High Accuracy
All-Purpose Decade Inductor

1491 Series

The 1491 Decade Inductor is an assembly of several decade inductor units in a single metal cabinet. The units have no electrical connection to the panel, but a separate ground terminal is provided, which can be connected to the adjacent low terminal, leading to the smallest decade.

Features:

- Shielded toroidal cores for low mutual inductance and minimal effect from external field
- Sealed against moisture for long-term stability
- Excellent as a moderately accurate inductance standard
- High Q, 200 and higher

1491 High Accuracy Decade Inductor

SPECIFICATIONS

Accuracy

Inductance per step	Accuracy	Test frequency	Test voltage
100 µH	±2%	1000 Hz	10 mV
1 mH	±2%	1000 Hz	10 mV
10 mH	±1.6%	500 Hz	20 mV
100 mH	±0.8%	200 Hz	20 mV
1 H	±0.8%	100 Hz	40 mV

Zero inductance
Approximately 1 µH

Maximum voltage
500 Vrms
1491 switches safely break the circuit at 500 V if turned rapidly, but voltages above 150 V may cause destructive arcing with the switch between detent positions.

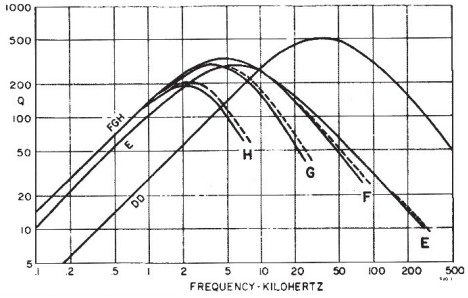
dc Resistance
Approximately 45 Ω per henry

Connection terminals
Two, 5-way, gold-plated, tellurium-copper binding posts with low thermal emf and low resistance, plus separate binding post for ground.

Temperature coefficient
Approximately -25 ppm/°C between 16° and 32°C.

Mechanical
Dimensions: 43.2 cm W x 22.3 cm W x 16.6 cm D
(17" x 8.75 " x 6.5")
Weight: 10.5 kg (23 lb)

Quality factor Q

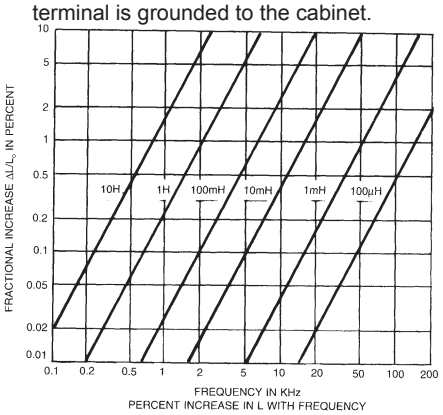


Variation of Q for maximum inductance at low excitation levels. Dashed lines correspond to use with chassis floating.

DD - 1 mH Steps
E - 0.01 H Steps
F - 0.1 H Steps
G - 1 H Steps
H - 10 H Steps

Change of inductance with current
To minimize the change in inductance, keep current low as shown. Contact IET for more details.

Frequency characteristics
Percentage increase in effective series inductance (above the zero-frequency value, L_0) may be obtained from the figure below. Results apply to when the LOW terminal is grounded to the cabinet.



Variation of inductance with frequency for the 1491 decade Inductors

Inductance per step	Increase in inductance	Switch setting 1	Switch setting 2, 3, 4	Switch setting 5, 6, 7, 8, 9, 10	Max current
100 µH	0.10%	141 mA	100 mA	63 mA	4000 mA
1 mH	0.25%	17 mA	12 mA	8 mA	1500 mA
10 mH	0.25%	5.4 mA	3.8 mA	2.4 mA	500 mA
100 mH	0.25%	1.7 mA	1.2 mA	0.8 mA	150 mA
1 H	0.25%	0.54 mA	0.38 mA	0.24 mA	50 mA

Note: At currents higher than those listed, the inductors begin to saturate and accuracy degrades further. For best accuracy, use at low current.

ORDERING INFORMATION

1491-D Decade inductor, 4 decades, 11.11 H total inductance, 1 mH per step
1491-G Decade inductor, 5 decades, 11.111 H total inductance, 100 µH per step

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