Model 15S

Features

- Very High Performance Economical Encoder
- Low Profile- Less Than 1.0” (25.4 mm) Height and 1.5” (38 mm) Diameter
- Extended Temperature Operating Ranges Available
- Up To 12 Pole Commutation Optional (for brushless motor control)

The Model 15S Accu-Coder™ 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 (1.5" 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, flange, and face mount options. The Model 15S may also be specified with features such as extended operating temperatures from -20° C to +120° C, or up to 12 pole commutation for brushless motor control. The Model 15S features EPC's 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, Medical Diagnostic Equipment, Specialty Assembly Machines, Digital Plotters, Printers, Typesetting Equipment

Model 15S Ordering Guide

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

Mechanical | Electrical | Optional Features (Leave Blank For Standard Options)

15S	-	19	M1	-	0500	N	12	A	OC	-	F00	-	200kHz Std	-20° to +85°C Std	IP50 Std	None Std

MODEL
15S Shaft Mount

SHAFT SIZE[1]
19 1/4", 0.250"
20 6 mm

MOUNTING
M1 Standard Servo Mount
M2 Servo Mount
M3 Square Flange
M4 Servo Mount
M5 Servo Mount
M6 Servo Mount
M7 Servo Mount

CYCLES PER REVOLUTION
See *CPR Options* below

COMMUTATION[2]
N No Commutation
A 4 Pole
B 6 Pole
C 8 Pole
D 12 Pole

INPUT VOLTAGE
5 5 VDC
12 12 VDC
V1 5 to 28 VDC

NUMBER OF CHANNELS
A Channel A
Q Quadrature A & B
R Quadrature A & B with Index Z[3]

OUTPUT TYPE
OC Open Collector
PP Push-Pull
HV Line Driver
PU Pull-Up Resistor[8]
OD Open Collector with Differential Outputs

Available on special request. Additional lead times may apply:
LO Line Driver on ABZ, Open Collector on UVW

CONNECTOR TYPE
F00 18" Cable[4] (Std)
F01 12" Cable
F02 24" Cable
F03 36" Cable
M00 2M Cable[5]
J00 18" Cable with 5-pin M12[7]
K00 18" Cable with 8-pin M12[7]

FREQUENCY RESPONSE
200 kHz (Std)
F3 300 kHz

OPERATING TEMPERATURE
-20° to +85° C (Std)
T1 -40° to +85° C
T2 -20° to +100° C
T3 -20° to +120° C[9]

SEALING
IP50 (Std)
S1 IP64

CERTIFICATION
None (Std)
CE CE Marked[6]


For enhanced connectivity, available with an M12 in- line connector

For specification assistance call Customer Service at 1-800-894-0412

Model 15S CPR Options

0001 thru 0189*		0198	0200	0250
0256	0300	0315	0360	0400
0500	0512	0580	0600	0800
1000	1024	1200	1250	1800
2000	2048	2500	2540	

*Contact Customer Service For Availability

New CPR values are periodically added to those listed. Contact Customer Service to determine all currently available values. Special disk 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 Contact Customer Service for non-standard index gating or phase relationship options.
4 For non-standard English cable lengths enter 'F' plus cable length expressed in feet. Example: F06 = 6 feet of cable.
5 For non-standard metric cable lengths enter 'M' plus cable length expressed in meters. Example: M06 = 6 meters of cable.
6 Please refer to Technical Bulletin TB100: *When to Choose the CE Option* at www.encoder.com.
7 Not available with commutation. 5-pin not available with Line Driver (HV, OD, LO) outputs. Additional cable lengths available. Please consult Customer Service.
8 With Input Voltage above 16 VDC, operating temperature is limited to 85° C.
9 Only available with 5 VDC Input Voltage

Model 15S

Model 15S Specifications

Electrical

Input Voltage	5 VDC ±10% Fixed Voltage 12 VDC ±10% Fixed Voltage 4.75 to 28 VDC max for temperatures up to 85º C 4.75 to 24 VDC for temperatures between 85º to 100º 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 Pull-Up- Open collector with 2.2K ohm Pull-Up 20mA max per channel Line Driver- 20 mA max per channel (Meets RS 422 at 5 VDC supply)
Index	Once per revolution. 190 to 2540 CPR: Gated to output A 1 to 189 CPR: Ungated See *Waveform Diagrams* below.
Freq. Response	200 kHz standard, 300 kHz optional
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 CPR>189)
Commutation	Up to 12 pole. Contact Customer Service for availability.
Comm. Accuracy	1º mechanical

