

LaserQualityMonitor LQM+ HP



Fiber and disc laser



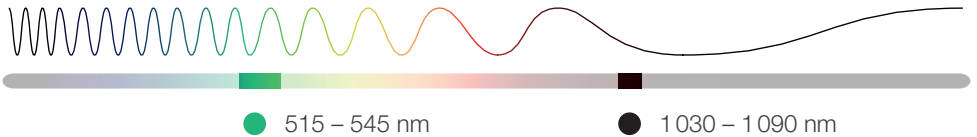
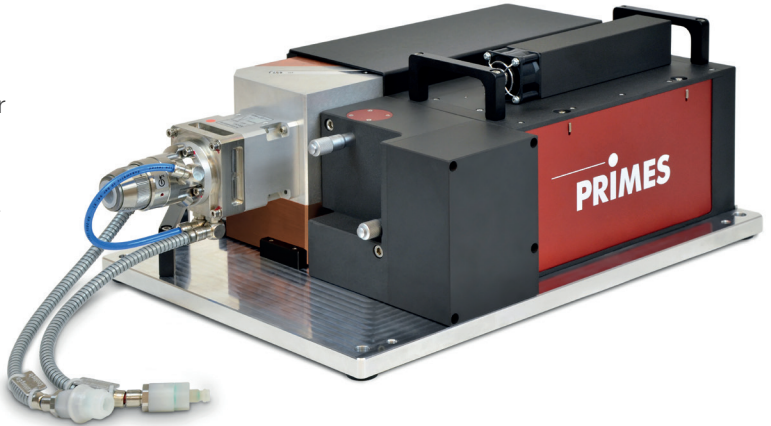
Diode laser



Ultrashort pulse laser



CO₂ laser



The LQM+ HP represents the easiest way to reliably measure the performance of your multi kW laser source.



Caustic



Raw beam



Power



Beam profile



Pointing stability



Vector



Focus shift

POWER RANGE	25 W – 2 kW
BEAM QUALITY M ²	1 – 60
BEAM DIAMETER	Collimated 1.5 – 15 mm 22 mm
	Fiber guided 10 – 600 μm
SPECIAL FEATURE	One click auto caustic
INTERFACES	Ethernet

Tech Corner

The LQM+ HP attenuates the raw beam generated by a collimator, dumps 99,9 % of the laser power in two separated power meters and then generates an internal caustic using a validated focussing lens.

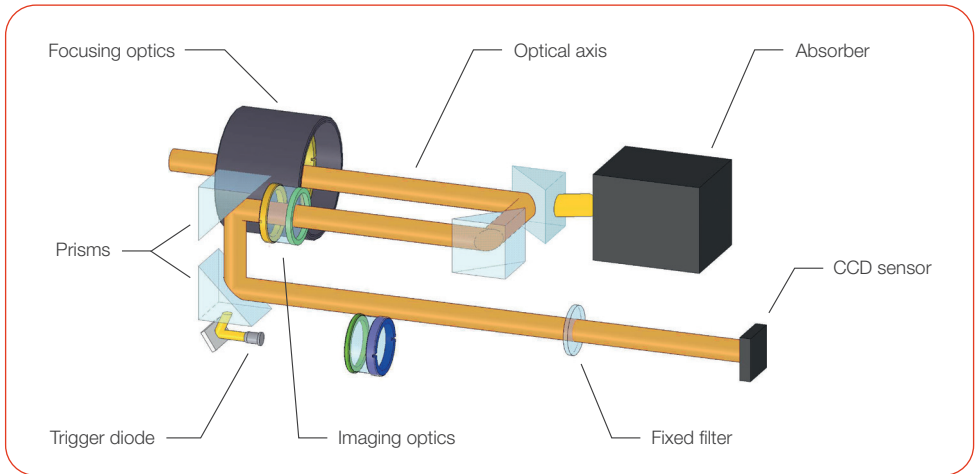


Figure: Internal optical setup of the LQM+ basic module.

The focused beam passes through additional attenuators and a lens to appear magnified on a CCD. Using the two dimensional power density distribution, our LaserDiagnosticsSoftware LDS calculates information such as beam diameter and location. Repeating this measurement at different positions along the internal beam path, all parameters necessary to fully describe the artificial caustic are determined.

The enormous attenuation of at least 9 orders in combination with the plug & play functionality makes the LQM+ unique on the market.

