IEEE-488

DIGITAL MULTIMETERS

8506A/8505A

8506A/8505A

8506A Thermal RMS Digital Multimeter

- 8505A features plus
- 120 ppm ac accuracy, 40 Hz to 20 kHz
- Full accuracy for crest factors as high as 8:1
- 25 ppm short-term ac stability
- Frequency response specified to 1 MHz
- AC-DC transfer accuracies with DMM speed and convenience

8505A Digital Multimeter

- 5 ppm dc accuracy, 100 nV (nanovolt) sensitivity
- 500 readings per second with 6½-digit resolution
- AC (8505A only), ohms, current module options
- IEEE-488, RS-232-C, and parallel interfaces
- Front-rear switchable input standard in basic mainframe
- Software calibration from front panel or remote interface
- Modular construction for application flexibility

The 8505A and 8506A Digital Multimeters are Fluke's most advanced bench/system DMMs. Both models excel in dc accuracy, resolution, versatility and speed.

The 8506A uses a fast thermal rms sensing technique for measuring ac which very significantly advances the state-of-the-art for ac measurements using a system DMM: It is several times more accurate than the calculating type of true-rms converter and is unmatched by any other DMM. Basic ac accuracy uncertainty is reduced to 120 parts per million for frequencies from 40 Hz to 20 kHz. That approximates the accuracy you can expect using traditional thermal transfer techniques that typically take several minutes for each measurement. Short term stability is 25 ppm. Accuracy is specified from 10 Hz to 1 MHz and non-sinusoidal waveforms having crest factors as high as 8 to 1 can be measured with full 90-day accuracy.

Software Calibration

Both the 8506A and 8505A have a "software calibration" feature that makes it easy to store correction factors for every range of any measurement function. You can update the 24-hour accuracy specifications daily, or whenever the need arises — without having to remove the covers. Nor do you need to use a cardinal point standard for a reference. Any reference having a suitably accurate value between 60% of range and full scale will do. This "software calibration" is managed with a few keystrokes on the front panel or even remotely when used as part of a test and measurement system.

Measurement Speed

Most system DMM manufacturers use an integrating technique for A-to-D conversion. That means there must be a compromise between resolution and reading speed. The 8505A and 8506A use a Fluke patented "recirculating remainder" technique for A-to-D conversion that does not compromise 6½-digit resolution at reading speeds up to 500 per second. Front or rear measurement inputs are switch-selectable from the front panel. For system applications the position of the switch can be sensed through the interface. An external trigger input is included to control the timing of measurements remotely. And, to control the switching time of an external scanner, scanner-advance output pulses are available at the rear panel.

Either IEEE-488, RS-232-C, or one of several parallel interface options may be used for systems applications. The parallel interfaces will work with DEC computer interfaces DR11C, DRV11, or PC11 or with HP computer interfaces 12566 or HP98032A.

Math Power

The 8506A and 8505A are controlled by an internal microprocessor and have built in math power to add, subtract, multiply, and divide as well as store and compare numerical information. Each measurement may be made a part of a calculation before being displayed or recorded. Stored HI and/or LO limit values may be repeatedly compared to measured values to determine out-of-tolerance conditions. HI, LO, or PASS indications may appear directly in the display. The highest and lowest values in a series of measurements may be stored and later displayed. And measurements may all be in terms of ± deviations from a stored "offset" value. In general, any calculation is possible based on the general formula.

$$Y = mx+b$$

Where m = scaling factor (multiplier),

x = value measured,

b = the ± offset, and

Y = the numerical result

8506A & 8505A Differences

The 8505A is Fluke's lowest cost DMM having top dc accuracy, resolution, and speed. Two options for measuring ac voltage are available — either an ac average-sensing, rms-indicating option (-01) for sinewaves or an ac true-rms option (-09A) for either sinewaves or non-sinusoidal waveforms. An option for measuring current (-03) and an option for measuring resistance (-02A) are also available for the 8505A. For measuring ac current, an ac voltage option (-01 or -09A) must also be installed. An 8505A, when fully equipped, will measure dc and ac voltage, dc and ac current, and resistance. The 8506A and 8505A have identical dc measurement capabilities but the 8506A requires no option for measuring ac voltage. State-of-the-art ac voltage measurement capabilities are built in. An option for measuring dc current may be installed (-03) or an option for measuring resistance may be installed (-02A), but not both at the same time. Any external dc reference voltage up to 40 volts that is applied at the rear panel may be compared and the relative values displayed as a ratio. The same interface options are available for the 8506A as for the 8505A.

