Shaft Encoders

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Encoder Solutions For Every Application

Don’t forget to check out the rest of our product families. Encoder Products Company manufactures a complete line of encoder solutions.

Bore Encoders - From small to large, a complete line of thru and hollow bore encoders with the most comprehensive selection of mounting options available in the industry.

Specialty Encoders - From stainless steel encoders for extreme environments, absolute positioning encoders, to unique linear measurement solutions, we have the specialty solution you need.

About Encoder Products

Company History
Encoder Products Company Inc. (EPC) is a leading designer and world-wide manufacturer of motion sensing devices. Founded in 1969 by William Watt, EPC began operations with a small line of custom encoders. Today, more than 35 years later, EPC’s popular Accu-Coder™ brand is the most complete line of incremental and absolute shaft encoders in the industry. Our core philosophy is that each and every customer deserves quality products, superior customer service, and expert support.

Business Partnerships
Fostering long term business partnerships with satisfied customers is what we do best, and the heart of our mission. We take pride in providing superior customer service and supplying you an encoder that functions precisely, dependably, and flawlessly. Listening to our customers needs, and designing products that provide solutions for them, is a key to our success. It isn’t every company that can say they have satisfied their customers for over 35 years!

Innovative Design Team
At EPC, we concentrate on encoders, making us famous for paving the path of the encoder industry and providing encoder standards for our industry since 1969. First to design the cube style encoder, now an industry standard. First to resolve mounting installation problems by providing an industry first flexible-mounting system. First to include Opto-ASIC technology, which virtually eliminates miscounts by eliminating electrical noise, and enhancing signal quality. First to provide an encoder that operates at 120° C. First to provide 6000 CPR in a 1.5” diameter encoder. First to provide a 3 year standard warranty, demonstrating that we stand proudly behind the reliability of each of our products.

Solving Problems
For over 35 years, we have been solving encoder problems. Custom designs, faster delivery, and reliable products are all areas in which we excel. We believe that an encoder supplier should solve problems, not cause them.

Custom Encoders Our Specialty
Through years of experience, we understand each industrial environment is different; you need an encoder that fits your specific situation. This ultimately means not having to make due with someone else’s specifications or configurations, but having your own custom designed unit. Many of our customers have come to depend on us for this special area of customization. Using state of the art technology, we can design and deliver custom encoders faster than most suppliers standard products - often shipping your unique encoder in 2 to 6 days or sooner.

ISO 9001 Quality Systems
At EPC, quality is designed into every product. Before it’s offered for sale, each Accu-Coder™ model is developed using state-of-the-art design tools and fully tested against EPC’s exacting quality standards. But quality does not stop at design. During the manufacturing process, each Accu-Coder™ is subjected to a series of stringent quality control tests to ensure you are receiving the best encoder available. Our quality system has successfully been audited to the requirements of ISO 9001:2000, an internationally recognized standard for comprehensive Quality Systems. By paying close attention to detail, our Accu-Coder™ brand has become known throughout the industry for quality and reliability.
Model 15S

Features
- Very High Performance Economical Encoder
- Low Profile - Less Than 1.0" (25.4 mm) Height and 1.5" (38 mm) Diameter
- Extended Temperature Operating Ranges Available
- Up To 12 Pole Commutation Optional (for brushless motor control)

The Model 15S Accu-Coder™ offers a high performance feedback solution in a low profile package, making the Model 15S ideal for commercial and light-duty industrial applications. This industry standard Size 15 (1.5” diameter) encoder features a precision bearing set, sealing available to IP64, a durable 1/4” or 6 mm stainless steel shaft, and a selection of servo, flange, and face mount options. The Model 15S may also be specified with features such as extended operating temperatures from -20°C to +120°C, or up to 12 pole commutation for brushless motor control. The Model 15S features EPC’s Opto-ASIC circuitry for a clean, reliable signal. Its durable, yet economical design makes it an ideal encoder for high precision OEM applications.

Common Applications
Servo Motor Control, Robotics, Medical Diagnostic Equipment, Specialty Assembly Machines, Digital Plotters, Printers, Typesetting Equipment

Model 15S Ordering Guide

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

Model 15S CPR Options

<table>
<thead>
<tr>
<th>Model 15S CPR Options</th>
<th>0001 thru 0189</th>
<th>0198</th>
<th>0200</th>
<th>0250</th>
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</thead>
<tbody>
<tr>
<td>0250</td>
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<td>0600</td>
<td>0800</td>
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<td></td>
</tr>
<tr>
<td>1200</td>
<td>1250</td>
<td>1500+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1500+</td>
<td>2000</td>
<td>2048</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2500</td>
<td>2540</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3000*</td>
<td>4096*</td>
<td>5000*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5000*</td>
<td>6000*</td>
<td>8192*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10,000*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Contact Customer Service For Availability
*Not available in 12V option

New CPR values are periodically added to those listed. Contact Customer Service to determine all currently available values. Special disk 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 or phase relationship options.
4. For non-standard English cable lengths enter 'F' plus cable length expressed in feet. Example: F06 = 6 feet of cable. Frequency above 300 kHz standard cable lengths only.
5. For non-standard metric cable lengths enter ‘M’ plus cable length expressed in meters. Example: M06 = 6 meters of cable.
8. With Input Voltage above 16 VDC, operating temperature is limited to 85°C.
9. Only available with 5 VDC Input Voltage.

Encoder Products Company • P.O. Box 249 • Sagle, ID 83860-0249 • 1-800-366-5412 • www.encoder.com • sales@encoder.com

This document provided by Barr-Thorp Electric Co., Inc. 800-473-9123 www.barr-thorp.com
Model 15S Specifications

Electrical

Input Voltage: 5 VDC ±10% Fixed Voltage
12 VDC ±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
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
Pull-Up - 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: 100 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, 2500, and 2540
Noise Immunity: Tested to BS EN61000-6-2; BS EN50081-2; BS EN61000-4-2; BS EN61000-4-3; BS EN61000-4-6, BS EN50081-1
Symmetry: 180° (± 18°) electrical
Quad. Phasing: 90° (± 22.5°) electrical
Accuracy: Within 0.01° mechanical or 1 arc-minute from true position. (For CPR > 189)
Comm. Accuracy: 1° mechanical
Comm. Accuracy: 1° mechanical

Mechanical

Max. Shaft Speed: 8000 RPM. Higher speeds may be achievable, contact Customer Service.
Shaft Material: Stainless Steel
Radial Shaft Load: 5 lb max. Rated load of 2 to 3 lb for bearing life of 1.2 x 10^10 revolutions
Axial Shaft Load: 5 lb max. Rated load of 2 to 3 lb for bearing life of 1.2 x 10^10 revolutions
Starting Torque: 0.05 oz-in
Moment of Inertia: 6.7 x 10^-5 oz-in² (4.8 gm-cm²)
Max Acceleration: 1 x 10^3 rad/sec²
Electrical Connector: 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)
Weight: 3 oz typical

Environmental

Operating Temp: 20° to +85° C for 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
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

All dimensions are in inches with a tolerance of ±0.005” or ±0.01” unless otherwise specified.
Metric dimensions are given in brackets [mm].
Model 15S

Model 15S Standard Servo Mount M7

Model 15S Servo Mount M4

Model 15S Square Flange M3

CABLE LENGTH 18" [457] STANDARD
M3 0.18 [4.57] DEEP
4X 90° Ø1:181 [30.00] B.C.

0.020 [0.51]
0.020 [0.51]
0.2498 [6.34]
0.0158 [4.01]
0.76 [19.3]
1.5 [38]

Ø0.7870 [20.00]
[Ø19.990+0.000]
Ø0.7870 [20.00]
[Ø19.990+0.000]

0.158 [4.01]
0.158 [4.01]

0.100 [2.54]
0.312 [7.92]
0.500 [12.70]

CABLE LENGTH 18" [457] STANDARD
M2 0.093 [2.362]
Ø0.875 [22.23]
1.750 [44.45]
2.093 [53.16]

0.02498 [6.34]
0.00044

0.02498 [6.34]
0.00044

4X 4.40 UNC-2B
0.181/4.57 mm DEEP
4X Ø1.000 B.C.

0.06 [1.52]
0.60 [15.2]
1.5 [38]

All dimensions are in inches with a tolerance of +0.005" or +0.01" unless otherwise specified. Metric dimensions are given in brackets [mm].

Wiring Table

<table>
<thead>
<tr>
<th>Function</th>
<th>Cable Wire Color</th>
<th>5-pin M12*</th>
<th>8-pin M12*</th>
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<tbody>
<tr>
<td>Com</td>
<td>Black</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>+VDC</td>
<td>White</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>Brown</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>A'</td>
<td>Yellow</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>Red</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>B'</td>
<td>Green</td>
<td>--</td>
<td>5</td>
</tr>
<tr>
<td>Z</td>
<td>Orange</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Z'</td>
<td>Blue</td>
<td>8</td>
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<tr>
<td>U</td>
<td>Violet</td>
<td>--</td>
<td>--</td>
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<tr>
<td>U'</td>
<td>Gray</td>
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<tr>
<td>V</td>
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<td>--</td>
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<tr>
<td>V'</td>
<td>Tan</td>
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</tr>
<tr>
<td>W</td>
<td>Red/Green</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>W'</td>
<td>Red/Yellow</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Shield</td>
<td>Bare</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

**Non-CE Option:**
- Cable shield (bare wire) is connected to internal case.
- CE Option: Cable shield and M12 connector body is connected to M12 connector body.

