

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

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

Mechanical Specifications

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

Environmental Specifications

Operating Temp.:	-40° to +70° C
Storage Temp.:	-40° to +70° C
Shock:	100g @ 11 ms
Vibration:	10g @ 10-2000 Hz
Bump:	10g @ 16 ms (1000 x 3 axis)
Humidity:	98 % RH without condensation
Enclosure Rating:	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.)

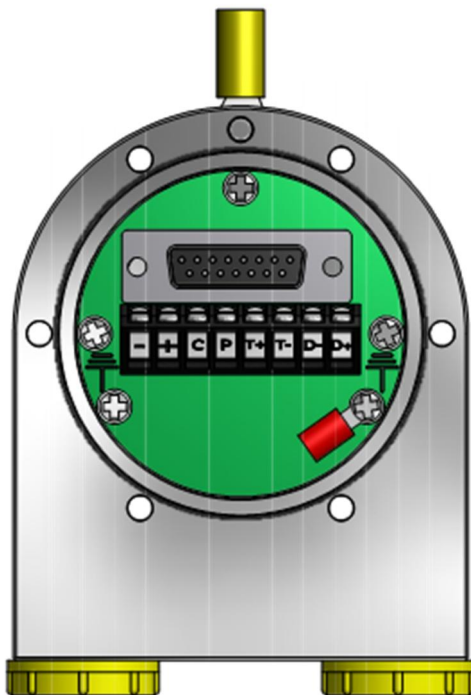
Certifications

ATEX:	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
IECEX:	Certificate No.: IECEX ITS 10.0016X Ex db IIC T5 Gb, Ex tb IIIC T100°C Db -40°C ≤ Ta ≤ +70°C
North America:	Certificate No: LR1192-5 Class I Division 2 Groups ABCD T5, Class II Division 2 Groups FG, Class I Zone 1AEx 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
EAC Ex:	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

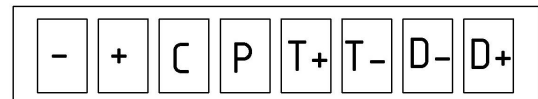
Installation

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 below.



Terminal	Description
1 (left)	0-V
2	10-30V
3	Complement (DIR-function)
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:
 - a) solid 0,14 mm² – 2,5 mm².
 - b) Stranded 0,14 mm² - 1,5 mm²
 - c) stranded with ferrule 0,25 mm² - 1,5 mm².

The rated wire size is AWG 22-12.

- **Le bornier** est conçu pour une installation d'un câble à la taille du fil:
 - a) rigide de 0,14 mm² - 2,5 mm²
 - b) souple 0,14 mm² - 1,5 mm²
 - c) souple avec embout 0,25 mm² - 1,5 mm².

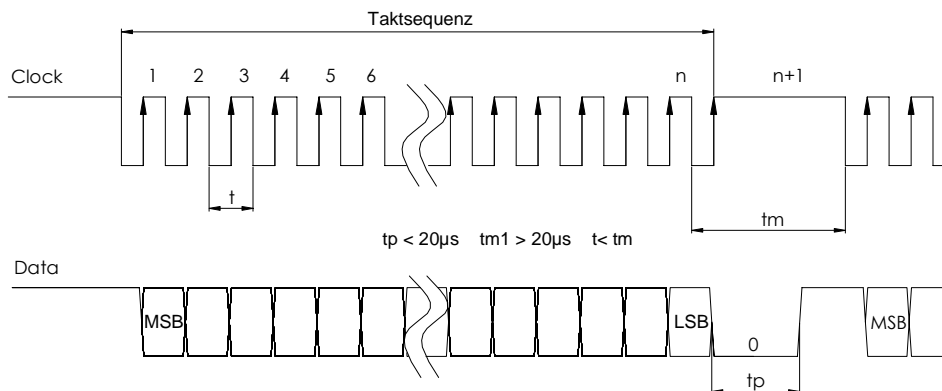
La taille de fil nominale est AWG 22-12.

