

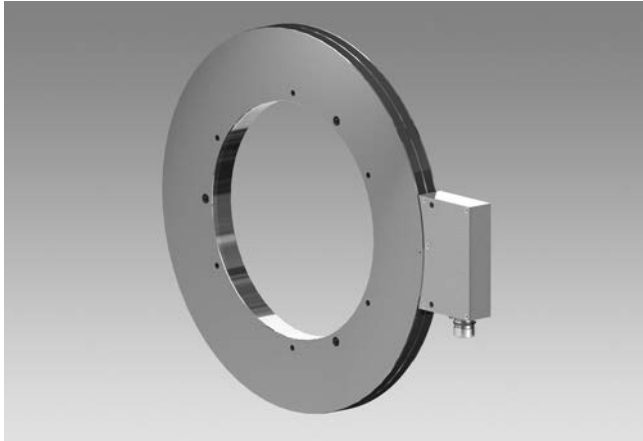
# Encoders without bearings - incremental

Sensor head with integrated FPGA signal processing, magnetic sensing

256...524288 pulses or 256...32768 sinewave cycles per turn

Through hollow shaft max.  $\varnothing$ 340 mm

## MHGP 400 - HDmag



MHGP 400 - Version for axial screw mounting

### Features

- Robust and wearless
- Electronics is fully encapsulated, high protection
- Large tolerances: axial  $\pm 3$  mm, radial max. 2.2 mm
- Very compact dimensions
- Simple mounting, easy adaptation
- Several mounting possibilities
- Sensor head with integrated FPGA signal processing

### Optional

- Triple-bandage (increased operating speed)

### Technical data - electrical ratings

Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Approvals	CE, UL approval / E217823

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

Voltage supply	4.5...30 VDC
Consumption w/o load	$\leq 160$ mA
Pulses per revolution	256...524288
Phase shift	$90^\circ \pm 10^\circ$
Duty cycle	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 stages	HTL, TTL/RS422

### Technical data - electrical ratings (SinCos)

Voltage supply	4.5...30 VDC
Consumption w/o load	$\leq 160$ mA
Sinewave cycles per revolution	256...32768
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 stages	SinCos 1 Vpp
Difference of SinCos amplitude	$\leq 20$ mV
Harmonics typ.	-40 dB
DC offset	$\leq 20$ mV
Bandwidth	400 kHz (-3 dB)

### Technical data - mechanical design

Sensor head	FPGA signal processing
Size (flange)	$\varnothing 405.4$ mm
Shaft type	$\varnothing 70...340$ mm (through hollow shaft)
Axial tolerance	$\pm 3$ mm (wheel/head)
Radial tolerance	0.1...2.2 mm (wheel/head)
Protection DIN EN 60529	IP 67 (head), IP 68 (wheel)
Operating speed	$\leq 2000$ rpm
Materials	Housing sensing head: aluminium alloy Wheel: stainless steel (1.4104)
Operating temperature	$-20...+85$ °C
Resistance	IEC 60068-2-6 Vibration 30 g, 55-2000 Hz IEC 60068-2-27 Shock 300 g, 2 ms
Accuracy of magnetic measure	$\pm 75$ "
Connection	Flange connector M23, 12-pin

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**MHGP 400 - HDmag**

**Part number**

MHGP 400   **5**       **N**   **C**

|  
Pulse number/sinewave cycles - see table

|  
Voltage supply / signals

- P 4.5...30 VDC / SinCos
- R 4.5...30 VDC / square-wave (TTL)
- T 5 VDC  $\pm$ 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 ( $\varnothing$  mm)

Screw or shrink fit mounting  
G140, G160, G170, G180, G190, G210, G230, G250, G300, G310, G340

Clamping set mounting  
Z70, Z75, Z80, Z85, Z90, Z95, Z100, Z110, Z120, Z130, Z140, Z150, Z160, Z170, Z200

Bandaging

- B Encoder wheel standard bandage
- T Encoder wheel with triple-bandage

**Pulse number/sinewave cycles**

256	2048	16384	131072
512	4096	32768	262144
1024	8192	65536	524288

Maximum sinewave cycles 32768 for SinCos output.

