



Type 2RMHF

- Hollow Shaft Encoder - $\varnothing$ 24 mm
- Hollow Bore: $\varnothing$ 2 mm to $\varnothing$ 1/4 inch
- Resolution up to 7.500 ppr
- IP 64 rating (*IP 50 for flat cable option*)

Electrical Specifications

Code:	Incremental
Resolution:	1 to 7.500 ppr (pulses per revolution)
Supply Voltage:	4,5 Vdc min. to 30 Vdc max. (35 mA max. - no load) **
Output Voltage:	Low: 500 mV max. at 10 mA High: ($V_{in} - 0,6$) at -10 mA ($V_{in} - 1,3$) at -25 mA
Output Current:	30 mA max. load per output channel **
Frequency Response:	200 kHz max. **
Output Format:	Two channel (A, B) quadrature with Index (Z) and optional complementary (A-, B-, Z-) outputs
Phase Sense:	A leads B clockwise (CW) from the mounting end of the encoder
Index:	Gated with Channels A and B high
Accuracy:	+/- 26 arc-sec.
Outputs:	ASIC Push pull and Differential OL7272 Push-pull and Differential Line Driver 26C31 Differential Line Driver 5V output (with 5V input)
Electrical Protection:	Reverse polarity and output short circuit protected
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: Brass Cap: Electroplated Steel Aluminum (flat cable option) Hollow Shaft: Brass
Weight:	Encoder: ~ 35 gr (1,23 oz) Cable: 50 gr / meter (1,76 oz / meter)
Bearing Life:	> $1,9 \times 10^{10}$ revolutions at rated load
Bearing Pre-Load:	1 to 3600 ppr 4 (N) 4000 to 5000 ppr 7 (N) 7500 ppr 10 (N)
Shaft Speed:	12.000 rpm (max.)
Starting Torque:	< 0,005 Nm (0,708 oz-in) at 25° C
Mass Moment of Inertia:	1,0 gcm ² ($1,42 \times 10^{-5}$ oz-in-sec ²)
Hollow Shaft Loads:	Axial: 20 N (4,5 lbs) max. Radial: 20 N (4,5 lbs) max.

Environmental Specifications

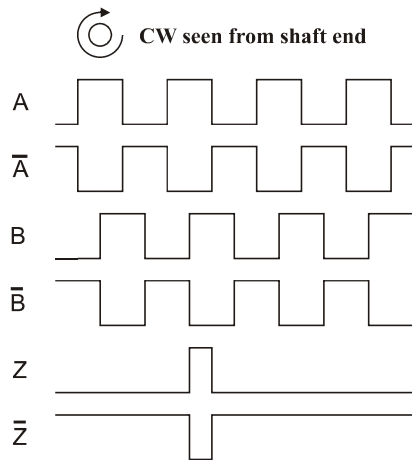
Operating Temp.:	-40° to +85° C
Storage Temp.:	-40° to +85° C
Shock:	100 G / 11 ms
Vibration:	10-2000 Hz / 10 G
Bump:	10 G / 16 ms (1000 x 3 axis)
Humidity:	98 % RH without condensation
IP Rating:	IP 64 / Nema 4 (approx.) IP 50 / Nema 5 (approx.) – flat cable

Connection Options

Cable:	8 leads (0,05 mm ² , 30 AWG) - Differential 5 leads (0,14 mm ² , 26 AWG) - Standard twisted pairs; shielded
Connector:	M9 5-pin M9 8-pin
Flat Cable:	10 lead flat cable with IDC connector

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

Output waveform



Channel tolerance $180^\circ \pm 36^\circ$
 Phase difference tolerance $90^\circ \pm 18^\circ$
 Z channel tolerance $90^\circ \pm 18^\circ$

Disk Resolutions (pulses per revolution)

