

Datasheet

High power / Short wavelength fiber delivery systems - kineFLEX-HPV™ / kineFLEX-UV™

The kineFLEX-HPV™ and kineFLEX-UV™ are robust laser beam delivery systems from the kineFLEX™ family of products.

This fiber delivery technology is designed around pre-focused and integrated optical assemblies. The fiber is designed to be mode-matched to your laser parameters to achieve transmission efficiencies greater than 65%.

Single-mode fiber enables the user to decouple the laser beam astigmatism and dynamic beam pointing instability from the measurement application. Fiber also provides a convenient packaging solution by relocating sources of heat and by removing bulk components thereby reducing the number of optical surfaces from the beam alignment scheme.

The kinematic design of the kineMATIX® coupler enables true 'Plug & Play' benefits for single mode and polarization-maintaining fiber designs. Sub-micron repeatability and sub-microradian stability mean systems can be aligned once only and are stable for multiple remove and insert operations, thus providing true modularity for instrument designs. Qioptiq fiber systems can be customized for exacting OEM specifications. Outputs can be configured to

produce pure Gaussian profiles with extremely low wavefront error, as well as engineered spatial profiles and shapes. Single-mode fiber designs are also available for multi-wavelength, broadband transmission (>200nm bandwidth) and ultra-high vacuum compatibility.

Some of the product features include:

- High power fibers for single wavelengths (405-640nm)
- UV fibers 355nm and 375nm
- Guaranteed for performance up to high power levels of 500mW for most wavelengths
- Highly insensitive to thermal effects
- Stable ruggedized platform for industrial applications
- Polarization-maintaining and single-mode transmission
- Custom OEM versions available
- Higher power and multiple wavelength versions on request



Technical specification

| Fibers for | Operating Wavelengths (λ in nm) | | | | | Maximum input power (mW) | | |
|--------------------------------------|--|-----------|-----|-----|-----|--------------------------|-----|-----|
| Single- λ UV laser | 355 | 375 | | | | 20 | | |
| Single- λ high-power laser | | 405 | 445 | | | 200 | | |
| | | | | 488 | 515 | 532 | 561 | 640 |
| Broadband λ high-power laser | | 405 - 640 | | | | 500 ¹ | | |
| | | 488-640 | | | | 500 | | |

Operating performance

| | | Units |
|--|---|--------------------------------|
| Polarization ratio | ≤ -20 | dB |
| Throughput efficiency ² | Single- λ high-power fibers: ≥ 65 Broad-band high-power fibers: ≥ 60 | % |
| Fiber parameters | | |
| Fiber length | 1, 2, 3 | m |
| Fiber protective jacket | Stainless steel, 5mm OD | - |
| Collimated output beam | | |
| Beam diameter | 0.7 | mm |
| M Squared | typ 1.1 | - |
| Pointing stability | ≤ 1 | $\mu\text{rad}/^\circ\text{C}$ |
| Mechanical dimensions | $\varnothing 12 \times 50$ | mm |
| Beam position | ≤ 0.15 | mm |
| Beam angle relative to mechanical axis | ≤ 0.5 | mrad |
| Environmental conditions | | |
| Storage temperature | 10 to 50 | $^\circ\text{C}$ |
| Operating pressure | Atmospheric | - |
| Operating temperature | 10 to 40 | $^\circ\text{C}$ |
| Operating humidity | Non-condensing | - |

¹With maximum 200mW in the 405-460nm range. Maximum combined power 500mW.

²Assuming 0.7 circularized input beam waist diameter, and $M^2 < 1.2$.

OEM versions available on request.

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