

FLUKE®

820

Stroboscope

Users Manual

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Introduction

The 820 Stroboscope (the Product) uses an adjustable LED strobe light to show the movement of mechanical parts. The frequency range is 30 flashes per minute (FPM) to 300,000 FPM.

Contact Fluke

To contact Fluke, call one of the following telephone numbers:

- Technical Support USA: 1-800-44-FLUKE (1-800-443-5853)
- Calibration/Repair USA: 1-888-99-FLUKE (1-888-993-5853)
- Canada: 1-800-36-FLUKE (1-800-363-5853)
- Europe: +31 402-675-200
- Japan: +81-3-6714-3114
- Singapore: +65-738-5655
- Anywhere in the world: +1-425-446-5500

Or, visit Fluke's website at www.fluke.com.

To register your product, visit <http://register.fluke.com>.

To view, print, or download the latest manual supplement, visit <http://us.fluke.com/user/support/manuals>.

Safety Instructions

Warning

To prevent personal injury:

- When you use the Product, do not touch the moving target object. In stroboscopic light, object movement can appear still or slowed.
- Do not use the Product around explosive gas, vapor, or in damp or wet environments.
- Do not use the Product around personnel that are susceptible to epileptic seizures.
- Use the Product only as specified, or the the protection provided by the Product can be compromised.
- Do not use and disable the Product if it is damaged.

Symbols

Symbols used in the manual or on the Product are shown in Table 1.

Table 1. Symbols

Symbol	Definition
	Risk of danger. Important information. See manual.
	Do not dispose of this product as unsorted municipal waste. Go to Fluke's website for recycling information.
	Conforms to European Union directives.
	Battery

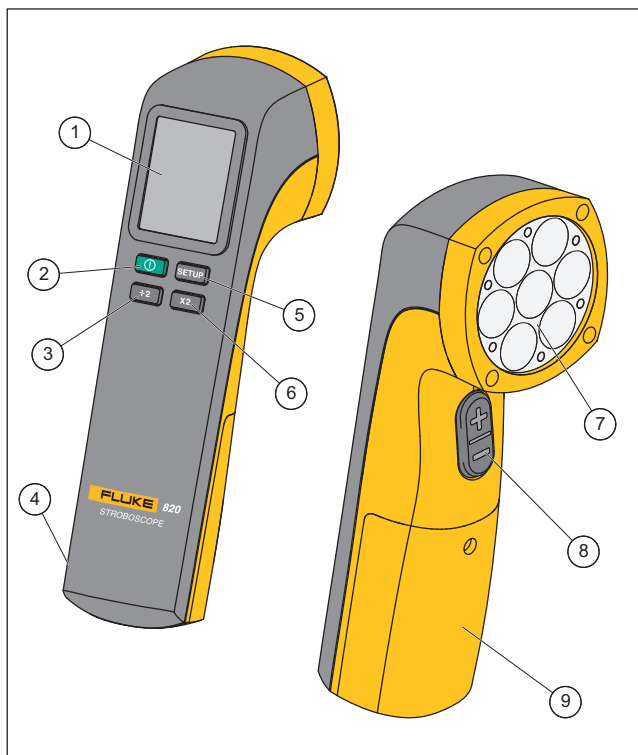
Standard Equipment

If an item below is missing or damaged, contact Fluke. The Product comes with:

- Users Manual
- International Registration Card
- Statement of Quality
- Hard Case
- Three AA Batteries
- External Trigger Input Connector

Features

Figures 1 and 2 and Tables 2 and 3 show the Product.

