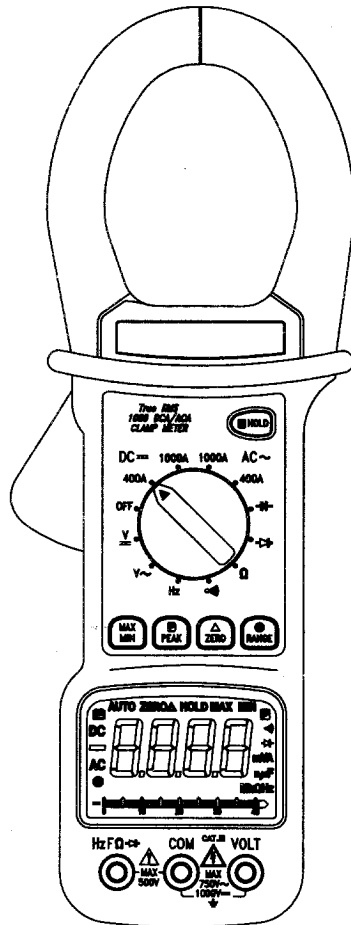


# INSTRUCTION MANUAL

## **BK PRECISION®**

### DIGITAL CLAMP METERS

### MODELS 330B, 340B, 350B, 369B, 367A



CE

## INTRODUCTION

The 330B/340B/350B/367A/369B family of rugged digital clamp meters will perform electrical measurements in the most severe industrial applications for many years. Non-intrusive current measurements are made without interrupting the circuit, just clamp the jaws around the conductor. The large 2.2 inch jaw opening accommodates large conductors; all models have a standard measurement capacity of 1,000 amps. These instruments also offer complete multimeter functions. All models in this series have the following minimum capabilities:

- AC current measurements to 1,000 amps
- AC voltage measurements to 750 volts
- DC voltage measurements to 1,000 volts
- Resistance measurements
- Continuity measurements
- Compliance with tough IEC-1010 safety standards

**MODEL 330B.** Model 330B is the most economical clamp meter of the series. It includes all features needed for basic electrical testing. This model features a 3-1/2 digit (2000 count) LCD display and manual ranging. It offers a total of 9 measurement ranges. Although economical, it includes a useful MAX hold to retain the highest of varying readings.

**MODEL 340B.** Model 340B is a more versatile manual ranging AC clamp meter. It features a 3-1/2 digit (2000 count) LCD display and MAX hold like Model 330B. However, it has a greater number of voltage, current and resistance ranges. Furthermore, it adds diode test, frequency measurement and capacitance measurement. The total number of measurement ranges is 19.

**MODEL 350B.** Model 350B is a more deluxe AC clamp meter with a 3200 count LCD display with an analog bargraph and autoranging. Peak hold is included for current, voltage, frequency and resistance measurements. The total measurement ranges is expanded to 23.

**MODEL 367A, 369B.** Model 367A, 369B is the most deluxe instrument of the series and offers several features that are vital in some applications. Model 367A, 369B is an AC/DC clamp meter; that is, it measures both AC and DC currents to 1,000 amps. AC measurements, both voltage and current, are true RMS. Other deluxe features include a 4000 count LCD with analog bargraph, autoranging, Relative Mode, MIN/MAX recording and Peak Hold for current measurements. Model 367A, 369B boasts a total of 33 measurement ranges.

## SPECIFICATIONS

### ELECTRICAL

NOTE: Accuracy is given as  $\pm$ (% of reading + number of least significant digits) at 18°C to 28°C, with relative humidity up to 70%.

\*\* Accuracy stated with conductor centered in jaws. Add 1% if conductor is not centered in jaws.

#### DC Current [367A] (Using clamp): \*\* Manual Ranging

Range	Resolution	Accuracy
400 A	100 mA	0-600 A, $\pm$ (1.5% reading + 5 digits)
2000 A	1 A	600-800 A, $\pm$ (2.0% reading + 5 digits) 800-1200 A, $\pm$ (3.5% reading + 5 digits) 1200-2000 A, $\pm$ (5.0% reading + 5 digits)

Overload Protection: 2000A for 60 seconds maximum.

