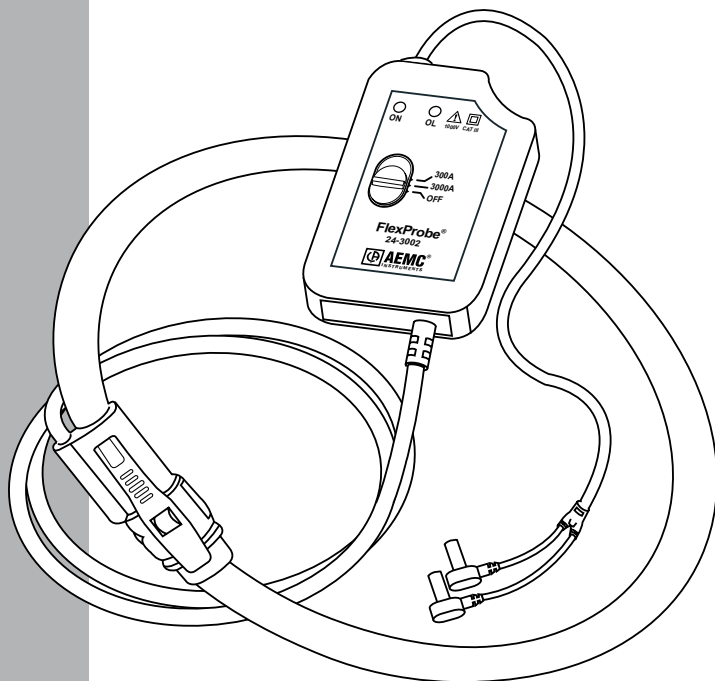


- FLEXIBLE
AC CURRENT PROBE

FlexProbe®

24-3001

24-3002



Owner's Record

The serial number for the FlexProbe® is located on the backside of the instrument. Please record this number and purchase date for your records.

FLEXPROBE® FLEXIBLE CURRENT MODEL 3001

CATALOG #: 2120.81

SERIAL #: _____

PURCHASE DATE: _____

DISTRIBUTOR: _____

FLEXPROBE® FLEXIPBLE CURRENT MODEL 3002

CATALOG #: 2120.82

SERIAL #: _____

PURCHASE DATE: _____

DISTRIBUTOR: _____

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INTRODUCTION

WARNING

- Read the instruction manual completely and follow all the safety information before attempting to use or service this instrument.
- Wear protective clothing and gloves as required.
- Use caution on any circuit: potentially high voltages and currents may be present and may pose a shock hazard.
- Read the safety specifications section prior to using the current probe. Never exceed the maximum voltage ratings given.
- Safety is the responsibility of the operator. The FlexProbe® must be used only by qualified personnel using applicable safety precautions.
- ALWAYS de-energize the circuit before wrapping the FlexProbe® around bare conductors, bus bars, or near live parts. Do not wrap on live conductors.
- ALWAYS connect the electronic module to the display device before wrapping the FlexProbe® around the sample being tested.
- ALWAYS inspect the module, sensor, sensor cable, and output terminals prior to use. Replace any defective parts immediately. Use only factory parts.
- NEVER use the FlexProbe® on electrical conductors rated above 1000V Cat. III and 600V Cat. IV.

1.1 International Electrical Symbols

	This symbol signifies that the instrument is protected by double or reinforced insulation.
	This symbol on the instrument indicates a WARNING and that the operator must refer to the user manual for instructions before operating the instrument. In this manual, the symbol preceding instructions indicates that if the instructions are not followed, bodily injury, installation/sample and product damage may result.
	Risk of electric shock. The voltage at the parts marked with this symbol may be dangerous.
	This symbol refers to a type B current sensor. Do not apply around or remove from HAZARDOUS LIVE conductors without additional protective means (de-energizing the circuit or wearing protective clothing suitable for high voltage work).
	In conformity with WEEE 2002/96/EC

1.2 Definition of Measurement Categories

- Cat. I:** For measurements on circuits not directly connected to the AC supply wall outlet such as protected secondaries, signal level, and limited energy circuits.
- Cat. II:** For measurements performed on circuits directly connected to the electrical distribution system. Examples are measurements on household appliances or portable tools.
- Cat. III:** For measurements performed in the building installation at the distribution level such as on hardwired equipment in fixed installation and circuit breakers.
- Cat. IV:** For measurements performed at the primary electrical supply (<1000V) such as on primary overcurrent protection devices, ripple control units, or meters.

