SLIP RING

IP 67

EXPLOSION PROOF

Transfer analog or digital energy signals

WWW.HBSTRANSMITTAL.IT
The company

Since 1967 HBS Group operates in the production and marketing of hydraulic and electromechanical components. The constant search for technical solutions, the constant improving the quality of product and process, in addition to the efficiency and flexibility of the production allow HBS to the continued success in the global market. The presence of HBS with unit production and trade in different continents, alongside a qualified distribution network, provides customer assistance it needs.

HBS bases its development on the singery with the customer

With its technical staff HBS is able to realize and customize, in synergy with the customer, highly innovative Slip Ring for each type of use, from transport to construction, from construction machinery to agriculture, from ecology to industrial systems.

HBS is able to anticipate the needs of the changing market and to develop customized products

PHILOSOPHY

R&D
With the unit planning, HBS is in a position to devise, realize and customize, in synergy with the customer, Slip Rings highly innovated for every type of employment, from transports to earth movement, from the building to agriculture, from the ecology to the industrial systems.
Slip ring SR130

**GENERAL SPECIFICATIONS**
- Slip ring with variable size
- Sizes under cover 30-260mm
- Max 50 ring
- Suitable for analog-to-digital, and auxiliary power
- Maximum operating voltage 680Vac / Vdc.
- Test voltage 2000 Vac.
- Intensity max current monofilament: 20A continuous loop
- Intensity max current electrografite: 12A continuous loop
- Contact resistance brushes / rings <20 mohm
- Degree of protection IP55/IP67
- Mounting Position Vertical / Horizontal
- Operating temp: -40/+60°C
  (under -20°C it’s recommended to use anti-condesation heater)
- Direction of rotation CW / CCW

**STANDARD CONSTRUCTION**
- Slip ring body: aluminium anticorodal
- Internal rings
  - Power: brass with nickel plating
  - Signals: brass with gold plating
- Type of brushes
  - Power: metal coal with a high content of copper or monofilament in beryllium copper with nickel plating treatment
  - Signals: monofilament in beryllium copper with gold plating treatment
- Mechanics and screws: stainless steel
- Rotating shaft on ball bearings: sealed and lubricated for life
- Cable glands for multi-core cables
- Rating plate on the basis of the slip ring

**Max capacity of the cables (CEI-UNEL)**

<table>
<thead>
<tr>
<th>Cable cross-section (mm²)</th>
<th>0.5</th>
<th>1</th>
<th>1.5</th>
<th>2.5</th>
<th>4</th>
<th>6</th>
<th>10</th>
<th>16</th>
<th>25</th>
<th>35</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Temperature on cable = 70°C</td>
<td>3A</td>
<td>10A</td>
<td>16A</td>
<td>20A</td>
<td>30A</td>
<td>37A</td>
<td>46A</td>
<td>60A</td>
<td>105A</td>
<td>130A</td>
<td>155A</td>
</tr>
</tbody>
</table>

**REFERENCE STANDARDS**
- Machinery Directive 2006/42 (Annex B)
- Standards EN 60309-1-2 Plugs and sockets for industrial use
- EN 60204-1 for electrical systems on board
- 60947-1-1 Low-voltage switchgear
- Part1: General rules

**RING** | **H**
---|---
1 - 12 | 80 mm
13 - 36 | 160 mm

**IP rating** | **Cable exit**
---|---
IP55 | Conduit flexible PVC corrugated tube
IP67 | Multipolar cable cable glands
### Version monofilament

