


# RELIABLE AND ESTABLISHED



**CE** **cUL** **us** **SSI**  
**PARALLEL**

**More information**

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### Product description

The modular setup of its CoreTech technology enables the compact ARS60 absolute singleturn encoder to provide a customized solution for all applications. All common mechanical variants

are available with any number of steps between 2 and 32,768 and are either equipped with an SSI or parallel output, making the ARS60 a universal solution for nearly any application requirements

### At a glance

- Absolute singleturn encoder
- Resolution: up to 15 bit (32,768 steps)
- Electrical interface: SSI with gray or gray capped code type
- Electrical interface: Parallel with gray, gray capped, binary, BCD code type
- Zero-set function
- Mechanical interfaces: face mount flange, servo flange, blind and through hollow shaft
- Enclosure rating: Up to IP66

### Your benefits

- Programmable resolution (up to 15 bit)
- Simple zero point adjustment directly on the encoder at the touch of a button or on a connecting wire (cable version)
- Suitable for all mounting methods thanks individual mechanical interfaces
- Application flexibility due to easily interchangeable collets for the blind hollow shaft and through hollow shaft

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## Fields of application

- Electronics and solar industry
- Textile machinery
- Packaging industry
- High-bay warehouses
- Woodworking machines
- Mechanical engineering
- Automotive industry
- Material handling

## Detailed technical data

### Performance

<b>Number of steps per revolution</b>	00002 ... 32,768 (see ordering information)
<b>Max. number of revolutions</b>	1
<b>Error limits</b>	
Binary number of steps	0.035°
Non-binary number of steps	0.046°
<b>Repeatability</b>	0.005°
<b>Measurement step deviation</b>	
Binary number of steps	0.005°
Non-binary number of steps	0.016°
<b>Measurement step</b>	360° / Number of lines per revolution
<b>Initialization time</b>	80 ms <sup>1)</sup>

<sup>1)</sup> Valid positional data can be read once this time has elapsed.

### Electrical data

<b>Electrical interface</b>	SSI or parallel
<b>Control input switching level</b>	Logic H = 0.7 x U <sub>S</sub> Logic L = 0 V... 0.3 V x U <sub>S</sub>
<b>Operation of SET button <sup>1)</sup></b>	100 ms
<b>Operating voltage range</b>	10 V DC ... 32 V DC
<b>Operating current</b>	
SSI	Typ. 60 mA
Parallel	Typ. 90 mA
<b>Code sequence</b>	CW, increasing, when viewing the clockwise rotating shaft
<b>Reverse polarity protection</b>	✓
<b>MTTFd: mean time to dangerous failure</b>	300 years (EN ISO 13849-1) <sup>1)</sup>

<sup>1)</sup> This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of devices, average ambient temperature 40 °C, frequency of use 8,760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.



Mechanical data

<b>Shaft diameter</b>	Face mount flange	10 x 19 mm
	Servo flange	6 x 10 mm
	Blind hollow shaft <sup>1)</sup>	6, 8, 10, 12, 14, 15 mm and 1/4", 3/8", 1/2"
	Through hollow shaft <sup>1)</sup>	6, 8, 10, 12 mm and 1/4", 3/8", 1/2"
<b>Shaft material</b>	Stainless steel	
<b>Flange material</b>	Aluminum	
<b>Housing material</b>	Aluminum	
<b>Mass <sup>2)</sup></b>	0.3 kg	
<b>Start up torque at 20 °C</b>	Face mount flange	0.4 Ncm
	Servo flange	0.25 Ncm
	Blind hollow shaft	0.6 Ncm
	Through hollow shaft	2.2 Ncm
<b>Operating torque at 20 °C</b>	Face mount flange	0.3 Ncm
	Servo flange	0.2 Ncm
	Blind hollow shaft	0.4 Ncm
	Through hollow shaft	1.6 Ncm
<b>Permissible shaft loading</b>	Face mount flange, servo flange	
	10 N radial 50 N axial	
<b>Permissible shaft movement of the drive element, static/dynamic</b>	Blind hollow shaft, through hollow shaft	
	± 0.3/ ± 0.1 mm radial ± 0.5/ ± 0.2 mm axial	
<b>Max. angular acceleration</b>	≤ 500,000 rad/s <sup>2</sup>	
<b>Operating speed <sup>3)</sup></b>	Face mount flange, servo flange	6,000 rpm with shaft seal 10,000 rpm without shaft seal, if the shaft seal has been removed by the customer
	Blind hollow shaft, through hollow shaft	3,000 rpm
<b>Rotor moment of inertia</b>	Face mount flange	54 gcm <sup>2</sup>
	Servo flange	48 gcm <sup>2</sup>
	Blind hollow shaft, through hollow shaft	See Figure 1 below.
<b>Bearing lifetime</b>	3,6 x 10 <sup>9</sup> revolutions	

<sup>1)</sup> Order collets for 6, 8, 10, 12 and 14 mm or 1/4", 3/8" and 1/2" as separate extra accessories. No collets are necessary for 15 mm shaft diameter.

<sup>2)</sup> Relates to devices with cable outlet.

<sup>3)</sup> Take into account self-warming of 3.3 K per 1,000 rpm when designing operating temperature range



