



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

Code:	Incremental
Resolution:	100 to 5.000 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:	20 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 Differential or Inverted
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: Aluminum / Brass Cap: Aluminum Hollow Shaft: Brass
Weight:	Encoder: ~ 15 gr (0,53 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 3.600 ppr 2 (N) 4.000 to 5.000 ppr 7 (N)
Shaft Speed:	12.000 rpm (max.)
Starting Torque:	< 0,005 Nm (0,708 oz-in) at 25° C
Mass Moment of Inertia:	0,25 gcm ² ($3,54 \times 10^{-6}$ oz-in-sec ²)
Hollow Shaft Loads:	Axial: 10 N (2,25 lbs) max. Radial: 10 N (2,25 lbs) max.

Environmental Specifications

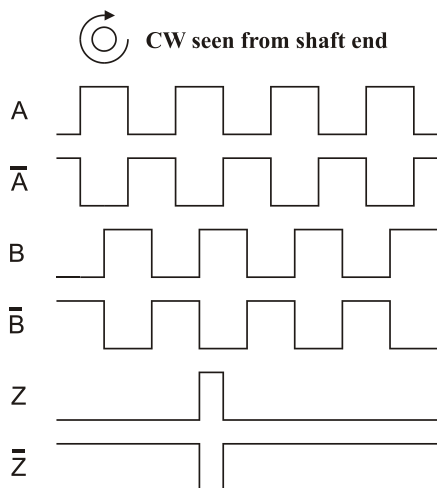
Operating Temp.:	-20° to +70° C
Storage Temp.:	-20° to +85° C
Shock:	100 G / 11 ms
Vibration:	10-2000 Hz / 10 G
Bump:	10 G / 16 ms (1000 x 3 axis)
Humidity:	98 % RH without condensation
IP Rating:	IP 50 / Nema 5 (approx.)

Connection Options

Cable:	8 leads (0,05 mm ² , 30 AWG) twisted pairs; shielded
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 $90^\circ \pm 18^\circ$

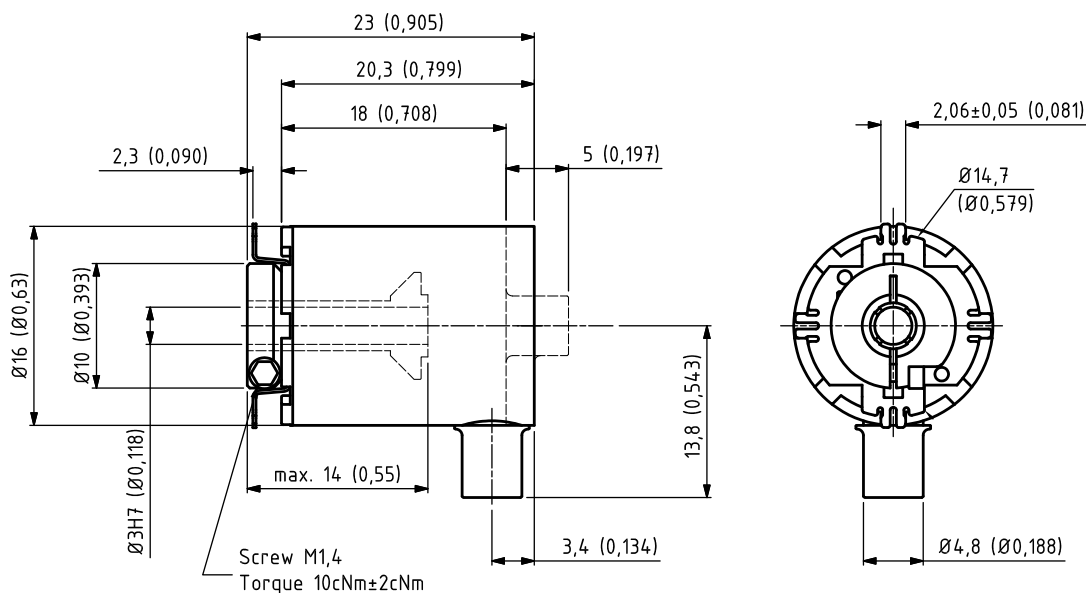
Disk Resolutions (pulses per revolution)

