

Model 15T Thru-Bore, or Model 15H Hollow Bore (Blind)



Principle Engineering



Features

- Very High Performance Economical Encoder
- Low Profile 25.4 mm Height and 38 mm Diameter
- Thru-Bore sizes up to 10 mm
- Simple, Innovative Flex Mounting System (Global Mounting Standards)
- Up To 12 Pole Commutation Optional (for brush less motor control)

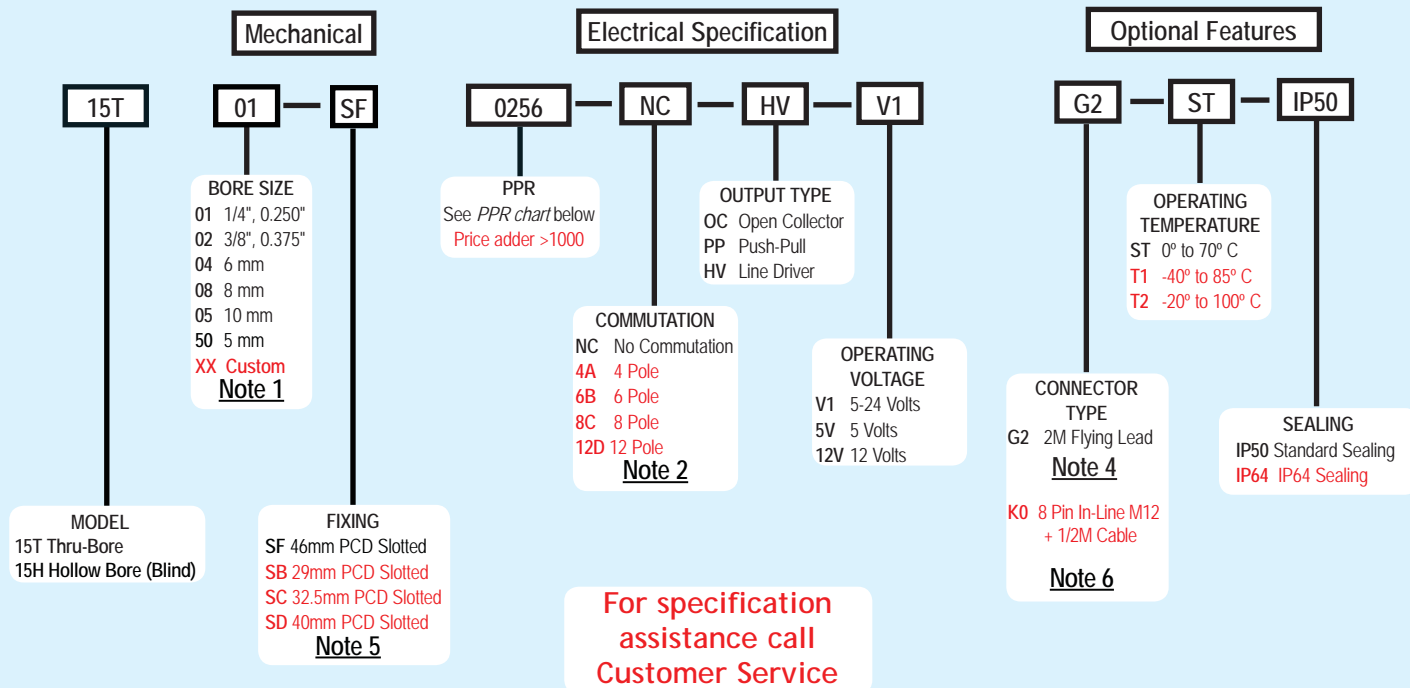
The Model 15T or 15H offer a high performance feedback solution in a low profile package. Unlike modular or kit encoders, the Model 15 utilizes an integral bearing set, and an innovative flexible mounting system which is much more tolerant to axial misalignment or radial shaft run-out. The slotted flex mounts provide 20 or 30 degrees of rotational adjustment for commutation or index pulse timing. Installation is quick and easy! For brush less servo motor applications, three 120° electrical phase tracks can provide up to 12 pole commutation feedback. The optional 100° C temperature options allow servo motors to operate at higher power outputs and duty cycles. The Model 15 provides stable and reliable operation and is an excellent replacement for other manufacturer's modular encoders where a high performance solution is desired.

Common Applications

Servo Motor Control, Robotics, Speciality Assembly Machines, Digital Plotters, High Power Motors

Model 15T/H Ordering Guide

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



Model 15T/H PPR Options (Note 3)

0001 thru 0189*	0200	0250	0256	
0300	0315	0360	0400	0500
0512	0580	0600	0800	1000
1024	1200	1250	1500	1800
2000	2048	2500	2540	3000
4096	5000	6000	8192	10000

*Contact Customer Service For Availability

New PPR values are periodically added to those listed. Contact Customer Service to determine all currently available values. Special disc resolutions are available upon request and may be subject to a one-time NRE fee.