Ambient data

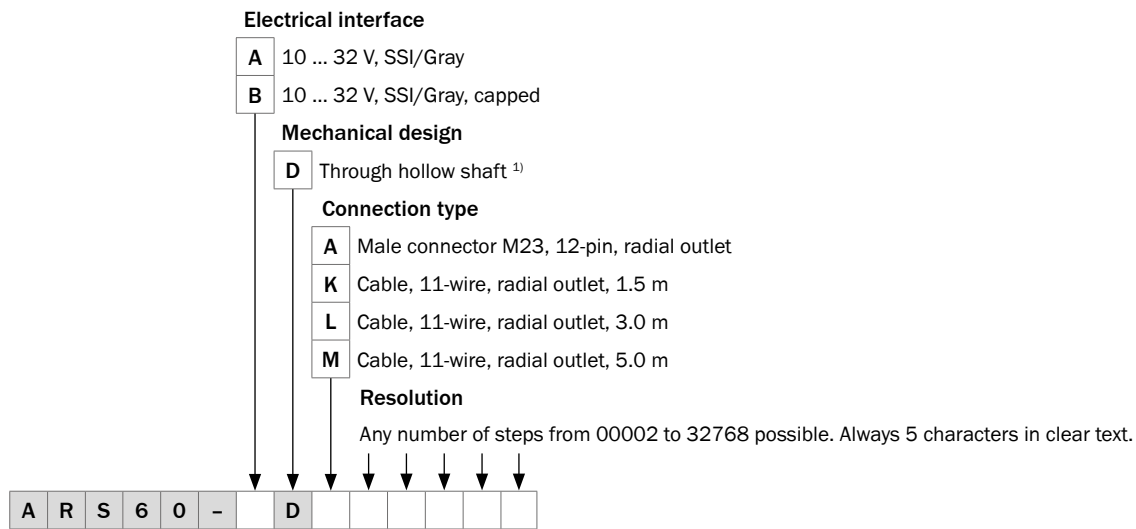
<b>EMC</b>	(according to EN 61000-6-2 and EN 61000-6-3) <sup>1)</sup>
<b>Enclosure rating (as per IEC 60529)<sup>2)</sup></b>	
Face mount flange, servo flange, blind hollow shaft: male connector outlet	IP 65
Face mount flange, servo flange, blind hollow shaft: cable outlet	IP 66
Through hollow shaft: male connector outlet	IP 64
Through hollow shaft: cable outlet	IP 64
<b>Permissible relative humidity</b>	90% (condensation of optical surfaces not permitted)
<b>Operating temperature range</b>	-20 °C ... +85 °C
<b>Storage temperature range</b>	-40 °C ... +100 °C
<b>Resistance to shocks</b>	50 g/ 11 ms (as per EN 60068-2-27)
<b>Resistance to vibrations</b>	20 g / 10 Hz - 2,000 Hz (according to EN 60068-2-6)

<sup>1)</sup> The EMC according to the standards quoted is achieved if shielded cables are used.

<sup>2)</sup> When mating connector is inserted.

Ordering information

Type code: ARS60 SSI, through hollow shaft



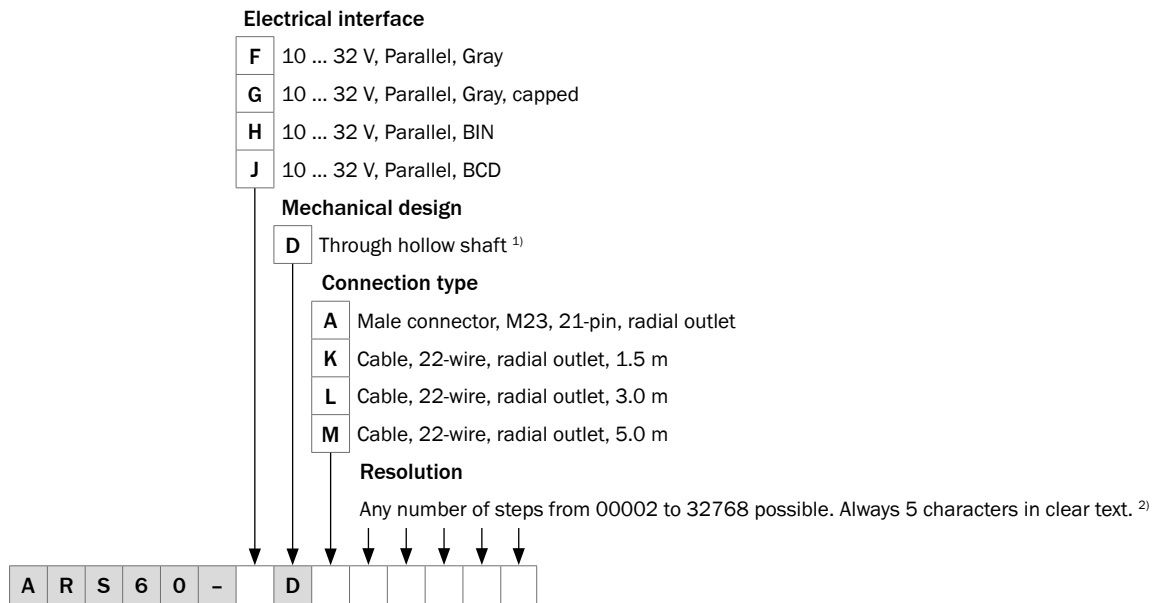
<sup>1)</sup> Order collet for 6, 8, 10 and 12 mm or 1/4", 3/8" and 1/2" as separate extra accessories (see recommended accessories).

Example orders

- Through hollow shaft

Through hollow shaft design	Type
10 ... 32 Volt, SSI, Gray, M23 male connector, 12-pin, radial, number of steps 8,192	ARS60-ADA08192

Type code: ARS60 parallel, through hollow shaft



<sup>1)</sup> Order collet for 6, 8, 10 and 12 mm or 1/4", 3/8" and 1/2" as separate extra accessories (see recommended accessories).

<sup>2)</sup> For the following interfaces: 10 ... 32 V Parallel Gray; 10 ... 32 V Parallel Gray capped; 10 ... 32 V Parallel BIN. 00002 to 07999 steps possible for the electrical interface: 10 ... 32 V, Parallel BCD. Always 5 characters in clear text.

