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PCE-DSX 20 Stroboscope User Manual

**User Manual
PCE-DSX 20 Stroboscope**

User manuals in various languages (français, italiano, español, português, nederlands, türk, polski, русский,)
can be found by using our product search on: **www.pce-instruments.com**

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v1.0

Contents

Safety notes

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel. Damage or injuries caused by non-observance of the manual are excluded from our liability and not covered by our warranty.

- The device must only be used as described in this instruction manual. If used otherwise, this can cause dangerous situations for the user and damage to the meter.
- The instrument may only be used if the environmental conditions (temperature, relative humidity, …) are within the ranges stated in the technical specifications. Do not expose the device to extreme temperatures, direct sunlight, extreme humidity or moisture.
- Do not expose the device to shocks or strong vibrations.
- Be careful with rotating objects! Even if they appear motionless in the stroboscopic light, the risk of injury is high.
- Do not look directly into the flash as this could injure your eyes.

- Do not point the stroboscope at other people. Light pulses of more than 5 Hz may cause people with photosensitive epilepsy to suffer a seizure.
- Do not touch the lamp with bare hands.
- The case should only be opened by qualified PCE Instruments personnel.
- Never use the instrument when your hands are wet.
- You must not make any technical changes to the device.
- The appliance should only be cleaned with a damp cloth. Use only pH-neutral cleaner, no abrasives or solvents.
- The device must only be used with accessories from PCE Instruments or equivalent.
- Before each use, inspect the case for visible damage. If any damage is visible, do not use the device.
- Do not use the instrument in explosive atmospheres.
- The measurement range as stated in the specifications must not be exceeded under any circumstances.
- Non-observance of the safety notes can cause damage to the device and injuries to the user.

We do not assume liability for printing errors or any other mistakes in this manual.
We expressly point to our general guarantee terms which can be found in our general terms of business.
If you have any questions please contact PCE Instruments. The contact details can be found at the end of this manual.

Specifications

Function	Range	Resolution	Accuracy
Flashes / speed	50 … 35000 RPM/FPM	<1000 PRM: 0.1 RPM <9999 RPM: 1 RPM <35000 RPM: 10 RPM	±(0.05 % of rdg. + 2 dgt.)
Flash frequency	0.833 … 583.3 Hz	<599.9 RPM: 0.001 Hz <5999 RPM: 0.01 Hz <35000 RPM: 0.1 Hz	±(0.05 % of rdg. + 2 dgt.)
Phase shift	0…359°	1°	±(0.1% of rdg. + 2 dqt.)
Ext. trigger	0 … 1200 ms	<1000 PRM: 0.1 RPM <9999 RPM: 1 RPM <35000 RPM: 10 RPM	±(0.1% of rdq. + 2 dgt)
Level ext. trigger		High: 2.5 … 12 V Low: <0.8 V	
Lamp type		Xenon flash	
Flash response time		10 30 ps	
Colour temperature		6500 K	
Flash output		8 joules	
Beam angle		80 °	
Power supply		PCE-DSX 20: 230 V AC 50/60 Hz PCE-DSX 20-US: 110 V AC 50/60 Hz	
Power consumption		240 mA © 3600 FPM	
Operating conditions		0 50 °C / 32 122 °F; max. 80 % RH	
Dimensions		230 x 110 x 150 mm / 9 x 4.3 x 5.9″	
Weight		approx. 1145 g / 2.5 lbs	

