection socket for test probe
2 Sensitivity trimmer
3 Sensitivity indicator
4 Frequency selector
5 Frequency display
6 Signal output
7 Magnetic field output
8 Socket for power supply
9 Coil connectors

4. Technical data

Basic unit

Dimensions:	165x105x135 mm³ approx.
Weight:	1.25 kg approx.

Magnetic coils

Windings:	500 each
Magnetic flux density:	0 − 3.37 mT
Connectors:	Coaxial power connectors
Dimensions:	20x74 mm diam. approx.
Weight:	0.2 kg approx.

Control console

Probe input:	4-pin Lemo socket
Coil connectors:	Sawtooth current source, 0 − 250 mA, 50 ms, pair of co-axial connectors
Magnetic field output:	proportional to coil current, 0 to 1 V, BNC socket
Signal output:	Resonance signal, 0 to 1 V, BNC socket
Frequency range:	45 to 75 MHz approx.(ESR) 10 to 15 MHz approx. (NMR)
Dimensions:	170x105x45 mm³ approx.
Weight:	0.5 kg approx.

5. Additionally required equipment

1 ESR supplementary set	1000640
or	
1 NMR supplementary set	1000642
1 Analogue oscilloscope, 2x30 MHz	1002727
2 High-frequency cables	1002746
alternatively	
1 3B NET*log*™ unit (230 V, 50/60 Hz)	1000540
or	
1 3B NET*log*™ unit (115, 50/60 Hz)	1000539
1 3B NET*lab*™	1000544
2 High-frequency cables, BNC/4-mm plug	1002748

6. Operation

- For set-up and experiment procedure see instruction sheets for ESR (1000640) and NMR (1000642) supplementary sets.

7. Care and maintenance

- Before cleaning the equipment, disconnect it from its power supply.
- Use a soft, damp cloth to clean it.

8. Disposal

- The packaging should be disposed of at local recycling points.
- Should you need to dispose of the equipment itself, never throw it away in normal domestic waste. Local regulations for the disposal of electrical equipment will apply.