LPHF Rotary Joints



Electrical & Electronics		Mechanical		Environmental	
Channels	1/2/3/4(optiongal)	Rotating speed	0-500rpm	Working temperature	Industrial: -40℃~+75℃
Frequency range	1CH:≤50GHz 2CH:≤18GHz	Lifetime	10million revolutions		Military: -55℃~+85℃
Inserfaces	SMA/N/3.5/2.92/2.4/F	Interface loads ,max	±5N(axial) ±5N(radial)	Storage ambient temperature	-50 ~ 85℃
VSWR,max	1.2(Minimum)	Torque during rotation	1N.cm(Minimum)	Relative humidity	≤95% (condensation not allowed)
Insertion ioss,max	0.25dB(Minimum)	Contact material	Precious metal		
Peak power,max	10KW(Maximum)	Case material	Aluminum alloy/ stainless steel/brass	IP protection level	IP 40 (High protection optional)
Isolation,min	50dB	Surface material	Conductive oxidation/ passivation/ nickel plating/ piating termary alloy		

Brief Introduction

High Frequency Rotary Joint is applied in constant rotating devices. It transmits high frequency signal and high speed signal from stationary part to rotary part. This rotary joint is able to transfer analog signals and high-speed digital signals with frequencies up to 500MHz-50GHz. It is compact in structure, stable in performance with good shielding effect, and low interference. Besides, high frequency slip ring can be easily installed in other applications.

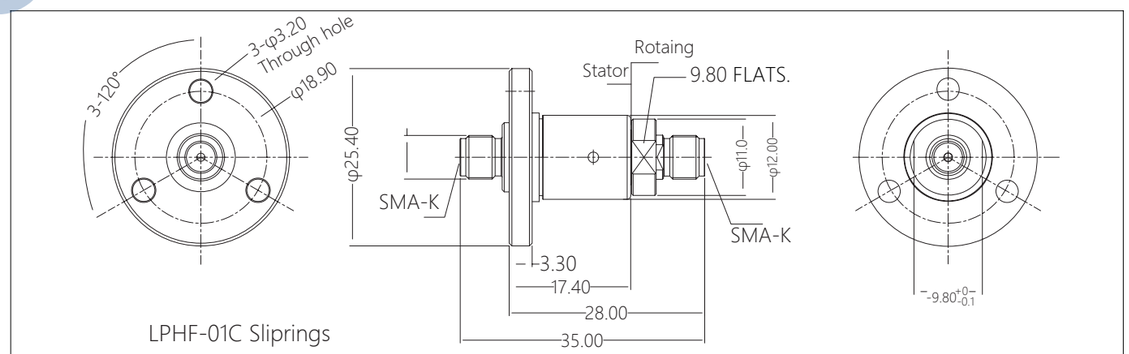
This series consists of high frequency slip ring and high frequency electric hybrid slip ring

Features:
- Up to 4 circuits (model with more circuits is customizable)
- Frequency up to 50GHz
- Compact structure with low interference
- Transmit multifarious signals simultaneously
- Ultra low insertion loss and transmission fluctuation
- Long service life and maintenance-free

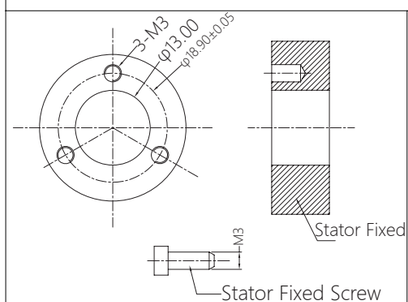
Options:
- Number of circuits
- High frequency range
- Voltage and current
- Integrated transmission of high frequency signal and power signal or other signals

Applications:
- Radar antenna, military system devices
- HD network video surveillance system
- Satellite communication system
- Medical treatment instrument
- Air traffic control and missile defense system

