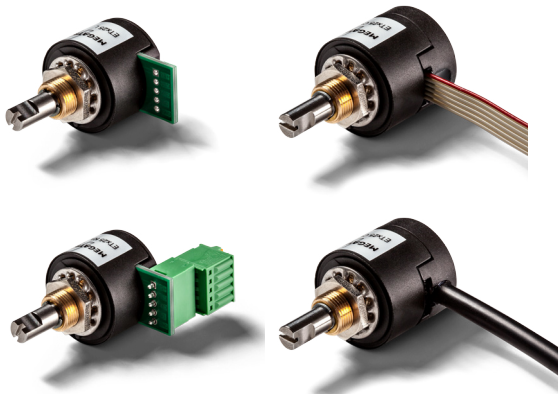


Data Sheet for Angle Sensors

Hall-Effect Singleturn Rotary Encoder with serial output

Series ETS25 12SER / 14SPI



- 10...100 times the service life of potentiometers
- Serial micro controller interface (SER)
Serial Peripheral Interface (SPI)
- Versatile electrical connection:
Solder- or clamping terminals,
flat ribbon or round cable
- Compact Ø25 mm design
- Simple and time-saving bushing design

Electrical Data

Effective electrical angle of rotation 1.)	0..360°	
Independent linearity (best straight line) 1.)	±0,4 % @ 360°	
Absolute linearity 1.)	±0,8 % @ 360°	
Output signal	SER	SPI
Resolution 1.)	12 bit (4096 steps)	14 bit (16384 steps)
Update rate	0,1 ms	0,6 ms
Supply voltage	5 VDC ±10 %	
Power consumption (no load)	≤ 20 mA	
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.)	> 100 x 10 ⁶ revolutions
Bearing	Sleeve bearing
Max. operational speed	100 rpm (800 rpm short time)
Operational torque without / with X-Ring	0,1 ≤ M ≤ 0,6 Ncm / 0,3 ≤ M ≤ 1,3 Ncm (@ RT, 10 rev./min)
Operating temperature range	-40..+85 °C (fixed cable)
Storage temperature range	-40..+105 °C
Protection grade front side (IEC 60529)	
Standard	IP40
Option D (with shaft sealing)	IP55M, IP66S
Protection grade rear side (IEC 60529)	
Solder- and clamping terminals	IP50 (solder pads and connectors excluded)
Flat ribbon - and round cable	IP66 (end of cable excluded)
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 / half-sine (3x6 shocks)

Data Sheet for Angle Sensors

Hall-Effect Singleturn Rotary Encoder with serial output

Series ETS25 12SER / 14SPI

Max. radial load	1 N
Mass (product with option L)	Approx. 26 g
Fastening parts included in delivery	Hex nut (AF14) and tooth washer
Fastening torque mounting nut	≤ 3 Nm
Material shaft	Stainless steel
Material housing	Plastic / Bronze

Immunity

EN 61000-4-2 ESD	Class B
EN 61000-4-3 RF sine wave	Class A
EN 61000-4-6 Conducted sine wave	Class A
EN 61000-4-8 Power frequency magnetic fields	Class A

1.) According IEC 60393

2.) Determined by climatic conditions according to IEC 68-1, para. 5.3.1 without load collectives

Data Sheet for Angle Sensors

Hall-Effect Singleturn Rotary Encoder with serial output

Series ETS25 12SER / 14SPI

Order code					
Description		Options			
Series ETS25	ETS25				
Shaft diameter Ø 6 mm		6			
Resolution / Update Rate / Supply Voltage / Interface 12 bit / high Speed / 5 VDC ±10% / SER 14 bit / high Speed / 5 VDC ±10% / SPI			12HS 05SER* 14HS 05SPI*		
Shaft Sealing Standard without sealing Shaft sealing				- D	
Connection options / Anti rotation pin (acc. drawing) Solder pads (only for SER) / Option Pin A (Pattern of drilling compatible to former Series MAB25A) Clamping terminals (only for SER) / Option Pin A (Pattern of drilling compatible to former Series MAB25A) Flat ribbon cable 150 mm (only for SPI) / Option Pin B (Pattern of drilling compatible to former Series ENA22) Round Cable 1m (only for SPI) / Option Pin B (Pattern of compatible to former Series ENA22) Solder pads (only for SER) / Option Pin C (No anti rotation pin)					L A KA A CVF B CVR B L C

(*) Please note that the max. cable length for SPI or SER communication is ≤1000mm.

