

53 series

INSTRUCTION MANUAL

		5308	5315	5318B	5325	5365	5385	860
DC VOLTAGE		a	a	a	a	a	a	a
AC VOLTAGE (200V 750V)		a	a	a				
AC VOLTAGE					a	a	a	a
DC CURRENT		a	a	a	a	a	a	a
AC CURRENT					a	a	a	a
RESIST RANGE UP TO MO		2	20	200	20	2000	2000	20
CAPACITANCE					a	a	a	
DIODE TEST		a	a	a	a	a	a	a
hFE TEST				a	a	a	a	
LOGIC TEST						a		
AUDIBLE CONTINUITY				a	a	a	a	a
FREQUENCY MEASUREMENT	200-20kHz						a	
	2k-200kHz					a		
	2k-10MHz							
BATTERY TEST		a		a				
TEMPERATURE MEASUREMENT							a	

1. SPECIFICATIONS

1.1 General Specifications

Display	3 1/2- digit liquid crystal display (LCD) with a maximum reading of 1999.
Polarity	Augomatic (-) negative polarity indication.
Overrange indication	Highest digit of (1) or (-1) is displayed.
Low battery	The (LO BAT) is displayed when the battery voltage drops below the operating voltage.
Measurement rate	3 measurements per second, nominal.
Operating temperature	0°C to 50°C 70%RH.
Storage temperature	-20°C to + 60°C 0-80% RH with battery removed.
Accuracy	Accuracy specifications at 23°C±5°C, less than 75%RH.
Power	Single standard 9 - Volt battery. NEDA 1604 JIS 006P, IEC 6F22.
Battery life (typical)	1 High-Power Zinc-Carbon Premium - 200 hours.
Dimensions	5.1 "(13cm) long 2.7"(7.1cm) wide 1.3 "(3.5cm) high.

Weight

9 ounces (250grams)
including battery.

Accessories

Test leads (pair), spare
fuse (2A) battery,
operators manual.

1.2 Electrical Specifications AT

23°C±5°C, less than 75%RH.

DC Voltage

Range	Accuracy	Resolution	Input Impedance	OL. Protection
200mV	±0.5% rdg +1dgt	100 µV	10MΩ	500CDC/350VAC for 15SEC.
2V				1200VDC/800VAC
20V				
200V				
1000V				

AC Voltage For 5308 5315 5318B only

Range	Accuracy	Resolution	Input Impedance	OL. Protection
200V	±1.2% rdg +4dgts	100mV	4.5MΩ	500CDC/750VAC for 15SEC.
750V				

AC Voltage

Range	Accuracy	Resolution	Input Impedance	OL. Protection
200mV	@50 --500Hz ±1.0% rdg +4dgts	100 µV	100MΩ	500CDC/350VAC for 15SEC.
2V				1200VDC/800VAC
20V				
200V				
750V	@50 --500Hz ±1.5% rdg +4dgts			

DC Current

Range	Accuracy	Resolution	Voltage Burden	OL. Protection
200 μ A	$\pm 1.0\%$ rdg +2dgts	100nA	325mV MAX.	0.25A/250V fuse
2mA				
20mA				
200mA				
10A	$\pm 2.0\%$ rdg +3dgts		700V MAX.	unfuse up to 12A for 30 SEC.

AC Current

Range	Accuracy	Resolution	Voltage Burden	OL. Protection
200 μ A	$\pm 1.0\%$ rdg +2dgts @50 – 500Hz	100nA	325mV MAX.	0.5A/250V fuse
2mA				
20mA				
200mA				
10A	$\pm 2.0\%$ rdg +4dgts @50 – 500Hz		700V MAX.	unfuse up to 12A for 30 SEC.

Resistance

Range	Accuracy	Resolution	Test Voltage	OL. Protection
200Ω	±1.0% rdg +3dgts	100μΩ	3.2V MAX.	500V DC/AC
2KΩ	±0.8% rdg +1dgt		0.3V MAX.	
20KΩ				
200KΩ				
20MΩ	±3.0% rdg +2dgts		3.2V MAX.	
200MΩ	±5.0%(rdg - 10dgts)+3dgts			
2000MΩ				

Capacitance

Range	Accuracy	Test Voltage	TEST Frequency	Resolution
2000pF	$\pm 3.0\%$ rdg +10dgts	50mV	400Hz	1pF
20nF				
200nF				
2 μ F				
20 μ F				

Continuity Beeper

Threshold	Response time
<approx. 80	<100mS

hFE Test

Range	Base DC current	VCE
0 to 1000	10 μ A	$2.8 \pm 0.4V$

Diode Test

Test Current	Test Voltage
$1.0 \pm 0.6mA$	3.2V MAX.

