

# Encoders without bearing

Sensor head with integrated FPGA signal processing, magnetic sensing

Hollow shaft max.  $\varnothing 80$  mm, incremental resolution 64...131072

## MHGP 100 - HDmag



MHGP 100 - Version for axial screw mounting

### Features

- Incremental encoder with magnetic sensing and without bearings
- Sensor head with integrated FPGA signal processing
- Sinewave or square-wave signals
- Resolution max. 131072 pulses
- Robust and free from wear
- Electronics is fully encapsulated
- High protection standard
- Large tolerances: axial  $\pm 3$  mm, radial max. 2.2 mm
- Very compact dimensions
- Simple mounting, easy adaptation
- Several mounting possibilities

### Technical data - electrical ratings (square-wave)

Voltage supply	4.5...30 VDC
Consumption w/o load	$\leq 160$ mA
Resolution (steps/turn)	64...131072
Phase shift	$90^\circ \pm 10^\circ$
Scan ratio	40...60 %
Reference signal	Zero pulse, width $90^\circ$
Sensing method	Magnetic
Output frequency	$\leq 2$ MHz
Output signals	A+, B+, R+, A-, B-, R-
Output circuit	HTL (power linedriver) TTL (RS422)
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4

### Technical data - electrical ratings (sinewave)

Voltage supply	4.5...30 VDC
Consumption w/o load	$\leq 160$ mA
Resolution (steps/turn)	64...8192
Phase shift	$90^\circ \pm 5^\circ$
Reference signal	Zero pulse, width $90^\circ$
Sensing method	Magnetic
Output signals	A+, B+, R+, A-, B-, R-
Output circuit	Sine/cosine 1 Vpp
Harmonics share approx.	-40 dB
Offset sine/cosine amplitude	$\leq 20$ mV
Spectrum	400 kHz (-3 dB)
Overlaying constant share	$\leq 20$ mV
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4

### Technical data - mechanical design

Sensor head	FPGA signal processing
Dimensions (flange)	$\varnothing 99,9$ mm
Shaft	$\varnothing 16...80$ mm hollow shft
Protection DIN EN 60529	IP 67 (sensor head), IP 68 (encoder wheel)
Operating speed	$\leq 8000$ rpm
Operating temperature	$-20...+85$ °C
Resistance	DIN EN 60068-2-6 Vibration 30 g, 55-2000 Hz DIN EN 60068-2-27 Shock 300 g, 2 ms
Axial tolerance	$\pm 3$ mm (wheel/head)
Radial tolerance	0.1...2.2 mm (wheel/head)
Accuracy of magnetic scale	$\pm 300$ "
Connection	Connector M23, 12-pin
Approvals	CE conform, ROHS compliant

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## Part number

**MHGP 100 B5**       **N**   **C**

|  
See part number (pulses)

|  
Voltage supply / signals

- P 4,5...30 VDC / sine
- R 4,5...30 VDC / square-wave (TTL)
- T 5 VDC ±5 % / square-wave (TTL)
- H 10...30 VDC / square-wave (HTL)
- U 5...30 VDC / square-wave (5 VDC = TTL / 10...30 VDC = HTL universal)

|  
Mounting type / hollow shaft (ø mm)

Screw mounting

G38, G45, G50, G55, G60, G65, G70, G75, G80

Clamping set mounting

Z16, Z20, Z22, Z25, Z28, Z32, Z35, Z38, Z40, Z42, Z45, Z48, Z50, Z55, Z60, Z63, Z65

Shrink fit mounting

H38, H45, H50, H55, H60, H65, H70, H75, H80

Clamping ring mounting

K25, K30, K32, K38, K40, K45, K48, K50, K55, K56, K60, K65, K70, K75

## Part number (pulses)

64	512	4096	32768
128	1024	8192	65536
256	2048	16384	131072

Maximum pulses at sinewave signals 8192

## Accessories

### Connectors and cables

HEK 8	Sensor cable for encoders
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# Encoders without bearing

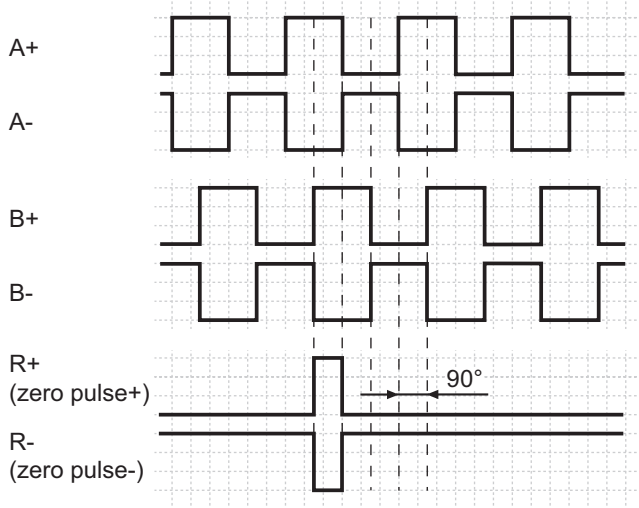
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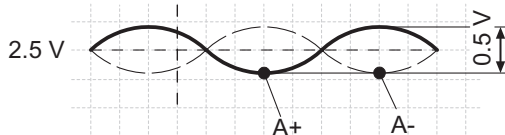
## MHGP 100 - HDmag

### Output signals

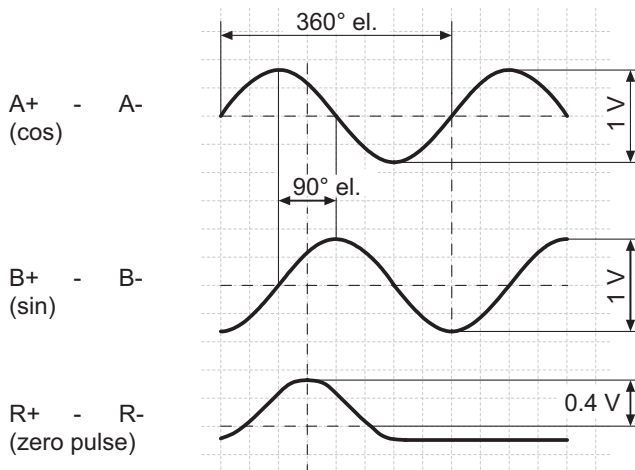
Version with square-wave signals HTL oder TTL  
at positive rotating direction



Version with sinewave signals



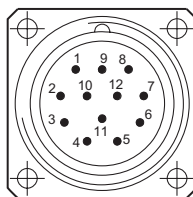
at positive rotating direction



### Terminal assignment

View A - Connector M23, male contacts, counter-clockwise

Male	Assignment
Pin 1	B-
Pin 2	do not use
Pin 3	R+
Pin 4	R-
Pin 5	A+
Pin 6	A-
Pin 7	do not use
Pin 8	B+
Pin 9	do not use
Pin 10	0 V
Pin 11	do not use
Pin 12	UB







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