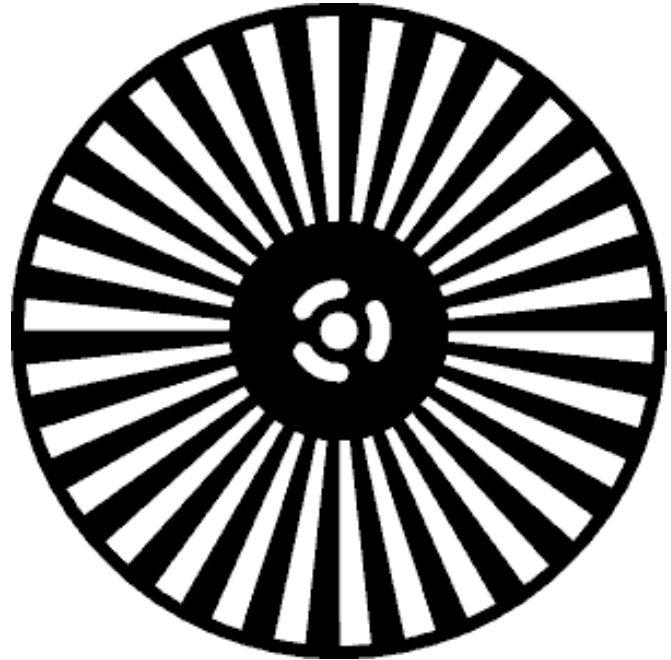




300C/CD Optical Chopper

FEATURES

- 5Hz – 20kHz standard chopping frequency range (0.015Hz to 44.5kHz options are available)
- Photochemically etched brass blades
- Variable aperture option (0% to 50% transmission)
- Dual frequency blades option for double beam experiments
- Compact chopper head
- Low noise and vibration
- Many blade combinations
- High frequency wide aperture option



DESCRIPTION

Scitec Instruments **Model 300C** and **Model 300CD** are high stability variable frequency optical choppers. They comprise a chopper control unit and chopping head, which is supplied complete with a set of five chemically blackened photoetched discs. These discs are of 2, 5, 10, 30, and 200* slots and allow operation over the frequency range 5Hz to 20kHz.

A wide selection of blades offering different numbers of slots, slot configurations, and surface finishes are available to suit particular requirements. The blades are made of half hard brass which is non-magnetic. The compact chopper head may be bench bolted or optical stalk (bench rod) mounted.

The chopping frequency is set using a ten turn dial mounted on the front panel of the control unit or by applying a voltage to the external control input. The reference output is a TTL pulse at the chopping frequency and has a constant phase relative to the chopping action

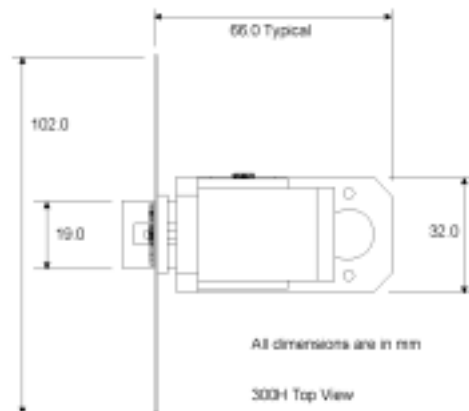
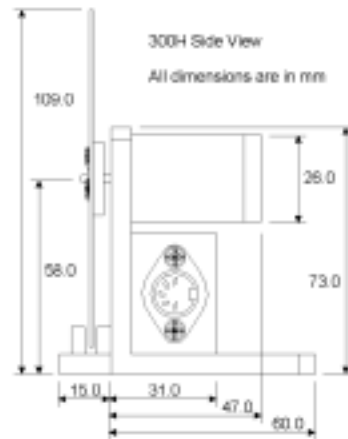
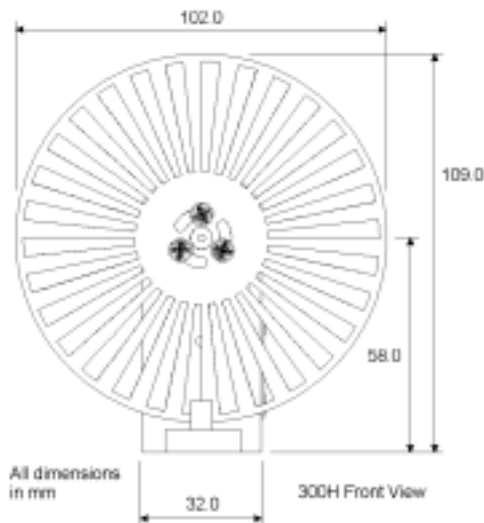
The **Model 300CD** has a 5 digit LED display which give a direct read-out of the chopping frequency.

*200 Slot Disc Aperture Note: The 200 slot disc limits the chopped beam diameter to 0.75mm. However, use of the 300HF-20K High Frequency Accessory enables light beams of up to 25mm diameter to be chopped.



