



## EXAG - Profinet Removable End Cap

- Hollow Shaft Encoder – Ø78 mm
- Hollow Shaft: Ø14 mm, Ø16 mm and 1 inch
- Profinet
- Resolution up to 30 bits
- Removable End Cap for on-site modification
- ATEX, IECEx, EAC Ex and North America Class I Div. 2, Ex db IIC



### Electrical Specifications

<b>Code:</b>	Absolute - Binary
<b>Interface:</b>	Profinet
<b>Profile</b>	Profinet Profile 4.x, Encoder Profile 4.x
<b>Resolution:</b>	Max. 14 bit (16384) revolutions Max. 16 bit (65536) steps per rev.
<b>Device Addressing:</b>	Programmable IP address and Network parameters
<b>Transmission Rate:</b>	10/100 Mbit
<b>Supply Voltage:</b>	10 to 30 Vdc (absolute limits)
<b>Current Consumption:</b>	Max. 230 mA with 10 Vdc Max. 100 mA with 24 Vdc
<b>Power Consumption:</b>	Max. 2.5 watts
<b>Accuracy (INL):</b>	±0.0220° (14-16 bit), ±0.0439° (≤13 bit)
<b>MTTF:</b>	65 years @ 40°C
<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, IP 66, IP 67
<b>Starting Torque:</b>	≤ 0,01 Nm at 25° C (no seal) ≤ 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>	100g @ 11 ms
<b>Vibration:</b>	10g @ 10-2000 Hz
<b>Bump:</b>	10g @ 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>	HAHIO «ИЦБЭ» No. EAЭC RU C-DK.AA87.B.00266/19 IEx db IIC T5 Gb X, Ex tb IIIC T100°C Db X -40°C < T.amb < +70°C

## Interface

### PROFINET technology

PROFINET is an Industrial Ethernet standard merging plant automation with other enterprise IT resources.

It provides comparable functionality to PROFIBUS with techniques used by engineering, IT, and management personnel.

Established IT standards are employed as basis of communication: TCP, UDP, IP. XML is used as description language for device profiles (GSDML files).

Two ways of using PROFINET are available: PROFINET IO, similar to PROFIBUS DP as a distributed I/O system and PROFINET CBA as a modular component-based system for larger systems.

PROFINET offers scalable communication for different applications in industrial automation:

- PROFINET NRT (non real time) is suited for non-time-critical process automation with clock rates of roughly 100 msec.
- PROFINET RT (real time) offers a communication channel with optimized performance (10 msec clock rate) for most factory automation tasks
- PROFINET IRT (isochronous real time) employs special communication hardware to enable clock rates of less than 1 msec and a jitter precision of less than 1 µsec. This channel is mainly of use for motion control applications.

PROFINET IO uses a view of distributed I/O similar to PROFIBUS DP. IO controllers (e.g. PLCs) run an automation program, IO devices (e.g. absolute encoders) are remotely assigned field devices, and IO supervisors (e.g. programming devices) are used for commissioning and diagnostics.

The engineering of PROFINET IO is done similar to PROFIBUS. The field buses (i.e. Ethernet topologies) are assigned to control systems during configuration. The IO device is configured in the actual system based on the contents of its GSDML file.

**After completion** of the engineering the installer loads the data for the expansion into the IO controller (PLC) and the IO controller assumes data exchange with the IO device.

An IO device is addressed within PROFINET (and also possibly by external IT components) through its IP address.

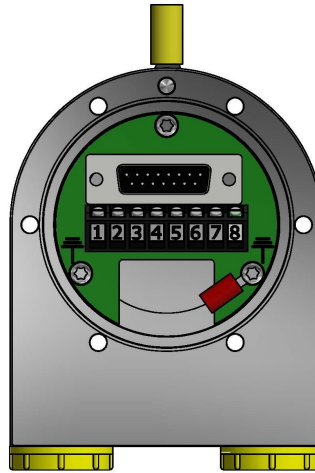
Data can be exchanged from the IO controller to the IO device (and vice versa) cyclically (for process data). Apart from this, parameter data can be exchanged acyclically during engineering of the IO device or by the use of PLC programming blocks.