**Accessories**

**Connectors and cables**

HEK 8      Sensor cable for encoders

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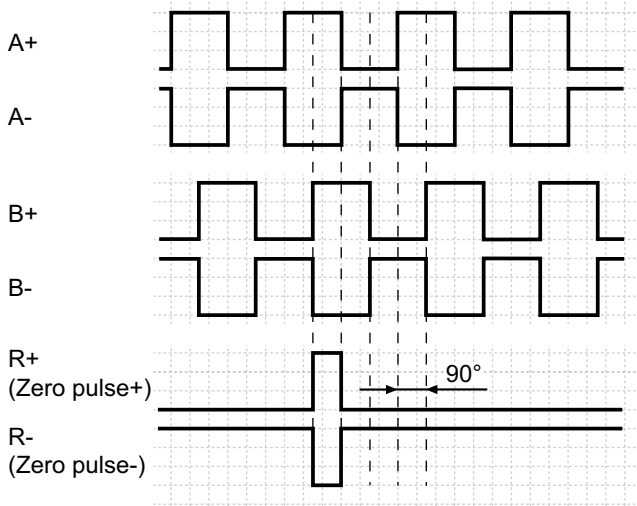
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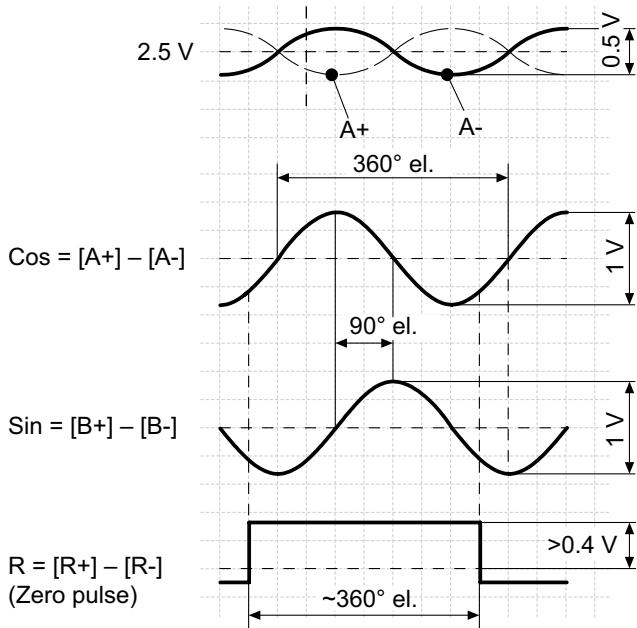
## MHGP 400 - HDmag

### Output signals

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



Version with SinCos signals at positive rotating direction

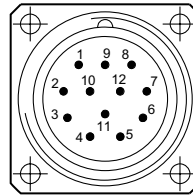


### Terminal assignment

#### View A

Flange connector M23, 12-pin, male contacts, CCW

Pin	Assignment
1	B-
2	Do not use
3	R+ (Zero pulse)
4	R- (Zero pulse inv.)
5	A+
6	A-
7	Do not use
8	B+
9	Do not use
10	⊥
11	Do not use
12	+UB



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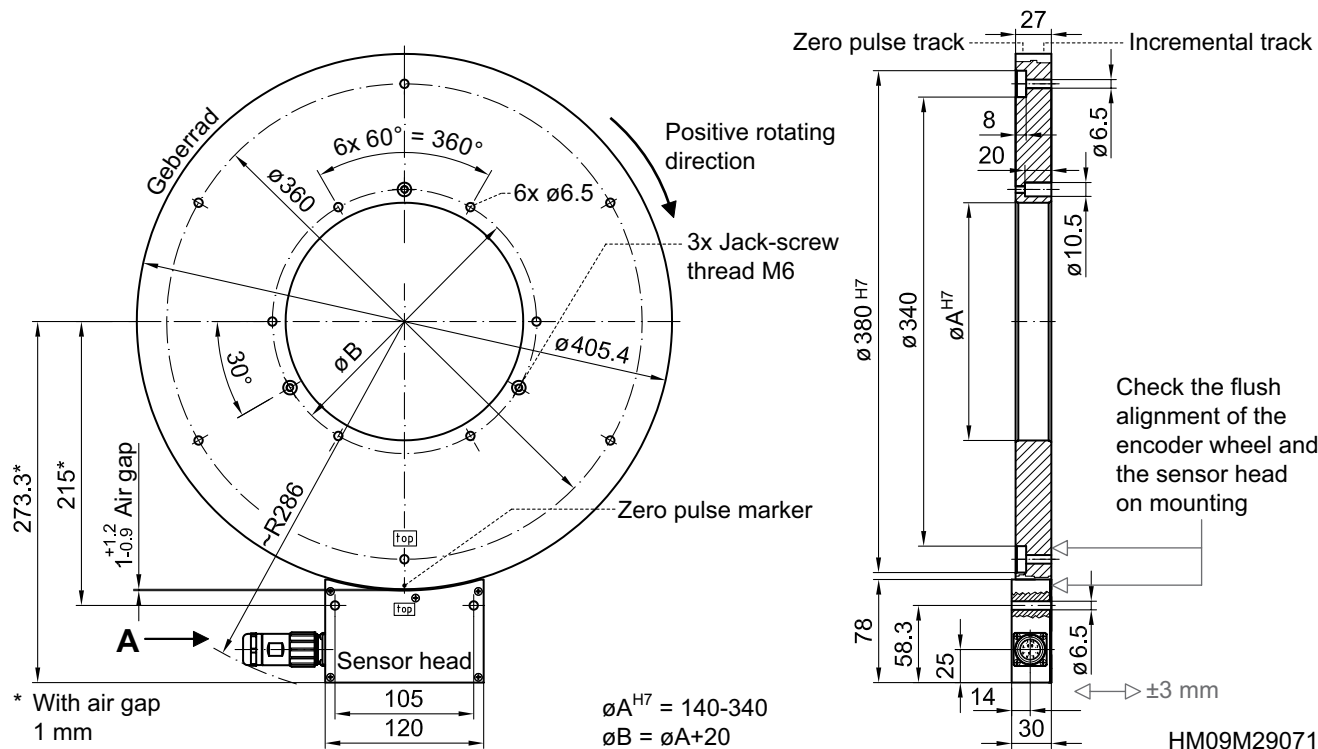
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## Dimensions

### Version for axial screw mounting or shrink fit mounting



### Version for clamping set mounting

