

MODEL 715 - INCREMENTAL SHAFT ENCODER



FEATURES

The original industry-standard Cube
Versatile housing styles
Bi-directional, constant pulse width
Resolutions available to 10,000 CPR

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. Critical performance specifications for the most popular resolutions and advanced Opto-ASIC circuitry – a single chip design that eliminates many board level components – increases the reliability of an already dependable and durable encoder. With new options continually being added, the Model 715 excels in a wide variety of industrial applications.

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.

715-1 – 0256 – .2 – N – S – HD1 – 6 – S – S – N

| | | | | |
|--|---|--|---|---|
| MODEL 715-1 Two channels 715-2 One channel and direction line | PULSE WIDTH Values from .01 to 100 milliseconds | OUTPUT TYPE S Pull-Up resistor O Open Collector | SHAFT DIAMETER⁴ 4 1/4", 0.250" ⁵ 5 5/16", 0.3125" ⁶ 6 3/8", 0.375" 8 1/2", 0.500" ⁷ 10 5/8", 0.625" ⁷ | CONNECTOR TYPE⁹ S Standard 6-pin MS J 5-pin M12 (12 mm) ⁸ K 8-pin M12 (12 mm) ⁸ G Gland nut – 18" cable ¹⁰ T Solder or screw terminal ¹¹ B Solder terminal with conduit box |
| PULSES PER REVOLUTION (PPR) 2-10,000 See <i>CPR Options</i> below for available resolutions. (1202 and above is a price adder) | PULSE POLARITY P Positive N Negative | HOUSING TYPE S 2.25" Standard housing S1 2.25" Standard housing with IP50 felt shaft seal ¹ IND12 Industrial housing with IP66 shaft seal HD1 3" x 3" x 6" Heavy Duty housing ² HD3 Heavy Duty housing with conduit connector & terminal strip HD5 Heavy Duty housing with 10 mm outer bearing ² HD10 Heavy Duty housing with ultra heavy duty bearings, 0.625" or 0.500" shaft ² HD12 Heavy Duty housing with IP66 outer shaft seal ² HD14 Heavy Duty housing with IP66 shaft seal and with conduit connector & terminal strip 5PY Standard Cube with 5PY adaptor ³ EX Explosion-proof housing | SHAFT TYPE S Single D Double ended ⁸ | MATING CONNECTOR N No connector Y Yes |

- NOTES:**
- Available with 0.250" shaft only.
 - Only available with 6-pin MS or Screw Terminal Connector Types.
 - Only available with 5/16", 0.3125" shaft.
 - Contact Customer Service for custom shaft lengths and diameters.
 - Standard housing only.
 - Standard or 5PY housing only.
 - HD10 housing only.
 - Not available for HD or EX housings.
 - For mating connectors, cables, and cordsets see Accessories at encoder.com. For Connector Pin Configuration Diagrams, see Technical Information or see Connector Pin Configuration Diagrams at encoder.com.
 - For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: G/6 = 6 feet of cable.
 - Screw terminals available for HD and EX housings. Solder terminals available for S and S1 housings.

Model 716 CPR Options

| | | | | | | | | |
|-----------------|------|------|------|------|------|------|------|------|
| 0001 thru 0189* | 0193 | 0198 | 0200 | 0205 | 0210 | 0240 | 0250 | 0256 |
| 0298 | 0300 | 0305 | 0333 | 0336 | 0350 | 0360 | 0400 | 0480 |
| 0512 | 0600 | 0700 | 0720 | 0800 | 0960 | 1000 | 1024 | 1200 |
| 1270 | 1800 | 2000 | 2048 | 2500 | | | | |

*Contact Customer Service for availability.
Contact Customer Service for other disc resolutions. Not all disc resolutions available with all output types.

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MODEL 715 SPECIFICATIONS

Common to all Cube Housing Styles

Electrical

| | |
|----------------------------|---|
| Input Voltage..... | 4.75 to 28 VDC max for temperatures up to 85° C 4.75 to 24 VDC for temperatures between 85° C and 100° 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 timed output |
| Output Types..... | Open Collector – 250 mA max per channel Pull-Up – Open Collector with 1.5K ohm internal resistor, 250 mA max per channel |
| Max Frequency..... | 0 to 125 kHz |
| Electrical Protection..... | Reverse voltage and output short circuit protected. NOTE: Sustained reverse voltage may result in permanent damage. |
| Rise Time..... | Less than 1 microsecond |
| Accuracy..... | Within 0.05° mechanical from one cycle to any other cycle, or 3 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 |

