

EXAG – SSI Removable End Cap

- Hollow Shaft Encoder - Ø 78 mm
- Hollow Shaft: Ø 14 mm, Ø 16 mm and Ø 1 inch
- Synchronous Serial Interface (SSI) – (RS422/TTL)
- Resolution up to 30 bits
- Removable End Cap for on-site modifications
- ATEX, IECEx, EAC Ex 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:	+/- ½ LSB (12 bit) +/- 2 LSB (16 bit)
Cycle Time:	< 25 µs
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:	EN61000-6-2:2005
Emitted Interference:	EN 61000-6-4:2007-09

Mechanical Specifications

Material:	Housing: Aluminum or Stainless Steel Cap: Aluminum or Stainless Steel Hollow 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
Hollow Shaft Speed:	6.000 rpm (max.) IP 64 3.000 rpm (max.) IP 65/66/67/68
Starting Torque:	≤ 0,01 Nm at 25° C (no seal) ≤ 0,03 Nm at 25° C (with seal)
Rotor Mass	Face Mount B: 595 gcm ²
Moment of Inertia:	Face Mount C: 102 gcm ²
Hollow 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.)

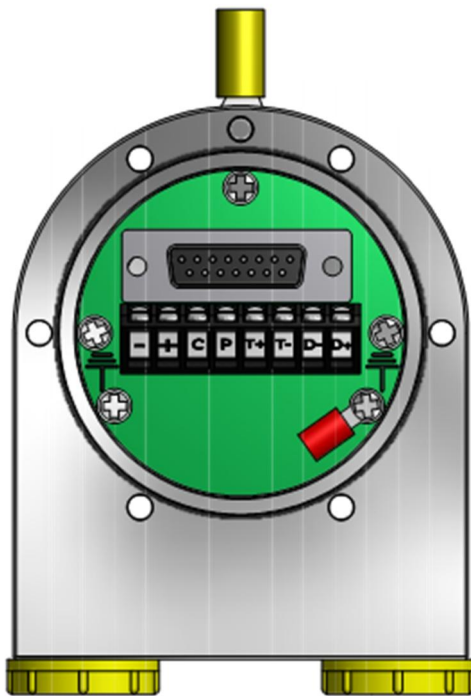
Certifications

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 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
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

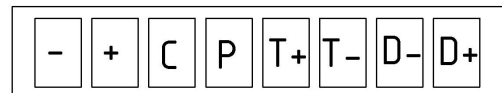
Installation

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:
solid 0,14 mm² – 2,5 mm².
Stranded 0,14 mm² - 1,5 mm²
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:
rigide de 0,14 mm² - 2,5 mm²
souple 0,14 mm² - 1,5 mm²
souple avec embout 0,25 mm² - 1,5 mm².

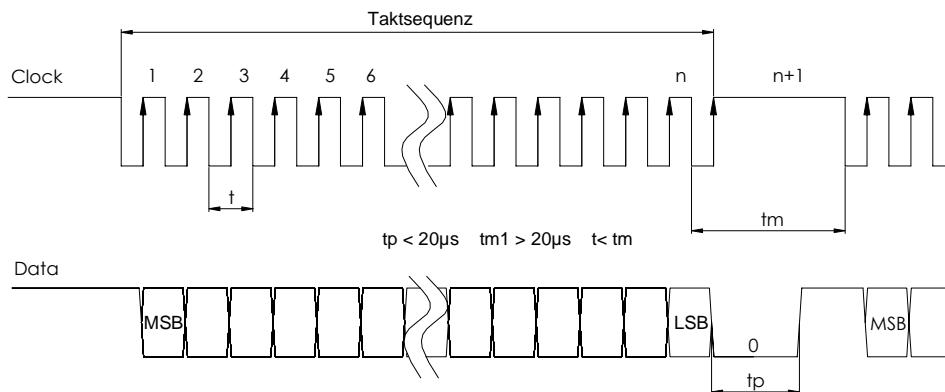
La taille de fil nominale est AWG 22-12.

