SERIES: AMT10X  DESCRIPTION: INCREMENTAL ENCODER

FEATURES
• patented capacitive technology
• 16 dip switch programmable resolutions
• straight (radial) and right-angle (axial) versions
• 9 different mounting hole options for AMT102
• 6 different mounting hole options for AMT103
• low power consumption
• line driver output available (CUI-10XE-10)
• -40°C to 100°C operating temperature
• TTL voltage output
• modular package

ELECTRICAL SPECIFICATIONS

output phase difference 90° (A ch leads B ch in CW direction viewed from front)
output current 5 mA max.
output waveform TTL voltage square wave
output signals A, B, Z1 phase (A, B, C line driver available with CUI-10XE-10)
current consumption 6 mA typ., 10 mA max.
supply voltage 3.6 ~ 5.5 V dc
output resolution (ppr)2 48, 96, 125, 192, 200, 250, 256, 384, 400, 500, 512, 800, 1000, 1024, 2048
frequency response 250 kHz max.
accuracy3 ±15 arcmin (at 192, 384, 400, 500, 800, 1000, 1024, 2048 ppr)
±30 arcmin (at 96, 200, 250, 512 ppr)
±60 arcmin (at 48, 100, 125, 256 ppr)
max. rotational speed 7500 rpm (at 2048, 1000, 800, 384 ppr)
15000 rpm (at 1024, 500, 400, 192 ppr)
30000 rpm (at 48, 96, 100, 125, 200, 250, 256, 512 ppr)

1. Some stepper motors may leak a magnetic field causing the AMT index pulse to not function properly.
2. All resolutions stated are before quadrature decoding. (example: 1000 ppr x 4 = 4000 counts)
3. Based on full production testing standards and includes all electronic and mechanical based errors, not a computed estimate.

MECHANICAL SPECIFICATIONS

mounting hole options A) 2 each M1.6 holes on 16 mm (0.63") bolt circle
B) 2 each #4 holes on 19.05 mm (0.75") bolt circle
C) 2 each M1.6 or M2 holes on 20 mm (0.787") bolt circle
D) 3 each M1.6 or M2 holes on 20.9 mm (0.823") bolt circle
E) 3 each M1.6 or M2 holes on 22 mm (0.866") bolt circle
F) 4 each M1.6 or M2 holes on 25.4 mm (1") bolt circle
G) 2 each #4 holes on 15.75 mm (0.62") x 20.96 (0.825") hole layout*
H) 2 each #4 holes on 32.43 mm (1.277") bolt circle*
I) 2 each #4 holes on 46.03 mm (1.812") bolt circle*
weight AMT102 20.5 g
AMT103 14.0 g
vibration proof 50 m/s², 10 ~ 200 Hz, 2 hours each on XYZ
shock resistance 147 m/s², 11 ms, 2 hours each on XYZ
ENVIRONMENTAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>operating temperature</td>
<td>-40° ~ +100° C</td>
</tr>
<tr>
<td>storage temperature</td>
<td>-40° ~ +100° C</td>
</tr>
<tr>
<td>humidity</td>
<td>30 ~ 95% (no condensation)</td>
</tr>
</tbody>
</table>

AMT10X-V KIT

In order to provide maximum flexibility for our customers, the AMT10X series is provided in kit form standard. This allows the user to implement the encoder into a range of applications using one sku#, reducing engineering and inventory costs.

SLEEVES

<table>
<thead>
<tr>
<th>Sleeve Diameter</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>8mm</td>
<td>Blue</td>
</tr>
<tr>
<td>1/4 inch (6.35 mm)</td>
<td>Gray</td>
</tr>
<tr>
<td>6mm</td>
<td>Red</td>
</tr>
<tr>
<td>5mm</td>
<td>Green</td>
</tr>
<tr>
<td>3/16 inch (4.76 mm)</td>
<td>Violets</td>
</tr>
<tr>
<td>4mm</td>
<td>Gray60</td>
</tr>
<tr>
<td>1/8 inch (3.175 mm)</td>
<td>Purple</td>
</tr>
<tr>
<td>3mm</td>
<td>Orange</td>
</tr>
<tr>
<td>2mm</td>
<td>Light Sky Blue</td>
</tr>
</tbody>
</table>

AMT10X - V

Mounting Version:
- 2 = Straight (radial connector)
- 3 = Right Angle (axial connector)

CUSTOM CONFIG KEY

For customers that prefer a specific AMT10X configuration, please reference the custom configuration key below.

AMT10X - XXXX - X XXXX - X

Mounting Version:
- 2 = Straight (radial connector)
- 3 = Right Angle (axial connector)

Resolution:
- D016 = Dip switch
- XXXX = Insert set resolution from chart

Index Pulse:
- I = Index Pulse
- N = No Index Pulse

Sleeve Bore Diameter:
- 2000 = 2 mm
- 3000 = 3 mm
- 3175 = 3.175 mm (1/8”)
- 4000 = 4 mm
- 4760 = 4.76 mm (3/16”)
- 5000 = 5 mm
- 6000 = 6 mm
- 6350 = 6.35 mm (1/4”)
- 8000 = 8 mm

Mounting Base Plate:
- S = Standard base plate
  (mounting hole options A-F, G on AMT 102)
- W = Wide base plate (AMT 102 Only)*
  (mounting hole options G-H)

*If ordering wide base plate, standard base plate is included.
RESOLUTION SETTINGS

