KM-307 DIGIT AUTORANGE MULTIMETERUSER'S MANUAL

SAFETY INFORMATION

The following safety information must be observed to insure maximum personal safety during the operation at this meter:

1. Use the meter only as specified in this manual.
2. Never measure the voltage while the test leads are at the current Test State.
3. Do not use the meter if it looks damaged. Inspect the leads for damaged insulation or exposed metal, check test lead continuity, and replace the damaged leaos.
4. Disconnect the power and discharge the high-voltage capacitor before testing in resistance, capacitance, Inductance, continuity and diode function.
5. Be cautions when working at DC60V or AC42V, such voltage may cause a shock hazard.
6. When making measurements, keep your finger behind the guards' plant on the probes.
7. Select the proper function and range for measurement, to avoid damaging the meter, disconnect the test leads from test points before change function.

General Features

Reading Rate: 3 reading/Sec.
Display: 4000 counts LCD
Range: Auto range.
Polarity: Automatic on
Overrange indication: "OL" mark indication
Low battery indication: " " mark is displayed when the battery voltage drops below 2.4V.
Auto Power off: Automatic off
Operational temperature: 0°C to 40°C, <75%RH
Storage temperature: -20°C to 60°C, <80%RH
Power supply: R6 UM3 AA SIZE 1.5Vx2

Table 1. Push button

Button	Function	Operation performed
RANGE	V / A / Ω	Press RANGE enter the manual range mode Press RANGE more than 2 sec. Return to auto range state.
SELECT	V /uA /mA / A /⊣⊢·))	Rotary switch at V, uA, mA, A or ⊣⊢ / ·)) test position, press SELECT to select DC or AC and ⊣⊢ or ·)) mode
HOLD	Any switch position except Hz	Press hold meter enter data hold mode and press this button again the meter exit hold mode
Hz/DUTY	Hz / V /uA / mA / A	Press this button change Hz or duty cycle test mode
REL	Any switch position except Hz	Press REL enter the relative value display, the meter will be set manual range mode
RST	Any switch position	Press RST to reset the meter

DC/AC voltage measurement

1. Set the rotary switch to DC or AC position.
2. Connect the red test lead to "**V Ω Hz**" terminal and the black test lead to "**COM**" terminal .
3. Touch the probes to the test points and reading the display.

DC/AC Current measurement

WARNING

To avoid damage to the meter or injury if the fuse blows, never attempt an in-circuit current measurement where the open-circuit potential to earth is greater than 1000V. To avoid damage to the meter, check the meter's fuses before proceeding. Use the proper terminals, function, and range for your measurement. Never place the probes in Parallel with a circuit or component when the leads are plugged into the current terminals.

1. Turn off power to the circuit. Discharge all high-voltage capacitors.
2. Set the rotary switch to "**uA**" "**mA**" or "**A**" position.
3. Press SELECT button to select DC or AC mode.
4. Connect the black test lead to "**COM**" terminal and the red test lead to "**mA**" or "**A**" terminal.
5. Touch the probes to the test points. Turn on to the circuit and read the display at the same time.

Resistance measurement

1. Set the rotary switch to " **Ω** " position
2. Connect the black test lead to "**COM**" terminal and the red test lead to " **V Ω HZ** " terminal
3. Touch the probes to test points or resistance and reading the display.

Diode and continuity test

1. Set the rotary switch to " **Ω** " position
2. Press SELECT to select " ⊣◀ " or " ·)) " test mode.
3. Touch the probes to tested point. For diode, a good diode should still produce a forward-bias reading of 0.3V to 0.8V, however, The reverse–bisa reading over range and appear "**OL**" on display. A shorted circuit diode reacing is near 0V and open circuit diode is appear "**OL**" is displayed in both directions. For continuity test if the test points resistance below 50Ω the beeper sound.

Capacitance measurement

CAUTION

To avoid electrical hazards, discharge the capacitor before measuring.

1. set the rotary switch to "**CAP**" position.
2. Connect the black test lead to "**COM**" terminal and red test lead to "**V Ω Hz**" terminal.
3. Touch the probes to test point, if the capacitor is a polarity, the red test lead to position leg and black test lead to minus leg.
4. Read the capacitor value on LCD.

Inductance measurement

1. set the rotary switch to desired Inductance position.
2. Insert the inductor pins into the Lx connector for measurement and read the inductance value on LCD.

