

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 μ V	±(0.03% of reading +2 digits).
±2V	100 μ V	
±20V	1 mV	
±200V	10 mV	
±1000V	100 mV	

INPUT IMPEDANCE: 10 M Ω 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 k Ω 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 μ V	200 mV						
0.1V - 2V	100 μ V	2V						
1V - 20V	1 mV	20V	1%+10		.5%+10	1%+10	5%+30	
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
0.77 mV - 2 mV	-60 to -52	200 mV*	0.5 dBm				
2 mV - 2V	-52 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 (600 Ω Ref) ± 1 dB to 10 kHz

EXTENDED FREQUENCY RESPONSE: Typically -3 dB at 200 kHz

COMMON MODE REJECTION RATIO (1 k Ω 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 M Ω 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 (50 Ω , 75 Ω , 93 Ω , 110 Ω , 125 Ω , 135 Ω , 150 Ω , 250 Ω , 300 Ω , 500 Ω , 600 Ω , 800 Ω , 900 Ω , 1000 Ω , 1200 Ω), and an 8 Ω impedance reference level is provided to reference a 0 dBW level.

DC CURRENT:

RANGE	RESOLUTION	ACCURACY for 1-Year	BURDEN VOLTAGE
200 μ A	0.01 μ A	$\pm (0.3\% \text{ of reading} + 2 \text{ digits})$	0.3V max
2 mA	0.1 μ A		
20 mA	1 μ A		
200 mA	10 μ A		
2000 mA	100 μ A		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 μ A - 200 μ A	0.01 μ A	200 μ A					
100 μ A - 2 mA	0.1 μ A	2 mA					
1 mA - 20 mA	1 μ A	20 mA	2%+10		1%+10	2%+10	0.3V rms max
10 mA - 200 mA	10 μ A	200 mA					
100 mA - 2000 mA	100 μ A	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
200 Ω	0.01 Ω	$\pm(0.1\% \text{ reading} + 2 \text{ digits} + .02\Omega)$.19V
2 k Ω	0.1 Ω		1.2V
20 k Ω	1 Ω	$\pm(.05\% \text{ of reading} + 2 \text{ digits})$.2V
200 k Ω	10 Ω		2V
2000 k Ω	100 Ω	$\pm(0.25\% \text{ reading} + 3 \text{ digits})$.2V
20 M Ω	1 k Ω		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 M Ω 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 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.

**CONDUCTANCE:**

RANGE	RESOLUTION	ACCURACY for 1-Year
2 mS	.1 μ S (10 M Ω)	$\pm(0.1\% \text{ of reading} + 5 \text{ digits})$
200 nS	.01 nS (100,000 M Ω)	$\pm(0.5\% \text{ of reading} + 20 \text{ digits})$

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 (\pm) 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 COEFFICIENT: <0.1 times the applicable accuracy specification per $^{\circ}\text{C}$ 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 $+70^{\circ}\text{C}$ (-40°F to $+158^{\circ}\text{F}$).
(with batteries): -40°C to $+50^{\circ}\text{C}$ (-40°F to $+122^{\circ}\text{F}$).

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 k Ω , 20 M Ω , 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 ($8\frac{1}{2}$ " X $2\frac{1}{2}$ " 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 Factory configured for customerspecified
105 to 132V ac, 47 to 440 Hz voltage.
200 to 264V ac, 47 to 440 Hz

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

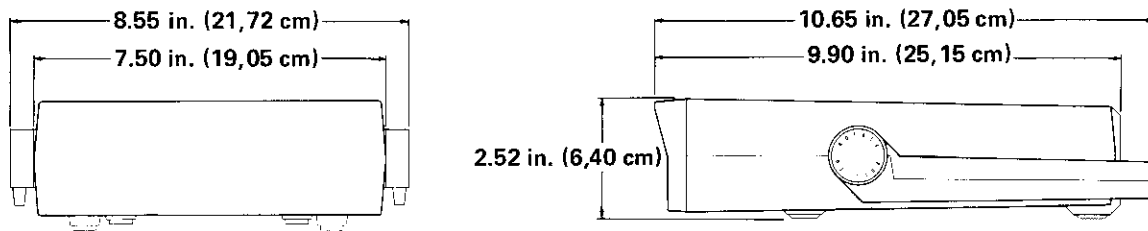
POWER CONSUMPTION: 6W max.**LINE VOLTAGE:** 90-264V, 47-440 Hz, field changeable**STANDARDS:** IEC 348: Protection Class 1 when operated from supply mains
Protection Class 2 when operated from internal batteries

Figure 1-8. 8050A Dimensions