**CE Option:**
- Cable shield (bare wire) is connected to internal case.
- CE Option: Cable shield and M12 connector body is connected to M12 connector body.

Connector Pin-Outs

5-pin M12
8-pin M12

NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES.
Model 755A

### Features
- **Miniature Size (1.5" Diameter)**
- **Up to 30,000 Cycles Per Revolution**
- **Servo or Flange Mounting**
- **1 MHz Frequency Response Available**
- **Extended Temperature Operating Range Available**

The Model 755A Size 15 Accu-Coder™ is ideal for applications requiring a small, high precision, high performance encoder. Approximately 1.5" in diameter and 1.5" long, it will fit where many encoders cannot. Designed with all metal construction and shielded ball bearings, it will provide years of trouble-free use. The standard servo mount (S) version is available with a variety of shaft sizes and lengths. Three additional servo style mounts (S1, S2, S3) are also available. The optional flange mounting (MF) is ideal for applications requiring a bolt-on, high precision encoder. With its high reliability and quick delivery, the Model 755A encoder is the perfect replacement encoder for less reliable encoders of this size.

### Common Applications
- Robotics, Assembly Machines, Motor-Mounted Feedback, Phototypesetters
- Printers & Digital Plotters, Elevator Controls, Medical Diagnostic Equipment

### Model 755A Ordering Guide

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

### Model 755A CPR Options

<table>
<thead>
<tr>
<th>0001*</th>
<th>0002*</th>
<th>0004*</th>
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<td>0256*</td>
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<td>0333*</td>
<td>0360*</td>
<td>0400*</td>
<td>0500</td>
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<td>5000*</td>
<td>6000*</td>
<td>7200*</td>
<td>7500*</td>
</tr>
<tr>
<td>10,000*</td>
<td>10,240*</td>
<td>12,000*</td>
<td>12,500*</td>
<td>13,400*</td>
<td>15,000*</td>
<td>16,000*</td>
<td>20,000*</td>
<td>20,480</td>
</tr>
</tbody>
</table>

* Contact Customer Service for High Temperature Option.

### Notes:
1. Contact Customer Service for additional options.
2. 0° to 85° C for certain resolutions, see CPR Options.
3. Contact Customer Service for Index gating options.
4. 24 VDC max for high temperature option.
5. Standard temperature, 60 to 3000 CPR only.
7. For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: S/6 = 6 feet of cable.
8. Please refer to Technical Bulletin TB110B: When to Choose the CE Option.
9. HS and PS outputs are not available with CE option.

For enhanced connectivity, available with an M12 in-line connector.

### For specification assistance call
Customer Service at 1-800-366-5412

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For specification assistance call
Customer Service at 1-800-366-5412

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For enhanced connectivity, available with an M12 in-line connector.

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Model 755A Specifications

Electrical
Input Voltage..................4.75 to 28 VDC max for temperatures up to 70° C
4.75 to 24 VDC for temperatures between 70° C to 100° C
Input Ripple..................100 mV peak-to-peak at 0 to 100 kHz
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- 100 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)
Input Current.............100 mA max with no output load
Input Ripple..............100 mV peak-to-peak at 0 to 100 kHz
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- 100 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)
Input Current.............100 mA max with no output load
Noise Immunity.............Tested to BS EN61000-4-2; IEC801-3; BS EN61000-4-4; DDENV 50141; DDENV 50204; BS EN55022 (with European compliance option); BS EN61000-6-2; BS EN50081-2
Symmetry.................1 to 6000 CPR: 180° (±18°) electrical at 100 kHz output
6001 to 20,480 CPR: 180° (±36°) electrical
Quadr Phasing...........1 to 6000 CPR: 90° (±22.5°) electrical at 100 kHz output
6001 to 20,480 CPR: 90° (±36°)
Min Edge Sep...............1 to 6000 CPR: 67.5° electrical at 100 kHz output
6001 to 20,480 CPR: 54° electrical
>20,480 CPR: 50° electrical
Rise Time..................Less than 1 microsecond
Accuracy...................Instrument and Quadrature Error: For 200 to 1999 CPR, 0.017° mechanical (1.0 arc minutes) from one cycle to any other cycle. For 2000 to 3000 CPR, 0.01° mechanical (0.6 arc minutes) from one cycle to any other cycle. Interpolation error (units > 3000 CPR only) within 0.005° mechanical. (Total Optical Encoder Error = Instrument + Quadrature + Interpolation)
Mechanical
Max Speed....................7500 RPM. Higher shaft speeds may be achievable, contact Customer Service.
Shaft Size..................0.250", 5 mm, 6 mm
Shaft Rotation............Bi-directional
Radial Shaft Load........5 lb
Axial Shaft Load.........3 lb
Starting Torque............0.14 oz-in typical
4.0 oz-in typical for -40° C operation
Moment of Inertia........2.8 x 10^{-10} oz-in-sec^2
Max Acceleration...........1 x 10^3 rad/sec^2
Electrical Connect........18" cable (foil and braid shield, 24 AWG conductors), 5- or 8-pin M12 (12 mm) in-line connector with 18" cable (braid shield), 8-pin Molex, Terminal Block
Housing....................Black non-corrosive finish
Bearings......................Precision ABEC ball bearings
Mounting.....................Servo or Optional Flange
Weight......................3.10 oz servo mount, typical
Environmental
Operating Temp............0° to 70° C for standard models
-40° to 70° C for low temperature option
0° to 100° C for high temperature option (0° to 80° C for certain resolutions, see CPR Options.)
Storage Temp.............-25° to +85° C
Humidity....................98% RH non-condensing
Vibration....................10 g @ 58 to 500 Hz
Shock.......................50 g @ 11 ms duration

Model 755A Standard Servo Mount S

Model 755A Servo Mounts S1 and S2

Model 755A Servo Mount S3

Model 755A Square Flange MF

Wiring Table

Function | Cable Wire Color | Terminal Block | 8-pin Molex | 5-pin M12 | 8-pin M12
--- | --- | --- | --- | --- | ---
Com | Black | 7 | 3 | 2 | 7
+ VDC | White | 8 | 1 | 1 | 2
A | Brown | 1 | 8 | 4 | 1
A' | Yellow | 2 | 7 | ----- | 3
B | Red | 3 | 4 | 2 | 4
B' | Green | 4 | 3 | ----- | 5
Z | Orange | 6 | 6 | 5 | 6
Z' | Blue | 5 | 5 | ----- | 8
Shield | Bare | ----- | ----- | ----- | ----- 

Cable Option: Cable shield (bare wire) is connected to internal case
CE Option: Read Technical Bulletin TB111

Waveform Diagrams

Line Driver and Push-Pull

Open Collector and Pull-Up

~s~
Model 711 Single Channel Cube

Features
- The Original Industry-Standard Cube
- Five Versatile Housing Styles
- Thousands of Configurations
- Many New Resolutions Available!

The Model 711 Accu-Coder™ is the original, industry standard Cube encoder. Designed for compatibility with most programmable controllers, electronic counters, motion controllers, and motor drives, it is ideally suited for applications that require a simple, symmetrical, unidirectional square wave output in a single channel format.

The new E-Cube™ version increases critical performance specifications for the most popular resolutions. The E-Cube™ features advanced Opto-ASIC circuitry, a single chip design that eliminates many board level components. This increases the reliability of an already dependable and durable encoder. With new options continually being added, the E-Cube™ just keeps getting better, and better!

Common Applications
Feedback For Counters, PLC's & Motors, Measuring For Packaging, Filling & Materials Handling Machines, Wire Winding, Film Extrusion

Model 711 Ordering Guide
Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.

Model 711 Ordering Code

<table>
<thead>
<tr>
<th>MODEL</th>
<th>OUTPUT TYPE</th>
<th>SHAFT TYPE</th>
<th>MATING CONNECTOR</th>
<th>HOUSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>711</td>
<td>S</td>
<td>S</td>
<td>N</td>
<td>S2</td>
</tr>
<tr>
<td>0256</td>
<td>Pull-Up Resistor</td>
<td>Single</td>
<td>No Connector</td>
<td>2.25&quot; Standard Housing</td>
</tr>
<tr>
<td>HD1</td>
<td>Open Collector</td>
<td>Open Ended</td>
<td>Yes</td>
<td>2.25&quot; Standard Housing</td>
</tr>
<tr>
<td>6</td>
<td>Push-Pull HV Driver</td>
<td>Double Ended</td>
<td>Yes</td>
<td>2.25&quot; Standard Housing</td>
</tr>
</tbody>
</table>

Model 711 CPR Options

Standard Cube: All resolutions from 1 to 900 except where E-Cube™ resolutions are available.

