

# Model 15S Servo-Style



# Principle Engineering



## Features

- Very High Performance Economical Encoder
- Low Profile 25.4 mm Height and 38 mm Diameter
- Shaft sizes up to 0.250" Diameter
- Up To 12 Pole Commutation Optional (for brush less motor control)

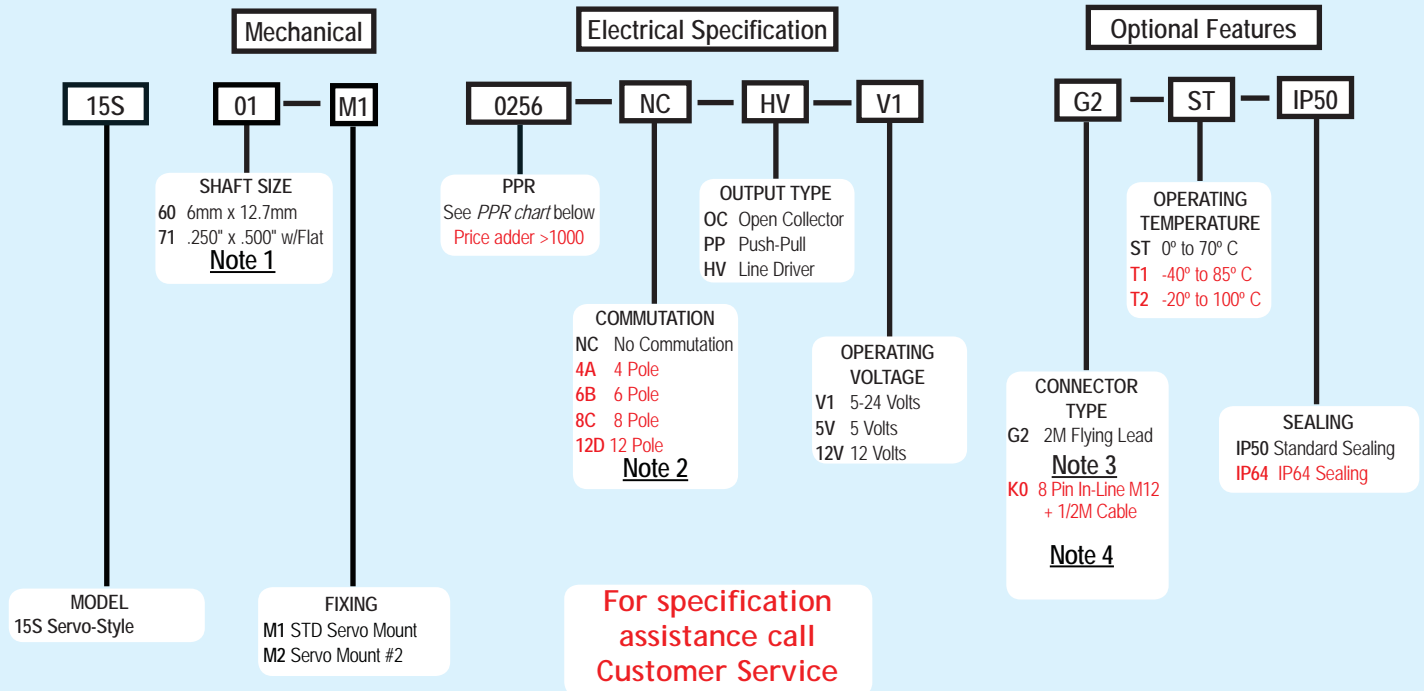
The Model 15S offers a high performance feedback solution in a low profile package, making the Model 15S ideal for commercial and light-duty industrial applications. This industry standard Size 15 (38mm diameter) encoder features a precision bearing set, sealing available to IP64, a durable 1/4" or 6 mm stainless steel shaft, and a selection of servo mount options. The Model 15S may also be specified with features such as extended operating temperatures from -20° C to +100° C, or up to 12 pole commutation for brush-less motor control. The Model 15S features our Opto-ASIC circuitry for a clean, reliable signal. Its durable, yet economical design makes it an ideal encoder for high precision OEM applications.

## Common Applications

Servo Motor Control, Robotics, Speciality Assembly Machines, Digital Plotters, High Power Motors

## Model 15S Ordering Guide

Red type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.



## Model 15S PPR Options

0001 thru 0189*	0200	0250	0256
0300	0315	0360	0400
0512	0580	0600	0800
<b>1024</b>	<b>1200</b>	<b>1250</b>	<b>1500</b>
<b>2000</b>	<b>2048</b>	<b>2500</b>	<b>2540</b>
<b>4096</b>	<b>6000</b>	<b>8192</b>	<b>10000</b>

\*Contact Customer Service For Availability

New PPR values are periodically added to those listed. Contact Customer Service to determine all currently available values. Special disc resolutions are available upon request and may be subject to a one-time NRE fee.

