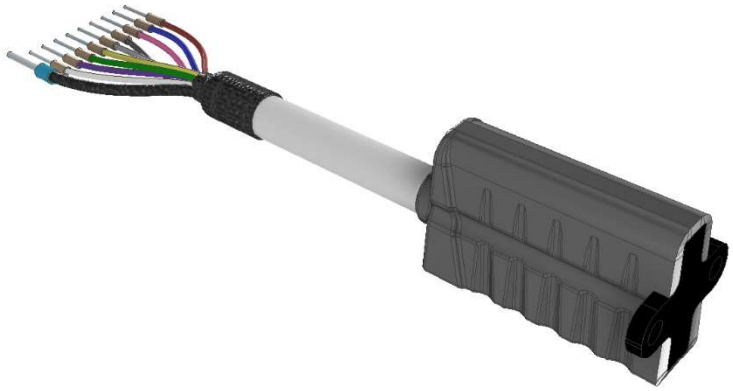
iLMA Hall effect sensor

Description

DGMOTION offers a Hall sensor which was specially developed for the iLMA linear motors. The sensor utilizes existing magnet feedback which allows for an unmatched accuracy to price ratio. Its main advantage is that the analog and the digital sensors are integrated into one housing.



Our Hall sensor can be used for a cost-effective solution when the position accuracy demands are not very high. Repeatable accuracy is in the range of 30 um whilst absolute accuracy is in the range of 100 um. With the integration of both sensors, analog is used for exact position control, where digital is used for commutation. A combination of both offers the customer a free “wake & shake” operation feature.

The sensor is equipped with 10 highly flexible shielded wires, which are suitable for use in the energy chains. The digital sensor generates the U, V, and W signal outputs with a 120° phase shift between them while the analog sensor generates sine and cosine signals with an amplitude of 1 Vpp. For the best EMC resistance, the signals are differential, ie.: sine: A+, A– and cosine: B+, B–.

Our Hall sensor is compatible with the iLMA motors, which helps the customers with an easy and precise mounting that allows for an ideal alignment between the sensors and the motor windings.

Specifications table

Absolute Maximum Ratings:

Parameter	MIN	MAX	UNIT
Power supply voltage V_{cc}	–0.3	6	V_{DC}
Output pin current U, V, W, A+, A–, B+, B–	0	–100	mA
Operating junction temperature, TJ	–15	85	°C
Storage temperature, T_{stg}	–25	90	°C

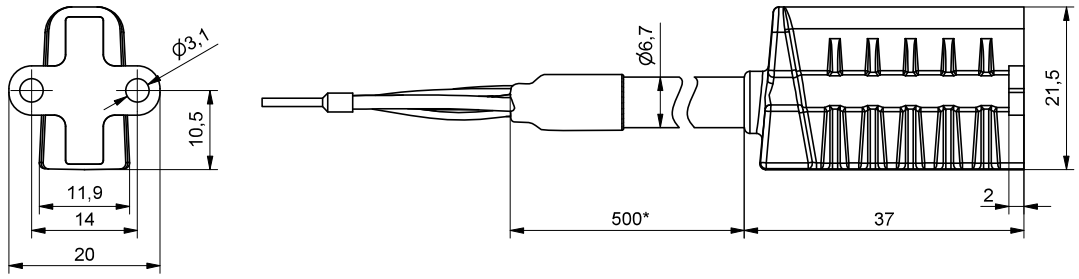
Recommended Operating Conditions:

Parameter	MIN	MAX	UNIT
Power supply voltage V_{cc}	4.9	5.5	V_{DC}
Powe supply current	30	50	mA
Output current	–	5	mA
Output voltage A+ to A– and B+ to B–	0.8	1.2	V_{pp}
Operating junction temperature, TJ	–15	85	°C
Storage temperature, T_{stg}	–25	90	°C

Technical specifications:

Parameter	VALUE	UNIT
Sensor accuracy	+/– 100	µm
Repeatability	+/– 30	µm
Hysteresis	+/– 10	µm
Signal period	30	mm
Cable	LAPP UNITRONIC FD CP plus 10x0.14	/
Cable bending radius (Fixed installation)	26.8	mm
Cable bending radius (Flexible installation)	50.25	mm

Description



* This is a standard cable length.
For different lengths, please refer to the “Hall sensor – How to order” section.

All dimensions are in mm.
The scale of the drawings may not be equal.

Pin-layout

Parameter	Symbol	Wire colour
Analog hall output A+	A+	Yellow
Analog hall output A–	A–	Green
Analog hall output B+	B+	Violet
Analog hall output B–	B–	White
Digital hall output U	U	Gray
Digital hall output V	V	Black
Digital hall output W	W	Pink
Power supply +5V_{DC}	+5V_{DC}	Red
Power supply GND	GND	Blue
Cable screen	EARTH	Screen

How to order

HALL - 0,5

Sensor:
– iLMA Hall

Cable length [m]:
– 0,5
– 2
– 5