AC / DC STROOMTANG MULTIMETER NI 39MR
AC / DC CLAMP MULTIMETER NI 39MR

Handleiding / Manual

NIEAF INSTRUMENTS™
A Nieaf-Smitt activity

DOUBLE INSULATION Protection Class II

INTRODUCTION

1-1 Unpacking and Inspection

Upon removing your new Clamp Multimeter from its packing, you should have the following items:

1. Clamp Multimeter.

2. Test lead set (one black, one red).

3. Carrying case.

4. Instruction manual.

1-2 Meter Safety

Terms as Marked on Equipment

⚠ **ATTENTION** -- Refer to manual

DOUBLE INSULATION-- Protection Class II

DANGER-- Risk of electric shock.

Symbols in this Manual

This symbol indicates where cautionary or other information is found in the manual.

Battery

1-3 Front Panel

Refer to Figure 1 and the following numbered steps to familiarize yourself with the meter's front panel controls and connectors.

1. **Digital Display** - The digital display has a 3 3/4 digit LCD readout (maximum reading 3999) plus auto polarity, decimal point, , AC ~, DC ⎓, and unit annunciators.

2. **Input terminal -** The black test lead is always connected to the “COM” input jack and the red test lead isalways connected to the “V Ω” input jack when measuring voltage or resistance.
   * COM input terminal: Reference input connenctor.
   * V Ω input terminal: Positive input connector.
3. **Function switch** – Rotary switch is used to select **Hz, V~, V⎓, Ω, A⎓, A~** function.
4. **Trigger –** Press the lever to open the transformer jaws. When the pressure on the lever is released, the jaws will close again.
5. **Transformer Jaws -** Designed to pick up the current flowing through the conductor.
6. **Hand Guard -** Designed to protect user for safety.
7. **PEAK HOLD SWITCH -** To hold the peak measured positive value. For negative value zero is displayed.
8. **DCA ZERO SWITCH** – Auto compensate the residual magnetism by pressing this key (for A⎓ only).

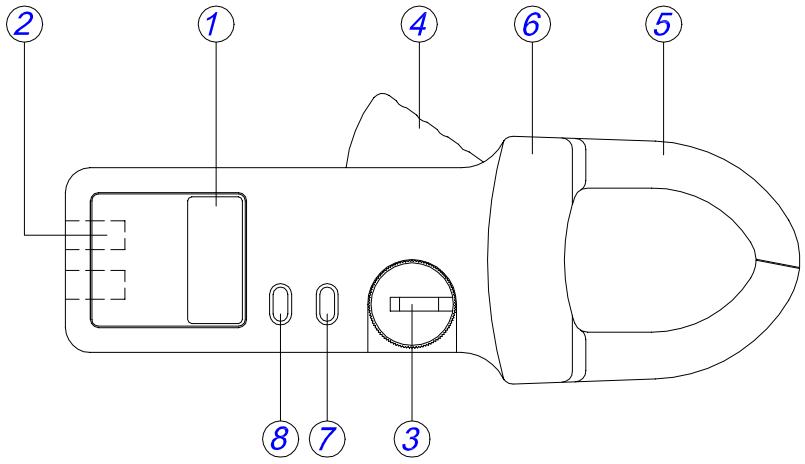

Fig. 1

9. SPECIFICATIONS

2-1 General Specifications

Display	**:** 3 ¾ Digital Liquid Crystal Display (LCD) with a maximum reading of 3999.
Polarity	**:** Automatic polarity indicated.
Overrange Indication	**: "OL"** or **"-OL"** indicated.
Range	**:** Autoranging.
Measuring Rate	**:** 2 times per second, nominal.
Position Error	**:** ± 1 % of Reading.
Type Of Sensing	**:** Hall effect sensing for AC and DC.
Low Battery Indication	**: "**  " is displayed when the battery voltage drops below the operating voltage.
Power Requirement	**:** Single 9V battery (NEDA 1604, JIS 006p or IEC6LF22)
Battery Life	**:** 40 hours typical. (Alkline)

Max/Conductor Size **:** 51mm diameter or 24x60mm busbar.
Size **:** 100mm (W) x 265mm (L) x 42mm (H).
Weight **:** 420 grams (including battery)
Accessories **:** Test leads, battery (installed), manual and carrying case.

