SERVO-TEK®

SERVO-TEK PRODUCTS COMPANY, INC.

Optical Encoders

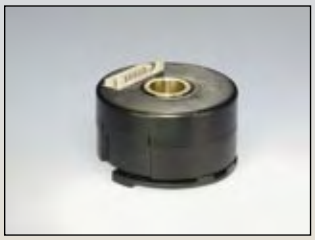
www.servotek.com

Summary

Hollow Shaft Encoders

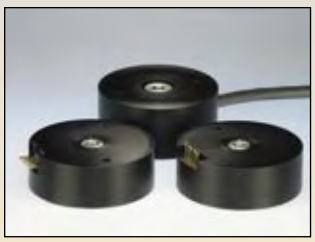
ST50 Series High Performance Rotary Incremental Encoder

- Resolutions to 5000 lines/rev, dual channel with index, brushless commutation
- 500 kHz bandwidth, -40°C to 125°C operating temperature, RS422 output
- 2.0 OD x 0.9 inches high, bores to 5/8 maximum
- Mounting #4-40 on 1.812 bolt circle in 2 places standard, others available
- Duplex bearings, flexible coupling, 360° commutation alignment



ST38 Series High Performance Rotary Incremental Encoder

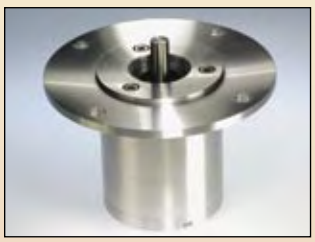
- Resolutions to 2048 lines/rev, dual channel with index
- 200 kHz bandwidth, -10°C to 100°C operating temperature, RS422 output
- 1.5 OD x 0.9 inches high, bores to 3/8 maximum
- Mounting #2-56 on 1.280 bolt circle in 2 places standard, others available
- Duplex bearings and flexible coupling



PT Series Modular Rotary Incremental Encoder

- Resolutions to 1024 lines/rev, dual channel with index
- 100 kHz bandwidth, 0°C to 70°C operating temperature
- 2.0 OD x 0.9 inches high, bores to 3/8 maximum
- Mounting #4-40 on 1.812 inch BC or #6-32 on 1.500 inch BC
- Locktite® mounting, optional push-on hub attachment

Shaft Encoders



ST25 Series Industrial Rotary Incremental Encoder

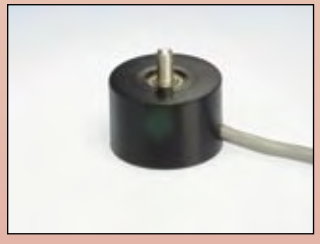
- Resolutions to 5000 lines/rev, dual channel with index
- 6000 RPM, shaft load 30 lbs radial and 30 lbs axial
- 2.5 OD x 2.5 inches minimum height, 1/4 to 3/8 inch stainless steel shaft
- Flange, face, servo or PY mounting available
- Protection to IP66, dust-tight, water jets

ST20 Series Heavy Duty Sealed Rotary Incremental Encoder

- Resolutions to 2048 lines/rev, dual channel with index
- 6000 RPM, shaft load 20 lbs radial and 20 lbs axial
- 2.0 OD x 1.6 inches minimum height, 1/4 to 3/8 inch stainless steel shaft
- Flange, face or servo groove mounting
- Protection to IP64, dust-tight, water splashes

ST32 Series Light Duty Rotary Incremental Encoder

- Resolutions to 100 lines/rev, single or dual channel
- 10,000 RPM, shaft load 4 lbs radial and 10 lbs axial
- 1.25 OD x 0.9 inches minimum height, 1/8 to 3/16 inch stainless steel shaft
- Face or servo groove mounting
- Protection to IP50, dust-protected



PM Series Light Duty Rotary Incremental Encoder

- Resolutions to 120 lines/rev (single channel) or 60 lines/rev (dual channel)
- 10,000 RPM, shaft load 1 lb radial and 1 lb axial
- 1.25 OD x 0.9 inches minimum height, #10-32 threaded shaft mounting
- Face or servo groove mounting options
- Protection to IP40, enclosed

