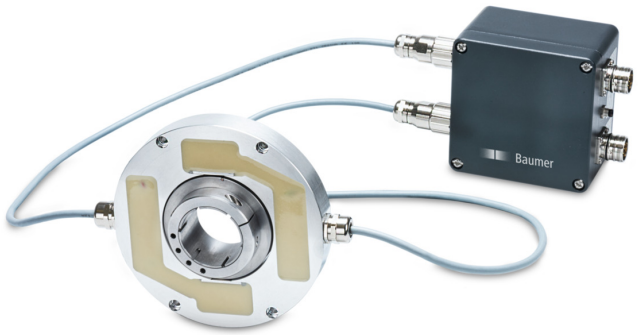
HMC16

Incremental encoder with magnetic sensing and connected signal processing
Through hollow shaft ø25...60 mm, resolution 128...65536 pulses

Overview

- Bearingless encoder system of rotor (HMCR16) and stator with sensing unit (HMCK16) with connected signal processing (HMCP16)
- Magnetic sensing
- Robust and free from wear, very high maximum speed up to 20000 rpm (25000 rpm on request)
- SinCos, HTL und TTL output, 128...65536 pulses with connected signal processing
- Redundant sensing for concentricity error compensation
- Delivery includes connector plug (not shown)



Technical data

Technical data - electrical ratings	
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Approval	CE
Technical data - electrical ratings (signal processing)	
Voltage supply	10...30 VDC
Consumption typ.	200 mA (15 VDC)
Output stages	SinCos 1 Vpp HTL TTL TTL/HTL (Vin = Vout), galvanically isolated
Output signals	A+, A-, B+, B- (Option: R+, R-)
Output frequency	≤300 kHz (HTL) ≤2 MHz (TTL) ≤400 kHz (SinCos)
Pulses per revolution	128 … 65536
Sinewave cycles per revolution	128 … 4096
Reference signal	Zero pulse (Option)
Sensing method	Magnetic
Technical data - mechanical design	
Size (flange)	Encoder: ø158 mm

Technical data - mechanical design	
Dimensions W x H x L	Signal processing: 122 x 122 x 80 mm
Shaft type	Encoder: ø25...60 mm (through hollow shaft)
Axial tolerance	±2 mm (encoder)
Radial tolerance	±0.2 mm (encoder) ±0.1 mm (>10000 rpm)
Protection EN 60529	IP 68 (encoder) IP 65 (Signal processing)
Operating speed	≤20000 rpm
Material	Housing sensing head: aluminium alloy Wheel: stainless steel (1.4104)
Rotor moment of inertia	7.5 kgcm² (ø45)
Operating temperature	Encoder: -20...+85 °C Signal processing: 0...+50 °C
Resistance	Encoder: IEC 60068-2-6 Vibration 25 g, 10-2000 Hz IEC 60068-2-27 Shock 300 g, 12 ms Signal processing: IEC 60068-2-6 Vibration 1 g, 50-2000 Hz IEC 60068-2-27 Shock 30 g, 11 ms
Connection	Encoder: Mating connector Signal processing: Flange connector M23, 12-pin / Connector M8, 3-pin, external voltage supply

Optional

- Speed in the form of a frequency or an SSI word
- Diagnostic function with error output
- Higher pulse numbers on request
- Other shaft diameters on request

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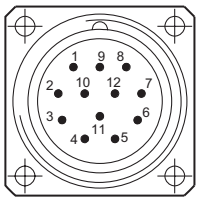
Terminal assignment

View Z *(see dimension)*
Output I and II HMCP



Flange connector M23
(male, 12-pin),
counter-clockwise (CCW)

Pin	Assignment
1	B–
2	dnu
3	R+
4	R–
5	A+
6	A–
7	dnu
8	B+
9	dnu
10	0V
11	dnu
12	dnu

Flange connector (male, 3-pin),
counter-clockwise (CCW)

