Section

Introduction & Specification

1-1. INTRODUCTION

1-2. Your John Fluke Model 8050A is a portable, bench-type digital multimeter with a 4-1/2 digit liquid crystal display (LCD). Your 8050A can make dB voltage measurements (ac and dc) and conductance measurements (1 Ω) in addition to the usual DMM measurements ac-dc volts, ac/dc current, and resistance. Some of the advantages of owning an 8050A are:

TRUE RMS MEASUREMENT OF AC SIGNALS: True RMS measurement is the only accurate way to directly measure ac signals that are not noise-free pure sine waves. Your 8050A measures ac voltage frequencies up to 50 kHz.

SEVEN MEASUREMENT FUNCTIONS:

AC and DC VOLTS: Standard linear voltage measurements from 10 μV to 1000V dc and 10 mV to 750V ac true rms.

dB VOLTAGE (dB, dBm, dBW, and dBV): Allows voltage measurements in decibels referenced to any user selected reference level or any 1-of-16 selectable reference impedances.

AC and DC CURRENT: Standard current measurements from 10 nA to 2A dc and 10 μA to 2A ac true rms.

RESISTANCE: Standard resistance measurements from 10 mΩ to 20 MΩ.

CONDUCTANCE (1/Ω): Allows fast, noise-free resistance measurements of up to 100,000 MΩ.

EACH MEASUREMENT RANGE HAS:

Autopolarity operation.

Overrange indication.

Effective protection from overloads a transients.

Dual slope integration measurement techniq to insure fast, accurate, noise-free measurement

RELATIVE: Allows you to store any input sign as an offset or relative reference value. Subseque measurements are displayed as the differen between the input level and the reference level. R ative reference works for all measurement functio

DIODE TEST: Ranges of the resistance functi that will turn on PN junctions allowing testing diodes and transistors. These ranges are mark with a diode symbol on the front panel of yo 8050A. The preferred 2 kΩ range is marked wi the largest diode symbol.

IN CIRCUIT RESISTANCE CHECKS: Are po sible with all resistance ranges that are not mark with a diode symbol on the 8050A front panel.

IMPROVED TEST LEADS: Finger guards on t probes and shrouded contacts on the input term nals decrease the possibility of accidental conta with circuit voltages.

LONG-TERM CALIBRATION STABILITY: year.

ACCESSORIES: A line of accessories that extend the range and scope of your instrument. These accessories are listed in Table 1-1 and are described in detail in Section 6.

Table 1-1. 80 0A Options and Accessories

MODEL	DESCRIPTION
ACCESSORIES	
Y8205	Carrying Case
C86	Carrying Case
M00-200-611	Offset Rack Mounting Kit
M00-200-612	Center Rack Mounting Kit
M00-200-613	Side-By-Side Rack Mounting Kit
Y8008	Touch and Hold Probe
80T-150	Temperature Probe
80I-600	Current Transformer
80J-10	Current Shunt
80K-40	High Voltage Probe
81RF	High Frequency Probe
82RF	High Frequency Probe
Y8100	DC/AC Current Probe
Y8101	Current Transformer
Y8134	Safety Designed Test Lead Set
Y8140	Test Lead Set
OPTION	
-01	Rechargeable Battery Option

3. UNPACKING YOUR INSTRUMENT

1. The shipping container should contain this manual, your multimeter, two test leads (one red and one black), and any accessories you have ordered. Check the equipment for damage. If anything is wrong with your equipment, contact the John Fluke Service Center nearest you. Section 5 contains a list of these service centers. If shipment is required, please use the original shipping container. If the original container is not available, a new container may be obtained from the John Fluke Mfg. Co., Inc. Please state that your DMM is a Model 8050A when ordering a new shipping container.

5. Turn your 8050A upside down. The decal on the bottom of your instrument is marked with the line voltage and frequency required for proper operation. Refer to Section 4 if a change in the input power configuration is desired.

1-6. GETTING ACQUAINTED

1-7. Let's take a brief look at your DMM before we discuss exactly how to operate it. Your meter is lightweight with a low profile that hugs the work bench. The light-grey case is made of rugged, high-impact plastic. The handle can be rotated to eight positions.

NOTE

One position allows it to be used as a carrying handle. Other positions allow the handle to be used as a bail to tilt the front panel for convenient bench-top operation.