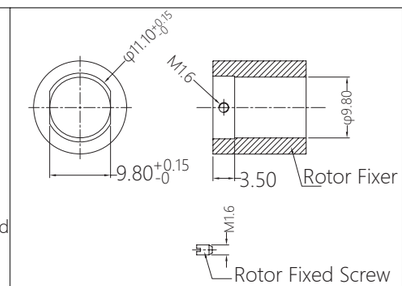
Installation Instructions



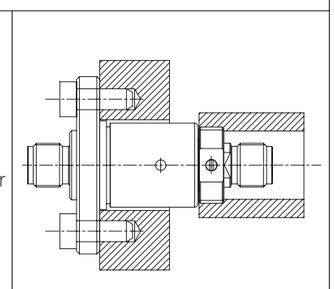
LPHF-01C Sliprings



Recommended mounting hole size for stator end



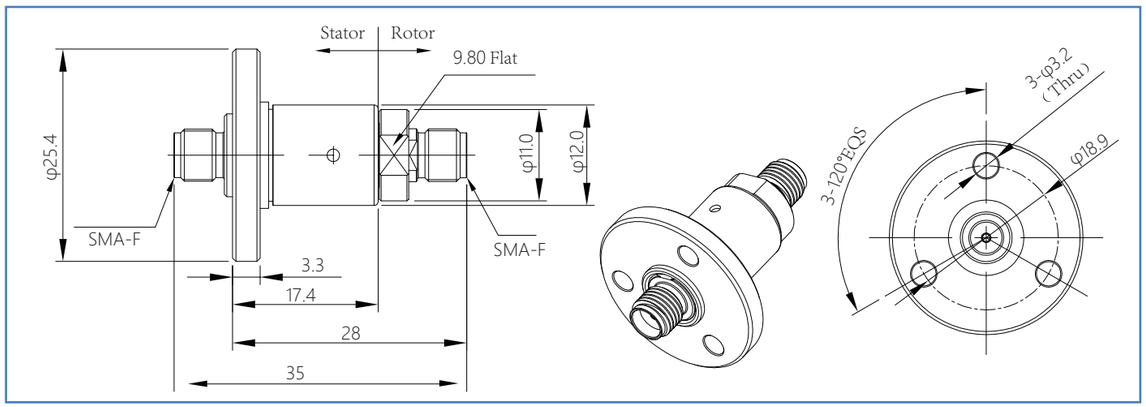
Recommended mounting hole size for the rotor end



Installation Instructions

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LPHF-01C Outline drawing



Specifications

Interface Type	SMA-F(50Ω)	Axial load on Interface, Max	±2N
Frequency Range	DC-18GHz	Radial Load on Interface, Max	±2N
VSWR, Max	1.3@DC-12GHz 1.4@12-18GHz	Body Material	Stainless Steel
VSWR WOW	0.05	Insul ator Material	PTFE
Insertion loss,Max.	0.3dB@DC-12GHz 0.4dB@12-18GHz	Marking	Laser marking
Insertion loss WOW	0.05dB	Weight	25.4g
Peak Power, Max.	3KW	IP Protection Level	IP40
Maximum speed	2000rpm	Operation Temperature	-45~+80°C
Average Power, Max	200W@1GHz/30W@18GHz	Storage Temperature	-55~+85°C
Phase WOW, Max	1°	Rotating Speed, Max.	300rpm
Humidity (Operation)	95%	Humidity (Storage)	95%
Life Time, Min.	10 Million Revolutions	Starting Torque	2Ncm Max
Continuous Rotational Torque		2Ncm Max	

Features

Independent Research and Development

Key Challenges

- Characteristic impedance transition matching design
- Contact material wear resistance technology
- Precision machining and assembly of miniature parts
- Off-axis channel RF rotation coupling technology
- Blind operation low temperature welding process
- High isolation design

Core Technology

- RF simulation optimization technology
- Self-lubricating contact material and lubricant process
- Multi-channel RF slip ring design ideas
- High power slip ring design technology

Slip Ring Performance and Quality

- Slip ring life is not lower than similar products
- Multi-channel slip ring insertion loss index is better than similar products
- Multi-channel slip ring size is smaller than similar products

