

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.

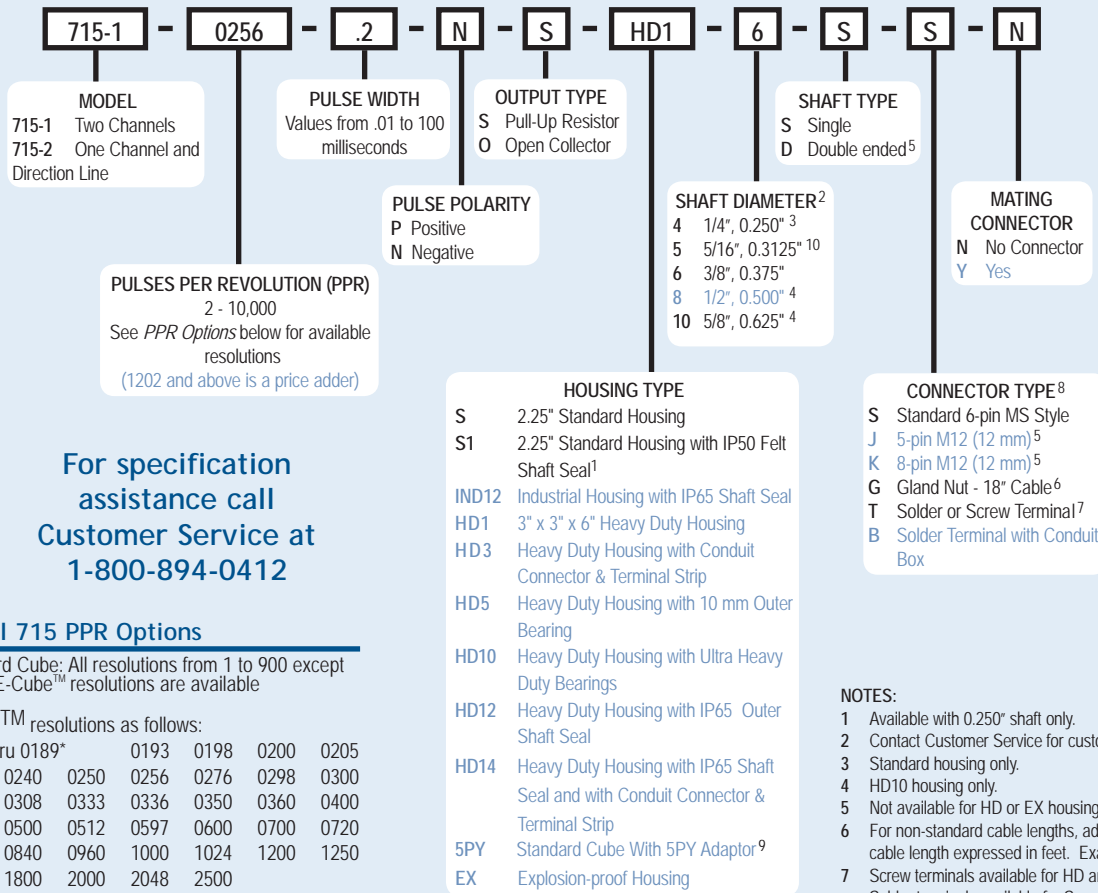
The new E-Cube™ version increases critical performance specifications for the most popular resolutions. The E-Cube™ features advanced Opto-ASIC circuitry, a single chip design that eliminates many board level components. This increases the reliability of an already dependable and durable encoder. With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



For specification assistance call Customer Service at 1-800-894-0412

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	0500	0512	0597	0600
0700	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

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 Mating Connectors, Cables, and Cordsets see Electrical Accessories at www.encoder.com.
- 9 Only available with 5/16" (0.3125") shaft.
- 10 Standard or 5PY housing only.

Model 715 Timed Pulse Cube

Model 715 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° 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 Ripple100 mV peak-to-peak at 0 to 100 kHz

Output FormatIncremental- Square wave with timed output

Output Types.....Open Collector- 250 mA max per channel
Pull-Up- 250 mA max per channel

Freq Response.....E-Cube™- 0 to 125 kHz
Standard Cube- 0 to 20 kHz

Rise Time.....Less than 1 microsecond

AccuracyE-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

Electrical Conn.....5- or 8-pin M12 (12 mm), gland nut with 18" cable (foil and braid shield, 24 AWG conductors), Solder or Screw Terminal, with or without Conduit Box.

