

SERIES 22

Dynapar™ brand

“QUBE” Encoder

Key Features

- New phased-array ASIC sensor
- Double the shaft loading of previous Qube
- Expanded resolution up to 3600PPR
- New IP67 sealing option
- Unbreakable code disc



SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental

Resolution: 1 to 3600 PPR (pulses/revolution)

Format: Two channel quadrature (AB) with optional Index (Z), and complementary outputs

Phase Sense: A leads B for CW shaft rotation when viewing the shaft farthest from connector or cable

Quadrature Phasing:

For resolutions to 625PPR: $90^\circ \pm 15^\circ$ electrical;

For resolutions over 625 PPR: $90^\circ \pm 30^\circ$ electrical

Symmetry:

For resolutions to 1024PPR: $180^\circ \pm 18^\circ$ electrical

For resolutions over 1024PPR: $180^\circ \pm 25^\circ$ electrical

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

ELECTRICAL

Input Power: 5-26VDC; 75 mA max., not including output loads.

Outputs: ET7272, ET7273

Frequency Response: 125 kHz (data & index)

CONNECTIONS

Mating Connector:

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

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

5 pin, style M12: Cable with connector available

8 pin, style M12: Cable with connector available

MECHANICAL

Shaft Loading: 80 lbs. radial, 80 lbs. axial

Shaft Speed: 6,000 RPM max.

Shaft Tolerance: Nominal $+0.005''/-0.002''$

Starting Torque: 2.5 oz-in max.; w/shaft seals: 4.0 oz-in max.; w/double shaft seal: 6.0 oz-in max.

Weight: 14 oz. max.

ENVIRONMENTAL

Operating Temperature: -40 to $+100^\circ\text{C}$

Storage Temperature: -40 to $+100^\circ\text{C}$

Shock: 100Gs for 100 milliseconds duration

Vibration: 5 to 2000 Hz at 20Gs

Enclosure Rating: IP67 with shaft seals

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
□ □ □	□ □ □ □	□	□	□	□

Ordering Information						
22 Qube Encoder, Bidirectional	0001	0360	available only when Code 1 is 22	0 Single Ended, Table 1	available when Code4 = 0, 1, 5, 6, 7 or 8: 0 5-26 VDC in, 5-26 VDC Open Collector w/2.2k pull-ups out 1 5-26 VDC in, 5-26 VDC Open Collector w/o pull-up out 2 5-26 VDC in, 5V Totem Pole out	0 MS Connector
	0010	0500		2 Differential, Table 2		available when Code 3 is 1, 2, 3, 4 or 5
22M Metric Qube Encoder, Bidirectional	0012	0512	0 3/8" Double ended shaft	available only when Code 1 is 22 or 22M:	available when Code4 = 2, 3, 4, 9 or A: 3 5-26 VDC in, 5V Line Driver out 4 5-26 VDC in, 5-26 VDC CMOS Line Driver	1 18" Cable
	0024	0600	1 3/8" Single ended shaft	1 Single Ended, with Index, Table 3		2 3' Cable
	0025	0625	2 1/4" Double ended shaft	available only when Code 6 is 1 to 5 or A to E:		3 6' Cable
	0035	0720	3 1/4" Single ended shaft	3 Differential, with Index, Table 5		4 10' Cable
	0040	0800	A Same as "0" with shaft seal	available only when code 6 is 0:		5 15' Cable
	0050	1000	B Same as "1" with shaft seal	4 Differential, Table 4		available when Code 4 is 5, 6, 7, 8, 9 or A
	0060	1024	C Same as "2" with shaft seal	available only when Code 6 is 6:		6 M12 Connector
	0100	1200	D Same as "3" with shaft seal	5 5 pin M12 connector, single ended, no index, Table 6		available when Code 3 is A,B,C,D,E or F
	0120	1250	available only when Code 1 is 22M	6 5 pin M12 connector, single ended, with index, Table 6		A 18" Sealed Cable
	0125	1270	4 6mm Double ended shaft	7 8 pin M12 connector, single ended, no index, Table 7		B 3' Sealed Cable
	0150	1440	5 6mm Single ended shaft	8 8 pin M12 connector, single ended, with index, Table 7		C 6' Sealed Cable
	0192	2000	E Same as "4" with shaft seal	9 8 pin M12 connector, differential, no index, Table 8		D 10' Sealed Cable
	0200	2048	F Same as "5" with shaft seal	A 8 pin M12 connector, differential, with index, Table 8		E 15' Sealed Cable
	0240	2500				
0250	2540					
0256	2600					
0300	3600					

