# Model 25T/H - Incremental Encoder

## Features

- 2.5" Opto-ASIC Encoder with a Low Profile (2.0"
- Standard Bore Sizes Ranging from 0.625" to 1.125"
- Metric Bore Sizes Ranging from 6 mm to 28 mm
- Single Replacement Solution for 2.0" to 3.5" Encoders
- Resolutions to 10,000 CPR; Frequencies to 1 MHz
- Versatile Flexible Mounting Options
- RoHS Compliant

The Model 25T Accu-Coder™ features the largest thru-bore available in a 2.5" encoder, able to mount directly on shafts as large as 1.125" (28 mm). With resolutions up to 10,000 CPR and frequencies up to 1MHz, this industrial strength encoder is perfect for fast revving motors. The 25T features the next generation of EPC’s proprietary Opto-ASIC sensor, which provides superior accuracy and precision counts. The injection molded housing, made from EPC’s custom blend of nylon composites, is grooved with “cooling fins” and can tolerate the extreme heat of the motion-control industry. With sealing available up to IP66 and many new rugged flexible mounting options, the Model 25T can perform in demanding industrial environments.

## Common Applications

- Motor-Mounted Feedback and Vector Control
- Specialty Machines
- Robotics
- Web Process Control
- Paper and Printing
- High Power Motors

## Model 25T/H Ordering Guide

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<td>25T</td>
<td>0500</td>
<td>V1, OC, SMW</td>
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<td>25T Thru-Bore</td>
<td>SE</td>
<td></td>
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<tr>
<td>25H Hollow Bore (Bind)</td>
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### housing Option

- Standard
- Corrosion Resistant

### Bore Size 1

<table>
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<tr>
<th>01</th>
<th>02</th>
<th>03</th>
<th>05</th>
<th>11</th>
<th>14</th>
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<tr>
<td>0.25&quot;</td>
<td>0.25&quot;</td>
<td>0.375&quot;</td>
<td>0.500&quot;</td>
<td>0.625&quot;</td>
<td>1.000&quot;</td>
<td>1.125&quot;</td>
</tr>
</tbody>
</table>

### Cycles Per Revolution

See CPR Options below

### Input Voltage

V1 5 to 28 VDC

### Output Type

- 5 - 28V In/Out
- OC Open Collector
- PP Push-Pull
- HV Line Driver
- PU Pull-Up Resistor

### Operating Temperature

-20º to 85º C (Std)
-40º to 85º C

### SEAling

- IP50 (Standard)
- IP56

### Connector Type

- SMW 6-pin MS4
- SMT 7-pin MS4
- SMX 10-pin MS
- SMU 5-pin M12
- SMK 6-pin M12 Standard Wiring
- SMZ 6-pin M12 Optional Wiring
- SMH 10-pin Bayonet
- F00 Gland, 24" Cable
- 9D 5-pin D-Sub

## Notes:

1. Contact Customer Service for additional options.
2. Reverse Quadrature not available with PU output type.
3. 24 VDC max for T4 temperature option.
4. Line Driver not available with 5-pin M12 or 6-pin MS style connectors. Available with 7-pin MS style connector without index Z.
5. With Input Voltage above 16 VDC, operating temperature is limited to 85º C max.
6. Standard operating temperature only.
7. For mating connectors, cables, and cordsets see Accessories at encoder.com. For Connector Pin Configuration Diagrams, see Technical Information or see Connector Pin Configuration Diagrams at encoder.com.
8. Not available with CE option.
9. Not available with corrosion resistant option.
10. For non-standard English cable lengths, enter ‘F’ plus cable length expressed in feet. Example: F06 = 6 feet of cable.
11. Contact Customer Service for availability on resolutions < 360 CPR.

