

QR145

DESIGN FEATURES

- 500 kHz fundamental frequency response
- Low profile, 0.87" assembled height
- Bearing design simplifies encoder attachment
- Resolutions up to 5000 lines per revolution direct read
- 4, 6 or 8 pole commutation
- Conductive carbon fiber housing
- Standard 1.812" bolt circle mounting
- Through shaft sizes up to 0.375" diameter
- High noise immunity
- Cost competitive with modular encoders

APPLICATIONS

- Servo Motors
- Robotics
- Medical
- Packaging
- XY Gantry



Quantum Devices, Inc. Model QR145 provides an improved feedback solution in applications typically using modular encoders. With an overall height of only 0.87" and the stability of a bearing encoder design, the model QR145 can provide significant performance upgrades in applications limited by traditional modular encoder solutions. Outputs consist of a quadrature with reference pulse and three-phase commutation, which can be configured with either the industrial standard 5 volt RS422A line driver or the 5 to 26 volt OL7272 line driver. A flexible member allows for much greater tail shaft run out than can be tolerated by modular encoder designs, plus it provides 30 degrees of rotation for commutation timing. A housing constructed of conductive carbon fiber composite provides the EMI shielding of an all metal housing and the performance of a lightweight robust assembly.



Configuration Options:

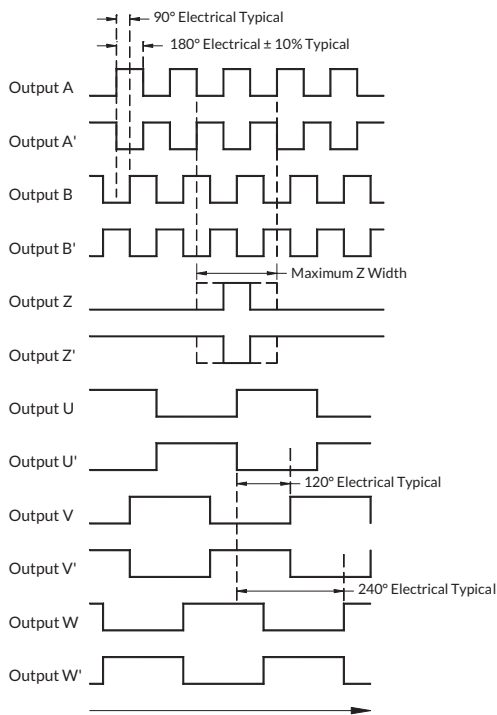
Voltage	Resolution*	Commutation	Output	Bore Size	Mounting	Index Gating
05/05 = 5VDC 05/26 = 5-26VDC	120, 200, 250, 256, 360, 500, 512, 600, 635, 800, 1000, 1024, 1250, 2000, 2048, 2500, 3000, 3600, 4096, 5000	0 = No Comm 4 = 4 Pole 6 = 6 Pole 8 = 8 Pole	01 = Line Driver 02 = 5-26VDC Line Driver 03 = TTL 04 = Line Driver ABZ / Open Collector UVW	T1 = .25" T2 = .312" T3 = .375" T4 = 6mm T5 = 8mm T6 = 10mm T1 1 = 5mm T1 2 = 4mm T1 8 = .1875"	01 = 1.812" 02 = Size 15 Resolver 03 = IP66 Sealed Housing 04 = 1.575" 06 = Inverted 1.575" 07 = Inverted 1.812"	00 = Ungated 01 = 180° gated to A 02 = 90° gated to A & B

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ISO 9001
CERT. NO. FM 52711

* Consult Factory for Resolution and Pole Count Availability.

OUTPUT WAVEFORMS



Clockwise Shaft Rotation as Viewed Looking at the Encoder Face
See figure below

Note: TTL Output Option consists of +VDC, Common, Case Ground and Outputs A, B & Z wires only

QD145 WIRING DIAGRAM

Red - +VDC	Violet - Output U
Black - Common	Gray - Output U'
Brown - Output A	Brown/White - Output V
White - Output A'	Red/White - Output V'
Blue - Output B	Orange/White - Output W
Green - Output B'	Yellow/White - Output W'
Orange - Output Z	Black/White - Case Ground
Yellow - Output Z'	Drain Wire - Cable Shield

ELECTRICAL SPECIFICATIONS

Input Voltage	5 VDC \pm 5% or 5-26 VDC
Input Current Requirements	125mA typical @ 5VDC plus interface loads
Input Ripple	2% peak to peak @ 5 VDC
Output Circuits	AM26LS31 RS 422A line driver OL7272 high voltage line driver TTL output
Incremental Output Format	Quadrature with A leading B for CW rotation with index pulse centered over A for 2500 line count and below. Index pulse true over A and B high for 2500 line count and above
Frequency Response	500 kHz
Symmetry	180 degrees \pm 10% typical
Minimum Edge Separation	54 electrical degrees
Commutation Format	Three phase 4, 6 or 8 poles
Commutation Accuracy	\pm 1° mechanical

ENVIRONMENTAL SPECIFICATIONS

Storage Temperature	-40 to 125° C
Operating Temperature	-20 to 100° C typical -20 to 120° C optional**
Humidity	98% Non-condensing
Vibration	20 g's @ 50 to 500 CPS
Shock	50 g's @ 11mS duration

MECHANICAL SPECIFICATION

Maximum Shaft Speed	8000 RPM
Through Shaft Diameter	0.1875", 0.250", 0.3125", 0.375", 4mm, 6mm, 8mm, 10mm, 5mm (-0.0000, +0.0005)
Radial Shaft Movement	0.007" TIR
Axial Shaft Movement	\pm 0.030"
Housing	Carbon fiber composite (case ground via cable)
Housing Volume Resistivity	10^{-2} ohm-cm
Termination	15 conductor cable, 28 AWG 18" long, 9 conductor cable for non-commutated and TTL outputs
Mounting	1.812" bolt circle
Moment of Inertia	1.5×10^{-4} oz-in-S ²
Acceleration	1×10^5 radians/S ²
Accuracy	\pm 1.0 arc minute

**Contact factory for more information

