

# Slip Ring Assemblies Program 5100



**CONDUCTIX**  
wampfler

DELACHAUX GROUP



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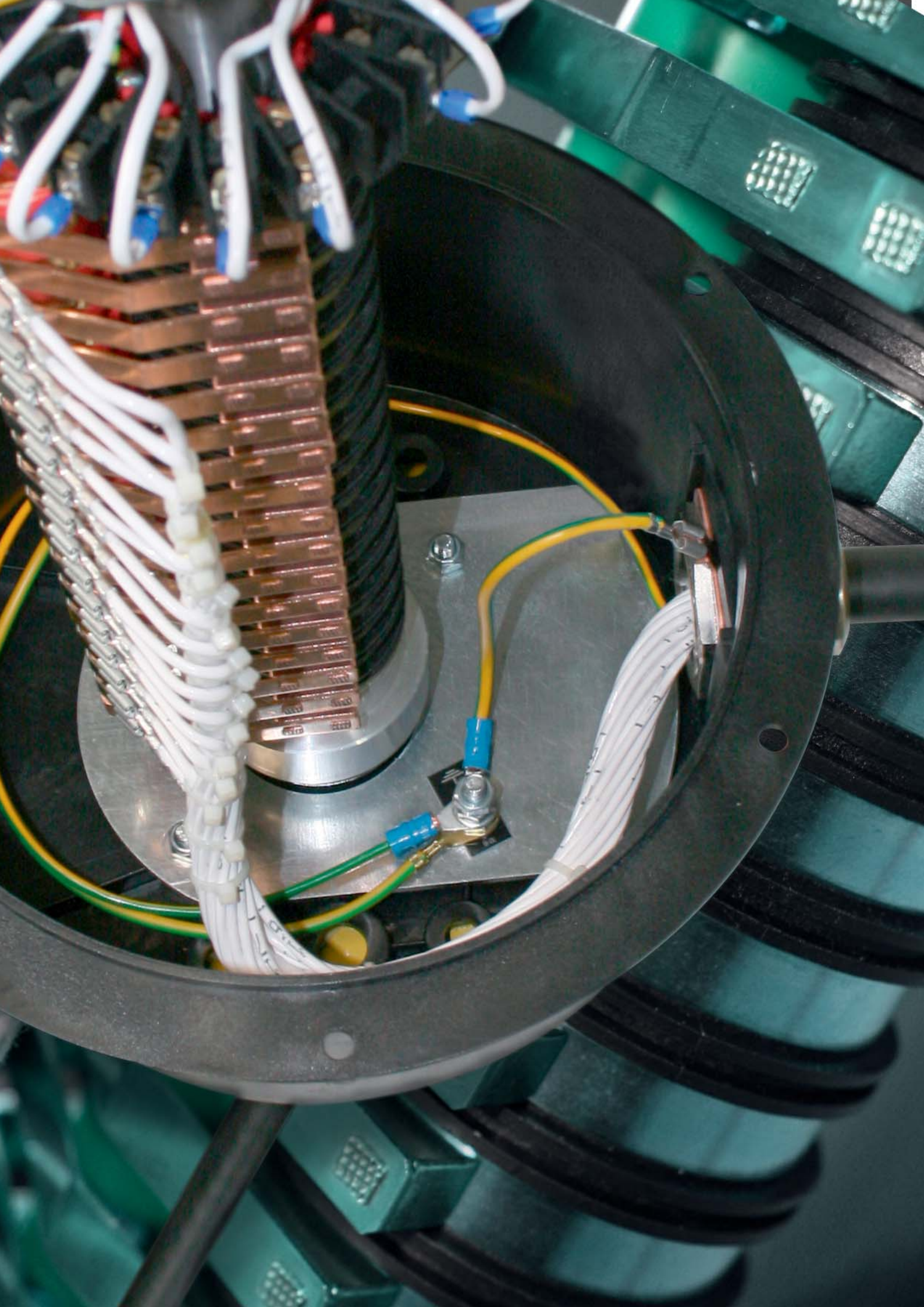
## Slip Ring Assembly

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# General

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## Electrical Data

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### Conductix-Wampfler - an experienced partner

Conductix-Wampfler offers a wide range of rotary transmissions, for energy, data and signal transmission as well as for the transmission of gasiform and fluid medias. The standard program allows to install slip ring assemblies for power and data/signal currents of any number of poles. Combinations that include additional rotary transmissions for liquid media (water, hydraulic oil, oil etc.) and gases (compressed air, argon etc.) are possible. Slip ring assemblies can be either supplied as an open built-in version that is adjusted to the customers' requirements or with a housing of impact-resistant plastic or steel.

### Data transmission

The transmission of analogue and digital signals is used in several industrial applications as well as in many other areas.

The communication works through all active transmission protocols.

Depending on the application, different materials are used for the slip rings.

Note: The quality of transmission of the analog-to-digital signals, strongly depends on the quality of the complete system in which the SRA (Slip Ring Assembly) is only a part. An important role is also played by the cables, their construction and shielding. The number of cable connections, external perturbation, the type of automation devices and their adaption to each other are important factors, too. This should be considered by dimensioning of the complete system.

### Options

- Internal heater to eliminate condensation in humid locations
- Installation of encoders and potentiometers
- Transparent windows and doors on the larger enclosures to aid maintenance

### Special constructions

Our experts are happy to advise you concerning any specials requirements, such as assemblies with big diameters, extreme operating conditions, units that incorporate fiber optic swivels, and units designed for high voltages.

### Easy assembly and maintenance

Our slip ring assemblies are easy to install and to maintain. By special request, rings and brush holders can be completely pre-wired using built-in terminal boxes and terminal strips. All connections are easy to access and the brushes are easy to replace.

### Engineer standards

All slip ring assemblies built by Conductix-Wampfler employ the latest technologies available. We conform to the strictest requirements of the low voltage directive.

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## Standard Range

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Type	I <sup>1)</sup> [mA/A]	U [V]	Ring-ø [mm]	Characteristics	Page
ES/GS30	mA - 16A	400 (415) <sup>2)</sup>	30	Suitable for data transmission	8
ES/GS45/1	mA - 25A	400 (415) <sup>2)</sup>	45		9
ES/GS45/3	25A	1000	45	-	10
ES/GS45/2	47A	1000	45	-	11
ES18	mA - 25A	630 (690) <sup>2)</sup>	102	Suitable for data transmission	12
GS18	mA - 25A	630 (690) <sup>2)</sup>	102		13
ES/GS13	50A	1000	85	-	14
ES/GS15	90A	1000	85	-	15
ES/GS16	100A	1000	110	-	16
ES/GS19	150A	1000	132	-	17
ES/GS21	250A	1000	210	-	18
ES/GS29	400A	1000	210	-	19
ES/GS260	mA - 47A	630 (690) <sup>2)</sup>	260	Suitable for data transmission	20
ES170, 200, 285	mA - 47A	630 (690) <sup>2)</sup>	170/200/285		21
GS323	400A	1000	320	-	23
GS19/13/18	Combination				24

1) Note: referring to the stated amperages

Max. ampacity might be reduced by positioning of single cores inside the slip ring assembly, by positioning of the feed cables or due to the ambient temperature.

2) The voltages apply for slip ring assemblies, installed in systems (parts of systems) that are not directly fed by the low-voltage net

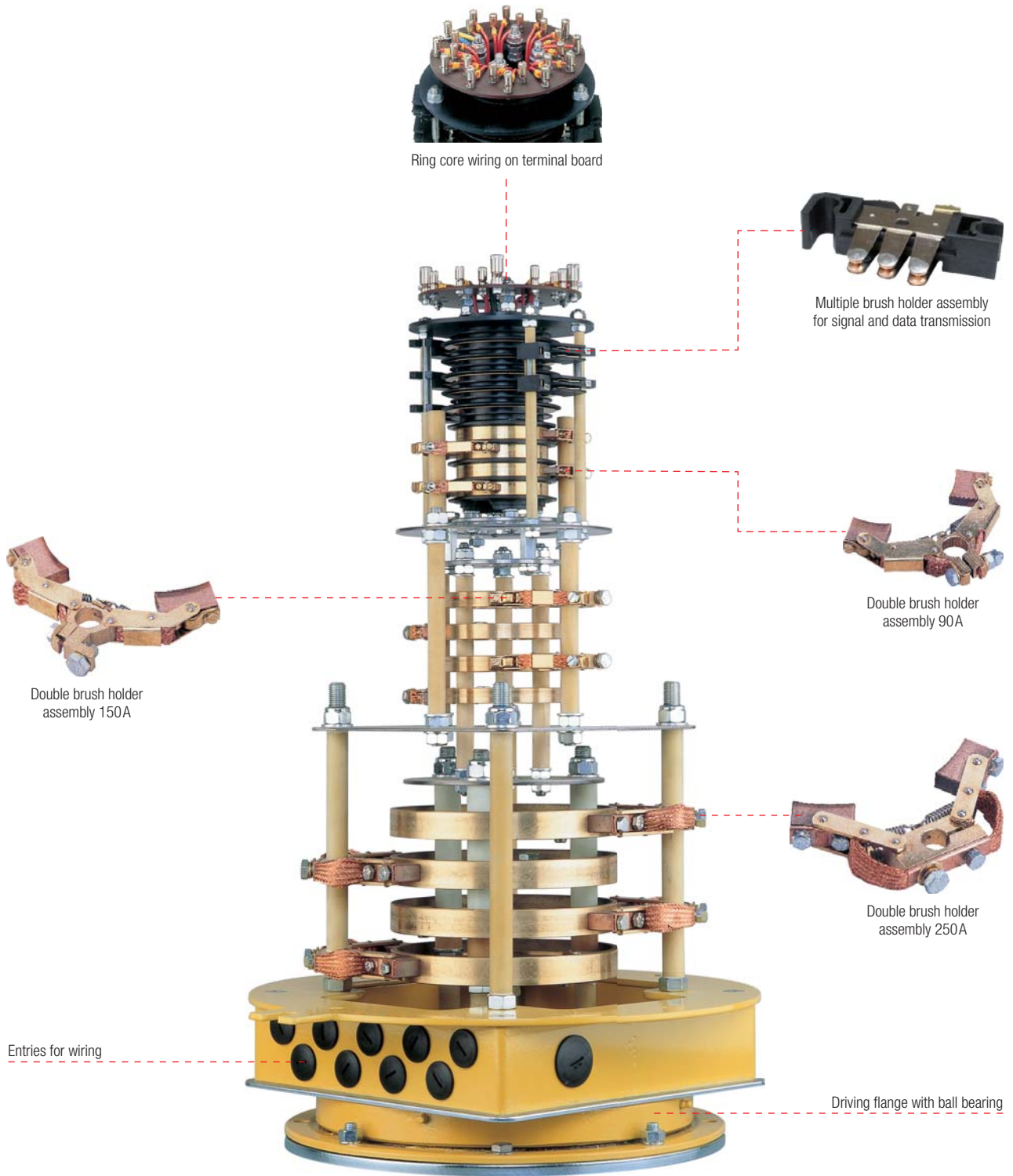
(VDE 0110-1/2008-01: 4.3.2.2.2, table F.4).

