

**Quantum Devices, Inc.**

“Improving the Quality of Life through the Power in Light”

**QPhaseä**

## QD787 20mm (0.787") Diameter Hollow Shaft Optical Encoder

### Design Features:

- Miniature Size, 20mm (0.787") Diameter
- Resolutions up to 2048 lines per revolution direct read
- Blind Hollow Shaft Bores
- Patent pending unique sensing system
- Long service life
- Conductive carbon fiber housing
- IP 50 sealing
- High noise immunity
- Low supply current requirements

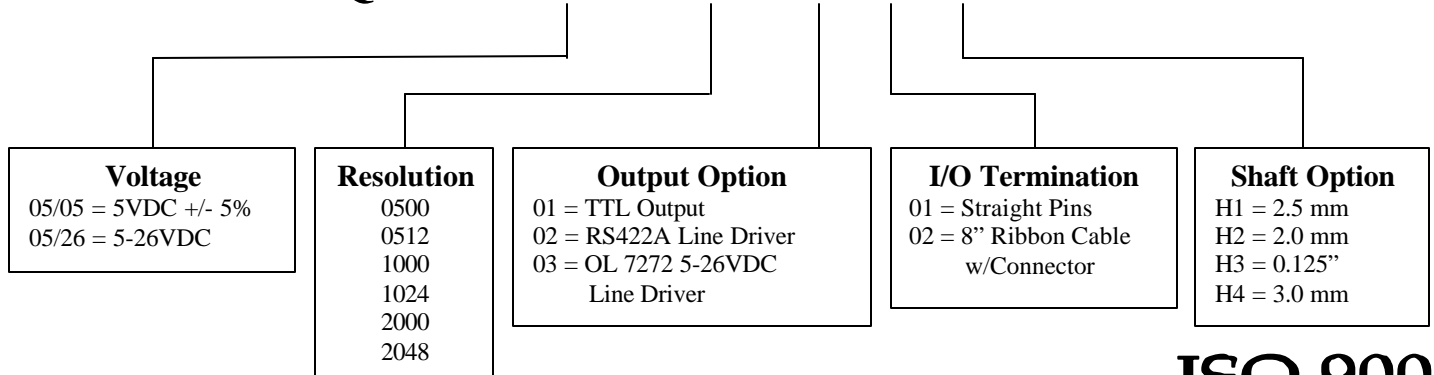


### Description:

The blind hollow shaft version of Quantum Devices' QD787 provides a high performance, high resolution digital feedback solution for small motor applications. The QD787 model provides the resolution of larger encoder packages but in a package only 20mm (0.787") in diameter. Outputs can be configured in either single ended, 5 volt RS422A differential or with high voltage differential line driver. QDI's patent pending sensing scheme embodies a much simplified encoder design, which ultimately results in longer service life and less down time due to feedback device failure. The encoder housing is constructed of a carbon fiber composite that provides the EMI shielding of an all metal housing and performance of a lightweight robust assembly.

### Ordering Information

**QD787-05/05-0500-01-01-H1**



**ISO 9001**

**CERT. NO. FM 52711**

**Quantum Devices, Inc. 112 Orbison St., P.O. Box 100 , Barneveld, WI 53507**

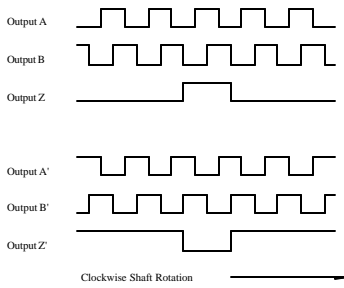
Tel: (608) 924-3000

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URL: [www.quantumdev.com](http://www.quantumdev.com)

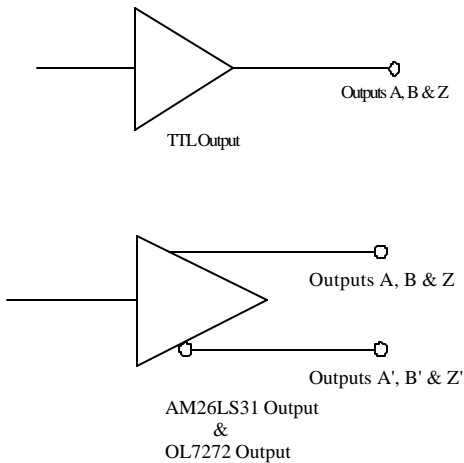
E-mail: [qdisales@quantumdev.com](mailto:qdisales@quantumdev.com)