E-Cube™ resolutions as follows:

0001 thru 0189* 0193 0198 0200 0205 0210 0256 0258 0259 0300 0305 0306 0308 0315 0333 0336 0350 0360 0400 0408 0500 0512 0580 0597 0600 0700 0720 0800 0840 0860 1000 1024 1200 1250 1270 1800 2000 2048 2500

*Contact Customer Service For Availability

Contact Customer Service for other disk resolutions; not all disk resolutions are available with all output types.

NOTES:
1. Available with 0.250" shaft only.
2. Contact Customer Service for custom shaft lengths and diameters.
3. Standard housing only.
4. HD10 housing only.
5. Not available for HD or EX housings.
6. For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: G/6 = 6 feet of cable.
7. Screw terminals available for HD and EX housings. Solder terminals available for S and S1 housings.
9. Only available with 5/16" (0.3125") shaft.
10. Standard or 5PY housing only.

For specification assistance call Customer Service at 1-800-366-5412

Encoder Products Company • P.O. Box 249 • Sagle, ID 83860-0249 • 1-800-366-5412 • www.encoder.com • sales@encoder.com

This document provided by Barr-Thorp Electric Co., Inc. 800-473-9123 www.barr-thorp.com
Model 711 Specifications
Common to All Cube Housing Styles

Electrical
Input Voltage..............E-Cube™-  4.75 to 28 VDC max for tempera-
tures up to 85° C     4.75 to 24 VDC for tem-
peratures between 85° C and 100° C.
Standard Cube- 4.75 to 28 VDC for
temperatures up to 70° C.
Input Current.............80 mA maximum with no output load
Input Ripple ..............100 mV peak-to-peak at 0 to 100 kHz
Output Format .........Incremental- Square wave with single channel
Output Types ............Open Collector-  250 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)
Freq Response..........E-Cube™-  0 to 125 kHz
                     Standard Cube-  0 to 20 kHz

Environmental
Operating Temp............E-Cube™-  0° to 85° C or
                         0° to 100° C at 5 to 24 VDC
                         Standard Cube-  0° to 70° C
Storage Temp..............-25° to +85° C
Humidity .................98% RH non-condensing
Vibration ................10 g @ 58 to 500 Hz
Shock .................... 50 g @ 11 ms duration

Symmetry .............180° (±18°) electrical
Rise Time ..............Less than 1 microsecond
Accuracy ..............E-Cube™- Within 0.05° mechanical from
                     one cycle to any other cycle, or 3 arc
                     minutes
                     Standard Cube- Within 0.1° mechanical
                     from one cycle to any other cycle, or 6 arc
                     minutes

Mechanical
Max Speed ..............6000 RPM. Higher shaft speeds
                     achievable, contact Customer Service.
Shaft Material .........303 stainless steel
Housing .................Black non-corrosive finished 6063-T6
                     aluminum
Bearings ...............Precision ABEC Ball Bearings

Standard Cube Housing (S, S1)

Mechanical
Shaft Size ..............0.250" or 0.375"
Shaft Type .............Single or double-ended (specify choice)
Radial Loading .........15 lb maximum (0.250" diameter shaft)
                     40 lb maximum (0.375" diameter shaft)
Axial Loading ..........30 lb maximum (0.250" diameter shaft)
                     40 lb maximum (0.375" diameter shaft)
Starting Torque ........0.13 oz-in typical (0.250"
                     shaft)
                     0.38 oz-in typical for 0.375" shaft
Moment of Inertia .......6.5 x 10^-6 oz-in-sec^2
Mounting ...............Tapped mounting holes on three sides for
                     base or face mounting
Weight ..................10 oz for standard housing

Industrial Cube Housing (IND12)

Industrial Housing Features
This more robust unit meets requirements between Standard and Heavy Duty housings while retaining the Cube design. The Industrial 12 (IND12) model features an IP65 shaft seal. The tough, sealed aluminum housing has a wall thickness of 0.187" and offers greater protection from wash down, sprays, dust, moisture, shock, vibration, and other hazards found in industrial environments.

Industrial Cube Housing (IND12)

Specifications
Refer to all Standard Cube Housing specifications except as follows:

Mechanical
Shaft Size .............0.375" diameter
Shaft Type .............Single- or Double-Ended Shaft Available
Radial Loading ..........40 Maximum
Axial Loading ..........30 Maximum
Starting Torque ..........3 oz-in Starting Torque w/IP65 Shaft Seal

Cube Housing With 1/4" Shaft (4)

Cube Housing With 3/8" Shaft (6)

All dimensions are in inches with a tolerance of +0.005" or +0.01" unless otherwise specified.
Model 715 Timed Pulse Cube

Features
- The Original Industry-Standard Cube
- Five Versatile Housing Styles
- Thousands of Configurations
- Many New Resolutions Available!

The Model 715 Accu-Coder™ is ideally suited for applications requiring bi-directional feedback with a constant pulse width. The Model 715 is available in two versions. The Model 715-1 provides output pulses for clockwise shaft rotation on one channel and pulses for counterclockwise rotation on another. The Model 715-2 provides output pulses for counting on one channel while the other channel indicates direction of rotation.

The new E-Cube™ version increases critical performance specifications for the most popular resolutions. The E-Cube™ features advanced Opto-ASIC circuitry, a single chip design that eliminates many board level components. This increases the reliability of an already dependable and durable encoder. With new options continually being added, the E-Cube™ just keeps getting better, and better!

Common Applications
- Measuring for Cut-To-Length, Labeling & Filling, Position Control, Motion Following, or Slaving Applications

Model 715 Ordering Guide
Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.

Model 715 PPR Options
Standard Cube: All resolutions from 1 to 900 except where E-Cube™ resolutions are available
E-Cube™ resolutions as follows:
- 0001 thru 0189* 0193 0198 0200 0205
- 0210 0240 0250 0256 0276 0298 0300
- 0305 0308 0333 0336 0350 0360 0400
- 0480 0512 0525 0528 0576 0600 0720
- 0800 0840 0960 1000 1024 1200 1250
- 1270 1800 2000 2048 2500
- 1x, 2x, and 4x, of all of the above resolutions are available
*Contact Customer Service For Availability

NOTES:
- Available with 0.250" shaft only.
- Contact Customer Service for custom shaft lengths and diameters.
- Standard housing only.
- 9 Available with 5/16" (0.3125") shaft.
- Standard or HD housing only.
- For specification assistance call Customer Service at 1-800-366-5412

For specification assistance call Customer Service at 1-800-366-5412

COMMON APPLICATIONS
- Measuring for Cut-To-Length, Labeling & Filling, Position Control, Motion Following, or Slaving Applications

Model 715 Timed Pulse Cube

Features
- The Original Industry-Standard Cube
- Five Versatile Housing Styles
- Thousands of Configurations
- Many New Resolutions Available!

The Model 715 Accu-Coder™ is ideally suited for applications requiring bi-directional feedback with a constant pulse width. The Model 715 is available in two versions. The Model 715-1 provides output pulses for clockwise shaft rotation on one channel and pulses for counterclockwise rotation on another. The Model 715-2 provides output pulses for counting on one channel while the other channel indicates direction of rotation.

The new E-Cube™ version increases critical performance specifications for the most popular resolutions. The E-Cube™ features advanced Opto-ASIC circuitry, a single chip design that eliminates many board level components. This increases the reliability of an already dependable and durable encoder. With new options continually being added, the E-Cube™ just keeps getting better, and better!

Common Applications
- Measuring for Cut-To-Length, Labeling & Filling, Position Control, Motion Following, or Slaving Applications

Model 715 Ordering Guide
Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.

Model 715 PPR Options
Standard Cube: All resolutions from 1 to 900 except where E-Cube™ resolutions are available
E-Cube™ resolutions as follows:
- 0001 thru 0189* 0193 0198 0200 0205
- 0210 0240 0250 0256 0276 0298 0300
- 0305 0308 0333 0336 0350 0360 0400
- 0480 0512 0525 0528 0576 0600 0720
- 0800 0840 0960 1000 1024 1200 1250
- 1270 1800 2000 2048 2500
- 1x, 2x, and 4x, of all of the above resolutions are available
*Contact Customer Service For Availability

NOTES:
- Available with 0.250" shaft only.
- Contact Customer Service for custom shaft lengths and diameters.
- Standard housing only.
- 9 Available with 5/16" (0.3125") shaft.
- Standard or HD housing only.
- For specification assistance call Customer Service at 1-800-366-5412

For specification assistance call Customer Service at 1-800-366-5412

This document provided by Barr-Thorp Electric Co., Inc. 800-473-9123 www.barr-thorp.com
Model 715 Timed Pulse Cube

Common to All Cube Housing Styles

**Electrical**
- Input Voltage: E-Cube™: 4.75 to 28 VDC max for temperatures up to 85°C, 4.75 to 24 VDC for temperatures between 85° to 100°C. Standard Cube: 4.75 to 28 VDC max for temperatures up to 70°C.
- Input Current: 80 mA maximum with no output load.
- Input Ripple: 100 mV peak-to-peak at 0 to 100 kHz.

**Mechanical**
- Max Speed: 6000 RPM. Higher shaft speeds achievable, contact Customer Service.
- Shaft Material: 303 stainless steel.
- Housing: Black non-corrosive finished 6063-T6 aluminum.
- Bearings: Precision ABEC Ball Bearings.

