COMPASSLab

Measurement unit

Product information

Ref. 1.0 (01/2026)

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1. Safety

Safety instructions

- Please read the following instructions carefully before operating the machine and refer to them as needed to ensure the continued safe operation of your machine.
- The appliance may only be installed and operated in dry, well-ventilated and dust-free rooms.
- Always check voltages and polarization of the adapter before connecting it.
- The unit must be securely placed in a vibration free environment. Adhere to the instructions on ambient conditions when setting up the device and before operation. Operational elements on the front of the machine (mains switch) must be easily accessible. The louvers at the bottom and front of the devices must be free at all times to allow sufficient heat transfer from inside the device.
- Users should not connect any devices other than those specified. This may cause damage to the device or other components.
- Care should be taken so that objects do not fall, and liquids are not spilled into the enclosure through any openings.
- Do not operate the device if the power cord, the power supply unit or the test unit are damaged!
- In case of damage, the appliance must only be opened by an authorized service technician. In this case, return the device for repair.

Caution: Samples coming out of the measurement unit can be cold or hot.

Caution: Handle cold or hot samples carefully.

Caution: Do not put flammable materials on or in the measurement unit or sample tube.

Caution: Do not put materials in or on the measurement and/or amplifier unit or sample tube that can emit dangerous/toxic fumes when exposed to temperatures that can be reached with the measurement device (<70°C).

Caution: Never let the VT system run unattended or leave the room while it is running.

This device is intended exclusively for non-medical research and educational use in controlled laboratory environments. Any use beyond the described purpose, in particular medical, diagnostic, or biological applications, is considered improper use and is strictly prohibited.

Notes on care:

- Remove any contamination with a suitable solvent.
- Do not use aggressive cleaning agents such as thinner or acetone for cleaning the surfaces or sample bore.

Transportation notes:

- Transportation of the device is only recommended in the transport case provided by the manufacturer.
- Avoid high shock loads and vibrations during transport. This may damage the control unit and the measurement units.

Any use not described in this manual, as well as modifications of the device or the use of non-approved accessories, is considered improper use and may result in hazards or damage to the equipment.

Operating instructions

- This high-quality instrument fulfills all of the technical requirements that are compiled in current CE guidelines. The characteristics of this product qualify it for the CE mark.
- This instrument is only to be put into operation under specialist supervision in a controlled electromagnetic environment in research, educational and training facilities (schools, universities, institutes and laboratories).
- Use only the provided cables for cabling/wiring. To ensure compliance, use only the provided manufacturer's approved power cord. The user is cautioned that changes or modifications to the equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- Electrostatic discharges may affect the function and reliability of the device.
- The unit contains electronic components that are very sensitive to electrostatic discharge (ESD). To avoid ESD, do not use the device on carpeted floors.
- This device is registered for business and industrial use and can be used in areas other than general households.
- The use on living or dead human or animal samples or tissues is not allowed.
- The product is no medical product.

2. Introduction

COMPASS stands for Critical Offset Magnetic Particle Spectroscopy and is a novel measurement technique for the highly sensitive characterization of magnetic nanoparticles. The method is based on the analysis of the nonlinear magnetic response of particles exposed to superimposed alternating and static magnetic fields.

Compared to conventional spectroscopic methods, COMPASS enables the detection of even very small changes in magnetic properties, for example those caused by particle interactions, environmental influences, or material parameters. This makes the system particularly suitable for research and development applications in the fields of magnetic nanoparticles, materials science, and applied physics.

3. Components and Assembly

The COMPASS Lab consists of multiple components:

COMPASS measurement unit

Drive console unit

Amp-Nk2 compact unit

optional:

VT unit

for more information about the components, please see specific documentation.