#### AC Current [367A] (Using clamp): \*\* True rms, Manual Ranging

Range	Resolution	Accuracy at 50/60 Hz
400 A	100 mA	0-600 A, $\pm$ (1.5% reading + 5 digits)
2000 A	1 A	600-1000 A, $\pm$ (2.0% reading + 5 digits) 1000-1500 A, $\pm$ (5.0% reading + 5 digits) 1500-1800 A, $\pm$ (6.0% reading + 5 digits) 1800-2000 A, $\pm$ (8.5% reading + 5 digits)
		Accuracy at 60-400 Hz
		0-600 A, $\pm$ (3.0% reading + 5 digits) 600-1000 A, $\pm$ (3.5% reading + 5 digits) 1000-1500 A, $\pm$ (5.0% reading + 5 digits)

Crest Factor:  $\geq 3$ .

Overload Protection: 2000 A for 60 seconds maximum.

#### DC Current [369B] (Using clamp): \*\* Manual Ranging

Range	Resolution	Accuracy
400 A	100 mA	0-600 A, $\pm$ (1.5% reading + 5 digits)
1000 A	1 A	600-800 A, $\pm$ (2.5% reading + 5 digits) >800 A, $\pm$ (3.5% reading + 5 digits)

Overload Protection: 1200A for 60 seconds maximum.

#### AC Current [369B] (Using clamp): \*\* True rms, Manual Ranging

Range	Resolution	Accuracy at 50/60 Hz
400 A	100 mA	0-600 A, $\pm$ (1.5% reading + 5 digits)
1000 A	1 A	>600 A, $\pm$ (2.0% reading + 5 digits)
		Accuracy at 60-400 Hz
		0-600 A, $\pm$ (3.0% reading + 5 digits) >600 A, $\pm$ (3.5% reading + 5 digits)

Crest Factor:  $\geq 3$

Overload Protection: 1200 A for 60 seconds maximum.

## SPECIFICATIONS

### AC Voltage [367A, 369B] (Using Test Leads): True rms. Auto or Manual Ranging

Range	Resolution	Accuracy, 50 to 500 Hz	Input Impedance
*400 mV	100 $\mu$ V	$\pm(1.5\%$ reading + 4 digits)	>1000 M $\Omega$ / $<100$ pF
4 V	1 mV	$\pm(1.5\%$ reading + 4 digits)	11 M $\Omega$ / $<100$ pF
40 V	10 mV	$\pm(1.5\%$ reading + 4 digits)	10 M $\Omega$ / $<100$ pF
400 V	100 mV	$\pm(1.5\%$ reading + 4 digits)	10 M $\Omega$ / $<100$ pF
750 V	1 V	$\pm(1.5\%$ reading + 4 digits)	10 M $\Omega$ / $<100$ pF

\* Input signal, >40 mV; frequency, 50-100 Hz.

Crest Factor:  $\geq 3$ .

Overload Protection: 1000 V dc or 750 V ac rms.

### AC Voltage [350B] (Using Test Leads): Average sensing, rms reading, Auto or Manual Ranging

Range	Resolution	Accuracy, 50 to 300 Hz	Input Impedance
3.2 V	1 mV	$\pm(1.5\%$ reading + 4 digits)	11 M $\Omega$ / $<20$ pF
32 V	10 mV	$\pm(1.5\%$ reading + 4 digits)	10 M $\Omega$ / $<20$ pF
320 V	100 mV	$\pm(1.5\%$ reading + 4 digits)	10 M $\Omega$ / $<20$ pF
750 V	1 V	$\pm(1.5\%$ reading + 4 digits)	10 M $\Omega$ / $<20$ pF

Overload Protection: 1000 V dc or 750 V ac rms.