On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating current

(VDE 0110-1/2008-01: 4.3.2.2.1, table F.3b).

# General

## Example of a Combined Slip Ring Assembly



**Combined slip ring assembly**  
GS2104 / 1904 / 1504 / 1806 / 04 ML  
3x250A + PE + 4x150A + 4x90A + 6x25A + 4xData

# General

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## A Developed and Comprehensive Standard Program

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Some examples of slip ring applications: rotary cranes, water treatment works, roundabouts, manipulators, rotary tables, antenna arrays, theatre stages, packing machines and cable reels.



Rotating die-casting equipment of Krauss-Maffei Kunststofftechnik (Munich); in operation at Johnson Controls Interiors (Lüneburg)



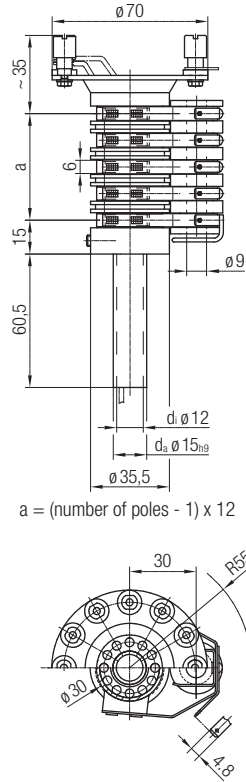
Slip ring assembly in building machinery



Slip ring assembly in elevating platforms

# Slip Ring Assembly

## Built-in Slip Ring Assembly ES30 16A/400V (415V)<sup>1)</sup>



### Electrical data

- Voltage:
  - max. 400V $\sim$  = (415V)<sup>1)</sup>
  - according to DIN VDE 0110
  - overvoltage category III
  - insulating material group II
  - degree of contamination 3
- Current: mA to 16A, at max. 30°C and 100% duty cycle
- Slip rings:
  - $\varnothing 30 \times 6$  mm, brass (MS)
  - distance between rings 12 mm
- Brush holder assembly:
  - brush holders with 2 pressed-in brushes (Cu) 20  $\times$  6.4 mm
  - Connecting flat plug 4.8 (DIN 46244) for flat socket 4.8 (DIN 46247)
- Protection class: IP 00

### Control and data transmission

- Ring with multi-layer coating (ML) and silver (Ag) brush holder assembly for the transfer of analog and digital signals
- Transmission of data and video signals requires additional consultation

### Wiring and max. number of poles

- Max. 10 (incl. PE)
- Completely wired with 2.5 mm<sup>2</sup> on a terminal board (terminal posts)

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: insulating parts, fiberglass reinforced polyamide
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Mounting shaft:  $d_a = 15_{H9}$

### Components included

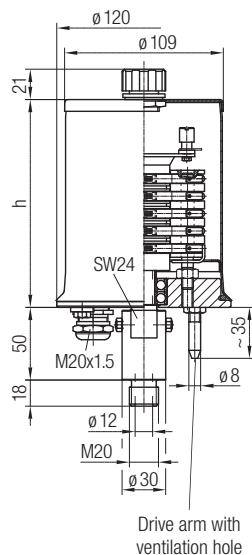
- Complete slip ring assembly with brush holders and brushes
- Insulators
- Mounting shaft (secured on site against torsion with 2 threaded pins M5, DIN 914)
- Brush holder bolt not included

1) The voltages apply for slip ring assemblies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/2008-01: 4.3.2.2.2, table F.4).  
On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating current (VDE 0110-1/2008-01: 4.3.2.2.1, table F.3b).

### Order example:

**ES30/R15-04**  
Built-in slip ring assembly  
type 30, 3-pole + PE  
with tube  $d_a = 15_{H9}$

## Enclosed Slip Ring Assembly GS30 16A/400V (415V)<sup>1)</sup>



### Electrical data

- According to type ES30
- Protection class: IP 65

### Wiring and max. number of poles

- According to type ES30

Max. poles incl. PE	h [mm]
4	126
6	143
10	193

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: insulating parts, fiberglass reinforced polyamide
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Bearing: anti-friction bearing (sealed-for-life)
- Corrosion protection: steel parts galvanized and/or powder coated RAL 1012
- Cable glands:
  - in the shaft hole  $\varnothing 12$  mm (with thread M20)
  - in the housing M20  $\times$  1.5 included (elbow fitting on request)
- Option: with mounting flange

1) The voltages apply for slip ring assemblies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/2008-01: 4.3.2.2.2, table F.4).  
On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating current (VDE 0110-1/2008-01: 4.3.2.2.1, table F.3b).

### Order example:

**GS30-04**  
Enclosed slip ring assembly  
type 30, 3-pole + PE



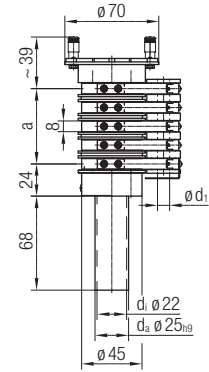
# Slip Ring Assembly

## Built-in Slip Ring Assembly ES45/1 25A/400V (415V)<sup>1)</sup>

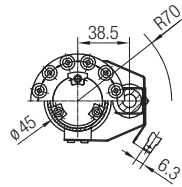


### Electrical data

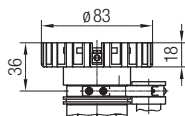
- Voltage:
  - max. 400V~ = (415V)<sup>1)</sup>
  - according to DIN VDE 0110
  - overvoltage category III
  - insulating material group II
  - degree of contamination 3
- Current: mA to 25A, at max. 30°C and 100% duty cycle
- Slip rings:
  - $\varnothing 45 \times 8$  mm, brass (MS)
  - distance between rings 14 mm
- Brush holder assembly:
  - brush holders with 2 pressed-on brushes (Cu) 20 x 8 mm
  - Connecting flat plug 6.3 (DIN 46244) for flat socket 6.3 (DIN 46247)
- Protection class: IP 00



$$a = (\text{number of poles} - 1) \times 14$$



12 poles with terminal posts



13 - 18 poles with insulated terminals

Number of poles	$\varnothing d_1$ [mm]
3 - 7	9
8 - 18	10.2

### Control and data transmission

- Ring with multi-layer coating (ML) and silver (Ag) brush holder assembly for the transfer of analog and digital signals

### Wiring and max. number of poles

- Max. 18 completely wired with 2.5 mm<sup>2</sup> on a terminal board
- Up to 12 rings, connection to terminal posts
- 13 to 18 rings connection to insulated terminals

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: insulating parts, fiberglass reinforced polyamide
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical
- Mounting shaft:  $d_a = 25_{H9}$

### Components included

- Complete slip ring assembly with brush holders and brushes
- Insulators
- Mounting shaft (secure on site against torsion with 2 threaded pins M5, DIN 914)
- Brush bolt not included (see  $d_1$ )

<sup>1)</sup> The voltages apply for slip ring assemblies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/2008-01: 4.3.2.2.2, table F.4).  
On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating current (VDE 0110-1/2008-01: 4.3.2.2.1, table F.3b).

**Order example:**  
**ES45/1/R22-04**  
Built-in slip ring assembly type 45/1, 3-pole with tube  $d_a = 25_{H9}$

## Enclosed Slip Ring Assembly GS45/1 25A/400V (415V)<sup>1)</sup>

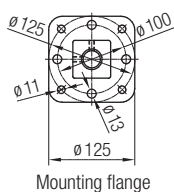
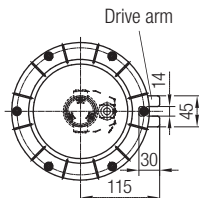
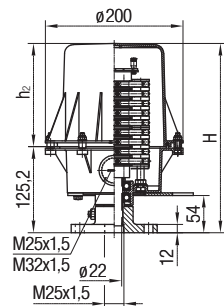


### Electrical data

- According to type ES45/1
- Protection class: IP 65

### Wiring and max. number of poles

- According to type ES45/1



h [mm]	H [mm]	Max. number of poles incl. PE	
		Standard	with heater
90	215	5	-
150	275	9	4
190	315	12	7
280	405	18	13

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: insulating parts, fiberglass reinforced polyamide
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Corrosion protection: steel parts galvanized and/or powder coated RAL 1012
- Standard housing: polyamide
- Cable glands:
  - mounting flange prep. for M25x1.5
  - through-holes in the housing bottom part for M25x1.5 and M32x1.5

- Vent plug
- Heater
- Tube or rotary transmission (protection class IP 40, higher protection class on request)

<sup>1)</sup> The voltages apply for slip ring assemblies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/2008-01: 4.3.2.2.2, table F.4).  
On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating current (VDE 0110-1/2008-01: 4.3.2.2.1, table F.3b).