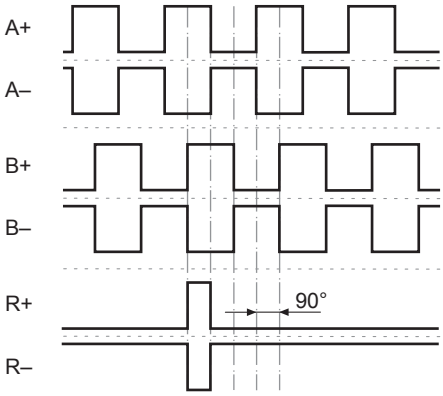
Pin	Assignment
1	10...30 VDC
3	0V
4	dnu

Terminal significance

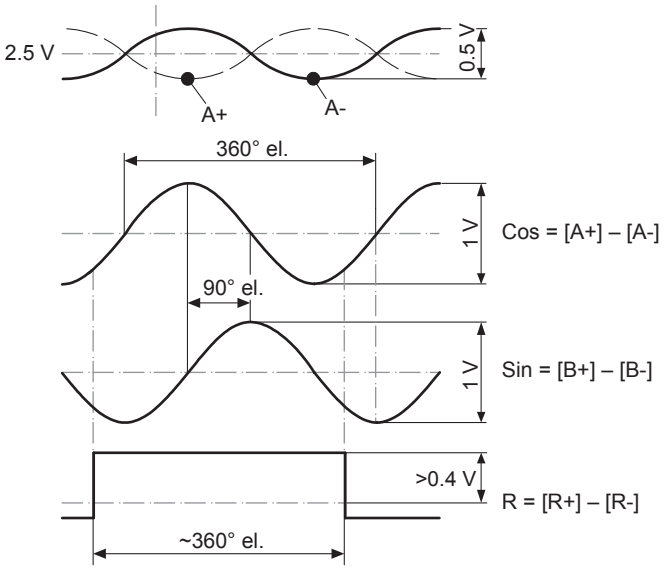
+UB	Voltage supply
⊥	Ground
⏚	Earth ground (housing)
A+	Output signal channel 1
A−	Output signal channel 1 inverted
B+	Output signal channel 2 (offset by 90° to channel 1)
B−	Output signal channel 2 inverted
R+	Zero pulse (reference signal)
R−	Zero pulse inverted
dnu	Do not use

Output signals

HTL/TTL
At positive rotating direction *(see dimension)*



SinCos
At positive rotating direction *(see dimension)*



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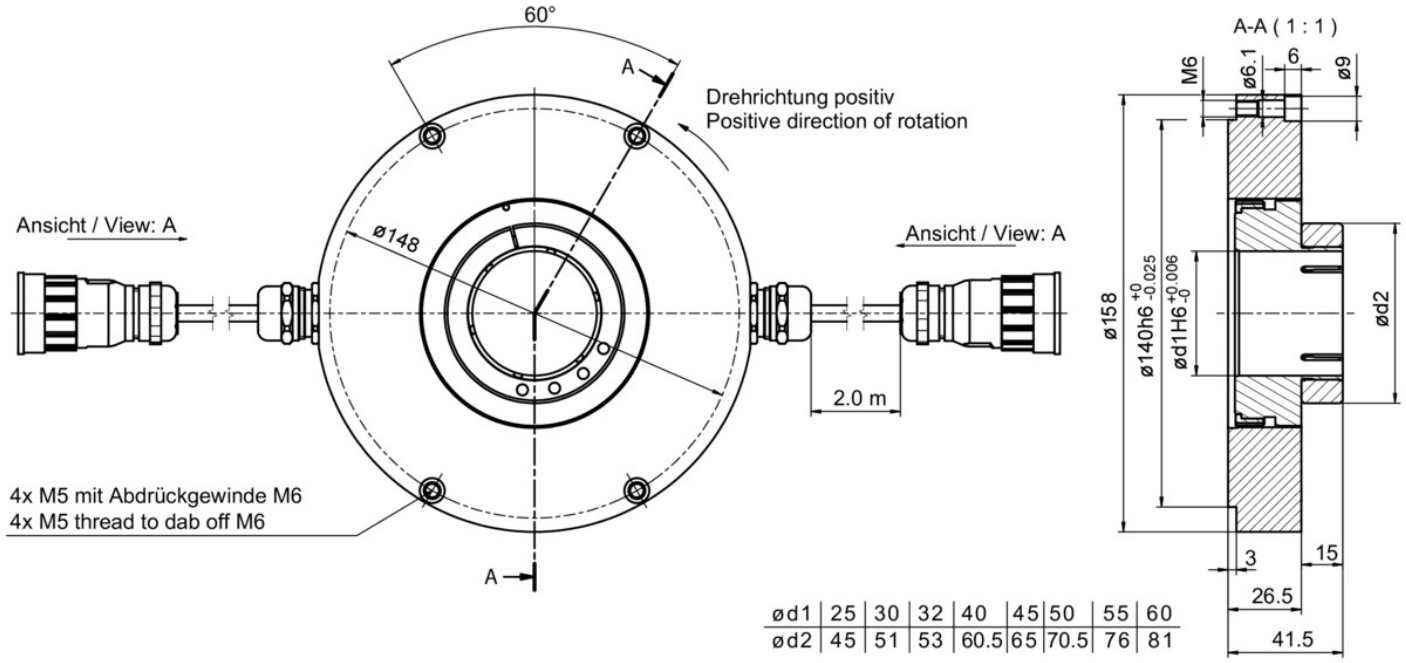
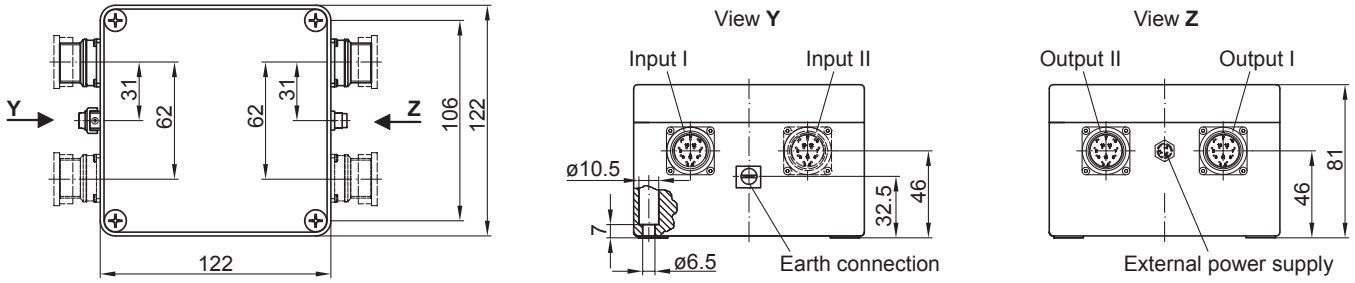
Dimensions



