

GURLEY MODEL A58 ABSOLUTE ENCODER

MOTION TYPE:

ROTARY

USAGE GRADE:

INDUSTRIAL

OUTPUT:

ABSOLUTE

RESOLUTION:

12 - 17 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
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SPECIFICATIONS

	Model A58-12	Models A58-13, -14, -15, -16, -17
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 -13 to 185 (-25 to 85)	
Storage Temperature, F (C)	0 to 160° (-18 to 71°)	
Relative Humidity, % (non-condensing)	98	
Electrical Specifications		
Supply Voltage, VDC	+5V +12V +24V	+5V
Current Consumption, mA	Max 150	250
LED Life	100,000 hours	
Output Code	Gray code or Natural binary	
Output Format:	Parallel	X
	Multiplexed byte-wide	X
	Serial	X
Accuracy, arc seconds	± 150	± 30
Availability time after applying power, µsec.	0.3	80
Max rotational speed, RPM (valid code)	3,000	1,800

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

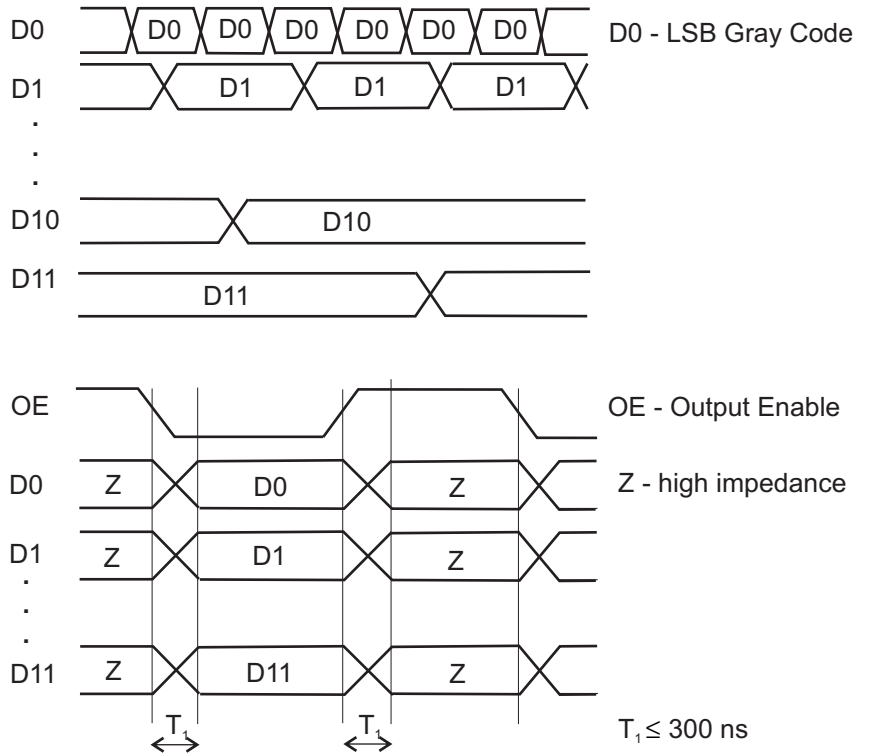


OUTPUT OPTIONS

Output Codes A58-12: Parallel

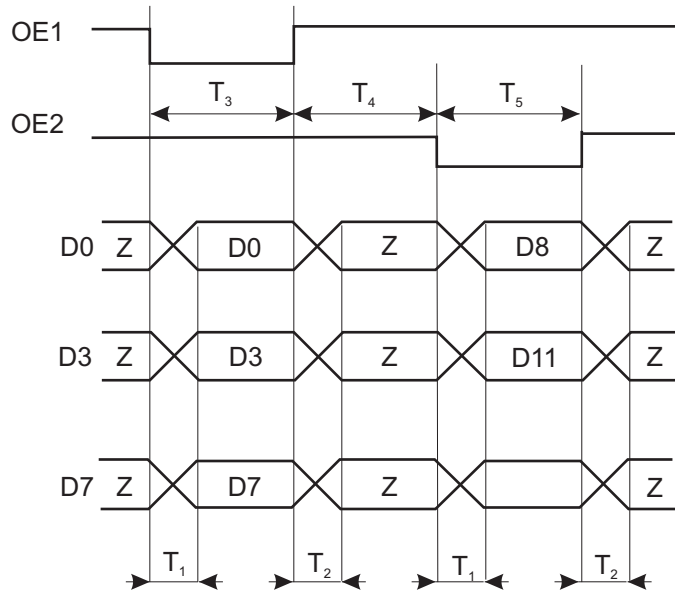
Electrical Signal	Pin	Color
D0	1	yellow
D1	2	brown
D2	3	green
D3	4	yellow-white
D4	5	blue
D5	6	white
D6	7	violet
D7	8	gray
D8	9	white-green
D9	10	red-blue
D10	11	pink
D11	12	yellow-brown
0 V	13	black
+V	14	red
CASE	15	shield
OE	16	brown-green (output enable)

