

Temperature Control System—H1000 Series

Specifications

Introduction

Micromanipulator's H1000 Series Thermal Chuck System is an integrated system to maximize your options. Choose a Thermal Chuck *and* a Temperature Control System (operate either an AC or DC Heat Controller). Next choose desired heat exchanger (cooling to ambient or rapid cooling of the thermal chuck below the cool setpoint). Then choose the Cooling Option (either above ambient with user-supplied cooling water or rapid cool down to 0 degrees C). This specification sheet features the Temperature Control System for precise temperature control.

The HC1000 Temperature Control System is an integrated system which incorporates either an AC or DC Heat Controller which provides precise control for temperatures from ambient to +400° C. The system also incorporates an Ultra Low Temperature Chiller to control the temperature of the chuck from ambient to -65° C.

Features

- The HC1000 Temperature Control system provides temperature control over the entire range of -65° C to +400° C.
- Both heating and cooling controllers employ PID (Proportional, Integral, Derivative) control which has been optimized to provide precise temperature control.
- The Ultra Low Temperature Chiller uses a two stage refrigeration system providing the capability to maintain a reservoir of cooling fluid at -80° C to ensure rapid cooling of the chuck to -65° C.
- The HC1000 is available with either an AC or DC power option for heating the thermal chuck.
- Internal safety circuitry in both the AC and DC heat controllers provides for over and under-temperature protection.
- The AC Heat Controller commands power with a zero-crossing detector in conjunction with burst firing to virtually eliminate 60Hz harmonic noise while accurately controlling power output to the thermal chuck.
- The DC Heat Controller includes a linear DC power supply capable of more than 1000W with less than 25mV ripple at 100 volts output.
- The HC1000 includes a separate cooling system providing fluid to the H1000 thermal chuck safety cooling shield.
- The HC1000 system is compatible with all H1000 Thermal Chuck system configurations.
- The HC1000 system includes a built-in RS-422 interface. RS-232 and IEEE-488 interfaces are available options.
- Optional temperature control software enables programmable sequencing of heat, cool and soak cycles.
- The AC and DC Heat Controllers allow entry of up to 10 temperature calibration data offsets to cause the H1000 display to match the measured temperature of the chuck surface.

Specifications

Performance

- Temperature control: PID
- Typical ramp rates: ^[1]
 - 6" (150mm) coaxial chuck
 - -65° C to +400° C: 32 minutes
 - +400° C to -65° C: 44 minutes
 - 8" (200mm) coaxial chuck
 - -65° C to +400° C: 45 minutes
 - +400° C to -65° C: 56 minutes
- Stability (Resolution of 0.1° C):
 - ± 0.3° C at temperatures above 50° C
 - ± 1.0° C at temperatures within 0.5° C of ambient or below ambient

Physical data; HC1000 Systems

- 31.5" x 48" x 27" (80cm x 122cm x 69cm) HxDx
- AC Version - 505 lb (229 kg)
- DC Version - 585 lb (265 kg)
- Hoses/Cables: 6' (183cm) long

^[1] to within 0.5° C of setpoint



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Specifications subject to change without notice.