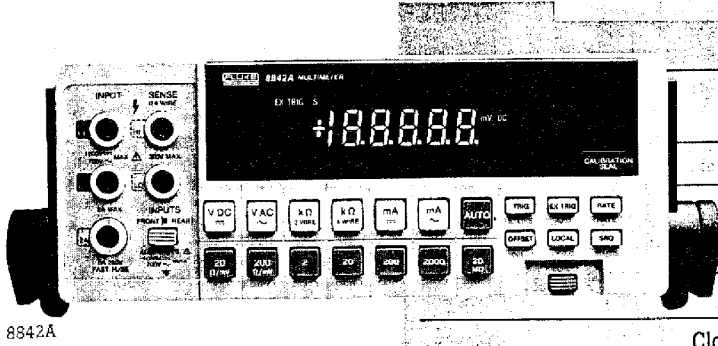




Bench Multimeters



8842A

8840A 5 1/2 Digit Multi meter

- 0.005% Basic 1 Year DC Accuracy
- Ohms and DC Current Standard - AC Voltage and Current Optional
- Full System Capability with IEEE-488 Interface
- Up to 100 Readings/Second System Speed
- Easy-to-Use Front Panel
- Vacuum Fluorescent Display
- Closed-Case Calibration - Comprehensive Self-Test

8842A 5 1/2 Digit Multimeter - The 8840A with Higher Accuracy and Sensitivity

- 0.003% Basic 1 Year DC Accuracy
- Increased Resolution with 20 mV, 200 mA, and 20Ω Ranges
- Extended Calibration Cycle with 2 Year Specifications
- Two-Year Warranty

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Performance

The 8840 Series has performance you would expect in multimeters costing much more. Basic dc accuracies to 0.003% and basic ac accuracies to 0.08% at one year are available. See the specifications that follow for complete information on measurement ranges and accuracy.

Powerful System Capabilities

The 884X/059 models adds the IEEE-488 interface to the 8840 Series provides system capability which includes complete system control of functions, ranges, and reading rates. Front and rear panel inputs are switch-selectable from the front panel (and you can sense the status of the switch over the bus). Calibration and self-test can also be controlled over the bus.

Powerful yet simple device dependent IEEE-488 code allows the 8840 Series DMMs to be easily integrated into your system. System software written for the 8840A is compatible with the 8842A.

The mechanical design also contributes to performance and convenience in system applications. The 8840A Series' metal case provides EMI shielding to ensure measurement integrity. The unit can be mounted in a half-rack slot simply by removing the handle, turning the "twist-away" rear feet, and bolting on rack mount brackets.

Embodying all these features, the 8840 Series DMMs are fully programmable, powerful digital multimeters within reach of every system builder.

Self-Testing

The 8840 Series automatically performs a digital self-test each time it is powered up. Additionally, you can initiate a comprehensive analog and digital diagnostic self-test from the front panel or through the IEEE-488 interface.

Closed-Case Calibration

No internal adjustments are required for calibration. After you initiate calibration via a recessed front panel switch, you are led through a software controlled procedure that even double checks to ensure that appropriate reference inputs have been applied. Calibration can be performed under front panel or IEEE-488 control.

Technology

A monolithic A/D converter uses a proprietary CMOS IC designed to achieve the superb accuracy, speed, and reliability of the 8840 Series.

Analog switch ICs developed and manufactured by Fluke replace discrete switching devices to create superior performance, reliability, and serviceability.

A voltage reference device similar to that found in the Fluke 732B DC Reference Standard provides unmatched stability.

Precision thin film resistor networks establish the accuracy and maintain the stability of the 8840 Series.

