LOW FREQUENCY
OPTICAL MODULATOR/SHUTTER
CH-60

FEATURES AND ADVANTAGES:
* Chopping frequency from DC to 50 Hz
  (when used as a chopper)
* Response time of 10msec (when used as a shutter)
* No hard stop, no “click” sound
* No shock to the system when opening and closing
* LOW COST
* Aperture 0.25" X 0.45" (6.3mm X 11.4mm)
* Jitter free operation
* High frequency stability
* Small size
* Withstands shock and vibration
* High reliability, long life
* Accepts external clock input (with DCH-60 driver)
* Phase locking to an external input
  (with DCH-60 driver)
* Can be stopped in the "ON" or "OFF" position
* No radiated electromagnetic interference (EMI)
* Bright or dark blade
* A BOXED chopper optional
* Integrated IR EMITTER (BLACK BODY) optional
* Special pricing for OEM applications.

DESCRIPTION:
The VARIABLE LOW FREQUENCY chopper/shutter Model CH-60 consists of a blade (vane) mounted on a motor with a
limited rotation angle. The position of the blade follows the direction of the current in the motor winding. Current in one
direction will set the chopper to the open position and current in the other direction will set the chopper to the closed position.
Alternating the current will cause the blade to open and close the chopper at a frequency range from DC to 50Hz. This method of
chopping is jitter free. High reliability and long life is achieved by eliminating the use of a brush type motor or gear heads. At the
same time it can also be used as a shutter that is controlled by the current direction.
The model CH-60-B is a boxed chopper (1.90" W x 3.00" L x 1.25" D) with a 0.25" x 0.45" window (cutout) for laser light,
larger cutout available.
The model CH-60-NF indicates the motor assembly with the blade and cable but without the frame.
The model CH-60-IR offers an integrated IR emitter (black body).

Using our DCH-60 driver with the ëMODEï selector switch provides two modes of operation for the CH-60 chopper/shutter:
internal mode and external mode.
In the internal mode the CH-60 is used as a variable low frequency chopper. The chopping frequency is set by an internal
oscillator adjustable from 1 Hz to 50 Hz.
In the external mode the CH-60 is used as a chopper or as a shutter and is controlled by an external TTL signal input. ëhighï input
keeps the CH-60 open, ëlowï input keeps it close. Response time is 10msec. Maximum frequency for TTL input is 50Hz.
The chopper is especially suitable for low cost dedicated applications, OEM, built into an instrument/system, and for portable systems.

**SPECIFICATIONS (when used with the DCH-60 Driver):**

APERTURE SIZE: 0.25 X 0.45 inch  
FREQUENCY RANGE: DC to 50Hz  
RESPONSE TIME: 10 mSec, from an OPEN position to a CLOSED position, or vice-versa  
FREQUENCY STABILITY: 0.1% internal clock  
0.005% with external crystal clock input  
EXTERNAL CLOCK INPUT: DC to 50Hz TTL level input  
5V or "OPEN" to open the chopper/shutter  
0V or "GND" to close the chopper/shutter  
SETTLING TIME TO EXTERNAL CLOCK: 20 mSec  
MONITOR OUTPUT: TTL level output  
"Hi" indicates the chopper is open  
"Lo" indicates the chopper is closed  
POWER REQUIREMENTS:  
1. The CH-60 and driver board: 15V dc, 250 mA  
2. CH-60-IR (emitter option) and driver board:  
   15V dc, 250mA and 5V dc, 1.0 Amp  
CHOPPER SIZE: 1.75" W X 3.0" H X 1.0" D  
   (1.90" W x 3.00" L x 1.25" D boxed)  
CHOPPER WEIGHT: 2.5 Oz (70 grams)  
OPERATING TEMPERATURE: 0-65°C  

**THE DCH-60 DRIVER CONFIGURATION:**

The DCH-60 Driver is available in two configurations:  
Model DCH-60-PC: A board level driver  
Model DCH-60-110 or -220: A cased driver, 5.3" x 5.3" x 2"  
Operating from a line voltage of 110V ac or from 220V ac

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**CH-60 CHOPPER OUTLINE DRAWING**

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**DCH-60 DRIVERHOOK UP DIAGRAM**

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**DCH-60 DRIVER**