

**FLUKE.**

**374/375**  
**376/376-II**  
Clamp Meter

**Users Manual**

PN 3608883  
July 2010 Rev. 1, 3/23

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## **LIMITED WARRANTY AND LIMITATION OF LIABILITY**

The Fluke 374/375/376 products will be free from defects in material and workmanship for 3 years from the date of purchase. The Fluke 376-II product will be free from defects in material and workmanship for 5 years from the date of purchase. This warranty does not cover fuses, disposable batteries, or damage from accident, neglect, misuse, alteration, contamination, or abnormal conditions of operation or handling. Resellers are not authorized to extend any other warranty on Fluke's behalf. To obtain service during the warranty period, contact your nearest Fluke authorized service center to obtain return authorization information, then send the product to that Service Center with a description of the problem.

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## ***Introduction***

### **Warning**

**Read "Safety Information" before you use the Meter.**

The Fluke 374/375/376/376-II (the Meter) measure true-rms ac current and voltage, dc current and voltage, inrush current, resistance, and capacitance. The 375/376/376-II also measure frequency and dc millivolts. The detachable iFlex (Flexible Current Probe) that is included with the 376/376-II (optional with the 374/375) expands the measurement range to 2500 A ac. The Flexible Current Probe provides increased display flexibility and allows measurements of awkward sized conductors and improved wire access. The illustrations in this manual show the 376.

## **Contact Fluke**

Fluke Corporation operates worldwide. For local contact information, go to our website:

[www.fluke.com](http://www.fluke.com)

To register your product, or to view, print, or download the latest manual or manual supplement, go to our website: [www.fluke.com/productinfo](http://www.fluke.com/productinfo).

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## **Safety Information**


A **Warning** identifies conditions and actions that pose hazard(s) to the user. A **Caution** identifies conditions and procedures that could cause Meter damage, equipment under test damage, or permanent loss of data.

Symbols used on the Meter and in this manual are explained in Table 1.

**⚠⚠ Warning**

To prevent possible electrical shock or personal injury, follow these guidelines:

- Use the Meter only as specified in this manual or the protection provided by the Meter can be compromised.
- Examine the case before you use the Meter. Look for cracks or missing plastic. Carefully look at the insulation around the connectors.
- Never measure current while the test leads are inserted into the input jacks.
- Make sure the battery door is closed and latched before operating the Meter.
- Remove the test leads from the Meter before the battery door is opened.
- Examine the test leads for damaged insulation or exposed metal. Check test lead continuity. Replace damaged test leads before using the Meter.
- Do not use the Meter if it operates incorrectly. Protection can be compromised. When in doubt, have the Meter serviced.
- Do not use the Meter around explosive gas, vapor or in damp or wet environments.
- Use only type AA batteries, properly installed in the Meter case, to power the Meter.
- When measuring current with the Jaw, keep fingers behind the Tactile Barrier. See "The Meter" ① .
- Measure a known voltage to verify product operation.

- **Do not use in CAT III or CAT IV environments without the protective cap of test probe. The protective cap decreases the expose probe metal <4 mm. This decreases the possibility of arc flash from short circuits.**
- **To avoid false readings that can lead to electrical shock and injury, replace the batteries as soon as the low battery indicator () appears.**
- **When batteries are changed, ensure that the calibration seal in the battery compartment is not damaged. If damaged, the Meter may not be safe to use. Return the Meter to Fluke for replacement of the seal.**
- **When servicing the Meter, use only specified replacement parts.**
- **Have the Meter serviced only by qualified service personnel.**
- **Be careful around voltages >30 V ac rms, 42 V ac peak, or 60 V dc. Such voltages pose a shock hazard.**
- **Do not apply more than the rated voltage, as marked on the Meter, between the terminals or between any terminal and earth ground.**
- **When using the probes, keep fingers behind the finger guards on the probes.**
- **Connect the common test lead before connecting the live test lead. When disconnecting test leads, disconnect the live test lead first.**
- **Do not work alone so assistance can be rendered in an emergency.**
- **Use extreme caution when working around bare conductors or bus bars. Contact with the conductor could result in electric shock.**