Synchronous Serial Interface (SSI)

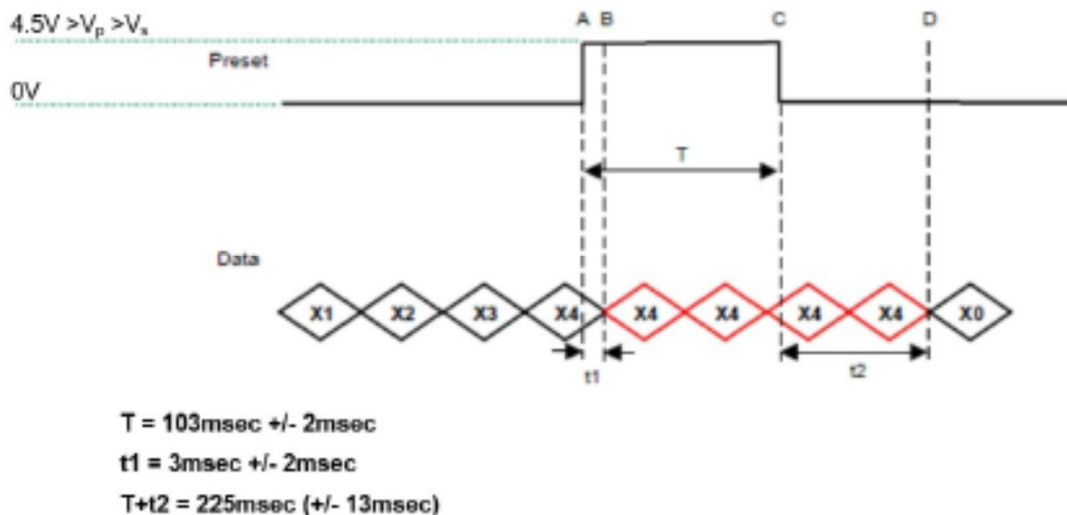
Comment

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



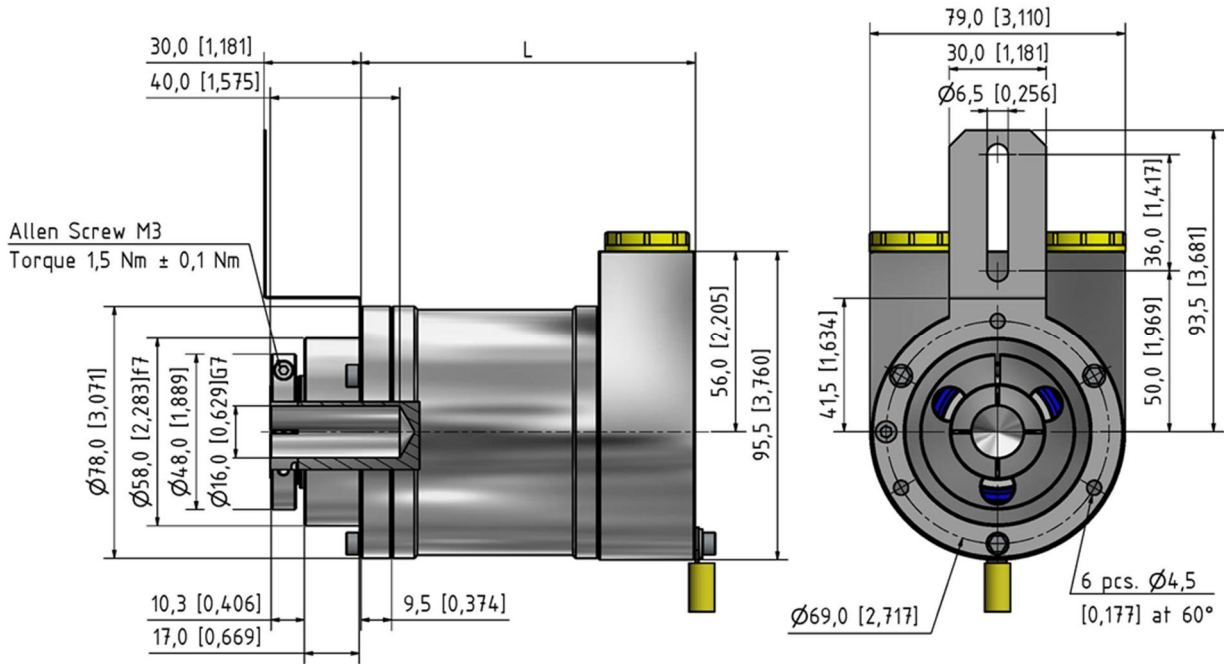
The Preset Function allows to set the output value to zero at the present mechanical position. Input resistance is 110 k Ω .



