

Two-Terminal Measurement

Conventional measurement of electrical circuits. Two-terminal measurements may use three or more test leads, in some cases, but are measuring in conventional ways so they are still called 2-terminal measurements in the 9925.

Three-Terminal and Two-Terminal Measurement

The 9925 makes measurements in two different ways. It makes 2-terminal measurements the same as other test sets, such as voltmeters, ohmmeters, and ammeters. It displays the results of these tests in digital form (number) and in some cases in analog (pointer on a scale) form also. The readings are in volts, ohms, or milliamps. These are all familiar to most people in repair.

The 9925 also makes 3-terminal measurements which are different from what any portable test set could do in the past. The Mechanized Loop Test (MLT) equipment in the Central Office, or its equivalent by another name, uses 3-terminal test procedures. The MLT values, which the Repair Service Bureau may send out, will be 3-terminal values.

The test procedure used to get these values is quite different from 2-terminal values. What the MLT and the 9925 do is to measure various combinations of Tip-to-Ring, Tip-to-Ground, and Ring-to-Ground while shorting another combination or injecting current into the pair, for example. The results of the measurements are then used in some complex mathematical calculations which result in the 3-terminal values which are displayed on the screen

of the test set. These results are called values because they actually represent the value of a battery voltage or a resistor that would be required, if you wanted to construct a circuit that would act exactly like a pair. There are two circuits called the Thevenin-equivalent Circuits, which are used as standards for 3-terminal DC and AC measurements.

WARNING, CODE OR ERROR MESSAGES

There are five warning, code, or error messages the 9925 can display.

1. Low battery voltage - test results may be incorrect.
2. Excessive current.
3. Data overflow (value too high).
4. Most significant A/D status byte not ready.
5. Least significant A/D status byte not ready.

68

18.0 Specifications

The Basic Unit

Storage Temperature

-20°C to +60°C

Operating Temperature

-10°C to +50°C

Weight

8.7 lbs (with batteries)

Size

Length: 10.56 inches

Width: 5.2 inches

Height: 11.0 inches

Material

High impact plastic in heavy-duty canvas bag with carrying strap and convenience pouch for cords and manual.

Specifications

All measurements are auto ranging

AC Voltage:

0 to 250 VAC ($\pm 2\% \pm .5V$)

DC Voltage:

0 to ± 300 VDC ($\pm 2\% \pm .5V$)

DC Loop Current

0 to 200 mA DC

($\pm 2\% \pm .3mA$)

(at 20 mA $\pm .3mA$)

measured through 430 ohm load

Resistance:

0 to 65 Megohms

0 - 200 ohms ($\pm 1\% \pm 1$ ohm)

200 ohms - 1 Megohm

($\pm 1\% \pm 1$ count)

1 - 3.5 Megohms

($\pm 2\% \pm 1$ count)

3.5 - 6.5 Megohms

($\pm 10\% \pm 1$ count)

Also displays loop length for 19, 22, 24 and 26 gauge wire. Temperature calibrations capability provided.

Capacitance:

300 pF to 5 μ F ($\pm 2\% \pm 50$ pF)

Also displays distance to open,

20 - 20 K ft. ($\pm 2\% \pm 6$ ft.)

Leakage:

0 to 100 points (± 2 points)

0 - 6 Megohms

($\pm 5\% \pm 2,000$ ohms)

Ring Count: 0 to 5 C4

type ringers ($\pm .5$ ringer)

Level:

-40 to +10 dBm ($\pm .5$ dB @ 1,000 Hz

measured across 600 ohms load)

Frequency: 100 to 10,000 Hz

($\pm 1\% \pm 1$ count)

Metallic Noise:

0 - 50 dBmC (± 1 dB)

measured across 600 ohms load

Power Influence:

50 to 100 dBmC ($\pm .5$ dB)

Outputs:

Tracing Tone: 577.5 Hz continuous or interrupted

Tone Send:

300 - 5,000 Hz ($\pm 1\%$)

-24 to +5 dBm ($\pm .5$ dB)

Send Frequency: 404; 1004; 2713; 2804;

3000; 5000 Hz at 0 dBm ($\pm .5$ dB)

Z out = 600 ohms