

GURLEY MODEL A90 ABSOLUTE ENCODER

MOTION TYPE:

ROTARY

USAGE GRADE:

INDUSTRIAL

OUTPUT:

ABSOLUTE

RESOLUTION:

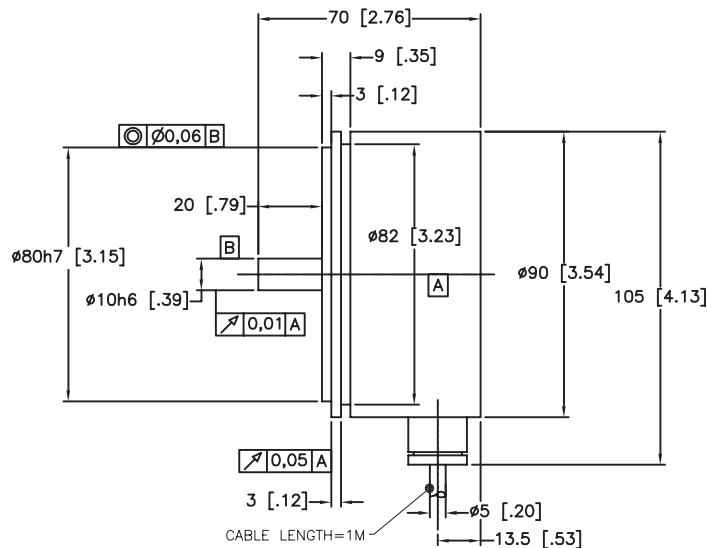
18 TO 23 BIT



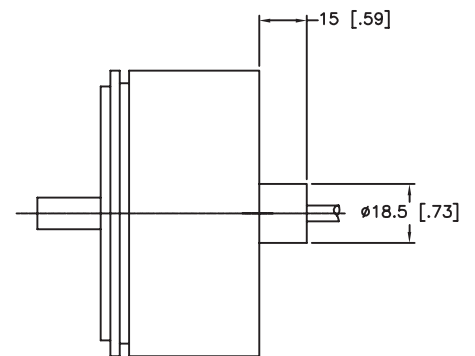
HIGH PERFORMANCE

The model **A90** encoder is a single-turn high resolution absolute rotary encoder with optoelectronic technology. This encoder is used in a wide variety of position-sensing applications for high resolution measuring of angles and distances. Mechanical features include a 90-mm aluminum housing, stainless steel shaft with a 10 mm diameter, and precision ball bearings.

DESIGN OPTION A



DESIGN OPTION B



ingenuity@work[®]

**ISO
9001
CERTIFIED**

Gurley Precision Instruments
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(800) 759-1844, (518) 272-6300, fax (518) 274-0336,
Online at www.gurley.com, e-mail: info@gurley.com



SPECIFICATIONS

Mechanical Specifications	
Moment of Inertia, in-oz-s ² (g-cm ²)	2.94 x 10 ⁻³ (20)
Operating Torque, Nm (in-oz)	0.01 Nm (1.416 in-oz)
Radial Shaft Load, lb (N)	2 (10)
Axial Shaft Load, lb (N)	2 (10)
Bearing Arrangement	2 pre-loaded bearings
Bearings	Grease-lubricated and sealed
Code Disk Type	Etched chrome on glass
Vibration, m/s ² (ft/s ²) (55-2000Hz)	100 (325)
Shock 10 (ms), m/s ² , (ft/s ²)	300 (975)
Sealing	IP64
Recommended Shaft Coupling: Model	SCA
Environmental Specifications	
Operating Temperatures, F (C)	S: 32 to 158 (0 to 70);
Storage Temperature, F (C)	0 to 160° (-18 to 71°)
Relative Humidity, % (non-condensing)	98
Electrical Specifications	
Supply Voltage, VDC	+5V
Current Consumption, mA	220
LED Life	100,000 hours
Output Code	Binary
Output Format:	Serial
Accuracy, arc-sec	+/- 3.5
Resolution, bit	18 to 23
Weight (w/o cable), lb(kg)	1.54(0.7)
Max rotation speed of the shaft, RPM	4,000
Max rotation speed of the shaft w/o output code failure, RPM	300

As part of our continuing product improvement program, all specifications are subject to change without notice.