8842A Specifications

Technical Specifications

DC Voltage

Input Characteristics

Range	Full Scale 5 1/2 Digits	Resolution		Input Resistance
		5 1/2 Digits	4 1/2* Digits	
20 mV	19.9999 mV	0.1 μV	1 μV	≥10,000 MΩ
200 mV	199.999 mV	1 μV	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

*4 1/2 digits at the fastest reading rate



Bench Multimeters

8840A & 8842A 5½ Digit Multimeters

Resistance Input Characteristics

Range	Full Scale 5½ Digits	Resolution		Input Resistance
		5½ Digits	4½ Digits	
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

*4½ digits at the fastest reading rate

Accuracy

Normal (S) Reading Rate: ± (% of Reading + Number of Counts)

Range	Accuracy		
	24 Hour [†] 23 ± 1°C	90 Day 23 ± 5°C	1 Year 23 ± 5°C
200Ω	0.004 + 3	0.011 + 4	0.014 + 4
2 kΩ	0.0028 + 2	0.01 + 3	0.013 + 3
20 kΩ	0.0028 + 2	0.01 + 3	0.013 + 3
200 kΩ	0.0028 + 2	0.01 + 3	0.013 + 3
2000 kΩ	0.023 + 3	0.027 + 3	0.028 + 3
20 MΩ	0.023 + 3	0.043 + 4	0.044 + 4

Using offset control

Relative to calibration standards

Applies to 4 wire ohms only

Medium and Fast Reading Rates: In medium rate, add to the number of counts 2 counts for the 200Ω through 200 kΩ ranges and 3 counts for the 2000 kΩ and 20 MΩ ranges. In fast reading rate, use for the number of counts three 4½ digit counts for the 200Ω range, and two 4½ digit counts.

Operating Characteristics

Temperature Coefficient: Less than 0.1 × accuracy specification per °C from 0°C to 18°C and 28°C to 50°C

Measurement Configuration: 2-wire or 4-wire

Open Circuit Voltage: Less than 6.5V on the 20Ω through 200 kΩ ranges, less than 1.3V 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*		
	50 Hz	60 Hz	400 Hz
S	2.08	2.5	2.38
M	16.7	20	19.0
F	100	100	100

*Sensed automatically at power-up

IEEE-488 Interface (8840A/059)

Allows complete control and data output capability, and supports the following interface function subsets: SHI, AHI, TS, L4, SRI, RLI, DGI, DTI, EI, PFO and CO.

General Specifications

Power Requirements

Power: 100V, 120V, 220V, or 240V ac ± 10% (250V ac maximum), switch-selectable at rear panel; 50 Hz, 60 Hz, or 400 Hz, automatically sensed at power up; 20 VA maximum

Environmental Data

Common Mode Voltage: 1000V dc or peak ac, or 700V rms ac from any input to earth ground

Temperature Range: 0°C to 50°C operating; -40°C to 70°C storage

Humidity Range: 80% RH from 0°C to 35°C; 70% to 50°C

Warmup Time: 1 hour to rated specifications

Vibration: Meets requirements of MIL-T- 28800C for Type III, Class 3, Style E equipment

Safety: ANSI C39.5 and IEC 348, Class I, VDE 0411 Marks License, and CSA Bulletin 556B

Mechanical Data

Size: 89 mm H × 216 mm W × 371 mm L (3.5 in H × 8.5 in W × 14.6 in L)

Weight: Net, 3.4 kg (7.5 lb); shipping 5 kg (11 lb)

Ordering Information

Models

8840A* Basic Digital Multimeter (dc and Ω)

8840A/059 w/IEEE-488 & True-RMS ac

Included with Instrument

One year product warranty, line cord, TL70A test leads, Operator/Service Manual, IEEE-488 Quick Reference Guide, Performance Verification Record, and Certificate of Calibration Practices.

Options (for 8840A)

884XA-05K IEEE-488 Interface Field Kit

8840A/09K* True-RMS ac Option Field Kit

*Requires recalibration

Accessories

Y8834 3½" Rack Mount Kit Offset, Single

Y8835 3½" Rack Mount Kit, Dual

Y8836 3½" Rack Mount Kit, Center

Y8021 IEEE-488 Shielded Cable, 1m

Y8022 IEEE-488 Shielded Cable, 2m

Y8023 IEEE-488 Shielded Cable, 4m

Y8077 Four Terminal Short

Manuals

8840A Getting Started*

8840A-IEEE-488 Quick Ref. Guide*

8840A Operator & Service*

*No charge with purchase of unit

Customer Support Services

Factory Warranty

One-year product warranty.