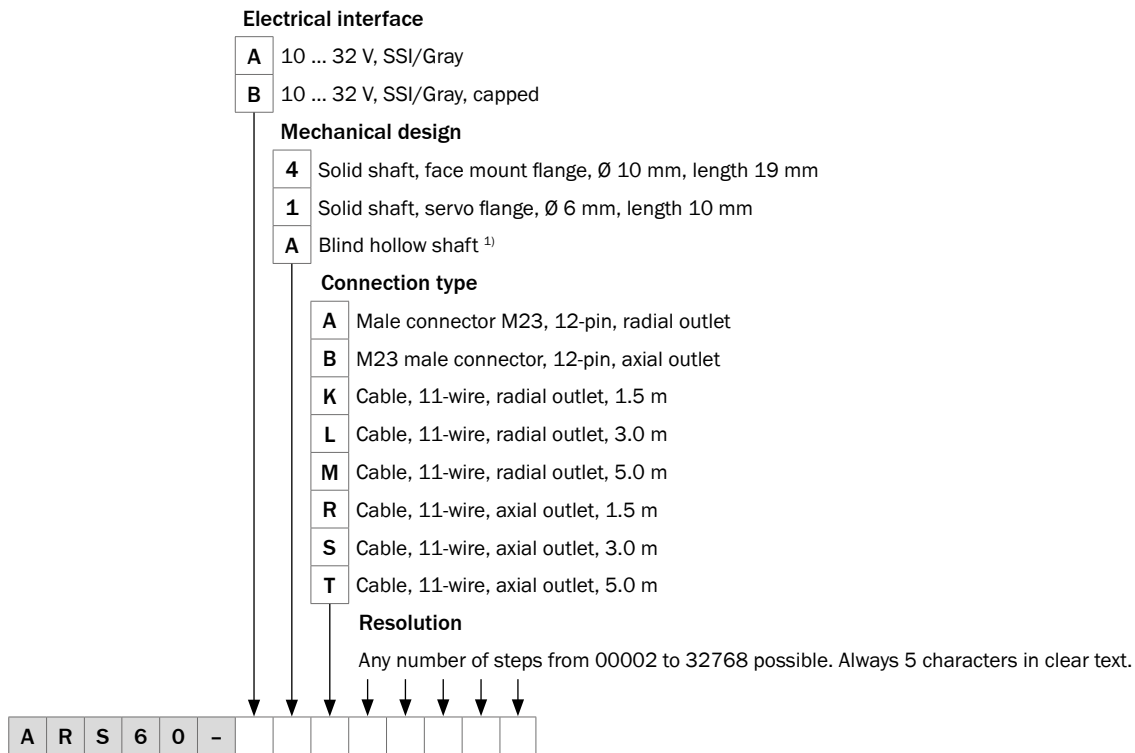
Example orders

- Through hollow shaft

Through hollow shaft design	Type
10 ... 32 Volt, Parallel, Gray, M23 male connector, 21-pin, radial, number of steps 8,192	ARS60-FDA08192



Type code: ARS60 SSI



<sup>1)</sup> Order collet for 6, 8, 10, 12 and 14 mm or 1/4", 3/8" and 1/2" as separate extra accessories (see recommended accessories). No collets are necessary for 15 mm shaft diameter.

Example orders

- Face mount flange

Face mount flange design	Type
10 ... 32 Volt, SSI, Gray, M23 male connector, 12-pin, radial, number of steps 8,192	ARS60-A4A08192

- Servo flange

Servo flange design	Type
10 ... 32 Volt, SSI, Gray, M23 male connector, 12-pin, radial, number of steps 8,192	ARS60-A1A08192

- Blind hollow shaft

Blind hollow shaft design	Type
10 ... 32 Volt, SSI, Gray, M23 male connector, 12-pin, radial, number of steps 8,192	ARS60-AAA08192



Type code: ARS60 parallel

**Electrical interface**

- F** 10 ... 32 V, Parallel, Gray
- G** 10 ... 32 V, Parallel, Gray, capped
- H** 10 ... 32 V, Parallel, BIN
- J** 10 ... 32 V, Parallel, BCD

**Mechanical design**

- 4** Solid shaft, face mount flange, Ø 10 mm, length 19 mm
- 1** Solid shaft, servo flange, Ø 6 mm, length 10 mm
- A** Blind hollow shaft <sup>1)</sup>

**Connection type**

- A** Male connector, M23, 21-pin, radial outlet
- B** Male connector, M23, 21-pin, axial outlet
- K** Cable, 22-wire, radial outlet, 1.5 m
- L** Cable, 22-wire, radial outlet, 3.0 m
- M** Cable, 22-wire, radial outlet, 5.0 m
- R** Cable, 22-wire, axial outlet, 1.5 m
- S** Cable, 22-wire, axial outlet, 3.0 m
- T** Cable, 22-wire, axial outlet, 5.0 m

**Resolution**

Any number of steps from 00002 to 32768 possible. Always 5 characters in clear text. <sup>2)</sup>



<sup>1)</sup> Order collet for 6, 8, 10, 12 and 14 mm or 1/4", 3/8" and 1/2" as separate extra accessories (see recommended accessories). No collets are necessary for 15 mm shaft diameter.

<sup>2)</sup> For the following interfaces: 10 ... 32 V Parallel Gray; 10 ... 32 V Parallel Gray capped; 10 ... 32 V Parallel BIN. 00002 to 07999 steps possible for the electrical interface: 10 ... 32 V, Parallel BCD. Always 5 characters in clear text.

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Example orders

- Servo flange

Servo flange design	Type
10 ... 32 Volt, Parallel, Gray, M23 male connector, 21-pin, radial, number of steps 8,192	ARS60-F1A08192

- Face mount flange

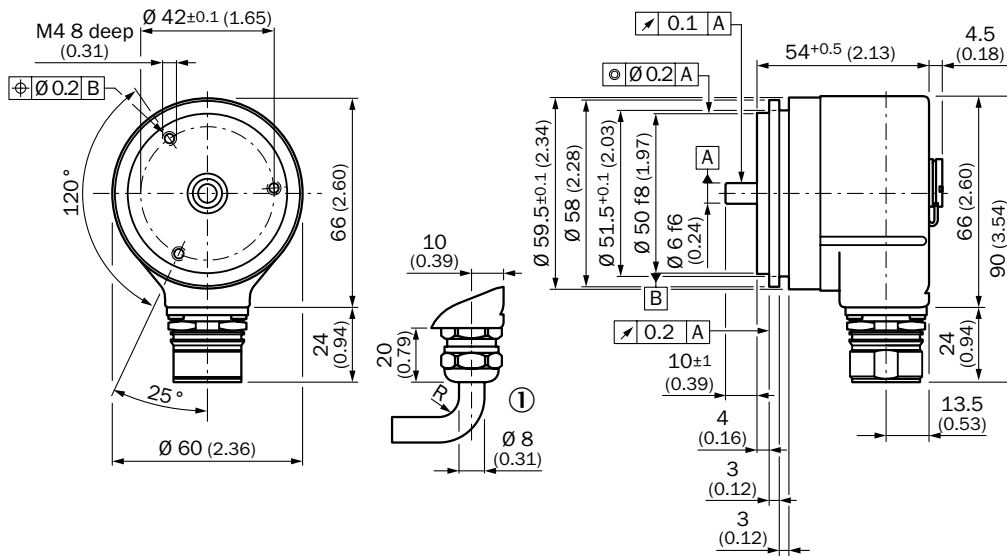
Face mount flange design	Type
10 ... 32 Volt, Parallel, Gray, M23 male connector, 21-pin, radial, number of steps 8,192	ARS60-F4A08192

- Blind hollow shaft

Blind hollow shaft design	Type
10 ... 32 Volt, Parallel, Gray, M23 male connector, 21-pin, radial, number of steps 8,192	ARS60-FAA08192

Dimensional drawings (dimensions in mm)

