

OPTICAL COMPONENTS

Product Information

OPTICAL COMPONENTS

Space qualified optical components from STI like Beam Collimators and Optical Isolators feature outstanding performance and reliability.

Qualified optical components play a vital part in the development of optical instruments for space. In the frame of developments of optical instruments, SpaceTech develops these components on its own where required, taking advantage of the expertise of its personnel, and the in-house knowledge of the special demands of satellite environments. Once developed, these components are made available as stand alone products at a competitive price. If required adaptations to the specific needs of the intended application and environment can be performed.

SpaceTech offers qualified highly stable Beam collimators and Optical Isolators. Other Cypes of optical components can be specifically developed for your needs.



SpaceTech Beam Collimator with AVIM® connector

SpaceTech Beam Collimator

In the frame of the Laser Ranging Interferometer project (LRI) an ultra-stable beam collimator has been developed and qualified.

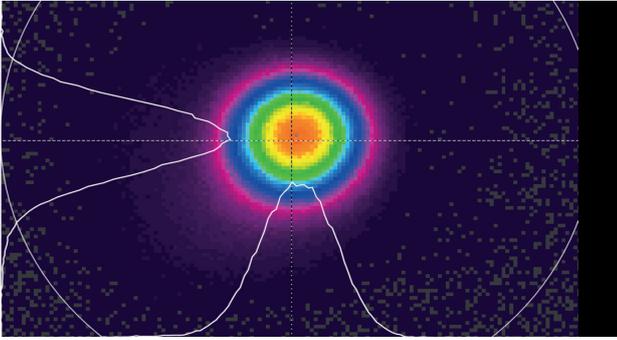
The design is optically fully monolithic, with the fiber rigidly attached directly to the aspheric lens body, avoiding any internal surfaces. It provides superior thermal behaviour, extremely low transmission loss, backreflection, and protection of the fiber end.

Beam Collimator Key Characteristics

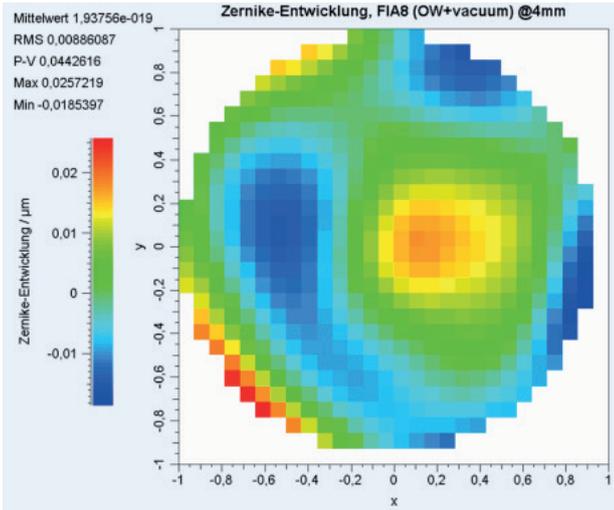
Operational wavelength	1064 nm*
Beam diameter	5 mm*
Wavefront planarity (PV)	$< \lambda/15$ (10° to 40°C, 1/e ²)
Pointing stability	$< 5 \mu\text{rad/K}$
Transmission loss	$< 1 \%$
Return loss	$> 50 \text{ dB}$
Temperature range	-20°C to +60°C
Size	55 x 27 x 50 mm ^{3**}
Qualification loads	160 g
Mass	85 g**

*others on request

**depending on beam diameter



Beam shape



Wavefront planarity

The Beam Collimator has been performance tested over the full operational temperature range and has successfully passed thermal cycling, vibration, and shock testing.

The design is adaptable to other beam diameters and mechanical interfaces. STI offers these Beam Collimators as optical components for demanding applications in terrestrial or space laser systems.

SpaceTech Optical Isolator

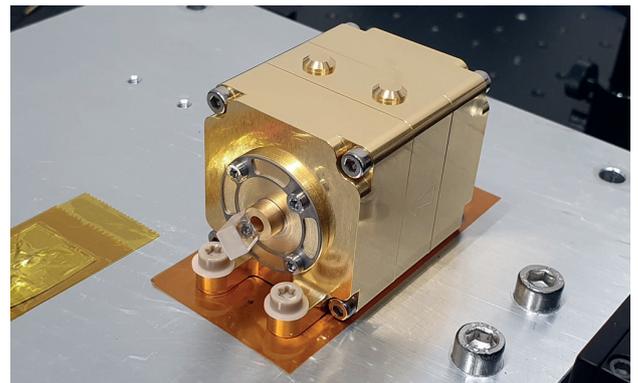
SpaceTech develops Optical Isolators for satellite-based high-power laser applications. In contrast to commercial products, they are designed to meet the highly demanding and specific requirements for high-power laser systems in space such as:

- Zero outgassing / no adhesives
- Vacuum compatibility
- Radiation hardness
- Launch loads
- Wide temperature range

Optical Isolator Key Characteristics

Operational wavelength	1064 nm*
Free aperture	4 mm*
Damage threshold	10 J/cm ² @ 10 ns
Isolation	> 30 dB
Transmission loss	< 0.2 dB
Temperature range	-40° C to +50° C
Size (w/o polarizers)	64 x 41.5 x 40 mm ³
Design loads	50 g
Mass	390 g

* others on request



SpaceTech optical isolator, flight Hardware for MERLIN

Our optical components benefit from SpaceTech's long standing experience in laser-optical instruments for space and ground. They offer smart designs, highest performance and cost efficiency for your application.

Are you interested in our existing components or in need of a new development?
Please contact us!

SpaceTech (STI) is a privately owned company and independent from large aerospace companies. Located in Immenstaad, Germany, on the shore of Lake Constance, we are ideally situated in the centre of a high tech area together with several other aerospace companies and have access to a strong network of experienced suppliers. Founded in 2004, STI has developed into an established and well recognized medium size enterprise in the space industry.

STI offers a wide spectrum of products and services for space missions, from challenging prototypes for institutional science and earth observation missions to low cost series production for mega constellations. Our main capability is the design, development and manufacturing of innovative, high quality space equipment. Our products in particular include:

- Small satellite system design, production, integration
- Solar arrays, satellite structures, deployment mechanisms, electronics, and cold gas propulsion systems
- Laser-optical instruments and components, ICARUS systems

Key to STI's success is our profound knowledge of satellite system and subsystem design which allows us to find smart solutions for each customer and mission from a holistic point of view. SpaceTech systems and equipment operate flawlessly on more than 300 satellites in orbit. We are known in the space industry for our straight forward and pragmatic approach, tailored processes and safe in-orbit function. The momentum as a young and dynamic space enterprise with innovative ideas is a perfect match for many of the new space challenges. This is why SpaceTech attracts highly qualified personnel, many with long standing and exceptional experience in the space business but also young and highly motivated engineers and scientists. And this is why we can deliver you the best solution for your needs.

When can we launch your space vision?



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