SERVICE

If the instrument fails to operate, check battery, test leads, etc. and replace as necessary. If the instrument still does not operate, double check operating procedure as described in the instruction manual. If the instrument still malfunctions, place it with pack slip along with a brief description of the problem in sufficient cushioning material in a shipping carton. Be sure to indicate the MFG # number located on the back of the instrument. Amprobe is not resonsible for damage in transit. Make certain your name and address also appears on the box as well as packing slip; Ship prepaid via U.P.S (where available) or Air Parcel Post insured to :

Service Division
AMPROBE INSTRUMENT
630 Merrick Road (use for U.P.S.)
P.O.Box 329 (use for Parcel Post)
Lynbrook, NY 11563-0329

Outside the U.S.A. the local Amprobe representative will assist you.

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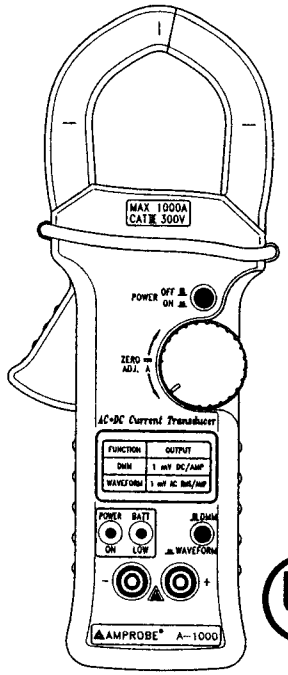
P/N 978751

PRINTED IN TAIWAN
P/N:91-25147-3C

Manual P/N : 978751
3/96

USER MANUAL

A UNIQUE AC / DC TRUE RMS / WAVEFORM CLAMP-ON TRANSDUCER



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A-1000 TABLE OF CONTENTS

SAFETY INFORMATION

To ensure that you use the A-1000 transducer safely, follow the safety guidelines listed below:

- This transducer is for indoor use, altitude up to 2,000 m.
- Avoid working alone. Take precautions when working around moving parts.
- Use extreme caution when working around bare conductors or bus bars. Accidental contact with the conductor could result in electric shock.
- Use the transducer only as specified in this manual. Otherwise, the protection provided by the transducer may be impaired.
- Do not use the transducer if it looks damaged.
- Inspect the leads for damaged insulation or exposed metal. Check test lead continuity. Replace damaged leads.
- When making measurements, keep your fingers behind the hand guards on the transducer.
- Read this operation manual completely before using the transducer and follow all safety information.

INTRODUCTION

This current transducer has been designed for use with digital multimeters, recorders and other suitable equipment for accurate non-intrusive measurement of AC, DC and complex waveform currents.

This transducer converts the measured current to a DC voltage by a True RMS to DC converter. True-RMS current is very important because it directly relates to the amount of heat dissipated in wiring, transformers, and system connections as well as ariations in loads. Most clamp transducers in the market output waveform current only.

Using advanced Hall Effect technology this transducer can accurately measure currents up to 1000A R.M.S. features make it a powerful tool for use on inverters, switch mode power supplies, industrial controllers, automotive diagnostics and other applications requiring accurate isolated current measurements.

