

The 1482 is an accurate, highly stable standard of self-inductance for use as a low frequency reference or working standard in the laboratory.

Records extending over 40 years, including those of inductors that traveled to national laboratories in several countries for calibration, show long-term stability well within  $\pm 0.01\%$ , typically  $< 10$  ppm/year.

### Features:

- A standard for national laboratories
- Stability within  $\pm 0.01\%$  per year and typically  $< 10$  ppm/year
- Values from  $1 \mu\text{H}$  to  $10 \text{ H}$
- Standard for quality factor (Q)
- Low, known temperature coefficient
- Self-shielding toroidal design
- Calibrated at multiple frequencies
- Ceramic non-magnetic core

Each inductor is a uniformly wound toroid on a ceramic core. It has a negligible external magnetic field and hence essentially no pickup from external fields. The inductor is resiliently supported in a mixture of ground cork and silica gel, after which the whole assembly is cast with a potting compound into a cubical aluminum case.

Values of  $500 \mu\text{H}$  and above have three terminals, 2 for inductor leads and the third connected to the case, to provide either a 2 or 3 terminal standard. Inductors with  $< 500 \mu\text{H}$  inductance values have three additional terminals to allow for switching between a short circuit and the inductance value which minimizes connection errors. This allows the user to perform short compensation without disconnecting leads from the inductor. A ground strap is moved to the  $L_0$  terminal when short compensation is performed and back to L for measurement of the inductance. When the same connections are used in both measurements, the inductance value is independent of the external lead inductance even for values much less than  $200 \mu\text{H}$ .



Model 1482 500  $\mu\text{H}$  and above Precision Inductor



Model 1482  $< 500 \mu\text{H}$  Precision Inductor

## SPECIFICATIONS

**Inductance Range:** See table

**Accuracy of Adjustment:** Adjustment is performed at one specific frequency, see table for accuracy and frequency.

**Calibration:** A certificate of calibration is provided with each unit, giving measured values of inductance at 100, 200, 400, and 1000 Hz, with test conditions and method of measurements specified. These values are obtained by comparison, to a precision, typically, of better than  $\pm 0.005\%$ , with standards whose absolute values, traceable to an SI, are known to an accuracy typically better than  $\pm (0.02\%)$  at 100 Hz. Measurement uncertainties are listed on certificate.

**Stability:** Inductance change is less than  $\pm 0.01\%$  per year.

**DC Resistance:** See table for typical values. A measured value of resistance at a specified temperature is given on the certificate of calibration.

### Low-Frequency Storage Factor Q:

See table for typical values of Q at 100 Hz (essentially from dc resistance). An individual value of Q is given on each certificate of calibration.

**Temperature Coefficient of Inductance:** Approximately  $30 \text{ ppm}/^\circ\text{C}$ . Small temperature corrections may be computed from resistance changes.

A 1% increase in resistance, produced by temperature increase of  $2.54^\circ\text{C}$  corresponds to  $0.0076\%$  increase in inductance.

**Resonant Frequency:** See table for representative values. A measured value is given on the certificate of calibration.

**Maximum Input Power:** For a rise of  $20^\circ\text{C}$ , 3 W; for precise work, a rise of  $1.5^\circ\text{C}$ , 200 mW. See table for corresponding current limits.

**Terminals:** 5-way gold-plated, tellurium-copper binding posts that feature low resistance. Terminals have standard  $\frac{3}{4}$ -in spacing with removable gold-plated ground strap.

