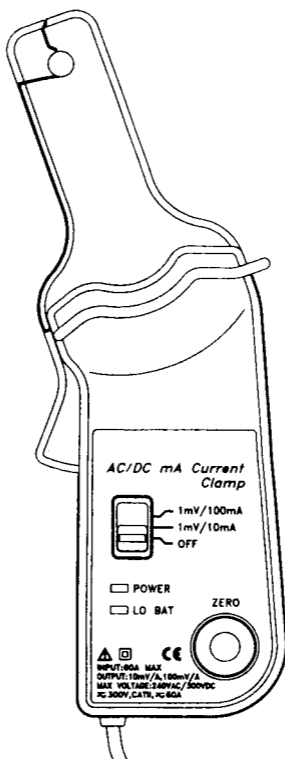


CA-60 AC/DC mA CURRENT CLAMP OPERATOR'S MANUAL



INTRODUCTION

The AC/DC mA Current Clamp is a transducer which will allow your multimeter to measure low electrical or/and electronic current up to 60 amperes AC/DC, with a frequency response up to 20kHz. When measuring current with this clamp, there is no need to break a circuit or to affect the isolation.

The extended measurement jaws allow performing measurements in a narrow space. When measuring DC current, a simple operating push button is designed for zero adjustment. The clamp adapter is applicable to leakage detection or monitoring.

APPLICATION PROCEDURES

1. Insert the black banana plug into the COM jack and the red banana plug into the V- Ω jack of any multimeter with a minimum input impedance of 10k ohms.
2. Set the power switch from "OFF" to the desired range, 1mV/10mA or 1mV/100mA position. The green LED will light to indicate that the clamp is switched on.
3. For current measurement below 2A, set the unit to 1mV/10mA range and set the multimeter to 200mV AC range for AC current measurements, or 200mV DC range for DC current measurements. If the measured current exceeds 2A, set the unit to 1mV/100mA range.
4. When perform DC current measurement, always push the zero adjustment button on the clamp until the multimeter reads zero.
5. Clamp the jaws around the current-carrying conductor and interpret the reading according to Step 3 above.
6. When 1mV/10mA range of clamp unit is selected, multiple the reading displayed on the multimeter by "10" for interpreting the measured current value in mA. For example, if the multimeter reads 10mV, the measured current is $10 \times 10 = 100\text{mA}$.

When 1mV/100mA range is selected, multiple the reading displayed on the multimeter by "100" for interpreting the measured current value in mA. For example, if the multimeter reads 5mV, the measured current is $5 \times 100 = 500\text{mA}$.

APPLICATION NOTES

1. In the case of DC current, the output is positive when the current flows from the upside to the underside of the clamp. The red banana plug end is positive.
2. In the case of DC current measurement, a hysteresis effect can occur so that it is impossible to zero the clamp properly. To eliminate this effect, open and close the jaws several times and push zero adjustment button.

OPERATOR SAFETY

1. Do not clamp around conductors with voltages equal to or exceeding 300V DC or 240V rms AC.
2. To avoid physical injury, measurements on bare conductors or conductors with cracked or frayed insulator are forbidden.

SPECIFICATIONS

GENERAL

Captured Conductor Size: 9 mm maximum

Low Battery Indicator: red LED lighting

Operating Temperature: 0°C to 50°C, 70% R.H.

Storage Temperature: -20°C to +70°C, 80% R.H.

Battery Type: 9V DC, NEDA 1604, 6F22, 006P

Battery Life: 100 hours typical with alkaline

Weight: 250 gm typical

Dimensions: 195mm(H) × 70mm(W) × 33mm(D)

Output: Coil cable with straight banana plug

ELECTRICAL (At 23±5°C, 70% R.H. maximum)

Effective Measurement Range

1mV/10mA: 10mA to 20A DC or rms AC for 200mV range of the multimeter.

1mV/100mA: 10mA to 20A DC rms AC for 200mV range of the multimeter.

20A to 60A DC or rms AC for 2V range of the multimeter.

Accuracy

System accuracy: Current clamp accuracy + DMM accuracy

For example, if the measured conductor carries a 100mA current, set the current clamp to 1mV/10mA range to get an output signal of 10mV. Suppose the accuracy of the units is 1.5%, the tolerance limit should be between 10.15mV maximum and 9.85mV minimum.

When the unit is connected to a DMM which accuracy is supposed to be 0.5% in 200mV range, the reading displayed on the DMM will be 10.20mV max. ($10.15\text{mV} \times (1+0.5\%)=10.20\text{mV}$) and 9.80mV min. ($9.85\text{mV} \times (1-0.5\%)=9.80\text{mV}$)

Current Clamp Accuracy

DCA range: 1mV/10mA

$\pm(1.5\% \pm 5\text{mA})$ 10mA ~ 20A

DCA range: 1mV/100mA

$\pm(2\% \pm 20\text{mA})$ 100mA ~ 40A

$\pm(4\% \pm 0.3\text{A})$ 40A ~ 60A

ACA range: 1mV/10mA

$\pm(2\% \pm 5\text{mA})$ 10mA ~ 10A (40Hz~2kHz)

$\pm(4\% \pm 30\text{mA})$ 10mA ~ 10A (2kHz~10kHz)

$\pm(6\% \pm 30\text{mA})$ 10mA ~ 10A (10kHz~20kHz)

$\pm(8\% \pm 30\text{mA})$ 10A ~ 15A (40Hz~20kHz)

ACA range: 1mV/100mA

$\pm(2\% \pm 30\text{mA})$ 100mA ~ 40A (40Hz~1kHz)

$\pm(4\% \pm 30\text{mA})$ 100mA ~ 40A (1kHz~2kHz)

$\pm(6\% \pm 30\text{mA})$ 100mA ~ 40A (3kHz~5kHz)

$\pm(8\% \pm 0.3\text{A})$ 40A ~ 60A (40Hz~5kHz)

Load Resistance: 10k Ω typical

Temperature Coefficient: 0.1 \times (specified accuracy) per degree C. (0 $^{\circ}$ C to 18 $^{\circ}$ C, 28 $^{\circ}$ C to 50 $^{\circ}$ C)

SAFETY INFORMATION

The instrument complies with class II, overvoltage CAT II of the EN 61010-1, and EN 61010-2-032 standards. Pollution degree 2 in accordance with IEC 664 indoor use. If the equipment is used in a manner not specified, the protection provided by the equipment may be impaired.



This product complies with the requirements of the following European Community Directives: 89/336/EEC (Electromagnetic Compatibility) and 73/23/EEC (Low voltage) as amended by 93/68/EEC (CE marking)