The GSDML file is necessary for installing the encoder. The **GSDML file can be downloaded [here](#)**

## Output Terminations

### Terminal connections

Position	Terminal
1	GND
2	Vsup
3	N.C.
4	N.C.
5	Rx -
6	Tx -
7	Rx +
8	Tx +

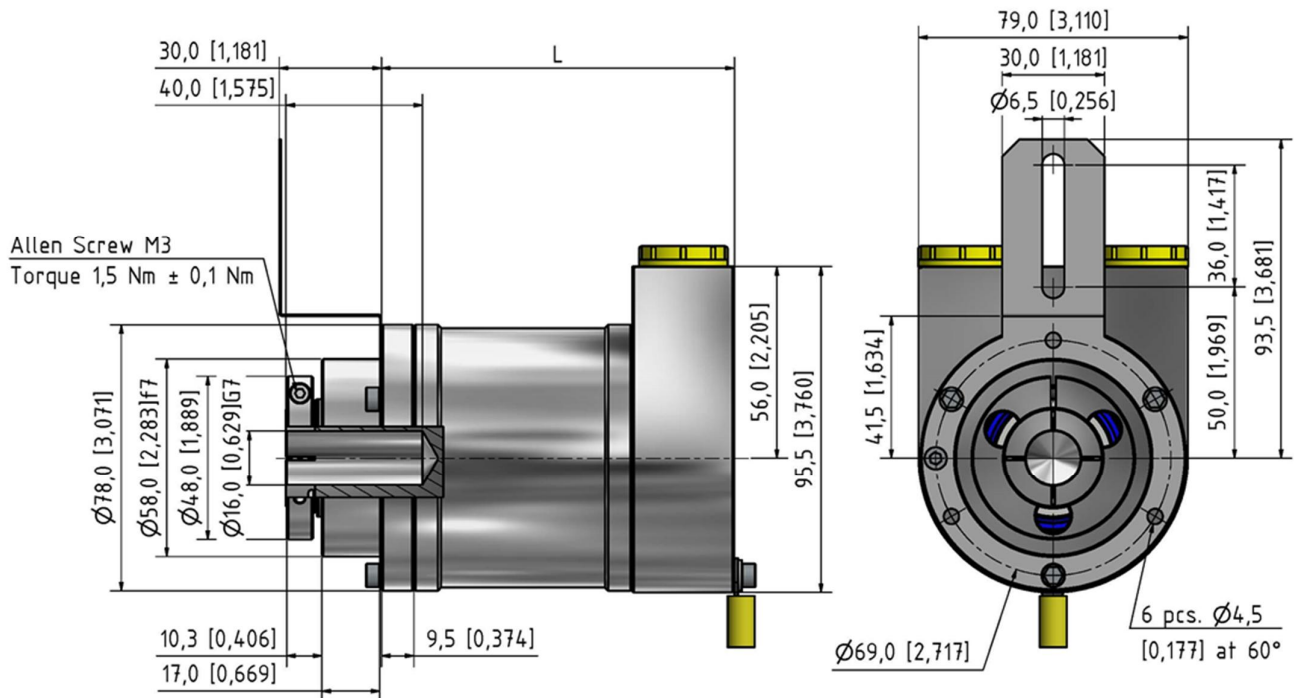


**Internal earth connection**  
(red cable shoes) is 22-16 AWG.  
*La connexion à la terre interne*  
(Borne rouge) est en 22-16 AWG.

**External earth connection**  
(yellow cable shoe) is 12-10 AWG.  
*La connexion de terre externe*  
(Borne jaune) est en 12-10 AWG.