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

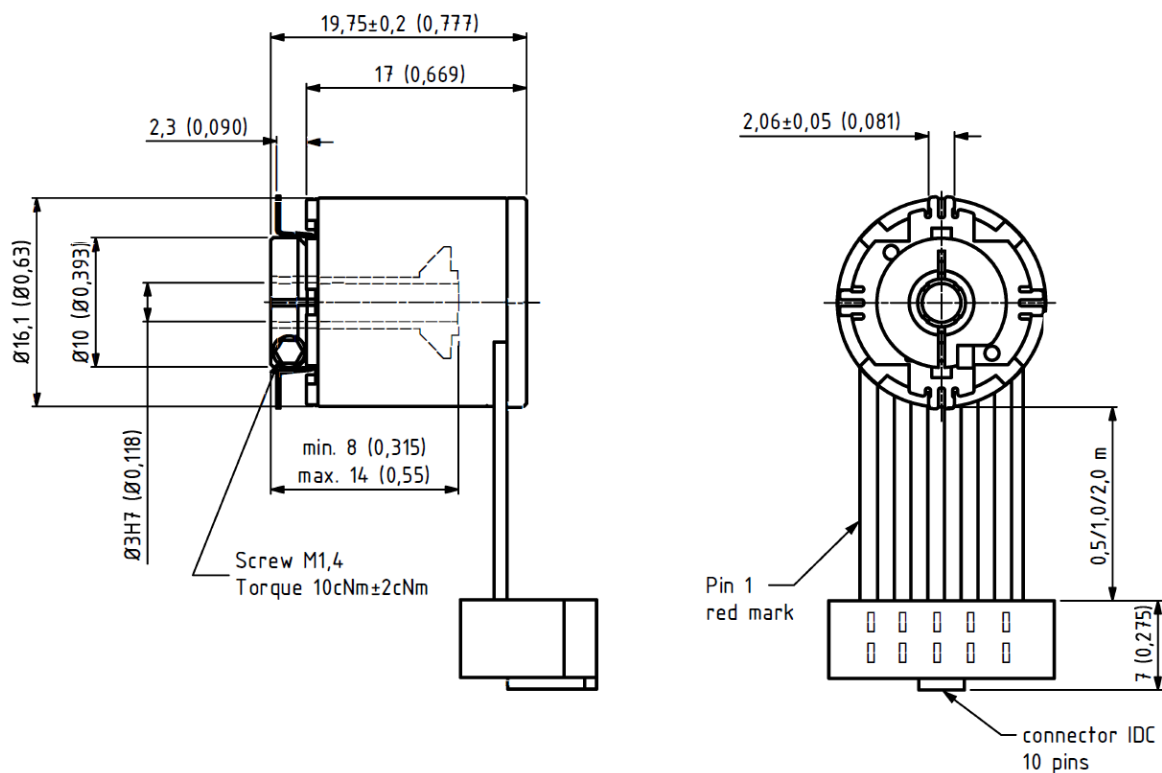
* Operating temperature: -20°C to $+50^\circ\text{C}$

Mechanical Dimensions



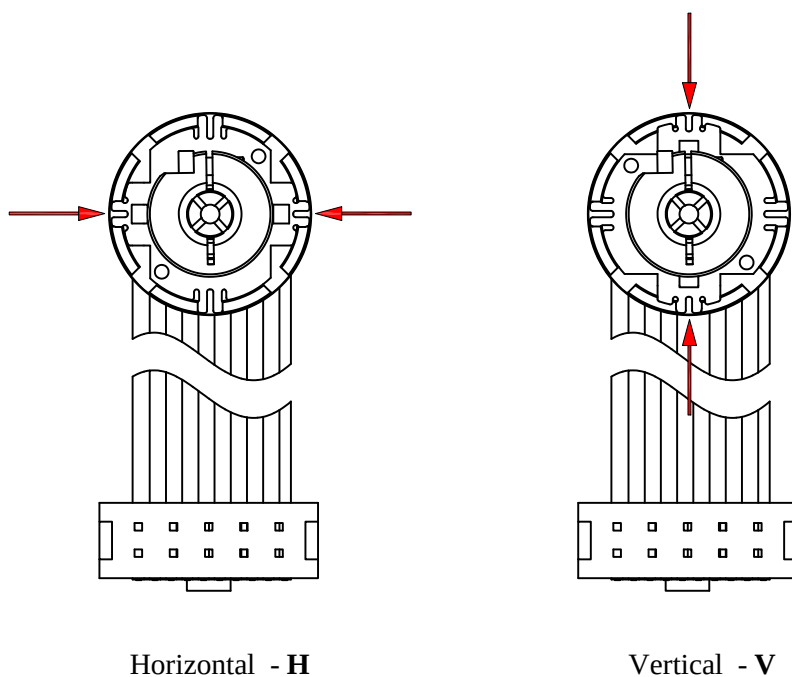
Standard Cable Gland
 Side (S) or Back (B)

mm (inches)



Flat Ribbon Cable with IDC connector

mm (inches)



Spring Coupling Orientation

Output Terminations

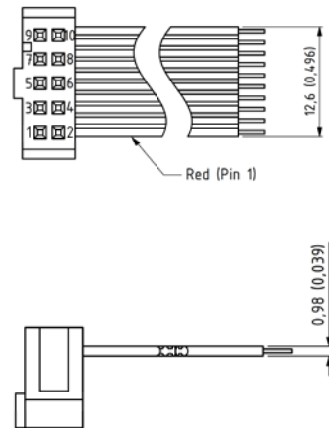
Standard Cable	
	Differential Output
Channel	Wire Color
A	Pink
A -	Gray
B	Green
B -	Yellow
Z	White
Z -	Brown
Vsup	Red
GND	Blue

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

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

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