10 foot Cable Assemblies with MS Connector

- 1400607-0010 6 Pin MS, Cable Assy. For Use with Single Ended Outputs
- 108241-0010 6 Pin MS, Cable Assy. For Use with Single Ended w/Index Outputs
- 1400664-0010 6 Pin MS, Cable Assy. For Use with Differential Line Driver Outputs
- 1400431-0010 7 Pin MS, Cable Assy. For Use with Differential Line Driver Outputs

15 foot Cable Assemblies with M12 Connector

- 112859-0015 5 Pin M12, Cable Assy. For Use with Single Ended Outputs
- 112860-0015 8 Pin M12, Cable Assy. For Use with Single Ended Outputs
- 112860-0015 8 Pin M12, Cable Assy. For Use with Differential Line Driver Outputs

Mating Connectors (no cable)

- 6 pin, style MS3106A-14S-6S (MCN-N4)
- 7 pin, style MS3106A-16S-1S (MCN-N5)

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ELECTRICAL CONNECTIONS

MS Connector Accessory Cables - when Code 4= 0 to 4

Table 1 – Current Sink Output

Pin	Function	Wire Color Code	Cable Acc'y #14006070010 Color Code
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 Output

Pin	Function	Wire Color Code	Cable Acc'y #14004310010 Color Code
A	Signal A	BRN	RED
B	Signal B	ORN	BLU
C	Signal \bar{A}	BRN/WHT	YEL
D	Power Source	RED	WHT
E	Signal \bar{B}	ORN/WHT	GRN
F	Common	BLK	BLK
G	Case (Ground)	GRN	

Table 3 – Current Sink Output w/Marker

Pin	Function	Wire Color Code	Cable Acc'y #108241-0010 Color Code
A	Common	BLK	BLK
B	Power Source	RED	RED
C	Signal Z	YEL	GRN
D	Signal A	BRN	BRN
E	Signal B	ORN	ORN
F	Common	BLK	BLK

Table 4 – 6-Pin Line Driver

Pin	Function	Wire Color Code	Cable Acc'y #14006640010 Color Code
A	Common	BLK	BLK
B	Power Source	RED	RED
C	Signal A	BRN	BRN
D	Signal \bar{A}	BRN/WHT	BRN/WHT
E	Signal B	ORN	ORN
F	Signal \bar{B}	ORN/WHT	ORN/WHT

Table 5 – Cable termination Line Driver Output with Marker

Function	Wire Color Code
Signal A	BRN
Signal B	ORN
Signal Z	YEL
Power Source	RED
Supply Common	BLK
Case (Ground)	GRN
Signal \bar{A}	BRN/WHT
Signal \bar{B}	ORN/WHT
Signal \bar{Z}	YEL/WHT

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

5 & 8 Pin M12 Accessory Cables - when Code 4= 5 to 9 and A

Connector pin numbers and cable assembly wire color information is provided here for reference.

