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Betriebsanleitung Handstroboskop



Handstroboscope operating instructions

Notice d'utilisation stroboscope portable

Istruzioni per l'uso dello stroboscopio manuale

Instrucciones de uso – Estroboscopio de mano

Manual de instruções Estroboscópio manual

Gebbruiksaanwijzing handstroboscoop

Bruksanvisning bärbart stroboskop

ハンディ・ストロボコープ操作説明書

手提式频闪观测仪使用说明书

핸드타입 스트로브스코프 작동 설명서

Specification

General Parameters

Range	30 ... 12,500 FPM (flashes per minute)
Accuracy	+/- 0.01 % from Display +/-1 digit
Resolution	+/-1 digit
Repeatability	+/-1 digit
Display	5 Digit LCD
External Trigger Input	0 ... 5 V DTL/TTL compatible 3,5 mm / 1/8" standard connector Uout = 7,2 V unregulated
Line Power Input	100 ... 240 V, 50/60 Hz incl. 4 area connector pins

Flash Tube Parameters

Longevity	200,000,000 flashes (@ 6,000 FPM)
Flash Duration	< 9 us
Light Emission / Range	1,200 Lux / 20 cm / 8" (@ 4,500 FPM)
Flash Colour	6,000 ... 6,500 K
Flash Energy	Max. 170 mJ

Specification battery*

Rechargeable battery	Lithium ion battery pack
Continuous Use Time	> 2h @ 1,500 FPM on 23°C / 73° F
Battery Protection	Yes
Recharging Time	Approx. 5 h
Overload protection	Yes

Housing

Material	ABS
Size	240 x 65 x 40mm / 9,75 x 2,75 x 1,75 inch
Weight	415g (300g AC only, without battery pack)

Ambient Conditions

Ambient Temp	0 ° ... 40 °C (32° ... 114°F)
Storage Temp	-25 °C ... 70 °C (-10 ... 125°F)
Humidity	Max. 95 % not condensed

Certifications

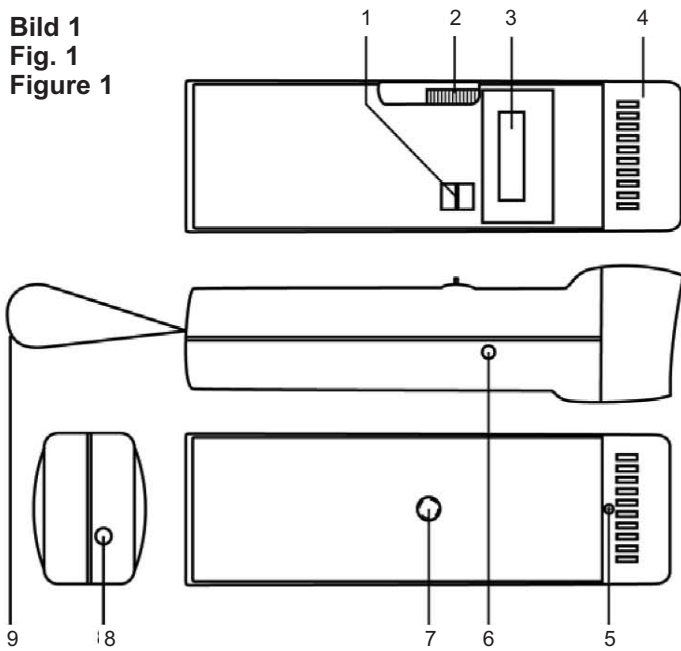
EMV / EMC 2004/108/EC
EN 60065:2006
2006/95/EC



