Table 1-1. Specifications, Models 83 and 85

FUNCTION	RANGE	RESOLUTION	ACCURACY[1]*			
$\tilde{V}$			50 Hz to 60 Hz	45 Hz to 1 kHz	1 KHz - 5 kHZ	
(Fluke 83)	400.0 mV	0.1 mV	±(1.0% + 4)	±(1.5% + 4)	±(2.0% + 4)	
	4.000V	0.001V	±(1.0% + 3)	±(1.5% + 3)	±(2.0% + 3)	
	40.00V	0.01V	±(1.0% + 3)	±(1.5% + 3)	±(2.0% + 3)	
	400.0V	0.1V	±(1.0% + 3)	±(1.5% + 3)	±(2.0% + 3)	
	1000V	1V	±(1.0% + 3)	±(2.5% + 3)	±(2.5% + 3)	
$\tilde{V}$			50 Hz to 60 Hz	45 Hz to 1 kHz	1 kHz - 5 kHz	5 kHz to 20 kHz
(Fluke 85)	400.0 mV	0.1 mV	±(0.5% + 4)	±(1.0% + 4)	±(2.0% + 4)	±(3.0% + 4)
	4.000V	0.001V	±(0.5% + 2)	±(1.0% + 2)	±(2.0% + 2)	±4.0% + 4)
	40.00V	0.01V	±(0.5% + 2)	±(1.0% + 2)	±(2.0% + 2)	±(4.0% + 4)
	400.0V	0.1V	±(0.5% + 2)	±(1.0% + 2)	±(2.0% + 2)	±(4.0% + 4)
	1000V	1V	±(0.5% + 2)	±(2.0% + 2)	±(2.0% + 2)	unspecified
$\overline{\overline{V}}$			Fluke 83		Fluke 85	
	4.000V	0.001V	±(0.3% + 1)		±(0.1% + 1)	
	40.00V	0.01V	±(0.3% + 1)		±(0.1% + 1)	
	400.0V	0.1V	±(0.3% + 1)		±(0.1% + 1)	
	1000V	1V	±(0.3% + 1)		±(0.1% + 1)	
$\overline{\overline{mV}}$	400.0 mV	0.1 mV	±(0.3% + 1)		±(0.1% + 1)	
Ω	400.0Ω	0.1Ω	±(0.4% + 1)		±(0.2% + 1)	
	4.000 kΩ	0.001 kΩ	±(0.4% + 1)		±(0.2% + 1)	
	40.00 kΩ	0.01 kΩ	±(0.4% + 1)		±(0.2% + 1)	
	400.0 kΩ	0.1 kΩ	±(0.4% + 1)		±(0.2% + 1)	
	4.000 MΩ	0.001 MΩ	±(0.4% + 1)		±(0.2% + 1)	
	40.00 MΩ	0.01 MΩ	±(1% + 3)		±(1% + 3)	
(nS)	40.00 nS	0.01 nS	±(1% +10)		±(1% + 10)	

TYPICAL OHMS SHORT CIRCUIT CURRENT

Range	400	4k	40k	400k	4M	40M
Current	700 µA	170 µA	20 µA	2 µA	.2 µA	.2 µA

1 *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. AC conversions are ac-coupled, average responding, and calibrated to the rms value of a sine wave input.*

** Below a reading of 200 counts, add 10 digits.*

Table 1-1. Specifications, Models 83 and 85 (cont)

FUNCTION	RANGE	RESOLUTION	ACCURACY[2]
Capacitance	5.00 nF	0.01 nF	±(1% + 3)
	0.0500 μF	0.0001 μF	±(1% + 3)
	0.500 μF	0.001 μF	±(1% + 3)
	5.00 μF	0.01 μF	±(1% + 3)
Diode Test	3.000V	0.001V	±(2% + 1)

FUNCTION	RANGE	RESOLUTION	ACCURACY		BURDEN VOLTAGE TYPICAL
			Fluke 83	Fluke 85	
mA A ~ (45 Hz to 2 kHz)	40.00 mA	0.01 mA	±(1.2% + 2)*	±(0.6% + 2)*	1.6 mV/mA
	400.0 mA	0.1 mA	±(1.2% + 2)*	±(0.6% + 2)*	1.6 mV/mA
	4000 mA	1 mA	±(1.2% + 2)*	±(0.6% + 2)*	0.03 V/A
	10.00A[3]	0.01A	±(1.2% + 2)*	±(0.6% + 2)*	0.03 V/A
mA A ⎓	40.00 mA	0.01 mA	±(0.4% + 2)	±(0.2% + 2)	1.6 mV/mA
	400.0 mA	0.1 mA	±(0.4% + 2)	±(0.2% + 2)	1.6 mV/mA
	4000 mA	1 mA	±(0.4% + 2)	±(0.2% + 2)	0.03 V/A
	10.00A[3]	0.01A	±(0.4% + 2)	±(0.2% + 2)	0.03 V/A
μA ~ (45 Hz to 2 kHz)	400.0 μA	0.1 μA	±(1.2% + 2)*	±(0.6% + 2)*	100 μV/μA
	4000 μA	1 μA	±(1.2% + 2)*	±(0.6% + 2)*	100 μV/μA
μA ⎓	400.0 μA	0.1 μA	±(0.4% + 3)	±(0.2% + 3)	100 μV/μA
	4000 μA	1 μA	±(0.4% + 2)	±(0.2% + 2)	100 μV/μA