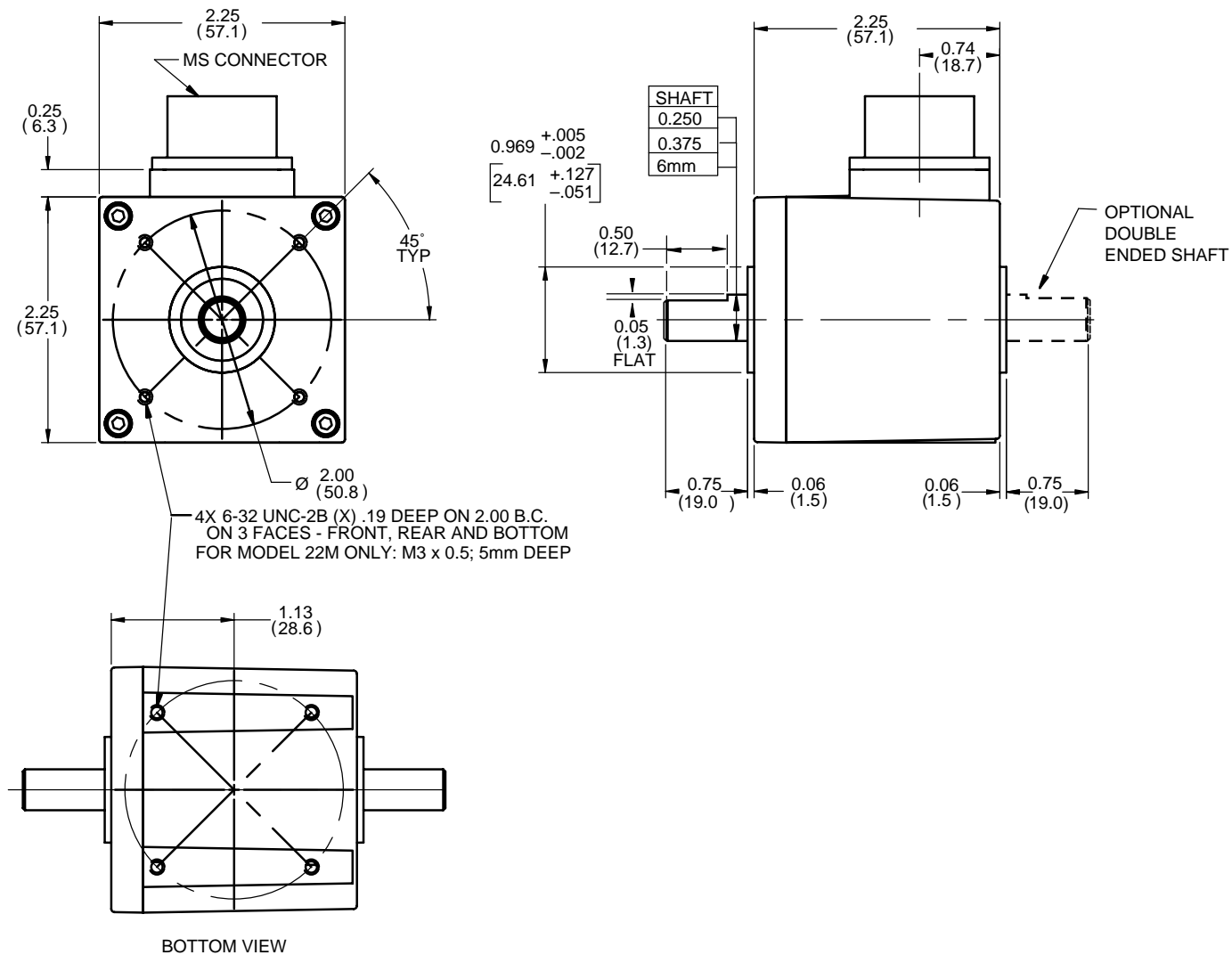
Encoder Function	Table 6 5 Pin Single Ended		Table 7 8 Pin Single Ended		Table 8 8 Pin Differential	
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color
Sig. A	4	BLK	1	BRN	1	BRN
Sig. B	2	WHT	4	ORG	4	ORG
*Sig. Z	5	GRY	6	YEL	6	YEL
Power +V	1	BRN	2	RED	2	RED
Com	3	BLU	7	BLK	7	BLK
Sig. \bar{A}	–	–	–	–	3	BRN/WHT
Sig. \bar{B}	–	–	–	–	5	ORG/WHT
*Sig. \bar{Z}	–	–	–	–	8	YEL/WHT

* Index not provided on all models. See ordering information

Cable Configuration: PVC jacket, 105 °C rated, overall foil shield; 24 AWG conductors, minimum

See “Accessories” Section for Connectors and Cable Assemblies Ordering Information

DIMENSIONS inches [mm]



Worldwide Brands: NorthStar™ • Acuro™ • Dynapar™ • Hengstler™ • Harowe™

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