8506A Specifications

DC Voltage

All dc voltage accuracy and stability specifications apply after a two-hour warm-up unless otherwise noted. The 24-hour specifications are relative to the calibration standards used.

Input Characteristics

Range	Full Scale (6½ Digits)	Resolution		Input Resistance
		7½* Digits	6½ Digits	
100 mV	200.0000 mV	—	100 nV	≥10,000 MΩ
1V	2.000000V	—	1 μV	≥10,000 MΩ
10V	20.00000V	1 μV	10 μV	≥10,000 MΩ
100V	128.0000V	—	100 μV	10 MΩ
1000V	1200.000V	—	1 mV	10 MΩ

In AVG operating mode

Accuracy, Normal Mode, 6½ Digits: ±(% of Rdg + Counts)

Range	24 Hours* 23°C ±1°C	Long Term, 18°C to 28°C	
		Up to 90 Days	Add per Month Over 90 Days
100 mV	0.0018 + 15	0.0025 + 40	0.00017 + 5.6
1V	0.0008 + 7	0.0015 + 8	0.0001 + 0.1
10V	0.0006 or 6**	0.0010 + 8	0.0001 + 0.1
100V	0.0010 + 6	0.0018 + 8	0.00013 + 0.1
1000V	0.0008 + 6	0.0018 + 8	0.00013 + 0.1

After 4-hour warm-up and within 1 hour of zeroing dc
***Whichever is greater*

Accuracy, AVG Mode, 6½ Digits: ±(% of Rdg + Counts)*

Range	24 Hours* 23°C ±1°C	Long Term, 18°C to 28°C	
		Up to 90 Days	Add per Month Over 90 Days
100 mV	0.0010 + 8	0.0020 + 8	0.0001 + 0.1
1V	0.0005 + 4	0.0012 + 6	0.0001 + 1
10V**	0.0005 or 50***	0.0008 + 60**	0.00008 + 1**
100V	0.0005 + 5	0.0015 + 6	0.0001 + 0.1
1000V	0.0005 + 5	0.0015 + 6	0.0001 + 0.1

After 4-hour warm-up and within 1 hour of zeroing dc
***7½-digit mode of operation*
****Whichever is greater*

Accuracy, Software Calibration

Fully restores above "24-hour" accuracy for 24 hours each time performed within 30 days after hardware calibration is performed. After 30 days add the following number of counts to the 24-hour accuracy specifications.

Time Since Internal (Hardware) Calibration	Number of Counts to be Added	
	6½ Digits	7½ Digits
Less than 30 Days	0	0
30 to 90 Days	1	10
90 Days to 1 Year	2	20
More than 1 Year	3	30

Temperature Coefficient: ±(% of Rdg + Counts)/°C

Range	18°C to 0°C and 28°C to 50°C	
	6½ Digits	7½ Digits
100 mV	0.0003 + 5	0.0003 + 50
1V	0.0003 + 1	0.0003 + 10
10V	0.0002 + 0.5	0.0002 + 5
100V	0.0003 + 1	0.0003 + 10
1000V	0.0003 + 0.5	0.0003 + 5

Input Bias Current

At time of Adjustment	1 Year 23°C ±1°C	Temperature Coefficient
<±5 pA	<±30 pA	<±1 pA/°C

Zero Stability: Less than 5 μV for 90 days after a four hour warm-up. Front panel pushbutton zero is provided for permanent storage of a zero correction for each range. Zero may be turned off at any time.