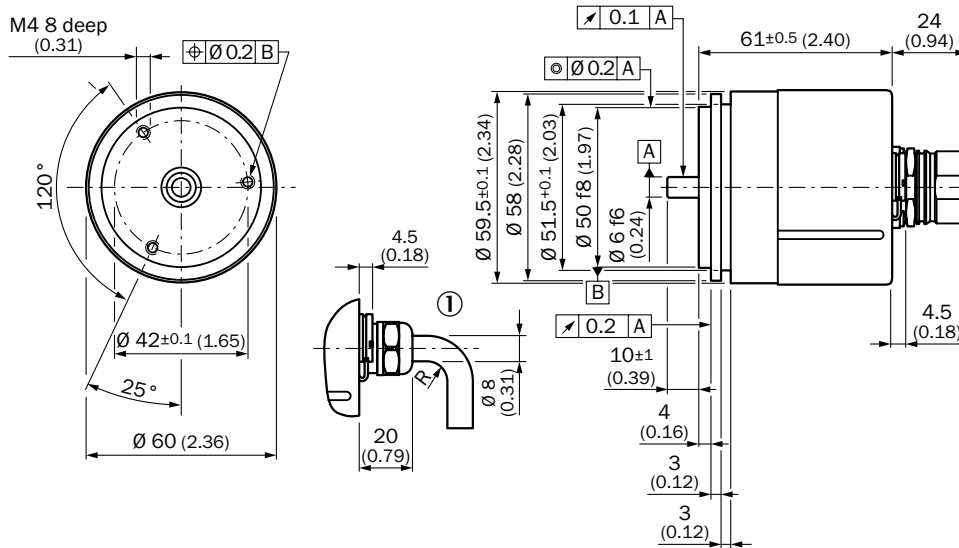
Servo flange, radial



General tolerances according to ISO 2768-mk

① R = min. bend radius 40 mm

Servo flange, axial



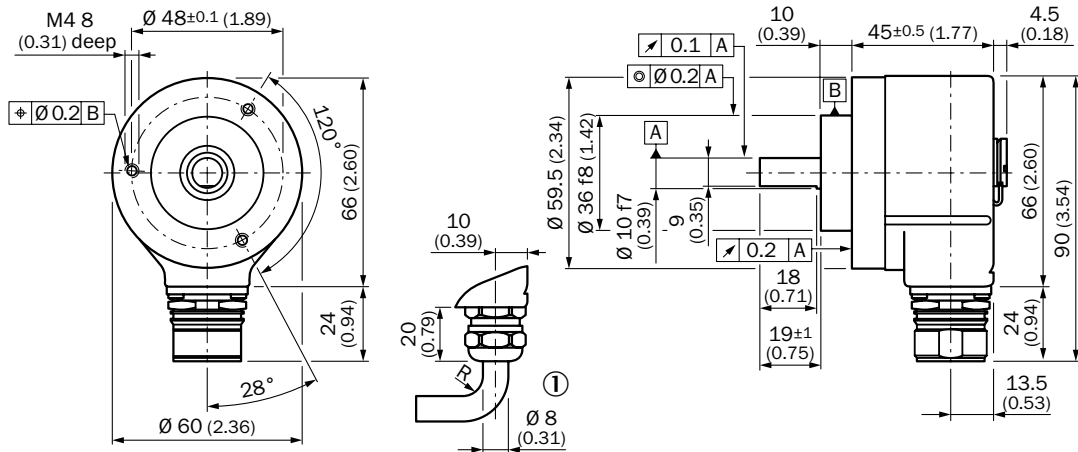
General tolerances according to ISO 2768-mk

① R = min. bend radius 40 mm



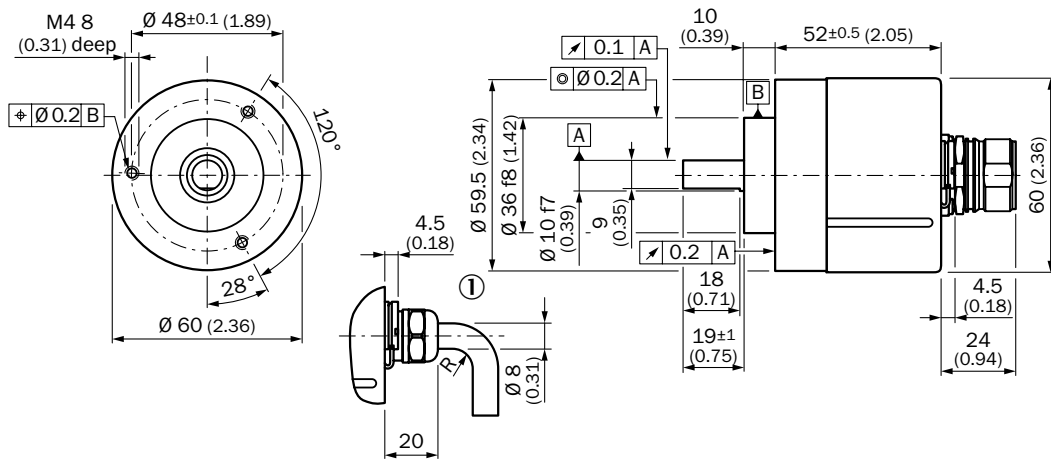


Face mount flange, radial



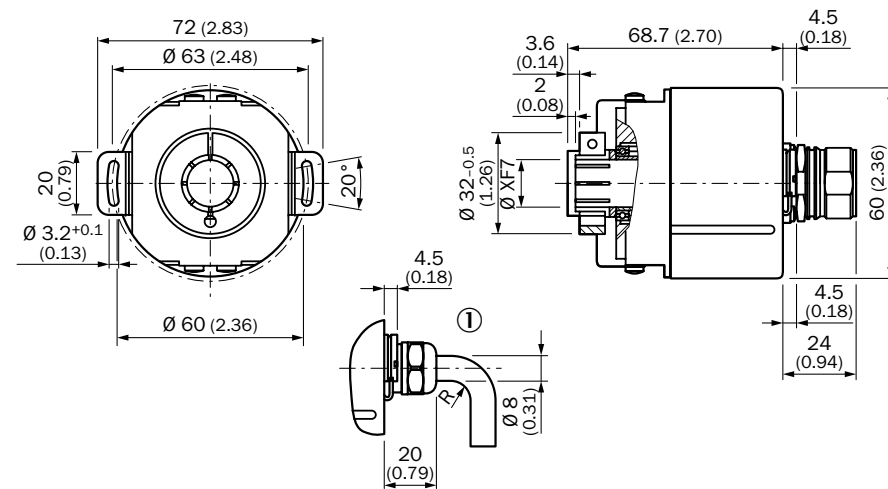
General tolerances according to ISO 2768-mk

