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, 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

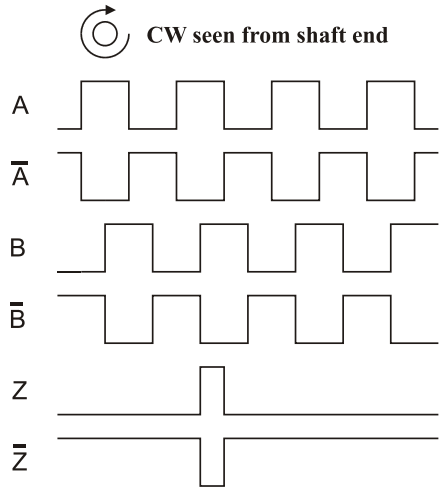
Operating Temp.:	-40° to +85° C
Storage Temp.:	-40° to +85° C
Shock:	100 G / 11 ms
Vibration:	10-2000 Hz / 10 G
Bump:	10 G / 16 ms (1000 x 3 axis)
Humidity:	98 % RH without condensation
IP Rating:	IP 64 / Nema 4 (approx.) IP 50 / Nema 5 (approx.) – flat cable

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

Type 2RMHF

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)

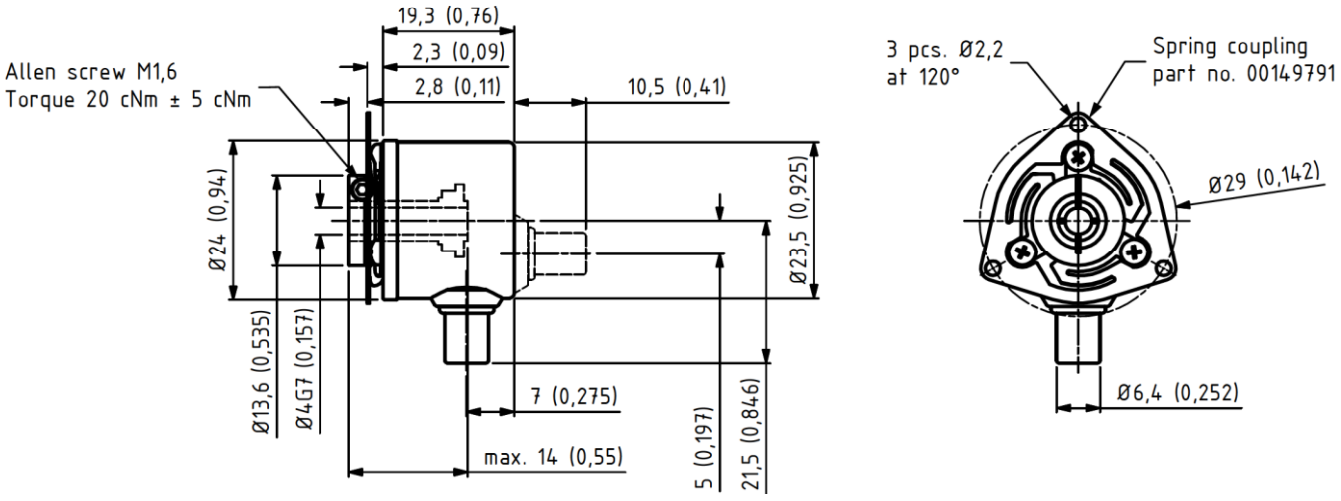
1	36	150	512	3000
4	50	180	600	3600
10	60	200	1000	5000
11	64	250	1024	7500*
12	75	256	1250	
15	90	300	1800	
20	100	360	2000	
25	125	400	2048	
30	128	500	2500	