COMPASS Lab measurement unit

COMPASS Lab measurement unit front panel

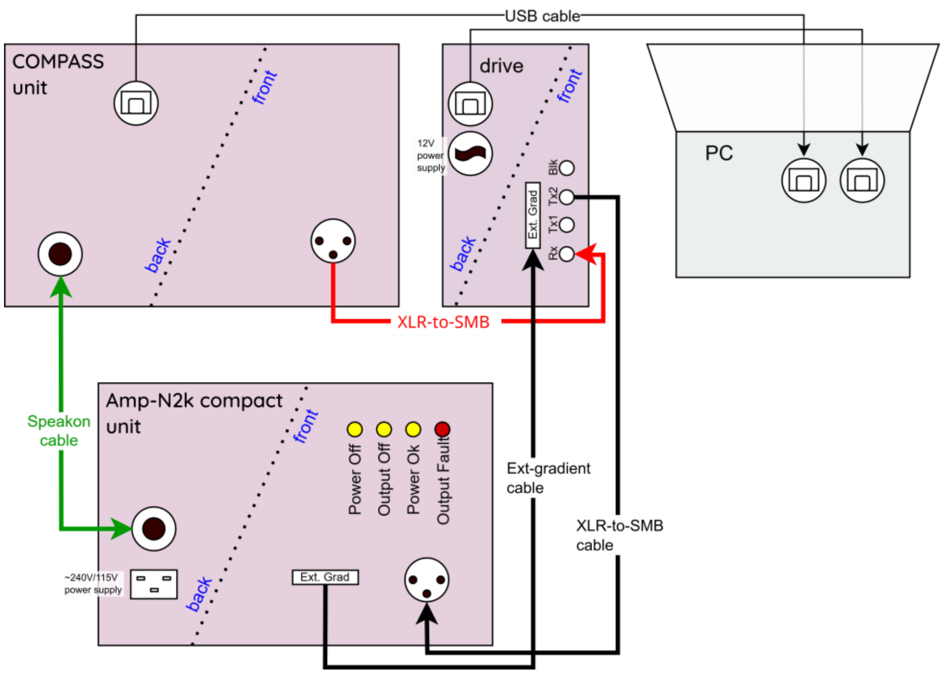
The COMPASS front panel of the measurement unit provides a 3 pole XLR connector (female) for the received signal.
The maximum voltage is < 100 Volts.

COMPASS Lab measurement unit back panel

The back panel of the COMPASS measurement unit consists of
1 × **USB connector** (type B) - provides operating information of the device (temperature signal, ID signal, etc.)
2 × **compressed air connectors** - use this as IN & OUT flow of an external compressed air unit.
1 × **SpeakON** (SL4MP) - provides the

Assembly

The components of the COMPASS Lab must be connected before operation.
Please switch-off all devices and unplug all power cores before assembling and cabling.



For more information, please read the document: COMPASS Lab cabling

4. How to use

1. Preparation

- Ensure that the system is installed according to the assembly instructions.
- Verify that all cables and connectors are securely connected.
- Ensure that ambient conditions comply with the specified operating range.

2. Power-up

- Switch on the amplifier and drive console units.
- Start the Octoview software and connect to the system.
- Allow the system to reach thermal equilibrium before starting a measurement.

3. Measurement operation

- Insert the sample carefully into the measurement unit.
- Start the measurement using the control software.
- Monitor system status and temperature signals during operation.

4. Shutdown

- Stop the measurement via the control software.
- Switch off all peripheral devices.

5. Reference to detailed instructions

Detailed step-by-step instructions for software operation and advanced measurement procedures are provided in the document COMPASS first steps.

5. Appendix

Technical specifications

COMPASS Lab measurement unit	
Operating temperature	5 °C to 35 °C
Maximum magnetic field strength (inside the bore)	30 mT (AC) + 30 mT (DC)
Maximum magnetic field strength (on the surface of the housing)	Top & bottom: < 6.5 G (0.650 mT) Sides: < 0.4 G (0.040 mT)
Maximum AC magnetic field frequency	75 kHz
Maximum power	< 200 W
Standby power	< 5 W
Maximum current (at the transmit coil)	45 A
Maximum input pressure	3 bar (43 psi)
Dimensions L × W × H	27 cm × 25 cm × 14 cm
Weight	< 5 kg

Maintenance and cleaning

Cleaning

Disconnect the device from the power supply before cleaning.
Remove dust and contamination from the housing using a soft, dry cloth or a slightly damp cloth if necessary.
Do not use aggressive cleaning agents, solvents, or abrasive materials.

Service

The device contains no user-serviceable parts.
Opening the housing or performing repairs is only permitted for authorized service personnel.

Guarantee

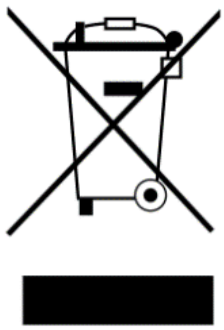
We guarantee the instrument supplied by us for a period of 24 months within the EU, or for 12 months outside of the EU. This guarantee does not cover natural wear nor damage resulting from improper handling.

The manufacturer is responsible for the safety and function of the instrument. Maintenance, repairs or modifications should only be performed by authorized personnel.

Waste disposal

The packaging consists predominately of environmentally compatible materials that can be passed on for disposal by the local recycling service.

This product does not belong into the household waste. For professional disposal send the device directly to the address below.



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6. Product Information

For further information about the product or the manufacturer, please visit our website

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