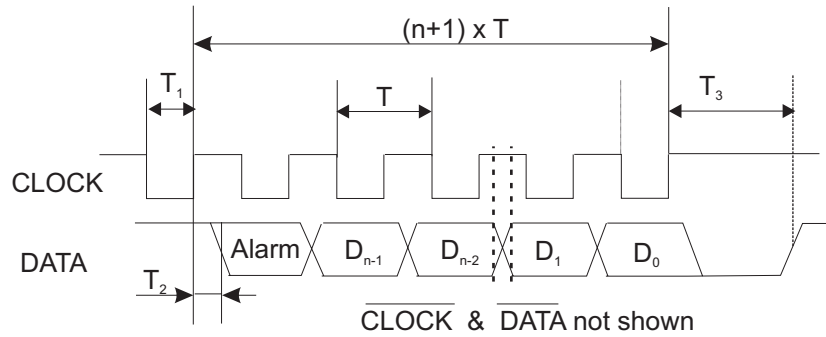


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Output Codes A90: Serial SSI

Electrical Signal	Pin	Color
CLOCK /CLOCK	1	shield
	2	yellow
	3	brown
+V DATA /DATA	4	red
	5	green
	6	orange
0 V	7	orange
	8	
	9	black

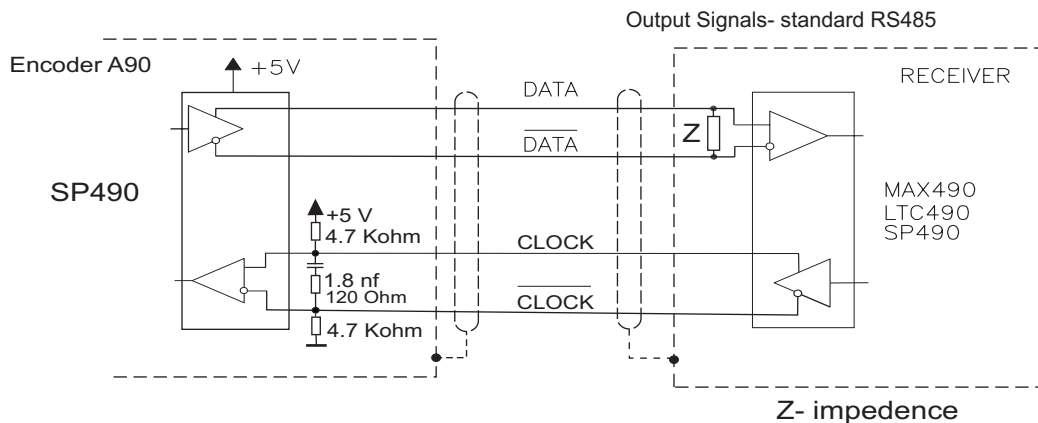


$T = 1-10\mu\text{s}$ ALARM- Error signal
 $T_1 > 0.45\mu\text{s}$ Log"1"-Encoder good
 $T_2 < 0.4\mu\text{s}$
 $T_3 = 12-35\mu\text{s}$ Log"0"-Encoder bad
 $n = \text{number of bits}$

Thanks to the serial data transmission, only four signal lines are required. The physical interface consists of two connections aside from power and ground. Data is transmitted in synchronism with a CLOCK signal from the subsequent electronics: one bit of position data is transmitted to the output per one CLOCK pulse received by the encoder.

In the beginning, when not transmitted, buses CLOCK and DATA are on Log "1". The transmission cycle begins with the first falling edge of the CLOCK, it means that the first negative front edge of signal CLOCK locks the output code into the internal register saving the measured values. So, the CLOCK initiates the communication- first falling edge latches the parallel data into an internal shift register.

Next positive edges of signal CLOCK provide bite-by-bite transfer of the fixed code starting from MSB. After the transfer of "n" bits (complete data word) the DATA line remains low and being held there for a period of time T3 until the encoder is ready for interrogation of a new value. At that time the code could be repeatedly read by putting the signal CLOCK into Log "0". Such transfer could be done not limited number of times. It means that if a falling CLOCK edge is received within T3, the same value will be output once again. After T3 DATA is being put into Log "1" and the encoder is ready to output the current code. If while reading the code the status of signal Clock is not changed in time higher than maximum value of T, the encoder automatically returns into starting state.



ORDERING INFORMATION

MODEL	SHAFT	RES	OF	OC	OD	VOLT	TEMP	BASE	EXIT	CAB	CONN	SHAFT	SPEC

MODEL

A90

SHAFT - Shaft type

S Solid

RES - Resolution

18 18 bit
19 19 bit
20 20 bit
21 21 bit
22 22 bit
23 23 bit

OF - Output Format

S SSI

OC - Output Code

B Binary

OD - Output Device

RS RS Differential (SP 490)

VOLT - Voltage

05 5 Vdc Power Supply

TEMP - Temperature Range

S Standard (0 - 70°C)

BASE

A Combination Synchro
flange/face mount base

EXIT - Cable Exit

S Side exit
T Top exit

CAB - Cable length, inches

39 Standard 39' (1.0 m)
02-99 02' to 99'

CONN - Connector

P Pigtail
S DE-9P

SHAFT - Diameter

10M 10mm
06E 3/8"

SPEC - Special features

N No Special Features

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 parameters. 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.

A90

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