# Reference Standard Capacitor

## 1408-9706 Capacitor Series

**Ultra-high stability.** The continuously improving accuracy of capacitor calibrations by NIST brings a better knowledge of capacitance to standards laboratories - provided, of course, the laboratories have adequate reference standards. The 1408 Reference Standard Capacitors, with their high stability, are suitable for calibration in parts in $10^7$. The 1616 Precision Capacitance Bridge is highly recommended for accurate calibration of a wide range of working standards from such a reference.

This unit includes two standards, 10 pF and 100 pF, plus a self-contained air bath whose temperature is held constant to within 0.01 per year to assure the utmost stability of the standards. Since ti carries its own environment, it is well adapted for use in laboratories without an oil bath or closely-controlled ambient temperature or in portable laboratories and calibration centers. The air bath operates from 12 volts so that it is an easy matter to transport it under power at all times.

- 10 pF and 100 pF combination
- High stability
- Low voltage coefficient

## SPECIFICATIONS

Nominal Value: 10 pF and 100 pF.

Calibration: A certificate of calibration is supplied with each capacitor, giving the measured direct capacitance at 1 kHz and at the specified temperature near 30°C, the air-bath temperature. The measured value is obtained by a comparison to a precision better than 0.5 ppm with standards whose values are determined and maintained by periodic calibrations made by NIST.

Adjustment Accuracy: ±5 ppm.

Stability: Estimated to be better than 1 ppm per year.

Temperature Coefficient: 2 ±2 ppm/°C for 100 pF;
5 ±2 ppm/°C for 10 pF.

Temperature Cycling: from 0 to 60°C, < 1 ppm hysteresis at 30°C.

Electrical:

Dissipation Factor: < $10^{-5}$ at 1 kHz.
Voltage: 750 V max.
Residual Impedances: See Figure 1

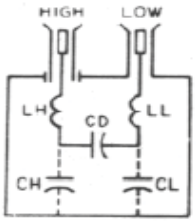


Fig.1

| Value (pF) | LH, LL (µH) | CD (pF) | CH (pF) | CL (pF) |
|---|---|---|---|---|
| 10 | 0.05 | 100 | 30 | 28 |
| 100 | 0.05 | 100 | 30 | 28 |

Terminals: Two locking G874 coaxial connectors or BNC connectors; various patch cords available.

Air-Bath Characteristics:

Temperature: 30°C nominal with stability of 0.01°C/year, <0.005°C/hour if ambient temperature is kept within 1°C.
Temperature Coefficient: 0+0.05ppm/°C from 17 to 29°C ambient temperature; thermometer well provided for calibration.

General: Connectors can be made to the front or the rear as your application dictates. A 12-volt input is provided to maintain a constant air-bath temperature even while the unit is in transit.

Power: 105 to 125 V or 210 to 250 V, 50 to 60 Hz, 5 W; 12 V at 0.4 A; for dc operation, battery connectors provided on rear.

Mechanical:

Dimensions: 22.2 cm H x 21.4 cm W x 40.7 cm D (8.72" x 8.42" x 16"); (approx.)

Weight: 12 kg (25 lb.) net, 16 kg (34 lb.) shipping; (approx.)

## ORDERING INFORMATION

1408-9706 10/100 pF Air bath Reference Standard Capacitor