

# Free Space Optical Isolators

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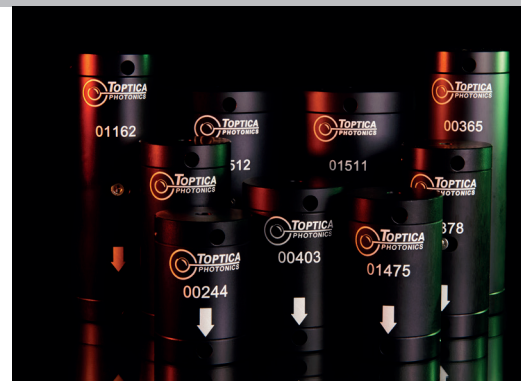
High Power Tunable Single and Dual Stage Performance

TOPTICA's product line of Faraday Optical Isolators are specially designed and manufactured in-house by the laser experts of TOPTICA to give industry leading performance in single and dual stage configurations. Single stage devices provide at least 38 dB isolation and 85 % transmission (>43 dB and >92 % average) over individual wavelength ranges in total spanning 392.5 - 427.5 nm and 630-1400 nm. Dual stage models provide at least 60 dB isolation and 80 % transmission (> 67 dB and >90 % average) over individual wavelength ranges in total spanning 640 - 1100 nm. All models are wavelength adjustable and can handle power densities up to 4 kW/cm<sup>2</sup>.

High Isolation, transmission, and power densities are achieved with precision PBS polarizers and precisely designed Faraday rotator elements. Most isolators have magnetically locked and removable protective endcaps and mounting fixtures. All internal optical components are angled to eliminate collinear back reflections.

Extensive individual, wavelength-specific testing guarantees performance of each isolator. All optical sub-components are inspected upon receipt, and all assembled devices are tested for transmission and isolation over their design wavelength ranges before shipment.

TOPTICA's isolators enable state of the art protection for the most stable lasers in the world. These are the same components already used by TOPTICA in the industry-leading DL pro, DL 100, TA-SHG pro, and TA-FHG pro product lines. They have been demonstrated to effectively reduce feedback in external cavity diode laser systems, block reflections from free-space fiber coupling, increase power stabilization in optical systems, and eliminate feedback-induced damage to sensitive optical components. The same superior isolators that make TOPTICA lasers the industry standard are now offered individually.



### Applications

- Eliminate feedback instabilities in ECDLs
- Reduce back reflections from fiber coupling
- Stabilize injection locking
- Eliminate feedback-induced damage

### Key Features

- High power damage threshold (4 kW/cm<sup>2</sup>)
- Highest guaranteed isolation in industry
  - > 38 dB (single stage)
  - > 60 dB (dual stage)
- High transmission
- Wavelength coverage 395-425 nm, 630-1400 nm
- All internal components angled 1° to eliminate back reflections
- 4.7 mm clear aperture
- All isolators are wavelength adjustable
- Designed and manufactured by the laser experts of TOPTICA



# Free-Space Faraday Optical Isolators



## Single Stage Isolators

Model	SSR405	SSR650	SSR690	SSR730	SSR780	SSR835	SSR885	SSR945	SSR1150	SSR1250	SSR1350
Design Wavelength [nm]	405	650	690	730	780	835	885	945	1150	1250	1350
Tunable Wavelength Range [nm]	395-425	630-670	670-710	710-750	750-810	810-860	860-910	905-985	1100-1200	1200-1300	1300-1400
Fixed Operation Range* [± nm]	2.5	5	6	6.5	7	7.5	8	9	10	10	10
Clear Aperture	4.7 mm										
Isolation at Design Wavelength (Min/Ave)	38/43 dB										
Transmission (Min/Ave)	85/92 %										
Power Handling	40 W, 4 kW/ cm <sup>2</sup>										
Operating Temperature Range	15 °C to 40 °C, non-condensing										
Storage & Transport	Shock 25 g / 10 ms., Vibration 3 g (15-100 Hz), 0 °C to 60 °C non-condensing										

