Mechanical Specifications

Shaft Diameter: 3/8” (1/2” as special feature)
Flat On Shaft: 3/8” Shaft: 0.80 long X 0.03” deep; 1/2” Shaft: 0.80 long X 0.04” deep (1/2” shaft width must be ordered as a special feature)
Shaft Loading: 3/8” shaft: Up to 40 pounds axial and 35 pounds radial; 1/2” shaft: Up to 90 pounds axial and 80 pounds radial
Shaft Runout: 0.0005 T.I.R. at midpoint regardless of shaft diameter

Starting Torque at 25°C: Without shaft seal 1.0 in-oz (max); With shaft seal 2.5 in-oz (max); 1/2” shaft with shaft seal 3.5 in-oz (max)

Bearings: Class ABEC 7 standard, ABEC 5 for 1/2” shaft
Shaft Material: 416 stainless steel

Bearing Housing: Die cast aluminum with protective finish; stainless steel (special feature)
Cover: Die cast aluminum; stainless steel (special feature)

Bearing Life: 2 X 10^8 revs (1300 hrs at 2500 RPM)

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Serial Synchronous Interface (SSI)

SSI output provides effective synchronization in a closed-loop control system. A clock pulse train from a controller is used to clock out sensor data; one bit of position data is transmitted to the controller per one clock pulse received by the sensor. The use of a differential driver permits reliable transmission of data over long distances in environments that may be electrically noisy. The encoder utilizes a clock signal, provided by the user interface, to time the data transmission. Receiving electronics must include an appropriate receiver as well as line terminating resistors.

Features:
- Synchronous transmission
- Transmission lengths to 1000 feet
- Accepts clock rates from 100 KHz to 1.8 MHz

Data Transmission Sequence
1. Output driver of the encoder is a MAX 491 in transceiver mode. The recommended receiver is a MAX 491 in receive mode.
2. Controller provides a series of pulses (or differential pulse pairs) on the CLOCK input lines.
3. On the first HIGH-to-LOW CLOCK transition, the encoder latches its data at the current position and prepares to transmit.
4. Controller reads data on the falling edge of the next 15 clock cycles.
5. The first bit is a START bit and is always HIGH.
6. Next comes 13 data bits beginning with the most significant bit (MSB) and ending with the parity bit. On 12 bit encoders, bit 13 is LOW. When parity is not ordered, parity is LOW.
7. After the last CLOCK HIGH-to-LOW transition, a minimum of 40 microseconds must pass before the beginning of the next CLOCK cycle.

Interfacing Long Data Lines

Ordering SSI: HOW TO SPECIFY SSI OUTPUT IN THE ENCODER MODEL NUMBER: Use the designation, S3 between the Code Format designation and the Connector designation. Example: H25D-SS-12GC-S3-CW-SM18

- CLOCK: Maximum (kHz) = 92,000 / Cable Length (ft)CW
- CLOCK+, B BLU 2
- CLOCK, MAX Freq (kHz) = 1800 900 500 300 200 100
- SIGNAL: Transformer, Level 1 (ft)CW
- MAX Freq (kHz) = 1800 900 500 300 200 100
- Circuit Board Output: A 5VDC +/- 5% standard (Note: Vout = Vin). This driver is TTL compatible when used with 5 volt supply. Supply lines are protected against overvoltage to 60 volts and reverse voltage. Outputs are short circuit protected for one minute. Supply current is 120 mA typical (plus load current). This is the recommended replacement for 3904R and 7406R open collector outputs. It is also a direct replacement for any 4469, 8630, 8630A or 28LS71 line driver.

Dimensions

- Model H25® Absolute Encoder
- 2.62 Dia Servo Mount
- 2.50 Servo Mount
- Square Flange
- Dimensions
  - Connector
  - Pinout
  - Dimensions
- Figure 1 Gray Code
- Figure 2 Natural Binary

Notes

1. Mounting is usually done either using the D-style square flange mount, E- or G-style servo mounts, or one of the standard face mounts, F1 for example. Consult factory for additional face mount options.
2. The shaft seal is recommended in virtually all installations. The most common exceptions are applications requiring a very low starting torque or those requiring operation at both high temperature and high speed.
3. Output IC's: Output IC's are available as either Line Driver (LD) or NPN Open Collector (OC) types. Open Collectors require pull-up resistors, resulting in higher output source impedance (sink impedance is similar to that of line drivers). In general, use of a Line Driver style output is recommended. Line Driver sources or sink current and their lower impedance mean better noise immunity and faster switching times. Warning: Do not connect any line driver outputs directly to circuit common/0V, which may damage the driver. Unused outputs should be isolated and left floating. Our applications specialists would be pleased to discuss your system requirements and the compatibility of your receiving electronics with Line Driver type outputs.

28V/V: Multi-voltage Line Driver (7272): 100 mA source/sink. Input voltage 5 to 28 VDC +/- 5% standard. This driver is TTL compatible when used with 5 volt supply. Supply lines are protected against overvoltage to 60 volts and reverse voltage. Outputs are short circuit protected for one minute. Supply current is 120 mA typical (plus load current). This is the recommended replacement for 3904R and 7406R open collector outputs with internal pullup resistors. It is also a direct replacement for any 4469, 8630, 8630A or 28LS71 line driver.

28V/5: Multi-voltage Line Driver (7272): 100 mA source/sink. Input voltage 5 to 28 VDC +/- 5% standard, internally regulated with 5V (TTL compatible) logic output. Supply lines are protected against overvoltage to 60 volts and reverse voltage. Outputs are short circuit protected for one minute. Supply current is 90 mA typical (plus load current). This is the recommended replacement for 3904R and 7406R open collector outputs with internal pullup resistors. It is also a direct replacement for any 4469, 8630, 8630A or 28LS71 line driver.

28V/DC: NPN Open Collector (3904, 7272). Current sink of 80 mA max. Current sourced by external pull-up resistor. Output can be pulled up to voltage other than supply voltage (30 V max). Input voltage 5 to 28 VDC +/- 5% standard. Supply current is 120 mA typical. This replaces prior IC’s with designations of 3904, 7406, 3902, 681 and 689.

4. Special –S at the end of the model number is used to define a variety of non-standard features such as special shaft lengths, voltage options, or special testing. Please consult the factory to discuss your special requirements.
5. Extended temperature ranges are available in the following ranges: -40 to 70°C, -40 to 85°C. Some models can operate down to -55°C. Extended temperature ranges can affect other performance factors. Consult with factory for more specific information.

Products manufactured prior to April 2007 used the line driver IC number instead of voltage output in model number.