

SAFETY

WARNING

An electrical shock causing 10 milliamps of current to pass through the human heart will stop most human hearts. Voltage as low as 35 V dc or ac rms should be considered dangerous since it can produce a fatal current under certain conditions. Higher voltages are even more dangerous. Observe the following safety precautions:

1. Do not exceed the following input ratings. Personal injury or damage to the instrument may result.



DC VOLTS	1.2 kV
AC VOLTS	850 V rms
AC AMPS	1000 A rms
OHMS	250 V dc or 176 V ac rms

2. Never use the clamp meter unless the battery compartment is closed.
3. Remove test leads before replacing battery.
4. Always remove test leads when they are not in use. Dangling test leads can be dangerous.
5. Use only the safety type test leads supplied with the clamp meter.
6. Turn off equipment while making test connections in high voltage circuits. Discharge high voltage capacitors after removing power.
7. For the safest voltage measurement in high voltage equipment, do not touch equipment, meter, or test leads while power is applied.
8. If possible, familiarize yourself with the equipment or system being tested and the location of its high voltage areas. However, remember that high

voltages may appear at unexpected points in defective equipment and systems.

9. Use an insulated floor material or floor mat to stand on. Make certain such surfaces are not damp or wet.
10. Keep "one hand in the pocket" while handling an instrument probe. Be particularly careful to avoid contacting a nearby metal object that could provide a good ground return path.
11. When using a probe, touch only the insulated portion. Never touch the exposed tip portion.
12. Never assume that connections designated as "neutral" are at ground potential.
13. Make certain that any ground is acceptable before relying on it.
14. Never assume circuit power is off until you are certain of it.
15. Never work alone. Someone should be nearby to render aid if necessary. Training in CPR (cardio-pulmonary resuscitation) first aid is highly recommended.

SYMBOLS



See instruction manual for further precautionary information.



High voltage terminal; up to 1000 volts may be present if connected to high voltage.



Volt/ohm - continuity input, diode test terminal.



Common input terminal.



Diode test.



Continuity buzzer.



Connect to earth ground or point not more than 500 V from earth ground.

1000 VDC
750 VAC

Maximum input rating of V-Ω terminal with respect to COM input terminal.

INSTRUCTION MANUAL

MODEL 350A



DIGITAL CLAMP METER



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INTRODUCTION

The **B & K-Precision** Model 350A Digital Clamp Meter is a practical, versatile instrument for measuring ac and dc voltage, ac current, and resistance. In addition, the meter also tests diode condition and checks continuity. The current clamp allows the user to measure ac current without disconnecting any wires. Test leads permit voltage and resistance measurements and continuity and diode tests. The meter displays a direct reading of current, voltage, or resistance on a 3-1/2 digit LCD readout. Three current ranges, two ac and dc voltage ranges, two resistance ranges, and a diode and continuity check feature allow accurate, versatile measurements.

Among the performance features of the meter are overload protection and unparalleled convenience. A wide selection of ranges and functions allows the user to perform measurements and tests on most electrical and electronic systems. The major convenience and timesaving features include an LCD digital readout for quick, easy readings, continuity buzzer, low-battery indication, and an overrange indicator on all functions and ranges.

Other special features include a data hold feature and a peak hold feature. The data hold feature allows the user to make a measurement and "lock" the reading on the display. The peak hold feature holds the highest voltage or current reading attained during the time of activation, allowing easy measurement of changing signals.

High performance and convenience make the Model 350A a truly portable, practical instrument for the electrician and service person. To gain the most value from this instrument, we recommend that you study the entire manual to fully understand all the capabilities of the instrument, and to familiarize yourself with all operating techniques.

SPECIFICATIONS

Specifications apply from
18° to 28° C (65 to 82° F)
RH = 75% or less.

AC CURRENT Average responding. Calibrated to read rms value of sine wave.