**Order example:**  
**GS45/1KS-04**  
Enclosed slip ring assembly type 45/1 with plastic housing, 3-pole + PE

### Options

- Reinforced bearing

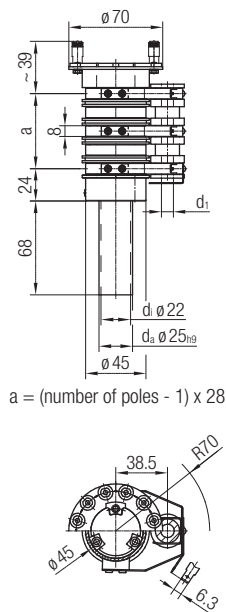
# Slip Ring Assembly

## Built-in Slip Ring Assembly ES45/3 25A/1000V



### Electrical data

- Voltage:
  - max. 1000 V~
  - according to DIN VDE 0110
  - overvoltage category IV
  - insulating material group II
  - degree of contamination 3
- Current: 25A, at max. 30°C and 100% duty cycle
- Slip rings:
  - $\phi 45 \times 8$  mm, brass (MS)
  - distance between rings 28 mm
- Brush holder assembly:
  - brush holders with 2 pressed-on brushes (Cu) 20x8 mm
  - Connecting flat plug 6.3 (DIN 46244) for flat socket 6.3 (DIN 46247)
- Protection class: IP 00



$$a = (\text{number of poles} - 1) \times 28$$

Number of poles	$\phi d_1$ [mm]
3 - 4	9
5 - 9	10.2

### Wiring and max. number of poles

- Max. 9 (incl. PE)
- Completely wired with 2.5 mm<sup>2</sup> on a terminal board (terminal posts)

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: insulating parts, fiberglass reinforced polyamide
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Mounting shaft:  $d_a = 25_{H9}$

### Components included

- Complete slip ring assembly with brush holders and brushes
- Insulator
- Mounting shaft (secure on site against torsion with 2 threaded pins M5, DIN 914)
- Brush holder bolt not included (see d.)

### Order example:

**ES45/3/R22-04**  
Built-in slip ring assembly type 45/3; 3-pole + PE with tube  $d_a = 25_{H9}$

## Enclosed Slip Ring Assembly GS45/3 25A/1000V

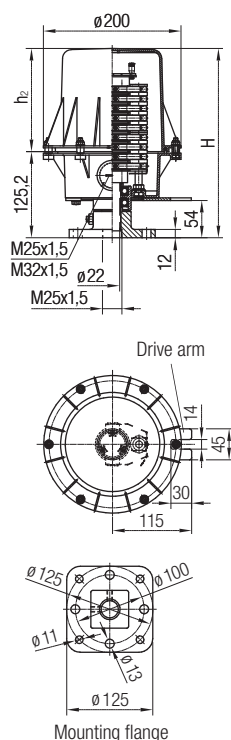


### Electrical data

- According to type ES45/3
- Protection class: IP 65

### Wiring and max. number of poles

- According to type ES45/3



h [mm]	H [mm]	Max. number of poles incl. PE	
		Standard	with heater
90	215	3	-
150	275	5	2
190	315	6	4
280	405	9	7

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: insulating parts fiberglass reinforced polyamide
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Corrosion protection: steel parts galvanized and/or powder coated RAL 1012
- Standard housing: polyamide
- Cable glands:
  - mounting flange prep. for M25x1.5
  - through-holes in the housing bottom part for M25x1.5 and M32x1.5

### Options

- Reinforced bearing
- Vent plug
- Heater
- Tube or rotary transmission (protection class IP 40, higher protection class on request)

### Order example:

**GS45/3KS-04**  
Enclosed slip ring assembly type 45/3 with plastic housing, 3-pole + PE

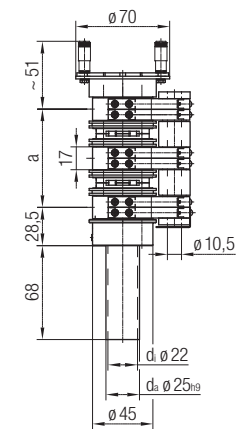
# Slip Ring Assembly

## Built-in Slip Ring Assembly ES45/2 47A/1000V

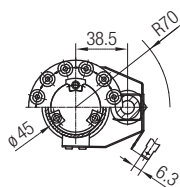


### Electrical data

- Voltage:
  - max. 1000V~==
  - according to DIN VDE 0110
  - overvoltage category IV
  - insulating material group II
  - degree of contamination 3
- Current: 47 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - $\phi 45 \times 17$  mm, brass (MS)
  - distance between rings 36.6 mm
- Brush holder assembly:
  - brush holders with 2 brush holders and brushes with two pressed-on brushes (Cu) 20 x 8 mm
  - connecting flat plug 6.3 (DIN 46244) for flat socket 6.3 (DIN 46247)
- Protection class: IP 00



$$a = (\text{number of poles} - 1) \times 36.6$$



### Wiring and max. number of poles

- Max. 5 (incl. PE)
- Completely wired with 6 mm<sup>2</sup> on a terminal board (terminal posts)
- Current collector in pairs per ring on connecting terminals

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: insulating parts, fiberglass reinforced polyamide
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures on request
- Position of installation: vertical (other positions on request)
- Mounting shaft:  $d_a = 25_{H9}$

### Components included

- Slip ring assembly complete with brush holders and brushes
- Insulator
- Mounting shaft (secure against torsion on site by means of 2 threaded pins M5, DIN 914)
- Brush holder bolt not included

### Mounting advice:

**The two brush holder assemblies per ring have to be connected always in parallel to a terminal board or similar.**

### Order example:

**ES45/2/R22-04**

Built-in slip ring assemblies type 45/2, 3-pole + PE with tube  $d_a = 25_{H9}$

## Enclosed Slip Ring Assembly GS45/2 47A/1000V

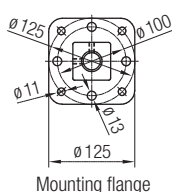
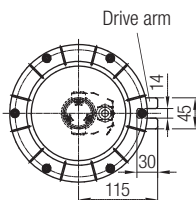
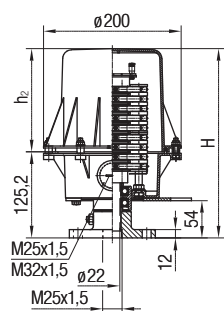


### Electrical data

- According to type ES45/2
- Protection class: IP 65

### Wiring and max. number of poles

- According to type ES45/2



h [mm]	H [mm]	Max. number of poles incl. PE	
		Standard	with heater
90	215	2	-
150	275	4	-
190	315	5	3
280	405	-	5

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: insulating parts fiberglass reinforced polyamide
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Corrosion protection: steel parts galvanized and/or powder coated RAL 1012
- Standard housing: polyamide
- Cable glands:
  - mounting flange prep. for M25x1.5
  - through-holes in the housing bottom part for M25x1.5 and M32x1.5

### Options

- Reinforced bearing
- Vent plug
- Heater
- Tube or rotary transmission (protection class IP 40, higher protection class on request)

### Order example:

**GS45/2KS-04**

Enclosed slip ring assembly type 45/2 with plastic housing, 3-pole + PE

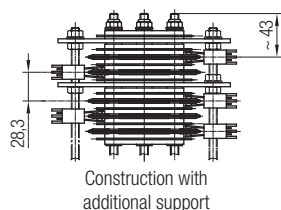
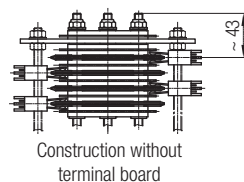
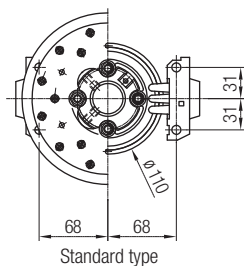
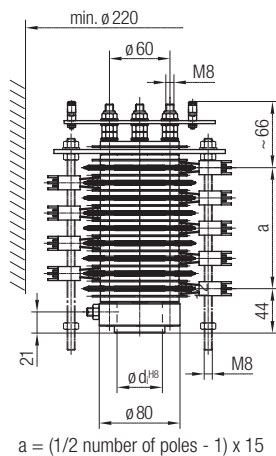
# Slip Ring Assembly

## Built-in Slip Ring Assembly ES18 25A/630V (690V)



### Electrical data

- Voltage:
  - max. 630V $\sim$  = (690V)<sup>1)</sup>
  - according to DIN VDE 0110
  - overvoltage category III
  - insulating material group II / III
  - degree of contamination 3
- Current: mA to 25A, at max. 30°C and 100% duty cycle
- Slip rings:
  - $\varnothing$  102 mm, brass (MS)
  - distance between rings 15 mm
- Brush holder assembly:
  - brush holders with 2 contact springs, each with 3 bronze brush (Br) rivets
  - connection: cable lug ring form M4 (DIN46237) or insulated flat socket 6.3 (DIN46245)
- Protection class: IP 00



### Control and data transmission

- Ring with multi-layer coating (ML) and silver (Ag) brush holder assembly for the transfer of analog and digital signals
- Transmission of data and video signals requires additional consultation

