



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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## SPECIFICATIONS

<b>Current range:</b>	2 A to 400 A, dc or ac.
<b>Accuracy:</b>	±(2% reading + 2A), dc or ac. (Accuracy specified at 18° to 28°C.)
<b>AC frequency response:</b>	50 Hz to 400 Hz.
<b>Output:</b>	1 mV per Amp.
<b>Input impedance (of DMM):</b>	10 kΩ minimum.
<b>Output cable:</b>	Coiled cord stretches to over 6 feet; connects to multimeter voltage jacks.
<b>Maximum conductor size:</b>	1.1" (30 mm).
<b>Power requirement:</b>	9 V battery (NEDA 1604).
<b>Battery life:</b>	100 hours typical.
<b>Low battery indication:</b>	Red LED.
<b>Operating temperature:</b>	0° to 40°C, <70% R.H.
<b>Storage temperature:</b>	-20° to +70°C, <80% R.H.
<b>Dimensions (HxWxD):</b>	7 x 2.75 x 1.3" (178 x 70 x 33 mm).
<b>Weight:</b>	11 oz. (290 gm).
<b>Accessories included:</b>	Battery, Instruction Manual.

## CONTROLS AND INDICATORS

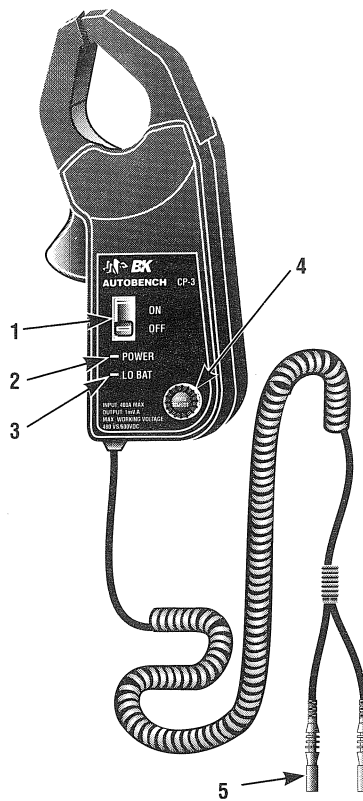


Fig. 1. Controls and indicators.

- ON / OFF Switch.**
- POWER Indicator.** Green LED lights to indicate that instrument is turned on.
- LO BAT Indicator.** Red LED lights to indicate that battery level is too low for dependable measurements. Battery should be replaced.
- ZERO ADJUST Control.** Used to zero the DMM reading before dc current measurements.
- Output Connector.** Plugs into V and COM jacks on multimeter.

## OPERATING INSTRUCTIONS

### DC CURRENT MEASUREMENTS

- Connect the black lead of the CP-3 to the common (negative) jack of the DMM. On most DMM's this jack is labeled "COM".
- Connect the red lead of the CP-3 to the Volts (positive) jack of the DMM. On most DMM's this jack is a multi-function jack such as "V/Ω/Hz".
- Turn on the DMM, and set it for dc voltage measurement. The table shows which range gives the best resolution for an expected current value. If you are unsure as to what current to expect, start with the higher range listed.
- Turn on the CP-3 by moving the ON/OFF switch to ON. The green POWER indicator lights. If the red LO BAT indicator lights and remains lit, the battery is too low for dependable measurements and should be replaced. Consult the "Maintenance" section.

#### NOTE

It is normal for the LO BAT indicator to flash momentarily when the ON/OFF switch is first turned to ON.

- Before clamping around the conductor, use the ZERO ADJUST control to obtain a reading of zero on the DMM. If a strong stray magnetic field is present, it is best to zero the clamp two to four inches from the conductor to be measured. The conductor itself will have no influence at this distance.
- Open the spring-loaded clamp by pressing the trigger on the left side of the CP-3.
- Position the clamp around a single wire or conductor carrying the current to be measured, and release the trigger. Make sure that the clamp is completely closed.
- Read and observe the important information in the "Considerations" section.