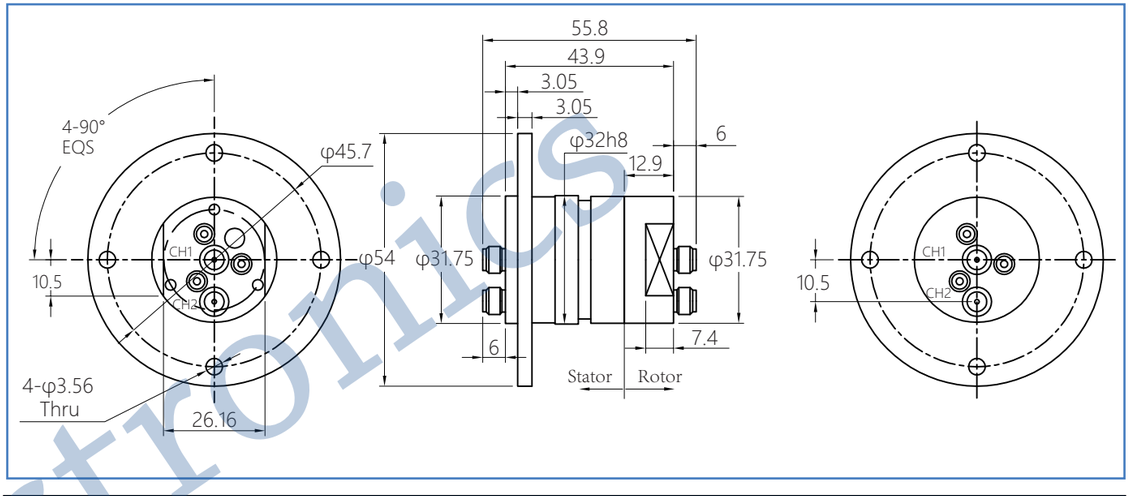
Product Delivery

- Significantly shorten the delivery period compared to imported products; General single-channel products are delivered for 1-2 weeks, multi-channel products are delivered for 2-4 weeks

Cost Performance

- Cost-effective compared to similar imported products

LPHF-02A Outline drawing



Specifications

Channel1	Channel1 1	Channel1 2	Starting Torque	5Ncm@ room temperature
Interface Type	SMA-F(50ohm)	SMA-F(50ohm)	Continuous Rotational Torque	5Ncm@ room temperature
Type	I	I	Rotaing Speed, Max.	60rpm
Frequency Range	DC-4.5GHz	DC-4.5GHz	Lofe Time,Min	10 million Revolutions
Peak Power, Max.	1000W	1000W	Body Material	Aluminum alloy
Average Power, Max	60W@4.5GHz	10W	Case surface finish	Chromate conversion coat
VSWR, Max	1.2	1.5	Weight	0.13Kg
VSWR, WOW	0.05	0.2	IP Protection Level	IP60
Insertion Loss, Max.	0.25dB	0.3dB	Operation Temperature	-45~+80°C
Insertion Loss, WOW	0.05dB	0.15dB	Storage Temperature	-55~+85°C
DC capability, max (one channel only)	0.5A, 48VDC@full RF avg.power	0.5A, 24VDC@full RF avg.power	Humidity(Operation)	95%
Phase WOW	0.5deg	4.0deg	Humidity(Storage)	95%
Isolation, min		50dB	/	

