

Model 702 Ultra Rugged 50.80mm Diameter



Principle Engineering



Features

- Standard Size 20 Package (50mm x 50mm)
- Flange, and Servo Mounting
- Up to 30,000 PPR
- 35 kg Max. Axial and Radial Shaft Loading
- IP65 Sealing Available

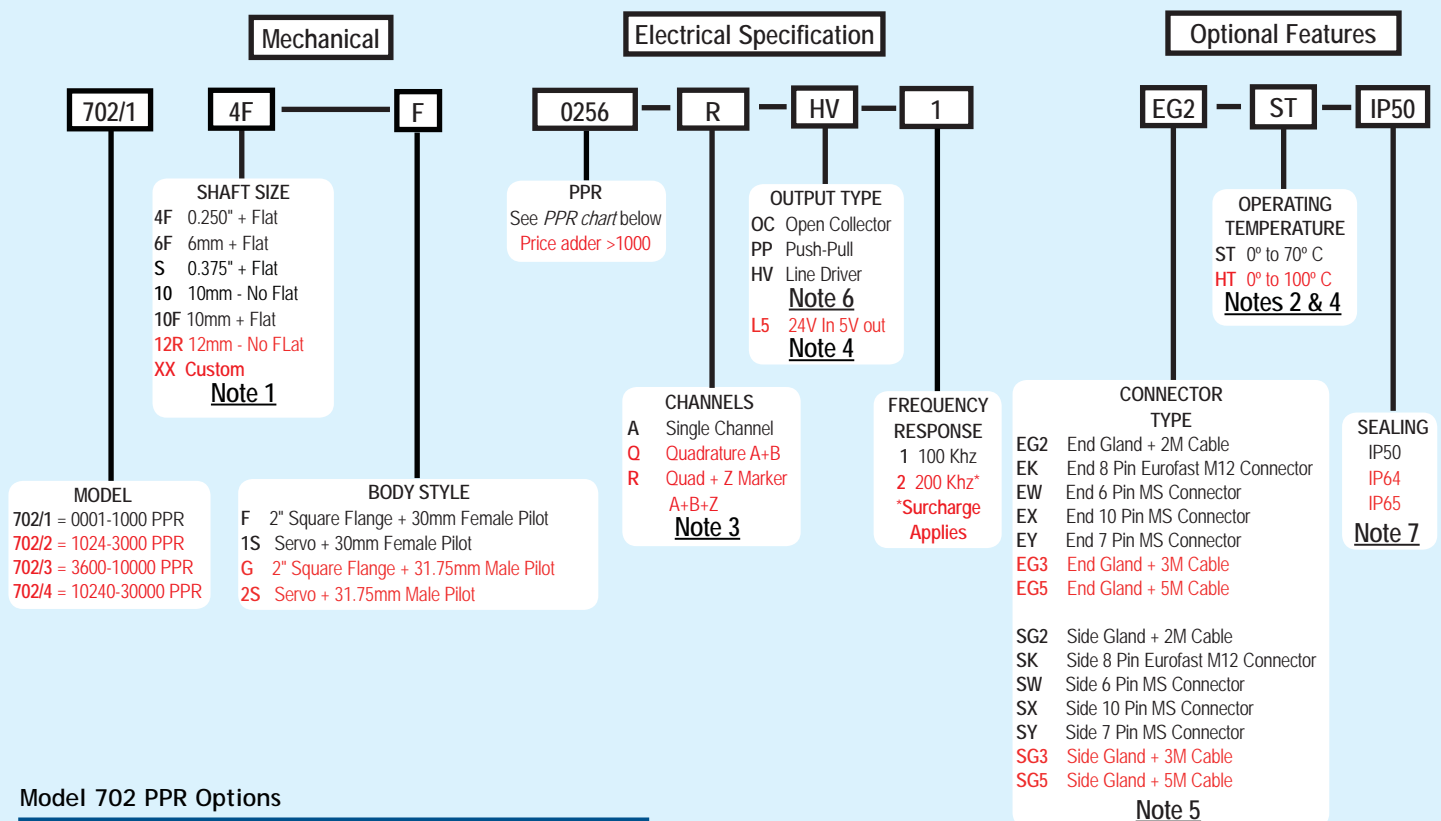
The Model 702 is a heavy duty, extremely rugged, reliable, yet compact industry standard 50.8mm diameter encoder, designed for harsh factory and plant floor environments. The double shielded ball bearings are rated at 35 kg maximum axial and radial shaft loading to ensure a long operating life. Made to withstand the harsh effects of the real world, both the flange and servo models are rated IP65 with the option of an extra heavy duty shaft seal. With a variety of mounting options in both the flange and servo models, the Model 702 is ideal for both new application and replacements. If you need an encoder that won't let you down, the Model 702 is it.

Common Applications

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

Model 702 Ordering Guide

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



Model 702 PPR Options

0010*	0020	0025*	0030*	0040*	0060	0100	0120	0125
0128*	0144*	0150*	0160*	0200	0240*	0250	0254*	0256*
0300	0333*	0360	0400	0500	0512	0600	0625*	0635
0720	0800	0900*	1000	1024	1200 ^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	12,500 ^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.

^a High Temperature Option (H) limited to 85° C maximum for these PPR options.

New PPR values are periodically added to those listed. Contact Customer Service to determine all currently available PPR values. Special disk resolutions are available upon request.

A one-time NRE (Non Recurring Engineering) fee may apply.

