Fiber Optic+Electric Joint Slip Ring — Quadruple

1310/1550 nm (SM), 850/1310 nm (MM), 4 Channels

DATASHEET

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Fiber Optic Rotary Joints (FORJs), also known as fiber optic slip rings, provide a continuous optical connection between stationary and rotating optical fibers while allowing unrestricted 360° rotation. They are designed for applications requiring the transmission of optical data, communication signals, or laser power between static and rotating platforms during continuous or intermittent rotation. Our FORJs are engineered for low insertion loss, low insertion loss variation, low back reflection, high rotational reliability, and high-speed optical transmission. Available in single-channel and multi-channel configurations, they support both single-mode and multimode fibers for demanding applications.

Features

- Low insertion loss, high rotation speed
- Non-contact, zero friction, long working life,
- Small size, light weight, high sealing class
- No electromagnetic interference

Applications

- Robot
- Material transfer system
- Rotating turret on vehicle
- Remote control system
- Radar signal
- Marine equipment and ship system
- Medical system
- Video monitoring system

Specifications

Parameter		Min	Typical	Max	Unit
Wavewidth			±50		nm
Insertion Loss (@23°C)				3.5	dB
Insertion Loss Ripple			1.5		dB
Return Loss	SM (1310/1550 nm)		≥ 50 (APC), ≥ 40 (PC)		dB
	MM (850/1310 nm)		≥ 30(PC)		dB
Power				0.5	W
Rotating Speed				300	rpm
Working Life			> 100 million		turn
Working Temperature		-20 (-40)		+60 (+85)	°C
Storage Temperature		-45		+85	°C
Electrical Data					
Rated Voltage		0		440	VAC/VDC
Insulation Resistance (@500VDC)			≥ 1000		MΩ
Lead Wires (Power/Signal)			AWG16/AWG22 #Teflon		
Lead Length			300 (can be extend)		mm
Dielectric Strength			500VAC @50Hz, 60s		
Electrical Noise			< 0.01		Ω
Mechanical Data					
Working Life			100 million		turn
Rotating Speed			250		rpm
Working Temperature		-30		+80	
Operating Humidity		0		85	% RH
Contact Material			Gold-Gold		
Housing Material			Aluminium Alloy		
Torque			0.1N.m; +0.03N.m./6ring		
Protection Grade			IP51		

RoHS COMPLIANT

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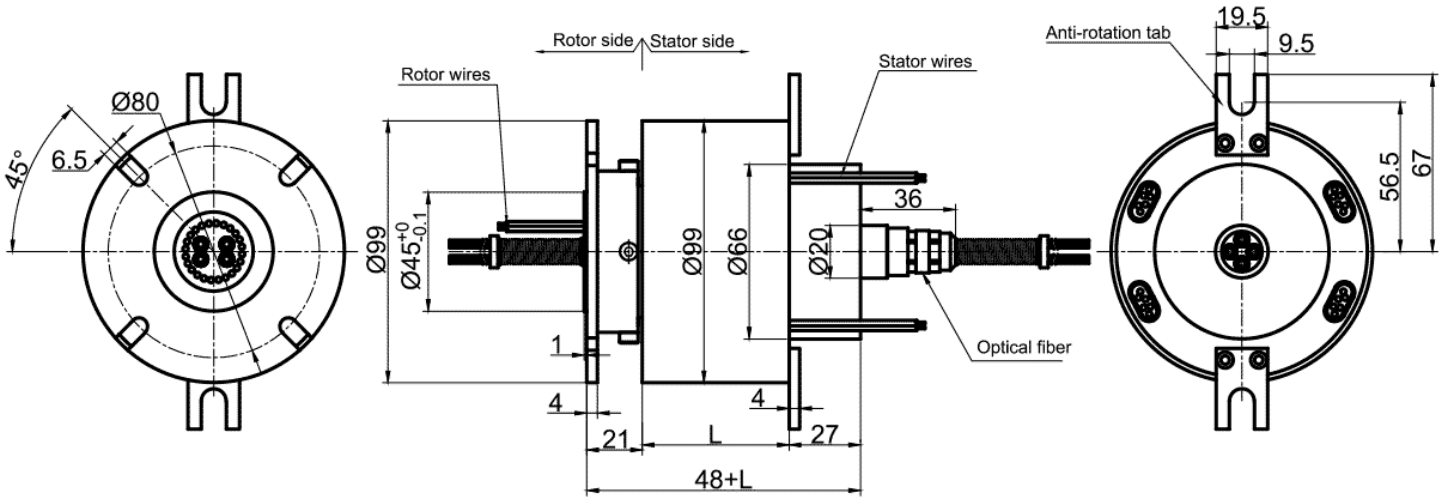
Mechanical Dimensions (mm)



*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Options for Custom Slip Ring

Note: Below special demands can be customized. Accordingly, the delivery date will be extended 3 to 15 days; also the cost will be increased 30% to 50%. Most of our basic parts are standard and modular, which can save the cost and lead time.