1.3 Receiving Your Shipment

Upon receiving your shipment, make sure that the contents are consistent with the packing list. Notify your distributor of any missing items. If the equipment appears to be damaged, file a claim immediately with the carrier and notify your distributor at once, giving a detailed description of any damage. Save the damaged packing container to substantiate your claim.

1.4 Ordering Information

FlexProbe® 24-3001 (300/3000AAC, 24", 10mV/A/1mV/A, with lead) **Cat. #2120.81**

FlexProbe® 24-3002 (300/3000AAC, 24", 10mV/A/1mV/A) **Cat. #2120.82**

Both models include a flexible probe with electronic module, 9V battery, user manual and a product warranty and registration card.

1.4.1 Accessories and Replacement Parts

Banana (Female) / BNC (Male) Adapter..... **Cat. # 2118.46**

For connection of FlexProbe® to BNC terminals on scopes and other displaying instruments.

Order Accessories and Replacement Parts Directly Online

Check our Storefront at www.aemc.com/store for availability

PRODUCT FEATURES

2.1 Description

The FlexProbe® is a flexible AC current transformer composed of a flexible sensor and an electronic module. The flexible sensor permits measurements on conductors where standard clamp-on probes could not be used. In particular, it can be installed in tight spaces, around breaker panels, around cable bundles, around wide or large bus bars, or even wrapped around irregular shapes.

The Shape Memory feature enables the user to “pre-shape” the sensor before inserting it between or around conductors. This feature facilitates closing, enhances user safety, and alleviates the drooping effect typically associated with flexible sensors.

The FlexProbe® is lightweight. It does not use magnetic cores like standard transformers. The transformation principle is based on an air core. It presents virtually no load to the system under test, has a low phase shift and excellent frequency response, and cannot be damaged by overloads.

The sensor assembly is waterproof and insulated for 1000V Cat. III; 600V Cat. IV. The FlexProbe® meets EN 61010, is CE marked, and is designed with materials and components to meet UL 3111, and international agency approvals.

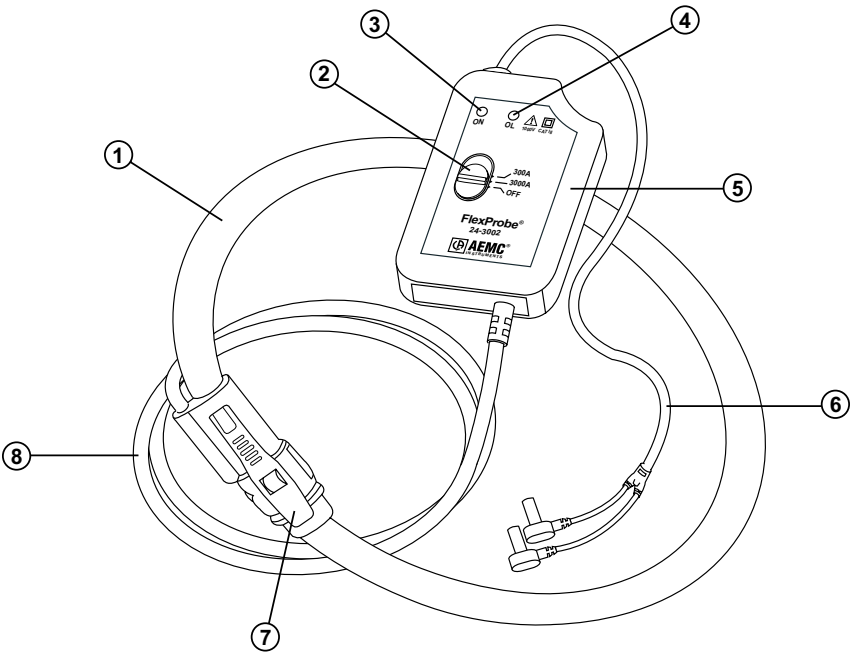
The FlexProbe® has a mV output proportional to the current measured for direct readings on DMMs, data loggers, oscilloscopes, and power or harmonic meters. TRMS measurements are taken when connected to a TRMS meter. The FlexProbe® is insensitive to DC currents and only the AC component of the measured signal is measured.