**Environmental**
- Accuracy: E-Cube™: Within 0.05° mechanical from one cycle to any other cycle, or 3 arc minutes. Standard Cube: Within 0.1° mechanical from one cycle to any other cycle, or 6 arc minutes.

---

Model 715 Specifications

**Standard Cube Housing (S, S1)**

**Specifications**

**Mechanical**
- Shaft Size: 0.250" or 0.375".
- Shaft Type: Single or double-ended (specify choice).
- Radial Loading: 15 lb maximum (0.250" diameter shaft).
- Axial Loading: 10 lb maximum (0.250" diameter shaft).
- Starting Torque: 0.13 oz-in typical for 0.250" shaft.
- Moment of Inertia: 6.5 x 10^-5 oz-in-sec^2.
- Mounting: Tapped mounting holes on three sides for base or face mounting.
- Weight: 10 oz for standard housing.

**Industrial Cube Housing (IND12)**

**Industrial Housing Features**
This more robust unit meets requirements between Standard and Heavy Duty housings while retaining the Cube design. The Industrial 12 (IND12) model features an IP65 shaft seal. The tough, sealed aluminum housing has a wall thickness of 0.187" and offers greater protection from wash down, sprays, dust, moisture, shock, vibration, and other hazards found in industrial environments.

**Industrial Cube Housing (IND12) Specifications**

Refer to all specifications in the standard or E-Cube, unless otherwise stated:

**Mechanical**
- Shaft Size: 0.375" diameter.
- Shaft Type: Single- or Double-Ended Shaft Available.
- Radial Loading: 40 lb maximum (0.375" diameter shaft).
- Axial Loading: 30 lb Maximum.
- Starting Torque: 3 oz-in Starting Torque w/IP65 Shaft Seal.

---

Cubing Dimensions: All dimensions are in inches with a tolerance of +0.005" or +0.01" unless otherwise specified.
Model 716 Quadrature Cube

Features
- The Original Industry-Standard Cube
- Five Versatile Housing Styles
- Thousands of Configurations
- Many New Resolutions Available!

The Model 716 Accu-Coder™ is ideally suited for applications requiring a quadrature output. Designed for compatibility with most programmable controllers, electronic counters, motion controllers, and motor drives, it is ideally suited for industrial applications where it is important that the direction of rotation be known.

The new E-Cube™ version increases critical performance specifications for the most popular resolutions. The E-Cube™ features advanced Opto-ASIC circuitry, a single chip design that eliminates many board level components. This increases the reliability of an already dependable and durable encoder. With new options continually being added, the E-Cube™ just keeps getting better, and better!

Common Applications
Feedback for counters, PLC’s & Motors, Cut To Length, Labeling, Measuring For Packaging, Filling & Materials Handling Machines, Wire Winding, Film Extrusion

Model 716 Ordering Guide

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

<table>
<thead>
<tr>
<th>716</th>
<th>0256</th>
<th>1</th>
<th>N</th>
<th>S</th>
<th>HD1</th>
<th>6</th>
<th>S</th>
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<td></td>
<td></td>
<td>PP</td>
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<td>1-2500 See CPR Options below for available resolutions. (601 and above is a price adder)</td>
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<td>HD14</td>
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<td>Open Collector</td>
<td>PP</td>
<td>Push-Pull</td>
<td>HV</td>
<td>Line Driver</td>
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<td>N Negative</td>
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<td>See CPR Options below for available resolutions. (601 and above is a price adder)</td>
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<td>Connector Customer Service For Availability</td>
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<td>For specification assistance call Customer Service at 1-800-366-5412</td>
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</table>

Model 716 CPR Options

Standard Cube: All resolutions from 1 to 900 except where E-Cube™ resolutions are available

E-Cube™ resolutions as follows:

0001 thru 0189" 0193 0198 0200 0205
0210 0240 0250 0256 0276 0298 0300
0305 0308 0315 0333 0336 0350 0360
0400 0480 0500 0512 0590 0597 0600
0700 0720 0800 0840 0960 1000 1024
1200 1250 1270 1800 2000 2048 2500

*Contact Customer Service For Availability

Contact Customer Service for other disk resolutions; not all disk resolutions available with all output types

NOTES:
1 Available with 0.250" shaft only.
2 Contact Customer Service for custom shaft lengths and diameters.
3 Standard housing only.
4 HD10 housing only.
5 Not available for HD or EX housings.
6 For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: G/6 = 6 feet of cable.
7 Screw terminals available for HD and EX housings. Solder terminals available for S and S1 housings.
8 For HV and PP Output Types, Index Pulse only available on E-Cube™.
9 Complete only if Index Pulse option is selected.
10 For Mating Connectors, Cables, and Cordsets see www.encoder.com
11 Only available with 5/16" (0.3125") shaft.
12 Standard or SPY housing only.

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Model 716 Specifications
Common to All Cube Housing Styles

Electrical
Input Voltage.............E-Cube™- 4.75 to 28 VDC max for temperatures up to 85° C; 4.75 to 24 VDC for temperatures between 85° and 100° C
Standard Cube- 4.75 to 28 VDC max for temperatures up to 70° C
Input Current.............80 mA maximum with no output load
Input Ripple..................with no output load
Output Voltage............with no output load
Output Current.............with no output load
Output Ripple..............100 mV peak-to-peak at 0 to 100 kHz
Output Format.............Incremental- Quadrature square wave with channel A leading B for clockwise shaft rotation
Output Types ............Open Collector- 250 mA max per channel
                  Pull-Up- 250 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 .........................E-Cube™- gated to channel A, 180° electrical wide (1 to 189 CPR ungated typical 270˚ electrical)

Environmental
Operating Temp.............E-Cube™- 0° to 85° C or 0° to 100° C at 5 to 24 VDC
Standard Cube- 0° to 70° C
Storage Temp..................-25° to +85° C
Humidity .....................98% RH non-condensing
Vibration .....................10 g @ 58 to 560 Hz
Shock .........................50 g @ 11 ms duration

Standard Cube Housing (S, S1)

Mechanical
Shaft Size ..................0.250" or 0.375"
Shaft Type ..................Single or double-ended (specify choice)
Radial Loading ............15 lb maximum (0.250" diameter shaft)
                  40 lb maximum (0.375" diameter shaft)
Axial Loading ..............10 lb maximum (0.250" diameter shaft)
                  30 lb maximum (0.375" diameter shaft)
Starting Torque ............0.13 oz-in typical for 0.250" shaft
                  0.38 oz-in typical for 0.375" shaft
Moment of Inertia .........6.5 x 10^-3 oz-in-sec²
Mounting ....................Tapped mounting holes on three sides for base or face mounting
Weight .....................10 oz for standard housing

Industrial Cube Housing (IND12)

Industrial Housing Features
This more robust unit meets requirements between Standard and Heavy Duty housings while retaining the Cube design. The Industrial 12 (IND12) model features an IP65 shaft seal. The tough, sealed aluminum housing has a wall thickness of 0.187" and offers greater protection from wash down, sprays, dust, moisture, shock, vibration, and other hazards found in industrial environments.

Industrial Cube Housing (IND12)

Specifications
Refer to all specifications in the standard or E-Cube, unless otherwise stated:

Mechanical
Shaft Size ..................0.375" diameter
Shaft Type ..................Single- or Double-Ended Shaft Available
Radial Loading ............40 lb Maximum
Axial Loading ..............30 lb Maximum
Starting Torque ............3 oz-in Starting Torque w/IP65 Shaft Seal

All dimensions are in inches with a tolerance of ±0.005" or ±0.01" unless otherwise specified

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Cube Series Housing Options

Heavy Duty Cube Housing (HD12)

The Heavy Duty housing uses a separate 0.375” diameter external shaft and bearing assembly to rotate the shaft of an internally mounted Cube Housing. This provides mechanical isolation from external loads and stress. A flexible coupling between the external shaft and the encoder protects the internal unit from axial and radial loading. The 0.250” aluminum walls protect the encoder from external shock, vibration, and the outside environment.

Heavy Duty Housing Options

- HD 1 Heavy Duty 3” x 6” housing
- HD 3 Heavy Duty w/conduit connector (threaded for 0.500” NPT Conduit) and terminal strip
- HD 5 Heavy Duty w/10 mm outer bearing
- HD 12 Heavy Duty w/IP65 rated outer shaft seal
- HD 14 Heavy Duty w/IP65 rated outer shaft seal, conduit connector (threaded for 0.500” NPT Conduit), and terminal strip

* These units have an outer boss diameter of 1.000”

Heavy Duty Cube Housing (HD12) Specifications

Refer to all cube specifications except as follows:

Mechanical

- Max Speed: 6000 RPM
- Shaft Size: 0.375”
- Rotation: Either direction
- Radial Loading: 40 lb maximum (50 lb for HD 5)
- Axial Loading: 30 lb maximum (35 lb for HD 5)
- Bearings: Precision ABEC ball bearings
- Starting Torque: 1 oz-in; 3 oz-in w/IP65 seal
- Mounting: Tapped holes face and base
- Weight: 3.25 lb

Ultra Heavy Duty Cube Housing (HD10)

The HD 10 Ultra Heavy Duty encoder is designed for use in applications with severe shaft loading conditions. The HD 10 offers two shaft sizes: 0.500” and 0.625”. Shaft material is 303 stainless steel. Bearings are conservatively rated at 95 lb radial and 60 lb axial shaft loading. IP65 shaft seal is standard on all units.