Normal Mode Rejection

Line Frequency	Filter Mode	4 Samples Per Reading	32 Samples Per Reading	128 Samples Per Reading
50 Hz	Fast	60 dB	70 dB	75 dB
50 Hz	Slow	85 dB	90 dB	95 dB
60 Hz	Fast	60 dB	70 dB	75 dB
60 Hz	Slow	90 dB	95 dB	100 dB

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Common Mode Rejection: 160 dB at 60 Hz with 1 kΩ in series with either lead, and 4 samples or more per reading. Greater than or equal to 100 dB with less than 4 samples per reading.

Analog Settling Time

Filter Mode	Filter Command	To 0.01% of Step Change	To 0.001% of Step Change
Bypassed	F1	2 ms	20 ms
Fast	F0 or F3	40 ms	50 ms
Slow	F or F2	400 ms	500 ms

Digitizing Time (Line Synchronous): For 2^0 to 2^{17} samples per reading the digitizing time is from 4 ms to 9 minutes 6 seconds using a 60 Hz line. Time increases 20% using 50 Hz ac line. Selectable in 18 binary steps.
Digitizing Time (Line Asynchronous): 2 ms in 3-byte binary mode with dc zero, offset, limits and calibration factors turned off
Maximum Input: ±1200V dc or 1000V rms ac to 60 Hz, or 1400V peak above 60 Hz may be applied continuously to any dc range without permanent damage. Maximum rate of voltage change is 1000V per μs.

Ratio (External DC Reference)

Voltage, resistance, or current may be measured and compared to an external dc voltage and displayed as a ratio. Option -02A or -03 is required when measuring resistance or current. The dc reference voltage (V_{xref}) is applied to terminals on the back panel and is the denominator of the ratio.

Input Resistance: >10,000 MΩ between Ext Ref HI and LO and between either Ext Ref HI or LO and Ohms Guard or Sense LO
Max. Reference Voltage: ±40V between Ext Ref HI and LO terminals providing neither terminal is greater than ±20V relative to the Sense LO or Ohms Guard terminal
Min. Reference Voltage: ≥0.0001V when comparing voltage or current, and ≥0.0001V or 1 billionth of the absolute value of resistance, whichever is greater, when comparing resistance
Maximum Ratio Display: 10^{-9} to 10^9
Source Impedance: Resistive unbalance (Ext Ref HI to LO) <4 kΩ. Total resistance to Sense LO from either Ext Ref HI or LO <20 kΩ
Overload Voltage: ±180V dc or peak ac relative to Ohms Guard or Sense LO. ±360V dc or peak ac (Ext Ref HI to LO)
Normal Mode Noise Rejection: ≥100 dB for line frequency and 2x line frequency
Common Mode Noise Rejection: ≥75 dB for dc, line frequency, and 2x line frequency

Ratio Accuracy

External Reference Voltage	Accuracy
±20V to ±40V	±(A + B + 0.001%)
±Vmin to ±20V	±(A + B + (0.02% ÷ |Vxref|))

A = 10V dc range accuracy for the appropriate period of time
B = Input signal function and range accuracy for the appropriate period of time
V_{min} = Minimum allowable external reference voltage
$|V_{xref}|$ = Absolute value of the external reference voltage

Digitizing Time: 196 ms to 9 minutes and 6s for 2^0 to 2^{17} samples per reading using 60 Hz line, increasing 20% using 50 Hz line.

AC Voltage (Thermal RMS)

All ac voltage accuracy and stability specifications for 5½-digit displays using at least 25% of full scale after a 2-hour warm-up. Except where noted, ac coupling is used to block dc. The 24-hour specifications are relative to the calibration standards used and within 1 hour of dc zero.