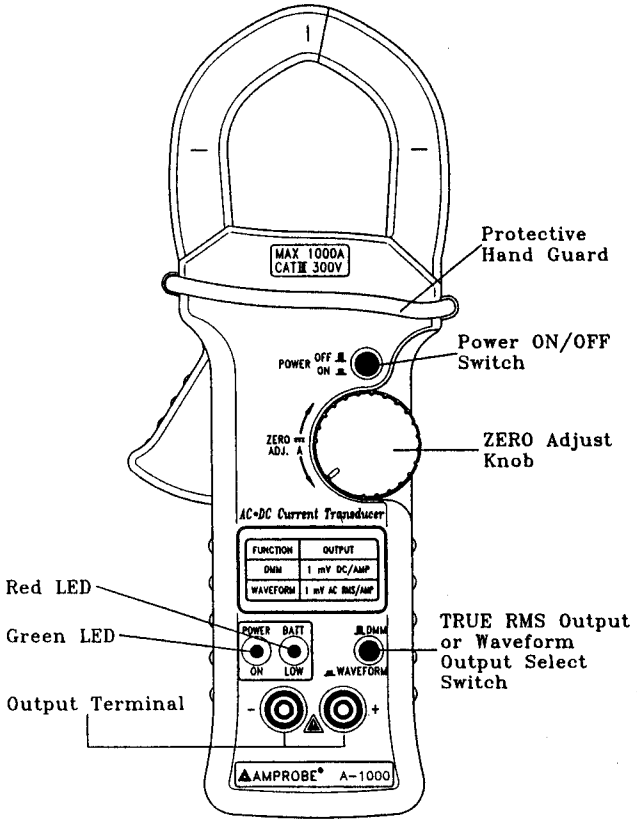

Figure 1. Appearance of Clamp Transducer

USING THE METER SAFELY

☐ WARNING

Read "SAFETY INFORMATION" before using the transducer.

A **WARNING** identifies conditions and actions that pose hazard(s) to the user; a **CAUTION** identifies conditions and actions that may damage the transducer. International electrical symbols used are explained in **Table 1**.

	**AC - Alternating Current**
	**DC - Direct Current**
	**AC and DC - Alternating and Direct Current**
	**Ground**
	**Double Insulation**
	**See Explanation in the Manual**

Table 1. International Electrical Symbols

☐ FRENCH WARNING

This transducer has some warning word on the bottom chasis case that needs to be followed prior to opening case. We have transferred to the French translations as listed below:

ATTENTION

POUR EVITER UN CHOC ELECTRIQUE, ENLECER LES CORDONS D'ESSAI AVANT D'OUVRIR LE BOITIER.

NE BAS UTILISER LORSQUE LE BOITIER EST OUVERT.

OPERATING INSTRUCTIONS

☐ ALIGNMENT MARKS

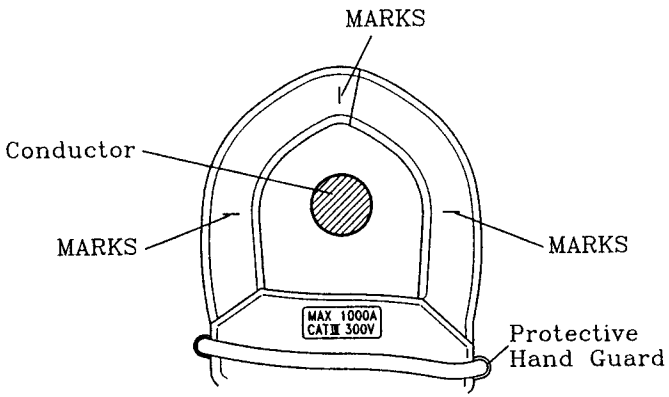

Figure 2. Alignment Marks

Encircle the conductor/bus with the instrument jaw. Position the conductor within the jaws. Centering marks will ensure measuring accuracy as shown in **Figure 2.**

☐ POWER ON

Push POWER switch to toggle ON/OFF transducer. When the transducer is switched on, the Green LED will light. When the Red LED is lit and the Green LED is off, the battery voltage is too low for normal operation. The battery should be changed as described in Battery Replacement. Refer to **Figure 5 and 6** on page 18 and 19 respectively.

☐ ZERO ADJUSTMENT

The output zero offset voltage of the transducer may change due to thermal shifts and other environmental conditions. To adjust the output voltage to zero, rotate zero adjust knob. Be sure that the transducer is away from the current carrying conductor when this adjustment is made. For zero adjustment in the Waveform or DMM mode, set your multimeter to DC mV range with a 0.1 mV resolution. Rotate knob to zero adjust.

