PHYWE

Speed measuring attachment

11229-99

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Operating instructions

CE The unit complies with the corresponding EU guidelines

Fig. 1: Speed measuring attachment 11229-99.

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1 SAEFTY PRECAUTIONS

- Carefully read these operating instructions completely before operating this instrument. This is necessary to avoid damage to it, as well as for user-safety.
- Only use the instrument for the purpose for which it was designed.
- Only use the instrument in dry rooms in which there is no risk of explosion.
- Do not start up this instrument should there be visible signs of damage to it.
- The optical path is composed of non-visible infrared radiation. Do not look into the emitter (optical path).

2 PURPOSE AND CHARACTERISTICS

The speed measuring attachment serves in combination with the ballistic unit/ballistic pendulum (order no.: 11229-00) for the determination of the starting speed of ball-shaped projectiles. The attachment contains two light barriers, which are fixed apart at a measurement distance of *l* = 20 mm in the direction of projection. The speed of the projectile is shown directly on a 4-digit LCD display in the dimension m/s.

3 FUNKTIONAL AND OPERATING ELEMENTS

1 *4-digit LCD display*

2 *Pair of light barriers*

3 *2 screws*
for attaching the attachment to the catapult of the throwing device

4 *Reset-button*
Press and hold for 5 seconds to switch on and off and to prepare a new measureme

5 *USB-C socket*
for external power supply (chapter 5.2)

4 NOTES ON OPERATION

CE This high-quality instrument fulfills all of the technical requirements that are compiled in current EC 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). This means that in such an environment, no mobile phones etc. are to be used in the immediate vicinity. The individual connecting leads are each not to be longer than 2 m.

The display may go outside of the given tolerances when the instrument is used in the vicinity of fields from strong high frequency emitters (e.g. radios). ESD's (electrostatic discharges), bursts of energy (rapid interference signals from the line) and high frequency fields can cause changes to the operating mode of the instrument and the loss of data. The following measures reduce or do away with disturbances: Avoid fitted carpets; ensure potential equalization; carry out experiments on a conductive, earthed surface, use screened cables, do not operate high-frequency emitters (radios, mobile phones) in the immediate vicinity. After a total blackout, carry out a "Reset" (new start) of the complete system.

5 HANDLING

Use the two screws (3) to attach the speed measuring attachment to the catapult of the launcher.

The measuring attachment is switched on by pressing the reset button (hold down for 5 seconds). A new measurement is also prepared when the reset button is pressed.

When not in use, the device switches to standby mode after 5 minutes.

5.1 Battery / charging process / safety

This device is powered by a long-life Li-Ion battery (type 703048) and can be operated independently of the mains.

To charge, connect the device to the USB charger using a USB-C connection cable. The LED lights up red during the charging process. Once the charging process is complete, the LED lights up green.

- Only use the enclosed charger. Incorrect chargers can lead to overheating, overcharging and other safety problems.
- Avoid extreme temperatures. Li-ion batteries should not be exposed to extreme heat or cold, as this can impair their performance and lead to dangerous conditions.
- Avoid discharging Li-ion batteries completely. It is advisable to charge the batteries before they reach a critically low charge level.
- Protect Li-ion batteries from mechanical damage. A damaged casing can lead to a short circuit and fire hazard.
- Remove the charger no later than 4 hours after the charging process has been completed. Otherwise the battery life may be shortened.

5.2 Power supply

Power supply unit with USB socket and USB to USB-C connection cable.

6 TECHNICAL DATA

(typical for 25°C)
Operating temperature range 5...40°C
Relative humidity < 80%

LED-Display	4-digit; *h* = 9 mm
Measurement range	0.02...9,99 m/s
Input	5V/500 mA
Power	3.7V, 1000mAh
Light barrier spacing	20.0 mm
Steel sheet housing (mm)	45 x 150 x 37 (B, H, T)
Weight	approx. 0.25 kg

Power supply unit with USB socket

Input	100 – 240 V~, 50/60 Hz, 0,4 A
Output	5V DC, 2,0 A

USB to USB-C connection cable

Battery	Polymer Lithium-Ion Lithium Cobalt Oxide ($LiCoO_2$)
Type:	703048
Voltage:	3,7V
Power	3,7 Wh (1000 mAh)

7 PARTS SUPPLIED

- Speed measurement attachment 11229-99
- 2 Screws M4 x 50 / 1 hexagon srewdriver
- Power supply unit with USB to USB-C connection cable

8 WASTE DISPOSAL

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

Should you no longer require this product, do not dispose of it with the household refuse.

Please return it to the address below for proper waste disposal.

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9 NOTES ON BATTERY AND RECHARGEABLE BATTERY DISPOSAL

As we sell batteries and rechargeable batteries or devices containing batteries and rechargeable batteries, we are obliged under the Battery Act (BattG) to inform you of the following:

Batteries and rechargeable batteries may not be disposed of with household waste, but you are legally obliged to return used batteries and rechargeable batteries. Used batteries may contain harmful substances that can damage the environment or your health if they are not stored or disposed of properly. Batteries also contain important raw materials such as iron, zinc, manganese or nickel and are recycled. You can either send the batteries back to us after use or return them free of charge in the immediate vicinity (e.g. in shops or at municipal collection centres). Batteries or rechargeable batteries that contain harmful substances are labelled with the symbol of a crossed-out dustbin.

The symbols shown on the batteries or rechargeable batteries have the following meaning: The crossed-out wheelie bin symbol means that the battery must not be disposed of with household waste.