Input Characteristics

Range	Full Scale (5½ Digits)	Resolution 6½ Digits*	Resolution 5½ Digits	Input Impedance
100 mV	125.000 mV	—	1 μV	
300 mV	400.000 mV	—	1 μV	
1V	1.25000V	1 μV	10 μV	1 MΩ
3V	4.00000V	1 μV	10 μV	±1%
10V	12.5000V	10 μV	100 μV	shunted by
30V	40.0000V	10 μV	100 μV	<180 pF
100V	125.000V	100 μV	1 mV	
500V	600.000V	100 μV	1 mV	

**In AVG operating mode*

Settling Time

High Accuracy Mode: Sample time is 3.5 seconds, hold time is 2.5 seconds. Measurement time is 6 seconds — the sum of sample time and hold time. If the state of the instrument is unknown, two complete measurement cycles will be required to guarantee a correct reading. Use of an external trigger will allow a 6-second measurement cycle.
Enhanced Mode: The first reading requires the same time as the high accuracy mode. Subsequent readings occur every 500 milliseconds. If the input changes 0.1% the analog settling time to 90-day mid-band accuracy is 1.5 seconds.
Normal Mode: Settling time for large changes is non-linear. Zero to full scale changes require 2.0 seconds to settle to 90-day, mid-band specifications. Full scale to 10% of full scale changes require 3.0 seconds to settle to mid-band, 90-day specifications. Small changes (<1%) settle to mid-band specifications in <1.5 seconds.
Autoranging: Upranges when input is higher than full scale. Downranges when reading is less than approximately 28% of full scale.

Accuracy, High-Accuracy Mode: ±(% of Reading)

24 Hours, 23°C ±1°C

Ranges	Frequency in Hertz 10** to 40	40 to 20k	20k to 50k	50k to 100k	100k to 200k	200k to 500k	500k to 1M
100 mV	0.08	0.02*	0.04*	0.2	0.6	1.5	3.5
300 mV to 10V	0.08	0.012	0.04	0.2	0.5	1.5	3.5
30V	0.08	0.012	0.05	0.2	0.5	3.5	12
100V	0.08	0.012	0.04	0.2	1.0	3.5	—
500V	0.08	0.012	0.04	0.2	—	—	—

90 Days, 18°C to 28°C

100 mV	0.08	0.026*	0.06	0.2	0.6	1.5	3.5
300 mV to 10V	0.08	0.016	0.06	0.2	0.5	1.5	3.5
30V	0.08	0.016	0.06	0.2	0.5	3.5	12
100V	0.08	0.016	0.06	0.2	1.0	3.5	—
500V	0.08	0.016	0.06	0.2	—	—	—

>90 Days, 18°C to 28°C, per month. Add to the 90-day specification the following % of reading.

All	0.008	0.0001	0.0025	0.012	0.021	0.06	0.11

**Add 5 digits (5 μV) to the % of reading*
***With Slow filter*

Accuracy, Enhanced Mode: Add the following (% of reading + number of digits) to the accuracy specifications of the high accuracy mode —

Ranges	Time Since First Reading	
	<5 Min	>5 and <30 Min
All except 500V	0 + 0	0.003 + 4
500V	0 + 0	0.003 + 6

Accuracy, Normal Mode: Add the following % of reading to the accuracy mode specification of the high accuracy mode —

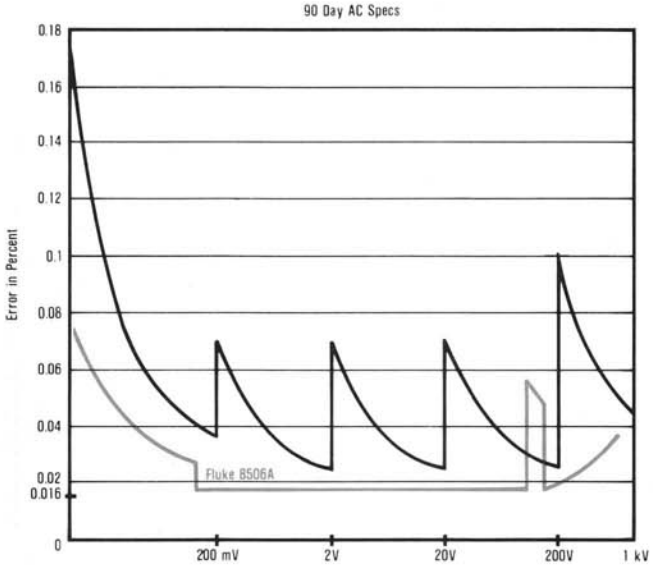
Segment of Scale	24 Hour, 90 Day	>90 Day Add per Month
0.25 x to 1 x full scale	0.4	0.044
0.1 x to 0.25 x full scale	0.6	0.055

