SERIES 22

Dynapar™ brand

"QUBE" Encoder

Key Features

- **Economical Anodized Housing**
- **Dual Shaft Output Option**
- **Up to 1270PPR with Optional Index**

RoHS

SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental

Resolution: 1 to 1270 PPR (pulses/revolution)

Accuracy: (Worst case any edge to any other edge) ±2.5 arc-min.

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

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

Index: 225° ± 90° electrical (active high)

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

ELECTRICAL

Input Power:
4.5 min. to 26 VDC max. at 110 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. data, 50 kHz min. 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: 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: 1.3 x 10^{-4} oz–in–sec^2

Weight: 14 oz. max.

ENVIRONMENTAL

Operating Temperature: 0 to +70 °C;

Storage Temperature: –40 to +90 °C

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SERIES 22

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 **22M** Metric Qube Encoder, Bidirectional	**0001** **0360** **0010** **0400** **0050** **0480** **0060** **0500** **0100** **0512** **0120** **0600** **0125** **0720** **0150** **0800** **0180** **0900** **0192** **1000** **0200** **1024** **0250** **1200** **0256** **1250** **0300** **1270**	**0** 3/8" Double Ended Shaft **1** 3/8" Single Ended Shaft **2** 1/4" Double Ended Shaft **3** 1/4" Single Ended Shaft available when Code 1 = 22M: **4** 6mm Double Ended Shaft **5** 6mm Single Ended Shaft	**0** Single Ended, Table 1 **2** Differential, Table 2 available only when code 6 is 0: **4** Differential, Table 4 available only when Code 1 is 22 or 22M: **1** Single Ended, with Index, Table 3 available only when Code 6 is 1 to 5: **3** Differential, with Index, Table 5 available only when Code 6 is 6: **5** 5 pin M12 connector, single ended, no index, Table 6 **6** 5 pin M12 connector, single ended, with index, Table 6 **7** 8 pin M12 connector, single ended, no index, Table 7 **8** 8 pin M12 connector, single ended, with index, Table 7 **9** 8 pin M12 connector, differential, no index, Table 8 **A** 8 pin M12 connector, differential, with index, Table 8	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 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	**0** MS Connector **1** 18" Cable **2** 3' Cable **3** 6' Cable **4** 10' Cable **5** 15' Cable available when Code 4 = 5, 6, 7, 8, 9 or A: **6** M12 Connector

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)

SERIES 22

by DYNAPAR™

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/BLK	GRN
D	Signal A	GRN	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	GRN	RED
B	Signal B	ORN	BLU
C	Signal $\overline{A}$	RED/BLK	YEL
D	Power Source	RED	WHT
E	Signal $\overline{B}$	WHT/BLK	GRN
F	Common	BLK	BLK
G	Case (Ground)	GRN/BLK	

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	WHT	GRN
D	Signal A	GRN	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	GRN	BRN
D	Signal $\overline{A}$	RED/BLK	BRN/WHT
E	Signal B	ORN	ORN
F	Signal $\overline{B}$	WHT/BLK	ORN/WHT

Table 5 – Cable termination Line Driver Output with Marker

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

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.

	Table 6 5 Pin Single Ended		Table 7 8 Pin Single Ended		Table 8 8 Pin Differential	
Encoder Function	Cable # 112859-		Cable # 112860-		Cable # 112860-	
	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. $\overline{A}$	–	–	–	–	3	BRN/WHT
Sig. $\overline{B}$	–	–	–	–	5	ORG/WHT
*Sig. $\overline{Z}$	–	–	–	–	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

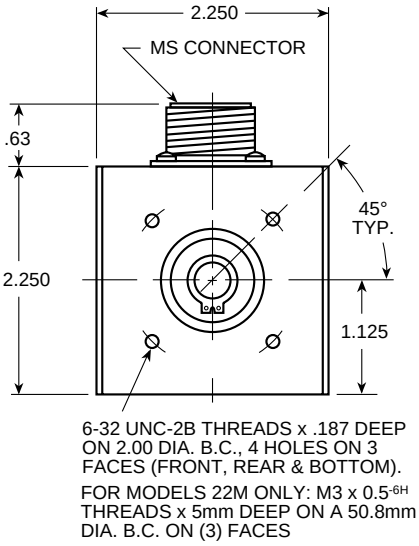
See "Accessories" Section for Connectors and Cable Assemblies Ordering Information

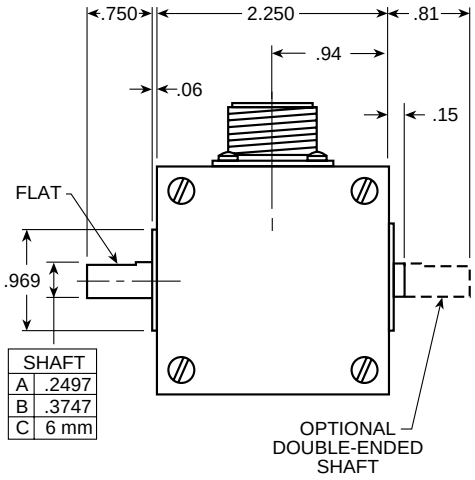
Dynapar™ brand SERIES 22

DIMENSIONS

MS Connector Models

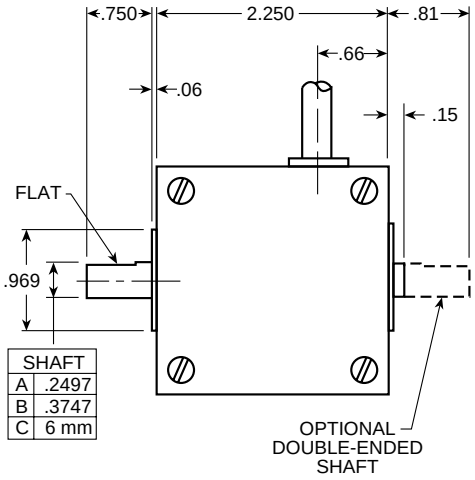
Approximate Dimensions (in inches)





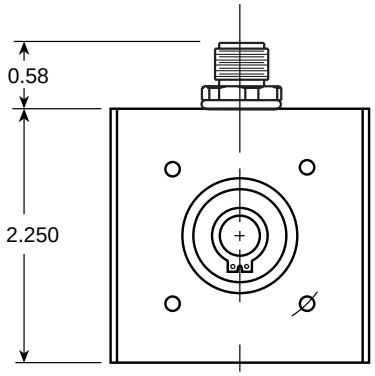
SHAFT	
A	.2497
B	.3747
C	6 mm

Prewired Cable Models



SHAFT	
A	.2497
B	.3747
C	6 mm

M12 Connector Models



DYNAPAR™
INNOVATION - CUSTOMIZATION - DELIVERY

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