NOTES:

- 1 Contact Customer Service for additional options not shown.
- 2 Not available in all configurations, **and not available with V1 Input Voltage**. Contact Customer Service for availability.
- 3 Contact Customer Service for non-standard index gating.
- 4 For non-standard cable lengths contact sales for availability and cost.
- 5 This mount requires button head screws and a modified Hex wrench. Order appropriate Installation Kit listed under Specifications.
- 6 8 Pin Not available with commutation

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Model 15T/H Specifications

Electrical

- Input Voltage 4.75 to 28 VCC max for temperatures up to 85° C
4.75 to 24 VCC for temperatures between 85° to 100° C
- Input Current 100 mA max (65 mA typical) with no output load
- 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* below.
- Output Types Open Collector- 20 mA max per channel
Push-Pull- 20 mA max per channel
20 mA max per channel
Line Driver- 20 mA max per channel (Meets RS 422 at 5 VCC supply)
- Index Once per revolution.
190 to 2540 PPR: Gated to output A
1 to 189 PPR: Ungated
See *Waveform Diagrams* below.
- Freq. Response 200 kHz standard (up to 1MHz)
- Noise Immunity Tested to BS EN61000-6-2; BS EN50081-2; BS EN61000-4-2; BS EN61000-4-3; BS EN61000-4-6; BS EN500811
- Symmetry 180° (±18°) electrical
- Quad. Phasing 90° (±22.5°) electrical
- Min. Edge Sep 67.5° electrical
- Accuracy Within 0.017° mechanical or 1 arc-minute from true position. (for PPR>189)
- Commutation Up to 12 pole. Contact Customer Service for availability.
- Comm. Accuracy 1° mechanical

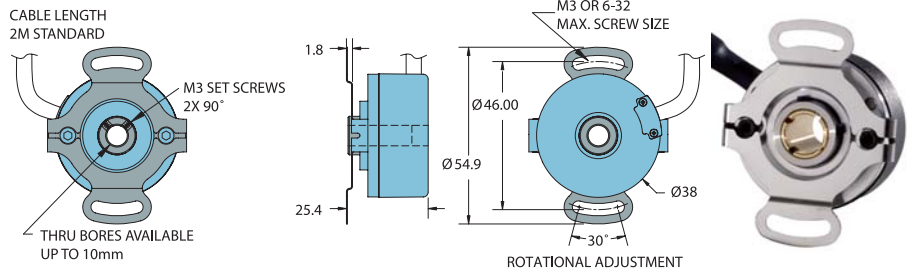
Mechanical

- Max Shaft Speed 8000 RPM. Higher speeds may be achievable, contact Customer Service.
- Bore Size 5 mm through 10 mm
- Bore Tolerance H7 (Sliding fit for g6)
- User Shaft Tolerances
Radial Runout 0.20mm max
Axial Endplay ±0.75mm max
- Starting Torque IP50 Hollow Bore: 1.4123 x 10⁻³ Nm
IP50 Thru-Bore: 2.1185 x 10⁻³ Nm
IP64: 4.2370 x 10⁻³ Nm
- Max Acceleration 1 x 10⁵ rad/sec²
- Electrical Conn 2M cable (foil and braid shield, 24 AWG conductors non-commutated, 28 AWG commutated), 8-pin M12 (12 mm) in-line connector with 0.5M cable (braid shield)
- Mounting 46 mm Slotted Flex mount
29 mm Slotted Flex Mount
32.5 mm Slotted Flex Mount
40 mm Slotted Flex Mount
(See mechanical drawings for dimensions)
- Weight 100 grams typical

Environmental

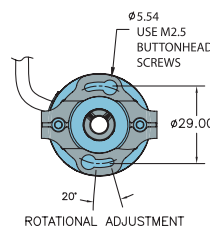
- Operating Temp -0° to +70° C standard models
-40° to +85° C for low temperature option
-20° to +100° C for high temperature option
- Storage Temp -25° to +85° C
- Humidity 98% RH non-condensing
- Vibration 10 g @ 58 to 500 Hz
- Shock 80 g @ 11 ms duration
- Sealing IP50 standard; IP64 available

Model 15T/H (46 mm) Slotted Flex Mount (SF)

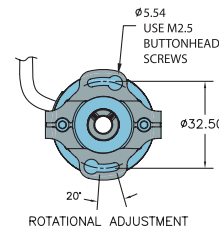


Model 15T/H Small Diameter Slotted Flex Mounts

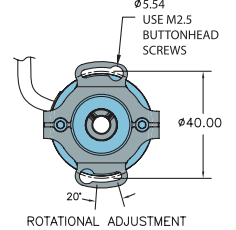
29 mm : SB*



32.5 mm : SC*



40 mm : SD*



Encoder Length and Diameter are the same as SF and SA mounts detailed above
All dimensions are in mm with a tolerance of ± 0.01* unless otherwise specified

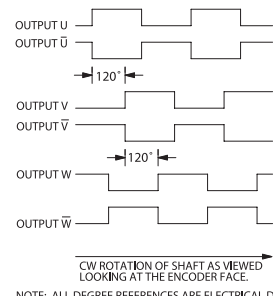
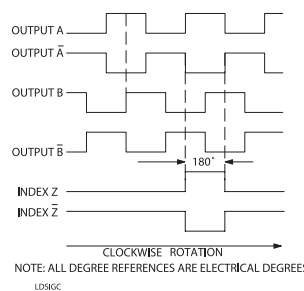
* Order Appropriate Mounting and Installation Kit for SB, SC, or SD Option

176149-01 Installation Kit, M 2.5 Buttonhead Screws with 1.5 mm Shortened Hex Wrench
Each kit contains 10 screws for mounting 5 encoders



"SB" Slotted Flex Mount

Waveform Diagrams



Wiring Table

Function	Cable Wire Color	8-pin M12**
Com	Black	7
+VDC	White	2
A	Brown	1
A'	Yellow	3
B	Red	4
B'	Green	5
Z	Orange	6
Z'	Blue	8
U	Violet	--
U'	Gray	--
V	Pink	--
V'	Turquoise	--
W	Red/Green	--
W'	Red/Yellow	--
Shield	Bare *	--