RANGE	RESOLUTION
20 A	0.01 A
200 A	0.1 A
1000 A	1 A

AC VOLTAGE Average responding. Calibrated to read rms value of sine wave.

RANGE	RESOLUTION
200 V	0.1 V
750 V	1 V

DC VOLTAGE

RANGE	RESOLUTION
200 V	0.1 V
1000 V	1 V

RESISTANCE

RANGE	RESOLUTION
200 Ω	0.1 Ω
2 kΩ	1 Ω

ACCURACY

RANGE	ACCURACY
20 A	±1.5% FS
200 A	50 Hz - 60 Hz
1000 A	±2.5% FS (750-1000 A) 50 Hz - 60 Hz
200 VAC	±1.2% rdg + 4 digits
750 VAC	40 Hz - 500 Hz
200 VDC	±0.5% rdg + 1 digit
1000 VDC	±0.5% rdg + 1 digit
200 Ω	±1.2% rdg + 4 digits
2 kΩ	±1.2% rdg + 1 digit

ACCURACY (Peak Hold Mode)

RANGE/ FUNCTION	ACCURACY
DC VOLTS	±4% rdg + 10 digits
AC VOLTS	±5% rdg + 12 digits
AC AMPS	±6% rdg + 12 digits

Operating Temperature Range:
0° C to 50° C, 0 - 70% RH

Storage Temperature Range:
-20° C to +60° C, 0 - 80% RH

Display:
3-1/2 digit LCD readout, maximum reading of 1999 counts.

Zero Adjust:
Automatic.

Overrange Indicator:
"1" displayed in leftmost position with no other digits present.

Polarity:
Automatic; negative polarity indicated by "-" display.

Readout Access Time:
2.5 seconds, nominal.

Continuity Test:
Audible tone for resistance below 100 Ω.

Diode Test:
Standard resistance test; bias voltage sufficient for silicon junction forward biasing.

Test Connections:
Inductive current clamp, Dual-banana type volt/ohm test lead jacks.

Power Source:
One - 9 V battery (NEDA 1604).

Battery Life:
200 hours typical (alkaline battery). Low battery condition indicated by LO BAT displayed.

Dimensions:
295 mm x 76 mm x 35 mm (11 5/8" x 3" x 1 3/8").

Weight:
490 g (1 lb, 1 oz) without battery.

WARRANTY

LIMITED ONE-YEAR WARRANTY

MAXTEC INTERNATIONAL CORPORATION warrants to the original purchaser that its **B & K-Precision** product, and the component parts thereof, will be free from defects in workmanship and materials for a period of one year from date of purchase.

MAXTEC will, without charge, repair or replace, at its option, defective product or component parts upon delivery to an authorized **B & K-Precision** service contractor or the factory service department, accompanied by proof of the purchase date in the form of a sales receipt.

To obtain warranty coverage in the U.S.A., this product must be registered by completing and mailing the enclosed warranty registration card to MAXTEC, **B & K-Precision**, 6470 West Cortland Street, Chicago, Illinois 60635 within fifteen (15) days from the date of purchase.

Exclusions: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. It is void if the serial number is altered, defaced or removed.

MAXTEC shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific rights and you may also have other rights which vary from state to state.

For your convenience we suggest you contact your **B & K-Precision** distributor, who may be authorized to make repairs or can refer you to the nearest service contractor. If warranty service cannot be obtained locally, please send the unit to **B & K-Precision** Service Department, 6470 West Cortland Street, Chicago, Illinois 60635, properly packaged to avoid damage in shipment.