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	Model	Channel	Interface	Frequency range	Peak power, max	Average power, max	VSWR, max	Insertion loss, max	Isolation, min
Single-Channel	LPCC-01A	1	Optional	DC-3GHz	1000W	20W@3GHz	1.5@0-3GHz	1.2dB@3GHz (250mm/250mm)	/
	LPCC-02A	1	Optional	DC-3GHz	1000W	20W@3GHz	1.6@0-3GHz	1.2dB@3GHz (250mm/250mm)	/
	LPCC-01B	1	Optional	DC-6GHz	800W	10W@6GHz	1.5@6GHz	1.8dB@0-6G (250mm/250mm)	/
	LPCC-01C	1	N-F(75Ω)	DC-12GHz	1KW	100W@1GHz 15W@12GHz	1.4	0.6dB	/
	LPHF-01A	1	SMA-f(50Ω)	DC-18GHz	1500W	200W@1GHz 30W@18GHz	1.20@0-6GHz 1.25@6-12GHz 1.35@12-18GHz	0.25dB@0-6GHz 0.3dB@6-12GHz 0.5dB@12-18GHz	/
	LPHF-01C	1	SMA-f(50Ω)	DC-18GHz	3000W	200W@1GHz 30W@18GHz	1.2@0-6GHz 1.3@6-12GHz 1.4@12-18GHz	0.25dB@0-6GHz 0.3dB@6-12GHz 0.4dB@12-18GHz	/
	LPHF-01E	1	3.5mm-f(50Ω)	DC-26.5GHz	3000W	200W@1GHz 50W@18GHz 30W@26.5GHz	1.30@0-12GHz 1.35@12-18GHz 1.7@18-26.5GHz	0.3dB@0-12GHz 0.35dB@12-18GHz 0.7dB@18-26.5GHz	/
	LPHF-01F	1	2.92mm-f(50Ω)	DC-40GHz	500W	50W@2GHz 2W@18GHz 1W@40GHz	1.4@0-18GHz 1.7@18-26.5GHz 2.0@26.5-40GHz	0.5dB@0-18GHz 1.0dB@18-26.5GHz 1.2dB@26.5-40GHz	/
	LPHF-01G	1	2.4mm-f(50Ω)	DC-50GHz	1000W	50W@1GHz 15W@10GHz 3W@50GHz	1.3@0-10GHz 1.4@10-26.5GHz 1.7@26.5-50GHz	0.3dB@0-10GHz 0.5dB@10-26.5GHz 0.9dB@26.5-50GHz	/
	LPHF-01H	1	N-f(50Ω)	DC-18GHz	10000W	200W@1GHz 100W@8GHz 70W@18GHz	1.2@0-10GHz 1.3@10-18GHz	0.2dB@0-10GHz 0.3dB@10-18GHz	/
	LPHF-01J	1	SSMA-F(50Ω)	DC-18GHz	500W	100 W @ 1 GHz 10 W @ 18 GHz	1.4 @ DC-18 GHz	0.4dB	/
	LPHF-01K	1	2.92mm-f(50Ω)	DC-40GHz	500W	50W@2GHz 2W@18GHz 1W@40GHz	1.4@0-18GHz 1.7@18-26.5GHz 2.0@26.5-40GHz	0.5dB@0-18GHz 1.0dB@18-26.5GHz 1.2dB@26.5-40GHz	/
	LPHF-01M	1	SMA-f(50Ω)	DC-18GHz	3000W	200W@1GHz	1.35@0-10GHz 1.5@10-18GHz	0.3dB@0-10GHz 0.4dB@10-18GHz	/
Multi-Channel	LPHF-02A	2	SMA-f(50Ω)	DC-4.5GHz	1000W	60W@4.5GHz	1.2	0.25dB	50dB
			SMA-f(50Ω)	DC-4.5GHz		10W	1.5	0.3dB	
	LPHF-02B	2	SMA-f(50Ω)	DC-18GHz	1000W	200W@1GHz	1.3@0-8GHz 1.5@4-18GHz	0.4dB@0-4GHz 0.9dB@4-18GHz	50dB
			SMA-f(50Ω)	DC-4GHz		200W@1GHz	1.5	0.5dB	
	LPHF-02C	2	SMA-f(50Ω)	DC-18GHz	1000W	100W@2GHz 60W@8GHz 10W@18GHz	1.35@0-8GHz 1.5@8-18GHz	0.4dB@0-8GHz 0.9dB@8-18GHz	50dB
			SMA-f(50Ω)	DC-13GHz		10W	1.6@0-4GHz 1.8@4-8GHz 2.0@8-13GHz	0.5dB0-4GHz 0.7dB@4-8GHz 1.0dB@8-13GHz	
	LPHF-02D	2	2.92-f(50Ω)	DC-18GHz	1000W	100W@2GHz 35W@8GHz 10W@18GHz	1.35@0-8GHz 1.5@8-18GHz	0.4dB@0-8GHz 1.0dB@8-18GHz	50dB
			2.92-f(50Ω)	DC-18GHz		10W	2.0@0-4GHz 2.5@4-8GHz 3.5@8-12GHz 4.5@12-18GHz	0.5dB@0-4GHz 1.0dB@4-8GHz 2.0dB@8-12GHz 3.5dB@12-18GHz	

