

GURLEY MODEL A58 ABSOLUTE ENCODER

MOTION TYPE:

ROTARY

USAGE GRADE:

INDUSTRIAL

OUTPUT:

ABSOLUTE

RESOLUTION:

12 - 21 BIT



The model **A58** encoder is a single-turn absolute rotary encoder with opto-electronic technology. This encoder is used in a wide variety of position-sensing applications for the measuring of angles and distances. Mechanical features include a 58-mm aluminum housing, stainless steel shaft with Dia from 3 mm to 0.25", and precision ball bearings.

ingenuity[®]@work

ISO
9001
CERTIFIED

Gurley Precision Instruments
514 Fulton Street
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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

	Model A58-12	Models A58-13 - 17	Models A58-18 - 21
Mechanical Specifications			
Moment of Inertia, in-oz-s ² (g-cm ²)	2.5 x 10 ⁻³ (17)		
Starting Torque, Nm (in-oz)	0.01 Nm (1.416 in-oz)		
Radial Shaft Load, lb (N)	4 (20)		
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		
Non-Operating Slew, RPM	10,000		
Vibration (55-2000Hz) g (m/s ²)	10 (100)		
Shock (10ms) g (m/s ²)	30 (300)		
Sealing	IP65		
Recommended Shaft Coupling: Model	SCA		
Environmental Specifications			
Operating Temperatures, F (C)	S: 32 to 158° (0 to 70°); E: -40 to 185° (-40 to 85°)		
Storage Temperature, F (C)	-45 to 185° (-40 to 85°)		
Relative Humidity, % (non-condensing)	98		
Electrical Specifications			
Supply Voltage, VDC (± 0.3V)	+5V +10 to 30V		
Current Consumption, mA	Max 75		
LED Life	100,000 hours		
Output Code	Gray code or Natural binary		
Model	Model A58-12	Models A58-13 - 17	Models A58-18 - 21
Accuracy, arc seconds	± 75	± 30	± 15
Max rotational speed, RPM (valid code)	3,000	1,800	3,000

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

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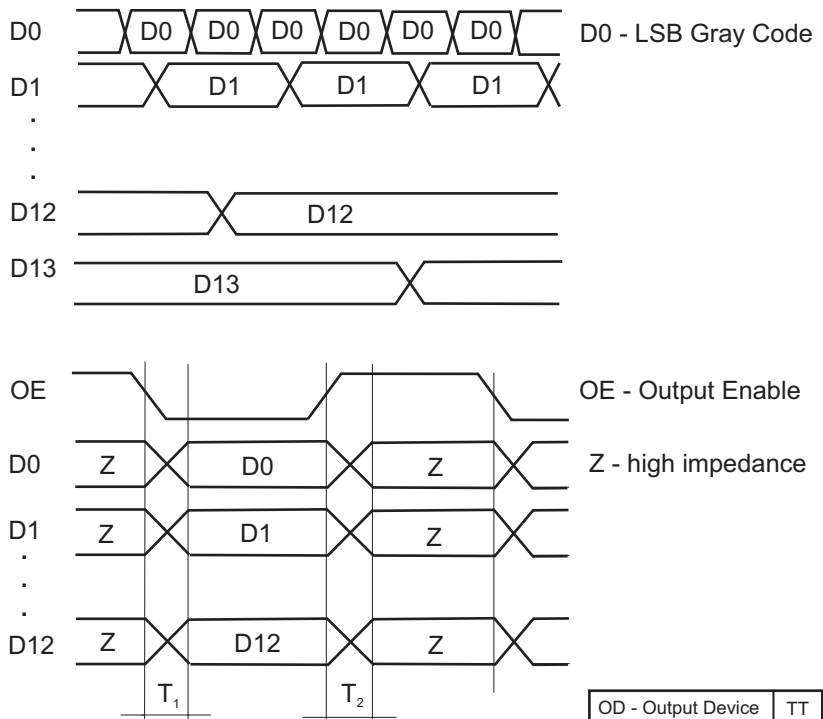
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OUTPUT OPTIONS

