Model 205 Brushless Slip Ring

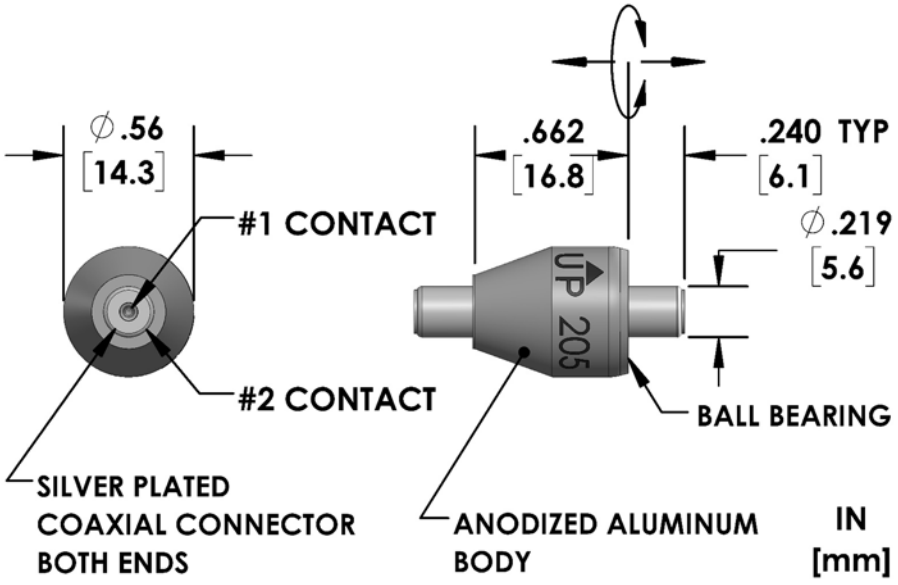
Conductors: Two Conductor
Amps: 4
Volts: 250

The Mercotac® model 205 brushless slip rings are ideal for thermocouples, strain gages, eddy current test devices, and wind turbine blade sensors due to their compact size, reliable quality signal connection, low torque and low cost. The model 205 replaced the model 590, which was the pioneering brushless slip ring designed specifically for the Leslie Organ Speaker.

Advantages:

- Durable, compact, and low cost
- Reliable for signal and power connections
- Easy to install and replace
- Lightweight and made of robust metal construction
- Long-lasting, energy efficient, and no maintenance
- Made in the USA

Model 205 Dimensions



Mercotac, Inc.
6195 Corte del Cedro #100 Carlsbad, CA 92011 USA
Telephone: (760) 431-7723 Fax: (760) 431-0905
Email: sales@mercotac.com Support: techsupport@mercotac.com

Specifications

Models 205, 205-SS			
Spec.	**Type**	**Value**	**Units**
Rotational Torque	Max.	75	gf-cm
Voltage Rating	Max.	250	Volts (AC/DC)
Current Rating	Max.	4	Amps
Rotational Speed	Max.	2000	RPM
Operating Temperature	Min.	45 (7)	°F (°C)
	Max.	140 (60)	
Frequency	Max.	200	MHz
Contact Resistance	-	<1	mΩ
Circuit Separation	-	>25	MΩ

Models 205-L, 205-LS			
Spec.	**Type**	**Value**	**Units**
Rotational Torque	Max.	L: 20 LS: 75	gf-cm
Voltage Rating	Max.	250	Volts (AC/DC)
Current Rating	Max.	4	Amps
Rotational Speed	Max.	1200	RPM
Operating Temperature	Min.	-20 (-29)	°F (°C)
	Max.	140 (60)	
Frequency	Max.	200	MHz
Contact Resistance	-	<1	mΩ
Circuit Separation	-	>25	MΩ

Model 205-H, 205-HS			
Spec.	**Type**	**Value**	**Units**
Rotational Torque	Max.	35	gf-cm
Voltage Rating	Max.	250	Volts (AC/DC)
Current Rating	Max.	4	Amps
Rotational Speed	Max.	3600	RPM
Operating Temperature	Min.	45 (7)	°F (°C)
	Max.	140 (60)	
Frequency	Max.	200	MHz
Contact Resistance	-	<1	mΩ
Circuit Separation	-	>25	MΩ

Materials

Mercotac brushless slip rings are made out of robust materials for long life and compactness. The terminals are silver-plated copper for low-resistance connections, the body, anodized aluminum for strength and corrosion resistance, and the high-quality ball bearings are lubed for life and require no maintenance.