CURRENT MEASUREMENT

☐ DMM (TRUE RMS OUTPUT)

* Using the **DMM** output of the A-1000 allows non TRMS multimeters to indicate TRMS values.
This transducer measures the true RMS value of AC currents. In physical terms, the RMS (root-mean-square) value of a waveform is the equivalent DC value that causes the same amount of heat to be dissipated in a resistor. True RMS measurement greatly simplifies the analysis of complex AC signals. Since the R.M.S value is the DC equivalent of the original waveform, it provides a reliable basis for comparing dissimilar waveforms.
Measurement procedure:

1) Switch on the transducer using the ON/OFF switch and check that the Green LED is lit.
2) Set **DMM/WAVEFORM** switch to " **DMM** " position. The output of the transducer is a DC voltage.
3) Connect the red and black output leads to a multimeter. Select the DC-mV range on the multimeter according to the level of the current measurement. (1 amp AC or DC = 1 mV DC output)
4) If necessary adjust the transducer output voltage to zero as described in section on **ZERO ADJUSTMENT**.
5) Clamp the jaws of the transducer around the conductor ensuring a good contact between the closing faces of the jaws.
6) Observe and take measurements as required.

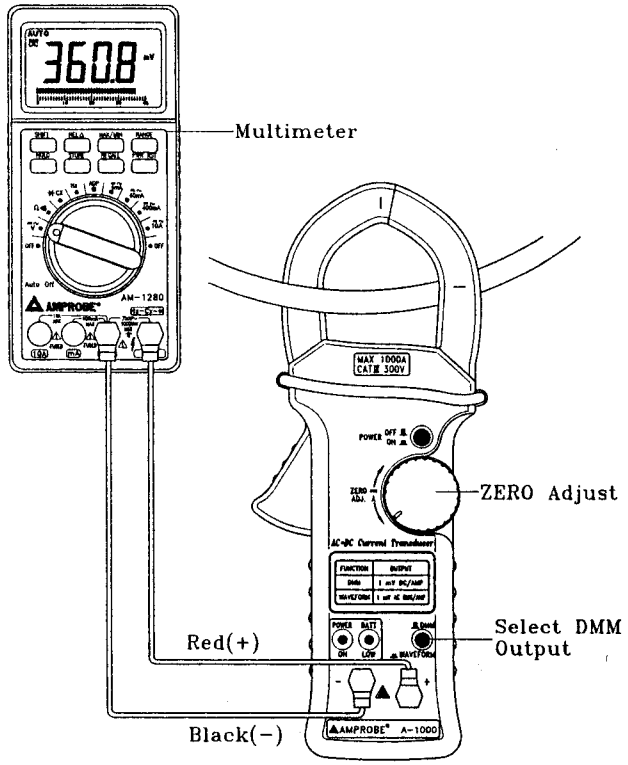

Figure 3. DMM (TRUE RMS) Output.

☐ Waveform

Measurement Procedure:

1) Switch on the transducer using the ON-OFF switch and check that the Green LED is lit.
2) Set **DMM/ WAVEFORM** switch to " **WAVEFORM**" position. The output will be a polarity sensitive DC voltage for DC current and an AC voltage for AC currents.
3) Connect the red and black output leads to a multimeter. Select the AC or DC mV range on the multimeter according to the current measurement being made.
4) If necessary adjust the transducer output voltage to zero as described in section on **ZERO ADJUSTMENT.**
5) Clamp the jaws of the transducer around the conductor ensuring a good contact between the closing faces of the jaws.
6) Observe and take measurements as required. A positive instrument reading indicates that the current is in the direction shown by the arrow on the transducer.
7) If the reading when measuring DC current on the multimeter is unstable and DC volts was selected, switch to the AC-V range on the multimeter.
8) You could also monitor the current waveform on an oscilloscope with the enclosed AMPROBE accessory, part number DTL-ABNC.