TIME DIAGRAM



Output Codes A58-12, 13, 14: 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
	9	
OE1	10	red-blue
OE2	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

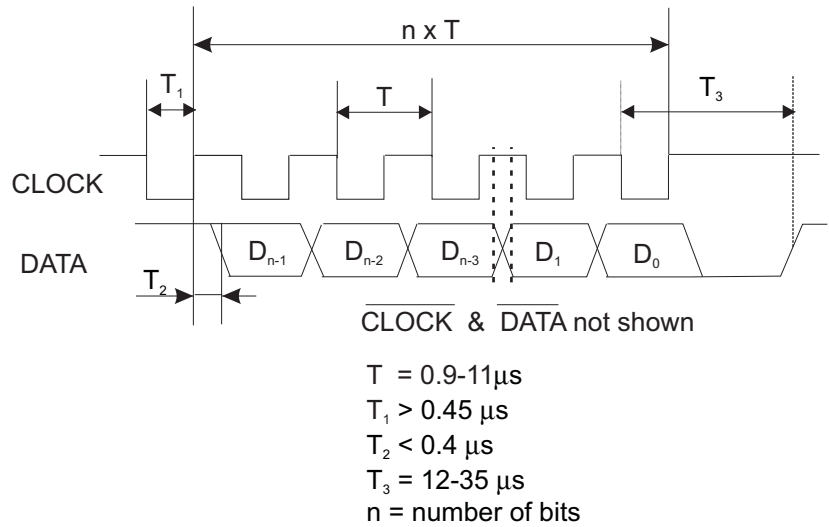
$T_1 \leq 0.5 \mu\text{s}$
 $T_2 \leq 0.5 \mu\text{s}$ (for output device OE $T_2 \leq 2.0 \mu\text{s}$)
 $T_3 \approx 0.6 \mu\text{s}$
 $T_4 \approx 2.8 \mu\text{s}$ (for output device OE $T_4 \approx 2.1 \mu\text{s}$)
 $T_5 \approx 0.6 \mu\text{s}$



