



# Type SCH16F

- Hollow Shaft Encoder -  $\varnothing$  16 mm
- Hollow Bore:  $\varnothing$  1,5 mm to  $\varnothing$  1/8 inch
- Resolution up to 5.000 ppr
- IP 50 rating
- Formerly named 2MCH

## Electrical Specifications

<b>Code:</b>	Incremental
<b>Resolution:</b>	100 to 5.000 ppr (pulses per revolution)
<b>Supply Voltage:</b>	4,5 Vdc min. to 30 Vdc max. (35 mA max. - no load) **
<b>Output Voltage:</b>	Low: 500 mV max. at 10 mA High: ( $V_{in} - 0,6$ ) at -10 mA ( $V_{in} - 1,3$ ) at -25 mA
<b>Output Current:</b>	20 mA max. load per output channel **
<b>Frequency Response:</b>	200 kHz max. **
<b>Output Format:</b>	Two channel (A, B) quadrature with Index (Z) and optional complementary (A-, B-, Z-) outputs
<b>Phase Sense:</b>	A leads B clockwise (CW) from the mounting end of the encoder
<b>Index:</b>	Gated with Channels A and B high
<b>Accuracy:</b>	+/- 26 arc-sec.
<b>Outputs:</b>	ASIC Differential or Inverted
<b>Electrical Protection:</b>	Reverse polarity and output short circuit protected
<b>Noise Immunity:</b>	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

<b>Material:</b>	Housing: Aluminum / Brass Cap: Aluminum Hollow Shaft: Brass
<b>Weight:</b>	Encoder: ~ 15 gr (0,53 oz) Cable: 50 gr / meter (1,76 oz / meter)
<b>Bearing Life:</b>	> $1,9 \times 10^{10}$ revolutions at rated load
<b>Bearing Pre-Load:</b>	1 to 3.600 ppr 2 (N) 4.000 to 5.000 ppr 7 (N)
<b>Shaft Speed:</b>	12.000 rpm (max.)
<b>Starting Torque:</b>	< 0,005 Nm (0,708 oz-in) at 25° C
<b>Mass Moment of Inertia:</b>	0,25 gcm <sup>2</sup> ( $3,54 \times 10^{-6}$ oz-in-sec <sup>2</sup> )
<b>Hollow Shaft Loads:</b>	Axial: 10 N (2,25 lbs) max. Radial: 10 N (2,25 lbs) max.

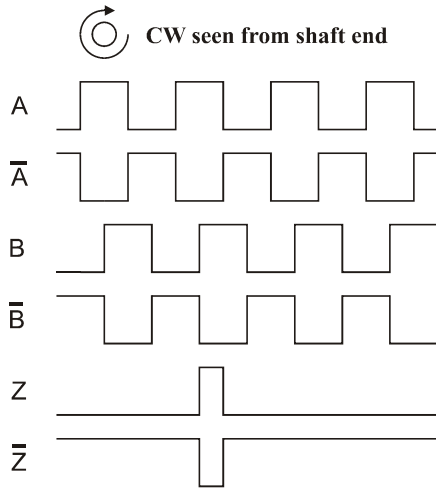
## Environmental Specifications

<b>Operating Temp.:</b>	-20° to +70° C
<b>Storage Temp.:</b>	-20° to +85° C
<b>Shock:</b>	100 G / 11 ms
<b>Vibration:</b>	10-2000 Hz / 10 G
<b>Bump:</b>	10 G / 16 ms (1000 x 3 axis)
<b>Humidity:</b>	98 % RH without condensation
<b>IP Rating:</b>	IP 50 / Nema 5 (approx.)

## Connection Options

<b>Cable:</b>	8 leads (0,05 mm <sup>2</sup> , 30 AWG) twisted pairs; shielded
<b>Flat Cable:</b>	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)