Stability: 40 Hz to 20 kHz, <1°C Temperature Change

Range	±(% of Rdg + Counts)*	
	24 Hours	90 Days
100 mV, 1V, 10V, 100V	0.0025 + 1	0.004 + 1
300 mV, 3V, 30V	0.0025 + 3	0.004 + 4
500V	0.0025 + 5	0.004 + 6

**For 5½-digit resolution*

Crest Factor: Up to 8:1, with 90-day or greater accuracy for input signals with peaks less than two times full scale and high frequency components within the 3 dB bandwidth. Up to 4:1 for signals with peaks less than four times full scale, with the addition of 0.03 to the percent-of-reading specification.
3 dB Bandwidth (Typical): 3 MHz for the 100 mV range and 10 MHz for the 300 mV, 1V, 3V and 10V ranges
Maximum Input Voltage: ±600V dc or rms ac, 840V peak, or $1x10^7$ volt-hertz product
DC-Coupled (AC+DC) Accuracy: ±(1.1 times the appropriate ac-coupled specifications + a calculated "Adder" from the following table) —



This graph compares the total ac uncertainty of the 8506A's thermal rms converter to that of a typical computing rms converter used in other DMMs. The effects of floor error which cause large uncertainties at the beginning of each range are non-existent in the 8506A from 125 mV ac to 125V ac.

Range	Adder
100 mV to 1V	±(150 μV x (dc volts/total rms volts))
3V and 10V	±(1 mV x (dc volts/total rms volts))
30V and 100V	±(10 mV x (dc volts/total rms volts))
500V	±(50 mV x (dc volts/total rms volts))

Temperature Coefficient: One tenth of the 90-day accuracy specification per °C from 18°C to 0°C or 28°C to 50°C
Common Mode Rejection: >120 dB from dc to 60 Hz with 100Ω in series with either lead

8506A Option Specifications

Resistance Option (-02A)

All resistance accuracy and stability specifications apply after a 2-hour warm-up. The 24-hour specifications are relative to the calibration standards used.

Input Characteristics

Range	Full Scale (5½ Digits)	Resolution*		Current Through Unknown
		6½ Digits	5½ Digits	
10Ω	20.0000Ω	10 μΩ	100 μΩ	10 mA
100Ω	200.000Ω	100 μΩ		10 mA
1 kΩ	2.00000 kΩ	1 mΩ	6½	1 mA
10 kΩ	25.0000 kΩ	10 mΩ	Digits	78 μA
100 kΩ	250.000 kΩ	100 mΩ	Only	7.2 μA
1 MΩ	4.10000 MΩ	1Ω	10Ω	4.5 μA
10 MΩ	35.0000 MΩ	10Ω	100Ω	0.45 μA
100 MΩ	265.000 MΩ	100Ω	1 kΩ	56 nA

** In normal operating mode, 5½ or 6½ digits depending on range. In AVG operating mode, 6½ digits on all ranges.*

Open Circuit Voltage. 7V maximum from 10Ω through 100k range; 25V maximum from 1 MΩ range through 100 MΩ range
Maximum Input: ±400V dc or peak ac, continuous on any range with no damage
Analog Settling Time: 80 ms with Fast filter or 800 ms with Slow filter, to rated accuracy
Digitizing Time: Depending on sample rate and filter selection the digitizing time will vary from 145 ms to 9 minutes 6 seconds using a 60 Hz ac line. Time increases 20% using a 50 Hz line.

