

# Инкрементный энкодер HSD44T

## Технические характеристики

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## Incremental



- Sealed against dust, oil, grease, liquids, vapor and mud
- Designed for high shock and vibration applications
- Electrically isolated from motor shaft
- Rugged cast-aluminum housing
- Advanced ASIC technology and optics
- Easy, hex wrench installation
- High temperature range: -40 ... +100°C

**HEAVY DUTY****NorthStar™**

## GENERAL INFORMATION

## EXTREME HEAVY DUTY HOLLOWSHAFT ENCODER

Even electric motors in the harshest environments require feedback to ensure smooth speed control. In the past, engineers have applied encoders and sensors designed for standard industrial environments into these extremely harsh environments, impacting system reliability and increasing life-cycle costs. Hengstler has the solution.

The heavy rail proven NorthStar HSD44 series optical encoder was designed to be a survivor. This anodized aluminum encoder can survive high levels of shock and vibration, wide temperature extremes, and operating environment contaminants. The HSD44 can withstand the harshest outdoor environments and the toughest industrial applications.

The 1024 pulses-per-revolution (PPR) are provided by a rugged, stainless steel disk, which is read from a specially designed optical sensor. An enormous 0.025" sensor gap reduces sensitivity to shock, vibration, and motor bearing wear. The counter-spiral shaft-coupler provides a flexible mount that eliminates resonance throughout the operating range and will not fatigue under vibration. Electronics are condensed down to a single ASIC, reducing the likelihood of electronic component failure.

The HSD44 is designed for end-of-motor application. Adapter plates are available for common motor styles, and custom adapter plates can be created to fit any application.

## APPLICATIONS

The HSD44 is the ideal source of control feedback for motors that drive heavy electric, and hybrid-electric vehicles. It is field proven for reliable operation in severe transportation and industrial environments.

**Designed for :**

- Heavy Rail
- Commercial Hybrid Electric and Electric Vehicles
- Heavy Duty cranes
- Mining Transport
- Conveyors

**INDUSTRIES**

Transportation, paper, steel, mining, material handling and other industries with harsh environments where precise and reliable encoder feedback is needed.

TECHNICAL DATA  
mechanical

|                                         |                                 |
|-----------------------------------------|---------------------------------|
| Housing diameter                        | 112 mm                          |
| Mounting depth                          | 60 mm                           |
| Shaft diameter                          | 16 mm (Flexible coupling)       |
| Protection class shaft input (EN 60529) | NEMA 6<br>IP67                  |
| Shaft tolerance                         | 11.9 to 15.9 mm                 |
| Max. speed                              | max. 6000 rpm                   |
| Bearing life                            | max. 5 x 10 <sup>11</sup> revs. |

**Incremental****TECHNICAL DATA**  
**mechanical (continued)**

|                                            |                                                |
|--------------------------------------------|------------------------------------------------|
| Vibration resistance<br>(DIN EN 60068-2-6) | 30 g                                           |
| Shock resistance<br>(DIN EN 60068-2-27)    | 200 g                                          |
| Operating temperature                      | -40 °C ... +100 °C                             |
| Material housing                           | Hard anodized Aluminum                         |
| Weight                                     | ca. 1.8 Kg                                     |
| Connection                                 | MS, radial<br>Cable, radial with M12 connector |

**TECHNICAL DATA**  
**electrical**

|                       |                                                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------|
| Supply voltage        | DC 5-30 V                                                                                                           |
| Current w/o load typ. | 50 mA                                                                                                               |
| Code                  | Incremental, optical                                                                                                |
| Max. pulse frequency  | 125 kHz                                                                                                             |
| Phasing               | Incremental signals (A leads B): A leads B by 90° for ccw shaft rotation viewing the shaft clamp end of the encoder |