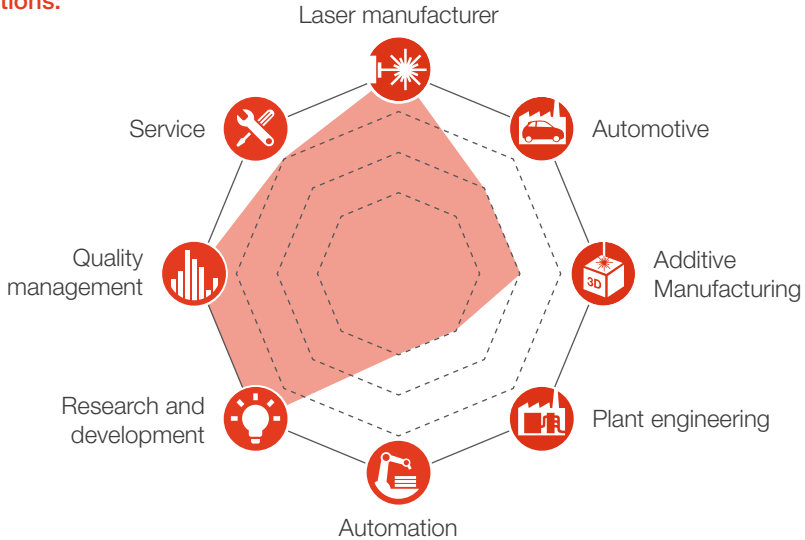
Additional features: Get a deep dive into your laser source and work out how it behaves over time and power. Our LDS provides a variety of functionalities covering pointing stability and focus shift analysis. Set up the LQM+ to automatically repeat caustic measurements in a pre-defined interval. Accumulate unlimited measurement data and find out how it performs over hours and days.

MEASUREMENT PARAMETERS		LQM+ HP10	LQM+ HP20
Max. laser power (for 1064 nm) ^{1,2)}		3 kW (single mode) 10 kW (multi mode)	5 kW (single mode) 20 kW (multi mode)
Pulse duration		100 fs – cw	100 fs – cw
Wavelength range		1 030 – 1 090 nm 532 nm on request	1 030 – 1 090 nm
Beam dimensions ¹⁾			
Single mode		7 – 9 mm	14 – 16 mm
Single mode (reduced power)		1,5 – 7 mm	8 – 14 mm
Multi mode		12 – 15 mm	18 – 22 mm
Multi mode (reduced power)		1,5 – 12 mm	8 – 18 mm
Beam quality factor M ²		1 - 60	1 - 60
Max. beam divergence		10 mrad	10 mrad
DETERMINED PARAMETERS			
Power density distribution		2D, 3D	
SUPPLY DATA			
Power supply		24 V DC ± 5 %, max. 1.8 A	24 V DC ± 5 %, max. 1.8 A
Cooling		water cooling	water cooling
Cooling water pressure		2 bar primary pressure with an unpressurized outflow, max. 4 bar	min. 4 – 6 bar
Recommended Cooling water flow rate		7 – 8 l/min	18 – 20 l/min
Cooling water temperature T _{in}		Dew point temperature < T _n < 30 °C	
COMMUNICATION			
Interfaces		Ethernet	Ethernet
DIMENSIONS AND WEIGHT			
Dimensions (L x W x H)		480 x 300 x 190 mm	495 x 320 x 190 mm
Weight (approx.)		35 kg	35 kg

¹⁾ Single mode < 1,5 mm x mrad < multi mode

²⁾ The maximum allowed laser power depends on wavelength, beam quality, raw beam diameter and the pulse characteristics of your laser. For further information please contact your local sales partner.

Applications:



System description: The LQM+ HP is a fast, accurate and reliable tool to measure the beam quality of multi kW laser sources in the NIR and green spectral range, such as fiber- and disc lasers. It comes as a portable plug & play device and operates with the PRIMES LaserDiagnosticsSoftware (LDS). **To characterize fiber lasers either the qualified PRIMES collimator or a custom laser/collimator combination can be used.**

Your benefit: In comparison to a laboratory setup, the LQM+ HP combines all needed components to **determine M²** at raw beams into one space saving and portable device. Manual adjustments, time-consuming alignments or own calculations for the required attenuation are no longer necessary. **The easy handling including plug & play functionality reduces operating errors and makes your measurement result even more trustworthy.**

CONCLUSION

The LQM+ measures beam characteristics of high-power lasers fully automatic with high accuracy. The compact, low-maintenance system is ready for operation in just a few steps, even for inexperienced users. In addition, it saves space and time compared to a hand-built laboratory setup.



For further information please visit www.primes.de/lqm+