

RotaCol® - Diamondline

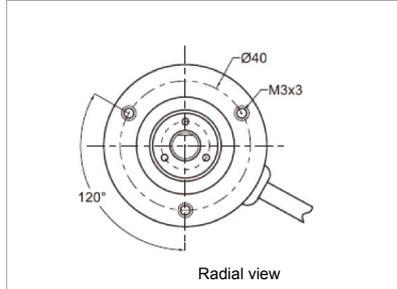
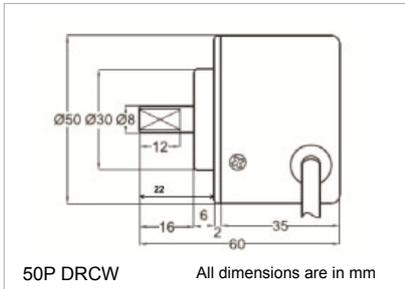
'SPI' Interface Precision Digital Hall Contactless Rotary Position Sensors
Clamping Flange - 2 Precision Ball Bearings

50P DRCW



Heavy duty - metalcase - 2 Ball bearing
Hall effect magnetic
SPI - 3 wire - half duplex or 4 wire - full duplex
50 mm Ø robust metal aluminium housing with ball bearing
Clamping flange with 3 screws
Shock & vibration proof, Measurement range 0° - 360°

1-Supply (Yellow) 2-Ground (White) 3-MOSI/ MISO (Brown) 4-Clock (Grey) 5-Chip select (Green) : For 3 wire SPI
1-Supply (Red) 2-Ground (Black) 3-Clock (Orange) 4-MOSI (Brown) 5-MISO (Green) 6-Chip select (Yellow) : For 4 wire

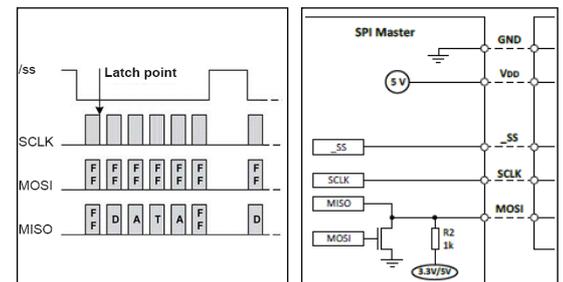


For full range of Rotary Sensor refer - www.rotacol.info/rotamec.pdf

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 : 50mm housing, Clamping Flange, 360° Electrical & Mechanical angle, SPI interface, 5 core round cable 2.5 mtr long - 3 wire SPI / 6 core round cable 2.5 mtr long - 4 wire SPI

Refer to electrical and mechanical options on page 2

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)
Shaft diameter X length (FMS)	8 mm Ø x 22 mm
Protection	IP 54
Operating torque	0.05 Ncm
Operating temperature	- 40 to +85° C
Rotational life	~ 75 million rotations
Mechanical speed (max.)	5000 rpm
Weight	250 gm
Interconnection	5 core round cable 2.5 mtr long - 3 wire SPI 6 core round cable 2.5 mtr long - 4 wire SPI

MATERIAL

Housing	Anodized aluminium
Shaft	Stainless steel
Bearings	2 precision ball bearing

ORDERING INFORMATION

Housing diameter	Serial peripheral interface (SPI)	Diamondline	RotaCol	Clamping flange with 3 screws	Signal	14 bit output	Without stop (default 360°)	Direction of rotation	Programming options	Zero point	Output connections
50	P	D	RC	W	S05SPI - 3 wire SE05SPI - 4 wire SE33SPI - 4 wire S05SPI2C - 3 wire	S14	O360	CW CCW	POX POZ		OCR
50	P	D	RC	W	SxxSPI	S14	O360	CW / CCW	POZ		OCR

Example with description - **50P DRCW S05SPI S14 O360 CW POZ OCR** - 50 mm diameter, SPI interface, Diamondline, Rotacol, clamping flange with 3 screws, 5V SPI - 3 wire, 14 bit output, without stop 360° clockwise, Zero point, 5 core round cable 2.5 mtr long

Please note: The specification and information in this datasheet cannot consider all special demands that are caused by the application. Because of this, they are no general description of the properties of the product. Megacraft does not assume any responsibility for damages due to improper application of our products. The user has to ensure on his own, that the products used are suitable for his application. Megacraft does not warrant the reproducibility of published information. The specifications can be changed any time without notice.

ELECTRICAL OPTIONS FOR SPI VERSION 50P DRCW

RotaCol® are the latest development in rotational position sensors and contactless devices. Modern Hall IC's in combination with special magnets and RISC processors provide intelligent customizing of output signals and interfacing. Not only precision potentiometer but also optoelectronic incremental and absolute encoders are replaced. The RotaCol® series is divided into 3 groups : analog types with analog output (replacement for precision potentiometer), incremental output (replacement of optoelectronic encoders), absolute digital SPI and SSI output. Because of wide variety of mechanical and electrical options it is possible to use them in almost any automation and control application where rotary angular sensing is required. Regardless of the wide variety of existing technical features, the price is relative low.

SPI Bus Interface - The Serial Peripheral Interface bus or SPI bus is a synchronous serial data link standard developed by Motorola that operates in full duplex mode. One or more devices can communicate with one master. The length of the signal wire should not be longer than 0.5m. To bridge larger distances it is recommended to use the SSI interface. The digital signal in 2 byte Grey code transmits the angular position information through the data bus.

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 Redundant Output (2C) - Special type (only for 3 wire SPI)

2 Channel Output (2C) : 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.

INTERCONNECTIONS

Standard Interconnections - 5 core round cable 2.5 mtr long - (for 3 wire SPI), 6 core round cable 2.5 mtr long (for 4 wire SPI)

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