

INSTRUCTION MANUAL

 **BK PRECISION**
DYNASCAN CORPORATION
MODEL 810A



CAPACITANCE METER

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DYNASCAN CORPORATION

MAINTENANCE

CAUTION

Remove discharged disposable batteries immediately to prevent damage from battery leakage.

BATTERY REPLACEMENT/FUSE ACCESS

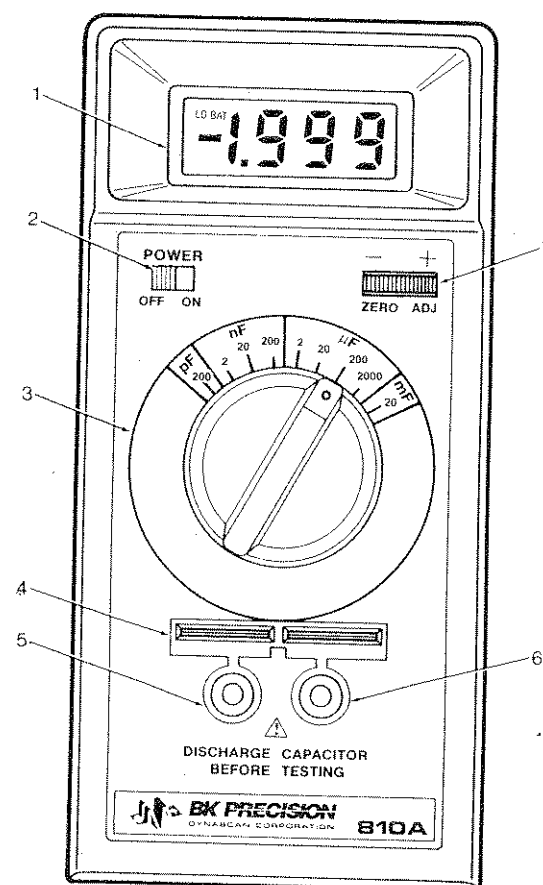
1. Slide battery compartment cover away from meter case by holding meter with both hands (facing rear of meter) and sliding battery compartment cover using both thumbs.
2. With index finger, tilt rear of battery out of compartment. When rear of battery is free, remove battery from meter case. Disconnect battery. To install battery, follow removal instructions in reverse order.

FUSE REPLACEMENT

The meter is protected against damage due to charged capacitors by a fuse located in the battery compartment. If the fuse opens, the meter will read as if an open capacitor was under test. Replace the fuse only with a 1/4 A, 250 V fuse (B & K Part No. 194-019-9-001). To remove the fuse, press against right end of fuse with a pen tip or small screwdriver. Fuse is axially spring loaded at the left-end fuse clip. A spare fuse is located next to the fuse clip. Replace fuse by indexing one end of new fuse in the spring-loaded side of the fuse clip and guiding other end of fuse under the retaining tabs located on the opposite side of the fuse clip.

CONTROLS AND INDICATORS

1. **Display.** 3-1/2 digit display (1999 maximum) with automatic decimal point. Indicates measured value. Overrange indicated by displaying most significant digit "1" and all other digits blank. Also indicates low battery.
2. **POWER Switch.** Turns instrument ON and OFF.
3. **Range Switch.** Selects range (200 pF, 2 nF, 20 nF, 200 nF, 2 μ F, 20 μ F, 200 μ F, 2000 μ F, or 20 mF).
4. **Capacitor Test Sockets.** Use for direct plug in of capacitor leads. See jack descriptions below.
5. **Jack (Black).** Common, reference, or foil side test lead jack.
6. **Jack (Red).** Positive polarized test lead input for red lead. Allows for use of test lead where test socket usage is not feasible. Test lead connected to this jack is applied to the positive (+) lead of a polarized capacitor.
7. **ZERO ADJ Knob.** Used for "zeroing" readout. Also useful for "zeroing" cable capacitance.
8. **Tilt Stand (not shown, on rear).** Converts to hanger strap if removed and reattached to holes at top rear of case.



INSTRUMENT PROTECTION PRECAUTIONS

CAUTION

1. Never apply a voltage to the test jacks of the meter; serious internal damage to the meter may result.
2. Fully discharge any capacitor to be measured.
3. Observe polarity when testing polarized capacitors.
4. Do not attempt to measure any component "in circuit."

OPERATING PROCEDURE

1. Set POWER switch to ON position. The presence of any character displayed on the LCD readout serves as a power on indicator.
2. Select the 200 pF range. Adjust the ZERO ADJUST control until the Least Significant Digit is as close as possible to just changing from "1" to "0" with no negative sign present. If test leads are used, connect them to the (+) and (-) capacitor test jacks before zeroing the meter. Zeroing the meter after the connection of test leads allows the lead capacitance to be zeroed out. Do not short the test leads together.
3. Recheck meter zero each time measurements are started, making sure the last digit appears as close to zero as possible. Remember that greatest meter resolution is realized when the meter is zeroed at the 200 pF range.
4. If the value of the capacitor under test is marked, select the appropriate range. For unknown capacitances, start with the 200 pF range. If an overrange is indicated keep increasing ranges until the overrange indication ceases and a reading is obtained. This procedure directs the user to the range that offers the greatest resolution.

