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**OPERATING INSTRUCTIONS**  
for  
***AMPROBE***®



**AC Flexible Current Transducer**  
**Model ACF-3AK**



**AMPROBE.**  
A United Dominion Company

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## LIMITED WARRANTY

Congratulations! You are now the owner of an AMPROBE® instrument. It has been quality crafted according to the highest standards of quality and workmanship. This instrument has been inspected for proper operation of all its functions and tested by qualified factory technicians according to the long-established standards of AMPROBE®.

Your AMPROBE® instrument has a limited warranty against defective materials and/or workmanship for one year from the date of purchase provided that the seal is unbroken or, in the opinion of the factory, the instrument has not been tampered with or taken apart.

***Should your instrument fail due to defective materials, and/or workmanship during the one year warranty period, return it along with a copy of your dated bill of sale which must identify instrument by model number and manufacturing number.***

**IMPORTANT:** For your protection, please use the instrument as soon as possible. If damaged, or should the need arise to return your instrument, place it in a shipping carton packed with sufficient packing material. It must be securely wrapped. Amprobe is not responsible for damage in transit. Be sure to include a packing slip (indicating model and manufacturer number) along with a brief description of the problem. Make certain your name and address appears on the box as well as the packing slip.

Ship prepaid via Air Parcel Post insured or U.P.S. (where available) to:

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

Outside the U.S.A. the local Amprobe representative will assist you. Above limited warranty covers repair and replacement of instrument only and no other obligation is stated or implied.

## SAFETY

The following symbols appear on the products:



Attention! Refer to Manual



Double/Reinforced Insulation



Battery Installation



Read all instructions completely before using this product.

### To avoid electric shock:

- Use caution during installation and use of this product; high voltages and current may be present in circuit under test.
- This product must be used only by qualified personnel practicing applicable safety precautions.
- Wear protective clothing and gloves as required.
- Do not install this product on live conductors.
- Always de-energize circuit under test before installing flexible measuring head. Always inspect the electronics unit, connecting cable, and flexible measuring head for damage before using this product.
- Do not use product if damaged.
- Always use cables rated IEC 1010-1, 600V Cat III to interconnect electronics unit to display device.
- Never use this product to measure electrical conductors above 600V.
- Always connect electronics unit to display device before installing flexible measuring head.
- Never change batteries while measurement head is installed on conductor.

## INTRODUCTION

The ACF-3AK Flexible Transducer can be used to measure AC current up to 3000A when used with a DMM, oscilloscope, or other recording or display device. Except for the DM-II™ Datalogger Recorder and HA-2000. The flexible measuring head allows current measurements on conductors that are hard to reach or inaccessible using typical clamp-on current probes.

The ACF-3AK provides a low-voltage, (3V), output proportional to the current being measured. Three selectable ranges provide direct readings for 30A, 300A, and 3000A full scale.

## MEASURING CURRENT WITH THE ACF-3AK

***Read safety section of instructions before operating this product.  
Ensure conductor to be tested is de-energized.***

Connect the output of the electronics to the VOLTS input of the DMM or other data recording device. This requires the use of shrouded male banana-to-male banana cables.

Wrap the flexible measuring head around the conductor to be tested, close coupling. Energize circuit under test. For most accurate measurement, center the flexible head around conductor. Locate coupling away from nearby conductors.

## OPERATION

Select the AC VOLTS range on the DMM (or other device).

<b><u>Switch Position</u></b>	<b><u>DMM Reading</u></b>	<b><u>Measured Current</u></b>
Off	0	0
3000A	3V	3000A
300A	3V	300A
30A	3V	30A

To activate unit, move switch button from forward position to cover the word "off". In this position, with three zeros exposed, the unit is set for 3000 Amp range. To change ranges to 300A or 30A, simply move the button so the appropriate range appears. If current range is unknown, select the 3000A range.

## **MAINTENANCE**

***Do not use the ACF-3AK if damaged.***

Always inspect the electronics unit, connecting cable, and flexible measuring head for damage before use.

To avoid electric shock, keep the ACF-3AK clean and free of surface contamination. Use Isopropyl Alcohol to clean the electronics unit and measuring head.

Make sure the flexible measuring head, connecting cable, and electronics enclosure are dry before further use.

## **BATTERY INSTALLATION**

***Never replace batteries with flexible measuring head installed on conductor to be tested.***

Remove screw holding the electronics enclosure together. The ACF-3AK requires (2) 9 volt batteries for operation.

## **BATTERY STATUS**

Battery status is indicated by an LED that is exposed when the switch is moved from the "OFF" position. This LED will flash when the unit is activated. The length of time the LED flash is lit will increase as battery life decreases.

