

Cube L1



Fiber and disc laser



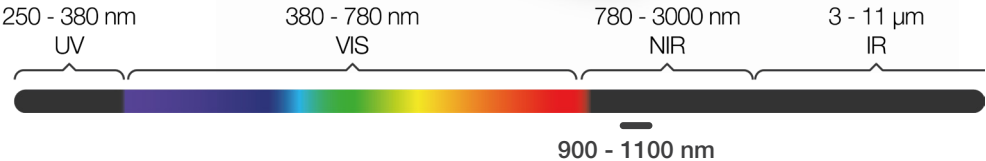
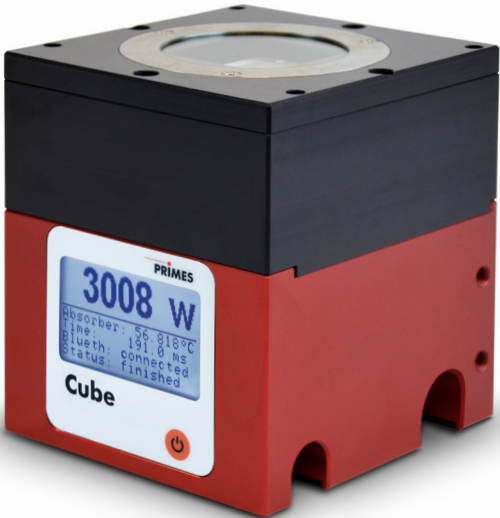
Diode laser



Ultrashort pulse laser



CO₂ laser



Precision meets performance. Fast and reliable measurements of multi-kilowatt lasers — with power densities up to 250 kW/cm².



Caustic



Raw beam



Power



Beam profile



Pointing stability



Vector



Focus shift

POWER RANGE	200 W – 16 000 W
ACCURACY	± 3 %
BEAM DIAMETER	1 – 7 mm
HIGHLIGHT	Angle of incidence ±5° Power density ≤ 250 kW/cm ²
INTERFACES	Bluetooth, Micro-USB

Engineered for Precision

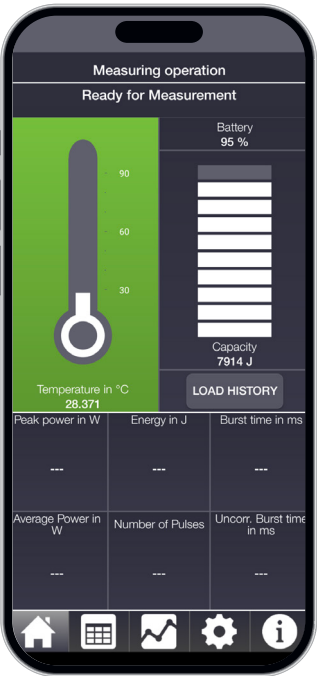
Designed for simplicity, speed, and reliability, the PRIMES Cube L1 is ready to use in just moments. Ideal for validating your machine's power output and identifying fluctuations, helping you maintain performance, perform adjustments, and ensure consistent part quality. It is a must-have for every machine operator and field service professional!

What sets the Cube L1 apart is its advanced optical front end — paired with an exceptionally wide power range. Whether you're measuring a few hundred watts or up to 16 kW, this versatile power meter is the go-to solution for demanding laser service tasks.

At its core lies a proven calorimetric measurement system that delivers precise, reproducible results — always referenced to the actual measured value. Meanwhile, the specialized optical front end handles extreme power densities of up to 250 kW/cm², making the Cube L1 ideal for accurate measurements in tight, high-power environments.

Using the PRIMES Cube App for mobile devices with Android™, you can operate and monitor all Cube models simply and conveniently on a tablet or smartphone via Bluetooth. Entire measuring series can be recorded during the measurement or uploaded from the internal storage (30 measurements) of the Cube. It will graphically display the measured values, such as average-, or peak power, energy per pulse and pulse duration.

The Cube App also supplements this information with the standard deviations. You can download the PRIMES Cube App from the Google Play Store. Alternatively, the micro-USB interface can be used to connect the Cube with a stationary computer and operate it with our LaserDiagnosticsSoftware (LDS). This offers even more features to control the device or to analyze and back up measurement data.