Visit Fluke on the world wide web at:

<http://www.fluke.com>



Bench Multimeters

FLLIKE

8840A & 8842A 5½ Digit Multimeters

8840A Specifications

Technical Specifications

DC Voltage

Input Characteristics

Range	Full Scale 5½ Digits	Resolution		Input Resistance
		5½ Digits	4½* Digits	
200 mV	199.999 mV	1 µV	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 Rates: ±(% of Reading + Number of Counts)

Range	24 Hour ¹ 23 ± 1°C	90 Day 23 ± 5°C	1 Year 23 ± 5°C
200 mV ²	0.003 + 3	0.007 + 4	0.008 + 4
2V	0.002 + 2	0.004 + 3	0.005 + 3
20V	0.002 + 2	0.005 + 3	0.006 + 3
200V	0.002 + 2	0.005 + 3	0.006 + 3
1000V	0.003 + 2	0.005 + 3	0.007 + 3

¹ Relative to calibration standards

² Using offset control

Medium and Fast Rates: In medium rate, add 2 counts. In fast rate, use three 4½ digit counts.

Operating Characteristics

Temperature Coefficient: > ± 0.006% of reading + 0.3 count per °C from 18°C to 0°C and 28°C to 50°C

Maximum Input: 1000V dc or peak ac on any range

Noise Rejection: Automatically optimized at power-up for 50 Hz, 60 Hz or 400 Hz

Rate	Readings/Second ¹	Filter	NMRR ²	Peak NM Signal	CMRR ³
S	2.5	Analog	> 86 dB	20V or 2kFS ⁴	> 140 dB
M	20	Digital	> 45 dB	1kFS	> 100 dB
F	100	None	-	1kFS	> 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 Hz or 60 Hz ± 0.1%. The NMRR for 400 Hz ± 0.1% is 85 dB in S rate and 35 dB in M rate.

³ Common Mode Rejection Ratio at 50 Hz or 60 Hz ± 0.1%, with 1 kΩ in series with either lead. The CMRR is > 140 dB at dc for all reading rates.

⁴ 20V or 2 times Full Scale whichever is greater, not to exceed 1000V

True-RMS AC Voltage

(8840A/059)

Input Characteristics

Range	Full Scale 5½ Digits	Resolution		Input Resistance
		5½ Digits	4½* Digits	
200 mV	199.999 mV	1 µV	10 µV	1 MΩ
2V	1.99999V	10 µV	100 µV	shunted by > 100 pF
20V	19.9999V	100 µV	1 mV	
200V	199.999V	1 mV	10 mV	
700V	700.00V	10 mV	100 mV	

*4½ digits at the fastest reading rate

Accuracy

Normal (S) Reading Rates: ±(% of Reading + Number of Counts) for sine wave inputs ≥ 10,000 counts¹ (5% of range)

Frequency Hz	24 Hour ² 23 ± 5°C	90 Day 23 ± 5°C	1 Year 23 ± 5°C
20-45	1.2 + 100	1.2 + 100	1.2 + 100
45-100	0.3 + 100	0.35 + 100	0.4 + 100
100-20k	0.07 + 100	0.14 + 100	0.16 + 100
20k-50k	0.15 + 120	0.19 + 150	0.21 + 200
50k-100k	0.4 + 300	0.5 + 300	0.5 + 400

¹ For sine wave inputs between 1000 and 10,000 counts, add to Number of Counts 100 counts for frequencies 20 Hz to 20 kHz, 200 counts for 20 kHz to 50 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 fast rate the specifications apply for sine wave inputs ≥ 1000 4½ digit counts and > 100 Hz.

Operating Characteristics

Temperature Coefficient: ± (% of Reading + Number of Counts) per °C, 0°C to 18°C and 28°C to 50°C

For Inputs	Frequency in Hertz		
	20-20k	20k-50k	50k-100k
≥ 10,000 counts	0.019 + 9	0.021 + 9	0.027 + 10
≥ 1000 counts	0.019 + 12	0.021 + 15	0.027 + 21

Nonsinusoidal Inputs: For non-sinusoidal inputs ≥ 10,000 counts with frequency components ≤ 100 kHz, add the following % of reading to the accuracy specifications

Fundamental Frequency	Crest Factor		
	1.0 - 1.5	1.5 - 2.0	2.0 - 3.0
45 Hz to 20 kHz	0.05%	0.15%	0.3%
20 Hz to 45 Hz & 20 kHz to 50 kHz	0.2%	0.7%	1.5%

