



### Model Number

ENI11HD-R

### Features

- Up to 2500 ppr
- Highly shock and vibration resistant
- Recessed hollow shaft
- Degree of protection IP66 / IP67 / IP69K
- Protected against shaft currents
- Variable connection by means of rotating terminal box with plug-in terminals
- High bearing loads

### Description

When conditions are tough, the ENI11HD heavy-duty rotary encoders provide reliable speed feedback for large asynchronous motors.

Heat, cold, dirt, permanent vibration, strong shocks, and electromagnetic interference pose no problem for these heavy duty encoders. The same applies to leakage currents that are generated as a result of induced voltage in the shaft of the drive motor.

ENI11HD rotary encoders combine a long service life with a high level of reliability. The cover on the junction box, which can be rotated 4 x 90°, provides greater flexibility when installing and maintaining the device while also helping to save costs.

## Technical data

### General specifications

Detection type	photoelectric sampling
Pulse count	max. 2500

### Functional safety related parameters

MTTF <sub>d</sub>	140 a
Mission Time (T <sub>M</sub> )	20 a
L <sub>10</sub>	50 E+9 at 1750 rpm
Diagnostic Coverage (DC)	0 %

### Electrical specifications

Operating voltage U <sub>B</sub>	10 ... 30 V DC or 5 V DC ± 5 % (see "Output circuit" in the ordering information)
No-load supply current I <sub>0</sub>	max. 70 mA

### Output

Output type	push-pull, incremental or RS 422, incremental (see "Output circuit" in the ordering information)
Voltage drop U <sub>d</sub>	< 2.5 V (push-pull, incremental)
Load current	max. per channel 40 mA , short-circuit protected, reverse polarity protected (push-pull, incremental) max. per channel 20 mA , short-circuit protected, reverse polarity protected (RS 422, incremental)
Output frequency	max. 200 kHz
Rise time	600 ns
De-energized delay t <sub>off</sub>	600 ns

### Connection

Connector	M23 connector, 12-pin , clockwise rotation M23 connector, 12-pin , counter clockwise rotation
Cable	Ø6.5 mm, 4 x 2 x 0.14 mm <sup>2</sup>
Terminal compartment	Cable duct for cable diameter Ø4 mm ... 13 mm

### Standard conformity

Degree of protection	DIN EN 60529, IP66, IP67 or IP69K <sup>1)</sup>
Climatic testing	DIN EN 60068-2-78 , no moisture condensation
Emitted interference	EN 61000-6-4:2007
Noise immunity	EN 61000-6-2:2005
Shock resistance	DIN EN 60068-2-27, 200 g, 6 ms
Vibration resistance	DIN EN 60068-2-6, 20 g, 10 ... 2000 Hz

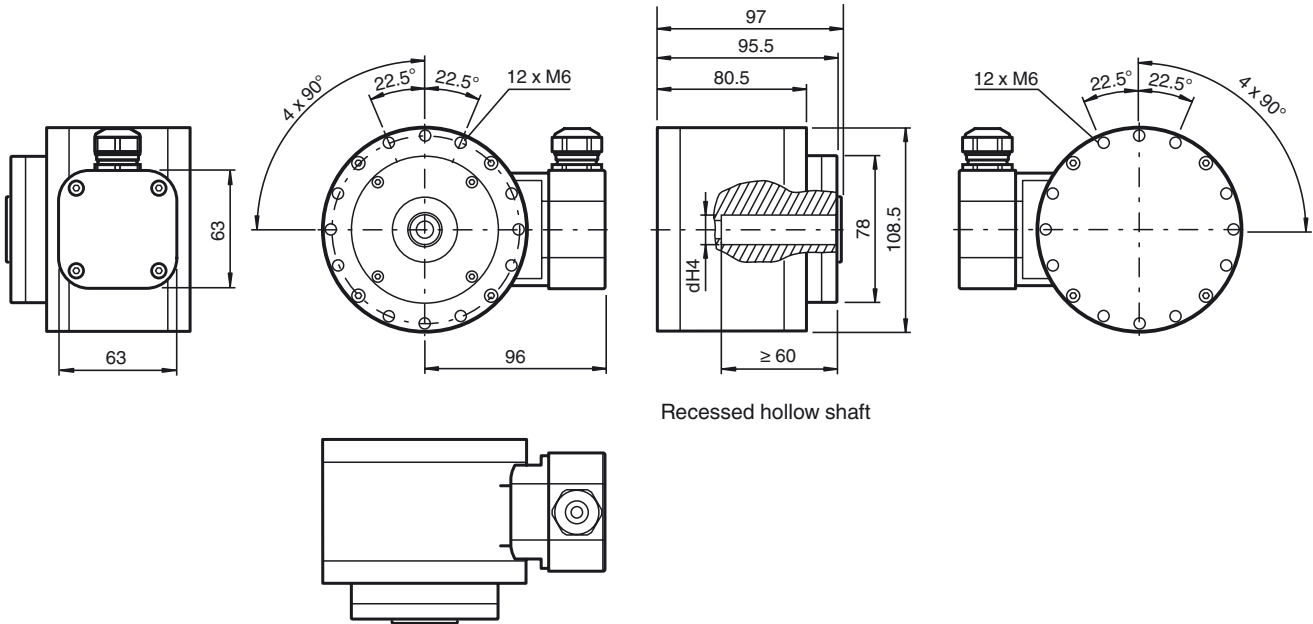
### Ambient conditions

Operating temperature	-40 ... 80 °C (-40 ... 176 °F) fixed cable
Storage temperature	-40 ... 80 °C (-40 ... 176 °F)