## Model 25T/H CPR Options

- 0001 0002 0003 0005 0008 0010 0011 0012
- 0024 0025 0030 0032 0050 0060 0064 0070
- 0080 0100 0105 0115 0120 0125 0150 0180
- 0192 0200 0240 0250 0256 0300 0336 0360
- 0500 0512 0660 0625 1000 1024 1200 1250
- 1800 2000 2048 2400 2500 3600 4096 5000
- 7200 8192 10,000

Contact Customer Service for other disk resolutions.
## MODEL 25T/H SPECIFICATIONS

### Electrical
- **Input Voltage**: 4.75 to 28 VDC max for temperatures up to 85°C. 4.75 to 24 VDC max for temperatures between 85° and 105°C.
- **Input Current**: 100 mA max 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 mounting face. See Waveform Diagram, below.
- **Output Types**: Open Collector – 20 mA max per channel. Pull Up – Open Collector with 2.2K ohm internal resistor. 20 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**: Once per revolution.
- **Max Frequency**: 250 kHz for 1 to 2500 CPR. 500 kHz for 2501 to 5000 CPR. 1 MHz for 5001 to 10,000 CPR. Electrical Protection – Reverse voltage and output short circuit protected. NOTE: Sustained reverse voltage may result in permanent damage.
- **CE Testing**: Emissions tested per EN61000-6-1:2001 as applicable. Immunity tested per EN61000-6-2: 2005 as applicable.
- **Min. Edge Sep**: 45° electrical min, 63° electrical or better typical.
- **Rise Time**: Less than 1 microsecond.
- **Environmental**: Proprietary nylon composite.
- **Weight**: 8 oz typical.
- **Storage Temp**: -20° to 85°C.
- **Humidity**: 98% RH non-condensing.
- **Vibration**: 20 g @ 5 to 2000 Hz.
- **Shock**: 80 g @ 11 ms duration.
- **Sealing**: IP50, IP66 with shaft seals at both ends.

### Mechanical
- **Max Shaft Speed**: 6000 RPM, 8000 RPM intermittent.
- **Bore Tolerance**: -0.0000”/+0.0008”
- **User Shaft Tolerances**: Radial Runout 0.005” max. Axial Endplay ±0.005” max.
- **Starting Torque**: IP50 sealing: 1.0 oz-in typical. IP66 sealing: 4.0 oz-in typical.
- **Moment of Inertia**: 7.6 x 10⁻⁴ oz-in-sec².
- **Housing**: Proprietary nylon composite.
- **Weight**: 8 oz typical.

### Environmental
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- **Humidity**: 98% RH non-condensing.
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## MODEL 25T/H WAVEFORM DIAGRAM

- **CLOCKWISE ROTATION AS VIEWED FROM THE MOUNTING FACE**
- **NOTE**: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES. WAVEFORM SHOWN WITH OPTIONAL COMPLEMENTARY SIGNALS X, E, G FOR HV AND HS OUTPUTS ONLY.

## MODEL 25T/H CONNECTOR OPTIONS

### MODEL 25T/H MOUNTING OPTIONS

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

## WIRING TABLE

For EPC-supplied mating cables, refer to wiring table provided with cable. Trim back and insulate unused wires.

### Function | Gland Cable1 Wire Color | 5-pin M12** | 8-pin M12** | 8-pin M12** | 10-pin MS | 7-pin MS | 7-pin MS | 6-pin MS | 6-pin MS | 9-pin D-sub | 10-pin Bayonet
---|---|---|---|---|---|---|---|---|---|---|---
Corn | Black | 3 | 7 | 1 | F | F | F | A, F | 9 | f | 10
+VDC | White | 1 | 2 | 2 | D | D | D | B | 1 | D | 11
A | Brown | 4 | 1 | 3 | A | A | A | D | 2 | A | 12
A’ | Yellow | – | 3 | 4 | H | C | – | – | 3 | H | 13
B | Red | 2 | 4 | 5 | B | B | B | E | 4 | B | 14
B’ | Green | – | 5 | 6 | I | E | – | – | 5 | J | 15
Z | Orange | 5 | 6 | 7 | C | – | C | C | 6 | C | 16
Z’ | Blue | – | 8 | 8 | J | – | – | – | 7 | K | 17
Case | – | – | – | – | G | G | – | 8 | G | – | 18
Shield | Bare* | – | – | – | – | – | – | – | – | – | 19

* | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | **

**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.**

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1. Gland Cable1: Wire Color
2. 5-pin M12**: Standard Wiring
3. 8-pin M12**: Optional Wiring
4. 10-pin MS
5. 7-pin MS
6. 7-pin MS: PU, PP, GC, PS
7. 6-pin MS: PU, PP, GC, PS
8. 9-pin D-sub: PU, PP, GC, PS
9. 10-pin Bayonet: HV, MS, OD, PU, PP, GC, PS

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