The HD 10 Ultra Heavy Duty housing uses a larger external shaft and R10 bearing assembly to rotate the shaft of an internally mounted Cube Housing. This provides mechanical isolation from external loads and stress. A flexible coupling between the external shaft and the encoder protects the internal unit from axial and radial loading. The 0.250” aluminum walls protect the encoder from external shock, vibration, and the outside environment.

Ultra Heavy Duty Cube Housing (HD 10) Specifications

Refer to all cube specifications except as follows:

Mechanical

- Max Speed: 6000 RPM
- Shaft Size: 0.500” or 0.625”
- Rotation: Either direction
- Radial Loading: 95 lb operating
- Axial Loading: 60 lb operating
- Bearings: ABEC precision ball bearings
- Bearing Life: 15,000 hours at rated load
- Starting Torque: 3 oz-in IP65 rated
- Mounting: Tapped holes face and base
- Weight: 3.85 lb

All dimensions are in inches with a tolerance of ±0.005” or ±0.01” unless otherwise specified.
An explosion-proof housing is available for installing the Cube Series Accu-Coder™ in hazardous locations. The Cube Series encoder is mounted within the explosion-proof housing and is coupled to the 0.375” shaft assembly by a flexible shaft coupling. This decreases radial and axial loading on the internal encoder shaft and bearings to ensure long life. Electrical connection to the Accu-Coder™ is by an internal barrier terminal strip. A threaded hole for 0.500” NPT conduit is provided.

The explosion-proof housing is designed to meet:

- NEC Class 1, Groups C and D
- NEC Class 2, Groups E, F, and G
- UL Standard 1203
- Class 1, Division 1, Groups C and D
- Class 2, Division 1, Groups E, F, and G
- CSA Standard C 22.2 No. 30-M 1986
- NEMA 7 and NEMA 9

Refer to all cube specifications except as follows:

**Mechanical**
- Max Speed: 4000 RPM
- Radial Loading: 30 lb operating
- Axial Loading: 10 lb operating
- Weight: 6 lb
- Finish: Unpainted Aluminum

**Cube Series Housing Options**

**Explosion-Proof Housing (EX)**

**Specifications**

The all aluminum optional 5PY adapter allows any standard housing Cube Series encoder to replace DC tachometer technology. The 5PY adapter is interchangeable with any 5PY tach generator.

**Ordering Information**

Order standard housing Cube Series Accu-Coder™ with 5/16” shaft and specify Accessory Part #175443. 5PY adapter kit includes all necessary hardware to attach the adapter to the encoder.

**Waveform Diagram**

**Wiring Table**

All dimensions are in inches with a tolerance of ±0.005” or ±0.01” unless otherwise specified.
Model 702 Shaft

Features
- Standard Size 20 Package (2” x 2”)
- Flange, and Servo Mounting
- Up to 30,000 CPR
- 80 lb Max. Axial and Radial Shaft Loading
- IP66 Sealing Available

The Model 702 Size 20 Accu-Coder™ is a heavy duty, extremely rugged, reliable, yet compact industry standard 2” diameter encoder, designed for harsh factory and plant floor environments. The double shielded ball bearings are rated at 80 lb maximum axial and radial shaft loading to ensure a long operating life. Made to withstand the harsh effects of the real world, both the flange and servo models are rated IP66 (NEMA 4 & 13) with the optional heavy duty shaft seal. With a variety of mounting options in both the flange and servo models, the Model 702 is ideal for both new applications and replacements. If you need an encoder that won’t let you down, the Model 702 is it.

Common Applications
Motion Control Feedback, Conveyors, Elevator Controls, Machine Control, Food Processing, Process Control, Robotics, Material Handling, Textile Machines

Model 702 Ordering Guide

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

Model 702 CPR Options

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Description</th>
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</thead>
<tbody>
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<td>16,000*</td>
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<tr>
<td>20,480*</td>
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<tr>
<td>25,000*</td>
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</tr>
<tr>
<td>30,000*</td>
<td></td>
</tr>
</tbody>
</table>

* Contact Customer Service for High Temperature Option.

New CPR values are periodically added to those listed. Contact Customer Service to determine all currently available CPR values. Special disk resolutions are available upon request. A one-time NRE fee may apply.
Model 702 Specifications

Electrical

- **Input Voltage**: 4.75 to 28 VDC max for temperatures up to 70°C; 4.75 to 24 VDC for temperatures between 70°C to 100°C.
- **Input Current**: 100 mA max with no output load.
- **Input Ripple**: 100 mV peak-to-peak at 0 to 100 kHz.
- **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: 100 mA max per channel
  - Push-Pull: 20 mA max per channel
  - Line Driver: 20 mA max per channel (Meets RS422 at 5 VDC supply)

- **Index**: Occurs once per revolution. The index for units >3000 CPR is 90° gated to Outputs A and B. See Waveform Diagrams below.
- **Freq Response**: Up to 1 MHz.
- **Noise Immunity**: Tested to BS EN61000-4-2; IEC801-3; BS EN55022; BS EN55024; DDENV 50204; BS EN55022 (with European compliance option); BS EN55024 (with European compliance option); BS EN61000-6-2; BS EN50081-2.
- **Symmetry**: 1 to 6000 CPR: 180° (±18°) electrical at 100 kHz output
  - 6001 to 20,480 CPR: 90° (±36°) electrical at 100 kHz output
- **Quad Phasing**: 1 to 6000 CPR: 90° (±22.5°) electrical at 100 kHz output
  - 6001 to 20,480 CPR: 90° (±36°) electrical at 100 kHz output
- **Min Edge Sep**: 1 to 6000 CPR: 67.5° electrical at 100 kHz output
  - 6001 to 20,480 CPR: 54° electrical at 100 kHz output
  - >20,480 CPR: 50° electrical at 100 kHz output
- **Rise Time**: Less than 1 microsecond
- **Accuracy**: Instrument and Quadrature Error: For 200 to 1999 CPR, 0.017° mechanical (1.0 arc minutes) from one cycle to any other cycle. For 2000 to 3000 CPR, 0.01° mechanical (0.6 arc minutes) from one cycle to any other cycle. Interpolation error (units > 3000 CPR only) within 0.005° mechanical. (Total Optical Encoder Error = Instrument + Quadrature + Interpolation)

Mechanical

- **Max Shaft Speed**: 8000 RPM. Higher shaft speeds may be achievable, contact Customer Service.
- **Shaft Size**: 0.250", 0.375", or 10 mm
- **Shaft Rotation**: Bi-directional
- **Radial Shaft Load**: 80 lb max. Rated load of 20 to 40 lb for bearing life of 1.5 x 10⁸ revolutions
- **Axial Shaft Load**: 80 lb max. Rated load of 20 to 40 lb for bearing life of 1.5 x 10⁸ revolutions
- **Starting Torque**: 1.0 oz-in typical with IP64 seal or no seal
  - 3.0 oz-in typical with IP66 shaft seal
- **Moment of Inertia**: 5.2 x 10⁻⁴ oz-in-sec²
- **Max Acceleration**: 1 x 10⁵ rad/sec²
- **Connector Type**: 6-, 7-, and 10-pin MS Style, 5- or 8-pin M12 (12 mm), 9-pin D-subminiature, or gland with 24 inches of cable (foil and braid shield, 24 AWG conductors)
- **Housing**: Black non-corrosive finish
- **Bearings**: Precision ABEC ball bearings
- **Mounting**: Various flange or servo mounts
- **Weight**: 11 oz typical

Environmental

- **Operating Temp**: 0° to 70°C for standard models
  - 0° to 100°C for high temperature option (0° to 85°C for certain resolutions, see CPR Options.)
- **Storage Temp**: 0° to 85°C
- **Humidity**: 98% RH non-condensing
- **Vibration**: 20 g @ 58 to 500 Hz
- **Shock**: 75 g @ 11 ms duration
- **Sealing**: IP66 (NEMA 13 and 44X) with shaft seal on flange and servo mounts, or IP64 available.
Model 702 Servo Mounts

**Servo #1 (S)**

- SERVO MOUNT #1
- 4-40 UNC-2B 0.25 DEEP
- 3X 120° Ø1.500 B.C.

**Servo #2 (C)**

- SERVO MOUNT #2
- 10-32 UNF-2B 0.25 DEEP
- 4X 90° Ø1.625 B.C.

**Servo #3 (P)**

- SERVO MOUNT #3
- 6-32 UNC-2B 0.25 DEEP
- 3X 120° Ø1.500 B.C.