Models 205, 205-L, 205-H			
Model	**Terminals**	**Body Material**	**Bearing Material**
205	2	Anodized Aluminum	Chromium Steel
205-L			
205-H			

Models 205-SS, 205-LS, 205-HS			
Model	**Terminals**	**Body Material**	**Bearing Material**
205-SS	2	Anodized Aluminum	440C Stainless Steel
205-LS			
205-HS			

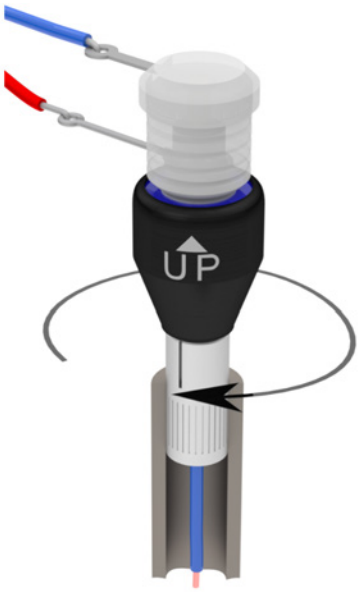
Available with stainless steel ball bearing (205-SS, 205-LS, 205-HS) (recommended for wet or corrosive environments)

Note: The body of the 205 series Mercotac Connector is electrically "hot" to the internal conductor

Available in low torque (205-L)

Mounting

Correct mounting of the Mercotac is important for maximum life. Mounting concentricity should be below .005” (.13mm) TIR. Some suggested mounting options are shown below but there are more examples on our website at www.mercotac.com.



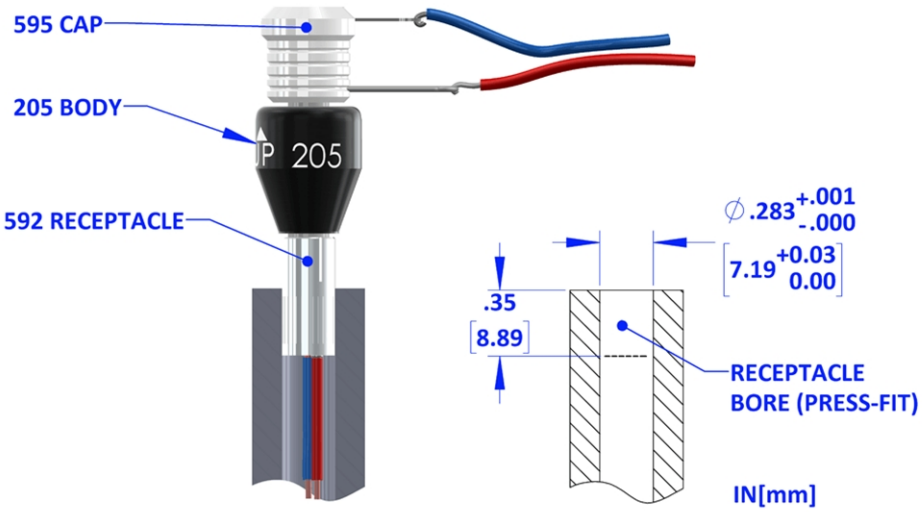
Best mounting method.

Mounting Guidelines

- Mercotac Brushless Slip Rings may be used in any position between vertical and 90 degrees horizontal except for certain low torque models. The UP arrow should not point below horizontal.
- The Coaxial models 104,105, 110, 130, 205, 305 can be held or mounted by the body or the receptacle. The cap is usually connected to the bearing end.
- In horizontal applications, mount the Mercotac with the body rotating to reduce mechanical loads on the bearing.
- Limit mounting eccentricity to a maximum of .005” TIR.
- Mercotac products are not designed to carry mechanical loads. One end should be allowed to float, attached only by the connecting wires.

See website for additional mounting illustrations and instructions.

Receptacle Mount



Vibration / Shock

- Vibration or mechanical shock will reduce Mercotac Brushless Slip Ring life or cause failure.
- If vibration or shock is present, use a flexible vibration isolating mounting.

Food Applications

- As a precaution, a protective housing is required to isolate the rotating slip ring from the food product.

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Temperature

It is very important to keep the operating temperature of the Mercotac slip ring below 140°F (60°C) as measured on the body. Electrical current heat rise, rotational heat rise, and the ambient temperature are factors contributing to the operating temperature of the Mercotac.

Provide thermal insulation where necessary to prevent the Mercotac temperature from exceeding 140°F (60°C). Mercotac slip rings contain plastic materials which are sensitive to heat. Overheating will cause connector failure and void the warranty.

The following data is from a model 430. Depending on your operating conditions it may not be directly applicable to a model 205 for your application.