OUTPUT OPTIONS

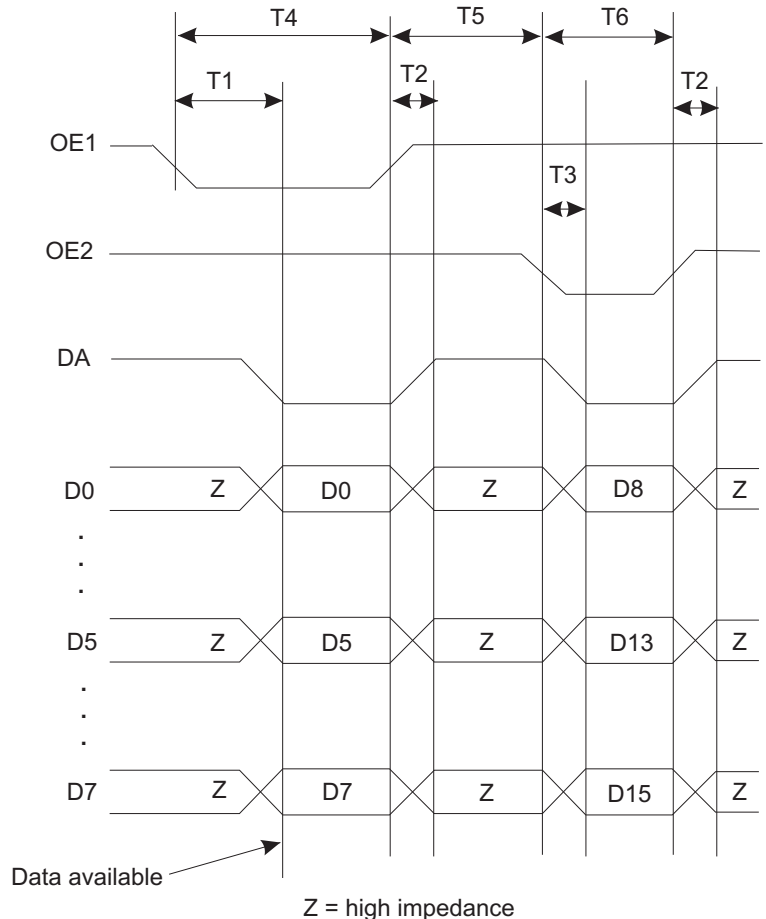
Output codes A58-12, 13, 14: Serial SSI

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



Output codes A58-15, 16: 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
DA	9	white-green (data availability)
OE1	10	red-blue (output enable 1)
OE2	11	pink (output enable 2)
	12	yellow-brown
0 V	13	black
+V	14	red
CASE	15	shield



On falling edge of OE1 - output code is fixed after T1 while logic low on DA and OE1 - D0-D7 are output while logic low on DA and OE2 - D8-D15 are output

- T1 ≤ 2.7 µs
- T2 ≤ 0.5 µs (for output device OE T2 ≤ 2.0 µs)
- T3 ≤ 0.5 µs
- T4 ? 2.8 µs
- T5 ? 0.6 µs (for output device OE T5 ? 2.1 µs)
- T6 ? 0.6 µs

A58

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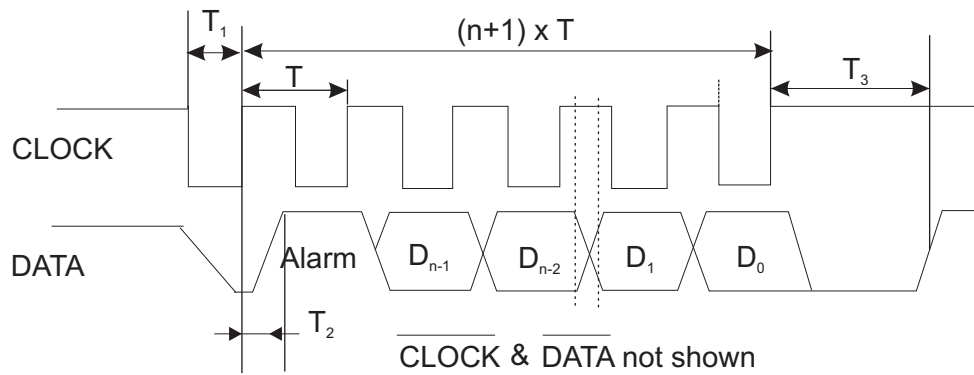
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Output codes A58-15, 16, 17: Serial SSI

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



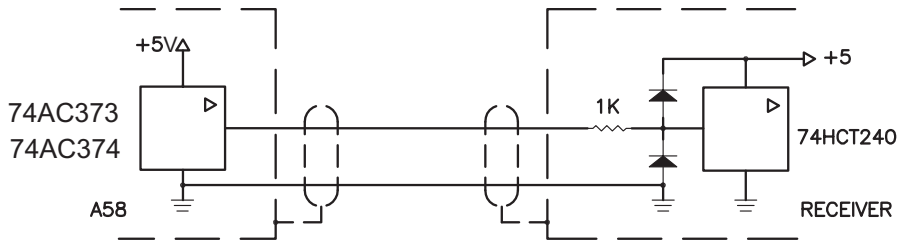
ALARM:
 1 = OK n = 15 for A58-15
 2 = ERROR n = 16 for A58-16
 n = 17 for A58-17
 n = number of bits

