5.52” Diameter Electrical Slip Ring with Fiber Optic Rotary Joint

Model 176 with FORJ

Focal Technologies Corporation, a Moog Inc. company, has over 30 years of expertise in supplying standard and custom marine products for harsh environments and is a leading manufacturer of high performance and high quality electrical slip rings. Contact Focal for assistance in selecting the best solution for your requirement.

The Model 176 with FORJ combination has served the marine industry for over 30 years and is ideal for applications where voltages exceed the 1000 V / 7 A capabilities of our Model 180.

The ESR portion is comprised of electrical power and signal passes. Highly configurable, it is customized to meet customer specific needs, providing superior performance and reliability in demanding operating environments. For the hazardous area environment, there is an option for a fully certified, flameproof enclosure. When underwater operational capability is required, it can also be adapted for use as a fluid-filled, pressure compensated unit.

Features

- Electrical passes rated to 7200 V / 20 A
- Up to 52 fiber optic channels in a very small form factor
- Pigtail exits are capable of being sealed to IP66 standards
- Sealed housing design tested to IP66 standards
- Can accommodate a variety of wire and cable types
- Hazardous area certification available
- Stainless steel construction
- Rugged design intended for harsh environments
- Reliable operation under shock and vibration
- Combined with Fluid Rotary Unions (FRU), see Model 173

Benefits

- Compliance with the highest quality standards for design, manufacture and test
- Maintenance free operation
- More than 30 years of proven field performance
- Integration with FORJ and fluid rotary unions (FRU) to provide a complete rotating interface solution

Applications

- Seismic survey winches
- Remotely Operated Vehicles (ROVs)
- Winch and TMS applications
- Mine countermeasures
- Towed instrument arrays
- Oceanographic winches (surface and subsea)

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Electrical Slip Ring (ESR) Component Specifications

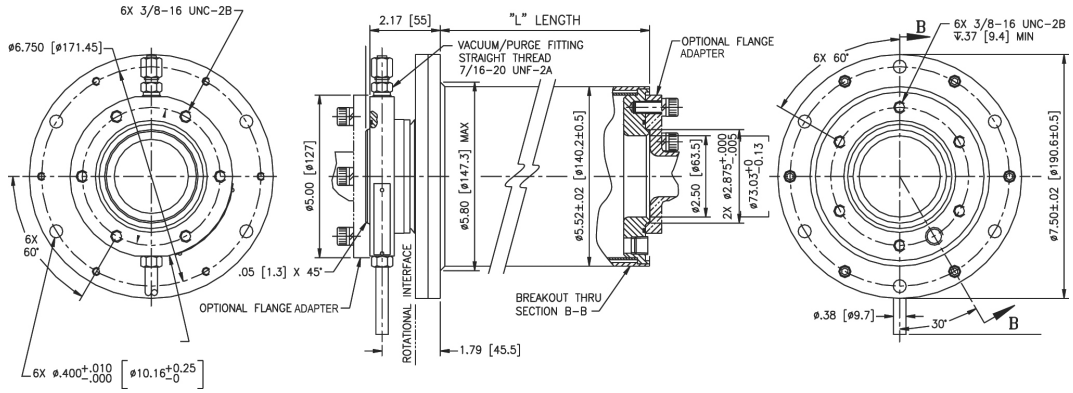
Electrical	
Voltage	Maximum 7200 VAC
Current	Maximum 20 A per pass Maximum 720 A total current * *Maximum total current is dependent on duty cycle, ambient temperature and specific configuration. Consult factory to ensure configuration is suitable for application.
Electrical Performance	
Contact Resistance	20 mΩ nominal
Insulation Resistance	Typical > 500 MΩ @ 1 kVDC
Short Circuit Rating	1.5 kA / 1s, 3.7 kA peak
Signal Types	Analog Video, CanBus, Profibus, Device Net, 10 Base-T Ethernet, SHDSL, RS-485
Mechanical	
Rotation Speed	Maximum 50 rpm continuous
Ingress Protection	Sealed to IP66, except for pigtail exits
Operating Temperature	-20°C to +55°C [1]
Housing	Stainless steel (304)
Insertion Length “L” (see drawing below)	Varies with number of electrical passes
Environment Test	
Temperature	Tested to MIL-STD-810F methods 501.4 and 502.4
Vibration	Tested to MIL-STD-167-1
Shock	Tested to MIL-STD-810D, method 516.3
Humidity	Tested to MIL-STD-810F, method 507.4

