



## EXAG – SSI Removable End Cap

- Shaft Encoder -  $\varnothing$  78 mm
- Shaft:  $\varnothing$  10 mm or  $\varnothing$  12 mm
- Synchronous Serial Interface (SSI) – (RS422/TTL)
- Resolution up to 30 bits
- Removable End Cap for on-site modifications
- ATEX, IECEx, EAC Ex and North America Class I Div. 2, Ex db IIC.

### Electrical Specifications

<b>Code:</b>	Absolute – Binary or Gray Code
<b>Interface:</b>	Synchronous Serial (SSI) Driver meets EIA standard RS422
<b>Resolution:</b>	Max. 14 bit (16384) revolutions Max. 16 bit (65536) steps per rev.
<b>Transfer Distance:</b>	Up to 1200 m (3937 ft)
<b>Clock Input:</b>	RS422 compatible via optocoupler
<b>Data Output:</b>	Line Driver RS422
<b>Clock Frequency:</b>	100 kHz to 2MHz
<b>Accuracy of Division:</b>	+/- 1/2 LSB (12 bit) +/- 2 LSB (16 bit)
<b>Cycle Time:</b>	< 25 $\mu$ s
<b>Turn On Time:</b>	< 1 s
<b>Supply Voltage:</b>	4.5 to 30 VDC (Absolute limits) According to EN 50 178
<b>Power Consumption:</b>	Max. 1,5 watts
<b>Electrical Protection:</b>	Reverse polarity and over-voltage-peak protection
<b>Noise Immunity:</b>	EN61000-6-2
<b>Emitted Interference:</b>	EN 61000-6-4

### Mechanical Specifications

<b>Material:</b>	Housing: Aluminum or Stainless Steel Cap: Aluminum or Stainless Steel Shaft: Stainless Steel
<b>Weight:</b>	Aluminum: ~ 1600 gr (56,44 oz) Stainless Steel: ~ 3100 gr (109,35 oz)
<b>Bearing Life:</b>	> 1,9 x 10 <sup>10</sup> revolutions at rated load
<b>Shaft Speed:</b>	6.000 rpm (max.) IP 64 3.000 rpm (max.) IP 65/66/67/68
<b>Starting Torque:</b>	$\leq$ 0,01 Nm at 25° C (no seal) $\leq$ 0,03 Nm at 25° C (with seal)
<b>Rotor Mass Moment of Inertia:</b>	42 gcm <sup>2</sup> (5,95 x 10 <sup>-4</sup> oz-in-sec <sup>2</sup> )
<b>Shaft Loads:</b>	Axial: 60 N (13,50 lbs) max. Radial: 80 N (17,98 lbs) max.

### Environmental Specifications

<b>Operating Temp.:</b>	-40° to +70° C
<b>Storage Temp.:</b>	-40° to +70° C
<b>Shock:</b>	100 G / 11 ms
<b>Vibration:</b>	10-2000 Hz / 10 G
<b>Bump:</b>	10 G / 16 ms (1000 x 3 axis)
<b>Humidity:</b>	98 % RH without condensation
<b>Enclosure Rating:</b>	IP 64 / Nema 4 (approx.) IP 65 / Nema 5 (approx.) IP 66 / Nema 6 (approx.) IP 67 / Nema 6 (approx.) IP 68 (1hour/1 meter) / Nema 6P (approx.)

