

BEI *SENSORS*

LP Series encoders



Low profile encoders for industrial and heavy-duty applications

About BEI Sensors



BEI Sensors production center in Strasbourg, France

BEI Sensors specializes in speed and position sensors for extreme applications. With an extensive product offering including optical and magnetic encoders, Hall effect sensors, and potentiometers, BEI Sensors offers standard configurations to completely customized solutions. Through uncompromising quality, performance, and reliability, BEI Sensors upholds a standard of excellence in its products, customer service experience, and commitment to being a global leader in sensor technology.

BEI Sensors is a brand of Sensata Technologies.

www.beisensors.com

Sensata Technologies Locations



About Sensata Technologies

Sensata Technologies is one of the world's leading suppliers of sensing, electrical protection, control and power management solutions with operations and business centers in 16 countries. Sensata's products improve safety, efficiency and comfort for millions of people every day in automotive, appliance, aircraft, industrial, military, heavy vehicle, heating, air-conditioning and ventilation, data, telecommunications, recreational vehicle and marine applications.

For more information please visit Sensata's website at www.sensata.com.



LP Series overview

In response to an increasing demand for compact, rugged encoders, BEI Sensors, a leading manufacturer of encoders and position sensors, has developed a range of low profile encoders to suit a wide variety of heavy-duty applications.

The series is comprised of three encoder types which are available with incremental or absolute single turn outputs; a compact version with cable or connector terminations, a terminal box option and an explosion proof model.



Housing variations

Encoder type	Material	Shaft	Termination
H: Incremental A: Absolute single turn	H: Anodized aluminum	M: Solid shaft K: Blind shaft A: Integrated coupling U: Through shaft	9: Cable or M12 connector B: Terminal box X: Explosion proof housing with terminal box

Example of Base Model Number Configurations:

*Incremental encoder in anodized aluminum with a through shaft and a cable termination= **HHU9***

*Absolute single turn encoder in anodized aluminum with a solid shaft and a terminal box termination= **AHMB***

Product specifications

	Compact version	Terminal box version	Explosion proof version
Thickness (mm / inch)	26 mm — 1 inch		51 mm — 2 inch
Housing material	Anodized aluminum		Hard anodized aluminum
Shaft styles	Solid — Blind — Integrated coupling — Through — Application dedicated shaft		
Terminations	M12 Connector — Cable	Terminal box with or without cable	
Electrical output	HTL-TTL / SSI		
Incremental resolution	1 to 10 000 PPR		
Absolute single turn resolution	Up to 16 bits		
Programmable version	Yes	Yes	No
Enhanced electronics	No	Yes	Yes
Mechanical speed	Up to 6 000 RPM		
IP rating	IP66		
Operating temperature	-40°C to 100°C		-40°C to 85°C
Shock	≤ 3000 m/s ² (5 ms 1/2 sine)		
Vibration	≤ 200 m/s ² (55 to 2000 Hz)		

Environmental specifications

Heavy-duty design

The LP Series of encoders has been built tough to withstand extreme temperatures, shock and vibration, and wet and dirty environments, while providing accurate position and speed sensing feedback. The heavy-duty design features:

- Standard aluminum anodized housing resists corrosion
- Encapsulated electronics provide IP66 ingress protection from dust and moisture
- Operates in extreme temperatures, from -40°C to 100°C
- Bearings protected against dust and water jets



Encapsulated electronics protect encoder from dust and moisture

Certifications

All LP Series encoders come standard with UL and CE certifications for use in European and North American applications.



Available triple ratings for the explosion proof version help to simplify the certification process of the end-users' assembly and save costs in obtaining additional approvals to comply with international safety regulations.



Accessories and features

To simplify installation into any system, a variety of accessories are available.



Hassle-free captive screws simplify installation



External or internal shaft couplings allow for shaft misalignment



A range of adjustable tether arms makes it easy to integrate encoders on your equipment



Ball-end tether arms ensure rotational stiffness for accuracy while maintaining axial flexibility for long bearing life







Programming dongle allows users to select desired resolution and configuration in programmable encoders





Mechanical options

Shafts

Many mechanical configurations are available including shafted, through shaft, blind shaft or shaft with integrated coupling to fit a wide range of applications.

