

Optical Chopper

Model 300C/CD



↑ Model 300C

↓ Model 300CD



Features

- 5 Hz – 3 kHz standard frequency range, can be extended to 15 mHz – 40 kHz
 - Choice of control units
 - Compact chopper head
 - Low noise and vibration
 - Photochemically etched non-magnetic discs
 - Variable aperture
 - Range of accessories
- **Scitec Instruments Model 300 is a high stability variable frequency optical chopper. The basic system consists of control unit, chopping head and set of four chemically blacked photo etched discs. This system provides operation over the frequency range 5 Hz to 3 kHz. A wide selection of additional discs and accessories is available to extend the frequency range and to satisfy individual requirements.**

→ Two versions of the control unit are available. The basic control unit is the 300CU, which has a 10 turn dial for setting the operating frequency. Alternatively, the 300CDU 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 on 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 300H chopping head supplied with the standard system may be bench bolted or optical stalk (bench rod) mounted. 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.

→ The set of four chopping discs included with the system (part number 300D) provides a choice of 2, 5, 10 or 30 slots each having a 1:1 mark-space ratio. Variable apertures can be achieved by mounting two identical discs simultaneously. Additional discs, with up to 445 slots, are available to extend the chopping frequency up to 40 kHz. Although the standard discs are chemically blacked other finishes, such as gold plating, are available.

Specifications

300CU Control Unit

- **Output voltage:** 15 V DC maximum.
- **Stability:** +/-0.01%/°C
- **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 - +/-0.1% of maximum frequency
- **Reference output:** 5 V HCT TTL signal via BNC socket.
- **Power requirement:** 100-130 V or 200-260 V, 50/60 Hz, 12 VA.
- **Dimensions:** 254(W) x 76(H) x 178(D) mm.
- **Weight:** 2.6 kg.

300CDU Control Unit

- **Output voltage:** 15V DC maximum.
- **Stability:** +/-0.01%/°C
- **Frequency control:** Internal - Manual control via 10-turn potentiometer. External - BNC connector for 0 to 15 V.
- **Frequency read out:** 5-digit 14 mm (0.56 in) led display with 1 Hz resolution (1 second update rate) or 0.1 Hz resolution (10 second update rate).
- **Frequency stability:** Short term - see phase jitter. Long term - +/-0.1% of maximum frequency.
- **Reference output:** 5 V HCT TTL signal via BNC socket.
- **Power requirement:** 100-130 V or 200-260 V, 50/60 Hz, 12 VA.
- **Dimensions:** 254(W) x 76(H) x 178(D) mm.
- **Weight:** 2.6 kg.

300H Chopper Head

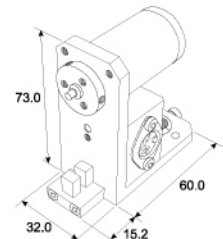
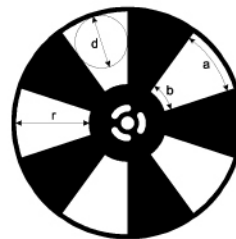
- **Motor:** 11 pole dc motor, sleeve bearings with more than 6000 hours lifetime, 0-6000 rpm reversible.
- **Reference pick-up:** IR led and phototransistor pair with Schmitt trigger.
- **Dimensions:** 73.0(H) x 74.7(L) x 32.0(W) mm, without blade.
- **Mounting:** Optical stalk: adjustable between 6.5 and 14.0 mm in diameter. Mounting holes: 2 x 3 mm.

300D Set of Chopper Discs

- **Disc types:** 2, 5, 10 and 30 slot
- **Material:** Half hard brass, 0.5 mm (0.020 in).
- **Diameter:** 102 mm (4 in).
- **Surface Finish:** Chemically blacked.
- **Mark-Space Ratio:** 1:1 with one blade.

Frequency Range

Blade	Frequency (Hz)	Aperture (mm)				Phase Jitter Max
		r	a	b	d	
300D2	5-200	32.0	77.0	26.7	32.0	+/-0.2°
300D5	12.5-500	32.0	30.8	10.7	23.1	+/-0.5°
300D10	25-1000	32.0	15.4	5.4	13.2	+/-1°
300D30	75-3000	32.0	5.1	1.8	4.8	+/-3°



Ordering Information

Model 300C Optical Chopper System: includes 300CU Control Unit, 300H Chopper Head, 300I Interconnecting cable, 300D Set of Chopper Discs and IEC mains lead.

Model 300CD Optical Chopper System: includes 300CDU Control Unit, 300H Chopper Head, 300I Interconnecting cable, 300D Set of Chopper 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 300C and 300CD Optical Chopper systems.