1-8. The LCD is on the left side of the front panel. The right side of your 8050A contains two rows of switches and input connectors. The power cord receptacle is located on the rear panel of your DMM.

1-9. USING YOUR METER

1-10. The following paragraphs describe each of the controls on your 8050A and how these controls can be used for each instrument function. Exercises are included to help familiarize you with your 8050A and to verify that your instrument is functional.

1-11. The LCD

1-12. The LCD (Figure 1-1) is a low-power, high-contrast display. The 4-1/2 digits — easily read from across the room — can register from 0000 to 19999. For ease of discussion, the 19999 will be rounded to 20000 in the remainder of this text. For example, we will refer to the 2V range, not the 1.9999V range. In all linear functions, the decimal point position is determined by the range selected. The REL (Relative) annunciator will appear in the lower right corner of the LCD when the RELATIVE switch is at the ON position. The dB annunciator will appear in the upper right corner of the LCD if the dB measurement function is selected. The HV (High Voltage) annunciator will appear in the center of the right side of the LCD any time an input signal greater than 40V dc/ac rms is measured. If you own an 8050A with the -01 Battery Option, the BT indicator will appear in the upper left corner of the LCD to indicate that battery voltage is low and you need to recharge the batteries (see Section 6). Polarity of the input signal or direction of dB or relative measurements is indicated by a + or - sign at the center of the left side of the LCD. The + sign is disabled in the AC V, AC mA, kΩ, and S measurement functions. The - sign may appear in any measurement function, but is normally not meaningful when making AC V, AC mA, kΩ, and S measurements. If you are reading resistance and the minus sign remains on, there may still be energy in the circuit being measured. The circuitry may still have

power applied, a capacitor may still be charged, etc. You will only get this indication of an energized circuit if the power in the circuit is negative with respect to the COMMON input terminal. If the power in the circuit is positive with respect to the COMMON input terminal, an erroneous resistance will be displayed. If there is any doubt about whether there is energy remaining in the circuit you are reading, read the resistance, then reverse the test lead positions. If the minus sign is displayed in either case, the remaining energy must be removed from the circuit before correct resistance readings can be made.

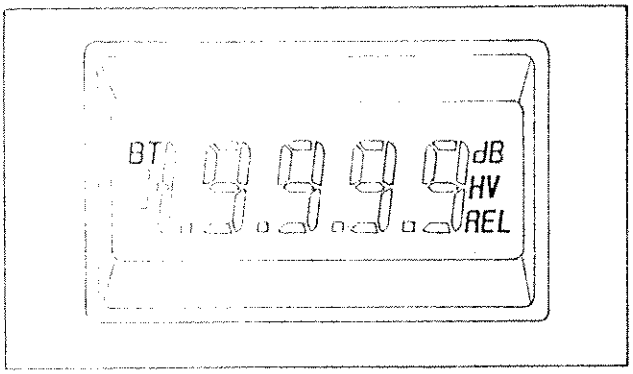

Figure 1-1. LCD

1-13. There are three LCD indications that require interpretation. If you apply an input signal that exceeds the limits of the range selected, the LCD will have a 1 in the extreme left digit location and a blank in the other four digit locations (other display indicators such as a decimal point may also be present). All decimal point positions appear in the display to indicate certain illegal combinations of front panel switch settings. For example, if you select the DC V function and the 20M/REF Z range switch, all four decimal points will appear on the display. Finally, when selecting lower ranges while the RELATIVE switch is at the ON position, the right-hand digit(s) will be blanked to indicate that the resolution of measurements for that range is decreased by the resolution of the stored relative reference level — more about this indication is contained in the description of the RELATIVE switch in this section.

1-14. POWER Switch

1-15. The green POWER switch is located in the lower right corner of the 8050A front panel. This is a push-push switch so don't try to pull the POWER switch to the OUT (OFF) position. Push the POWER switch on your 8050A to the IN (ON) position.

1-16. RELATIVE Switch

1-17. The RELATIVE switch — located immediately to the left of the POWER switch (Figure 1-2) — allows direct measurements to be made in relation to a reference level. When the RELATIVE switch is in the ON position the displayed value is the input signal measurement with the reference level algebraically subtracted.

