

60SMF-MAV-4-M12-08-Ti-V

Amagnetic Laser Beam Coupler



FEATURES

High precision amagnetic fiber coupler optimized for high pointing stability and long-term stability. Efficient coupling of collimated laser radiation into single-mode and PM fiber cables.

- Focal length 12 mm
- Optics type: Doublet optics, Monochromatic
- AR-Coating: 980 - 1550 nm
- Mini AVIM ® type receptacle (APC): compatible with fiber connectors type Mini AVIM ® and Midi AVIM ®
- System mount Ø 19.5 mm
- Titanium design

DESCRIPTION

The laser beam coupler series 60SMS is designed for compact and long-term stable coupling of singlemode laser radiation into a singlemode or polarization-maintaining fiber.

The features of the coupler type 60SMF include:

Optics

The [monochromat](#) with focal length 12 mm is designed for collimating single wavelengths. It is AR-coated from 980 - 1550 nm. It is corrected for spherical aberrations and designed in such a way that it leads to a diffraction-limited beam with an $M2 < 1.05$. The focus position varies strongly with wavelength so that the collimator has to be recollimated after any changes to the wavelength. It is not suitable for UHV applications.

High long-term stability

It's compact size as well as the high-resolution alignment mechanisms allow for a straight-forward, intuitive coupling procedure. The result is a fiber coupling with high thermal stability, pointing stability, that is vibration and shock-insensitive. [Long-term stability tests](#) (see figure on the right) have shown a power stability better than 3 % for a temperature range of 15 - 35 °C.

6 Degrees of freedom*

In order to achieve optimum coupling efficiency the fiber coupler needs to provide certain degrees of freedom. You need to adjust the angle between laser beam and lens/fiber end-face, the z-position of the lens, adjust the polarization axis of the fiber to that of the laser source and center the lens with respect to the laser beam. The fiber coupler provides all degrees of freedom necessary. It has a TILT adjustment, an independent focus adjustment, can be rotated 360°, and allows for lateral adjustment* using e.g. the adapter 60A19.5-F.

The TILT adjustment is used to maximize the lateral overlap between the mode field of the fiber and the focussed laser spot using 3 adjustment screws. 3 locking screws are used for fine-adjustment and to lock the position for an optimum mechanical stability.

Independent to the TILT adjustment, the distance between fiber end-face and coupling optics is adjusted by means of an eccentric key. The final focus setting is locked by means of two radially arranged clamping screws. Since the focus adjustment is independent, the z-position of the mode field diameter can be placed much more precisely.

The polarization alignment of the fiber to the polarization axis of the laser source is performed by rotating the laser beam coupler. The separation of the fiber coupler and the adapter necessary for centering is essential to allow for a full 360° freedom of rotation. The coupler has a tight-fit cylinder that can be placed into a 19.5 mm receptacle of a corresponding [adapter](#).

The beam can be centered with respect to the aperture of the coupling optics using e.g. the adapter [60A19.5-F].

Optimum lens performance

The angled polish of connectors of type APC causes the beam to exit in an angle and not parallel to the optical axis of the fiber. This is corrected by the [pre-angled mechanical coupling axis](#) of the coupler, that compensates the beam deflection and you can use the lens centrically. This minimizes aberrations simply resulting from a non-ideal beam path through the lens.

Connector Type

The fiber coupler has a [receptacle](#) of type Mini AVIM ®, APC (for fibers with 8°-polish). The receptacle type Mini AVIM ® is compatible with fiber connectors type Mini AVIM ® and Midi AVIM ®. Compatible fiber cables can be found on www.diamond-fo.com.

Material

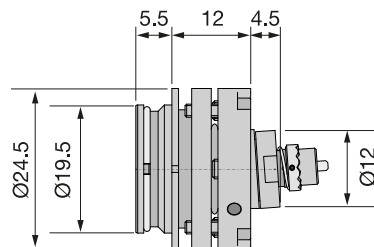
The fiber collimator type 60FC is made from amagnetic titanium. The linear coefficient of thermal expansion is close to that of the optics so that a thermal stability over a larger temperature range can be expected. The laser beam coupler is vacuum-compatible.

TECHNICAL DATA

60SMF-MAV-4-M12-08-Ti-V

Type	60SMF
Order Code	60SMF-MAV-4-M12-08-Ti-V

Focal lengths	12 mm
AR coating	08
Wavelength range	980 - 1550 nm
Lens type	Doublet optic
Correction	Monochromatic
Numerical Aperure	0.23
Clear aperture	4.5 mm
Connector type	Mini AVIM
Outer diameter	Ø 25 mm
Tilt adjustment	Yes
System mount	Ø 19.5 mm
Housing Material	Titanium
Weight	
UHV compatible	No
Suitable for multimode	Yes
Note	
Dimensions (for a complete dimensional drawing please refer to the downloads section)	



DOWNLOADS



[010821190800.pdf \(Dimensional drawing\)](#)



[Coating-0800-25.pdf \(Coating curve\)](#)

ACCESSORIES

POLARIZATION ANALYZER SK010PA

Measurement tool for coupling into polarization-maintaining fiber cables

60EX-5

Eccentric key with a stroke of ± 1.0 mm.

9D-12

Screwdriver WS 1.2

50HD-15

Hex key WS 1.5

60A19.5-F

Adapter for 60SMS Laser Beam Couplers Flange mount 1"x1"

RELATED PRODUCTS

FIBER COLLIMATOR SERIES 60FC-MAV

with mini AVIM type receptacle for collimating radiation exiting an optical fiber or as an incoupler

LASER BEAM COUPLERS SERIES 60SMF

with fine-thread adjustment screws - for coupling into single-mode and polarization-maintaining fiber cables

FIBER-TO-FIBER COUPLERS 60FF

Compact, rugged and highly efficient opto-mechanical unit for interconnecting two fiber cables

This is a printout of the page <https://sukhamburg.com/products/details/60SMF-MAV-4-M12-08-Ti-V> from 5/4/2024

CONTACT

For more information please contact:

Schäfter + Kirchhoff GmbH

Kieler Str. 212

22525 Hamburg

Germany

Tel: +49 40 85 39 97-0

Fax: +49 40 85 39 97-79

info@sukhamburg.de

www.sukhamburg.com

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