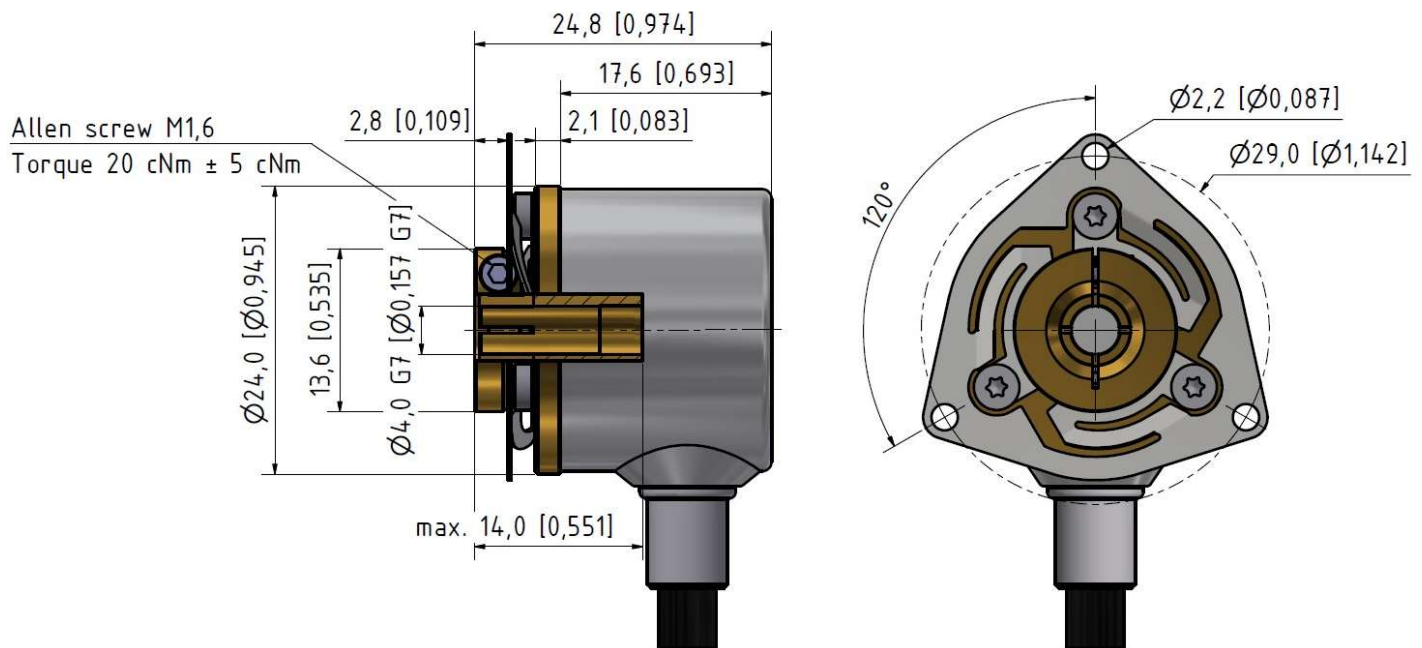
1	36	150	512	3000
4	50	180	600	3600
10	60	200	1000	5000
11	64	250	1024	7500*
12	75	256	1250	
15	90	300	1800	
20	100	360	2000	
25	125	400	2048	
30	128	500	2500	

Other options on request

Pulses per revolution,
 min. 1 – max. 7.500

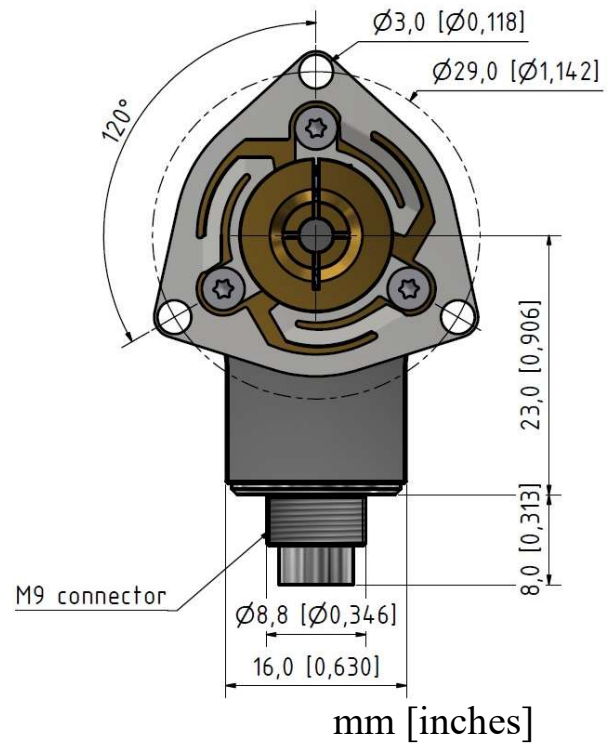
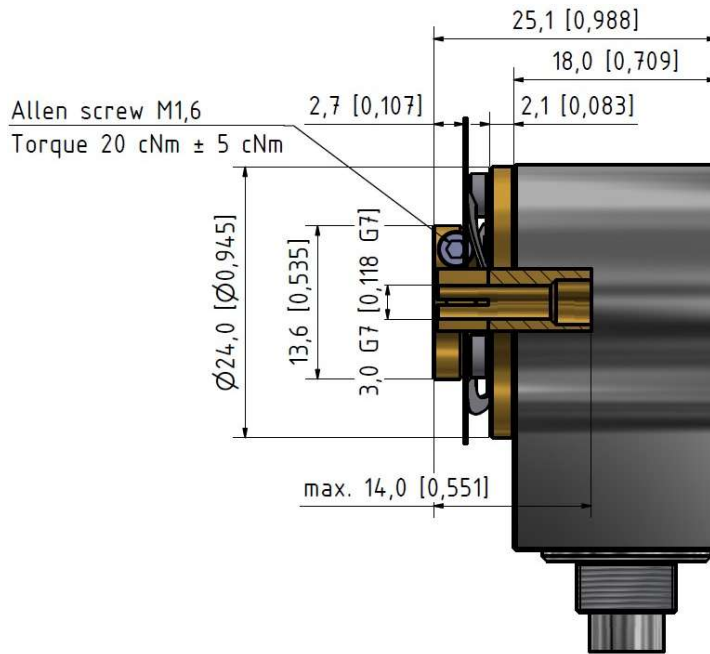
* Operating temperature: -20°C to 50°C