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

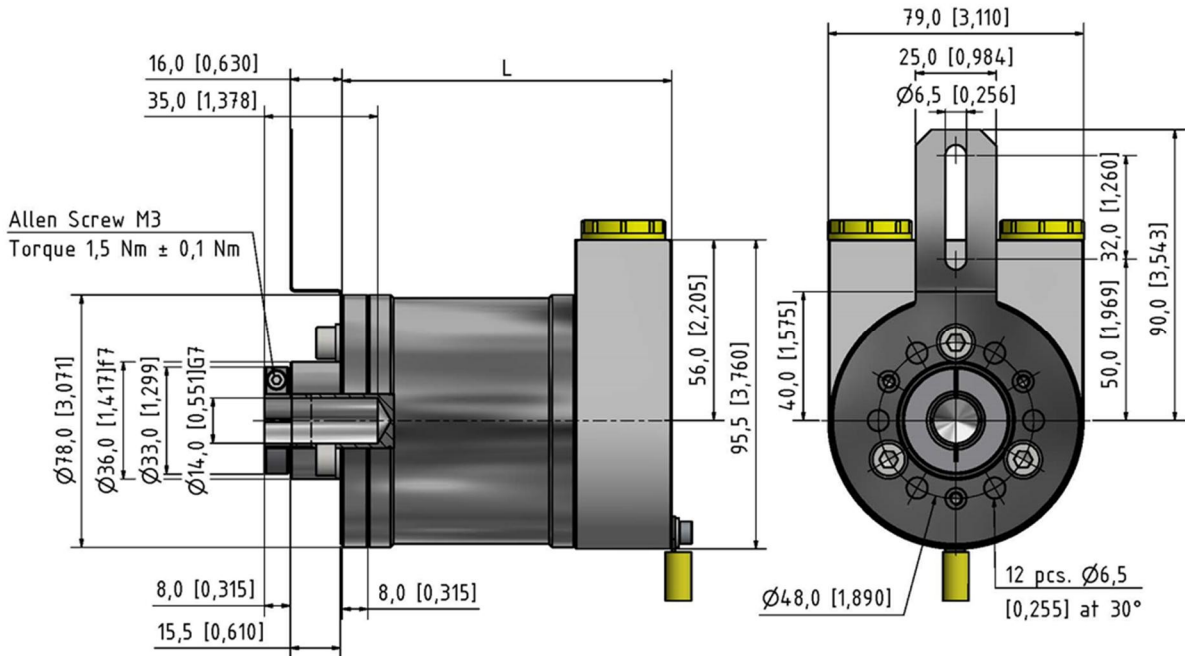
0 (open or GND)	Increasing Values Turning Clockwise (Viewed from Flange Side)
1 (4.5 V to Vs)	Decreasing Values Turning Clockwise (Viewed from Flange Side)
Input Resistance	60 k Ω

Face mounts



Face Mount B
Clamping Flange

mm (inches)



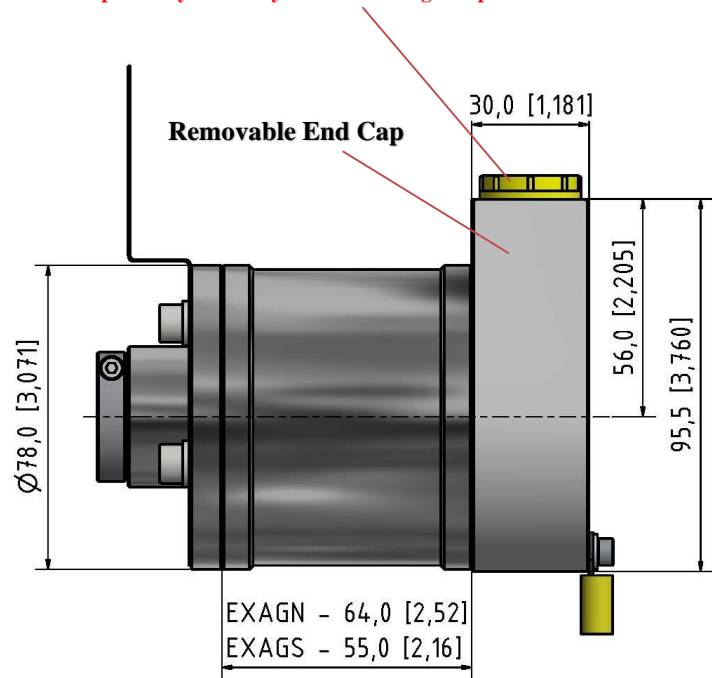
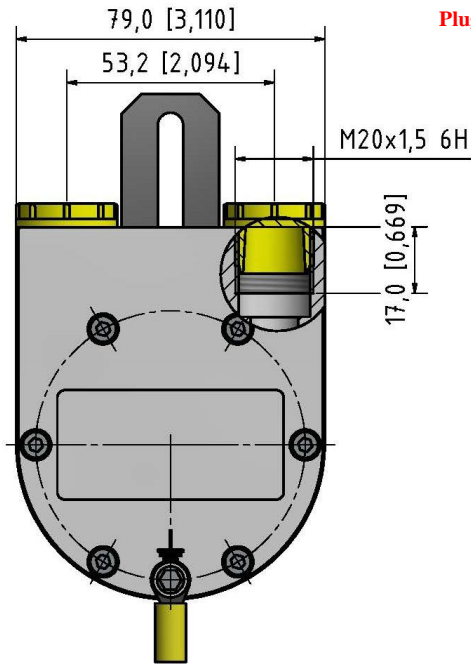
Face Mount C
Clamping Flange

