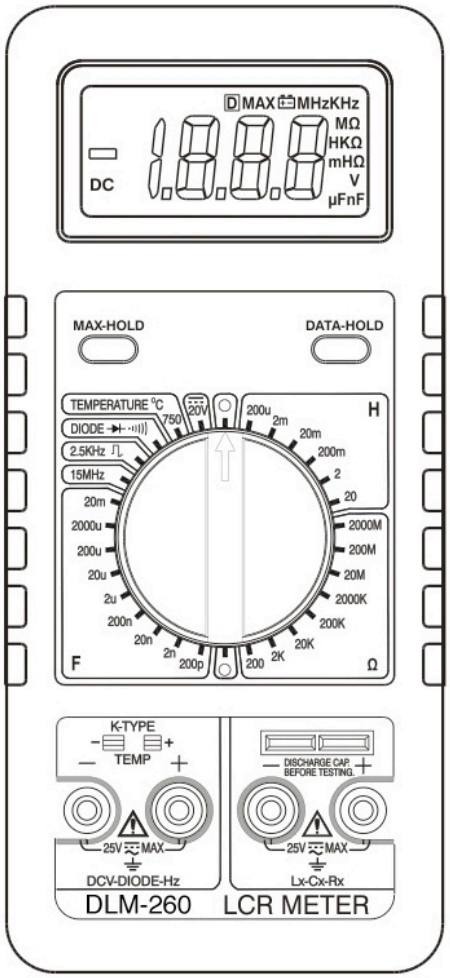
CIRCUIT-TEST

OPERATING INSTRUCTIONS

DLM-260 CE

DIGITAL LCR METER



SPECIFICATIONS

Display: 3½ digit liquid crystal display (LCD) with a maximum reading of 1999.
Polarity: Automatic, positive implied, negative polarity indication.
Overrange: (OL) or (-OL) is displayed.
Zero: Automatic.
Low battery indication: The "⊟" is displayed when the battery voltage drops below the operating level.
Measurement rate: 2.5 times per second, nominal.
Operating Environment: 0°C to 40°C at <70% R.H.
Storage Temperature: -20°C to 60°C, 0 to 80% R.H. with battery removed from meter.
Accuracy: Stated accuracy at 23°C±5°C, <75% R.H.
Power: Single standard 9-volt battery, NEDA 1604, JIS 006P, IEC 6F22.
Battery life: 60 hours typical with carbon-zinc.
Dimensions: 200mm (H) x 90mm (W) x 40mm (D).
Weight: Approx. 14 oz. (400g) including battery.
Accessories: One pair test leads, one spare fuse installed, 9V battery (installed) and Operating Instructions.

DC VOLTS

Ranges: 20V
Accuracy: ±(2.0%rdg + 1dgt)
Input impedance: 1MΩ
Overload protection: 25V DC or AC rms

TEMPERATURE

Ranges: -20°C to 750°C
Resolution: 1°C
Accuracy:
±(2.0%rdg + 3dgts) on -20°C to 500°C
±(3.0%rdg + 2dgts) on 500°C to 750°C

DIODE TEST

Including: →|, continuity test
Test current: 1.0mA±0.6mA
Open voltage: 3.0VDC typical
Accuracy: ±(3.0%rdg +1dgt)
Continuity: <30dgts
Display: Forward junction voltage
Overload protection: 25V DC or AC rms

SIGNAL OUTPUT

Signal: +3V, -0.5V square wave, 50% duty
Voltage: Hi: +5V approx
Lo: -2V approx
Frequency: 2.5KHz square wave
Output impedance: 3.5KΩ
Overload protection: 25V DC or AC rms

FREQUENCY (Autoranging)

Ranges: 2KHz, 20KHz, 200KHz, 2000KHz, 15MHz
Accuracy: ±(0.1%rdg +1dgt)
Sensitivity: 1.0Vrms min (TTL signal)
Overload protection: 25V DC or AC rms

CAPACITANCE

Ranges: 200pF, 2nF, 20nF, 200nF, 2μF, 20μF, 200μF, 2000μF, 20mF
Accuracy:
±(2.0%rdg + 30dgts) on 200pF range
±(2.0%rdg + 10dgts) on 2nF to 20μF ranges
±(3.0%rdg + 10dgts) on 200μF to 20mF ranges
Test frequency:
1000Hz on 200pF to 20nF ranges
80Hz on 200nF to 2μF ranges
26Hz on 20μF range
10.5Hz on 200μF to 20mF ranges
Overload protection: 0.1A/250V fast blow fuse
Note: In lower range 200pF, 2nF subtract residual offset reading from result with test leads opening.