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

For example:

- 3,3 V supply voltage
- Shaft diameter 6.35
- Special shaft design
- Special cable and connection design
- Without anti-rotation pin

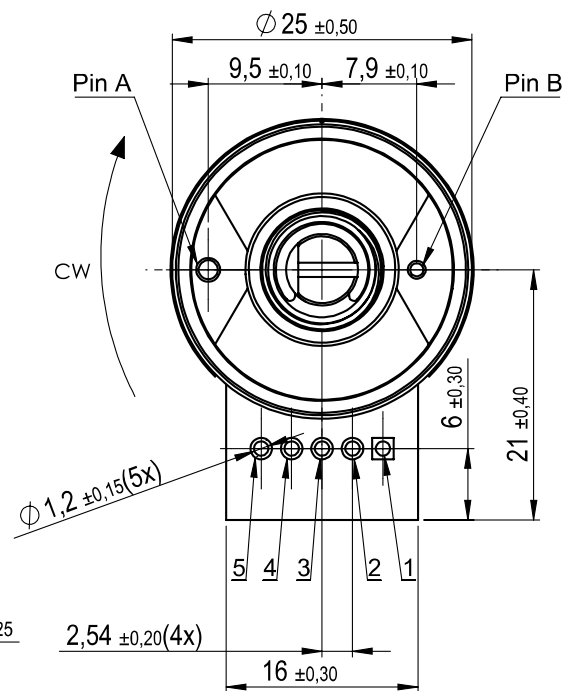
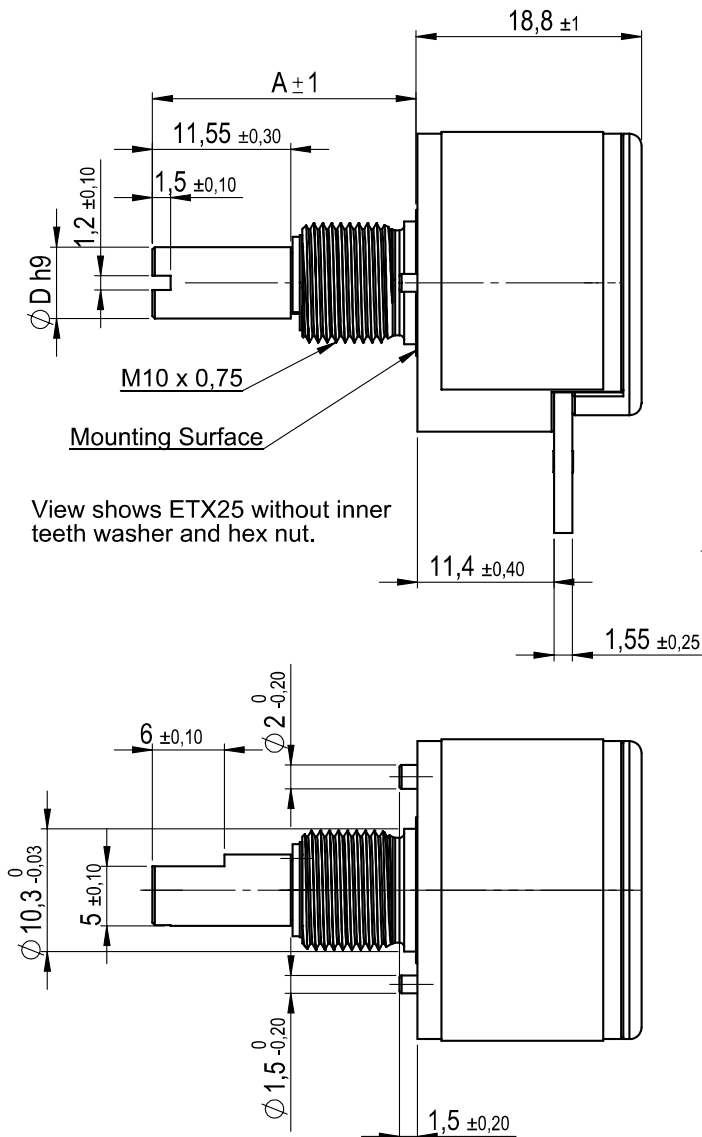
Data Sheet for Angle Sensors

