

Optical Chopper – Miniature

Model 350C/CD



Features

- 10Hz - 10kHz standard chopping frequency range
- 30mm diameter chopping discs
- Choice of control units
- Very compact chopper head
- Low noise and vibration
- Photochemically etched, non-magnetic discs

- **Scitec Instruments Model 350 is a high stability variable frequency optical chopper. The basic system consists of a control unit and a chopping head. It is supplied with four chemically blacked 30 mm diameter discs. These discs are of 2, 4, 10 and 40 slots and allow operation over the frequency range 10 Hz to 10 kHz. Discs with 20 and 80 slots are also available. The small chopping head allows positioning in areas where space is critical.**
- Two versions of the control unit are available. The basic control unit is the 350CU, which has a 10 turn dial for setting the operating frequency. Alternatively, the 350CDU control unit has an additional 5-digit display of the chopping frequency.
- Other features are common to both control units. Chopping frequency can be controlled externally by applying an analogue voltage to a "Control" BNC. A "Reference" BNC provides a TTL level output, generated directly from the opto-switch within the chopping head. This signal has constant phase relative to the chopping action and can be used as the reference for other instruments such as lock-in amplifiers.

- The 350H chopping head completely encloses the chopping disc, drive motor and reference pick-up. Three optical apertures of 9 mm diameter provide flexibility in beam positioning. The chopper head has an M8 threaded hole in its base for mounting on an optical stalk (bench rod).
- Mountings are provided to enable parts, such as a high frequency accessory or blade protector, to be attached. For lower frequency operation, the chopper head can be fitted with a reduction gearbox motor.

Specifications

350CU Control Unit

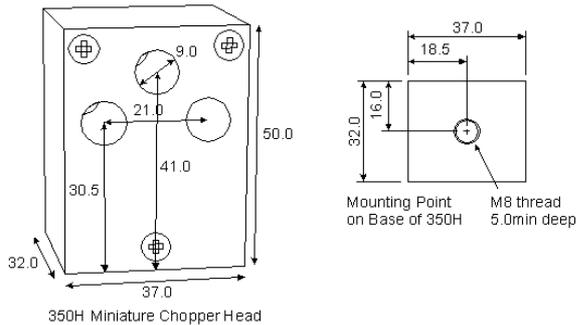
- **Output Voltage:** 6 V DC Maximum.
- **Frequency Control:** Internal - Manual Control via 10 turn potentiometer fitted with a turns counting dial. External - BNC connector for 0 to 15 V.
- **Frequency stability:** Short term - see phase jitter. Long term - $\pm 1\%$ of maximum frequency within 10 to 100% of maximum frequency.
- **Reference output:** 5V HCT TTL signal via BNC socket.
- **Power requirement:** 90-130 V or 180-260 V AC, 50 or 60 Hz, 12 VA.
- **Dimensions:** 254(W) x 76(H) x 178(D) mm.
- **Weight:** 2.6 kg (approx).

350CDU Control Unit

- **Output Voltage:** 6 V DC Maximum.
- **Frequency Control:** Internal - Manual Control via 10 turn potentiometer fitted with a turns counting dial. External - BNC connector for 0 to 15 V.
- **Frequency Read Out:** 5 digit 14mm LED display with 0.01 Hz resolution, 0.1 Hz or 1 Hz resolution depending on frequency.
- **Frequency stability:** Short term - see phase jitter. Long term - $\pm 1\%$ of max frequency within 10 to 100% of maximum frequency.
- **Reference output:** 5V HCT TTL signal via BNC socket.
- **Power requirement:** 90-130 V or 180-260 V AC, 50 or 60 Hz, 12 VA.
- **Dimensions:** 254(W) x 76(H) x 178(D) mm.
- **Weight:** 2.6 kg.

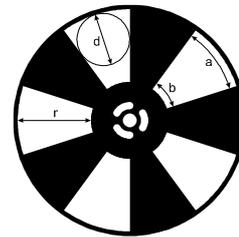
350H Chopping Head

- **Motor:** 5 pole DC motor, sleeve bearings with more than 5000 hours lifetime, 0-15000 rpm reversible.
- **Reference pick-up:** IR led and phototransistor pair with Schmitt trigger.
- **Dimensions:** 50(H) x 32(L) x 37(W) mm.
- **Mounting:** Optical stalk or bolt with M8 thread.



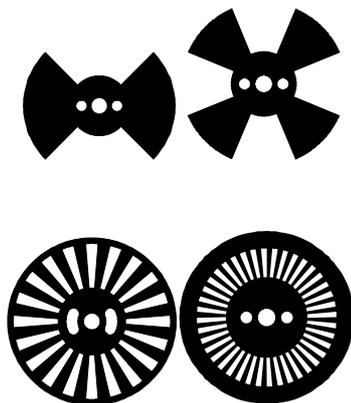
Frequency Range

| Blade | Frequency (Hz) | Aperture (mm) | | | | Phase Jitter Max |
|-------------------|----------------|---------------|------|------|-----|------------------|
| | | r | a | b | d | |
| 350D2 (2 slots) | 10 - 500 | 9.0 | 23.6 | 9.4 | 9.0 | TBA |
| 350D4 (4 slots) | 20 - 1000 | 9.0 | 11.8 | 4.7 | 8.3 | TBA |
| 350D10 (10 slots) | 50 - 2500 | 8.0 | 4.4 | 1.9 | 3.7 | TBA |
| 350D20 (20 slots) | 100 - 5000 | 8.0 | 2.2 | 0.94 | 2.0 | TBA |
| 350D40 (40 slots) | 200 - 10000 | 8.0 | 1.1 | 0.47 | 1.0 | TBA |
| 350D80 (80 slots) | 400 - 20000 | 5.0 | 0.55 | 0.35 | 0.5 | TBA |



350D Chopping Discs

- **Disc types:** 2, 4, 10 and 40 slot (20 and 80 slot discs are also available).
- **Material:** Half hard brass, 0.25mm thick.
- **Diameter:** 30 mm.
- **Surface Finish:** Chemically blacked.
- **Mark-Space Ratio:** 1:1.



Ordering Information

Model 350C Optical Chopper System: A complete optical chopper system includes: 350CU Control Unit, 350H Chopping Head, 350I Interconnecting Cable, 2, 4, 10 and 40 slot 30 mm chopping discs and IEC mains lead.

Model 320CD Optical Chopper System: A complete optical chopper system with frequency display includes: 350CDU Control Unit, 350H Chopping Head, 350I Interconnecting Cable, 2, 4, 10 and 40 slot 30mm chopping discs and IEC mains lead.

See separate data sheet for details of the complete range of chopper discs and accessories that can be used with the Models 350C and 350CD Optical Chopper systems.

Enquiries

→ Scitec Instruments Ltd
Bartles Industrial Estate
North Street
Redruth
Cornwall
TR15 1HR
UK

→ t. +44 [0]1209 314 608
→ f. +44 [0]1209 314 609

→ www.scitec.uk.com
→ e. scitec@scitec.uk.com