- **Adhere to local and national safety codes. Individual protective equipment must be used to prevent shock and arc blast injury where hazardous live conductors are exposed.**
- **Disconnect circuit power and discharge all high-voltage capacitors before you measure resistance, continuity, or capacitance.**
- **For the 374 and 375, do not measure ac/dc current in circuits carrying more than 1000 V or 600 A with the Meter Jaw.**
- **For the 376/376-II, do not measure ac/dc current in circuits carrying more than 1000 V or 1000 A with the Meter Jaw.**
- **Never operate the Meter with the back cover removed or the case open.**
- **Do not measure ac current in circuits carrying more than 1000 V or 2500 A with the Flexible Current Probe.**
- **Do not apply the Flexible Current Probe around or remove from HAZARDOUS LIVE conductors.**
- **Do not use the flexible current sensor if the inner contrasting insulation color is showing.**
- **Take special care during fitting and removal of the Flexible Current Probe. De-energize the installation under test or wear suitable protective clothing.**



**⚠ Caution**

To avoid possible damage to the Meter or to equipment under test:

- Use the proper jacks, function, and range for the measurement application.
- Clean the case and accessories with a damp cloth and mild detergent only. Do not use abrasives or solvents.

Table 1. Symbols

Symbol	Definition	Symbol	Definition
	Consult user documentation.		WARNING. RISK OF DANGER.
	WARNING. HAZARDOUS VOLTAGE. Risk of electric shock.		Conforms to European Union directives.
	DC (Direct Current)		AC (Alternating Current)
	Earth		Double Insulated
	Application around and removal from uninsulated hazardous live conductors is permitted.		Battery. Low battery when shown on display.

<b>Symbol</b>	<b>Definition</b>
	Do not apply around or remove from uninsulated hazardous live conductors without taking additional protective measures.
<b>CAT II</b>	Measurement Category II is applicable to test and measuring circuits connected directly to utilization points (socket outlets and similar points) of the low-voltage MAINS installation.
<b>CAT III</b>	Measurement Category III is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.
<b>CAT IV</b>	Measurement Category IV is applicable to test and measuring circuits connected at the source of the building's low-voltage MAINS installation.
	This product complies with the WEEE Directive and its marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste. Do not dispose of this product as unsorted municipal waste. For information about take-back and recycling programs available in your country, see the Fluke website.

*Note*

*The Measurement Category (CAT) and voltage rating of any combination of test probe, test probe accessory, current clamp accessory, and the Meter is the LOWEST rating of any individual component.*

## The Meter

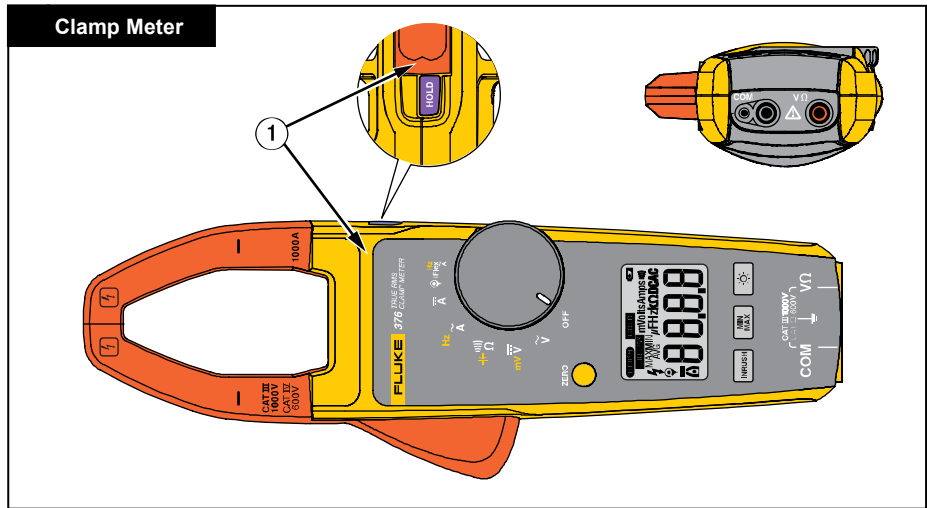
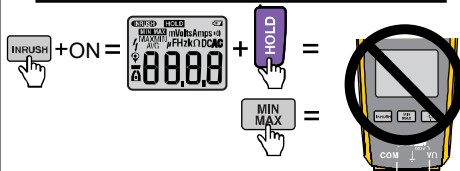
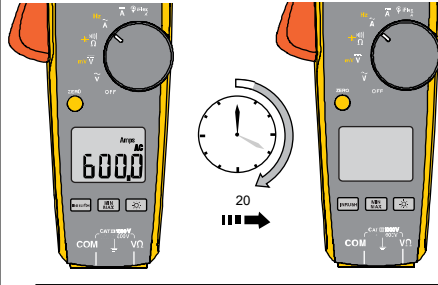


