

# GURLEY SERIES 9480H ANGLE ENCODER

**MOTION TYPE:**

**ROTARY**

**USAGE GRADE:**

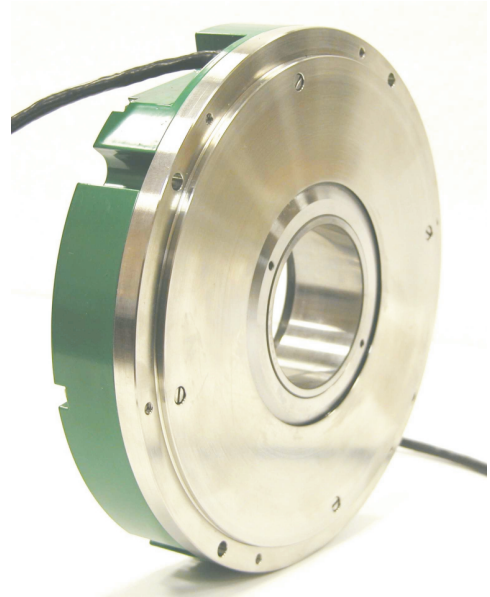
**INDUSTRIAL METROLOGY**

**OUTPUT:**

**INCREMENTAL**

**MAX RESOLUTION:**

**0.00005°  
(0.18 ARCSEC)**



## VERY HIGH RESOLUTION - INDUSTRIAL RUGGEDNESS

The Series 9480H is a robust metrology-grade encoder that is equally well-suited for industrial applications. It incorporates four reading heads to eliminate many common sources of encoder errors, while its stainless steel construction greatly enhances resistance to shock and vibration.

It is designed for very precise positioning of rotary tables on machine tools, coordinate measuring machines, dividing apparatus, antennas, test equipment and similar devices.

The 9480H incorporates an internal ASIC (application-specific integrated circuit) to generate quadrature square waves up to 100 times the line count on the disc. Thus, the resolution (after 4X quadrature evaluation by the user) can be as fine as 0.18 arcsec (0.00005°, or 7,200,000 counts per revolution).

**9480H:  $\pm 2.5$  arcseconds accuracy**

**ISO  
9001  
CERTIFIED**

Gurley Precision Instruments  
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**ingenuity<sup>®</sup>@work**

# SPECIFICATIONS

Input Power	+5 VDC +/- 5%, 150 mA max		
Available line counts	18000		
Output waveforms	Quadrature square waves ¼-cycle wide, gated with high states of A and B		
Data Index			
For all models:			
<u>Interpolation</u>	<u>Deg. Of Res. (arcsec)</u>	<u>Max. Output Frequency, mHz</u>	<u>RPM</u>
100X	0.00005° (0.18)	2.70	80
50X	0.0001° (0.36)	2.70	180
32X	0.00015° (0.56)	2.70	280
25X	0.0002° (0.72)	1.35	180
16X	0.0003° (1.125)	1.60	330
10X	0.0005° (1.80)	1.00	330
8X	0.0006° (2.25)	0.80	330
5X	0.001° (3.60)	0.50	330
4X	0.0012° (4.50)	0.64	530
2X	0.0025° (9.0)	0.32	530
1X	0.005° (18.0)	0.16	530
Output device	EIA/RS-422 differential line drivers (TTL compatible) on all channels		
Accuracy at 20° C	+/- 2.5 arcsec		
Maximum output frequency	3 MHz (with 50X interpolation)		
Maximum weight, kg [lb]	4.9[10.9]		
Starting torque at 20°C Nm [in-oz]	0.5 [75]		
Moment of inertia g-cm <sup>2</sup> [in-oz-s <sup>2</sup> ]	1500 [0.21]		
Protection level	IP64		
Operating temperature	0°C to 50°C [32°F to 122°F]		
Maximum mech. speed	1000 RPM		
Vibration	50-200 Hz; 100ms <sup>2</sup>		
Shock	10 ms; 30°ms <sup>2</sup>		

## USING THE 9480H

In order to have a system that does not miss any counts during the 4X quadrature evaluation, user's counter or input circuit must be able to detect quadrature edges as close as 50 nanoseconds, which corresponds to a 20 MHz count rate.

# 9480H

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# ORDERING INFORMATION

MODEL SHAFT LINES IND VOLT OUT INTERP. BASE CABLE EXIT CONN SHAFT SPEC

## MODEL

**9480** ± 2.5 ARCS ACCURACY  
(CALL FACTORY FOR LOWER VALUES)

## SHAFT

**H** HOLLOW SHAFT

## LINE COUNT

**18000**

## INDEX

**Q** Quarter cycle

## VOLTAGE

**5** +5 volts dc

## OUTPUT FORMAT

**L** RS-422 differential line driver

## INTERPOLATION FACTOR

**1X, 2X, 4X, 8X, 10X, 16X, 25X, 32X, 50X, 64X OR 100X** (WRITE AS **1C**)

## BASE

**A** Synchro/face mount

## CABLE LENGTH

**XX** INCHES  
**40** STANDARD

## EXIT

**S** Side

## CONNECTOR

**P** PIGTAILS

**Q** DA - 15P

**S** DE-9P (FLT and /FLT not available)

## SHAFT

**60M** HOLLOW-SHAFT

## SPECIAL CODE TO DEFINE NON-STANDARD FEATURES

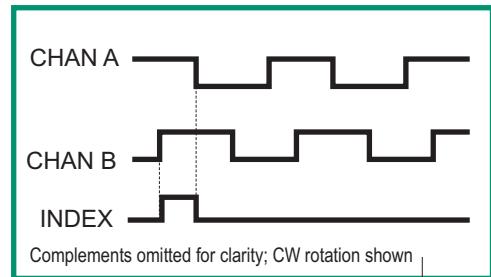
**N** NO SPECIAL FEATURE

## OPTIONS

**M01** MATING CONNECTOR FOR DA-15P

**M06** MATING CONNECTOR FOR DE-9P

## OUTPUT SIGNALS



## ELECTRICAL CONNECTIONS

CONN. CODE	P	Q	S
CONN. TYPE	NONE	DA-15P	DE-9P
FUNCTION	COLOR	PIN #	PIN #
A	Yellow	8	4
/ A	Brown	7	8
B	Green	5	3
/ B	Orange	4	7
IND	Blue	2	2
/ IND	White	1	6
+ V	Red	10	5
COMMON	Black	13	9
CASE	Drain	9	1
MATING CONN.	-	M01	M06

## SPECIAL CAPABILITIES

For special situations, we can optimize catalog encoders to provide higher frequency response, greater accuracy, wider temperature range, reduced torque, non-standard line counts, or other modified characteristics. In addition, we regularly design and manufacture custom encoders for user-specific requirements. These range from high-volume, low-cost, limited-performance commercial applications to encoders for military, aerospace and similar high-performance, high-reliability conditions. We would welcome the opportunity to help you with your encoder needs.

## WARRANTY

Gurley Precision Instruments offers a limited warranty against defects in material and workmanship for a period of one year from the date of shipment.

**9480H**

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