### Wiring and max. number of poles

- Standard construction:
  - up to 4 rings without terminal board
  - 6 to 36 rings on a terminal board with 2.5 mm<sup>2</sup> (terminal posts)
  - 37 to 48 rings with strand wiring 1.5 mm<sup>2</sup>, 2 m from flange, without terminal board
- Special construction:
  - up to 48 rings wiring on a terminal board with 1.5 mm<sup>2</sup> possible
  - up to max. 100 rings with strand wiring 1 mm<sup>2</sup>, 2 m from flange, without terminal board
  - 10 rings or more with supporting plate on top
  - 48 rings or more with intermediate supports

### Additional technical specifications

- Rotational speed for
  - standard construction (MS-rings and Br-brushes): 1-100 min<sup>-1</sup>
  - data (ML-rings + Ag-brushes): 1-30 min<sup>-1</sup>
- Insulation: insulating parts, fiberglass reinforced polyamide
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Flange diameter: d<sub>1</sub>
  - 45<sup>H8</sup>
  - 20<sup>H8</sup>, 30<sup>H8</sup> and 35<sup>H8</sup> on request

### Components included

- Slip ring assembly without brush bolt
- Brush holder assemblies loosely enclosed
- On request with brush bolt possible

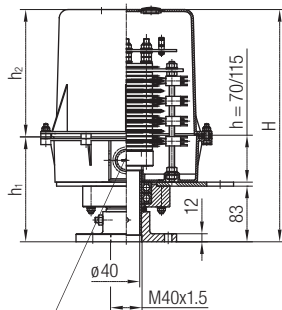
1) The voltages apply for slip ring assemblies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/2008-01: 4.3.2.2.2, table F.4).  
On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating current (VDE 0110-1/2008-01: 4.3.2.2.1, table F.3b).

### Order example:

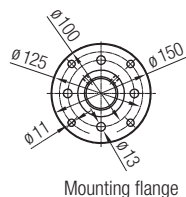
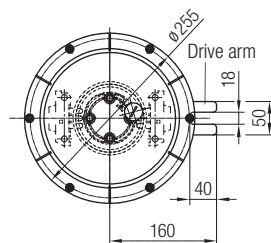
**ES18/F45-24**  
Built-in slip ring assembly  
type 18, 23-pole + PE  
flange diameter  
d<sub>1</sub><sup>H8</sup> = 45<sup>H8</sup>

# Slip Ring Assembly

## Enclosed Slip Ring Assembly GS18 25A/630V (690V)<sup>1)</sup>



$h_{70} = 1 \times M32 \times 1.5 + 1 \times M25 \times 1.5$   
 $h_{115} = 1 \times M40 \times 1.5 + 1 \times M25 \times 1.5$



### Electrical data

- Voltage:
  - max. 630V~ = (690V)<sup>1)</sup>
  - according to DIN VDE 0110
  - overvoltage category III
  - insulating material group II / III
  - degree of contamination 3
- Current: mA to 25A, at max. 30°C and 100% duty cycle
- Slip rings:
  - $\varnothing 102$  mm, brass (MS)
  - distance between rings 15 mm
- Brush holder assembly:
  - brush holders with 2 contact springs, each with 3 bronze brush (Br) rivets
  - connection: cable lug ring form M4 (DIN46237) or insulated flat socket 6.3 (DIN46245)
- Protection class: IP65

$h_1$ [mm]	$h_2$ [mm]	H [mm]	Max. number of poles	
			incl. PE	with heater
157	125	282	10	-
	190	347	18	8
	280	437	30	20
202	125	327	14	6
	190	392	24	14
	280	482	36	26

### Control and data transmission

- Ring with multi-layer coating (ML) and silver (Ag) brush holder assembly for the transfer of analog and digital signals
- Transmission of measured values and video signals requires additional consultation

### Wiring and max. number of poles

- Standard construction:
  - up to 36 rings on a terminal board with 2.5 mm<sup>2</sup>
  - 37 to 48 rings with strand wiring 1.5 mm<sup>2</sup>, 2 m from flange, without terminal board
- Special construction:
  - up to 48 rings wiring on a terminal board with 1.5 mm<sup>2</sup> possible
  - up to max. 100 rings with strand wiring 1 mm<sup>2</sup>, 2 m from flange, without terminal board
  - 10 rings or more with supporting plate on top
  - 48 rings or more with intermediate supports

### Additional technical specifications

- Rotational speed for
  - standard construction (MS-rings and Br-brushes): 1-100 min<sup>-1</sup>
  - data (ML-rings + Ag-brushes): 1-30 min<sup>-1</sup>
- Bearing: anti-friction bearing (sealed-for-life)
- Insulation: insulating parts, fiberglass reinforced polyamide
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Corrosion protection:
  - steel parts galvanized and/or powder coated
  - aluminum (powder coated)
  - standard housing of polyamide, up to 36 poles
  - >36 poles: steel housing (IP 54)

### Components included

- Standard without glands
- On request with metric glands possible

### Options

- Reinforced bearing
- Vent plug
- Heater
- Tube or rotary transmission (protection class IP 40, higher protection class on request)

<sup>1)</sup> The voltages apply for slip ring assemblies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/2008-01: 4.3.2.2.2, table F.4).

On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating current (VDE 0110-1/2008-01: 4.3.2.2.1, table F.3b).

**Order example:**  
**GS18KS-24/08ML/LI**  
 Enclosed slip ring assembly  
 type 18, 23-pole + PE,  
 8 multi-layer coated rings  
 and strand wiring

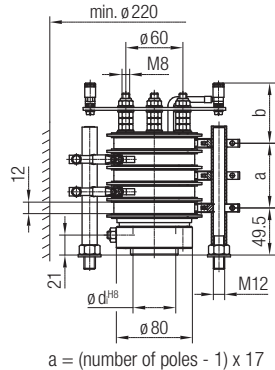
# Slip Ring Assembly

## Built-in Slip Ring Assembly ES13 50A/1000V

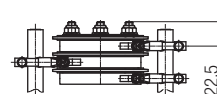
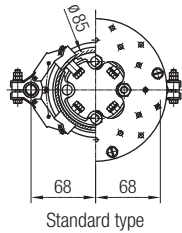


### Electrical data

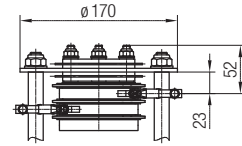
- Voltage:
  - max. 1000V~
  - according to DIN VDE 0110
  - overvoltage category IV
  - insulating material group II / III
  - degree of contamination 3
- Current: 50A, at max. 30°C and 100% duty cycle
- Slip rings:
  - $\varnothing 85 \times 12$  mm, brass (MS)
  - distance between rings 17 mm
  - connection M6
- Brush holder assembly:
  - industrial double brush holder with two articulating brushes (Cu)  $22 \times 6.4$  mm
  - connection M5
- Protection class: IP00



Rings	b [mm]
up to 7	63
8 rings or more	90



Construction with strand wiring



Construction with additional support for 8 rings or more

### Wiring and max. number of poles

- Max. 28 (incl. PE) completely wired with 10 mm<sup>2</sup>
- Up to 14 poles on terminal board, connected to terminal posts
- Strand wiring 10 mm<sup>2</sup> up to 28 rings possible
- Construction with 8 rings or more with intermediate support

- Position of installation: vertical (other positions on request)
- Flange diameter  $d_i$ :
  - 45<sup>H8</sup>
  - 20<sup>H8</sup>, 30<sup>H8</sup> and 35<sup>H8</sup> on request

### Components included

- Slip ring assembly complete with brush bolts and current collector
- Insulating tubes

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: insulating parts, fiberglass reinforced polyamide
  - glass filament, fabric tube HGW2375, 4 DIN7735
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request

### Order example: ES13/F45-04

Built-in slip ring assembly type 13, 3-pole + PE, flange diameter  $d_i = 45^{\text{H8}}$

## Enclosed Slip Ring Assembly GS13 50A/1000V

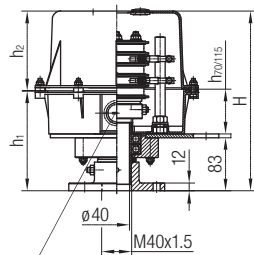


### Electrical data

- According to type ES13
- Protection class: IP65

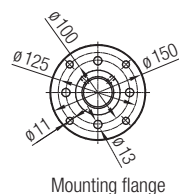
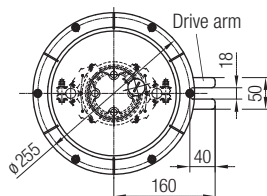
### Wiring and max. number of poles

- According to type ES13



$$h_{70} = 1 \times M32 \times 1.5 + 1 \times M25 \times 1.5$$

$$h_{115} = 1 \times M40 \times 1.5 + 1 \times M25 \times 1.5$$



$h_1$ [mm]	$h_2$ [mm]	H [mm]	Max. number of poles			
			A	B	C	D
157	125	282	6	4	-	-
	190	347	8	7	5	3
202	280	437	14	11	9	7
	125	327	7	6	4	2
202	190	392	11	8	7	6
	280	482	16	14	12	10

- A) without terminal board;
- B) with terminal board
- C) without terminal board, with heater
- D) with terminal board and heater

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation:
  - insulating parts, fiberglass reinforced polyamide
  - glass filament, fabric tube HGW2375, 4 DIN7735
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Bearing: anti-friction bearing (sealed-for-life)
- Corrosion protection:
  - steel parts galvanized and/or powder coated RAL 1012
  - aluminum (powder coated)

- standard housing of polyamide, up to 16 poles
- 17 rings or more with steel housing IP54

### Components included

- Standard without glands (possible on request)

### Options

- Heater
- Rotary transmission for gases and liquids (protection class IP 40, higher protection class on request)

