

INCREMENTAL ENCODERS

SERIES E9

Dynapar™ brand

Miniature Encoder

SSM
Servo Small Motor

Key Features

- Super-Compact Modular Encoder for Small Servo and Stepper Motor Feedback
- Integrated ASIC for Enhanced Reliability and Accuracy
- Up to 512 PPR Resolution



SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical
Resolution: 100 to 512 PPR (pulses/revolution)
Symmetry: 180° ±18° electrical
Index: 90° ±36° electrical
Quadrature Phasing: 90° ±18° electrical
Phase Sense: A leads B for CW shaft rotation
Format: See chart below (output waveform & connections)

ELECTRICAL

Input Power: 5 VDC ±10%, 10mA, typ.
Output Signals: 2.5 V min. high (V_{OH}); 0.5 V max. low (V_{OL}). 6 mA sink/source (25°C), 4 mA (100°C)

Frequency Response: 200 kHz
Termination: 5 pin header (accessory 12" wires w/connector, part no. CA0050012) or flying leads
Recommended Mating Connector: AMP part number 103675-4

MECHANICAL

Hub Diameter: 1/8", 5/32", 1.5mm ~ 4.0 mm
Hub Dia. Tolerance: +0.0004"/-0.0000" (+0.010 mm/-0.000 mm)
Mating Shaft Length: See table
Mating Shaft Runout: 0.001 TIR
Mating Shaft Endplay: >256 ppr: ±0.003" (±0.076mm); 250, 256 ppr: +0.005/-0.003" (+0.127/-0.076mm); <250 ppr: +0.007/-0.003" (+0.178/-0.076mm)

Moment of Inertia: 0.15 x 10⁻⁵ oz-in-sec² (0.11 gm-cm²)
Housing and Cover: Plastic
Weight: 0.15 oz (4.14 g)

ENVIRONMENTAL

Operating Temperature: -20° to 100°C
Storage Temperature: -50° to 125°C
Humidity: Up to 90% (non-condensing)

OUTPUT WAVEFORMS & CONNECTIONS

Code 4= 00

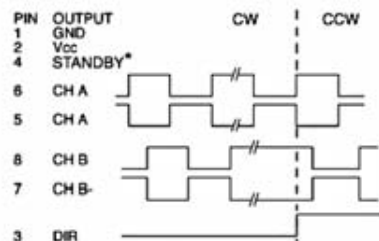


Figure 1

Code 4= 01

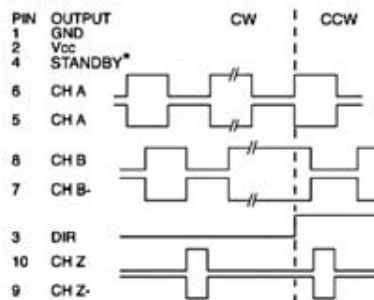


Figure 2

Code 4= 02

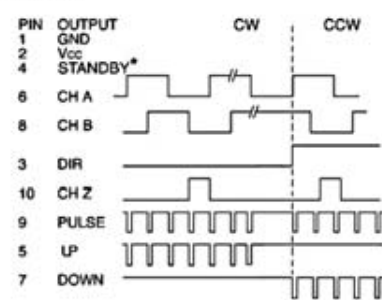


Figure 3

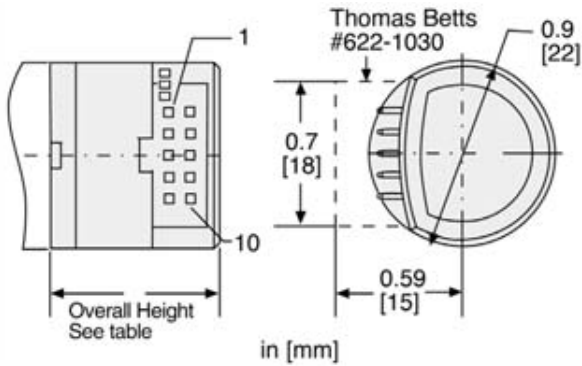
* For operation, connect STANDBY (4) to Vcc (2)



INCREMENTAL ENCODERS

SERIES E9

DIMENSIONS/INSTALLATION



IMPORTANT: To properly install Series E9, a specialized mounting kit must be purchased. Only one kit is required to install any number of encoders with the same hub bore size.

Kit Part Number:

MK E9 Code 3 (from Models Table, above) designating Hub Bore requirement.

Example: Kit for installing encoders with 3.0 mm hub Bore= **MK E9 3.0**

Base (Code 3)	Overall Height inch (MM)	Motor Shaft Length inch (MM)	
		Max.	Min
A	0.795 (20.20)	0.479 (12.16)	0.467 (11.86)
C, D, E	0.929 (23.60)	0.613 (15.56)	0.581 (14.76)

Bases C and D provide clearance for motor-bosses with maximum dimensions of 0.5 in. Dia. x 0.15 in. high. Base E provides clearance for motor-bosses with maximum dimensions of 1.0 in. x 0.15 in. high