### AC Voltage [340B] (Using Test Leads): Average sensing, rms reading, Manual Ranging

Range	Resolution	Accuracy, 50 to 500 Hz	Input Impedance
200 V	100 mV	$\pm(1.5\%$ reading + 4 digits)	4.5 M $\Omega$
750 V	1 V	$\pm(1.5\%$ reading + 4 digits)	4.5 M $\Omega$

Overload Protection: 1000 V dc or 750 V ac rms.

### AC Voltage [330B] (Using Test Leads): Average sensing, rms reading, Manual Ranging

Range	Resolution	Accuracy, 50 to 500 Hz	Input Impedance
750 V	1 V	$\pm(1.5\%$ reading + 4 digits)	4.5 M $\Omega$

Overload Protection: 1000 V dc or 750 V ac rms.

## SPECIFICATIONS

### Resistance [367A, 369B] (Using Test Leads): Auto or Manual Ranging

Range	Resolution	Accuracy	Open Circuit Volts
400 $\Omega$	0.1 $\Omega$	$\pm(1.2\%$ reading + 4 digits)	0.4 V dc
4 k $\Omega$	1 $\Omega$	$\pm(1.0\%$ reading + 2 digits)	0.4 V dc
40 k $\Omega$	10 $\Omega$	$\pm(1.0\%$ reading + 2 digits)	0.4 V dc
400 k $\Omega$	100 $\Omega$	$\pm(1.0\%$ reading + 2 digits)	0.4 V dc
4000 k $\Omega$	1 k $\Omega$	$\pm(1.5\%$ reading + 4 digits)	0.4 V dc
40 M $\Omega$	10 k $\Omega$	$\pm(2.0\%$ reading + 4 digits)	0.4 V dc

Overload Protection: 500 V dc or ac rms.

### Resistance [350B] (Using Test Leads): Auto or Manual Ranging

Range	Resolution	Accuracy	Test Current
320 $\Omega$	0.1 $\Omega$	$\pm(1.0\%$ reading + 3 digits)	<0.7 mA
3.2 k $\Omega$	1 $\Omega$	$\pm(1.0\%$ reading + 3 digits)	<0.13 mA
32 k $\Omega$	10 $\Omega$	$\pm(1.0\%$ reading + 3 digits)	<13 $\mu$ A
320 k $\Omega$	100 $\Omega$	$\pm(1.0\%$ reading + 3 digits)	<1.3 $\mu$ A
3.2 M $\Omega$	1 k $\Omega$	$\pm(1.5\%$ reading + 3 digits)	<0.13 $\mu$ A
30 M $\Omega$	10 k $\Omega$	$\pm(2.5\%$ reading + 5 digits)	<0.13 $\mu$ A

Overload Protection: 500 V dc or ac rms.

### Resistance [340B] (Using Test Leads): Manual Ranging

Range	Resolution	Accuracy	Open Circuit Volts
200 $\Omega$	0.1 $\Omega$	$\pm(1.2\%$ reading + 4 digits)	3.0 V dc
2 k $\Omega$	1 $\Omega$	$\pm(1.0\%$ reading + 3 digits)	0.3 V dc
20 k $\Omega$	10 $\Omega$	$\pm(1.0\%$ reading + 3 digits)	0.3 V dc
200 k $\Omega$	100 $\Omega$	$\pm(1.0\%$ reading + 3 digits)	0.3 V dc
2 M $\Omega$	1 k $\Omega$	$\pm(1.0\%$ reading + 3 digits)	0.3 V dc
20 M $\Omega$	10 k $\Omega$	$\pm(2.0\%$ reading + 5 digits)	0.3 V dc

Overload Protection: 1000 V dc or 750 V ac rms.

### Resistance [330B] (Using Test Leads): Manual Ranging

Range	Resolution	Accuracy	Open Circuit Volts
200 $\Omega$	0.1 $\Omega$	$\pm(1.2\%$ reading + 4 digits)	3.0 V dc
2 k $\Omega$	1 $\Omega$	$\pm(1.0\%$ reading + 3 digits)	0.3 V dc
20 M $\Omega$	10 k $\Omega$	$\pm(2.0\%$ reading + 5 digits)	0.3 V dc
2000 M $\Omega$	100 k $\Omega$	$\pm[(5\%$ reading - 10 digits) + 10 digits]	3.0 V dc

Overload Protection: 1000 V dc or 750 V ac rms.