### Order example GS13KS-04

Enclosed slip ring assembly type 13 with plastic housing; 3-pole + PE

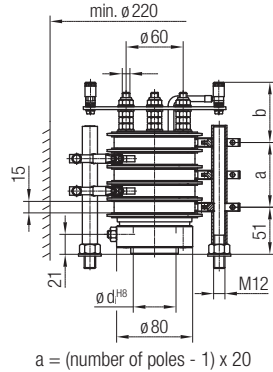
# Slip Ring Assembly

## Built-in Slip Ring Assembly ES15 90A/1000V

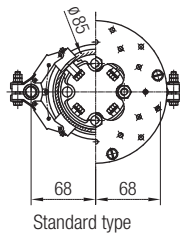


### Electrical data

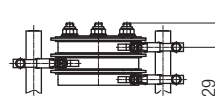
- Voltage:
  - max. 1000V~
  - according to DIN VDE 0110
  - overvoltage category IV
  - insulating material group II / III
  - degree of contamination 3
- Current: 90A at max. 30°C and 100% duty cycle
- Slip rings:
  - $\varnothing 85 \times 15$  mm, brass (MS)
  - distance between rings 20 mm
  - connection M8
  - max. 100 A
- Brush holder assembly:
  - industrial double brush holders with two articulating brushes (Cu) 25 x 8 mm
  - connection M6
  - max. 90 A
- Protection class: IP00



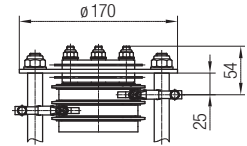
Rings	b [mm]
up to 7	65
8 - 16	91



Standard type



Construction with strand wiring



Construction with additional support for 8 rings or more

### Wiring and max. number of poles

- Max. 16 (incl. PE) completely wired with 16 mm<sup>2</sup>
- Up to 8 pole on a terminal board, connected to insulated terminal posts
- Strand wiring 16 mm<sup>2</sup> up to 16 rings possible
- Construction with 8 rings or more with intermediate support plate

- Position of installation: vertical (other positions on request)
- Flange diameter d<sub>i</sub>:
  - 45<sup>H8</sup>
  - 20<sup>H8</sup>, 30<sup>H8</sup>, and 35<sup>H8</sup> on request

### Components included

- Slip ring assembly complete with brush bolts and current collector
- Insulating tubes

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation:
  - insulating parts, fiberglass reinforced polyamide
  - glass filament, fabric tube HGW2375,4 DIN7735
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at >30°C the max. current load has to be reduced accordingly
  - higher temperatures on request

### Order example:

**ES15/F45-04**  
Built-in slip ring assembly type 15, 3-pole + PE, flange diameter d<sub>i</sub> = 45<sup>H8</sup>

## Enclosed Slip Ring Assembly GS15 90A/1000V

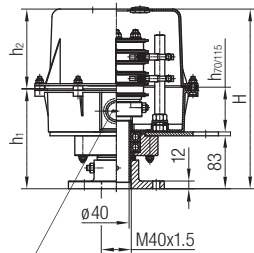


### Electrical data

- According to type ES15
- Protection class: IP65

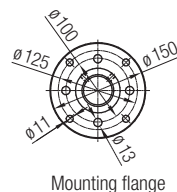
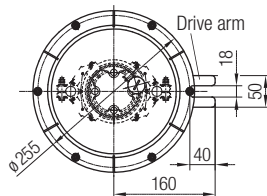
### Wiring and max. number of poles

- According to type ES15



$$h_{70} = 1 \times M32 \times 1.5 + 1 \times M25 \times 1.5$$

$$h_{115} = 1 \times M40 \times 1.5 + 1 \times M25 \times 1.5$$



Mounting flange

h <sub>1</sub> [mm]	h <sub>2</sub> [mm]	H [mm]	Max. number of poles			
			A	B	C	D
157	125	282	5	3	-	-
	190	347	-	6	4	3
202	280	437	11	9	7	7
	125	327	7	5	3	2
	190	392	9	7	7	5
	280	482	14	8	9	8

- A) without terminal board;
- B) with terminal board
- C) without terminal board, with heater
- D) with terminal board and heater

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at >30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Bearing: anti-friction bearing (sealed-for-life)
- Corrosion protection:
  - steel parts galvanized or powder coated
  - aluminum (powder coated)
  - standard housing: polyamide
  - 14 - 16 rings with steel housing IP54

### Components included

- Standard without glands (possible on request)

### Options

- Heater
- Rotary transmission for gases and liquids (protection class IP 40, higher protection class on request)

### Order example:

**GS15KS-04**  
Enclosed slip ring assembly type 15 with plastic housing; 3-pole + PE

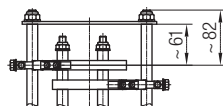
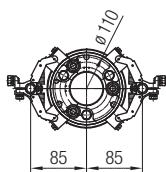
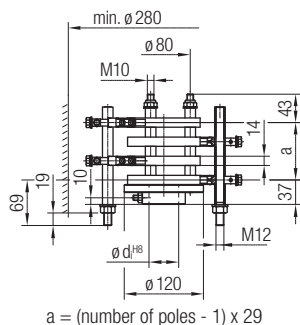
# Slip Ring Assembly

## Built-in Slip Ring Assembly ES16 100A/1000V



### Electrical data

- Voltage:
  - max. 1000V~
  - according to DIN VDE 0110
  - overtension category IV
  - insulating material group II
  - degree of contamination 3
- Current: 100A at max. 30°C and 100% duty cycle
- Slip rings:
  - $\varnothing 110 \times 14$  mm, brass (MS)
  - distance between rings 29 mm
  - connection M8
  - max. 100A
- Brush holder assembly:
  - industrial double brush holder with two mobile brushes (Cu) 32x10 mm
  - connection M8
  - max. 150A
- Protection class: IP 00



$\geq 5$  rings with connecting bracket over the brush bolts

### Wiring and max. number of poles

- Max. 12 (incl. PE), connection made by the customer with 35 mm<sup>2</sup>
- Strand wiring 25 mm<sup>2</sup> available on request
- $\geq 5$  rings connecting bracket over brush bolts needed

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: glass filament, fabric tube HGW2375,4 DIN7735
- Ambient temperature:
  - from -30°C up to max. +60°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Flange diameter d:
  - 45<sup>H8</sup>
  - 35<sup>H8</sup> on request

### Components included

- Slip ring assembly complete with brush bolts and brush holder assembly
- Insulating tubes

### Order example:

**ES16/F45-04**  
Built-in slip ring assembly type 16, 3-pole + PE, flange diameter d, = 45<sup>H8</sup>

## Enclosed Slip Ring Assembly GS16 100A/1000V

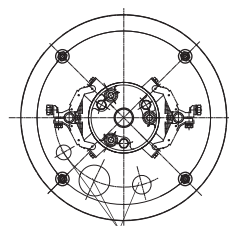
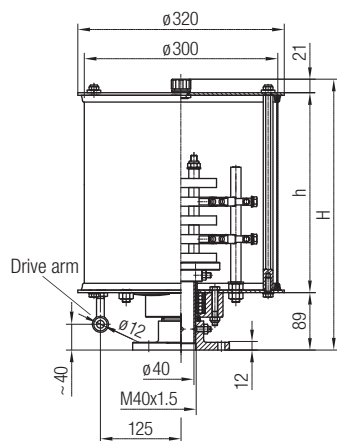


### Electrical data

- According to type ES16
- Protection class: IP 54 (higher protection class on request)

### Wiring and max. number of poles

- Max. 9 (incl. PE)
- Further details according to type ES16



Holes at the bottom plate:  
1x for cable gland M40x1.5  
1x for cable gland M25x1.5  
1x for cable gland M20x1.5

### Components included

- Standard without cable glands
- with cable glands on request

### Options

- Heater
- Rotary transmission for gases and liquids (protection class IP 40, higher protection class on request)

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: glass filament, fabric tube HGW2375,4 DIN7735
- Ambient temperature:
  - from -30°C up to max. +60°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Bearing: anti-friction bearing (sealed-for-life)
- Corrosion protection: steel parts galvanized and/or powder coated
- Protective cover:
  - removable vertical-up
  - also available with a removable side door or with a side access window (protection class IP 40)

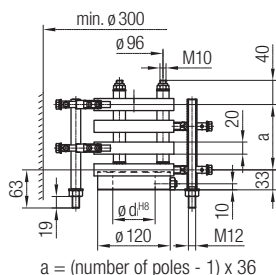
### Order example:

**GS16-04**  
Enclosed slip ring assembly type 16 with steel housing; 3-pole + PE



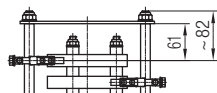
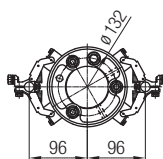
# Slip Ring Assembly

## Built-in Slip Ring Assembly ES19 150A/1000V



### Electrical data

- Voltage:
  - max. 1000V~
  - according to DIN VDE 0110
  - overvoltage category IV
  - insulating material group II
  - degree of contamination 3
- Current: 150A at max. 30°C and 100% duty cycle
- Slip rings:
  - $\varnothing 132 \times 20$  mm, brass (MS)
  - distance between rings 36 mm
  - connection M8
- Brush holder assembly:
  - industrial double brush holder with two mobile brushes (Cu)
  - 32 x 10 mm
  - connection M8
- Protection class: IP00



$\geq 5$  rings with connecting bracket over the brush bolts

### Wiring and max. number of poles

- Max. 18 (incl. PE), connection made by the customer with 35 mm<sup>2</sup>
- Strand wiring 35 mm<sup>2</sup>, available on request
- According to DIN VDE 0100-540 a outer conductor of 35 mm<sup>2</sup> cross section only requires a minimum cross section of the earth conductor of 16 mm<sup>2</sup>
- $\geq 5$  rings connecting bracket over brush bolts needed

