LIMITED WARRANTY AND LIMITATION OF LIABILITY

This Fluke product will be free from defects in material and workmanship for two years from the date of purchase. This warranty does not cover fuses, disposable batteries, or damage from accident, neglect, misuse, alteration, contamination, or abnormal conditions of operation or handling. Resellers are not authorized to extend any other warranty on Fluke's behalf. To obtain service during the warranty period, contact your nearest Fluke authorized service center to obtain return authorization information, then send the product to that Service Center with a description of the problem.

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11/99
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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 view, print, or download the latest manual supplement, visit http://us.fluke.com/usen/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 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>
<thead>
<tr>
<th>Symbol</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>✖️</td>
<td>Do not dispose of this product as unsorted municipal waste. Go to Fluke’s website for recycling information.</td>
</tr>
<tr>
<td>✚️</td>
<td>Conforms to European Union directives.</td>
</tr>
<tr>
<td>🍀</td>
<td>Battery</td>
</tr>
</tbody>
</table>
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.
Stroboscope
Features

Figure 1. The Product
Table 2. The Product

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display</td>
</tr>
<tr>
<td>2</td>
<td><strong>Power Button</strong> - Push 0 to energize the Product. Push and hold 0 for 2 seconds to de-energize the Product.</td>
</tr>
<tr>
<td>3</td>
<td>Push +2 to half the current set value. Speed of the scroll increases when +2 is held down.</td>
</tr>
<tr>
<td>4</td>
<td>External trigger connection</td>
</tr>
<tr>
<td>5</td>
<td><strong>Setup</strong> - Push SETUP to move between different settings and modes.</td>
</tr>
<tr>
<td>6</td>
<td>Push ×2 to double the current set value. Speed of the scroll increases when this button is held down.</td>
</tr>
<tr>
<td>7</td>
<td>LED strobe</td>
</tr>
<tr>
<td>8</td>
<td>Push the trigger (§) up to increase the current set value. Push § down to decrease the current set value. Speed increases when § is held down.</td>
</tr>
<tr>
<td>9</td>
<td>Battery compartment</td>
</tr>
</tbody>
</table>
Stroboscope
Features

Figure 2. Display
## Table 3. Display

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adjustable pulse width in microseconds (μs). Adjustment is accessed in the Setup Menu.</td>
</tr>
<tr>
<td>2</td>
<td>Adjustable pulse width in degrees. Adjustment is accessed in the Setup Menu.</td>
</tr>
<tr>
<td>3</td>
<td>Primary display. Six digits with decimal.</td>
</tr>
<tr>
<td>4</td>
<td>Set external trigger edge to 0 for positive and 1 for negative. Adjustment is accessed in the Setup Menu.</td>
</tr>
<tr>
<td>5</td>
<td>External trigger input is connected.</td>
</tr>
<tr>
<td>6</td>
<td>Set the external trigger pulse divider from 1 to 255. Adjustment is accessed in the Setup Menu.</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>7</td>
<td>Low battery. Replace the battery.</td>
</tr>
<tr>
<td>9</td>
<td>Flashes per minute (FPM), default at power up.</td>
</tr>
<tr>
<td>11</td>
<td>Pulse delay in degrees (Phase degree). Adjustment is accessed in the Setup Menu.</td>
</tr>
<tr>
<td>13</td>
<td>Internal trigger</td>
</tr>
</tbody>
</table>

**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.
820

Product Use

The subsequent sections tell you how to use the Product.

Push \( \sigma \) to turn on the Product. Push and hold \( \sigma \) for 2 seconds to turn off the Product.

Default Settings

To set the Product back to its default settings, push and hold \( \Delta \) and \( \times 2 \).

The default settings are:

- 1000 FPM
- 16.6 Hz
- 333 Pulse \( \mu s \)
- 2.0 Pulse deg
- 0 Delay ms
- 0 Phase deg
- External pulse divider = 1
- External trigger edge = positive
**Setup Menu**

When you push \textbf{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 (\(\mu\))** – Adjust the flash intensity in microseconds of pulse width.
- **Pulse width in degrees (\(\degree\))** – Adjust the flash intensity in degrees of flash rate.
- **Delay in ms (\(\text{ms}\))** – 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 (\(\Phi\))** – 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 (\(\Re\))** – Set the external trigger divider, which lets you adjust the flash rate.
- **External trigger edge (\(\Upsilon\))** – Set the external trigger edge to either positive (0) or negative (1).

Push \textbf{\(\pm\)}, \textbf{\(\pm\)}, and \textbf{\(\pm\)} to make adjustments to each parameter.

Push \textbf{SETUP} to change parameters and to enter and exit the Setup menu.

**Range**

When the external trigger is >5 kHz, \textbf{-OL-} shows on the display.

When the external trigger is <0.5 Hz, \textbf{-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.

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.
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.
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
820

Users Manual

Safety Compliance
Agency Approvals.................CE
Protection Class .................Class III (SELV) Pollution Degree 2

Miscellaneous Specifications
Flash Frequency
  Range ..........................30 to 300,000 FPM
  0.5 to 5000 Hz
  Accuracy ......................0.02 %
  Resolution ....................30 to 999 FPM = 0.1
  1000 to 300,000 = 1
  0.5 to 999 Hz = 0.1
  1000 to 5000 Hz = 1
Frequency Setting ...............FPM or Hz
Flash Pulse
  Duration .....................Adjustable in μs or degrees
  Delay .........................Adjustable in ms or degrees
Light
  Color ..........................Approx 6500 K
  Emission Output..............1500 lx @ 6000 FPM at 20 cm
  (7.9 in)
Stroboscope
Specifications

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 μs Connection