fig01.eps

### Auto Power Off



### Backlight

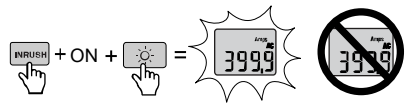
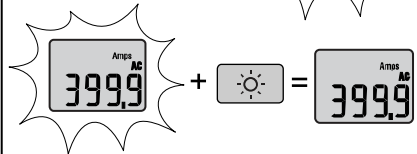
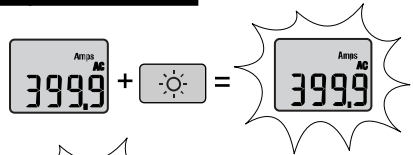


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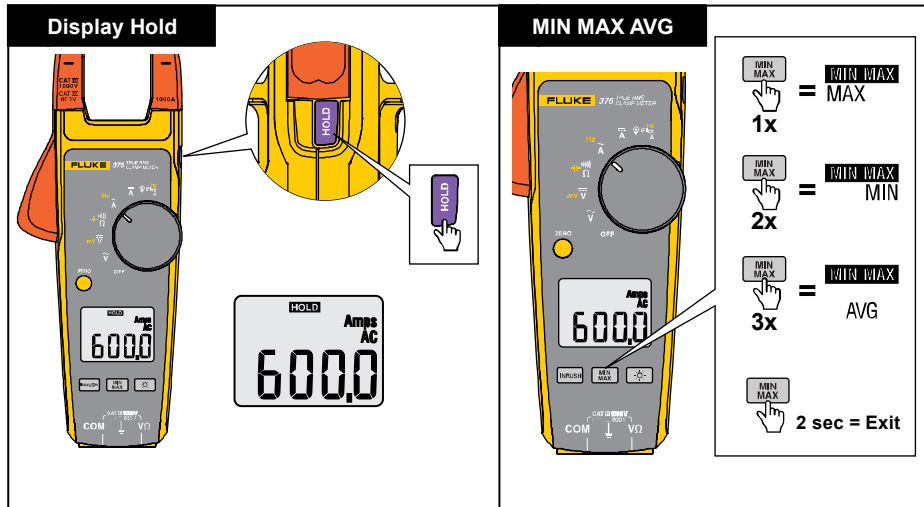


