

# SERIES HDP18

**NorthStar™ brand**

## Shaft-Less Encoder

### Key Features

- No Shaft, Bearings, or Seals to Wear Out
- Eliminates Shaft Coupling Issues
- Completely Sealed & Encapsulated Electronics
- Wide Sensing Envelope is Tolerant to Misalignment
- Incremental or Absolute Output
- Incredibly Small Package
- LED Indicators Make Installation and Troubleshooting a Breeze



## SPECIFICATIONS

### MECHANICAL

**Enclosure Diameter:** 18mm

**Enclosure Height:** 47mm

**Mounting:** 18mm thread (standard prox thread)

**Weight:** 3.0 oz with mounting nuts and 6" flying lead cable

**Speed:** 3000 RPM max

### ELECTRICAL

**Input Power:** 6vdc min to 30vdc max at 60mA max, not including output loads

**Outputs:** 7272 Push-Pull : 40mA sink or source

**Electrical Protection:** Overvoltage, Reverse Voltage, Output short Circuit protected

**PWM Output:** 10 bit Pulse Width Modulation output signal proportional to absolute position. 0 degrees = 1 usec of 1025 usec period, 359.65 degrees = 1024 usec of 1025 usec period.

**LED Indicators:** Power, A, B, Z

### ENVIRONMENTAL

**Operating Temperature:** -25 to +80 degrees C (-13 to 176 degrees F)

**Storage Temperature:** -40 to +90 degrees C

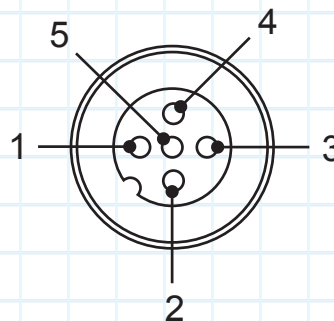
**Enclosure Rating:** Connector dependent

– M12 on pigtail – IP68

– Cable with flying leads – IP68

### CONNECTIONS

| Function              | 5 Pin M12 On Cable | 5 Conductor Cable | 5 Conductor Cable |
|-----------------------|--------------------|-------------------|-------------------|
|                       | Pin                | Wire Color        | Wire Color        |
| +Vdc                  | 1                  | BRN               | BRN               |
| Common                | 3                  | BLU               | BLU               |
| Data A                | 4                  | BLK               | BLK               |
| Data B                | 2                  | WHT               | WHT               |
| Data Z                | 5                  | GRY               | GRY               |
| PWM Absolute Posirion |                    |                   | PNK               |



Male 5-pin M12

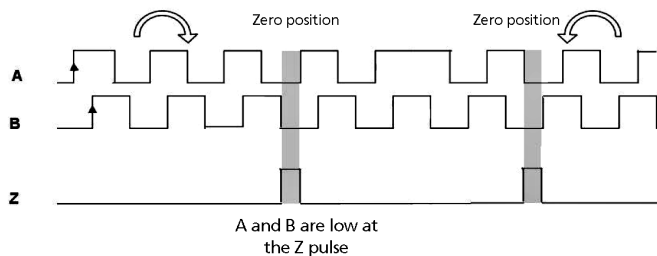
**Ordering Information**

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

| Code 1: Model        | Code 2: Resolution | Code 3: Output                                                                                                                                    | Code 4: Connections                                                                       | Code 5: Target Magnet                                                                                                                                                                                                                                                                                                                         |
|----------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HDP18T</b>        | □□□□               | □                                                                                                                                                 | □                                                                                         | □                                                                                                                                                                                                                                                                                                                                             |
| Ordering Information |                    |                                                                                                                                                   |                                                                                           |                                                                                                                                                                                                                                                                                                                                               |
| <b>HDP18T</b>        | <b>0256</b>        | <b>0</b> Single Ended A,B,Z Push-pull (7272)<br><br>Code 4 must = 7<br><b>P</b> PWM 10-bit absolute output w/ Single ended A,B,Z Push-pull (7272) | <b>1</b> 5 pin M12 on pigtail<br><b>2</b> 5 conductor cable<br><b>7</b> 6 conductor cable | <b>0</b> No magnet, customer supplied<br><b>3</b> Dual magnet nylon collar, 1/2" bore<br><b>4</b> Dual magnet nylon collar, 3/4" bore<br><b>5</b> Dual magnet nylon collar, 1" bore<br><b>6</b> Dual magnet nylon collar, 1-1/2" bore<br><b>8</b> Dual magnet nylon collar, 5/8" bore<br><b>R</b> Ring magnet w/knurled aluminum bolt, 1/4-20 |

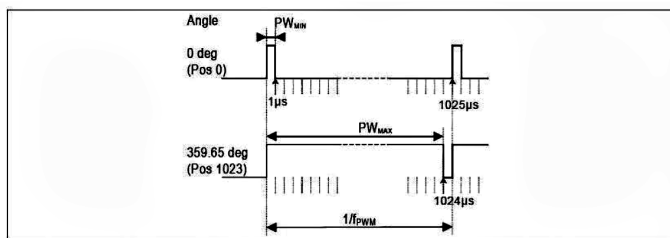
**HDP18 OUTPUT FORMAT**

18MM: QUADRATURE INCREMENTAL OUTPUT



PULSE WIDTH MODULATION (PWM) OUTPUT

$$\text{Position} = \frac{t_{on} \cdot 1025}{(t_{on} + t_{off})} - 1$$

**HDP18 TARGET MAGNETS**

- Neodymium
- Distance from user magnet to face of encoder: 0.01 to 0.5 inches
- Center alignment: 0 to 0.10 inches
- Planar tilt: 30 degrees



Dual magnet, Nylon collar



1/4 Bolt Magnet with Knurl