Multímetros digitales Serie 80V

FLUKE®

Fluke 87V

Fluke 83V

Nuevo

Garantía para Toda la Vida

83V/87V

CAT III 1000V
CAT IV 600V

En todas las entradas

Fluke 87V Ex

Verdadero valor eficaz

no para 87V Ex

Rendimiento y precisión para una mayor eficacia

La Serie 80V de multímetros Fluke ha mejorado las funciones de medida, características, resolución y precisión de su antecesora Serie 80. Estos nuevos multímetros son excelentes instrumentos para afrontar con éxito los problemas típicos en motores, sistemas automatizados, sistemas de distribución eléctrica y las medidas habituales en equipamiento y maquinaria industrial. El 87V de Fluke integra una nueva tecnología que le permite realizar medidas precisas de tensión y frecuencia en variadores de velocidad y en otros equipos con gran cantidad de ruido eléctrico. Además, lleva integrado un termómetro que permite realizar medidas básicas de temperatura sin necesidad de instrumentos adicionales. Para obtener información sobre el 87V EX consulte también las páginas 73 y 74.

Características

	83V	87V / 87V Ex
Medidas de Verdadero Valor Eficaz en tensión y corriente		●
Ancho de banda (tensión/corriente)	5 kHz	20 kHz
Resolución digital (predeterminada/seleccionable)	6000	20000 / 6000
Filtro seleccionable para medidas precisas de frecuencia y tensión en variadores de velocidad		●
Pantalla grande con barra gráfica analógica y retroiluminación de dos niveles	●	●
Selección manual y automática de rangos	●	●
Termómetro incorporado		●
Captura de picos de hasta 250 µs		●
Modo relativo para compensar la resistencia de las puntas de prueba	●	●
Registro de valores mínimos, máximos y promedio con alarma de mínimos y máximos	●	●
AutoHold® para captura automática de medidas en pantalla	●	●
Comprobación de continuidad con señal acústica, comprobación de diodos y ciclo de trabajo	●	●
Alarma de conexión de entrada incorrecta	●	●
Diseño "clásico" con nueva funda extraíble y compartimento trasero para almacenamiento de puntas y cables de prueba	●	●
Modo "en espera" seleccionable mejorado para alargar la vida útil de las baterías	●	●
Fácil cambio de baterías y fusibles sin necesidad de abrir todo el aiento	●	●
Categoría ATEX Ⓔx II 2 G Eex ia IIC		87V Ex

Especificaciones

(visite la página Web de Fluke para obtener especificaciones detalladas)

Funciones	Rango máximo	83V		87V/87V Ex*	
		Máx. resolución	Precisión	Máx. resolución	Precisión
Tensión CC	1.000 V	0,1 mV	±(0,1+1%)	10 µV	±(0,05%+1)
Tensión CA	1.000 V	0,1 mV	±(0,5%+2)	10 µV	±(0,7%+2)
Corriente CC	10 A **	0,1 µA	±(0,4%+2)	0,01 µA	±(0,2%+2)
Corriente CA	10 A **	0,1 µA	±(1,2%+2)	0,01 µA	±(1,0%+2)
Resistencia	50 MΩ	0,1 Ω	±(0,4%+1)	0,01 Ω	±(0,2%+1)
Conductancia	60 nS	0,01 nS	±(1,0%+10)	0,001 nS	±(1,0%+10)
Capacidad	9.999 µF	0,01 nF	±(1,0%+2)	0,01 nF	±(1,0%+2)
Frecuencia	> 200 kHz	0,01 Hz	±(0,005%+1)	0,01 Hz	±(0,005%+1)
Temperatura	-200 a 1090 °C	-		0,1 °C	1,0%
Sonda de temperatura 80BK	- 40 a 260 °C	-		-	2,2 °C ó 2%

La precisión considerada es la mejor para cada función.
* La precisión del modelo 87V está definida para 6.000 cuentas y la resolución para 20.000 cuentas
** 20 A hasta un maximo de 30 segundos

Vida útil de la batería: típicamente más de 400 horas (alcalina).
Tamaño (LxAxF): 200 mm x 95 mm x 48 mm

Peso: 0,6 kg
83V / 87 V: Garantía para toda la vida
87VEx: Garantía de 1 año

Accesorios incluidos

Puntas de prueba TL75, pinzas de cocodrilo AC72, carcasa amarilla (H80M no incluye TPAK), sonda de temperatura 80BK (sólo 87V), batería de 9 V (instalada), CD-ROM (manual de usuario y notas técnicas) y guía de uso.