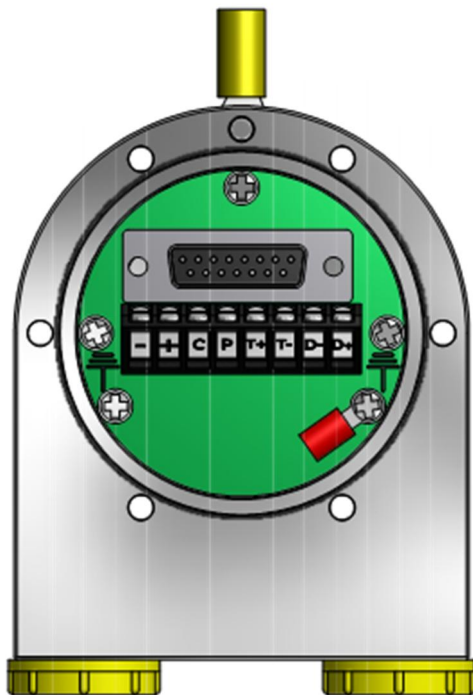
## Certifications

<b>ATEX:</b>	Certificate No.: ITS09ATEX16867X II 2 G Ex db IIC T5 Gb II 2 D Ex tb IIIC T100°C Db -40°C ≤ Ta ≤ +70°C
<b>IECEX:</b>	Certificate No.: IECEX ITS 10.0016X Ex db IIC T5 Gb, Ex tb IIIC T100°C Db -40°C ≤ Ta ≤ +70°C
<b>North America:</b>	Certificate No: LR1192-5 Class I Division 2 Groups ABCD T5, Class II Division 2 Groups FG, Class I Zone 1 AEx db IIC T5 Gb, Ex db IIC T5 Gb, Zone 21 AEx tb IIIC T100°C Db, Ex tb IIIC T100°C Db, Tamb= -40 °C to +70 °C
<b>EAC Ex:</b>	НАННО «ЦСВЭ» No. EAЭС RU C-DK.AA87.B.00266/19 1Ex db IIC T5 Gb X, Ex tb IIIC T100°C Db X -40°C < T.amb < +70°C

## Interface

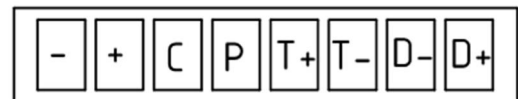
### Installation

The rotary encoder is connected by one, two or three cables. This depends on whether the power supply is integrated into the bus cable or connected separately. If the power supply is integrated into the bus cable, the remaining cable glands can be fitted with a plug. Any unused cable outlets must be closed using a suitably certified - proof blind plug. The threaded entries are M20x1,5.



The connection cap can easily be opened by removing the six screws in the cap.

Pin assignments for the 8-pin terminal block are shown



Terminal	Description
1 (left)	0-V
2	10-30V
3	Complement
4	Preset
5	T+ (Clock+)
6	T- (Clock-)
7	Data-
8 (right)	Data+

- **The internal earth connection** (red cable shoes) is 22-16 AWG.  
*La connexion à la terre interne (Borne rouge) est en 22-16 AWG.*
- **The external earth connection** (yellow cable shoe) is 12-10 AWG.  
*La connexion de terre externe (Borne jaune) est en 12-10 AWG.*
- **The terminal block** is intended for installation a cable with wire size:
  - solid 0,14 mm<sup>2</sup> – 2,5 mm<sup>2</sup>.
  - Stranded 0,14 mm<sup>2</sup> - 1,5 mm<sup>2</sup>
  - stranded with ferrule 0,25 mm<sup>2</sup> - 1,5 mm<sup>2</sup>.

The rated wire size is AWG 22-12.

- **Le bornier** est conçu pour une installation d'un câble à la taille du fil:
  - rigide de 0,14 mm<sup>2</sup> - 2,5 mm<sup>2</sup>
  - souple 0,14 mm<sup>2</sup> - 1,5 mm<sup>2</sup>
  - souple avec embout 0,25 mm<sup>2</sup> - 1,5 mm<sup>2</sup>.

