

Heavy-duty incremental encoder

ENI11HD-H

- Up to 2500 ppr
- Variable hollow shaft up to Ø28 mm
- Highly shock and vibration resistant
- Degree of protection IP66 / IP67 / IP69K
- Optional: Electrically insulated shaft for a dielectric strength up to 2.5 kV
- Variable connection by means of rotating terminal box with plug-in terminals
- High bearing loads

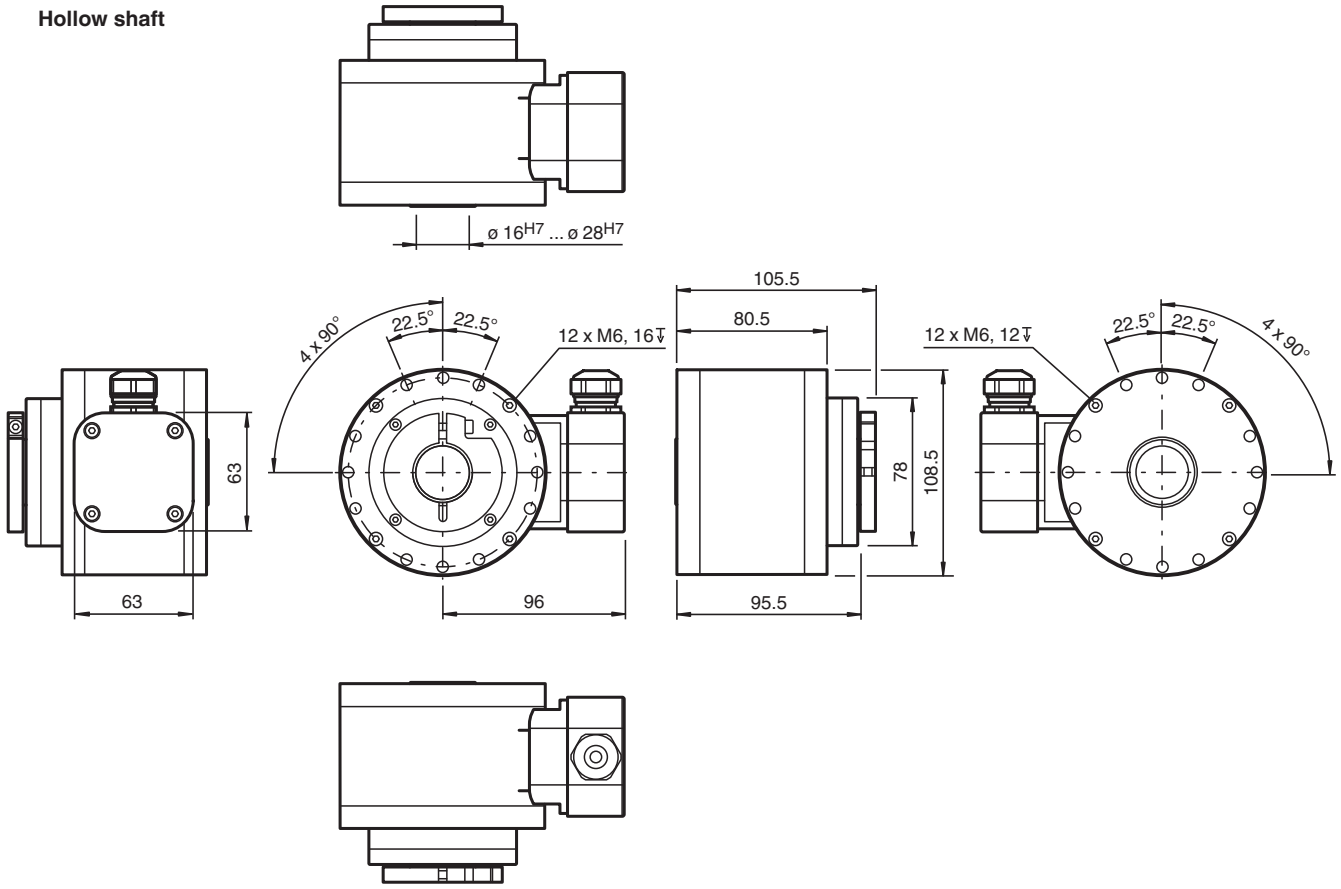
CE

Function

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 optional electrically insulated shaft guarantees a dielectric strength of up to 2.5 kV. This option prevents damage to the ball bearing due to current flashovers caused by shaft currents.
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.

