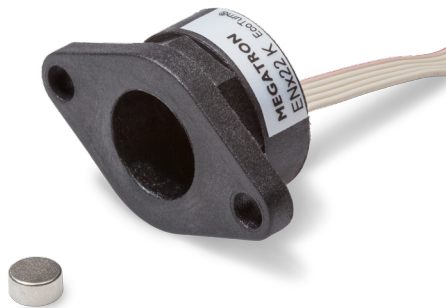


Data Sheet for Angle Sensors

Hall-Effect Single-Turn Rotary Encoder with Analog Output

Series ENA22K



- No mechanical wearing
- Analog output (voltage, current, redundant)
- Versatile programming ex works
- Potted electronics
- Life expectancy > 25 x 10⁶ shaft revolutions

The Hall effect Kit-Encoder Series ENA22K has an endless mechanical life expectancy because there is no bearing nor wear. A separate magnet is enclosed. There are push on magnet holders as an accessory available. Due to the easy connection of the flat ribbon cable, e.g. using IDC, the cost of soldering can be reduced as well.

Electrical Data

Effective electrical angle of rotation ^{1.)}	0..10° - 0..360°					
Independent linearity (best straight line) ^{1.)}	±0,5 % @ 360°					
Output signal	0.5 V ratio- metric	5V PWM 244Hz, 10..90% duty cycle	0..10 V	0..5 V	0..20 mA	4..20 mA
Resolution	12 bit (4096 steps) (electrical angle 90°..360°)					
Update rate	200µs	4ms	200µs	600µs		
Supply voltage	5 V ±10 %		15..30 V	9.. 30 V		
Power consumption (no load)	< 10 mA					
Output load	≥ 10 kOhm				≤ 500 Ohm	
Insulation voltage ^{1.)}	1000 VAC @ 50 Hz, 1 min					
Insulation resistance ^{1.)}	2 MOhm @ 500 VDC, 1 min					

Mechanical and Environmental Data

Mechanical angle of rotation ^{1.)}	Endless
Lifetime ^{2.)}	Mechanical unlimited
Operating temperature range	-40..+85 °C (fixed cable, other temperature on request)
Storage temperature range	
Standard	-40..+105 °C
Option P	-40..+90 °C
Protection grade (IEC 60529)	IP65
Vibration (IEC 68-2-6, Test Fc)	±1,5 mm / 20 g / 10 bis 2000 Hz / 16 frequency cycles (3x4 h)
Mechanical shock (IEC 68-27, Test Ea)	50 g / 11 ms / halfsine (3x6 shocks)
Mass	Approx. 11 g
Included in delivery	Sensor magnet
Material housing	Plastic

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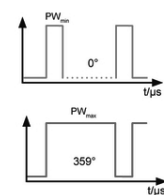
Emission / Immunity

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

Function description PWM signal output ENA22K

The rotary encoder ENA22K supplies as output signal 244Hz constant carrier frequency with defined high low ratio. The duty cycle (ratio between high and low value) changes in dependency of the rotation angle. The duty cycle lies between 10% and 90%.

If the option CW is chosen the duty cycle increases clockwise. If option CCW was chosen the duty cycle decreases clockwise. Normally for PWM signals no further processing - for example an external analog/digital converter - is needed, because many micro controllers are equipped with a PWM input.



Data Sheet for Angle Sensors

Hall-Effect Single-Turn Rotary Encoder with Analog Output

Series ENA22K

Order code

Description

Series ENA22 Kit with single electronic	ENA22K			
Supply voltage / Output signal 5 V \pm 10 % / 0..5 V ratiometric 5 V \pm 10 % / OUT=5 V / 244 Hz / PWM 10...90% 24 V (9..30 V) / 0..5 V (*) 24 V (15..30 V) / 0..10 V 24 V (9..30 V) / 4..20 mA 24 V (9..30 V) / 0..20 mA (*)		0505 0505PWM DC05 (*) 2410 2442 2420 (*)		
Without mechanical stops; clockwise; 360°			OCW360	
Signal raising in counter clockwise (*)			OCCW360(*)	
Free choice of the electrical angle (*)			OC(C)Wxxx (*)	
Other cable length [m] (*)				CVxx (*)

(*) = on request available for projects

Accessories

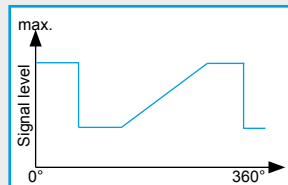
Push-on-magnet holder

Magnet holder with set screws

On request for higher quantities or on-going demand, additional options are available as described below

For example:

- Customized signal characteristic
- Mu-Metal shielding
- Other mechanical angle
- Other starting torque



Customized output signal

For example:

- Other minimum and maximum signal level
- Multi point programming

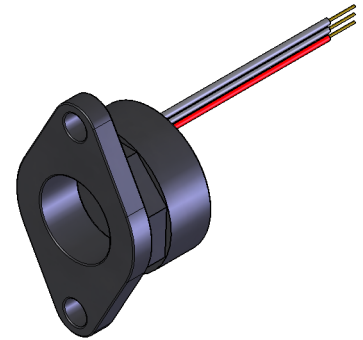
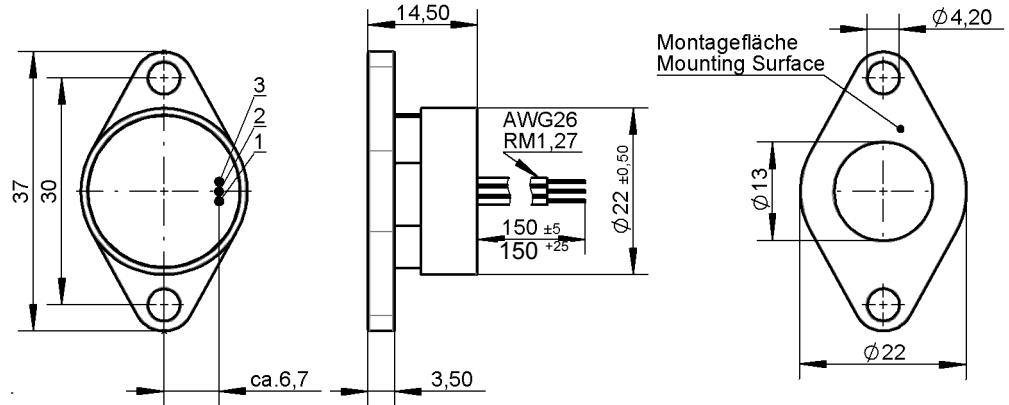
Data Sheet for Angle Sensors

Hall-Effect Single-Turn Rotary Encoder with Analog Output

Series ENA22K

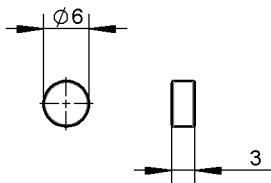
Drawing

Single version



Cable assignment	
VSUP 1	1
OUT 1	2
GND 1	3

Magnet for standard electronic
Dimensions and mounting
instruction



Eccentricity Magnet vs. Accuracy	
Eccentricity	Accuracy @ 360°
0.5 mm	0.6°
0.75 mm	1.2°