1-18. To store a reference level, connect the test leads to the reference level source and set the RELATIVE switch to the ON position. The REL annunciator will appear and the display will read +0000. You can now make measurements and the displayed value will be relative to the stored reference level. Remember that if either the algebraic sum or the input signal exceed the limits of the range selected, the LCD will display an overrange condition. The stored reference level only works in the measurement function for which it was established. For example, suppose that we have stored a reference level of +1V dc with the DC V function selected, if we select the kΩ function, normal resistance measurements can be made. If we select the DC V function again, the stored reference level of +1V dc will be subtracted from the input signal and the result will be displayed.

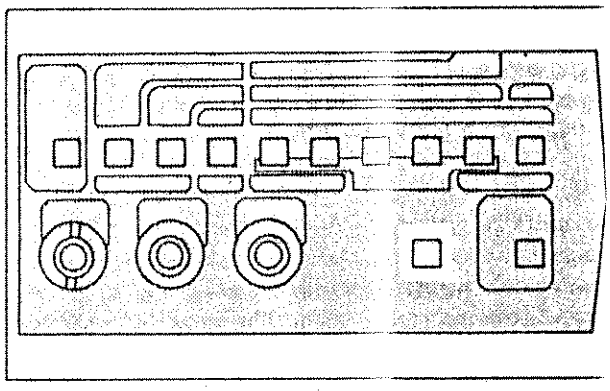

Figure 1-2. RELATIVE Switch

1-19. If any linear function is selected, optimum resolution will be obtained only on the range where the relative reference level was originally established. If a higher range of measurement is selected, the stored reference will be rounded to the resolution of the range selected. For example, in the linear volts function with the 2 range selected, a relative reference level of 1.2345V established. If the 20V range is selected, the usable reference level will be altered to 1.235V. If the 200V range selected, the stored reference level will be altered to 1.23V. If, however, you select a lower range than the range at which the relative reference level was established, the resolution of the display will be the same as the resolution of the stored reference level. For example, the linear volts function, with the 20V range selected, relative reference level of 1.234V is established. If the 2 range is selected and a 1V signal is measured, the display value will be -.234XV with the extreme right digit blanked.

-20. . AC/DC Select Switch

-21. The switch used to select either ac or dc measure-ients is located at the left end of the upper row of ushbuttons. The AC/DC switch works for both the urrent and the voltage measurement functions. This witch is a push-push type switch. Do not to try to pull the C/DC switch to the OUT (DC) position.

-22. Voltage Measurements

-23. Your 8050A can make either linear voltage or dB oltage measurements. For both types of voltage mea-urements, plug the black test lead into the COMMON rminal and the red test lead into the V/kΩ/S terminal.

-24. Linear Voltage Measurements

25. The controls and terminals used for making linear oltage measurements are highlighted in Figure 1-3. tarting at the top left is the AC/DC switch. Next is the V ushbutton. This pushbutton is interlocked with the her two white function selection switches — mA and Ω/S. That is, if the V function switch is at the IN osition (V selected), and any other function select switch pushed, the V pushbutton will be released to the OUT osition. Push the V switch to the IN position.

26. The light green area around the V switch is tended up and to the right to enclose the five range lues of the voltage function. Push the range switch mediately below the range value desired to select a nge of voltage measurement. The range select switches e interlocked in the same manner as the function itches.

27. Perform the following procedure:

1. If the test leads are not connected, plug them into your DMM, red test lead to the V/kΩ/S terminal and black to the COMMON terminal.

2. Select the 2V range.

3. Push the AC/DC switch to the DC position.

4. With the POWER switch set to the OFF position, connect your DMM to a line power outlet rated at the operating voltage and frequency of your instrument.

5. Push the POWER switch to the ON position. The LCD should count down rapidly to a reading of .0000.

6. Touch the sampling end of the red test lead to the mA terminal. (A firm contact must be made or the display may be in error.) The LCD should display approximately -1.3 to -1.6V. This is the signal voltage for the optional Touch and Hold Probe (see Section 6). It is not a precise voltage and will vary from instrument to instrument. This voltage is not present when the ac or the dc current function, or the dB function is selected.

7. Push the AC/DC switch to the AC position. The LCD should count down to a reading that is typically -.0020 to .0020 the dc signal has been eliminated.