### Body For Servo Mounts #1, #2, #3

SIDE OR END MOUNT CONNECTORS AVAILABLE

**Optional Pilots For Flange And Servo Mounts**

- (G, T, D)
- (L, U, E)

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

---

**Wiring Table**

<table>
<thead>
<tr>
<th>Function</th>
<th>5-pin</th>
<th>8-pin</th>
<th>10-pin</th>
<th>7-pin</th>
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<td>Com</td>
<td>M12x</td>
<td>M12x</td>
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<td>MS</td>
<td>MS</td>
<td>D-bub</td>
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<td>7</td>
<td>G</td>
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<td></td>
</tr>
</tbody>
</table>

**CE Option:**

- Cable shield (bare wire) is connected to internal case
- Read Technical Bulletin TB111

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**Connector Pin-Outs**

- 5-pin M12
- 8-pin M12
- 10-pin MS
- 7-pin MS
- 6-pin MS
- 9-pin D-SUB

**0.55 MAX. HEIGHT**

**0.8 MAX. HEIGHT**

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**Waveform Diagrams**

- **Line Driver and Push-Pull**
- **Open Collector and Pull-Up**
Mounting/Mechanical Installation and Applications

For over 35 years, our engineers have been designing encoders that are quick and easy to install. With a variety of mounting options available, your encoder should be a perfect match for your existing equipment. Accessories such as pivoting mounting brackets, measuring wheels, flexible couplings, etc., are available from EPC to ease installation. The first principle for every encoder installation is "Don't force it!". Striking or using excessive force can either damage your new encoder, or introduce excessive shaft loading, shaft misalignment, or other conditions shortening its expected life. Tighten allcouplings and bolts to their recommended torque. Remember, tighter isn't always better!

**Shaft Style Encoders**

- Gently couple the shaft of the Accu-Coder™ to the driving shaft, using a correctly sized flexible shaft coupling. **Never use a rigid coupling.**
- Verify proper alignment between the Accu-Coder™ shaft and the driving shaft.
- If using pulleys or gears, mount them on the shaft as close as possible to the Accu-Coder™ to reduce bearing load.
- Axial and radial shaft loading should be low as possible. Never exceed printed specifications.
- Use recommended torques to tighten all clamping bolts and couplings.

**Caution:** Avoid damage to your Accu-Coder™. The following actions may cause damage, and void product warranty.

- Do not shock or strike.
- Do not subject shaft to excessive axial or radial shaft stresses.
- Do not use a rigid coupling.
- Do not disassemble.

**Accu-Coder™ Applications Include:**

Any application that measures speed, distance, or position can use an encoder. An example of how an encoder works in a motion control system is diagramed in this typical cut-to-length example below.

**Controller**

Received pulses from encoder indicating distance of material traveled. A signal is sent to the cutting assembly, actuating the blade each time the correct amount of material passes.

**Encoder (with measuring wheel)**

Movement of material under the measuring wheel causes the encoder shaft to rotate, sending pulses to the controller.

**Cutting Assembly**

Receives signal from controller indicating the timing to initiate a cut to create material in the proper length.

**Textiles**

**Packaging**

**Automotive**

**Flood Gate Control**

**Printing and Binding**
Model 725

Features
- Standard Size 25 Package (2.5” x 2.5”)
- Up to 30,000 CPR
- Standard and Industrial Housings
- Servo and Flange Mounting
- IP66 Sealing Available

Model 725 Size 25 Accu-Coder™ optical shaft encoder is specifically designed for the challenges of an industrial environment. But don’t let its tough, industrial package fool you; it still has the performance to reach resolutions up to 30,000 cycles per revolution. The Model 725 is available with both flange and servo mounting options, along with two distinctive 2.5” diameter housing styles. The rugged Standard Housing (N) isolates the internal electronics from the shock and stress of the outer environment. The extra heavy-duty Industrial Housing (I) features a fully isolated internal encoder unit that prolongs bearing life by using an internal flexible mount to protect the encoder from severe axial and radial shaft loading.

Common Applications
Motion Control Feedback, Conveyors, Elevator Controls, Machine Control, Food Processing, Process Control, Robotics, Material Handling, Textile Machines

Model 725 Ordering Guide

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

<table>
<thead>
<tr>
<th>MODEL</th>
<th>N</th>
<th>4</th>
<th>S</th>
<th>1000</th>
<th>R</th>
<th>HV</th>
<th>1</th>
<th>F</th>
<th>1</th>
<th>E</th>
<th>X</th>
<th>N</th>
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<tr>
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</table>

<table>
<thead>
<tr>
<th>HOUSING STYLE</th>
<th>N</th>
<th>Standard Housing</th>
<th>I</th>
<th>Heavy Duty Industrial</th>
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<tbody>
<tr>
<td>OPERATING TEMPERATURE</td>
<td>S</td>
<td>0° to 70° C</td>
<td>H</td>
<td>0° to 100° C</td>
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<td>SHAFT SIZE</td>
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<td>Q</td>
<td>Quadrature A &amp; B</td>
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<td>FREQUENCY RESPONSE</td>
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<td>200 kHz</td>
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<tr>
<td>250 kHz, &gt;3000 CPR</td>
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<td>500 kHz, &gt;6000 CPR</td>
<td>4</td>
<td>1 MHz, &gt;10,000 CPR</td>
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<tr>
<td>CYCLES PER REVOLUTION</td>
<td>1-30,000 See CPR Options for available resolutions. Price adder for CPR &gt;1270</td>
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Model 725 CPR Options

- 0001* 0002* 0004* 0005* 0006* 0007* 0008* 0010* 0011* 0033* 0034* 0035* 0038* 0040* 0042* 0045* 0050* 0060 0064* 0100 0120 0125 0128* 0144* 0150* 0160* 0200 0240* 0250 0254* 0256* 0300 0333* 0360 0400 0500 0512 0600 0625* 0635 0665* 0720 0768* 0800 0889 10,000a 10,240a 12,000a 12,500a 14,400a 15,000a 18,000a 20,000a 20,480a 25,000a 30,000a

* Contact Customer Service for High Temperature Option.

NOTES:
1. Available with I housing style only.
2. 0° to 85° C for certain resolutions, see CPR Options.
3. Contact Customer Service for index gating options.
4. 24 VDC max for high temperature option.
5. Standard temperature, 60 to 3000 CPR only.
7. For Non-Standard Cable Lengths add a forward slash (/) plus cable length expressed in feet. Example: SG/6 = 6 feet of cable.
8. Please refer to Technical Bulletin TB100: When to Choose the CE Option.
9. Not available with 5-pin M12 or 6-pin MS connector. Available with 7-pin MS connector only without Index Z.
10. For Mating Connectors, Cables, and Cordsets see www.encoder.com.
11. HS and P5 outputs not available with CE option, or any End Mount MS Connector.

For specification assistance call Customer Service at 1-800-366-5412

Encoder Products Company • P.O. Box 249 • Sagle, ID 83860-0249 • 1-800-366-5412 • www.encoder.com • sales@encoder.com
**Model 725 Specifications**

**Electrical**
- Input Voltage: 4.75 to 28 VDC max for temperatures up to 70°C
- Input Current: 100 mA max with no output load
- Input Ripple: 100 mV peak-to-peak at 0 to 100 kHz
- 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: 100 mA max per channel
  - Pull-Up: 100 mA max per channel
  - Pull-Up: 20 mA max per channel
  - Line Drive: 20 mA max per channel (Meet RS 422 at 5 VDC supply)
- Index Occurs once per revolution. The index for units >3000 CPR is 90 gated to Outputs A and B. See Waveform Diagrams below.
- Freq Response: Up to 1 MHz
- Noise Immunity: Tested to BS EN61000-4-2; EC801-3; BS EN61000-4-4; DDENV 50141; DDENV 50204; BS EN55022 (with European compliance option); BS EN55081-2
- Symmetry: 1 to 6000 CPR, 180° (±18°) electrical at 100 kHz output
- Quad Phasing: 1 to 6000 CPR, 90° (±22.5°) electrical at 100 kHz output
- Accuracy: Instrument and Quadrature Error: For 200 to 1999 CPR, 0.01° mechanical (0.6 arc minutes) from one cycle to any other cycle. For 2000 to 3000 CPR, 0.017° mechanical (1.0 arc minutes) from one cycle to any other cycle. Interpolation error (units >3000 CPR only) within 0.005° mechanical. (Total Optical Encoder Error = Instrument + Quadrature + Interpolation)
- Mechanical
  - Max Shaft Speed: 6000 RPM. Higher shaft speeds may be achievable, contact Customer Service.
  - Shaft Material: 303 stainless steel
  - Shaft Rotation: Bi-directional
  - Radial Shaft Load: 35 lb max (standing housing)
  - Axial Shaft Load: 45 lb max (standing housing)
  - Starting Torque: 1.5 oz-in typical with IP64 seal or no seal
  - Moment of Inertia: 1 oz-in² typical with IP64 seal or no seal
  - Max Acceleration: 1 x 10⁴ rad/sec²
- Electrical Conn: 6-, 7-, or 10-pin MS Style, 5- or 8-pin M12
- Housing: Black non-corrosive finish
- Mounting: Flange, servo, or 5PY
- Weight: 20 oz typical