RESISTANCE

Ranges: 200Ω, 2KΩ, 20KΩ, 200KΩ, 2000KΩ, 20MΩ, 200MΩ, 2000MΩ
Resolution: 200Ω range 100mΩ
Accuracy:
±(0.3%rdg + 3dgts) on 200Ω range
±(0.3%rdg + 1dgt) on 2KΩ to 2000KΩ ranges
±(2.0%rdg + 2dgts) on 20MΩ range
±[(5.0%rdg - 10dgts) + 10dgts] on 200MΩ to 2000MΩ ranges
Open circuit volts:
3.0VDC on 200Ω, 200MΩ, 2000MΩ ranges
0.3VDC on other ranges
Overload protection: 25V DC or AC rms

INDUCTANCE

Ranges: 200μH, 2mH, 20mH, 200mH, 2H, 20H
Accuracy: ±(5.0%rdg + 3dgts)
Test frequency:
1000Hz on 200μH to 20mH ranges
80Hz on 200mH to 2H ranges
26Hz on 20H range
Overload protection: 0.1A/250V fast blow fuse
Note: In lower range 200μH, 2mH subtract residual offset reading from result with test leads being shorted.

OPERATION

However, electrical noise or intense electromagnetic fields in the equipment may disturb the measurement circuit. Measuring instruments will also respond to unwanted signals that may be present within the measurement circuit. Users should exercise care and take appropriate precautions to avoid misleading results when making measurements in the presence of electronic interference.

Voltage Measurements

1. Connect the red test lead to the DCV-DIODE-Hz "+" jack and the black test lead to the DCV-DIODE-Hz "–" jack.
2. Set the Function/Range switch to the DC 20V range.
3. Connect the test leads to the device or circuit being measured.
4. For dc, a (−) sign is displayed for negative polarity, positive polarity is implied.

Temperature Measurements

WARNING
Remove test leads being measured.

1. Set the Function/Range switch to the "°C" position.
2. 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.

Diode Tests and Continuity Measurements

1. Connect the red test lead to the DCV-DIODE-Hz "+" jack and the black test lead to the DCV-DIODE-Hz "–" jack.
2. Set the Function/Range switch to the →| position.
3. Turn off power to the circuit under test.
4. Touch probes to diodes. A forward-voltage drop on diode. Microwave diode about 0.6VDC typical.
5. Reverse probes. If the diode is good, display rending "OL".
6. If the junction is measured in a circuit and a low reading is obtained with both lead connections, the junction may be shunted by a resistance of less than 1kΩ. In this case the diode must be disconnected from the circuit for accurate testing.
7. If display reading <30dgts, the beeper sounds continuously.

Signal Output

1. Set the Function/Range switch to the "⊓" position.
2. Connect the red test lead to the DCV-DIODE-Hz "+" jack and the black test lead to the DCV-DIODE-Hz "–" jack.
3. Connect the test leads to the points of signal input.

Frequency Measurements

1. Set the Function/Range switch to the Hz position.
2. Connect the red test lead to the DCV-DIODE-Hz "+" jack and the black test lead to the DCV-DIODE-Hz "–" jack.
3. Connect the test leads to the point of measurement and read the frequency from the display.

Capacitance

1. Discharge capacitors before trying to measure it.
2. Set the Range to the desired F range.
3. Insert the leads directly in to socket or test leads sockets.
4. Never apply an external voltage to sockets or damage to the meter may result.
5. Read the capacitance directly from the display.

Note: In lower range 200pF, 2nF subtract residual offset reading from result with test leads opening

Resistance

1. Set the Range to the desired "Ω" resistance range.
2. Never apply an external voltage to the sockets or damage to the meter may result.
3. Insert the leads directly in to socket or test leads sockets.
4. Read the Resistance directly from the display.

WARNING
The accuracy of the functions might be slightly affected, when exposed to a radiated electromagnetic field environment, e.g., radio, telephone or similar.

Inductance

1. Set the Ranges to the desired H range.
2. Never apply an external voltage to the sockets damage to the meter may result.
3. Insert the inductor leads directly into sockets or test leads sockets.
4. Read the inductance directly from the display.

Note: In lower range 200µH, 2mH subtract residual offset reading from result with test leads being shorted.

MAINTENANCE

WARNING
Remove test leads before changing battery or fuse or performing any servicing.

Battery Replacement

Power is supplied by a 9 volt "transistor" battery. (NEDA 1604 IEC 6F22). The "  " appears on the LCD display when replacement is needed. To replace the battery, remove the two screws from the back of the meter and lift off the battery case. Remove the battery from battery contacts.

Fuse Replacement

If no capacitance and inductance measurements are possible, check for a blown overload protection fuse. For access to fuses, remove the two screws from the back of the meter and lift off the battery case. Replace F1 only with the original type 0.1A/250V, fast acting fuse.

Cleaning

Periodically wipe the case with a damp cloth and detergent, do not use abrasives or solvents.