

# Incremental encoders

## Blind hollow shaft or cone shaft

### 300...5000 pulses per revolution

## HOG 9



HOG 9

### Technical data - electrical ratings

Voltage supply	9...30 VDC 5 VDC $\pm$ 5 %
Consumption w/o load	$\leq$ 100 mA
Pulses per revolution	300...5000
Phase shift	90° $\pm$ 20°
Scan ratio	40...60 %
Reference signal	Zero pulse, width 90°
Sensing method	Optical
Output frequency	$\leq$ 120 kHz $\leq$ 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
Approvals	CE, UL approval / E256710

### Features

- Optical sensing method
- Output stage HTL with power linedriver
- TTL output driver for cable length up to 500 m
- Operating temperature up to +100 °C
- Hybrid bearing for extended lifetime

### Optional

- Function control with EMS  
(Enhanced Monitoring System)

### Technical data - mechanical design

Size (flange)	$\varnothing$ 97 mm
Shaft type	$\varnothing$ 12...16 mm (blind hollow shaft) $\varnothing$ 17 mm (cone shaft 1:10)
Admitted shaft load	$\leq$ 400 N axial $\leq$ 500 N radial
Protection DIN EN 60529	IP 56
Operating speed	$\leq$ 10000 rpm (mechanical)
Operating torque typ.	6 Ncm
Rotor moment of inertia	160 gcm <sup>2</sup>
Materials	Housing: aluminium die-cast Shaft: stainless steel
Operating temperature	-30...+100 °C -25...+100 °C (>3072 pulses per revolution)
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 Complies to ISO 12944-5:1998 Protective paint systems (C4)
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

Subject to modification in technic and design. Errors and omissions excepted.

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#### Part number

#### Incremental encoder

HOG9 

		DN					
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#### Shaft diameter

12H7	Blind hollow shaft ø12 mm
14H7	Blind hollow shaft ø14 mm
15H7	Blind hollow shaft ø15 mm
16H7	Blind hollow shaft ø16 mm
17K	Cone shaft ø17 mm (1:10)

#### Voltage supply / signals

I	9...30 VDC / output stage HTL with inverted signals
TTL	5 VDC / output stage TTL with inverted signals
R	9...30 VDC / output stage TTL with inverted signals

Pulse number - see table

#### Output signals

DN K1, K2, K0

EMS - Enhanced Monitoring System

Without EMS

.2 With EMS

#### Pulse number

300	1000	2048	4096
500	1024	2500	5000
512	1200	3072	

Other pulse numbers on request.

#### Accessories

##### Connectors and cables

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

##### Mounting accessories

DMS 6	Torque arm size M6
11081744	Mounting and dismounting kit for blind hollow shaft
11084868	Mounting and dismounting kit for cone shaft

##### Diagnostic accessories

HENQ 1100	Analyzer for encoders
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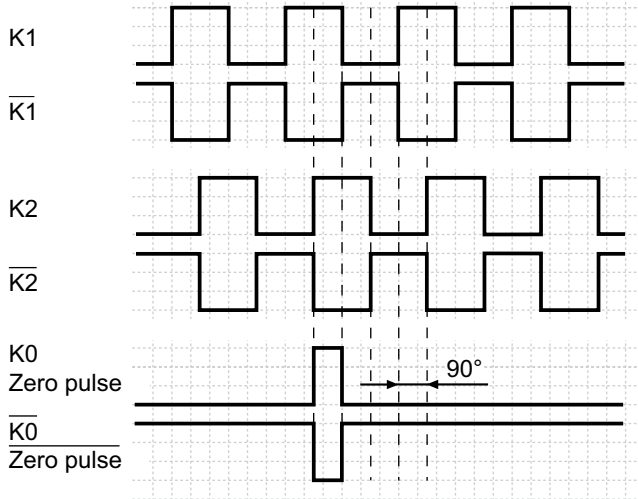
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### Output signals

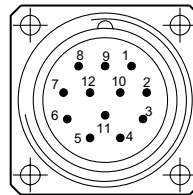
At positive rotating direction



### Terminal assignment

**View A** - Flange connector M23, 12 pin, male contacts, CW

Pin	Assignment
1	$\overline{K2}$ (K2 inv.)
2	Do not use
3	K0 (Zero pulse)
4	$\overline{K0}$ (Zero pulse inv.)
5	K1
6	$\overline{K1}$ (K1 inv.)
7	Do not use (Option EMS: Err)
8	K2
9	Do not use (Option EMS: 0 V)
10	0 V
11	Do not use
12	+UB



### Option EMS: LED status / 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	Encoder o.k., rotating (Error output = HIGH)
Green	Encoder o.k., stopped (Error output = HIGH)
No light	No output voltage connection or wrong connection (Error output = LOW)