8. Remove the red test lead from the mA terminal.

9. Select the 750V ac range.

WARNING

LOCAL LINE VOLTAGE IS MEASURED IN THE FOLLOWING STEP. BE CAREFUL NOT TO TOUCH THE PROBE TIPS WITH YOUR FINGERS OR TO ALLOW THE PROBE TIPS TO TOUCH EACH OTHER.

10. Insert the sampling ends of the test leads into the slots of a power outlet. The LCD should display the true local line voltage.

11. Push the AC/DC switch to the DC position. The LCD should display near zero volts but there may be some residual dc voltage on the power line due to non-linear loads such as SCR light dimmers.

12. Remove the test leads from the line power outlet.

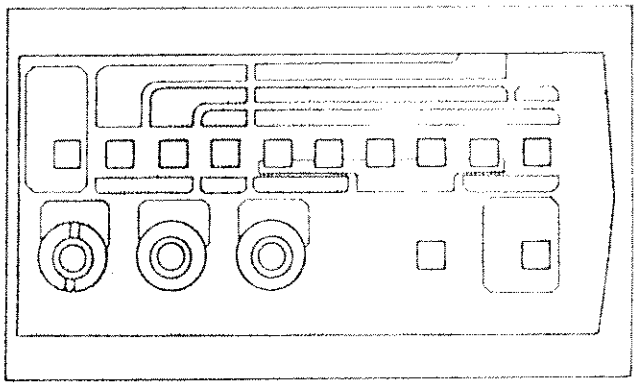

Figure 1-3. Linear Voltage Measurements

1-28. dB Voltage Measurements

1-29. The controls and terminals used for making dB voltage measurements are highlighted in Figure 1-4.

Starting at the top left is the AC/DC switch. Use the AC position to measure noise or ac signals (dBm, for example). Both the V and mA function select switches must be pushed at the same time to select the dB measurement function. The five range switches for the dB function are partially enclosed by a dark blue area. The 200 mV range switch will autorange from below -60.0 dBm (REF Z = 600Ω) to +8.24 dBm. This is the only autoranging capability of your 8050A. When the dB reading is within 5% of scale to full scale, four digits will be displayed, giving maximum resolution (.01 dB). When less than four digits are displayed, switch to a lower dB range to increase resolution.

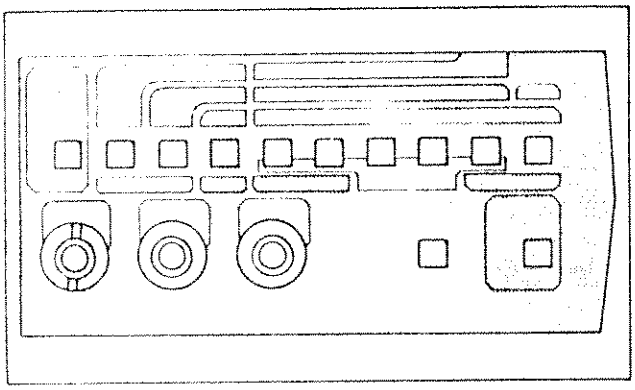

Figure 1-4. dB Voltage Measurements

1-30. The standard 8050A turns on referenced to 600Ω for 0 dBm. To select one of the other 15 stored reference impedances, select dB and push the REF Z switch to the IN position. For the first three seconds, the LCD will display the standard reference impedance of 600Ω. Then the other 15 stored reference impedances will appear sequentially on the display (see Table 1-2) at a rate of about one per second. When the reference impedance you want to use appears, select any one of the dB ranges. The sequence will stop and the microcomputer will store the displayed impedance as the reference. Normal dB measurement resumes. The 8050A will continue to use the reference impedance that you have just selected until you select another reference impedance or turn the instrument off. Refer to the Maintenance Section if you want your 8050A to turn on with a reference impedance other than 600Ω.

1-31. Current Measurements

1-32. All of the controls and terminals used to make current measurements are highlighted in Figure 1-5. The AC/DC and mA function switches determine the measurement function. The colored area around the mA switch extends up and to the right to enclose the five range values for the mA measurement function. Push the range switch immediately below the range value desired to select a range of current measurement.