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: glass filament, fabric tube HGW2375,4 DIN7735
- Ambient temperature:
  - from -30°C up to max. +60°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Flange diameter d<sub>i</sub>:
  - 70<sup>H8</sup>
  - 35<sup>H8</sup> and 45<sup>H8</sup> on request

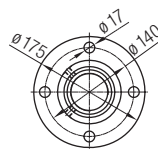
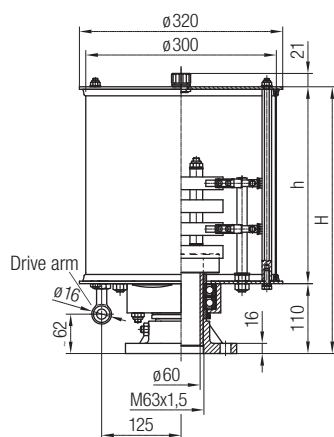
### Components included

- Slip ring assembly complete with brush bolts and brush holder assembly
- Insulating tubes

### Order example:

**ES19/F70-04**  
Built-in slip ring assembly type 19, 3-pole + PE, Flange diameter d<sub>i</sub> = 70<sup>H8</sup>

## Enclosed Slip Ring Assembly GS19 150A/1000V



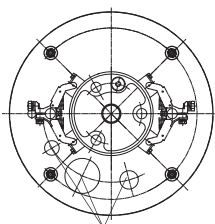
Mounting flange

### Electrical data

- According to type ES19
- Protection class: IP 54 (higher protection class on request)

### Wiring and max. number of poles

- Max. 16
- Further details according to type ES19



Holes at the bottom plate:  
1x for cable gland M50x1.5  
1x for cable gland M25x1.5  
1x for cable gland M20x1.5

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: glass filament, fabric tube HGW2375,4 DIN7735
- Ambient temperature:
  - from -30°C up to max. +60°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Bearing: anti-friction bearing (sealed-for-life)
- Corrosion protection: Steel parts galvanized and/or powder coated
- Protective cover:
  - removable vertical-up
  - available with a removable side door or with a side access window (protection class IP 40)

### Components included

- Standard without cable glands
- cable glands on request

### Options

- Heater
- Rotary transmission for gases and liquids (protection class IP 40, higher protection class on request)

### Order example:

**GS19-04**  
Enclosed slip ring assembly type 19 with steel housing; 3-pole + PE

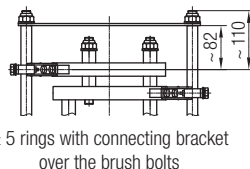
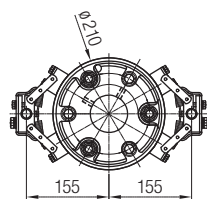
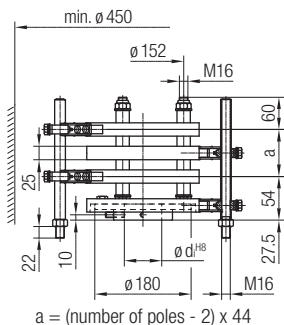
# Slip Ring Assembly

## Built-in Slip Ring Assemblies ES21 250A/1000V



### Electrical data

- Voltage:
  - max. 1000V~==
  - according to DIN VDE 0110
  - over-tension category IV
  - insulating material group II
  - degree of contamination 3
- Current: 250A at max. 30°C and 100% duty cycle
- Slip rings:
  - $\varnothing 210 \times 25$  mm, brass (MS)
  - distance between rings 44 mm
  - connection M10 / M12
- Brush holder assembly:
  - industrial double brush holder with two articulating brushes (Cu) 45 x 16 mm
  - connection M10
- Protection class: IP00



### Wiring and max. number of poles

- Max. 8 (incl. PE), connection made by the customer with 95 mm<sup>2</sup>
- Strand wiring 95 mm<sup>2</sup>, available on request
- According to DIN VDE 0100-540 the minimum cross section for the earth conductor is 1/2 the cross section of the outer conductor
- $\geq 5$  rings connecting bracket over brush bolts needed

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: glass filament, fabric tube HGW2375,4 DIN7735
- Ambient temperature:
  - from -30°C up to max. +60°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Flange diameter d: 70<sup>H8</sup>

### Components included

- Slip ring assembly complete with brush bolts and brush holder assembly
- Insulating tubes

### Order example:

**ES21/F70-04**  
Built-in slip ring assembly type 21, 3-pole + PE, Flange diameter d<sub>i</sub> = 70<sup>H8</sup>

## Enclosed Slip Ring Assembly GS21 250A/1000V

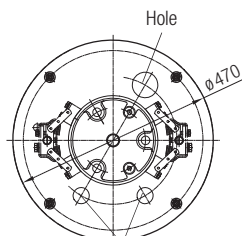
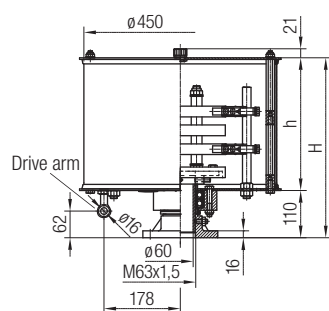


### Electrical data

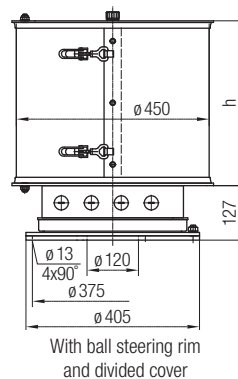
- According to type ES21
- Protection class: IP 54 (higher protection class on request)

### Wiring and max. number of poles

- Max. 8 (incl. PE)
- Further details according to ES21



Holes for cable glands in the bottom plate: 1x M63x1.5, 1x M40x1.5, 1x M32x1.5



- Bearing:
  - anti-friction bearing (sealed-for-life)
  - ball steering rim on request
- Corrosion protection: Steel parts galvanized and/or powder coated
- Protective cover:
  - removable vertical-up
  - available on request with divided cover (removable to the side) and/or side access window

### Components included

- Standard without cable glands
- cable glands on request

### Options

- Heater
- Rotary transmission for gases and liquids (protection class IP 40, higher protection class on request)

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: glass filament, fabric tube HGW2375,4 DIN7735
- Ambient temperature:
  - from -30°C up to max. +60°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)

### Order example:

**GS21-04**  
Enclosed slip ring assembly type 21 with steel housing; 3-pole + PE

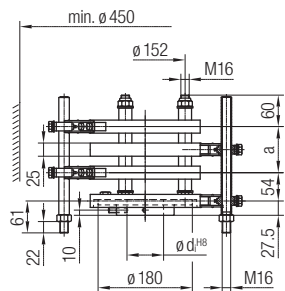
# Slip Ring Assembly

## Built-in Slip Ring Assembly ES29 400A/1000V

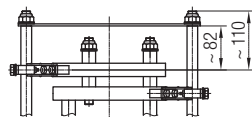
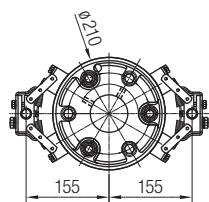


### Electrical data

- Voltage:
  - max. 1000V~=-
  - according to DIN VDE 0110
  - overvoltage category IV
  - insulating material group II
  - degree of contamination 3
- Current: 400A max. 30°C and 100% duty cycle
- Slip rings:
  - $\varnothing 210 \times 25$  mm, brass (MS)
  - distance between rings 44 mm
  - connection M12
- Brush holder assembly-phase:
  - industrial double brush holder with two articulating brushes (Cu) 50x20 mm
  - connection M12



$$a = (\text{number of poles} - 2) \times 44$$



$\geq 5$  rings with connecting bracket over the brush bolts

- Brush holder assembly PE:
  - industrial double brush holder with two articulating, replaceable brushes 45 x 16 mm
  - connection M10
  - max. 300A
- Protection class: IP00

### Wiring and max. number of poles

- Max. 4 (incl. PE), connection made by the customer with 2 x 95 mm<sup>2</sup>
- Strand wiring 2 x 95 mm<sup>2</sup>, available on request
- According to DIN VDE 0100-540 the minimum cross section for the earth conductor is  $\frac{1}{2}$  x the cross section of the outer conductor
- $\geq 5$  rings connecting bracket over brush bolts needed

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: glass filament, fabric tube HGW2375,4 DIN7735
- Ambient temperature:
  - from -30°C up to max. +60°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Flange diameter d: 70<sup>H8</sup>

### Components included

- Slip ring assembly complete with brush bolts and brush holder assembly
- Insulating tubes

### Order example:

**ES29/F70-04**  
Built-in slip ring assembly type 29, 3-pole + PE, Flange diameter d<sub>i</sub> = 70<sup>H8</sup>

## Enclosed Slip Ring Assembly GS29 400A/1000V

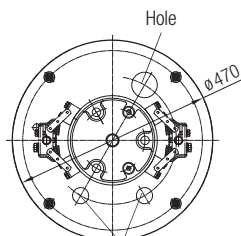
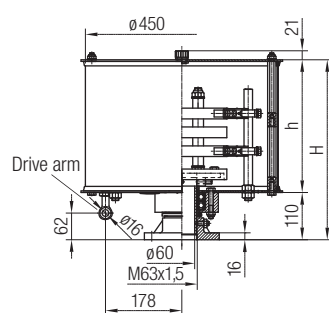


### Electrical data

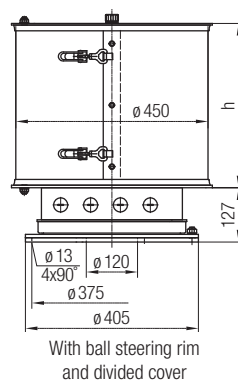
- According to type ES29
- Protection class: IP 54 (higher protection class on request)