Other options on request
Pulses per revolution,
min. 1 – max. 7.500

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

Mechanical Dimensions

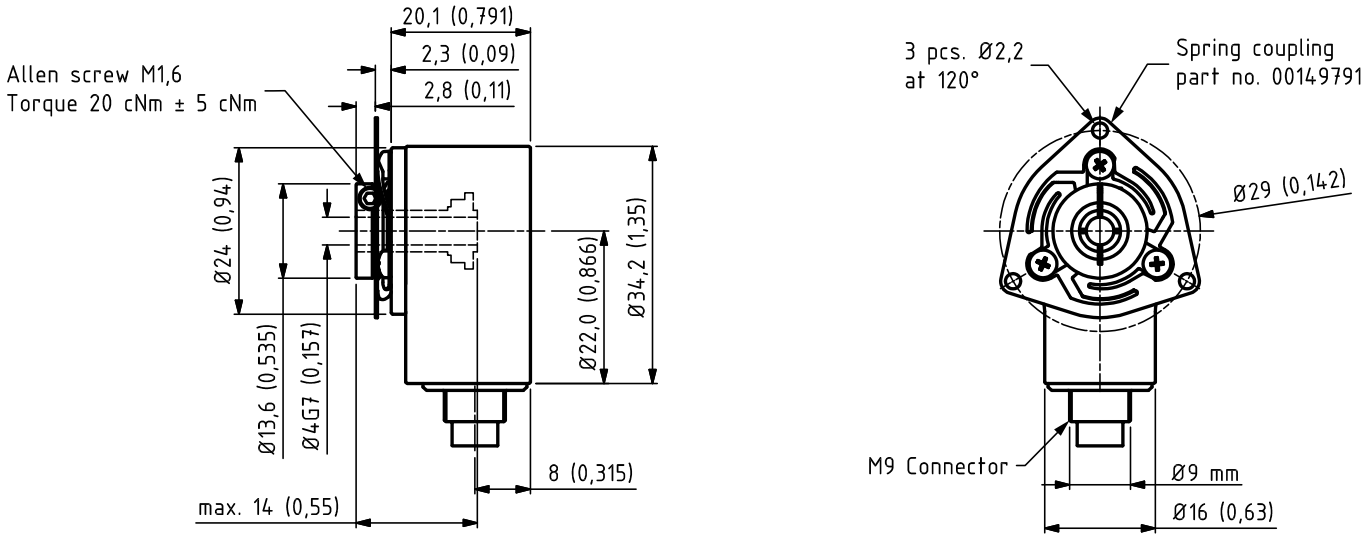
Tolerances according to ISO 2768 f



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

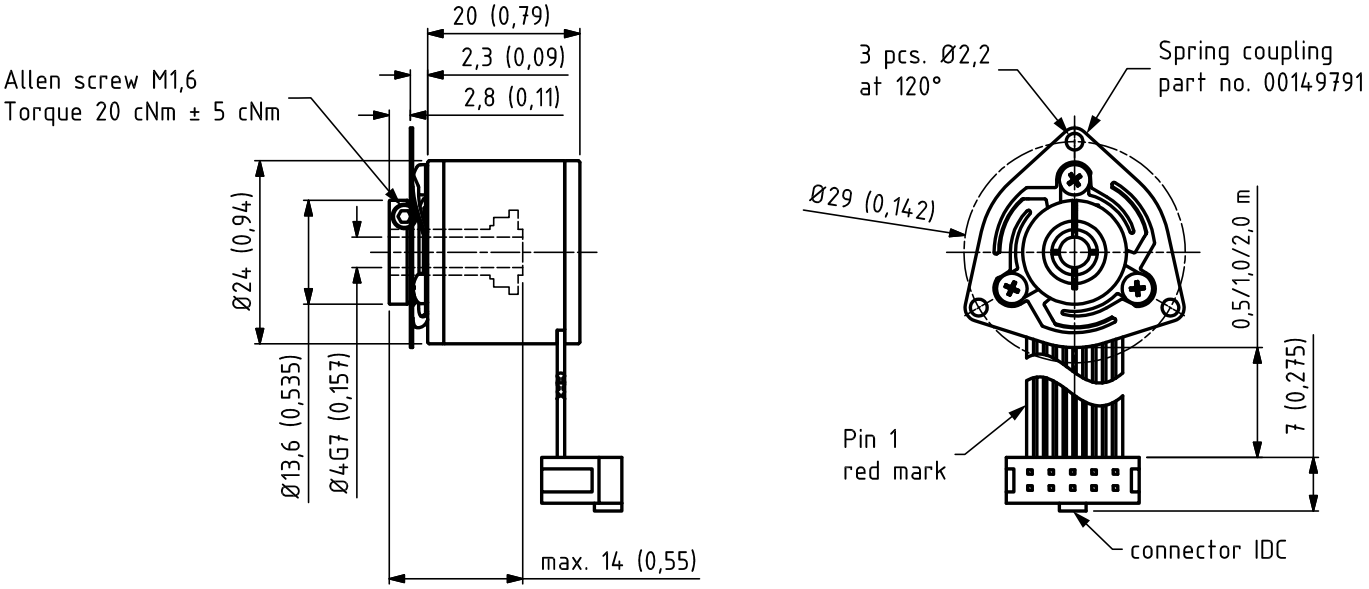
mm (inches)

Tolerances according to ISO 2768 f



M9 Connector mm (inches)

Tolerances according to ISO 2768 f



Flat Ribbon Cable with IDC connector mm (inches)

Output Terminations

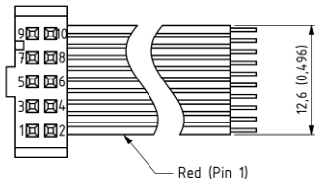
	Standard Cable	
	Standard Output	Differential Output
Channel	Wire Color	
A	Green	Pink
A -	*NC**	Gray
B	Yellow	Green
B -	*NC**	Yellow
Z	Gray	White
Z -	*NC**	Brown
Vsup	Brown	Red
GND	White	Blue

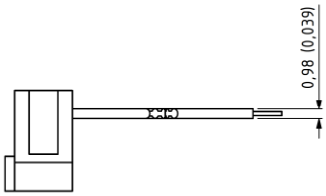
GND = Circuit Ground

** 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*

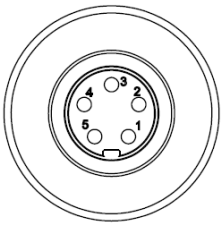


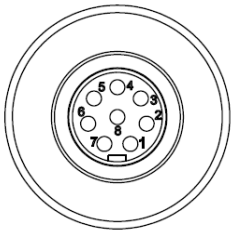


- **IP 50 rating**
- **CE mark not available**
- **0,5 m, 1 m, or 2 m cable length only**

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

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

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**

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**

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

2 mm x 14 mm	**2**	**-**	**14**
3 mm x 14 mm	**3**	**-**	**14**
4 mm x 14 mm	**4**	**-**	**14**
5 mm x 14 mm	**5**	**-**	**14**
6 mm x 14 mm	**6**	**-**	**14**
3/16 in x 14 mm	**3/16**	**-**	**14**
1/4 in x 14 mm	**1/4**	**-**	**14**

M9 5-pin	**M9/5**
M9 8-pin	**M9/8**
IDC on flat cable*	**IDC**
No Connector	**00**

*=Only IP 50

1 hole *p/n 70137434*	**S1**
1 hole *p/n 80147180*	**S2**
2 hole *p/n 80149654*	**S3**
2 hole *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**

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

See Accessories for drawings