Table 1-2. Display Sequence of Reference Impedances

SEQUENCE NUMBER	REFERENCE IMPEDANCE 1 mW = 0 dB	DISPLAY	REMARKS
0	600	600	
1	800	800	
2	900	900	
3	1000	1000	dBV
4	1200	1200	
5	8000	8	dBW into 8Ω
6	50	50	
7	75	75	
8	93	93	
9	110	110	
10	125	125	
11	135	135	
12	150	150	
13	250	250	
14	300	300	
15	500	500	
0, etc.			

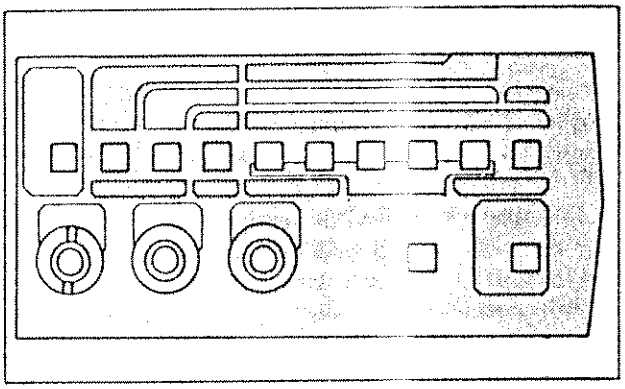

Figure 1-5. Current Measurements

1-33. As the colored areas around the terminals indicate, the red test lead should be plugged into the mA terminal and the black test lead should be plugged into the COMMON terminal. The mA terminal is also the fuse holder for an in-line mA circuit protection fuse. To gain access to the fuse, insert your fingernail or a coin in the slot on the mA terminal, push inwards, and rotate the terminal counterclockwise. The terminal will pop out after about 1/4 turn. The terminal and the fuse may now be pulled out of the DMM. To replace the fuse, insert the fuse and terminal, press on the terminal and rotate it clockwise about 1/4 turn.

NOTE

An internal, 3A, 600 V backup fuse is in series with the externally accessible 2A, 250 V fuse. Should the internal fuse blow, refer to Section 4 for replacement instructions.

-34. Resistance Measurements

35. The controls and terminals used to make resistance measurements are highlighted in Figure 1-6. The easurement function is selected by pushing the kΩ itch to the IN position. The colored area enclosing the Ω function switch extends up and to the right enclosing e six range values for the resistance function. To select a rticular resistance range, depress the range switch mediately below the desired range value. Connect the t leads; red to the V kΩ/S terminal and black to the OMMON terminal.

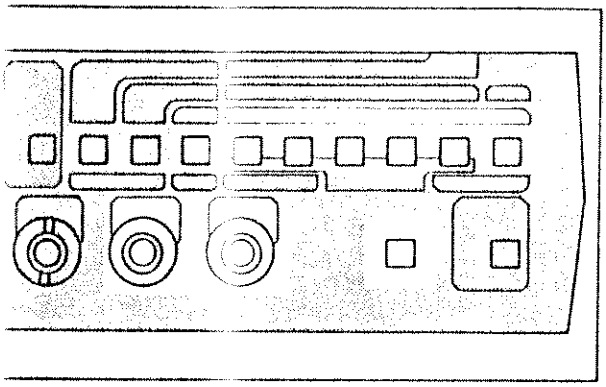

Figure 1-6. Resistance Measurements

6. Use the following procedure to familiarize yourf with the resistance function and to see how the range itches affect decimal point position on the LCD.

1. With the test leads held apart, select the 2000 kΩ range. The LCD should display an overrange indication — a 1 in the extreme left hand position and the rest of the digits blank.

2. Make a firm connection between the sampling ends of the test leads. The LCD should count down to 000.0.

3. Maintain a firm contact between the ends of the test leads and sequentially select the ranges starting with the 200Ω switch. The decimal point for each should be as follows:

Range	Display
200Ω	00.00*
2 kΩ	.0000*
20 kΩ	0.000
200 kΩ	00.00
2000 kΩ	000.0
20 MΩ	0.000

* Displayed value will show lead resistance which can be removed by using the RELATIVE switch.

1-37. Conductance Measurements

1-38. The controls and terminals used to make conductance measurements are highlighted in Figure 1-7. With exception of range selection, the controls and connections are exactly the same as the resistance function. There are two ranges of conductance measurement: 2 mS and 200 nS. Each range is selected by simultaneously pushing the two indicated range switches to the IN position.

