

## HOG 9

Blind hollow shaft or cone shaft  
300...5000 pulses per revolution

### Overview

- Optical sensing method
- Output stage HTL with power linedriver
- TTL output driver for cable length up to 550 m
- Operating temperature up to +100 °C
- Hybrid bearing for extended service life



### Technical data

#### Technical data - electrical ratings

Voltage supply	9...30 VDC 5 VDC ±5 %
Consumption w/o load	≤100 mA
Pulses per revolution	300 ... 5000
Phase shift	90 ° ±20°
Duty cycle	40...60 %
Reference signal	Zero pulse, width 90°
Sensing method	Optical
Output frequency	≤120 kHz ≤300 kHz (on request)
Output signals	K1, K2, K0 + inverted
Output stages	HTL-P (power linedriver) TTL/RS422
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Approval	CE UL approval / E217823

#### Technical data - mechanical design

Size (flange)	ø97 mm
Shaft type	ø12...16 mm (blind hollow shaft) ø17 mm (cone shaft 1:10)

#### Technical data - mechanical design

Admitted shaft load	≤400 N axial ≤500 N radial
Protection DIN EN 60529	IP 56
Operating speed	≤10000 rpm (mechanical)
Operating torque typ.	6 Ncm
Rotor moment of inertia	160 gcm <sup>2</sup>
Material	Housing: aluminium die-cast Shaft: stainless steel
Operating temperature	-30...+100 °C -25...+100 °C (>3072 pulses)
Resistance	IEC 60068-2-6 Vibration 17 g, 10...2000 Hz IEC 60068-2-27 Shock 275 g, 6 ms
Corrosion protection	IEC 60068-2-52 Salt mist for ambient conditions C4 according to ISO 12944-2
Explosion protection	II 3 G Ex nA IIC T4 Gc (gas) II 3 D Ex tc IIIB T135°C Dc (dust)
Connection	Flange connector M23, 12-pin
Weight approx.	700 g

### Optional

- Function control with EMS (Enhanced Monitoring System)

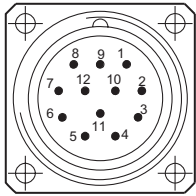
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## Terminal assignment

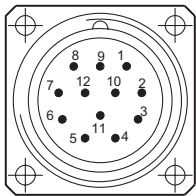
**View A** (see dimension)  
Assignment flange connector



Flange connector M23,  
male, 12-pin,  
clockwise (CW)

Pin	Assignment
1	$\overline{K2}$
2	dnu
3	K0
4	$\overline{K0}$
5	K1
6	$\overline{K1}$
7	dnu
8	K2
9	dnu
10	0V ( $\perp$ )
11	dnu
12	+UB

**Option EMS: View A** (see dimension)  
Assignment flange connector



Flange connector M23,  
male, 12-pin,  
clockwise (CW)

Pin	Assignment
1	$\overline{K2}$
2	dnu
3	K0
4	$\overline{K0}$
5	K1
6	$\overline{K1}$
7	$\overline{Err}$
8	K2
9	0V ( $\perp$ ) @ $\overline{Err}$
10	0V ( $\perp$ )
11	dnu
12	+UB

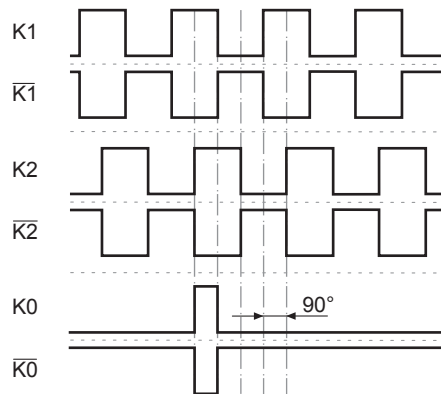
## Terminal significance

+UB	Voltage supply
0V ( $\perp$ )	Ground
K1	Output signal channel 1
$\overline{K1}$	Output signal channel 1 inverted
K2	Output signal channel 2 (offset by 90° to channel 1)
$\overline{K2}$	Output signal channel 2 inverted
K0	Zero pulse (reference signal)
$\overline{K0}$	Zero pulse inverted
$\overline{Err}$	Error output (option EMS)
dnu	Do not use