The length of the flexible sensor can be selected in lengths of 24", 36", and 48" in length. Consult the factory for custom lengths, ranges and/or features.

2.2 General Features

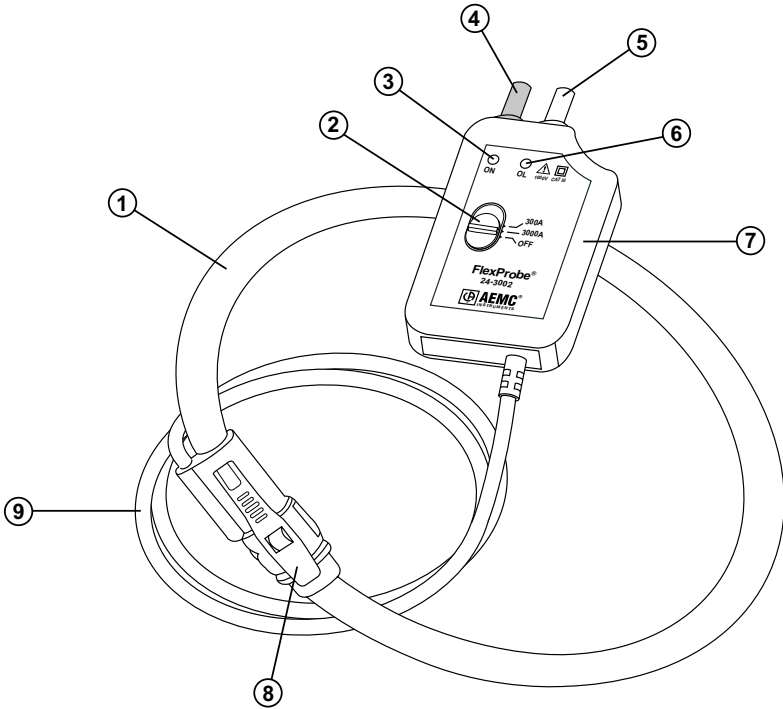
- Models to measure from 0.5 to 30000Arms
- Accuracy 1% of Reading
- TRMS measurements when connected to a TRMS instrument
- No core saturation or damage if overloaded
- Overrange LED for measurement circuitry
- EN 61010; 1000V Cat. III; 600V Cat. IV
- Waterproof sensor
- 9V battery for typical 150 hour continuous operations
- Shape Memory™ for custom pre-shaping of sensor before use (no drooping)
- High frequency response
- Low phase shift for power measurements
- Insensitive to DC, measures only AC component on DC + AC signals
- Excellent linearity
- Lightweight

2.3 FlexProbe® 24-3001 Features



1. Flexible sensor (\varnothing 0.5", 12.5mm)
2. Range selection switch
3. Power ON indicator (Green LED)
4. Overload indicator (Red LED)
5. Electronic module
6. Double insulated 14" (36cm) lead with safety banana plugs
7. FlexProbe® connector/latch
8. Sensor lead

2.4 FlexProbe® 24-3002 Features



1. Flexible sensor (\varnothing 0.5", 12.5mm)
2. Range selection switch
3. Power ON indicator (Green LED)
4. Common: Black banana jack (-)
5. Positive: Red banana jack (+)
6. Overload indicator (Red LED)
7. Electronic module
8. FlexProbe® connector/latch
9. Sensor lead

SPECIFICATIONS

Reference Conditions: 41°F ± 5°F (23°C ± 3°C), 20 to 70% RH, 50Hz, 1 minute warm-up, battery at 9V ± 0.1V, external magnetic field < 40A/m, no DC component, no external current carrying conductor, 10MΩ load, conductor center.