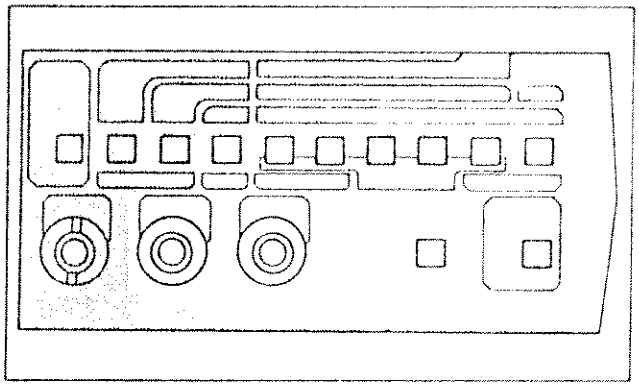

Figure 1-7. Conductance Measurements

1-39. Use the following procedure to exercise the conductance function:

NOTE

When switching from kΩ to conductance, 200 nS range, the instrument will read -00.00 for a number of seconds. This settling time may be shortened considerably by momentarily shorting the test leads or by pushing the 200 nS range buttons before pushing the kΩ/S function button.

1. Select the 200 nS range, then the conductance function.

2. Hold the sampling ends of the test leads apart. After settling, the LCD should display 00.01 to 00.20 (the residual reading results from input test lead, pcb, and component leakage, and can be removed by using the RELATIVE switch).

3. Make a firm contact between the sampling ends of the test leads. The LCD should display an overrange condition.

1-40. ACCESSORIES

1-41. The options and accessories that can be used to extend the range and scope of your 8050A are listed in Table 1-1. Each option and accessory is described in Section 6 of this manual.

1-42. SPECIFICATIONS

1-43. Table 1-3 lists the specifications of your 8050A. Table 1-4 lists the specifications for each 8050A option.

Table 1-3. 8050A Specifications

ELECTRICAL: The electrical specifications given apply for an operating temperature of 18°C to 28°C (64.4°F to 82.4°F), relative humidity up to 90%, and a 1-year calibration cycle.

FUNCTIONS: DC volts, AC volts (linear and dB), DC current, AC current, resistance, diode test, conductance, relative.

DC VOLTS*:

RANGE	RESOLUTION	ACCURACY for 1-Year
±200 mV	10 μV	±(0.03% of reading +2 digits).
±2V	100 μV	
±20V	1 mV	
±200V	10 mV	
±1000V	100 mV	

INPUT IMPEDANCE: 10 MΩ in parallel with <100 pF, all ranges

NORMAL MODE REJECTION RATIO: >60 dB at 60 Hz or 50 Hz

COMMON MODE REJECTION RATIO: >90 dB at dc, 50 Hz or 60 Hz (1 kΩ unbalanced)
(>120 dB available on request)

COMMON MODE VOLTAGE (MAXIMUM): 500V dc or peak ac

RESPONSE TIME TO RATED ACCURACY: 1 second maximum

MAXIMUM INPUT: 1000V dc or peak ac continuous (less than 10 seconds duration on both the 200 mV and 2V ranges).

*DC Volts can also be measured using the dB mode with .01 dB resolution between 5% of range and full range.

AC VOLTS (TRUE RMS RESPONDING, AC COUPLED):

VOLTAGE READOUT ACCURACY: ± (% of reading + no. of digits), between 5% of range and full range.

INPUT VOLTAGE	RESOLUTION	RANGE	20 Hz**	45 Hz	1 kHz	10 kHz	20 kHz	50 kHz
10 mV - 200 mV	10 μV	200 mV	1%+10		.5%+10	1%+10	5%+30	
0.1V - 2V	100 μV	2V						
1V - 20V	1 mV	20V						
10V - 200V	10 mV	200V						
100V - 750V	100 mV	750V			NOT SPECIFIED			

** *Typically 3 to 5 digits of rattle will be observed at full scale at 20 Hz.*

Table 1-3. 8050A Specifications (cont)

dB RANGES:

INPUT VOLTAGE	dBm (600 Ω REF)	ACCURACY: from 5% of range to full scale, 1-year					
		RANGE	20 Hz	45 Hz	1kHz	10 kHz	20 kHz	50 kHz
0.77 mV - 2 mV	-50 to -52	200 mV*	0.5 dBm				
2 mV - 2V	-32 to +8	200 mV*	±0.25 dBm		±0.15 dBm	±0.25 dBm	±0.75 dBm
0.1V - 2V	-18 to +8	2V					
1V - 20V	+2 to +28	20V					
10V - 200V	+22 to +48	200V					
100V - 750V	+42 to +60	750V			NOT SPECIFIED		

When 200 mV range is selected the 8050A autoranges for best accuracy for 2V inputs and less.

