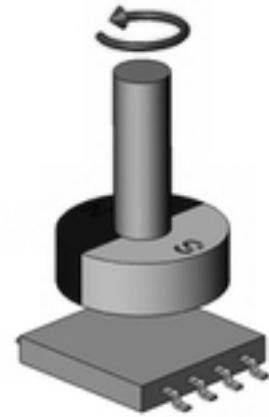


Series ENI22 - EcoTurn® - Contactless, programmable angle sensors with incremental output, housing Ø22mm

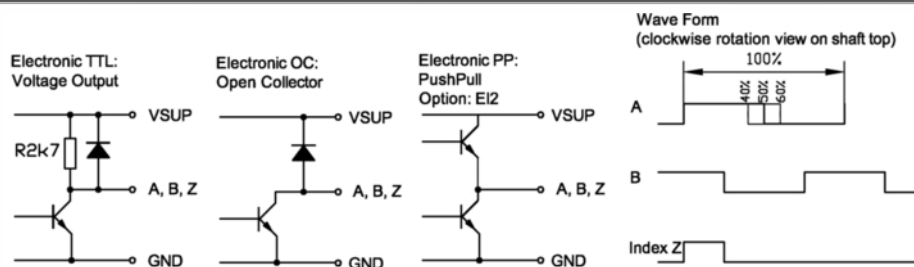
- Contactless sensor technology (hall effect)
- 360° output range
- Low-priced rugged plastic housing Ø22mm
- 3 housing types: bushing, flange and kit-version
- Encapsulated electronic
- Revolution 1...128, 256, 512, 1024
- With several actuating torques (bushing version)
- Long life time due to polymer sleeve bearing or sinter bronze bearing
- Supply voltage 5 VDC, 9-30 VDC
- Signal characteristics programmable from factory
- Numerous mechanical and electrical options



The EcoTurn product family uses the CMOS-Hall-Effect-Sensor Technology. The angular position of a diametrically oriented magnet is detected by the sensor unit over a full revolution. There are various analogue, serial and incremental interfaces available. The EcoTurn family offers probably the worlds broadest range of mechanical and electrical features. The outstanding price / performance ratio allows the replacement of potentiometers as well as the operation in versatile new applications.



