Quantum Devices, Inc.

"Improving the Quality of Life through the Power in Light"

QPhase™

QD145 (1.45") Diameter Optical Encoder

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

Description:

Quantum Devices, Inc. Model QD145 provides an improved feedback solution in applications typically using modular encoders. With an over all height of just only 0.87" and the stability of a bearing encoder design, the model QD145 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.

Ordering Information:

QD145-05/05-1000-6-01-T3-01-02

Construction
QD145 = Non-RoHS
QR145 = RoHS

Voltage
05/05 = 5VDC +/-5%
05/26 = 5-26VDC

***Resolution**
200
250
256
500
512
600
1000
1024
1250
2000
2048
2500
4096
5000

***Motor Poles**
0 = No Com
4 = 4 Pole
6 = 6 Pole
8 = 8 Pole

Output Option
01 = RS422A Line Driver
02 = OL7272 5-26VDC
03 = TTL Output
04 = RS422A for A, B, Z; Open Collector for U, V, W

Bore Size
T1 = 0.250"
T2 = 0.312"
T3 = 0.375"
T4 = 6mm
T5 = 8mm
T6 = 10mm
T11 = 5mm
SS = Special

Mounting
01 = STD 1.812" Flex
02 = Size 15 Resolver Mount
03 = Sealed Housing
04 = STD 1.575" Flex
SS = Special

Index Gating
Blank = Ungated Index
01 = Gated to A, 180°
02 = Gated to A & B, 90°

** Consult Factory for Resolution and Pole Count Availability.*

ISO 9001
CERT. NO. FM 52711

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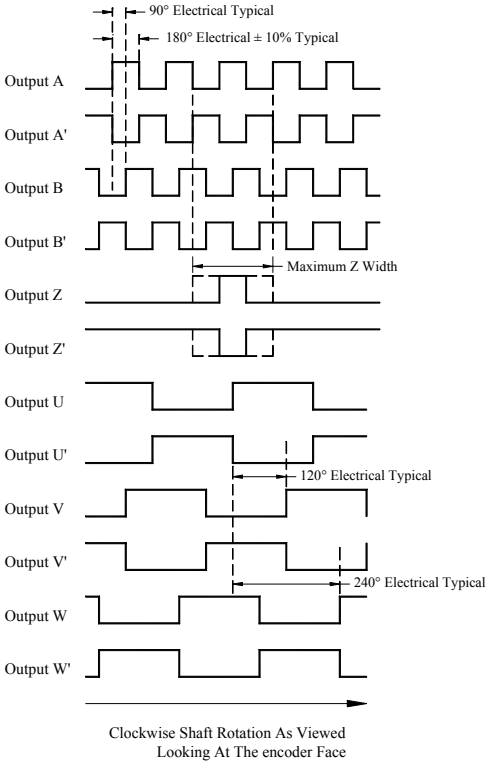


See figure below

Output Waveforms

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

QD145 Wiring Diagram

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

Electrical Specifications

Input Voltage	5 VDC ± 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 ± 10% Typical
Minimum Edge Separation	54 electrical degrees
Commutation Format	Three Phase 4, 6 or 8 poles
Commutation Accuracy	± 1° mechanical

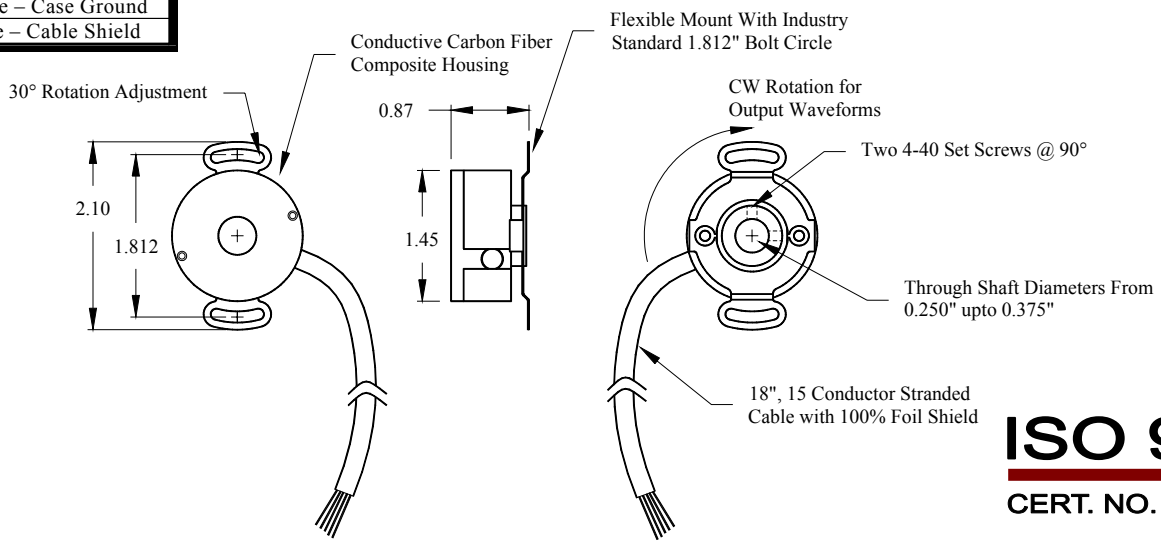
Environmental Specifications

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	0.250", 0.3125", 0.375", 6mm ,8mm, 10mm, 5mm (-0.0000, + 0.0005)
Radial Shaft Movement	0.007" TIR
Axial Shaft Movement	± 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	$1x10^5$ Radians/S^2
Accuracy	± 1.0 arc minute

** Contact Factory for more information



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