Type 2RMHF

- **Hollow Shaft Encoder - ø 24 mm**
- **Hollow Bore: ø 2 mm to ø 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. ** (45 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)

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

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 x 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 gcm² (1,42 x 10^{-5} oz-in-sec²)
Hollow Shaft Loads:	Axial: 20 N (4,5 lbs) max. Radial: 20 N (4,5 lbs) max.

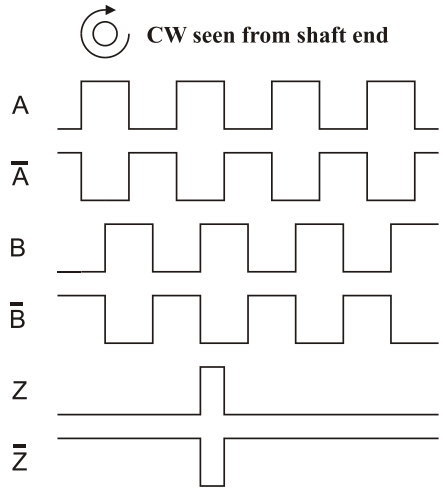
Environmental Specifications

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 mm², 30 AWG) - Differential 5 leads (0,14 mm², 26 AWG) - Standard twisted pairs; shielded
Connector:	5-pin M9 8-pin M9
Flat Cable:	10 lead flat cable with IDC connector

Output waveform



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

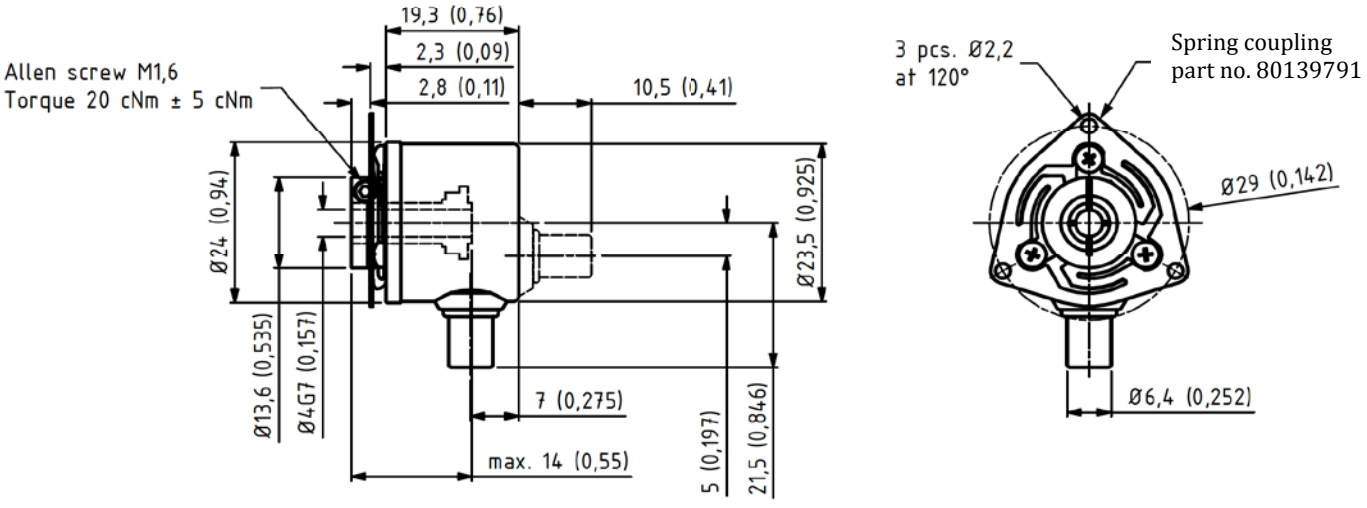
Disk Resolutions (pulses per revolution)