## SPECIFICATIONS

### Continuity Test (Using Test Leads):

Model	Range	Audible Threshold	Response Time	Test Current
367A	400 $\Omega$	< 40 $\Omega$	About 500 ms	< 0.4 mA
369B	400 $\Omega$	< 40 $\Omega$	About 500 ms	< 0.4 mA
350B	320 $\Omega$	< 20 $\Omega$	About 500 ms	< 0.7 mA
340B	2k $\Omega$	< 75 $\Omega$	About 100 ms	< 1.0 mA
330B	200 $\Omega$	< 75 $\Omega$	About 100 ms	< 1.0 mA

Overload Protection: 500 V dc or ac rms.

### Diode Test (Using Test Leads):

Model	Range	Resol.	Accuracy	Test Current	Open Circuit V
367A	4 V	1 mV	$\pm(1\% \text{ rdg} + 2 \text{ dgts})$	About 0.6 mA	3.2 V dc
369B	4 V	1 mV	$\pm(1\% \text{ rdg} + 2 \text{ dgts})$	About 0.6 mA	3.2 V dc
350B	3.2 V	1 mV	$\pm(10\% \text{ rdg} + 2 \text{ dgts})$	About 0.6 mA	3.0 V dc
340B	2 V	1 mV	$\pm(1.5\% \text{ rdg} + 2 \text{ dgts})$	About 1 mA	3.0 V dc

Overload Protection: 500 V dc or ac rms.

### Frequency [367A, 369B] (Using Test Leads): Auto or Manual Ranging

Range	Resolution	Accuracy	Trigger Level
100 Hz	0.01 Hz	$\pm(0.1\% \text{ reading} + 10 \text{ digits})$	2.5V rms
1 kHz	0.1 Hz	$\pm(0.1\% \text{ reading} + 4 \text{ digits})$	2.5V rms
10 kHz	1 Hz	$\pm(0.1\% \text{ reading} + 4 \text{ digits})$	2.5V rms
100 kHz	10 Hz	$\pm(0.1\% \text{ reading} + 8 \text{ digits})$	2.5V rms
400 kHz	100 Hz	$\pm(0.1\% \text{ reading} + 20 \text{ digits})$	2.5V rms

Overload Protection: 500 V dc or ac rms.

NOTE: Frequencies < 100 Hz and > 100 kHz, reading may tend to be unstable

Minimum Frequency: 1 Hz.

### Frequency [350B] (Using Test Leads): Manual Ranging

Range	Resolution	Accuracy at 50/60 Hz
320 Hz	0.1 Hz	$\pm(1.0\% \text{ rdg} + 4 \text{ digits})$
3200 Hz	1 Hz	$\pm(1.0\% \text{ rdg} + 4 \text{ digits})$
32 kHz	10 Hz	$\pm(1.0\% \text{ rdg} + 4 \text{ digits})$

Trigger Level: 3.5V rms min. at > 20% and < 80% duty cycle

Effective Reading: More than 100 digits at pulse width of > 2 $\mu$ s

Overload Protection: 500 V dc or ac rms

## SPECIFICATIONS

### Frequency [340B] (Using Test Leads): Auto Ranging

Range	Resolution	Accuracy	Trigger Level
10 Hz-40 kHz	1 Hz/10 Hz	$\pm(0.5\% \text{ reading} + 3 \text{ digits})$	2 V rms

Minimum Pulse Width: > 7.5  $\mu$ s w/duty cycle > 30% and < 70%.

Overload Protection: 500 V dc or ac rms.

