**SPECIFICATIONS**

**STANDARD OPERATING CHARACTERISTICS**

- **Code:** Incremental, Optical
- **Resolution:** 1 to 2540 PPR (pulses/revolution)
- **Accuracy:** (worst case any edge to any other edge)
  - <1024 PPR (metal disk): ±7.5 arc-min.
  - ≥1024 PPR (glass disk): ±2.5 arc-min.
- **Format:** Two channel quadrature (AB) with optional Index (Z) and complementary outputs
- **Phase Sense:** A leads B for CCW shaft rotation as viewed from the shaft end of the encoder
- **Quadrature Phasing:** 90° ± 22.5° electrical
- **Symmetry:** 180° ± 18° electrical
- **Index:** 180° ± 18° electrical (gated with B low)
- **Waveforms:** Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

**ELECTRICAL**

- **Input Power:** 5 to 26 VDC at 80 mA max., not including output loads
- **Outputs:**
  - 7273 Open Collector: 40mA, sink max
  - 7272 Push-Pull: 40mA, sink or source
  - 7272 Differential Line Driver: 40 mA, sink or source
  - 4469 Differential Line Driver: 100mA, sink or source
- **Frequency Response:** 100 kHz min. (index 75 kHz min. for extended temperature range)
- **Noise Immunity:** Tested to EN61326-1
- **Electrical Immunity:** Reverse polarity and short circuit protected
- **Termination:** MS Connector, M12 Connector, Cable Exit
- **Mating Connector:**
  - 6 pin, style MS3106A-14S-6S (MCN-N4);
  - 7 pin, style MS3106A-16S-1S (MCN-N5);
  - 10 pin, style MS3106A-18-1S (MCN-N6);
  - 10 pin, NEMA4 style (MCN-N6N4)
- **Cable w/ 5 pin M12 Connector (112859-xxxx)**
- **Cable w/ 8 pin M12 Connector (112860-xxxx)**

**MECHANICAL**

- **Shaft Sizes:** 10mm, 1/4” or 3/8”
- **Shaft Loading:** (at 0.25” from encoder face)
  - Resolutions ≤1024 PPR: 80 lbs. radial, axial
  - Resolutions >1024 PPR: 40 lbs. radial, axial
- **Shaft Speed:**
  - Resolutions ≤1024 PPR: 10,000 RPM max.
  - Resolutions >1024 PPR: 5,000 RPM max.
- **Starting Torque:** (max at 25 °C)
  - Without shaft seal: 1.0 oz.-in.
  - With shaft seal: 2.0 oz.-in
- **Moment of Inertia:** 3.0 x 10⁴ oz–in–sec²
- **Housing and Cover:** Aluminum
- **Shaft Material:** Stainless Steel
- **Disk Material:** Glass or plastic (PPR Dependent)
- **Weight:** 10 oz. max.

**ENVIRONMENTAL**

- **Operating Temperature:**
  - Standard: 0 to +70 °C
  - Extended: 0 to +85 °C
- **Storage Temperature:** −40 to +90 °C
- **Shock:** 50 G’s for 11 milliseconds duration
- **Vibration:** 5 to 2000 Hz at 20 G’s
- **Humidity:** Up to 98% (non-condensing)
- **Enclosure Rating:** NEMA12/IP54 (dirt tight, splashproof); NEMA4/IP66 (dust proof, washdown) when ordered with shaft seal and either M12 connector or watertight cable exit
### Ordering Information

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

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>H2</td>
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</tr>
</tbody>
</table>

#### Code 1: Model

- **H2**: Incremental Encoders

#### Code 2: PPR

- **0001**: 6000
- **0005**: 0800
- **0010**: 0900
- **0012**: 1000
- **0050**: 1200
- **0100**: 1250
- **0120**: 1270
- **0200**: 1500
- **0240**: 1600
- **0250**: 1800
- **0256**: 1968
- **0300**: 2000
- **0360**: 2048
- **0400**: 2400
- **0500**: 2500
- **0512**: 2540

#### Code 3: Housing

- **1**: Servo Mount Flange Mount

#### Code 4: Shaft

- **0**: 3/8” Dia. Shaft with flat
- **1**: 1/4” Dia. Shaft, no flat
- **4**: 10mm Dia. Shaft, no flat

#### Code 5: Face Mount

- **0**: no face mount available when Code 3 is 0:
  - **1**: (4) #10-32 @ 1.63” BC
  - **2**: (3) #4-40 @ 1.50” BC
  - **3**: (3) #6-32 @ 1.75” BC

#### Code 6: Pilot, Seal

- **0**: 1.18” Dia. Female Pilot
- **1**: 1.25” Dia. Male Pilot
- **2**: 1.25” Dia. Male Pilot with Shaft Seal

#### Code 7: Electrical

- **0**: 5-26V in, 5-26V Open Collector out
- **1**: 5-26V in, 5-26V Open Collector out with 2.2 kΩ Pullups
- **2**: 5-26V in, 5-26V Push-Pull out
- **A**: Same as “0” with extend. temp range
- **B**: Same as “1” with extend. temp range
- **C**: Same as “2” with extend. temp range