2-2 Environmental Conditions:

Indoor use

Maximum Altitude **:** 2000 meter
Installation Category **:** IEC 1010 1000V CAT. II., 600V CAT. III.
Pollution Degree **:** 2
Temperature Coefficient: 0.2x (spec. Acc'y) / °C, <18°C or >28°C.
Operating Ambient **:** 0°C to + 45°C (below 80%R.H.)
Storage Temperature **:** -20°C to +60°C (below 80% R.H.)

2-3 Electrical Specifications

Accuracy is ±(% reading + number of digits) at 23°C ± 5°C , less than 80% R.H.

(1) Frequency: Hz

Range	Resolution	Accuracy	Over Voltage Protection
4KHz	1Hz	±(0.5%rdg + 3dgt)	AC/DC 2000A for 1min.
10KHz	10Hz		

Min. Input Frequency: 20Hz
Sensitivity: 6A r.m.s.nfor ACA (A~)
3Vr.m.s. to 600Vr.m.s. for ACV (V~).

(2) ACV: V~

Range	Resolution	Accuracy	Overload Protection
400V	0.1V	±(1.2%rdg + 5dgt) 50Hz ~ 500Hz	850V rms
600V	1V		

Additional error according to crest factor (CF) : CF from 2 to 3: + 1.4%
CF from 3 to 4: + 3%

Input impedance : 10MΩ // 100 pF.
Conversion type : True RMS

(3) DCV : V

Range	Resolution	Accuracy	Overload Protection
400V	0.1V	±(0.7%rdg + 2dgt)	1000V
1000V	1V		

Input impedance: 10MΩ.

(4) Resistance: Ω

Range	Resolution	Accuracy	Max. Open Circuit Voltage	Overload Protection
4KΩ	1Ω	±(1.0%rdg + 2 dgt)	3.3V	600V r.m.s.
40KΩ	10Ω			

Instant Continuity Description: Built- in buzzer sound when resistance is less than 100Ω.

(5)DCA: A⎓

Range	Resolution	Accuracy	Overload Protection
0 ~ 400A	0.1A	±(1.0%rdg + 3dgt)	AC 2000A for 1 min.
400 ~ 600A	1A		
600 ~ 1000A	1A	±(1.9%rdg + 5dgt)	

Additional error according to remanence : 1% max. of current crest

(6) ACA: A~

Range	Resolution	Accuracy	Frequency Response	Overload Protection
0 ~ 400A	0.1A	±(1.0%rdg + 5dgt)	40 ~ 400Hz.	AC 2000A for 1 min.
400 ~ 600A	1A			
600 ~ 1000A	1A	±(2.5%rdg + 5dgt)	40 ~ 200Hz.	

Additional error according to crest factor (CF) : CF from 2 to 3: + 1.4%
CF from 3 to 4: + 3%

Conversion type: True RMS.

(7) Auto Power Off: The meter will automatically shut itself off approximately 10 minutes after function changes.

(8) Peak Hold: ± (3%rdg + 10dgt)

OPERATION

This instrument has been designed and tested in accordance with IEC Publication 1010, Safety Requirements for Electronic Measuring Apparatus and has been supplied in a safe condition. This instruction manual contains some information and warnings which have to be followed by the user to ensure safe operation and to retain the instrument in safe condition.

3-1 Precautions and Preperations for measurement

1. If the meter is usded near equipment that generates electro-magnetic interence, the display may be unstable or indicate incorrect measurement values.
2. Make sure that the battery is properly connected.
3. The instrument should only be operated between 0°C ~ 45°C and at less than 80% R.H.
4. Do not use or store this instrument in a high temperature or high humidity environment and do not use or store the unit in direct sunlight.

5. Do not replace battery in a power on condition.
6. If the unit is not to be used for a long period of time , remove the battery.
7. Do not forget to turn off after use.

⚠	THIS INSTRUMENT MUST NOT BE USED ON UNINSULATED CONDUCTORS AT A VOLTAGE GREATER THAN 600 v AC/DC.

3-2 Frequency measurement

A. Frequency measurement by clamp on (AC current)

1. Set the rotary switch to "Hz" position.
2. Open spring-loaded clamp by pressing trigger on left side of meter.
3. Position clamp around wire or conductor and release clamp trigger, make sure that the clamp is entirely closed. The clamp must be positioned around only one conductor of a circuit. If the clamp is placed around two or more current carrying conductors, the meter reading will be false.

B. Frequency measurement by input terminal (AC voltage)

1. Set the rotary switch to "Hz" position.
2. Connect the black test lead to the "COM" terminal on the bottom of the meter and the red test lead to the "VΩ" terminal.
   You can now place the test probes on the conductors to take the measurement.

