

**DEUBLIN**<sup>®</sup>  
*Engineered for Performance*



# ELECTRICAL SLIP RINGS

*DEUBLIN* Company is the proven leader for the manufacture of rotary unions in rugged industrial and wind turbine applications. Based on decades of experience with harsh rotary union applications, *DEUBLIN* developed Electrical Slip Rings to serve similar environments.

*DEUBLIN* electrical slip rings optimize the latest technology to obtain long-term operation and unrestrained connection of signals and power.

*DEUBLIN* slip rings are developed in response to industrial manufacturers' demand for longer service life. The integrated system has been optimized

with special material configurations that are tested and proven for hundreds of millions of cycles, which translates into many years of trouble-free operation with unsurpassed performance.

*DEUBLIN* has focused on superior reliability, which in turn, significantly reduces down-time and maintenance costs.

As with all *DEUBLIN* products, our slip ring product line is 100% tested prior to installation in the field and manufactured using high performance production methods. The long-life slip ring technology will provide consistent, reliable service and maintenance-free performance.



*Off-shore wind turbine union, slip ring and encoder. A complete DEUBLIN solution providing hydraulics, electrical power, EtherCAT and position.*

## On-Shore and Off-Shore Wind Energy Farms

- Power supply up to 250 A
- Transmission of Ethernet and Profibus signals
- Resistant to shock and vibration
- Protection class IP 54 - IP 66

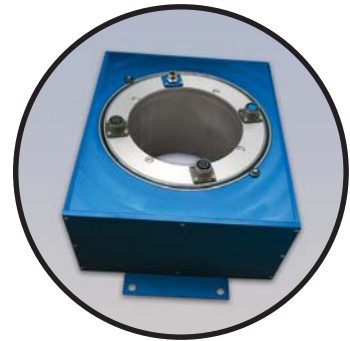
Custom slip ring designs and applications have been a staple of *DEUBLIN's* slip ring design team. Our design team has an extensive group of building blocks to use in the development of any new slip ring requirement. Design challenges such as RF shielding, mixed signal handling, high frequency impedance matching, reduced temperature generation, and miniaturization are commonly solved by *DEUBLIN's* knowledgeable staff.

For those customers who require both electrical connection and hydraulic/air/gas from a stationary connection to a rotating connection, *DEUBLIN* can supply the complete solution. Rotary union and slip ring combinations are developed to assure the customer receives an optimized design and mounting of the entire structure. *DEUBLIN* has available a unique plug and play slip ring and union combination. This design reduces installation and maintenance time

since the rotor electrical and hydraulic connections are plugged or unplugged as part of the installation or removal process rather than having to disconnect those cable connections and hose fittings separately.

Integrated slip ring and union packages have been developed for reduced overall package size. This reduces risk in our customer's initial product development stage as well as on a production basis. Our *DEUBLIN* slip ring design team has the experience and tools required to custom design a highly reliable slip ring for even the most challenging requirements.

*DEUBLIN's* design capability includes the incorporation of absolute or incremental encoders, optical rotary joints for fiber optical connection, internal heater for use in cold weather conditions and any other special customer needs.



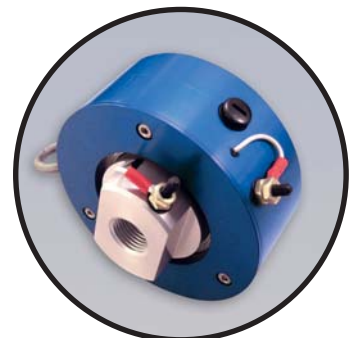
*Industrial control slip ring for mounting around a 165mm shaft*



