Incremental Shaft Encoder
OPE1275S Single Channel (Tachometer)
OPE2275S Dual Channel

TT electronics
OPTEK Technology

Features:

- Body O.D. = 28mm [1.10”]
- Shaft Diameter 6.35 mm [0.25”]
- 3/8”-32 UNF Thread
- Pulses per revolution 256 maximum
- Analog Output
- 100 - 5,000 RPM



Description:

The **OPE1275S** and **OPE2275S** are designed for small shaft motors. The **OPE1275S** provides a single channel analog output for speed of rotation while the **OPE2275S** provides a dual channel analog output for speed and direction of rotation.

The output of the **OPE1275S** provides a rise and fall pulse providing the designer two slopes for each pulse doubling the count capability. The **OPE2275S** provides quadrature rise and fall pulse patterns providing the design engineer 4 times the pulse per revolution count.

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.

Frequency response is from DC to 25 kHz providing a maximum of 256 cycles per revolution (CPR) and 1024 quadrature states per revolution (PPR).

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

The **OPE1275S and OPE2275S** are fully assembled and ready to be connected to your application.

Applications:

- Printer motors
- Machine automation
- Machine safety

Ordering Information

OPE X 275 S - ZZZ

OPTEK Product Encoder

Channels:
1 = Single channel
2 = Dual Channel

Motor Diameter- 27.5mm

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

Shaft Configuration:

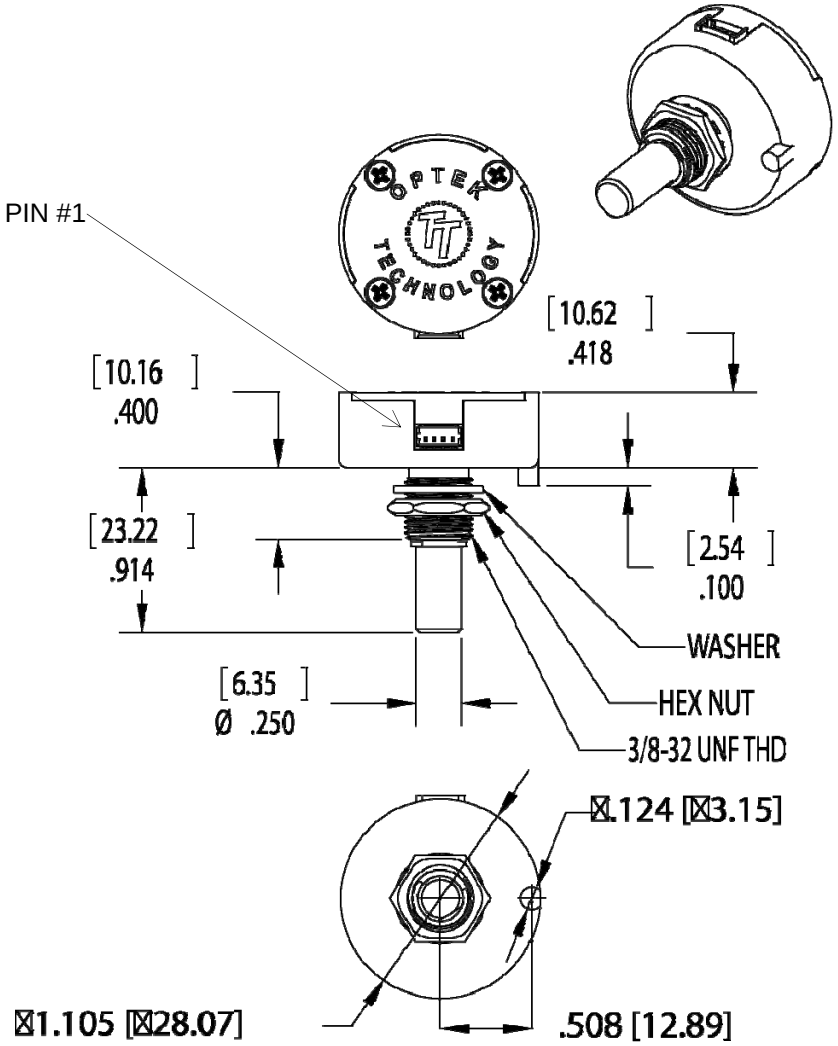
S = Extended Shaft

Pb

RoHS

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

OPE1275S
OPE2275S



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	

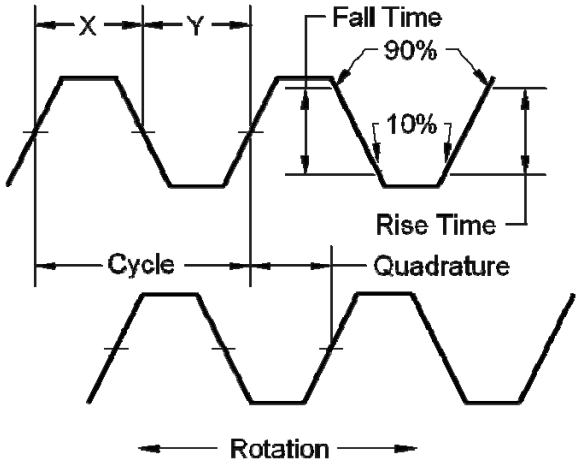
Encoding Characteristics:

SE	Symmetry Error	0	16	75	°e	
QE	Quadrature Error—OPE2275 only	0	12	60		

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

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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.

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