KUSAM-MECO®

An ISO 9001:2008 Company

3½ DIGIT 1999 COUNTS LARGE DISPLAY DIGITAL LCR METER

13 FUNCTIONS 29 RANGES

Model KM 954MK-II

SPECIAL FEATURES :

- **Professional Grade Digital LCR Mete**
- **Diode Test**
- **MAX HOLD & DATA HOLD facility**
- **Low battery indication**

GENERAL SPECIFICATIONS :

- ✷ **Basic Accuracy :** ±(0.3%rdg + 1dgt)
- ✷ **Display :** 3½ digit LCD display (1999 Counts)
- ✷ **Digit Size :** 17.5mm
- ✷ **Polarity :** Automatic, positive implied, (-) negative polarity indication
- ✷ **Overrange :** (OL) or (-OL) is displayed
- ✷ **Measurement Rate :** 2.5 times per second, nominal
- ✷ **Operating Temperature :** 0°C to 40°C at <70% R.H.
- ✷ **Storage Temperature :** -20°C to 60°C, 0 to 80% R.H. With battery removed
- ✷ **Accuracy :** Stated accuracy at 23°C ± 5°C, <75% R.H.
- ✷ **Power :** Single 9V Battery.
- ✷ **Dimension :** 200(H) x 90(W) x 40(D)mm
- ✷ **Weight :** Approx. 400g. Includung battery.

ACCESSORIES :

Test leads pair, Carrying Case, Batteries installed, User's Manual & One Spare fuse installed.

ELECTRICAL SPECIFICATIONS- KM 954MK-II

Accuracy is ± (% reading digits + number of digits) or otherwise specified, at 23°C ± 5°C

CAPACITANCE

Range	Resolution	Accuracy
200 pF	0.1 pF	±(2.0%rdg + 30dgts)
2 nF	1 pF	±(2.0%rdg + 10dgts)
20 nF	10 pF	
200 nF	100 pF	
2 F	1 nF	
20 F	10 nF	
200 F	100 nF	±(3.0% rdg + 10 dgts)
2000 F	1 F	
200 mF	10 F	

Test Frequency : 1000Hz on 200pF to 20nF ranges.
80Hz on 200nF to 2 F ranges ; 26Hz on 20 F range.
10.5Hz on 200 F 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.

INDUCTANCE

Range	Resolution	Accuracy
200 H	0.1 H	±(5.0%rdg + 3dgts)
2 mH	1 H	
20 mH	10 H	
200 mH	100 H	
2 H	1 mH	
20 H	10 mH	

Test Frequency : 1000 Hz on 200 H to 20mH ranges,
80 Hz on 200mH to 2H ranges.
26 Hz on 20H range.
Overload Protection : 0.1A/250V fast blow fuse
Note : In lower range 200 H, 2mH subtract residual offset reading from result with test leads being shorted.

FREQUENCY (Autoranging)

Range	Resolution	Accuracy
2 KHz	1 Hz	±(0.1%rdg + 1dgt)
20 KHz	10 Hz	
200 KHz	100 Hz	
2000 KHz	1 KHz	
15 MHz	10 KHz	

Sensitivity : 1.0Vrms min (TTL signal)
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 : 3.5K
Overload protection : 25V DC or AC rms

RESISTANCE

Range	Resolution	Accuracy
200	100 m	±(0.3%rdg + 3dgts)
2 K	1	±(0.3%rdg + 1dgt)
20 K	10	
200 K	100	
2000 K	1 K	
20 M	10 K	±(2.0%rdg + 2dgts)
200 M	100 M	±[(5.0%rdg-10dgts)+ 10dgts]
2000 M	1 M	

Open Circuit Voltage : 3.0V DC on 200 , 200M , 2000M ranges.
0.3V DC on other ranges.
Overload Protection : All ranges 25V DC or AC rms.

DIODE TEST

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

DC VOLTAGE

Range	Resolution	Accuracy
20 V	10 mV	±(2.0%rdg+1dgt)

Input impedance : 1M
Overload protection : 25V DC or AC rms

All Specifications are subject to change without prior notice

KUSAM-MECO®
An ISO 9001:2008 Company

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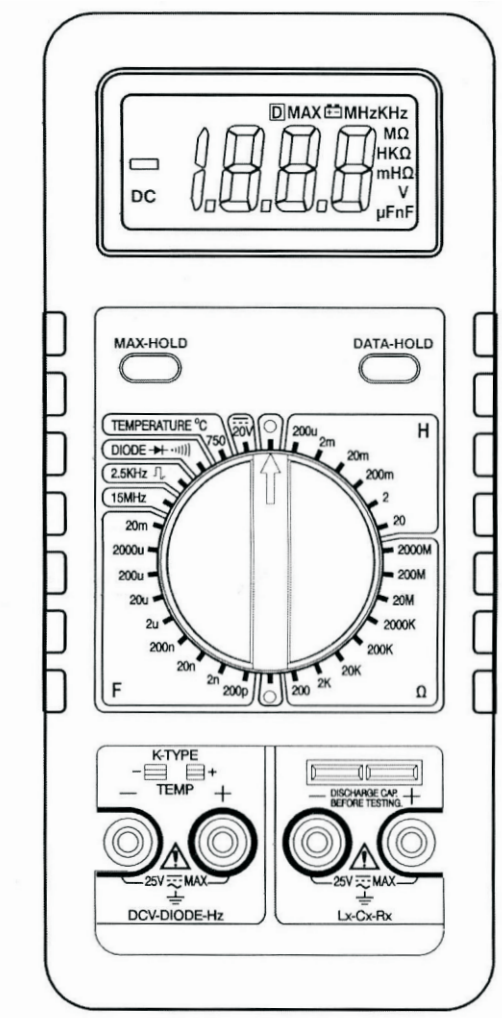
KUSAM-MECO

DIGITAL LCR METER
954 MK-II



INSTRUCTION MANUAL

KUSAM-MECO

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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.

ELECTRICAL SPECIFICATION

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.

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MUMBAI

TEST CERTIFICATE

DIGITAL LCR MULTIMETER

This Test Certificate warrantees that the product has been inspected and tested in accordance with the published specifications.

The instrument has been calibrated by using equipment which has already been calibrated to standards traceable to national standards.

MODEL NO. **954 MK-II**

SERIAL NO. _____

DATE: _____

ISO 9001
REGISTERED

QC
KUSAM-MECO
PASS

KUSAM-MECO

WARRANTY

Each "KUSAM-MECO" product is warranted to be free from defects in material and workmanship under normal use & service. The warranty period is one year (12 months) and begins from the date of despatch of goods. In case any defect occurs in functioning of the instrument, under proper use, within the warranty period, the same will be rectified by us free of charges, provided the to and fro freight charges are borne by you.

This warranty extends only to the original buyer or end-user customer of a "KUSAM-MECO" authorized dealer.

This warranty does not apply for damaged Ic's, fuses, burnt PCB's, disposable batteries, carrying case, test leads, or to any product which in "KUSAM-MECO's" opinion, has been misused, altered, neglected, contaminated or damaged by accident or abnormal conditions of operation or handling.

"KUSAM-MECO" authorized dealer shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of "KUSAM-MECO".

"KUSAM-MECO's" warranty obligation is limited, at option, free of charge repair, or replacement of a defective product which is returned to a "KUSAM-MECO" authorized service center within the warranty period.

THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. "KUSAM-MECO" SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE WHATSOEVER.

All transaction are subject to Mumbai Jurisdiction.