

line between them with a note to remind the operator that current measurements should not exceed 2A. The mA terminal is also the end of protective fuse holder. The collar of the terminal is slotted to facilitate fuse replacement. There is a curved arrow with a 2A fuse note to the left of the mA terminal to indicate how to remove the 2A fuse. For additional information on fuse replacement, refer to Section 2.

1-28. Resistance Measurements

1-29. The controls and terminals used for making resistance measurements are highlighted in Figure 1-4. The resistance measurement function is selected by pressing the kΩ switch. The tan decal extends up and to the right with the six ranges of resistance labeled over their respective pushbuttons. The COMMON and V/kΩ terminals are used for signal input.

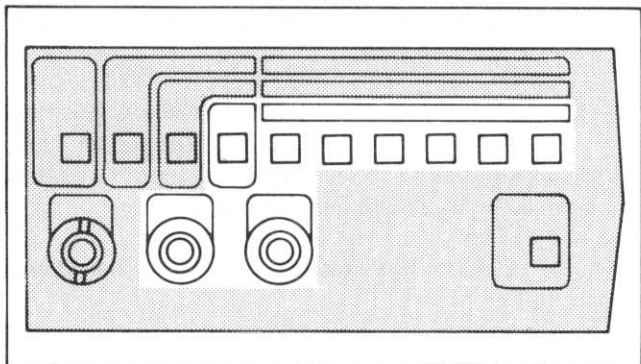


Figure 1-4. Resistance Measurement

1-30. Let's use the following procedure to exercise the resistance function and see how the range switches affect the position of the decimal point on the display.

1. Select the resistance function, 2000 kΩ range.
2. The LCD should display an overrange indication, a 1 with the three right-hand digits blank.
3. Connect the test leads to the input terminals, black to COMMON and red to V/kΩ .
4. Make a firm connection between probe tips. The LCD should count down to a reading of 000.
5. While maintaining a firm contact between the sampling ends of the test leads, sequentially select each of the six resistance ranges starting with 200Ω. The decimal point for each range should be as follows:

200Ω	00.0*	200 kΩ	00.0
2 kΩ	.000	2000 kΩ	000
20 kΩ	0.00	20 mΩ	0.00

*Display may display .1 or .2 ohms of lead resistance.

1-31. SPECIFICATIONS

1-32. Detailed specifications for the 8010M are given in Table 1-1. Specifications for the Battery Pack (Option -01) are given in Section 6.

Table 1-1. 8010M Specifications

These electrical specifications assume an operating temperature of 15°C to 35°C, humidity up to 80%, and a 1-year calibration cycle.

ELECTRICAL FUNCTIONS DC Volts, AC Volts, DC Current, AC Current, and Resistance.

DC Volts

RANGE, RESOLUTION, AND ACCURACY

RANGE	RESOLUTION	ACCURACY for 1-Year
±200 mV	100 μV	±(0.1% of reading + 1 digit)
±2V	1 mV	
±20V	10 mV	
±200V	100 mV	
±1200V	1V	

TEMPERATURE COEFFICIENT

(-10°C to 15°C and 35°C to 55°C) ±(.01% of reading + .005% of F.S.)/°C

INPUT IMPEDANCE 10 MΩ, all ranges.

NORMAL MODE REJECTION RATIO . >60 dB at 60 Hz (or at 50 Hz on 50 Hz Units) and multiples thereof.

Table 1-1. 8010M Specifications (cont)

COMMON MODE REJECTION RATIO >120 dB at dc, 50 Hz and 60 Hz.
(1 kΩ unbalance)

OVERVOLTAGE PROTECTION 1200V rms or 1700V peak on all ranges.

RESPONSE TIME 1/2 second.

AC Volts (True RMS Responding)

RANGE, RESOLUTION, AND ACCURACY

RANGE	RESOLUTION	ACCURACY FOR 1 YEAR		
		45 Hz to 10 kHz	10 kHz to 20 kHz	20 kHz to 50 kHz
200 mV	100 μV	± (0.5% of reading + 2 digits)	±(1.0% of reading + 2 digits)	±(5% of reading + 3 digits)
2V	1 mV			
20V	10 mV			
200V	0.1V			
1200V	1V	±(0.5% of reading +2 digits)		

TEMPERATURE COEFFICIENT
(-10°C to 15°C and 35°C to 55°C) ±(.01% of reading + .005% of F.S.)/°C

VOLT-HZ PRODUCT 10⁷ max (500V max @ 20 kHz).