**brush standard versions**

<table>
<thead>
<tr>
<th>Version</th>
<th>Type</th>
<th>N. Ring</th>
<th>Rated current (A)</th>
<th>Cable (mm²) L=2.5m</th>
<th>VAC maximum voltage supply</th>
<th>Rpm Max</th>
<th>Protection class</th>
<th>Output type</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>S0541049900</td>
<td>1Earth+3</td>
<td>16</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable4G1.5 pur</td>
</tr>
<tr>
<td>A</td>
<td>S0541069900</td>
<td>1Earth+5</td>
<td>16</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable7G1.5 pur</td>
</tr>
<tr>
<td>A</td>
<td>S0541089900</td>
<td>1Earth+7</td>
<td>16</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable12G1.5 pur</td>
</tr>
<tr>
<td>A</td>
<td>S0541129900</td>
<td>1Earth+11</td>
<td>16</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable12G1.5 pur</td>
</tr>
<tr>
<td>A</td>
<td>S0541169900</td>
<td>1Earth+15</td>
<td>16</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable18G1.5 pur</td>
</tr>
<tr>
<td>A</td>
<td>S0541189900</td>
<td>1Earth+17</td>
<td>16</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable18G1.5 pur</td>
</tr>
<tr>
<td>A</td>
<td>S0541259900</td>
<td>1Earth+24</td>
<td>16</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable25G1.5 pur</td>
</tr>
<tr>
<td>B</td>
<td>S0541309900</td>
<td>1Earth+29</td>
<td>16</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP55</td>
<td>Conduit / Unipolar cables</td>
</tr>
<tr>
<td>B</td>
<td>S0541369900</td>
<td>1Earth+35</td>
<td>16</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP55</td>
<td>Conduit / Unipolar cables</td>
</tr>
</tbody>
</table>

### Version electrografite

**brush standard versions**

<table>
<thead>
<tr>
<th>Version</th>
<th>Type</th>
<th>N. Ring</th>
<th>Rated current (A)</th>
<th>Cable (mm²) L=2.5m</th>
<th>VAC maximum voltage supply</th>
<th>Rpm Max</th>
<th>Protection class</th>
<th>Output type</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable4G1.5 pur</td>
</tr>
<tr>
<td>A</td>
<td>S0542069900</td>
<td>1Earth+5</td>
<td>12</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable7G1.5 pur</td>
</tr>
<tr>
<td>A</td>
<td>S0542089900</td>
<td>1Earth+7</td>
<td>12</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable12G1.5 pur</td>
</tr>
<tr>
<td>A</td>
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<td>1Earth+11</td>
<td>12</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable12G1.5 pur</td>
</tr>
<tr>
<td>A</td>
<td>S0542169900</td>
<td>1Earth+15</td>
<td>12</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable18G1.5 pur</td>
</tr>
<tr>
<td>A</td>
<td>S0542189900</td>
<td>1Earth+17</td>
<td>12</td>
<td>1.5</td>
<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable18G1.5 pur</td>
</tr>
<tr>
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<td>1Earth+24</td>
<td>12</td>
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<td>680</td>
<td>12</td>
<td>IP67</td>
<td>Multipolar cable25G1.5 pur</td>
</tr>
</tbody>
</table>
Accessories for special application

HBS offers a range of accessories for special applications associated with the series Slip ring SR130

<table>
<thead>
<tr>
<th>ACCESSORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBS offers a range of accessories for special applications associated with the series Slip ring SR130</td>
</tr>
</tbody>
</table>

ROTARY SENSOR WITH SUPPORT BASE (internal installation)

Version available:
- output can bus redundant
- single output can bus
- analog
- analog current

AIR SWIVEL JOINT (internal installation)

Version available:
- 1/4"G
- 3/8"G

ANTI-CONDENSATION HEATER

For applications ambient temperatures -20 to -40 °C

FLANGE 1”G (available for standard models)

To convert the 1”G connection in flanged connection

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To convert the 1”G connection in flanged connection
Slip ring explosion proof
SR130EX

For special requirements, please contact our sales department

GENERAL SPECIFICATIONS
- Slip ring with variable size
- Sizes under cover 80/160/240mm
- Max 50 ring
- Suitable for analog-to-digital, and auxiliary power
- Maximum operating voltage 680 Vac / Vdc
- Test voltage 2000 Vac
- Intensity max current 20 A continuous loop
- Contact resistance brushes / rings <20 mOhm
- Degree of protection IP55/IP66
- Mounting Position Vertical / Horizontal
- Operating temp: -40/+60°C (under -20°C it’s recommended to use anti-condensation heater)
- Direction of rotation CW / CCW

STANDARD CONSTRUCTION
- Slip ring body: aluminium anticorodal
- Internal rings:
  - Power: brass with nickel plating
  - Signals: brass with gold plating
- Type of brushes:
  - Power: monofilament in beryllium copper with nickel plating treatment
  - Signals: monofilament in beryllium copper with gold plating treatment
- Mechanics and screws: stainless steel
- Rotating shaft on ball bearings: sealed and lubricated for life
- Wiring cables: special explosion-proof
- Barrier cable glands for multi-core cables
- Protective sheath: special explosion-proof
- Rating plate on the basis of the slip ring