**Dimensions:** 16.6 cm H x 16.6 cm W x 20.4 cm D  
(6.5" H x 6.5" W x 8" D)

**Weight:** 5.3 kg (11.5 lb) net, 6 kg (13 lb) shipping

| Description | Nominal Inductance | Adjustment Accuracy (%) | Adjustment Frequency (kHz) | *Resonant Frequency (kHz) | *dc Resistance ( $\Omega$ ) | *Q at 100 Hz | mA rms for: |       |
|-------------|--------------------|-------------------------|----------------------------|---------------------------|-----------------------------|--------------|-------------|-------|
|             |                    |                         |                            |                           |                             |              | 200 mW      | 3 W   |
| 1482-AAA    | 1 $\mu$ H          | $\pm 5\%$               | 10                         | 8500                      | 0.006                       | 0.15         | 5000        | 16000 |
| 1482-AA     | 10 $\mu$ H         | $\pm 1\%$               | 10                         | 4500                      | 0.03                        | 0.30         | 2500        | 9000  |
| 1482-A      | 50 $\mu$ H         | $\pm 0.5$               | 10                         | 3100                      | 0.039                       | 0.85         | 2260        | 8770  |
| 1482-B      | 100 $\mu$ H        | $\pm 0.25$              | 10                         | 2250                      | 0.083                       | 0.76         | 1550        | 6010  |
| 1482-C      | 200 $\mu$ H        | $\pm 0.25$              | 10                         | 1400                      | 0.15                        | 0.84         | 1150        | 4470  |
| 1482-D      | 500 $\mu$ H        | $\pm 0.1$               | 1                          | 960                       | 0.38                        | 0.83         | 725         | 2810  |
| 1482-E      | 1 mH               | $\pm 0.1$               | 1                          | 800                       | 0.84                        | 0.75         | 490         | 1890  |
| 1482-F      | 2 mH               | $\pm 0.1$               | 1                          | 580                       | 1.52                        | 0.83         | 360         | 1400  |
| 1482-G      | 5 mH               | $\pm 0.1$               | 1                          | 320                       | 3.8                         | 0.83         | 230         | 890   |
| 1482-H      | 10 mH              | $\pm 0.1$               | 1                          | 220                       | 8.2                         | 0.77         | 156         | 600   |
| 1482-J      | 20 mH              | $\pm 0.1$               | 1                          | 145                       | 14.5                        | 0.87         | 117         | 450   |
| 1482-K      | 50 mH              | $\pm 0.1$               | 0.1                        | 84                        | 36.8                        | 0.85         | 74          | 280   |
| 1482-L      | 100 mH             | $\pm 0.1$               | 0.1                        | 71                        | 81                          | 0.78         | 50          | 192   |
| 1482-M      | 200 mH             | $\pm 0.1$               | 0.1                        | 39.0                      | 109                         | 1.15         | 43          | 166   |
| 1482-N      | 500 mH             | $\pm 0.1$               | 0.1                        | 24.5                      | 280                         | 1.12         | 27          | 103   |
| 1482-P      | 1 H                | $\pm 0.1$               | 0.1                        | 14.6                      | 616                         | 1.02         | 18          | 70    |
| 1482-Q      | 2 H                | $\pm 0.1$               | 0.1                        | 10.6                      | 1125                        | 1.12         | 13.3        | 52    |
| 1482-R      | 5 H                | $\pm 0.1$               | 0.1                        | 6.8                       | 2920                        | 1.08         | 8.3         | 32    |
| 1482-T      | 10 H               | $\pm 0.1$               | 0.1                        | 4.9                       | 6400                        | 0.98         | 5.6         | 22    |

\*Typical values. Actual values given on certificate

### ORDERING INFORMATION

|           |                                       |           |                                  |
|-----------|---------------------------------------|-----------|----------------------------------|
| 1482-9699 | 1482-AAA Standard Inductor, 1 $\mu$ H | 1482-9710 | 1482-J Standard Inductor, 20 mH  |
| 1482-9700 | 1482-AA Standard Inductor, 10 $\mu$ H | 1482-9711 | 1482-K Standard Inductor, 50 mH  |
| 1482-9701 | 1482-A Standard Inductor, 50 $\mu$ H  | 1482-9712 | 1482-L Standard Inductor, 100 mH |
| 1482-9702 | 1482-B Standard Inductor, 100 $\mu$ H | 1482-9713 | 1482-M Standard Inductor, 200 mH |
| 1482-9703 | 1482-C Standard Inductor, 200 $\mu$ H | 1482-9714 | 1482-N Standard Inductor, 500 mH |
| 1482-9704 | 1482-D Standard Inductor, 500 $\mu$ H | 1482-9716 | 1482-P Standard Inductor, 1 H    |
| 1482-9705 | 1482-E Standard Inductor, 1 mH        | 1482-9717 | 1482-Q Standard Inductor, 2 H    |
| 1482-9706 | 1482-F Standard Inductor, 2 mH        | 1482-9718 | 1482-R Standard Inductor, 5 H    |
| 1482-9707 | 1482-G Standard Inductor, 5 mH        | 1482-9720 | 1482-T Standard Inductor, 10 H   |
| 1482-9708 | 1482-H Standard Inductor, 10 mH       |           |                                  |