FUNCTION	RANGE	RESOLUTION	ACCURACY
Frequency (0.5 Hz to 200 kHz, pulse width >2 μs)	199.99	0.01 Hz	±(0.005% + 1)
	1999.9	0.1 Hz	±(0.005% + 1)
	19.999 kHz	0.001 kHz	±(0.005% + 1)
	199.99 kHz	0.01 kHz	±(0.005% + 1)
	>200 kHz	0.1 kHz	Unspecified

2 With film capacitor or better using Relative mode to zero residual

3 10A continuous, 20A for 30 seconds maximum

Table 1-1. Specifications, Models 83 and 85 (cont)

FREQUENCY COUNTER SENSITIVITY AND TRIGGER LEVEL			
INPUT RANGE	**MINIMUM SENSITIVITY (RMS SINEWAVE)**		**APPROXIMATE TRIGGER LEVEL (DC VOLTAGE FUNCTION)**
(Maximum input for specified accuracy = 10X Range or 1000V)	**5 Hz-20 kHz**	**0.5 Hz-200 kHz**	
400 mV dc	70 mV (to 400 Hz)	70 mV (to 400 Hz)	40 mV
400 mV ac	150 mV	150 mV	—
4V	0.3V	0.7V	1.7V
40V	3V	7V	4V
400V	30V	70V (≤140 kHz)	40V
1000V	300V	700V (≤14 kHz)	400V

Duty Cycle 0.1 to 99.9% (0.5 Hz to 200 kHz, pulse width >2 μs)

Accuracy: Within ±(0.05% per kHz + 0.1%) of full scale for a 5V logic family input on the 4V dc range.

Within ± ((0.06 x Voltage Range/Input Voltage) X 100%) of full scale for sine wave inputs on ac voltage ranges.

FUNCTION	OVERLOAD PROTECTION[5]	INPUT IMPEDANCE (nominal)	COMMON MODE REJECTION RATIO (1 kΩ unbalance)	NORMAL MODE REJECTION RATIO
$\overline{\overline{V}}$	1000V rms	10 MΩ<100 pF	>120 dB at dc, 50 Hz or 60 Hz	>60 dB at 50 Hz or 60 Hz
$\overline{\overline{mV}}$	1000V rms	10 MΩ<100 pF	>120 dB at dc, 50 Hz or 60 Hz	>60 dB at 50 Hz or 60 Hz
$\tilde{V}$	1000V rms	10 MΩ<100 pF (ac-coupled)	>60 dB, dc to 60 Hz	

Ω		OPEN CIRCUIT TEST VOLTAGE	FULL SCALE VOLTAGE		SHORT CIRCUIT CURRENT
			To 4.0 MΩ	40 MΩ or nS	
	1000V rms[6]	<1.3V dc	<450 mV dc	<1.3V dc	<500 μA
Diode Test	1000V rms[6]	<3.9V dc	3.000V dc		1.0 mA typical

5 *10^7 V Hz max*

6 *For circuits < 0.3A short circuit, 660V for high energy circuits.*

Table 1-1. Specifications, Models 83 and 85 (cont)

	NOMINAL RESPONSE	ACCURACY (5% to 100% of range)
MIN MAX Recording	100 ms to 80%	Specified accuracy ±12 digits for changes >200 ms in duration (±40 digits in AC with beeper on)
	1 s	Same as specified accuracy for changes >2 seconds in duration (±40 digits in AC with beeper on)

FUSE PROTECTION	
mA or μA	1A 600V FAST Fuse
A	15A 600V FAST Fuse

MAXIMUM VOLTAGE BETWEEN ANY TERMINAL AND EARTH GROUND
1000 Volts

Display	Digital: 4000 counts, updates 4/sec Analog: 43 segments, updates 40/sec Frequency: 19,999 counts, updates 3/sec @ > 10 Hz
Operating Temperature	-20°C to 55°C
Storage Temperature	-40°C to 60°C
Temperature Coefficient	0.05 x (specified accuracy)/°C (<18°C or >28°C)
Electromagnetic Compatibility	In an RF field of 1 V/m on all ranges and functions: Total Accuracy = Specified Accuracy + 0.5% of range. Performance above 1 V/m is not specified.
Relative Humidity	0% to 90% (0°C to 35°C) 0% to 70% (35°C to 55°C)
Battery Type	9V, NEDA 1604 or 6F22 or 006P
Battery Life	500 hrs typical with alkaline
Shock, Vibration	Per MIL-T-28800 for a Class 2 Instrument
Size (HxWxL)	1.25 in x 3.41 in x 7.35 in (3.1 cm x 8.6 cm x 18.6 cm)
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 (355g)
With Holster and Flex-Stand:	22.0 oz (624g)
Safety	Designed to Protection Class II per IEC 348, ISA-DS82, and UL1244