Output and Flanks



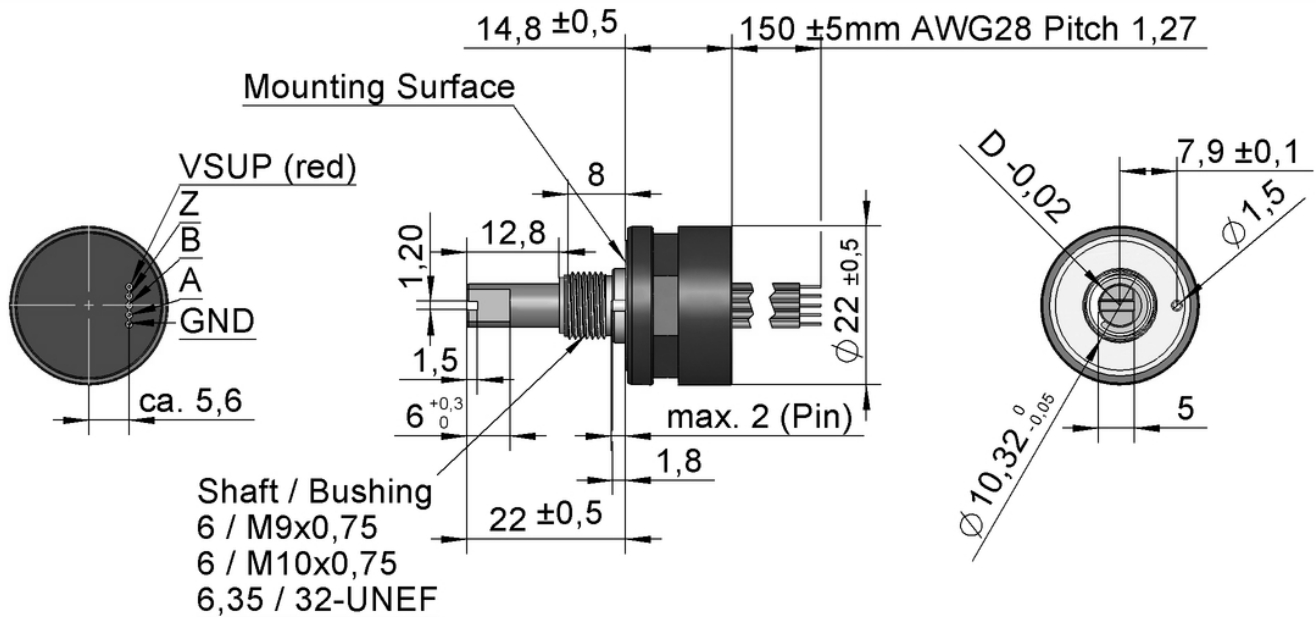
push-pull electronic with ENI28 series

Series ENI22 - EcoTurn® - Contactless, programmable angle sensors with incremental output, housing $\varnothing 22\text{mm}$

Electrical Data

Pulses per revolution	1-128, 256, 412, 1024 ppr
Output channels	A, B, Z
Frequency response	500 kHz
Supply voltage / output signal	4,5-5,5 VDC / 9-30 VDC
Supply current	30 mA

ENI22B Bushing-Version



ENI22B	Mechanical Data	
	Mechanical rotational speed with brass bearing with high-performance polymer sleeve bearing	800 rpm max. 4000 rpm
	Life time with brass bearing Life time with polymer sleeve bearing	> 10 Mio. turns (dependent on application) > 25 Mio. turns (dependent on application) <small>tested at room temperature, with radial load 1N, without o-ring</small>
	Starting torque: Option LT (Low Torque) Option MT (Medium Torque) Option HT (High Torque)	< 0,5 Ncm (smooth running grease/ basic type w/o stop) 0.3 - 1 Ncm (special grease / basic type with stop) > 1 Ncm (special high viscosity grease)
	Stopper strength	< 80 Ncm
	Max. torque mounting nut	1 Nm

ENI22B	Other Data	
	Protection class with optional sealing ring	IP65 (electronic and cable generally encapsulated)
	Operating temperature	-40 ... +85 °C fixed cable (please ask for other temperature)
	Storage temperature	-40 ... +105 °C (+90°C with polymer sleeve bearing)
	Bearing basic type with stop Bearing basic type without stop and Option P	Brass bushing on stainless-steel shaft Polymer sleeve bearing on stainless-steel shaft

Series ENI22 - EcoTurn® - Contactless, programmable angle sensors with incremental output, housing Ø22mm

ENI22B	Other Data	
	Housing material	fiberglass reinforced polyamid (Nylon 66/30% GF)
	Shaft material	stainless steel
	Mounting parts (included)	hex-nut wrench size 14mm, tooth washer
	Weight	approx. 20 g

Options and Order Description Bushing Version

Description	Basic Type				Options						
EcoTurn with incremental output, 22mm housing, bushing version	ENI22B										
Bushing M10 / Shaft Ø 6mm		1									
Bushing M9 / Shaft Ø 6mm		2									
Bushing 3/8" / Shaft Ø 6,35mm		3									
Pulses per rotation (further pls. see option EA1)			1024								
Supply voltage / Output signal: 5V ± 10% / TTL 5V / Open Collector 9-30V / Open Collector				05 BZ TTL 05 BZ OC 24 BZ OC							
Zero point orientation (index) * Shaft flattening adjusted at anti rotation pin					N						
Polymer sleeve bearing (not with option D) * (only with bushing M10 /shaft Ø 6mm = mounting B1)						P					
Torque: LT - smooth running grease (standard) MT - special grease (basic type with stop) HT - Special high viscosity grease							LT MT HT				
Sealing ring IP65 (not with option P) *								D			
Shaft length [mm] (Standard 22 mm)									Axx		
Cable length [m] (Standard 0,15m)										CVxx	
Example Basic Type	EN22B	2	1024	05 BZ TTL		LT					
EcoTurn with incremental output, 22mm housing, 9mm bushing and 6mm shaft, 1024 pulses, supply voltage 5V, TTL-output, low torque.											
Example with Options	ENI22B	2	512	05 BZ TTL	N	P	LT	-	A30	CV0,1	
EcoTurn with incremental output, 22mm housing, 9mm bushing and 6mm shaft, 512 pulses, supply voltage 5V, TTL-output, zero point, polymer sleeve bearing, low torque, shaft length 30mm, cable length 0,1m											
*) Please note the explanation concerning the order options on the next page.											