3-3 AC Voltage Measurement

1. Set the rotary switch at " V~" position.
2. Connect the black test lead to the "COM" terminal on the bottom of the meter and the red test lead to the " V Ω" terminal . You can now place the test probes on the conductors to make the measurement.

⚠ To avoid electrical shock, hazard or damage to the meter, do not attempt to measure voltages that might exceed 850V ac rms between the common input terminal and earth ground.

3-4 DC Voltage Measurement

1. Set the rotary switch at " V⎓" position.
2. Connect the black test lead to the "COM" terminal on the bottom of the meter and the red test lead to the " V Ω" terminal . Place the test probes on the conductors to make the measurement.

> ⚠ To avoid electrical shock, hazard or damage to the meter, do not attempt to measure voltages that might exceed 1000V ac rms between the common input terminal and earth ground.

3-5 Resistance Measurement

1. Set the rotary switch at " KΩ" position.
2. Connect the black test lead to the "COM" terminal on the bottom of the meter and red test lead to the " V Ω" terminal.
3. Verify that the power to the circuit under test is off. Connect test leads to the circuit to take the measurement.
   *Built - in buzzer sounds if the resistance of the circuit under test is less than 100 Ω.

3-6 DC Current Measurement

Set the rotary switch at " A ⎓" position at first.

Low current : Press DCA ZERO switch before measuring .

High current :

1. Enclose the conductor lead and close the clamp.
2. Remove the clamp and press the DCA ZERO switch . (remanent magnetization compensation)
3. Enclose the conductor lead , close the clamp and take measurements (same current direction).
   For DC measurement , the readings are positive when the current flows from the upper side to the
   lower side of the instrument as Fig. 2
4. Position the clamp around wire or conductor and release clamp trigger , make sure that the clamp is entirely closed. The clamp must be positioned around only one conductor of a circuit . If the clamp is placed around two or more current carrying conductors, the meter reading will be FALSE.

3-7 AC Current Measurement

1. Set the rotary switch at " A ~" position.
2. Open Spring-loaded clamp by pressing trigger on left side of meter.
3. Position the clamp around wire or conductor and release clamp trigger , make sure that the clamp is entirely closed. The clamp must be positioned around only one conductor of a circuit . If the clamp is placed around two or more current-carrying conductors , the meter reading will be FALSE.

MAINTENANCE

WARNING : TO AVOID ELECTRICAL SHOCK REMOVE THE TEST LEADS BEFORE OPENING THE COVER.

4-1 General Maintenance

1. Repairs or servicing not covered in this manual should only be performed by qualified personnel.
2. Periodically wipe the case with a dry cloth and detergent do not use abrasives or solvents.

4-2 Battery Installation or Replacement

The meter is powered by a single 9V battery. Use the fol
ing procedure to replace the battery.
1. Disconnect the test leads and turn the meter off. Remove the test leads from the input terminals.
2. Turn the meter power off.
3. Position the meter face down and remove the two screws of the case bottom.
4. Unsnap the case bottom and remove the battery.
5. Install a new 9V battery and refit the case bottom.

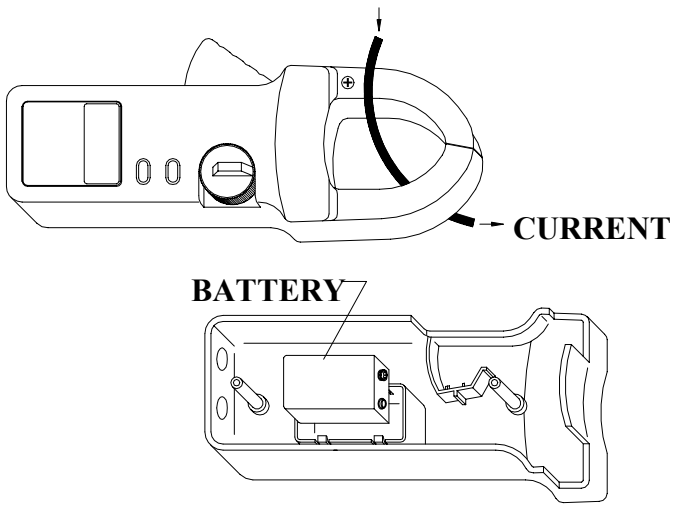

Fig. 2

Battery Replacement or Installation

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