# MODEL 755A - INCREMENTAL SHAFT ENCODER



Ø1.5"

## FEATURES

Miniature size (1.5" diameter)
Up to 30,000 CPR
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 in this size category.

## COMMON APPLICATIONS

Robotics, Assembly Machines, Motor-Mounted Feedback, Phototypesetters, Printers and 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.

**755A – 07 – S – 1000 – R – HV – 1 – S – S – CE**

**MODEL**
**755A** Model 755A

**SHAFT SIZE[1]**
**07** 1/4", 0.250"
**08** 5 mm
**06** 6 mm
**32** 1/4", 0.250" Servo 1, 2, or 3 only
**20** 6 mm x 0.500"
**19** 1/4", 0.250" x 0.500"

**OPERATING TEMPERATURE**
**S** 0° to 70° C
**L** -40° to 70° C[2]
**H** 0° to 100° C[3]

**CYCLES PER REVOLUTION**
1-30,000
See CPR Options below
Price adder for >1270

**NUMBER OF CHANNELS[4]**
**A** Channel A
***Channel A Leads B***
**Q** Quadrature A & B
**R** Quadrature A & B with Index
***Channel B Leads A***
**K** Reverse Quadrature A & B
**D** Reverse Quadrature A & B with Index

**OUTPUT TYPE**
***5 - 28V In/Out[5]***
**OC** Open Collector
**PU** Pull-Up Resistor
**PP** Push-Pull
**HV** Line Driver[6]
***8 - 28V In/5V Out[7]***
**H5** Line Driver[6, 8]
**P5** Push-Pull[7]

**MAXIMUM FREQUENCY**
**1** Standard 100 kHz
**2** 200 kHz ≤ 3000 CPR
**5** 250 kHz, > 3000 CPR
**3** 500 kHz, > 6000 CPR[9]
**4** 1 MHz, > 10,000 CPR[9]

**MOUNTING & HOUSINGS**
**S** Standard Servo Mount
**MF** Square Flange
**S1** Servo Mount (choose shaft 32)
**S2** Servo Mount (choose shaft 32)
**S3** Servo Mount (choose shaft 32)

**CONNECTOR TYPE[10]**
**S** Standard 18" Cable[11]
**C01** 8-pin Molex
**C02** Terminal Block
**J00** 18" Cable with 5-pin M12[6, 12]
**K00** 18" Cable with 8-pin M12[12]

**CERTIFICATION**
**N** None
**CE** CE Marked[8, 13]

### Model 755A CPR Options

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0001* | 0002* | 0004* | 0005* | 0006* | 0007* | 0008* | 0010* | 0011* |
| 0012* | 0014* | 0020 | 0021* | 0024* | 0025* | 0028* | 0030* | 0032* |
| 0033* | 0034* | 0035* | 0038* | 0040* | 0042* | 0045* | 0050* | 0060 |
| 0064* | 0100 | 0120 | 0125 | 0128* | 0144* | 0150* | 0160* | 0192* |
| 0200 | 0240* | 0250 | 0254* | 0256* | 0300 | 0333* | 0336* | 0360 |
| 0400 | 0500 | 0512 | 0600 | 0625* | 0635 | 0665* | 0720 | 0889 |
| 1000 | 1024 | 1200 | 1204*[a] | 1250[a] | 1270[a] | 1440 | 1500 | 1800 |
| 2000 | 2048 | 2400[a] | 2500 | 2540[a] | 2880[a] | 3000[a] | 3600[a] | 4000[a] |
| 4096[a] | 5000[a] | 6000[a] | 7200[a] | 7500[a] | 9000[a] | 10,000[a] | 10,240[a] | 12,000[a] |
| 12,500[a] | 14,400[a] | 15,000[a] | 18,000[a] | 20,000[a] | 20,480[a] | 25,000[a] | 30,000[a] | |

* Contact Customer Service for High Temperature Option (H).
[a] High Temperature Option (H) limited to 85° C maximum for these CPR options.
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.

**NOTES:**

1 Contact Customer Service for additional options.
2 Low temperature option not available with resolutions of 3000 CPR or higher.
3 0° to 85° C for certain resolutions, see CPR Options.
4 Contact Customer Service for index gating options.
5 24 VDC max for high temperature option.
6 5-pin not available with Line Driver (HV, H5) outputs.
7 Standard temperature, 60 to 3000 CPR only. Not available with 2400 CPR, 2540 CPR, or 2880 CPR.
8 H5 and P5 outputs are not available with CE option.
9 Standard cable lengths only. For details, please refer to Technical Bulletin TB-116: Noise and Signal Distortion Considerations at encoder.com.
10 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.
11 For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: S/6 = 6 feet of cable.
12 Additional cable lengths available. Please consult Customer Service.
13 Please refer to Technical Bulletin TB-100: When to Choose the CE Mark at encoder.com.