### Mechanical specifications

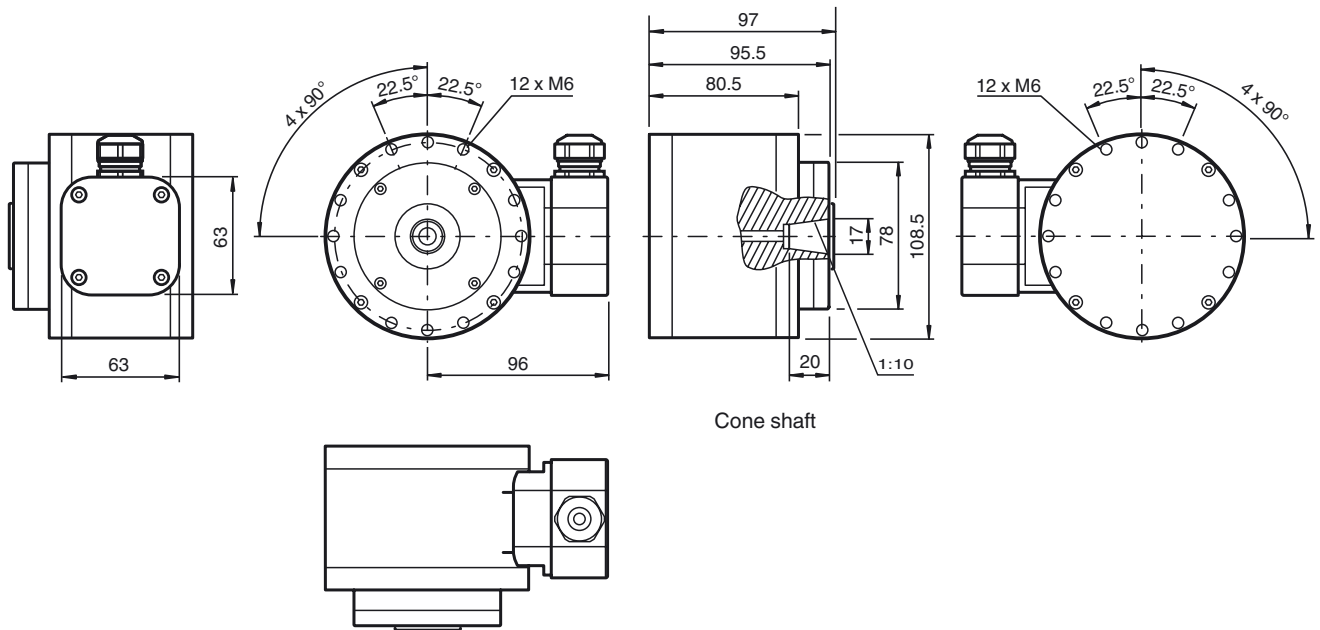
Material	
Housing	3.1645 aluminum
Flange	3.1645 aluminum
Shaft	Stainless steel 1.4305 / AISI 303
Mass	approx. 2200 g
Rotational speed	max. 3000 min <sup>-1</sup> 1)
Starting torque	≤ 10 Ncm
Shaft load	
Axial	≤ 300 N
Radial	≤ 400 N
Angle offset	1 °
Axial offset	max. 1 mm

Dimensions



Recessed hollow shaft

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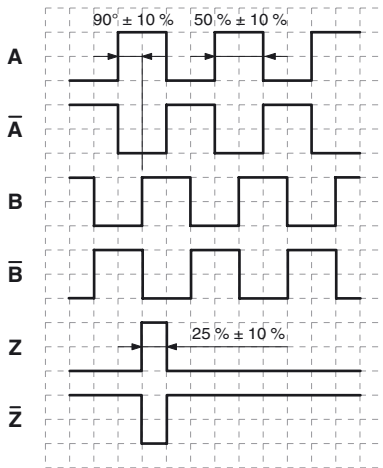


Electrical connection

Signal	Cable Ø6.5 mm, 8-core	Connector 9416, M23, 12-pin	Connector 9416L, M23, 12-pin	Terminals
GND	White	10	10	0V
U <sub>b</sub>	Brown	12	12	U <sub>B</sub>
A	Green	5	5	A
B	Grey	8	8	B
A\	Yellow	6	6	A\
B\	Pink	1	1	B\
Z	Blue	3	3	Z
Z\	Red	4	4	Z\
Shield	-	Housing	Housing	⏏
NC	-	2, 7, 9, 11	2, 7, 9, 11	