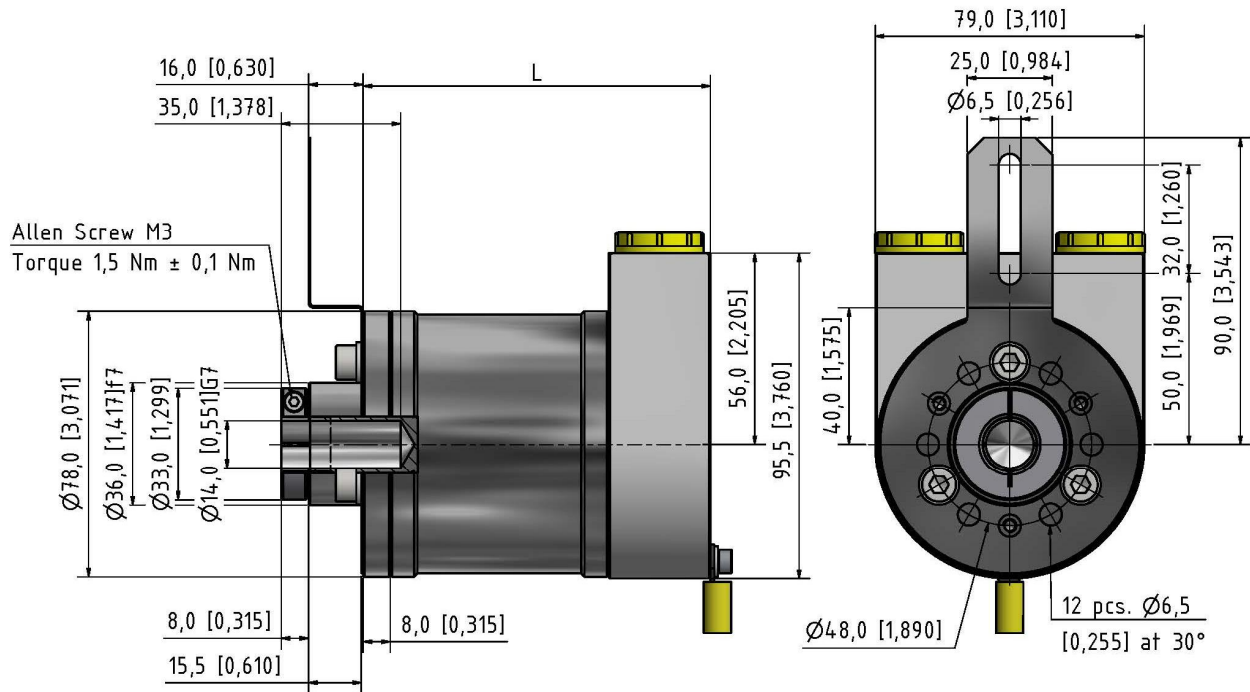
**Wire conductor size** AWG 22-12,  
0.14 mm<sup>2</sup> – 2.5 mm<sup>2</sup>.  
*La taille de fil nominale est* AWG 22-12,  
0.14 mm<sup>2</sup> – 2.5 mm<sup>2</sup>

## Face Mounts



**Face Mount B**  
**Clamping Flange**

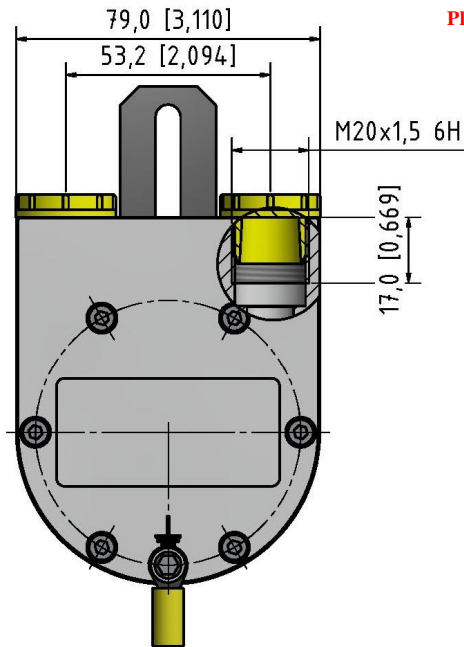
mm [inches]



