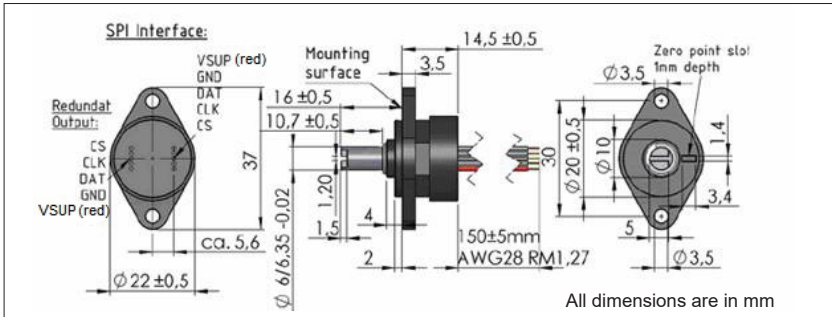


ERCFS Series Hall Effect Encoder SPI Output

SPI - 3 wire - half duplex or 4 wire - full duplex
Economical - SPI digital -interface - 22 mm Ø housing
Direct SPI interface to microcontroller
Flange mounting
Shock and vibration proof



1-Supply (Red) 2-Ground (Grey) 3-MOSI/ MISO (Grey) 4-Clock (Grey) 5-Chip select (Grey) : For 3 wire SPI
 1-Supply (Red) 2-Ground (Grey) 3-Clock (Grey) 4-MOSI (Grey) 5-MISO (Grey) 6-Chip select (Grey) : For 4 wire

ELECTRICAL CHARACTERISTICS

Electrical angle	0 - 360°	
Electrical speed (Max.)	800 rpm	
Resolution	14 bit (16383 steps)	
Signal type	Supply voltage	Output signal
S05SPI	5V±10%	5V SPI - 3 wire
SE05SPI	5V±10%	5V SPI - 4 wire
SE33SPI	3.3V±10%	3.3V SPI - 4 wire
S05SPI2C	5V±10%	2 channel 5V SPI - 3 wire
Frequency response	5 KHz	
Supply current	< 30 mA	
Update rate	0.6 ms	

MECHANICAL CHARACTERISTICS

Mechanical angle	360° (continuous)	
Mechanical speed (Max.)	3000 rpm	
Shaft diameter X length (FMS)	6 mm Ø X 16 mm	
Operating Life	~ 20 million rotations	
Operating temperature	- 40 ... +85 °C	
Operating torque (Low.)	0.3 to 0.5 Ncm (default)	
Vibration (IEC 68-2-6, Test Fc)	±1.5 mm / 20g / 2000Hz / 16cycles	
Mechanical shock (IEC 68-2-7, Test Ea)	50g /11ms /half sine (3X6 shocks)	
Weight	18 gm	
Interconnection	5 core flat cable 0.15 mtr long - 3 wire SPI 6 core flat cable 0.15 mtr long - 4 wire SPI	

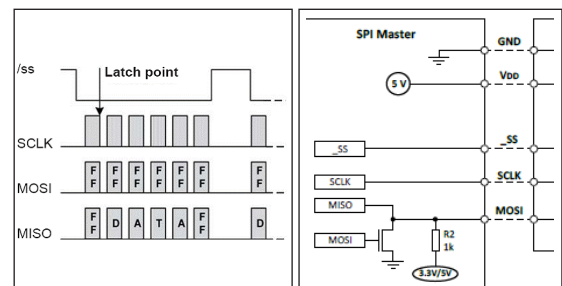
MATERIAL

Bearing	Polymer bearing
Housing	Nylon 66 Glass Fibre reinforced
Shaft	Stainless steel

FUNCTION PRINCIPLE

The angular position and the signal generation is detected by a CMOS Hall sensor over which a parallel diametrically polarized magnet induces a magnetic field. An integrated electronic provides the output of a 2 byte WORD with an SPI interface.

SERIAL PERIPHERAL INTERFACE



The serial peripheral interface (SPI) is a bus system for a serial synchronous data transmission between different integrated circuits.

A) For 3 wire SPI - The bus consists of 3 lines MOSI / MISO (one common line), SCLK - (Serial Clock, output from master) and SS Slave Select (active low; output from master).

B) For 4 wire SPI - The bus consists of 4 lines MOSI (Master Out Slave In), MISO (Master In Slave Out), SCLK - (Serial Clock, output from master) and SS Slave Select (active low; output from master).

By these signal lines the master selects the slave for communication. This is done because the master sets the SS line from high to low. The angular informations are calculated all 350 µs and are available for the master on demand. There is no fixed protocol for the SPI bus. Nevertheless many microcontroller IC's have a SPI input. By programming this microcontroller IC many SPI suitable sensors can be managed by one microcontroller. Two channel redundant outputs can be provided.

Default Version :

22mm housing, Flange mount, SPI interface, 360°
 Electrical & Mechanical angle, Low Torque, 5 core flat cable 0.15 mtr long - 3 wire SPI / 6 core flat cable 0.15 mtr long - 4 wire SPI

Direction of Rotation (CW / CCW)

The default direction of rotation is clockwise (CW) for 3 wire SPI. It is also possible to change the direction of turning to counter clockwise mode (CCW). The default direction of rotation is counter clockwise (CCW) for 4 wire SPI. It is not possible to change the direction from counter clockwise (CCW) to clockwise (CW).

Zero Point Programming (POZ)

The electrical zero point is at the beginning of the signal rise. If a shaft marking is brought in line with the housing marking, the electrical zero point can be set to that position. In any case it is necessary to have a reference to the shaft marking.

2 Channel Output (2C) (only for 3 wire SPI) : The sensor provides 2 operating modes: A) Redundancy i.e. channel one and channel two are identical. If one channel fails the other channel remains active.B) It is also possible to have 2 different programs in the 2 channels. For this, additional functions can be obtained.