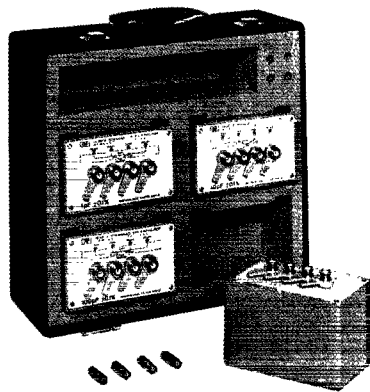


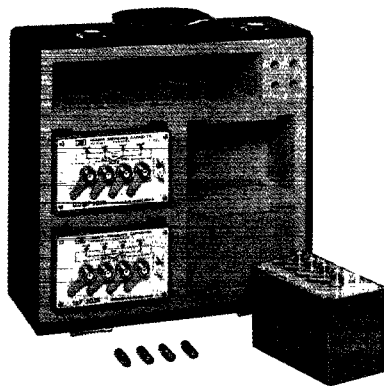
# COMPONENT MEASUREMENT

## Standard Capacitor Set and Decade Capacitor

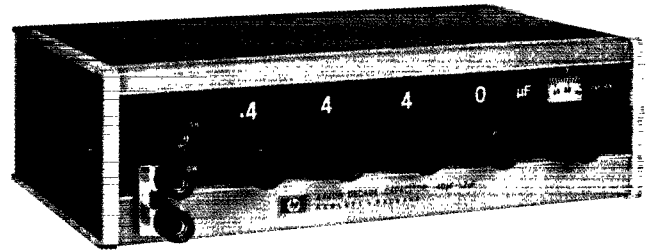
HP 16380A, 16380C, 4440B



HP 16380A



HP 16380C



HP 4440B

### HP 16380A, HP 16380C Description

The HP 16380A and HP 16380C are precision standard capacitor sets that cover the range of 1 pF to 1  $\mu$ F in decade steps. The HP 16380A consists of four discrete air-dielectric capacitors with nominal values of 1 pF, 10 pF, 100 pF, and 1000 pF. Similarly, the HP 16380C consists of four discrete capacitors, but with solid dielectrics and with nominal values of 0.01  $\mu$ F, 0.1  $\mu$ F, and 1  $\mu$ F.

Both the HP 16380A and HP 16380C are furnished with test certification of 0.01% calibration accuracy. Capacitance stability with respect to time varies from capacitor to capacitor but is in the range of  $\pm 50$  or  $\pm 300$  ppm/year.

The HP 16380A and HP 16380C both have the four-terminal pair configuration to allow direct connection to any of Hewlett-Packard's many four-terminal pair impedance measuring instruments. The HP 16380A/C can be easily adapted to two-, three-, and five-terminal configurations.

### HP 16380A, 16380C Specifications (valid at 1 kHz, 23 $\pm$ 5° C) HP 16380A

Capacitance	1 pF	10 pF	100 pF	1000 pF
Nominal Accuracy	$\pm 0.1\%$			
Calibration Accuracy	$\pm 0.01\%$			
Stability	$\leq 300$ ppm/yr*			
Dissipation Factor	$\leq 0.0001$			
Dimensions	112 mm H $\times$ 142 mm W $\times$ 88 mm D			
Weight	8.0 kg (includes case)			

\*Supplemental performance characteristics.

### HP 16380C

Capacitance	0.01 $\mu$ F	0.1 $\mu$ F	1 $\mu$ F
Nominal Accuracy	$\pm 0.1\%$		
Calibration Accuracy	$\pm 0.01\%$		
Stability	$\leq 50$ ppm/yr		
Dissipation Factor	$\leq 0.0004$	$\leq 0.0005$	$\leq 0.0007$
Dimensions	117 mm H $\times$ 142 mm W $\times$ 88 mm D		
Weight	6.3 kg (includes case)		

### HP 4440B Description

The HP 4440B Decade Capacitor is a high accuracy instrument providing usable capacitances from 40 pF to 1.2  $\mu$ F. Its 0.25% accuracy makes it an ideal aid for circuit design or as a working standard.

The use of silvered-mica capacitors in all four decades provides higher accuracy, lower dissipation factor, and good temperature coefficient. An air capacitor vernier provides 100 pF (from 40 pF to 140 pF) with resolution of 1 pF. Capacitors are housed in a double shield in such a way that increased capacitance from two terminals to three terminals is held to 1 pF.

### 4440B Specifications

**Capacitance:** 40 pF to 1.2  $\mu$ F in steps of 100 pF with a 40 pF to 140 pF variable air capacitor providing continuous adjustment to better than 2 pF between steps

**Direct reading accuracy:**  $\pm (0.25\% + 3 \text{ pF})$  at 1 kHz for three-terminal connection

**Resonant frequency:** Typical values of the resonant frequency are 450 kHz at 1  $\mu$ F, 4 MHz at 0.01  $\mu$ F, and 40 MHz at 100 pF

**Dissipation factor:** for  $C \geq 1040$  pF, 0.001 max. at 1 kHz  
for  $C < 1040$  pF, 0.005 max. at 1 kHz

**Temperature coefficient:**  $< +70$  ppm/ $^{\circ}$ C

**Insulation resistance:** 5 G $\Omega$  minimum, after 5 minutes at 500 V dc

**Maximum voltage:** 42 Vdc or 30 Vrms

**Weight:** net, 2.5 kg (5½ lb); shipping, 3.6 kg (8 lb)

**Size:** 76 mm H  $\times$  264 mm W  $\times$  152 mm D (3 in  $\times$  11 in  $\times$  6 in)

### Ordering Information

**HP 16380A** Standard Capacitor Set (1 pF, 10 pF, 100 pF, 1000 pF) \$3.095

**HP 16380C** Standard Capacitor Set (0.01  $\mu$ F, 0.1  $\mu$ F, 1  $\mu$ F) \$4.660

**HP 4440B** Decade Capacitor \$1.975