POND ENGINEERING

Pond Engineering Laboratories, Inc.
2401 South County Road 21.
Berthoud CO 80513 USA

Model K23M/MR
PRIMARY METROLOGY FURNACE

MODEL K23M/MR
Low/Medium Range
Primary Metrology Furnace

Pond Engineering designed this maintenance system for user-friendly calibrations using Indium, Tin, Zinc and Aluminum Metal Freeze Point Cells in a stable, uniform thermal environment. The optional removable comparison block enhances the system's outstanding control stability.

Interactive controls on a sloping front panel increase usability in a stand-alone configuration. Optional remote interface (RS-232 or IEEE-488) allow users to integrate the K23 into an automated calibration system, dramatically increasing throughput and reducing the cost of primary-level calibrations.

All Pond Engineering primary level furnaces combine linear DC heater drive electronics with bifilar oriented heater elements (instead of the circular heater windings often found in other systems.) The bifilar oriented elements make only one turn around the core (rather than the usual tens or hundreds) to reduce the inductive coupling of the heater drive current to the thermometer, making this system the most electrically quiet available. Considering that the bridge measures SPRT resistance in nanovolts makes any electric noise significant.

Standard features include a single, integrated multi-zone control system utilizing dual microprocessors to provide completely redundant primary and secondary over-temperature safety cutout for unparalleled safety. Using PRTs with 20 bit AC excitation resistance ratiometric signal conditioning (not thermocouples) for all temperature sensing means unprecedented accuracy and control stability.

The floating inner core design, a Pond Engineering exclusive, affords extraordinary gradient suppression, protecting cells against crucible and envelope rupture. Interactive internal system temperature sensor calibration functions allow users to maintain system performance over time.

TO ORDER, OR FOR MORE INFORMATION:

PHONE – (303)651-1678

FAX – (303)651-1668

EMAIL – info@pondengineering.com

SPECIFICATIONS

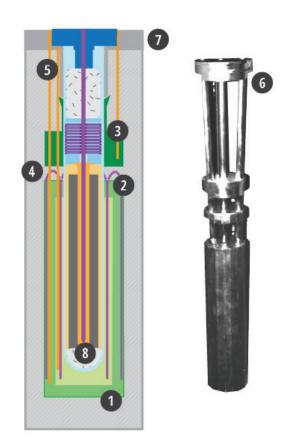|	
System Setpoint Range:	90°C to 455°C (low) 90°C to 680°C (med.)
Control Stability:	Better than +/-0.02°C
Core Gradients:	Less than +/-0.15°C in inner core
Setpoint Accuracy:	Better than +/-0.3°C in inner core
Pre Heat Wells (3 ea.):	Series 600 Inconel ≈0.33" (8.0 mm) I.D. ≈16.0" (40 cm) deep
Power Requirements:	120 / 240 Volts 8.0 Amps max. A.C. 47 - 63 Hz.
Cabinet Physical Dimensions:	18" (46 cm) wide 20" (51 cm) deep 36" (92 cm) high

KEY TECHNICAL FEATURES

1 Thermally-floating inner core provides tremendous axial and circumferential gradient suppression, protecting against cell damage

2 Linear D.C. heater drive electronics in conjunction with bifilar heater construction minimize electrical interference with thermometer resistance measurements

3 High-temperature PRTs with 20-bit ratiometric signal conditioning used for all temperature sensing mean you have no thermocouple drift to compensate for

4 Three-zone furnace geometry and integrated control system provide unsurpassed temperature stability, particularly important when performing comparison calibrations

5 Three preheat wells allow thermometers to be heated prior to insertion into cell, prolonging plateau life

6 Optional comparison blocks allow use of the furnace for comparison calibrations. Ultra-high stability (better than +/- 0.001°C over 15 minutes) available

7 Unique bezel suspends the cell in the isothermal zone and allows for easy insertion, removal and inspection

8 Overtemperature protection (both primary and secondary) is ensured by multiple sensors and an integrated microprocessor-based controller with watchdog safety shutoff

RANGE OF APPLICATION 90

500 - K23M
670 - K23MR

| Fixed Point Temperature (°C) | | | Ar TP -189.344 | | Hg TP -38.834 | TPW 0.01 | Ga MP 29.764 | In FP 156.598 | Sn FP 231.92 | Zn FP 419.52 | Al FP 660.32 | Ag FP 961.78 |

Gas Thermometry

Radiation Thermometry

ITS-90 Standard Platinum Resistance Thermometer (SPRT)
Interpolation Range and Calibration Points