3.1 Electrical

Current Range: 300/3000AAC

Output Signal: mV output (4000mV peak max)

Three position slide switch: 10mV/A 5A to 300Arms
1mV/A 50A to 3000Arms
ON/OFF

AC Current Accuracy (after calibration and for one year):
1% of Reading ± 500mA

Crest Factor: 4.5

Phase Shift: < 0.7° at 50 or 60Hz

Frequency Range: 40 to 5kHz

Residual Noise When I Measured = 0: 200mArms

Working Voltage: 1000Vrms max (Cat. III)

Common Mode Voltage: 600Vrms max

Influence of Frequency: Add 1% to the reference accuracy between 40 and 2000Hz, and up to 5% at 5kHz

Influence of Adjacent Conductor: <2%

Influence of Conductor Position in Jaw: <4%

Power Source: 9V alkaline (NEDA 1604A, IEC 6LR61)

Battery Life: 150 hours typical (continuous use)
300 hours with Lithium battery

Low Battery: Green LED Off when $\geq 7V$

Overload Indication: Red LED indicates input greater than selected range

3.2 Environmental

Operating Temperature Range: 14° to 131°F (-10° to +55°C)

Storage Temperature Range: -40° to 158°F (40° to +70°C)

Influence of Temperature:

Sensor: -14° to 212°F (-10° to 100°C); <0.5% per 10°C

Module: -14° to 131°F (-10° to 55°C); <0.5% per 10°C

Operating Relative Humidity:

50° to 86°F (10° to 30°C); 85 ± 5% RH (without condensation)

104° to 122°F (40° to 50°C); 45 ± 5% RH (without condensation)

Altitude: Operating: 0 to 2000m

Non-operating: 0 to 12000m

3.3 Mechanical Specifications

Dimensions (Sensor): 24" ± 1" (610 x 25mm)

Color (Sensor): Red with black connector

Dimensions (Electronic Module): 4.9 x 2.5 x 1.1" (124 x 64 x 28mm)

Color (Electronic Module): Dark gray

Weight: 1.1 lb (0.5kg)

Output:

Model 24-3001: Double insulated 14" (36cm) lead with safety banana plugs

Model 24-3002: 4mm safety banana jacks (red and black)

Maximum Cable Diameter: 7.6" (193mm)

Cable Length from Sensor to Module: 6.5 ft (2m)

Drop Test:

1.0m on 38mm of Oak on concrete. Test according to EN 61010.

Case Protection: Sensor: IP65
Electronic Module: IP40

Vibration: Test Per IEC 68-2-6

Frequency Range: 10 to 55Hz

Amplitude: 0.15mm

Mechanical Shock: 100G, Test Per IEC 68-2-32

Material: Module: UL 94V2
Cable Assembly: UL94V0

3.4 Safety Specifications

Electrical Safety

Double insulation or reinforced insulation between the primary or the secondary and the outer case of the handle per EN 61010.

EN 61010, 1000V Cat. III, 600V Cat. IV

Pollution Degree: 2

Electromagnetic Compatibility:

EN 50081-1 Class B

EN 50082-2 Electrostatic discharge IEC 1000-4-2

Radiated Field IEC 1000-4-3

Fast transients IEC 1000-4-4

Magnetic Field at 50/60Hz IEC 1000-4-8

**All specifications are subject to change without notice*

OPERATION

Please make sure that you have already read and fully understand the WARNING section on page 2.

4.1 Making Measurements with the FlexProbe®

1. Connect the electronic module to the AC Volt range of your DMM or measuring instrument.
2. Select the appropriate module output voltage range. If the current magnitude is unknown, select the 3000A range.
3. Wrap the flexible core around the conductor to be tested. Select the 300A range to obtain the best resolution, if the reading is less than 300mV.



Do not exceed specified current range for the output. Do not use on selected range if Overload LED goes on.

4. Example:
 - a. Read the DMM displayed value: 2.59V
 - b. Determine the range and output used on the FlexProbe: 0.01V/A for the 300A range; .001V/A for the 3000A range
 - c. Divide the reading by the output to determine the actual current value: $2.59 \div 0.01 = 259\text{A}$ or $2.59 \div 0.001 = 2590\text{A}$

For best accuracy, carefully center the conductor inside the flexible core, and avoid if possible, the proximity of other conductors which may create noise and interference (particularly near the latch).