Synchronous Serial Interface (SSI)

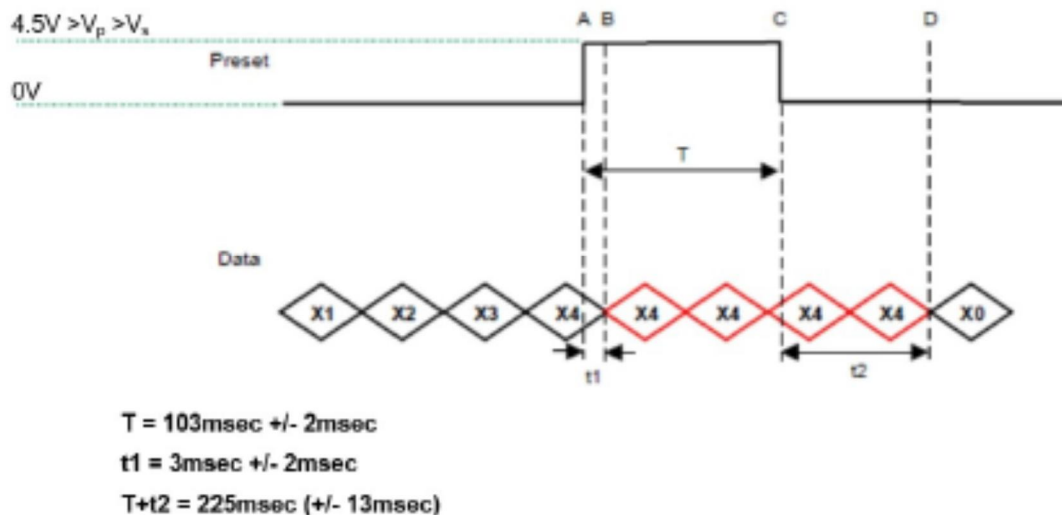
Comment

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



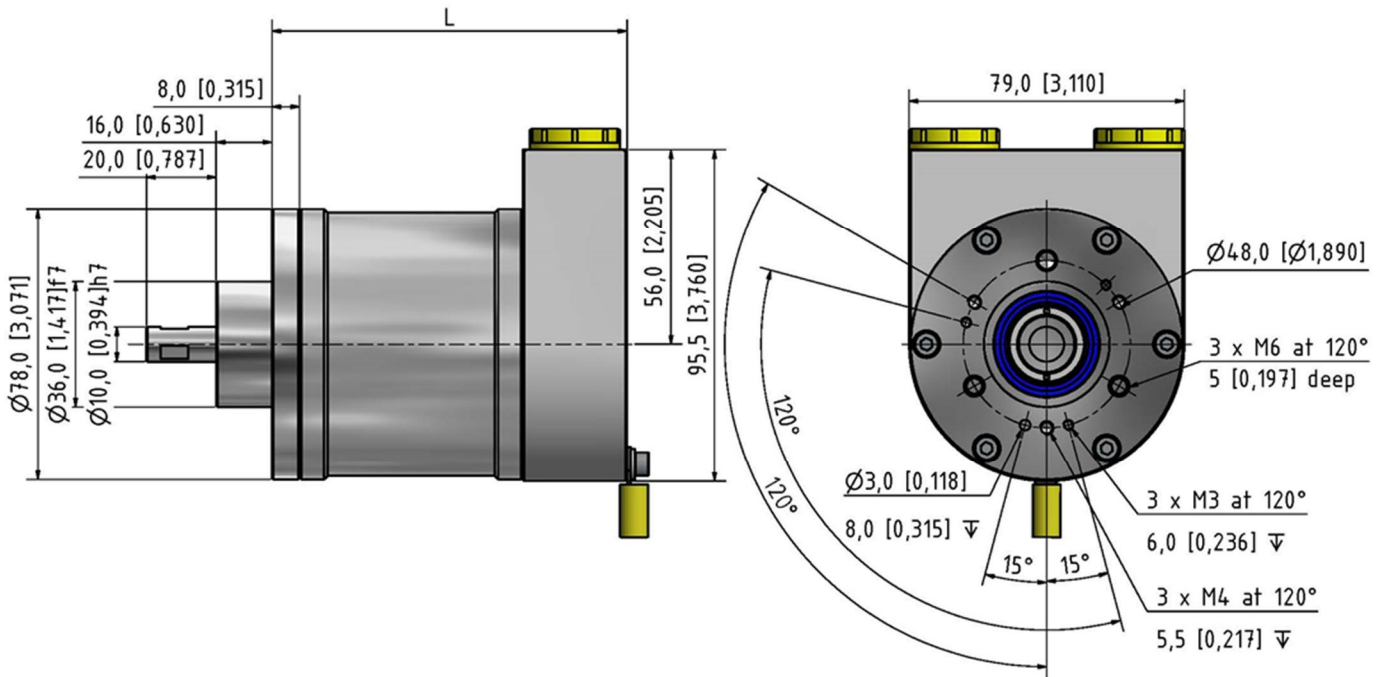
The Preset Function allows to set the output value to zero at the present mechanical position. Input resistance is 110 kΩ.