CONTROLS AND INDICATORS

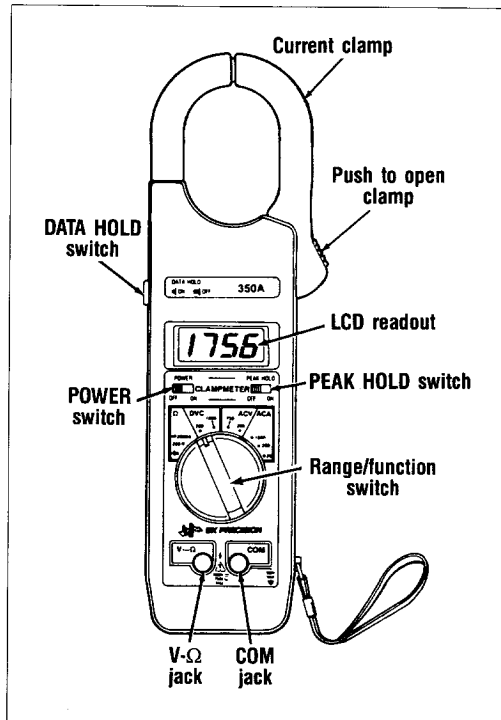


Fig. 1. Operating Controls

POWER Switch. Turns meter **ON** and **OFF**.

DATA HOLD Switch. Turns **DATA HOLD** feature **ON** and **OFF**.

PEAK HOLD Switch. Turns **PEAK HOLD** feature **ON** and **OFF**.

RANGE/FUNCTION Switch. Selects the following functions and ranges:

USING CLAMP	
ACA (ac amperes)	20, 200, and 1000 amp ac current ranges with 0.01, 0.1, and 1 A respective resolutions.
USING TEST LEADS	
ACV (ac volts)	200 and 750 volt ac voltage ranges with 0.1 and 1 V respective resolutions.
DCV (dc volts)	200 and 1 kV dc voltage ranges with 0.1 and 1 V respective resolutions.
Ω (resistance)	2000 and 200 Ω resistance ranges with 0.1 and 1 Ω respective resolutions. Continuity alert sounds if resistance is less than 100 Ω.
➔ (diode test)	Resistance range recommended for diode forward and reverse bias testing.
••••• (continuity check)	Buzzer sounds below 100Ω. Resistance simultaneously displayed.

Current Clamp. Allows current measurement without making connections in circuit. Simply open clamp and loop around conductor.

V-Ω Jack. Positive (red) test lead input for voltage, diode test and resistance/continuity functions.

COM Jack. Common, or negative (black) test lead input.

LCD Readout. 3-1/2 digit LCD readout. Indicates current, voltage and resistance values. Automatic decimal point placement. Overrange indicated by a "1" displayed at the leftmost digit while all other digits remain blank. A **LO BAT** and polarity indicator (-) are integral parts of the display.

OPERATING INSTRUCTIONS

WARNING

Refer to safety instructions contained in this manual before attempting any measurements.

NOTE

Clamp must be positioned around only one conductor of a circuit (as shown in Fig. 2). If clamp is placed around two or more current-carrying conductor (such as when attempting current measurement around the line cord of an appliance), the meter reading will be FALSE. This is true of any clamp meter. Other wires in the clamp tend to cancel the measurement.

OPERATING PROCEDURE

1. Although a battery is provided with the meter, it is not installed. Install the battery as instructed in the **MAINTENANCE** section of this manual.
2. Set **POWER** switch to **ON** position. The presence of any character on the LCD readout serves as a power on indicator.
3. The current clamp allows current measurement only. Use the test leads for other measurements and tests; **red** lead to **V-Ω** jack, **black** lead to **COM** jack.
4. An overrange condition using any function is indicated by a "1" displayed on the readout with no other digits present.
5. Read measurements directly from the readout. The decimal point is automatically located.
6. For best resolution, select the range closest to an overrange indication.

MEASURING CURRENT

1. Open spring-loaded clamp by pressing trigger on right side of meter.
2. Position clamp around wire or conductor and release clamp trigger, making sure clamp is entirely closed.