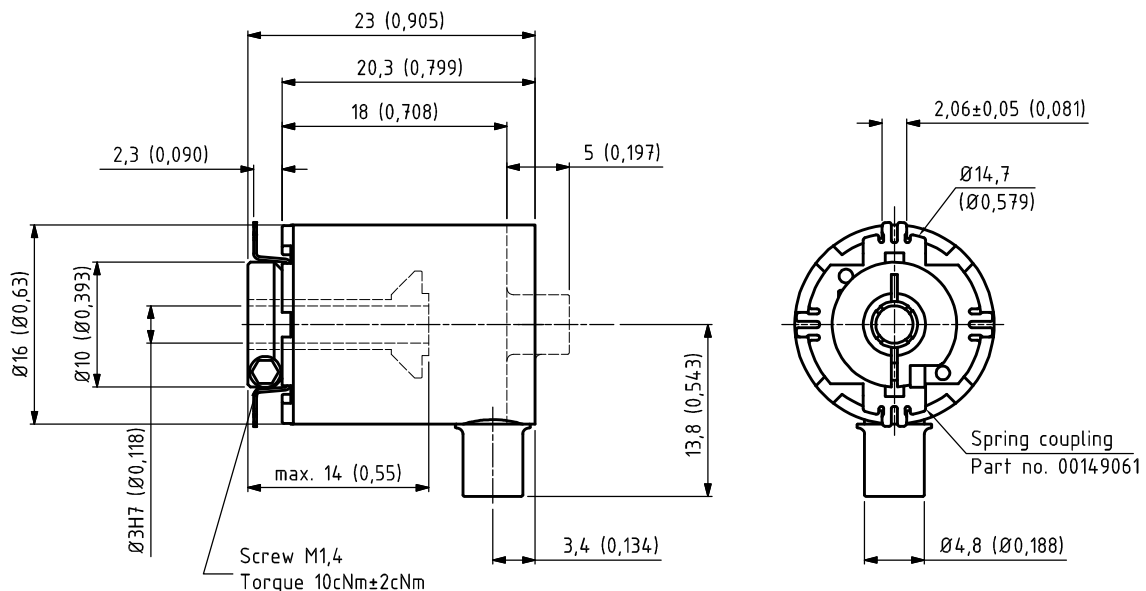
100	125	160	256	300
360	500	1000	1024	2000
2500	3600	5000*		

### Other options on request

Pulses per revolution,  
min. 1 – max. 5.000

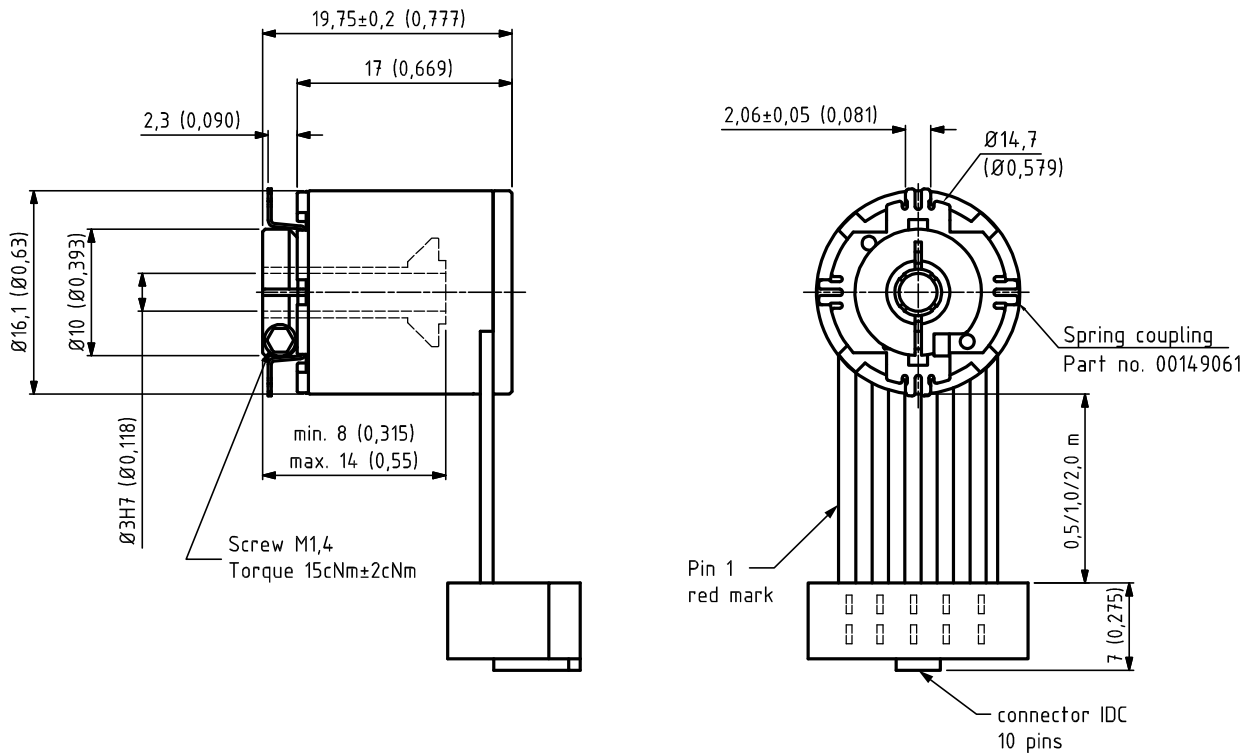
\* Operating temperature: -20° C to +50° C