Environmental

| | |
|---------------------|-----------------------|
| Operating Temp..... | 0° to 85° 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 |

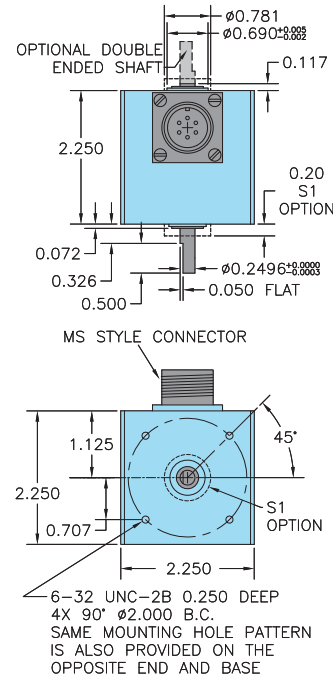
STANDARD CUBE HOUSING (S, S1) SPECIFICATIONS

Mechanical

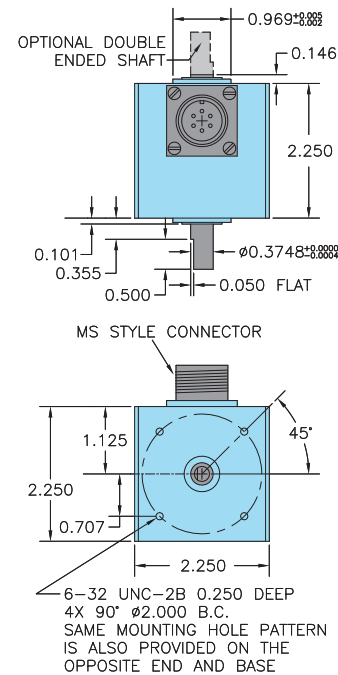
| | |
|------------------------|--|
| Shaft Type..... | Single or double-ended (specify choice) |
| Radial Loading..... | 15 lb maximum (0.250" diameter shaft) 40 lb maximum (0.375" diameter shaft) |
| Axial Loading..... | 10 lb maximum (0.250" diameter shaft) 30 lb maximum (0.375" diameter shaft) |
| Starting Torque..... | .013 oz-in typical for 0.250" shaft .038 oz-in typical for 0.375" shaft |
| Moment of Inertia..... | .65 x 10 ⁻⁶ oz-in-sec ² |
| Weight..... | 10 oz for standard housing |

STANDARD CUBE HOUSING (S, S1)

Cube Housing with 1/4" Shaft (4)



Cube Housing with 3/8" Shaft (6)

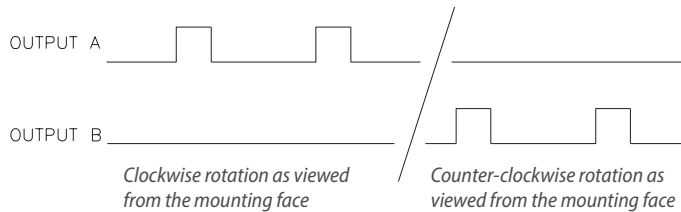


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WAVEFORM DIAGRAMS

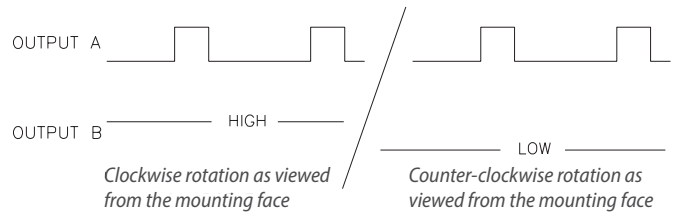
Model 715-1 Bi-Directional Encoder

The 715-1 provides two output channels. A constant pulse width is generated on one channel with clockwise shaft rotation, and on the other channel with counter-clockwise shaft rotation. Specify PPR in any even numbered value between 2 and 10,000. 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 direction. The other channel indicates direction with logic level "1" for clockwise shaft rotation, and level "0" for counter-clockwise shaft rotation. Options are the same as for the Model 715-1.



WIRING TABLE

For EPC-supplied mating cables, refer to wiring table provided with cable.

| 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 | -- | -- | -- | -- |

[†]Standard cable is 24 AWG conductors with foil and braid shield.

CUBE PIVOT MOUNTING BRACKETS

176430-01 Single Pivot

176431-01 Double Pivot

176430-02 Spring Loaded Single Pivot

176431-02 Spring Loaded Double Pivot

Encoder sold separately.

Dual Wheel



Single Wheel (shown with Torsion Spring)