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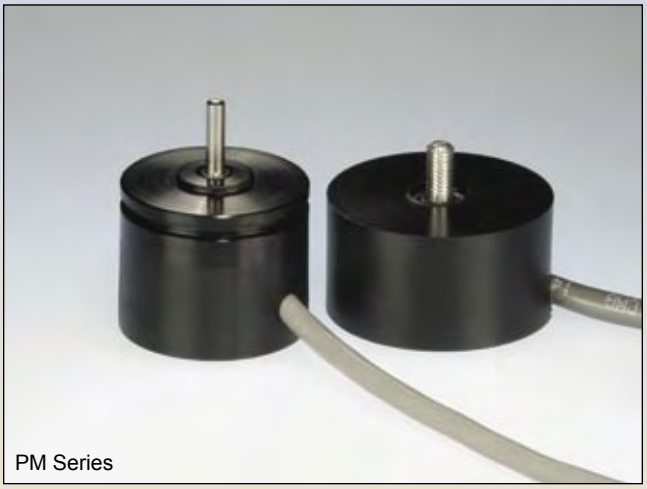
PM Series Encoders
1-120 cycles per revolution



PM Series

PM Series Light Duty Encoder

The small size of the PM series encoder makes it easy to use where space is limited. The screw mount design has a #10-32 threaded shaft that is easy to mount. Special mounting brackets and couplings are not required. The face mount design has three tapped mounting holes and a synchro groove. Resolutions to 120 lines/rev (single channel) or 60 lines/rev (dual channel) are possible. Consult sales department for any special requirements you may have.

Electrical Specifications	
Resolution	Up to 120 lines/rev
Bandwidth	20 kHz maximum
Power Options	5, 12, 15 and 24 VDC
Internal Pullup Resistor	10 kilohms

Mechanical Specifications	
Diameter x Height	1.25 OD x 0.9 inches
Standard Cable	3-conductor 22 AWG
Weight	2.0 ounces
Housing	Delrin (Black)
Shaft Type	Threaded or Round
Shaft Speed	10,000 RPM maximum
Shaft Size	#10-32 or 0.187 inch
Mounting Configuration 1	Screw Mount
Mounting Configuration 2	Face Mount

Environmental Specifications	
Operating Temperature	0ºC to+70ºC

Reference data sheet #D425 for more information.

PT Series Encoders
1-1024 cycles per revolution

PT Series

PT Series Modular Encoder

The PT series encoders are a cost effective solution to velocity and positional feedback. When mounted to any rotating shaft, the PT series encoder provides a single or dual channel square wave output for speed and position control. The small size of the PT series encoder makes it easy to use where space is limited. The hollow shaft design is easy to mount with no coupling or tedious alignment procedures. Consult sales department for your special requirements.

Electrical Specifications	
Resolution	Up to 1024 lines/rev
Bandwidth	100 kHz maximum
Power Options	5, 12, 15 and 24 VDC
Internal Pullup Resistor	10 kilohms

Mechanical Specifications	
Diameter x Height	2.0 OD x 0.9 inches
Shielded Cable	3-conductor 24 AWG
Weight	2.0 ounces
Housing	Delrin (Black)
Shaft Type	Hollow Shaft
Shaft Speed	20,000 RPM maximum
Shaft Bore	0.188” or 0.251” standard
Mounting Center 1	#4-40 on 1.812 inch BC
Mounting Center 2	#6-32 on 1.500 inch BC

Environmental Specifications	
Operating Temperature	0ºC to+70ºC

Reference data sheet #D400 for more information.

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PTS Series Tach-Encoders
1-1024 cycles per revolution

30-12PTSA-7103A-2 shown here

PTS Series DC Tachometer Encoder

The PTS series tach-encoder combination provides both velocity and position signals from one device. By having the tachometer and encoder on one common shaft, mounting and coupling requirements are reduced. The DC tachometer generator can provide an analog signal from 12,000 RPM down to zero speed. Since the DC tachometer generator reverses polarity from CW to CCW rotation, direction can be sensed almost instantaneously. Different mounting arrangements are available for your tach-encoder such as face mount, square end bell, round end bell and even an adaptor that will fit PY mounting kits. Servo-Tek manufactures sealed DC tachometer generators which could be incorporated into your tach-encoder as well as low ripple units. See tables below for specifications.

