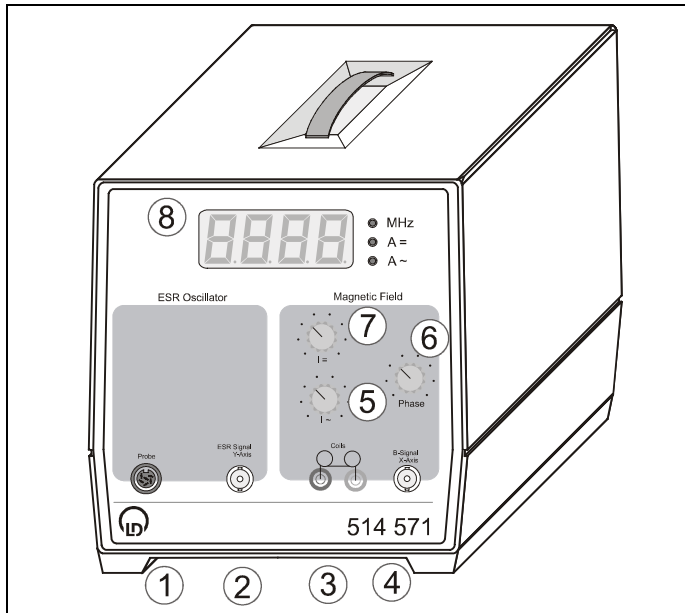


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Instruction sheet 514571

ESR Control Unit



- 1 Socket for connection to the ESR basic unit (probe holder)
- 2 Signal output
- 3 Output magnet supply
- 4 Modulation output
- 5 Modulation voltage adjusting Potentiometer
- 6 Phase shifter
- 7 D.C. voltage adjusting Potentiometer
- 8 Digital Display

Function

The ESR basic unit 514 55 is used in experiments on electron spin resonance, the ESR control unit 514 571 provides all the required voltages and also digitally indicates the frequency of the oscillatory circuit and measures DC and AC currents through the Helmholtz coils.

Measuring Principle:

A paramagnetic electron spin system - probe consisting of DIPHENYL-PICRYL-HYDRAZYL (DPPH) - placed between the coils of an r-f oscillatory circuit and applying a constant field, will absorb r-f energy thus measurably changing the impedance of the oscillatory circuit. The impedance change of the constant magnetic field as produced by the modulation can be displayed on an oscilloscope.

Note:

The predecessor unit 514 57 required a parallel connection of both Helmholtz coils, this ESR control unit in contrast requires a serial connection of both coils.

Technische Daten

- * magnetic field supply
 - 0 ... 15 V =
 - 0 ... 5 V ~ (overload protected)
- * Phase difference: adjustable
- * Display: 4 digits
- * Frequency measurement: 10 .. 130 MHz
- * Current measurement: 0 ... 1.5 A =, 0... 0.5 A ~
- * Mains connection: 230 V / 115 V, see label 50/60 Hz
- * Dimensions: 20 cm x 20 cm x 23 cm
- * Weight: ca. 3.5 kg

Examples of experiments:

- Verification of electron spin resonance
- Magnetic field as a function of resonant frequency (linearity of Zeeman interaction)
- Measurement of the gyromagnetic ratio and factor of g
- ESR line width
- Signal amplitude as a function of resonant frequency

for further details see leaflet P 6.2.6.2

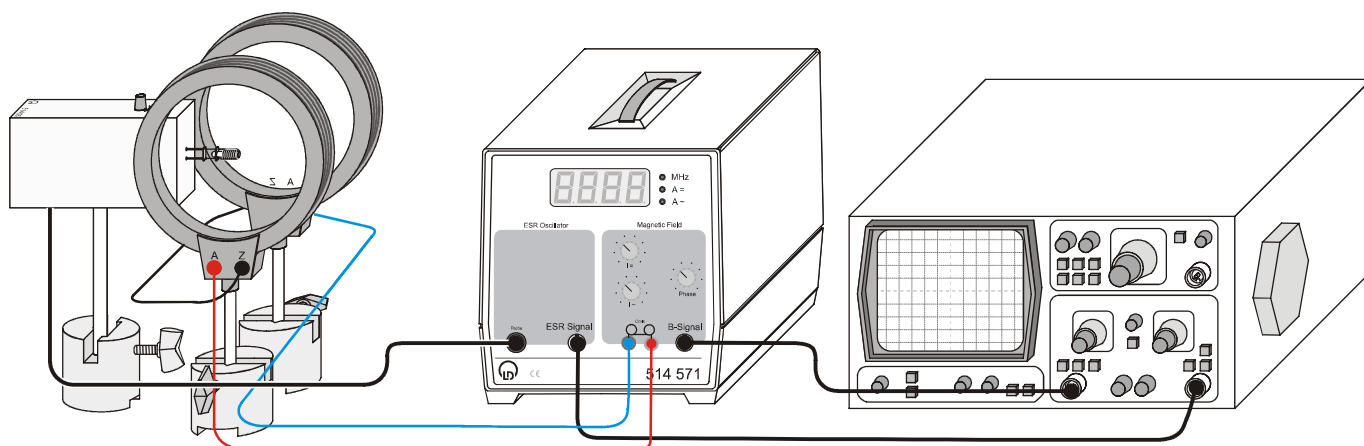


Fig 1: Experimental setup for electron spin resonance at DPPH P6.2.6.2