① R = min. bend radius 40 mm



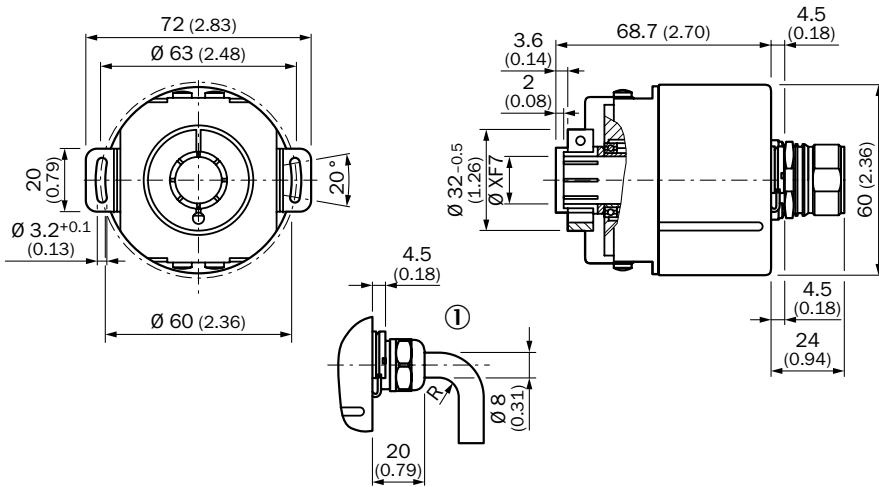
G

Blind hollow shaft, axial

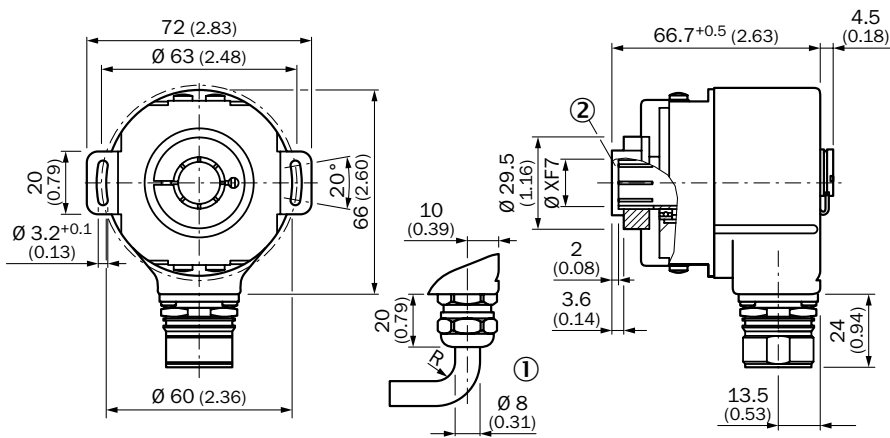


General tolerances according to ISO 2768-mk

① R = min. bend radius 40 mm



Through hollow shaft, radial



General tolerances according to ISO 2768-mk

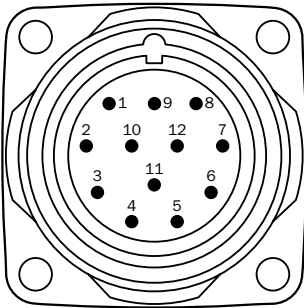
- ① R = min. bend radius 40 mm
- ② Min. shaft insertion depth 15 mm



**PIN assignment**

Pin assignment for design with 12-pin male connector; SSI interface

Signal	12-pin male device connector	11-wire cable outlet
GND	1	Blue
Data (+)	2	White
Clock (+)	3	Yellow
N. C.	4	-
$V_{CC}$	5	Pink
N. C.	6	-
N. C.	7	-
$U_s$	8	Red
SET	9	Orange
Data (-)	10	Brown
Clock (-)	11	Violet
N. C.	12	-



View of 12-pin M23 device connector on SSI encoder



Pin assignment for design with 21-pin male connector, single; parallel interface

PIN	Wire colors at cable outlet	Binary	Gray	BCD	Explanation
1	Violet	2 <sup>0</sup>	G <sub>0</sub>	2 <sup>0</sup> v.10 <sup>0</sup>	Data cables Outputs
2	White/brown	2 <sup>1</sup>	G <sub>1</sub>	2 <sup>1</sup> v.10 <sup>0</sup>	
3	White/green	2 <sup>2</sup>	G <sub>2</sub>	2 <sup>2</sup> v.10 <sup>0</sup>	
4	White/yellow	2 <sup>3</sup>	G <sub>3</sub>	2 <sup>3</sup> v.10 <sup>0</sup>	
5	White/gray	2 <sup>4</sup>	G <sub>4</sub>	2 <sup>0</sup> v.10 <sup>1</sup>	
6	White/pink	2 <sup>5</sup>	G <sub>5</sub>	2 <sup>1</sup> v.10 <sup>1</sup>	
7	White/blue	2 <sup>6</sup>	G <sub>6</sub>	2 <sup>2</sup> v.10 <sup>1</sup>	
8	White/red	2 <sup>7</sup>	G <sub>7</sub>	2 <sup>3</sup> v.10 <sup>1</sup>	
9	White/black	2 <sup>8</sup>	G <sub>8</sub>	2 <sup>0</sup> v.10 <sup>2</sup>	
10	Brown/green	2 <sup>9</sup>	G <sub>9</sub>	2 <sup>1</sup> v.10 <sup>2</sup>	
11	Brown/yellow	2 <sup>10</sup>	G <sub>10</sub>	2 <sup>2</sup> v.10 <sup>2</sup>	
12	Brown/gray	2 <sup>11</sup>	G <sub>11</sub>	2 <sup>3</sup> v.10 <sup>2</sup>	
13	Brown/pink	2 <sup>12</sup>	G <sub>12</sub>	2 <sup>0</sup> v.10 <sup>3</sup>	
14	Brown/blue	2 <sup>13</sup>	G <sub>13</sub>	2 <sup>1</sup> v.10 <sup>3</sup>	
15	Brown/red	2 <sup>14</sup>	G <sub>14</sub>	2 <sup>2</sup> v.10 <sup>3</sup>	
16	Green	Parity	Parity	Parity	
17	Pink	Store_	Store_	Store_	
18	Yellow	Enable_	Enable_	Enable_	
19	Brown	V/R_	V/R_	V/R_	
1)	Gray	SET	SET	SET	
20	Blue	GND	GND	GND	
21	Red	U <sub>s</sub>	U <sub>s</sub>	U <sub>s</sub>	
Housing		Screen	Screen	Screen	

<sup>1)</sup> Set cable only possible at cable outlet.

U<sub>s</sub> Encoder's supply voltage (always observe the encoder's type label prior to commissioning).