RESOLUTION: 0.01 dB from 5% of scale to full scale; 0.1 dB from 1-5% of scale, 1 dB below 1% of scale.

VOLT - Hz PRODUCT: 10^7 max (200V max @ 50 kHz)

EXTENDED dB RESPONSE: Typically -72 dB (600Ω Ref) ± 1 dB to 10 kHz

EXTENDED FREQUENCY RESPONSE: Typically -3 dB at 200 kHz

COMMON MODE REJECTION RATIO (1 kΩ unbalance): >60 dB at 50 Hz or 60 Hz

CREST FACTOR RANGE: Waveforms with a Peak/RMS ratio of 1:1 to 3:1 at full scale, increasing down range

INPUT IMPEDANCE: 10 MΩ in parallel with <100 pF

MAXIMUM INPUT VOLTAGE: 750V rms or 1000V peak continuous (less than 10 seconds duration on both the 200 mV and 2V ranges), not to exceed the volt-hertz product of 10^7.

RESPONSE TIME: 2 seconds maximum within a range

REFERENCE IMPEDANCES: Fifteen user selectable impedance reference levels are provided to reference a 0 dBm, 1 mW level (50Ω, 75Ω, 93Ω, 110Ω, 125Ω, 135Ω, 150Ω, 250Ω, 300Ω, 500Ω, 600Ω, 800Ω, 900Ω, 1000Ω, 1200Ω), and an 8Ω impedance reference level is provided to reference a 0 dBW level.

DC CURRENT:

RANGE	RESOLUTION	ACCURACY for 1-Year	BURDEN VOLTAGE
200 μA	0.01 μA	±(0.3% of reading + 2 digits	0.3V max
2 mA	0.1 μA		
20 mA	1 μA		
200 mA	10 μA		
2000 mA	100 μA		0.9V max

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

Table 1-3. 8050A Specifications (cont)

AC CURRENT (TRUE RMS RESPONDING, AC COUPLED):

INPUT CURRENT	RESOLUTION	RANGE 20 Hz**	45 Hz	2 kHz	10 kHz	20 kHz	BURDEN VOLTAGE
10 µA - 200 µA	0.01 µA	200 µA	2%+10	1%+10	2%+10		0.3V rms max
100 µA - 2 mA	0.1 µA	2 mA					
1 mA - 20 mA	1 µA	20 mA					
10 mA - 200 mA	10 µA	200 mA					
100 mA - 2000 mA	100 µA	2000 mA		Not specified			0.9V rms max

** *Typically 3 to 5 digits of rattle will be observed at full scale at 20 Hz.*

CREST FACTOR RANGE: Waveforms with a Peak/RMS ratio of 1:1 to 3:1 at full scale.

RESISTANCE:

RANGE	RESOLUTION	ACCURACY for 1-Year	FULL SCALE VOLTAGE ACROSS UNKNOWN RESISTANCE
200Ω	0.01Ω	±(0.1% reading + 2 digits + .02Ω)	.19V
2 kΩ	0.1Ω		1.2V
20 kΩ	1Ω	±(.05% of reading + 2 digits)	.2V
200 kΩ	10Ω		2V
2000 kΩ	100Ω	±(0.25% reading + 3 digits)	.2V
20 MΩ	1 kΩ		2V

OVERLOAD PROTECTION: 500V dc/ac rms on all ranges

OPEN CIRCUIT VOLTAGE: Less than 3.5V on all ranges

RESPONSE TIME (TO RATED ACCURACY): 10 seconds maximum on 20 MΩ range
2 seconds maximum on all other ranges

DIODE TEST: ⊣▶ These three ranges have enough voltage to turn on silicon junctions to check for proper forward-to-back resistance. The 2 kΩ 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.