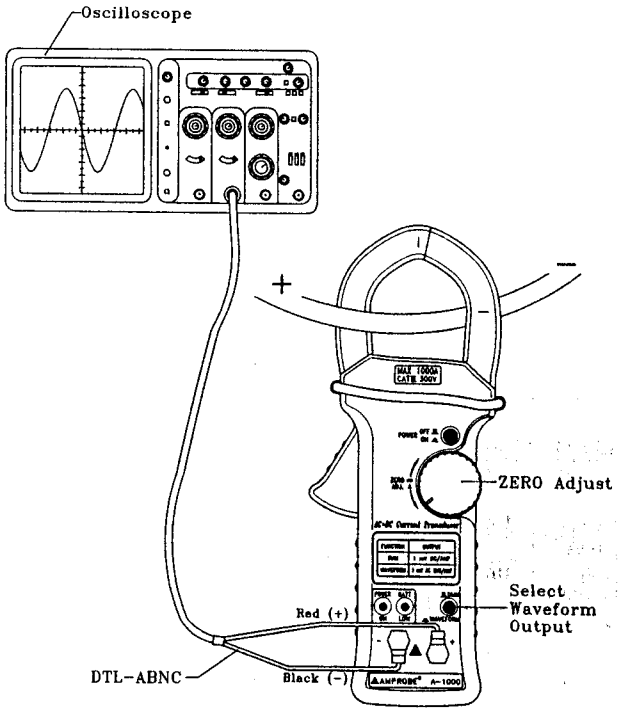

Figure 4. Waveform Output.

ELECTRICAL SPECIFICATIONS

Accuracy is given as ± % of reading + no. of least significant digits at 23 °C ± 5 °C , with relative humidity Less than 80% R.H.

☐ DC CURRENT (Waveform output)

Range	OUTPUT	Accuracy
0 ~ 100A	1mV/1A	±(1.5%rdg+0.3A)
100 ~ 1000A	1mV/A	±(2.0%rdg+1A)

☐ AC CURRENT (Waveform output)

Range	OUTPUT	Accuracy		
		40Hz ~ 65 Hz	65Hz ~1kHz	1kHz ~2kHz)
0 ~ 100A	1mV/A	±(1.5%rdg+ 0.5A)	±(2.0%rdg+0.5A)	±(3%rdg+1A)
100~ 1000A	1mV/A	±(2.0%rdg+1A)	±(2.5%rdg+1A)	±(4%rdg+3A)

☐ DC CURRENT (DMM output/TRUE RMS)

Range	OUTPUT	Accuracy
0 ~ 100A	1mV/A	±(1.5%rdg+0.5A)
100 ~ 1000A	1mV/A	±(2.0%rdg+1A)

☐ AC CURRENT (DMM output/ TRUE RMS)

Range	OUTPUT	Accuracy		
		40Hz~65Hz	65Hz~1KHz	1kHz-2kHz
0 ~ 100A	1mV/A	±(1.5%rdg+0.5A)	±(2.0%rdg+0.5A)	±(3%rdg+1A)
100 ~1000A	1mV/A	±(2.0%rdg+1A)	±(2.5%rdg+1A)	±(4%rdg+3A)

• Crest factor: > 3:1

Low battery indicator: The RED LED is lit when the battery voltage drops below 6.0V (approx).

Operating temperature: 0 °C to 50 °C (32 °F to 120 °F), 0 - 80 % R.H.

Storage temperature:
-20 °C to 60 °C (-4 °F to 140 °F), 0 - 80 % R.H. with BATTERY REMOVED.

Temperature coefficient:
0.12 % / °C (from 0 °C to 18 °C or 28 °C to 50 °C)

Power supply: Single standard NEDA1604, JIS006P,IEC6F22 carbonzinc or alkaline type 9V battery.

Maximum Jaw Opening:
To Accommodate Circuit Cables 2"(50.8 mm) diameter

Dimension: 32 (H) * 64 (W) * 260 (L) mm
1.26"(H) * 2.52"(W) * 10.24"(L)

Weight: 780 grams with all accessories.
(1.72lbs with all accessories.)

Accessories: Test leads (pair), manual, battery and carrying case

Safety: Certified in compliance with UL 3111-1, C22.2 NO. 1010.1-92 and EN61010 (IEC10-1, IEC-1010-2-031, IEC-1010-2-032) Installation Category III, 300V, Pollution Degree 2 environment,

CE requirement: under the influence of R.F field according to stand, the supplied test leads will pick up induced noise. to have better shielding effect, a short-twisted lead should be used.
The standard of test requirement shows below:
1. IEC 801-2: That is ESD(electro-static discharge) test.
2. IEC-801-3: This is RFI(Radio Frequency Interference) test.
   Condition: 27 ~ 500MHz , singal intensity is 3 volts per meter.
3. IEC 801-2: That is ESD(electro-static discharge) test.
4. EN 55011: This is EMI test.

