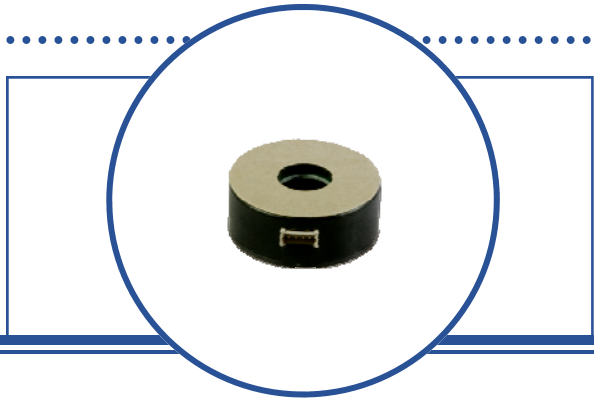
Incremental Hollow Shaft Encoder
OPE1275H Single Channel (Tachometer)
OPE2275H Dual Channel

TT electronics
OPTEK Technology

Features:

- O.D. = 28mm [1.10”]
- Motor Shaft Diameter 2 mm [0.079”]
- Motor Shaft length 3.8 mm [0.150”] minimum
- Pulses per revolution 256 maximum
- Analog Output
- 100 - 5,000 RPM



Description:

The **OPE1275H** and **OPE2275H** are designed for small shafted motors with a shaft diameter of 2 mm [0.079”] and a minimum length of 3.8 mm [0.150”]. The **OPE1275H** provides a single channel analog output for speed of rotation while the **OPE2275H** provides a dual channel analog output for speed and direction of rotation.

The output of the **OPE1275H** provides a rise and fall pulse providing the designer two slopes for each pulse doubling the count capability. The **OPE2275H** provides quadrature rise and fall pulse patterns providing the design engineer 4 times the pulse per revolution count.

The **OPE1275H** and **OPE2275H** are very easy to assemble on your motor shaft using a #1 Phillips screwdriver.

Power requirements are 5 volts ± .5 volts.

Electrical connection is achieved with a 4-pin Molex 53048-0410 connector providing V+, Ground and Output pins. The mating connector is a 4-pin Molex 51021-0400 (Terminal pin 50058 or 50079) or equivalent.

Mounting of the hollow shaft version of the **OPE1275 and OPE2275** is achieved with a stick-on transfer adhesive pre-applied to the back of the housing. Just peel off the protective base and press the encoder to your motor.

Frequency response is from DC to 25 kHz providing a maximum of 256 cycles per revolution (CPR)

This product is designed for general encoding for low-speed applications.

Applications:

- Printer motors
- Machine automation
- Machine safety

Ordering Information

OPE X 275 H - ZZZ

OPTEK Product Encoder

Channels:
1 = Single channel
2 = Dual Channel

Motor Diameter- 27.5mm

Shaft Configuration:
H = Hollow Shaft

Resolution per revolution:
128 holes per revolution
256 holes per revolution

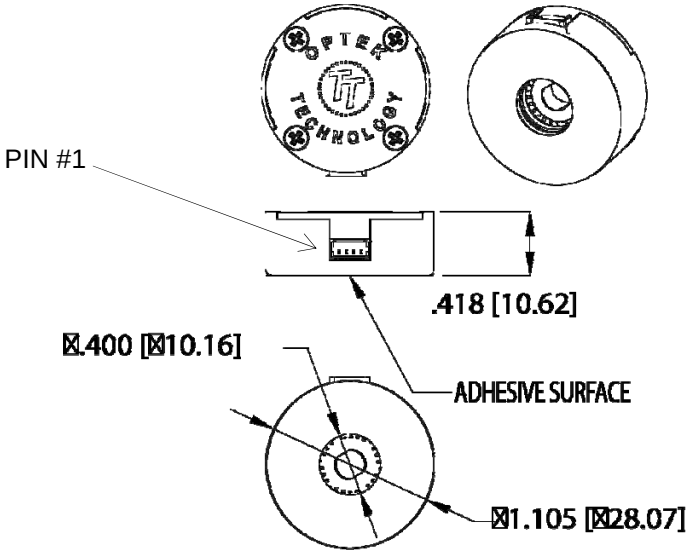
Pb

RoHS

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
Phone: (972) 323-2200 or (800) 341-4747 FAX: (972) 323-2396 sensors@optekinc.com www.optekinc.com

OPE1275H
OPE2275H



Pin Out			
1	2	3	4
V_{CC}	CH A	CH B	GND

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Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

	Maximum	Units
Storage Temperature Range	-40° C to +85°	C
Operating Temperature Range	0° C to +85°	C
Power Supply Voltage V_{CC}	4.5 to 5.5	V_{DC}
Power Dissipation(2)	250	mW
Vibration (5 Hz to 2 kHz)	20	g
Shaft Axial Play	± 0.51 mm [0.02"]	
Off-Axis Mounting Tolerance	0.254 mm [0.01"]	
Acceleration	250,000	rad/sec^2

Mechanical Specifications:

	Dimensions	Units
Moment of Inertia	6.48 X 10^{-5}	OZ-IN-S^2
Shaft Length	0.3 to 0.7	Inches

Electrical Characteristics (T_A = 25°C unless otherwise noted — for reference only)

