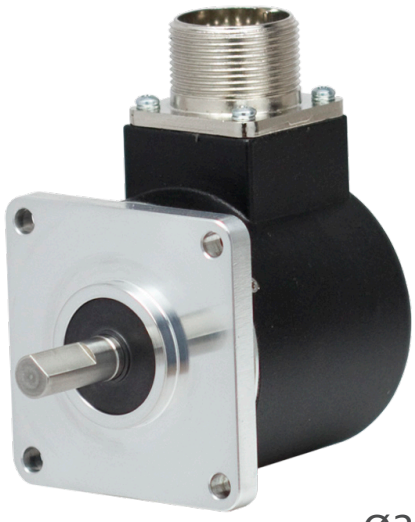
MODEL 725 – INCREMENTAL SHAFT ENCODER



FEATURES

Standard Size 25 Package (2.5" x 2.5")
Up to 30,000 CPR
Standard and Industrial Housings
Servo and Flange Mounting
IP67 Sealing Available

The Model 725 Accu-Coder™ optical shaft encoder is specifically designed for the challenges of an industrial environment. But don't let its tough, industrial package fool you – this Size 25 encoder still has the performance to reach resolutions up to 30,000 cycles per revolution. The Model 725 offers both flange and servo mounting options, and is available in two distinctive housing styles: Standard Housing (N) and Industrial Housing (I). The rugged Standard Housing isolates the internal electronics from the shock and stress of the outer environment, while the extra heavy-duty Industrial Housing features a fully isolated internal encoder unit. Isolating the unit prolongs bearing life by using an internal flexible mount to protect the encoder from severe axial and radial shaft loading. The Industrial Housing is the recommended solution for applications subject to continuous side loads, such as those that drive the encoder with a measuring wheel, pulley, or chain and sprocket.

COMMON APPLICATIONS

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

MODEL 725 ORDERING GUIDE

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

725 – N – 4 – S – 1000 – R – HV – 1 – F – 1 – E – X – N – CE

MODEL
725 Size 25 (2.5")

HOUSING STYLE
N Standard Housing
I Heavy Duty Industrial with Internal Flex Mount

SHAFT SIZE
S 3/8", 0.375" (standard)
4 1/4", 0.250"
19 5/16", 0.3125"
25 3/8", 0.375" - No flat[1]
06 6 mm
18 8 mm
21 10 mm

OPERATING TEMPERATURE
S 0° to 70° C
L -40° to 70°C
H 0° to 100° C[2]

CYCLES PER REVOLUTION
1-30,000
See *CPR Options* for available resolutions.
Price adder for CPR >1270

NUMBER OF CHANNELS[3]
A Channel A
Channel A Leads B
Q Quadrature A & B
R Quadrature A & B with Index
Channel B Leads A
K Reverse Quadrature A & B
D Reverse Quadrature A & B with Index

OUTPUT TYPE
5 - 28V In/Out[4]
OC Open Collector
PU Pull-Up Resistor
PP Push-Pull
HV Line Driver[5]
8 - 28V In/5V Out[6,7]
H5 Line Driver[5]
P5 Push-Pull

MAXIMUM FREQUENCY
1 Standard 100 kHz
2 200 kHz
5 250 kHz, >3000 CPR
3 500 kHz, >6000 CPR[8]
4 1 MHz, >10,000 CPR[8]

MOUNTING
F Flange
S 2.50" Servo
R 2.50" Servo
Q 2.50" Servo
L 2.62" Servo
P 5PY

SEALING
N No Seal
1 IP66
2 IP64
5 IP67

CONNECTOR LOCATION
S Side
E End

CONNECTOR TYPE[9]
W 6-pin MS[5]
Y 7-pin MS[5]
X 10-pin MS
9D 9-pin D-subminiature
J 5-pin M12 (12 mm)[5]
K 8-pin M12 (12 mm)
G Gland, 24" Cable[10]

MATING CONNECTOR
N No
Y Yes

CERTIFICATION
N None
CE CE Marked[11]

MODEL 725 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 (H).
[a]High 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:

1. Available with Industrial Housing (I) only.
2. 0° to 85° C for certain resolutions, see CPR Options.
3. Contact Customer Service for index gating options.
4. 24 VDC max for high temperature option.
5. Line Driver not available with 5-pin M12 or 6-pin MS connector. Available with 7-pin MS connector only without Index Z.
6. Standard temperature, 60 to 3000 CPR only.
7. H5 and P5 outputs not available with CE option, or any End Mount MS connector.
8. Standard cable lengths only. For details, please refer to **Technical Bulletin TB116: *Noise and Signal Distortion Considerations*** at www.encoder.com.
9. For mating connectors, cables, and cordsets see Accessories or visit www.encoder.com. For Connector Pin Configuration Diagrams, see Technical Information or visit www.encoder.com.
10. For Non-Standard Cable Lengths add a forward slash (/) plus cable length expressed in feet. Example: SG/6 = 6 feet of cable.
11. Please refer to **Technical Bulletin TB100: *When to Choose the CE Mark***.

MODEL 725 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 and 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 – Open Collector with 2.2K ohm internal resistor, 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

Electrical Protection .. Reverse voltage and output short circuit protected. NOTE: Sustained reverse voltage may result in permanent damage.

Noise Immunity..... Tested to BS EN61000-4-2; IEC801-3; BS EN61000-4-4; DDENV 50141; DDENV 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 20,480 CPR: 180° (±36°) electrical

Quad Phasing..... 1 to 6000 CPR: 90° (±22.5°) electrical at 100 kHz output
6001 to 20,480 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.

Shaft Material ..... 303 Stainless Steel

Shaft Rotation ..... Bi-directional

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

Axial Shaft Load ..... 80 lb max. Rated load of 20 to 40 lb for bearing life of 1.5 x 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 x 10^{-4} oz-in-sec^2

Housing ..... Black non-corrosive finish

Bearings..... Precision ABEC ball bearings

Weight..... 20 oz typical

Environmental

Storage Temp ..... -25° to 85° C

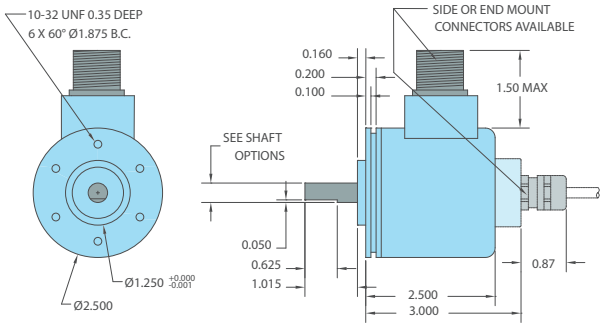
Humidity..... 95% RH non-condensing

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

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

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

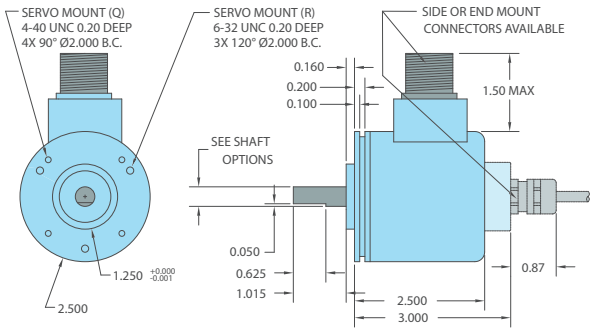
MODEL 725 2.5" SERVO MOUNT (S)





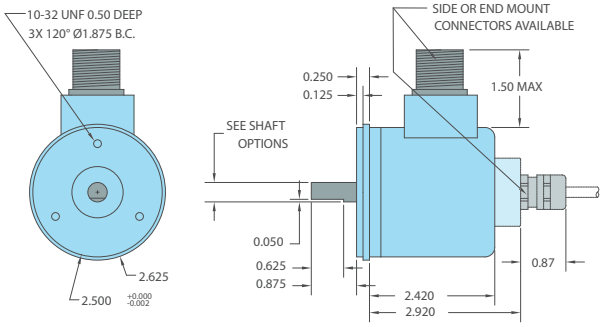
MODEL 725 2.5" SERVO MOUNT (Q)

