ENCODERS

HOLLOW SHAFT

DataTorque™
HS15

Performance Benefits

MTI-Torque Systems is widely recognized for providing high performance Hollow shaft and motor-mounted DataTorque™ Encoder solutions. The DataTorque HS15 is no exception.

With high-performance, high-resolution digital feedback in an extremely small package, the DataTorque HS15 combines the resolution and performance common with much larger encoder packages with the stability of a bearing encoder design. The HS15 provides a bearing design that simplifies encoder attachment, resulting in a longer service life with less downtime (from feedback device failure). It delivers high noise immunity. In addition, the DataTorque HS15 is cost competitive with modular encoders.

Design Features

The DataTorque HS15 is miniature in size, only 1.45 inches (36.83 mm) in diameter and low profile, only 0.87 inches (22 mm) in assemble height, yet it provides resolutions up to 5,000 lines with or without commutation. Output options are single-ended or differential line driver.

The DataTorque HS15 has low supply current requirements. The optional 5 to 26 VDC can help reduce inventory. It is constructed of a conductive carbon fiber composite that provides the EMI shielding of an all-metal housing and the performance of a lightweight robust assembly.

Providing High-Resolution Digital Performance in a Miniature Package

- Resolutions up to 5,000 lines
- Miniature size, only 1.45 inches (36.83 mm) in diameter
- Single-ended and differential outputs
- High noise immunity
- Conductive carbon fiber housing
- Low supply current requirements Supply voltages of 5 v or 5 to 26 VDC
- Cost competitive with modular encoders
- Commutation
- 500 kHz frequency response
**DataTorque™**

**HS15**

**PACKAGE DIMENSIONS**

**TERMINATIONS**

<table>
<thead>
<tr>
<th>Color</th>
<th>Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>+VDC</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>Common</td>
<td></td>
</tr>
<tr>
<td>Brown</td>
<td>Output A</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>Output A'</td>
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</tr>
<tr>
<td>Blue</td>
<td>Output B</td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td>Output B'</td>
<td></td>
</tr>
<tr>
<td>Orange</td>
<td>Output Z</td>
<td></td>
</tr>
<tr>
<td>Yellow</td>
<td>Output Z'</td>
<td></td>
</tr>
<tr>
<td>Violet</td>
<td>Output U</td>
<td></td>
</tr>
<tr>
<td>Gray</td>
<td>Output U'</td>
<td></td>
</tr>
<tr>
<td>Brown/White</td>
<td>Output V</td>
<td></td>
</tr>
<tr>
<td>Red/White</td>
<td>Output V'</td>
<td></td>
</tr>
<tr>
<td>Orange/White</td>
<td>Output W</td>
<td></td>
</tr>
<tr>
<td>Yellow/White</td>
<td>Output W'</td>
<td></td>
</tr>
<tr>
<td>Black/White</td>
<td>Case Ground</td>
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</tbody>
</table>

**ELECTRICAL SPECIFICATIONS**

- **Input Voltage**: 5 VDC +/- 5% or 5-26 VDC
- **Outputs**: 5v L.D.-AM26LS31, RS422A Line Driver 5-26v L.D., OL7272, TTL
- **Phase Sense**: “A” leads “B” CW, Full cycle “Z” with “A” Symmetry 180 degrees +/- 10%
- **Zero Reference**: Standard: Ungated 270 deg.
- **Frequency Response**: 500 kHz
- **Quadrature**: 54 electrical degrees minimum edge separation
- **Commutation Format**: Three phase 4, 6 or 8 poles
- **Commutation Accuracy**: +/- 1 mechanical degree

**ENVIRONMENTAL SPECIFICATIONS**

- **Storage Temperature**: -40 to +125 degrees C
- **Operating Temperature**: -20 to 100 degrees C Typical 0 to 120 degrees C Optional*
- **Humidity**: 98% Non-condensing
- **Vibration**: 20 g’s @ 50 to 500 CPS
- **Shock**: 50 g’s @ 11 ms duration

* Consult factory for more information

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encoder Series:</td>
<td>05/05 = 5 VDC +/- 5%</td>
<td>05/26 = 5-26 VDC</td>
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<tr>
<td>Resolution:</td>
<td>200, 256, 500, 512, 600, 1000, 1024, 1250, 2000, 2048, 2500, 4096, 5000</td>
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<tr>
<td>Motor Poles:</td>
<td>0 = No Comm, 4 = 4 pole, 6 = 6 pole, 8 = 8 pole</td>
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<tr>
<td>Output Option:</td>
<td>01 = RS-422A Line Driver, 02 = OL7272 5-26 VDC 03 = TTL Output, 04 = RS-422A Incremental Open Collector Commutation</td>
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<tr>
<td>Bore Size:</td>
<td>T1 = .250”, T2 = .312”, T3 = .375”, T4 = 6 mm, T5 = 8 mm, T6 = 10 mm, T11 = 5mm</td>
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<tr>
<td>Mounting:</td>
<td>01 = STD 1.812” Flex, 02 = Size 15 Resolver Mount 04 = STD 1.575” Flex, SS = Special</td>
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<tr>
<td>Index Gating:</td>
<td>Blank = Ungated Index, 01 = Gated to A, 180°, 02 = Gated to A &amp; B, 90°</td>
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**MECHANICAL SPECIFICATIONS**

- **Maximum Shaft Speed**: 8,000 RPM
- **Radial Shaft Movement**: 0.007 inches TIR
- **Axial Shaft Movement**: +/- 0.030 inches
- **Termination**: 15 conductor cable, 28 AWG 18 inches long
- **Mounting**: 1.812 inches bolt circle
- **Moment of Inertia**: 1.5 X 10^{(-4)} oz-in-S(2)
- **Acceleration**: 1 X 10(5) Radians/S (2)
- **Accuracy**: +/- 1.0 Arc minutes

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MTI-Torque Systems
6 Enterprise Road
Billerica, MA 01821 USA
Tel.: (978)667-5100
Fax:(978)600-0280
sales: customer@slmti.com
www.torquesystems.com

MTI-Torque Systems
8201 109th St. Suite 500
Pleasant Prairie, WI 53158
www.torquesystems.com

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TS HS15 2017R2