NovaStrobe - Stroboscope Model DB Plus 115/230

Pacific Gas and Electric Company - Pacific Energy Center

Introduction

A stroboscope is used to "stop" the motion of a rotating object for diagnostic inspection and/or to measure the rotational speed of the object. When the meter provides an accurate reading, the rotation of the device will appear to have stopped. The flash rate is controlled by an adjustment knob, which varies the flash rate in 0.1 flashes per minute increments. The knob has 36 steps, or clicks, per revolution, allowing definite adjustment and can be turned continuously. This strobe can be hand-held or mounted on either a tripod or a bracket.

***Figure 1**: Stroboscope*

Operation

To evaluate a motor or other rotating system, the object being measured should be visible for all 360° of rotation, and the object must have some unique part on it such as a bolt, an imperfection, or a mark to use as a reference point. The reference point allows the user of the stroboscope to distinguish rotation as the strobing "stops" the rotation.

If a reference point is not available, use the manufacturer's specifications of the motor in order to get within the range of its true speed. The figure below is a representation of a motor as it is perceived with the Stroboscope at different flash rates. For this example, the motor is rotating at 3000 RPM.

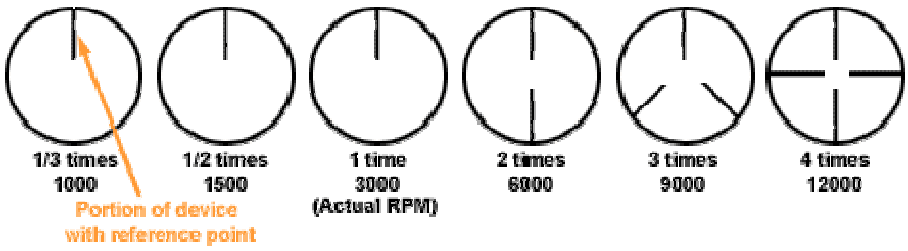


***Figure 2**: Stopped images for a motor rotating at 3000 RPM.*

1. **Point the strobe at the object, pull the trigger, and begin measurement at the highest flash rate.** Adjust the flash rate down until a single still image of the reference point appears. A single, still image occurs when the reference point appears to be fixed in an exact location.

The trigger may be locked by pushing in the button on the side of the handle and released by depressing the trigger quickly.

- As it approaches the correct speed there may be two, three, four or more still images of the reference point. When the reference point appears in two locations, 180° apart, a double image appears and the strobe is reading two times the motor speed.

- The **first single** image seen is the true speed (revolutions per minute), as shown in ***Figure 2***. To confirm this true speed, double the flash rate by pressing the **x2** button on the display panel to see if two still images of the reference point appear.

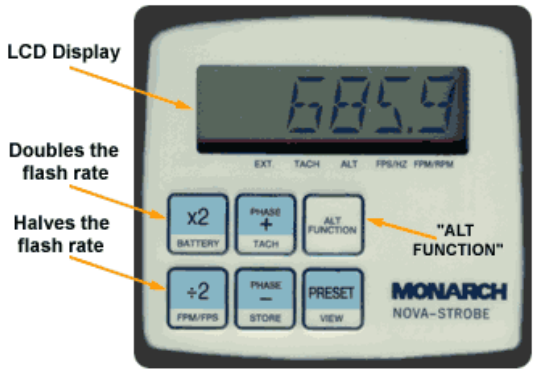


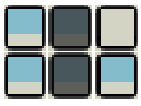
Figure 3:*Stroboscope LCD and keypad.*

- When viewing the reference point, a stationary image of the actual speed, speed at ½, 1/3, ¼, etc will appear. 2 images will appear at twice the actual speed, 3 images at 3-times the actual speed, etc.

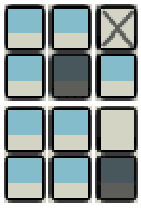
- If the speed of the object being measured exceeds the maximum range of the strobe (14,000 RPM), readings will be of significant error. Special equations can be used for measuring an object whose speed exceeds the maximum range of the strobe. See the user's manual for more details.

Using the Command Buttons

A series of commands are activated through six buttons on the face of the meter. The functionality of these commands is described below. Most of these are best applied after the strobe rate is set to the motor's true speed. Commands on the lower portions of the buttons are activated through the "ALT FUNCTION" button.



The **Phase** + and **Phase** - buttons (see Figure 3) may be used to increase or decrease the phase of the image. Press and hold the **Phase** + button to have the image appear to slowly rotate in the direction the object is actually rotating. The **Phase** - button rotates the image in the opposite direction that the object is actually rotating. These phase buttons can be used to bring the reference mark into your line of sight.



Use the Store button to store the current flash rate into the last preset location viewed. This flash rate is then stored along with six different factory preset flash rates: 100, 500, 1000, 3600, 7200, and 14000 FPM (flashes per minute). These flash rates along with your stored flash rate can be reviewed by pressing the **Preset** button.

The **View** button can be used if you just want to view the preset values without changing the current flash rate of the strobe.

The **FPM/FPS** button toggles the display between Flashes Per Minute and Flashes Per Second.

The **Tach** button starts and stops the strobe from flashing.

LCD Panel Display Symbol Definition

Symbol	Definition
Tach	-Tachometer Mode active (strobe will not flash).
Alt Function	-Indicates second function of each button and knob.
FPS	-Flashes Per Second is on the display.
FPM	-Flashes Per Minute is on the display.
⊙	-Remote Sensor On Target Indicator (external mode only).
- - - -	-Indicates input frequency exceeds the limit of the strobe.
LO BAT	-Flashes when battery is getting low, and is steady when strobe must be recharged.