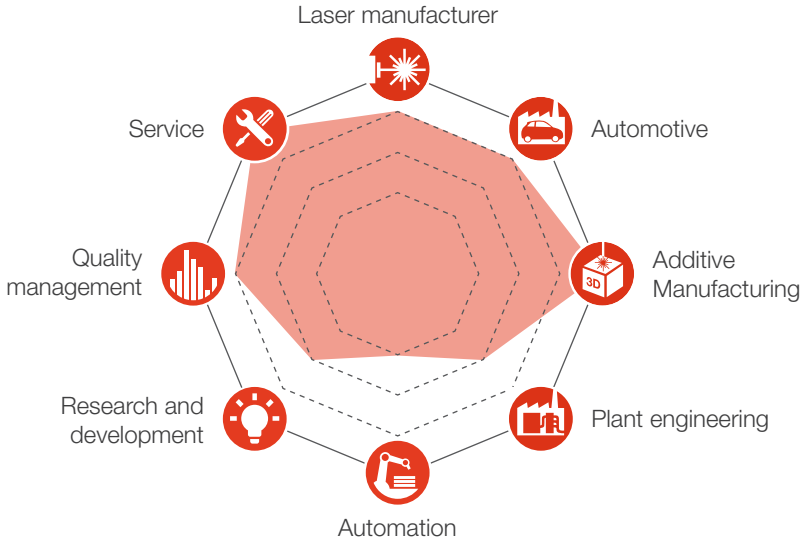


Other PRIMES Cube Models

Cube	standard model up to 12 kW
Cube L	laser power up to 20 kW
Cube M	specifically designed for AM machines
Cube XT	laser power up to 150 kW

MEASUREMENT PARAMETERS		CUBE L1
Power range		200 – 16 000 W ¹⁾
Wavelength range		900 – 1 100 nm
Beam diameter on the protective window		1 – 7 mm
Max. power density on the protective window		250 kW/cm ²
Irradiation time (depending on laser power)		0.1 – 2.0 s ¹⁾
Min. on/off times (duty cycle) for pulsed lasers		50 µs (e.g. max. 10 kHz at 50 % duty cycle)
Max. laser rise time		< 1 % of irradiation time
Energy per measurement		200 – 4 000 J
Recommended energy per measurement		500 – 2 000 J
Total duration until measurement value output		< 15 s
Nominal measurement frequency		700 J: 1 cycle/min; 4 000 J: 1 cycle/15 min
DEVICE PARAMETERS		
Max. absorber temperature		120 °C
Max. angle of incidence perpendicular to inlet aperture		± 5°
Max. beam divergence (full angle) at angle of incidence of up to 5°		160 mrad
Max. centered tolerance		± 2.0 mm
Accuracy Angle of incidence up to 5°		± 3 %
Reproducibility		± 1 %
SUPPLY DATA		
Power supply		Built in lithium-ion battery, which can be charged via a Micro-USB port
Temperature range for charging the lithium-ion cell		0 – 45 °C
COMMUNICATION		
Interfaces		Bluetooth, Micro-USB
Software		LaserDiagnosticsSoftware (LDS) and Cube App
DIMENSIONS AND WEIGHT		
Dimensions (L x W x H; without connectors)		92 x 97 x 110 mm
Weight (approx.)		1 700 g

¹⁾The stated limit values are to be understood in correlation with the permitted maximum energy ($E = P \cdot t$).



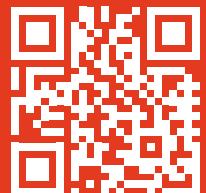
Your benefit

The PRIMES Cube L1 delivers fast, precise and the most reliable laser power measurements for CW and pulsed lasers. One ultra-compact device for powers from 200 W to 16 kW, delivering ± 3 % accuracy, independent of environmental conditions and user interference. Its specially designed optical front end allows precise measurement of small beams with extreme power densities of up to 250 kW/cm². As a result, the Cube L1 can be positioned above the focal plane and remains suitable for operation in areas with very limited space.

- Unrivalled measuring accuracy and reproducibility
- Designed for tight spaces with small beams and high power densities
- Fully portable – no cables, no water cooling
- Wireless operation via Bluetooth
- Built-in display and internal memory for measurement series

Conclusion

The Cube L1 is a compact, robust and reliable solution for measurements at high-power density in high-power laser applications. Fast and easy measuring without cooling or cables make it the perfect tool for your quality assurance between machining operations in confined spaces.



For further information please visit www.primes.de/cubel1