**For specification
assistance call
Customer Service**

NOTES:

- 1 Contact Customer Service for additional options.
- 2 0° to 85° C for certain resolutions, see PPR Options.
- 3 Contact Customer Service for non-standard index gating options.
- 4 24 VCC max for high temperature option.
- 5 For non-standard cable lengths, call sales office for availability and cost.
- 6 Marker not available with 6-pin or 7-pin MS connector & HV Output.
- 7 Increased starting torque with IP64 & IP65 options.

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Model 702 Specifications

Electrical

Input Voltage.....4.75 to 24 VDC max for temperatures up to 100° C
 Input Current 100 mA max with no output load
 Input Ripple100 mV peak-to-peak at 0 to 100 kHz
 Output FormatIncremental- 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- 50 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)
 IndexOccurs once per revolution. The index for units >3000 PPR is 90° gated to Output A. See *Waveform Diagrams* below.
 Freq Response.....Up to 500 KHz.
 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
 Symmetry1 to 6000 PPR: 180° (±18°) electrical at 100 kHz output
 Quad Phasing.....6001 to 20,480 PPR: 180° (±36°) electrical
 1 to 6000 PPR: 90° (±22.5°) electrical at 100 kHz output
 6001 to 20,480 PPR: 90° (±36°) electrical
 Min Edge Sep.....1 to 6000 PPR: 67.5° electrical at 100 kHz
 6001 to 20,480 PPR: 54° electrical
 >20,480 PPR: 50° electrical
 Rise Time.....Less than 1 microsecond
 Accuracy.....Instrument and Quadrature Error: For 200 to 1999 PPR, 0.017° mechanical (1.0 arc minutes) from one cycle to any other cycle. For 2000 to 3000 PPR, 0.01° mechanical (0.6 arc minutes) from one cycle to any other cycle. Interpolation error (units > 3000 PPR only) within 0.005° mechanical. (Total Optical Encoder Error = Instrument + Quadrature + Interpolation)

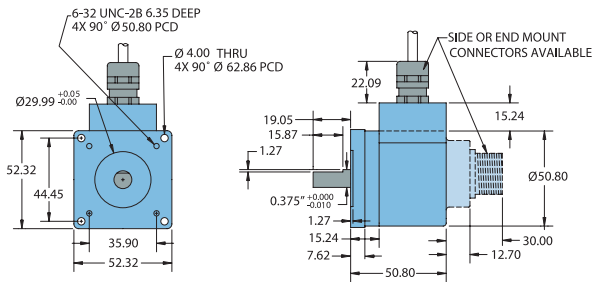
Mechanical

Max Shaft Speed.....8000 RPM. Higher shaft speeds may be achievable, contact Customer Service.
 Shaft Size0.250", 0.375", 10mm or 12mm
 Shaft Rotation.....Bi-directional
 Radial Shaft Load.....35kg max. Rated load of 10kg to 20kg for bearing life of 1.5 x 10⁹ revolutions
 Axial Shaft Load35kg max. Rated load of 10kg to 20kg for bearing life of 1.5 x 10⁹ revolutions
 Starting Torque7.0615 x 10⁻³ Nm typical with IP64 seal or no seal
 2.0118 x 10⁻² Nm typical with IP65 shaft seal
 Max Acceleration.....1 x 10⁵ rad/sec²
 Connector Type.....6-, 7-, and 10-pin MS Style, 8-pin M12 (12 mm), or gland with 2 Metres of cable (foil and braid shield, 24 AWG conductors)
 Housing.....Black non-corrosive finish
 Bearings.....Precision ABEC ball bearings
 Mounting.....Various flange or servo mounts
 Weight.....320g typical

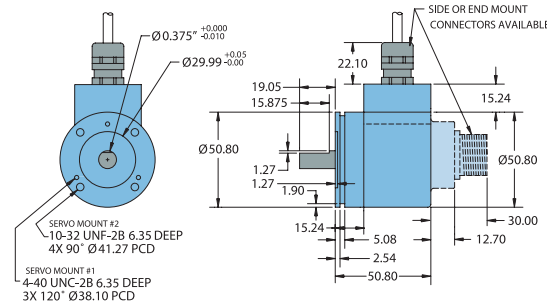
Environmental

Operating Temp.....0° to 70° C for standard models
 0° to 100° C for high temperature option
 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.....IP64/IP65 with shaft seal and cable gland.

Model 702 Flange Mount (F)



Model 702 Servo Mount

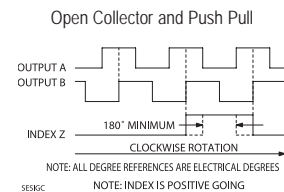
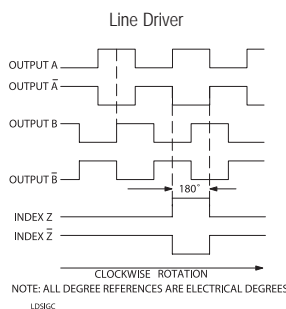


Servo #2 (C)



Servo #1 (S)

Waveform Diagrams



Wiring Tables

Function	Gland Cable Wire Color	8-pin M12	10-pin MS	7-pin MS HV L5	7-pin MS PP OC	6-pin MS PP OC
Com	Black	7	F	F	F	F
+VDC	White	2	D	D	D	D
A	Brown	1	A	A	A	A
A'	Yellow	3	H	C	---	---
B	Red	4	B	B	B	B
B'	Green	5	I	E	---	---
Z	Orange	6	C	---	C	C
Z'	Blue	8	J	---	---	---
Case	---	---	G	G	G	---
Shield	Screen	---	---	---	---	---

CAUTION - Always check wiring colour code against Encoder Label due to changes in specification since September 2006