GND Encoder ground connection; electrically isolated from the housing. The voltage relating to GND is U<sub>s</sub>.

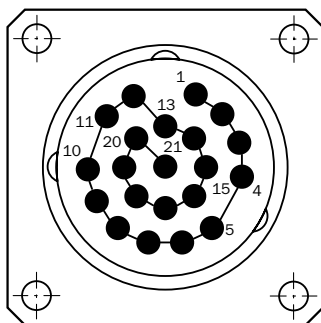
V/R\_ Forwards/Reverse: This input programs the counting direction for the encoder. When it is not connected, this input is set to HIGH. If the encoder shaft is rotated clockwise (to the right) as viewed when facing the drive shaft, it counts in ascending order. If it should count in ascending order when the shaft is rotated counterclockwise (to the left), then this connection must be permanently set to LOW level (GND).

Enable\_ This input activates the data output driver if a LOW level is connected. When it is not connected, this input is set to LOW. The outputs are in tri-state mode when the level is HIGH.

Store\_ This input stores the encoder data in gray code when connecting a LOW level. This helps to prevent read errors if the output data is requested in binary code. If this input is set to LOW, the data at the encoder output is stable, regardless of whether the input shaft is rotating. When it is not connected, this input is set to HIGH.

Parity This output supplies a HIGH level when the checksum is even.

SET This input is for electronic zeroing. If the SET cable is set to U<sub>s</sub> for more than 100 ms, the mechanical position corresponds to the value 0.

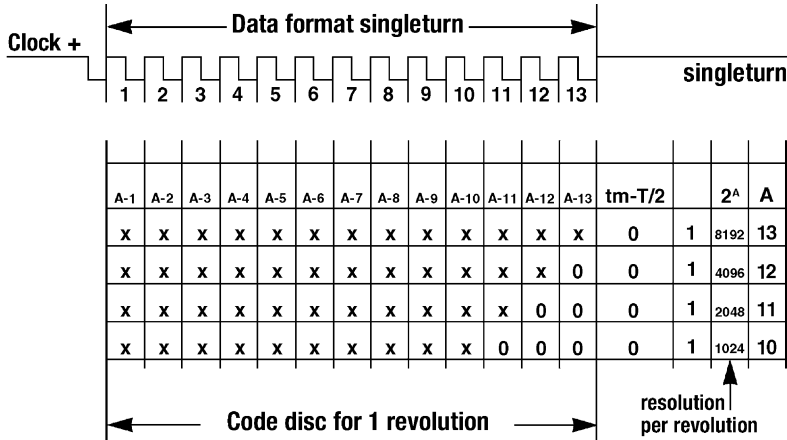


View of 21-pin M23 device connector on parallel encoder

Signal outputs

SSI data format for resolutions  $\leq 8,192$  (1–13 bit)

In order to ensure compatibility with the data formats available on the market, the ARS60 distinguishes between two data formats: The first data format is for encoders with resolutions up to 13 bit. This is the standard data format for the singleturn absolute encoder.



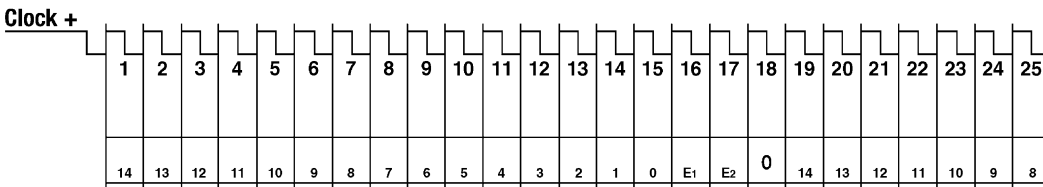
SSI data format for resolutions  $> 8,192$  (14 and 15 bit)

All data is transmitted MSB-justified. Two errorbits follow the 15 data bits.

**Error 1 (E1) = Position error**

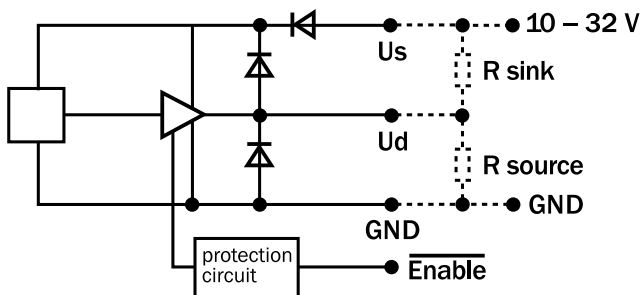
An error has occurred during the position detection process since the last SSI transmission. This errorbit is deleted during the next SSI transmission.

**Error 2 (E2) = Sender monitoring**



Parallel interface (output driver 7272 push pull)

- Tri-state-compatible
- Short-circuit protected
- Reverse polarity protection
- Integrated transient protection diodes



## Technical data for parallel interface


<b>Id<sub>H</sub> max. at +85 °C, 8 nF load 6,000 rpm</b>	30 mA
<b>Id<sub>L</sub> max. at +85 °C, 8 nF load 6,000 rpm</b>	30 mA
<b>Output saturation level (H level)</b>	
At Id <sub>H</sub>	10 mA 2.8 V
U <sub>S</sub> -Ud <sub>H</sub>	30 mA 3.0 V
<b>Output saturation level (L level)</b>	
At Id <sub>L</sub>	10 mA 0.4 V
Ud <sub>L</sub>	30 mA 2.0 V
<b>Position repeatability (depending on encoder resolution and output code)</b>	
Parallel gray code	60 µs
Parallel BIN code	60 µs
Parallel BCD code	200 µs

Recommended accessories

Mounting systems

Mounting brackets and plates






Mounting bracket

Figure	Brief description	Type	Part no.
	Mounting bracket for encoder with centering hub 36 mm, including mounting kit for face mount flange	BEF-WF-36	2029164

Dimensional drawings → [page K-725](#)

Flanges





Flange plate

Figure	Brief description	Type	Part no.
	Flange adapter, adaptation of face mount flange with 36 mm centering hub to 50 mm servo flange, aluminum, including 3 flat head screws M4 x 10	BEF-FA-036-050	2029160
	Flange adapter, adaptation of face mount flange with 36 mm centering hub to 60 mm square mounting plate, aluminum, including 3 flat head screws M4 x 10	BEF-FA-036-060REC	2029162
	Flange adapter, adaptation of face mount flange with 36 mm centering hub to 58 mm square mounting plate with shock absorbers, aluminum	BEF-FA-036-060RSA	2029163
	Flange adapter, adaptation of face mount flange with 36 mm centering hub to 63 mm square mounting plate, aluminum, including 3 flat head screws M4 x 10	BEF-FA-036-063REC	2034225
	Flange adapter, adaptation of face mount flange with 36 mm centering hub to 100 mm servo flange with 60 mm centering hub, aluminum	BEF-FA-036-100	2029161