Maximum Input: 700V rms, 1000V peak or 2 × 10⁷ volt-hertz product (whichever is less) for any range

Common Mode Rejection: > 60 dB at 50 Hz or 60 Hz with 1 kΩ in either lead

Current

Input Characteristics

Range	Full Scale 5½ Digits	Resolution	
		5½ Digits	4½ Digit*
2000 mA	1999.99 mA	10 µA	100 µA

*4½ digits at the fastest reading rate

DC Accuracy

Normal (S) Reading Rate: ±(% of Reading + Number of Counts)

Range	90 Days 23 ± 5°C	1 Year 23 ± 5°C
≤ 1A	0.04 + 4	1.05 + 4
> 1A	0.1 + 4	1.1 + 4

Medium and Fast Reading Rates: In medium reading rate, add 2 counts (20 counts on 20 mA range) to number of counts. In fast reading rate, use two 4½ digit counts (20 counts on 200 mA range) for number of counts.

AC Accuracy: (Requires Option -09)

Normal (S) Reading Rate: ±(% of Reading + Number of Counts) 23 ± 5°C, for sine wave inputs ≥ 10,000 counts

Time	Frequency in Hertz		
	20-45	45-100	100-5k*
One Year	2.0 + 200	0.5 + 200	0.4 + 200

*Typically 20 kHz

Medium and Fast Reading Rates: In medium reading rate, add 50 counts to number of counts. In fast reading rate, for sine wave inputs ≥ 1000 4½ digit counts and frequencies > 100 Hz, the accuracy is + (0.4 % of reading + 30 counts).

Operating Characteristics

Temperature Coefficient: Less than 0.1 × accuracy specifications per °C from 0°C to 18°C and 28°C to 50°C

Maximum Input: 2A dc or rms ac protected with 2A, 250V fuse accessible at front panel, and internal 3A, 600V fuse.
Burden Voltage: 1V dc or rms ac typical at full scale



Bench Multimeters

8840A & 8842A 5½ Digit Multimeters

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Time	Frequency in Hertz		
	20-45	45-100	100-5k*
One Year	2.0 + 200	0.5 + 200	0.4 + 200
Two Years	3.0 + 300	0.7 + 300	0.6 + 300

Medium and Fast Reading Rates: In medium reading rate, add 50 counts to number of counts. In fast reading rate, for sine wave inputs ≥ 1000 4½ digit counts and frequencies > 100 Hz, the accuracy is $\pm (0.4\%$ of reading + 30 counts)

Nonsinusoidal Inputs: For nonsinusoidal inputs $\geq 10,000$ counts with frequency components ≤ 100 kHz, add the following % of reading to the accuracy specifications
* Typically 20 kHz

Fundamental Frequency	Frequency in Hertz		
	1.0 - 1.5	1.5 - 2.0	2.0 - 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 Coefficient: Less than 0.1 x accuracy specifications per °C from 0°C to 18°C and 28°C to 50°C

Maximum Input: 2A dc or rms ac. Protected with 2A, 250V fuse accessible at front panel, and internal 3A, 600V fuse.

Burden Voltage: 1V dc or rms ac typical at full scale

Resistance Input Characteristics

Range	Full Scale 5½ Digits	Resolution		Current Through Unknown
		5½ Digits	4½ Digits	
20Ω ¹	19.9999Ω	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 4-wire ohms only

Resistance Accuracy
Normal (S) Reading Rate: \pm [% of Reading + Number of Counts]¹

Range	24 Hour ² 23 ± 1°C	90 Day 23 ± 5°C	1 Year 23 ± 5°C	2 Year 23 ± 5°C
20Ω ³	0.007 + 30	0.009 + 40	0.012 + 40	0.015 + 40
200Ω ³	0.0040 + 3	0.007 + 4	0.010 + 4	0.012 + 4
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 4-wire ohms only

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 three 4½ digit for the number of counts for the 200Ω range, 20 4½ digit counts for the 20Ω range, and two 4½ digit for all other ranges.

