Model 630 Brushless Slip Ring

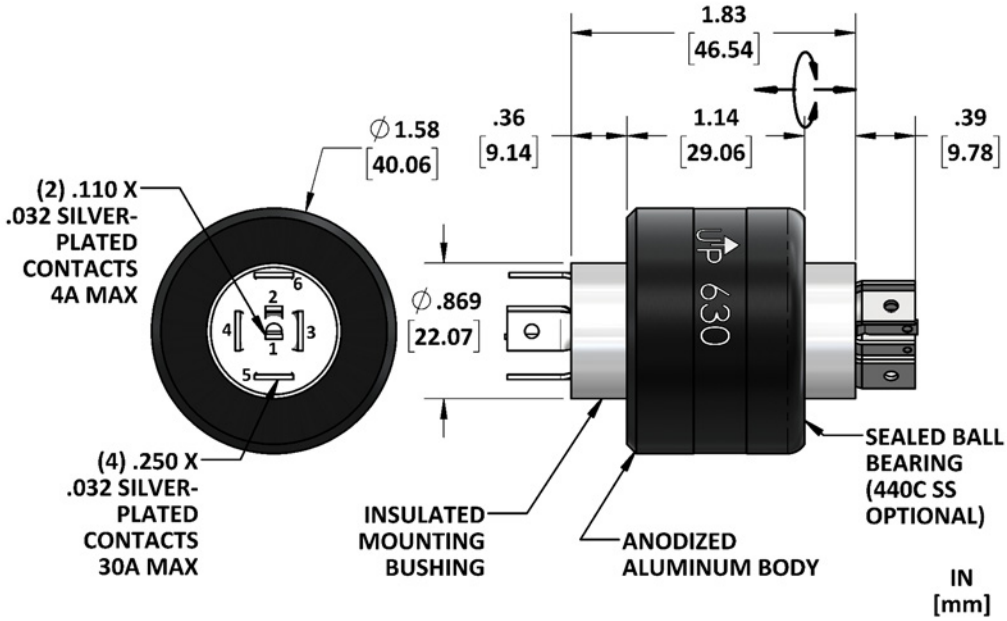
Conductors: Six Conductor
Amps: 2@4 Amps, 4@30 Amps
Volts: 250

The Mercotac® model 630 brushless slip rings ensure a reliable transmission of electrical power, control signals, and data between stationary and rotating components. Specifically designed for various applications such as robotic arms, semiconductor equipment, rotary tables, wind turbines, and robotics, these slip rings ensure secure and dependable operation even in challenging environments. Highly versatile and reliable, they are essential for industries that require robust electrical rotary connections.

Advantages:

- Durable, compact, and low cost
- Reliable for signal and power connections
- Easy to install and replace
- IP 51 protection rating with boot kit
- Lightweight and made of robust metal construction
- Long-lasting, energy efficient, and no maintenance
- Made in the USA

Model 630 Dimensions



Specifications

Model 630, 630-SS			
Spec.	**Type**	**Value**	**Units**
Rotational Torque	Max.	700	gf-cm
Voltage Rating	Max.	250	Volts (AC/DC)
Current Rating (.110" Tabs)	Max.	4	Amps
Current Rating (.250" Tabs)	Max.	30	Amps
Rotational Speed	Max.	300	RPM
Operating Temperature	Min.	-20 (-29)	°F (°C)
	Max.	140 (60)	
Frequency	Max.	100	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.

Model 630, 630-SS			
Model	**Terminals**	**Body Material**	**Bearing Material**
630	6	Anodized Aluminum	52100 Chrome Steel
630-SS			440C Stainless Steel

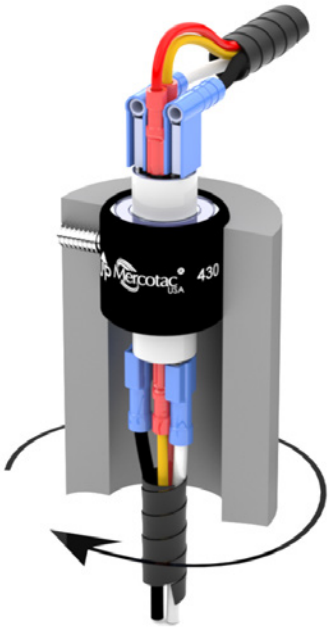
Available with stainless steel ball bearing (630-SS) (recommended for wet or corrosive environments)

Plug Kit Available (see accessories list below)

Dust/Splash Boot Kit Available (see accessories list below)

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.



