

# GURLEY MODEL A90 ABSOLUTE ENCODER

MOTION TYPE:

ROTARY

USAGE GRADE:

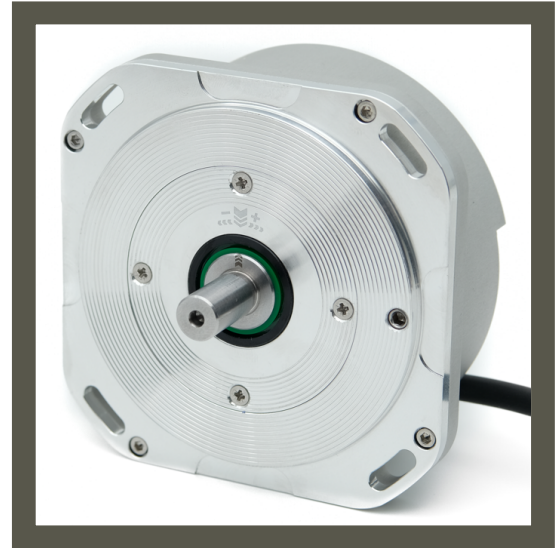
INDUSTRIAL

OUTPUT:

ABSOLUTE

RESOLUTION:

UP TO 26 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. Extended operating temperature from -30 to +70C is optional.

ingenuity<sup>®</sup>@work

ISO  
9001  
CERTIFIED

Gurley Precision Instruments  
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Troy, NY 12180 U.S.A.  
(800) 759-1844, (518) 272-6300, fax (518) 274-0336,  
Online at [www.gurley.com](http://www.gurley.com), e-mail: [info@gurley.com](mailto:info@gurley.com)



# SPECIFICATIONS

	Units	Limiting Values	See Note
<b>Mechanical Specifications</b>			
Moment of Inertia	kg-mm <sup>2</sup>	50	
Operating Torque	Nm	0.01	
Radial Shaft Load	N	10	
Axial Shaft Load	N	10	
Bearing Arrangement		2 pre-loaded bearings	
Bearings		Grease-lubricated and sealed	
Maximum Operating Speed	RPM	1000	
Non-Operating Slew	RPM	4000	
Shock 11 (ms)	m/s <sup>2</sup>	300	
Vibration (55-2000Hz)	m/s <sup>2</sup>	100	
Sealing		IP64	2
<b>Environmental Specifications</b>			
Operating Temperature	°C	0 to +70	3
Relative Humidity	%	98	1
<b>Electrical Specifications</b>			
Supply Voltage	VDC	4.75 to 5.25, 5.00 nominal	
Current Consumption	mA	≤ 220	
LED Life	hours	≥ 100,000	
Output Code		Binary	
Output Format		Up to 26 bit SSI or BiSS	
Output Device		RS Differential MAX3490	
Accuracy		+/-5.0 arc seconds	

**Notes**

1. Non-condensing
2. Per CEI / IEC 529 - Degrees of protection provided by enclosures (IP Code)
3. -30C to +70C extended operating temperature available. Accuracy may be affected. Consult factory for additional information.

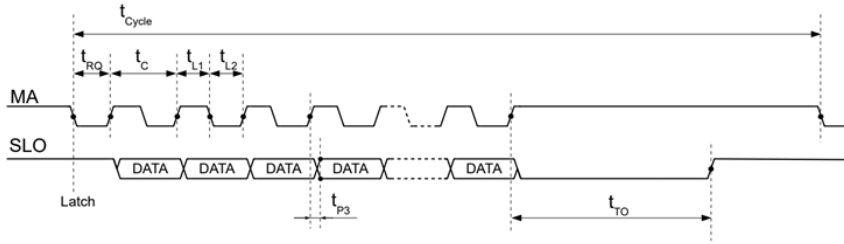
*As part of our continuing product improvement program, all specifications are subject to change without notice.*



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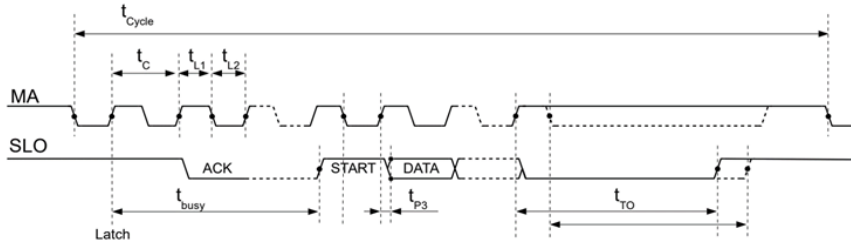
## SSI Timing Protocol