Información para pedidos

Fluke 83V	Multímetro
Fluke 87V	Multímetro de verdadero valor eficaz
Fluke 87V Ex	Multímetro de verdadero valor eficaz con seguridad intrínseca
Fluke 87V/E	Kit combinado para técnicos electricistas en la industria Consulte la página 13

Accesorios recomendados

(no apto para zonas peligrosas)

C90
Consulte la página 84

TL238
Consulte la página 76

i410/i1010
Consulte la página 81

TPAK
Consulte la página 86

L215
Consulte la página 77

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Fluke 83V and 87V True-rms Digital Multimeters

Detailed Specifications

For all detailed specifications:

Accuracy is given as ±([% of reading] + [number of least significant digits]) at 18 °C to 28 °C, with relative humidity up to 90 %, for a period of one year after calibration.

For Model 87 in the 4½-digit mode, multiply the number of least significant digits (counts) by 10. AC conversions are ac-coupled and valid from 3 % to 100 % of range. Model 87 is true-rms responding. AC crest factor can be up to 3 at full scale, 6 at half scale. For non-sinusoidal wave forms add -(2 % Rdg + 2 % full scale) typical, for a crest factor up to 3.

Fluke 87V ac voltage function specifications (true-rms)

Function	Range	Resolution	Accuracy					
			45 - 65 Hz	30 - 200 Hz	200 - 440 Hz	440 Hz - 1 kHz	1 - 5 kHz	5 - 20 kHz[1]
$\tilde{V}$ [2,4]	600.0 mV 6.000 V 60.00 V 600.0 V	0.1 mV 0.001 V 0.01 V 0.1 V	± (0.7 % + 4) ± (0.7 % + 2)	± (1.0 % + 4)			± (2.0 % + 4) ± (2.0 % + 4)[3]	± (2.0 % + 20) unspecified
	1000 V	1 V					unspecified	unspecified
	Using low pass filter		± (0.7 % + 2)	± (1.0 % + 4)	+ 1 % + 4 -6 % - 4[5]	unspecified	unspecified	unspecified

[1] Below 10 % of range, add 6 counts.
[2] The Fluke 87V is a true-rms responding meter. When the input leads are shorted together in the ac functions, the meter may display a residual reading between 1 and 30 counts. A 30-count residual reading will cause only a 2-digit change for readings over 3 % of range. Using REL to offset this reading may produce a much larger constant error in later measurements.
[3] Frequency range: 1 kHz to 2.5 kHz.
[4] A residual reading of up to 13 digits with leads shorted, will not affect stated accuracy above 3 % of range.
[5] Specification increases from -1 % at 200 Hz to -6 % at 440 Hz when filter is in use.

Fluke 83V ac voltage function specifications (average responding rms indicating)

Function	Range	Resolution	Accuracy		
			50 Hz - 60 Hz	30 Hz - 1 kHz	1 kHz - 5 kHz
$\tilde{V}$ [1]	600.0 mV	0.1 mV	± (0.5 % + 4)	± (1.0 % + 4)	± (2.0 % + 4)
	6.000 V	0.001 V	± (0.5 % + 2)	± (1.0 % + 4)	± (2.0 % + 4)
	60.00 V	0.01 V	± (0.5 % + 2)	± (1.0 % + 4)	± (2.0 % + 4)
	600.0 V	0.1 V	± (0.5 % + 2)	± (1.0 % + 4)	± (2.0 % + 4)[2]
	1000 V	1 V	± (0.5 % + 2)	± (1.0 % + 4)	unspecified

[1] Below a reading of 200 counts, add 10 counts
[2] Frequency range: 1 kHz to 2.5 kHz

Fluke 83V and 87V Detailed Specifications cont.

DC voltage, resistance, and conductance function specifications

Function	Range	Resolution	Accuracy	
			Fluke 83V	Fluke 87V
V⎓	6.000 V	0.001 V	± (0.1 % + 1)	± (0.05 % + 1)
	60.00 V	0.01 V	± (0.1 % + 1)	± (0.05 % + 1)
	600.0 V	0.1 V	± (0.1 % + 1)	± (0.05 % + 1)
	1000 V	1 V	± (0.1 % + 1)	± (0.05 % + 1)
mV⎓	600.0 mV	0.1 mV	± (0.3 % + 1)	± (0.1 % + 1)
Ω	600.0 Ω	0.1 Ω	± (0.4 % + 2)[1]	± (0.2 % + 2)[1]
	6.000 kΩ	0.001 kΩ	± (0.4 % + 1)	± (0.2 % + 1)
	60.00 kΩ	0.01 kΩ	± (0.4 % + 1)	± (0.2 % + 1)
	600.0 kΩ	0.1 kΩ	± (0.7 % + 1)	± (0.6 % + 1)
	6.000 MΩ	0.001 MΩ	± (0.7 % + 1)	± (0.6 % + 1)
	50.00 MΩ	0.01 MΩ	± (1.0 % + 3)[2]	± (1.0 % + 3)[2]
nS	60.00 nS	0.01 nS	± (1.0 % + 10)[1]	± (1.0 % + 10)[1]