Encoder Specifications	
Resolution	Up to 1024 lines/rev
Channels	Single or Dual
Voltage	5 VDC, 12 VDC, others
Body Diameter	2.00 inches

Tachometer Specifications	
Output Voltage	1 to 50 VDC/1000 RPM
Shaft Diameters	.120 .187 .250 Others
Mounting Configurations	Face, Flange or Servo
Body Diameter	1.134 inches

ST32 Series Encoders
30-100 cycles per revolution

ST32 with servo groove

ST32 Series Light Duty Encoder

- Single or dual channel
- Optional RS422 line driver available
- Shaft load 4 lbs radial and 10 lbs axial
- 10k internal pullup is standard
- 1/8 or 3/16 inch stainless steel shaft
- Face, flange or servo groove available
- Protection to IP50, dust-protected

Electrical Specifications	
Resolution	30, 60 or 100 lines/rev
Bandwidth	20 kHz maximum
Standard Power Option	5 VDC
Alternate Power Option	7 to 24 VDC

Mechanical Specifications	
Diameter x Height	1.25 OD x 0.9 inches
Starting Torque	0.1 oz-inch
Weight	2.0 ounces
Shaft Runout	0.001 T.I.R. maximum
Shaft Material	416 Stainless Steel
Shaft Speed	10,000 RPM maximum

Environmental Specifications	
Operating Temperature	-40ºC to+85ºC
Storage Temperature	-40ºC to +85ºC
Relative Humidity	90% non-condensing
Mechanical Shock	50G for 11mS
Vibration	5 to 2000 Hz @ 20G

Reference data sheet #505 for more information.

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ST20 Series Encoders
10-2048 cycles per revolution

ST20 with face mount

ST20 Series Heavy Duty Sealed Encoder

- Single or dual channel with index
- RS422 differential line driver optional
- Shaft load 20 lbs radial and 20 lbs axial
- Special shaft seal is standard
- 1/4 or 3/8 inch stainless steel shaft
- Face, flange, servo, or PY mounting adaptor
- Protection to IP64, dust-tight, water splashes

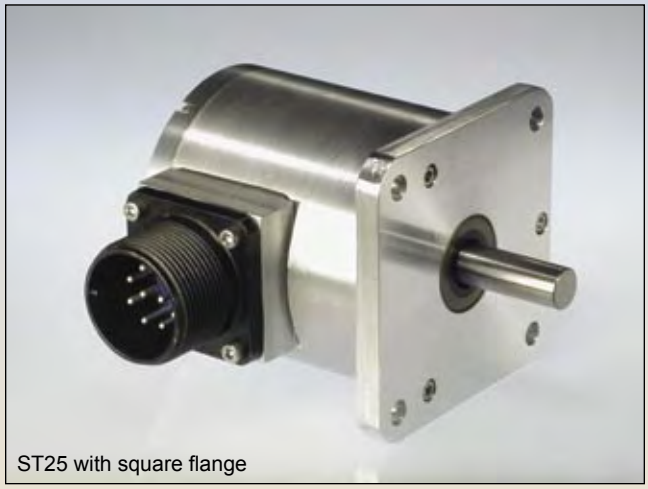
Electrical Specifications	
Resolution	10 to 2048 lines/rev
Bandwidth	50 kHz, 125 kHz optional
Standard Power Option	5 VDC
Alternate Power Option	4 to 18 VDC

Mechanical Specifications	
Diameter x Height	2.0 OD x 1.6 inches
Starting Torque	0.1 oz-inch
Weight	6.5 ounces
Shaft Runout	0.001 T.I.R. maximum
Shaft Material	416 Stainless Steel
Shaft Speed	6,000 RPM maximum

Environmental Specifications	
Operating Temperature	-40ºC to+85ºC
Storage Temperature	-40ºC to +85ºC
Relative Humidity	90% non-condensing
Mechanical Shock	50G for 6mS
Vibration	5 to 2000 Hz @ 20G

Reference data sheet #503 for more information.

