

Power Analyzer Sampling Calculator

Compare an analyzer sample rate with the Nyquist screening minimum implied by the entered fundamental frequency and harmonic order.

Generated October 10, 2026

<https://www.elecatrix.com/testing-protection-grounding/power-analyzer-sampling-calculator/>

Inputs

Input	Value	Unit
Fundamental frequency	60	Hz
Highest harmonic order	50	order
Sample rate	10000	samples/s

Results

Result	Value	Unit
Highest frequency	3000	Hz
Nyquist minimum	6000	samples/s
Sample-rate margin	4000	samples/s
Sampling margin ratio	1.6667	x
Samples per fundamental cycle	166.6667	samples/cycle
Sample interval	0.1	ms
Sampling comparison	At or above the Nyquist screening minimum	

Calculation details

Detail	Value	Unit
Calculation basis	Nyquist screening rate equals twice the entered highest harmonic frequency.	
Screening boundary	Sampling arithmetic only; instrument bandwidth, anti-aliasing filters, standards rules, and firmware behavior remain external.	

Formulas

highest frequency = fundamental frequency x highest harmonic order

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Nyquist minimum sample rate = $2 \times$ highest frequency

sampling margin ratio = sample rate / Nyquist minimum sample rate

Warnings and limitations

This worksheet does not certify analyzer bandwidth, anti-aliasing, harmonic compliance, memory limits, or measurement accuracy.