A-1000 Accessories and Replacement Parts

Amprobe P/N	Description
DTL-1000	Shrouded Test Leads
DTL-ABNC	Shrouded Right Angle to BNC Test Leads
CC-ACDC	Carrying Case
MN-1604	9 Volt Alkaline Battery
978753	A-1000 Instruction Manual

MAINTENANCE

WARNING

To avoid electrical shock, do not perform any servicing unless one is qualified to do so.

☐ SERVICE

If the instrument fails to operate, check battery, test leads, etc., and replace as neces sary. If the instrument still does not operate, double check operating procedure as described in this manualinstruction. When servicing, use only specified replacement parts.

WARNING

To avoid electrical shock or damage to the transducer, do not let water get inside the case. Remove the test leads from transducer before opening the case.

☐ BATTERY REPLACEMENT

This transducer is powered by a single 9V battery , with NEDA1604, JIS006P, IEC6F22 carbonzinc or alkaline battery. To replace battery if the low battery red LED is lit. Use the following procedures to replace the battery:

1. Unclamp the jaw from the conductor, turn it off using the ON-OFFswitch and disconnect the output leads.
2. Loosen screw of battery cover. Pull up the cover slightly, see **Figure 5.** Then Pull and Move the cover to right direction, see **Figure 6.**
3. Replace the weak battery.
4. Reverse the above procedure to close the battery cover.

□ CLEANING

To clean the instrument, use a soft cloth dampened in a solution of mild detergent and water. Do not spray cleaner directly onto the instrument, since it may leak into the cabinet and cause damage. Do not use chemicals containing benzine, benzene, toluene, xylene, acetone or similar solvents.

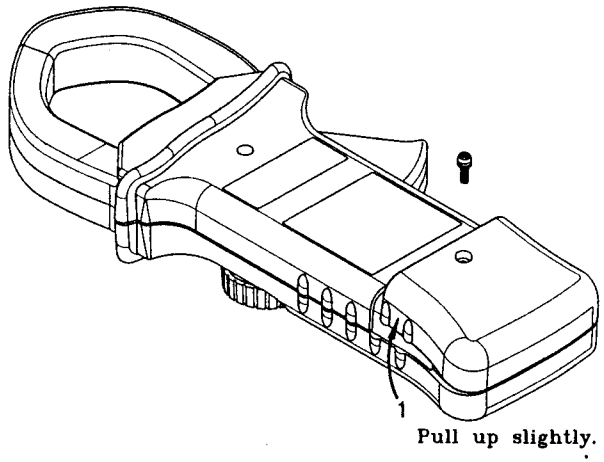

Figure 5. Step 1 of Battery Replacement.

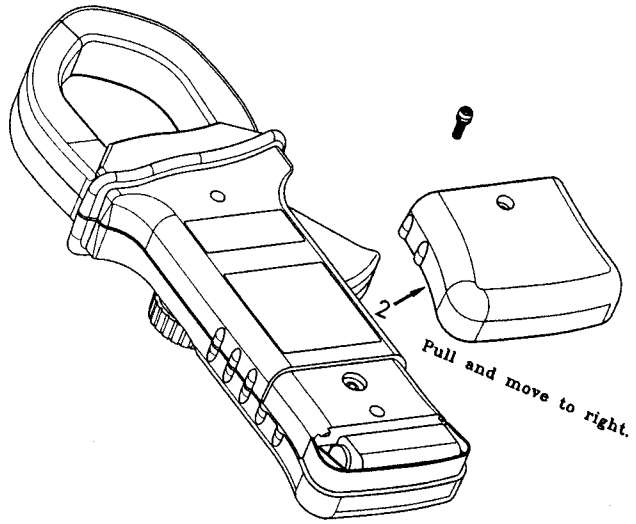

Figure 6. Step 2 of Battery Replacement.