Delivery scope

1 x stroboscope PCE-DSX 20
1 x plug for trigger input / output
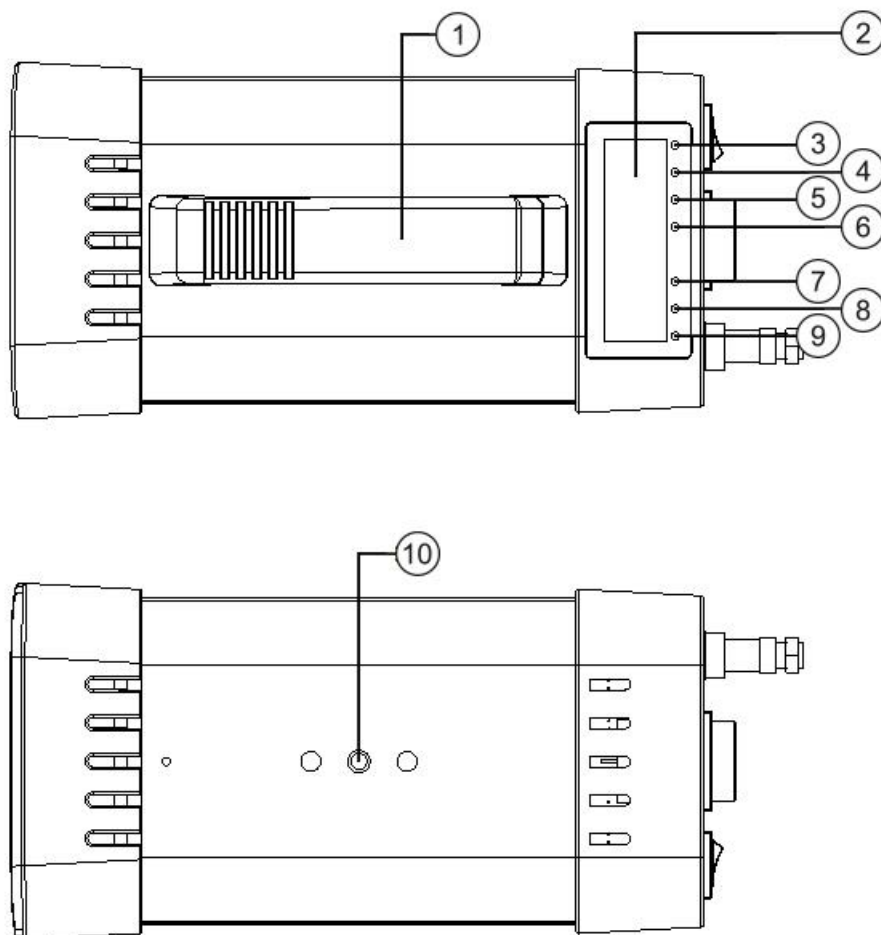1 x power cable
1 x user manual

System description

Front and back
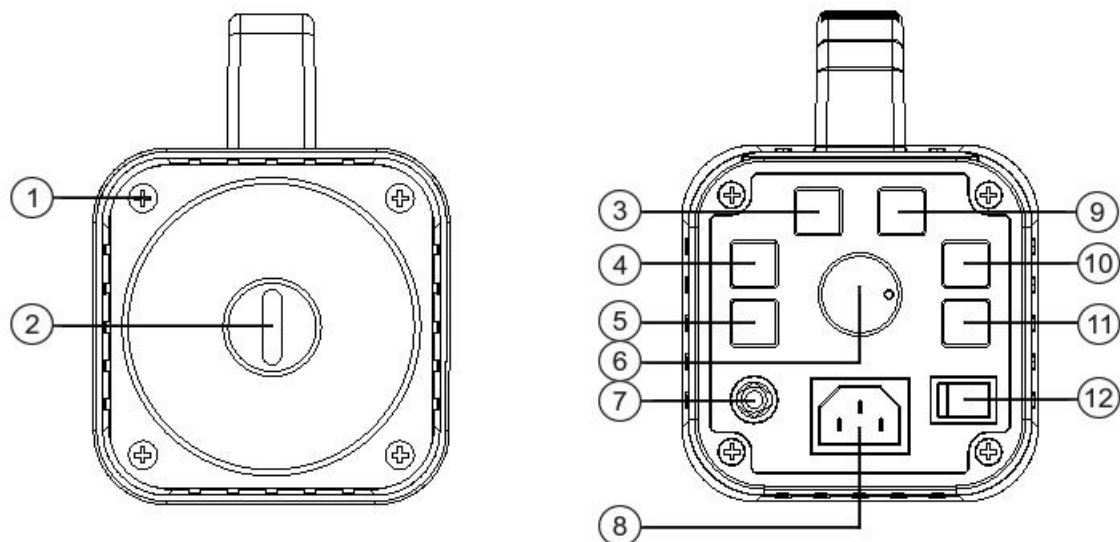
① Screws protective glass	⑦ Ext. trigger input / signal output
② Xenon flash lamp	⑧ 230 V AC input
③ Internal / external selection key	⑨ MODE key
④ Key X 2 (doubling)	⑩ Key +
⑤ Key ÷2 (halving)	Key –
⑥ + / – rotary switch	On / off switch