T = 1.0-11 μ s
 T₁ = 0.45 μ s
 T₂ < 0.2 μ s
 T₃ = 12-35 μ s



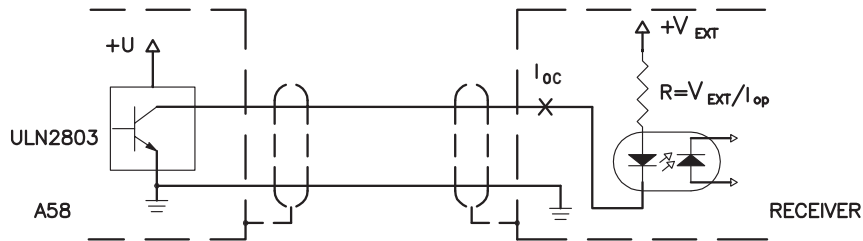
TTL:
(FOR A58-12,14,15,16)

$V_O < 0.5V$ @ $I \leq 20mA$
WITH +5V POWER SUPPLY



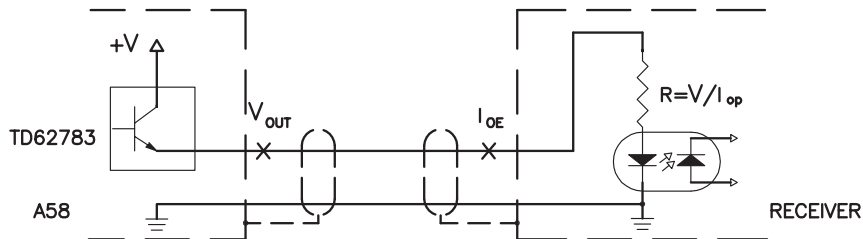
OC (OPEN COLLECTOR):
(FOR A58-12)

$V = +(5,12,24)V$
 $V_{EXT} = 50V$ MAX
 $I_{EXT} = 50 mA$ MAX



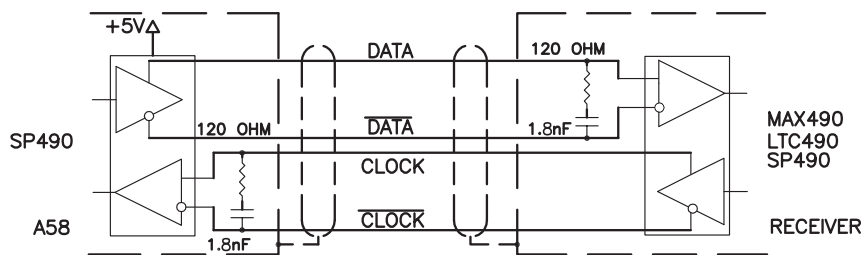
OE (OPEN EMITTER):
(FOR A58-12)