Dimensions

Hollow shaft



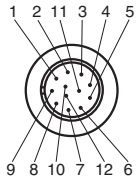
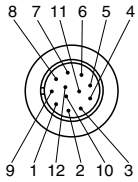
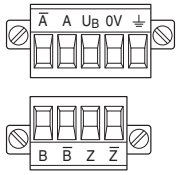
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Technical Data

General specifications		
Detection type		photoelectric sampling
Pulse count		max. 2500
Functional safety related parameters		
$MTTF_d$		140 a
L_{10}		50 E+9 at 1750 rpm
Diagnostic Coverage (DC)		0 %
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC or 5 V DC ± 5 % (see "Output circuit" in the ordering information)
No-load supply current	I_0	max. 70 mA
Output		
Output type		push-pull, incremental or RS 422, incremental (see "Output circuit" in the ordering information)
Voltage drop	U_d	< 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_{off}	600 ns
Connection		
Connector		M23 connector, 12-pin , clockwise rotation M23 connector, 12-pin , counter clockwise rotation
Cable		Ø7,5 mm, 6 x 2 x 0,14 mm^2
Terminal compartment		Cable duct for cable diameter Ø4 mm ... 13 mm
Standard conformity		
Degree of protection		DIN EN 60529, IP66, IP67 or IP69K
Climatic testing		DIN EN 60068-2-78 , no moisture condensation
Emitted interference		EN IEC 61000-6-4:2019
Noise immunity		EN IEC 61000-6-2:2019
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) cable, fixed installation
Storage temperature		-40 ... 80 °C (-40 ... 176 °F)
Mechanical specifications		
Material		
Housing		3.2315 aluminum
Flange		3.2315 aluminum
Shaft		Stainless steel 1.4305 / AISI 303
Mass		approx. 2200 g
Rotational speed		max. 3000 min^{-1}
Starting torque		≤ 20 Ncm
Shaft insulation		max. 2.5 kV (for dielectric strength version)
Shaft load		
Axial		≤ 300 N
Radial		≤ 400 N
Angle offset		1 °
Axial offset		max. 1 mm
Dimensions		
Length		90 mm
Diameter		110 mm

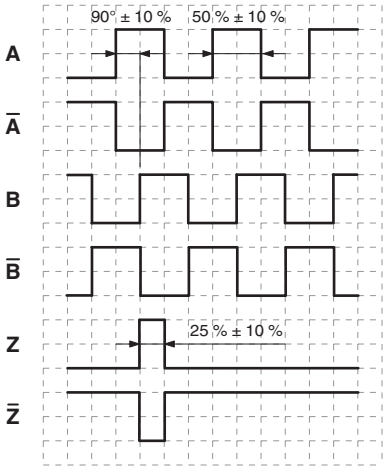
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Connection

Signal	Cable	Connector 9416, M23, 12-pin	Connector 9416L, M23, 12-pin	Terminals
GND	White	10	10	0V
U_b	Brown	12	12	U_B
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\
Shielding	Shield	Housing	Housing	⏚
NC	-	2, 7, 9, 11	2, 7, 9, 11	
				

Operation

Signal outputs



↻ cw - with view from the drive side

Type Code

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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 V, increased EMC
RS6 RS422, U_B = 10 ... 30 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
NB Support plate 120 mm, straight
NC Support plate 120 mm, right angle
T1 Support plate 70 mm, straight, with articulated arm 70 mm
T2 Support plate 120 mm, straight, with articulated arm 70 mm
T3 Support plate 120 mm, right angle, with articulated arm 70 mm
V1 Support plate 70 mm, straight, with articulated arm 120 mm
V2 Support plate 120 mm, straight, with articulated arm 120 mm
V3 Support plate 120 mm, right angle, with articulated arm 120 mm

Shaft diameter
16 16 mm
20 20 mm
25 25 mm
28 28 mm
R1 16 mm, dielectrically strong
R3 20 mm, dielectrically strong
R5 25 mm, dielectrically strong
R6 28 mm, dielectrically strong

Shaft type
H Hollow shaft

Version
HD Heavy duty

Size
11 Housing diameter: 110 mm

Device type
ENI Incremental rotary encoder

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