fig04\_5.eps

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A Flexible Current Probe

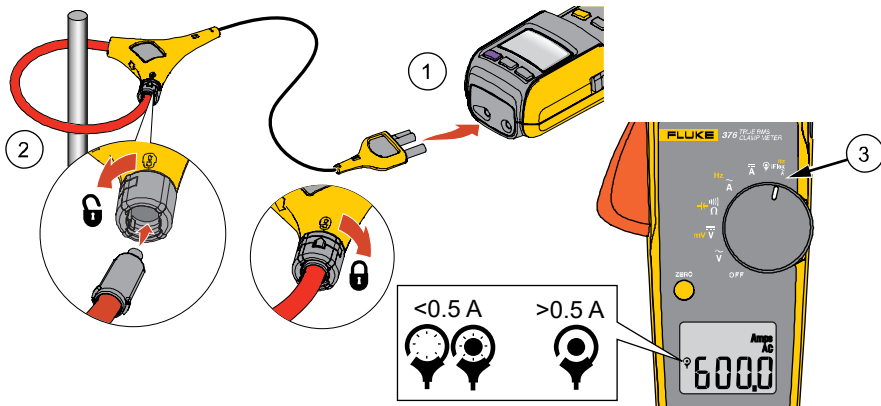


fig06.eps

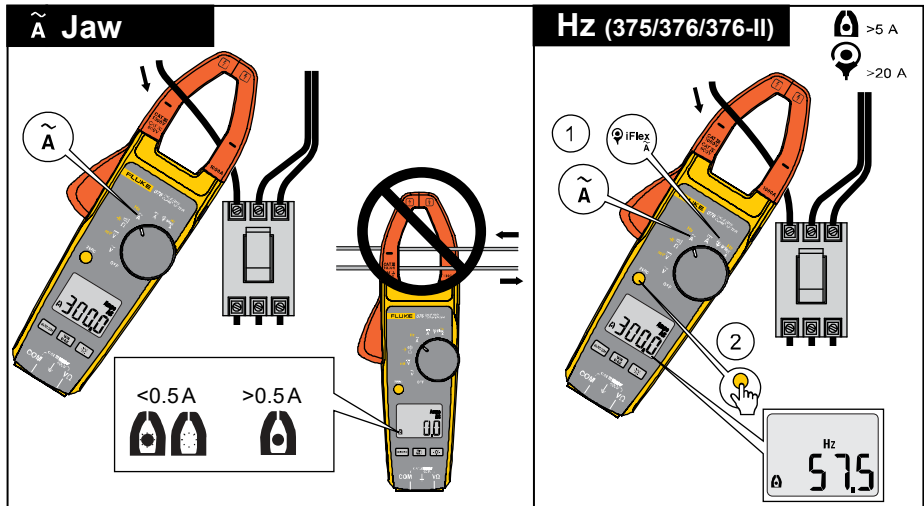


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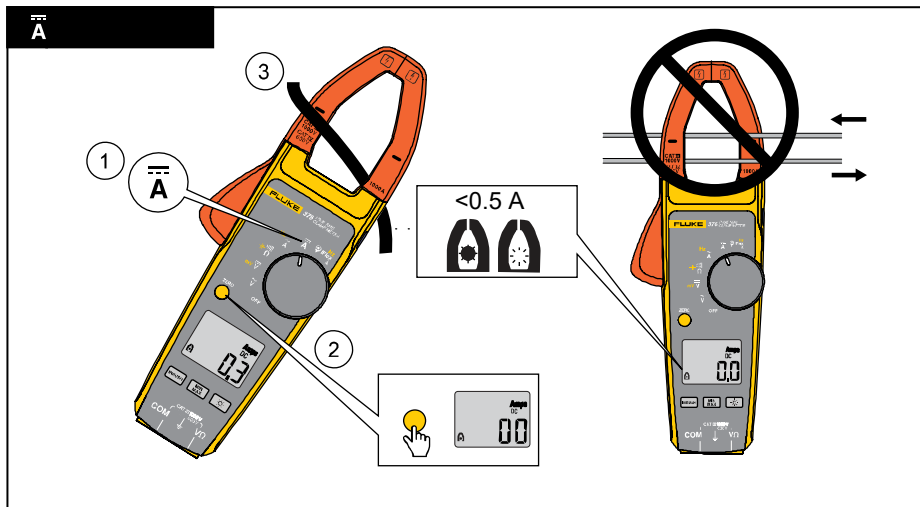


