Model SR540 Optical Chopper - 4 Hz to 3.7 kHz -



FEATURES

- VERY LOW PHASE JITTER
- SINGLE AND DUAL BEAM EXPERIMENTS
- SUM AND DIFFERENCE REFERENCE
 OUTPUTS
- SYNTHETIC CHOPPING TO 18.5 kHz
- BOLT CLAMP OR ROD MOUNTING

The model SR540 light beam chopper will handle common chopper requirements as well as dual beam and intermodulation experiments. The SR540 has a voltage control input, four-digit frequency display, ten-turn frequency control, and two reference outputs with selectable operating modes. These features were perviously available only in choppers costing much more. The SR540 can be mounted with bolts, clamps, or on a rod.

SPECIFICATIONS

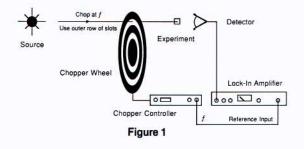
Chop Frequency	4 Hz to 400 Hz with 5/6 slot blade 400 Hz to 3.7 kHz with 25/30 slot blade	Reference Modes	Switch up	Left BNC	Right BNC	
Frequency Stability Long Term Frequency Drift	250 ppm/°C typical < 2%, 100Hz < f < 3700 Hz	Dimensions	middle $5 \times f$ f down $f + f_{inner}$ $f - f_{inner}$ Controller 7.7" x 5.1" x 1.8"			
Phase Jitter	0.2°rms from 50 Hz to 400 Hz 0.5°rms from 400 Hz to 3.7 kHz		Chopper Head 2.8" x 2.1" x 1.0" Blade Diameter 4.0" Control Cable Length 6 feet 100/120/220/240/ VAC 50/60 Hz 12 Watts One year parts and labor on			
Frequency Display Frequency Control	4-digit, 1 Hz resolution, 1 Hz accuracy 10-turn pot with 3 ranges: 4 Hz to 40 Hz 40 Hz to 400 Hz 400 Hz to 3.7 kHz	Power Warranty				
Input Control Voltage	0 to 10 VDC for 0-100% of full scale. Control voltage overrides requency dial.		materials and workmanship. *90 days on motor.			

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APPLICATIONS

SINGLE BEAM EXPERIMENT

In this application, a single optical beam is chopped by the outer row of slots, and the reference output from the right BNC is used to lock the lock-in amplifier to a chop frequency (figure 1). Note that the inner row of slots could be used, in which case the reference from the left BNC would be used. In either case, the REFERENCE MODE switch is in the "up" position.

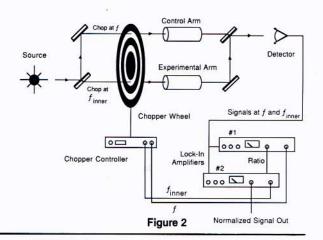


DUAL BEAM EXPERIMENT

In this arrangement, the output from a single source is split in two and chopped at two different frequencies by the same chopper wheel (figure 2). One of the beams passes through the experiment, while the other beam, a reference beam, passes through a control arm. The beams are recombined and sent to the same detector.

Two lock-in's are used to detect the two signals which are at different frequencies. The signal at f corresponds to the control arm, the signal at f_{inner} is the response from the experimental arm. If the detected signal in the experimental arm is ratioed to the detected signal in the control arm, then effects due to charging source intensity and detector efficiency are removed.

Also note that each beam passes through one beam splitter, reflects on one beam splitter, and reflects off one mirror, so that effects due to these components are cancelled in the ratio output.



3.08" 78.2mm

DIAMETER 4" APERTURE .62" (5-SLOT) APERTURE .84" (6-SLOT) 4.65" (118mm) 5/6 Slot Blade **DIAMETER 4**" APERTURE .170" (30-SLOT) APERTURE .124" (25-SLOT) 25/30 Slot Blade Chopper base measures 2.70 x 3.08 x .25" with mounting slots on 2.0" centers.

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