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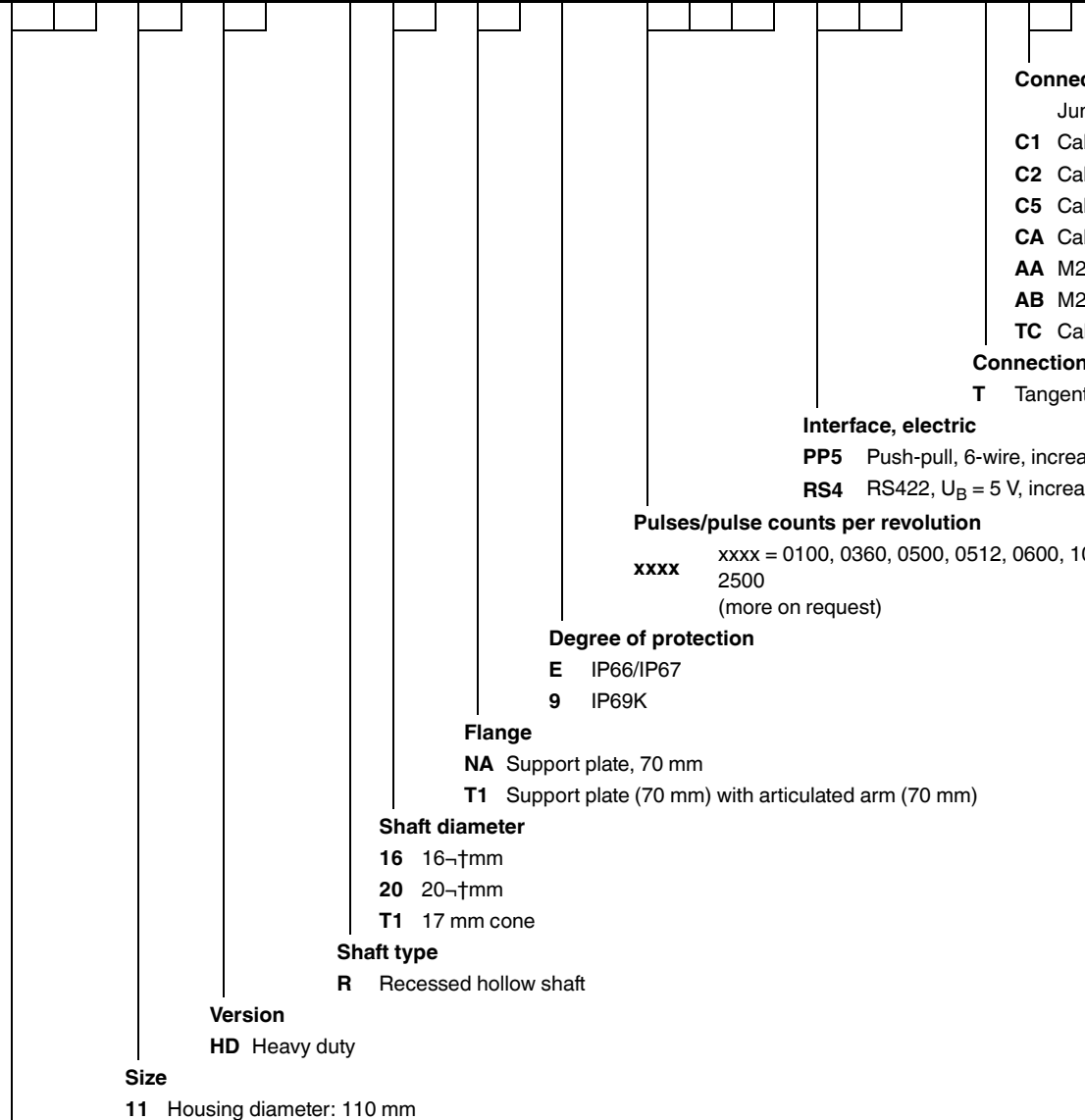
Signal outputs



↻ cw - with view from the drive side

Model Number

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Connection type

Junction box with ...

- C1** Cable, 1 m
- C2** Cable, 2 m
- C5** Cable, 5 m
- CA** Cable, 10 m
- AA** M23 device plug, cw
- AB** M23 device plug, ccw
- TC** Cable duct

Connection alignment

- T** Tangential

Interface, electric

- PP5** Push-pull, 6-wire, increased EMC
- RS4** RS422,  $U_B = 5\text{ V}$ , increased EMC

Pulses/pulse counts per revolution

**xxxx** xxxx = 0100, 0360, 0500, 0512, 0600, 1000, 1024, 1250, 2048, 2500 (more on request)

Degree of protection

- E** IP66/IP67
- 9** IP69K

Flange

- NA** Support plate, 70 mm
- T1** Support plate (70 mm) with articulated arm (70 mm)

Shaft diameter

- 16** 16- $\uparrow$ mm
- 20** 20- $\uparrow$ mm
- T1** 17 mm cone

Shaft type

- R** Recessed hollow shaft

Version

- HD** Heavy duty

Size

- 11** Housing diameter: 110 mm

Device type

- ENI** Incremental rotary encoder

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