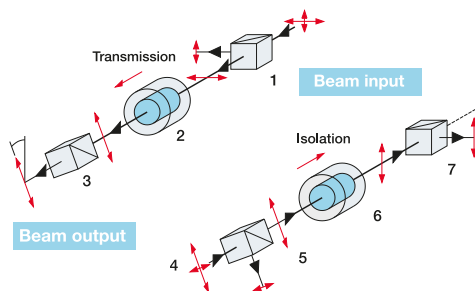


## FARADAY ISOLATOR: WORKING PRINCIPLE



Faraday isolator scheme

### Effects on the input beam

- 1 Polarizing beam splitter eliminates the s-polarized portion (typically 1%) of the laser (diode) radiation
- 2 Faraday crystal in a strong magnetic field rotates the - input polarization plane  $45^\circ$
- 3 Polarizing beam splitter exactly aligned with the output polarization plane, i.e. by  $45^\circ$  with respect to the input polarization

### Effects on the back-reflected beam

- 4 Reflective or scattering surfaces cause polarized or - depolarized reflected signals
- 5 Polarizing beam splitter (3) eliminates the s-polarized portion of the reflected signal
- 6 Faraday rotator (2) rotates the polarization plane by a further  $45^\circ$  so that the polarization plane of the reflected signal is now rotated by  $90^\circ$  from the polarization plane of the input beam
- 7 Polarizing beam splitter (1) blocks the reflected signal

This is a printout of the page <https://sukhamburg.com/support/technotes/fiberoptics/multicube/48fi.html> from 7/6/2025

## 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.com](mailto:info@sukhamburg.com)

[www.sukhamburg.com](http://www.sukhamburg.com)

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