### AC CURRENT MEASUREMENTS

- Connect the black lead of the CP-3 to the common (negative) jack of the DMM. On most DMM's this jack is labeled "COM".
- Connect the red lead of the CP-3 to the Volts (positive) jack of the DMM. On most DMM's this jack is a multi-function jack such as "V/Ω/Hz".
- Turn on the DMM, and set it for ac voltage measurement. Set the range according to Table 1, under "Considerations". The table shows which range gives the best resolution for an expected current value. If you are unsure as to what current to expect, start with the higher range listed.

- Turn on the CP-3 by moving the ON/OFF switch to ON. The green POWER indicator lights. If the red LO BAT indicator lights and remains lit, the battery is too low for dependable measurements and should be replaced. Consult the "Maintenance" section.

#### NOTE

It is normal for the LO BAT indicator to flash momentarily when the ON / OFF switch is first turned to ON.

- Wait a few seconds for the DMM reading to settle down.
- Open the spring-loaded clamp by pressing the trigger on the left side of the CP-3.
- Position the clamp around a single wire or conductor carrying the current to be measured, and release the trigger. Make sure that the clamp is completely closed.
- Read and observe the important information in the "Considerations" section.

### CONSIDERATIONS

- The output of the CP-3 is a *voltage*. Make sure you connect it to the voltage jack on the DMM, not to any current jack.
- The clamp must be positioned around only "one" conductor of a circuit as shown in Fig. 2. If it is placed around two or more current-carrying conductors the reading will be false. A good example of a false reading would be an attempt to measure ac current by clamping around the line cord of an appliance. Currents flowing in both directions tend to cancel the measurement, giving a false reading.
- The dc current reading is positive when the current is flowing *into* the clamp from the front. The reading is negative when current is flowing outwards. See Fig. 3.
- The input impedance of the DMM used must be 10 kΩ or greater. Since the input impedance of most DMM's is 10 MΩ, this is typically no problem.



Fig. 2. Illustration of single wire clamped for current measurement.

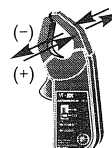


Fig. 3. Polarity of dc current readings.

- When making dc current measurements, a hysteresis effect can occur which makes it impossible to zero the clamp properly. To eliminate this effect, open and close the jaws several times and then zero again.
- A good practice for measuring low currents is to loop an appropriate number of turns of the conductor through the jaws. The actual current is the measured value divided by the number of turns.
- Table 1 shows which range gives the best resolution, given the meter type and expected current value. If unsure about the expected value, use the larger range listed. The CP-3 outputs a voltage of 1 mV per Amp of measured current. Therefore, at a current of 400 A, the voltage applied to the DMM is 400 mV.

DMM type:	If the expected current is 0 to 200 A:	If the expected current is 200 to 400 A:
3-1/2 digit	Use 200 mV range (max reading 199.9). Current value is display reading, in Amps, with 0.1 A resolution.	Use 2 V range (max reading .400*) Current value is display reading x 1000, in Amps, with 1 A resolution.
4-1/2 digit	Use 200 mV range (max reading 199.99). Current value is display reading, in Amps, with 0.01 A resolution.	Use 2 V range (max reading .4000*) Current value is display reading x 1000, in Amps, with 0.1 A resolution.
3-3/4 digit	Use 400 mV range (max reading 399.9) Current value is display reading, in Amps, with 0.1 A resolution.	

\*Higher readings are possible on the DMM. However, accuracy on the current clamp is specified to 400 A.

Table 1. Range/resolution table.

- If the DMM has a Peak Hold or Max Hold capability, surge current may be measured by enabling the Peak (or Max) Hold mode and clamping around the conductor before energizing the circuit under test. Note, however, that some current spikes may be too fast for a DMM to catch.
- If the DMM has true RMS capability, the current measurement will be a true RMS value.