\* Only at rotating encoder

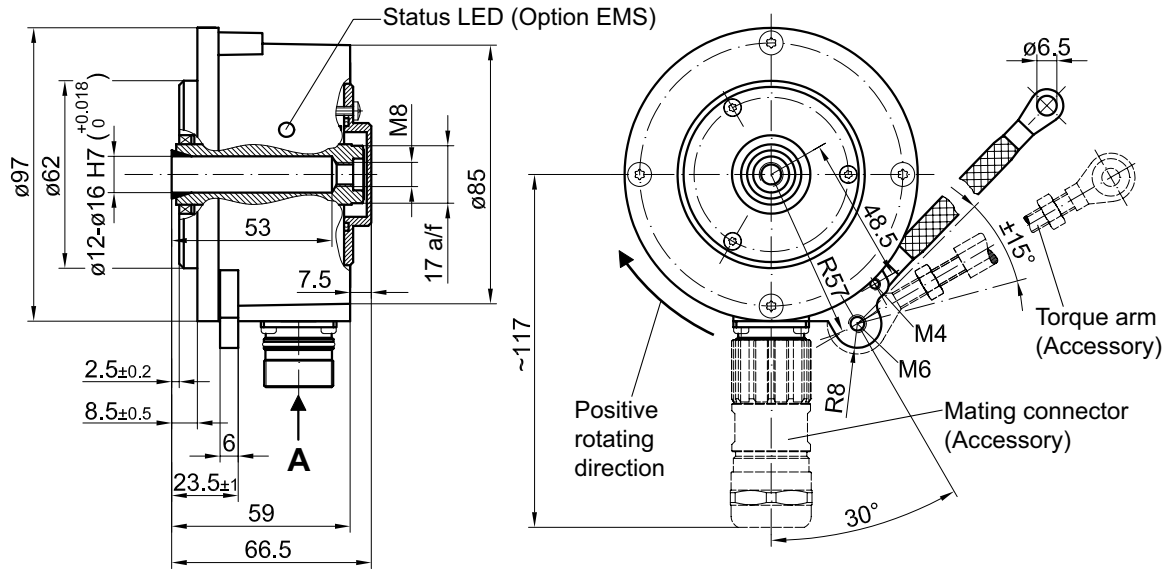
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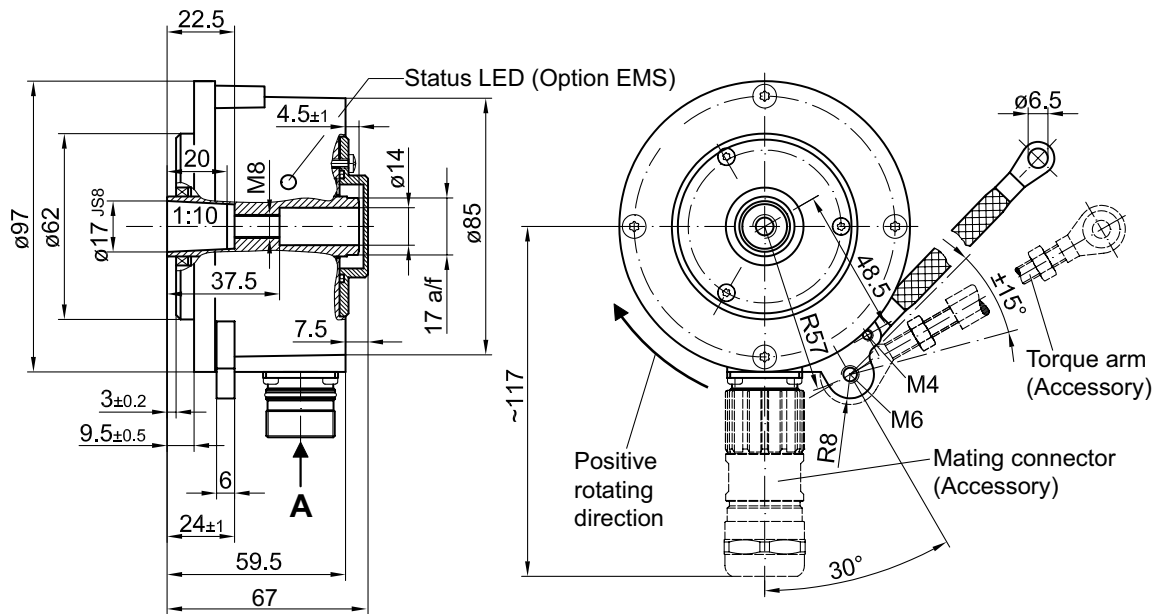
HOG 9

## Dimensions

### HOG 9 (HOG 9.2) - Version with blind hollow shaft



### HOG 9 (HOG 9.2) - Version with cone shaft



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