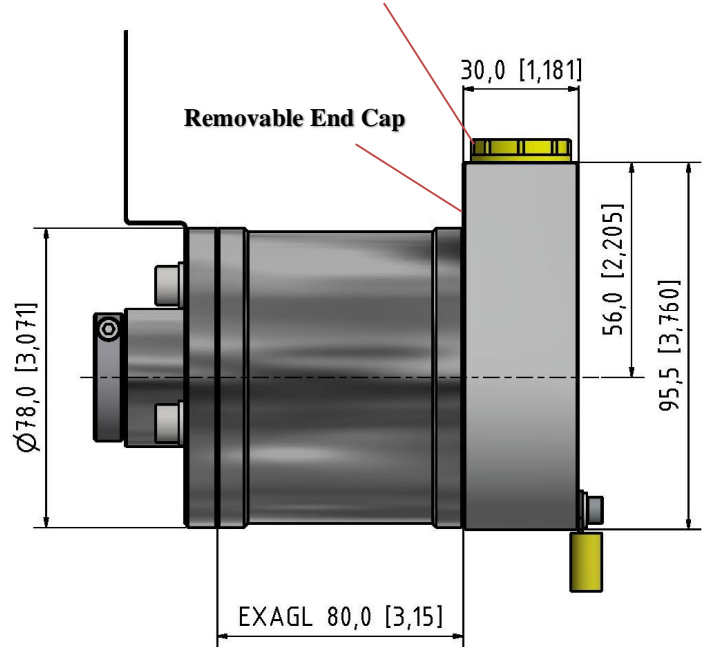
**Face Mount C**  
**Clamping Flange**

mm [inches]

## End Caps with Cable Outlets

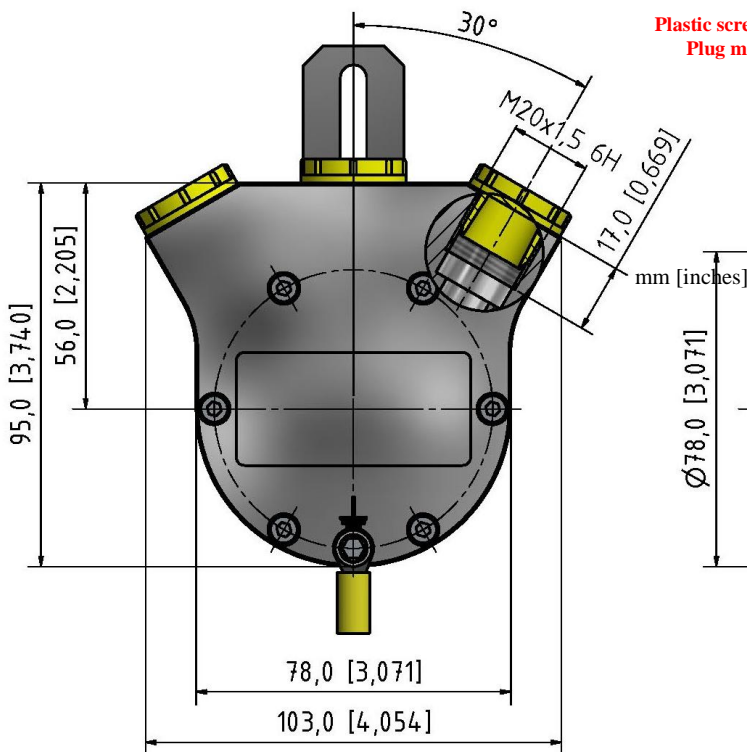


Plastic screw plug is for cable outlet protection during shipping and storage.  
 Plug must be replaced by a suitably certified cable gland prior to use.

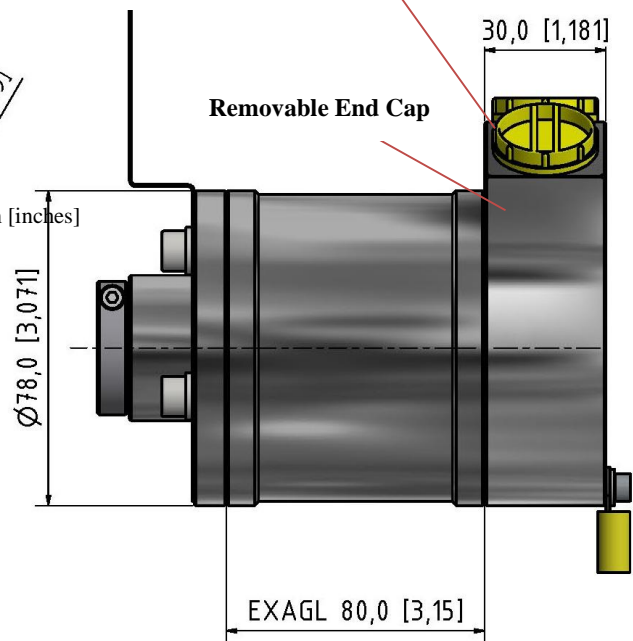


Side Standard End Cap (FZ)

mm [inches]