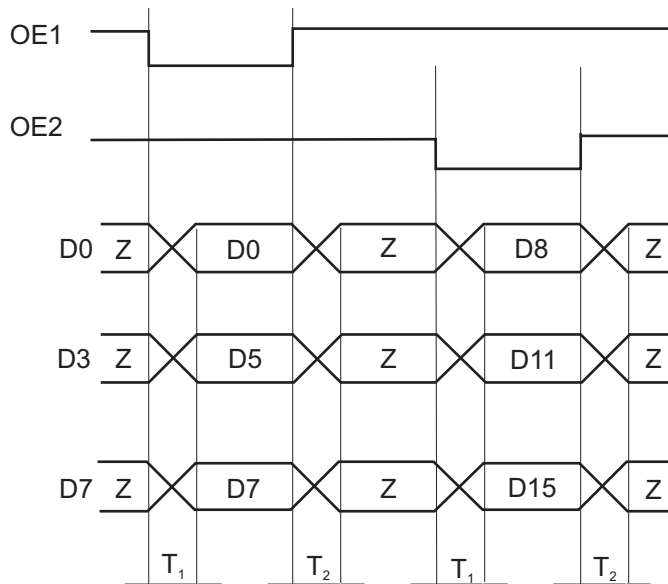
Output Format: Parallel

Electrical Signal	Color
D0	yellow
D1	brown
D2	green
D3	yellow-white
D4	blue
D5	white
D6	violet
D7	gray
D8	white-green
D9	red-blue
D10	pink
D11	yellow-brown
D12	brown-green
D13/OE	gray-pink
0 V	black
+V	red
CASE	shield
	brown-green (output enable)



Output Format: Multiplexed byte-wide

Electrical Signal	Pin	Color
D0	1	yellow
D1	2	brown
D2	3	green
D3	4	yellow-white
D4	5	blue
D5	6	white
D6	7	violet
D7	8	gray
OE1	9	
OE2	10	red-blue
	11	pink
	12	
0 V	13	black
+V	14	red
CASE	15	shield



On falling edge of OE1-output code is being fixed on logic low of OE1 - D0-D7 are output on logic low of OE2 - D₈ - D_{msB} are output Z - high impedance

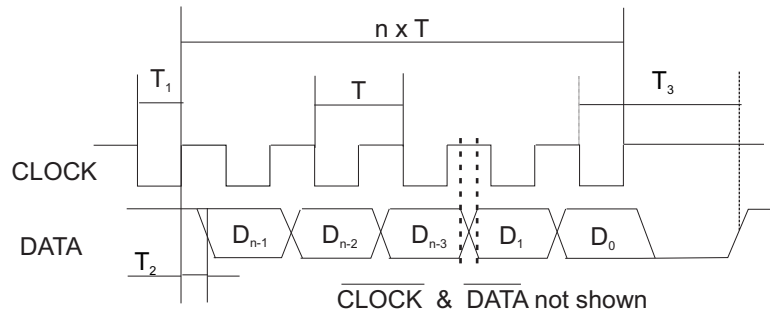
OD - Output Device	TT	OC	OE
$T_1, \text{microsec} \leq$	0.3	0.3	0.5
$T_2, \text{microsec} \leq$	0.3	0.5	2.0



