# Model 15S
# Servo-Style

## 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 -20º C to +100º 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.

**Mechanical**

15S — 60 — M1

- 15S — MODEL: 15S Servo-Style
- 60 — SHAFT SIZE: 60 6mm x 12.7mm w/Flat; 71 .250" x .500" w/Flat
- M1 — FIXING: M1 STD Servo Mount; M2 Servo Mount #2

**Electrical Specification**

0256 — NC — HV — V1

- 0256 — PPR: See *PPR chart* below; Price adder >1000
- NC — COMMUTATION 5V ONLY: NC No Commutation; 4A 4 Pole; 6B 6 Pole; 8C 8 Pole; 12D 12 Pole; Note 1
- HV — OUTPUT TYPE: OC Open Collector; PP Push-Pull; HV Line Driver
- V1 — OPERATING VOLTAGE: V1 5-24 Volts; 5V 5 Volts; 12V 12 Volts

**Optional Features**

G2 — ST — IP50

- G2 — CONNECTOR TYPE: G2 2M Flying Lead; Note 2; K0 8 Pin In-Line M12 + 1/2M Cable; Note 3
- ST — OPERATING TEMPERATURE: ST 0º to 70º C; T1 -40º to 85º C; T2 -20º to 100º C
- IP50 — SEALING: IP50 Standard Sealing; IP64 IP64 Sealing; Note 4

**For specification assistance call Customer Service at +44 (0)1978 262100**

### Model 15S PPR Options

| | | | | |
|---|---|---|---|---|
| 0001 thru 0189* | | 0200 | 0250 | 0256 |
| 0300 | 0315 | 0360 | 0400 | 0500 |
| 0512 | 0580 | 0600 | 0800 | 1000 |
| 1024 | 1200 | 1250 | 1500 | 1800 |
| 2000 | 2048 | 2500 | 2540 | 3000 |
| 3600 | 4000 | 4096 | 5000 | 6000 |
| 8192 | 10000 | | | |

*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 Not available in all configurations, Only available with 5V Input Voltage. 12D Only available with 80 PPR. Contact Customer Service for availability.
2 For non-standard cable lengths contact sales for availability and cost.
3 8 Pin Not available with commutation
4 Increased starting torque with IP64 selection.

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## Model 15S Specifications

### Electrical

Input Voltage .....4.75 to 28 VCC max for temperatures up to 85º C
4.75 to 24 VCC for temperatures between 85º to 100º C
5V Only for Commutation Encoders.
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 .....180º (±18º) electrical
Quad. Phasing .....90º (±22.5º) electrical
Min. Edge Sep .....67.5º electrical
Accuracy.....Within 0.017º mechanical or 1 arc-minute from true position. (for PPR>189)
Commutation.....Up to 12 pole. Contact Customer Service for availability.
Comm. Accuracy.....1º mechanical

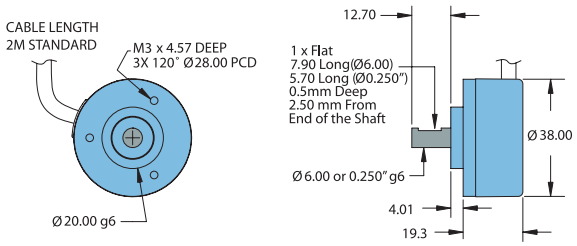
### Mechanical

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 $10^{-4}$ Nm
IP64 2.825 x $10^{-3}$ Nm
Max Acceleration.....1 x $10^{5}$ rad/sec$^{2}$
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

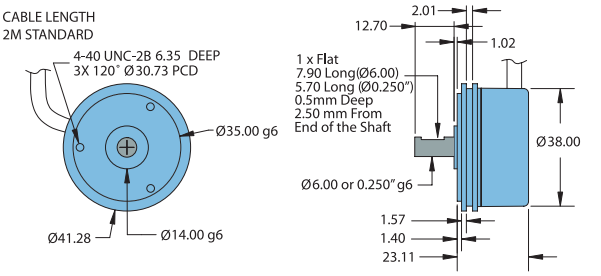
### Environmental

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.....-25º to +85º C
Humidity.....98% RH non-condensing
Vibration .....10 g @ 58 to 500 Hz
Shock.....80 g @ 11 ms duration
Sealing.....IP50 standard; IP64 available

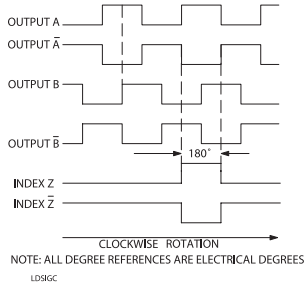
## Model 15S Standard Servo Mount (M1)



## Model 15S Servo Mount (M2)



### Waveform Diagrams




NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES

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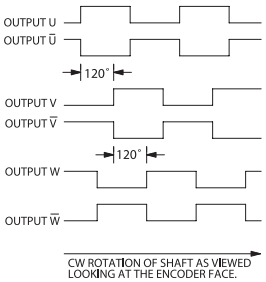


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COMM-SIGA

### 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 * | -- |