Lehr– und Didaktiksysteme
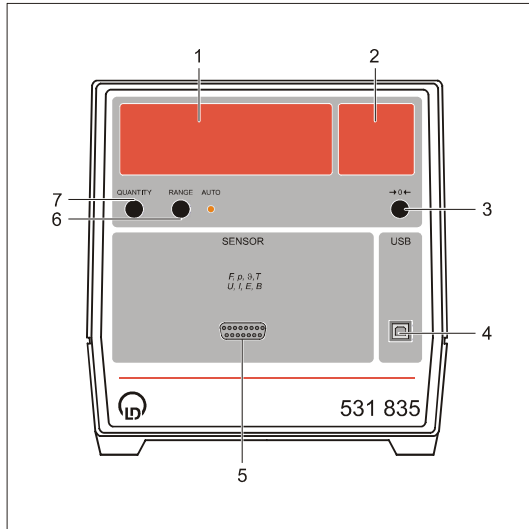LD Didactic GmbH
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02/05-W97-Hund

Instruction sheet 531 835

Universal measuring instrument physics (531 835)

1 Numerical display
2 Unit display
3 Pushbutton →0←
4 USB port
5 Sensor input
6 Pushbutton RANGE, with status LED
7 Pushbutton QUANTITY

Safety notes

The universal measuring instrument physics complies with the safety requirements for electrical measuring, control and laboratory equipment in accordance with DIN EN 61010 part 1, and it is constructed in compliance with safety class I. The device is intended for use in dry rooms that are suited for the operation of electrical equipment and devices.

If the device 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 is no longer possible (e.g. in the case of visible damage), shut the device down immediately.

- When putting the device into operation for the first time, check whether the value for the mains voltage indicated on the rating plate (back of housing) agrees with the local value.

- Before putting the device into operation, examine the housing for damage. In case of malfunction or visible damage shut the device down and make sure that it is not used inadvertently.

- Connect the device only to socket-outlets with grounded neutral wire and protective conductor.

- Replace a defective fuse only with a fuse that corresponds to the original value.

- Always keep the ventilation slots of the housing free in order to ensure sufficient air circulation.

- Allow only skilled persons to open the device.

1   Description

The universal measuring instrument physics (UMI Physics) is designed for use in lectures, demonstration experiments in the classroom and practical exercises. It has a large digital indicator and provides for the connection of numerous sensors S for measuring forces, pressures, temperatures, electric field strengths, magnetic flux densities, distances, light time-of-flight, counting rates of radioactive decays, voltages or currents.

If the device is connected to a computer, it is also possible to display and evaluate time-resolved measurement curves.

Meas. quantity	Suitable sensor S
Force	Force sensor S, ±50 N (524 042)
Force	Force sensor S, ±1 N (524 060)
Force	Centrifugal force unit S (524 068)
Relative pressure	Pressure sensor S, ±2000 hPa (524 064)
Relative pressure	Pressure sensor S, ±70 hPa (524 066)
Absolute pressure	Absolute pressure sensor S, 1500 hPa (524065)
Temperature	Temperature sensor S, NTC (524 044)
Temperature, differential temp.	NiCr-Ni adapter S (524 0673) with sensor
Electric field strength	Electric field meter S (524 080)
Magnetic flux density	Combi B-sensor S (524 0381)
Magnetic flux density	Axial B-sensor S, ±1000 mT (524 0382)
Magnetic flux density	Axial B-probe S, ±0.3 mT (524 0383)
Distance, propagation time of light	Laser motion sensor S (524 073)
Counting rate, pulses	GM counter tube S (524 0331)
Voltage, current	UI sensor S (524 062)

2   Operation

Sensor input (SubD15 socket)

for connecting a suitable sensor S. The connected sensor is recognized by the device automatically and the currently measured value is displayed automatically. If no sensor is connected, the open sensor input is displayed in the unit display.
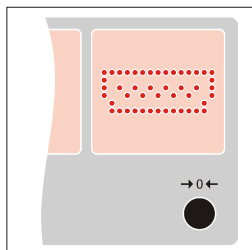
Pushbutton RANGE

switches cyclically from a measuring range to the next one or switches the automatic range selection on (status LED AUTO shines).

Pushbutton QUANTITY

switches cyclically from display of a measurement quantity (indicated by the unit) to the next one.

For voltage, current and magnetic flux density, the display can be switched over to RMS values (indicated by "~").

Pushbutton →0←

sets the current measured value to zero for the zero calibration.

In an RMS measurement of the magnetic flux density, only the constant component is compensated.

3   Technical data

Meas. quantity:	see instruction sheet of the respective sensor S
Range(s):	see instruction sheet of the respective sensor S
Range selection:	automatic or manual
Numerical display:	5-digit, 7-segment display
Unit display:	7x15 LEDs
Digit height:	25 mm
Mains voltage:	see rating plate on the back of the housing
Fuse:	see fuse plate on the back of the housing
Dimensions:	20 cm x 21 cm x 23 cm
Weight:	approx. 2 kg
Scanning rate:	max. 10,000 values/s (for measuring curve shapes on a computer)
Measured values storage:	16,000 values (for measuring curve shapes on a computer)
USB port:	compatible with USB 1.x and 2.0 (full speed, isolated)
Developer information:	http://www.ld-didactic.com/software/ cassy-s.html

4   Scope of supply

1   Universal measuring instrument physics

1   CASSY Lab software for Windows 98/ Me/ 2000/ XP or higher, with comprehensive help (unlimited use for the universal measuring instrument physics without activation code)

1   USB cable

5   Operation on a PC

5.1   Hardware and software installation

The installation of the hardware and software requires a properly configured computer with the operating system 98/Me/ 2000/XP or higher.

Hardware installation:

- Connect the UMI Physics to the computer via the USB cable.

When the UMI Physics is connected to the computer for the first time, it is recognized by the operating system automatically, and the necessary drivers are installed.

Under Windows 98, the driver installation has to be confirmed manually:

- Confirm the dialog windows which appear with "Continue" and have the Windows installation CD ready.

Software installation:

- Insert the CD with the CASSY Lab software.
- Call the program START.EXE.
- Select the desired language.

During the installation an activation code is requested. This code need *not* be entered for the UMI Physics.

After the installation, the software is found in the Start menu under "Programs" → "CASSY Lab".

CASSY Lab contains a comprehensive help for all of its functions. In order to get familiar with the program, it is recommended to call this help with F1 after starting the program or to read the manual on the CD-ROM.

CASSY Lab can be deinstalled in "Control panel" under "Software".

Updates of the software (extensions, error corrections) are free available on our Internet server http://www.ld-didactic.com/software/cassy-s.html. There you also find the Developer Information (incl. source code) for creating your own software for the universal measuring instrument physics.

5.2   Operation of the UMI Physics on a computer

If the connected UMI Physics was recognized during the start of CASSY Lab, a picture of the UMI Physics is displayed. After clicking on the input, the input is switched on. The measurement quantities, ranges and zero calibration are indicated in a settings window. The measurement quantity currently displayed on the UMI Physics can be selected with the pushbutton QUANTITY. The other two pushbuttons of the UMI Physics are inoperative.