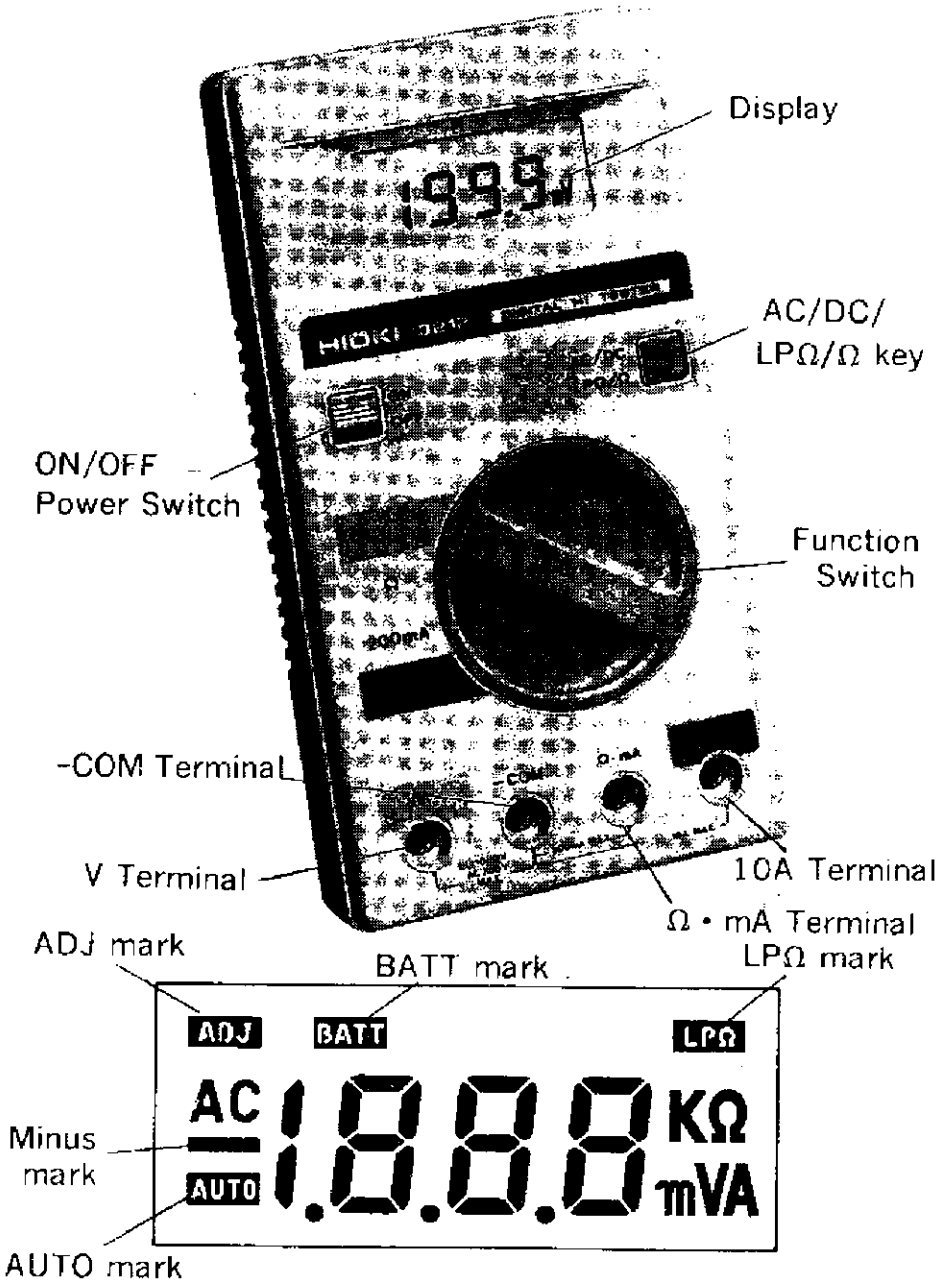
Measurement Range and Accuracy

(Specified for 23°C ± 5°C, < 80% RH)

	Range	Resolution	Accuracy	Notes
DCV	200mV	100μV	±0.5%rdg. ±4dgt.	Input resistance: > 100MΩ
	2V	1mV	±0.7%rdg. ±4dgt.	// 10MΩ (approx)
	20V	10mV	//	// //
	200V	0.1V	//	// //
	1000V	1V	±1.0%rdg. ±4dgt.	// //
ACV	2V	1mV	±1.0%rdg. ±8dgt.	Input resistance: 10MΩ (approx) (40~500Hz)
	20V	10mV	//	// //
	200V	0.1V	//	// //
	600V	1V	±1.2%rdg. ±8dgt.	// //
DCA	200mA	100μA	±1.5%rdg. ±4dgt.	approx. 1Ω (not including fuse resistance.)
	10A	10mA	±1.7%rdg. ±4dgt.	> approx. 15mΩ
ACA	200mA	100μA	±2.0%rdg. ±8dgt.	approx. 1Ω 40Hz~500Hz
	10A	10mA	±2.2%rdg. ±8dgt.	> approx. 15mΩ
OHMS	200Ω	0.1Ω	±0.8rdg. ±5dgt.	Open-terminal voltage: 1.5V±0.2V
	2kΩ	1Ω	//	0.65V±0.065V //
	20kΩ	10Ω	//	// //
	200kΩ	100Ω	//	// //
	2000kΩ	1kΩ	±1.8%rdg. ±10dgt.	// //
LPΩ	2kΩ	1Ω	±1.0%rdg. ±10dgt.	Open-terminal voltage: < 0.4V
	20kΩ	10Ω	//	// //
	200kΩ	100Ω	//	// //
	2000kΩ	1kΩ	±2.0%rdg. ±10dgt.	// //



English

WARNING

This instrument is designed to prevent accidental shock to the operator when properly used. However, no engineering design can render safe an instrument which is used carelessly. Therefore, this manual must be read carefully and completely before making any measurement. Failure to follow directions can result in a serious or fatal accident.