<table>
<thead>
<tr>
<th>Resolution (PPR)</th>
<th>Maximum RPM</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>2048</td>
<td>7500</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>1000</td>
<td>7500</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
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</tr>
<tr>
<td>800</td>
<td>7500</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
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</tr>
<tr>
<td>384</td>
<td>7500</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1024</td>
<td>15000</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>15000</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
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</tr>
<tr>
<td>400</td>
<td>15000</td>
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<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
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<td>192</td>
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<tr>
<td>612</td>
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<td>1</td>
<td>1</td>
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<tr>
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<td>1</td>
<td>1</td>
<td>0</td>
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<tr>
<td>200</td>
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<td>1</td>
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<td>1</td>
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<tr>
<td>125</td>
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<td>0</td>
<td>1</td>
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<tr>
<td>100</td>
<td>30000</td>
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<td>0</td>
<td>0</td>
<td>1</td>
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</tr>
<tr>
<td>48</td>
<td>30000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

DIP switch:
Example setting: 500

**ASSEMBLY PROCEDURE**

**STEP 1**
Insert Tool A as a spacer that defines the distance to the mounting surface.

**STEP 2**
Slide appropriate sized Sleeve over shaft all the way down to Tool A.

**STEP 3**
Slide Shaft Adaptor over Sleeve.
Use Tool B to press Shaft Adaptor over Sleeve until flush with Tool A.

**STEP 4**
Align Tool B with flange on Base.

**STEP 5**
Slide the Top Cover onto the Base, carefully observing that the teeth of the Shaft Adaptor align with the grooves in the hub.

**STEP 6**
Fasten the Base on the motor.
Remove Tool B.
### Title:
AMT103-V

### Description:
AMT103-V comes with all items shown: all Sleeve sizes, Shaft Adapter, Base, Top Cover, Tool A, Tool B, Index Pulse, and 16 Resolution Dip Switch.

### Pin-out:

<table>
<thead>
<tr>
<th>PIN</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>B CHANNEL</td>
</tr>
<tr>
<td>5V</td>
<td>+5VDC POWER</td>
</tr>
<tr>
<td>A</td>
<td>A CHANNEL</td>
</tr>
<tr>
<td>X</td>
<td>INDEX OUTPUT</td>
</tr>
<tr>
<td>G</td>
<td>GROUND</td>
</tr>
</tbody>
</table>

### Mating Connector
AMP 3-640440-5

### Cables Available
(Sold Separately)

### SLEEVES

<table>
<thead>
<tr>
<th>Size</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>2mm</td>
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</tr>
<tr>
<td>3mm</td>
<td></td>
</tr>
<tr>
<td>4mm</td>
<td></td>
</tr>
<tr>
<td>5mm</td>
<td></td>
</tr>
<tr>
<td>6mm</td>
<td></td>
</tr>
<tr>
<td>8mm</td>
<td></td>
</tr>
<tr>
<td>10mm</td>
<td></td>
</tr>
</tbody>
</table>

### SHOFT ADAPTER

<table>
<thead>
<tr>
<th>Size</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>2mm</td>
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<tr>
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<tr>
<td>4mm</td>
<td></td>
</tr>
<tr>
<td>5mm</td>
<td></td>
</tr>
<tr>
<td>6mm</td>
<td></td>
</tr>
<tr>
<td>8mm</td>
<td></td>
</tr>
</tbody>
</table>

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RoHS
20050 SW 112th Ave.
Tualatin, OR 97062
Phone: 503-612-2300
800-275-4899
Fax: 503-612-2383
Website: www.cui.com

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AMT102-V comes with all items shown: all Sleeve sizes, Shaft Adapter, Base, Wide Base, Top Cover, Tool A, Tool B, Index Pulse, and 16 Resolution Dip Switch.

### PIN-OUT

<table>
<thead>
<tr>
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<tbody>
<tr>
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</tr>
<tr>
<td>X</td>
<td>INDEX OUTPUT</td>
</tr>
<tr>
<td>G</td>
<td>GROUND</td>
</tr>
<tr>
<td>T</td>
<td>FOR FUTURE USE</td>
</tr>
</tbody>
</table>

MATING CONNECTOR
MOLEX 50-57-9405 HOUSING
MOLEX 16-02-0086 TERMINALS

CABLES AVAILABLE
(SOLD SEPERATELY)

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**Description:**

- **SLEEVE SIZES:**
  - 2mm
  - 3mm
  - 4mm
  - 5mm
  - 6mm
  - 8mm
  - 10mm
  - 1/4 inch (6.35mm)

- **TOOL SIZES:**
  - 3mm
  - 4mm
  - 5mm
  - 6mm
  - 8mm

- **Shaft Adapter:**
  - 3.175mm (102)
  - 6mm
  - 8mm

- **Base:**
  - 1/8 inch

- **Wide Base:**
  - 102

- **Top Cover:**
  - 102

- **Tool A:**
  - Snow Green
  - Light Sky Blue
  - Orange
  - Blue

- **Tool B:**
  - Gray
  - 60 Red
  - Purple

**Mating Connector:**

- MOLEX 50-57-9405 HOUSING
- MOLEX 16-02-0086 TERMINALS

**Cables Available:**

- (SOLD SEPERATELY)

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RoHS

AMT102 WIDE BASE DIMENSION DRAWING

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TOLERANCE:
±0.05mm UNLESS OTHERWISE SPECIFIED

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Tualatin, OR 97062
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800-275-4899
Fax: 503-612-2383
Website: www.cui.com

TITLE: AMT102 WIDE BASE DIMENSION DRAWING
REV: C
PART NO.: AMT102 WIDE BASE
UNITS: MM [INCHES]

DRAWN BY: ZRJ
APPROVED BY:

SCALE: 2:1

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