**Environmental**
- Operating Temp: 0° to 70°C for standard models
  - 0° to 100°C for high temperature option (0° to 85°C for certain resolutions, see CPR Options.)
- Storage Temp: -25° to 85°C
- Humidity: 95% RH non-condensing
- Vibration: 725N: 10 g @ 50 to 500 Hz
  - 250 g @ 50 to 1000 Hz
- Shock: 725N: 50 g @ 11 ms duration
  - 725N: 75 g @ 11 ms duration
- Sealing: IP50 standard, IP64 and IP68 (NEMA 4 and 4X) optional
- Pull-Up 100 mA max per channel
- Line Drive 20 mA max per channel

**Waveform Diagrams**
- Line Driver and Push-Pull
- Open Collector and Pull-Up

**Wiring Table**

<table>
<thead>
<tr>
<th>Function</th>
<th>Gland</th>
<th>Cable Wire Color</th>
<th>5-pin M12</th>
<th>8-pin M12</th>
<th>10-pin MS</th>
<th>7-pin MS</th>
<th>5-pin MS</th>
<th>8-pin MS</th>
<th>9-pin D-sub</th>
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<tbody>
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<td>F</td>
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<td>F</td>
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<td>+VDC</td>
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<td></td>
</tr>
<tr>
<td>A</td>
<td>White</td>
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<td>A</td>
<td>A</td>
<td>A</td>
<td>D</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>A'</td>
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</tr>
</tbody>
</table>

- CE Option: Cable shield (bare wire) is connected to internal case
- CE Option: Read Technical Bulletin TB111

All dimensions are in inches with a tolerance of +0.005” or +0.01” unless otherwise specified.
Model 758

**Features**
- Standard Size 58 Mounting (58 mm Diameter)
- Up to 30,000 CPR
- 80 lb Max. Axial and Radial Shaft Loading
- High Temperature Option (100° C)
- IP66 Sealing Available

The Model 758 Size 58 Accu-Coder™ is a heavy duty, extremely rugged, reliable, yet compact European standard 58 millimeter diameter encoder, designed for harsh factory and plant floor environments. Shaft loading is no problem for the double-shielded ball bearings; their 80 lb load rating ensures a long operating life. With the optional heavy-duty shaft seal, the Model 758 is rated IP66 (NEMA 4 & 13). Two European standard mounting options are available: Clamping Flange (20 type) or Synchro Flange (26 type). The Model 758 is the perfect replacement encoder for units requiring the European mount.

**Common Applications**
Motion Control Feedback, Machine & Elevator Controls, Food Processing, Robotics, Material Handling, Conveyors, Textile Machines

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### Model 758 Ordering Guide

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

#### Model 758 CPR Options

| MODEL 758 | A      | 21 | S   | 1000 | R   | HV | E | CE |
|-----------|--------|----|-----|------|-----|----|---|--|--|
| 758       | Channel A & B |
| OPERATING TEMPERATURE | 0° to 70° C |
| CYCLES PER REVOLUTION | See CPR Options below for available resolutions. Price adder for CPR >1270 |
| OUTPUT TYPE | 5 - 28V In/Out |
| FREQUENCY RESPONSE |
| NUMBER OF CHANNELS | A | Channel A |
| SEAL | N | No Seal |
| CERTIFICATION | N | None |
| CE Marked | |

For specification assistance call Customer Service at 1-800-366-5412

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**NOTES:**
1. 0° to 85° C for certain resolutions, see CPR Options.
2. Contact Customer Service for index gating options.
3. 24 VDC max for high temperature option.
4. Standard temperature, 60 to 3000 CPR only.
6. For Non-Standard Cable Lengths add a forward slash (/) plus cable length expressed in feet. Example: SG/6 = 6 feet of cable.
7. Please refer to Technical Bulletin TB100: When to Choose the CE Option.
8. For mating connectors, cables, and cordsets, see Electrical Accessory Catalogs on the web at www.encoder.com.
9. Not available with 5-pin M12 connector. Available with 7-pin MS Type Connector only without Index Z.
10. HV and P5 outputs are not available with CE option, or any End Mount MS Connector.
**Model 758 Specifications**

### Electrical

- **Input Voltage**: 4.75 to 28 VDC max for temperatures up to 70°C
- **Input Current**: 0.10 mA max with no output load
- **Input Ripple**: 100 mV peak-to-peak at 0 to 100 kHz
- **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 100 mA max. Push-Pull 20 mA max. Line Driver 20 mA max per channel (Meets RS422 at 5 VDC supply).
- **Index**: Occurs once per revolution. The index for units >3000 CPR is 90° gated to Outputs A and B. See Waveform Diagrams below.
- **Freq Response**: Up to 1 MHz
- **Noise Immunity**: Tested to BS EN61000-4-2; IEC801-3; BS EN61000-4-4; DDENV 50141; DDENV 50204; BS EN65022 (with European compliance option); BS EN61000-4-5; BS EN60061-2
- **Symmetry**: 1 to 6000 CPR: 180° (±18°) electrical at 100 kHz output
  - 6001 to 20,480 CPR: 180° (±36°) electrical
- **Quad Phasing**: 1 to 6000 CPR: 90° (±18°) electrical at 100 kHz output
  - 6001 to 20,480 CPR: 90° (±36°) electrical
- **Min Edge Sep**: 1 to 6000 CPR: 67.5° electrical at 100 kHz output
  - 6001 to 20,480 CPR: 54° electrical
- **Rise Time**: Less than 1 microsecond
- **Accuracy**: Instrument and Quadrature Error: For 200 to 1999 CPR, 0.017° mechanical (1.0 arc minutes) from one cycle to any other cycle. For 2000 to 3000 CPR, 0.01° mechanical (0.6 arc minutes) from one cycle to any other cycle. Interpolation error (units >3000 CPR only) within 0.005° mechanical. (Total Optical Encoder Error = Instrument + Quadrature + Interpolation)

### Mechanical

- **Max Shaft Speed**: 8000 RPM. Higher shaft speeds may be achievable, contact Customer Service.
- **Shaft Size**: 0.250", or 0.375", 6 mm, 10 mm
- **Shaft Rotation**: Bi-directional
- **Radial Shaft Load**: 80 lb max. Rated load of 20 to 40 lb for bearing life of 1.5 x 10^9 revolutions
- **Axial Shaft Load**: 80 lb max. Rated load of 20 to 40 lb for bearing life of 1.5 x 10^9 revolutions
- **Starting Torque**: 1.0 oz-in. typical with IP64 seal or no seal
- **Max. Acceleration**: 1 x 10^3 radians/sec^2
- **Electrical Conn**: Standard: 4-conductor shield (tinned braid) shielded cable. See Cable Standards below.
- **Housing**: Black non-corrosive finish
- **Bearings**: Precision ABEC ball bearings
- **Mounting**: European Standard Clamping Flange (20 Type) and Synchro Flange (26 Type)
- **Weight**: 11 oz typical

### Environmental

- **Operating Temp**: 0° to 70°C for standard models
  - 0° to 100°C for high temperature option
  - 0° to 85°C for certain resolutions, see CPR Options.
- **Storage Temp**: -25° to +85°C
- **Humidity**: 98% RH non-condensing
- **Vibration**: 20 g @ 50 Hz to 500 Hz
- **Shock**: 75 g @ 11 ms duration
- **Sealing**: IP65 (NEMA 13 and 4/4X) shaft seal or IP66 shaft seal

### Wiring Table

- **Gland Cable**:
  - 5-pin M12: Red
  - 8-pin M12: Blue
  - 12-pin M12: Orange
- **Evaluation**:
  - 6-pin M12: Brown
  - 10-pin MS Style: Black

**Waveform Diagrams**

**Open Collector and Pull-Up**

- **Line Driver and Push-Pull**
- **5-pin M12**
- **8-pin M12**
- **12-pin M12**

**Model 758 Clamping Flange 20 Type (A)**

**Model 758 Synchro Flange 26 Type (B)**

All dimensions are in millimeters with a tolerance of ±0.17 mm unless otherwise specified.
Ordering Through a Distributor
Encoder Products Company has distributors across the United States and Canada. Call 800-366-5412 and ask a Customer Service Representative for a distributor in your area.

Part Numbers
Accu-Coder™ part numbers are found on the model Datasheet located at www.encoder.com. Use the appropriate Ordering Guide for your particular model. It is important to specify the complete part number. If you are reordering, the serial number of the unit being replaced will help speed the ordering process. Ordering with incomplete information may delay product delivery. In addition, Encoder Products Company cannot assume responsibility for errors when a part number is incomplete. If you need help creating a part number, contact Customer Service.

Product Lead Time
Standard lead time is 4 to 6 business days. Expedite Service is available upon request. Accessories are generally in stock and available for quick delivery. Contact Customer Service to confirm lead times.

Next Day Express
Single-piece orders for many of our products can ship the next business day without an expedite charge. Contact Customer Service for details.

Expedites Service
One, two, and three working day expedited service is available upon request. Contact Customer Service for applicable expedite charges. Expedited service is done on a “best efforts” basis. In some cases a part shortage or other unforeseen factor may cause an expedited order to ship late. In such a case, the expedite charge is prorated.

Confirming an Order
Confirmation by mail or fax is required for all telephone orders. Please be sure the order is clearly marked “confirmation”. Please check your purchase order against the acknowledgment that Encoder Products Company faxes to you. To ensure accuracy, a Customer Service Representative will check your confirmation against your order.

