

Incremental encoders

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



RAD ELECTRIC Int.
www.radelectric.co

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°
Duty cycle	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 service life

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 ²
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 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

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



Part number

Incremental encoder

HOG9 **DN**

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.

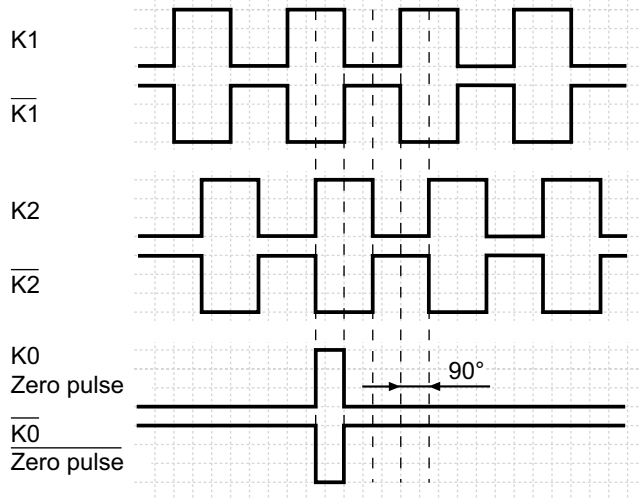
Incremental encoders

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

HOG 9

Output signals

At positive rotating direction



Terminal significance

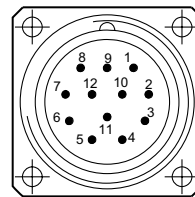
+UB	Voltage supply (for the device)
⊥; ↓; GND; 0 V	Ground (for the signals)
⊕; ↕	Earth ground (housing)
K1; A; A+	Output signal channel 1
$\overline{K1}$; \overline{A} ; A-	Output signal channel 1 inverted
K2; B; B+	Output signal channel 2 (offset by 90° to channel 1)
$\overline{K2}$; \overline{B} ; B-	Output signal channel 2 (offset by 90° to channel 1) inverted
K0; C; R; R+	Zero pulse (reference signal)
$\overline{K0}$; \overline{C} ; \overline{R} ; R-	Zero pulse (reference signal) inverted
\overline{Err} ; Err-	Error output (option EMS)
dnu	Do not use

Terminal assignment

View A

Flange connector M23, 12-pin, male, CW

Pin	Assignment
1	$\overline{K2}$
2	dnu
3	K0
4	$\overline{K0}$
5	K1
6	$\overline{K1}$
7	dnu (option EMS: \overline{Err})
8	K2
9	dnu (option EMS: ⊥)
10	⊥
11	dnu
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	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



Accessories

Connectors and cables

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

Mounting accessories

11043628	Torque arm M6, length 67-70 mm
11004078	Torque arm M6, length 120-130 mm (shortenable ≥ 71 mm)
11002915	Torque arm M6, length 425-460 mm (shortenable ≥ 131 mm)
11054917	Torque arm M6 insulated, length 67-70 mm
11072795	Torque arm M6 insulated, length 120-130 mm (shortenable ≥ 71 mm)
11082677	Torque arm M6 insulated, length 425-460 mm (shortenable ≥ 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