*La taille de fil nominale est AWG 22-12.*

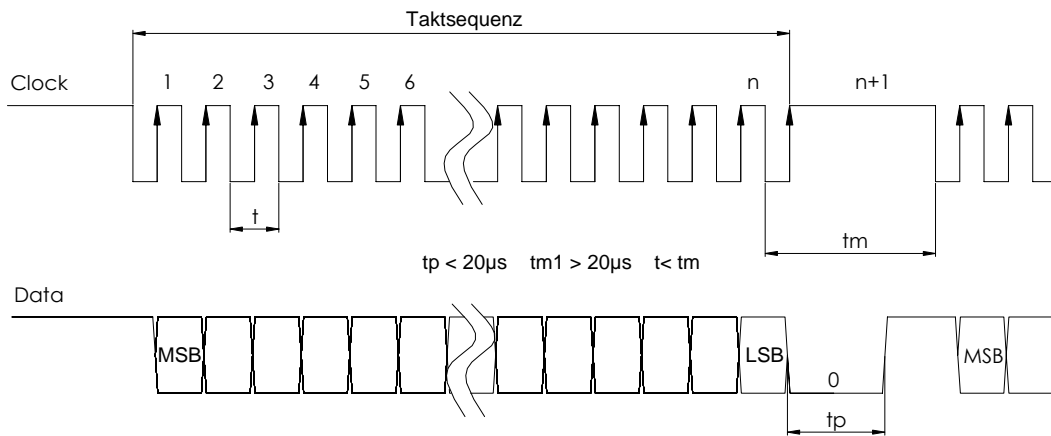
## Interface

### Synchronous Serial Interface (SSI)

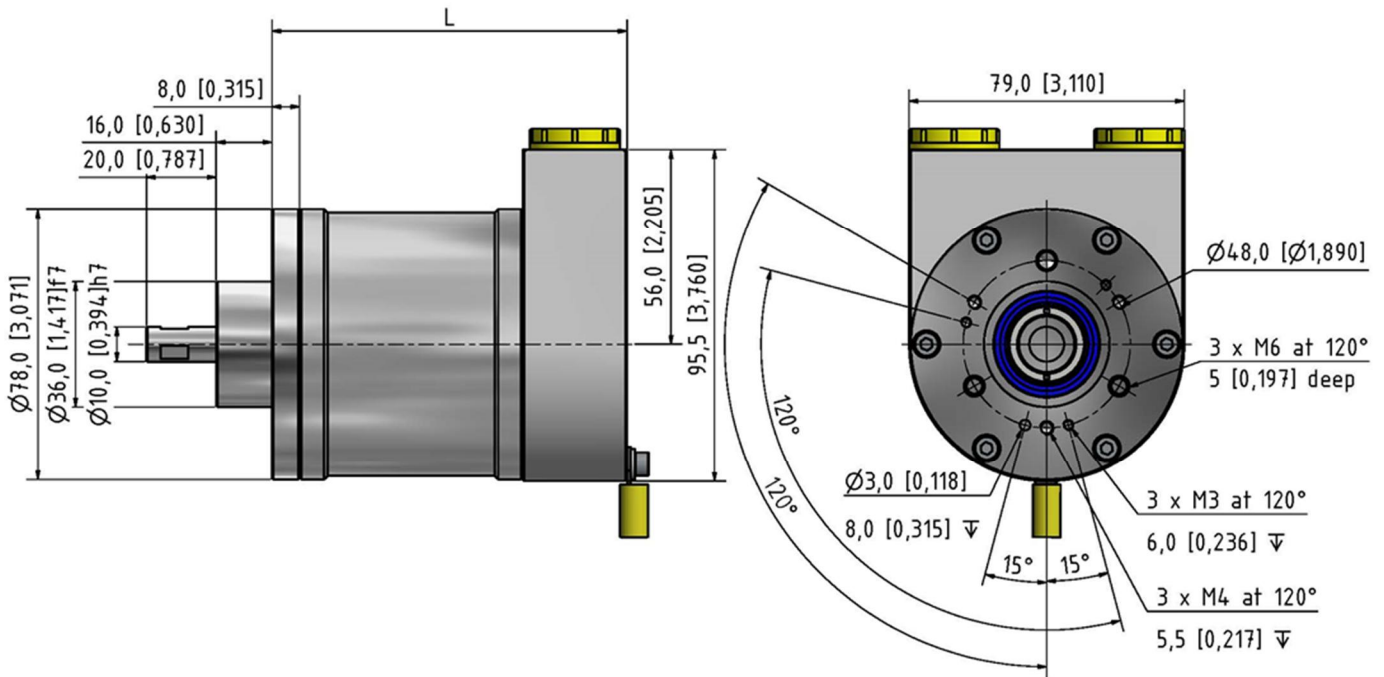
### Comment

Driver	Driver meets EIA standard RS 422; transmission rates up to 10 Mbits/sec.
Transfer	Transfer distance up to 1200 m (3937 ft)

