

# Data Sheet for Angle Sensors

Hall-Effect Singleturn Rotary Encoder with incremental output

Series ETI25



ETI25 - R



ETI25 - F



ETI25 - L



ETI25 - K

- Up to 1024 pulses per revolution (4096 steps) factory programmable 1 to 1024 ppr
- Versatile connecting possibilities:  
Solder- or clamping terminals, flat ribbon or round cable
- Electrical Interfaces Push-Pull, Open-Collector, TTL
- Compact Ø25 mm housing
- Simple to mount bushing design

## Electrical Data

Output Signal	TTL		Push-Pull	Open Collector
Number of pulses	1024, 512, 256, 1-128 Imp./Rev.			256, 1-128 Imp./Rev.
Limit frequency	100 kHz			10 kHz
Switch-on delay	20 ms			
Supply voltage	3,3 VDC ±10%	5 VDC ±10%	10...30 V	10...30 V
Power consumption (no load)	≤ 15 mA		≤ 50 mA	≤ 25 mA
Output load	≥ 5 kOhm			
Max. Pull-Up Voltage				30 VDC
Insulation voltage <sup>1.)</sup>	1000 VAC @ 50 Hz, 1 min			
Insulation resistance <sup>1.)</sup>	2 MOhm @ 500 VDC, 1 min			

## Mechanical and Environmental Data

Life time <sup>2.)</sup>	> 100 Mio. shaft rotating movements For Option D (with shaft sealing) the sealing is at least working up to 200 000 shaft rotating movements
Bearing	Sleeve bearing
Max. operational speed	100 rpm (< 1 min 800 rpm)
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)

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Max. radial load	1 N
Mass (product with option L)	Approx. 26 g
Fastening parts included in delivery	Hex nut (AF14) and tooth washer, if option D is ordered then an additional O-Ring is part of delivery as sealing between mounting panel and rotary encoder.
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

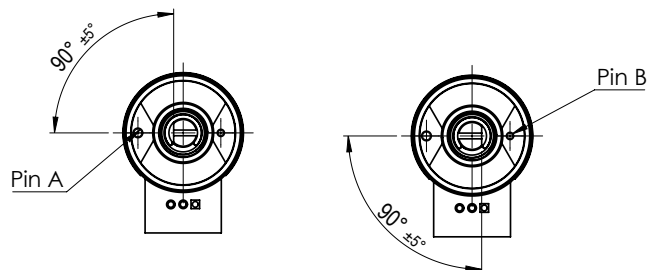
1.) According IEC 60393

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

### Further information

#### Relationship between anti rotation pin and effective electrical angle

Option anti rotation pin A	If shaft flattening is facing antirotation pin A then index signal (Z) will be output.
Option anti rotation pin B	If shaft flattening is facing antirotation pin B then index signal (Z) will be output.



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## Order Code

Description		Selection: standard=black/bold, possible options=grey/cursive					
<b>Series ETI25</b>	<b>ETI25</b>						
<b>Shaft diameter, shaft length:</b> <b>Shaft diameter Ø 6 mm, shaft length 22 mm</b> <i>Option: Shaft diameter Ø 6.35 mm, shaft length 22 mm</i> <i>Option: User defined shaft [mm] Ø ≤ 6.35mm</i>			<b>6x22</b>				
			6.35x22				
			XxXX				
<b>Number of pulses (ppr):</b> <i>Option: 128</i> <i>Option: 256</i> <i>Option: 512 (only for TTL and push-pull)</i> <b>1024 (only for TTL and push-pull)</b> <i>Option: user defined pulses (&lt;128)</i>					128		
					256		
					512		
					<b>1024</b>		
					0XXX		
<b>Supply voltage / Output signal:</b> <b>VSUP=24 V (10...30 V) / OUT=A, B, Z, Push-Pull</b> <b>VSUP=24 V (10...30 V) / OUT=Open Collector</b> <b>VSUP=5 V ± 10% / OUT=A, B, Z, TTL</b> <b>VSUP=3,3 V ± 10% / OUT=A, B, Z, TTL*</b> <small>(*available only for options L or K with 256, 128, 64 or 32 impulses)</small>						<b>24BZPP</b>	
						<b>24BZOC</b>	
						<b>05BZTTL</b>	
						<b>3.3BZTTL</b>	
<b>Shaft sealing (standard without shaft sealing):</b> <i>Option: D with shaft sealing</i>							D
<b>Electrical connection, cable length, anti rotation pin (according drawing)</b> <b>Standards:</b> <b>Flat ribbon cable standard length 0.15 m</b> <small>(anti rotation pin compatible to former series ENA22, anti rotation pin option B)</small> <b>Round cable 1 m [x.xx m]</b> <small>(anti rotation pin compatible to former series ENA22, anti rotation pin B)</small>							<b>F0.15B</b>
							<b>R1.00B</b>
<b>Electrical connection, cable length, anti rotation pin (according drawing):</b> <i>Options:</i> <i>Electrical connection:</i> <i>Option: solder pads</i> <i>Option: clamping Terminals</i> <i>Option: flat ribbon cable</i> <i>Option: round cable</i> <i>Cable length:</i> <i>Option: cable length in user defined length [x,xx m] (only for option F and R, flat ribbon cable ≤ 3 m)</i> <i>Anti rotation pin:</i> <i>Option: anti rotation pin A (anti rotation pin compatible to former series MAB25A)</i> <i>Option: anti rotation pin B (anti rotation pin compatible to former series ENA22A)</i>							L K F R
							X.XX
							A B