[1] When using the REL Δ function to compensate for offsets
[2] Add 0.5 % of reading when measuring above 30 MΩ in the 50 MΩ range and 20 counts below 33 nS in the 60 nS range

Temperature specifications (87V only)

Temperature	Resolution	Accuracy[1, 2]
–200 °C to +1090 °C	0.1 °C	1 % + 10
–328 °F to +1994 °F	0.1 °F	1 % + 18

[1] Does not include error of the thermocouple probe.
[2] Accuracy specification assumes ambient temperature stable to ± 1 °C. For ambient temperature changes of ± 5 °C, rated accuracy applies after 1 hour.

Current function specifications

Function	Range	Resolution	Accuracy		Burden Voltage (typical)
			Model 83[1]	Model 87[2, 3]	
mA	60.00 mA	0.01 mA	± (1.2 % + 2)[5]	± (1.0 % + 2)	1.8 mV/mA
A~	400.0 mA[6]	0.1 mA	± (1.2 % + 2)[5]	± (1.0 % + 2)	1.8 mV/mA
	6.000 A	0.001 A	± (1.2 % + 2)[5]	± (1.0 % + 2)	0.03 V/A
(45 Hz to 2 kHz)	10.00 A[4]	0.01 A	± (1.2 % + 2)[5]	± (1.0 % + 2)	0.03 V/A
mA	60.00 mA	0.01 mA	± (0.4 % + 4)	± (0.2 % + 4)	1.8 mV/mA
A⎓	400.0 mA[6]	0.1 mA	± (0.4 % + 2)	± (0.2 % + 2)	1.8 mV/mA
	6.000 A	0.001 A	± (0.4 % + 4)	± (0.2 % + 4)	0.03 V/A
	10.00 A[4]	0.01 A	± (0.4 % + 2)	± (0.2 % + 2)	0.03 V/A
µA~	600.0 µA	0.1 µA	± (1.2 % + 2)[5]	± (1.0 % + 2)	100 µV/µA
	6000 µA	1 µA	± (1.2 % + 2)[5]	± (1.0 % + 2)	100 µV/µA
(45 Hz to 2 kHz)					
µA⎓	600.0 µA	0.1 µA	± (0.4 % + 4)	± (0.2 % + 4)	100 µV/µA
	6000 µA	1 µA	± (0.4 % + 2)	± (0.2 % + 2)	100 µV/µA

[1] AC conversion for Model 83 is ac coupled and calibrated to the rms value of a sine wave input.
[2] AC conversions for Model 87 are ac coupled, true rms responding, and valid from 3 % to 100 % of range.
[3] Model 87 is a true rms responding meter. When the input leads are shorted together in the ac functions, the Meter may display a residual reading between 1 and 30 counts. A 30 count residual reading will cause only a 2 digit change for readings over 3 % of range. Using REL to offset this reading may produce a much larger constant error in later measurements.
[4] ⚠ 10 A continuous up to 35 °C; < 20 minutes on, 5 minutes off at 35 °C to 55 °C. 20 A for 30 seconds maximum; > 10 A unspecified.
[5] Below a reading of 200 counts, add 10 counts.
[6] 400 mA continuous; 600 mA for 18 hours maximum.

Capacitance and diode function specifications

Function	Range	Resolution	Accuracy
⊣⊢	10.00 nF	0.01 nF	± (1 % + 2)[1]
	100.0 nF	0. 1 nF	± (1 % + 2)[1]
	1.000 µF	0.001 µF	± (1 % + 2)
	10.00 µF	0.01 µF	± (1 % + 2)
	100.0 µF	0.1 µF	± (1 % + 2)
	9999 µF	1 µF	± (1 % + 2)
⊣▶⊢	3.000 V	0.001 V	± (2 % + 1)

[1] With a film capacitor or better, using Relative mode to zero residual.

Frequency counter specifications

Function	Range	Resolution	Accuracy
Frequency (0.5 Hz to 200 kHz, pulse width > 2 µs)	199.99 1999.9 19.999 kHz 199.99 kHz > 200 kHz	0.01 Hz 0.1 Hz 0.001 kHz 0.01 kHz 0.1 kHz	± (0.005 % + 1) ± (0.005 % + 1) ± (0.005 % + 1) ± (0.005 % + 1) unspecified

Frequency counter sensitivity and trigger levels

Input Range[1]	Minimum Sensitivity (RMS Sine wave)		Approximate Trigger Level (DC Voltage Function)
	5 Hz - 20 kHz	0.5 Hz - 200 kHz	
600 mV dc	70 mV (to 400 Hz)	70 mV (to 400 Hz)	40 mV
600 mV ac	150 mV	150 mV	–
6 V	0.3 V	0.7 V	1.7 V
60 V	3 V	7 V (≤ 140 kHz)	4 V
600 V	30 V	70 V (≤ 14.0 kHz)	40 V
1000 V	100 V	700 V (≤ 1.4 kHz)	100 V
Duty Cycle Range	**Accuracy**		
0.0 to 99.9 %	Within ± (0.2 % per kHz + 0.1 %) for risetimes < 1 µs		

[1] Maximum input for specified accuracy = 10X Range or 1000 V.