Symbol	Parameter	Min	Max	Unit
$t_c$	Permissible Clock Period	250		ns
$t_{L1}$	Clock Signal Hi-Level Duration	125	$t_{TO}$	ns
$t_{L2}$	Clock Signal Lo-Level Duration	125	$t_{TO}$	ns
$t_{RQ}$	Request Time	500		ns
$t_{P3}$	Output Propagation Delay		50	ns
$t_{TO}$	Slave Timeout		20.5	us
$t_{Cycle}$	Permissible Clock Cycle Time	*	indefinite	ns

\*allow  $t_{TO}$  to elapse

## BiSS Timing Protocol

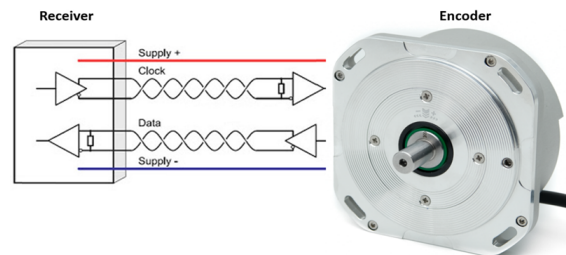


Symbol	Parameter	Min	Max	Unit
$t_c$	Permissible Clock Period	100		ns
$t_{L1}$	Clock Signal Hi-Level Duration	40	$t_{TO}$	ns
$t_{L2}$	Clock Signal Lo-Level Duration	40	$t_{TO}$	ns
$t_{busy}$	Minimum Data Output Delay		$2t_c$	ns
$t_{busy}$	Maximum Data Output Delay		400	ns
$t_{P3}$	Output Propagation Delay		50	ns
$t_{TO}$	Slave Timeout	0.16	20.5	us
$t_{Cycle}$	Permissible Clock Cycle Time	*	indefinite	ns