ST25 Series Encoders
200-5000 cycles per revolution



ST25 with square flange

ST25 Series Industrial Encoder

- Single or dual channel with index
- RS422 differential line driver standard
- Shaft load 30 lbs radial and 30 lbs axial
- Special shaft seal is standard
- 1/4 or 3/8 inch stainless steel shaft
- Face, flange, servo, or PY mounting adaptor
- Protection to IP66, dust-tight, water jets

Electrical Specifications	
Resolution	200 to 5000 lines/rev
Bandwidth	From 50 kHz to 500 kHz
Standard Power Option	5 VDC
Alternate Power Option	Consult Factory

Mechanical Specifications	
Diameter x Height	2.5 OD x 2.5 inches
Starting Torque	0.9 oz-in, 10 oz-in (seal)
Weight	18 to 28 ounces
Shaft Runout	0.001 T.I.R. maximum
Shaft Material	416 Stainless Steel
Shaft Speed	6,000 RPM maximum

Environmental Specifications	
Operating Temperature	-10ºC to+100ºC
Storage Temperature	-40ºC to +100ºC
Relative Humidity	98% non-condensing
Mechanical Shock	50G for 11mS
Vibration	5 to 2000 Hz @ 20G

Reference data sheet #506 for more information.

ST38 Series Encoders
200-2048 cycles per revolution

ST38 hollow shaft encoder

ST38 Series High Performance Encoder

- Single or dual channel with index
- RS422 differential line driver standard
- Low cost and low profile
- Easy to install
- -10ºC to 100ºC operating temperature
- Several mounting configurations available
- Duplex bearings and flexible coupling

Electrical Specifications	
Resolution	200 to 2048 lines/rev
Bandwidth	200 kHz maximum
Incremental Accuracy	0.5 arc minutes
Commutation Accuracy	N/A

Mechanical Specifications	
Diameter x Height	1.5 OD x 0.9 inches
Shaft Bore	Up to 3/8 inches
Minimum Shaft Length	0.25 inches standard
Maximum Shaft Length	Thru shaft is standard
Axial Shaft Movement	± 0.030 total
Shaft Speed	10,000 RPM maximum

Environmental Specifications	
Operating Temperature	-10ºC to+100ºC
Storage Temperature	-25ºC to +100ºC
Relative Humidity	90% non-condensing
Mechanical Shock	100G for 6mS
Vibration	10 to 2000 Hz @ 10G

Reference data sheet #501 for more information.

ST50 Series Encoders
200-5000 cycles per revolution

ST50 hollow shaft encoder

ST50 Series High Performance Encoder

- Dual channel with index and gating option
- RS422 differential line driver standard
- Brushless motor commutation
- 360º commutation alignment
- -40ºC to 125ºC operating temperature
- Several mounting configurations available
- Duplex bearings and flexible coupling

Electrical Specifications	
Resolution	200 to 5000 lines/rev
Bandwidth	500 kHz maximum
Incremental Accuracy	0.5 arc minutes
Commutation Accuracy	± 30 arc minutes

Mechanical Specifications	
Diameter x Height	2.0 OD x 0.9 inches
Shaft Bore	Up to 5/8 inches
Minimum Shaft Length	0.35 inches standard
Maximum Shaft Length	Thru shaft is standard
Axial Shaft Movement	± 0.030 total
Shaft Speed	10,000 RPM maximum

Environmental Specifications	
Operating Temperature	-40ºC to+125ºC
Storage Temperature	-55ºC to +150ºC
Relative Humidity	90% non-condensing
Mechanical Shock	100G for 6mS
Vibration	10 to 2000 Hz @ 10G

Reference data sheet #502 for more information.

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Accessories

Encoder Accessories

Several different mounting accessories are available for the Servo-Tek encoder line. We offer a coupling accessory for our shaft encoders that will allow attachment to virtually any shaft. An adaptor is also available that will allow attachment to PY mounting kits.

Encoder Cables and Flying Leads

For Servo-Tek's ST38 and ST50 series hollow shaft encoders, we have shielded cables and flying leads available with mating connectors in 8, 14 or 16 pin configurations. See table below for details ("L" is length in inches). Standard shielded cable length is 24 inches for both ST38 and ST50 encoders.

