Linear Position Sensor – Hall

Figure 1: Linear Position Sensor

Features

- Magnetically operated position sensor
- Linear PWM outputs
- Programmable sensor – custom option
- Separate magnet assembly as actuator
- Large air gap operating
- Non-contact measuring

Benefits

- Robust construction makes this sensor well suited to harsh environments
- Magnetically operated non-contact sensing gives excellent life and reliability
- Ability to customize programming output states to customer needs

Applications

- Transmission fork position
- Linear stroke

General Description

The Hall Effect Linear Position Sensor detects the position of each fork in a DCT transmission. Each position sensor operates in a pair with one magnet actuator. There are four pairs in total to detect the fork position of gears 1~7 and reverse position.

Operation

Basic Principle

The sensor is a linear PWM output sensor which detects the position of moving parts. After programming, the sensor will output a linear PWM signal to reflect the position of the magnet assembly actuator.

Figure 2: Magnet Actuator

Figure 3: Linear Position Sensor

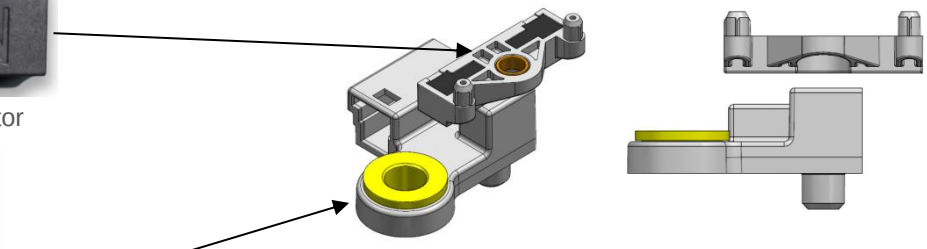

Figure 4: Assembly Relationship

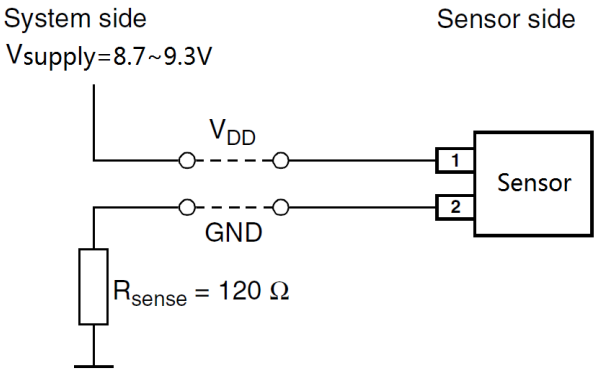

Figure 5: Typical Application Schematic Diagram

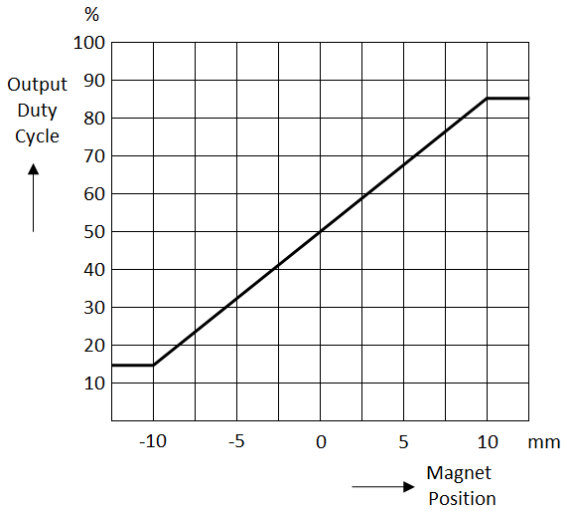

Figure 6: Output Curve

Packaging Options

Custom packaging can be provided to meet any need, please contact Littelfuse Engineering for details.

Functional Characteristics

Parameter				
Type				
Hall Effect Sensor			Programmable	
Output			Linear PWM Duty Cycle	
Electrical				
Voltage Supply	Max.		9.3Vdc	
	Min.		8.7Vdc	
PWM Output Signal Current	Low		4.0 ~ 8.0mA	
	High		12.0~ 16.5mA	
PWM output Frequency			420~540Hz	
Magnet to Sensor Air Gap	Max.		2.3mm	
	Min.		4.7mm	
Magnet Linear Sensing Range			-10~+10mm	
Repeatability Across Temp Range			0.5%FS	
Sensor Output Performance (typical)	Air Gap		-10.0mm	+10.0mm
	2.3mm		15%DC	85%DC
	3.5mm		25%DC	75%DC
	4.7mm		33%DC	67%DC
PWM Output Signal Clamps	Min.		3%DC	
	Max.		97%DC	
Environmental/Mechanical				
Temperature	Operating	Celsius	-40° C to +140°C	
	Storage	Celsius	-55°C to +150°C	
Mechanical Shock	15ms ½ Sine	Max.	25g	
Random Vibration	12 – 2000Hz	Max.	RMS MAX 4.2g	

Littelfuse

Website: www.littelfuse.com
Sales Support: ALL_Autosensors_Sales@littelfuse.com
Technical Support: ALL_Autosensors_Tech@littelfuse.com

ASP-MKT45-0021-AB