

RotaCol® - Ecoline Speedconnect PRECISION SPI DIGITAL CONTACTLESS ROTARY POSITION SENSORS - BUSH MOUNTING

Series 25P RSB
Series 30P RSB

25 mm & 30 mm Ø plastic robust housing - Bush mounting
SPI - 3 wire half duplex

Direct SPI interface to microcontroller

Shock and vibration proof

Following interconnections are available :

Round cable, Cable gland, miniature connector and terminal block

1- Supply (Red) 2- Ground (Black) 3- MOSI/MISO (Brown) 4- clock (Orange) 5- chip select (Yellow); For OCR, OCG
1- Supply; 2- Ground; 3- MOSI/MISO; 4- clock; 5- chip select : For OCM, OCTA, OCTR



with cable gland

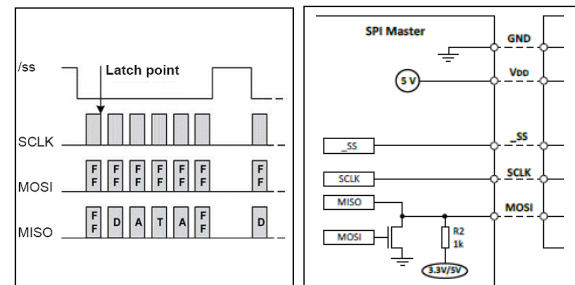
with connector

For full range of Rotary Sensors 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

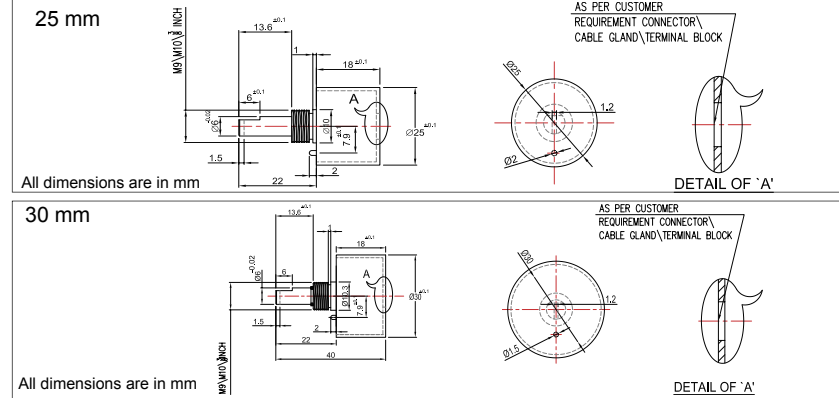


The serial peripheral interface (SPI) is a bus system for a serial synchronous data transmission between different integrated circuits. The bus consists of 3 lines MOSI / MISO (one common line), SCLK - (Serial Clock, output from master) and SS Slave Select (active low; output from master). By these signal 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 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 :

360° CW Electrical & Mechanical angle, Medium Torque, 5V SPI - 3 wire

Refer to electrical & 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%	SPI - 3 wire
Frequency response	5 KHz	
Supply current	< 30 mA	
Update rate	0.6 ms	

MECHANICAL CHARACTERISTICS

Mechanical angle	(O) 360° without stop (S) 320° +5° / - 0° with stop
Mechanical speed (Max.)	800 rpm (brass), 3000 rpm (polymer bearing)
Shaft diameter x length (FMS)	6 mm or 1/4 inch Ø X 22 mm
Life: with brass sleeve bearings	~10 million rotations
Life: with polymer sleeve bearings	~15 million rotations
End stopper strength	< 80 Ncm
Operating temperature	- 40 ... +85 °C
Operating torque (Medium)	0.5 - 1 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 / halfsine (3X6 shocks)
Weight (25PRSB) - (gm)	60 (OCR), 70 (OCG), 30 (OCTA/R), 36 (OCM)
Weight (30PRSB) - (gm)	65 (OCR), 76 (OCG), 35 (OCTA/R), 45 (OCM)

MATERIAL

Bushing	brass
Bearing standard	brass bearing
Bearing type: option P	polymer sleeve bearing
Housing	Nylon 66 Glass Fibre reinforced
Shaft	stainless steel