$V = +(5,12,24)V$
 $I_{EXT} = 50 mA$ MAX
 V_{OUT} AT $I_{OE} = 50 mA$, NOT LESS THAN $(V - 1.5)V$

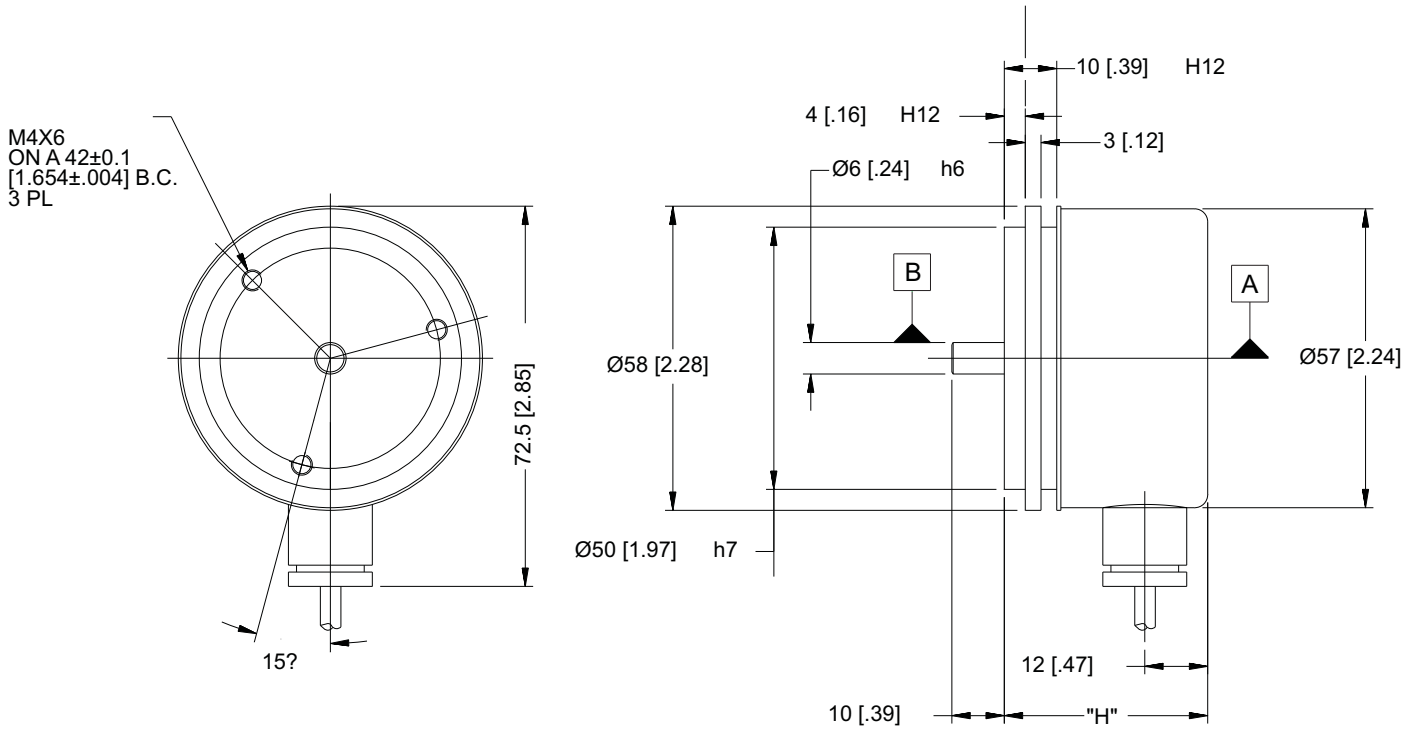


SSI (RS485):
(FOR A58-12,14,15,16,17)

$V = +5V$



SIDE CABLE EXIT

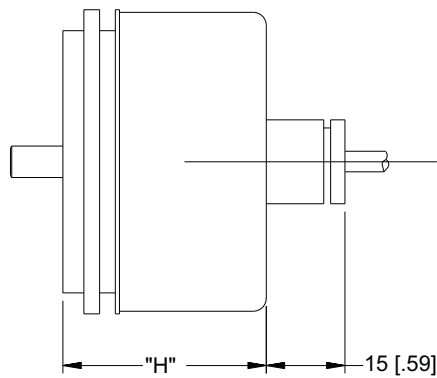


DIMENSIONS ARE mm [INCHES]

"H" (mm)

A58-12	A58-14, -15, -16, -17
42	53

TOP CABLE EXIT



ORDERING INFORMATION

A58 Ordering Combinations

RES	OF	OC	OD	VOLT	CONN
12	S	B, G	RS	5	P, S
	P	B, G	T, OC, OE	5	P, T
			OC, OE	12, 24	
	N	G	T, OC, OE	5	P, Q, R
			OC, OE	12, 24	
	M	B, G	T, OC, OE	5	P, Q, R
OC, OE			12, 24		
13 - 16	S	B, G	RS	5	P, S
	M	B, G	T, OC, OE	5	P, Q, R
17	S	B, G	RS	5	P, S

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

MODEL

A58

SHAFT - Shaft type
S Solid

RES - Resolution
12 12 bit
13 13 bit
14 14 bit
15 15 bit
16 16 bit
17 17 bit

OF - Output Format
S SSI
P Parallel, output enable
N Parallel, no output enable
M Multiplexed

OC - Output Code
B Binary
G Gray code

OD - Output Device
TT TTL (74AC373, 74AC374)
OC Open Collector (ULN2803)
OE Open Emitter (TD62783)
RS RS Differential (SP 490)

VOLT - Voltage
05 5 Vdc Power Supply
12 12 Vdc Power Supply
24 24 Vdc Power Supply

TEMP - Temperature Range and Sealing
S Standard (0 - 70°C), IP-64
T Standard (0 - 70°C), IP-65
E Extended (-25 - 85°C), 64
F Extended (-25 - 85°C), 65

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
Q DA-15P
R DE-15P
S DE-9P
T DA-26P

SHAFT - Dia
03M 3 mm
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.

