neoplascontrol
solutions for your operations in gases and plasmas

Q-MACS MIR Source

Optical Testing

technical specification

The Q-MACS MIR Source offers highly brilliant emissive surfaces with approximately the same dimensions as the emitted wavelengths leading to a true point source emission pattern. This pattern is ideal for testing infrared lenses, microscope objectives and IR-cameras. The emissive surface of about 3 x 6 µm² works as a true point source without any additional slits or pin holes. Hence no misalignment in respect to slits or pin holes can occur. The power level is easily adapted to any sensitivity of the camera by computer control in order to achieve best signal to noise ratios (SNR).

The small linewidth, the high spectral power density and the wide range of available wavelengths allow the quantification of the chromatic aberration of lenses, which limits the image quality especially in broad band applications like thermal imaging. Former pin hole based approaches struggled with the contradicting restrictions using small apertures to fulfil the approximation of being a point source and getting enough energy through an infinitely small diameter.

The high wavelength accuracy and stability allow measuring the refractive index of the optical material as long as the geometry is known. The high resolution version of Q-MACS MIR Source ensures this by using specific absorption lines. A visual wavelength control is available, which can be elaborated into optional closed loop active wavelength stabilization. Extremely high spectral power density as a result of narrow laser linewidth and average power levels up to a couple of mW ensure excellent signal to noise ratios.

The Q-MACS MIR Source can control up to 8 lasers, which are individually configurable including synchronized emission based on an internal clock signal. The compact, robust and easy to use driver solution allows remote control via PC.

general
True point source with emissive apertures down to 3 x 6 µm² *
More than 100 discrete wavelengths available in the mid-infrared range 3 to 11µm
Extremely brilliant IR-Source with unmatched spectral and spatial power density
Enables precise chromatic aberration measurements due to low wavelengths uncertainty
Precise absolute wavelength reference based on absorption lines (uncertainty <0.1 nm)* ** ** available only in High Resolution Version
Pulsed and quasi-CW operation (repetition rate up to 5 MHz)
High stability of optical emission
Up to 8 wavelengths independently configurable
Emission angle >90° (full angle) for lenses with high NA (e. g. microscopes)

* depending on the individual Quantum Cascade Laser (QCL)