EXTENDED FREQUENCY RESPONSE Typically ±3 dB at 200 kHz.

COMMON MODE NOISE REJECTION RATIO (1 kΩ UNBALANCE) >60 dB at 50 Hz and 60 Hz.

CREST FACTOR RANGE 1.0 to 3.0.

INPUT IMPEDANCE 10 MΩ in parallel with <100 pF.

OVERLOAD PROTECTION 1200V rms or 1700V peak continuous not to exceed 10⁷ volt-hertz product on the 20, 200, and 1200 ranges; 500V rms on the 200 mV and 2V ranges.

RESPONSE TIME 3 seconds maximum within a range.

DC CURRENT

RANGE, RESOLUTION, ACCURACY, AND BURDEN VOLTAGE

RANGE	RESOLUTION	ACCURACY FOR 1 YEAR	BURDEN VOLTAGE
20 μA	0.1 μA	±(0.3% of reading + 1 digit)	0.3V max
2 mA	1 μA		
20 mA	10 μA		
200 mA	100 μA		
2000 mA	1 mA		0.9V max

TEMPERATURE COEFFICIENT
(-10°C to 15°C and 35°C to 55°C) ±(.015% of reading + .005% of F.S.)/°C

OVERLOAD PROTECTION 2A/250V fuse in series with 3A/600V fuse (for high energy sources).

RESPONSE TIME 1/2 second.

Table 1-1. 8010M Specifications (cont)

AC Current (True RMS Responding)

RANGE, RESOLUTION, ACCURACY, AND BURDEN VOLTAGE

RANGE	RESOLUTION	ACCURACY FOR 1 YEAR			BURDEN VOLTAGE
		45 Hz to 3 kHz	45 Hz to 10 kHz	10 kHz to 20 kHz	
200 μ A	0.1 μ A	$\pm(1\%$ of reading + 2 digits)		$\pm(2\%$ of reading + 2 digits)	0.3V rms max
2 mA	1 μ A				
20 mA	10 μ A				
200 mA	100 μ A				
2000 mA	1 mA	$\pm(1\%$ of reading + 2 digits)			0.9V rms max

TEMPERATURE COEFFICIENT(-10°C to 15°C and 35°C to 35°C) $\pm(.015\%$ of reading + .005% of F.S.)/°C

OVERLOAD PROTECTION 2A/250V fuse in series with 3A/600V fuse (for high energy sources).

CREST FACTOR RANGE 1.0 to 3.0.

Resistance

RANGE, RESOLUTION, ACCURACY, AND LIMITS

RANGE	RESOLUTION	ACCURACY FOR 1 YEAR	FULL-SCALE VOLTAGE	MAXIMUM TEST CURRENT
200 Ω	0.1 Ω	$\pm(0.2\%$ of reading + 1 digit)	<0.25V	1.3 mA
2 k Ω \rightarrow	1 Ω		>1.0V	1.3 mA
20 k Ω	10 Ω		<0.25V	10 μ A
200 k Ω \rightarrow	100 Ω		>1.0V	35 μ A
2000 k Ω	1 k Ω	$\pm(0.5\%$ of reading + 1 digit)	<0.25V	0.10 μ A
20 M Ω \rightarrow	10 k Ω		>1.5V	0.35 μ A

TEMPERATURE COEFFICIENT(-10°C to 15°C and 35°C to 55°C) $\pm(.015\%$ of reading + .005% of F.S.)/°C
except 20 M Ω range, $\pm(.02\%$ of reading + .005% of F.S.)/°C

OVERLOAD PROTECTION 300V dc/ac rms on all ranges.

OPEN CIRCUIT VOLTAGE Less than 3.5V on all ranges.

RESPONSE TIME 1/2 second, all ranges except 2000 k Ω and 20 M Ω ranges. 4 seconds these two ranges.

DIODE TEST \rightarrow These three ranges have enough voltage to turn on silicon junctions to check for proper forward-to-back resistance. The 2 k Ω range is preferred and is marked with a larger diode symbol on the front panel of the instrument. The three non-diode test ranges will not turn on silicon junctions so in-circuit resistance measurements can be made with these three ranges.