REFERENCE STANDARDS
- Machinery Directive 2006/42 (Annex B)
- Standards EN60309-1-2 Plugs and sockets for industrial use
- EN 60204-1 for electrical systems on board
- 60947-1-1 Low-voltage switchgear Part 1: General rules
- 94/9/EC Atex Directive (Atmospheres Explosibles)
- Technical protection for electrical equipment according to EN60079-0 and EN60079-1
- 13 ATEX 1.1X CESI Certificate Number EC Type-Notification of EC quality of production in accordance with Annex VII to Directive 94/9EC (ATEX)
**Standard dimensions**

The Slip Ring Series SR130EX are used in potentially explosive atmospheres. We must therefore ensure that the slip ring is suitable for the area classification and the characteristics of the system to which it is intended. The essential safety requirements against the risk of explosion in hazardous areas with regard to the devices are set by European directives 94/9/EC of 23 March 1994 (1999/92/EC of 16.12.1999 for the plant).

Areas with a potentially explosive atmosphere are classified according to EN60079-10, while the technical requirements of electrical installations in hazardous areas are given in standard EN 60079-14. Technical protection for electrical equipment according to standards EN60079 and EN60079-0-1.

Based on these technician requirements and laws, the should be chosen taking into account the following factors:
- type of plant equipment group II surface;
- category Gas 2GD dust protection high use areas of zone 1 and zone 2 are present;
- the characteristics of the combustible materials present in the form of gas, vapor or mist;
- subgroup: II B (ethylene), IIC (hydrogen);
- temperature class: T5 (300), T1 (450).

**Note:**
The slip ring of the group IIC are also suitable for areas II B IIA (propane). The slip ring with a given temperature class are also suitable for all substances with higher temperature class.
For example collectors T5 are also suitable for all substances with temperature class T4 (135), T3 (200), T2 (300), T1 (450).

**Slip ring Sr130ex**
These series are suitable for the passage of signals of power. The peculiarity of this series of slip ring is the radial dimension extremely content that allows its use in very small spaces.
Power Slip ring SR220

The sliding contacts of SR220 Series slip rings are designed to carry electrical signals AC and DC by a rotating platform to a stationary structure and vice versa, or with the same contacts with a galvanic gold plating surface treatment they are also suitable for the transport of analog or digital signals. The main characteristics of the six Series Slip Ring power that the sliding contacts are realized according to a technology in the form of monofilament with different types of surface treatments which give the best mechanical and electrical performance compared to the traditional metal graphite. 1) Of the mono filament point of contact with the rotating ring surface 2) Contact surface that does not require lubrication, and low contact dynamic resistance (noise). 3) Long service life and low contact force. 4) High compaction of the rotor and stator; 5) High permissible current density and wide dynamic range of low electrical resistivity current (job); 6) Very low generation of debris. Wide operating temperature range, good environmental conditions (no oxidation) high scroll speed. The structure is entirely in aluminum Marinal Anticorodal. The product for its ease in construction can is assembled to “internal modulated with different sizes of rings and sliding contacts, in such a way as to optimize space and installation time.

<table>
<thead>
<tr>
<th>GENERAL SPECIFICATIONS</th>
<th>Slip ring with variable size</th>
</tr>
</thead>
<tbody>
<tr>
<td>- suitable for analog-to-digital, and auxiliary power</td>
<td></td>
</tr>
<tr>
<td>- maximum operating voltage 690Vac / Vdc.</td>
<td></td>
</tr>
<tr>
<td>- test voltage 2500 Vac.</td>
<td></td>
</tr>
<tr>
<td>- intensity max current. A continuous loop.</td>
<td></td>
</tr>
<tr>
<td>- contact resistance brushes / rings &lt;0.5 mhom.</td>
<td></td>
</tr>
<tr>
<td>- degree of protection IP 66.</td>
<td></td>
</tr>
<tr>
<td>- maximum operating speed 17.5 rpm</td>
<td></td>
</tr>
<tr>
<td>- mounting Position Vertical / Horizontal.</td>
<td></td>
</tr>
<tr>
<td>- operating temperature - 40°C - +60°C</td>
<td></td>
</tr>
<tr>
<td>- direction of rotation CW / CCW</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STANDARD CONSTRUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>- slip ring body: Aluminium anticorodal. Rings slip ring; silver or gold for signals</td>
</tr>
<tr>
<td>- brushes: power - metal coal with a high content of copper monofilament to beryllium copper with nickel plating treatment</td>
</tr>
<tr>
<td>- signals: monofilament treatment of browning</td>
</tr>
<tr>
<td>- mechanics and screws: stainless steel</td>
</tr>
<tr>
<td>- rotating shaft on ball bearings: sealed and lubricated for life</td>
</tr>
<tr>
<td>- cable glands for multi-core cables</td>
</tr>
<tr>
<td>- the rating plate on the basis of the slip ring</td>
</tr>
</tbody>
</table>
## Test schedule