Dimensional drawings → [page K-725](#)

Other mounting accessories


Measuring wheels and measuring wheel systems

Figure	Brief description	Type	Part no.
	Measuring wheel with smooth plastic surface (Hytrel) for 10 mm solid shaft, circumference 200 mm	BEF-MR-010020	5312988
	Measuring wheel with ridged plastic surface (Hytrel) for 10 mm solid shaft, circumference 200 mm	BEF-MR-010020G	5318678
	Measuring wheel with smooth plastic surface (Hytrel) for 10 mm solid shaft, circumference 500 mm	BEF-MR-010050	5312989
	Measuring wheel with O-ring (NBR70) for 6 mm solid shaft, circumference 200 mm	BEF-MR006020R	2055222
	Measuring wheel with O-ring (NBR70) for 6 mm solid shaft, circumference 300 mm	BEF-MR006030R	2055634
	Measuring wheel with O-ring (NBR70) for 10 mm solid shaft, circumference 300 mm	BEF-MR010030R	2049278

Dimensional drawings → [page K-725](#)





## Mounting bell

Figure	Brief description	Type	Part no.
	Mounting bell for encoders with a servo flange, centering hub 50 mm, including mounting kit	BEF-MG-50	5312987



Dimensional drawings → [page K-725](#)

## Servo clamps

Figure	Brief description	Type	Part no.
	Half-shell servo clamps (2 pcs.) for servo flanges with a 50 mm centering hub	BEF-WG-SF050	2029165
	Servo clamps, large, for servo flanges (clamps, eccentric fastener), 3 pcs., without mounting material	BEF-WK-SF	2029166





Dimensional drawings → [page K-725](#)

## Miscellaneous

Figure	Brief description	Type	Part no.
	Mounting kit for servo flange encoder on the bearing block, 1 bar coupling SKPS 1520 06/06 1 hexagon socket wrench SW1.5 DIN 911, 3 mounting eccentric BEMN 1242 49 3 screws M4 x 10 DIN 912, 1 hexagon socket wrench SW3 DIN 911	BEF-MK-LB	5320872
	Bearing block for hollow shaft encoder, including fixing screws	BEF-FA-B12-010	2042728
	Bearing block for servo and face mount flange encoder	BEF-FA-LB1210	2044591



Shaft couplings


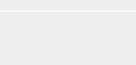
Figure	Brief description	Type	Part no.
	Bellows coupling, shaft diameter 6 mm / 6 mm, maximum shaft offset: radial $\pm 0.25$ mm, axial $\pm 0.4$ mm, angular $\pm 4^\circ$ ; max. speed 10,000 rpm, $-30^\circ$ to $+120^\circ$ °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum hub	KUP-0606-B	5312981
	Bellows coupling, shaft diameter 6 mm / 10 mm, maximum shaft offset: radial $\pm 0.25$ mm, axial $\pm 0.4$ mm, angular $\pm 4^\circ$ ; max. speed 10,000 rpm, $-30^\circ$ to $+120^\circ$ °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum hub	KUP-0610-B	5312982
	Bellows coupling, shaft diameter 10 mm/10 mm; maximum shaft offset: radial $\pm 0.25$ mm, axial $\pm 0.4$ mm, angular $\pm 4^\circ$ ; max. revolutions 10,000 rpm, $-30^\circ$ to $+120^\circ$ °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum clamping hubs	KUP-1010-B	5312983
	Bellows coupling, shaft diameter 10 mm/12 mm; maximum shaft offset: radial $\pm 0.25$ mm, axial $\pm 0.4$ mm, angular $\pm 4^\circ$ ; max. revolutions 10,000 rpm, $-30^\circ$ to $+120^\circ$ °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum clamping hubs	KUP-1012-B	5312984
	Bar coupling, shaft diameter 6 mm / 6 mm, maximum shaft offset: radial $\pm 0.3$ mm, axial $\pm 0.2$ mm, angle $\pm 3^\circ$ ; max. speed 10,000 rpm, $-10^\circ$ to $+80^\circ$ °C, max. torque 80 Ncm; material: fiber-glass reinforced polyamide, aluminum hub	KUP-0606-S	2056406
	Bar coupling, shaft diameter 6 mm / 8 mm, maximum shaft offset radial $\pm 0.3$ mm, axial $\pm 0.2$ mm, angle $\pm 3^\circ$ , max. speed 10,000 rpm, torsion spring rigidity 38 Nm/wheel; material: fiber-glass reinforced polyamide, aluminum hub	KUP-0608-S	5314179
	Bar coupling, shaft diameter 6 mm/10 mm, maximum shaft offset: radial $\pm 0.3$ mm, axial $\pm 0.2$ mm, angular $\pm 3^\circ$ ; max. speed 10,000 rpm, $-10^\circ$ to $+80^\circ$ °C, max. torque 80 Ncm; material: fiber-glass reinforced polyamide, aluminum hub	KUP-0610-S	2056407
	Bar coupling, shaft diameter 8 mm / 10 mm, maximum shaft offset: radial $\pm 0.3$ mm, axial $\pm 0.2$ mm, angular $\pm 3^\circ$ ; torsion spring rigidity 38 Nm/wheel; material: fiber-glass reinforced polyamide, aluminum hub	KUP-0810-S	5314178
	Bar coupling, shaft diameter 10 mm / 10 mm, maximum shaft offset radial $\pm 0.3$ mm, axial $\pm 0.2$ mm, angle $\pm 3^\circ$ ; max. speed 10,000 rpm, torsion spring rigidity 38 Nm/wheel; material: fiber-glass reinforced polyamide, aluminum hub	KUP-1010-S	2056408
	Double-loop coupling, shaft diameter 6 mm/10 mm, maximum shaft offset: radial $\pm 2.5$ mm, axial $\pm 3$ mm, angular $\pm 10^\circ$ ; max. speed 3,000 rpm, $-30^\circ$ to $+80^\circ$ °C, max. torque 1.5 Nm; material: polyurethane, galvanized steel flange	KUP-0610-D	5326697
	Double-loop coupling, shaft diameter 8 mm/10 mm, maximum shaft offset: radial $\pm 2.5$ mm, axial $\pm 3$ mm, angular $\pm 10^\circ$ ; max. speed 3,000 rpm, $-30^\circ$ to $+80^\circ$ °C, max. torque 1.5 Nm; material: polyurethane, galvanized steel flange	KUP-0810-D	5326704
	Double-loop coupling, shaft diameter 10 mm/10 mm, maximum shaft offset: radial $\pm 2.5$ mm, axial $\pm 3$ mm, angular $\pm 10^\circ$ ; max. speed 3,000 rpm, $-30^\circ$ to $+80^\circ$ °C, max. torque 1.5 Nm; material: polyurethane, galvanized steel flange	KUP-1010-D	5326703
	Double-loop coupling, shaft diameter 10 mm/12 mm, maximum shaft offset: radial $\pm 2.5$ mm, axial $\pm 3$ mm, angular $\pm 10^\circ$ ; max. speed 3,000 rpm, $-30^\circ$ to $+80^\circ$ °C, max. torque 1.5 Nm; material: polyurethane, galvanized steel flange	KUP-1012-D	5326702
	Spring washer coupling, shaft diameter 6 mm/10 mm, maximum shaft offset: radial $\pm 0.3$ mm, axial $\pm 0.4$ mm, angular $\pm 2.5^\circ$ ; max. speed 12,000 rpm, $-10^\circ$ to $+80^\circ$ °C, max. torque 60 Ncm; material: aluminum flange, fiber-glass reinforced polyamide membrane and tempered steel coupling pin	KUP-0610-F	5312985
	Spring washer coupling, shaft diameter 10 mm / 10 mm, maximum shaft offset: radial $\pm 0.3$ mm, axial $\pm 0.4$ mm, angular $\pm 2.5^\circ$ ; max. speed 12,000 rpm, $-10^\circ$ to $+80^\circ$ °C, max. torque 60 Ncm; material: aluminum flange, glass fiber-reinforced polyamide membrane and hardened steel coupling pin	KUP-1010-F	5312986