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	Model	Channel	Interface	Frequency range	Peak power,max	Average power,max	VSWR, max	Insertion loss, max	Isolation, min.
Multi-Channel	LPHF-02E	2	SMA-f(50Ω)	DC-5GHz	1000W	60W@5GHz	1.2	0.25dB	50dB
			SMA-f(50Ω)	DC-5GHz		10W	1.5	0.45dB	
	LPHF-02W	2	SMA-f(50Ω)	DC-18GHz	1000W	200W@1GHz	1.5@-18GHz	0.6dB@	50dB
			SMA-f(50Ω)	DC-10GHz		200W@1GHz	2.4@4-10GHz	1.5dB@	
	LPHF-02F	2	SMA-f(50Ω)	DC-18GHz	1000W	100W@2GHz 35W@8GHz 10W@18GHz	1.35@0-8GHz 1.5@8-18GHz	0.5dB@0-8GHz 1.0dB@8-18GHz	50dB
			SMA-f(50Ω)	DC-13GHz		10W	1.6@0-5GHz 2.0@5-13GHz	0.6dB@0-5GHz 1.2dB@5-13GHz	
	LPHF-02G	2	SMA-f(50Ω)	DC-8GHz	1000W	200W@1GHz	1.2@0-4GHz 1.3@4-8GHz	0.2dB@0-4GHz 0.4dB@4-8GHz	50dB
			SMA-f(50Ω)	DC-8GHz		10W	1.8@0-4GHz 2.2@4-8GHz	0.5dB@0-4GHz 0.8dB@4-8GHz	
	LPHF-02A -75Ω	2	MCX-M(75Ω)	DC-1.5GHz	1000W	200W@1GHz	2	1.5dB	50dB
			SMA-F(75Ω)	DC-1.5GHz		200W@1GHz	2.5	1.5dB	
	LPHF-02K	2	1.85-F(50Ω)	DC-60GHz	1000W	200W@1GHz	2	2.0dB	50dB
			SMA-F(50Ω)	DC-6GHz		10W@6GHz	2.5	1.5dB	
	LPHF-02I	2	2.92-F(50Ω)	DC-40GHz	1000W	200W@1GHz	2	1.5dB	50dB
			SMA-F(50Ω)	DC-6GHz		10W@4.5GHz	1.65	1.65dB	
	LPHF-03A	3	SMA-K(50Ω)	DC-2GHz	1000W	30W@1GHz 10W@1GHz 10W@1GHz	1.5	1.0dB	50dB
	LPHF-03C	3	SMA-F(50Ω)	DC-3GHz	1000W	30W	1.5	0.8dB	50dB
			SMA-F(50Ω)	DC-3GHz		30W	1.5	0.8dB	
			SMA-F(50Ω)	DC-3GHz		30W	1.5	0.8dB	
	LPHF-04A	4	SMA-f(50Ω)	DC-4GHz	1000W	50W	1.3	1.0dB	55dB
			SMA-f(50Ω)	DC-4GHz		10W	1.5	1.0dB	
			SMA-f(50Ω)	DC-4GHz		10W	1.5	1.0dB	
			SMA-f(50Ω)	DC-4GHz		10W	1.5	1.0dB	
Integrated	LPC-1C1202	1	Optional	DC-3GHz	1000W	20W@3GHz	1.6@0-3GHz	1.2dB@3GHz (250mm/250mm)	/
	LPC-1C2402	1	Optional	DC-3GHz	1000W	20W@3GHz	1.6@0-3GHz	1.2dB@3GHz (250mm/250mm)	/
	LPC-1C3002	1	Optional	DC-3GHz	1000W	20W@3GHz	1.6@0-3GHz	1.2dB@3GHz (250mm/250mm)	/
	LPC-1C3602	1	Optional	DC-3GHz	1000W	20W@3GHz	1.6@0-3GHz	1.2dB@3GHz (250mm/250mm)	/

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