*Momentary* lighting of LED indicates batteries are *good*. *Continuous* lighting of LED indicates *low* battery, replace batteries soon. *No* lighting of LED indicates batteries are *dead*, replace immediately.

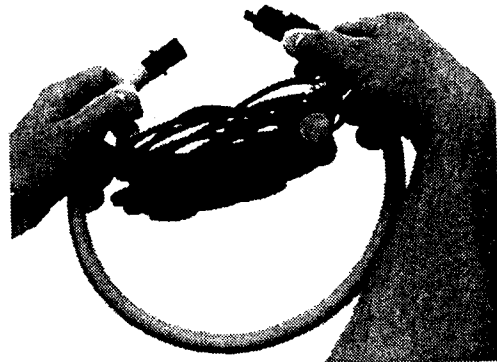
## STORAGE

The ACF-3AK integrator electronics enclosure features a pivot loop that can be extended to provide a bail for the interconnecting cable and the measurement head. The following diagram shows how to store the unit.

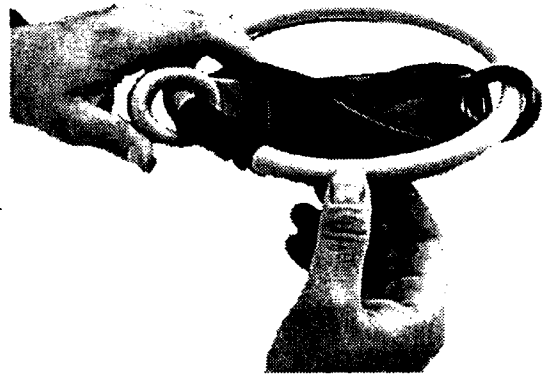
1. Extend pivot loop, wrap connecting cable around enclosure in "figure eight" as shown.



2. Thread latch end of measurement head through pivot loop.



3. Thread cap end of head through cable, close coupling.





## SPECIFICATIONS

<b>Input &amp; Scaling:</b>	Three switch selectable ranges 30 A / 300 A / 3000A AC full scale
<b>Output:</b>	100mV / 10mV/ 1mV per A 3.0VAC RMS F.S. or 6.2VAC RMS (max.) via banana jacks (Load > 1000 Ohms)
<b>Frequency Range :</b>	1Hz to 20kHz
<b>Phase angle error:</b>	< $\pm 0.5^\circ$ maximum (45-65 Hz)
<b>Accuracy:</b>	$\pm 1.0\%$ of full scale (45-65 Hz)
<b>Linearity:</b>	$\pm 0.2\%$ of reading (20%...100% of full scale)
<b>Position Sensitivity:</b>	Less than $\pm 2.0\%$ F.S. (bus $\geq 1"$ from coupling)
<b>Ext. Field Effects:</b>	Less than $\pm 1.0\%$ F.S. (bus $\geq 8"$ from head)
<b>Noise:</b>	< 2 mV RMS. on 300 / 3000 ranges < 8 mV RMS. on 30A range
<b>Power:</b>	Two 9V alkaline batteries - MN-1604 (> 100 hours of operation) LED power status indicator
<b>Control Switch :</b>	Range Selection and Power On/Off
<b>Operating Temp:</b>	Head : -4 to 194° F (-20 to 90° C) Electronics: 32 to 158° F (0 to 70°C)
<b>Safety Rating:</b>	Pollution Degree 2 Flame Retardant UL 94 V-0 rated Max. working voltage: 600VAC Hi-Pot Tested 5550VAC for 1 minute, surface to output without breakdown Double Insulation

**EM/RF Susceptibility:** 30A range will not recover when RF of frequencies >216MHZ are present. The output will self-recover when RF is removed (EN 50082-1, Criterion B)

**Electrostatic Discharge:**An ESD event may cause a deviation of 1%. The output will self-recover. (EN 50082-1, Criterion A)

**MEASURE HEAD**

<b>Bend radius:</b>	1.5 in. minimum (38.1 mm)
<b>Cable Diameter:</b>	0.5625 in. (14.3 mm)
<b>Coupling Dia.:</b>	0.875 in. ( 22.2 mm)
<b>Dimensions:</b>	Length (Open): 24 in. (610 mm)
<b>Window O.D.:</b>	8.3 in. round (210 mm)
<b>Window I.D.:</b>	7.0 in. round (178 mm)
<b>Weight:</b>	0.4 lb. (0.18 kg)
<b>Connecting Cable:</b>	78.7 in. long (2.0 m)

**Electronics Enclosure Dimensions:**

1.5 (H) x 2.0 (W) x 7.5 (L) in. (9.6 (L) with Pivot Loop extended)  
38.1 (H) x 50.8 (W) x 190.5 mm (243.4 L pivot loop extended)





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