Dimensional drawings → [page K-725](#)

## Connectivity





## Plug connectors and cables

## Connecting cables with female connector

Figure	Brief description	Length of cable	Type	Part no.
	Head A: female connector, M23, 12-pin, straight Head B: cable Cable: suitable for drag chain, PUR, shielded, 4 x 2 x 0.25 mm <sup>2</sup> + 2 x 0.5 mm <sup>2</sup> + 2 x 0.14 mm <sup>2</sup> , Ø 7.8 mm <sup>1)</sup>	1.5 m	DOL-2312-G1M5MA2	2029206
		3 m	DOL-2312-G03MMA2	2029207
		5 m	DOL-2312-G05MMA2	2029208
		10 m	DOL-2312-G10MMA2	2029209
		20 m	DOL-2312-G20MMA2	2029210
		30 m	DOL-2312-G30MMA2	2029211
	Head A: female connector, M23, 21-pin, straight Head B: cable Cable: PUR, halogen-free, shielded, 20 x 0.14 mm <sup>2</sup> , 2 x 0.25 mm <sup>2</sup> , Ø 7.8 mm <sup>2)</sup>	1.5 m	DOL-2321-G1M5PA4	2029218
		3 m	DOL-2321-G03MPA4	2029219
		5 m	DOL-2321-G05MPA4	2029220
		10 m	DOL-2321-G10MPA4	2029221
		20 m	DOL-2321-G20MPA4	2029222

<sup>1)</sup> For ARS60 SSI.<sup>2)</sup> For ARS60 Parallel.Dimensional drawings → [page K-725](#)

## Female connectors (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: female connector, M23, 12-pin, straight, shielded, for cable diameter 5.5 mm ... 10.5 mm Head B: - Operating temperature: -20 °C ... +130 °C	DOS-2312-G	6027538
	Head A: female connector, M23, 12-pin, straight, shielded, for cable diameter 5.5 mm ... 10.5 mm Head B: - Operating temperature: -40 °C ... +125 °C	DOS-2312-G02	2077057
	Head A: female connector, M23, 12-pin, angled, shielded, for cable diameter 4.2 mm ... 6.6 mm Head B: - Operating temperature: -20 °C ... +130 °C	DOS-2312-W01	2072580
	Head A: female connector, M23, 21-pin, straight, shielded, for cable diameter 5.5 mm ... 12 mm Head B: -	DOS-2321-G	6027539
	Head A: female connector, D-Sub, 37-pin, straight, shielded Head B: -	DOS-0D37-G	2029224



Dimensional drawings → [page K-725](#)

G

Cables (ready to assemble)

Figure	Brief description	Length of cable	Type	Part no.
	Head A: cable Head B: cable Cable: suitable for drag chain, PUR, halogen-free, shielded, 4 x 2 x 0.15 mm <sup>2</sup> , Ø 5.6 mm	By the meter	LTG-2308-MWENC	6027529
	Head A: cable Head B: cable Cable: PUR, shielded, 4 x 2 x 0.25 mm <sup>2</sup> + 2 x 0.5 mm <sup>2</sup> + 1 x 0.14 mm <sup>2</sup> , Ø 7.5 mm	By the meter	LTG-2411-MW	6027530
	Head A: cable Head B: cable Cable: suitable for drag chain, PUR, halogen-free, shielded, 4 x 2 x 0.25 mm <sup>2</sup> + 2 x 0.5 mm <sup>2</sup> + 2 x 0.14 mm <sup>2</sup> , Ø 7.8 mm	By the meter	LTG-2512-MW	6027531
	Head A: cable Head B: cable Cable: suitable for drag chain, PUR, halogen-free, shielded, UV and saltwater-resistant, 4 x 2 x 0.25 mm <sup>2</sup> + 2 x 0.5 mm <sup>2</sup> + 2 x 0.14 mm <sup>2</sup> , Ø 7.8 mm	By the meter	LTG-2612-MW	6028516
	Head A: cable Head B: cable Cable: PUR, halogen-free, shielded, 20 x 0.14 mm <sup>2</sup> , 2 x 0.25 mm <sup>2</sup> , Ø 7.8 mm	By the meter	LTG-2622-MW	6027532

Male connectors (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: male connector, D-Sub, 15-pin, straight, shielded Head B: -	STE-0D15-G	2029223
	Head A: male connector, M23, 12-pin, straight, shielded, for cable diameter 5.5 mm ... 10.5 mm Head B: - Operating temperature: -20 °C ... +130 °C	STE-2312-G	6027537
	Head A: male connector, M23, 12-pin, straight, for cable diameter 5.5 mm ... 10.5 mm Head B: - Operating temperature: -40 °C ... +125 °C	STE-2312-G01	2077273

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→ For additional accessories, please see [page K-668 onwards](#)