True RMS measurements are obtained when the FlexProbe® is connected to a True RMS meter. Note that the DC component is not measured.

4.2 Tips for Making Precise Measurements

- When using the FlexProbe® with a meter, it is important to select the range that provides the best resolution. Failure to do this may result in measurement errors.
- For best results, select the highest FlexProbe® output signal possible and the most sensitive meter range for this output.
- Make sure the DMM or measuring instrument can accurately measure mVAC. Certain inexpensive DMM have poor resolution and accuracy when measuring low mVAC.
- For best accuracy, center the FlexProbe® around the conductor to be measured.
- To increase the sensitivity or measure on low currents, the FlexProbe® may be wrapped several times around the conductor. Remember to divide your reading by the number of turns for the actual measurement (See Figure 1).
- The overall measurement accuracy is the sum of the FlexProbe® accuracy and the displaying instrument accuracy.
- The FlexProbe® may be doubled around the conductor to be measured to double the output. (See Figures 1 and 2 to show the different values on a DMM while measuring 250AAC.)

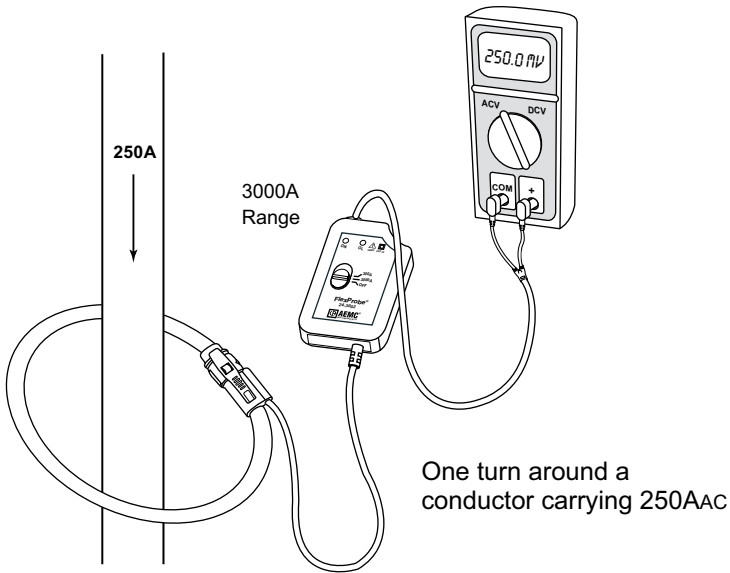


Figure 1

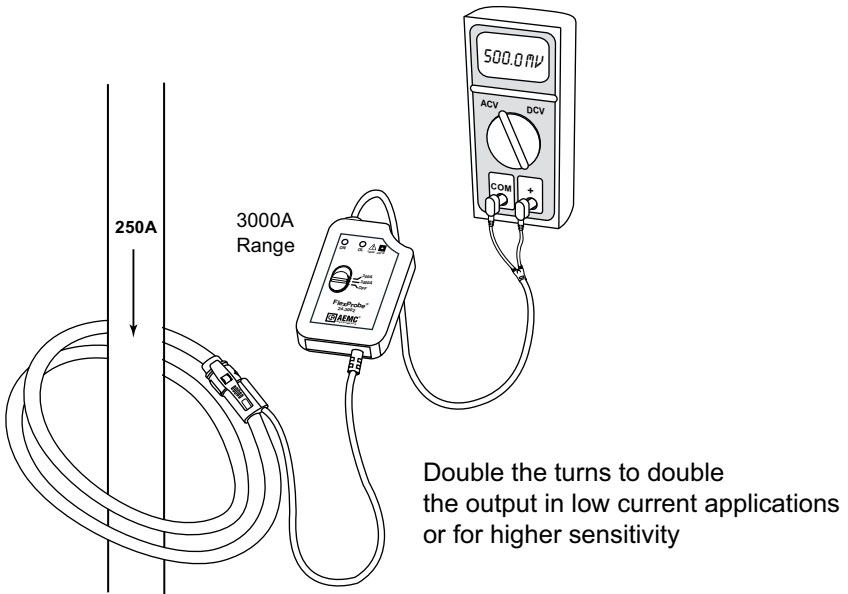


Figure 2

MAINTENANCE

Warning

- For maintenance use only specified replacement parts.
- To avoid electrical shock, do not attempt to perform any servicing unless you are qualified to do so.
- Do not perform any service while the FlexProbe® is on any circuit.
- To avoid electrical shock and/or damage to the instrument, do not get water or other foreign agents into the electronic module.
- Also see warning on page 2.