Typical Rotational Temperature Rise	
RPM	**Temp**
500 RPM	9.5°C
1200 RPM	15°C

Typical Electric Current Temperature Rise °C at 208 VAC*			
Amps	**Wire Gauge**	**Channel 1,2 (.110" Tab)**	**Channel 3,4 (.250" Tab)**
4 Amps	18 AWG	1°C	-
5 Amps	18 AWG	N/A	-
10 Amps	16 AWG	N/A	2°C
20 Amps	12 AWG	N/A	4°C
30 Amps	10 AWG	N/A	9°C

*Test Conditions: Room Temperature, Using Mercotac supplied disconnects and a single insulated wire

Connections

When connecting to a Mercotac slip ring, it is important to properly size the wire and disconnects for the maximum current load. The connecting wires should also be loose and not pull or put a side load on the Mercotac. It is highly recommended to use the disconnects supplied by Mercotac, as they have been evaluated to make the best connection.

Allowable Ampacity*	
AWG	**Maximum Current Carrying Capacity (Amps)**
10	30
12	20
14	15
16	12
18	9
20	7
22	5

*This chart is provided solely for informational purposes. The values presented in this table are derived from single insulated wires operating in free air at a temperature of 25°C (77°F). The ampacity needs to be adjusted or derated for multi-conductor cables in order to account for the heat generated by increased current flow and to ensure proper heat dissipation. Additionally, follow all electrical regulatory guidelines for your geography.

Typical Electrical Connections

Connection Guidelines

- Use stranded wires of ample length and flexibility for the Mercotac connection in order to avoid mechanical loads.
- It is important to use receptacle or cap accessories and push on securely.
- Do **not** solder wires to the Mercotac Brushless Slip Ring, as such misuse will cause failure and void the warranty.
- Provide quick-acting overload protection to the electrical circuit containing the Mercotac slip ring to prevent overheating and Mercotac failure.
- If wire wrapping occurs from too much rotational torque, it is suggested to use a torque arm positioned to float against a fixed stop.
- The plastic cap with solder lugs attach to the stationary wires.
- The metal receptacle press fits into the rotating member of the machine.

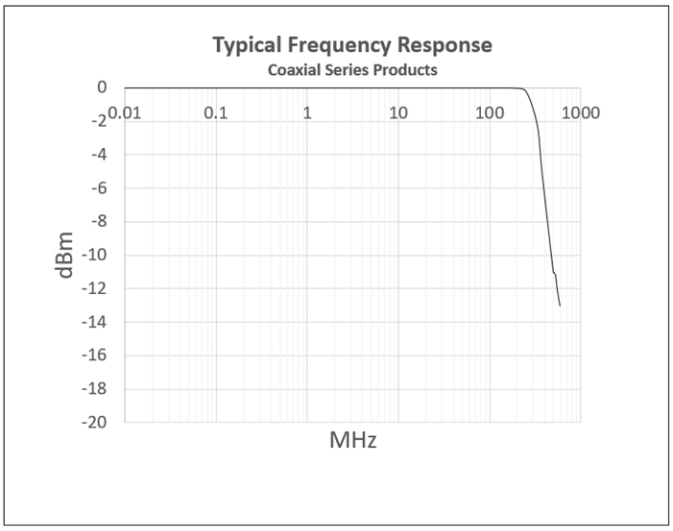
See website for additional electrical illustrations and instructions.

Frequency

Frequency response is usually not a factor in most applications. However, for high-frequency applications, there is a limit on the frequency that a Modular or Coaxial Mercotac can pass through. For these applications, it is important to consider the Versatac™ model, which is designed for higher frequencies, such as ethernet applications.

Model 205 is a Coaxial Series product.

Typical Frequency Response	
Series	**Products**
Coaxial	104, 105, 110, 110T, **205**, 305, 1250, 1500



Handling / SAFETY

- Mercotac units should be handled in a way that is free of vibration and mechanical shock.
- Disconnect electrical power when working on or near a Mercotac.

Recycling

- Mercotac brushless slip rings contain mercury and should not be disposed of in the trash but only through mercury recycling programs. Mercotac Inc. offers a mercury recycling service for this purpose. Ship spent connectors to our Carlsbad facility by UPS ground enclosed in a plastic bag. Include paperwork stating, “for recycling” with your company name, phone and fax numbers. **Do not send** through the US mail.

Model 205 Accessories

Not Included – order separately:

Description: Two Contact Receptacle (1 wire)
Item #: 591

- With one pre-attached 6" wire (18 AWG), center contact
- Customer may solder their own wire in the outer contact hole (18 AWG recommended)
- Suitable up to 4 Amps

Description: Two Contact Receptacle (2 wire)
Item #: 592

- With two pre-attached 6" wire (18 AWG)
- Suitable up to 4 Amps

Description: Two Contact Receptacle with Solder Holes
Item #: 594

- Two solder holes for 18 AWG wires
- Suitable up to 4 Amps

Description: Two Contact Cap
Item #: 595

- With two solder lugs for 18 AWG wires
- Suitable up to 4 Amps

A receptacle is used for mounting to the rotating device. The accessories are required for wire connections, since the Mercotac units cannot be soldered to directly. Soldering will void the warranty and cause failure. Order Separately.

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