## Order example ETI25

### Requirement:

Shaft Ø 6.00 mm, shaft length 22 mm, number of pulses 1024 TTL output, VSUP=5 V/TTL, no shaft sealing, flat ribbon cable 0,15 m, anti rotation pin B

### Example for order code:

ETA25 6x22 1024 05BZTTL R1.20B

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

- Output of absolute value by incrementing the signals after power on
- Alteration of the signal sequence and index position
- Special shaft design
- Special operational torque
- Special cable assembly, cable length

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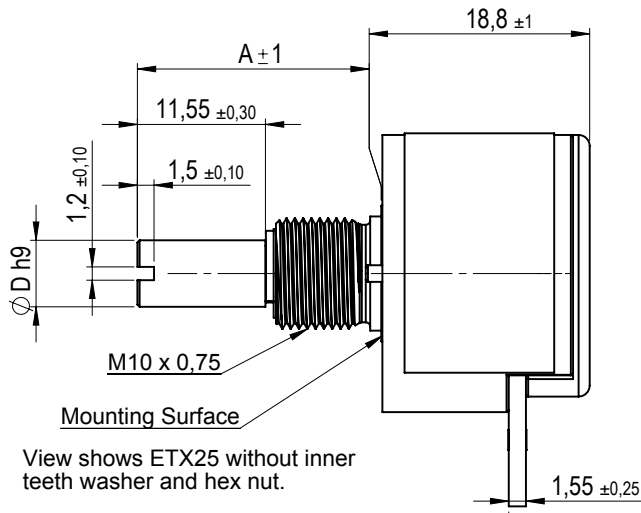


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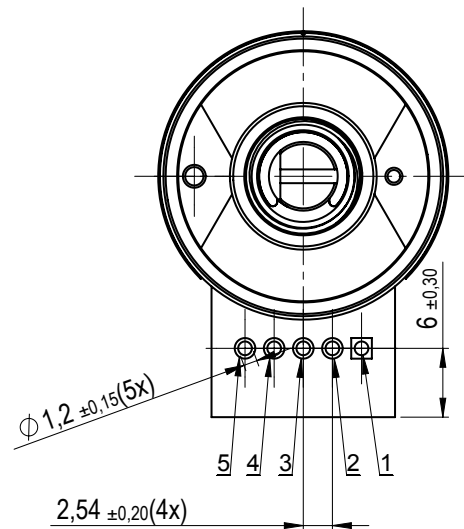
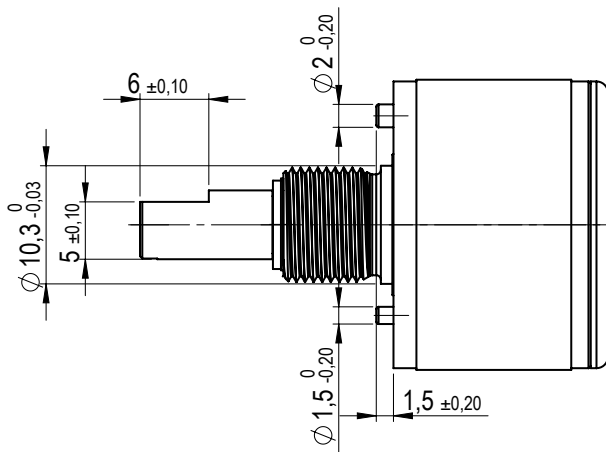
Series ETI25