5.1 Changing the Battery

If the power ON indicator (green LED) blinks or does not light up, replace the battery.

Disconnect the instrument from any source of electricity.

- To replace the battery, open rear case, replace battery and re-assemble.
- The green LED should go on when the module is turned on.

5.2 Cleaning

- Use a soft cloth lightly dampened with soapy water, then dry with a dry cloth.
- Do not splash water directly on the instrument.
- Do not use alcohol, solvents or hydrocarbons.
- Make sure the sensor, electronic module, and all leads are dry before any further use.

Repair and Calibration

To ensure that your instrument meets factory specifications, we recommend that it be scheduled back to our factory Service Center at one-year intervals for recalibration, or as required by other standards or internal procedures.

For instrument repair and calibration:

You must contact our Service Center for a Customer Service Authorization Number (CSA#). This will ensure that when your instrument arrives, it will be tracked and processed promptly. Please write the CSA# on the outside of the shipping container. If the instrument is returned for calibration, we need to know if you want a standard calibration, or a calibration traceable to N.I.S.T. (Includes calibration certificate plus recorded calibration data).

Ship To: Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments
15 Faraday Drive
Dover, NH 03820 USA
Phone: (800) 945-2362 (Ext. 360)
(603) 749-6434 (Ext. 360)
Fax: (603) 742-2346 or (603) 749-6309
E-mail: repair@aemc.com

(Or contact your authorized distributor)

Costs for repair, standard calibration, and calibration traceable to N.I.S.T. are available.

NOTE: You must obtain a CSA# before returning any instrument.

Technical and Sales Assistance

If you are experiencing any technical problems, or require any assistance with the proper operation or application of your instrument, please call, mail, fax or e-mail our technical support team:

Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments
200 Foxborough Boulevard
Foxborough, MA 02035 USA
Phone: (800) 343-1391
(508) 698-2115
Fax: (508) 698-2118
E-mail: techsupport@aemc.com
www.aemc.com

NOTE: Do not ship Instruments to our Foxborough, MA address.

Limited Warranty

The FlexProbe® is warranted to the owner for a period of one year from the date of original purchase against defects in manufacture. This limited warranty is given by AEMC® Instruments, not by the distributor from whom it was purchased. This warranty is void if the unit has been tampered with, abused or if the defect is related to service not performed by AEMC® Instruments.

For full and detailed warranty coverage, please read the Warranty Coverage Information, which is attached to the Warranty Registration Card (if enclosed) or is available at www.aemc.com. Please keep the Warranty Coverage Information with your records.

What AEMC® Instruments will do:

If a malfunction occurs within the one-year period, you may return the instrument to us for repair, provided we have your warranty registration information on file or a proof of purchase. AEMC® Instruments will, at its option, repair or replace the faulty material.

**REGISTER ONLINE AT:
www.aemc.com**

Warranty Repairs

What you must do to return an Instrument for Warranty Repair:

First, request a Customer Service Authorization Number (CSA#) by phone or by fax from our Service Department (see address below), then return the instrument along with the signed CSA Form. Please write the CSA# on the outside of the shipping container. Return the instrument, postage or shipment pre-paid to:

Ship To: Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments
15 Faraday Drive • Dover, NH 03820 USA
Phone: (800) 945-2362 (Ext. 360)
(603) 749-6434 (Ext. 360)
Fax: (603) 742-2346 or (603) 749-6309
E-mail: repair@aemc.com

Caution: To protect yourself against in-transit loss, we recommend you insure your returned material.

NOTE: You must obtain a CSA# before returning any instrument.



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