

MODEL 802S - STAINLESS STEEL ENCODER



Ø2.0"

FEATURES

- Industry Standard Size 20 (2" Diameter) Stainless Steel Package Flange and Servo Mounting
- Up to 30,000 CPR
- 80 lb Maximum Axial and Radial Shaft Loading
- IP67 Sealing Available

The Model 802S Accu-Coder™ is a heavy duty, industry standard Size 20 (2.0" diameter) encoder specifically designed for harsh factory and plant floor environments. The Model 802S is available with a variety of flange and servo mounting styles, making it easy to use in a broad range of applications. Its heavy duty, double shielded ball bearings are rated at 80 pounds maximum axial and radial shaft load, ensuring long operating life. This ultra-rugged, yet compact encoder is housed in a type 316 stainless steel enclosure, making it ideal for applications where contamination or exposure to caustic chemicals is a concern. But don't let its tough exterior fool you, the Model 802S provides the precise, reliable output you've come to expect from Accu-Coder™.

COMMON APPLICATIONS

Food Processing, Oil, Gas & Chemical Processing, Material Handling, Conveyors, Robotics, Elevator Controls, Textile Machines

MODEL 802S ORDERING GUIDE

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

802S	20	S	1000	R	HV	1	F	1	E	G	CE
MODEL 802S Size 20 (2.0")	SHAFT SIZE¹ 07 1/4", 0.250" 20 3/8", 0.375" 21 10 mm 30 3/8", 0.375" ²	OPERATING TEMPERATURE S 0° to 70° C L -40° to 70° C H 0° to 100° C ³	CYCLES PER REVOLUTION 1-30,000 Price adder for CPR>1270 (See table below)	OUTPUT TYPE 5 - 28V In/Out ⁵ OC Open Collector PU Pull-Up Resistor PP Push-Pull HV Line Driver 8 - 28V In/5V Out ^{6,7} H5 Line Driver (5V) P5 Push-Pull (5V)	SEAL N No Seal 1 IP66 2 IP64 ⁹ 5 IP67	CERTIFICATION N None CE CE Marked ¹³	CONNECTOR LOCATION E End S Side	MOUNTING <i>Flange Mounts</i> F 1.181" Female Pilot L 0.687" Male Pilot G 1.250" Male Pilot K Size 25 w/30 Shaft <i>Servo Mounts</i> S 1.181" Female Pilot U 0.687" Male Pilot T 1.250" Male Pilot J Size 25 w/30 Shaft	CONNECTOR TYPE¹⁰ G Gland, 24" cable ¹¹ J 5-Pin M12 (12mm) ¹² K 8-Pin M12 (12mm) ¹²	NUMBER OF CHANNELS⁴ A Channel A <i>Channel A Leads B</i> Q Quadrature A & B R Quadrature A & B with Index <i>Channel B Leads A</i> K Reverse Quadrature A & B D Reverse Quadrature A & B with Index	MAXIMUM FREQUENCY 1 100 kHz (Standard) 2 200 kHz 5 250 kHz, >3000 CPR 3 500 kHz, >6000 CPR ⁸ 4 1 MHz, >10,000 CPR ⁸

MODEL 802S CPR OPTIONS

0001*	0002*	0004*	0005*	0006*	0007*	0008*	0010*	0011*	0012*
0014*	0020	0021*	0024*	0025*	0028*	0030*	0032*	0033*	0034*
0035*	0038*	0040*	0042*	0045*	0050*	0060	0064*	0100	0120
0125	0128*	0144*	0150*	0160*	0192*	0200	0240*	0250	0254*
0256*	0300	0333*	0360	0400	0500	0512	0600	0625*	0635
0665*	0720	0768*	0800	0889	0900*	1000	1024	1200	1201 ^a
1203 ^a	1204 ^a	1250 ^a	1270 ^a	1440	1500	1800	2000	2048	2400 ^a
2500	2540 ^a	2880 ^a	3000 ^a	3600 ^a	4000 ^a	4096 ^a	5000 ^a	6000 ^a	7200 ^a
7500 ^a	9000 ^a	10,000 ^a	10,240 ^a	12,000 ^a	12,500 ^a	14,400 ^a			
15,000 ^a	18,000 ^a	20,000 ^a	20,480 ^a	25,000 ^a	30,000 ^a				

*Contact Customer Service for High Temperature Option.