Cables & Flying Leads for ST38 and ST50 Series Encoders			
Pins	Shielded Cable at 80ºC	Shielded Cable at 105ºC	Flying Leads at 200ºC
8	20076-L	20184-L	20073-L
14	20180-L	20183-L	20182-L
16	20181-L	20084-L	20074-L

Other Products

CS-7514F-51C

This low ripple DC tach-generator has a 1/4" stainless steel shaft, 22 AWG shielded cable and an output of 3 volts per thousand RPM. The ripple will not exceed 1.5% RMS on this unit.

SA-740A-2

This small, face mounted DC tach-generator has a 1/8" stainless steel shaft and an output of 7 volts per thousand RPM. It is ideally suited to many instrumentation applications.

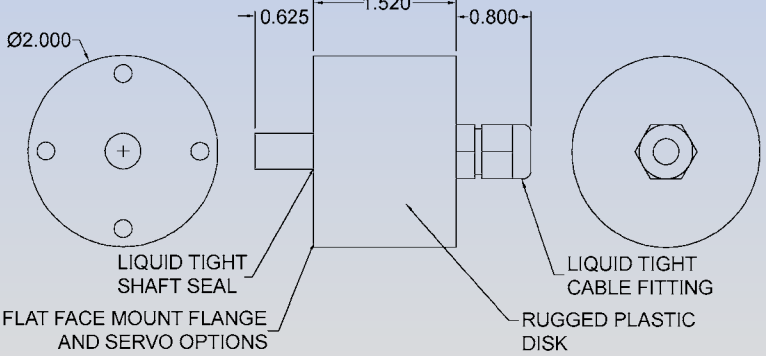
ST-7565A-2

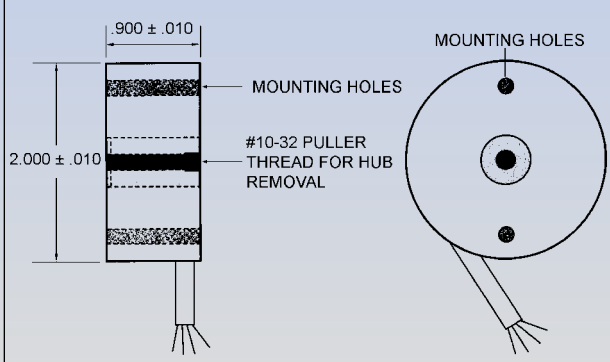
This bearingless tach-generator is small in size and has a black delrin housing and end plate. Mounts easily using a #10-32 threaded shaft. Mounting brackets will not be required.

Tachsyn Transducer

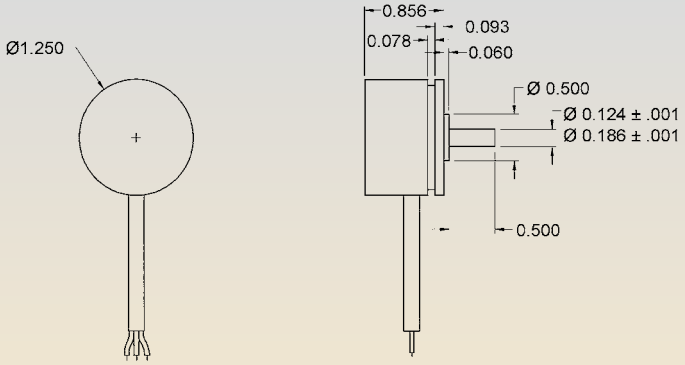
The patented Tachsyn brushless tachometer/ commutator is a unique transducer that can be used as a brushless DC tachometer and/or as a brushless DC motor commutator.

Request a Servo-Tek RC-700 catalog for more information on our DC tachometer generators.

