



Type 2QEX-A

- 2.5" or 2.65" Square mount or Ø58 servo mount
- IP 67 Environmental Protection
- "Seawater-Proof" 22 micron Anodization
- ATEX and IECEx Certified

Electrical Specifications

Code:	Incremental
Resolution:	1 to 12,500 ppr (pulses per revolution)
Supply Voltage:	4.5 Vdc min. to 30 Vdc max. ** (at 45 mA max. - no load)
Output Voltage:	Low: 500 mV max. at 10 mA High: (V _{sup} - 0.6) at -10 mA (V _{sup} - 1.3) at -25 mA
Output Current:	30 mA max. load per output channel **
Frequency Response:	300 kHz max. **
Output Format:	Two channel (A, B) quadrature with Index (Z) and optional complementary (A-, B-, Z-) outputs
Phase Sense:	A leads B counterclockwise (CCW) from the shaft end of the encoder
Index:	Gated with Channel B low
Accuracy:	+/- 0.8 arc-min.
Outputs:	ASIC Push-pull and Differential OL7272 Push-pull and Differential Line Driver 26C31 Differential Line Driver 5V output (with 5V input)
Electrical Protection:	Output short circuit protected. Reverse polarity protected for ASIC outputs only. (not for OL7272 or 26C31 outputs)
Noise Immunity:	Tested to EN61000-6-2 : 2005 (industrial environments) Electromagnetic compatibility (EMC) and EN 61000-6-3 : 2007 (residential, commercial, and light-industrial environments) for Electromagnetic compatibility (EMC)

Mechanical Specifications

Material:	Housing: Aluminum Cap: Aluminum Shaft: Stainless Steel (AISI 303)
Weight:	Encoder: Approx. 350 gr (12.35 oz)
Bearing Life:	> 1.9 x 10 ¹⁰ revolutions at rated load
Shaft Speed:	6,000 rpm max.
Starting Torque:	< 0.01 Nm (1.4 oz-in) at 25° C
Mass Moment of Inertia:	4 gcm ² (5.66 x 10 ⁻⁵ oz-in-sec ²)
Shaft Loads:	Axial 200 N (50 lbs) max. Radial 250 N (56 lbs) max.

Environmental Specifications

Operating Temperature:	-40°C to +70°C
Storage Temperature:	-40°C to +70°C -40°C to +60°C with Rota connector
Shock:	100 G @ 11 ms
Vibration:	10-2000 Hz @ 10 G
Bump:	10 G @ 16 ms (1000 x 3 axis)
Humidity:	98 % RH without condensation
Enclosure Rating:	IP 67 / Nema 6 (approx.) IP 66 / Nema 6 (approx.) – option IP 65 / Nema 4 (approx.) – option IP 64 / Nema 4 (approx.) – option 22 micron anodization

Connection Options

Cable:	8 leads (0.14 mm ² , 26 AWG) twisted pairs; shielded
Connectors:	6-pin Mil radial (optional cap) 7-pin Mil radial (optional cap) 10-pin Mil radial (optional cap) 5-pin Rota radial (optional cap)

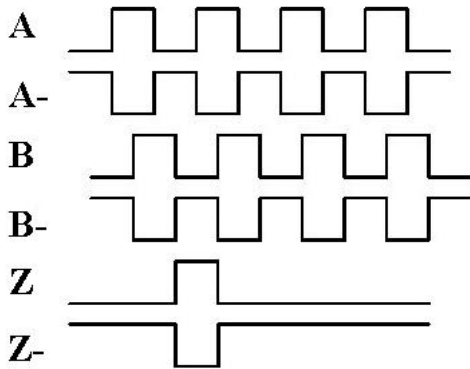
**= It is recommended user not to combine max. Value for all 3 parameters

Certifications

ATEX:	Certificate No.: ITS08ATE42972X II 3 G Ex nA IIC T4 Gc, II 3 D Ex tc IIIC Tmax.100°C Dc -40°C ≤ Ta ≤ +70°C (+60°C with ROTA connector)
IECEX:	Certificate No.: IECEX ITS 15.0035X Ex nA IIC T4 Gc, Ex tc IIIC Tmax.100°C Dc -40°C ≤ Ta ≤ +70°C (+60°C with ROTA connector)
EACEx:	Certificate No.: RU No. 0249626 НАННО «ЦСВЭ» No.TC RU C-DK.ГБ05.B.00974 2Ex nA IIC T5 Gc Ex tc IIIC T95°C Dc -40°C < T.amb < +85°C

