

## PROVA 23

### Power Harmonics and Leakage Tester

Electrical Specifications: (23°C±5°C)



#### AC Watt

(50 or 60 Hz, PF 0.6~1, CT=1, Voltage is greater than AC 4V, Current is greater than AC 1mA for mA range, and Current is greater than AC 0.04A for A range. Specification applies to continuous waveforms)

Range (0 to 60A)	Resolution	Accuracy of Readings
0.050 – 9.999 W	0.001W	±2% ± 0.025W
10.00 – 99.99 W	0.01W	±2% ± 0.25W
100.0 - 999.9 W	0.1W	±2% ± 2.5W
1.000 – 9.999 KW	0.001 KW	±2% ± 0.025KW
10.00 – 99.99 KW	0.01 KW	±2% ± 0.25KW
100.0 – 999.9 KW	0.1 KW	±2% ± 2.5KW
1000 – 9999 KW	1 KW	±2% ± 25KW

Range (60 – 100A)	Resolution	Accuracy
0.050 – 9.999 W	0.001W	±2% of VA ± 5dgts
10.00 – 99.99 W	0.01W	±2% of VA ± 5dgts
100.0 - 999.9 W	0.1W	±2% of VA ± 5dgts
1.000 – 9.999 KW	0.001 KW	±2% of VA ± 5dgts
10.00 – 99.99 KW	0.01 KW	±2% of VA ± 5dgts
100.0 – 999.9 KW	0.1 KW	±2% of VA ± 5dgts
1000 – 9999 KW	1 KW	±2% of VA ± 5dgts

#### AC Voltage

(Auto Range, True RMS, Crest Factor<4, Input Impedance 10 MΩ, Max. peak value 860VDC, and Overload Protection AC 800V)

Range	Resolution	Accuracy of Readings (50/60Hz)
5V – 250 V	0.1 V	±0.5% ± 5dgts
250 V – 600 V	0.1 V	±0.5% ± 5dgts

Range	Resolution	Accuracy of Readings (45-1KHz)
5V – 250 V	0.1 V	±1.5% ± 5dgts
250 V – 600 V	0.1 V	±1.5% ± 5dgts

**AC Current** (Auto Range, True RMS, Crest Factor<4, CT=1, Max. peak values 880mADC for mA range, 73.5ADC for A range, Overload Protection AC 600A)

Range	Resolution	Accuracy of Readings (50/60Hz)
0.5 – 60mA	0.01mA	±0.5% ± 5dgts
60 – 100mA	0.01mA	±0.5% ± 50dgts
100 – 600 mA	0.1 mA	±0.5% ± 5dgts
0.05 – 3 A	0.001 A	±0.5% ± 5dgts
3 – 30 A	0.01 A	±0.5% ± 5dgts
30 – 90 A	0.01 A	±1.0% ± 5dgts

Range	Resolution	Accuracy of Readings (45-1KHz)
0.5 – 60mA	0.01mA	±1.5% ± 5dgts
60 – 100mA	0.01mA	±1.5% ± 50dgts
100 – 600 mA	0.1 mA	±1.5% ± 5dgts
0.05 – 3 A	0.001 A	±1.5% ± 5dgts
3 – 30 A	0.01 A	±1.5% ± 5dgts
30 – 90 A	0.01 A	±1.5% ± 5dgts

**Harmonics of AC Voltage in Percentage** (1 to 99<sup>th</sup> order, minimum voltage at 50 or 60 Hz is greater than AC 80V. If the voltage is 0 at 50 or 60 Hz, all the percentage (%) display is 0.)

Range	Resolution	Accuracy
1 – 10 <sup>th</sup>	0.1 %	±0.7% of reading ±1%
11 – 20 <sup>th</sup>	0.1 %	±2% of reading ±1%
21 – 50 <sup>th</sup> (A range)	0.1 %	±5% of reading ±1%
21 – 50 <sup>th</sup> (mA range)	0.1 %	±10% of reading ±1%
51 - 99 <sup>th</sup>	0.1 %	±35% of reading ±1%

**Harmonics of AC Voltage in Magnitude** (1 to 99<sup>th</sup> order, minimum voltage at 50 or 60 Hz is greater than AC 80V)

Range	Resolution	Accuracy
1 – 10 <sup>th</sup>	0.1 V	±0.7% of reading ±7dgts
11 – 20 <sup>th</sup>	0.1 V	±2% of reading ±7dgts
21 – 50 <sup>th</sup> (A range)	0.1 V	±5% of reading ±7dgts
21 – 50 <sup>th</sup> (mA range)	0.1 V	±10% of reading ±7dgts
51 - 99 <sup>th</sup>	0.1 V	±35% of reading ±7dgts

**Harmonics of AC Current in Percentage** (1 to 99<sup>th</sup> order, minimum current at 50 or 60 Hz is greater than 100mA for mA range, and greater than 1A for A range. If the current is 0 at 50 or 60 Hz, all the percentage (%) display is 0.)