## Mechanical Dimensions



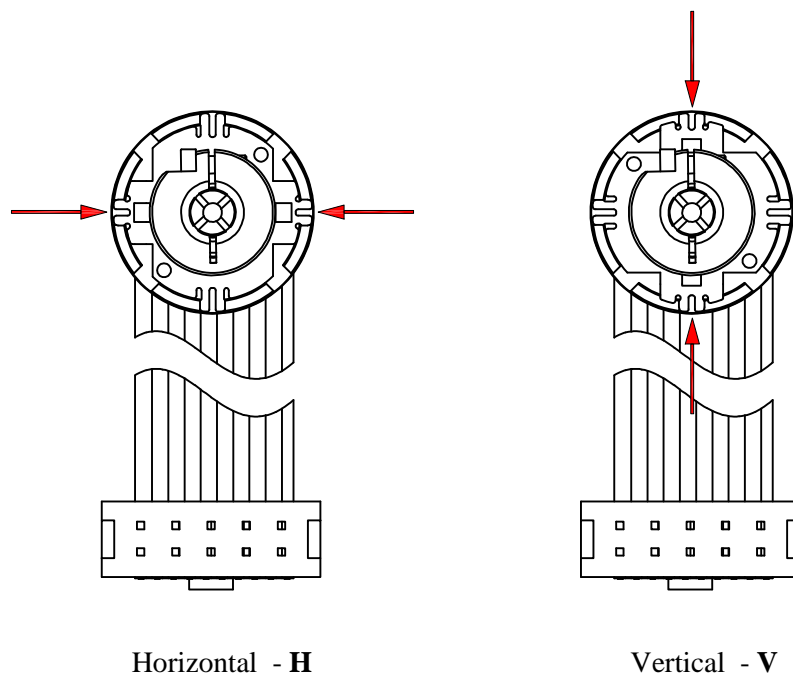
Standard Cable Gland  
Side (S) or Back (B)

mm (inches)



Flat Ribbon Cable with IDC connector

mm (inches)



Spring Coupling Orientation

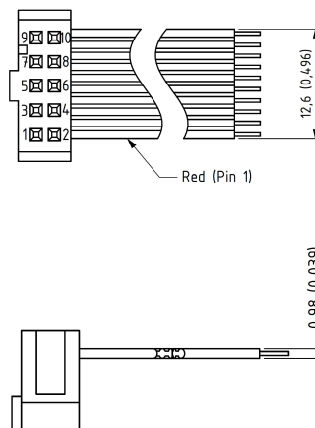
## Output Terminations

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

GND = Circuit Ground

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

\* Hewlett Packard (HP) compatible  
 \*\* ID # required for ordering



- 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

## Ordering Code

Example: SCH16F – 1024 – D – 03 – 14 – 50 – 01 – S – 00 – S3

SCH16F	-	-	-	-	-	-	-	-	-
<b>Pulses per Revolution</b>	<b>Output</b>	<b>Hollow Shaft Dia.</b>	<b>Hollow Shaft Length</b>	<b>IP Rating</b>	<b>Cable Length</b>	<b>Cable Takeout</b>	<b>Connector</b>	<b>Spring Coupling</b>	
See table				IP 50 <b>50</b>			IDC on flat cable <b>IDC</b> No connector <b>00</b>		
Differential <b>D</b> Inverted (Flat cable option only) <b>I</b>							Side (radial) <b>S</b> Back (axial) <b>B</b> Flat Cable (radial) <b>SF</b>		
		1,5 mm x 14 mm <b>1,5 - 14</b> 2,0 mm x 14 mm <b>02 - 14</b> 3,0 mm x 14 mm <b>03 - 14</b> 1/8 in x 14 mm <b>1/8 - 14</b>							
					<u>Standard Cable</u> Standard is 1 meter <b>01</b> Specify length <b>XX</b> No Cable <b>00</b> <u>Flat Cable w/ IDC</u> 0,5 meter <b>0,5</b> 1 meter <b>01</b> 2 meters <b>02</b>				
							<u>For Scancon Motor Flanges</u> 80149061 0,25 mm V <b>S1</b> 80149061 0,25 mm H <b>S3</b> 80142773 0,25 mm V <b>S7</b> 80142773 0,25 mm H <b>S8</b> No spring coupling <b>00</b>		
							<u>For Maxon Motor Flanges</u> 80142626 0,15 mm V <b>S2</b> 80142626 0,15 mm H <b>S4</b> 80142665 0,25 mm V <b>S5</b> 80142665 0,25 mm H <b>S6</b> No spring coupling <b>00</b>		
Other options on request: Please contact Scancon A/S									
See Accessories for drawings									