### Output Waveforms



Viewed From Shaft End

### Output Circuits



### Electrical Specifications

Input Voltage	5 VDC ± 5% or 5-26 VDC
Input Current Requirements	80 mA Max. Output Option 01 & 02, 35mA Max Output Option 03; plus Interface Loads
Input Ripple	2% Peak to Peak @ 5 VDC
Output Currents	AM26LS31 RS 422A line driver TTL Output, OL7272 Line Driver
Output Format	Quadrature with A leading B for CW rotation. Ungated Z index pulse true over A and B high
Frequency Response	200 kHz
Symmetry	180 Degrees ± 10% Typical
Minimum Edge Separation	54 electrical degrees

### Environmental Specifications

Storage Temperature	-40 to 125° C
Operating Temperature	0 to 70° C Typical -20 to 100° C Optional**
Humidity	98% Non-Condensing
Vibration	20 g's @ 50 to 500 CPS
Shock	50 g's @ 11mS Duration

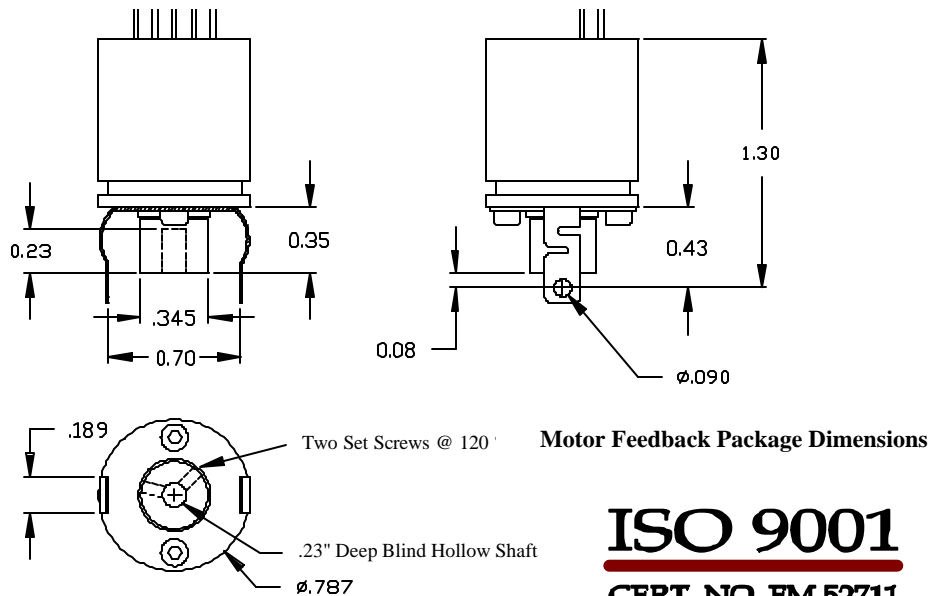
### Mechanical Specification

Maximum Shaft Speed	8000 RPM
Hollow Shaft Bores	2.5mm, 2.0mm, 0.125"
Shaft Material	360 Brass
Bearings	Radial Ball Bearing, R2 type
Radial Shaft Load	2 lbs. Maximum
Axial Shaft Load	1 lbs. Maximum
Housing	Carbon Fiber Composite (case ground via connector)
Housing Volume Resistivity	10 <sup>-2</sup> ohm-cm
Termination	Two Rows of 5 Pins on 0.100" Centers. 8" Ten Conductor Ribbon Cable with 2x5 Connector
Mounting	Servo
Moment of Inertia	9.5x10 <sup>-6</sup> oz-in-sec <sup>2</sup>
Acceleration	1x10 <sup>5</sup> Radians per Second <sup>2</sup>

\*\* Contact Factory for more information

### QD787 Wiring Diagram

Pin 1 - Common
Pin 2 - +VDC
Pin 3 - Z
Pin 4 - Z'
Pin 5 - B
Pin 6 - B'
Pin 7 - A
Pin 8 - A'
Pin 9 - N/C
Pin 10 - Case



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\*Quantum Devices, Inc. reserves the right to make changes in design, specifications and other information at any time without prior notice. Rev. 062811