### Single Shift

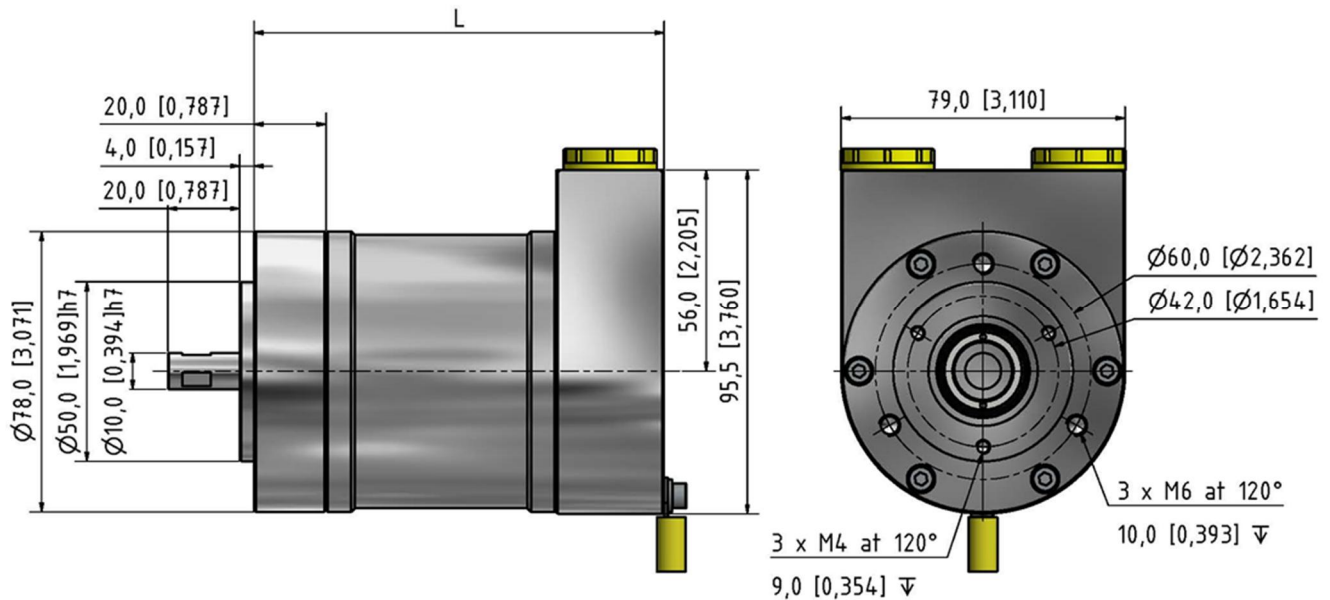


## Face mounts



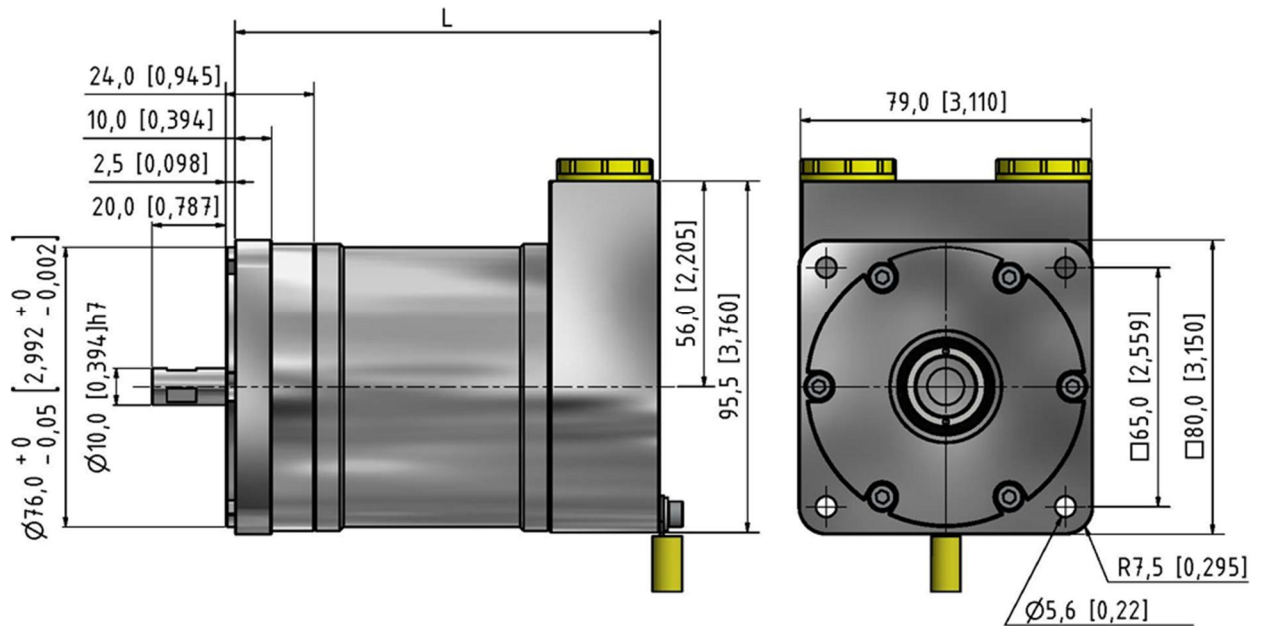
**Face Mount C**  
*Clamping Flange*