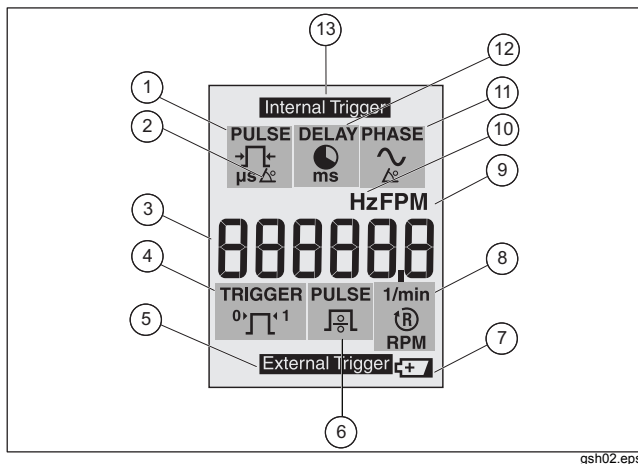


gsh01.eps

Figure 1. The Product

Table 2. The Product

Item	Description
①	Display
②	Power Button- Push  to energize the Product. Push and hold  for 2 seconds to de-energize the Product.
③	Push  to half the current set value. Speed of the scroll increases when  is held down.
④	External trigger connection
⑤	Setup- Push  to move between different settings and modes.
⑥	Push  to double the current set value. Speed of the scroll increases when this button is held down.
⑦	LED strobe
⑧	Push the trigger () up to increase the current set value. Push  down to decrease the current set value. Speed increases when  is held down.
⑨	Battery compartment



gsh02.eps

Figure 2. Display

Table 3. Display

Item	Description	Item	Description
①	Adjustable pulse width in microseconds (μ s). Adjustment is accessed in the Setup Menu.	②	Adjustable pulse width in degrees. Adjustment is accessed in the Setup Menu.
③	Primary display. Six digits with decimal.	④	Set external trigger edge to 0 for positive and 1 for negative. Adjustment is accessed in the Setup Menu.
⑤	External trigger input is connected.	⑥	Set the external trigger pulse divider from 1 to 255. Adjustment is accessed in the Setup Menu.

Table 3. Display (cont)

Item	Description	Item	Description
⑦	Low battery. Replace the battery.	⑧	1/min or RPM for external trigger input.
⑨	Flashes per minute (FPM), default at power up.	⑩	Flashes per second. Adjustment is accessed in the Setup Menu.
⑪	Pulse delay in degrees (Phase degree). Adjustment is accessed in the Setup Menu.	⑫	Pulse delay in milliseconds (ms). Adjustment is accessed in the Setup Menu.
⑬	Internal trigger		

Auto Off

To conserve battery power, the Product turns off after 15 minutes of non-use.

Low-Battery Indicator

The low-battery indicator is shown when the battery is low. When the low-battery indicator shows () , change the batteries.

Product Use

The subsequent sections tell you how to use the Product.

Push  to turn on the Product. Push and hold  for 2 seconds to turn off the Product.

Default Settings

To set the Product back to its default settings, push and hold  and .

The default settings are:

- 1000 FPM
- 16.6 Hz
- 333 Pulse μ s
- 2.0 Pulse deg
- 0 Delay ms
- 0 Phase deg
- External pulse divider = 1
- External trigger edge = positive

Setup Menu

When you push **SETUP**, the display shows the Setup menu. From the Setup menu, you can change these parameters:

- **Hz setting** – Adjust the flashes per seconds in Hz.
- **Pulse width in μs (μs)** – Adjust the flash intensity in microseconds of pulse width.
- **Pulse width in degrees ($\mu\text{s}/\text{Hz}$)** – Adjust the flash intensity in degrees of flash rate.
- **Delay in ms (ms)** – Adjust the delay time in milliseconds between internal trigger and flash. Precise adjustments of the observation position can be made with this setting.
- **Phase degree (Hz)** – Adjust the degrees of phase shift between internal trigger and flash. Precise adjustments of the observation position can be made with this setting.
- **External trigger pulse divider (Hz)** – Set the external trigger divider, which lets you adjust the flash rate.
- **External trigger edge ($0/1$)** – Set the external trigger edge to either positive (0) or negative (1).

Push **$\div 2$** , **$\times 2$** , and **Hz** to make adjustments to each parameter. Push **SETUP** to change parameters and to enter and exit the Setup menu.

Range

When the external trigger is $>5\text{ kHz}$, **-OL-** shows on the display.
When the external trigger is $<0.5\text{ Hz}$, **-UL-** shows on the display.

External Trigger

Use the External Trigger Input Connector for outside trigger sources. When the Connector is plugged into the Product (see Figure 1, item ④) the Product displays **External Trigger**. Figure 2 and Table 3 show what options are available when an external trigger is used. For Connector polarity information, see Figure 3.