The DIR-function allows to change the encoder counting direction.

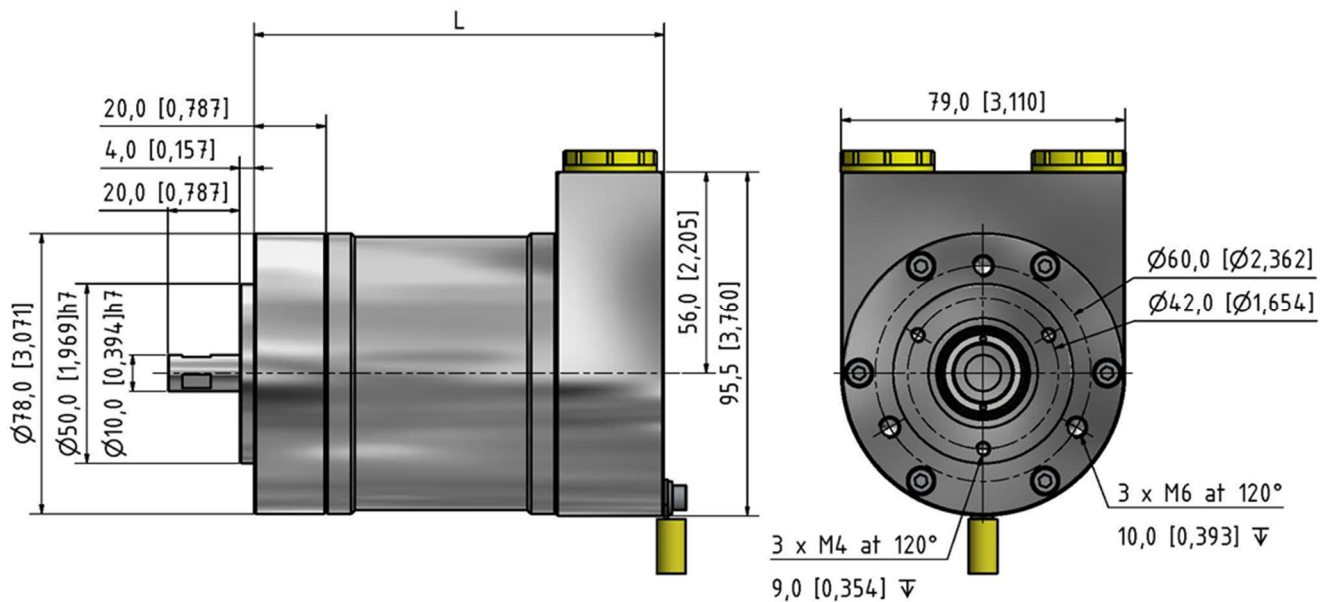
0 (open or GND)	Increasing Values Turning Clockwise (Viewed from Flange Side)
1 (4.5 V to Vs)	Decreasing Values Turning Clockwise (Viewed from Flange Side)
Input Resistance	60 kΩ

