SECTION I
GENERAL INFORMATION

1-1. INTRODUCTION.

1-2. This section contains general information concerning the -hp- Model 3465B Multimeter. Included is an instrument description, specifications, information about instrument and manual identification, option and accessory information and safety considerations.

1-3. DESCRIPTION.

1-4. The -hp- Model 3465B Multimeter is a 4-1/2 digit, five function digital multimeter. The five functions are dc volts, ac volts, dc current, ac current and ohms. Measurements can be made to four significant digits with a sample rate of 2-1/2 readings per second. Throughout this manual, the 3465B Multimeter will be referred to as Multimeter.

1-5. SPECIFICATIONS.

1-6. Instrument specifications are listed in Table 1-1. These specifications are the performance standards or limits against which the instrument is tested. Any change in the specifications due to manufacturing, design or traceability to the U.S. National Bureau of Standards will be covered by a change sheet. Additional information describing the operating characteristics are not specifications but are supplemental information for the user.

1-7. INSTRUMENT AND MANUAL IDENTIFICATION.

1-8. Hewlett-Packard uses a two-section serial number. The first section (prefix) identifies a series of instruments. The last section (suffix) identifies a particular instrument within the series. If a letter is included with the serial number, it identifies the country where the instrument was manufactured. This manual is kept up-to-date with the instrument at all times by revision. If the serial prefix of your instrument differs from the one on the title page of this manual, refer to Section VIII for backdating information that will adapt this manual to your instrument. All correspondence with Hewlett-Packard should include the complete serial number.

1-9. OPTIONS.

1-10. The following is a list of the options available for the multimeter. Multimeter options are available to allow operation from various line voltages.

Option	Description
100	86 – 106 V ac 48 – 440 Hz
115	104 – 127 V ac 48 – 440 Hz
210	190 – 233 V ac 48 – 440 Hz
230	208 – 250 V ac 48 – 440 Hz
910	An additional Operating and Service Manual

1-11. Warranty Exceptions.

1-12. Batteries are warranted for 90 days.

1-13. ACCESSORIES.

1-14. The following accessories are available to extend the usefulness of your Multimeter:

a. Model 11096B RF Probe, 100 kHz to 500 MHz (down 3 dB at 10 kHz and 700 MHz), for use on the 10 V and 100 V ranges in the DCV function only.

b. Model 11002A Test leads, dual banana to dual alligator.

c. Model 11003A test leads, dual banana to probe and alligator.

d. Model 11000A dual banana to dual banana, 44 in.

e. Model 34110A soft vinyl carrying case.

f. Model 34111A HV Probe, 40 kV dc.

g. Model 34112A Touch – Hold Input Probe.

1-15. SAFETY CONSIDERATIONS.

1-16. This operating and service manual contains cautions and warnings alerting the user to hazardous operating and maintenance conditions. This information is flagged by a caution or warning heading and/or the symbol ⚠. The ⚠ symbol appears on the front panel and is an international symbol meaning "refer to the Operating and Service Manual". This symbol flags important operating instructions located in Section III. To ensure the safety of the operating and maintenance personnel and retain the operating condition of the instrument, these instructions must be adhered to.

Table 1-1. Specifications.

DC VOLTMETER

Ranges: 20 mV, 200 mV, 2 V, 20 V, 200 V, 1,000 V

Maximum Input: 1,000 V (DC + Peak AC)

Accuracy (1 year + 23°C ± 5°C):

Range	Specification
20 mV	± (0.03% of reading + 2 counts)
200 mV through 200 V	± (0.02% of reading + 1 count)
1000 V	± (0.025% of reading + 1 count)

Temperature Coefficient (0°C to 50°C): ± 0.003% of Reading/°C

Effective Common-Mode Rejection (with 1 kΩ imbalance in either lead):

AC: > 120 dB at 50/60 Hz ± 0.1%

AC Normal-Mode Rejection:

> 60 dB at 50/60 Hz ± 0.1%

Input Resistance:

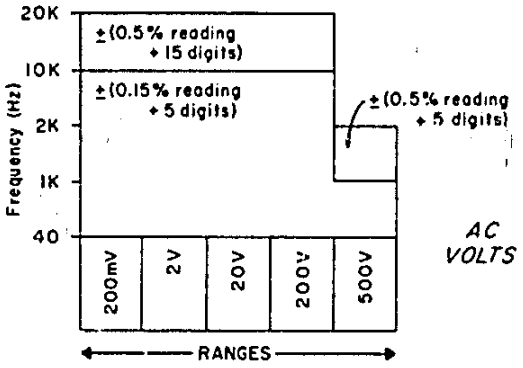
20 mV through 2 V ranges: (80% R.H.) $\geq 10^{10}$ Ω
20 V through 1,000 V ranges: 10 MΩ ± 1%

AC VOLTMETER

Ranges: 200 mV, 2 V, 20 V, 200 V, 500 V (500 V Max)

Overrange: The maximum reading decreases linearly from 19,999 at 10 kHz to 10,000 at 20 kHz.

