

SERIES GMIXIA

Magnetic Incremental Linear Encoder with adjustable Resolution and Speed Monitoring



- Contactless and wear-free, magnetic measuring principle
- 5 different resolutions up to 0.01 mm selectable
- LED and signal output for speed monitoring (in compliance with the prescribed max. 25 m/min for panel saws)
- Output level switchable (HTL push/pull or TTL line driver)
- Speed proportional square wave signal outputs
- External metal box for evaluation and settings
- Status LED for each channel (A, B and Z)
- Small sensor with IP67 protection class

GMIX1A - Magnetic Linear Encoder with adjustable Resolution

General:

The GMIX1A system is a magnetic, incremental linear encoder for measurement of lengths and distances, e.g with wood working machines. The evaluation electronics are housed in a separate box where the square wave output signals are indicated via LEDs. Another LED is used to indicate the operating status. Various settings can be made via a 6-pin DIL switch, which is located in the evaluation box:

2.55 P

- The output levels (TTL Line driver or HTL push / pull)
- The configuration of speed monitoring VMAX
- The resolution of the measuring system

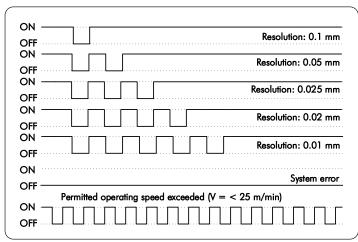
VMAX Speed Monitoring:

If the operating speed of 25 m/min is exceeded (under consideration of the selected operating direction), the output "VMAX" switches off its HIGH potential (wire break safety). Furthermore, a signal with the corresponding flashing sequence (see above) is given by the status LED.

The VMAX output is reset to HIGH after 60 seconds. The signaling of speed overruns via the status LED is only deactivated after a moving distance of 200 mm in positive or negative counting direction.

LEDs and Flashing Sequences:

The evaluation box of the **GMIX1A** has a line with four LEDs, whereby the signal output of channels A, B and Z is indicated by a red LED each. A green LED serves as a status indicator, for which different flashing sequences are assigned to different operating states (see figure right).



Connections:

Mounting of Sensor and Evaluation Box:

To mount the sensor head, use $2 \times M3$ screws of adequate length. During installation, the specified installation tolerances (see last page) must also be adhered to. The evaluation box has two lateral \emptyset 4.5 mm mounting holes for mounting the housing on a surface with two M4 screws. The drilling distance is 106 mm (see drawing on the last page).

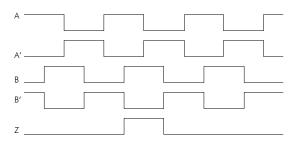
Function Principle:

The basis of the magnetic incremental encoders consists of a scanning technology, which scans the north and south poles on the coded magnetic tape and produces a single Sine/Cosine wave for each pole. The complete sine/cosine signal process is interpolated electronically. Depending on refinement of the interpolation, together with the pole distance of the magnetic tape, the resolution of the measuring system is determined. The magnetic tape MB20-50-10-1-R has a pole pitch of 5 mm.



A special evaluation electronic (translator) processes the sine/cosine wave into square output signals from the signal information of the magnetic tape. These square signals are equivalent to conventional optical rotary- or linear encoder outputs.

Output Pulse Diagram:



- a. Channel A and B are phase shifted by 90°.
- b. The output level can be switched between HTL and TTL via the internal DIL switch.
- c. The index pulse Z output occurs periodically every 5 mm.

Pin	Function
1	Α
2	A'
3	GND
4	В
5	B'
6	VMAX out
7	Z
8	VCC
9	GND

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Technal Data:

Mechanical Data		
Measuring principle	incremental	
Repeat accuracy	± 1 Increment	
System accuracy at 20°C	$\pm (25 + 20 \times L)$, L = measuring length in meter	
Distance sensor - magnetic tape	1.5 mm	
Housing material	sensor head: zinc die cast evaluation box: galvanized steel	
Housing dimensions (L x W x H)	sensor head: 30 x 10 x 15 mm evaluation box: 16 x 74 x 28 mm	
Necessary type	MB20-50-10-1-R	
Magnetic tape pole pitch	5 mm	
Maximum measuring length	theoretically unlimited	
Connections	9-pin (female) D-SUB	
Sensor cable	1.5 m standard cable length (others on request), drag-chain suitable	
Sensor cable bending radius	min. 60 mm	
Weight	sensor head: approx. 15 g (without cable), cable: approx 60 g/m evaluation box: approx. 280 g	
Electrical Data		
Power supply voltage	10 30 VDC ±10 %	
Residual ripple	< 10 %	
Current consumption	max. 300 mA	
Output signals	A, A', B, B', Z	
Output levels	TTL / HTL (switchable)	
Resolution	0.1 0.05 0.025 0.02 0.01 mm (selectable)	
Max. output frequency / channel	depending on selected resolution	
Max. operating speed	depending on selected resolution	
Index pulse	every 5 mm (periodically)	
Output VMAX		
Output voltage	≙ power supply voltage (10 30 VDC) –0,7 V	
Output current	max. 200 mA (resistive, inductive or capacitive load)	
Miscellaneous	output is permanently short-circuit proof and current limited	
Environmental Conditions		
Storage temperature	−20 +85° C	
Operation temperature	sensor head: -10 +70 °C (-25 +85 °C on request) evaluation box: -10 +50° C	
Humidity	sensor head: max. 95 %, evaluation box: max. 80 %, each non-condensing	
Protection class	sensor head: IP67 evaluation box: IP40	

Typen Designation:

To order, please use the following code:

A Version

000 = standard version

001 = first special version etc.

B Sensor Cable Length

01.5 = 1.5 m standard (others on request)

C Resolution

1 = 0.1 mm

2 = 0.05 mm

3 = 0.025 mm

4 = 0.02 mm

5 = 0.01 mm

D Power Supply / Output Levels

 $00 = 10 \dots 30 \text{ VDC} / \text{HTL push-pull}$

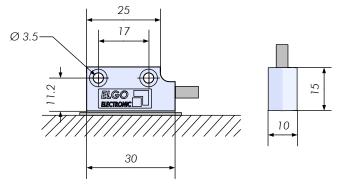
01 = 5 VDC / TTL line driver

Example:

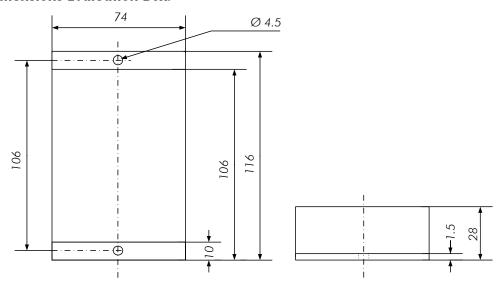
Standard GMIX1A with 1.5 m long cable, preconfigured resolution of 0.1 mm, 10 ... 30 VDC suplly and HTL as output signal level

Your order:

Dimensions Sensor:



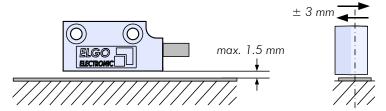
Dimensions Evaluation Box:



Mounting Tolerances Sensor:

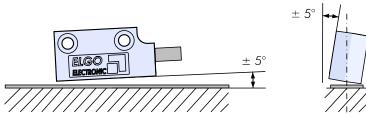


Lateral offset:

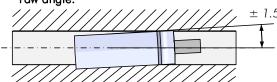


Pitch angle:









Accessories:

Order Designation	Description
MB20-50-10-1-R-XX.X*	Magnetic tape with 5 mm pole pitch *) please indicate length in XX.X m
10 mm end cap set	2 end caps (10 mm) for magnetic tape. Two M3 screws included. Additional fixation in the radial and linear range to protect the ends of the magnetic tape.
FS1000, FS1500 or FS2000	Guide rail for magnetic tape (length: 1.0 m, 1.5 m and max. 2.0 m available). For longer measuring lengths the rails can be lined up together.
FW2060	Guide carriage for sensor head as ideal supplement to FS guide rails. The carriage is made of special sliding plastic. Dimensions L x W x H = $80 \times 48 \times 24$ mm.
AP-00-XX**	Aluminium cover-profile for magnetic tapes (as alternative to the cover tape). **) $AP-00-1m = 1 \text{ m long } / AP-00-2m = 2 \text{ m long}$
POSU	Pole finder card 85 x 55 mm

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