

MODEL 25SF - INCREMENTAL SHAFT ENCODER



Ø2.5"

FEATURES

Industry Standard Size 25 Package (2.5" x 2.5" / 63.5 mm)
 Resolutions from 1 to 65,536 CPR (262,144 quadrature counts)
 Servo and Flange Mounting
 Optical Technology for High Accuracy
 Standard with Heavy-Duty Dual Bearings Rated Load of 80 lbs axial & radial
 IP67 Sealing Available

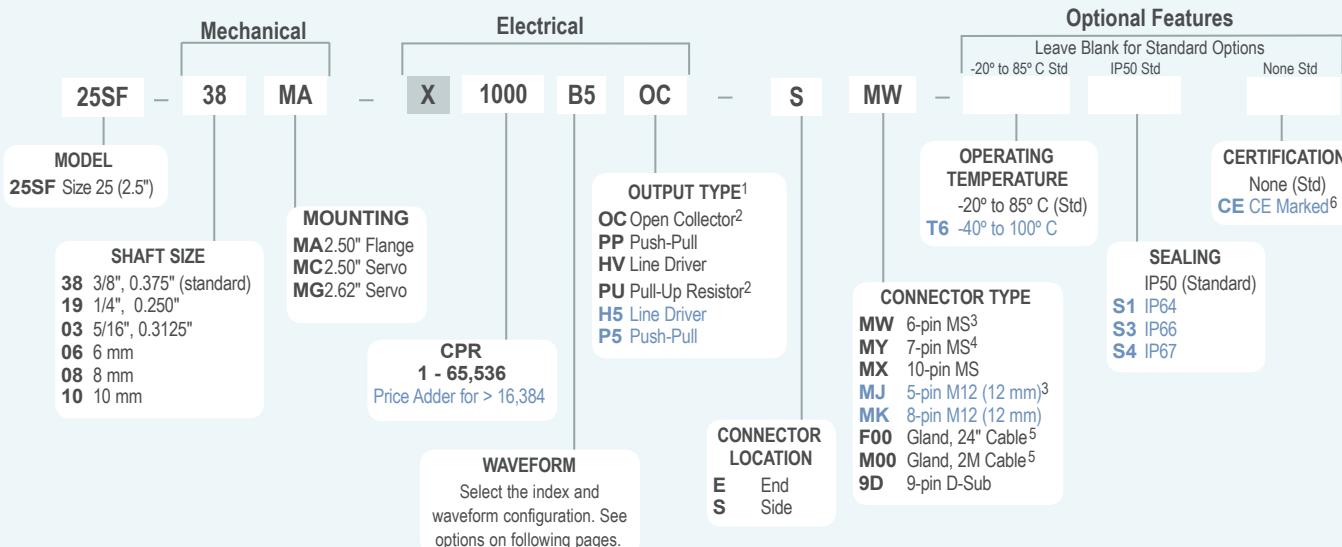
The Model 25SF Size 25 Accu-CoderPro™ shaft encoder offers the performance advantages of the programmable Model 25SP, but in an economical, fixed resolution version. The versatile Model 25SF offers 32 different waveforms options, six output types, and any resolution from 1 to 65,536 CPR. Specifically designed for the challenges of an industrial environment, the Model 25SF features a rugged, industrial housing and comes standard with dual bearings rated 80 lbs axial or radial. Offering shaft sizes up to 10 mm, multiple mounting options, and sealing up to IP67, this encoder can take on your most demanding application.

COMMON APPLICATIONS

Motion Control Feedback, Conveyors, Elevator Controls, Machine Control, Food Processing, Process Control, Robotics, Material Handling, Textile Machines

MODEL 25SF ORDERING GUIDE

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


NOTES:

- 1 All output types are 5V to 30V in/out **except** H5 Line Driver and P5 Push-Pull output types, which are 5-30VDC in and 5VDC out.
- 2 Open Collector and Pull-Up Resistor outputs not recommended for CPR > 8192 and/or frequencies > 150 KHz.
- 3 6-pin MS and 5-pin M12 Connectors only available with Pull-Up, Open Collector, and Push-Pull output types.
- 4 7-pin MS Connector does not provide Index Pulse Z when selected output is Line Driver (HV or H5).
- 5 For non-standard English cable lengths enter 'F' plus cable length expressed in feet. Example: F06 = 6 feet of cable. For non-standard metric cable lengths enter 'M' plus cable length expressed in meters. Example: M06 = 6 meters of cable.
- 6 Frequency above 300 KHz standard cable lengths only.

