POND ENGINEERING
Pond Engineering Laboratories, Inc.
2401 S. County Road 21 Berthoud, CO 80513

Model K18
MERCURY TRIPLE POINT

MODEL K18C / K18M

Mercury Triple Point Cell and Maintenance System

Previously utilized only as a secondary fixed point, the Triple Point of Mercury has been adopted as a defining fixed point of the International Temperature Scale of 1990 (ITS-90). Virtually all standards-grade cryogenic thermometer calibrations include the Triple Point of Mercury. Used with the Triple Point of Water and the Melting Point of Gallium, the Mercury Triple Point is particularly important to users in oceanographic, medical, biological and industrial process thermometry.

A rugged, hermetically sealed Type 304 Stainless Steel cell envelope filled with 2.5 kg of .999 999 pure Mercury provides stable, long-lasting temperature plateaus. Since triple point conditions can only exist at the liquid-to-vapor interface, hydrostatic head corrections must be applied to the theoretical triple point temperature. The user manual includes tables and charts presenting a measured melt plateau profile and the hydrostatic head corrections applied to each cell.

Pond Engineering's model K18M Triple Point of Mercury Maintenance System provides a convenient, reliable environment to maintain the Triple Point of Mercury with ease and accuracy. Interactive controls on a sloping front panel make this system easy to use in a stand-alone configuration. Control features include three user-modifiable "memory setpoints" integrated into the system control prompts to step users through the realization sequence. An optional remote interface (RS-232 or IEEE-488) allows users to integrate this system into an automated lab. The self-contained, air-cooled refrigeration system uses a non-ozone-depleting refrigerant (R134a), ensuring serviceability for years to come. Rapid cool down, freeze, and stabilization times allow users to realize the triple point and stabilize the system on plateau less than three hours from power-up. Operating in either freezing or melting mode, a typical plateau will last for 30 hours or more with little or no user intervention.

SPECIFICATIONS

System Set point Range:	-25°C to -50°C
Temperature Control Stability:	+/-0.01°C typical +/-0.02°C max.
Main Well:	Type 304 Stainless Steel ≈1.56” (39.6 mm) I.D. ≈16.8” (427 mm) deep
Precool Wells (2 ea.):	Type 304 Stainless Steel ≈0.32” (8.2 mm) dia. ≈16.8” (427 mm) deep
Isothermal Zone:	Lower 10.4” (265 mm) of well
Operator Interface:	Manual front panel (Optional IEEE-488 or RS-232 Remote)
Power Requirements:	120 Volts 10 Amps max. A.C. 47 - 63 Hz. (Other Input Power Available on Special Order)
Cabinet Physical Dimensions:	18” (46 cm) wide 20” (51 cm) deep 36” (92 cm) high
Metal Sample Purity:	.999 999
Cell Dimensions: *Body*:	≈1.5” (38 mm) dia. ≈8.5” (21.6 cm) long
Thermometer Well:	≈0.32” (8.2 mm) I.D.
Immersion Depth:	≈7.9” (200 mm)

All specifications subject to change without notice. Rev.Jul16

TO ORDER, OR FOR MORE INFORMATION:

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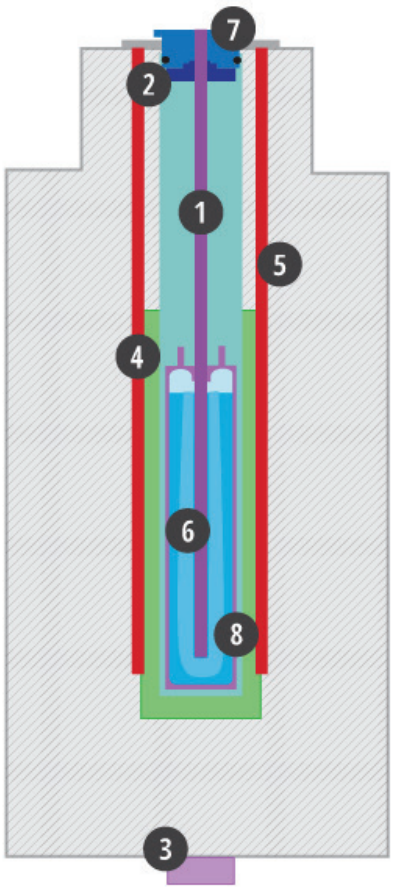
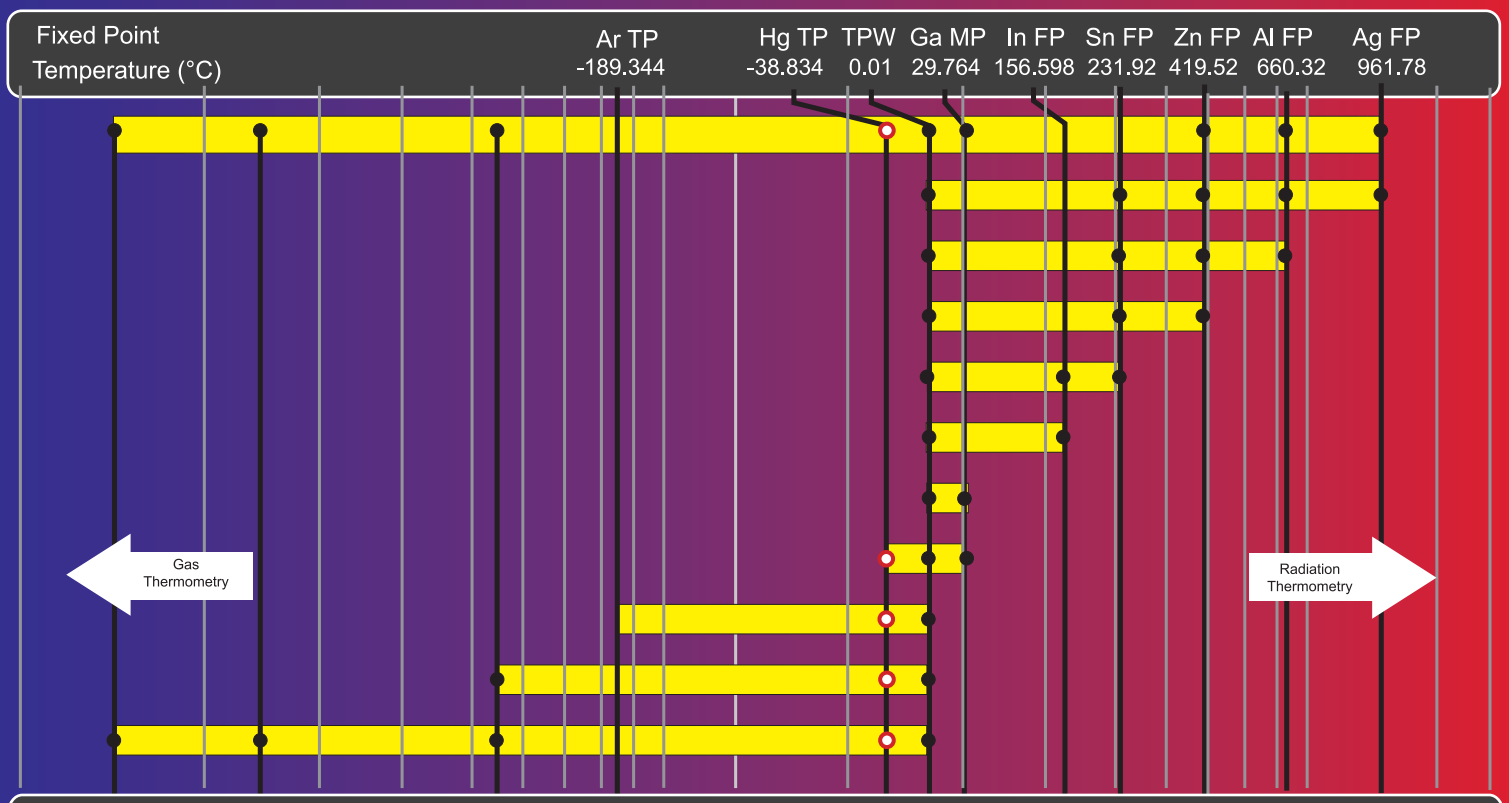
KEY TECHNICAL FEATURES

1. Stainless steel main well provides long life and durability as well as corrosion protection.
2. "O" ring seals on the cell top protect against moisture accumulation in the main well during prolonged operation.
3. Durable outer shell vapor barrier and replaceable desiccant pack protect all cold components from moisture accumulation, preventing damaging corrosion.
4. Isothermal zone provides an ideal environment for maintenance of the Mercury Triple Point. Typical plateau duration exceeds 30 hours.
5. Two precool wells allow thermometers to be chilled prior to insertion into cell, prolonging plateau life.
6. High purity Mercury (.999 999 pure) provides exceptionally flat plateaus.
7. Removable cell top suspends the cell in the isothermal zone, and allows for easy cell insertion, removal and inspection.
8. Cell body is constructed of machined stainless steel components, ensuring a completely smooth interior surface; which minimizes contamination of the high-purity mercury.



POINT OF APPLICATION



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