Printed CE-Conformity on request

* valid only for handstroboscope with battery pack

Bild 1
Fig. 1
Figure 1



1. EIN/AUS
ON/OFF
MARCHE/ARRET
2. STELLRAD ZUR GROB- UND FEINEINSTELLUNG
COARSE AND FINE ADJUSTMENT KNOB
MOLLETTE DE REGLAGE FIN ET GROSSIER
3. LCD ANZEIGE
LCD DISPLAY
AFFICHEUR LCD
4. REFLEKTOR
REFLECTOR
REFLECTEUR
5. REFLEKTORSCHRAUBE
REFLECTOR SCREW
VIS DU REFLECTEUR
6. EXTERNER TRIGGERANSCHLUSS
EXTERNAL TRIGGER INPUT JACK
CONNECTEUR EXTERNE DE DECLENCHEMENT
7. STATIVANSCHLUSS
TRIPOD SCREW HOLE
POINT DE FIXATION DU TREPIED
8. LADEGERÄTANSCHLUSS
BATTERY CHARGER JACK
PRISE DE RACCORDEMENT DU CHARGEUR
9. FANGKORDEL
LANYARD
LANIERE

Bild 2
Fig. 2
Figure 2

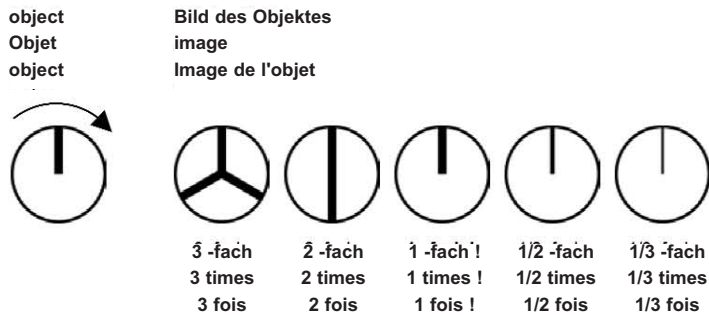


Bild 3
Fig. 3
Figure 3

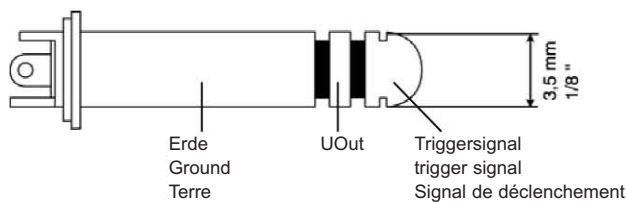
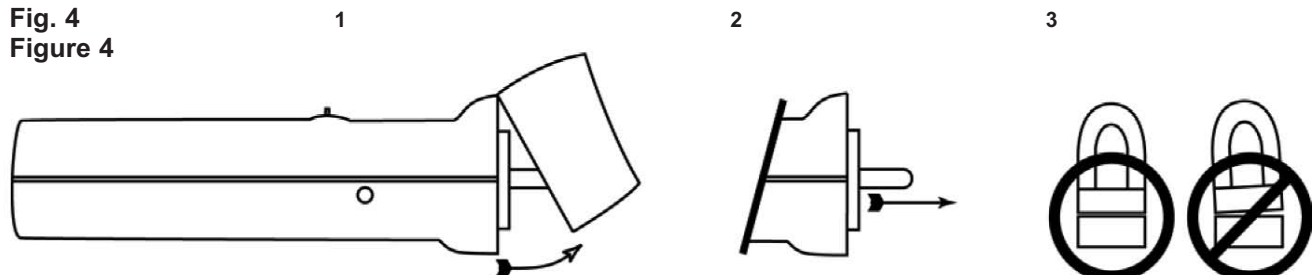


Bild 4
Fig. 4
Figure 4



EN Operating Instructions Handstroboscope

These operating instructions are an integral part of the device. They must be kept in an accessible place and passed on to subsequent users. **If anything is unclear, please contact your supplier.** The manufacturer reserves the right to further develop this device without having to document it. Your supplier will be happy to inform you as to how up-to-date these instructions are.

1. Intended use

This device is for testing the movement of rotating and vibrating objects. It should only be used in accordance with these operating instructions. Modifications to the device are not permitted. The manufacturer shall not be liable for damages resulting from improper use. This will also void the warranty.

2. Safety instructions

DANGER HIGH VOLTAGE! Only open the device to change the flash lamp (see Chapter 5).

WARNING! In stroboscopic light moving objects appear to be stationary or slow moving. Never touch the objects.

WARNING! Do not use the device in potentially explosive areas.