Output waveform

CCW Seen from shaft end



Channel tolerance 180 e° +/- 36 e°
Phase difference tolerance 90 e° +/- 18 e°
Z channel tolerance 90 e° +/- 18 e°

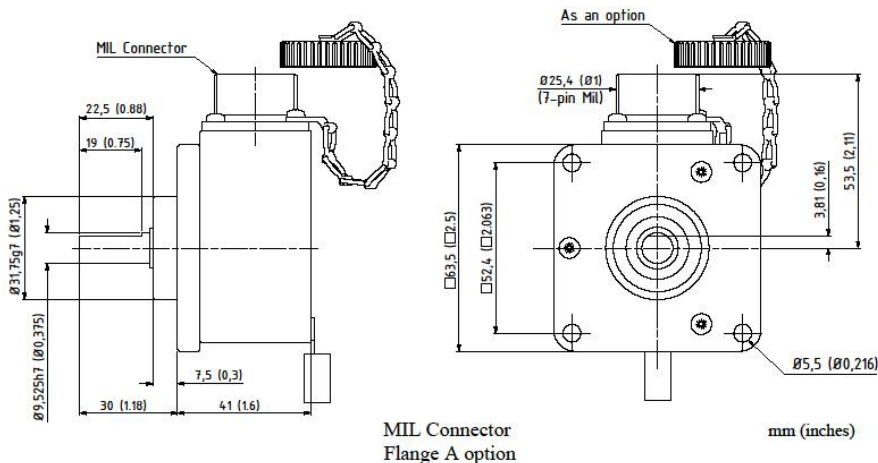
Disk Resolutions (pluses per revolution)

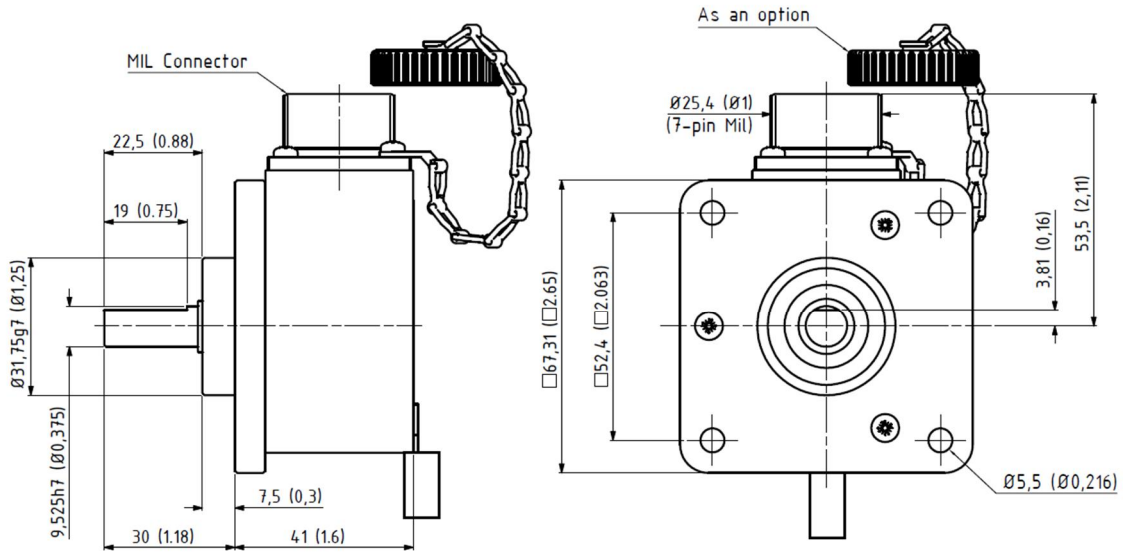
1	32	125	720	3072
2	36	150	800	3600
5	40	180	1000	4000
6	45	200	1024	4096
7	47	250	1131	5000
8	50	256	1200	8192
10	60	300	1250	9000*
12	64	360	1270	10000*
15	70	400	1500	12500*
16	75	455	2000	
18	80	500	2048	
20	90	512	2400	
25	100	600	2500	
30	120	635	3000	