ORDERING INFORMATION

xx	P	RS	Bx	S05SPI	2C	S14	O360 / Sxxx	CW / CCW	POZ	xT	P	D	Axx	CVxx	OCxx
25 / 30	P	RS	B1 B2 B3	S05SPI	2C	S14	O360	Sxxx	POX POZ	LT MT HT	P	D	Axx	CVxx	OCxx
25 & 30 mm Housing diameter	Serial peripheral interface (SPI)	Ecoline RotaCol Speedconnect	Thread M10 X 0.75 / Shaft 6 mm Ø Thread M9 X 0.75 / Shaft 6 mm Ø Thread 3/8" X 32 UNEF / Shaft 1/4" Ø	Signal	5V SPI - 3 wire	2 Channel output	Without stop (default 360°) With stop (default 320°) options 90°, 180°, 270°	Clockwise (CW) (default) Counter clockwise (CCW)	Programming options Zero point	Low torque (< 0.5 Ncm) Medium torque (0.5 - 1 Ncm) - default High torque (1.5 - 3 Ncm)	Polymer sleeve bearing (only for B1)	Shaft seal IP65 (not for "P" option)	Special shaft length (default 22 mm FMS)	Special cable length (default 1m long)	Output connections Cable gland with round cable 1m long Miniature connector 5 core round cable 1 mtr long Terminal block Axial Terminal block Radial

Example with description - 30P RSB3 S05SPI S14 O360 CW POZ A25 OCTA - 30 mm housing, SPI output, Ecoline RotaCol Speedconnect, Bush mounting - Thread 3/8" X 32 UNEF - shaft 1/4", 5V SPI output - 3 wire, 14 bit, 360° clockwise, zero point, special shaft length 25 mm, 5 pin terminal block axial

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 25/30P RSB

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 standard direction of rotation is clockwise (CW). It is also possible to change the direction of turning to counter clockwise mode (CCW).

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.

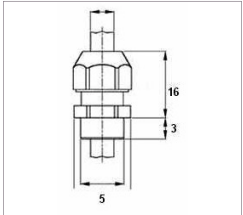
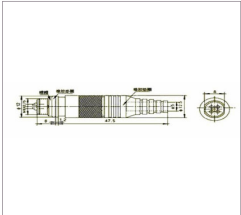
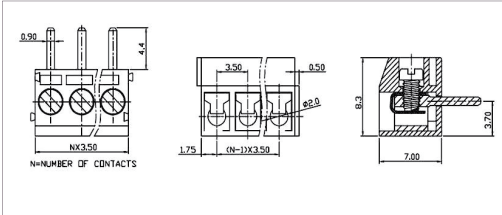
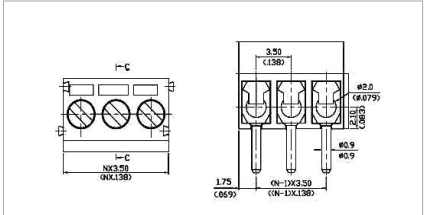
2 Channel Output (2C)

The Hall sensor chip which is integrated into the sensor consists of two galvanically separated sensor units which are influenced by the same magnetic field. The sensor provides 2 operating modes: 1) redundancy i.e. channel one and channel two are identical. If one channel fails the other channel remains active. 2) It is also possible to have 2 different programs in the 2 channels. For this, additional functions can be obtained.

MECHANICAL OPTIONS FOR SPI VERSION 25/30P RSB

Type / Series	Standard mechanical options	Customized mechanical options
25/30P RSB	Low torque (LT), High torque (HT); Endstop at 90°, 180°, 270°, Mu metal cap	Special shaft length; Special endstop angle

SPEEDCONNECT OUTPUT CONNECTIONS FOR SPI VERSION 25/30P RSB

Cable gland (OCG)	Miniature connector (OCM)	Terminal block - Axial (OCTA) Wires leaving axial to shaft axis	Terminal block - Radial (OCTR) Wires leaving radial to shaft axis
5 core round cable 1m long according to interface	5 pin in integrated socket with plug	5 sockets	5 sockets
			

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