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

BearingsPrecision ABEC Ball Bearings

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

Standard Cube Housing (S, S1)

Standard Cube Housing (S, S1) Specifications

Mechanical

Shaft Size.....0.250" or 0.375"

Shaft TypeSingle or double-ended (specify choice)

Radial Loading15 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)

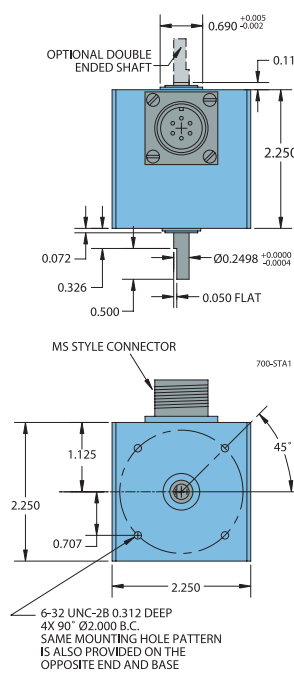
Starting Torque0.13 oz-in typical for 0.250" shaft
0.38 oz-in typical for 0.375" shaft

Moment of Inertia6.5 x 10⁻⁶ oz-in-sec²

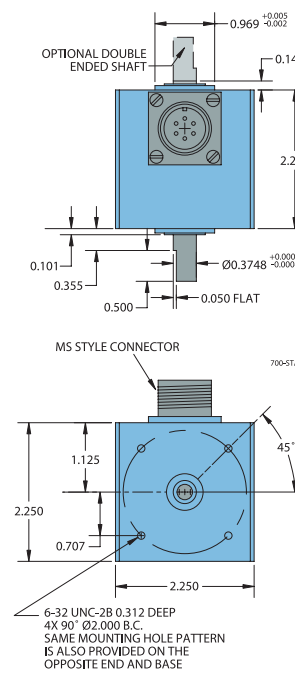
Mounting.....Tapped mounting holes on three sides for base or face mounting

Weight.....10 oz for standard housing

Cube Housing With 1/4" Shaft (4)



Cube Housing With 3/8" Shaft (6)



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

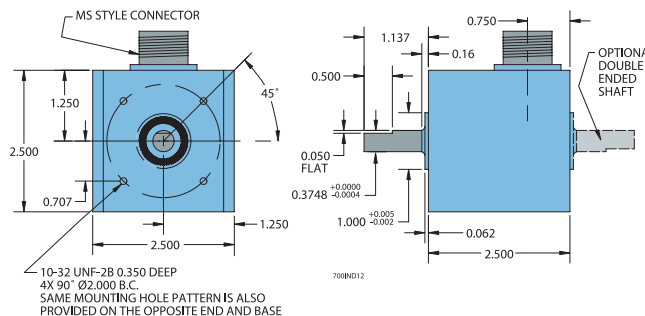
Shaft Size0.375" diameter

Shaft TypeSingle- or Double-Ended Shaft Available

Radial Loading40 lb Maximum

Axial Loading30 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

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

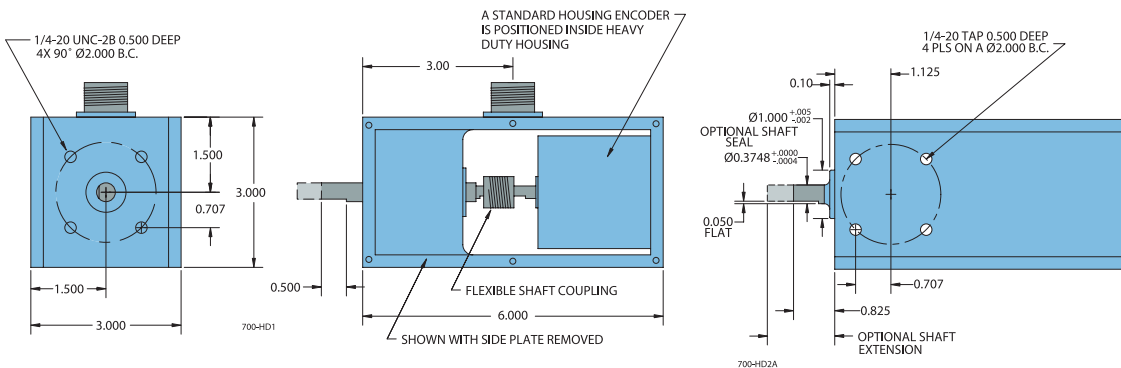
- HD 1 Heavy Duty 3" X 6" housing
- HD 3 Heavy Duty w/conduit connector (threaded for 0.500" NPT Conduit) and terminal strip
- HD 5 Heavy Duty w/10 mm outer bearing
- HD 12* Heavy Duty w/IP65 rated outer shaft seal
- HD 14* Heavy Duty w/IP65 rated outer shaft seal, conduit connector (threaded for 0.500"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