Fig08.eps

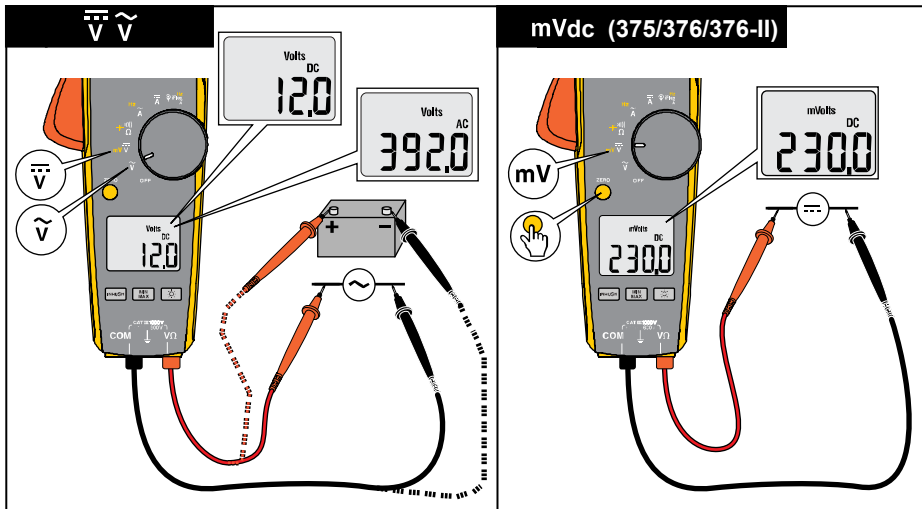


fig09\_10.eps

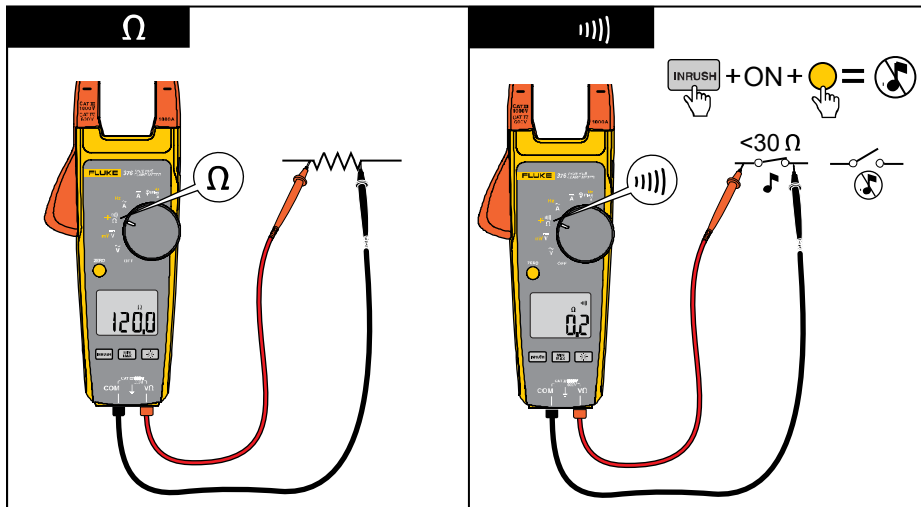


Fig15.eps

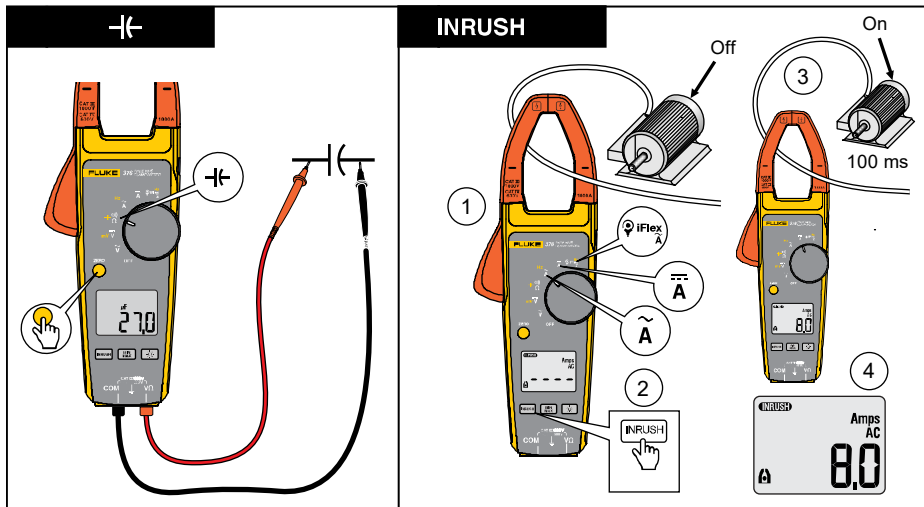


fig13\_14.eps

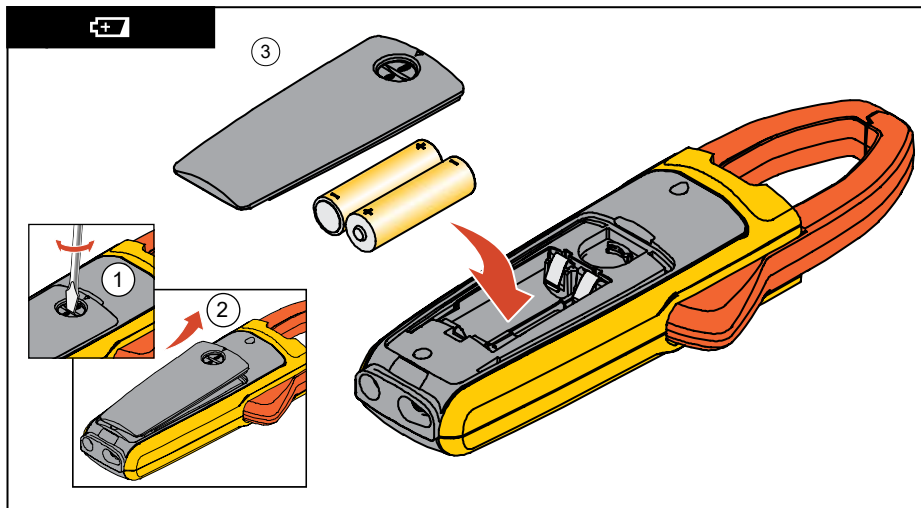


fig11\_12.eps

## **Specifications**

### **General Specifications**

Maximum voltage between any terminal and earth ground.....	1000 V
Size (L x W x H) .....	246 mm x 83 mm x 43 mm
Weight .....	388 g
Jaw Opening.....	34 mm
Flexible Current Probe Diameter .....	7.5 mm
Flexible Current Probe Cable Length (head to electronics connector) .....	1.8 m
Operating Temperature .....	-10 °C to 50 °C
Storage Temp .....	-40 °C to 60 °C
Operating Humidity .....	Non condensing (< 10 °C to °C) ≤90 % RH (at 10 °C to 30 °C) ≤75 % RH (at 30 °C to 40 °C) ≤45 % RH (at 40 °C to 50 °C)
Operating Altitude .....	2000 meters
Storage Altitude .....	12 000 meters

Batteries .....	2 AA, IEC LR6
Ingress Protection (IP) Rating.....	IEC 60529: IP30
Safety.....	IEC 61010-1 Pollution Degree 2 IEC 61010-2-032: CAT III 1000 V/CAT IV 600 V

**Electromagnetic Compatibility (EMC)**

International.....	IEC 61326-1: Portable Electromagnetic Environment CISPR 11: Group 1, Class A
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*Group 1: Equipment has intentionally generated and/or uses conductively-coupled radio frequency energy that is necessary for the internal function of the equipment itself.*