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

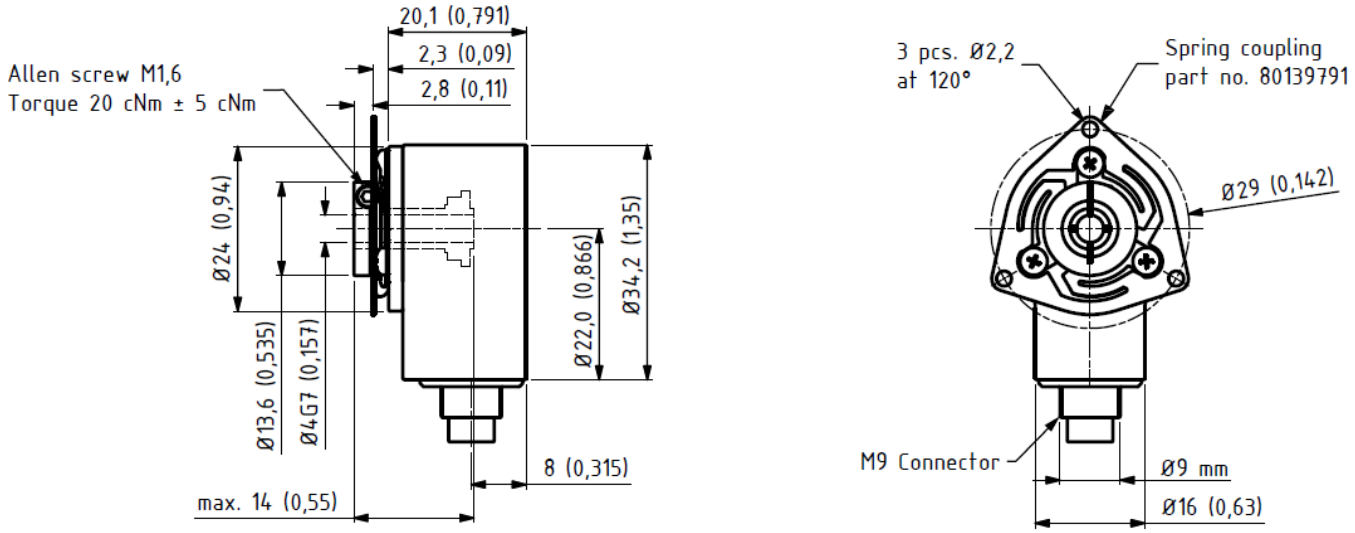
* ***Operating temperature: -20° C to 50° C***