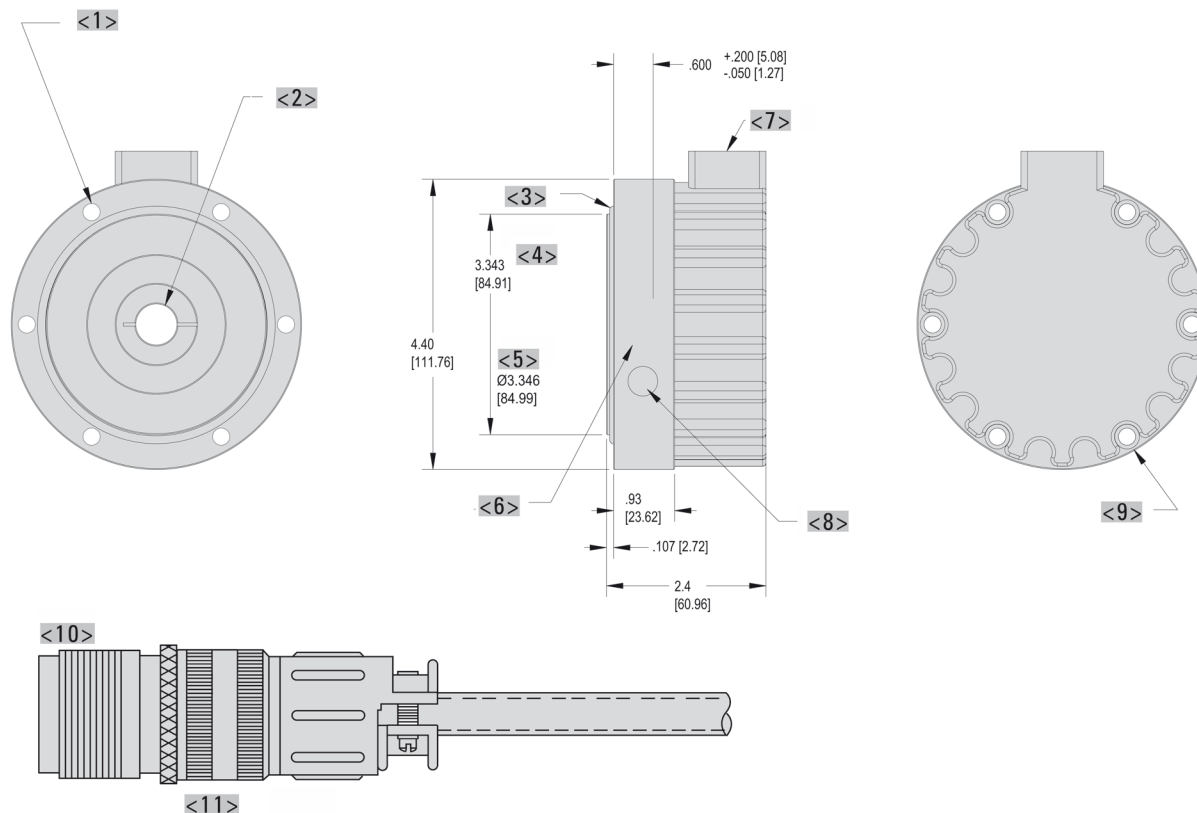
**ELECTRICAL CONNECTIONS**  
**Cable, MS connector 10 poles**

| Kabelfarbe   | Stecker | Signal |
|--------------|---------|--------|
| braun        | A       | Sig.A  |
| orange       | B       | Sig.B  |
| gelb         | C       | Sig.Z  |
| rot          | D       | +UB    |
| schwarz      | E       | Com.   |
| grün         | F       | 0V     |
| -            | G       | N.C.   |
| braun/ weiß  | H       | Sig.A- |
| orange/ weiß | I       | Sig.B- |
| gelb/ weiß   | J       | Sig.Z- |

# Heavy Duty Incremental

# HSD44T

## DIMENSIONED DRAWINGS



- <1> Clearance for 1/4-20 SHCS (6) on Ø3.937(100.0) BC equally spaced
- <2> Collar: 10-32 x 1/2 SS SHCS tightened with a 5/32 ball driver allen wrench
- <3> O ring
- <4> Pilot
- <5> Pilot cavity

- <6> 16 MM shaft extension I.D. .6295  $\pm 0/-0.0005$
- <7> Cable exit
- <8> Shaft clamp access plug
- <9> 1/4-20 x 1 SS SHCS supplied with the encoder
- <10> MS3101A-18-1P
- <11> Pigtail with MS connector (K Option)

Dimensions in inch [mm]

## ORDERING INFORMATION

| Type                     | Number of pulses         | Shaft Ø                  | Output                                                       | Connection                                                                  |
|--------------------------|--------------------------|--------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                                     | <input type="checkbox"/>                                                    |
| <b>HSD44T</b>            | <b>1024</b>              | <b>A 16 mm</b>           | <b>3</b> 5-26V in, 5-26V Differential Line Driver out (7272) | <b>A</b> Cable, 0.5 m<br><b>K</b> 0.5 m cable with 10 pin in-line connector |

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