## Output signals

### HTL/TTL

At positive rotating direction (see dimension)



## Option EMS (Enhanced Monitoring System): Status LED / error output

Flash light red*	Error of signal sequence, zero pulse or pulses (Error output = HIGH-LOW alternation)
Red	Overload output transistors (Error output = LOW)
Flash light green	Device o.k., rotating (Error output = HIGH)
Green	Device o.k., stopped (Error output = HIGH)
No light	No voltage supply connection or wrong connection (Error output = LOW)

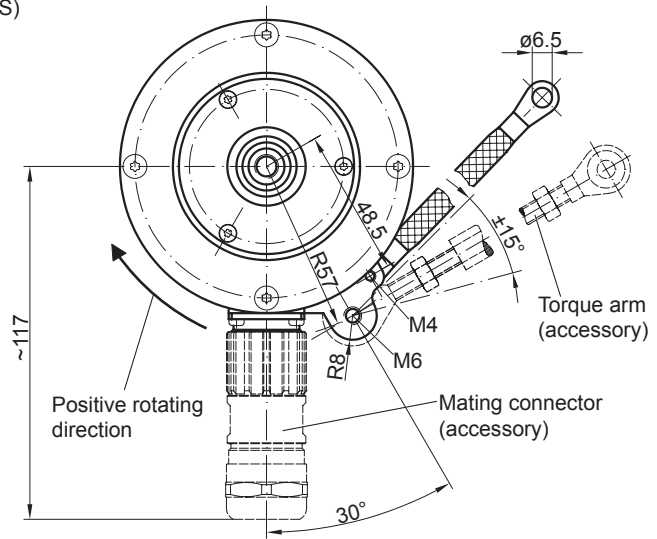
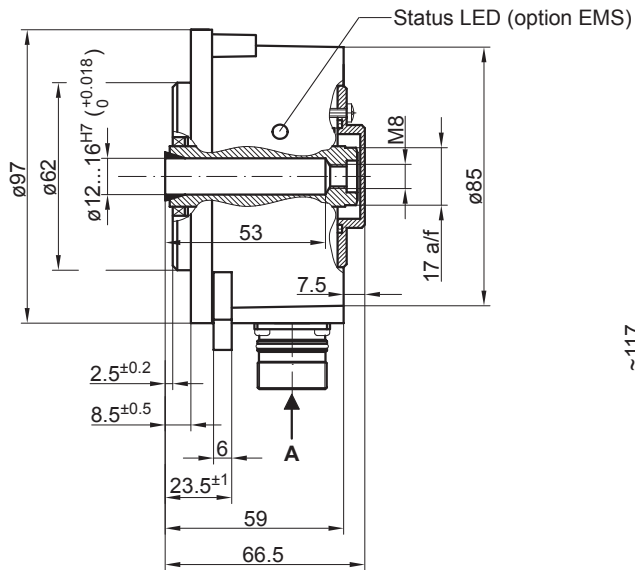
\* Only at rotating device