Battery Test

Range	Accuracy	Loaded Current
1.5V	$\pm 3\%$ rdg + 1 dgt	200mA
9V		6mA

Frequency Measurement

Range	Accuracy	Effect Reading	Input Sensitivity	OL. Protection
200Hz	$\pm 3.0\%$ rdg +4dgts	10-1999	35mV rms	500V DC/ AC
2KHz				
20KHZ				

Logic Measurement

Logic Type	Logic Threshold	Frequency Response	Detectable Pulse width	Input Impedance	OL. Protection
TTL	Logic 1: $2.4V \pm 0.2V$	20MHz	25nS.MIN.	$120K\Omega \pm 10K\Omega$	50V DC/AC
	Logic 0: $0.7V \pm 0.2V$				

Temperature

Range	Accuracy	Resolution
-20°C to 750°C	$\pm(3^\circ + 1\text{dgt})$ up to 150 $\pm 3\%$ rdg over 150	1°C , 1°F
0°F to 1400°F	$\pm(5^\circ + 2\text{dgt})$ up to 225 $\pm 3\%$ rdg over 225	

2. OPERATION

2.1 DC Voltage Measurement (or AC Voltage Measurements)

1. Connect red test lead to V - Ω input connector and black test lead to COM input connector.
2. Set Function/Range switch to desired DC and V position (or Set Function/ Range Switch to desired AC and V position) if magnitude of voltage is not known. Set switch to the highest range and reduce until a satisfactory reading is obtained.
3. Turn off power to the device or circuit being tested and discharge all capacitors.
4. Connect test leads to the device or circuit being measured.
5. Turn on power to the device or circuit being measured Voltage value will appear on the digital display along with the voltage polarity.
6. Turn off power to the device or circuit being tested and discharge all capacitors prior to disconnecting test leads.

2.2 DC Current Measurement (or AC Current Measurement)

1. Connect red test lead to the mA input connector for current measurements up to 200 millamperes. Connect black lead to the COM input Connector.

2. Set Function/Range switch to desired DC and A position (or Set Function/Range Switch to desired AC and A position if magnified of current is not known set switch to highest range and reduce until satisfactory reading is obtained.

3. Turn off power to the device or circuit being tested and discharge all capacitors.

4. Open the circuit in which current is to be measured now securely connect test leads in series with the load in which current is to be measured.

5. Turn on power to the circuit being tested.

6. Read current value on digital display.

7. Turn off al power to the circuit being tested and discharge all capacitors.

8. Disconnect test leads from circuit and reconnect circuit that was being tested.

2.3 Resistance Measurement

All resistance ranges on the multimeter are low-power ohms except for the 200- ohm range. The low power ohm allows accurate measurements of in-circuit resistance as test voltage is below that necessary to turn on a diode function note in the 200 range the continuity beeper function is activated.

1. Connected red test lead to the V - Ω input connector and black test lead to the COM input connector.

2. Set Function/Range switch to desired Ω position. If magnitude of resistance is not known. Set switch to highest range and reduce until satisfactory reading is obtained.

3. if the resistance being measured is connected to a circuit turn off power to the circuit being tested and discharge all capacitors.

4. Connect test leads to the circuit being measured. When measuring high resistance. Be sure not to contact adjacent points even if insulated.

Because some insulators have a relatively low insulation resistance. causing the measured resistance to be lower than the actual resistance.

5. Read resistance value on digital display if a high resistance value is shunted by a large value of capacitance, allow digital to stabilize.

2.4 Diode Tests

1. Connect red test lead to the V - Ω input connector and black test lead to the COM input connector.

2. Set Function/Range switch to the diode test position.

3. If the semiconductor Function being measured is connected to a circuit turn off power to circuit being tested and discharge all capacitors.

4. Connect test leads to the device.

5. Read forward value on digital display.

2.5 Transistor hFE Measurements

1. Transistor must be out of circuit. Set the function/range switch to the hFE position.

2. Plug the emitter. Based and collector leads of the transistor into correct holes in either the NPN or PNP transistor test socket. whichever is appropriate for the transistor you are cheching. Read the hFE (beta. or DC current gain) in the display.

2.6 Capacitance Measurements

1. Set the function/range switch to the desired capacitance range.
2. Short the leads of the capacitor to be tested to insure that there is no charge on the capacitor
3. Insert the capacitor leads into capacitor test socket. Note that there are two groups of the holes. One lead must be inserted into one hole of group two.
4. Read the capacitance value in the display.

2.7 Battery Test

1. Set the function/range switch to the 1.5V of 9V BATT range.
2. Model 5308 and 5318B; connect red test lead to the mA, input connector and black test lead to the COM input connector.
3. Connect the test leads to Battery "+" , "-" two terminals, Battery voltage value will appear on digital display.

2.8 Continuity Measurements

1. Set the selectors switch to the 200 position.
2. Continuity between probe tips will be indicated by audible beeper when resistance is below 100

2.9 Frequency Measurement

1. Connect the red lead to the "Hz" jack and the black lead to the "COM" jack.

2. Set the RANGE switch to the desired "Hz" position.
3. Connect test leads to device or be measured.
4. Read frequency on Digital Display.

2.10 Temperature Measurement

1. Connect a type K thermocouple to the jack on the instrument. Place the probe or thermocouple tip on or in the material to be measured and take the temperature reading directly from the display.

2. Remove and disconnect the old battery from the meter and replace clip. A new unit. Wind the excel lead length once around the battery clip.

Install the battery and replace the battery cover.
(or remove the old fuse and replace with a new fuse of the proper rating the fuse must be 0.5V, 250V.)