Change Orders
To change an order, ask for a Customer Service Representative. For faster service, either have your purchase order number or Encoder Products Company’s sales order number available. Service charges are assessed for some changes, including order cancellations. Contact Customer Service to determine applicable charges.

Shipping Methods
Orders will be shipped out by UPS or Federal Express. All shipments are F.O.B. factory.

Consignments & Evaluation Units
If you are a new OEM account or have a new OEM application, consignment or evaluation units may be available for up to 60 days. Contact Customer Service for complete details.

Technical Application Support
Our Technical Support professionals are available to assist you in your application needs - whether its selecting the right encoder for your application, troubleshooting a new installation, or connecting your new encoder to your motion control system.

Custom Design Service
If your application calls for a solution that cannot be solved using off-the-shelf-products, EPC’s Custom Design Service may be just what you need. A simple phone call to Customer Service will put our expertise to work for you.

Expert Cross Reference & Retrofit Service
Encoder Products Company understands the importance of time when you have a machine down. Through its free Cross Reference and Retrofit Service, and thanks to a thorough library of specifications and dimensional information for a wide range of competitive encoders, EPC offers expert assistance for the cross-referencing and/or retrofit replacement of most domestic and foreign optical rotary encoders. In addition, serviceable replacements can often be found for encoders that use other technologies. As a final service, for those hard to find units, EPC can often suggest an alternative approach that will get you back up and running. We have provided an Expert Cross-Reference Service page on our website. It provides you with part numbers of competitors encoders, and compares them with Accu-Coder™ encoders, so that you can begin the cross-referencing process.

Direct Replacements
Encoder Products has identified some of the encoders on the market that are currently hard to find or replace. We have labeled these “Direct Replacement Encoders” and have made a selection available at www.encoder.com.
Warranty/Returns/Repairs

Call Sales/Customer Service at 800-366-5412
EPC is open for business from 8:00 a.m. to 7:30 p.m. Eastern Time
(5:00 a.m. to 4:30 p.m. Pacific Time)

Warranty Policy
Products manufactured by Encoder Products Co., Inc. (EPC International, Inc.), are warranted against defects in materials and workmanship, and are warranted to meet the performance specifications as listed in the current catalog and/or data sheet for the specific product being warranted. This warranty applies to all standard catalog product configurations, with the exception of units with a rated operating temperature exceeding 70°C, for three (3) years following the date of shipment. For units with a rated operating temperature exceeding 70°C the warranty period shall be two (2) years following the date of shipment. During that period, EPC will, at its sole option, repair or replace, at no cost to the customer, products which prove to be defective, provided the defect or failure is not due to misuse or abuse of the product. Any unauthorized attempt to repair the product(s) by the customer, or any unauthorized modifications by the customer, can, at EPC’s sole option, cause this warranty to become null and void. In addition, this warranty does not apply to products that have been subjected to abuse or operated in environments that exceed their design specifications. The customer is responsible for shipment of the defective product to the EPC factory. Software products are supplied on a site license basis subject to the same performance warranty provisions; the materials and workmanship provision applies to the distribution media only. NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION IS EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO WARRANTY FOR MERCHANTABILITY OR FOR FITNESS OF PURPOSE. EPC SHALL, IN NO CASE, BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER. NOTWITHSTANDING, IN ANY CASE, EPC’S LIABILITY SHALL BE LIMITED TO REPAIR, REPLACEMENT, OR PURCHASE PRICE REFUND, AT ITS SOLE OPTION, ONLY AFTER THE RETURN OF SUCH GOODS WITH CONSENT IN ACCORDANCE WITH THE RETURN POLICY AND WITH SHIPPING CHARGES PREPAID. ANY WARRANTY SERVICE (CONSISTING OF TIME, TRAVEL, AND EXPENSES RELATED TO SUCH SERVICES) PERFORMED OTHER THAN AT ENCODER PRODUCTS COMPANY’S FACTORY, SHALL BE AT CUSTOMERS EXPENSE.

Return Policy
Only products currently stocked by Encoder Products Company may be returned for restocking. Products which have been manufactured or configured to customer specifications are not stocked and may not be returned. Returned products are subject to a restocking fee of $25 or 25% of the purchase price, whichever is greater, and must be returned within 30 days of the date shipped from Encoder Products Company.

All products being returned must be 100% complete and must be packaged in ORIGINAL PACKAGING. All packaging materials, manuals, other accessories and documentation must be included in the original packaging. Items sent for return consideration will be denied and Encoder Products Company’s return policy will not be honored, in the event that a return shipment is received by us improperly packaged, altered, or physically damaged. All items will be inspected and tested upon receipt.

A Return Materials Authorization (RMA) number is required for any item returned for credit. Returns should be sent to our Repair Department. RMA numbers may be obtained by contacting Customer Service in advance. RMA numbers will be issued to original purchaser only.

Repair Services
Each Accu-Coder™ manufactured by Encoder Products Company is backed by our best-in-the-industry three year warranty. If you experience a problem, call our trained professionals. We can often troubleshoot a problem over the phone and determine if a repair is needed. If its necessary to return the encoder for repair, our technicians will perform a complete evaluation and recommend a course of action. In an emergency situation our technicians can often have your evaluation and repair completed, and ready for return shipment, within a matter of hours after receiving your encoder.

For non-sales or support matters call between 7:00 a.m. and 2:30 p.m. Pacific Time.
See the complete product line on the Internet at www.encoder.com
## Encoder Accessories

### Mating Connectors and Pre-Wired Cable/Mating Connector Assemblies
EPC stocks an extensive selection of high quality connectors, cables, cable assemblies, and cordsets to optimize encoder performance; most can be ordered with MS style or M12 connectors.

### M12 (12 mm) Cordsets
M12 (12 mm) cordsets are available for use with 5- or 8-pin M12 connectors. Cable lengths may vary.

### Shaft Couplings
EPC’s precision shaft couplings are carefully manufactured to optimize performance, reduce the chance of premature failure, and provide easy installation. We stock a wide range of choices to match your exact shaft size requirements.

### Hubs/Flanges
Hubs and Flanges allow Accu-Coder™ encoders to be easily mounted to industry standard housing styles; NEMA, servo, 5PY, and other styles available.

### Protective Covers
The protective Uni-Cover helps to keep encoders from damage, and allow a wide variety of encoders to be used in harsh environments. The Uni-Cover Kit is equipped with washers and bolts and is compatible with the Models 121, 225, 260, 755A, 702, 775, 776, and 960. It can be mounted on NEMA 4.5" AK motors with a 5.875" bolt hole pattern.

### The Linear Cable Adapter (LCA)
The Linear Cable Adapter (LCA) is used to transform a Cube Series Encoder into a Linear Encoder. It can be mounted to a Standard or Industrial housed Cube, and provides a low cost alternative for obtaining accurate linear measurement.

### Mounting Brackets
The Uni-Bracket adapts the Model 260 or the Model 702 Flex-Mount to fit a standard motor mount with a mounting bolt circle up to 5.875", such as NEMA 4.5" AK mount or IEC equivalent.

**Cube Series Mounting Bracket** are used to mount measuring wheels to Cube and 702 Series Accu-Coders™. Available in two types: single pivot which pivots vertically, and dual pivot which pivots vertically and longitudinally.

**The Tru-Trac™ Mounting Bracket** secures the TR1 to your assembly for perfect linear measurement.

### Measuring Wheels
Often used to obtain linear motion feedback from a rotating shaft, EPC carries measuring wheels in a large range of surface finishes (urethane, rubber, knurled, grooved). See chart in Encoders Measuring Wheel section on the internet, detailing applications and temperatures for proper mating to nearly any surface. Available in a variety of both English and metric circumferences, to provide linear measurement in a host of different manufacturing applications.

### Power Supplies, Anti-Rotational Mounts, RX/TX Converter/Splitter/Repeater
Power Supplies, Anti-Rotational Mounts and RX/TX information can be found in detail at www.encoder.com.

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For the complete line of encoder accessories and ordering information, visit www.encoder.com. Select “Encoder Accessories” under the “Products” pull-down menu.
Who Is Encoder Products Company?

Encoder Products Company is a global manufacturer of Accu-Coder™ Brand Encoders. Established in 1969, we are the largest privately held encoder manufacturer in America. We have concentrated on building reliable, durable, industrial encoders. We believe that every customer deserves a quality product, with superior customer service, and expert support. Delivering a reliable encoder in less than a week, that will last you for years; we hope you will discover the Accu-Coder™ Advantage.

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Website: www.asiaencoder.com

Superior Design
• First To Use Opto-ASIC Technology
• Creators Of The First Cube Encoder
• Creators Of The Original Tru-Trac™

Exceptional Value
We’ve Done Our Homework
There Is No Better Encoder On
The Market For The Price!

Quick Delivery
• Standard Delivery In 4 To 6 Days
• Next Day No Charge Express
• Expedite Delivery Available

Customer Service
A Helpful Customer Service
Representative Is Available From
5:00 am To 4:30 pm Pacific Time

Outstanding Quality
• ISO 9001:2000 Certified
• ISO Consortium (IIC) Members
• RoHS And WEEE Compliance

3 Year Warranty
The Best In The Industry!

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