mm (inches)



**Face Mount S**  
*Servo Flange*

mm (inches)



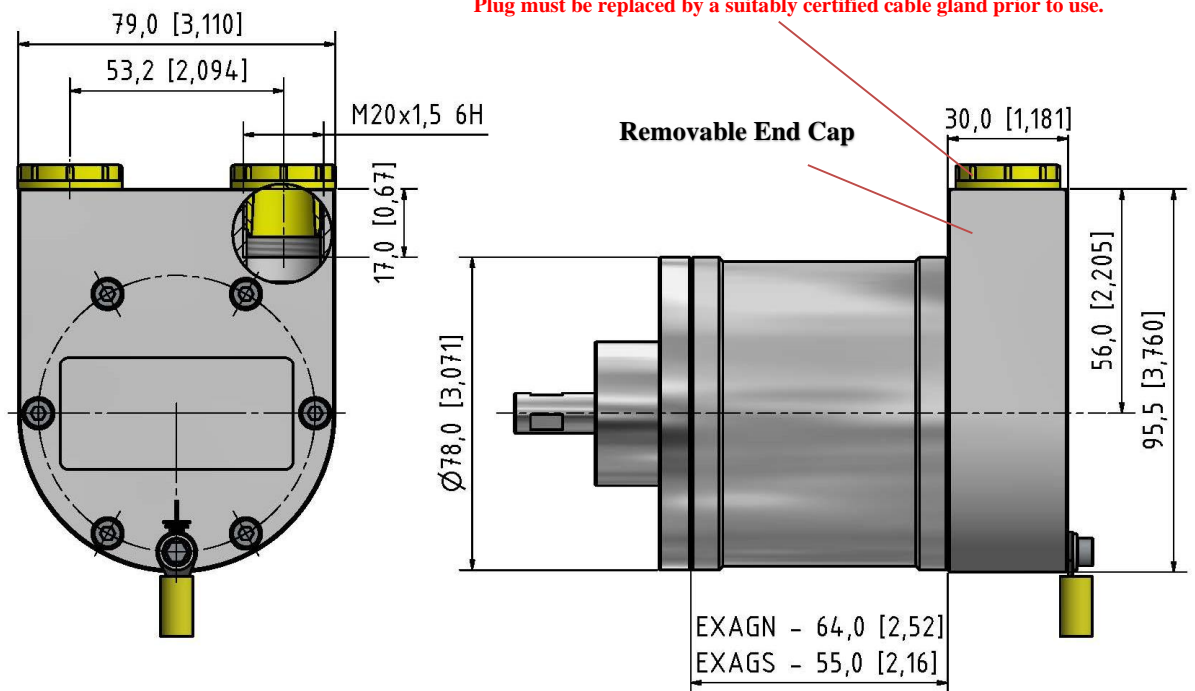
**Face Mount Q**  
*Square Flange*

mm (inches)