WARNING! Store the device in a dry place. Protect the device against dripping and splash water during operation. Never place objects filled with water (e.g. vases) on top of the device. Never insert metal objects into the ventilation openings of the casing.

WARNING! The stroboscopic light can cause epileptic fits in some people.

WARNING! Risk of explosion! Do not expose the rechargeable battery to excessive heat (direct sunlight, naked flames, etc.) (Only for battery-powered devices)

CAUTION! Repairing the device and replacing the battery must be carried out by the manufacturer or the supplier.

CAUTION! The electronic components of the device, the rechargeable battery and the flash tube contain environmentally hazardous substances. Always dispose of them in accordance with national environmental regulations.

3. Operation

Recommendation (only for battery-powered devices): Prior to initial operation, use the mains adapter to charge the rechargeable battery. Do not charge the battery at temperatures below 0° C.

- Aim the device at the moving object and switch it on (Fig. 1, 1).
- The device flashes at the last set frequency. The display (Fig. 1, 3) shows the set flash frequency in "flashes per minute" (FPM).
- Setting the flash frequency via the knob (Fig. 1, 2)

The stages at which the frequency changes depend on the rotation. If the flash frequency corresponds to the movement frequency, a stationary image appears. As you approach the movement frequency, the object appears to move slowly.

INFORMATION! Stationary images do not only appear with moving frequency, but also for multiples and fractions of the same (see Fig. 2).

Practical analysis of movement frequency

- Search for a stationary image by rotating the knob
- Compare the image pattern and the contrast for multiples and fractions of this flash frequency.

The flash frequency at which the single image appears with the greatest contrast is the movement frequency.

4. Special messages on the display

- **Low Bat** constant: The rechargeable battery is almost flat. From the moment this first appears, the device has a remaining operating time of approx. 6 minutes. (Only for battery-powered devices)
- **Low Bat** flashing: The rechargeable battery is flat. The device switches to power-saving mode to avoid a sudden total discharge. (Only for battery-powered devices)

CAUTION! If the **Low Bat** message flashes, the device stops measuring and must be switched off. (Only for battery-powered devices)

- **Ext:** External triggering
- **E1:** Reflector is not fastened correctly

CAUTION! If **E1** appears, the device must be switched off and the reflector fastened correctly using the reflector screw.

5. Replacing the flash lamp

DANGER HIGH VOLTAGE!

- Never use the device without a reflector.
- Never insert the reflector screw if the reflector is not in place. Otherwise there is a risk of electric shock.

CAUTION! Only use the manufacturer's original flash lamps. Never touch the flash lamp with your bare hands.

- Switch off the device
- Unscrew the reflector screw (Fig. 1, 5)
- Remove the reflector (Fig. 4, 1)
- Remove the old flash lamp (see Fig. 4, 2)
- Use a dust and grease-free cloth to insert the new flash lamp with the mark at the top.
- Use the screw to re-attach the reflector.

CAUTION! Make sure the flash lamp is installed correctly in the socket. If it is not inserted correctly, the light output of the reflector will be reduced (see Fig. 4, 3).

6. Connections

Trigger signal connection (Fig. 1, 6)

CAUTION! Do not trigger the device with signals over 12,500 Hz.

INFORMATION! If an external trigger signal is connected, the flash frequency is automatically adjusted to it and shown on the display. The knob (Fig. 1, 2) does not function.

The device includes a plug suitable for the input socket. Arrangement of the plug contacts is displayed in Fig. 3.

Recommended: Shielded cable, max. 3 m.

Mains adapter connection (Fig. 1, 8)

CAUTION!

- Only use the supplied mains adapter.
- Please observe the operating instructions of the mains adapter.

The handstroboscope can be used with or without the mains adapter. (Only for battery-powered devices.) When the device is connected via the mains adapter, the internal lithium-ion rechargeable battery is on charge. (Only for battery-powered devices)

7. Scope of delivery

- handstroboscope
- Operating instructions
- Device case
- Mains adapter and country-specific adapter
- Plug for trigger input

8. Accessories, optional

- Spare flash lamp (space provided in the device case)
- Belt-clip holster
- Tripod