1. Instrument Specifications

Display: 3 1/2-digit LCD, maximum reading of "1999", autopolarity, unit symbols.

Ranging: Automatic (Manual for current ranges.)

Overrange Indicator: "1" in MSD column blinks (except in DC 1000V, AC 600V and AC/DC 10A range.) Beeper sounds (except in DC 1000V, AC 600V, AC/DC 10A, and Ohms range.)

Battery Low Indicator: BATT mark lights.

Sampling Rate: 2 per second.

Power Source: Two size AA (SUM-3) batteries; Life: 300 hours continuous use (approx)

Environmental Conditions (Operating): 0~40°C, <80% RH. (No condensation)

(Storage): −20~60°C, <70% RH (No condensation)

Power Consumption: 5mw (typical)

Temperature Coefficient: ±(400ppm + 0.3dgt)/°C (0~30°C)

±(400ppm + 2dgt)/°C (30~40°C)

Maximum Overload Limits : Volts; DC 1100V, AC 750V (1 min.)

Ω & mA; AC 250V (0.5A non-arcing fuse)

10A range; AC/DC 12A (1 min.)

Dielectric Strength: AC 3kV/1 min (between input terminals and case).

Dimensions/Weight: 160H×85W×29D (mm)/250g (approx)

Accessories Furnished: Test leads, 0.5A non-arcing fuse

Optional Accessories: 9145 Carrying Case, 9014 High-Voltage Test Probe

2. Precautionary Notes

- Always check to make sure that the function switch setting and test lead connection is correct before making a measurement.
- The BATT mark appearing in the display indicates that the batteries are worn-out. Replace the batteries with new ones.
- Always turn the power switch OFF when not using the instrument.
- Do not store the instrument in a high temperature, high humidity location, and avoid areas where condensation is likely to occur.
- Condition of the internal fuse is checked in the Ohms range with the test leads plugged into the Ω • mA and −COM terminals. When shorting the test leads together, a blown fuse is indicated by the display failing to "zero", and indicating that the reading is NG (no good). When this is the

case, replace the fuse.

3. Voltage Measurements

⚠**WARNING:** Maximum allowable input is DC 1000V, or AC 600V.

①Plug the red test lead into the V terminal, and the black test lead into the −COM terminal.

②Set the function switch to V. (The AUTO mark will appear in the display.)

③For DC V measurements, press the AC/DC key to erase the AC mark from the display. (There is no DC mark.) For AC V measurements, press the AC/DC key to light the AC mark in the display.

④Connect the test leads to the circuit under test and read the value from the display.

NOTE: In the DC 200mV range (autoranging), since input resistance is a high value (>100MΩ), noise will cause the display to show a reading even though there is no measurement input. In this case, short the test lead tips together. If the display will zero, the measurewill be accurate.

NOTE: When taking voltage measurements where spikes and other distortion are present in the waveform (e.g., horizontal output from a TV set, etc.), use positive (+) polarity readings. Negative (−) polarity readings will be grossly erroneous.

NOTE: There is no 200mV range with AC V.

4. Ohms (Ω and LPΩ) Measurements

NOTE: When the test lead tips are shorted together in the lowest range, 2 to 3 counts will typically be indicated in the display. (This is not a defect.)

NOTE: There is no 200Ω range with the LPΩ function.

①Plug the red test lead into the Ω • mA terminal, and the black test lead into the −COM terminal.

②Set the function switch to Ω. (The AUTO mark will appear in the display.)

③For Ω measurements, press the LPΩ/Ω key and erase the LPΩ mark from the display. For LPΩ measurements, press the LPΩ/Ω key to light the LPΩ mark.

④Connect the test leads to the circuit or component under test and read the value from the display.

NOTE: Both Ω and LPΩ functions are autoranging.

NOTE: The Ohms function includes both Ω and LPΩ. In the LPΩ function, open terminal and full-scale voltages are less than those for the standard

Ω function. LPΩ should be used for in-circuit measurements in microcircuits containing semiconductors that should have less than 0.5V applied to them.

5. AC and DC Current Measurements) (Manual ranging)

①With the meter in the AC/DC 200mA range, plug the red-test lead into the Ω • mA terminal, and the black test lead into the −COM terminal. If the meter is in the AC/DC 10A range, plug the red test lead into the 10A terminal, and the black lead into the −COM terminal.

②Set the function switch to 200mA or 10A. (The AUTO mark will be extinguished.)

③For DC current measurements, press the AC/DC key to erase the AC mark from the display.

For AC current measurements, press the AC/DC key to light the AC mark.

④Connect the test leads to the circuit under test and read the value from the display.

*Measurements in the 10A range should be completed in under 3 minutes due to heat produced by such high current values.

6. Continuity Test

①Plug the red test lead into the Ω • mA terminal, and the black lead into the −COM terminal.

②Set the function switch to the Ω position.

③Continuity is indicated when the display reads 19 counts or less (in the lowest range), and the beeper sounds.

NOTE: Either Ω or LPΩ can be used for the continuity test.

7.Battery and Fuse Replacement

Both batteries and the spare fuse are located inside the battery holder. When replacing the batteries, make sure that the pole polarity markings are observed.