

# SERIES HD35R

# NorthStar™ brand

## Heavy Duty Encoder

### Key Features

- Phased Array Sensor for Reliable Signal Output
- Rugged Design with Wide-Spaced Oversized Bearings
- Unbreakable Code Disc up to 5000PPR
- Improved Seal Design for Increased Moisture Resistance



## SPECIFICATIONS

### STANDARD OPERATING CHARACTERISTICS

**Code:** Incremental

**Resolution:** to 5000 PPR (pulses/revolution) See Ordering Information

**Format:** Two channel quadrature (AB) with optional Index (Z), and complementary outputs

**Phase Sense:** A leads B for CW shaft rotation viewing the shaft end of the encoder

**Quadrature Phasing:** For resolutions to 1200 PPR:  $90^\circ \pm 15^\circ$  electrical; For resolutions over 1250 PPR:  $90^\circ \pm 30^\circ$  electrical

**Symmetry:**

For resolutions to 1024PPR:  $180^\circ \pm 18^\circ$  electrical

For resolutions over 1024PPR:  $180^\circ \pm 25^\circ$  electrical

**Waveforms:** Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

### ELECTRICAL

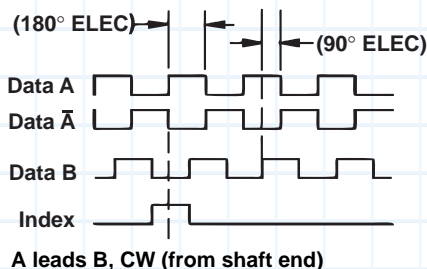
**Input Power:** 5-26VDC, 5-15VDC. 50 mA max., not including output loads.

**Frequency Response:** 125 kHz (data & index)

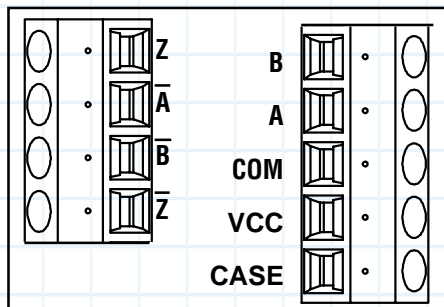
**Termination:** Pluggable screw terminals inside terminal box with M20 cable gland exit