Servo mount (R) has been discontinued and replaced by servo mount (Q)



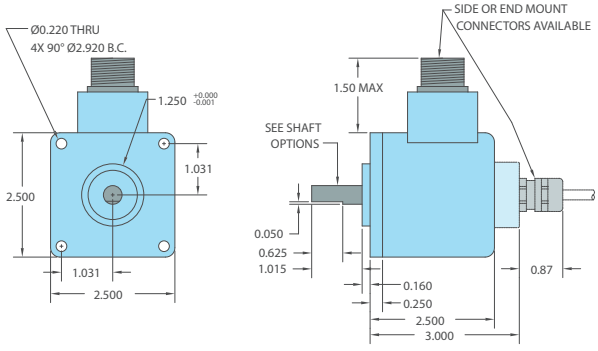


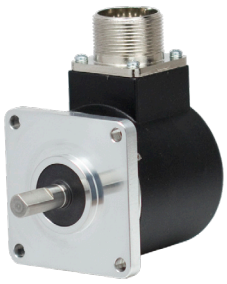
MODEL 725 2.62" SERVO MOUNT (L)





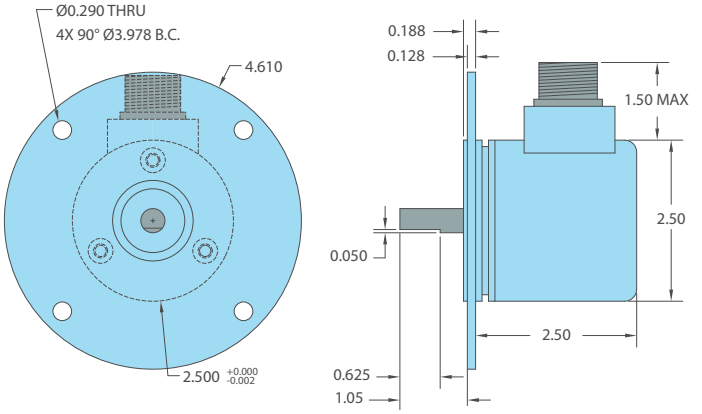
MODEL 725 FLANGE MOUNT (F)

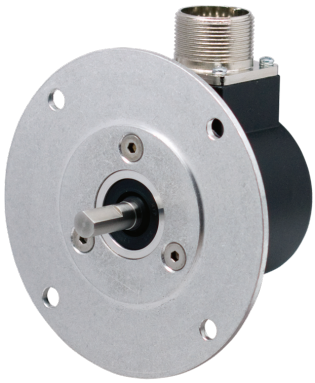




All dimensions are in inches with a tolerance of ±0.005" or ±0.01" unless otherwise specified.

MODEL 725 OPTIONAL 5PY MOUNTING (P)



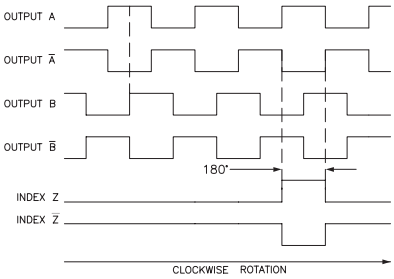


The optional 5PY adapter is made of all aluminum construction and allows the Model 725 encoder to replace DC tachometer technology. The 5PY adapter is mechanically interchangeable with any 5PY tach generator.

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

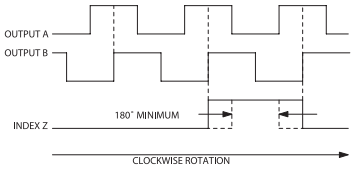
WAVEFORM DIAGRAMS

Line Driver and Push-Pull



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

Open Collector and Pull-Up



NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES. INDEX IS POSITIVE GOING.

WIRING TABLE

For EPC-supplied mating cables, refer to wiring table provided with cable.

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,F	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	--	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 cord set with shield connected to M12 connector coupling nut.