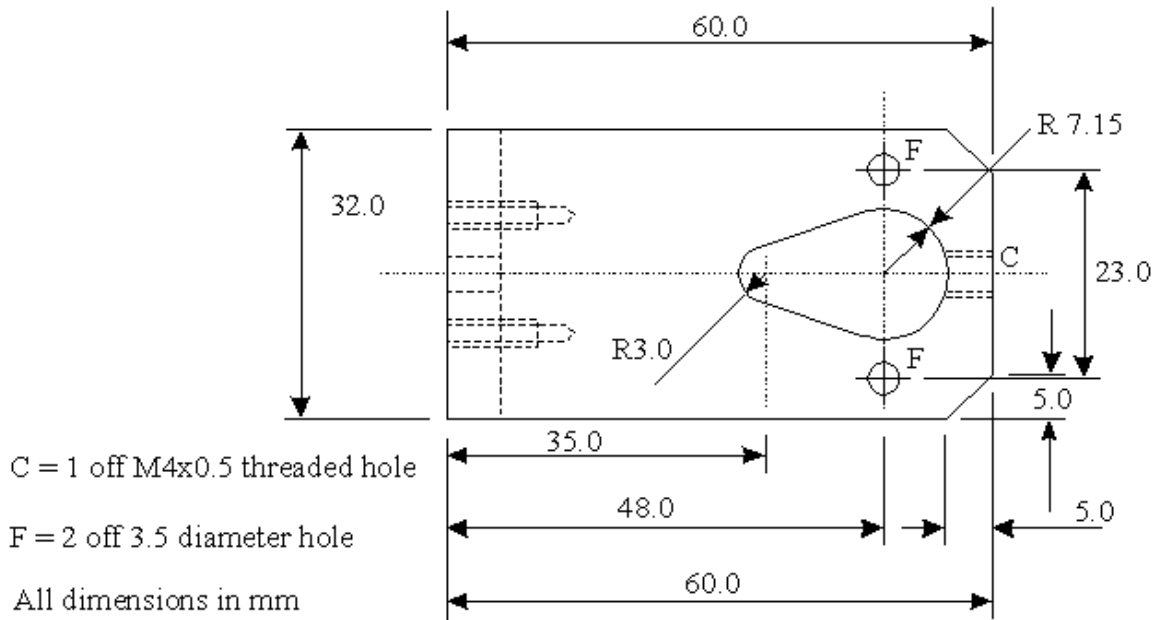
SPECIFICATIONS

| Model 300C/CD Control Unit | |
|---------------------------------------|--|
| Frequency read-out (Model 300CD Only) | 5 digit 11mm (0.43 inches)LED display with user selected update rates of 1 second (1Hz display resolution) or 10 second (0.1Hz display resolution) |
| Output voltage | 15V DC maximum |
| Stability | Better than 0.01%/C |
| Frequency control | Internal-Manual control via ten turn potentiometer fitted with a turns counting dial. External-BNC connector for 0 to 15V |
| Frequency stability | Short term- see phase jitter below. Long term- better than +/-0.1% of reading within 10 to 100% of maximum frequency |
| Reference output | 5V HCT TTL pulse via BNC socket |
| Power requirements | 90-130V or 180-260V, 50/60Hz, 12VA |
| Dimensions | 254(W) x 76(H) x 178(D)mm |
| Weight | 2.6kg |
| Model 300H Chopper Head | |
| Motor | 11pole DC motor, sleeve bearings with more than 8000 hours lifetime, 0-6000rpm reversible |
| Reference pick-up | IR LED and phototransistor pair with Schmitt trigger |
| Dimensions | 73.0(H) x 75.0(L) x 32.0(W)mm, without blade |
| Mounting | Optical stalk: adjustable between 6.5 and 14.0mm in diameter. Bolts: 2 x M3 |
| Chopper Blades | |
| Material | Half hard brass, 0.5mm (0.020 inches) |
| Diameter | 102mm (4 inches) |
| Surface Finish | Chemically blackened or gold plated |
| Mark-Space Ratio | 1:1 with one blade |



| Phase Jitter | | |
|---------------------|---------------|--------------|
| Blade | Aperture (mm) | Phase jitter |
| 2-slot | 77.0 | +/- 0.2° |
| 5-slot | 30.8 | +/- 0.5° |
| 10-slot | 15.4 | +/- 1° |
| 30-slot | 5.1 | +/- 3° |
| 200-slot | 0.8 | +/- 20° |





300H Mounting details

OPTIONS

Reduction Gearboxes: Chopping frequency range can be reduced through the selection of a gear box. Reductions available are 7.2:1, 20:1, 32:1, 64:1, 131:1, 199:1, and 325:1. The last gear box allows operation down to 0.015Hz!

Dual Frequency Blades: Dual frequency blades can be used with the 300C/CD chopper but no reference signal will be available for the internal set of slots. If a reference is required then please purchase the 320C or 320CD chopper.

Blade Protector: the chopping blade can be protected through the use of a 300P blade protector.

Chopper Synchronizer: The chopper can be synchronized to another chopper or to an external source through the use of a chopper synchronizer. See the 300Synch for more details.

Miniature Chopping Head: A miniature chopping head is available through the purchase of the 350C chopper.

Variable Aperture: Slot aperture can be varied from 0% to 50% by using 2 identical discs on the same chopping head at the same time.

20kHz Large Beam Modulation: 20kHz modulation of a 25mm beam can be achieved with the 300HF-20K high frequency accessory together with the use of the 200 slot disc (supplied with the 300HF). See the 300HF datasheet for more details.

44.5kHz Large Beam Modulation: 44.5kHz modulation of a 10mm beam can be achieved with the 300HF-45K high frequency accessory together with the use of the 445 slot disc. See the 300HF datasheet for more details.

