Data Sheet for Angle Sensors

Programmable Hall-Effect Single-Turn Rotary Encoder with Analog Output — Series SPOT25S

- Angle 0..20° to 0..360° programmable by DIP-Switches
- Sense of rotation switchable (CW/CCW)
- Supply voltage: 5 V / 3,3V (switchable), 24V
- Analogue output: 0..5 V / 0..3,3 V (ratiom.), 0..10 V
- High life expectancy >100 Mio. shaft revolutions
- Power save mode < 1mA on request
- Small housing case (ø25mm)

Only one sensor for different electrical rotating angles and an easy and accurate programming of start- and end position and senses of rotation. This helps saving production time and to simplfy logistics. In combination with the long life expectancy the SPOT25S offers an outstanding price performance relationship

Electrical Data	
Electrical angle	0..20° to 0..360°
Max. number of programming cycles	with DIP-Switchse: 1x (OTP) (with I²C-Interface: 3x)
Resolution	12 bit (4096 steps) @ 360°, 11bit @ 180°..
Tolerance independent linearity	±0,3%
Update rate	0,14 ms Standard (Power save mode 20 ms .. 100 ms on request)
Output signal (Supply voltage)	0..10V (15..30V) 0..5 V ratiometric (5 V ±10%) 0..3,3 V ratiometric (3,3 V ±10%)
Supply current (no load) Supply voltage 5 VDC, 3,3 VDC Supply voltage 15..30 VDC	 < 8mA (Power save mode < 1 mA on request) < 10 mA
Output load	>= 5 kOhm
Isolation resistance	100 MOhm @ 1000 VDC
Dielectrical strength	1000 VAC (1 min.)

Mechanical and Environmental Data	
Mechanical angle	Endless
Maximum rotational speed	3000 rpm
Bearing	Polymer sleeve bearing
Life expectancy	> 100 Mio. revolutions Tested under room temperature +20 °C, with radial load 1N, without sealing ring
Starting torque	< 0,3 Ncm
Protection class housing (IEC60529) (except electrical connection area)	IP40
Operational temperature	-40°..85°C (extended temp. range on request)
Storage temperature	-40°..+90° C
Mechanical vibration (IEC 60068-2-6)	20 g (±1,5 mm, 10..2000 Hz 16 cycles 3 axis,, 3x4 h)
Mechanical shock (IEC 60068-2-27)	50 g (11 ms, 18x, 6 directions)
Humidity (IEC 60068-2-3)	93% @40°C, 10 days

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Emission / Immunity	
DIN EN 55011 Emission AC/DC power	Class B
DIN EN 55011 Emission housing	Class B
DIN EN 61000-4-2 Immunity housing ESD	Class B
DIN EN 61000-4-3 Immunity RF sine wave	Class A
DIN EN 61000-4-4 Immunity DC power, I/O cable: Burst	Class B
DIN EN 61000-4-5 Immunity DC power, I/O cable: Surge	Class B
DIN EN 61000-4-6 Immunity DC power, I/O cable: Conducted sine wave	Class A

Order Code					
Description					
Series SPOT	**SPOT25S**				
Supply voltage / outputsignal **5 V ± 10 % / 0..5 V ratiometric (switachble to 3,3V)** **24 V (9..30 V) / 0..10 V** 5 V ± 10 % / 0,5..4,5V ratiometric 5 V ± 10 % / PWM (10-90% Duty-Cycle, 230 Hz)		**0505** **2410** 0545 (*) 05PWM (*)			
Updaterate / Low Power Mode **0,2 ms Standard** 20 ms Low Speed/Power Mode 100 ms Ultra Low Speed/Power Mode			-- LS (*) ULS (*)		
Polymergleitlager + Leichtes Losbrechdrehmoment				**P LT**	
Pfostenstecker Molex Serie KK (axial) 5-pol					**ST1**
Pfostenstecker Molex Serie KK (radial) 5-pol					ST2 (*)

Accessory cable 0.5 m with counter connector: Art.-No.: 133041 FB-Kabel 5xAWG26 0,5m Stecker weibl. Molex Serie KK

short-term stock types can be found on: http://www.megatron.de/en/stocklists/angle-sensors/lagerliste.html
bold print = standard option
(*) = on request available for projects

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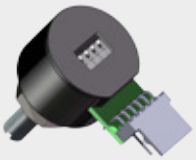
For higher quantities or on-going demand, additional options are available as described below

For example:
- Modified shaft shape
- Cable assembly
- Radial connector outlet
- Special connector
- Clamping terminals
- Mechanical endstop



For technical advice, projects, samples, questions about pricing, delivery times and availability please contact us

