

# 2.85" Diameter Electrical Slip Ring with Fiber Optic Rotary Joint

Model 180 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 and fiber optic rotary joints. Contact Focal for assistance in selecting the best solution for your requirement.



The Model 180 is comprised of electrical power and signal passes, and provides superior performance and reliability in demanding operational environments. The Model 180 may be constructed for subsea use where underwater operation is required. The slip ring may be fluid-filled, and pressure compensated unit. For the hazardous locations, the Model 180-X variant is fully certified, as a flameproof and explosion proof enclosure.

The electrical slip ring (ESR) 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 hazardous area environments there is an option for a fully certified, flameproof enclosure.

The fiber optic rotary joint (FORJ) can be configured with many of Moog Focal's single-channel or multi-channel, singlemode or multimode fiber joints. Our FORJs are capable of working with all fiber types, sizes and wavelengths, and meet insertion loss performance typical of customer requirements.

## Features

- Standard electrical passes rated up to 1000 V / 7 A
- 1500 V passes optional
- Can accommodate a variety of wire and cable types
- Maintained type certification for Hazardous locations
- Rugged design intended for harsh environments
- Reliable operation under shock and vibration
- Underwater designs available
- Combined with Fluid Rotary Unions (FRU), see Model 200

## Benefits

- Compliance with the highest quality standards for design, manufacture and test
- Maintenance free operation
- More than 20 years of proven field performance
- Integration with FORJ and FRU to provide a complete rotating interface solution

## Applications

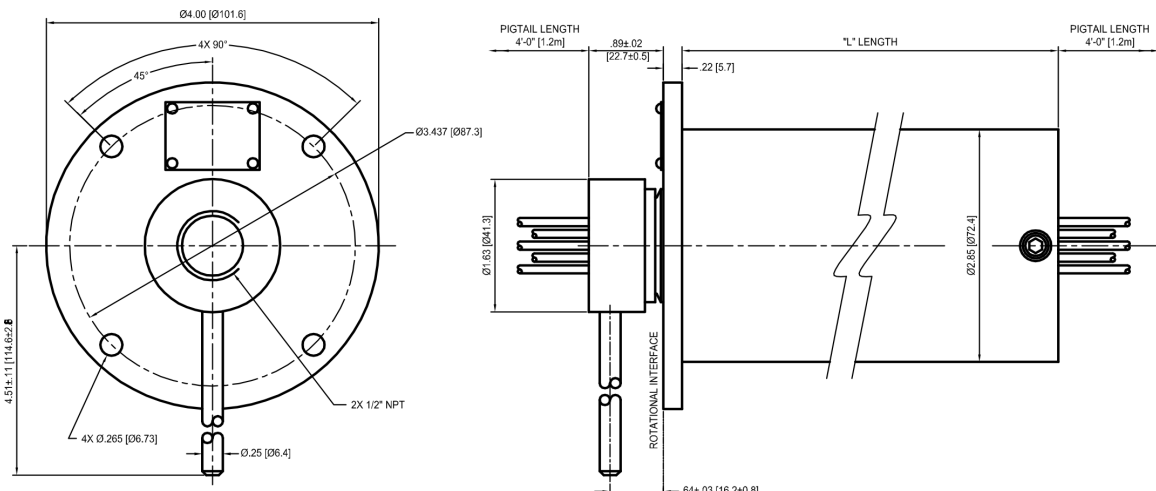
- Remotely Operated Vehicles (ROVs)
- Winch and TMS applications
- Industrial machinery
- Seismic surveying

# Specifications

Electrical	
<b>Voltage</b>	1000 VAC standard 1500 VAC optional
<b>Current</b>	Maximum 7 A per pass Maximum 100 A total current
Electrical Performance	
<b>Contact Resistance</b>	20 mΩ nominal
<b>Insulation Resistance</b>	Minimum 500 MΩ @ 1 kVDC
<b>Signal Types</b>	Analog Video, CanBus, Profibus, Device Net, 10 Base-T Ethernet, SHDSL, RS-485, 1000 Base-T Ethernet
Mechanical	
<b>Rotation Speed</b>	Maximum 100 rpm
<b>Ingress Protection</b>	Sealed to IP66, except for pigtail exits
<b>Operating Temperature</b>	-20°C to +55°C <sup>1</sup>
<b>Housing</b>	Stainless steel (304)
<b>Insertion Length "L" (see drawing below)</b>	Varies with number of electrical passes
Environment Test	
<b>Temperature</b>	Tested to MIL-STD-810F Methods 501.4 and 502.4
<b>Vibration</b>	Tested to MIL-STD-167-1
<b>Shock</b>	Tested to MIL-STD-810D, method 516.3
<b>Humidity</b>	Tested to MIL-STD-810F, method 507.4

<sup>1</sup> -20°C to +40°C for a hazardous area certified Model 180-X under Canadian jurisdiction

Hazardous Area Option: Model 180-X	
<b>Certifications</b>	<b>US:</b> Class I, Division 1, Group C & D, T5 Class I, Zone 1, AEx d IIB T5  ETL ATM 4007859
	<b>CAN:</b> Class I, Division 1, Group C & D, T5 Class I, Zone 1, Ex d IIB T5 ETL ATM 4007859
	<b>ATEX:</b> CE 0334 Ⓢ II 2 G Ex db IIB T5 Gb KEMA 04ATEX2084X
	<b>IECEX:</b> Ex db IIB T5 Gb ETL 13.0013X
Terminations	
<b>Standard</b>	Wire pigtails, 4 ft [1.2 m], exiting via 1/2" or 3/4" NPT female ports
<b>Special</b>	Supply and installation of connectors, terminals, conduit, cable, glands, junction boxes, sealed pigtail exits
Additional Options	
<b>Optics</b>	Fiber Optic Rotary Joint (FORJ) or optical converter
<b>Design Classification</b>	ABS, DNV, BV, LRS
<b>Submersed Applications</b>	Fluid fill fittings or fluid filled/ pressure compensated at factory
<b>Other Devices</b>	RF Rotary Joint, shaft encoder, sensors, Fluid Rotary Union, customer supplied product
<b>Ingress Protection</b>	IP 67 or IP 68
<b>Housing Material</b>	316 stainless steel



All specifications and information are subject to change without notice. Please contact Focal for the latest updates.

Dimensions in inches [mm].

# Specifications

Model Number Reference	Optical Channels	Fiber Type	Insertion Loss (dB)	FORJ Selection Notes. See individual datasheets for more details
FO197	1	MMF	≤ 3.0	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 <u>or</u> 1 ch MMF/1 ch SMF
FO291	2-6 <sup>Note 5</sup>	SMF	≤ 6.5	Industry standard multichannel SMF FORJ for marine winch applications. Can be supplied with 1 channel as MMF.
FO300A	2-6 <sup>Note 5</sup>	MMF/SMF	≤ 4.0	Provides a mix of multiple MMF/SMF channels

**Notes:**

- 1 SMF = Singlemode fiber | MMF = 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 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.

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.

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