\*with respect to design wavelength >35 dB and >85 %

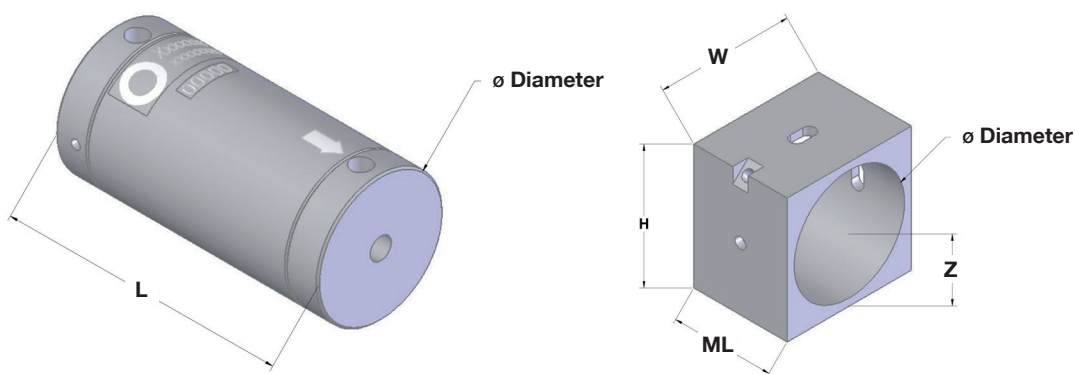
## Dual Stage Isolators

Model	DSR660	DSR700	DSR740	DSR780	DSR820	DSR880	DSR950	DSR1020	DSR1070
Design Wavelength [nm]	660	700	740	780	820	880	950	1020	1070
Tunable Wavelength Range [nm]	640-680	680-720	720-760	760-805	800-865	860-930	930-995	995-1050	1050-1100
Fixed Operation Range* [± nm]	6	6.5	7	7.5	8	10	11.5	12	12
Clear Aperture	4.7 mm								
Isolation at Design Wavelength (Min/Ave)	60/67 dB								
Transmission (Min/Ave)	80/90 %								
Power Handling	40 W, 4 kW/cm <sup>2</sup>								
Operating Temperature Range	15 °C to 40 °C, non-condensing								
Storage & Transport	Shock 25 g / 10 ms., Vibration 3 g (15-100 Hz), 0 °C to 60 °C non-condensing								

\*with respect to design wavelength >60 dB and >80 %

Model	Dia	L	Clamp Mount
SSR405	22.00	24.00	A
SSR650	35.50	50.00	B
SSR690	35.50	50.00	B
SSR730	35.50	50.00	B
SSR780	35.50	51.00	B
SSR835	35.50	58.50	B
SSR885	35.50	58.50	B
SSR945	40.50	60.50	C
SSR1150	22.00	33.50	A
SSR1250	22.00	33.50	A
SSR1350	22.00	33.50	A
DSR660	35.50	74.00	B
DSR700	35.50	74.00	B
DSR740	35.50	74.00	B
DSR780	35.50	74.00	B
DSR820	35.50	72.80	B
DSR880	35.50	106.40	B
DSR950	35.50	108.20	B
DSR1015	53.50	91.55	D
DSR1070	53.50	91.55	D

All dimensions given in mm.



Model	ML	W	H	Dia	Z	S**
A	12.00	36.00	32.50	22.03	20.00	30.00
B	30.00	40.00	40.00	35.53	20.00	30.00
C	30.00	45.00	45.00	40.53	22.50	30.00
D	30.00	58.00	58.00	53.53	29.00	40.00

\*\*Dimension "S" is the spacing of the 2 mounting threads (not shown) on the bottom surface  
All dimensions given in mm.

All specifications are subject to change at any time.

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