

1-4. SPECIFICATIONS

Specifications for the 8842A are given in Table 1-1. External dimensions are shown in Figure 1-1.

Table 1-1. Specifications

DC VOLTAGE
Input Characteristics

RANGE	FULL SCALE 5½ DIGITS	RESOLUTION		INPUT RESISTANCE
		5½ DIGITS	4½ DIGITS*	
20 mV	19.9999 mV	0.1µV	1 µV	≥10,000 MΩ
200 mV	199.999 mV	1µV	10 µV	≥10,000 MΩ
2V	1.99999V	10 µV	100 µV	≥10,000 MΩ
20V	19.9999V	100 µV	1 mV	≥10,000 MΩ
200V	199.999V	1 mV	10 mV	10 MΩ
1000V	1000.00V	10 mV	100 mV	10 MΩ

*4½ digits at the fastest reading rate.

Accuracy

NORMAL (S) READING RATE ±(% of Reading + Number of Counts)

RANGE	24 HOUR ¹ 23±1°C	90 DAY 23±5°C	1 YEAR 23±5°C	2 YEAR 23±5°C
20 mV ²	0.0050 + 2 ³	0.0070 + 3 ³	0.0100 + 3 ³	0.0120 + 4 ³
200 mV ²	0.0030 + 2 ⁴	0.0045 + 3 ⁴	0.0070 + 3 ⁴	0.0100 + 4 ⁴
2V	0.0015 + 2	0.0025 + 2	0.0030 + 2	0.0050 + 3
20V	0.0015 + 2	0.0030 + 2	0.0035 + 2	0.0060 + 3
200V	0.0015 + 2	0.0030 + 2	0.0035 + 2	0.0060 + 3
1000V	0.0020 + 2	0.0035 + 2	0.0045 + 2	0.0070 + 3

1. Relative to calibration standards.
2. Within one hour of dc zero, using offset control.
3. When offset control is not used the number of counts are 50, 70, 90 and 90 for 24 hours, 90 day, 1 year, and 2 year respectively.
4. When offset control is not used the number of counts are 5, 7, 9 for 24 hours, 90 day, 1 year, and 2 year respectively.

MEDIUM AND FAST RATES:In medium rate, add 3 counts (20 counts on 20 mV Range) to number of counts. In fast rate, use 2 (4½ digit mode) counts (30 counts on 20 mV range) for the number of counts

Operating Characteristics

TEMPERATURE COEFFICIENT $\pm(0.0006\%$ of reading + 0.3 Count) per °C from 0°C to 18°C and 28°C to 50°C .

MAXIMUM INPUT1000V dc or peak ac on any range.

NOISE REJECTION.....Automatically optimized at power-up for 50, 60, or 400 Hz.

RATE	READINGS/ SECOND ¹	FILTER	NMRR ²	PEAK NM SIGNAL	CMRR ³
S ⁵	2.5	Analog & Digital	>98 dB	20V or 2x FS ⁴	>140 dB
M ⁶	20	Digital	>45 dB	1x FS	>100 dB
F	100	None	–	1x FS	>60 dB

1. Reading rate with internal trigger and 60 Hz power line frequency. See "reading rates" for more detail.
2. Normal Mode Rejection Ratio, at 50 or 60 Hz $\pm 0.1\%$. The NMRR for 400 Hz $\pm 0.1\%$ is 85 dB in S rate and 35 dB in M rate.
3. Common Mode Rejection Ratio at 50 or 60 Hz $\pm 0.1\%$, with 1 k Ω in series with either lead. The CMRR is >140 dB at dc for all reading rates.
4. 20 volts or 2 times full scale whichever is greater, not to exceed 1000V.
5. Reading rate-1/3 rdg / sec. in the 20 mV, 20 Ω , 200 mA dc ranges
6. Reading rate-1.25 rdg / sec. in the 20 mV, 20 Ω , 200 mA dc ranges

TRUE RMS AC VOLTAGE (OPTION 8842A-09)**Input Characteristics**

RANGE	FULL SCALE 5½ DIGITS	RESOLUTION		INPUT IMPEDANCE
		5½ DIGITS	4½ DIGITS*	
200 mV	199.999 mV	1 μ V	10 μ V	1 M Ω
2V	1.99999V	10 μ V	100 μ V	Shunted
20V	19.9999V	100 μ V	1 mV	By
200V	199.999V	1 mV	10 mV	<100 pF
700V	700.00V	10 mV	100 mV	

*4½ digits at the fastest reading rate

Accuracy

NORMAL (s) READING RATE \pm (% of Reading + Number of Counts).

For sinewave inputs $\geq 10,000$ counts¹.