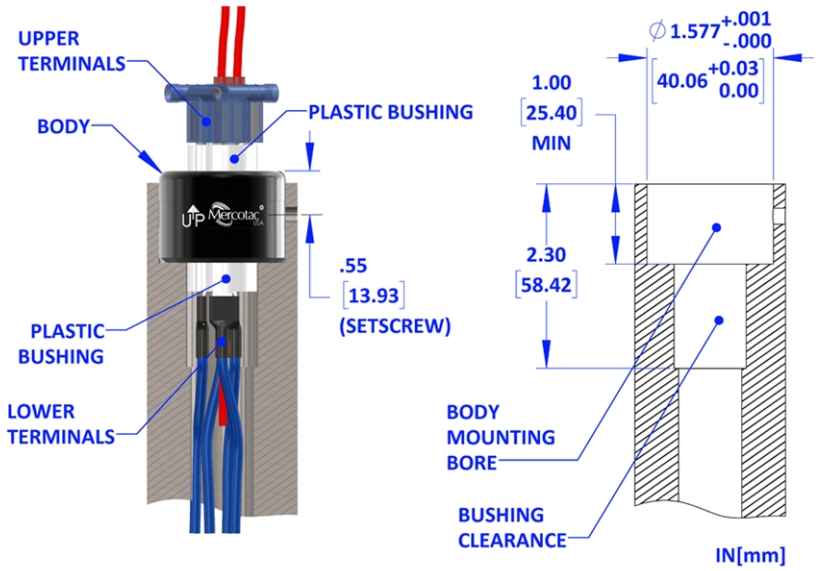
Best mounting method.

Mounting Guidelines

- Mercotac Brushless Slip Rings may be used in any position between vertical and 90 horizontal except for certain low torque models. The UP arrow should not point below horizontal.
- The Modular models 1250, 1500, 215-2K, 230, 235, 330 331, 335, 430, 435, 630, 830 use either the body, plastic collar, or the threaded stud for mounting to the rotating member.
- 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.

Body 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.

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 140F (60C). 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 630 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 Using Disconnects

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 provided push-on terminals and crimp them securely. Push-on quick disconnects crimp onto the connecting wires and push onto the Mercotac tabs.
- Do **not** solder wires to the Mercotac Brushless Slip Ring or bend tabs, 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.

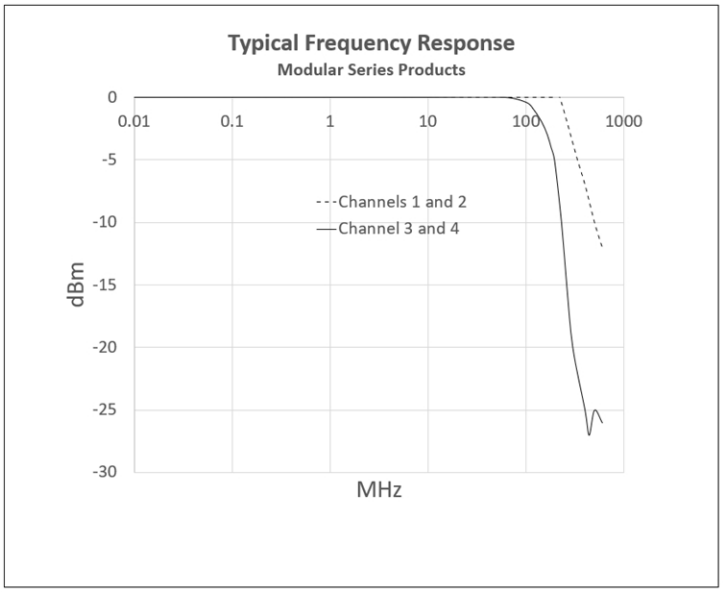
See website for additional electrical illustrations and instructions.

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 630 is a Modular Series product.

Typical Frequency Response	
Series	**Products**
Modular	230, 235, 215-2K, 330, 331, 335, 430, 435, 435, **630**, 830



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 630 Accessories

Included with purchase:

Description: Large Flag Disconnect, Insulated
Item #: 55251

- 16 AWG - 14 AWG
- Quantity 4 included
- Maximum recommended Amps: 15

Description: Large Straight Disconnect, Insulated
Item #: 55250

- 16 AWG - 14 AWG
- Quantity 4 included
- Maximum recommended Amps: 15

Description: Small Straight Disconnect, Insulated
Item #: 55110

- 22 AWG - 18 AWG
- Quantity 4 included
- Maximum recommended Amps: 4

Description: Shrink Tube
Item #: 55253

- Quantity 4 included

Not Included – order separately:

Description: Boot Kit Parts
Item #: 57630

- Vinyl Boot Kit for dust and splash protection
- IP51 protection rating

Description: Boot Kit Shown Assembled
Item #: 57630

- Vinyl Boot Kit for dust and splash protection
- IP51 protection rating

Description: Other Disconnects

- Disconnects for other wire gauges are available and can be substituted for the standard disconnects (22-18 AWG and 12-10 AWG).