

# SERIES RIM 1250

**NorthStar™ brand**

## Bearingless Encoder

### Key Features

- **Bearingless Design Mounts to 250-C Face Motors (12.5" Diameter Mounting Flange)**
- **Sensor Modules are Removable On-The-Fly and Require No Gapping**
- **Stainless Steel and Ductile Cast Iron Construction for Harsh Mill Environments**
- **Magneto-Resistive Technology Resists Dust, Dirt, Oil, Water and Other Common Contaminants**



## SPECIFICATIONS

### STANDARD OPERATING CHARACTERISTICS

**Code:** Incremental  
**Pulses per Revolution:** 60-1200  
**Phasing Sense:** A leads B for Counter-Clockwise rotation (CCW) viewing encoder-mounted end  
**Quadrature Phasing:**  $90^\circ \pm 22^\circ$   
**Symmetry:**  $180^\circ \pm 54^\circ$   
**Index:**  $270^\circ$ , ungated (optional gated to falling B edge)

### ELECTRICAL

**Input Power Requirements:** 5-15 Volts DC, 45 mA typical per sensor module plus line driver load  
**Output Signals:** Line Driver, 150mA source/sink  
**Frequency Response:** 0 - 120kHz Data & Index  
**Electrical Immunity:** 2kV ESD, Reverse Polarity, Short Circuit  
**Connector:** 10 pin industrial duty latching, sealed NEMA 4 & 12, IP65

### MECHANICAL

**Shaft Speed:** 7,000 RPM (J or K wheels); 3600 RPM (TL wheels)  
**Mounting Configuration:** 12.5" face mount for NEMA MG1 standards  
**Housing Material:** Cast Iron/Stainless Steel  
**Acceleration Rate:** 3600 rpm/sec max  
**Shaft Length Required:** 3.0" min  
**Allowable Shaft End-Play:**  $\pm 0.050"$   
**Allowable Shaft Runout:** 0.003" TIR

### ELECTRICAL CONNECTIONS

| Signal        | Connector Pin | Pigtail Cable | MS 3102E18-IT# |
|---------------|---------------|---------------|----------------|
| Common        | 1             | Black         | A              |
| B             | 2             | Green         | E              |
| A             | 3             | Blue          | D              |
| Z *           | 4             | Violet        | C              |
| No Connection | 5             | —             | —              |
| Vcc           | 6             | Red           | B              |
| $\bar{B}$     | 7             | Yellow        | H              |
| $\bar{A}$     | 8             | Gray          | G              |
| $\bar{Z}$ *   | 9             | Orange        | I              |
| Shield        | 10            | Braid         | J              |

\* Index (Z) optional. See Ordering Information

### ENVIRONMENTAL

**Operating Temperature Range:**  $-40^\circ\text{C}$  to  $+80^\circ\text{C}$   
**Storage Temperature Range:**  $-40^\circ\text{C}$  to  $+120^\circ\text{C}$   
**Humidity:** to 98% RH (non-condensing)  
**Shock (Sensor Module):** 1 meter drop test, 30 G's Min  
**Vibration:** 18 G's @ 5-2000 Hz spectrum

**Ordering Information**

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

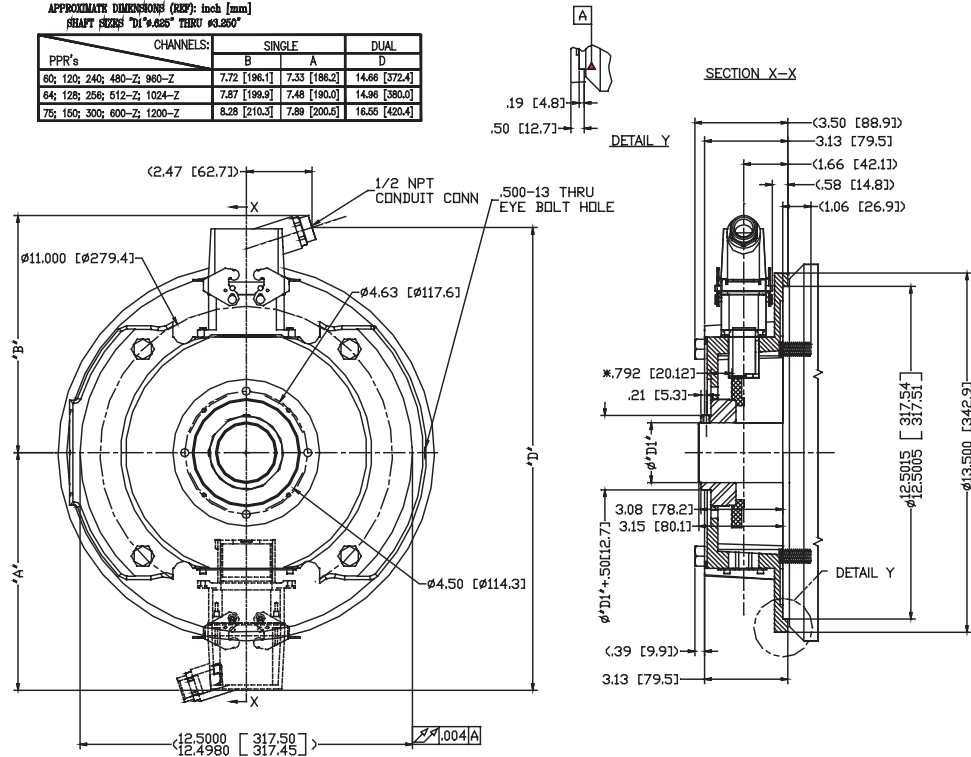
|               |             |               |                    |                |                    |                     |
|---------------|-------------|---------------|--------------------|----------------|--------------------|---------------------|
| Code 1: Model | Code 2: PPR | Code 3: Index | Code 4: Wheel Bore | Code 5: Output | Code 6: Electrical | Code 7: Termination |
| <b>R1</b>     | □□□□        | □             | □□□                | □              | □                  | □                   |