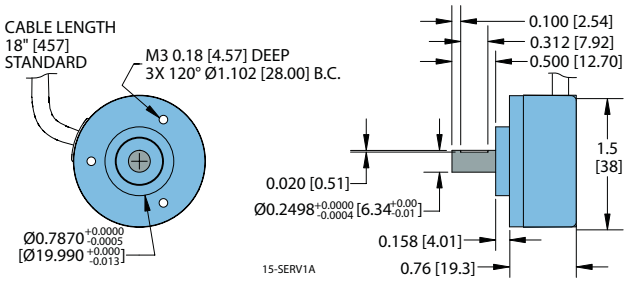
Mechanical

Max Shaft Speed	8000 RPM. Higher speeds may be achievable, contact Customer Service.
Shaft Material	Stainless Steel
Radial Shaft Load	5 lb max. Rated load of 2 to 3 lb for bearing life of 1.2 x 10^{10} revolutions
Axial Shaft Load	5 lb max. Rated load of 2 to 3 lb for bearing life of 1.2 x 10^{10} revolutions
Starting Torque	IP50 0.05 oz-in IP64- 0.4 oz-in
Moment of Inertia	6.7 x 10^{-5} oz-in-sec^2 (4.8 gm-cm^2)
Max Acceleration	1 x 10^5 rad/sec^2
Electrical Conn	18" cable (foil and braid shield, 24 AWG conductors non-commutated, 28 AWG commutated), 5- or 8-pin M12 (12 mm) in-line connector with 18" cable (braid shield)
Weight	3 oz typical

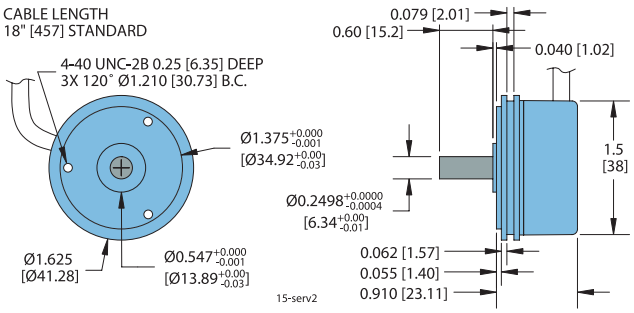
Environmental

Operating Temp	-20° to +85° C for standard models -40° to +85° C for low temperature option -20° to +100° C for high temperature option -20° to +120° C for extreme 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