FREQUENCY	24 HOURS ² 23 \pm 1°C	90 DAY 23 \pm 5°C	1 YEAR 23 \pm 5°C	2 YEARS \pm 5°C
20-45	1.2 + 100	1.2 + 100	1.2 + 100	1.2 + 100
45-200	0.3 + 100	0.35 + 100	0.4 + 100	0.5 + 100
200-20k				
(200 mV range)	0.06 + 100	0.08 + 100	0.10 + 100	0.20 + 100
(2V-200V range)	0.05 + 80	0.07 + 80	0.08 + 80	0.15 + 80
(700V range)	0.06 + 100	0.08 + 100	0.10 + 100	0.20 + 100
20k-50k	0.15 + 120	0.19 + 150	0.21 + 200	0.25 + 250
50k-100k	0.4 + 300	0.5 + 300	0.5 + 400	0.5 + 500

1. For sinewave inputs between 1,000 and 10,000 counts, add to number of counts 100 counts for frequencies 20 Hz to 20 kHz, 200 counts for 20 kHz, and 500 counts for 50 kHz to 100 kHz.

2. Relative to calibration standards.

MEDIUM AND FAST READING RATES..... In medium rate, add 50 counts to number of counts. In the fast rate the specifications apply for sinewave inputs ≥ 1000 (4½ digit mode) counts and >100 Hz.

NONSINUSOIDAL INPUTS For nonsinusoidal inputs $\geq 10,000$ counts with frequency components ≥ 100 kHz, add the following % of reading to the accuracy specifications.

FUNDAMENTAL FREQUENCY	CREST FACTOR		
	1.0 TO 1.5	1.5 TO 2.0	2.0 TO 3.0
45 Hz to 20 kHz 20 Hz	0.05	0.15	0.3
20 Hz to 45 Hz and 20 kHz to 50 kHz	0.2	0.7	1.5

Operating Characteristics

MAXIMUM INPUT 700V rms, 1000V peak or 2×10^7 Volts-Hertz product (whichever is less) for any range.

TEMPERATURE COEFFICIENT \pm (% of reading + Number of Counts) per °C, to 18°C and 28°C to 50°C.

FOR INPUTS	FREQUENCY IN HERTZ		
	20-20k	20k-50k	50k-100k
$\geq 10,000$ counts	0.019 + 9	0.021 + 9	0.027 + 10
$\geq 1,000$ counts	0.019 + 12	0.021 + 15	0.027 + 21

COMMON MODE REJECTION >60 dB at 50 or 60 Hz with 1 k Ω in either lead.

CURRENT

Input Characteristics

RANGE	FULL SCALE 5½ DIGITS	RESOLUTION	
		5½ DIGITS	4½ DIGITS ¹
200 mA ²	199.999 mA	1 µA	10 µA
2000 mA	1999.99 mA	10 µA	100 µA

1. 4½ digits at the fastest reading rate.
 2. The 200mA range is available for dc current only.

DC Accuracy

NORMAL (S) READING RATE±(% of reading + number of counts).

RANGE	90 DAYS 23±5°C	1 YEAR 23±5°C	2 YEARS 23±5°C
200 mA	0.04 + 40	0.05 + 40	0.08 + 40
2000 mA			
≤1A	0.04 + 4	0.05 + 4	0.08+4
>1A	0.1 + 4	0.1 + 4	0.15+4

MEDIUM AND FAST READING RATES In medium reading rate, add 2 counts (20 counts on 200 mA range) to number of counts. In fast reading rate, use 2 (4½ digit mode) counts (20 counts on 200 mA range) for number of counts.

AC Accuracy (Option -09)

NORMAL (S) READING RATE±(% of Reading + Number of Counts).

23±5°C, for sinewave inputs ≥10,000 counts¹.

FREQUENCY IN HERTZ			
	20-45	45-100	100-5K*
ONE YEAR	2.0 + 200	0.5 + 200	0.4 + 200
TWO YEAR	3.0 + 300	0.7 + 300	0.6 + 300

*Typically 20 kHz
 1. For sinewave inputs between 1,000 and 10,000 counts, add to number of counts 100 counts for frequencies 20 Hz to 5 kHz (typically 20 kHz).

MEDIUM AND FAST READING RATES.....In medium rate, add 50 counts to number of counts. In fast reading rate, for sinewave inputs ≥ 1000 (4½ digit mode) counts and frequencies > 100 Hz, the accuracy is $\pm(0.4\%$ of reading $+30$ (4½ digit mode) counts).

NONSINUSOIDAL INPUTSFor nonsinusoidal inputs $\geq 10,000$ counts with frequency components ≤ 100 kHz, add the following % of reading to the accuracy specifications

FUNDAMENTAL FREQUENCY	CREST FACTOR		
	1.0 TO 1.5	1.5 TO 2.0	2.0 TO 3.0
45 Hz to 5 kHz	0.05	0.15	0.3
20 Hz to 45 Hz	0.2	0.7	1.5

Operating Characteristics

TEMPERATURE COEFFICIENTLess than 0.1 x accuracy specification per °C to 18°C and 28°C to 50°C.

MAXIMUM INPUT2A dc or rms ac. Protected with 2A, 250V fuse accessible at front panel, and interval 3A, 600V fuse.

BURDEN VOLTAGE1V dc or rms ac typical at full scale.