Mechanica Dimentions

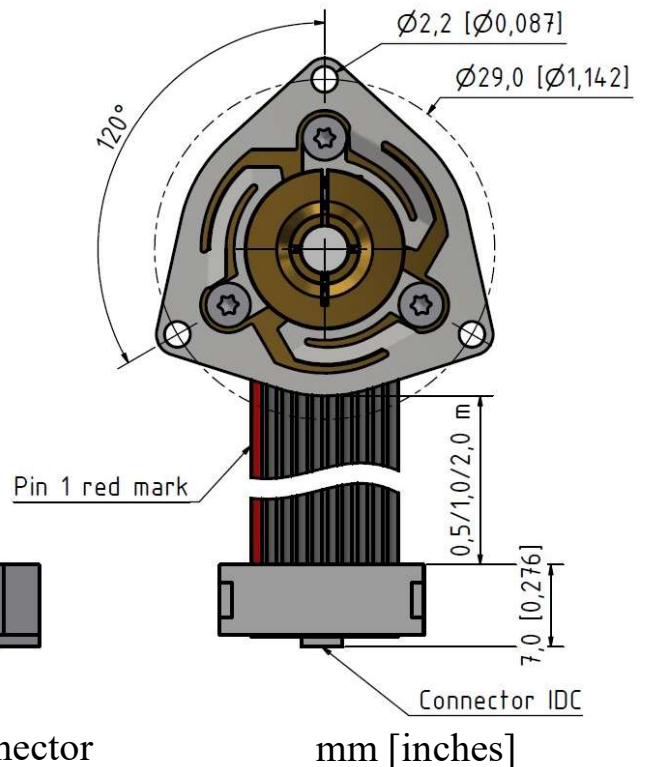
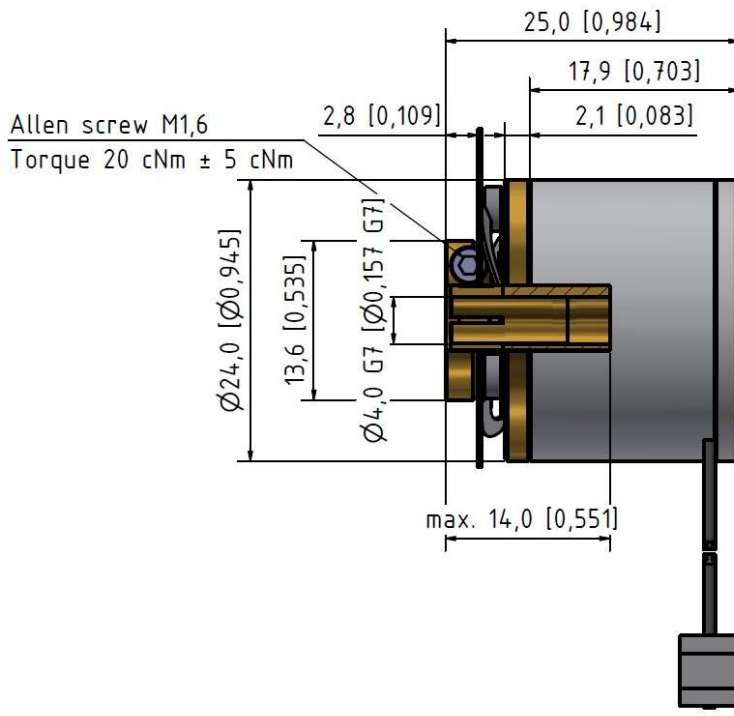