Accuracy: 1 year + 23°C ± 5°C)



Temperature Coefficient (0°C to 50°C): ± (0.005% of Reading + .2 counts)/°C

Input Impedance: 1 M ± 1% shunted by < 100 pF

DC AMMETER

Ranges: 200 µA, 2 mA, 20 mA, 200 mA, 2,000 mA

Maximum Input: 2 A from < 250 V source

Protection: 2 A/250 V fuse (normal blow)

Voltage Burden:

Range	Max Burden at Full Scale
200 µA – 200 mA	< 250 mV
2,000 mA	< 700 mV

Accuracy: 1 year + 23°C ± 5°C)

Range	Specification
200 µA, 2 mA	± (0.07% of reading + 1 count)
20 mA	± (0.11% of reading + 1 count)
200 mA, 2000 mA	± (0.6% of reading + 1 count)

Temperature Coefficient (0°C to 50°C):

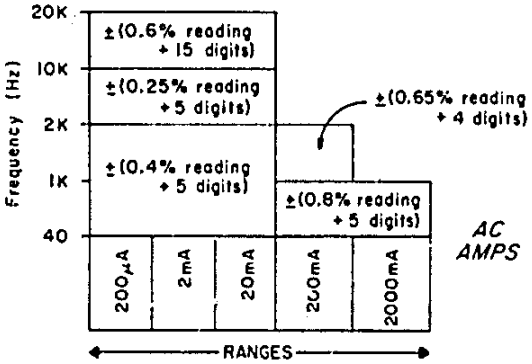
Range	Specification ± (% of Reading)/°C
200 µA	± 0.006%
2 mA, 20 mA	± 0.004%
200 mA, 2,000 mA	± 0.01%

AC AMMETER

Ranges: 200 µA, 2 mA, 20 mA, 200 mA, 2,000 mA

Overrange: The maximum reading decreases linearly from 19,999 at 10 kHz to 10,000 at 20 kHz.

Accuracy: (1 year, + 23°C ± 5°C)



Temperature Coefficient (0°C to 50°C): ± 0.01% of Reading/°C.

Protection: 2A/250 V fuse (normal blow)

Voltage Burden:

Range	Max Burden at Full Scale
200 µA – 200 mA	< 250 mV
2,000 mA	< 700 mV

OHMMETER

Ranges: 200 Ω, 2 kΩ, 20 kΩ, 200 kΩ, 2,000 kΩ, 20 MΩ

Accuracy: (1 year + 23°C ± 5°C)

Range	Specification
200 Ω	± (0.02% of reading + 2 counts)
2 kΩ through 2 MΩ	± (0.02% of reading + 1 count)
20 MΩ	± (.1% of reading + 1 count)

Table 1-2. General Information.

Temperature Coefficient (0°C to 50°C):

Range	Specification ± (% of Reading)/°C
200 Ω through 2 MΩ	± 0.0015%
20 MΩ	± 0.004%

Maximum Input Voltages:

Between Input HIGH (V, Ω) and COM:

Function	Max Voltage
DC Volts	1000 V (dc + peak ac)
AC Volts	600 V dc; 500 V ac rms; 800 V peak ac
Ohms	350 V (dc + peak ac)

Between COM terminal and grc ± 500 V (dc + peak ac)

Reading Rate: 2.5 samples per second

Overload Indication: Display Blanks except for overrange "1" and decimal point (also polarity sign on DCV or DCA FUNCTIONS).

Ohms Terminal Characteristics:
Configuration: 2 wire
Open-circuit voltage: < 5 V max.
Overload protection: 350 V (dc + peak ac)

Nominal current through unknown resistance:

Range	Current
200 Ω	1 mA
2 kΩ	1 mA
20 kΩ	10 μA
200 kΩ	10 μA
2000 kΩ	1 μA
20 MΩ	0.1 μA

Power Requirements:

Power: AC Line; 48 – 440 Hz

86 – 106 V Option 100
104 – 127 V Option 115
190 – 233 V Option 210
208 – 250 V Option 230

Battery (Rechargeable NiCad): 6 hours minimum continuous operation

Recharge Time: 8 hours (instrument off)

Total Instrument Power Dissipated:

Instrument on, Battery Operation: < 1 watt
Instrument on, Line Operation: < 10 VA

Battery Test: Depress DCV and 10 MΩ: Recharge NiCad batteries if the display reading is < 0.380.

Environmental Considerations:
Operating temperature: 0°C to 40°C (32°F to 104°F)
Humidity range: 95% at 40°C
Storage temperature: - 20°C to + 50°C (- 4°F to 122°F)

CAUTION

Maximum Input Voltages:

Between Input HIGH (V Ω) and COM:

Function	*Max Voltage*
DC Volts	*1000 V (dc + peak ac)*
AC Volts	*600 V dc; 500 V ac rms; 800 V peak ac*
Ohms	*350 V (dc + peak ac)*