^aHigh Temperature Option (H) limited to 85° C maximum for these CPR options.

New CPR values are periodically added to those listed. Contact Customer Service to determine all currently available CPR values. Special disk resolutions are available upon request. A one-time NRE fee may apply.

NOTES:

- Contact Customer Service for additional options.
- Shaft with Size 25 Mounting Adapter, J or K mounting only.
- 0° to 85° C for certain resolutions, see CPR Options.
- Contact Customer Service for non-standard index gating options.
- 24 VDC max for high temperature option.
- Standard temperature, 60 to 3000 CPR only.
- CE not available with H5/P5 output type options.
- Standard cable lengths only. For additional information please refer to **Technical Bulletin TB116: Noise and Signal Considerations** at www.encoder.com.
- IP64 not available in low temp option.
- For mating connectors, cables, and cordsets see Encoder Accessories on page 102 or visit www.encoder.com. For Pin Configuration Diagrams, see page 107 or visit www.encoder.com.
- For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: G/6 = 6 feet of cable.
- M12 connector available on side mount option only.
- For additional information please refer to **Technical Bulletin TB100: When to Choose the CE Option** at www.encoder.com.

MODEL 802S SPECIFICATIONS

Electrical

Input Voltage.....4.75 to 28 VDC max for temperatures up to 70° C
4.75 to 24 VDC for temperatures between 70° C to 100° C

Input Current 100 mA max with no output load

Input Ripple..... 100 mV peak-to-peak at 0 to 100 kHz

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*.

Output Types Open Collector- 100 mA max per channel
Pull-Up- 100 mA max per channel
Push-Pull- 20 mA max per channel
Line Driver- 20 mA max per channel (Meets RS 422 at 5 VDC supply)

Index..... Occurs once per revolution. The index for units >3000 CPR is 90° gated to Outputs A and B. See *Waveform Diagrams*.

Max Frequency Up to 1 MHz.

Noise Immunity..... Tested to BS EN61000-4-2; IEC801-3; BS EN61000-4-4; DENV 50141; DENV 50204; BS EN55022

(with European compliance option); BS EN61000-6-2; BS EN50081-2

Symmetry..... 1 to 6000 CPR: 180° (±18°) electrical at 100 kHz output
6001 to 30,000 CPR: 180° (±36°) electrical

Quad Phasing 1 to 6000 CPR: 90° (±22.5°) electrical at 100 kHz output
6001 to 30,000 CPR: 90° (±36°) electrical

Min Edge Sep 1 to 6000 CPR: 67.5° electrical at 100 kHz output
6001 to 20,480 CPR: 54° electrical
>20,480 CPR: 50° electrical

Rise Time..... Less than 1 microsecond

Accuracy..... Instrument and Quadrature Error: For 200 to 1999 CPR, 0.017° mechanical (1.0 arc minutes) from one cycle to any other cycle. For 2000 to 3000 CPR, 0.01° mechanical (0.6 arc minutes) from one cycle to any other cycle. Interpolation error (units > 3000 CPR only) within 0.005° mechanical. (Total Optical Encoder Error = Instrument + Quadrature + Interpolation)

Mechanical

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

Radial Shaft Load 80 lb max. Rated load of 20 to 40 lb for bearing life of 1.5×10^9 revolutions

Axial Shaft Load 80 lb max. Rated load of 20 to 40 lb for bearing life of 1.5×10^9 revolutions

Starting Torque 1.0 oz-in typical with IP64 seal or no seal
3.0 oz-in typical with IP66 shaft seal
7.0 oz-in typical with IP67 shaft seal

