

Series 31/32



- **Up to 1200 PPR**
- **Compact 2.25" cube shape**
- **Magnetic technology**

The 31/32 QUBE encoder is designed for operation in industrial environments. It resists dust, grease, moisture, and thermal and mechanical shocks, better than many other encoders. The 31/32 QUBE is stable in temperatures from 0° to 70°C.

The 31/32 QUBE generates digital incremental position data proportional to shaft rotation. Through higher mechanical and electronic operating speeds, the 31/32 QUBE can boost system speeds, cycle times, and productivity.

Its general-purpose design makes the 31/32 QUBE compatible with most programmable controllers, electronic counters, motion controllers, and motor drives. The 31/32 QUBE is electrically and physically interchangeable with most cube-style encoders on the market.

Applications

- Measuring, cut-to-length or size for textile, metal, lumber and rubber industries
- Tracking, storage & retrieval, pick & place, conveying, and elevating for material handling applications
- Winding, including films, foils, wire and extrusions
- Measuring mechanical motion for processing, labeling, filling, mixing, batching, and packaging
- Position control, for flexible and automatic assembly equipment
- Speed feedback, for precise drive and machine monitoring and control

Mechanical Features

- Rugged, magnetic transducer design
- Environmentally sealed enclosure
- Large 3/8", 1/4" or 6 mm diameter stainless steel shafts
- Durable anodized aluminum housing with 5/16" thick housing walls
- Extra-wide bearing span with heavy-duty sealed bearings front and rear
- 6000 RPM capability

Electrical Features

- Wide selection of resolutions up to 1200 PPR
- 120 kHz electronic operating speed
- Wide input voltage
- Unidirection or quadrature outputs
- Optional complementary (differential) outputs
- Low current draw

SPECIFICATIONS

Electrical

Code: Incremental

Resolution: 1 to 1200 PPR (pulses/revolution)

Format: Two channel quadrature (AB)

Phase Sense: A leads B for CW shaft rotation as viewed from the shaft end of the encoder farthest from the connector or cable

Quadrature Phasing: 90° ± 18° electrical

Symmetry: 180° ± 18° electrical

Waveforms: Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

Input Power:

4.5 min. to 26 VDC max. at 80 mA max., not including output loads

Outputs:

7273 Open Collector: 30 VDC max., 40 mA sink max.

7272 Push-Pull and Differential Line Driver: 40 mA sink or source

Frequency Response: 120 kHz min.

Electrical Protection: Overvoltage, reverse voltage and output short circuit protected

Noise Immunity: Tested to EN50082-2 (Heavy Industrial) for Electro Static Discharge, Radio Frequency Interference, Electrical Fast Transients, Conducted and Magnetic Interference

Mating Connector:

6 pin, style MS3106A-14S-6S (MCN-N4)

7 pin, style MS3106A-16S-1S (MCN-N5)

Cable Termination: PVC jacket, 105 °C rated, overall foil shield; 3 twisted pairs 26 AWG (output signals), plus 2 twisted pairs 24 AWG (input power)

Mechanical

Shaft Loading: 40 lbs. radial, 30 lbs. axial

Shaft Speed: 6,000 RPM max.

Shaft Tolerance: Nominal -0.0003"/-0.0007"

Starting Torque: 2.5 oz-in max.

Moment of Inertia: 9.0 x 10⁻⁴ oz-in-sec²

Weight: 14 oz. max.

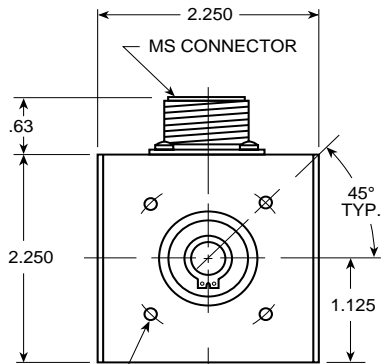
Environmental

Operating Temperature: 0 to +70 °C;

