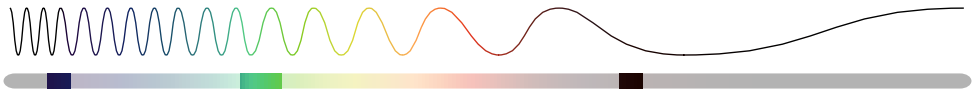
LaserQualityMonitor LQM+

PRIMES

- Fiber and disc laser
- Diode laser
- Ultrashort pulse laser
- CO_2 laser



340 – 360 nm 515 – 545 nm 1 030 – 1 090 nm

The LaserQualityMonitor LQM+ measures the quality of cw, pulsed and USP laser beams with a simple push of a button.

- Caustic
- Raw beam
- Power
- Beam profile
- Pointing stability
- Vector
- Focus shift

POWER RANGE		up to 500 W
BEAM QUALITY M^2		1 – 60
BEAM DIAMETER	Single mode	1.5 – 9 mm
	Multi mode	1.5 – 15 mm
HIGHLIGHT		One click auto caustic
INTERFACES		Ethernet

Tech Corner

The LQM+ 500 attenuates the raw beam, dumps 96 % of the laser power in a separated power meter and then generates an internal caustic using a validated focusing lens. All optical elements involved are coated for the use with solid-state lasers as well as for their second and third harmonic.

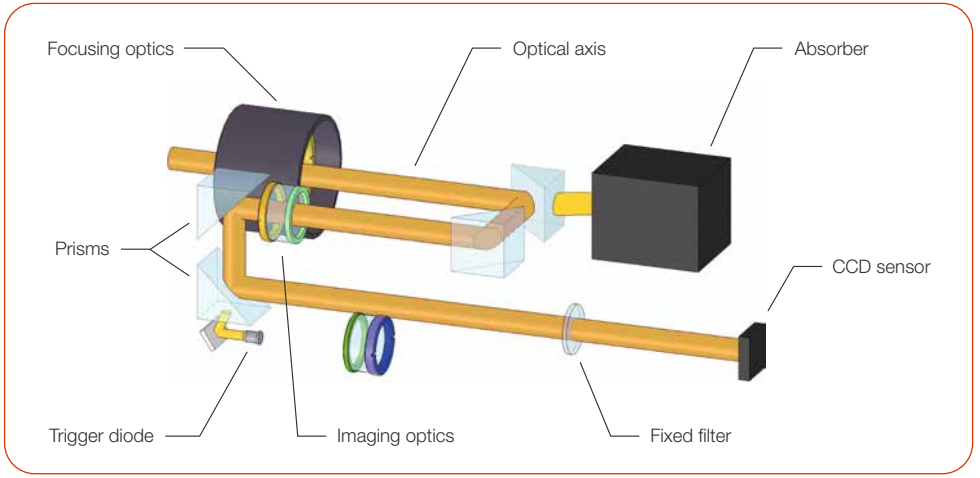


Figure: Internal optical setup of the LQM+ basic module.

The collimated laser beam will be focused to create an internal caustic (the beam shape). This focused beam will then be magnified with a second set of optics. This magnified laser beam is imaged onto a camera sensor. The camera sensor will detect the power density distribution, from which a laser beam diameter is calculated.

The focal position of that caustic is then moved to image different parts of the laser beam onto the CCD sensor and another power density distribution is captured. Repeating this step will yield the beam parameters of the internal, focused caustic. With detailed knowledge of the internal optics, the parameters of the raw, collimated beam that has entered the LQM+ can be calculated.

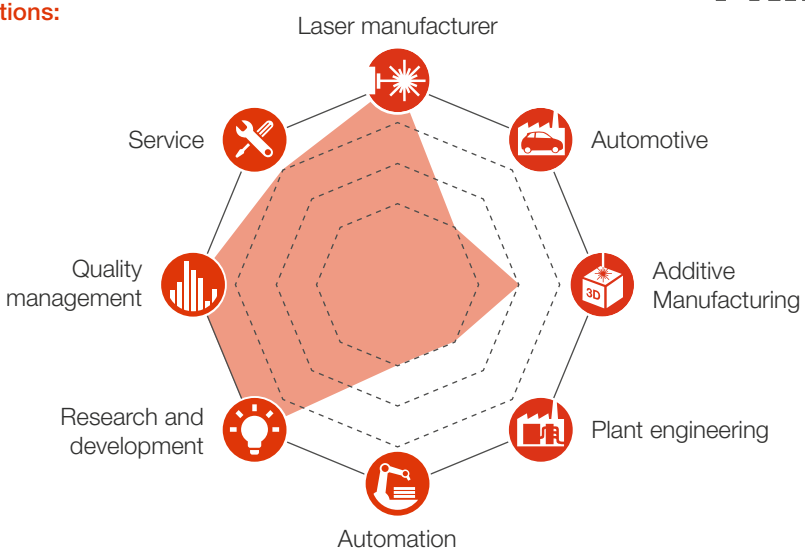
Additional features: The LaserDiagnosticsSoftware (LDS) is a powerful tool to help you understand your laser. The LDS allows you to deep dive into the technical details of your laser beam. It is also made easy to keep track of previous measurements and track the performance of a dedicated laser (or model) over time. Additionally the LDS is so easy to use, that even untrained personnel can perform reliable, accurate und norm conforming measurements.

MEASUREMENT PARAMETERS	LQM+ 20	LQM+ 200/500
Max. laser power (for 1064 nm) [1, 2]	20 W	200 W/500 W
Pulse duration	100 fs – cw	100 fs – cw
Wavelength range	340 – 360 nm (UV), 515 – 545 nm (Green), 1 030 – 1 090 nm (NIR)	340 – 360 nm (UV), 515 – 545 nm (Green), 1 030 – 1 090 nm (NIR)
Beam dimensions [1] Single mode Multi mode	 1.5 – 9 mm 1.5 – 15 mm	 1.5 – 9 mm 1.5 – 15 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	air cooling	air cooling (LQM+ 200) water cooling (LQM+ 500)
Cooling water pressure	-	2 bar primary pressure with an unpressurized outflow, max. 4 bar
Min. cooling water flow rate	-	1.5 l/min
Cooling water temperature T_{in}	Dew point temperature < T_{in} < 30 °C	
COMMUNICATION		
Interfaces	Ethernet	Ethernet
DIMENSIONS AND WEIGHT		
Dimensions (L x W x H)	285 x 190 x 180 mm	350 x 230 x 190 mm
Weight (approx.)	10 kg	18 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+ integrates all optical components and measuring functions in one device. It measures the quality of collimated laser beams in the UV, VIS and NIR spectral range. It's unique design does not require any external attenuation. The LQM+ measures beams up to 200 W air cooled and 500 W water cooled. The LQM+ features automated measurements and on the fly good/bad evaluation, using our new LaserDiagnosticsSoftware. **This makes the LQM+ ideal for automated quality control, without the need for intense operator training.**

Your benefit: Setting the LQM+ up for measurement is quick and easy. Simply align the LQM+ with your laser beam, connect the software and hit start. These three steps will yield an accurate, repeatable and objective measurement of all important beam parameters. **The LQM+ produces industry leading, norm conforming measurements with the use of one single button.**

CONCLUSION

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

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

PRIMES GmbH | Max-Planck-Straße 2 | 64319 Pfungstadt | Germany | www.primes.de
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