### Capacitance [367A, 369B] (Using Test Leads): Auto or Manual Ranging

Range	Resolution	Accuracy
4 nF	0.001 nF	$\pm(1.5\% \text{ reading} + 40 \text{ digits})^{**}$
40 nF	0.01 nF	$\pm(1.5\% \text{ reading} + 4 \text{ digits})^{**}$
400 nF	0.1 nF	$\pm(1.5\% \text{ reading} + 4 \text{ digits})$
4 $\mu$ F	0.001 $\mu$ F	$\pm(1.5\% \text{ reading} + 4 \text{ digits})$
40 $\mu$ F	0.01 $\mu$ F	$\pm(1.5\% \text{ reading} + 4 \text{ digits})$ at < 20 $\mu$ F $\pm(5.0\% \text{ reading} + 4 \text{ digits})$ at > 20 $\mu$ F

\*\* After zeroing in relative mode.

Overload Protection: 500 V dc or ac rms.


### Capacitance [340B] (Using Test Leads): Auto Ranging

Range	Resolution	Accuracy	Test Frequency
200 $\mu$ F	100 nF	$\pm(3.5\% \text{ reading} + 5 \text{ digits})$	42 Hz















Overload Protection: 500 V dc or ac rms.

## SPECIFICATIONS

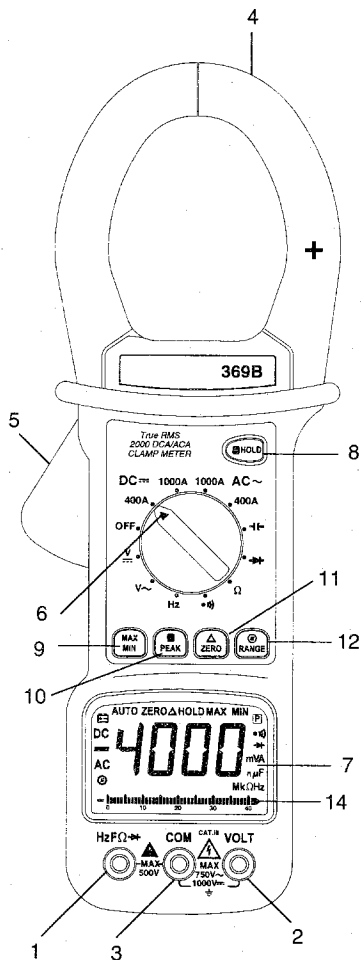
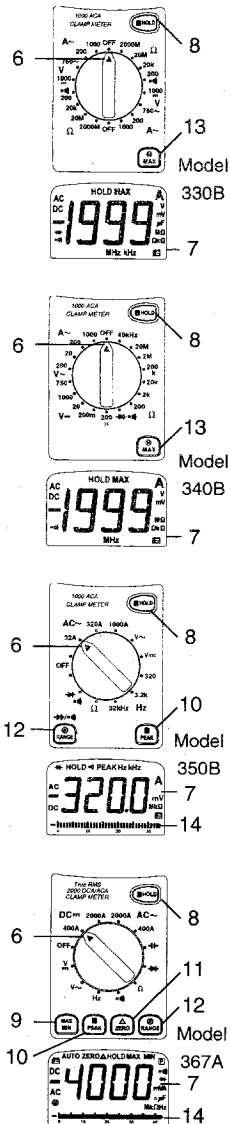
### GENERAL