Encoder (Rotor HMCR + Stator HMCK)



Signal processing HMCP

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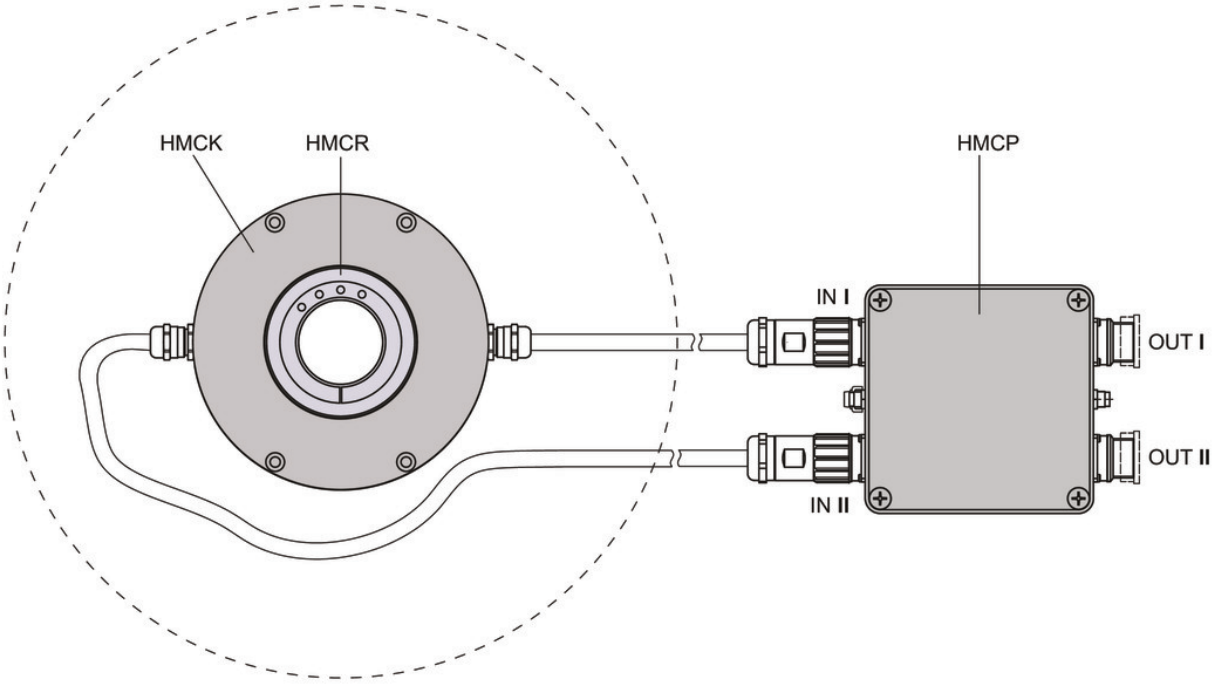
Connection examples



With redundant sensing

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Ordering reference

	HMC16A2	#	##	D	02	#	##	#	##	X00	E	##
Product												
	HMC16A2											
Zero pulse												
Without zero pulse		X										
With zero pulse		N										
Shaft diameter												
Through hollow shaft ø25 mm			25									
Through hollow shaft ø30 mm			30									
Through hollow shaft ø32 mm			32									
Through hollow shaft ø40 mm			40									
Through hollow shaft ø45 mm			45									
Through hollow shaft ø50 mm			50									
Runout error compensation												
With runout error compensation				D								
Cable length												
Standard 2 m, M23 connector					02							
Output stage I												
SinCos 1 Vpp (max. 4096 periods per revolution)						S						
HTL						H						
TTL						T						
TTL/HTL (Vin=Vout), galvanically isolated, 5...30 VDC						U						
Pulse number/periods per revolution I												
128							00					
256							01					
512							10					
1024							11					
2048							12					
4096							13					
8192							30					
16384							31					
32768							32					
65536							33					
Output stage II												
Output not used								x				
HTL								H				
TTL								T				
TTL/HTL (Vin=Vout), galvanically isolated, 5...30 VDC								U				
Pulse number/periods per revolution II												
128									00			
256									01			
512									10			
1024									11			
2048									12			
4096									13			
8192									30			
16384									31			
32768									32			
65536									33			
Output stage III												
Without output stage III										X00		

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Ordering reference

	HMC16A2	#	##	D	02	#	##	#	##	X00	E	##
Voltage supply												
10...30 VDC, external via M8 connector											E	
Filter settings												
150 runtime in µs												00
300 runtime in µs												01
500 runtime in µs												02
1000 runtime in µs												03

Other shaft diameters, pulse numbers and versions on request