*Class A: Equipment is suitable for use in all establishments other than domestic and those directly connected to a low-voltage power supply network that supplies buildings used for domestic purposes. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted and radiated disturbances.*

*Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.*

*Emissions that exceed the levels required by CISPR 11 can occur when the equipment is connected to a test object.*

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Korea (KCC) ..... Class A Equipment (Industrial Broadcasting & Communication Equipment)

*Class A: Equipment meets requirements for industrial electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and not to be used in homes.*

USA (FCC)..... 47 CFR 15 subpart B. This product is considered an exempt device per clause 15.103.

### Accuracy Specifications

Temperature Coefficients ..... Add 0.1 x specified accuracy for each degree C above 28 °C or below 18 °C

### AC Current via Jaw

Range

374/375 ..... 600.0 A

376/376-II ..... 999.9 A

Resolution ..... 0.1 A

Accuracy ..... 2 %  $\pm$ 5 digits (10 Hz to 100 Hz)

2.5 %  $\pm$ 5 digits (100 Hz to 500 Hz)

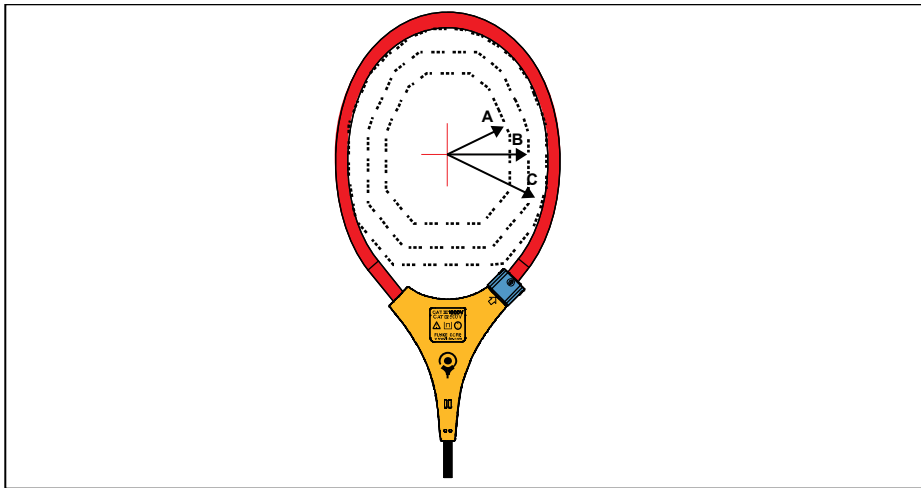


Crest Factor (50/60 Hz) .....	3 @ 500 A (375/ 376/376-II only)
	2.5 @ 600 A
	1.42 @1000 A (376/376-II only)
	Add 2 % for C.F. >2