Accuracy, 5½ Digits: ±(% of Rdg + Counts)**

Range	24 Hours 23°C ±1°C	Long Term, 18°C to 28°C		Plus Temp Coefficient Per °C*
		Up to 90 Days	>90 Days Add to % of Rdg	
10Ω	0.003+20	0.005+20	0.00056	0.0008+1.5
100Ω	0.002+1.4	0.003+1.4	0.00033	0.0007+0.2
1 kΩ	0.002+0.8	0.003+0.8	0.00033	0.0007+0.2
10 kΩ	0.002+0.8	0.003+0.8	0.00033	0.0007+0.2
100 kΩ	0.002+0.8	0.003+0.8	0.00033	0.0007+0.5
1 MΩ	0.002+0.8	0.003+0.8	0.00033	0.001+0.5
10 MΩ	0.0075+0.8	0.02+0.8	0.0022	0.005+0.5
100 MΩ	0.026+0.8	0.05+1	0.0056	0.02+0.5

**From 18° C to 0°C or 28° C to 50° C*
***For 6½-digit display, multiply number of counts by 10*

Measurement Configuration: Two-wire and four-wire available on all ranges
Four-Wire Lead Resistance: Source leads should not exceed 10Ω for the 10Ω and 100Ω ranges, 100Ω for the 1 kΩ range, or 1 kΩ for the 10 kΩ or higher ranges

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DC Current Option (-03)

All current accuracy and stability specifications apply after a 2-hour warm-up. The 24-hour specifications are relative to the calibration standards used. No ac current option is available for the 8506A.

Input Characteristics

Range	Full Scale (5½ Digits)	Resolution		Voltage Burden
		6½* Digits	5½ Digits	
100 μA	250.000 μA	0.1 nA	1 nA	≤100 mV
1 mA	2.00000 mA	1 nA	10 nA	≤100 mV
10 mA	16.0000 mA	10 nA	100 nA	≤200 mV
100 mA	128.000 mA	100 nA	1 μA	≤200 mV
1A	1.28000A	1 μA	10 μA	≤500 mV

**In AVG operating mode*

Accuracy, 5½ Digits: ±(% of Rdg + Counts)**

Range	24 Hours 23°C ±1°C	Long Term, 18°C to 28°C		Plus Temp Coefficient Per °C*
		Up to 90 Days	>90 Days Add to % of Rdg	
100 μA	0.02+10	0.03+10	0.0022	0.0025+0.6
1 μA	0.02+10	0.03+10	0.0022	0.0025+0.6
10 mA	0.02+10	0.03+10	0.0022	0.0025+0.6
100 μA	0.03+20	0.05+20	0.0056	0.0035+0.6
1A	0.03+20	0.05+20	0.0056	0.0035+0.6

**From 18°C to 0°C or 28°C to 50°C*
***For 6½-digit display, multiply number of counts by 10*

Overload: 1.5A maximum, ±140V dc or peak ac to 60 Hz, or 200V peak ac above 60 Hz on any range with no damage. Protected by a 1.5A fuse.
Settling and Digitizing Time: Same as for dc volts

IEEE-488 Interface Option (-05)

This interface incorporates the following subset of the IEEE Standard 488-1978; SH1, AH1, T5, L4, SR1, RL2, DC1, DT1, and E1. The interface allows full control of all instrument functions and the transfer of ASCII or binary data. In the binary mode the instrument is capable of 500 readings per second.

RS-232 Interface Option (-06)

This interface is a bit serial asynchronous interface providing either voltage or 20 mA current loop level signals. The interface allows selection of baud rate from 50 to 9600, either one or two stop bits, and odd or even parity. Up to 40 ASCII character readings per second are possible with Option -06.

