1658

The GenRad 1658 offers you all of the Digibridge capability of the 1657—and then some. The result? An even higher level of performance at a typically low GenRad price.

Measurement at 0.1%.

The second member of the GenRad Digibridge family, the 1658 can give you automatic microprocessor-based testing of R, L, C, D, and Q. Basic accuracy for R, L, and C is 0.1%.

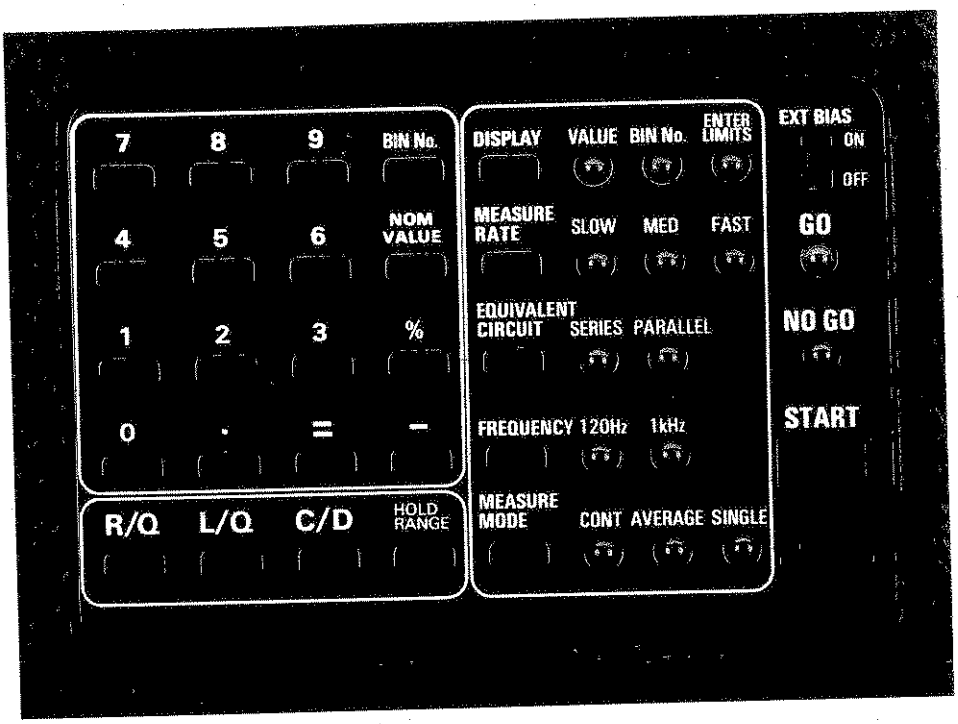
Its primary display is a five full-digit LED readout, while its secondary display contains four full digits. The benefits in resolution and accuracy are clear. And that accuracy is compounded by the standard Digibridge guarded Kelvin measurement techniques, freeing you from worries of shunt admittance- or series impedance-induced errors.

A simple, yet sophisticated programming keyboard for a new level of testing flexibility.

The 1658 offers you a clean, simple control pad that enables you to pre-enter the limits to which you want to test components. That way, the operator merely pushes a button, and the 1658 automatically consigns the component under test to the proper bin with a simple, 1-digit display.

This limit comparison feature of the 1658 gives you 10 bins for sorting. This is especially convenient for component manufacturing and incoming inspection applications. Bin 0 is designated for D/Q failures; bins 1-8 for multi-band sorting. Bin 9 is for components that don't meet any of the specified limits for bins 0-8.

RLC limits for bins 1-8 are entered as percentage deviations from the nominal value—for example, ±1%. You can even enter asymmetrical limits, such as −20% to 80%. The DQ limit is entered as a single number.



A GO/NO-GO light on the control panel indicates quick pass-fail results for all tests on all components, whether or not the bin number is being displayed. That, too, adds testing speed and flexibility.

And all bin limits are held in the 1658's memory until they are changed or the power is turned off. That way, the operator can move from display mode to display mode (value to bin number, bin number to bin limit) without reprogramming the instrument.

The result? Simple, straightforward readout of test results—value, bin limit, or bin number, all at the touch of a button, with little or no operator training.

There's more to 1658 flexibility than just a programming keyboard.