Table 1-1. 8010M Specifications (cont)

ENVIRONMENTAL	
Operating Conditions	
TEMPERATURE	-10°C to 55°C
HUMIDITY	0 to 80%
Storage Conditions	
TEMPERATURE	(without batteries): -40°C to +75°C (-40°F to +140°F). (with batteries): -40°C to +60°C (-40°F to +122°F).
GENERAL	
Maximum Common Mode Voltage	1200V dc or peak ac
Power Requirements	90 to 132V ac or 200 to 264V ac, 50 or 60 Hz to 400 Hz.
LINE MODEL	2 watts
BATTERY MODEL	3.5 watts
Size	6.40 cm x 25.15 cm x 21.72 cm (2.52" x 9.90" x 8.55"). See Figure 1-5.
Weight	
LINE MODEL	1.08 kg (2 lb, 6 oz).
BATTERY MODEL	1.42 kg (3 lb, 6 oz)

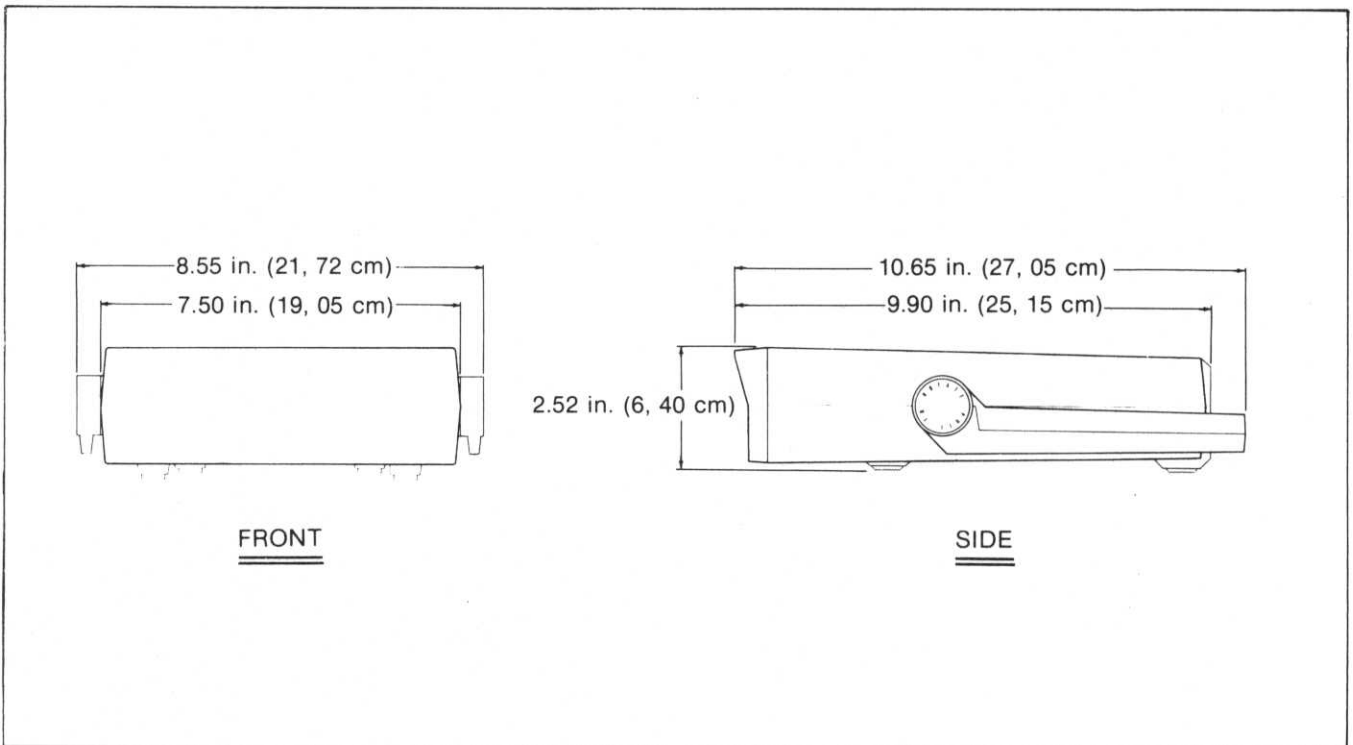


Figure 1-5. 8010M Dimensions