OUTPUT OPTIONS

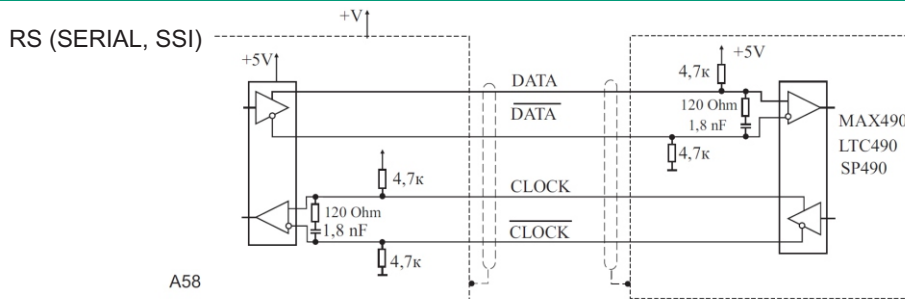
Output Format: Serial SSI

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



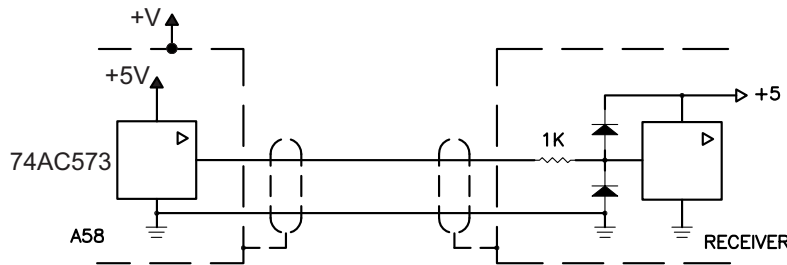
$T = 1.0 - 11\mu\text{s}$ $T_2 = 0.2-0.3\mu\text{s}$ for $n \leq 16$ -bits
 $T_1 > 0.45 - 0.55 \mu\text{s}$ $T_2 = 1.5-1.7\mu\text{s}$ for $n = 17$ -bits
 $T_3 = 12 - 35 \mu\text{s}$ $T_2 = 0.6-0.7\mu\text{s}$ for $n = 18-21$ -bits
 Calculated time for position value
 is $10-15\mu\text{s}$ for $18-21$ -bits
 $n = \text{number of bits}$

OUTPUT SIGNALS AND RECOMMENDED CIRCUIT INTERFACE



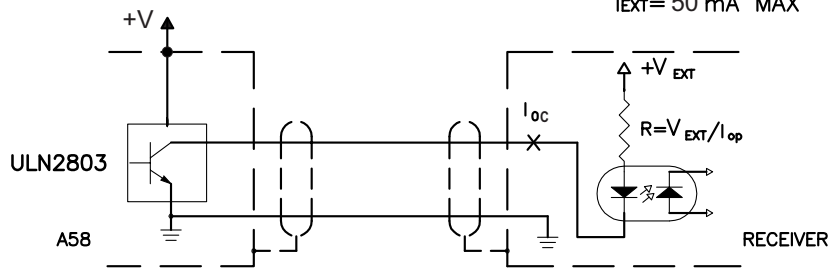
TTL:

+V = +5V, +(10 to 30)V



OC (OPEN COLLECTOR):

+V = +5V, +(10 to 30)V
 $V_{EXT} = 50V \text{ MAX}$
 $I_{EXT} = 50 \text{ mA MAX}$



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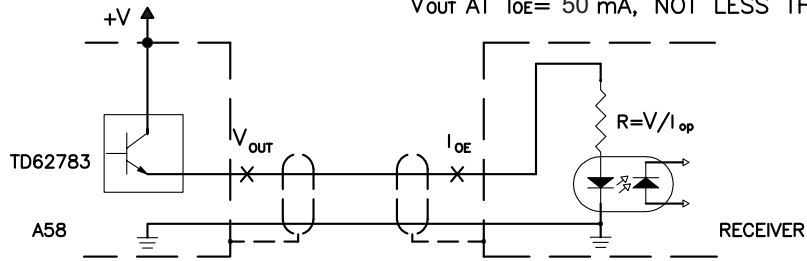
OUTPUT SIGNALS AND RECOMMENDED CIRCUIT INTERFACE

OE (OPEN EMITTER):