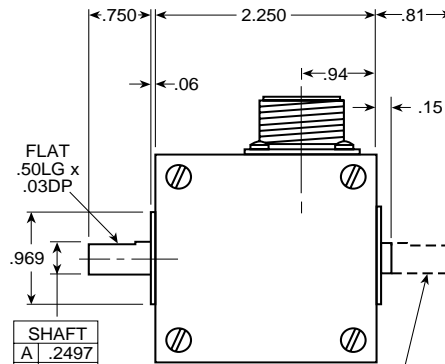
Storage Temperature: -40 to +90 °C

Enclosure: Environmentally sealed

Approximate Dimensions (in inches)

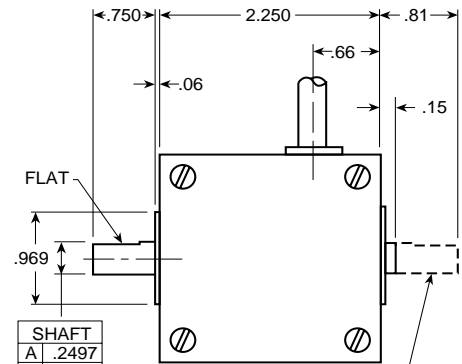


6-32 UNC-2B THREADS x .187 DEEP ON 2.00 DIA. B.C., 4 HOLES ON 3 FACES (FRONT, REAR & BOTTOM).
FOR MODELS 32M ONLY: M3 x 0.5^{6H} THREADS x 5mm DEEP ON A 50.8mm DIA. B.C. ON (3) FACES



OPTIONAL DOUBLE-ENDED SHAFT

Prewired Cable Models



OPTIONAL DOUBLE-ENDED SHAFT

Table 1 – Current Sink Output

Pin	Function	Wire* Color Code	Color Code** Cable Accessory
Current Sink Output			#14006070010
A	Common	BLK	BLK
B	Power Source	RED	RED
C	Case (Ground)	GRN	GRN
D	Signal A	BRN	BRN
E	Signal B	ORN	ORN
F	Supply Common	BLK	BLK

Table 2 – 7-Pin Line Driver

Pin	Function	Wire* Color Code	Color Code** Cable Accessory
7-Pin Line Driver Output			#14004310010
A	Signal A	BRN	RED
B	Signal B	ORN	BLU
C	Signal \bar{A}	BRN/WH	YEL
D	Power Source	RED	WHT
E	Signal \bar{B}	ORN/WH	GRN
F	Common	BLK	BLK
G	Case (Ground)	GRN	SHIELD

Table 3 – 6-Pin Line Driver

Pin	Function	Wire* Color Code	Color Code** Cable Accessory
6-Pin Line Driver Output			#14006640010
A	Common	BLK	BLK
B	Power Source	RED	RED
C	Signal A	BRN	BRN
D	Signal \bar{A}	BRN/WH	BRN/WH
E	Signal B	ORN	ORN
F	Signal \bar{B}	ORN/WH	ORN/WH

* Wire color codes are referenced here for models that are specified with prewired cable.

** Mating connector/cable assembly described in the Encoder Accessories section of this catalog. Color-coding information is provided here for reference.

Ordering Information

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

Code 1: Model	Code 2: Pulses/Rev	Code 3: Mechanical	Code 4: Output	Code 5: Electrical	Code 6: Termination
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31 Qube Encoder, Unidirectional	0001 0025 0002 0030 0003 0050	0 3/8" Double Ended Shaft 1 3/8" Single Ended Shaft	0 Single Ended, Table 1 2 Differential, Table 2	available when Code 4 is 0: 0 5-26V in, 5-26V Open Collector w/2.2k pull-up out	0 MS Connector 1 18" Cable 2 3' Cable 3 6' Cable 4 10' Cable 5 15' Cable
32 Qube Encoder, Bidirectional	0004 0060 0005 0100 0006 0120	2 1/4" Double Ended Shaft 3 1/4" Single Ended Shaft	available when Code 6 = 0: 4 Differential, Table 3	1 5-26V in, 5-26V Open Collector w/o pull-up out 2 5-26V in, 5V Totem pole out	
32M Metric Qube Encoder, Bidirectional	0007 0200 0008 0250 0009 0300 0010 0500 0012 0600 0015 1000 0018 1200 0020	available when Code 1 = 32M: 4 6mm Double Ended Shaft 5 6mm Single Ended Shaft		available when Code 4 is 2 or 4: 3 5-26V in, 5V Line Driver out 4 5-26V in, 5-26V Line Driver out	