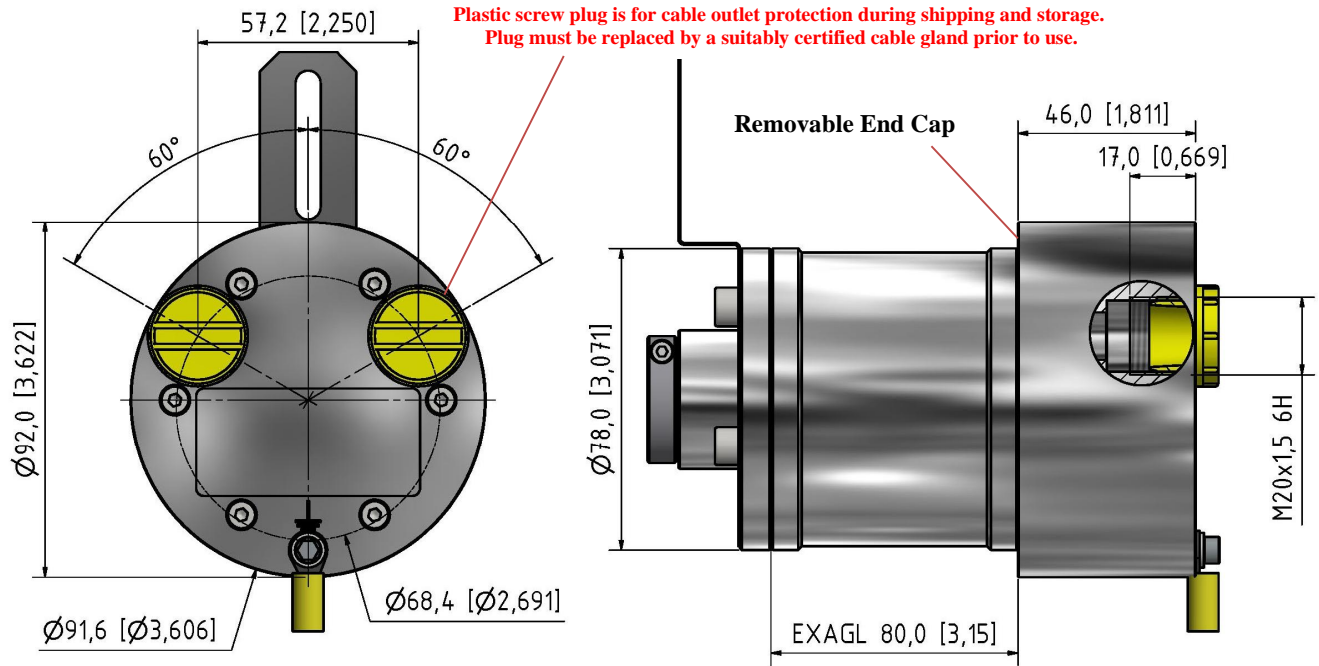


Plastic screw plug is for cable outlet protection during shipping and storage.  
 Plug must be replaced by a suitably certified cable gland prior to use.



Side Standard End Cap (FE)

mm [inches]



**Back Standard End Cap (FG)**

mm [inches]

## Encoder Length

**Housing L (Table 1)**  
(80 mm)

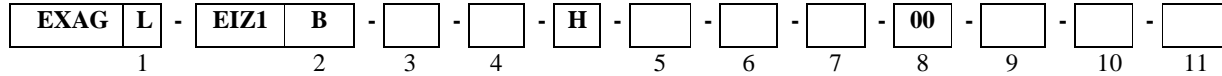
**Total Encoder Length**

End Cap	Face Mount	
	Clamping Flange B	Clamping Flange C
<b>FZ</b>	119,5 mm (4,705 in)	118 mm (4,645 in)
<b>FE</b>	119,5 mm (4,705 in)	118 mm (4,645 in)
<b>FG</b>	135,5 mm (5,334 in)	134 mm (5,275 in)

*End Cap + Face Mount + 80 mm = Total Encoder Length*

## Ordering Code

**Example: EXAGL - EIZ1B - 12 - 16 - H - AL - 01 - 66 - 00 - FZ - C - S1**



### 1. Housing

80 mm length ..... **L**  
 See Table 1

### 2. Interface

Vers. .... **EIZ1**  
 Code ..... Binary **B**

### 3. Revolutions

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

### 4. Steps per revolution

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. Hollow Shaft (*diameter*)

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

### 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 .....**B**  
 Clamping flange .....**C**

### 11. Accessory

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