RESISTANCE

Input Characteristics

RANGE	FULL SCALE 5½ DIGITS	RESOLUTION		CURRENT THROUGH UNKNOWN
		5½ DIGITS	4½ DIGITS ¹	
20Ω ²	19.999Ω	0.1 mΩ	1 mΩ	1 mA
200Ω	199.999Ω	1 mΩ	10 mΩ	1 mA
2 kΩ	1.99999 kΩ	10 mΩ	100 mΩ	1 mA
20 kΩ	19.9999 kΩ	100 mΩ	1Ω	100 μA
200 kΩ	199.999 kΩ	1Ω	10Ω	10 μA
2000 kΩ	1999.99 kΩ	10Ω	100Ω	5 μA
20 MΩ	19.9999 MΩ	100Ω	1 kΩ	0.5 μA

1. 4½ digits at the fastest reading rate.
2. Four-wire ohms only.

Accuracy

NORMAL (S) READING RATE±(% of Reading + Number of Counts)¹.

RANGE	24 HOURS 23±1°C	90 DAY 23±5°C	1 YEAR 23±5°C	2 YEARS 23±1°C
20Ω ³	0.007 + 30 ⁴	0.009 + 40 ⁴	0.012 + 40 ⁴	0.015 + 40 ⁴
200Ω ³	0.0040 + 3 ⁵	0.007 + 4 ⁵	0.010 + 4 ⁵	0.012 + 4 ⁵
2 kΩ	0.0025 + 2	0.005 + 3	0.008 + 3	0.010 + 3
20 kΩ	0.0025 + 2	0.005 + 3	0.008 + 3	0.010 + 3
200 kΩ	0.0025 + 2	0.006 + 3	0.010 + 3	0.012 + 3
2000 kΩ	0.023 + 3	0.025 + 3	0.027 + 3	0.030 + 3
20 MΩ	0.023 + 3	0.040 + 4	0.042 + 4	0.050 + 4

1. Within one hour of ohms zero, using offset control.
2. Relative to calibration standards.
3. Applies to 4-wire ohms only.
4. When offset control is not used the number of counts are 50, 70, 90 and 90 for 24 hours, 90 day, 1 year, and 2 year respectively.
5. When offset control is not used the number of counts are 5, 7, 9 and 9 for 24 hours, 90 day, 1 year, and 2 year respectively.

MEDIUM AND FAST READING RATES.....In medium rate, add 2 counts to the number of counts for the 200Ω through 200 kΩ ranges, 3 counts for the 2000 kΩ and 20 MΩ ranges, and 20 counts for the 20Ω range. In fast reading rate, use 3 (4½ digit mode) counts for the number of counts for the 200Ω range, 20 (4½ digit mode) counts for the 20Ω range and 2 (4½ digit mode) counts for all other ranges.

Operating Characteristics

TEMPERATURE COEFFICIENTLess than 0.1 x accuracy specification per °C from 0°C to 18°C and 28°C to 50°C.

MEASUREMENT CONFIGURATION2-wire or 4-wire in all ranges except 20Ω range. Only 4-wire configuration is allowed in the 20Ω range.

OPEN CIRCUIT VOLTAGELess than 6.5V on the 20Ω through the 200 kΩ ranges. Less than 13V on the 2000 kΩ and 20 MΩ ranges.

INPUT PROTECTION.....To 300V rms.

Reading Rates

READING RATES WITH INTERNAL TRIGGER (readings per second)

RATE	POWER LINE FREQUENCY ¹		
	50 Hz	60 Hz	400 Hz
S	2.08 (.26) ²	2.5 (.31) ²	2.38 (.30) ²
M	16.7 (1.04) ²	20 (1.25) ²	19.0 (1.19) ²
F	100	100	100

1. Sensed automatically at power-up.
2. In 20 mV, 20 ohm, and 200 mA DC ranges.

AUTORANGING

The 8842A autoranges up to the highest ranges in all functions, down to the 200 mV range in the VDC and VAC functions, and down to the 200 Ω ranges in the ohms functions. To select the 20 mV dc, 20Ω, or 200 mA dc range, press the respective range button (or send the respective range command, if using the IEEE-488 option).

AUTOMATIC SETTling TIME DELAY

Time in milliseconds from single trigger to start of A/D conversion, Autorange off.

FUNCTION	RANGE	READING RATE			NUMBER OF COUNTS FROM FINAL VALUE ¹
		S	M	F	
VDC	20 mV	342	342	9	30
	200 mV	342	61	9	5
	2V-1000V	342	17	9	9
VAC	All	551	551	551	30 (Note 2)
MA DC	200 mA	342	342	9	9
	2000 mA	342	17	9	5
MA AC	2000 mA	551	551	551	30 (Note 2)
Ohms	20Ω	395	395	17	40
	200Ω	395	106	17	5
	2 kΩ	322	17	13	5
	20 kΩ	342	17	13	5
	200 kΩ	141	121	21	5
	2000 kΩ	141	101	81	10
	20 MΩ	1020	964	723	10

1. Difference between first reading and final value for an in-range step change coincident with trigger. For slow reading rate. 50 counts for medium rate; 10 counts for fast rate.