Electrical characteristics of the terminals

Function	Overload Protection[1]	Input Impedance (nominal)	Common Mode Rejection Ratio (1 kΩ unbalance)		Normal Mode Rejection					
$\overline{\tilde{V}}$	1000 V rms	10 MΩΩ < 100 pF	> 120 dB at dc, 50 Hz or 60 Hz		> 60 dB at 50 Hz or 60 Hz					
$\overline{\tilde{mV}}$	1000 V rms	10 MΩΩ < 100 pF	>120 dB at dc, 50 Hz or 60 Hz		> 60 dB at 50 Hz or 60 Hz					
$\tilde{V}$	1000 V rms	10 MΩΩ < 100 pF (ac-coupled)	> 60 dB, dc to 60 Hz							
		Open Circuit Test Voltage	Full Scale Voltage		Typical Short Circuit Current					
			To 6.0 MΩ	50 MΩ or 60 nS	600 Ω	6 k	60 k	600 k	6 MΩ	50 MΩ
Ω	1000 V rms	< 7.3 V dc	< 4.1 V dc	< 4.5 V dc	1 mA	100 µA	10 µA	1µA	1 µA	0.5 µA
→|←	1000 V rms	< 3.9 V dc	3.000 V dc		0.6 mA typical					

[1] 10^6 V Hz maximum

MIN MAX recording specifications

Model	Nominal Response	Accuracy
83V	100 ms to 80 %	Specified accuracy ± 12 counts for changes > 200 ms in duration (± 40 counts in ac with beeper on)
87V	100 ms to 80 % (dc functions)	Specified accuracy ± 12 counts for changes > 200 ms in duration > 25 % of range
	120 ms to 80 % (ac functions)	Specified accuracy ± 40 counts for changes > 350 ms and inputs
	250 µs (peak) (Model 87 only)[1]	Specified accuracy ± 100 counts for changes > 250 µs in duration (add ± 100 counts for readings over 6000 counts) (add ± 100 counts for readings in Low Pass mode)

[1] For repetitive peaks: 1 ms for single events.

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Fluke 83V and 87V General Specifications

Maximum voltage between any terminal and earth ground: 1000 V rms
Fuse protection for mA or µA inputs: 44/100 A, 1000 V FAST Fuse
Fuse protection for A input: 11 A, 1000 V FAST Fuse
Display:
Digital: 6000 counts updates 4/sec; (Model 87V also has 19,999 counts in high-resolution mode)
Analog: 33 segments, updates 40/sec.
Frequency: 19,999 counts, updates 3/sec at > 10 Hz
Temperature: Operating: -20 °C to +55 °C; Storage: -40 °C to +60 °C
Altitude:
Operating: 2000 m
Storage: 10,000 m
Temperature coefficient: 0.05 x (specified accuracy)/ °C (< 18 °C or > 28 °C)
Electromagnetic compatibility: In an RF field of 3 V/m total accuracy = specified accuracy
Relative humidity: 0 % to 90 % (0 °C to 35 °C); 0 % to 7 0% (35 °C to 55 °C)
Battery type: 9 V zinc, NEDA 1604 or 6F22 or 006P
Battery life: 400 hours typical with alkaline (with backlight off)
Vibration: Per MIL-PRF-28800 for a Class 2 instrument
Shock: 1 Meter drop per IEC 61010-1:2001
Size (HxWxL): 1.25 in x 3.41 in x 7.35 in (3.1 cm x 8.6 cm x 18.6 cm)
Size with holster and flex-stand: 2.06 in x 3.86 in x 7.93 in (5.2 cm x 9.8 cm x 20.1 cm)
Weight: 12.5 oz (355 g)
Weight with holster and flex-stand: 22.0 oz (624 g)
Safety: Complies with ANSI/ISA S82.01-2004, CSA 22.2 No. 1010.1:2004 to 1000 V Overvoltage Category III, IEC 664 to 600 V Overvoltage Category IV. UL listed to UL3111-1. Licensed by TÜV to EN61010-1.

Fluke. *Keeping your world up and running.*

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