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# MODEL 755A - INCREMENTAL SHAFT ENCODER

## MODEL 755A SPECIFICATIONS

**Electrical**

| | |
|---|---|
| Input Voltage | 4.75 to 28 VDC max for temperatures up to 70° C<br>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. |
| Output Types | Open Collector – 100 mA max per channel<br>Pull-Up – Open Collector with 2.2K ohm internal resistor, 100 mA max per channel<br>Push-Pull – 20 mA max per channel<br>Line Driver – 20 mA max per channel (Meets 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. |
| Max Frequency | 100 kHz std; Up to 1 MHz optional. (See Ordering Guide for availability) |
| Electrical Protection | Reverse voltage and output short circuit protected. NOTE: Sustained reverse voltage may result in permanent damage. |
| 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<br>6001 to 20,480 CPR: 180° (±36°) electrical |
| Quad Phasing | 1 to 6000 CPR: 90° (±22.5°) electrical at 100 kHz output<br>6001 to 20,480 CPR: 90° (±36°) |
| Min Edge Sep | 1 to 6000 CPR: 67.5° electrical at 100 kHz output<br>6001 to 20,480 CPR: 54° electrical<br>>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) |

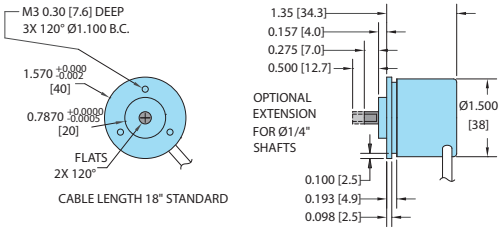
**Mechanical**

| | |
|---|---|
| Max Speed | 7500 RPM. Higher shaft speeds may be achievable, contact Customer Service. |
| Shaft Rotation | Bi-directional |
| Radial Shaft Load | 5 lb |
| Axial Shaft Load | 3 lb |
| Starting Torque | 0.14 oz-in typical<br>4.0 oz-in typical for -40° C operation |
| Moment of Inertia | 2.8 x $10^{-4}$ oz-in-$sec^2$ |
| Housing | Black non-corrosive finish |
| Bearings | Precision ABEC ball bearings |
| Weight | 3.10 oz servo mount, typical |

**Environmental**

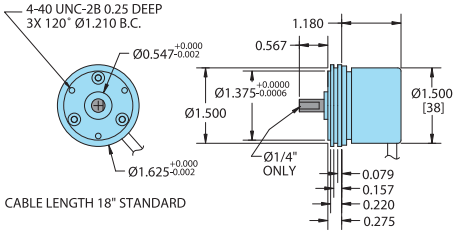
| | |
|---|---|
| Storage Temp | -25° to 85° C |
| Humidity | 98% RH non-condensing |
| Vibration | 10 g @ 58 to 500 Hz |
| Shock | 50 g @ 11 ms duration |

## MODEL 755A STANDARD SERVO MOUNT (S)






## MODEL 755A SERVO MOUNTS (S1 & S2)

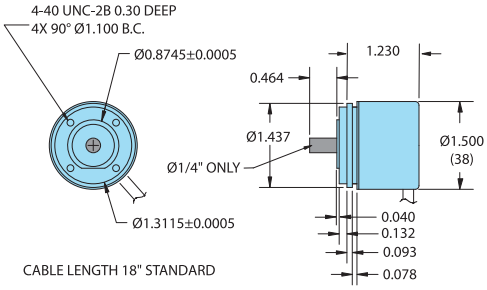






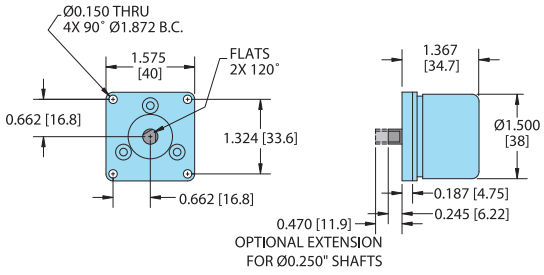
*S1 (left) has a 0.547" boss. S2 (right) has a 0.750" boss.*
*Download drawings at encoder.com*

## MODEL 755A SERVO MOUNTS (S3)






## MODEL 755A 1.575" SQUARE FLANGE (MF)





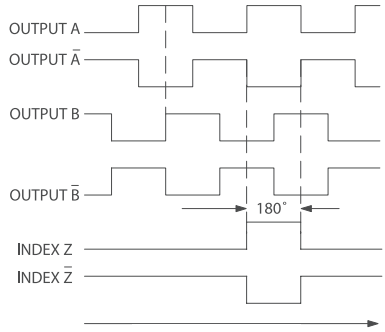

*All dimensions are in inches with a tolerance of ±0.005" or ±0.01" unless otherwise specified. Metric dimensions are given in brackets [mm].*


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# MODEL 755A - INCREMENTAL SHAFT ENCODER

## WAVEFORM DIAGRAMS

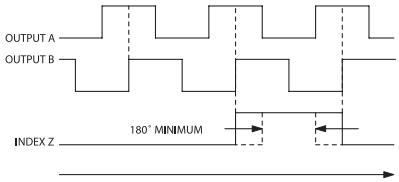
Line Driver and Push-Pull




CLOCKWISE ROTATION AS VIEWED FROM THE MOUNTING FACE

NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES. Waveform shown with optional complementary signals $\overline{A}$, $\overline{B}$, $\overline{Z}$ for HV output only.

Open Collector and Pull-Up




CLOCKWISE ROTATION AS VIEWED FROM THE MOUNTING FACE

NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES. Index is positive going.

## WIRING TABLE

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

| Function | Flying Leads Cable† Wire Color | Terminal Block | 8-pin Molex | 5-pin M12** | 8-pin M12** |
|---|---|---|---|---|---|
| Com | Black | 7 | 2 | 3 | 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* | -- | -- | -- | -- |

* CE Option: Cable shield (bare wire) is connected to internal case.
** CE Option: Use cable cordset with shield connected to M12 connector coupling nut.
† Standard cable is 24 AWG conductors with foil and braid shield.


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