#### Code 8: Termination

- **0**: 6 Pin Conn, End Mount
- **1**: 6 Pin Conn, End Mount
- **2**: 7 Pin Conn, End Mount
- **3**: 7 Pin Conn, Side Mount
- **4**: 10 Pin Conn, End Mount
- **5**: 10 Pin Conn, End Mount
- **6**: 18” Cable, End Exit
- **17**: 18” Cable, End Exit
- **18**: 18” Side Exit
- **36**: 36” Cable, End Exit
- **39**: 36” Cable, Side Exit
- **A**: 10” Cable, End Exit
- **B**: 10” Cable, Side Exit
- **J**: 25” Cable, End Exit
- **K**: 25” Cable, Side Exit
- **L**: 25” Sealed Cbl, End Exit
- **M**: 25” Sealed Cbl, Side Exit

#### Code 9: Options

- **P**: LED Indicator
- **S**: Pilot, Seal
- **T**: Mating Connectors (no cable)

---

**Cable Assemblies with MS Connector**

- **108594-XXXX**: 6 Pin MS, Cable Assy. For Use with Single Ended Outputs
- **108595-XXXX**: 7 Pin MS, Cable Assy. For Use with Single Ended Outputs
- **108596-XXXX**: 7 Pin MS, Cable Assy. For Use with Differential Line Driver w/o Index Outputs
- **1400635XXXX**: 10 Pin MS, Cable Assy. For Use with Differential Line Driver with Index Outputs
- **109209-XXXX**: NEMA4 10 pin MS, Cable Assy. For Use with Differential Line Driver with Index Outputs

**Cable Assemblies with M12 Connector**

- **112859-XXXX**: 5 Pin M12, Cable Assy. For Use with Single Ended Outputs
- **112860-XXXX**: 8 Pin M12, Cable Assy. For Use with Single Ended Outputs
- **112860-XXXX**: 8 Pin M12, Cable Assy. For Use with Differential Line Driver Outputs

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**Mating Connectors (no cable)**

- **MCN-N4**: 6 pin, style MS3106A-14S-6S
- **MCN-N5**: 7 pin, style MS3106A-16S-1S
- **MCN-N6**: 10 pin, style MS3106A-18-1S
- **MCN-N6N4**: 10 pin, NEMA4 style

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**Note:** Standard cable length is 10 feet but may be ordered in any length in 5 foot increments. For example, for a 20 foot cable, replace XXXX with -0020.
SERIES H20

CONNECTIONS

6, 7 & 10 Pin MS Connectors and Cables - Code 8= 0 to 9, A to M
Connector & mate/accessory cable assembly pin numbers and wire color information is provided here for reference. Models with direct cable exit carry the color coding as shown in the right hand column.

<table>
<thead>
<tr>
<th>Connector Function</th>
<th>Cable # 108594-XXXX 6 Pin Single Ended</th>
<th>Cable # 108595-XXXX 7 Pin Single Ended</th>
<th>Cable # 108596-XXXX 7 Pin Dif Line Driver w/o Index</th>
<th><strong>Cable # 108209-XXXX or 1400635XXX 10 Pin Dif Line Driver w/ Index</strong></th>
<th>Cable Exit with Seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin</td>
<td>Wire Color</td>
<td>Pin</td>
<td>Wire Color</td>
<td>Pin</td>
<td>Wire Color</td>
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<td>E</td>
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<tr>
<td>Sig. Z*</td>
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<table>
<thead>
<tr>
<th>Encoder Function</th>
<th>Cable # 112859-XXXX 5 Pin Single Ended</th>
<th>Cable # 112860-XXXX 8 Pin Single Ended</th>
<th>Cable # 112860-XXXX 8 Pin Differential</th>
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</thead>
<tbody>
<tr>
<td>Pin</td>
<td>Wire Color</td>
<td>Pin</td>
<td>Wire Color</td>
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<tr>
<td>Sig. Z*</td>
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</tbody>
</table>

1) Cable Configuration (Table 1): PVC jacket, 105 °C rated, overall foil shield; 3 twisted pairs 26 AWG (output signals), plus 2 twisted pairs 24 AWG (input power)
2) Cable Configuration (Table 2): PVC jacket, 105 °C rated, overall foil shield; 24 AWG conductors, minimum
3) Standard cable length is 10 feet but may be ordered in any length in 5 foot increments. For example, for a 20 foot cable, replace -XXXX with -0020
4) *Index not provided on all models. See ordering information.
5) **For watertight applications, use NEMA4 10 pin cable & connector 109209-XXXX
6) "MS" Type mating connectors and pre-build cables are rated NEMA 12
7) "M12" Cable assemblies are rated IP67
## SERIES H20

### DIMENSIONS

**Code 3: Housings**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Servo Mount</td>
<td>1.75&quot;</td>
</tr>
<tr>
<td>1</td>
<td>Flange Mount</td>
<td>1.75&quot;</td>
</tr>
</tbody>
</table>

**Dimensions**

- 0.374" x 0.374" DIA.
- 0.375" x 0.375" DIA.
- 0.375" x 0.375" DIA.
- 0.374" x 0.374" DIA.

**Face Mounts**

- 1 Female
- 2, 3, 4 Male

**Pilots**

- 0 Female
- 1, 2 Male
- 3, 4 Male

**Terminations**

- 0, 2 6, 7 Pin End Conn
- 1, 3 6, 7 Pin Side Conn
- 4 10 Pin End Conn
- 5 10 Pin Side Conn
- N, Q M12 End Conn
- P, R M12 Side Conn

**Software Options**

- 0-5 dimensions shown with LED Output Indicator Option (Code 9: PS)

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