mm (inches)

VA/SA option only

End Caps with Cable Outlets

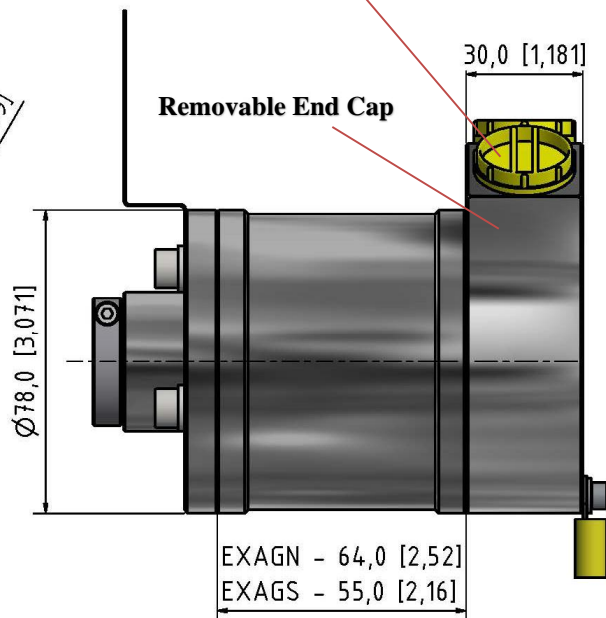
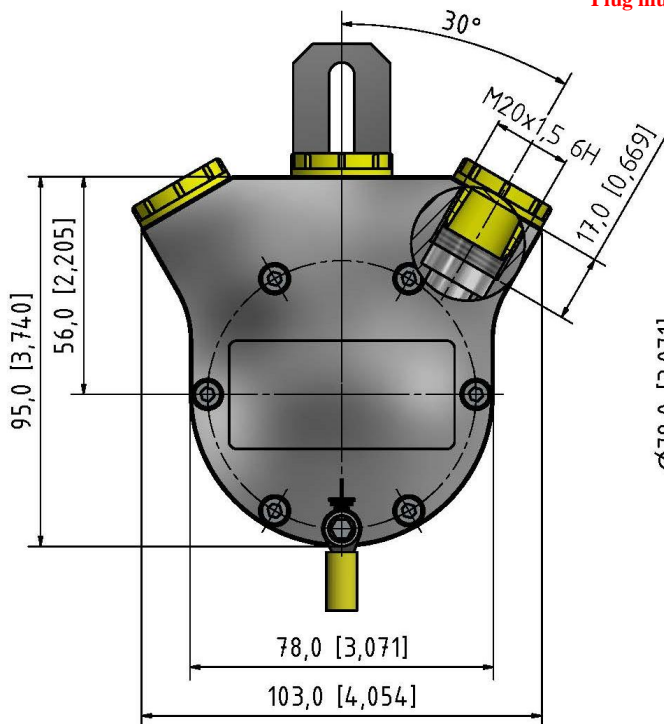
Plastic screw plug is for cable outlet protection during shipping and storage.
 Plug must be replaced by a suitably certified cable gland prior to use.