Series ENI22 - EcoTurn® - Contactless, programmable angle sensors with incremental output, housing $\varnothing 22\text{mm}$

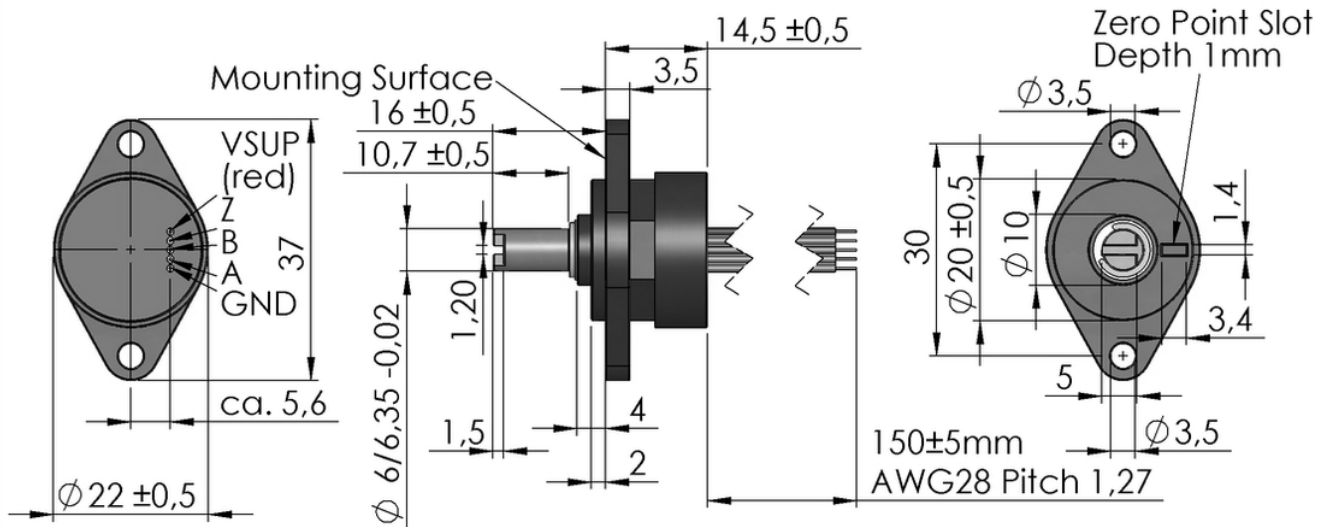
Please note before order

The mechanical zero point is adjusted when the shaft flattening is in direction of the anti rotation pin (bushing version) or with the zero score (flange version).

At the base type without stop there is no alignment between electrical and mechanical angle. The option "N" assigns the electrical zero position (minimum signal level) to the mechanical zero position. You also can specify an offset value (please refer to the standard option E2).

The option D (sealing ring) AND the polymer sleeve bearing are available only on special request.

