Physics | Chemistry · Biology | Technology

Lehr– und Didaktiksysteme
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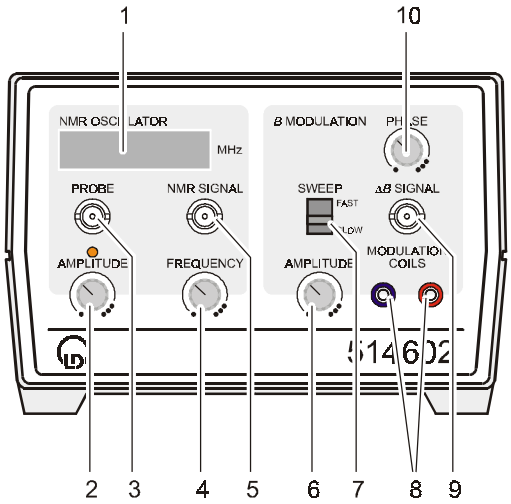


Instruction sheet 514 602

NMR supply unit (514 602)

1 Frequency display
2 Potentiometer for HF amplitude
3 Connection PROBE
4 Frequency controller
5 Connection NMR SIGNAL (amplified resonance signal)
6 Potentiometer for field modulation amplitude
7 Switch for sweep mode
7 Connection MODULATION COILS
9 Connection ΔB SIGNAL (phase-shifted modulation voltage)
10 Phase controller

Safety notes

The NMR supply unit complies with the safety requirements for electrical measuring, control and laboratory equipment in accordance with DIN EN 61010 Teil 1 and is designed according to Class I. It is intended for operation in dry rooms which are suitable for electrical equipment and devices.

If the NMR supply unit is used as prescribed, its safe operation is guaranteed. However, safety is not guaranteed if the device is improperly used or carelessly handled. If it has to be assumed that safe operation of the device is no longer possible, it has to be put out of operation immediately (e.g. in case of visible damage).

- Before using the NMR supply unit, examine the housing and the operating and display elements for damage. In case of visible damage, put the device out of operation and make sure that it is not used inadvertently.
- When using the device for the first time, check whether the value on the power plate (back of the housing) for the supply voltage is equal to the local mains voltage.

1 Description

In conjunction with an NMR apparatus consisting of the NMR probe (514 606), the U-core (562 11) and two coils (562 131), the NMR supply unit makes possible basic experiments on nuclear magnetic resonance with different samples at frequencies between 16.0 and 19.5 MHz.

The supply unit supplies the HF oscillating circuit in the measuring cell and the modulation coils of the NMR apparatus and, at the same time, serves as an amplifier for the resonance signal during the observation of the transitions of the nuclear spin in an external magnetic field induced by high frequencies. The phase shift between the sinusoidal modulation signal and the amplified resonance signal is compensated electronically if the phase controller is adjusted appropriately.

2 Technical data

High frequency:

Range:	approx. 16.0-19.5 MHz
Display:	6 digits, digital

Field modulation:

Fast Sweep:	approx. 30 Hz
Slow Sweep:	approx. 0.5 Hz
Modulation voltage:	1-12 V_{ss}
Phase shift:	approx. 0-90°

Signal amplification:

Gain:	approx. 200
Filter:	approx. 15-7000 Hz (Fast Sweep) approx. 0.15-90 Hz (Slow Sweep)

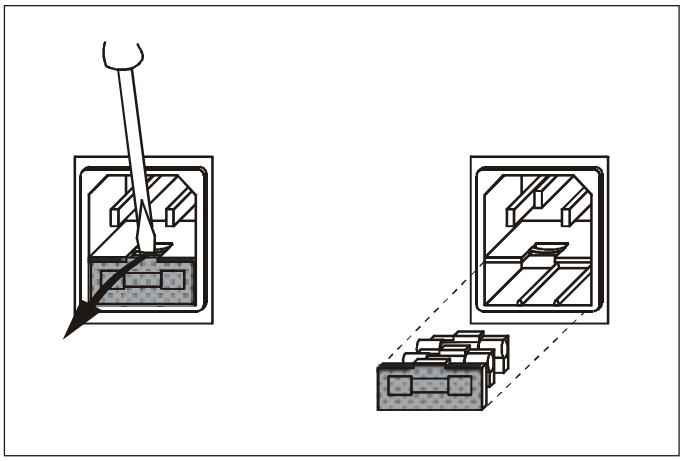
Connections:

NMR probe:	BNC socket
NMR signal (amplified resonance signal):	BNC socket
Modulation coils:	Safety experiment sockets
Phase-shifted modulation voltage:	BNC socket

General data:

Supply voltage:	see power plate on the back of the housing
Fuse:	see fuse plate on the back of the housing
Dimensions:	20 cm × 12 cm × 27 cm
Mass:	2.3 kg

3 Exchangeing the primary fuse



- Unplug the mains plug.
- Lever out the fuse holder.
- Replace the defective fuse with a new one.
- Insert the fuse holder.

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