Moment of Inertia 5.2×10^{-4} oz-in-sec²

Max Acceleration 1×10^5 rad/sec²

Housing Type 316 Stainless Steel

Bearings..... Precision ABEC ball bearings

Weight..... 1.5 lb typical

Environmental

Storage Temp -25° to +85° C

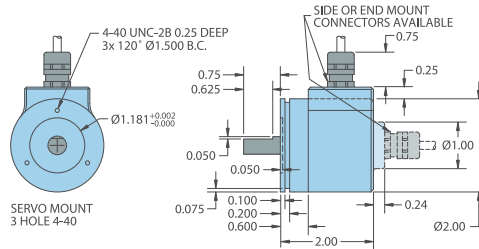
Humidity..... 98% RH non-condensing

Vibration..... 20 g @ 58 to 500 Hz

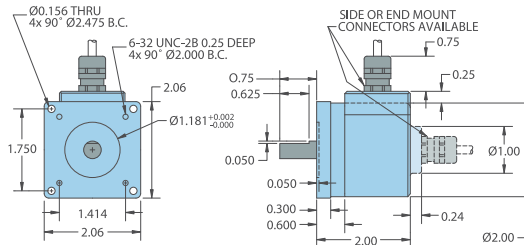
Shock..... 75 g @ 11 ms duration

Sealing..... IP50 standard; IP64, IP66, IP67 optional

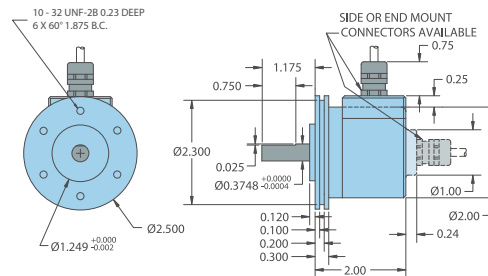
MODEL 802S SERVO MOUNT (S)



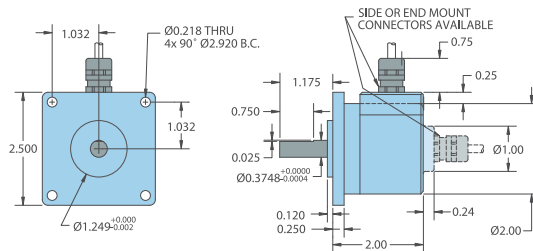
MODEL 802S FLANGE MOUNT (F)



MODEL 802S SIZE 25 (2.5") SERVO MOUNT (J)



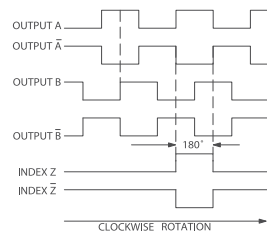
MODEL 802S SIZE 25 (2.5") FLANGE MOUNT (K)



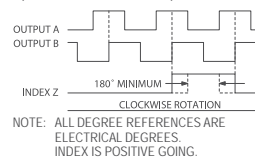
All dimensions are in inches with a tolerance of $\pm 0.005''$ or $\pm 0.01''$ unless otherwise specified.

WAVEFORM DIAGRAMS

Line Driver and Push-Pull



Open Collector and Pull-Up



NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES. WAVEFORM SHOWN WITH OPTIONAL COMPLEMENTARY SIGNALS Ā, B̄, Z̄ FOR HV OUTPUT ONLY.

WIRING TABLE

Function	Gland Cable ¹		
	Wire Color	5-pin M12	8-pin M12
Com	Black	3	7
+VDC	Red	1	2
A	White	4	1
A'	Brown	--	3
B	Blue	2	4
B'	Violet	--	5
Z	Orange	5	6
Z'	Yellow	--	8
Case	Green	--	--
Shield	Bare*	--	--

*CE Option: Cable Shield (bare wire) is connected to internal case.

¹Standard cable is 24 AWG conductors with foil and braid shield.