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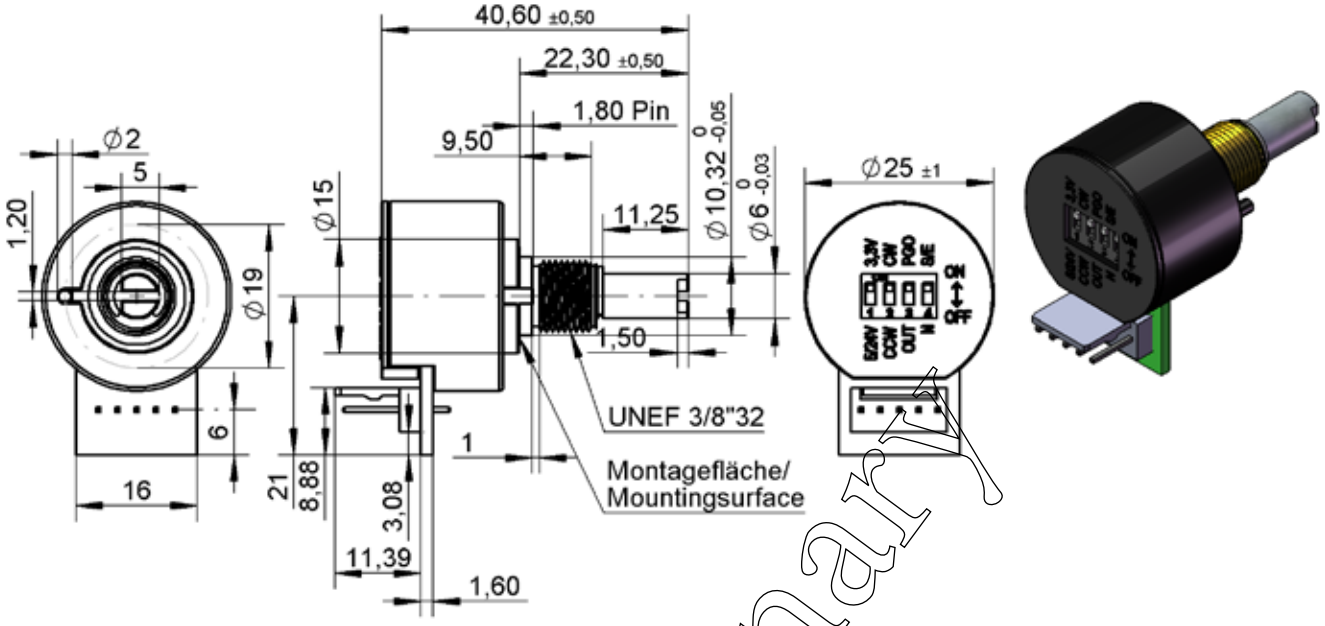
Drawing



Pin-Assignment Connector Molex Series KK, 5-pol, RM2,54
1 = VSUP
2 = OUT
3 = GND
4 = SCL
5 = SDA

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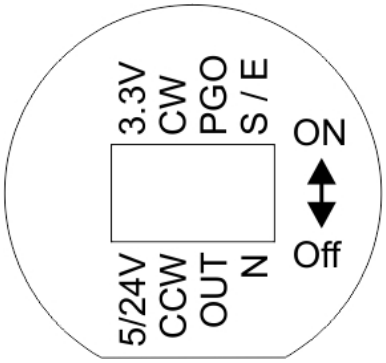
Operation of the Programming Interface



Function	Switch No.:	DIP-Switch OFF	DIP-Switch ON
Supply voltage	1	5V (24V)	3,3V
Sense of rotation	2	CCW	CW
Operating mode	3	OUT (measuring mode)	PGO (programming mode)
Programming Input	4	N (inactive)	S / E (setting start / end position)

Programming Procedure:

A Before connceting the supply voltage

1. Configure DIP-Switch 1: Supply voltage 5V / (24V) or 3.3V
2. Configure DIP-Switch 2: Sense of rotation (rising signal in CW or CCW direction)
3. DIP-Switches 3 and 4 are both in OFF-position

B Programming Start- and Endposition

1. Connect the supply volatage
2. Put programming switch on ON-position
3. Put the shaft to start position and set DIP-Switch 4 for > 1s to ON and then back to OFF
4. Put the shaft to the end position and set DIP-Switch 4 for > 1s to ON and then back to OFF

READY

Please note:

The adjustment of the start- and end position by means of the DIP-Switch programming procedure can be done only one time *). The change of the sense of rotation (CW / CCW) and the supply voltage (5V/3.3V) can be changed several times (>500x).
The programming switches 3 and 4 are out of function after programming.
If neccessary you can hide the DIP-switches with the enclosed label
*) On request there is a possibility to programm the sensor via I²C-interface 3-times