Top and bottom

① Handle	⑥ HZ mode LED
② Display	⑦ Internal mode LED
③ RPM mode LED	⑧ External mode LED
④ DEG mode LED	⑨ Trigger mode LED
⑤ mSec mode LED	⑩ Tripod thread

Operation

Preparation

- Before first use, remove the film from the front protective glass and the display.
- Connect the stroboscope to the power supply using the power cable.
- Make sure that the voltage supply values indicated on the type plate correspond to your mains supply.

Set flash frequency

Quick adjustment
Use the X 2 and ÷2 keys to quickly change the flash frequency.
"X 2" doubles the currently set flash frequency.
Example based on flash frequency 100/min: 100 X 2 200 X 2 400
"÷2 " halves the currently set flash frequency.
Example based on flash frequency 400/min: 400 ÷ 2 200 ÷ 2 100

Moderate adjustment

Use the + / – rotary switch at the rear side for moderate flash frequency adjustment. Turning to the right increases the flash frequency and turning to the left decreases the flash frequency. When turning slowly, only the last digit of the flash frequency is changed. When turning faster, the tens or hundreds of the flash frequency are changed.

Fine-tuning

Use the "+" and "-" keys for fine adjustment. Per keystroke, the last digit of the flash frequency is changed by the value 1. Holding the key changes the tens or hundreds of the flash frequency.

Rotational speed measurement

- Place a unique mark on the object to be measured and switch on the machine.
- Switch on the stroboscope via the switch on the back.
- Use the "Int / Ext Signal" key to select the Internal option.
- Aim the light cone at the object to be measured.
- Set a flash frequency that is above the expected speed of the object to be measured.
- Change the flash frequency as described in chapter 5.2 until the mark shows a single standing image. If 2, 3 or more standing marks are visible, reduce the flash frequency until only one standing mark is visible.
- To check, double the flash frequency with the "X 2" key. Now you should see 2 opposite markings. Double the flash frequency again with the "X 2" key. Now you should see 4 standing marks in a cross arrangement.

External input

- Connect an external signal cable to the signal input on the rear side. (connector plug is included in the delivery scope)
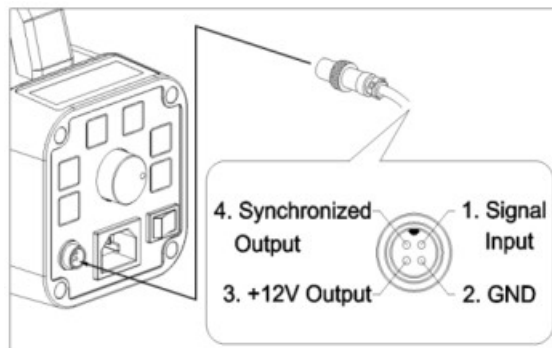

- Switch on the stroboscope via the switch on the back.
- Use the "Int / Ext Signal" key to select the External option.
- Within this setting, it is not possible to adjust the flash frequency on the device.

An external trigger signal that is outside the controllable flash frequency of the stroboscope is signalled by flashing of the display and the flash triggering is set.

Rotational speed

-
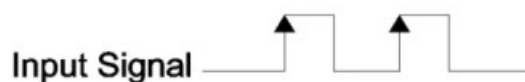
Select speed with the "MODE" key.

- As soon as an external signal is present, the stroboscope flashes in time with the external signal. The corresponding rotational speed is shown on the display.