### DATA AND INDEX

Not all complements shown  
A shown for reference



### TERMINAL CONNECTIONS



### MECHANICAL

**Shaft Material:** Stainless Steel

**Shaft Diameter:** 11mm with 4mm key

**Shaft Speed:** 6000 RPM, Maximum

**Starting torque:** 12.0 in-oz. maximum (at 25°C)

**Running torque:** 5.0 in-oz. maximum (at ambient)

**Bearings:** Deep groove, Dual arrangement

**Housing and cover:** Hard Anodized Aluminum

**Disc material:** Mylar (unbreakable)

**Weight:** 4lb

### ENVIRONMENTAL

**Standard Operating Temperature:** -40 to +85°C. At shaft speed above 3000 RPM, derate 10°C per 1000 RPM

**Extended Temperature Range:** -40 to +100°C (See ordering information)

**Storage temperature:** -40 to +100°C

**Shock:** 400g, 6mSec

**Vibration:** 5 to 3000 Hz, 20g

**Humidity:** 98%, non-condensing

**Enclosure Rating:** IP67

### WIRE COLORS

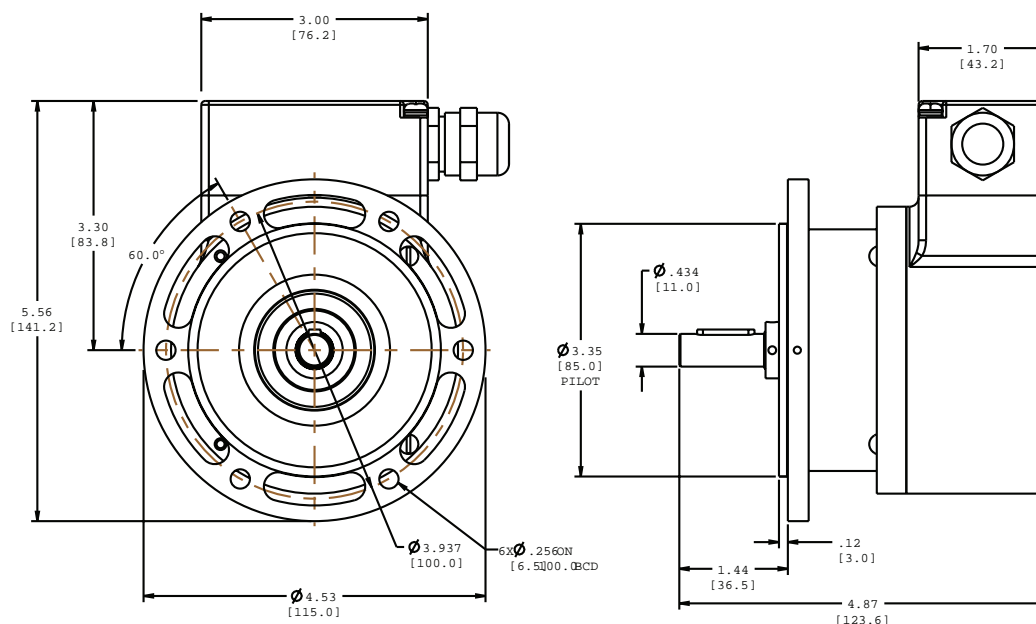
| WIRE                  | PRIMARY FUNCTION | ALTERNATE FUNCTION |
|-----------------------|------------------|--------------------|
| Black paired w/ Green | VCC              | +UB                |
| Green paired w/ Black | COM              | COM                |
| Black paired w/ Blue  | A                | K1                 |
| Blue paired w/ Black  | Ā               | K̄1                |
| Black paired w/ Red   | B                | K2                 |
| Red paired w/ Black   | B̄               | K̄2                |
| Black paired w/ White | Z                | K0                 |
| White paired w/ Black | Z̄               | K̄0                |

**Ordering Information**

To order, complete the model number with code numbers from the table below:

| Code 1: Model                                       | Code 2: PPR   | Code 3: Mounting   | Code 4: Output Format  | Code 5: Termination                 | Code 6: Housing               | Code 7: Options                           |
|---|---|--|--|-------------------------------------|-------------------------------|---|
| <b>HD35R</b> □□□□ □ □ □                             |   |  |  |                                     |                               | □□  |
| <b>Ordering Information</b>                         |   |  |  |                                     |                               |   |
| <b>HD35R</b><br>Heavy Duty<br>IEC Flange<br>Encoder | <b>0001 0500</b><br><b>0003 0512</b><br><b>0010 0600</b><br><b>0012 0900</b><br><b>0015 1000</b><br><b>0032 1024</b><br><b>0050 1200</b><br><b>0060 1500</b><br><b>0100 2000</b><br><b>0120 2048</b><br><b>0200 2400</b><br><b>0240 2500</b><br><b>0250 3072</b><br><b>0300 4000</b><br><b>0360 4096</b><br><b>5000</b> | <b>0</b> 100mm IEC<br>"Euro"<br>flange,<br>11mm<br>shaft w/<br>4mm key | <b>0</b> Single Ended ABZ, 5-26VDC push-pull<br><b>1</b> Single Ended ABZ, 5-26VDC O/C<br><b>2</b> Single Ended ABZ, 5-26VDC O/C w2.2kOhm<br><b>H</b> Same as "0" with Extended temp range<br><b>J</b> Same as "1" with Extended temp range<br><b>K</b> Same as "2" with Extended temp range<br><br><b>4</b> Differential AB only, 5-26VDC, 5-26VDC out *(7272)<br><b>5</b> Differential AB only, 5-26VDC in, 5VDC out *(7272)<br><b>A</b> Differential AB only, 5-15VDC in, 5VDC out *(4469)<br><b>C</b> Differential AB only, 5-15VDC in, 5-15VDC out *(4469)<br><b>L</b> Same as "4" with Extended temp range<br><b>M</b> Same as "5" with Extended temp range<br><br><b>6</b> Differential ABZ, 5-26VDC in, 5VDC out *(7272)<br><b>7</b> Differential ABZ, 5-26VDC in, 5-26VDC out *(7272)<br><b>8</b> Differential ABZ, 5-15VDC in, 5VDC out *(4469)<br><b>9</b> Differential ABZ, 5-15VDC in, 5-15VDC out *(4469)<br><b>N</b> Same as "6" with Extended temp range<br><b>P</b> Same as "7" with Extended temp range<br><b>W</b> ABZ, 10-24VDC Line Driver for over 80 meter cable runs<br><br>* Line Driver Type | <b>0</b> Terminal Box,<br>M20 gland | <b>0</b> Anodized<br>Aluminum | <b>Blank</b> None<br><b>01</b> Wind Label |

Accessories: 114917-001, Isolated coupling, 11mm

**DIMENSIONS** <sup>inch</sup>  
[mm]

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