**Power Slip ring SR200**

<table>
<thead>
<tr>
<th>Type of test</th>
<th>Reference</th>
<th>Standard</th>
<th>Date</th>
<th>Executed</th>
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</thead>
<tbody>
<tr>
<td>1 Degree of protection IP67</td>
<td>Degrees of protection provided by enclosures (IP Code)</td>
<td>EN 60529</td>
<td>03/05/2012</td>
<td>int.</td>
</tr>
<tr>
<td>2 Degree of impact IK</td>
<td>Plugs and sockets for industrial use</td>
<td>CEI EN 60309-1</td>
<td>05/04/2012</td>
<td>int.</td>
</tr>
<tr>
<td>3 Overheating and test current (thermal) AT</td>
<td>Low voltage equipment</td>
<td>CEIEN 60947-1</td>
<td>14/05/2012</td>
<td>int.</td>
</tr>
<tr>
<td>4 Insulation resistance</td>
<td>Plugs and sockets for industrial use</td>
<td>CEI EN 60309-1</td>
<td>21/05/2012</td>
<td>int.</td>
</tr>
<tr>
<td>5 Verifications of voltage drop</td>
<td>Low voltage equipment</td>
<td>CEIEN 60947-1</td>
<td>14/05/2012</td>
<td>int.</td>
</tr>
<tr>
<td>6 Rigidity test</td>
<td>Plugs and sockets for industrial use</td>
<td>CEI EN 60309-1</td>
<td>21/05/2012</td>
<td>int.</td>
</tr>
<tr>
<td>7 Earth resistance</td>
<td>Plugs and sockets for industrial use</td>
<td>CEI EN 60309-1</td>
<td>21/05/2012</td>
<td>int.</td>
</tr>
<tr>
<td>8 B10 tests of wear</td>
<td>Safety of machinery</td>
<td>EN13489-1</td>
<td>29/05/2012</td>
<td>int.</td>
</tr>
<tr>
<td>9 Tear-proof terminals</td>
<td>Low voltage equipment</td>
<td>CEIEN 60947-1 CEI EN 60204-1</td>
<td>21/05/2012</td>
<td>int.</td>
</tr>
<tr>
<td>10 EMC test</td>
<td>Electromagnetic compatibility (EMC)</td>
<td>EN61000-4-4:2007+A1 (2011)</td>
<td>20/05/2014</td>
<td>External NEmko</td>
</tr>
<tr>
<td>11 Test aging</td>
<td>Plugs and sockets for industrial use</td>
<td>CEI EN 60309-1</td>
<td>28/06/2012</td>
<td>int.</td>
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<tr>
<td>12 Corrosion proof enclosure &amp; electrical contact</td>
<td>Plugs and sockets for industrial use</td>
<td>CEI EN 60309-1</td>
<td>12/09/2012</td>
<td>External institution</td>
</tr>
<tr>
<td>13 Thermal test casing housing</td>
<td>Non-electrical equipment for potentially explosive atmospheres</td>
<td>UNI EN 13463-1</td>
<td>25/06/2012</td>
<td>int.</td>
</tr>
<tr>
<td>14 ATEX Explosion proof type tests</td>
<td>Electrical apparatus for explosive atmospheres due to the presence digas Part 1: explosion proof enclosures “D”</td>
<td>EN 60079-1/ EC:2008-03.</td>
<td>15/04/2013</td>
<td>External institution CESI</td>
</tr>
</tbody>
</table>
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