Phase shift delay mode (ms/degree)
If the input signal is 360 ° (see sketch), you can delay the flash by up to 359°. A correct setting is only possible with a stable trigger signal.
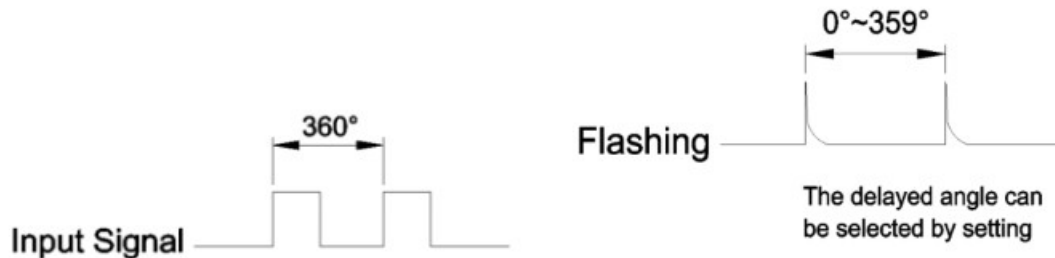
- Use the "MODE" key to select deg or mSec.
- The flash delay is changed with the "+ / – rotary switch".

 The flash frequency is maintained but, depending on the setting, triggered with a delay.

Application example
You want to view a rotating object with external triggering.
The viewing area or the mark of the rotating object is outside or not perfectly within your field of view. With the phase shift / delay of the flash triggering, you can let the field of view / the marking move optically around the axis of rotation to the ideal position.

Synchronised output / trigger output

The output signal is output via the "Ext. triggering / signal output" socket.
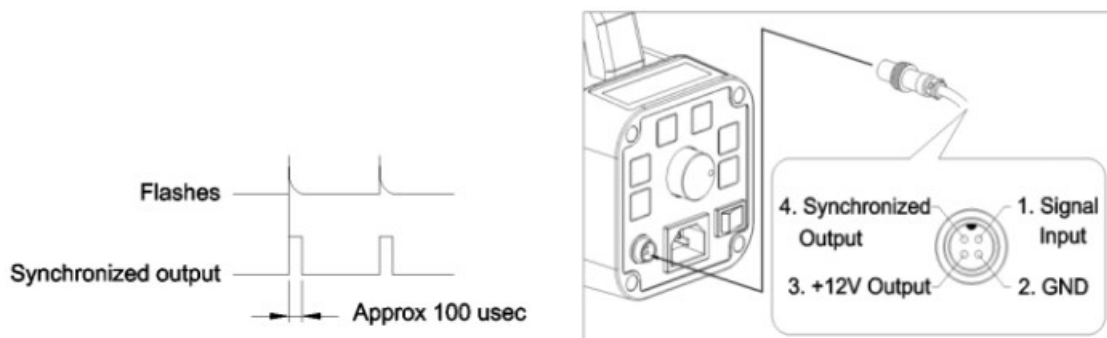
Movement analysis

- Set the stroboscope ideally as described in chapter 5.3.
- Now slowly press the "+ / – rotary switch". This triggers a slow motion effect that allows you to view the movement more closely.

Notes

Duration of use

The maximum time of use of the stroboscope per measurement should not exceed the following times. The pause between measurements should be at least 10 minutes.

Flash frequency	Duration
<2000 RPM	4 hours
2001 … 3600 RPM	2 hours
3601 … 8000 RPM	60 minutes
>8000 RPM	30 minutes

Replacing the flash lamp

The flash lamp must be replaced if the unit flashes erratically at a set flash frequency of more than 3600. The lamp should be replaced by a qualified technician.

- Switch off the instrument and disconnect it from the power supply.
- Wait 15 minutes to allow all electronic components to discharge.
- Loosen the four screws of the lamp cover on the front side.
- Remove the protective glass and the reflector.
- Detach the flash lamp from the base.
- Insert a new flash lamp.
- Mount the reflector and the protective glass.
- Fasten the screws of the front cover.

Attention!
Do not touch the flash lamp with your fingers. Use protective gloves.

Warranty

You can read our warranty terms in our General Business Terms which you can find here: **https://www.pce-instruments.com/english/terms**.

Disposal

For the disposal of batteries in the EU, the 2006/66/EC directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste.
They must be given to collection points designed for that purpose.
In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law.
For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations.
If you have any questions, please contact PCE Instruments.

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Documents / Resources

PCE PCE-DSX 20 Stroboscope [pdf] User Manual
PCE-DSX 20 Stroboscope, PCE-DSX, PCE-DSX Stroboscope, 20 Stroboscope, Stroboscope

References

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- ◎ **iberica.es**
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- *ci* **Computer Instruments | Home**
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