1. Cable exit way and cable length can be customized for both rotor and stator.
2. Because of the structure limitation, length/height/OD can be customized on your request.
3. Support current or signal up to 200 rings.
4. Aviation plug, terminal and heat-shrink tube are optional.
5. Hybrid slip ring for Yaskawa/Panasonic/Siemens servo control signal, power line and encoder line.
6. Support mixed high speed data transmission (including Ethernet, USB, RS232, RS485, Profibus, CanBUS, CANOPEN, DeviceNET, CC-LINK, ProfiNET, EtherCAT, etc.).
7. Can combine temperature control signal with thermocouple signal.
8. Special environment can be customized, such as quakeproof, high temperature, etc.
9. Hybrid pneumatic/hydraulic and electric slip ring can be mixed.
10. Optical fiber connector, optical fiber type and fiber pigtail length can be customized.
11. Optical fiber channels can be customized.
12. Optical fiber wavelength can be customized.
13. Maximum current can be up to 5000 amperes.
14. Military grade.
15. Optional for underwater IP65, IP68.
16. Optional for stainless steel housing.

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Ordering Information (Part Number)

	FE	4	☐	☐☐	☐	☐	☐
Prefix	**Configuration**	**# Channel**	**Wavelength**	**Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector [1]**
FORJ-	Fiber+Electric = FE	4 = 4	1310/1550nm = S 850/1310nm = M Special = 0	SM28 = 01 50/125 = 05 62.5/125 = 06 105/125 = 0A Special = 00	3mm tube = 3 0.9mm tube = 2 Special = 0	0.5m = 2 1.0m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 LC/UPC = U Special = 0

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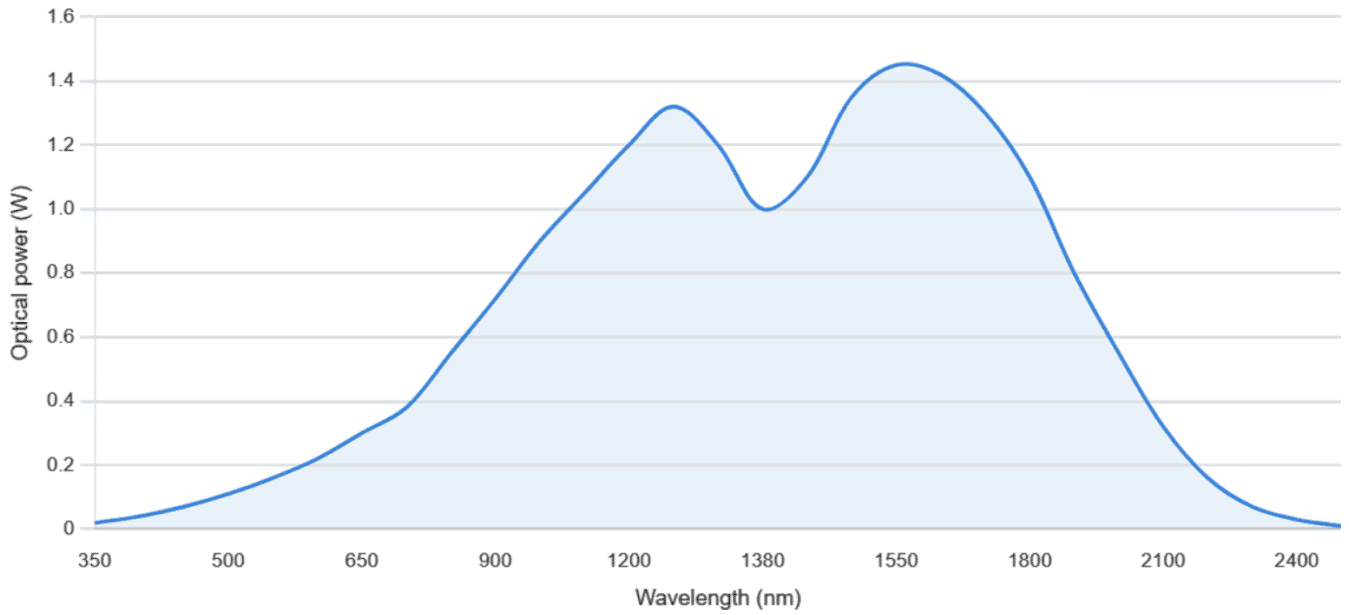
Regular Single Mode / Polarization Maintaining Fiber Optical Power Handing vs Wavelength



Single mode fiber optical power is limited by nonlinear effects in addition to absorption that increase loss and generate heat. The curve shows the approximate safe CW power envelope for standard single-mode fiber. Actual limits depend on fiber design, core size, length, and laser characteristics. Specialty fibers can significantly increase the power limit.

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