

## ULTRA LOW VIBRATION SHUTTER SH-65

### LOW COST OPTICAL SHUTTER/ LOW FREQUENCY CHOPPER

#### FEATURES AND ADVANTAGES:

- \*Aperture size: 0.65" (16mm) dia.
- Boxed version aperture size: 0.56" (14mm) dia.
- \*No clicking or knocking noise (no hard stop)
- \*Does not create shock and vibration
- \*Response time: 10 mSec
- \*Can be used as a low frequency chopper
- \*Frequency response: DC to 25 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
- \*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-65 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 0.65" (16mm) 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 10mSec 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 25Hz.

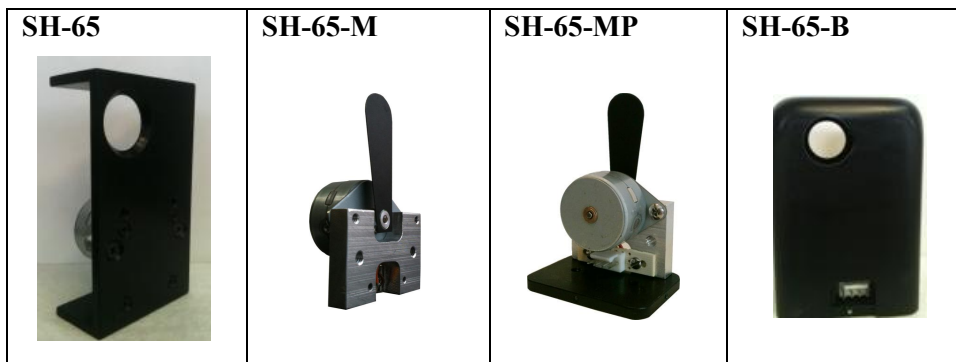
We offer the following models (custom and standard) for the SH-65 shutter:

**SH-65** shutter is mounted on a frame that allows horizontal and vertical mounting

**SH-65-M** shutter comes with a mounting plate and allows horizontal and vertical mounting.

**SH-65-MP** shutter can be mounted directly on an optical table.

**SH-65-B** shutter is boxed in an aluminum box with a 0.56" (14mm) through hole.



## SPECIFICATIONS:

### When used with the DSH-65 Driver)

APERTURE SIZE: 0.65" (16mm) dia.

FREQUENCY RANGE: DC to 25Hz

RESPONSE TIME: 10 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 25Hz TTL level input;

5V or "OPEN" to open the shutter

0V or "GND" to close the shutter

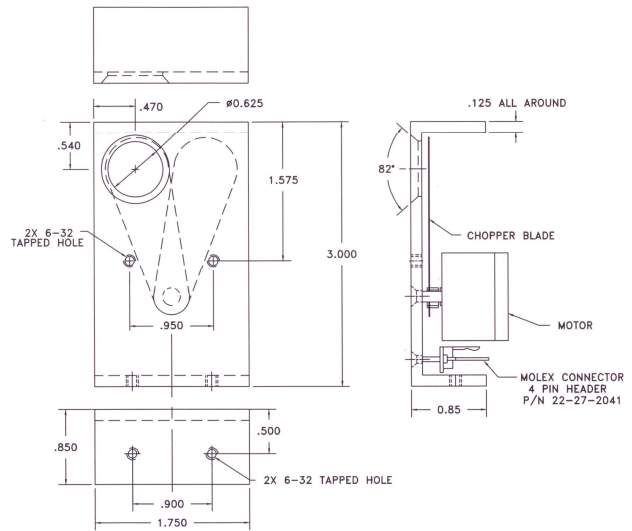
SETTLING TIME TO EXTERNAL TTL INPUT: 10m

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



## SH-65 SHUTTER OUTLINE DRAWING

### DSH-65 DRIVER:

The DSH-65 driver is designed specially for model SH-65 chopper/shutter. It has two modes of operation:

In the "internal" mode the SH-65 is used as an optical chopper. The chopping frequency is set by the internal oscillator and is adjustable from 0.5Hz to 25Hz.

In the "external" mode the SH-65 can be used as an optical shutter or as a chopper.

A TTL input controls the blade position of the SH-65.

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 10mSec. The maximum TTL input frequency is 25Hz.

### DRIVER CONFIGURATION:

EOPC offers drivers that enable the user to control the shutter with a TTL signal.

The following drivers are available:

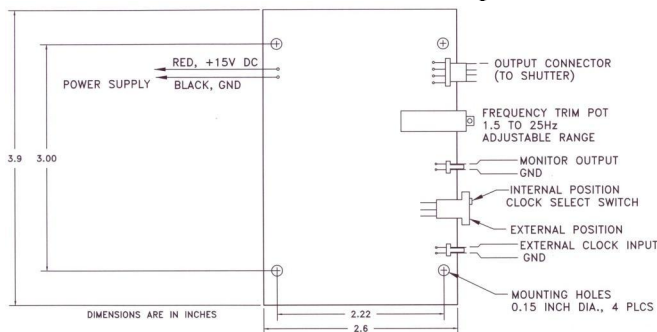
Model DSH-65-PC: A board level driver with components which requires an external regulated 15Vdc power supply

Model DSH-65-110 or DSH-65-220: A cased driver, 5.3" x 5.3" x 2", Operating from a line voltage of 110Vac or from 220Vac

Model DSH-65-110-BNC or DSH-65-220-BNC: A cased driver, 5.3" x 5.3" x 2", Operating from a line voltage of 110Vac or from 220Vac with a BNC connector for TTL input

Model DSH-65-110/220: A cased driver, 5.3" x 5.3" x 2", with a selector switch for operating from a line voltage of 110Vac or 220Vac.

Model DSH-65-110/220-BNC: A cased driver, 5.3" x 5.3" x 2", with a selector switch for operating from a line voltage of 110Vac or 220Vac with a BNC connector for TTL input



### DSH-65-PC DRIVER HOOK UP DIAGRAM



### DSH-65 DRIVER

### ORDERING INFORMATION:

SHUTTER: SH-65, SH-65-M, SH-65-MP, SH-65-B, Dark blade or bright blade

DRIVER: DSH-65-PC, DSH-65-110, DSH-65-220, DSH-65-110-BNC, DSH-65-220-BNC, DSH-65-110/220-BNC.

Example: PART NO. SH65-M-bright w/ DSH-65-110-BNC

Special pricing for OEM applications.