ORDERING INFORMATION

To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: PPR	Code 3: Hub Bore	Description	Code 4: Output	Description	Code 5: Mounting	Description
E9	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
Ordering Information							
E9	0.9" Diameter Incremental Modular Encoder	0100	2.0 2.0 mm	00	See Figure 1	0	No mounting base
		0144	2.5 2.5 mm	01	See Figure 2	A	4x M1.6 on 0.728" BC
		0200	3.0 3.0 mm	02	See Figure 3	C	2x #2-56 on 0.75" BC
		0500	4.0 4.0 mm			D	3x #0-80 on 0.823" BC
		0512	125 0.125 in			E	2x #2-56 On 1.812" BC
		Special Order Consult Factory for Lead Time & Price	156 0.156 in				
	0256	Special Order Consult Factory for Lead Time & Price					
	0300	1.5 1.5 mm					
	0360						

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Key Features

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- Integrated ASIC for Enhanced Reliability and Accuracy
- Up to 512 PPR Resolution
- Ideal for Pick and Place Type Machines



SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical
Resolution: 100 to 512 PPR (Pulses/Revolution)
Phasing: 90° ±18° electrical
Symmetry: 180° ±18° electrical
Index Pulse Width: 90° ±36° electrical

ELECTRICAL

Supply Voltage: 5 VDC ±10%
Supply Current: 10 mA, typ.
Output Signals: 2.5 V min. high (V_{OH}); 0.5 V max. low (V_{OL}), 6 mA sink/source (25°C), 4 mA (100°C)
Frequency Response: 200 kHz
Termination: 5 pin header (accessory 12" wires w/connector, part no. CA0050012) or flying leads
Recommended Mating Connector: AMP part number 103675-4

MECHANICAL

Hub Diameter: 1.5, 2.0, 2.5, 3.0, 4.0 mm; 0.125, 0.156 inch
Mounting Configuration: Modular Hollow Bore Mount
Hub Dia. Tolerance: +0.0004"/-0.0000" (+0.010 mm/-0.000 mm)
Mating Shaft Length: See table (page 2)
Mating Shaft Runout: 0.001 TIR
Mating Shaft Endplay: >256 ppr: ±0.003" (±0.076mm); 250, 256 ppr: +0.005/-0.003" (+0.127/-0.076mm); <250 ppr: +0.007/-0.003" (+0.178/-0.076mm)
Moment of Inertia: 0.15 x 10⁻⁵ oz-in-sec² (0.11 gm-cm²)
Housing and Cover: Plastic
Weight: 0.15 oz (4.14 g)

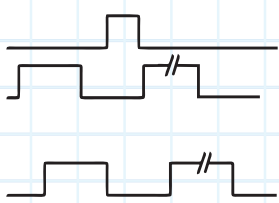
ENVIRONMENTAL

Operating Temperature: -20° to 100°C
Storage Temperature: -50° to 125°C
Humidity: Up to 90% (non-condensing)

OUTPUT WAVEFORMS & CONNECTIONS

PIN	FUNCTION	CABLE WIRE
1	GND	BLACK
2	CH Z	BLUE
3	CH A	WHITE
4	Vcc	RED
5	CH B	BROWN

(Direction CCW viewing encoder cover)

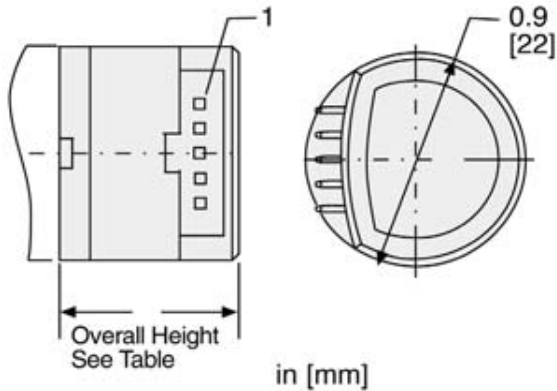




INCREMENTAL ENCODERS

SERIES M9

DIMENSIONS/INSTALLATION



IMPORTANT: To properly install Series M9, a specialized mounting kit must be purchased. Only one kit is required to install any number of encoders with the same hub bore size.

Kit Part Number:

MK M9 Code 4 (from Models Table, above) designating Hub Bore requirement.

Example: Kit for installing encoders with 3.0 mm hub Bore= **MK M9 3.0**

Base (Code 3)	Overall Height inch (MM)	Motor Shaft Length inch (MM)	
		Max.	Min
A	0.583 (14.80)	0.437 (11.10)	0.377 (9.57)
C, D, E	0.717 (18.20)	0.571 (14.50)	0.511 (12.97)

Bases C and D provide clearance for motor-bosses with maximum dimensions of 0.5 in. Dia. x 0.15 in. high. Base E provides clearance for motor-bosses with maximum dimensions of 1.0 in. x 0.15 in. high

ORDERING INFORMATION

To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: PPR	Code 3: Mounting	Description	Code 4: Hub Bore	Description	Code 5: Termination	Description
M9	<input type="text"/>	<input type="text"/>		<input type="text"/>		<input type="text"/>	
Ordering Information							
M9	0.9" Diameter Incremental Modular Encoder	0100/0	0 No mounting base	2.0	2.0 mm	1	5 pin header flying leads
		0200/0		A 4x M1.6 on 0.728" BC,	2.5		
		0256/0	C 2x #2-56 on 0.75" BC	3.0	3.0 mm		
		0500/0	D 3x #0-80 on 0.823" BC	4.0	4.0 mm		
		0512/0	E 2x #2-56 on 1.812" BC	125	0.125 in		
		Special Order Consult Factory for Lead Time & Price		156	0.156 in		
		0300/0		Special Order Consult Factory for Lead Time & Price			
		0360/0		1.5	1.5 mm		