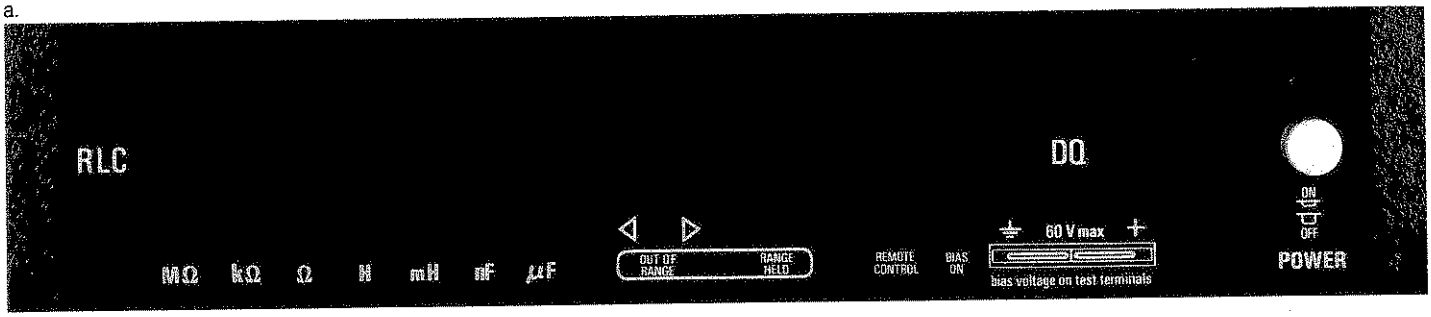
In some testing applications, speed is relatively less important than accuracy. In others, the opposite holds true. The 1658 is flexible enough to let you choose which combination is best suited to a particular test, offering three distinct measurement speeds: SLOW (typically 1.5 measurements/second) with 0.1% accuracy; MEDIUM (typically 3 measurements/second) with 0.2% accuracy; and FAST (typically 7 measurements/second) at 0.5% accuracy. The choice is yours, and you can change it from test to test by just pressing the MEASUREMENT RATE key on the 1658's control panel.

You also get the choice of measuring in series or parallel circuits. The equivalent circuit is operator-selectable, again on a test-to-test basis.

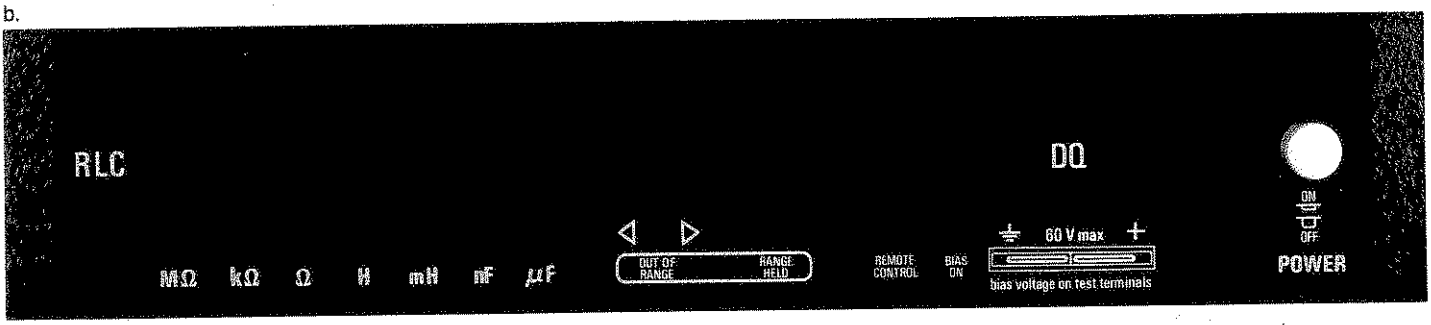
Two standard test frequencies come with the 1658: 1 kHz and either 120 or 100 Hz. That enables you to pick the one that matches the component under test, resulting in a more reliable test. On special order, test frequencies of 50, 60, 400, or 800 Hz can be substituted for the 120 or 100 Hz frequencies.

a. & b. Two 1658 displays for the same component. The first shows the component's capacitance and dissipation factor. The second indicates the operator-programmed bin number for faster sorting.

a.



b.



Three measurement modes can be chosen. The CONTINUOUS measurement mode, as its name implies, will give you continuous measurements of the device. It makes a good way to check a device's stability. The AVERAGE measurement mode makes 10 consecutive measurements and displays the average. This is particularly useful in electrically noisy situations. And the SINGLE measurement mode displays and holds one test measurement—ideal for fast GO/NO-GO incoming inspection applications as well as for use in closed-loop systems with automatic component handlers.

As for axial-lead and radial-lead components: both types can be tested on the 1658, and they can be of virtually any size, shape, or description. The 1658's built-in Kelvin test fixture can handle them all. (For components that cannot be physically inserted into the built-in test fixture, an extender cable [1657-9600] can be used to make the measurement.)

The flexibility of the 1658 is further enhanced by its IEEE 488 bus/handler option. With it, the 1658 can be connected to a variety of ancillary equipment, such as handlers, printers, or calculator-based systems. (Even if your present needs don't call for the bus/handler option, you can easily add it at any later date.)

Sophisticated test power with simple test operation.

The 1658 was designed for use by an operator having little (or no) technical training, to help you get high-throughput, high-quality testing with low testing overhead.

The 1658's LED display gives the operator test results in simple, unambiguous terms. The units being measured (MΩ, H, μF, and the like) are clearly indicated.

The measurement range is automatically selected and indicated, eliminating the need for the operator to choose the one which provides the optimum resolution and accuracy. Since there are no operator decisions to be made, there are likely to be no operator mistakes.

