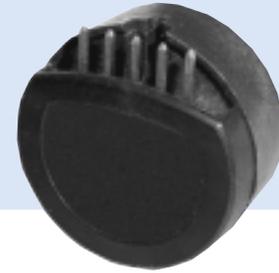


Series M9 Miniature Encoder

- Ideal for position and speed sensing in small machines and actuators
- 200 kHz operating frequency
- Resolution to 512 lines/rev
- CE Qualified



MOTOR MOUNT

APPLICATION/INDUSTRY

With a total length less than 15mm and a very low mass, the M9 series incremental optical encoder is ideally suited for use on the moving heads of pick-and-place type machines.

DESCRIPTION

The M9 may be used as direct replacements for most Hewlett Packard HEDS-5XXX encoders with no changes to the motor or cable.

The M9 provides high performance feedback for precision motion control in a very small package. Its small envelope makes it ideal for instrument axes for position and speed control in mechanisms too small to accept standard encoders. Its high performance, advanced features, and competitive pricing make it the encoder of choice for a broad range of applications.

It utilizes a patent-pending ASIC that integrates all encoder electronics, including the optoelectronic sensors, which enhances reliability and accuracy.

Outputs are single-ended quadrature A and B channels with up to 512 lines per rev plus an index pulse.

SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical
Resolution: Incremental pulses per revolution; 100 to 512
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

Weight: 0.15 oz (4.14 g)
Moment of Inertia: 0.15 x 10⁻⁵ oz-in-sec² (0.11 gm-cm²)
Hub Bore: 1.5, 2.0, 2.5, 3.0, 4.0 mm; 0.125, 0.156 inch
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)

ENVIRONMENTAL

Operating Temperature: -40° to 100°C
Storage Temperature: -50° to 125°C
Relative Humidity: 90% non-condensing

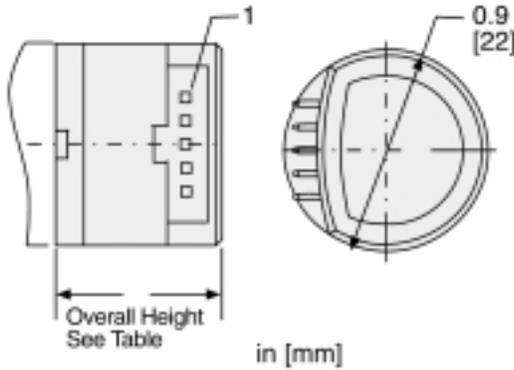
Output Waveforms & Connections

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)

Series M9 Miniature Encoder

Dimensions/Installation



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

MOTOR MOUNT

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="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> /0	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
Ordering Information				
M9 0.9" Diameter Incremental Modular Encoder	0100/0 0144/0 0200/0 0256/0 0300/0 0360/0 0500/0 0512/0	0 No mounting base A 4x M1.6 on 0.728" BC, C 2x #2-56 on 0.75" BC D 3x #0-80 on 0.823" BC E 2x #2-56 on 1.812" BC	1.5 1.5 mm 2.0 2.0 mm 2.5 2.5 mm 3.0 3.0 mm 4.0 4.0 mm 125 0.125 in 156 0.156 in	1 5 pin header 2 flying leads

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**