Operating Characteristics
Temperature Coefficient: Less than 0.1 x accuracy specification per °C from 0°C to 18°C and 28°C to 50°C
Measurement Configuration: 2-wire or 4-wire (20Ω range is 4-wire only)
Open Circuit Voltage: Less than 6.5V on the 20Ω through 200 kΩ ranges. Less than 13V on the 2000 kΩ and 20 MΩ ranges
Input Protection: To 300V rms
Reading Rates and Ranging
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 the 20 mV, 20Ω, and 200 mA ranges. The 8842A does not autorange down into these ranges. To access these ranges, select the specific range, from the front panel or over the bus.

IEEE-488 Interface (8842A/059)
Allows complete control and data output capability, and supports the following interface function subsets: SH1, AH1, T5, L4, SR1, RL1, DC1, DT1, E1, PPO and CO.

General Specifications

Power Requirements
Power: 100V, 120V, 220V, or 240V ac $\pm 10\%$ (250V ac maximum), switch-selectable at rear panel; 50 Hz, 60 Hz, or 400 Hz, automatically sensed at power up; 20 VA maximum

Environmental Data
Common Mode Voltage: 1000V dc or peak ac, or 700V rms ac from any input to earth ground
Temperature Range: 0 to 50°C operating; -40°C to 70°C storage
Humidity Range: 80% RH from 0°C to 35°C; 70% to 50°C
Warmup Time: 1 hour to rated specifications

Vibration: Meets requirements of MIL-T-28800C for Type III, Class 3, Style E equipment
Safety: ANSI C39.5 and IEC 348, Class I, VDE 0411 Marks License, and CSA Bulletin 556B

Mechanical Data
Size: 89 mm H x 216 mm W x 371 mm L (3.5 in H x 8.5 in W x 14.6 in L)
Weight: Net, 3.4 kg (7.5 lb); shipping, 5 kg (11 lb)

Ordering Information

Models
8842A* Basic Digital Multimeter (dc and SL)
8842A/059 w/IEEE-488 & True-RMS ac
Included with Instrument
Two-year product warranty, line cord, TL70A test leads, Operator/Service Manual, IEEE-488 Quick Reference Guide, Performance Verification Record, and Certificate of Calibration Practices.

Options (for 8842A)
8842A-05K IEEE-488 Interface Field Kit
8842A/09K* True-RMS ac Option Field Kit
*Requires recalibration

Accessories
Y8834 3½" Rack Mount Kit Single
Y8835 3½" Rack Mount Kit, Dual
Y8836 3½" Rack Mount Kit, Center
Y8021 IEEE-488 Shielded Cable, 1m
Y8022 IEEE-488 Shielded Cable, 2m
Y8023 IEEE-488 Shielded Cable, 4m
Manuals
8842A Getting Started*
8842A-IEEE-488 Quick Ref. Guide*
8842A Operator & Service*
*No charge with purchase of unit

Customer Support Services

Factory Warranty
Two-year product warranty.
Visit Fluke on the world wide web at:
<http://www.fluke.com>

Bench Multimeters

8840A & 8842A 5½ Digit Multimeters

Accuracy

Normal (S) Reading Rates: ± (% 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 + 20	0.0070 + 30	0.0100 + 30	0.0120 + 40
200 mV ²	0.0030 + 2	0.0045 + 3	0.0070 + 3	0.0100 + 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

Medium and Fast Rates: In medium rate, add 3 counts (20 counts on 20 mV range) to number of counts. In fast rate, use two 4½ digit counts (30 counts on 20 mV range) for the number of counts

Operating Characteristics

Temperature Coefficient: > ± (0.0006% of Reading + 0.3 Count) per °C from 18°C to 0°C and 28°C to 50°C

Maximum Input: 1000V dc or peak ac on any range

Noise Rejection: Automatically optimized at power-up for 50, 60 or 400 Hz

Accuracy

Normal (S) Reading Rates: ± (% of Reading + Number of Counts)¹

Freq (Hz)	24 Hour ² 23 ± °C	90 Day 23 ± 5°C	1 Year 23 ± 5°C	2 Year 23 ± 5°C
20-45	1.2 + 100	1.2 + 100	1.2 + 100	1.1 + 100
45-200	0.3 + 100	0.35 + 100	0.4 + 100	0.3 + 100
200-20k (200 mV)	0.06 + 100	0.08 + 100	0.10 + 100	0.2 + 100
(2-200V)	0.05 + 80	0.07 + 80	0.08 + 80	0.1 + 80
(700V)	0.06 + 100	0.08 + 100	0.10 + 100	0.2 + 100
20-50k	0.15 + 120	0.19 + 150	0.21 + 200	0.2 + 250
50-100k	0.4 + 300	0.5 + 300	0.5 + 400	0.3 + 500