*VA/SA option only*

## End Caps with Cable Outlets

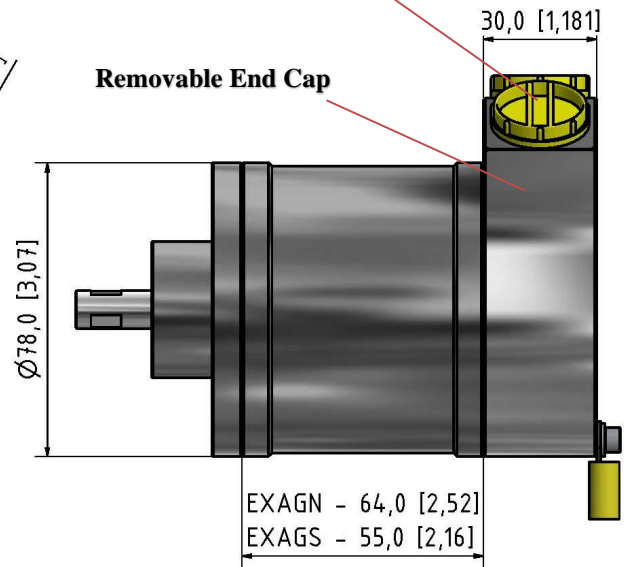
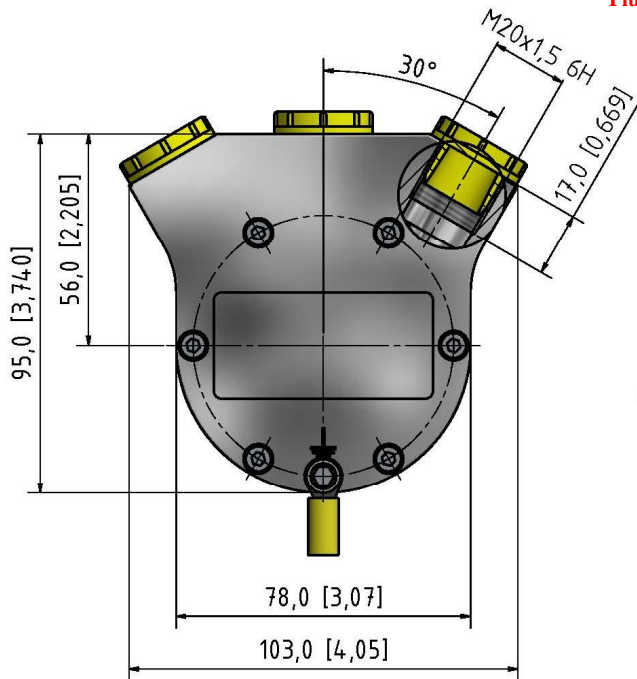
Plastic screw plug is for cable outlet protection during shipping and storage.  
Plug must be replaced by a suitably certified cable gland prior to use.



**Side Standard End Cap (FZ)**

mm (inches)

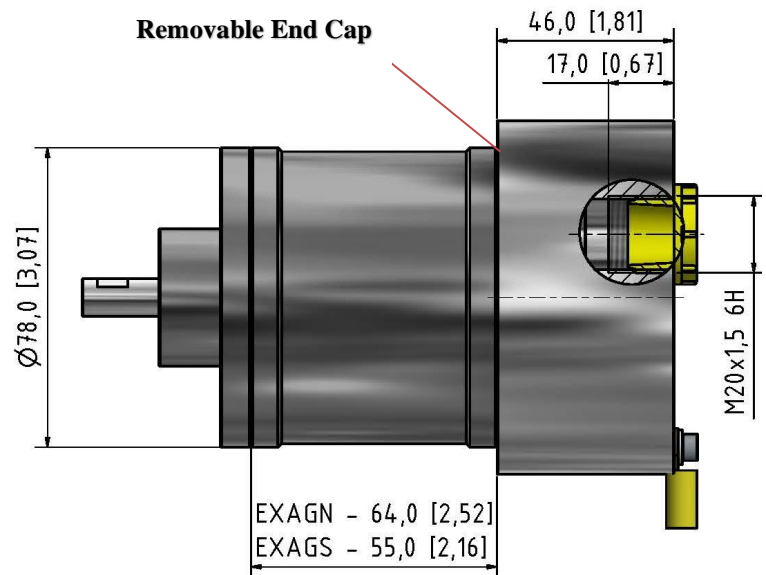
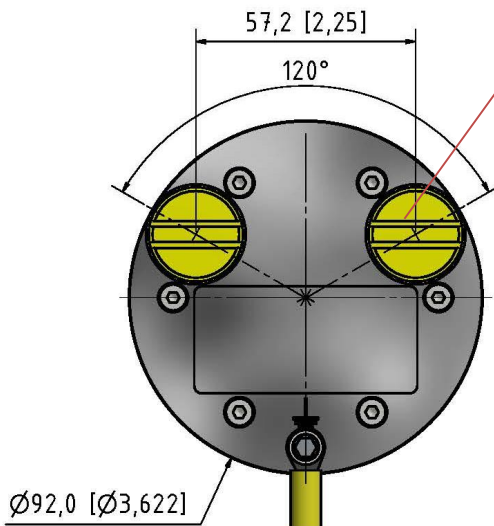
Plastic screw plug is for cable outlet protection during shipping and storage. Plug must be replaced by a suitably certified cable gland prior to use.