## NOTES:

- 1 Contact Customer Service for additional options not shown.
- 2 Not available in all configurations, and not available with V1 Input Voltage. Contact Customer Service for availability.
- 3 For non-standard cable lengths contact sales for availability and cost.
- 4 8 Pin Not available with commutation

# Model 15S Servo-Style

## Model 15S Specifications

### Electrical

Input Voltage ..... 4.75 to 28 VCC max for temperatures up to 85° C  
 4.75 to 24 VCC for temperatures between 85° to 100° C

Input Current ..... 100 mA max (65 mA typical) with no output load

Output Format ..... Incremental- Two square waves in quadrature with channel A leading B for clockwise shaft rotation, as viewed from the encoder mounting face. See *Waveform Diagrams* below.

Output Types ..... Open Collector- 20 mA max per channel  
 Push-Pull- 20 mA max per channel  
 20 mA max per channel  
 Line Driver- 20 mA max per channel (Meets RS 422 at 5 VCC supply)

Index ..... Once per revolution.  
 190 to 2540 PPR: Gated to output A  
 1 to 189 PPR: Ungated  
 See *Waveform Diagrams* below.

Freq. Response ..... 200 kHz standard (up to 1MHz)

Noise Immunity ..... Tested to BS EN61000-6-2; BS EN50081-2; BS EN61000-4-2; BS EN61000-4-3; BS EN61000-4-6; BS EN500811

Symmetry ..... 180° (±18°) electrical

Quad. Phasing ..... 90° (±22.5°) electrical

Min. Edge Sep ..... 67.5° electrical

Accuracy ..... Within 0.017° mechanical or 1 arc-minute from true position. (for PPR>189)

Commutation ..... Up to 12 pole. Contact Customer Service for availability.

Comm. Accuracy ..... 1° mechanical

### Mechanical

Max Shaft Speed ..... 8000 RPM. Higher speeds may be achievable, contact Customer Service.

Shaft Size ..... 6mm & 0.250" g6 Tolerance

Shaft Material ..... Stainless Steel

Radial Shaft Load ..... 2.27 Kg max. Rated load of 0.91 Kg to 1.36 Kg

Axial Shaft Load ..... 2.27 Kg max. Rated load of 0.19 Kg to 1.36 Kg

Starting Torque ..... IP50 3.531 x 10<sup>-4</sup> Nm  
 IP64 2.825 x 10<sup>-3</sup> Nm

Max Acceleration ..... 1 x 10<sup>5</sup> rad/sec<sup>2</sup>

Electrical Conn ..... 2M cable (foil and braid shield, 24 AWG conductors non-commutated, 28 AWG commutated), 8-pin M12 (12 mm) in-line connector with 0.5M cable (braid shield)

Weight ..... 100 grams typical

### Environmental

Operating Temp ..... 0° to +70° C standard models  
 -40° to +85° C for low temperature option  
 -20° to +100° C for high temperature option

Storage Temp ..... -25° to +85° C

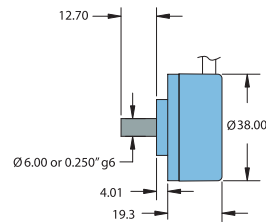
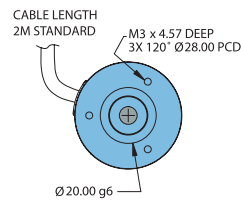
Humidity ..... 98% RH non-condensing

Vibration ..... 10 g @ 58 to 500 Hz

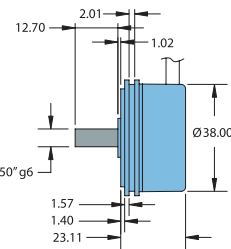
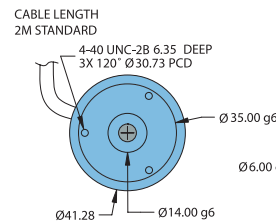
Shock ..... 80 g @ 11 ms duration

Sealing ..... IP50 standard; IP64 available

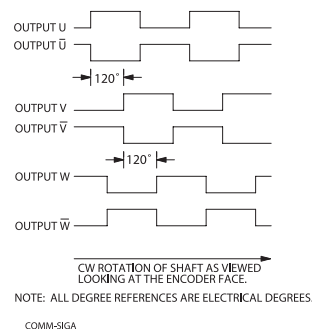
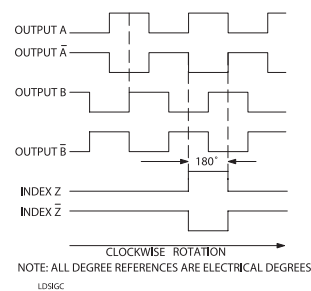
## Model 15S Standard Servo Mount (M1)



## Model 15S Servo Mount (M2)



### Waveform Diagrams



### Wiring Table

Function	Cable Wire Color	8-pin M12**
Com	Black	7
+VDC	White	2
A	Brown	1
A'	Yellow	3
B	Red	4
B'	Green	5
Z	Orange	6
Z'	Blue	8
U	Violet	--
U'	Gray	--
V	Pink	--
V'	Turquoise	--
W	Red/Green	--
W'	Red/Yellow	--
Shield	Bare *	--