Face mounts



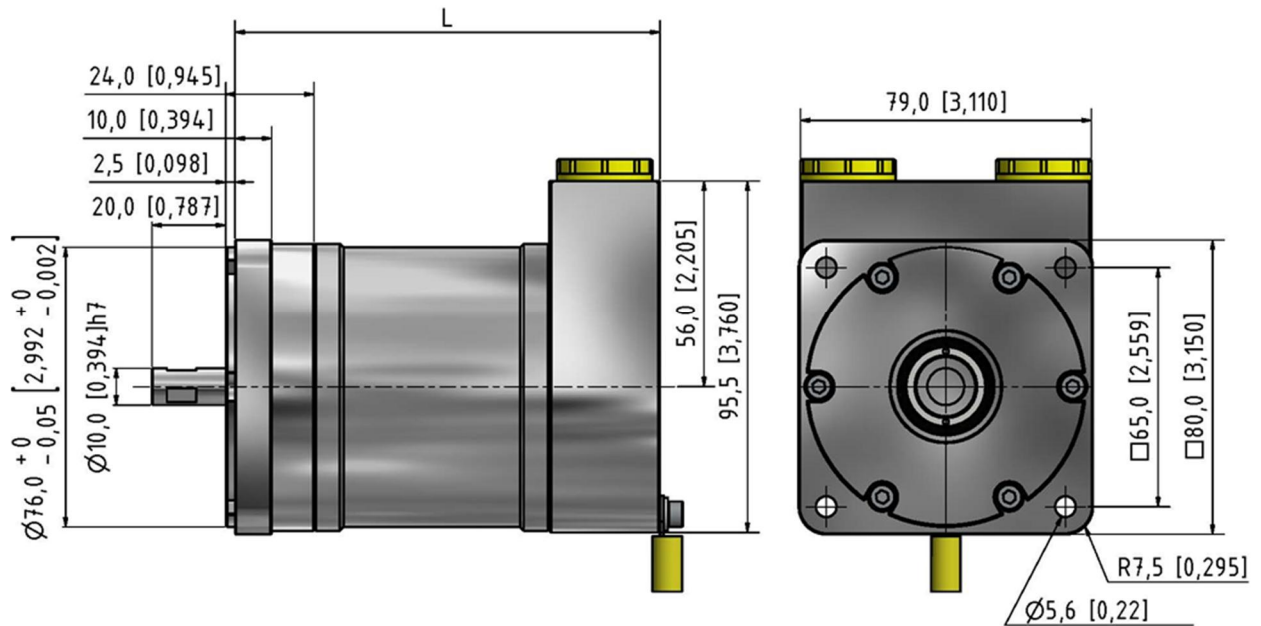
Face Mount C
Clamping Flange

mm (inches)



Face Mount S
Servo Flange

mm (inches)