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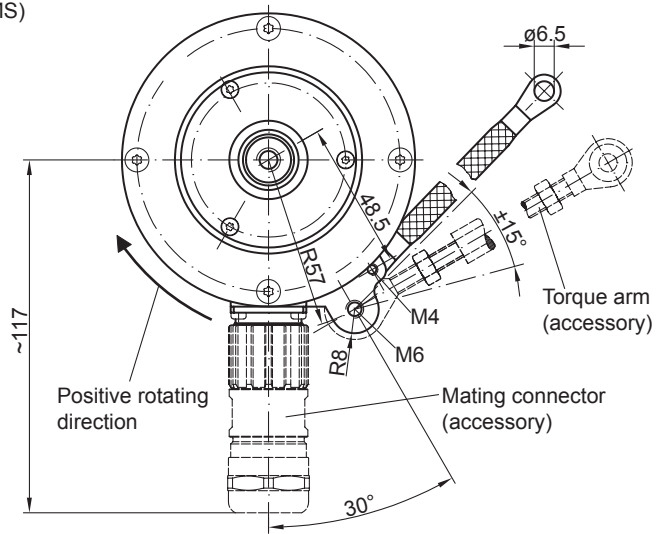
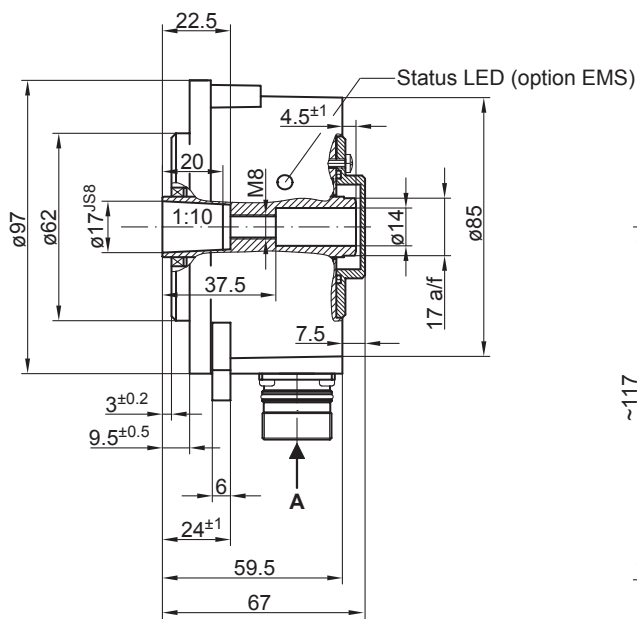
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## Dimensions



Blind hollow shaft



Cone shaft

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**Ordering reference**

	HOG9	##	DN	####	###	#####
<b>Product</b>						
Incremental encoder	HOG9					
<b>EMS - Enhanced Monitoring System</b>						
Without EMS						
With EMS		.2				
<b>Output signals</b>						
K1, K2, K0			DN			
<b>Pulse number<sup>(1)</sup></b>						
300				300		
500				500		
512				512		
1000				1000		
1024				1024		
1200				1200		
2048				2048		
2500				2500		
3072				3072		
4096				4096		
5000				5000		
<b>Voltage supply / output stage</b>						
9...30 VDC / output stage HTL with inverted signals					I	
5 VDC / output stage TTL with inverted signals					TTL	
9...30 VDC / output stage TTL with inverted signals					R	
<b>Shaft diameter</b>						
Blind hollow shaft ø12 mm						12H7
Through hollow shaft ø14 mm						14H7
Blind hollow shaft ø15 mm						15H7
Blind hollow shaft ø16 mm						16H7
Cone shaft ø17 mm (1:10)						17K

(1) Other pulse numbers on request.

**Accessories**
**Mounting accessories**

11043628	Torque arm M6, length 67...70 mm
11004078	Torque arm M6, length 120...130 mm (≥71 mm)
11002915	Torque arm M6, length 425...460 mm (≥131 mm)
11054917	Torque arm M6 insulated, length 67...70 mm
11072795	Torque arm M6 insulated, length 120...130 mm (≥71 mm)
11082677	Torque arm M6 insulated, length 425...460 mm (≥131 mm)
11077197	Mounting kit for torque arm size M6 and earthing strap
11081744	Mounting and dismounting kit for blind hollow shaft
11084868	Mounting and dismounting kit for cone shaft

**Connectors and cables**

	Sensor cable for encoders HEK 8
11068577	Mating connector M23, solder version, 12-pin, CCW

**Accessories**
**Diagnostic accessories**

11075858	Analyzer for encoders HENQ 1100
11075880	Analyzer for encoders HENQ 1100 with a power pack