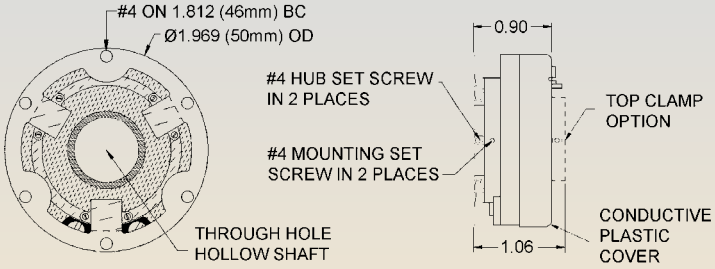




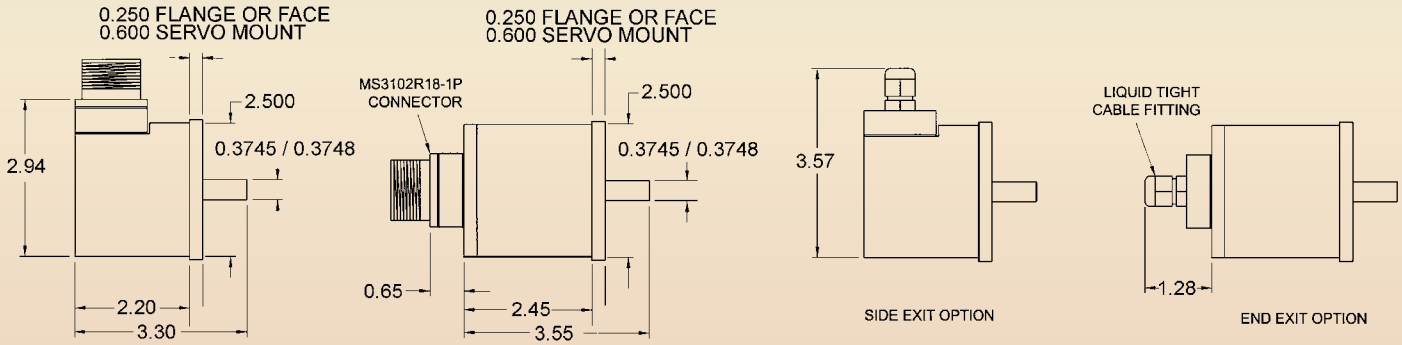
ST32



ST50

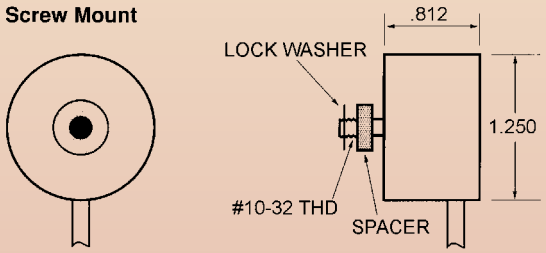


ST25

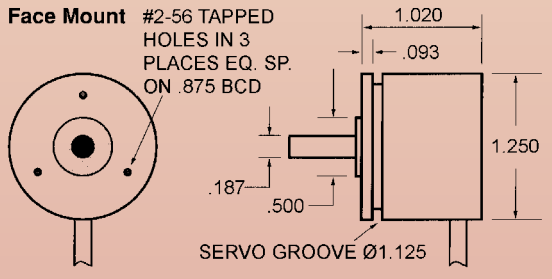


PM Series

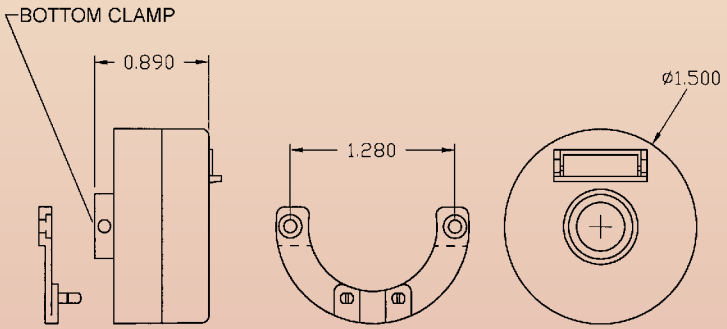
Screw Mount



Face Mount #2-56 TAPPED HOLES IN 3 PLACES EQ. SP. ON .875 BCD



ST38



Several models may be configured, by consulting the factory, for specific options not listed here. Almost any line count and shaft bore are possible within the encoder's limits. Virtually any electronic circuit or mounting pattern can be made available. Contact sales department for any special requests.

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