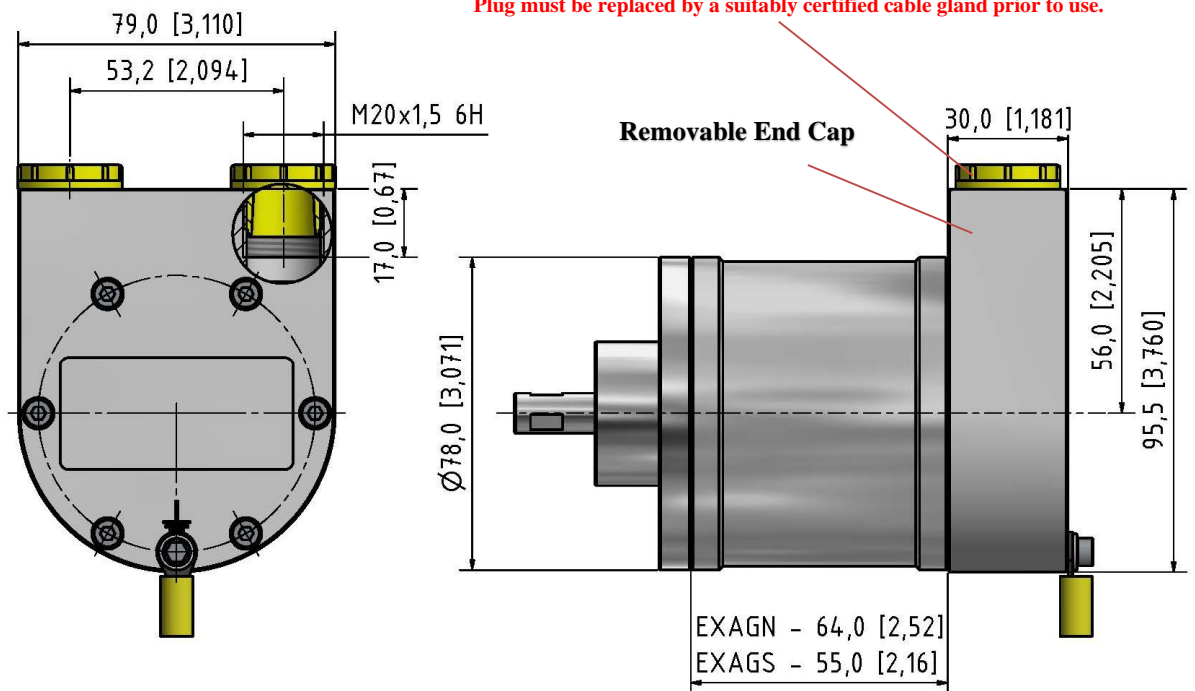
Face Mount Q
Square Flange

mm (inches)

VA/SA option only

End Caps with Cable Outlets

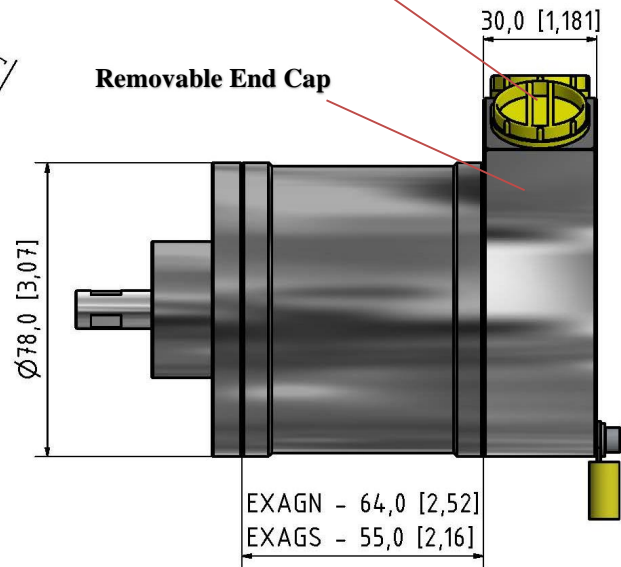
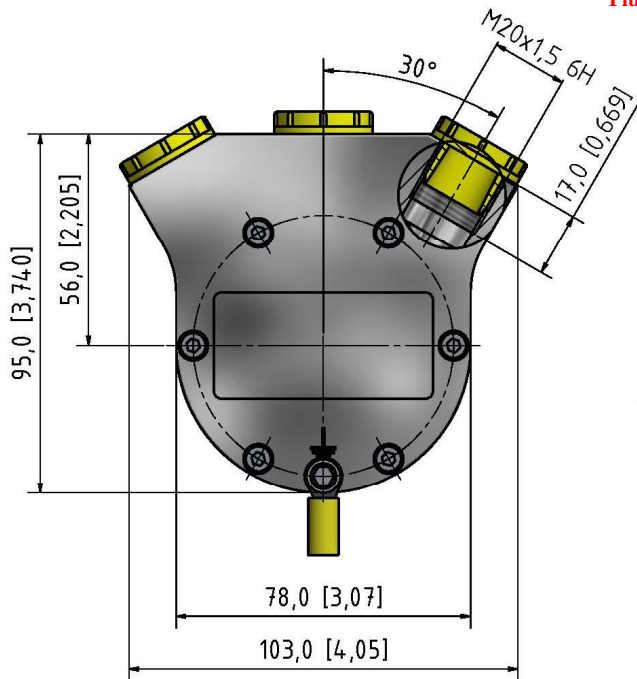
Plastic screw plug is for cable outlet protection during shipping and storage.
Plug must be replaced by a suitably certified cable gland prior to use.