Standard Cable Gland (side or back outlet)

mm [inches]



M9 Connector



Flat Ribbon Cable with IDC Connector

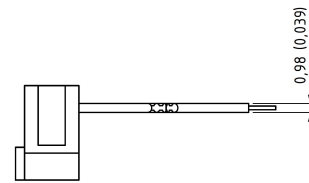
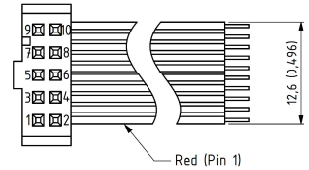
Output Terminations

	Standard Cable		Flat Cable w/ IDC Connector	
	Standard Output	Differential Output	Differential Output *	
Channel	Wire Color		Position	Channel
A	Green	Pink	1	NC
A -	NC*	Gray	2	Vsup
B	Yellow	Green	3	GND
B -	NC*	Yellow	4	NC
Z	Gray	White	5	A
Z -	NC*	Brown	6	A -
Vsup	Brown	Red	7	B
GND	White	Blue	8	B -
			9	Z -
			10	Z

GND = Circuit Ground

* Internally connected as GND

* Hewlett Packard (HP) compatible

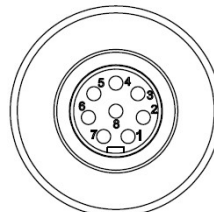
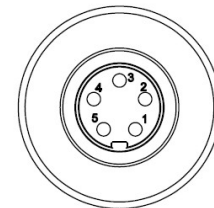


- IP 50 rating
- CE mark not available
- 0,5 m, 1 m, or 2 m cable length only

Cable Tolerances		
	Cable Length	Tolerances
Flat Cable	0,5 (= 0,5 m)	+/- 10 mm
	01 (= 1 m)	+/- 15 mm
	02 (= 2 m)	+/- 20 mm
Round Cable	01 (= 1 m)	Min. XX - 15 mm
	XX (specified length)	
	XX ≤ 500 mm w/ connector	Min. XX - 10 mm
	500 ≤ XX ≤ 1000 mm w/ connector	Min. XX - 15 mm
	XX > 1000 mm w/ connector	Min. XX - 20 mm



Position	5 - pin	8 - pin
	Standard Output	Differential Output
Channel	Channel	Channel
1	VDD	VDD
2	GND	GND
3	A	A
4	B	A -
5	Z	B
6		B -
7		Z
8		Z -



Ordering Code

Example: 2RMHF – 1024 – D – 04 – 14 – 64 – 01 – S – 00 – S5

2RMHF	-		-		-		-	14	-		-		-		-		-	
		1		2		3		4		5		6		7		8		9

1. Pulses per revolution

See table on page 2

2. Output

Standard N
Standard (Open collector NPN) **NON**
Standard (Open collector PNP) **NOP**
Differential **D**
26C31 Line Driver (5V IN/OUT) **L**
OL 7272 Line Driver **M**
Standard (with built-in TSM **) .. **T**
**Only without cable

3 & 4. Hollow Shaft diameter

3.

4.

2 mm x 14 mm	02	x	14
3 mm x 14 mm	03	x	14
4 mm x 14 mm	04	x	14
5 mm x 14 mm	05	x	14
6 mm x 14 mm	06	x	14
3/16 in x 14 mm	3/16	x	14
1/4 in x 14 mm	1/4	x	14

5. IP Rating

IP 50 **50***
IP 64 **64**
*Only flat cable

6. Cable Length

Standard cable is 1m **01**
Specify length **XX**
No cable **00**

Flat cable w/ IDC

0,5 meters **0,5**
1 meters **01**
2 meters **02**

7. Cable & Connector Takeout

Side radial **S**
Back axial **B***
Flat cable radial **SF**
*Only encoders with cable

8. Connector

M9 5-pin **M9/5**
M9 8-pin **M9/8**
No connector **00**

IDC connector

IDC on flat cable* **IDC**
*Only IP 50

9. Spring coupling

1 hole p/n 70137434 **S1**
1 hole p/n 80147180 **S2**
2 holes p/n 80149654 **S3**
2 holes p/n 80149578 **S4**
3 holes p/n 80139791 **S5**
3 holes p/n 80131377* **S6**
2 holes p/n 80140700 **S7**
3 holes p/n 80141752 **S8**
1 hole p/n 80140482 **S9**
No spring coupling **00**
*Always used for 7500 pulses