| Ordering Information                                  |             |             |   |  |  |   |
|---|-------------|-------------|---|--|--|---|
| <b>R1</b> Motor Mount Ring, for 12-1/2" C-Face Motors | <b>0060</b> | <b>0300</b> | <b>L</b> No Index   | <b>J04</b> 5/8" bore                                 | <b>1</b> Single<br><b>2</b> Dual (Isolated)        | <b>L</b> 5-15V in, 5-15V Line Driver (4428) out<br><b>R</b> 15-26V in, 15V Line Driver (4428) out<br><b>5</b> 5-15V in, 5V Line Driver (4428) out |
|   | <b>0064</b> | <b>0480</b> | Available when Code 2 is 0480, 0512, 0600, 0960, 1024, 1200 or 2048 | <b>J05</b> 7/8" bore                                 |  |   |
|   | <b>0075</b> | <b>0512</b> | <b>G</b> Gated Index (Z, Z̄)  | <b>J06</b> 1.00" bore                                | Differential, bidirectional signals (A, Ā, B, B̄) | <b>C</b> Latching Industrial Connector with 1/2" NPT<br><b>M</b> 10 pin MS Connector<br><b>P</b> 18" Pigtail                                      |
|   | <b>0120</b> | <b>0600</b> | <b>Z</b> Differential Index (Z, Z̄)                                 | <b>J07</b> 1-1/8" bore                               |  |   |
|   | <b>0128</b> | <b>0960</b> |   | <b>K09</b> 1-3/8" bore                               |  |   |
|   | <b>0150</b> | <b>1024</b> |   | <b>K10</b> 1-1/2" bore                               |  |   |
|   | <b>0240</b> | <b>1200</b> |   | <b>K11</b> 1-5/8" bore                               |  |   |
|   | <b>0256</b> |             |   | <b>K12</b> 1-3/4" bore                               |  |   |
|   |             |             |   | <b>K13</b> 1-7/8" bore                               |  |   |
|   |             |             |   | <b>K14</b> 2" bore                                   |  |   |
|   |             |             |   | <b>K15</b> 2-1/8" bore                               |  |   |
|   |             |             |   | <b>K16</b> 2-1/4" bore                               |  |   |
|   |             |             |   | <b>K17</b> 2-3/8" bore                               |  |   |
|   |             |             |   | <b>K18</b> 2-1/2" bore                               |  |   |
|   |             |             |   | <b>K19</b> 2-7/8" bore                               |  |   |
|   |             |             |   | Additional Shaft Sizes Available Up to 8.00" Maximum |  |   |

**DIMENSIONS** inch [mm]

APPROXIMATE DIMENSIONS (REF): inch [mm]  
SHAFT SIZES "D1" & "D2" THRU #3.250"

| PPR's                       | CHANNELS:    |              |               |
|-----------------------------|--------------|--------------|---------------|
|                             | B            | A            | D             |
| 60; 120; 240; 480-Z; 960-Z  | 7.72 [196.1] | 7.33 [186.2] | 14.66 [372.4] |
| 64; 128; 256; 512-Z; 1024-Z | 7.87 [199.9] | 7.48 [190.0] | 14.86 [380.0] |
| 76; 150; 300; 600-Z; 1200-Z | 8.28 [210.3] | 7.88 [200.5] | 16.65 [420.4] |



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