Diagnostic accessories

11075858	Analyzer for encoders HENQ 1100
----------	---------------------------------

Incremental encoders

Blind hollow shaft or cone shaft

300...5000 pulses per revolution

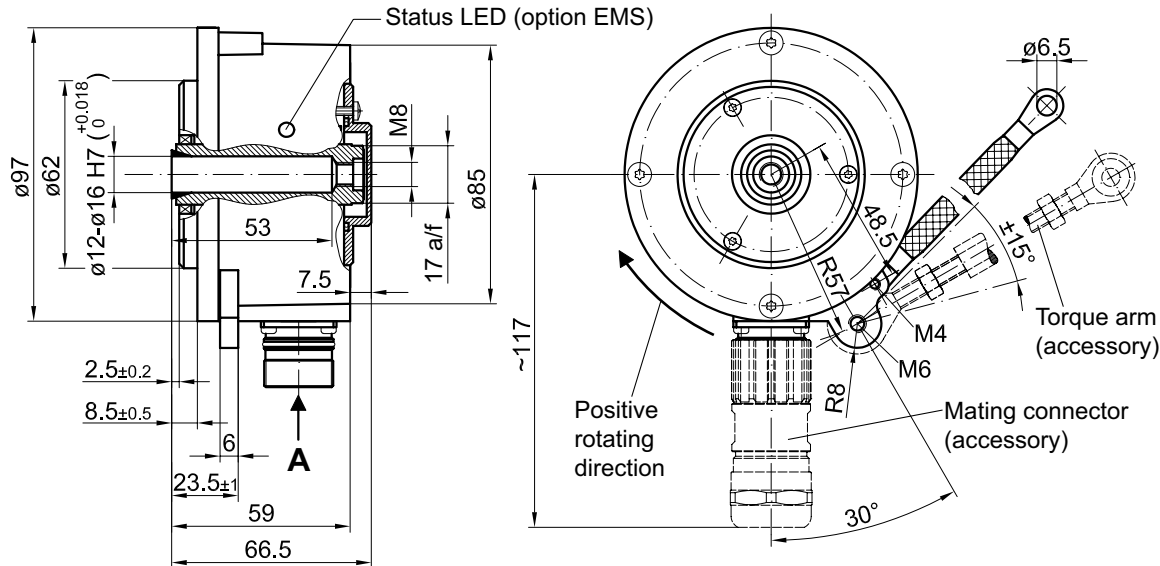


RAD ELECTRIC Int.
www.radelectric.com

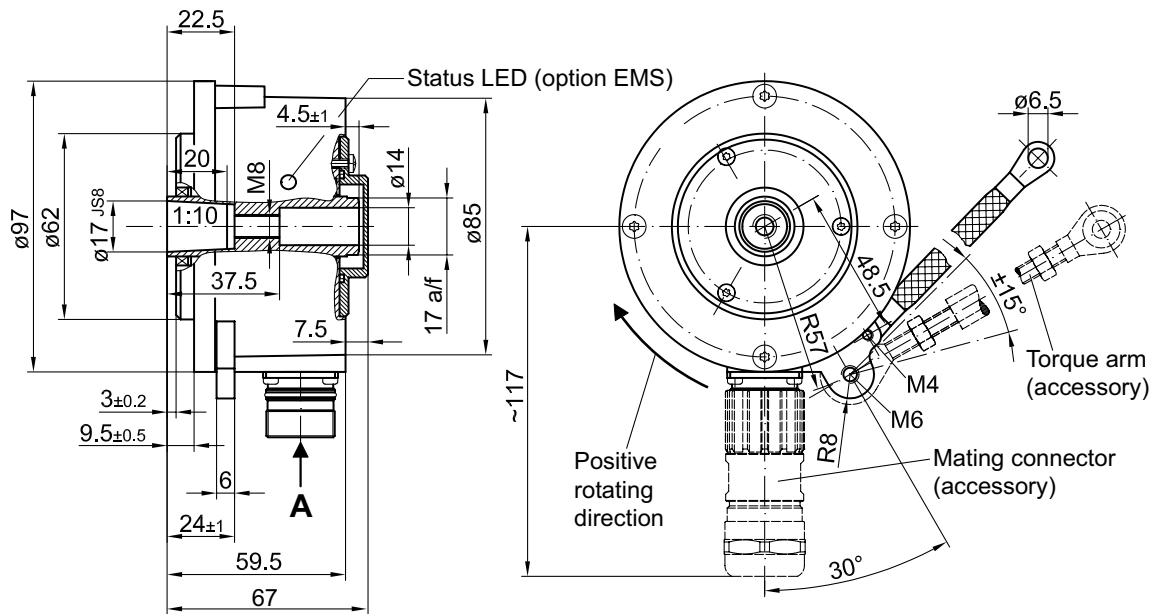
HOG 9

Dimensions

Version with blind hollow shaft



Version with cone shaft



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