Mechanical Dimensions

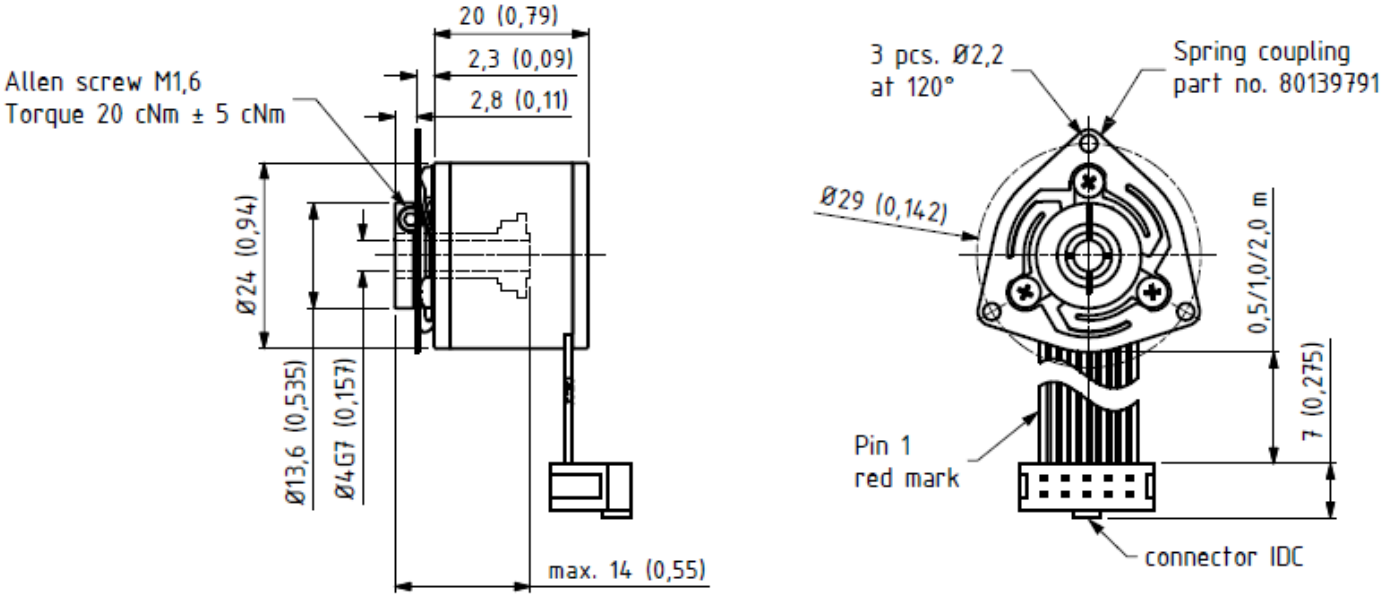


Standard Cable Gland
Side (S) or Back (B)

mm (inches)



M9 Connector mm (inches)



Flat Ribbon Cable with IDC connector mm (inches)

Output Terminations

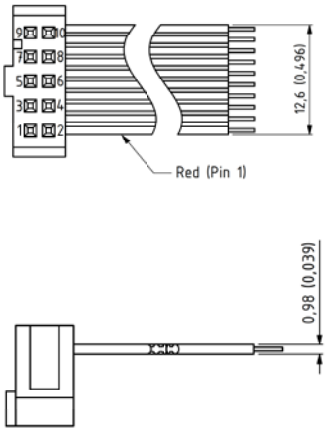
	Standard Cable	
	Standard Output	Differential Output
Channel	Wire Color	
A	Green	Pink
A -	*NC**	Gray
B	Yellow	Green
B -	*NC**	Yellow
Z	Gray	White
Z -	*NC**	Brown
Vsup	Brown	Red
GND	White	Blue

GND = Circuit Ground

** Internally connected as GND*

Flat Cable w/ IDC Connector	
Differential Output *	
Position	Channel
1	*NC*
2	Vsup
3	GND
4	*NC*
5	A
6	A -
7	B
8	B -
9	Z -
10	Z

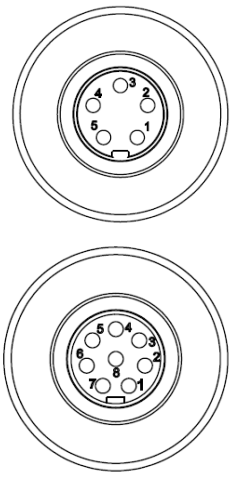
* *Hewlett Packard (HP) compatible*



- **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

	M9 5 - pin	M9 8 - pin
	Standard Output	Differential Output
Position	Channel	Channel
1	VDD	VDD
2	GND	GND
3	A	A
4	B	A -
5	Z	B
6		B -
7		Z
8		Z -



GND = Circuit Ground

Ordering Code

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

2RMHF	-		-		-		-	14	-		-		-		-		-		-	
		Pulses per Revolution		**Output**		**Hollow Shaft Dia.**		**Hollow Shaft Length**		**IP Rating**		**Cable Length**		**Cable Takeout**		**Connector**		**Spring Coupling**		

See table

Standard	**N**
Standard – *Open Collector NPN*	**NON**
Standard – *Open Collector PNP*	**NOP**
Differential	**D**
26C31 Line Driver 5V / 5V only	**L**
OL 7272 Line Driver	**M**
Standard - with built-in TSM **	**T**

IP 50	**50***
IP 64	**64**

* = Only flat cable

Standard Cable

Standard is 1 meter	**01**
Specify length	**XX**
No Cable	**00**

Flat Cable w/ IDC

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

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

Cable

Side (radial)	**S**
Back (axial)	**B**
Flat Cable (radial)	**SF**

Connector

Side (radial)	**S**

Connector**

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

IDC connector

IDC on flat cable*	**IDC**

* = Only IP 50
** = Only whitout cable

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**
No spring coupling	**00**

* Allways used for 7500 pulses

See Accessories for drawings

Other options on request:
Please contact Scancon A/S

****** Designed specifically for Wind Power applications.

See **SCA24 COC** under *Industries – Wind Power – SCA24* for additional conformity standards testing.

TSM = Transient Suppression Module

Available only as Standard output