Power Unit Converter (kW, hp, kcal/h, Btu/h, TR)

Convert power and heat duty between watts, kilowatts, megawatts, kcal/h, Btu/h, MMBtu/h, mechanical and metric horsepower and tons of refrigeration.

Method: NIST SP 811 (2008); Appendix B conversion factors

Input parameters

Unit system: SI

Parameter	Value	Unit
Power (choose its unit)	175.84	kW

Calculated results

Parameter	Value	Unit
watt	175,843	W
kilowatt	175.84	kW
megawatt	0.17584	MW
kilocalorie per hour	151,197	kcal/h
megacalorie per hour	151.20	Mcal/h
Btu per hour	600,000	Btu/h
million Btu per hour	0.60000	MMBtu/h
horsepower (mechanical, 550 ft·lbf/s)	235.81	hp
metric horsepower (PS)	239.08	hp (metric)
ton of refrigeration (12 000 Btu/h)	50.000	TR

Notes for this case

• Mechanical horsepower is 745.70 W; metric horsepower (PS) is 735.50 W; electrical horsepower is 746 W exactly (235.714 hp electrical, 0.04 % fewer than mechanical). Boiler horsepower is a steaming rate: see the boiler rating converter.

Formula and method

$$1\ \text{kW} = 859.845\ \text{kcal/h} = 3412.14\ \text{Btu/h}$$

$$1\ \text{hp} = 745.70\ \text{W}, \quad 1\ \text{TR} = 12\,000\ \text{Btu/h} = 3516.85\ \text{W}$$

Variables

P	Power (choose its unit)	W

Method and standards

Exact or defined factors from NIST SP 811.

Assumptions and limits

- Boiler horsepower is a steaming rate: use the boiler rating converter.

References

• NIST SP 811 (2008)
• Appendix B conversion factors

Report details

Report reference	FCC-A71H-Q078 (the same inputs always give the same reference)
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Software release	FireCAD Calc, release of 17 November 2026
Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/general/unit-conversions/power-unit-converter

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.