Hall-Effect Singleturn Rotary Encoder with serial output

Series ETS25 12SER / 14SPI

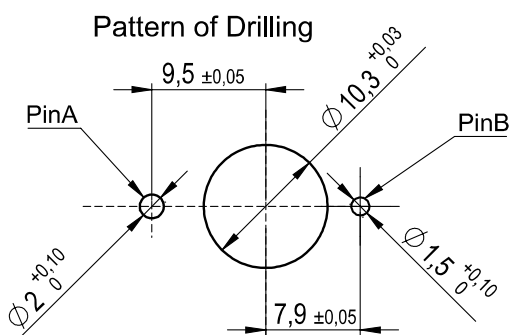
Drawing

Option L



Position of Pin A/B refer to shaft flattening according to above drawing

Standard Dimensions	
A	22 mm
D	6 mm

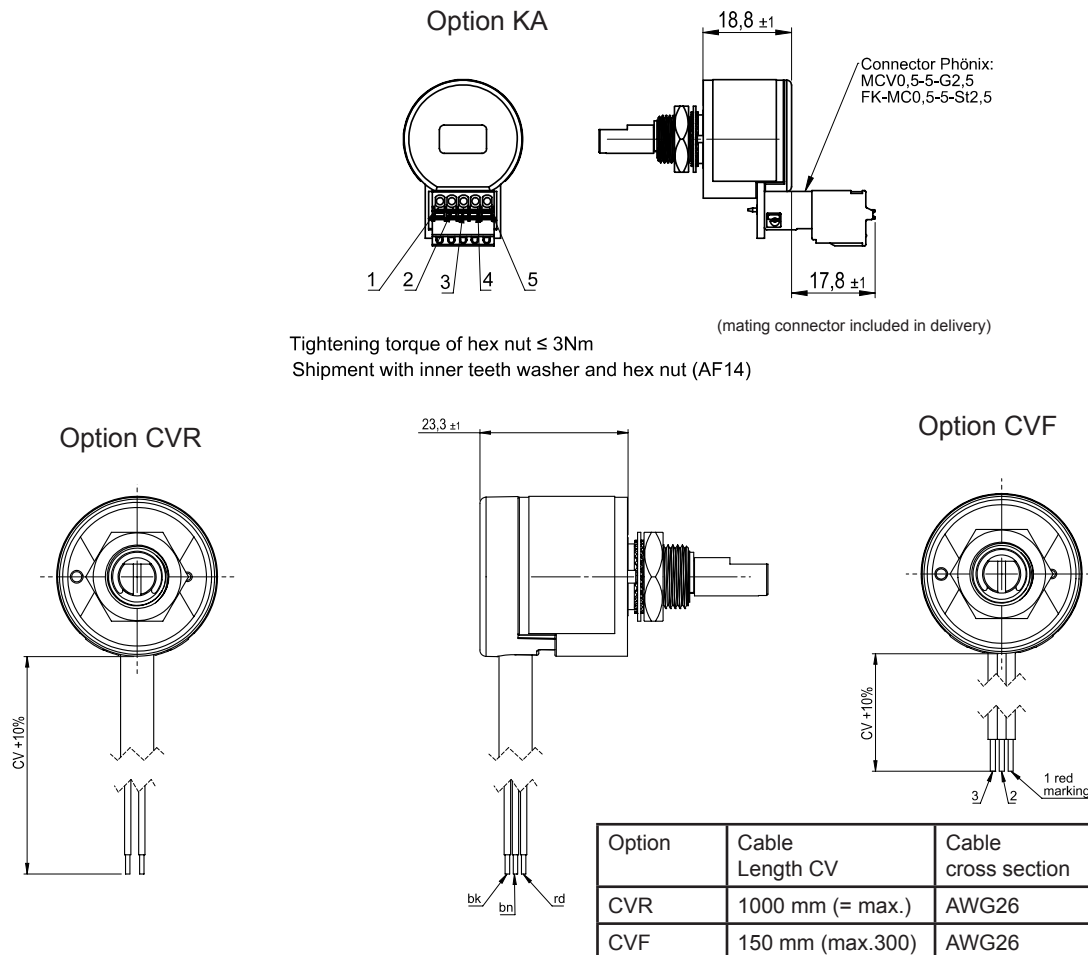


Data Sheet for Angle Sensors

Hall-Effect Singleturn Rotary Encoder with serial output

Series ETS25 12SER / 14SPI

Drawing



Cable- and Pin Assignment

Function:	Option L and KA:	Function:	Option CVF	Option CVR
VSUP	PIN 1	VSUP	Lead 1 (red)	red
Chipselect	PIN 2	GND	Lead 2	black
Clock	PIN 3	Data	Lead 3	brown
Data out	PIN 4	Clock	Lead 4	orange
Ground	PIN 5	Chipselect	Lead 5	yellow

For details of the communication of the interfaces please have a look at the data sheets of the chip producer.

SER-Interface

Producer: ams

Type: AS5045

web: www.ams.com

SPI-Interface

Producer: Melexis

Type: MLX90316EDC

web: www.melexis.com