+V = +5V, +(10 to 30)V

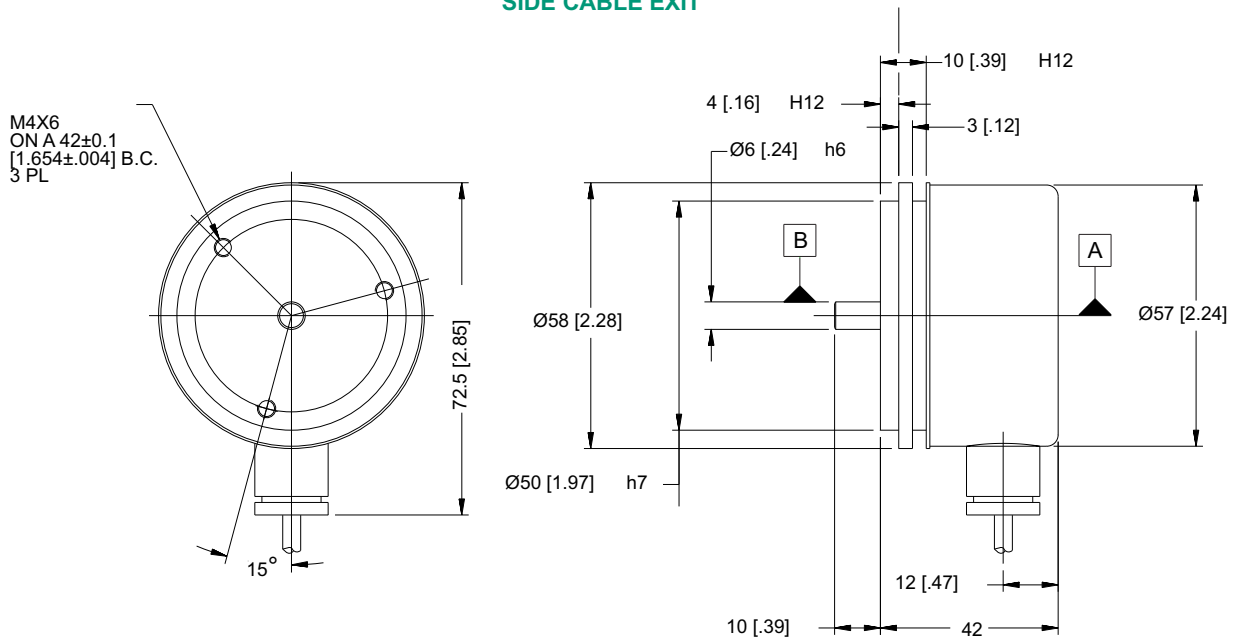
$I_{EXT} = 50 \text{ mA MAX}$

V_{OUT} AT $I_{OE} = 50 \text{ mA}$, NOT LESS THAN $(V - 1.5)V$



OUTLINE DIMENSIONS

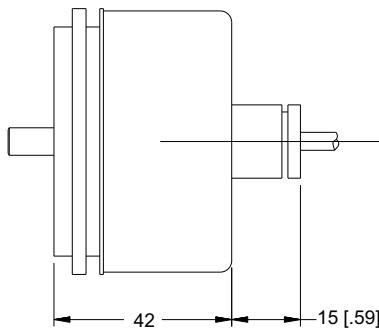
SIDE CABLE EXIT



M4X6
ON A 42±0.1
[1.654±.004] B.C.
3 PL

DIMENSIONS ARE mm [INCHES]

TOP CABLE EXIT



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ORDERING INFORMATION

A58 Ordering Combinations

RES	OF	OC	OD	VOLT	CONN
12 – 21	S	B, G	RS	5, 10 - 30	P, S
12, 13	P	B, G	T, OC, OE		P
12 – 14	N	B, G	T, OC, OE		P
12 – 16	M	B, G	T, OC		P, R
12 – 16	M	B, G	OE	5, 10 – 30 <small>FOR 10-30V, DEFINE VOLTAGE VALUE</small>	P, R

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

MODEL

A58

SHAFT - Shaft type

S Solid

RES – Resolution

12 -21 12 – 21-bits

OF – Output Format

- B** Serial, BiSS
- S** Serial, SSI
- P** Parallel, output enable
- N** Parallel, no output enable
- M** Multiplexed byte-wide

OC – Output Code

- B** Binary
- G** Gray code

OD – Output Device

- TT** TTL
- OC** Open Collector
- OE** Open Emitter
- RS** RS Differential

VOLT – Voltage

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

TEMP – Temperature Range

- S** Standard (0 to +70C)
- E** Extended (-40 to +85C)

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
- R** DE-15P
- S** DE-9P

SHAFT - Dia

- 04M** 4 mm
- 05M** 5 mm
- 06M** 6 mm
- 02E** 1/8"
- 03E** 3/16"
- 04E** 1/4"

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.



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