### Wiring and max. number of poles

- Max. 4 (incl. PE)
- Further details according to ES29



Holes for cable glands in the bottom plate: 1x M63x1.5, 1x M40x1.5, 1x M32x1.5



- Bearing:
  - anti-friction bearing (sealed-for-life)
  - greasable ball steering rim on request
- Corrosion protection: steel parts galvanized and/or powder coated
- Protective cover:
  - removable vertical-up
  - available on request with divided cover (removable to the side) and/or side access window

### Components included

- Standard without cable glands
- Cable glands on request

### Options

- Heater
- Rotary transmission for gases and liquids (protection class IP 40, higher protection class on request)

### Additional technical specifications

- Rotational speed: 1-100 min<sup>-1</sup>
- Insulation: glass filament, fabric tube HGW2375,4 DIN7735
- Ambient temperature:
  - from -30°C up to max. +60°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)

### Order example:

**GS29-04**  
Enclosed slip ring assembly type 29 with steel housing; 3-pole + PE

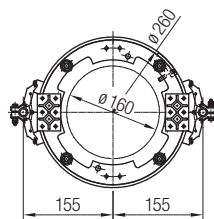
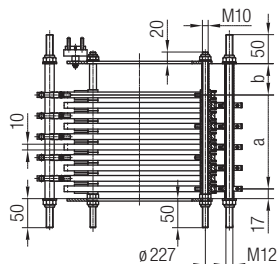
# Slip Ring Assembly

## Built-in Slip Ring Assembly ES260 47A/630V (690V)<sup>1)</sup>



### Electrical data

- Voltage:
  - max. 630V~ = (690V)<sup>1)</sup>
  - according to DIN VDE 0110
  - overvoltage category IV
  - insulating material group II
  - degree of contamination 3
- Current: 47 A at max. 30°C and 100% duty cycle
- Slip rings:
  - $\varnothing 260 \times 10$  mm, brass (MS)
  - distance between rings 18 mm
  - connection M6
- Brush holder assembly:
  - industrial double brush holders with two articulating brushes (Cu) 22 x 6.4 mm
  - connection M5
  - max. 50 A
- Protection class: IP 00



### Control and data transmission

- Ring with multi-layer coating (ML) and silver (Ag) brush holder assembly for the transfer of analog and digital signals
- Transmission of data and video signals requires additional consultation

### Wiring and max. number of poles

- Max. 24 (incl. PE) completely wired with 6 mm<sup>2</sup> on a terminal board
- Connection at terminal board M5
- > 24 to 36 rings with strand wiring

### Additional technical specifications

- Rotational speed: 1-60 min<sup>-1</sup>
- Insulation:
  - slip ring holder polyamide
  - brush bolt glass filament fabric tube HGW2375, 4 DIN7735
- Corrosion protection: steel parts galvanized
- Tube passage: max.  $\varnothing 160$  mm
- Ambient temperature:
  - from -30°C up to max. +60°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request

- Position of installation: vertical (other positions on request)
- Possible installation methods:
  - with 4 brush bolts M10, bolt circle  $\varnothing 227$  mm
  - on site the brush bolts M12 have to be screwed on top and at the bottom

### Components included

- Slip ring assembly without brush bolt
- Insulating tubes
- Brush holder assembly

<sup>1)</sup> The voltages apply for slip ring assemblies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/2008-01: 4.3.2.2.2, table F.4).  
On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating current (VDE 0110-1/2008-01: 4.3.2.2.1, table F.3b).

### Order example: ES260-04

Built-in slip ring assembly  
type 260, 3-pole + PE

## Enclosed Slip Ring Assembly GS260 47A/630V (690V)<sup>1)</sup>

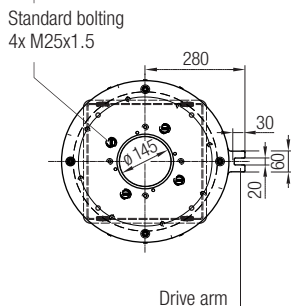
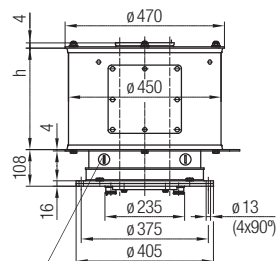


### Electrical data

- According to type ES260
- Protection class: IP 54

### Wiring and max. number of poles

- Max. 24 (incl. PE)
- Further details according to ES260



Number of poles incl. PE without heater	Number of poles incl. PE with heater	h [mm]
up to 12	up to 9	300
up to 18	up to 15	450
up to 24	up to 21	600

### Additional technical specifications

- Rotational speed: 1-60 min<sup>-1</sup>
- Insulation:
  - slip ring holder polyamide
  - brush bolt glass filament fabric tube HGW2375, 4 DIN7735
- Tube passage: max.  $\varnothing 145$  mm
- Ambient temperature:
  - from -30°C up to max. +60°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Bearing: anti-friction bearing (sealed-for-life) or greasable ball steering rim
- Corrosion protection: steel
- Protective cover:
  - removable vertical up with viewing or access window
  - with divided cover on request (removable to the side)

### Components included

- Standard without cable glands
- Cable glands on request

### Option

- Heater

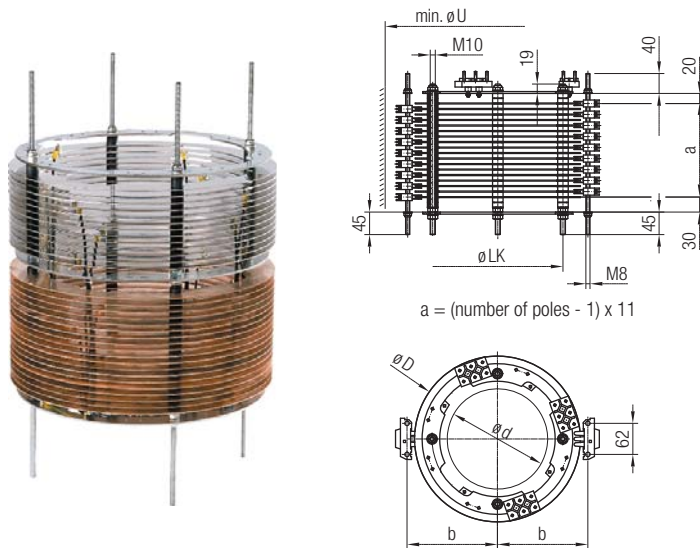
<sup>1)</sup> The voltages apply for slip ring assemblies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/2008-01: 4.3.2.2.2, table F.4).  
On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating current (VDE 0110-1/2008-01: 4.3.2.2.1, table F.3b).

### Order example: GS260-08

Enclosed slip ring assembly  
type 260, with steel housing  
7-pole + PE

# Slip Ring Assembly

## Built-in Slip Ring Assembly ES170, ES200, ES285 47 A/630V (690V)<sup>1)</sup>



Type	b [mm]	ød [mm]	øD [mm]	øLK [mm]	øU [mm]	Combination with
ES170	101	75	170	120 – 3x120°	290	-
ES200	116	100	200	150 – 3x120°	320	ES185
ES285	158.5	160	285	227 – 4x90°	400	ES260

### Electrical data

- Voltage:
  - max. 630V~ = (690V)<sup>1)</sup> according to DIN VDE 0110
  - overvoltage category III
  - insulating material group II
  - degree of contamination 3
- Current: 47 A at max. 30°C and 100% duty cycle
- Protection class: IP 00

### Control and data transmission

- Ring with multi-layer coating (ML) and silver (Ag) brush holder assembly for the transfer of analog and digital signals
- Transmission of measured values and video signals requires additional consultation

### Wiring and max. number of poles

- Max. 18 (incl. PE) completely wired with 6 mm<sup>2</sup> on terminal boards
- Connection at terminal board M5

### Additional technical specifications

- Rotational speed: on request
- Insulation:
  - slip ring holder polyamide
  - brush bolt glass filament fabric tube HGW2375, 4 DIN7735
- Corrosion protection: steel parts galvanized
- Tube passage: see table, diameter d
- Ambient temperature:
  - from -30°C up to max. +60°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical (other positions on request)
- Possibilities of installation:
  - with 3 screw bolts M10
  - on site the brush bolts M8 have to be screwed on top and at the bottom

### Components included

- Slip ring assembly complete with brush bolts and brush holder assembly
- Insulating tubes

1) The voltages apply for slip ring assemblies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/2008-01: 4.3.2.2.2, table F.4).

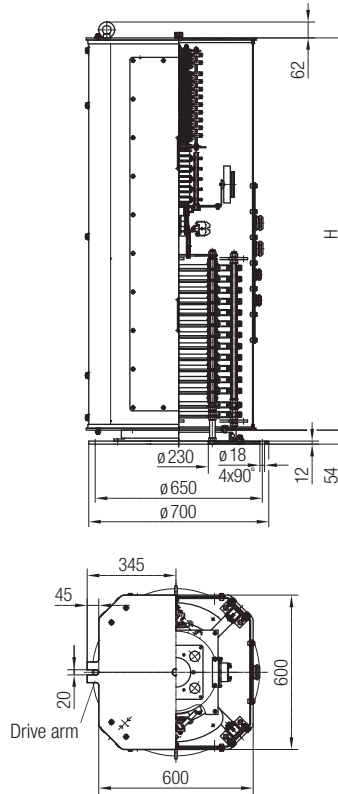
On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating current (VDE 0110-1/2008-01: 4.3.2.2.1, table F.3b).