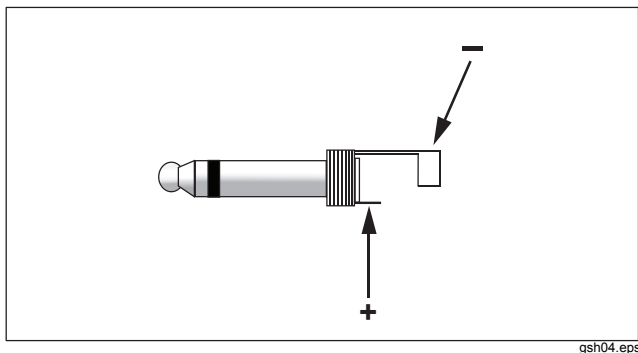


Figure 3. External Trigger Connector Polarity

Maintenance

Caution

The Product contains no user-serviceable parts. To prevent damage to the Product, do not open the case. For service, see “Contact Fluke”.

How to Clean the Product

Regularly clean the case and holster with a damp cloth and mild detergent.

⚠ Caution

To prevent damage to the Product, do not use abrasives or solvents to clean the Product case.

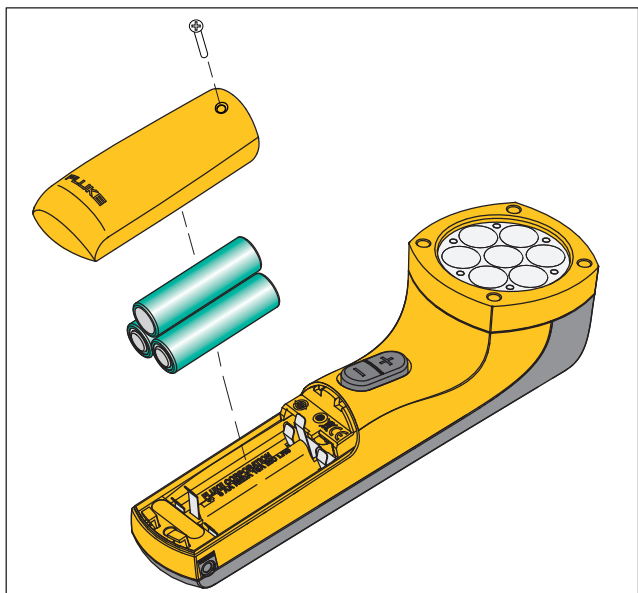
How to Change the Batteries

The Product is energized by three AA (LR6) batteries. When the low battery symbol shows on the display () , replace the batteries. See Figure 4.

⚠ Caution

To prevent damage to the Product:

- **Be sure that the battery polarity is correct to prevent battery leakage.**
- **Remove batteries to prevent battery leakage and damage to the Product if it is not used for an extended period.**



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Figure 4. Battery Replacement

Specifications

Mechanical Specifications

Size (H x W x L)..... (5.71 x 6.09 x 19.05) cm
(2.25 x 2.4 x 7.5) in

Weight 0.24 kg (0.53 lb)

Environmental Specifications

Operating Temperature 0 °C to +45 °C

Storage Temperature -10 °C to +50 °C

Operating Humidity Non-condensing (<10 °C)

90 % RH (10 °C to 30 °C)

75 % RH (30 °C to 40 °C)

45 % RH (40 °C to 50 °C)

(Without Condensation)

Absorption/Corrosion 30 °C, 95 % RH, 5 day

Product functions normally

Operating Altitude..... 2,000 m

Storage Altitude 12,000 m

Vibration MIL-PRF-28800F Class 2

Impact Resistance 1 m drop

EMI, RFI, EMC EN61326-1:2006

Safety Compliance

Agency ApprovalsC €

Protection ClassClass III (SELV) Pollution Degree 2

Miscellaneous Specifications

Flash Frequency

Range30 to 300,000 FPM

0.5 to 5000 Hz

Accuracy0.02 %

Resolution30 to 999 FPM = 0.1

1000 to 300,000 = 1

0.5 to 999 Hz = 0.1

1000 to 5000 Hz = 1

Frequency SettingFPM or Hz

Flash Pulse

DurationAdjustable in μ s or degrees

DelayAdjustable in ms or degrees

Light

ColorApprox 6500 K

Emission Output.....1500 lx @ 6000 FPM at 20 cm
(7.9 in)

External Trigger

Method.....	Connector to externally control trigger
Frequency Range	0.5 to 5000 Hz
High Level.....	3 to 32 V
Low Level	<1 V
Minimum Pulse Width...	50 μ s Connection