Range	Resolution	Accuracy
1 – 10 <sup>th</sup>	0.1 %	±0.7% of reading ±1%
11 – 20 <sup>th</sup>	0.1 %	±2% of reading ±1%
21 – 50 <sup>th</sup> (A range)	0.1 %	±5% of reading ±1%
21 – 50 <sup>th</sup> (mA range)	0.1 %	±10% of reading ±1%
51 - 99 <sup>th</sup>	0.1 %	±35% of reading ±1%

**Harmonics of AC Current in Magnitude** (1 to 99<sup>th</sup> order, min. current at 50 or 60 Hz is greater than 100mA for mA range, and greater than 1A for A range)

Range	Resolution	Accuracy
1 – 10 <sup>th</sup>	0.01mA / 0.1mA /	reading in mA: $\pm 1\%$ of reading $\pm 2\text{mA}$ reading in A: $\pm 1\%$ of reading $\pm 0.3\text{A}$
11 – 20 <sup>th</sup>	0.001A / 0.01A	reading in mA: $\pm 7\%$ of reading $\pm 2\text{mA}$ reading in A: $\pm 7\%$ of reading $\pm 0.3\text{A}$
21 – 50 <sup>th</sup>		reading in mA: $\pm 15\%$ of reading $\pm 3\text{mA}$ reading in A: $\pm 15\%$ of reading $\pm 0.3\text{A}$
51 - 99 <sup>th</sup>		reading in mA: $\pm 35\%$ of reading $\pm 3\text{mA}$ reading in A: $\pm 35\%$ of reading $\pm 0.3\text{A}$

**Power Factor** (PF, ACV > 4V, AC mA > 1mA, AC A > 0.04A, Watt > 50 digits)

Range	Resolution	Accuracy
0.000 – 1.000	0.001	$\pm 0.04$

**Phase Angle** ( $\Phi$ , 50 or 60Hz)

Range	Resolution	Accuracy
-180° to 180°	0.1°	$\pm 2^\circ$
0° to 360°	0.1°	$\pm 2^\circ$

**Total Harmonic Distortion**

(THD-F with respect to the first (fundamental) harmonics, min. value in the range from 45 to 65Hz is greater than AC 80V, greater than 1A for A range, and greater than 100mA for mA range. Calculation is done over 1 to 50<sup>th</sup> Harmonics. If the voltage or current is 0 in the range from 45 to 65Hz, all the percentage (%) display is 0)

Range (45~65Hz)	Resolution	Accuracy
0.0 – 20.0 %	0.1%	$\pm 2\%$
20.0 – 100%	0.1%	$\pm 3\%$ of reading $\pm 5\%$
100 – 999.9%	0.1%	$\pm 10\%$ of reading $\pm 10\%$

**Peak Value of AC Periodic Voltage** (peak value > 10V) or **AC Periodic Current** (peak value > 10mA for mA range and peak value > 0.5A for A range) for **continuous waveform except for square wave:**

Range	Sampling Time	Accuracy of Reading
50 Hz	39 $\mu\text{s}$	$\pm 5\% \pm 30$ digits
60 Hz	33 $\mu\text{s}$	$\pm 5\% \pm 30$ digits

**Crest Factor (C.F.) of AC Voltage** (peak value > 10V) or **AC Current** (peak value > 10mA for mA range and peak value > 0.5A for A range) for **continuous waveform except for square wave:**

Range (45~65Hz)	Resolution	Accuracy of Readings
1.00 – 99.99	0.01	$\pm 5\% \pm 30$ digits

## Frequency (Hz)

Range	Resolution	Accuracy of Readings	Allowed Input
mA (45 – 65Hz)	0.1Hz	± 0.5Hz	20mA to 1.2A
A (45 – 65Hz)	0.1Hz	± 0.5Hz	1A to 100A

Sensitivity: > 20mA for mA range, > 3A for A range, and > 50V

## General Specifications:

Conductor Size:	30mm (approx.)
Battery Type:	two 1.5V SUM-3
Display:	4+2+2 digits LCD
Range Selection:	Auto
Overload Indication:	OL
Power Consumption:	10 mA (approx.)
Low battery Indication:	
Auto-Power-Off:	30 minutes after power-on
Update Time:	2 times/second (display)
No. Of Samples per Period	512 (voltage or current); 256 (power)
Temperature Coefficient (< 18°C or > 28°C):	0.15 x (Specified Accuracy) / °C
Operating Temperature:	-10°C to 50°C
Operating Humidity:	less than 85% relative
Altitude:	up to 2000M
Storage Temperature:	-20°C to 60°C
Storage Humidity:	less than 75% relative
Dimension:	210mm (L) x 62mm (W) x 35.6mm (H) 8.3" (L) x 2.5" (W) x 1.4" (H)
Weight:	200g (battery included)
Accessories:	Test leads x 1 pair, Carrying bag x 1, Users manual x 1, Batteries 1.5V x 2
Option:	Alligator clips

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