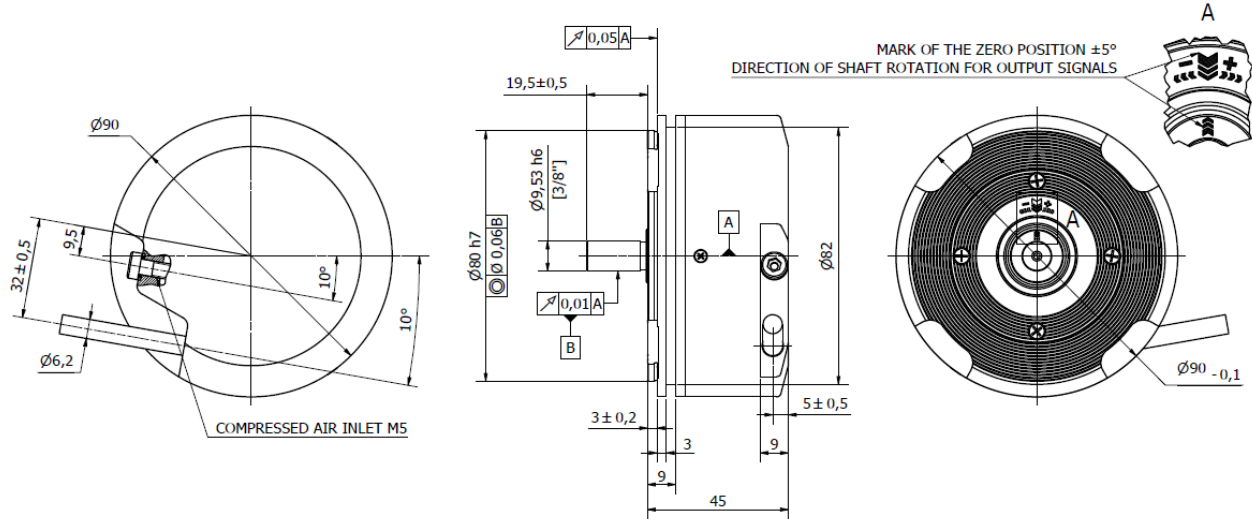
\*allow  $t_{TO}$  to elapse

## Pin Assignment / Wire Color

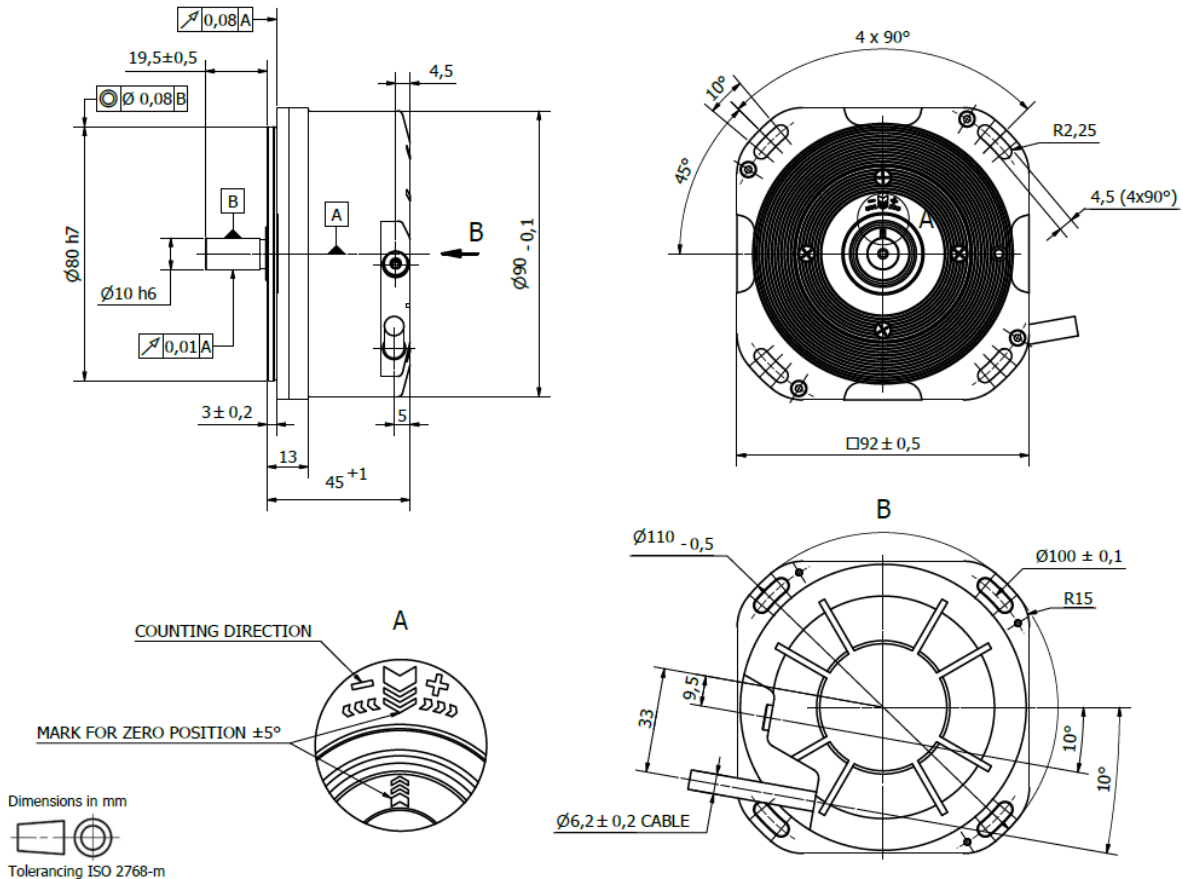
Electrical Signal	Pin	Color
CLOCK /CLOCK	1	shield
	2	light blue
	3	white
+V DATA /DATA	4	
	5	red
0 V	6	green
	7	orange
	8	
	9	blue



## Base Code A Dimensions



## Base Code C Dimensions



Dimensions in mm



Tolerancing ISO 2768-m

# 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 (in bits)

**01 - 26**

**OF** – Output Format

**B** BiSS  
**S** SSI

**OC** – Output Code

**B** Binary (OF = **B** or **S**)

**OD** – Output Device

**RS** RS Differential (MAX3490)

**VOLT** – Voltage

**05** 5 VDC Power Supply  
**RR** 10-30VDC Power Supply

**TEMP** – Temperature Range

**S** Standard (0 to 70°C)  
**T** Extended (-30 to 70C)

**BASE**

**A** Synchro flange mount base  
**C** Square flange mount base

**EXIT**– Cable Exit

**S** Side 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.