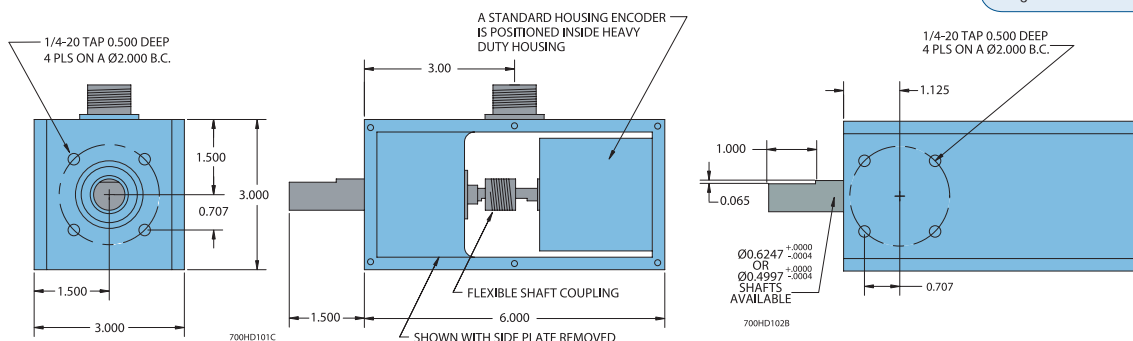
The HD 10 Ultra Heavy Duty encoder is designed for use in applications with severe shaft loading conditions. The HD 10 offers two shaft sizes: 0.500" and 0.625". Shaft material is 303 stainless steel. Bearings are conservatively rated at 95 lb radial and 60 lb axial shaft loading. IP65 shaft seal is 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 $\pm 0.005"$ or $\pm 0.01"$ unless otherwise specified



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Explosion-Proof Housing (EX)

Explosion-Proof Housing (EX) Specifications

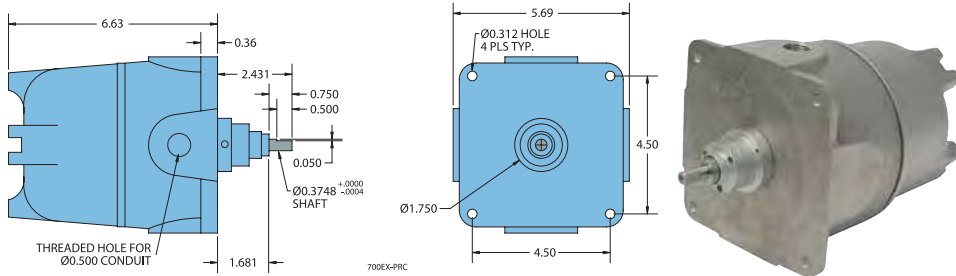
The explosion-proof housing is designed to meet the following:

- 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

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.

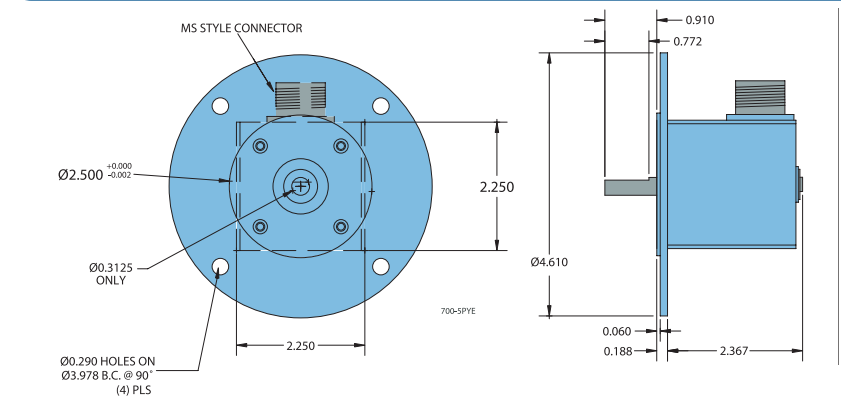


Cube Series Optional 5PY Adapter (175443)

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

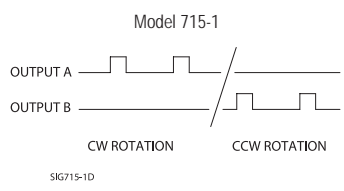
Order standard housing Cube Series Accu-Coder™ with 5/16" shaft and specify Accessory Part #175443. 5PY adapter kit includes all necessary hardware to attach the adapter to the encoder.



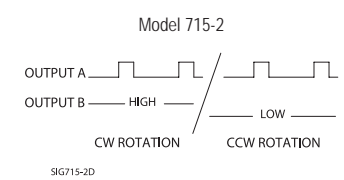
All dimensions are in inches with a tolerance of ±0.005" or ±0.01" unless otherwise specified

Waveform Diagrams

Model 715-1 - Bi-directional Encoder
The 715-1 provides two output channels, one with a constant pulse width output on one channel for clockwise shaft rotation, and on the other channel for counterclockwise shaft rotation. Specify PPR in any even numbered value between 2 and 5000 std cube, or 2 and 10,000 for E-Cube™. Specify any pulse width from 10 microseconds to 100 milliseconds and pulse polarity. Some options require Heavy Duty housing. The Line Driver output option is not available.



Model 715-2 - Bi-directional Encoder
The 715-2 provides two output channels, one channel has a constant pulse width output regardless of shaft rotation. The other channel an up/down direction line with logic level "1" for clockwise shaft rotation, and level "0" for counterclockwise shaft rotation. Options are the same as for the Model 715-1.



Wiring Table

Function	Gland Cable Wire Color	5-pin M12	8-pin M12	6-pin MS	Term. Block
Com	Black	3	7	A, F	1, 6
+VDC	Red	1	2	B	2
A	White	4	1	D	4
B	Blue	2	4	E	5
Shield	Bare	----	----	----	----