

# 15T / 15H Encoder

## Hollow Bore Performance Encoder



The Model 15T or 15H offers 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 brushless servo motor applications, three 120° electrical phase tracks can provide up to 12 pole commutation feedback. The optional 100°C and 120°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 manufacturers modular encoders where a high performance solution is desired.

### Key Features

- High Performance Economical Encoder
- Low Profile 1.0" (25.4 mm) Height and 1.5" (38 mm) Diameter
- Thru-Bore (sizes up to 0.375" or 10 mm)
- Simple, Innovative Flex Mounting System (Global Mounting Standards)
- Up To 12 Pole Commutation Optional (for brushless motor control)

### Applications

- Servo motor control
- Robotics
- Specialist assembly machines
- Digital plotters
- High power motors



## Specifications

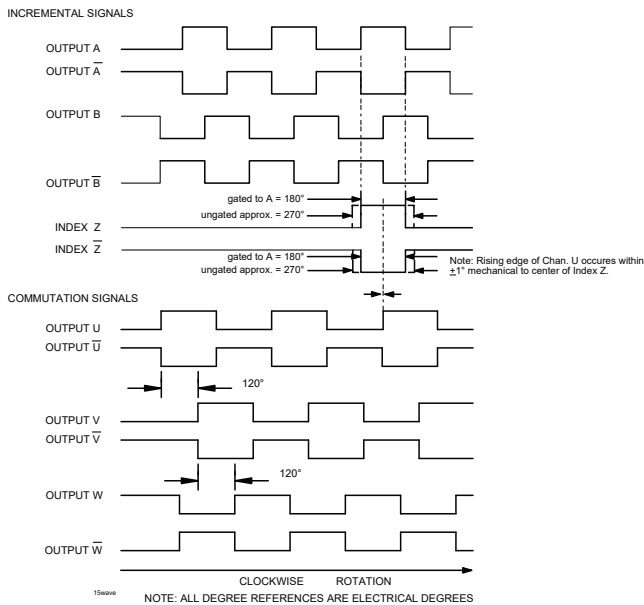
### Electrical

<b>Input Voltage</b>	5 VDC $\pm 10\%$ Fixed Voltage 12 VDC $\pm 10\%$ Fixed Voltage 4.75 to 28 VDC max for temperatures up to 85°C 4.75 to 24 VDC for temperatures between 85° to 100°C
<b>Input Current</b>	100 mA max (65 mA typical) with no output load
<b>Output Format</b>	Incremental- Two square waves in quadrature with channel A leading B for clockwise shaft rotation, as viewed from the encoder mounting face. <i>See Waveform Diagrams.</i>
<b>Output Types</b>	Open Collector- 20 mA max per channel Push-Pull- 20 mA max per channel Pull-Up- Open collector with 22K ohm Pull-Up 20 mA max per channel Line Driver- 20 mA max per channel (Meets RS 422 at 5 VDC supply)
<b>Index</b>	Once per revolution. 190 to 10,000 CPR: Gated to output A 1 to 189 CPR: Ungated <i>See Waveform Diagrams.</i>
<b>Max. Frequency</b>	Standard Frequency Response is 200 kHz for CPR 1 to 2540 500 kHz for CPR 2541 to 5000 1 MHz for CPR 5001 to 10,000 Extended Frequency Response (optional) is 300 kHz for CPR 2000, 2048, 2500, and 2540
<b>Noise Immunity</b>	Tested to BS EN61000-6-2; BS EN50081-2; BS EN61000-4-2; BS EN61000-4-3; BS EN61000-4-6; BS EN500811
<b>Symmetry</b>	180° ( $\pm 18^\circ$ ) electrical
<b>Quad. Phasing</b>	90° ( $\pm 22.5^\circ$ ) electrical
<b>Min. Edge Sep</b>	67.5° electrical
<b>Accuracy</b>	Within 0.017° mechanical or 1 arc-minute from true position. (for CPR>189)
<b>Commutation</b>	Up to 12 pole. Contact Customer Service for availability.
<b>Comm. Accuracy</b>	1° mechanical

### Mechanical

<b>Max Shaft Speed</b>	8000 RPM. Higher speeds may be achievable, contact Customer Service.
<b>Bore Size</b>	0.1875" through 0.375", 5 mm through 10 mm
<b>Bore Tolerance</b>	-0.0000" / +0.0006"
<b>User Shaft Tolerances</b>	
<b>Radial Runout</b>	0.008" max
<b>Axial Endplay</b>	$\pm 0.030$ " max
<b>Starting Torque</b>	IP50 Hollow Bore: 02 oz-in IP50 Thru-Bore: 0.3 oz-in IP64: 0.6 oz-in
<b>Moment of Inertia</b>	6.7 x 10 <sup>-5</sup> oz-in-sec (4.8 gm-cm <sup>2</sup> )
<b>Max Acceleration</b>	1 x 105 rad/sec <sup>2</sup>
<b>Electrical Conn</b>	18" cable (foil and braid shield, 24 AWG conductors non-commutated, 28 AWG commutated), 5- or 8-pin M12 (12 mm) in-line connector with 18" cable (braid shield) 1.812" (46 mm) Slotted Flex mount 1.812" (46 mm) Two Hole Flex Mount 1.142" (29 mm) Slotted Flex Mount 1.2795" (32.5 mm ) Slotted Flex Mount 1.575" (40 mm ) Slotted Flex Mount (See mechanical drawings for dimensions)
<b>Mounting</b>	
<b>Weight</b>	3 oz typical
<b>Environmental</b>	
<b>Operating Temp</b>	-20° to +85° C standard models -40° to +85° C for low temperature option -20° to +100° C for high temperature option -20° to +120° C for extreme temperature option
<b>Storage Temp</b>	-25° to +85° C
<b>Humidity</b>	98% RH non-condensing
<b>Vibration</b>	10g@58 to 500 Hz
<b>Shock</b>	80 g @ 11 ms duration
<b>Sealing</b>	IP50 standard; IP64 available

## Waveform Diagrams



## Wiring Table

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

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

\*\*Non-CE Option: Cable shield is connected to M12 connector body.

CE Option: Cable shield and M12 connector body is connected to internal case.

