

Harmonic Distortion Calculator

Estimates THD and each listed harmonic as a percentage of the fundamental from entered fundamental and harmonic RMS values.

Generated October 10, 2026

<https://www.elecatrix.com/power-quality-transformers/harmonic-distortion-calculator/>

Inputs		
Input	Value	Unit
Fundamental RMS	100	RMS
2nd harmonic RMS	10	RMS
3rd harmonic RMS	20	RMS
5th harmonic RMS	N/A	RMS
7th harmonic RMS	N/A	RMS
Results		
Result	Value	Unit
Combined harmonic RMS	22.3607	RMS
Total harmonic distortion	22.3607	%
2nd harmonic	10	%
3rd harmonic	20	%
5th harmonic	N/A	%
7th harmonic	N/A	%
Calculation details		
Detail	Value	Unit
Calculation basis	THD uses the RMS sum of the selected harmonic orders divided by the entered fundamental RMS value.	
Power-quality boundary	No measurement, waveform, utility-limit, equipment-rating, filter-design, neutral, or power-quality compliance result is made.	

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Formulas

$$I_{h,combined} = \sqrt{I_2^2 + I_3^2 + I_5^2 + I_7^2}$$

$$THD(\%) = \frac{I_{h,combined}}{I_1} \times 100$$

$$Harmonic_n(\%) = \left(\frac{I_n}{I_1} \right) \times 100 \quad (n \text{ in } 2, 3, 5, 7)$$

Warnings and limitations

This harmonic distortion estimate includes only the harmonic orders entered. It does not replace instrument measurements, waveform analysis, utility requirements, equipment limits, filter design, neutral analysis, or a power-quality study.