

Optical Fiber Mode Scrambler/De-Speckler

Fiber Core, 50-400 μ m, 400 to 2000nm, CPR>22, IL<1dB



The Optical Fiber Mode Scrambler/De-Speckler (FMSC) is engineered to scramble laser light modes in multimode fibers, eliminating modal interference without optical loss. As laser light propagates through a multimode fiber, the beam shape or mode field fluctuates with time and distance, causing signal instability. The FMSC resolves this by redistributing the mode field with modulation up to 10 kHz, ensuring a stable, homogeneous laser output – essential for applications requiring uniform beam quality. Ideal for measurement and sensor systems, the FMSC enhances accuracy despite environmental variations. In many fiber-coupled applications, reducing speckle is crucial, as modal noise can degrade performance. Our despeckler effectively removes unwanted modal noise, making it an excellent choice for fiber assemblies used in Life Sciences, Digital Laser Projection, Interferometry, Laser Beam Homogenization, Lithography, and Metrology.

The FMSC is a compact, plug-and-play unit that includes a driver and power supply.

Features

- Low Loss
- Low Cost
- High Stability
- High Reliability
- Wide Temperature Operation

Applications

- Test/Measurement
- Sensor Systems
- Instruments

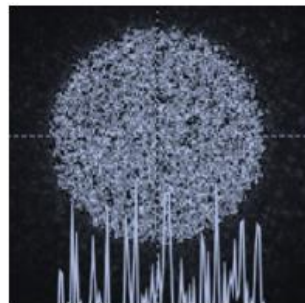
Specifications

Parameter	Min	Typical	Max	Unit
Center Wavelength	300		2200	nm
Insertion Loss [1]	0.0	0.1	0.3	dB
Return Loss	50			dB
Scrambling Rate			10	kHz
Operating Temperature	-20		60	°C
Storage Temperature	-40		85	°C
Applying DC		5		V
Electrical Power		<1		W

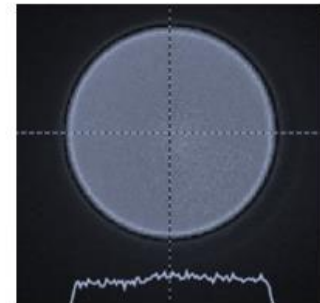
Notes:

[1] Without a connector, each connector adds 0.3dB

Near Field Measurement (400 μ m fiber @ 445nm)



■ Without Scrambler



■ With Scrambler

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Mechanical Dimensions (mm)

Ordering Information

Prefix	Fiber Type	Type	1	2	Fiber Protection	Fiber Length	Connector
FMSC-	105 μ m = 1 200 μ m = 2 400 μ m = 4 Square 200x200 μ m = 5 Square 400x400 μ m = 6 50/125 = A 62.5/125 = B Special = 0	Regular = 1 Special = 0			3mm = 1 Special = 0	0.5m = 5 1.0m = 1 2.0m = 2 Special = 0	None = 1 FC/PC = 2 SMA = 3 Special = 0

Red color for special order