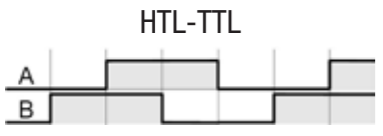
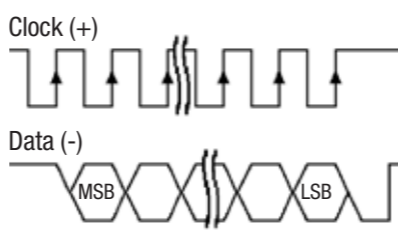
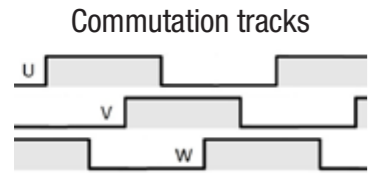

Solid shaft		Blind shaft	
	Standard 12 mm (0.47 inch) solid shaft for flange mounting		Standard 14 mm (0.55 inch) blind shaft for installation on motor shafts (cylindrical or center-tapped) with a floating mounting
Through shaft		Integrated coupling	
	Through hollow shaft (up to 30 mm — 1 1/8 inch) allows for redundant mounting (multiple units on a single shaft)		Integrated coupling offers a unique solution for flange mounting with a real through hollow shaft capability up to 20 mm — 0.78 inch

Wiring options

Standard Terminations			Explosion-proof Termination	
Connector	Cable	Terminal box	Terminal box	
M12 connector	PUR, PVC and silicone cable	Removable terminal box for cables with a diameter from 6 to 13 mm (0.2 to 0.5 inch)	ATEX - IECEx: M16 cable gland prewired with PUR or PVC cable	UL - CSA: Terminal box 1/2 NPT threaded Terminal box 3/4 NPT threaded
				

Electrical options

Available outputs

Incremental		Absolute Single-Turn	
 <p>HTL-TTL</p>	5 – 30 V / push pull 5 – 30 V / RS 422 line driver 5 V / RS 422 line driver 11-30 push pull	5 – 30 V / SSI	 <p>Clock (+) Data (-)</p>
 <p>Commutation tracks</p>			

Enhanced electronics

The terminal box and explosion proof versions of the LP Series provide additional electrical features such as:

- Protection against mis-wiring
- Overvoltage protection up to 60V
- Enhanced drive capabilities to ensure a strong signal over long cable runs



Programmable versions

Easily program encoder resolution*	
Incremental	Absolute single-turn
<ul style="list-style-type: none"> • From 1 to 10 000 pulses per revolution • Index positioning (Top 0) • Index calibration • Programmable U/V/W channels 	<ul style="list-style-type: none"> • Up to 16 bits • Reset and preset functions

* Programmability feature not available with explosion proof encoder.



Mounting options

Floating mounting

The innovative package and available accessories allow for easy installation in a variety of floating mountings:

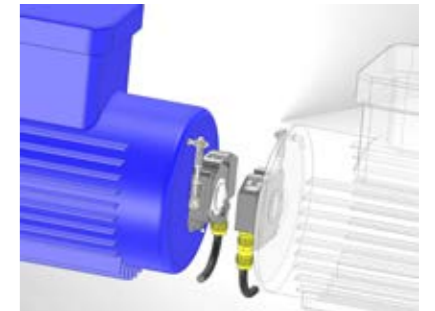
- The low profile design saves space for two encoders to be mounted back-to-back in motor applications
- Encoders can be mounted far away from the control center with no loss of signal with the enhanced electronics in the terminal box version
- A torque arm can be used to mount the encoders directly on a small or medium sized motor, while a ball and tether arm allows for mounting on large motors



Through shaft allows for redundant mounting



Anti rotation pin mounting



Space saving design for back-to-back motor mounting

Flange mounting

Various coupling options ensure that the LP Series encoders can be adapted to different flange mounting installations:

- Integrated coupling with a through shaft encoder minimizes vibration and allows for direct mounting onto a motor, reducing overall installed length
- An external coupling can be used with a solid shaft body type for use on a larger motor shaft



Integrated coupling with real through shaft



Solid shaft with coupling

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