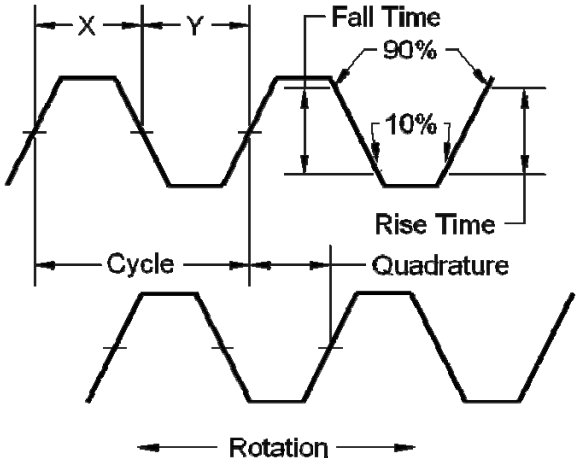
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
V_{CC}	Supply Voltage	4.5	5.0	5.5	V	
I_{CC}	Supply Current	-	21	27	mA	V_{CC} = 5.0 volts
V_{OH}	High Level Output Voltage	Vcc-0.5	-	-	V	I_C = 100 µA
V_{OL}	Low Level Output Voltage	-	-	0.4	V	I_C = 20 mA
TR	Rise Time	-	500	-	ns	10% to 90%, V_{CC} = 5.0 volts
TF	Fall Time	-	100	-	ns	10% to 90%, V_{CC} = 5.0 volts
FR	Frequency Response	-	-	60	kHz	
H.S.	Hole Size	0.10	-	-	inch	
Rotation	Maximum speed of rotation with 1024 holes per rotation	-	-	100	rev/sec	

Encoding Characteristics:

SE	Symmetry Error	0	16	75	°e	
QE	Quadrature Error—OPE2275H only	0	12	60		

Notes:
1. All parameters measured using pulse technique, Vcc = 5.0 volts and T_A = 25°C.

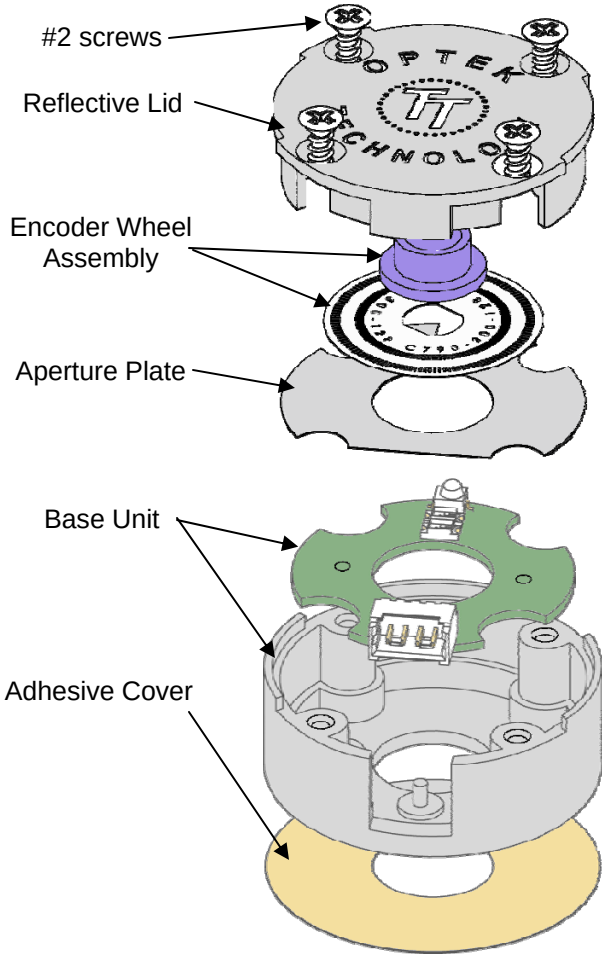
Timing Diagram:



Timing Definitions:

PPR = Pulses Per Revolution
Electrical Degree (°e) = 1/360th of 1 cycle
Cycle = 360 electrical degrees (°e)
Symmetry = Relationship between X & Y in electrical degrees (°e).
Position Error = The difference between the actual shaft position and the position indicated by the encoder cycle count.
Quadrature: The lead or lag difference between channels "A" and "B" in electrical degrees (normally 90°e)
Cycle Error = The difference between the actual shaft rotational position and the cycle count rotational position.
Rise Time = Time required to switch between 10% and 90% of the highest to lowest signal levels.
Fall Time = Time required to switch between 90% and 10% of the highest to lowest signal levels.

Hollow Shaft Assembly Instructions:



Make sure the kit has all required parts:

- 1 each Base Unit
- 1 each Base Unit Alignment Tool
- 1 each Aperture Plate
- 1 each Encoder Wheel Assembly
- 1 each Wheel Assembly Alignment Tool
- 1 each Reflective Lid
- 4 each #2-56 self tapping screws

1. Peal the protective covering from the adhesive on the back of the Base Unit.
2. To center the Base unit, carefully slide the Base Unit over the flange on the motor and press firmly.
3. Place the Aperture Plate on the Base Unit.
4. Slide the Encoder Wheel Assembly over the motor shaft until it almost touches the Aperture Plate.
5. Carefully place the Reflective Lid on the encoder (rotate as necessary to align) and attach with 4 #2 self tapping screws (provided).
6. Connect the electrical interface to the encoder.

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