**Side Triple End Cap (FE)**

mm (inches)

Plastic screw plug is for cable outlet protection during shipping and storage. Plug must be replaced by a suitably certified cable gland prior to use.



**Back Round End Cap (FG)**

mm (inches)



## Encoder Length

### Housing N (Table 1) (64 mm)

#### Total Encoder Length

End Cap	Face Mount		
	Clamping Flange C	Servo Flange S	Square Flange Q
<b>FZ</b>	102 mm (4,02 in)	114 mm (4,49 in)	115,5 mm (4,55 in)
<b>FE</b>	102 mm (4,02 in)	114 mm (4,49 in)	115,5 mm (4,55 in)
<b>FG</b>	118 mm (4,65 in)	130 mm (5,12 in)	131,5 mm (5,18 in)

*End Cap + Face Mount + 64 mm = Total Encoder Length*

### Housing S (Table 2) (55 mm)

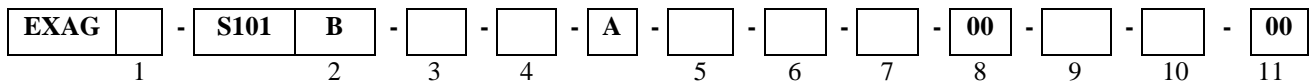
#### Total Encoder Length

End Cap	Face Mount		
	Clamping Flange C	Servo Flange S	Square Flange Q
<b>FZ</b>	93 mm (3,66 in)	105 mm (4,29 in)	106,5 mm (4,68 in)
<b>FE</b>	93 mm (3,66 in)	105 mm (4,29 in)	106,5 mm (4,68 in)
<b>FG</b>	109 mm (4,29 in)	121 mm (4,76 in)	122,5 mm (4,82 in)

*End Cap + Face Mount + 55 mm = Total Encoder Length*

## Ordering Code

**Example: EXAGN – S101B – 12 – 13 – A – AL – 01 – 66 – 00 – FZ – C – 00**



### 1. Housing

64 mm length ..... N  
 55 mm length ..... S

See Table 1 & 2

### 4. Steps per revolution

12 bits (4096) (0.09°).....**12**  
 13 bits (8192) (0.04°).....**13**  
 16 bits (65536) (0.005°).....**16**

### 7. IP Rating

IP 64 ..... **64**  
 IP 65 ..... **65**  
 IP 66 ..... **66**  
 IP 67 ..... **67**  
 IP 68\* ..... **68**

\*1 meter/1 hour

### 10. Flange

Clamping flange ..... C  
 Synchro flange ..... S  
 Square VA/SA option only..... Q

### 2. Interface

Vers. .... **S101/**  
 Code ..... Binary **B**  
 Code ..... Grey **G**

### 5. Composition

Aluminum ..... **AL**  
 Stainless Steel\* ..... **VA**  
 Stainless Steel\*\* ..... **SA**

\* AISI 303  
 \*\* AISI 316

### 8. Cable

No cable..... **00**

### 11. Accessory

No accessory..... **00**

### 3. Revolution

Single Turn..... **00**  
 Multiturn 12 bits (4096) ..... **12**  
 Multiturn 14 bits (16384)..... **14**

### 6. Shaft (diameter x length)

10 mm x 20 mm 2 flats, 8mm length ..... **01**  
 12 mm x 25 mm 2 flats, 8 mm length ..... **02**  
 10 mm x 20 mm 1 flat, 15 mm length ..... **03**

### 9. Cable Outlets

Side Standard 2 outlets ..... **FZ**  
 Side Triple 3 outlets..... **FE**  
 Back Round 2 outlets..... **FG**