[1] -20°C to +40°C for hazardous area certified Model 176-X under Canadian jurisdiction

Hazardous Area Option: Model 176-X		
Certification	US:	Class I, Division 1, Group C & D, T5 Class I, Zone 1, AEx d IIB T5 ETL ATM 4007859
	CAN:	Class I, Division 1, Group C & D, T5 Class I, Zone 1, Group IIB T5 ETL ATM 4007859
	ATEX:	CE 0334 II 2 G Ex db IIB T5 Gb KEMA 04ATEX2084X
	IECEx:	Ex db IIb T5 Gb ETL 13.0013X
Terminations		
Standard		Wire pigtails, 10 ft [3.0 m]
Flange and Cable Covers		Various entry threads and orientations available
Special		Supply and installation of connectors, terminals, conduit, cable, glands, junction boxes, sealed pigtail exits
Additional Options		
Fiber Optics		Fiber Optic Rotary Joint (FORJ) or optical converter
Covered Pigtails		Tinned copper braid and heat shrink installed over loose wire pigtails
Other Devices		RF Rotary Joint, shaft encoder, sensors, Fluid Rotary Union (FRU), slip ring sensors, customer supplied product
Ingress Protection		IP 67 or IP 68
Housing Material		316 stainless steel

Please contact factory with your application details

Model 176 Slip Ring with Integrated Fiber Joint Dimensions



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Fiber Optic Rotary Joint (FORJ) Component Specifications

Model Number Reference	Optical Channels	Fiber Type	Insertion Loss (dB)	FORJ Selection Notes. See individual datasheets for more details
FO197	1	MMF	≤ 2.5	Industry standard MMF FORJ for marine winch applications
FO206	1	SMF	≤ 3.5	Industry standard SMF FORJ for marine winch applications
FO292	2	MMF/SMF	≤ 6.0	2 channels MMF or 1 ch MMF/1 ch SMF
FO190	2-21	MMF	≤ 5.5	Industry standard multichannel MMF FORJ for marine winch applications. Can be supplied with 1 channel as SMF.
FO291	2-9	SMF	≤ 6.0	Industry standard multichannel SMF FORJ for marine winch applications. Can be supplied with 1 channel as MMF.
FO300A	2-17 Note 6	MMF/SMF	≤ 4.0	Applications requiring higher channel count or a mix of multiple MMF/SMF channels. (Note FO300C is currently SMF only).
FO300B	2-31 Note 6	MMF/SMF	≤ 5.0	
FO300C	2-52 Note 6	SMF	≤ 5.0	

Notes:

1 SMF = Singlemode fiber| MM = Multimode fiber

2 Pigtail lengths as defined by customer

3 Standard connector options include ST, FC, SC, LC. Contact factory for others.

4 Optical values shown for MMF FORJs based on use with sources defined per IEC 61280-4-1

5 Legacy FO242 SMF FORJs are replaced by the newer Model FO291

6 Junction boxes, fiber and electrical wire size, and the number of electrical wires may limit number of possible optical channels. Please contact factory for higher channel count requirements to discuss options

MOOG

Manufactured in an ISO 9001:2008 registered facility.
All specifications and information are subject to change without prior notice.

Please contact the factory for the latest updates.

Focal Technologies Corporation | A Moog Inc. Company

77 Frazee Avenue, Dartmouth

Nova Scotia, Canada B2B 1Z4

Tel: 1- 888-302-2263 or +1-902-468-2263 | **Fax:** +1-902-468-2249

Email: focal@moog.com | **Web**: www.moog.com/focal

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