*DEUBLIN'S custom graphite power brush holder*



*Slip ring and union combination in one integrated assembly*



*Rugged 1 channel slip ring with thru bore for construction industry*

## SLIP RING APPLICATIONS

*Tooling Machines*

*Plastic Molding Machines*

*Wind Energy*

*Winding Machines*

*Centrifuges*

*Semi Conductor Production*

*Directional Drilling Machines*

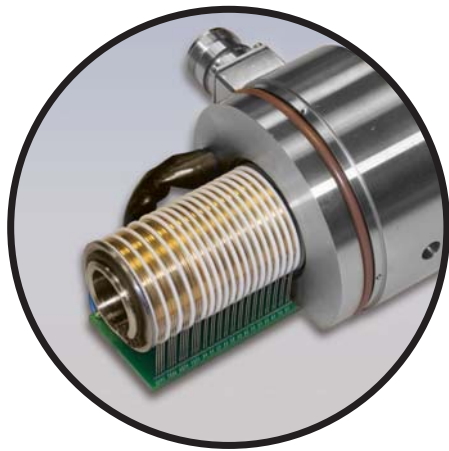
*Handling Machines*

*Robotics*

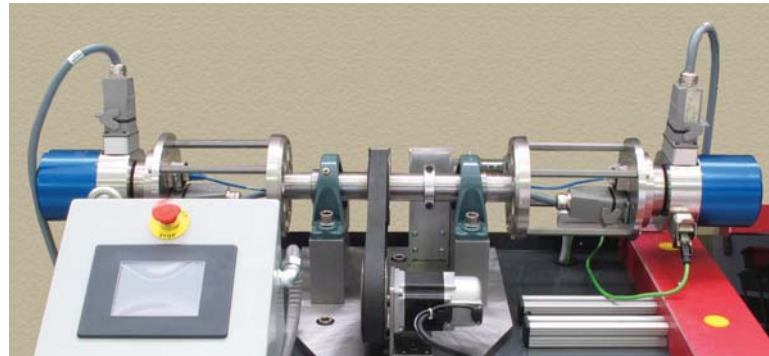
*Pick & Place Machines*

*Turntables*





Slip ring without cover, using wires on gold-plated rings



DEUBLIN slip rings undergoing life cycle tests

## SLIP RING INDUSTRIES



**Wind Turbines**



**Semiconductor**



**Plastic Molding**



**Construction Equipment**



**Industrial**



**Food Processing**

# ELECTRICAL SLIP RING OVERVIEW

## DEUBLIN Electrical Slip Rings – Features and Benefits

Features	Benefits
Integrated hydraulic union and slip ring assembly	Single source for integrated union/slip ring assembly
DEUBLIN Slip Rings offer replacement of existing slip ring brands	Easy to replace at end user or OEM
Custom mounting configurations from 1 channel to an infinite number of channels	Flexible engineering to support unique requirements
Push pin, solder or custom connector configurations	Simple installation and maintenance

## SLIP RING CAPABILITIES

<b>Voltage:</b>	Up to 1000 Volts AC (single or three phase) or DC.
<b>Current:</b>	Up to 250 Amperes AC or DC.
<b>Signal types:</b>	Analog signals such as sensors, thermocouples, audio, video, etc. Digital signals such as Ethernet, PROFIBUS, CANbus, RS-232, RS-422, RS-485 and other logic control.
<b>EMI shielding:</b>	Shielding of analog, digital, RF and Microwave signals to prevent crosstalk with other signals and/or AC/DC power.
<b>Slip ring brush technology:</b>	Monofilament or multi-fiber precious metal (Palladium, Silver or Gold). Carbon based (Graphite, Copper/Graphite, Silver/Graphite). Actual brush material and technology is selected based on power or signal requirements.
<b>Electrical Connection:</b>	Cables/leads (length as specified by the customer), circular industrial or military connectors, modular industrial connectors, RJ45, screw or spring terminal blocks, etc.
<b>Mounting:</b>	Flanged rotor mount, threaded rotor mount, or hollow rotor mount. Through bore slip ring (hollow rotor mount) is optional to allow line(s) for other media to be routed through the center of the slip ring.
<b>Rotational speed:</b>	Up to 10,000 rpm.
<b>Operating life:</b>	Up to 200,000,000 cycles (rotations).
<b>Ingress protection rating:</b>	Up to IP66 or NEMA 12

DEUBLIN designs slip rings to a variety of EMI, operating temperatures, storage temperatures, acceleration, mechanical vibration, and mechanical shock requirements as required by the customer application.



Since its establishment in 1945, **DEUBLIN** has consistently adhered to a policy of producing the best product of its kind in the market. The result of this policy has been constant growth through the years. For this progress we are grateful to our many loyal customers. We cordially invite you to visit our modern manufacturing facilities in Waukegan, Illinois; Mainz, Germany; Monteveglio, Italy and Dalian, China.

Sincerely,

Donald L. Deubler  
Chairman of the Board



Global Headquarters in Waukegan, Illinois, U.S.A.