ENI22F Flange Version



ENI22F	Mechanical Data	
	Maximum rotational speed	4000 rpm
	Life time with polymer sleeve bearing	25 Mio. turns (dependent on application) tested at room temperature, with radial load 1N
	Operating torque	0,2 - 0,6 Ncm

ENI22F	Other Data	
	Protection class electronic	IP65 (electronic and cable generally encapsulated)
	Operating temperature	-40 ... +85 °C bei fixed cable (please ask for other temperature)
	Storage temperature	-15 ... +90 °C
	Bearing	sinter bronze bearing
	Housing material	fiberglass reinforced polyamid (Nylon 66/30% GF)
	Shaft material	stainless steel
	Weight	ca. 20 g

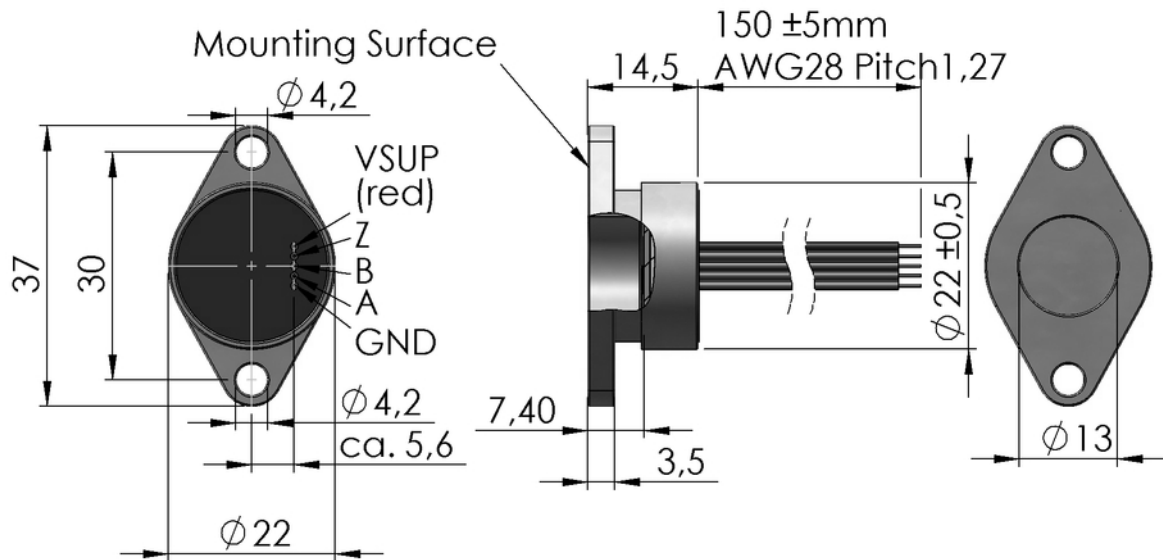
Series ENI22 - EcoTurn® - Contactless, programmable angle sensors with incremental output, housing Ø22mm

Options and Order Description Flange Version

Description	Basic Type				Options		
	ENI22F						
EcoTurn with incremental output, 22mm housing, flange version	ENI22F						
Mounting Flange, shaft Ø 6mm Mounting Flange, shaft Ø 6,35mm with sinter bronze bearing		1 2					
Pulses per rotation (further pls. see option EA1)			1024				
Supply voltage / Output signal: 5V ± 10% / TTL 5V / Open Collector 9-30V / Open Collector				05 BZ TTL 05 BZ OC 24 BZ OC			
Zero point orientation (index) * Shaft flattening adjusted at zero-point groove signal 0					N		
Shaft length [mm] (Standard 16 mm)						Axx	
Cable length [m] (Standard 0,15m)							CVxx
Example Basic Type	ENI22F	2	1024	05 BZ OC			
EcoTurn with incremental output, 22mm housing, with flange and 6,35mm shaft diameter, 1024 ppr, supply voltage 5V, output open collector.							
Example with Options	ENI22F	2	512	05 BZ OC	N	A18	CV0,2
EcoTurn with incremental output, 22mm housing, flange mounting, 6,35mm shaft diameter, 512 ppr, supply voltage 5V, output open collector, zero point orientation, shaft length 18mm, cable length 0,2m							
*) Please note the explanation concerning the order options on page 4.							