5. For smaller capacitors with axial leads and/or PC mount lead configurations, zero the meter and insert the capacitor leads directly into the slotted capacitor test socket. For capacitors where it is not feasible to use the test socket, plug test leads into the (+) and (-) capacitor test jacks and clip the test leads to the capacitor terminals.
6. An overrange condition is indicated by a "1" located in the Most Significant Digit with no other digits displayed.
7. Read capacitance directly from the readout, as the decimal point is automatically located by the meter thereby allowing all readings to correspond to the range selected.

CONSIDERATIONS

1. An open capacitor will read zero on all ranges (possibly a few pF on the 200 pF range).
2. When using the 200 pF range, it is recommended that only the supplied short test leads be used for testing if the test socket is not feasible for a particular situation. Long test leads may possess excessive capacitance. If the test lead capacitance exceeds 20 pF, the zero adjust of the meter will not be able to "zero out" the additional cable capacitance. Also, even though a test cable may have been initially "zeroed," subsequent movement of the leads may invalidate previous meter zero.
3. If the test lead capacitance exceeds the limit of the meter zero adjust, note the cable capacitance reading and deduct it from the final meter reading.
4. When measuring an assortment of capacitors, where some will require test leads and some will not, leave the test leads connected to the meter throughout the measurements. Otherwise, it will be necessary to "zero out" the test lead capacitance when test leads are in use, and "rezero" when test leads are removed.
5. To conserve battery life, turn the POWER switch to OFF when measurements are complete. For prolonged use, use

the optional AC adapter. A low battery condition is indicated by LO BAT appearing in the upper-left corner of the readout. When the LO BAT indicator is active, the battery should be replaced as soon as possible.

6. The instrument applies a very low voltage to the capacitor under measurement. There is no danger of exceeding the voltage rating of most capacitors, or of retaining a dangerous voltage on the capacitor when it is removed from the meter.
7. Capacitors (especially electrolytics) often have notoriously wide tolerances. Typically, measured values of up to 100% greater than the rated value are observed. However, values are seldom drastically below the rated value.
8. The meter utilizes an ac measurement method. This method inherently more immune to error than meters using the timed dc-ramp method when measuring high-leakage capacitors; a situation common with electrolytic capacitors.
9. This capacitance meter (as well as most capacitance meters) is intended solely for the measurement of elements possessing purely capacitive characteristics. It is not intended for the measurement of capacitance of components possessing combined resistive and capacitive characteristics, such as encountered when attempting the measurement of capacitance of a resistor.

USEFUL CONVERSIONS

pF	nF	μ F	mF	FARAD
1,000	1.0	0.001		
10,000	10.0	0.01		
100,000	100.0	0.1		
1,000,000	1,000.0	1.0	0.001	
	10,000	10.	0.01	
	100,000	100.0	0.1	
	1,000,000	1,000.0	1.0	0.001
		10,000	10.0	0.01
		100,000	100.0	0.1
		1,000,000	1,000.0	1.0

pF = picofarads (10^{-12})
 μ F = microfarads (10^{-6})

nF = nanofarads (10^{-9})
 mF = millifarads (10^{-3})

SPECIFICATIONS

Range	Accuracy	Resolution	Test Frequency
20 mF	$\pm (2\% \text{ rdg} + 1 \text{ digit})$	10 μF	10 Hz
2000 μF		1 μF	10 Hz
200 μF	$\pm (1\% \text{ rdg} + 1 \text{ digit})$	100 nF	10 Hz
20 μF		10 nF	100 Hz
2 μF	$\pm (0.5\% + 1 \text{ digit} + 0.5 \text{ pF})$	1 nF	1 kHz
200 nF		100 pF	
20 nF		10 pF	
2 nF		1 pF	
200 pF		0.1 pF	

GENERAL SPECIFICATIONS

Display. 3-1/2 digit liquid crystal display (LCD) with a maximum reading of 1999.

Overrange Indication. "1" or "-1".

Low Battery Indication. LO BAT displayed.

Sampling Rate. 2.5 measurements per second, nominal.

Excitation Voltage. 3.2 volts maximum.

Zero Adjustment Range. $\pm 20 \text{ pF}$ min.

Power. Single standard 9 V battery, NEDA 1604 or equivalent.

Battery Life. 100 hours typical (alkaline).

Dimensions. (H x W x D) 1-3/8" x 3-9/16" x 7-1/2" (35 mm x 90 mm x 190 mm), 1-3/4" (45 mm) max height at tilted window.

Weight. 13 oz (365 g) including battery.

Supplied Accessories. Test leads (pair), spare fuse (1/4 A), battery, instruction manual,

Optional Accessories. AC adapter (Model BE-11) and Carrying Case (Model LC-29).