CONDUCTANCE:

RANGE	RESOLUTION	ACCURACY for 1-Year
2 mS	.1 µS (10 MΩ)	±(0.1% of reading + 5 digits)
200 nS	.01 nS (100,000 MΩ)	±(0.5% of reading + 20 digits)

MAXIMUM OPEN CIRCUIT VOLTAGE: <3.5V

OVERLOAD PROTECTION: 500V dc/ac rms on all ranges

CONDUCTANCE UNITS: We use the international unit of conductance, the siemen = S = 1/Ω. Another unit of conductance is the mho.

Table 1-3. 8050A Specifications (cont)

RELATIVE:

RELATIVE REFERENCE: An input applied when the RELATIVE button is depressed to the ON position is held as "0" reference point. Subsequent readings indicate the deviation (±) from this point. (Note: REL annunciator indicates when this mode is enabled.)

RELATIVE ACCURACY: Error will not exceed the sum of the errors of the two measurements.

ENVIRONMENTAL:

TEMPERATURE COEFFECIENT: <0.1 times the applicable accuracy specification per °C for 0°C to 18°C and 28°C to 50°C (32°F to 64.4°F and 82.4°F to 122°F).

OPERATING TEMPERATURE: 0°C to 50°C (32°F to 122°F).

STORAGE TEMPERATURE: (without batteries): −40°C to +70°C (−40°F to +158°F).
(with batteries): −40°C to +50°C (−40°F to +122°F).

RELATIVE HUMIDITY: Up to 90%, 0°C to 35°C (32-95°F), up to 70%, 35°C to 50°C (95-122°F), except on 2000 kΩ, 20 MΩ, and 200 nS ranges where it is up to 80%, 0°C to 35°C (32-95°F).

GENERAL:

MAXIMUM COMMON MODE VOLTAGE: 500V dc, or peak ac (low terminal potential with respect to power line ground)

SIZE: 22 cm X 6 cm X 25 cm (8-½" X 2-½" X 10") See Figure 1-8.

WEIGHT: 1.08 kg (2 lbs., 6 oz.)

POWER REQUIREMENTS (LINE ONLY MODELS):

LINE VOLTAGE: 90 to 110V ac 47 to 440 Hz
105 to 132V ac, 47 to 440 Hz
200 to 264V ac, 47 to 440 Hz
Factory configured for customer-specified voltage.

POWER CONSUMPTION: 4W max.

STANDARDS: IEC 348 Protection Class 1

Table 1-4. 8050A Option Specifications

-01 BATTERY OPTION:
BATTERIES: TYPE: NiCAD OPERATING TIME: 10 hours, typical RECHARGE TIME: (with POWER switch in OFF position): 14 hours for full charge
POWER CONSUMPTION: 6W max.
LINE VOLTAGE: 90-264V, 47-440 Hz, field changeable
STANDARDS: IEC 348: Protection Class 1 when operated from supply mains Protection Class 2 when operated from internal batteries

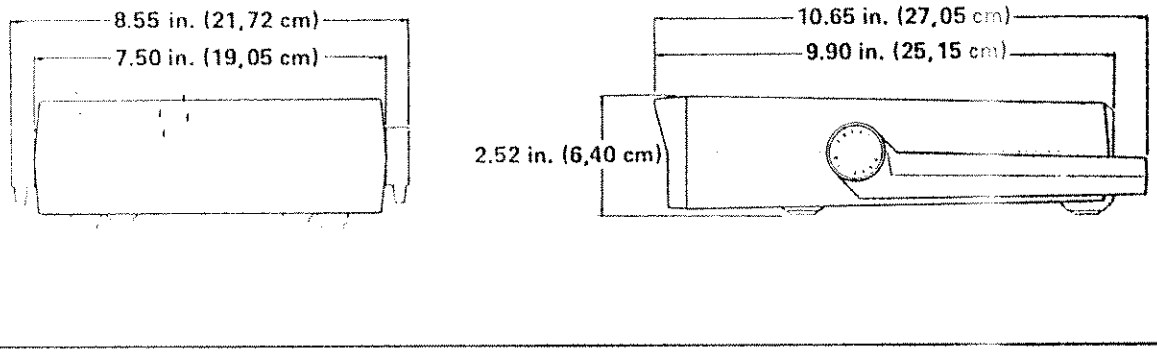

Figure 1-8. 8050A Dimensions