**Order example:**  
**ES170-10**  
 Built-in slip ring assembly  
 type 170, 9-pole + PE



# Combination of Slip Ring Assemblies

## Enclosed Slip Ring Assembly GS323



### Additional technical specifications

- Rotational speed for
  - standard type (MS-rings and Br-brushes): 1-100 min<sup>-1</sup>
  - data (ML-rings and Ag-brushes): 1-30 min<sup>-1</sup>
- Bearing: greasable ball steering rim
- Insulation: slip ring assembly and insulator polyamide, glass filament
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Corrosion protection:
  - steel parts galvanized and/or powder coated
  - exterior panels stainless steel (powder coated, RAL1012)
- Position of installation: vertical

### Components included

- Standard without strand wiring for main current section
- Depending on the ring construction, different holes in the bottom plate for cable glands are provided.
- Special design on request

### Options

- Anti-condensation heater
- Rotary transmission for gases and liquids

### Electrical data, main current section

- Voltage:
  - max. 1000V<sub>~</sub>
  - according to DIN VDE 0110
  - overvoltage category IV
  - insulating material group II
  - degree of contamination 3
- Current:
  - 400A at 60% duty cycle, higher current on request
  - at parallel connection of rings
- Insulation: HGW2375.4 DIN 7735
- General: other amperage and voltage combinations are possible
- Protection class: IP54

### Control current section

- In general, slip ring type 18 is used. Please find technical details on page 12.
- Additional technical information on request.

### Control and data transmission

- Ring with multi-layer coating (ML) and silver (Ag) brush holder assembly for the transfer of analog and digital signals

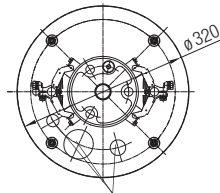
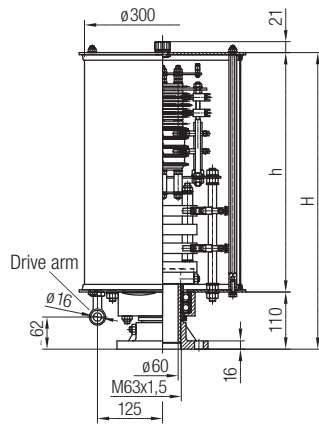
### Wiring

- Control current section completely wired on terminal bar or terminal board
- Main current section with strand wiring on request

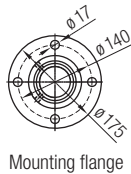
Please contact us with your specific requirements and we would be happy to design a customized solution for your application.

# Combination of Slip Ring Assemblies

## Enclosed Slip Ring Assembly e.g. Type GS19/13/18



Holes in the bottom plate:  
 1x for cable gland M50x1.5  
 1x for cable gland M25x1.5  
 1x for cable gland M25x1.5



Mounting flange

### Electrical data

- Voltage:
  - max. 1000/630V~ = (690V)<sup>1)</sup>
  - according to DIN VDE 0110
  - overvoltage category III
  - insulating material group II / III
  - degree of contamination 3
- Ring construction:
  - 150A + PE / 50A / 25A
- Protection class: IP 54  
 (higher protection class on request)

### Additional technical specifications

- Rotational speed for
  - standard type (MS-rings and Br-brushes): 1-100 min<sup>-1</sup>
  - data (ML-rings and Ag-brushes): 1-30 min<sup>-1</sup>
- Bearing: anti-friction bearing (sealed-for-lifetime)
- Cable connection:
  - Main current rings with strand wiring on request
  - control rings on terminal board
- Protective cover:
  - removable vertical-up
  - available on request with divided cover (removable to the side) and/or side access window
- Corrosion protection:
  - steel parts galvanized and/or powder coated
  - stainless steel enclosure on request
- Ambient temperature:
  - from -35°C up to max. +50°C
  - at > 30°C the max. current load has to be reduced accordingly
  - higher temperatures possible on request
- Position of installation: vertical  
 (other positions on request)

### Components included

- Standard without glands
- Cable glands on request

### Options

- Heater
- Rotary transmission for gases and liquids (protection class IP 40, higher protection class on request)

<sup>1)</sup> The voltages apply for slip ring assemblies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/2008-01: 4.3.2.2.2, table F.4).

On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating current (VDE 0110-1/2008-01: 4.3.2.2.1, table F.3b).

Please contact us with your specific requirements and we would be happy to design a customized solution for your application.



# Combination of Slip Ring Assemblies

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## Enclosed Slip Ring Assembly combined with Rotary Transmission for Gases and Liquids

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Besides premium slip ring assemblies for energy- and data transmission, Conductix-Wampller offers rotary joints as well. The rotary joints are available in single or multi-channel design and in combination with our slip ring range. They are used in turntables, for machine tools, cranes and other industrial applications.

### Rotary joints

- For gases and liquids (except oxygen)
- Design in single or multi-channel
- With and without enclosed slip rings for energy and data transmission
- For different pressures and temperatures

Combined design of slip ring assembly type 18 (see page 12) and single channel rotary joint for gas or liquid:

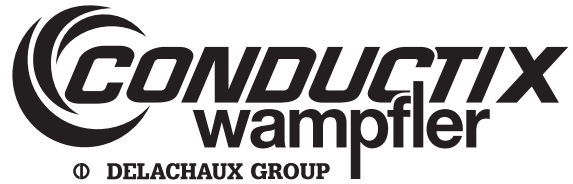


Please contact us with your specific requirements and we would be happy to design a customized solution for your application.

# Questionnaire | Specification Data

## Slip Ring Assemblies

### Program 5100



#### Construction of the slip ring assembly power section

Number of poles	Amperages [A]	Voltage [V]	Frequency [Hz]
+ PE			
+ PE			
+ PE			
+ PE			

#### Data transmission or low voltage (up to 50V)

• PE:  yes  no

Number of insulated shields/poles	Analog	Digital	Data transfer rate [kBit/s]	Transmission protocol e.g. Profibus, Fast-Ethernet

#### Construction of the gas or fluid rotary joint

Number of channels	Nominal width [mm]	Pressure [bar]	Medium

#### Application conditions

- Duty cycle: \_\_\_\_\_ [%]
- Rotational speed: \_\_\_\_\_ min<sup>-1</sup>
- Stationary operation:  yes  no  
(Stationary oper. = rotational speed < 1/min and more than 60% of the max. current load for more than 10 min)
- Mounting position:  vertical standing (standard)  
 vertical hanging  
 horizontal

#### Environmental conditions

- Temperature: \_\_\_\_\_ °C up to \_\_\_\_\_ °C
- Dust: \_\_\_\_\_
- Humidity: \_\_\_\_\_ [%]
- Chemistry-Atmosphere: \_\_\_\_\_

#### Construction

- Slip Ring Assembly:
- Slip Ring Assembly without housing IP 00
  - Enclosed Slip Ring Assembly  
(Steel housing max. IP 54, plastic housing max. IP 65)
- Housing:
- Removable vertical-up
  - Divided for side (steel housing)
  - With side access window

- Wiring:
- Ring connection via terminal board
  - Pre-wiring  
 Ring side \_\_\_\_\_ [m] from mounting flange  
 Brush holder side \_\_\_\_\_ [m] from housing
  - Single strand  Cable \_\_\_\_\_

#### Space requirements

- Max. free diameter: \_\_\_\_\_ [mm]
- Max. mounting height: \_\_\_\_\_ [mm]
- Required tube passage inside-ø: \_\_\_\_\_ [mm]

#### Accessories

- End switch:  \_\_\_\_\_ [Number of]
- Heating:  24V  110V  230V

#### Application area of the slip ring assembly / rotary joint, special conditions, special accessories

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#### Customer Data

Company: \_\_\_\_\_ Customer-No.: \_\_\_\_\_

FAO: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-Mail: \_\_\_\_\_

# Your Applications – our Solutions

Slip ring assemblies from Conductix-Wampfler represent only one of the many solutions made possible by the broad spectrum of Conductix-Wampfler components for the transport of energy, data and fluid media. The solutions we deliver for your applications are based on your specific requirements. In many cases, a combination of several different Conductix-Wampfler systems can prove advantageous. You can count on all of Conductix-Wampfler's Business Units for hands-on engineering support - coupled with the perfect solution to meet your energy management and control needs.



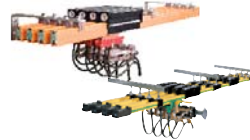
## Cable reels

Motorized reels and spring reels by Conductix-Wampfler hold their own wherever energy, data and media have to cover the most diverse distances within a short amount of time - in all directions, fast and safe.



## Festoon systems

It's hard to imagine Conductix-Wampfler cable trolleys not being used in virtually every industrial application. They're reliable and robust and available in an enormous variety of dimensions and designs.



## Conductor rails

Whether they're enclosed conductor rails or expandable single-pole systems, the proven conductor rails by Conductix-Wampfler reliably move people and material.



## Non-insulated conductor rails

Extremely robust, non-insulated conductor rails with copper heads or stainless steel surfaces provide the ideal basis for rough applications, for example in steel mills or shipyards.



## Energy guiding chains

The "Jack of all trades" when it comes to transferring energy, data, air and fluid hoses. With their wide range, these energy guiding chains are the ideal solution for many industrial applications.



## Slip ring assemblies

Whenever things are really "moving in circles", the proven slip ring assemblies by Conductix-Wampfler ensure the flawless transfer of energy and data. Here, everything revolves around flexibility and reliability!



## Inductive Power Transfer IPT®

The no-contact system for transferring energy and data. For all tasks that depend on high speeds and absolute resistance to wear.



## Reels, retractors and balancers

Whether for hoses or cables, as classical reels or high-precision positioning aids for tools, our range of reels and spring balancers take the load off your shoulders.



## Jib boom

Complete with tool transporters, reels, or an entire media supply system - here, safety and flexibility are key to the completion of difficult tasks.



## Conveyor systems

Whether manual, semiautomatic or with Power & Free – flexibility is achieved with full customization concerning layout and location.

# www.conductix.com

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