Transistor Gain Measurements

1. Set the rotary switch to desired hfe position.
2. Never apply an external voltage to the hFE sockets. Damage to the meter may result.
3. Plug the transistor directly into the hFE sockets. The sofckets are labeled E, B and C for emitter, base and collector.
4. Read the transistor Hfe (dc gain) from the display.

Frequency and duty cycle measurement

1. Set the rotary switch to "**Hz**" position
2. Connect the black test lead to "COM" terminal and red test lead to "**V Ω Hz**" terminal.
3. Press to **Hz/DUTY** select Hz or DUTY test mode.
4. Touch the probes to signal source and read display.

Note: In voltage or current measurement positions, press **Hz/DUTY** can measure frequency or duty cycle.

Temperature Measurement (only model C)

1. Set the rotary switch to "**C**" position.
2. Insert the cold terminal (free terminal) of the thermocouple sensor into the temperature test jack and put the working terminal (the temperature testing terminal) onto or into the object under test. Then the reading of temperature will be directly displayed.

Table 3. DC/AC voltage

Range	DC Accuracy	AC Accuracy
400mV	± (0.8%rdg+2)	± (1.8%rdg+5)
4V / 40V / 400V		± (1.0%rdg+3)
DC1000V / AC750V		± (1.5%rdg+3)

Note: Input resistance: 10MΩ.
AC voltage Respond Frequency: 50Hz~400Hz for 400V and below, 50Hz~100Hz for 750V
Over load protect: 400mV range 500V RMS, the rest 1000V DC or AC 750V RMS.

Table 4. DC/AC Current

Range	DC Accuracy	AC Accuracy
400uA / 4000uA	± (1.2%rdg+2)	± (1.8%rdg+3)
40mA / 400mA	± (1.5%rdg+2)	± (2.0%rdg+3)
20 A	± (2.0%rdg+3)	± (2.5%rdg+5)

Note: Overload protect: Fast fuse 0.5A/250V & Fast fuse 10A/250V

Table 5. Resistance

Range	Accuracy
400Ω / 4kΩ / 40kΩ / 400kΩ / 4MΩ	± (1.0%rdg+2)
40MΩ	± (1.5%rdg+2)

Note: Overload protect: 250V RMS

Table 6. Capacitance

Range	Accuracy	Overload protect
4nF	± (5.0%rdg+25)	250V RMS
40nF	± (2.5%rdg+10)	
400nF/4uF/40uF	± (2.0%rdg+4)	
100uF	Unspecified, >30Sec	

Table 7. Diode & CONTINUITY

Range	Description
⊣◀	Display read approx. Forward voltage of diode. Accuracy: ± (3.0%rdg+3)
•)))	If the resistance is less than50Ω, the beeper sounds continuously

Note: Overload protect: 250V RMS

Table 8. Inductance

Range	Accuracy	Test frequency
4mH	± (5.0% + 25)	Approx.1KHz
40mH	± (2.5% +10)	
400mH	± (2.0% + 3)	
4H	± (5.0% + 25)	
40H	± (5.0% + 25)	

Table 9. TRANSISTOR hFE

Range		Description	Test Condition
hFE	NPN	Display read approx. hFE value (0~1000) of transistor under test	I_b=10uA V_{CE}=1.5V
	PNP		

Table 10. Frequency any Duty

Range	Accuracy	Sensitivity
9.99 Hz	unspecified	0.7V RMS
99.9 Hz-9.99 MHz	± (0.2%rdg+3)	
DUTY Range: 0.1% to 99.9%		

Note: Overload protect: 250V RMS

Table 11. Temperature

Range		Accuracy
750°C	-20°C~400°C	± (1.0%rdg + 3)
	400°C~750°C	± (2.0%rdg + 1)

Maintenance

WARNING

To avoid electrical shock or damage the meter. Do not get water inside the case. If the meter fails to operate, check battery, test leads, fuse, etc., and replace them if necessary. If the meter still does not work, couble check operating procedure as described in this manual.

Battery replacement

The meter is powered by a single two 1.5V battery. With R6 UM3 AA SIZE carbon zinc or alkaline battery. Replace battery if the low battery sign " [BAT] " is displayed.

1. Set the rotary switch to **"OFF"** position.
2. Loosen screws on bottom cover, pull up and move the cover
3. Replace the defective battery.
4. Reverse the procedure of opening cover to close the bottom cover.

Fuse replacement

1. Perform steps 1 to 2 of battery replacement procedure.
2. Replace the defective fuse and use same size and rating install in the fuse holder.
3. Reverse the procedure of opening cover to close the bottom cover.