Series ENI22 - EcoTurn® - Contactless, programmable angle sensors with incremental output, housing $\varnothing 22\text{mm}$

ENI22K Kit-Version



ENI22K	Other Data	
	Protection class	IP65 (electronic and cable generally encapsulated)
	Operating temperature	-40 ... +85 °C fixed cable (please ask for other temperature)
	Storage temperature	-40 ... +105 °C
	Housing material	fiberglass reinforced polyamid (Nylon66/30% GF)
	Weight	approx. 20 g

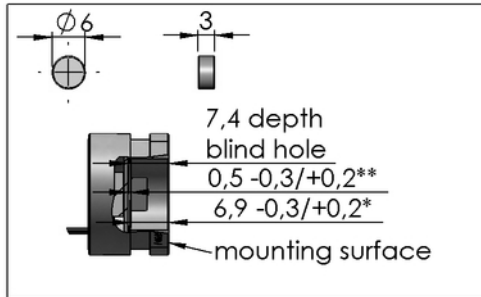
Options and Order Description Kit Version

Description	Basic Type			Options
EcoTurn with incremental output, 22mm housing, kit-version	ENI22K			
Pulses per rotation (further pls. see option EA1)		1024		
Supply voltage / Output signal: 5V ± 10% / TTL 5V / Open Collector 9-30V / Open Collector			05 BZ TTL 05 BZ OC 24 BZ OC	
Cable length [m] (Standard 0,15m)				CVxx
Example Basic Type	ENI22K	1024	05 BZ OC	
EcoTurn with incremental output, 22mm housing, kit-mounting, 1024 ppr, supply voltage 5V, output open collector.				
Example with Options	ENI22K	60	05 BZ OC	CV0,2
EcoTurn with incremental output, 22mm housing, kit-mounting, 60 ppr, supply voltage 5V, output open collector, cable length 0,2m				
*) Please note the explanation concerning the order options on page 4.				

Accessories to Kit-Version: Magnet $\varnothing 6 \text{ mm} \times 2 \text{ mm}$

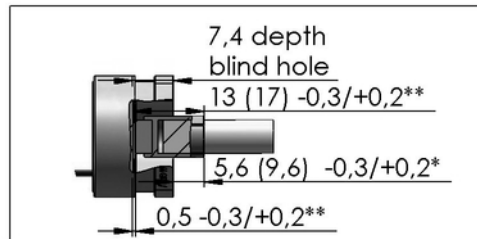
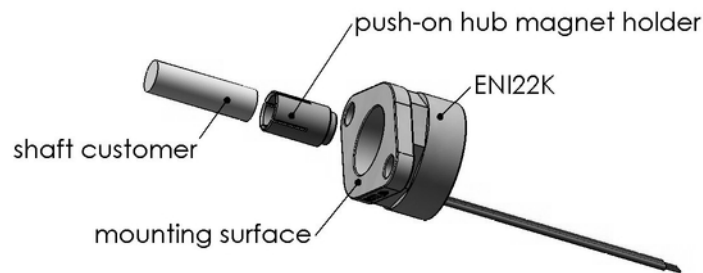
Series ENI22 - EcoTurn® - Contactless, programmable angle sensors with incremental output, housing $\varnothing 22\text{mm}$

MAGNET (included in delivery)



*..related to mounting surface **..related to bottom of blind hole
 ()..magnet holder for shaft diameter $\geq 12\text{mm}$

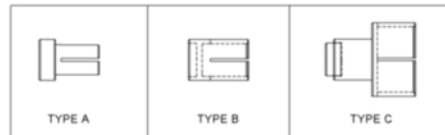
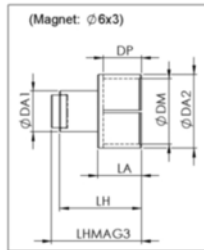
Push-On-Hub Magnet Holder (accessory part)



*..related to mounting surface **..related to bottom of blind hole
 ()..magnet holder for shaft diameter $\geq 12\text{mm}$