There's no need for measurement drift and offset compensation, either. It's all done, automatically, by the 1658's microprocessor-based electronics.

As for the 1658's keyboard, it too is simple to use. The buttons' functions are intuitively clear. And "programming" the instrument actually amounts to little more than pushing a few buttons in the correct sequence. Here's an example of entering symmetrical and asymmetrical test limits:

Example of Limit Entry
Given: 1.5 μF capacitors with D < .005
Sort: ±1%, 2%, 5%, 10%, −20% +80%
Select desired measure rate, equivalent circuit, frequency, measure mode.
With DISPLAY key, select ENTRY LIMITS
Enter D limit: .005 = BIN No. 0
With C/D key, select μF
Enter nominal value: 1.5 = NOM VALUE
Enter bin limits:
1% = BIN No. 1
2% = BIN No. 2
5% = BIN No. 3
10% = BIN No. 4
80% – 20% = BIN No. 5

Very fast, straightforward, and simple. And once the limits are entered, the operator can perform high-throughput testing, sorting, and evaluating. That's the kind of price/performance you can realize with the GenRad 1658.

1658 SPECIFICATIONS

Measurement Parameters: Measures R and Q series or parallel; L and Q series or parallel; C and D series or parallel. All measurement modes are key selectable.

Measurement Speed: Slow (1.5/s typical) medium (3/s typical) or fast (7/s typical) key selectable. See accuracy table for speed/accuracy data.

Test Frequencies: 1 kHz and 120 Hz. Also 100 Hz in place of 120 Hz. Key selectable. 50, 60, 400 or 800 Hz available on special order.

Measurement Ranges: Autoranging automatically finds the optimum range. Three internal ranges used. Microprocessor indicates over/under range conditions. Hold range/automatic feature is key selectable. 5:1 overrange at top of each range. 50:1 overrange on highest range of R and C at 120 Hz (and at 100 Hz on 100 Hz/1 kHz model).

R = 0.0001Ω to 9.9999 MΩ at 1 kHz
R = 0.0001Ω to 99.999 MΩ at 120 Hz (or 100 Hz)
L = .00001 mH to 999.99 H at 1 kHz
L = 0.0001 mH to 9999.9 H at 120 Hz (or 100 Hz)
C = .00001 nF to 999.99 μF at 1 kHz
C = 0.0001 nF to 99999. μF at 120 Hz (or 100 Hz)
D = .0001 to 9.999
Q = 00.01 to 999.9 for L/Q
Q = .0001 to 9.999 for R/Q

Display: Three selectable display modes.
1. Measured values. R, L and C—Five full digits (99999), LED display with automatic decimal point positioning. D and Q—Four full digits (9999), LED display with automatic decimal point positioning.
2. Bin number. Identifies bin for tested component.
3. Programmed limits for any bin.

Measurement Mode: Continuous, average (average value of 10 measurements), or single. Key selectable.

External Bias: Up to 60 V can be applied.

Applied Voltage: 0.3 V rms maximum.

Supplied: Power cord.

Power: 90 to 125 or 180 to 250V, 48 to 62 Hz. Voltage selected by rear-panel switch. 30 W maximum.

Mechanical: Bench model. DIMENSIONS (WxHxD): 14.78x4.4x13.5 in. (37.54x11.18x34.29 cm). WEIGHT: 13.5 lb (6.14 kg) net, 18 lb (8.2 kg) shipping.

Accuracy:

Measurement Mode	Test Frequency	RLC and DQ Values				
		MIN	MAX	Accuracy		
				Slow	Medium	Fast
C	1 kHz	.200 nF	199.9 μF	±0.1%	±0.2%	±0.5%
C	120 Hz*	2.0 nF	1999.9 μF	±0.1%	±0.2%	±0.5%
D	Either	.0000	.1000	±.0005	±.001	±.0025
L	1 kHz	.200 mH	199.99 H	±0.1%	±0.2%	±0.5%
L	120 Hz*	2.0 mH	1999.9 H	±0.1%	±0.2%	±0.5%
Q	Either	00.00	02.00	±.01	±.01	±.01
R	1 kHz/120 Hz*	2.0Ω	1.9999 MΩ	±0.1%	±0.2%	±0.5%
Q	Either	.0000	.1000	±.001	±.002	±.005

*Values also apply to 100 Hz.

For values outside of these ranges, or for values for high-phase components or networks, contact your local GenRad sales office.

Description	Catalog Number
1658 RLC Digibridge®	
120 Hz and 1 kHz Test Frequencies	**1658-9700**
100 Hz and 1 kHz Test Frequencies	**1658-9800**
120 Hz and 1 kHz Test Frequencies with IEEE 488 Bus/Handler Interface	**1658-9701**
100 Hz and 1 kHz Test Frequencies with IEEE 488 Bus/Handler Interface	**1658-9801**
Extender Cable (for remote measurements)	**1657-9600**
IEEE 488 bus/handler interface option retrofit	**1658-9610**