



# **ELECTRO-OPTICAL PRODUCTS CORP.**

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## **ULTRA LOW VIBRATION SHUTTER WITH A STANDOFFS SH-35-S**

### **LOW COST OPTICAL SHUTTER/ LOW FREQUENCY CHOPPER**

#### **FEATURES AND ADVANTAGES:**

- \*Aperture size: 0.35" (9mm) dia.
- \*No clicking or knocking noise (no hard stop)
- \*Does not create shock and vibration
- \*Response time: 5 mSec
- \*Can be used as a low frequency chopper
- \*Frequency response: DC to 50 Hz
- \*Can be stopped in the OPEN or CLOSE position
- \*Long life: 100 million cycles min.
- \*Jitter free operation
- \*Dark blade, bright optional
- \*LOW COST
- \*Simple to operate
- \*Extremely small size
- \*Easy to integrate into OEM products.
- \*Special pricing for OEM applications.



Patents No.: US 6,046,836  
US 6,215,575 B1  
US 6,466,353 B2

#### **DESCRIPTION:**

The low cost small size mechanical light shutter /chopper model SH-35 is an ULTRA-LOW VIBRATION device that does not create shock or vibrations. It is useful when working on an optical table and is suitable to be part of an instrument or a system where a vibration free environment is needed. The shutter / chopper is easy to operate and is valuable when integrated into an OEM product. It is very cost effective in high volume.

The device consists of a 0.010" thick aluminum black anodized blade mounted on a motor with a limited rotation angle to fit a 0.35" (9mm) aperture. The blade is also available in a bright nickel plating finish. Other thicknesses and finishing types are available. The total swing of the blade from one end position to the other end position is 30 degrees. Transition from one position to the other is 5mSec total. Transition is smooth, no clicking noise, no hard stops, and with minimal shock or vibration.

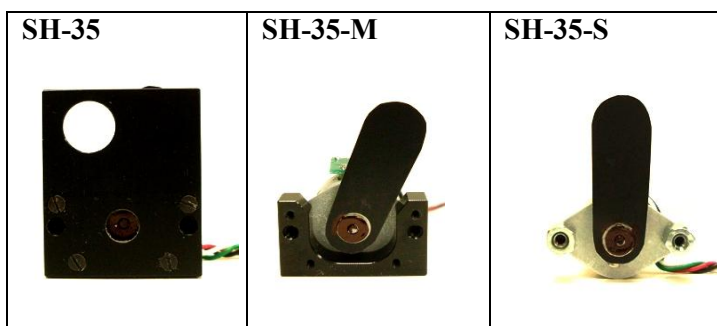
The shutter can also be used as a low frequency optical chopper at frequencies from DC to 50Hz.

We offer the following models (custom and standard) for the SH-35 shutter:

**SH-35** shutter is mounted on a base with a front plate that allows horizontal and vertical mounting

**SH SH-35-M** shutter comes without a mounting plate and allows horizontal and vertical mounting.

**SH-35-S** shutter is mounted with standoffs only

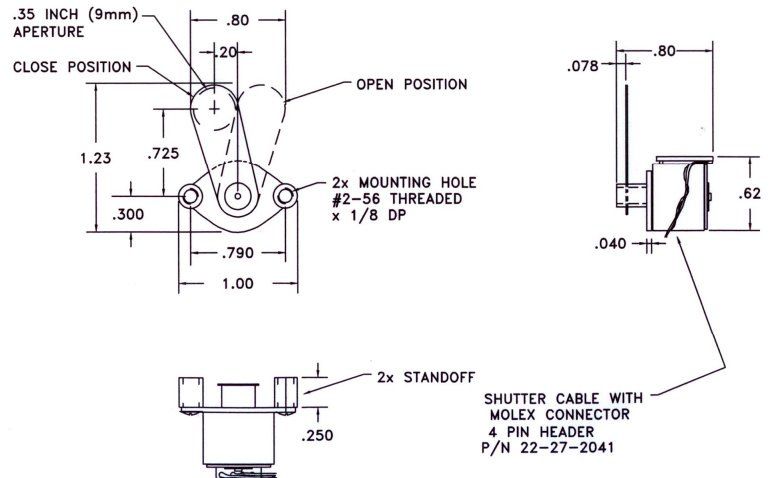




## SPECIFICATIONS:

### When used with the DSH-35 Driver

APERTURE SIZE: 0.35" (9mm) dia.  
FREQUENCY RANGE: DC to 50Hz  
RESPONSE TIME: 5 mSec, from an OPEN position to a CLOSE position, or vice-versa  
FREQUENCY STABILITY: 0.1% internal clock;  
0.005% with external crystal clock input (TTL input)  
EXTERNAL INPUT: DC to 50Hz TTL level input;  
5V or "OPEN" to open the shutter  
0V or "GND" to close the shutter  
SETTLING TIME TO EXTERNAL TTL INPUT: 5mSec  
MONITOR OUTPUT: TTL level output:  
"Hi" indicates that the shutter is open  
"Lo" indicates that the shutter is close  
OPERATING TEMPERATURE: 0-65 deg C



METRIC MOUNTING OPTIONAL

## SH-35-S SHUTTER OUTLINE DRAWING

### DSH-35 DRIVER:

The DSH-35 driver is designed specially for model SH-35 chopper/shutter. It has two modes of operation:

In the "internal" mode the SH-35 is used as an optical chopper. The chopping frequency is set by the internal oscillator and is adjustable from 2Hz to 50Hz.

In the "external" mode the SH-35 can be used as an optical shutter or as a chopper.

A TTL input controls the blade position of the SH-35.

A "High" TTL input (5V) keeps the shutter open.

A "Low" TTL input (0V) keeps the shutter close.

The response time of the shutter to the TTL input is 5mSec. The maximum TTL input frequency is 50Hz

### DRIVER CONFIGURATION:

EOPC offers drivers that enable the user to control the shutter with a TTL signal. The following drivers are available:

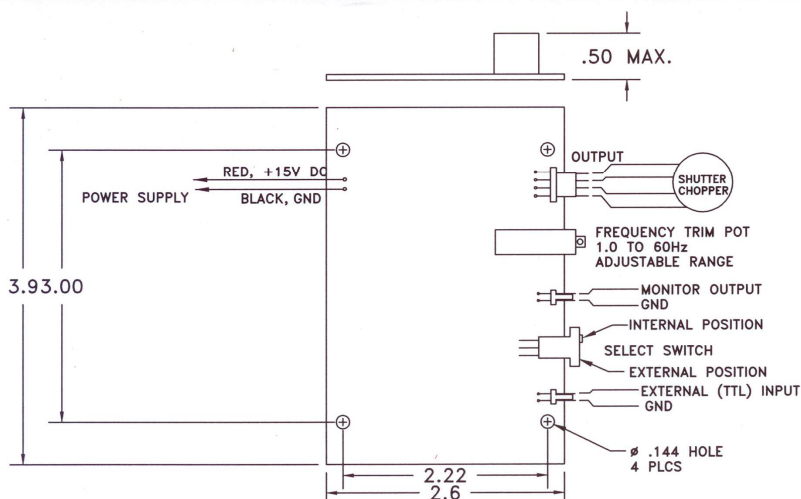
Model DSH-35-PC: A board level driver with components which requires an external regulated 15Vdc 150mA power supply

Model DSH-35-110: A cased driver, 5.3" x 5.3" x 2", Operating from a line voltage of 110Vac

Model DSH-35-220: A cased driver, 5.3" x 5.3" x 2", Operating from a line voltage of from 220Vac

Model DSH-35-110-BNC: A cased driver, 5.3" x 5.3" x 2", Operating from a line voltage of 110Vac with a BNC connector for TTL input;

Model DSH-35-220-BNC: A cased driver, 5.3" x 5.3" x 2", Operating from voltage of 220Vac with a BNC connector for TTL input



**DSH-35 DRIVER**

### DSH-35-PC DRIVER HOOK UP DIAGRAM:

### ORDERING INFORMATION:

Example: PART NO. SH35-S-bright w/ DSH-35-110-BNC

Special pricing for OEM applications.