6 Please refer to Technical Bulletin [TB100: When to Choose the CE Mark](#) at encoder.com.

ACCU>>CODERPRO™
 by Encoder Products Company

MODEL 25SF SPECIFICATIONS

Electrical

Input Voltage.....	4.75 to 30 VDC max. See Output Types for limitations
Input Current	100 mA max with no output load (65mA typical)
Output Format.....	Incremental. See Waveforms on following page for options.
Output Types.....	Line Driver* (HV) – 20 mA max per channel, max freq 1.0 MHz, 5 VDC max at 100° C or 24 VDC max at 85° C. Line Driver* (H5) – 5-30 VDC in/5 VDC out, 20 mA max per channel, max freq 2.7 MHz, 5 VDC max at 100° C. Push-Pull (PP) – 20 mA max per channel, max frequency 1.0 MHz, 5 VDC max at 100° C or 24 VDC max at 85° C. Push-Pull (P5) – 5-30 VDC in/5 VDC out, 20 mA max per channel, max frequency 2.7 MHz, 5 VDC max at 100° C. Open Collector (OC) – 100 mA max per channel, 200 KHz max freq recommended Pull-Up (PU) – 2.2K ohm internal resistors, 100 mA max per channel, 150 KHz max freq recommended, max temp 85° C at > 24 VDC
	*Meets RS 422 at 5 VDC supply
Index	Once per revolution. EPC standard is 180° gated to output A (waveform B5). See Waveforms on Model 25SP for options.
Max Frequency	2.7 MHz subject to RPM restrictions for high resolution (CPR): 5000 RPM max for CPR 16385 to 32768 and 2500 RPM max for CPR 32769 to 65536 NOTE: Use 5 VDC Line Driver (H5 or HV output type) to obtain high frequencies.
Electrical Protection ..	Overvoltage, reverse voltage, and output short circuit protected. NOTE: Sustained over or reverse voltage may result in permanent damage.
Min Edge Sep	1 to 16384 CPR: 36° electrical min, 63° or better typical 16385 to 65536 CPR: 20° electrical min, 36° or better typical
Rise Time	Less than 1 microsecond
Accuracy.....	Better than 0.013° or 47 arc-sec from true

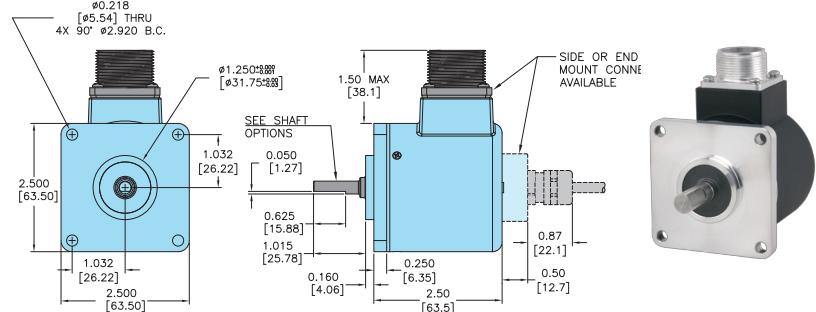
Mechanical

Mechanical	
Max Shaft Speed	8000 RPM. Higher shaft speeds may be achievable, contact Customer Service.
Shaft Material	303 Stainless Steel
Shaft Rotation	Bi-directional
Radial Shaft Load	80 lb max. Rated load of 20 to 40 lb for rated life of 1.5×10^9 revs
Axial Shaft Load	80 lb max. Rated load of 20 to 40 lb for rated life of 1.5×10^9 revs
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 ...	5.6×10^{-4} oz-in-sec ²
Housing	Black non-corrosive finish
Bearings.....	Precision ABEC ball bearings
Weight.....	20 oz typical

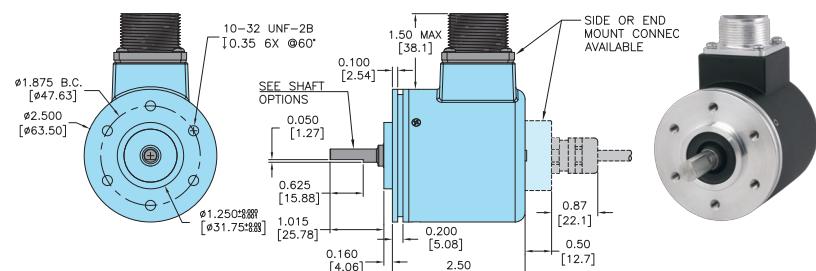
Environmental Operating Temp

Operating Temp	-20° to 85° C for standard models -40° to 100° C for extended temp option
Humidity.....	95% RH non-condensing
Vibration.....	20 g @ 5 to 2000 Hz
Shock.....	80 g @ 11 ms duration
Sealing.....	IP50 standard; IP64, IP66 or IP67 optional

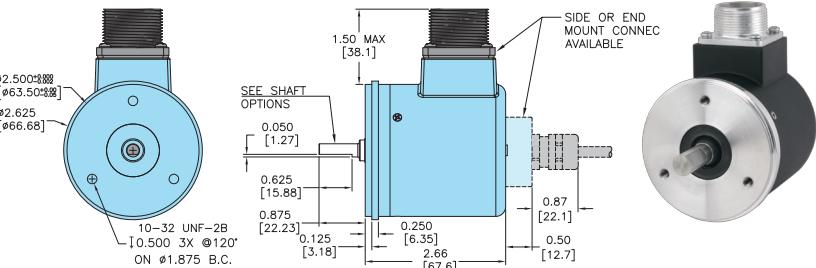
MODEL 25SF FLANGE MOUNT (MA)



MODEL 25SF 2.5" SERVO MOUNT (MC)



MODEL 25SF 2.62" SERVO MOUNT (MG)



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

ENCODER WIRING TABLE

For EPC-supplied mating cables, refer to wiring table provided with cable. Trim back and insulate unused wires.