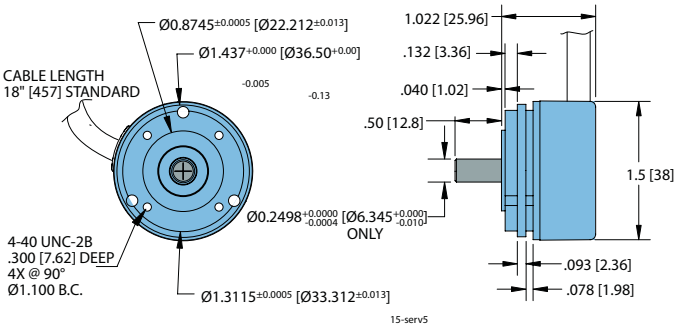
Model 15S Standard Servo Mount M1



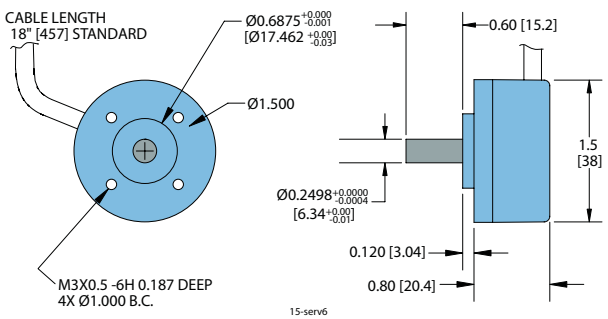
Model 15S Servo Mount M2



Model 15S Servo Mount M5

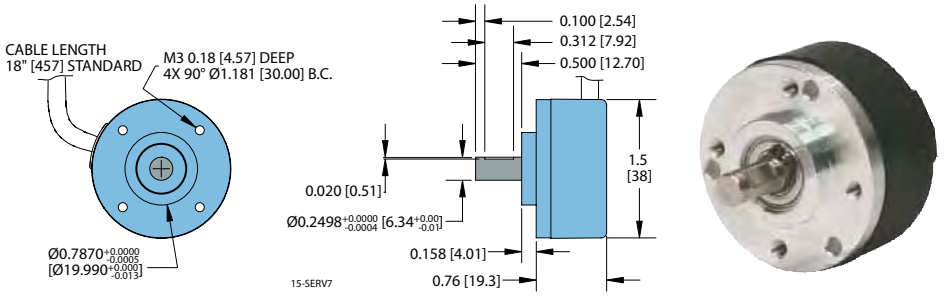


Model 15S Servo Mount M6

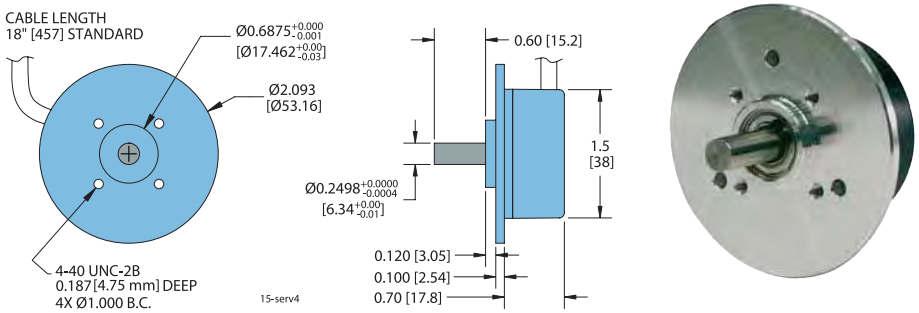


All dimensions are in inches with a tolerance of ±0.005" or ±0.01" unless otherwise specified
Metric dimensions are given in brackets (mm)

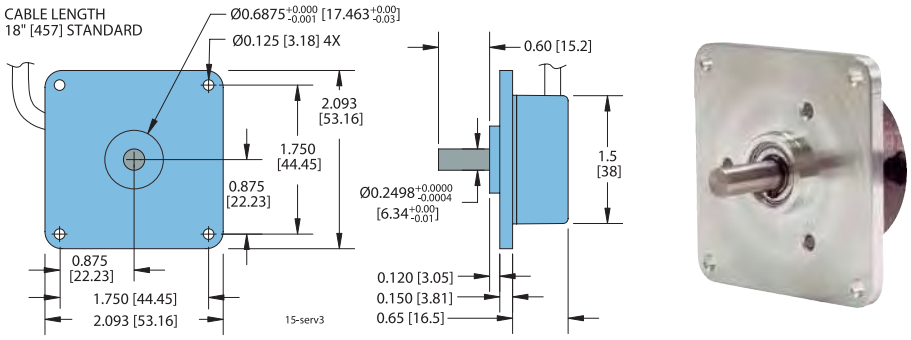
Model 15S Standard Servo Mount M7



Model 15S Servo Mount M4



Model 15S Square Flange M3



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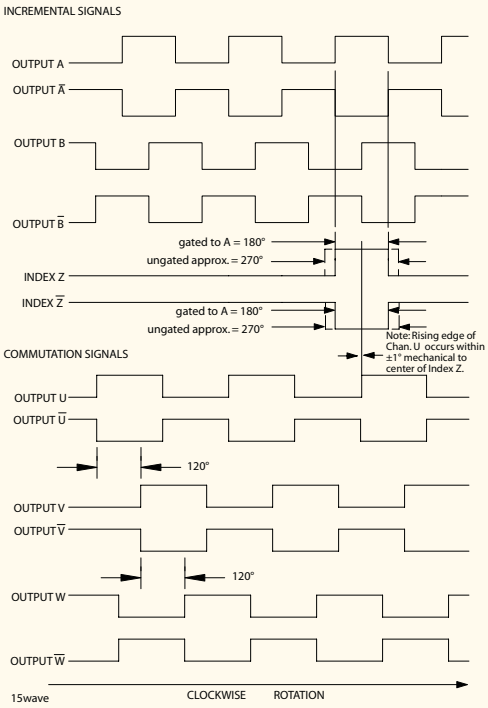
Metric dimensions are given in brackets (mm)

Waveform Diagrams



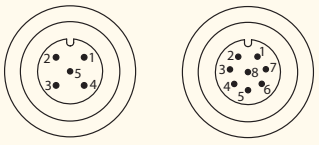
NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES

Wiring Table

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

* CE Option: Cable shield (bare wire) is connected to internal case
**Non-CE Option: Cable shield is connected to M12 connector body. CE Option: Cable shield and M12 connector body is connected to internal case.

Connector Pin-Outs



5-pin M12 | 8-pin M12

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