Bit-Parallel Interface Options (-07A,-07B,-07D,-07H,-07L)

Permit you to connect the instrument to a large variety of minicomputer and microcomputer interfaces. This is accomplished via a plug-in header called a "personality card" that you may wire to your system or that may be supplied in standard versions by Fluke. Personality cards are available for three DEC PDP 11 interfaces (DRIIC, DRVII and PC11) and for two HP interfaces (HP 12566 and HP 98032A). The interface permits either 8- or 16-bit parallel ASCII transfers or 8- or 16-bit parallel binary transfers. In the binary mode the instrument is capable of up to 500 readings per second.

8505A Specifications

DC Voltage

Same specifications as for 8506A

Ratio (External DC Reference)

Same specifications as for 8506A for dc ratio. AC/AC ratio available upon special request

8505A Option Specifications

True-RMS AC Voltage Option (-09A)

All true-rms ac voltage accuracy and stability specifications apply to readings between 0.1% of range to full scale after a 2-hour warm-up. Options -09A and -01 may not be installed at the same time.

Accuracy: ±(% of Rdg + % of Full Scale)*

Frequency	90 Days, 18°C to 28°C		
	% of Rdg	% Full Scale	
		(AC)	(AC + DC)
DC	0.1	—	0.03
10 Hz to 20 Hz	1.0	0.04	0.06
20 Hz to 50 Hz	0.5	0.012	0.03
50 Hz to 10 kHz	0.1	0.012	0.03
10 kHz to 30 kHz	0.2	0.04	0.06
30 kHz to 50 kHz	0.3	0.1	0.12
50 kHz to 100 kHz	1.0	0.3	0.3
100 kHz to 300 kHz	2.0	0.5	0.5
300 kHz to 1 MHz	3.3	1.8	1.8

** Slow filter must be used below 400 Hz. For inputs greater than 500V multiply the accuracy specification by: (2000 + reading) ÷ 2000*

Common Mode Rejection: >120 dB, dc to 60 Hz, with 100Ω unbalance in either lead
Crest Factor: >7 at full scale, increasing down scale by

$$7x \sqrt{V_{Range} \div V_{Reading}}$$

Voltage & Frequency Limits: $1x10^7$ volt-hertz product for the 1V and 10V ranges and $2x10^7$ for the 100V and 1000V ranges
Analog Settling Time: 100 ms with Fast filter and 500 ms with Slow filter to within 0.1% of a step change within a range
Digitizing Time: Same as for dc voltages. See 8506A specifications

Average-Sensing AC Voltage Option (-01)

All average-sensing ac voltage accuracy and stability specifications apply to a 5½-digit display with readings between 0.1% of range to full scale after a 2-hour warm-up. Option -01 and -09A may not be installed at the same time.

Input Characteristics

Range	Full Scale (5½ Digits)	Resolution		Input Impedance
		6½ Digits*	5½ Digits	
1V	2.50000	1 μV	10 μV	1 MΩ shunted by <100 pF
10V	20.0000	10 μV	100 μV	
100V	160.000	100 μV	1 mV	
1000V	1000.00	1 mV	10 mV	

**In AVG operating mode*

Accuracy: ±(% of Rdg + Counts)*

Frequency	90 Days, 18°C to 28°C	
	0 to 500V**	Above 500V
30 Hz to 50 Hz	0.5 + 5	0.55 + 5
50 Hz to 10 kHz	0.05 + 5	0.1 + 5
10 kHz to 40 kHz	0.1 + 5	0.15 + 5
10 kHz to 50 kHz**	0.1 + 5	—
50 kHz to 100 kHz**	0.5 + 5	—

** Slow filter must be used below 400 Hz. For 6½-digit display, multiply number of counts by 10*
*** On 1-volt range add 7 counts above 10 kHz or 35 counts above 50 kHz*

Common Mode Rejection: >120 dB, dc to 60 Hz with 100Ω imbalance in either lead
Voltage and Frequency Limits: 1000V rms (1400V peak) or $2x10^7$ volt-hertz product, whichever is less
Analog Settling Time: 100 ms with Fast filter and 500 ms with Slow filter, to within 0.05% of step change within a range
Digitizing Time: Same as for dc voltages. See 8506A specifications