## Drawing

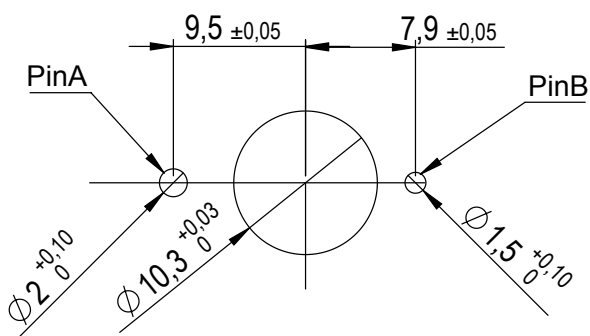
Option L



Standard shaft dimensions	
Shaft length A	22 mm
Shaft diameter D	6 mm



### Pattern of Drilling



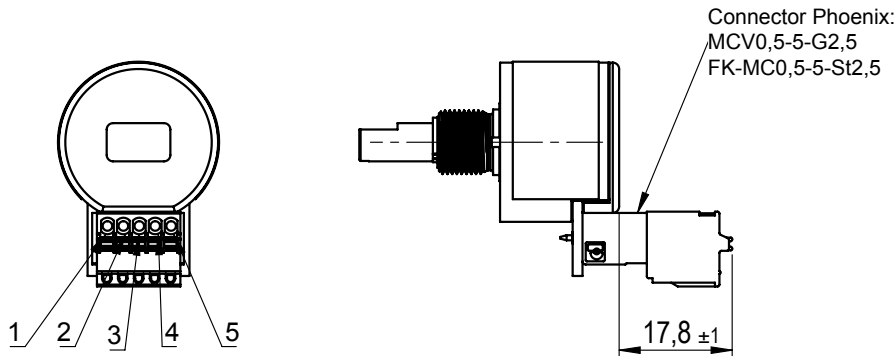
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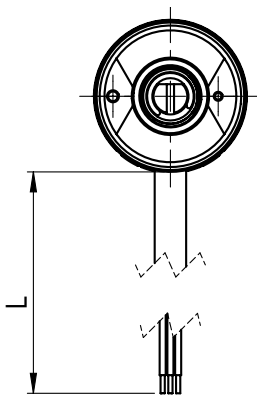
Series ETI25

## Drawing

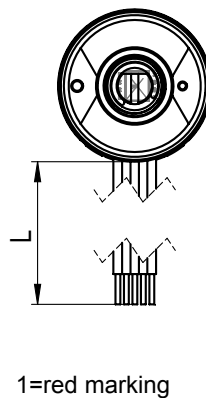
### Option K



### Option R

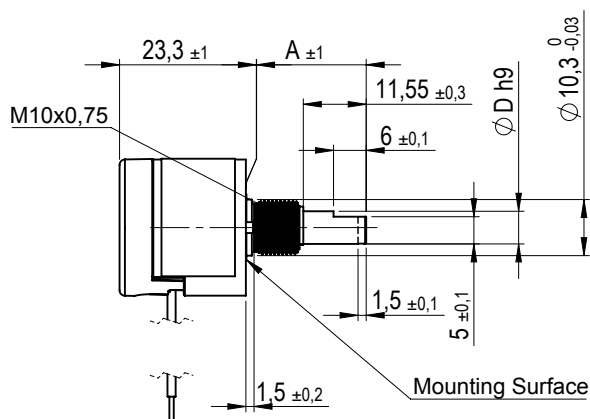


### Option F



Option	Standard Cable Length L	Cable Cross Section	Allowed Tolerance
R	1000 mm	AWG26	-20 mm...+40 mm
F	150 mm	AWG26	-10 mm...+25 mm

(\*) Tolerances according IPC Association

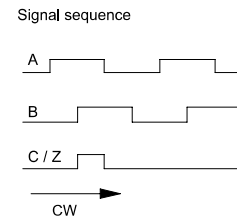
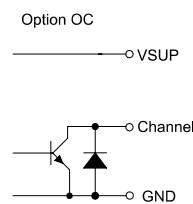
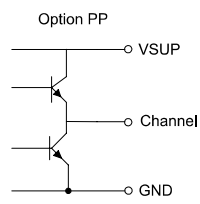
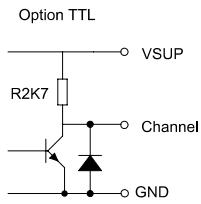


Drawing is applicable for option F and R

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### Cable and pin assignment for option L, K

Option L and K:	Function: Push-Pull, TTL, Open Col
PIN 1	VSUP
PIN 2	GND
PIN 3	A
PIN 4	B
PIN 5	Z

### Cable and pin assignment for option F

Option F	Function: Open Col, TTL	Function: Push-Pull
Lead 1 (red)	VSUP	VSUP
Lead 2	GND	Z
Lead 3	A	B
Lead 4	B	A
Lead 5	Z	GND

### Cable and pin assignment for option R

Option R	Function: Push-Pull, TTL, Open Col
red	VSUP
black	GND
brown	A
orange	B
yellow	Z
green	NC