***AC Current via Flexible Current Probe***

Range.....	2500 A
Resolution	
374/375.....	0.1 A ( $\leq 600$ A)
	1 A ( $\leq 2500$ A)
376/376-II.....	0.1 A ( $\leq 999.9$ A)
	1 A ( $\leq 2500$ A)
Accuracy .....	3 % $\pm 5$ digits (5 Hz to 500 Hz)
Crest Factor (50/60 Hz) .....	3.0 at 1100 A (375/376/376-II only)
	2.5 at 1400 A
	1.42 at 2500 A
	Add 2 % for C.F. >2

*Position Sensitivity*



ghn12.eps

**Figure 1. Position Sensitivity**

Distance from Optimum	i2500-10 Flex	i2500-18 Flex	Error
A	0.5 in (12.7 mm)	1.4 in (35.6 mm)	±0.5 %
B	0.8 in (20.3 mm)	2.0 in (50.8 mm)	±1.0 %
C	1.4 in (35.6 mm)	2.5 in (63.5 mm)	±2.0 %
Measurement uncertainty assumes centralized primary conductor at optimum position, no external electrical or magnetic field, and within operating temperature range.			

**DC Current**

Range

374/375 ..... 600.0 A

376/376-II ..... 999.9 A

Resolution ..... 0.1 A

Accuracy ..... 2 % ±5 digits

**AC Voltage**

Range

374/375 ..... 600.0 V

376/376-II ..... 1000 V

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#### Resolution

374/375 .....	0.1 V
376/376-II .....	0.1 V ( $\leq 600.0$ V)
	1 V ( $\leq 1000$ V)

Accuracy ..... 1.5 %  $\pm 5$  digits (20 Hz to 500 Hz)

#### DC Voltage

##### Range

374/375 .....	600.0 V
376/376-II .....	1000 V

#### Resolution

374/375 .....	0.1 V
376/376-II .....	0.1 V ( $\leq 600.0$ V)
	1 V ( $\leq 1000$ V)

Accuracy ..... 1 %  $\pm 5$  digits

#### mV dc

##### Range

375/376/376-II .....	500.0 mV
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Resolution ..... 0.1 mV

Accuracy ..... 1 %  $\pm 5$  digits

**Frequency via Jaw**

Range

375/376/376-II .....	5.0 Hz to 500.0 Hz
Resolution .....	0.1 Hz
Accuracy .....	0.5 % $\pm$ 5 digits
Trigger Level .....	5 Hz to 10 Hz, $\geq$ 10 A 10 Hz to 100 Hz, $\geq$ 5 A 100 Hz to 500 Hz, $\geq$ 10 A

**Frequency via Flexible Current Probe**

Range

375/376/376-II .....	5.0 Hz to 500.0 Hz
Resolution .....	0.1 Hz
Accuracy .....	0.5 % $\pm$ 5 digits
Trigger Level .....	5 Hz to 20 Hz, $\geq$ 25 A 20 Hz to 100 Hz, $\geq$ 20 A 100 Hz to 500 Hz, $\geq$ 25 A

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#### Resistance

##### Range

374 ..... 6000  $\Omega$

375/376/376-II ..... 60 k $\Omega$

##### Resolution

374 ..... 0.1  $\Omega$  ( $\leq 600 \Omega$ )  
1  $\Omega$  ( $\leq 6000 \Omega$ )

375/376/376-II ..... 0.1  $\Omega$  ( $\leq 600 \Omega$ )  
1  $\Omega$  ( $\leq 6000 \Omega$ )  
10  $\Omega$  ( $\leq 60 \text{ k}\Omega$ )

Accuracy ..... 1 %  $\pm 5$  digits

#### Capacitance

Range ..... 1000  $\mu\text{F}$

Resolution ..... 0.1  $\mu\text{F}$  ( $\leq 100 \mu\text{F}$ )  
1  $\mu\text{F}$  ( $\leq 1000 \mu\text{F}$ )

Accuracy ..... 1 %  $\pm 4$  digits