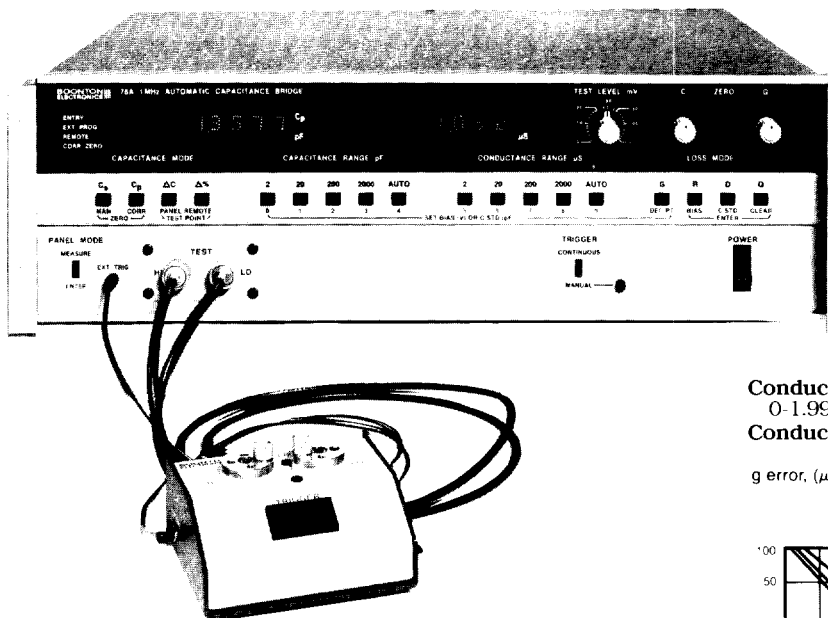


Automatic 1 MHz Capacitance Bridge Model 76A



The Model 76A combines established precision bridge techniques with an automatic balancing system and internal computing facilities. It makes fully automatic, triggered or free running, 1 MHz parallel capacitance and conductance measurements with test levels of from 5 to 200 mV r.m.s. Independent range selection or autoranging for both capacitance and loss is made using the convenient front-panel push-button controls. Annunciators show the range or mode in use. The bridge will compute and display on command the equivalent series capacitance, series resistance, dissipation ($\tan \delta$), or Q of the test. In addition, any capacitance measurement can be displayed as a deviation in capacitance or a percentage deviation versus a previously entered and stored value.

The push button controls have a secondary function when the "entry" mode is selected. In this mode they may be used to program numbers which appear in the right hand display. These numbers may be entered into storage as a reference capacitance value for deviation measurements or entered to set a dc bias voltage on the optional internal supply.

A unique "corrected zero" feature of the 76A supplements the front panel coarse and fine C & G zero controls. In this mode the zero offsets of every combination of C & G range are automatically measured and stored for correction of subsequent readings.

Measurements may be made at the front panel test inputs or at the end of shielded test leads. When "remote test point" is selected a stored program is used to calculate and correct for each measurement made through the 30 inch test cables supplied.

Versatile remote control input and data output options are available.

SPECIFICATIONS

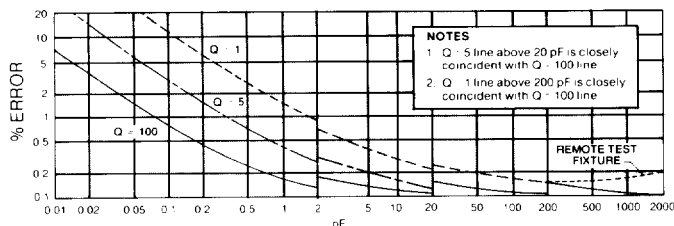
Capacitance: 0-2000 pF in 4 ranges:

0-1.9900 pF, 0-19.900 pF, 0-199.00 pF, 0-1990.0 pF

Capacitance Accuracy:

$$C \text{ error, (pF)} \leq \pm \left[\frac{C(\text{pF})}{1000} + \frac{g(\mu\text{S})}{20000} + \frac{C \text{ fs(pF)}}{20000} + 0.0005 \left(\frac{1+10D}{1+D} \right)^2 + \frac{0.02}{e} \right]$$

where e = test level in mV



CAPACITANCE ACCURACY (200 mV TEST LEVEL)

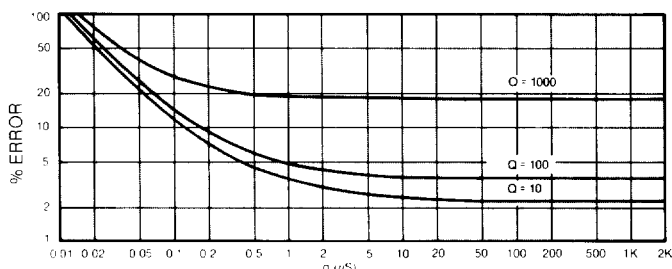
Conductance: 0-2000 μS in 4 ranges:

0-1.999 μS , 0-19.99 μS , 0-199.9 μS , 0-1999 μS

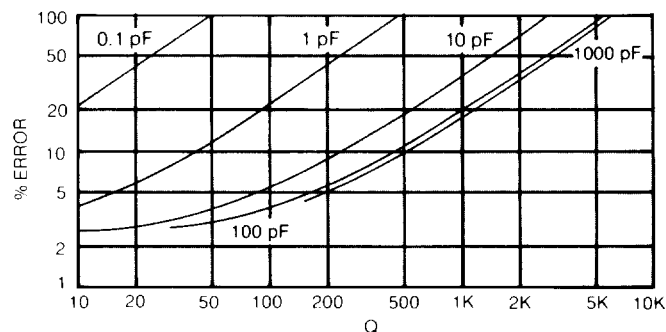
Conductance Accuracy:

$$g \text{ error, } (\mu\text{S}) \leq \pm \left[\frac{g(\mu\text{S})}{50} + \frac{C(\text{pF})}{1000} + \frac{g \text{ fs}(\mu\text{S})}{2000} + 0.001 \left(\frac{1+10Q}{1+Q} \right) + \frac{0.2}{e} \right]$$

where e = test level in mV



CONDUCTANCE ACCURACY (200 mV TEST LEVEL)



CONDUCTANCE ACCURACY
IN THE PRESENCE OF CAPACITANCE

Test Signal: 1 MHz, 5-200 mV, variable

Test Time: 100 — 150 ms, $C > 2$ pF and $G > 2$ μS .

500 ms, $C < 2$ pF or $G < 2$ μS .

Display: Dual digital readout, decimal points, units, modes, active ranges.

Display Modes: C_p , C_s , ΔC , $\Delta\%$, G , R_p , R_s , D ($\tan \delta$), Q .

Autoranging Speed: 5 ms each range change.

Trigger Modes: Continuous (1 per sec), manual, external.

DC Bias: External input, ± 200 V, 30 mA fused.

Supplied Accessories: Universal test fixture with 30" input cables Model 76-9A

Available Accessories: 76-2A thru 76-9A, 102-3A (see accessories).

Options:

-01 IEEE 488-1975 Interface Bus.*

-02 Parallel BCD Data Outputs, TTL isolated*

-03 Programmable DC Bias

Range: 0 to 200 volts, unipolar, 5 mA max.

Resolution: 5 mV for bias to 20 volts

50 mV for bias from 20 to 200 volts

Programming: Entered numerically from panel or externally programmed.

Accuracy: 0.05% of setting + resolution

-04 RS-232C Interface*

*May not be installed at the same time.