Function	Gland Cable [†] Wire Color	5-pin M12**	8-pin M12**	10-pin MS	7-pin MS HV,H5	7-pin MS PU,PP, OC,P5	6-pin MS PU,PP, OC,P5	9-pin D-sub
Com	Black	3	7	F	F	F	A	9
+VDC	Red	1	2	D	D	D	B	1
A	White	4	1	A	A	A	D	2
A'	Brown	--	3	H	C	--	--	3
B	Blue	2	4	B	B	B	E	4
B'	Violet	--	5	I	E	--	--	5
Z	Orange	5	6	C	--	C	C	6
Z'	Yellow	--	8	J	--	--	--	7
Case	Green	--	--	G	G	G	F	8
Shield	Bare*	--	--	--	--	--	--	--

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

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

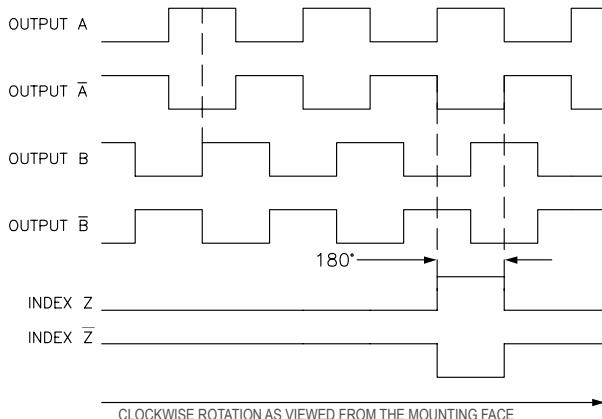
**CE Option: Use cable cordset with shield connected to M12 connector coupling nut.



An EPC Size 25 Encoder in a common application

EPC STANDARD WAVEFORM (B5)

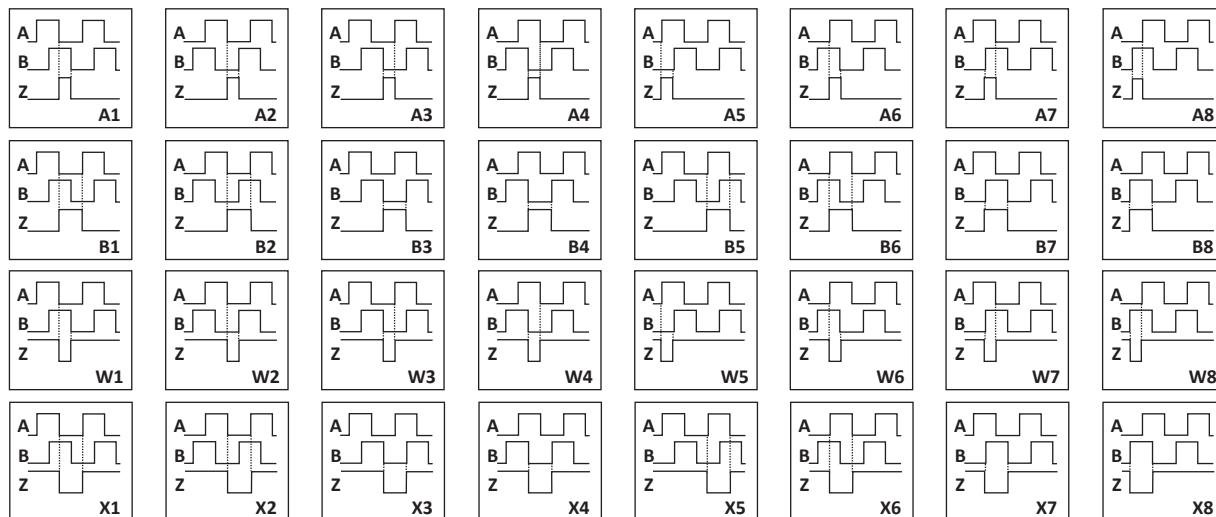
Additional waveforms available. See below for other options.



NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES.
 COMPLEMENTARY SIGNALS \bar{A} , \bar{B} , \bar{Z} APPLY TO LINE DRIVER (HV & H5) OUTPUTS ONLY.

WAVEFORMS

Choose any of these waveforms when ordering.



Odd numbers - A leads B
 Even numbers - B leads A

A and B - High Going Index
 W and X - Low Going Index

A and W - 90 Degree Index
 B and X - 180 Degree Index