Series ENI22 - EcoTurn® - Contactless, programmable angle sensors with incremental output, housing $\varnothing 22\text{mm}$

Dimensions of the slotted magnet holder for incremental elektronik EcoTurn Kit



TYPE	DM	DA1	DA2	LH	LA	DP	LHMAG3 analog standard	shaft diameter =DM (h9)
A	3	7,5	4,5	11	---	8,5	12,5	3 +0/-0,030
	3,175	7,5	4,5	11	---	8,5	12,5	3,175 +0/-0,030
	4	7,5	5,5	11	---	8,5	12,5	4 +0/-0,030
B	6	7,5	7,5	11	---	8,5	12,5	6 +0/-0,030
	6,35	7,5	7,5	11	---	8,5	12,5	6,35 +0/-0,036
	8	9,5	9,5	11	---	8,5	12,5	8 +0/-0,036
	10	11,5	11,5	11	---	8,5	12,5	10 +0/-0,036
C	12	7,5	13,5	15	8	7	16,5	12 +0/-0,043

Order Description Magnet Holder

Push-On Type DM.. * MAG6x3

*) available shaft diameters pls. see table above

Overview of all options (Bushing, Flange and Kit-Version)

Mechanical Standard Options low price, short delivery time

Endstop 90°, 180°, 270° (Bushing-Version only)	SCW
Zero point orientation (offset 0°) (not for Kit-Version)	N
Low torque by smooth-running grease (Bushing-Version only): Low Torque	LT
Increased torque by special grease (Bushing-Version only): Medium Torque	MT
Increased torque by high viscosity grease (Bushing-Version only): High Torque	HT
Sealed shaft IP65 (bushing version only, not with polymer bearing)	D
Shaft length from mounting surface	A..
Extended cable, axial	CV...
Polymer sleeve bearing (only Bushing-Version: M10 / shaft $\varnothing 6\text{mm}$, Standard for Flange-Version)	P

Mechanical Special Options (MS) possible options, additional tooling fee, increased delivery time

Without anti rotation pin (for bushing version only)	MS1
Other stop than 90° / 180° / 270° / 320°	MS2
Special shaft shape	MS3
Special shape of housing and mounting	MS4
Metal cap for magnetic protection	MS5
Special cable: round cable, connector or anything else	MS6
Special bushing: shape, diameter	MS7

Series ENI22 - EcoTurn® - Contactless, programmable angle sensors with incremental output, housing Ø22mm

Electrical Standad Options (EI) Electrical or programmable options to basic type, low price, short delivery time

<p>Different Number of Pulses (Standard = 1024 ppr) As a unique feature any number of pulses from 1 - 128 pulses per revolution (ppr) can be programmed in a 3 channel configuration. Above 128 ppr the following resolutions are possible as standard option: 256, 512 ppr.</p>	E11
<p>Push - Pull Function In an open collector mode the driver current is limited by pull up resistor. In push - pull mode the driver current goes up to 300 mA. Longer distances and faster switching is possible.</p>	E12
<p>Output of the absolute position After switching on of the EcoTurn supply voltage the absolute position is measured and the encoder generates the number of pulses accordingly. Afterwards the behaviour of the encoder is like a standard incremental encoder. That means the absolute position is transmitted instantly after power on and there is no need to drive to the home position. But please take care that the external counter is switched on before the encoder.</p>	E13
<p>Z - Point Positioning (= Option N) It is possible to position the Z Pulse in line with the marking on the shaft and the bushing. Also any offset to this marking is possible.</p>	E15
<p>Inverted Signals The channels A and B can be inverted or not inverted independent of each other. The basic type is not inverted.</p>	E16

All the specifications and information in this data sheet can not consider the special demands that are caused by the application. Because of this, they are no general description of the properties of the product. The lifetime specification was testet under room temperature, without o-ring.

Please find the exact specifications of the output signals in the datasheets of Melexis. (Application note MLX90316): www.melexis.com

2012 January 26. All specifications are subject to change without notice.