¹ For sinewave inputs between 1000 and 10,000 counts, add to Number of Counts 100 counts for frequencies 20 Hz to 20 kHz, 200 counts for 20 kHz to 50 kHz, and 500 counts for 50 kHz to 100 kHz

² Relative to calibration standard

Medium and Fast Reading Rates: In medium rate, add 50 counts to number of counts. In fast rate the specifications apply for sinewave inputs ≥ 1000 4½ digit counts and > 100 Hz.

Nonsinusoidal Inputs: For nonsinusoidal inputs ≥ 10,000 counts with frequency components ≤ 100 kHz, add the following % of reading to the accuracy specifications

Fundamental Frequency	Crest Factor		
	1.0 - 1.5	1.5 - 2.0	2.0 - 3.0
45 Hz to 20 kHz	0.05%	0.15%	0.3%
20 Hz to 45 Hz & 20 kHz to 50 kHz	0.2%	0.7%	1.5%

Operating Characteristics

Maximum Input: 700V rms, 1000V peak or 2 × 10⁹ volt-hertz product (whichever is less) for any range

Temperature Coefficient: ± (% of Reading + Number of Counts) per °C, 0°C to 18°C and 28°C to 50°C

For Inputs	Frequency in Hertz		
	20 - 20k	20k - 50k	50k - 100k
≥ 10,000 counts	0.019 + 9	0.021 + 9	0.027 + 10
≥ 1,000 counts	0.019 + 12	0.021 + 15	0.027 + 21

Common Mode Rejection: > 60 dB at 50 Hz or 60 Hz with 1 kΩ in either lead

Current

Input Characteristics

Range	Full Scale 5½ Digits	Resolution	
		5½ Digits	4½ Digit 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

² 200 mA range is dc only

DC Accuracy

Normal (S) Reading Rate: ± (% of Reading + Number of Counts)

Range	90 Day 23 ± 5°C	1 Year 23°C ± 1°C	2 Year 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 Rates: In medium reading rate, add 2 counts (20 counts on 20 mA range) to number of counts. In fast reading rate, use two 4½ digit counts (20 counts on 200 mA range) for number of counts.

AC Accuracy: (8842A/059)

Normal (S) Reading Rate: ± (% of Reading + Number of Counts) 23°C ± 5°C, for sinewave inputs ≥ 10,000 counts

Rate	Readings/Second ¹	Filter	NMRR ²	Peak RM Signal	CMRR ³
S	2.5 ⁴	Analog	> 98 dB	20V	> 140 dB
M	20 ⁵	Digital	> 45 dB	or 2xFS ⁶	> 100 dB
F	100	None	-	1xFS	> 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 Hz or 60 Hz ± 0.1%. The NMRR for 400 Hz ± 0.1% is 85 dB in S rate and 35 dB in M rate.

³ Common Mode Rejection Ratio at 50 Hz or 60 Hz ± 0.1%, with 1 kΩ in series with either lead. The CMRR is > 140 dB at dc for all reading rates.

⁴ 20V or 2 times Full Scale whichever is greater, not to exceed 1000V

⁵ Reading rate - .31 rdg/sec in the 20 mV, 20Ω, 200 mA dc ranges

⁶ Reading rate - 1.25 rdg/sec in the 20 mV, 20Ω, 200 mA dc ranges

True-RMS AC Voltage (8842A/059)

Input Characteristics

Range	Full Scale 5½ Digits	Resolution		Input Resistance
		5½ Digits	4½ [*] Digits	
200 mV	199.999 mV	1 μV	10 μV	1 MΩ
2V	1.99999V	10 μV	100 μV	shunted
20V	19.9999V	100 μV	1 mV	by < 100 pF
200V	199.999V	1 mV	10 mV	
700V	700.00V	10 mV	100 mV	

*4½ digits at the fastest reading rate