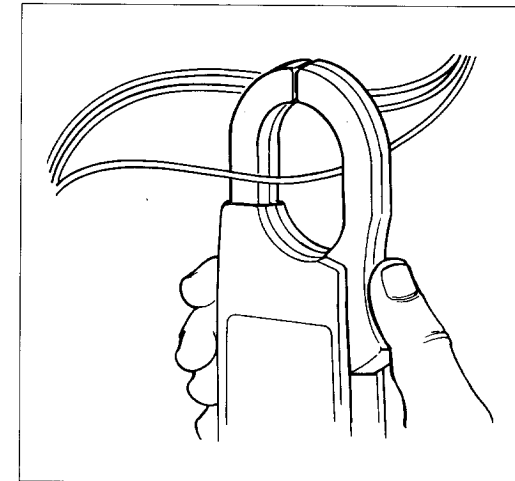


Fig. 2.

3. For measurements of unknown current levels, set the range/function switch to **ACA 20 A**.
4. If an overrange is indicated, select a higher range until the overrange indication ceases.

OPERATING INSTRUCTIONS (Continued)

5. If the approximate range of current is known, select the appropriate range.
6. Read current level directly from LCD readout.


MEASURING VOLTAGE

1. Connect test leads to meter jacks.
2. To measure **dc voltage**, set the range/function switch to the proper **DCV** range.
3. To measure **ac voltage**, set the range/function switch to the proper **ACV** range.
4. Connect test leads across the desired points of measurement.
5. Read voltage level directly from LCD readout.


MEASURING RESISTANCE

1. Set the range/function switch to the proper Ω range.
2. *Remove power from the circuit under test.*
3. Connect test leads to meter jacks.
4. Connect test leads to desired point of measurement.
5. Read resistance value directly from LCD readout.

CHECKING CONTINUITY

1. Set the range/function switch to .
2. Connect the test leads as outlined above.
3. Buzzer sounds if resistance is under 100 Ω . Resistance value displayed on readout.

TESTING DIODES

1. Set the range/function switch to .
2. Connect the test leads to the meter.
3. Connect the **red** test lead to the anode of the diode (P side of a semiconductor junction).
4. Connect the **black** test lead to the cathode of the diode (N side of a semiconductor junction).
5. Test should indicate a low resistance (less than approximately 700 Ω).
6. Reverse test lead connection and repeat test. Resistance reading should now indicate over-range. If resistance is low regardless of lead orientation, diode is shorted. If resistance is high regardless of lead orientation, diode is open.

USING DATA HOLD FEATURE

The data hold feature allows the user to “hold” (store) measurements. The following steps explain the usage of this feature:

1. Make measurements as outlined in previous steps.
2. When measurement is obtained, press **DATA HOLD** switch to the **ON** position. The readout will hold the reading, even after the clamp or test leads are removed from point of measurement.
3. To clear the readout, release **DATA HOLD** switch.

USING PEAK HOLD FEATURE:

1. Peak hold is used to measure the peak value of a short term changing voltage or current such as surge current when power is first applied to a load.
2. Make measurements as outlined in previous steps.
3. Activate feature by setting **PEAK HOLD** switch to **ON** position.
4. While active, the meter will only display the highest reading attained during a series of measurements.
5. Peak hold readings decay at about two digits per second. Therefore, use **DATA HOLD** to indefinitely hold a reading.
6. To disable the **PEAK HOLD** function, return the **PEAK HOLD** switch to the **OFF** position.

MAINTENANCE

WARNING

Remove test leads before changing batteries. Never operate instrument with battery compartment open.

CAUTION

Remove discharged disposable batteries immediately to prevent damage from battery leakage.

BATTERY REPLACEMENT

The presence of **LO BAT** on the readout indicates that the battery is near discharge. The meter may still be used for a short time afterwards. However, battery must be replaced as soon as possible. Open battery compartment cover by sliding cover away from unit while exerting slight downward pressure with thumb.

TEST LEADS

Use only the safety type test leads, like those supplied. Periodically inspect the test leads to ensure that the conductors are not intermittent, corroded, or broken. Keep the jack area of the meter free from dirt. Inspect the test leads for breaks in the insulation and replace as necessary.