Other options on request
Pulses per revolution,
min. 1 – max. 12.500

* Operating temperature: -20° C to 50° C

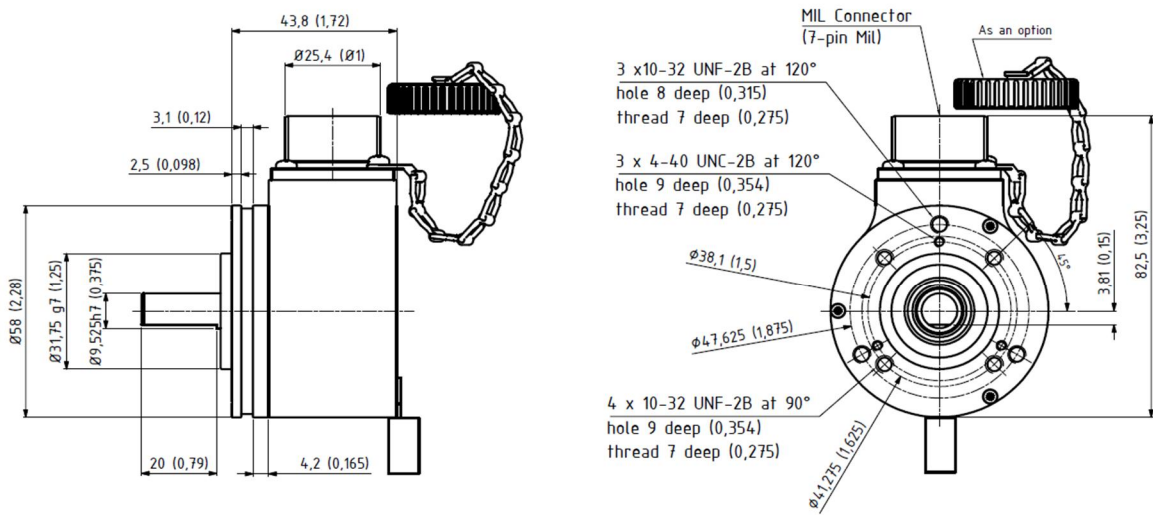
Mechanical Dimensions





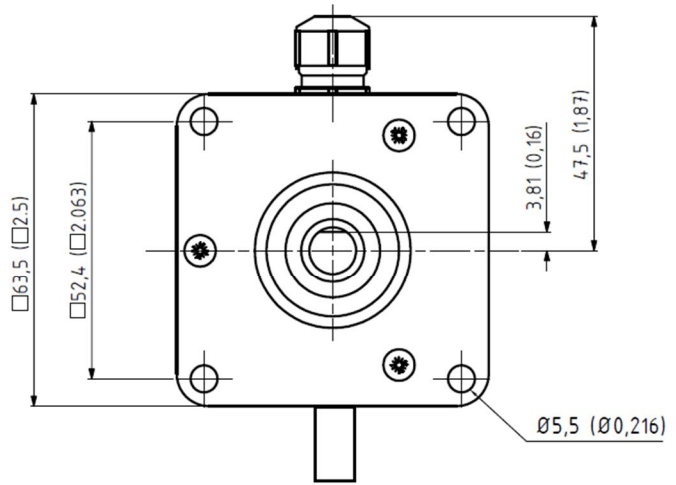
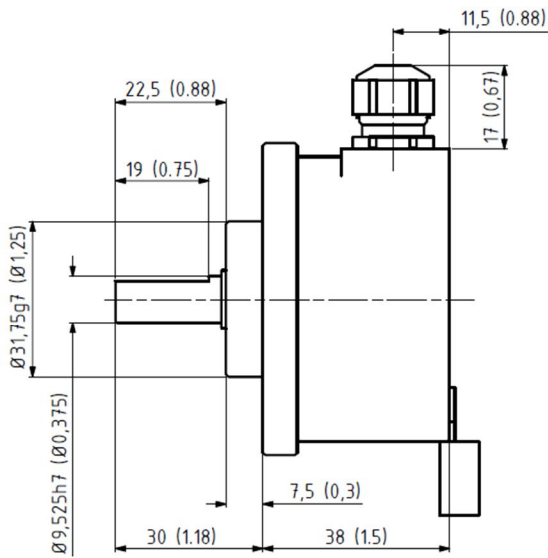
MIL Connector
Flange B option

mm (inches)