Mainz, Germany



Monteveglio, Italy



Dalian, China



**DEUBLIN PRODUCTS & SERVICES ARE AVAILABLE THROUGHOUT THE WORLD**

**www.deublin.com**

## AMERICA

### DEUBLIN USA

2050 Norman Drive  
Waukegan, IL 60085-6747 U.S.A  
Phone: +1 847-689 8600  
Fax: +1 847-689 8690  
e-mail: customerservice@deublin.com

### DEUBLIN Brazil

Rua Fagundes de Oliveira, 538 - Galpão A11  
Piraporinha  
09950-300 - Diadema - SP - Brasil  
Phone: +55 11-2455 3245  
Fax: +55 11-2455 2358  
e-mail: deublinbrasil@deublinbrasil.com.br

### DEUBLIN Mexico

Norte 79-A No. 77, Col. Claveria  
02080 Mexico, D.F.  
Phone: +52 55-5342 0362  
Fax: +52 55-5342 0157  
e-mail: deublinmexicocs@deublin.com

## ASIA

### DEUBLIN China

No. 2, 6th DD Street,  
DD Port Dalian, 116620, China  
Phone: +86 411-8754 9678  
Fax: +86 411-8754 9679  
e-mail: info@deublin.cn

### Shanghai Branch Office

Room 15A07, Wangjiao Plaza  
No. 175 East Yan'an Road, Huangpu District  
Shanghai 200002  
Phone: +86 21-5298 0791  
Fax: +86 21-5298 0790  
e-mail: info@deublin.cn

### DEUBLIN Asia Pacific

51 Goldhill Plaza  
#17-02 Singapore 308900  
Phone: +65 6259-92 25  
Fax: +65 6259-97 23  
email: deublin@singnet.com.sg

### DEUBLIN Japan

2-13-1, Minamihanayashiki, Kawanishi City  
Hyogo 666-0026, Japan  
Phone: +81 72-757 0099  
Fax: +81 72-757 0120  
e-mail: customerservice@deublin-japan.co.jp  
2-4-10-3F, Ryogoku, Sumida-ku  
Tokyo 130-0026, Japan  
Phone: +81 35-625 0777  
Fax: +81 35-625 0888  
e-mail: customerservice@deublin-japan.co.jp  
1-9-2-4F, Mikawaanjo-cho, Anjo City  
Aichi 446-0056, Japan  
Phone: +81 566-71 4360  
Fax: +81 566-71 4361  
e-mail: customerservice@deublin-japan.co.jp

### DEUBLIN Korea

Star Tower #1003, Sangdaewon-dong 223-25,  
Jungwon-gu, Seongnam-si, Gyeonggi-do,  
South Korea  
Phone: +82 31-8018 5777  
Fax: +82 31-8018 5780  
e-mail: customerservice@deublin.co.kr

## EUROPE

### DEUBLIN Germany

Florenz-Allee 1  
55129 Mainz, Germany  
Phone: +49 6131-49980  
e-mail: info@deublin.de

### DEUBLIN Italy

Via Guido Rossa 9 - Loc. Monteveglio  
40053 Comune di Valsamoggia (BO), Italy  
Phone: +39 051-835611  
Fax: +39 051-832091  
e-mail: info@deublin.it

### DEUBLIN Austria

Lainzer Straße 35  
1130 Wien, Austria  
Phone: +43 1-8768450  
Fax: +43 1-876845030  
e-mail: info@deublin.at

### DEUBLIN France

61 Bis, Avenue de l'Europe  
Z.A.C de la Malnoue, Emerainville  
77436 Marne-la-Vallée Cedex 2, France  
Phone: +33 1-64616161  
Fax: +33 1-64616364  
e-mail: service.client@deublin.fr

### DEUBLIN Poland

ul. Bierutowaska 57-59  
51-317 Wrocław, Poland  
Phone: +48 71-3528152  
Fax: +48 71-3207306  
e-mail: info@deublin.pl

### DEUBLIN Russia

5ya yl. Sokolinoi gori, 18, bld 2, 1st floor  
Moscow, 105275, Russia  
Phone: +7 495-647 1434  
e-mail: info@deublinrussia.ru

### DEUBLIN Spain

C/ Lola Anglada, 20 local 1  
08228 Terrassa, Spain  
Phone: +34 93-221 1223  
Fax: +34 93-221 2093  
e-mail: deublin@deublin.es

### DEUBLIN United Kingdom

6 Sopwith Park, Royce Close, West Portway  
Andover SP10 3TS, UK  
Phone: +44 1264-33 3355  
Fax: +44 1264-33 3304  
e-mail: info@deublin.co.uk