Jaw Opening:	2.24" (57 mm).
Display [367A, 369B]:	3-3/4 digit liquid crystal display (LCD), max. reading or 4000 counts (9999 in Frequency) with 42 segment bargraph. Character ht., 17 mm.
Display [350B]:	3-1/2 digit liquid crystal display (LCD), max. reading of 3200 counts with 34 segment bargraph. Character ht., 17 mm.
Display [330B, 340B]:	3-3/4 digit liquid crystal display (LCD), max. reading of 1999 counts. Character ht., 21 mm.
Measuring Rate:	[367A, 369B, 350B] Nominal, 2/sec.; Cap. & Freq., 1/sec. [330B, 340B] Nominal, 2.5/sec.
Auto Power OFF:	If not used, turns meter off after: [367A, 369B] about 30 minutes. [350B] about 10 minutes. [330B, 340B] manual shut-off.
Polarity:	Automatic, " - " shown + assumed.
Overrange Indication:	OL shown, all digits blank.
Low Battery Indication:	 symbol shown at about 7.4 V, or less.
Power Requirement:	Single 9 V battery (NEDA 1604A).
Battery Life, Alkaline:	[367A, 369B] 100 hours typical. [350B] 200 hours typical. [330B, 340B] 300 hours typical.
Operating Temp.:	0°C to 50°C, < 70% relative humidity.
Storage Temp.:	-20°C to +60°C, < 80% relative humidity w/battery removed.
Temperature Coefficient:	0.1° • specified accuracy / °C (<18°C or >28°C)
Dimensions (HxWxD):	10.9" x 4" x 1.9" (277 x 102 x 49 mm).
Weight:	18.9 oz (540 g), includes battery.
Accessories Supplied:	Battery Carrying Case Test Leads Instruction Manual

## SYMBOLS

	See instruction manual for further precautionary information.
	Danger, high voltage terminal
	Double insulation, class II
<b>COM</b>	Common input jack
<b>VOLT</b>	Voltage input jack
<b>V</b>	Volts
<b>A</b>	Amperes
<b>DC</b> 	DC Voltage
<b>AC</b> 	AC Voltage
<b>Ω</b>	Ohms
	Continuity
	Diode Test
<b>Hz</b>	Frequency
<b>μF</b>	Capacitance
<b>MAX/MIN</b>	Monitor MAXimum or MINimum level
 <b>PEAK</b>	Monitor PEAK level
 <b>ZERO</b>	Record ZERO (difference)
 <b>RANGE</b>	Manual ranging
 <b>MAX</b>	Monitor maximum level
 <b>HOLD</b>	Hold (freeze) level
	Earth ground
	Low battery symbol
<b>500 V</b>	Maximum input rating of terminal with respect to COM
<b>750 V</b>	input terminal.
<b>1000 V</b>	
<b>MAX.</b>	

## CONTROLS & INDICATORS



## CONTROLS & INDICATORS

- **Hz Ω F** Jack [367A, 369B, 340B]. Test lead input for frequency, resistance, capacitance, continuity and diode test measurements.
  - **Hz Ω** Jack [350B]. Test lead input for frequency, resistance, continuity and diode test measurements.
  - **Ω Jack** [330B]. Test lead input for resistance and continuity measurements.
- VOLT Jack.** Positive (or high) test lead input for voltage measurements.
- COM Jack.** Black (common neutral, ground), low side test lead input.
- Current Clamp Jaws.** Use for current measurements without disconnecting circuit. Simply open jaws and loop around conductor.
- Lever.** Press to open, or release to close jaws.
- Power/Function/Range Selector.** Rotary switch to turn power off or to select measurement range and function.
- **Display, LCD Readout** [367A, 369B, 350B]. Indicates function selected, data reading selected (PEAK, HOLD, etc.) overrange, polarity (-), and low battery status. Digit display: 3¾ [367A, 369B], 3½ [350B], with automatic placement of decimal point. Maximum count: [367A, 369B] 4000; [350B] 3200.
  - **Display, LCD Readout** [340B, 330B]. Indicates function selected, data reading selected (MAX, HOLD) overrange, polarity (-), and low battery status. 3½ digit display (1999 maximum) with automatic placement of decimal.
- HOLD.** Press to freeze present reading at display and to display "HOLD" annunciator. Press again to exit.
- MAX/MIN** [367A, 369B]. Press to record and enable display of minimum and maximum input levels. Press this button to increment through levels recorded and present input level. Display shows HOLD MAX or MIN and active level.
- **PEAK** [367A, 369B, 350B]. Push button store peak value of a varying input, PEAK displayed. Press to toggle in and out.
  - **ZERO** [367A, 369B]. Push button to obtain difference between a stored reference and present reading, Δ ZERO displayed. Stored reference is input level when Δ ZERO data mode is enabled. Press and hold button down for at least 2 seconds to exit.