Side Standard End Cap (FZ)

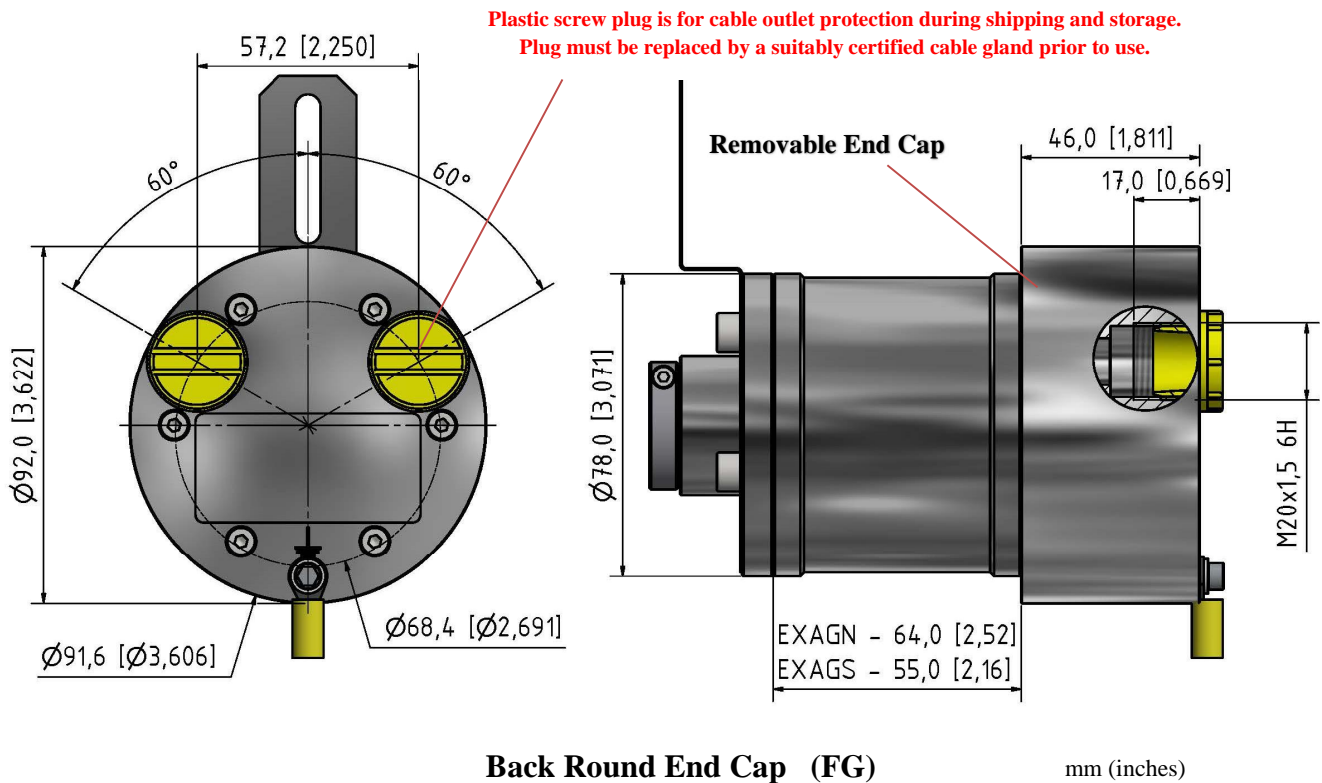
mm (inches)

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)



Encoder Length

Housing N (Table 1) (64 mm)

Total Encoder Length

End Cap	Clamping Flange B	Clamping Flange C
FZ	103,5 mm (4,07 in)	102 mm (4,02 in)
FE	103,5 mm (4,07 in)	102 mm (4,02 in)
FG	119,5 mm (4,70 in)	118 mm (4,65 in)

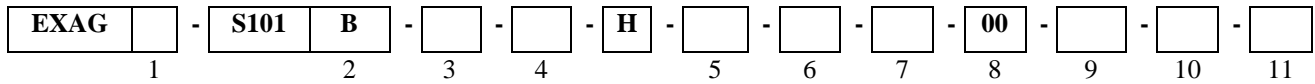
Housing S (Table 2) (55 mm)

Total Encoder Length

End Cap	Clamping Flange B	Clamping Flange C
FZ	94,5 mm (3,72 in)	93 mm (3,66 in)
FE	94,5 mm (3,72 in)	93 mm (3,66 in)
FG	110,5 mm (4,35 in)	109 mm (4,29 in)

Ordering Code

Example: EXAGN – S101B – 12 – 16 – H – AL – 01 – 66 – 00 – FZ – C – S1



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. Face mount

Clamping flange **B**
 Clamping flange **C**

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

Spring Coupling
 1 hole *Flange C* p/n 80131046...**S1**
 1 hole *FlangeB* p/n 80131342...**S2**

3. Revolution

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

6. Hollow Shaft (*diameter*)

14 mm **01**
 16 mm *Face Mount B only*..... **02**
 14 mm *Face mount B* **03**
 1 inch *Face mount B only*..... **04**

9. Cable Outlets

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