Side Standard End Cap (FZ)

mm (inches)

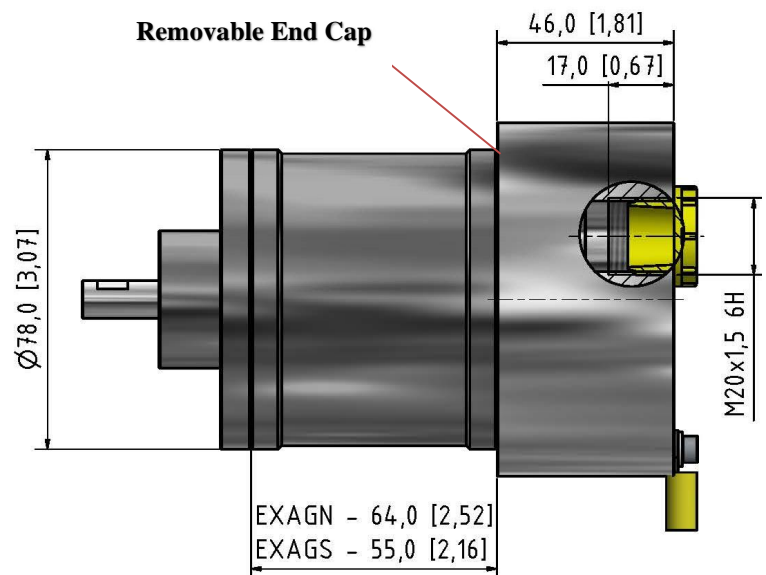
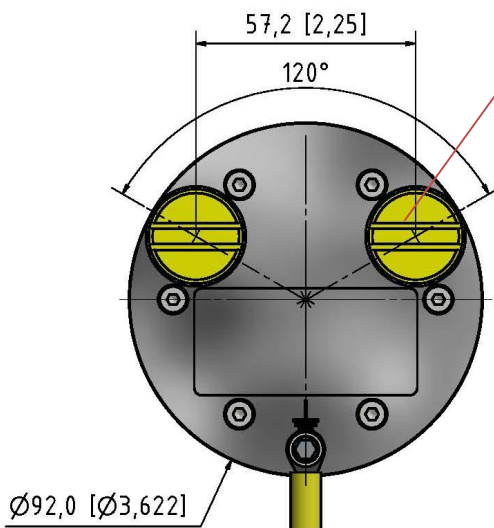
Plastic screw plug is for cable outlet protection during shipping and storage.
Plug must be replaced by a suitably certified cable gland prior to use.



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
FZ	102 mm (4,02 in)	114 mm (4,49 in)	115,5 mm (4,55 in)
FE	102 mm (4,02 in)	114 mm (4,49 in)	115,5 mm (4,55 in)
FG	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)

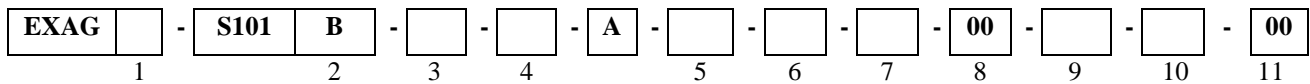
Total Encoder Length

End Cap	Face Mount		
	Clamping Flange C	Servo Flange S	Square Flange Q
FZ	93 mm (3,66 in)	105 mm (4,29 in)	106,5 mm (4,68 in)
FE	93 mm (3,66 in)	105 mm (4,29 in)	106,5 mm (4,68 in)
FG	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

2. Interface

Vers. S101/
 Code Binary B
 Code Grey G

3. Revolution

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

4. Steps per revolution

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

5. Composition

Aluminum AL
 Stainless Steel* VA
 Stainless Steel** SA

* AISI 303
 ** AISI 316

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

7. IP Rating

IP 64 64
 IP 65 65
 IP 66 66
 IP 67 67
 IP 68* 68

*1 meter/1 hour

8. Cable

No cable..... 00

9. Cable Outlets

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

10. Flange

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

11. Accessory

No accessory..... 00