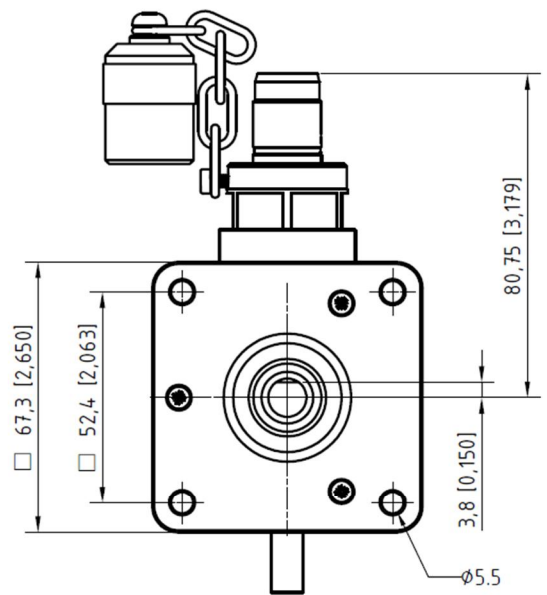
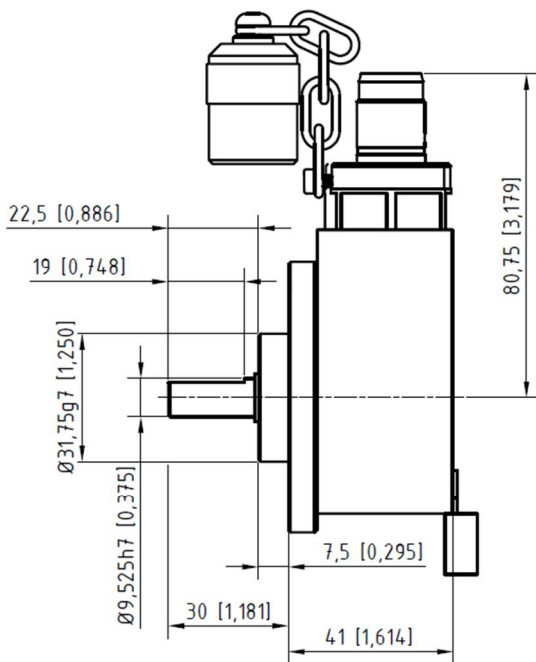
MIL Connector
Servo-Flange C option

mm (inches)



Standard Cable Gland
Flange A option

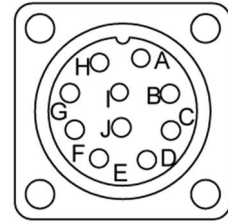
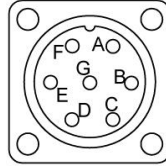
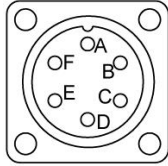
mm (inches)



ROTA Ex. Connector

mm (inches)

Output Terminations



Pin	6-pin Mil		7-pin Mil		10-pin Mil	
	Standard Output	Standard Output	Optional Standard Output *	Optional Differential Output *	Differential Output	Optional Differential Output *
Pin	Channel	Channel	Channel	Channel	Channel	Channel
A	GND	Ch. A	Ch. A	Ch. A	Ch. A	Ch. A
B	Vsup	Ch. B	Ch. B	Ch. B	Ch. B	Ch. B
C	Ch. Z	Ch. Z	NC	Ch. A -	Ch. Z	Ch. A -
D	Ch. B	Vsup	Vsup	Vsup	Vsup	Vsup
E	Ch. A	NC	NC	Ch. B -	NC	Ch. B -
F	Shield	GND	GND	GND	GND	GND
G		Shield	Shield	Shield	Shield	Shield
H					Ch. A -	NC
I					Ch. B -	NC
J					Ch. Z -	NC

* ID number required

GND = Circuit Ground Shield = Case Ground

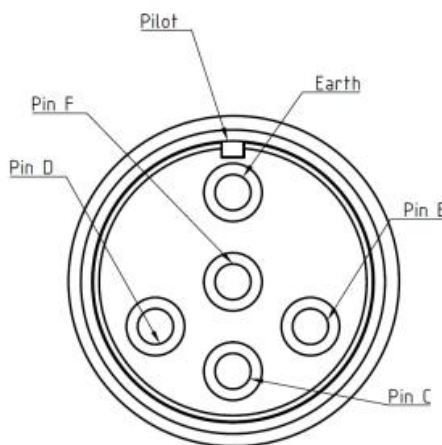
Standard Cable

Channel	Standard Output	Differential Output
	Wire Color	Wire Color
A	Pink	Pink
A -	Gray*	Gray
B	Green	Green
B -	Yellow*	Yellow
Z	White	White
Z -	Brown*	Brown
Vsup	Red	Red
GND		

* Gray, Yellow, and Brown are internally connected as Ground

GND: Shield internally connected to case ground

Rota Ex Connector



Pin No.	Signal
Earth	Shield (Earth)
B	Channel A
C	Channel B
D	Vsup
F	GND (0 Volt)

Ordering Code

Example: 2QEX - A - 1024 - AL - N - 3/8 - 20 - 67 - 00 - C7 - B

Type

2QEX - A	-		-	AL	-		-		-		-		-		-		-																																									
		Pulses per Revolution		Composition		Output		Shaft Dia.	Shaft Length		IP Rating		Cable Length		Cable Takeout or Connector		Flange																																									
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