Autonics

Ø58mm Shaft type Single-turn **Absolute Rotary Encoder EP58 SERIES**

INSTRUCTION MANUAL



Thank you for choosing our Autonics product. Please read the following safety considerations before use.

Safety Considerations

×Please observe all safety considerations for safe and proper product operation to avoid

★▲ symbol represents caution due to special circumstances in which hazards may occur.

Marning Failure to follow these instructions may result in serious injury or death.

⚠ Caution Failure to follow these instructions may result in personal injury or product damage.

▲ Warning

- 1. Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)
- Failure to follow this instruction may result in personal injury, economic loss or fire.

 2. Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present. Failure to follow this instruction may result in explosion or fire.
- 3. Install on a device panel to use.
- Failure to follow this instruction may result in fire.
- 4. Do not connect, repair, or inspect the unit while connected to a power source.
 Failure to follow this instruction may result in fire.

 5. Check 'Connections' before wiring.
- Failure to follow this instruction may result in fire
- 6. Do not disassemble or modify the unit.

 Failure to follow this instruction may result in fire

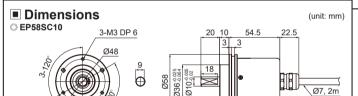
▲ Caution

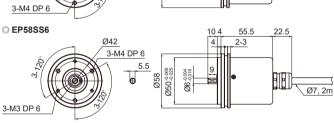
- Use the unit within the rated specifications.
 Failure to follow this instruction may result in fire or product damage. 2. Do not short the load.
- Failure to follow this instruction may result in product damage by fire.

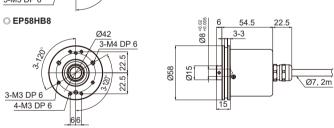
 3. Do not use the unit near the place where there is the equipment which generates strong magnetic force or high frequency noise and strong alkaline, strong acidic
- Failure to follow this instruction may result in product damage.

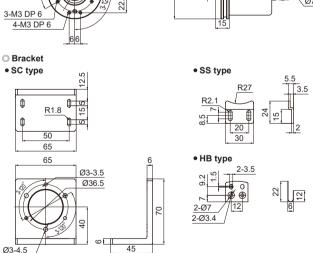
Ordering Information

EP58SC	10		10	1024	1	R	P	24
Series Ø58mm	Shaft diameter			Pulses/ resolution	Output code	Rotating direction	Control output	Power supply
SC: Shaft clamping type	nal	10	Ø10mm		1:BCD	F : Output value	P : PNP open	
SS: Shaft synchro type	External	6	Ø6mm	Refer to resolution	code 2:Binary code	increases at CW direction R	collector output N	5: 5VDC±5% 24: 12-24VDC ±5%
HB: Hollow built-in type	Inner	8	Ø8mm		3:Gray code	: Output value increases at CCW direction	: NPN open collector output	1576

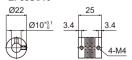








O Coupling EP58SC10



 EP58SS6 Ø6^{+0.1} 2.8

- · Parallel misalignment: max. 0.25mm
- Angular misalignment: max. 5°
- End-play: max. 0.5mm
- %For flexible coupling (ERB Series) information, refer to catalogue.
- XDo not put strong impact when insert a coupling into shaft.
- Failure to follow this instruction may result in product damage
- ※Fix the unit or a coupling by a wrench under 0.15 N·m of forque.
 ※When you install this unit, if eccentricity and deflection angle are larger, it may shorten the life cycle of this unit.
- *The above specifications are subject to change and some models may be
- discontinued without notice.

 **Be sure to follow cautions written in the instruction manual, and the technical descriptions (catalog, website).

Speicifications

Туре	•		Ø58mm 9	Single-turn Absolute Ro	stary Encoder								
-,-	DND	pen collector output			nary Encoder								
Mode		pen collector output											
Reso	olution (Pl			80, 360, 720			64. 128.	256, 512, 1024					
	Output o		BCD Code		Binary Code	Gray Code		BCD Code	Binary Code	Gray Code			
	output sous	45	TS: Signal pulse(7bit)			64	TS : Signal pulse(7bit)	TS: Signal pulse(6bit)					
			-division		TS:8°±25'	TS:16°±25'		TS: 5.625°±15'	TS:5.625°±15'	TS:11.25°±15'			
			90	TS: Signal pulse(8bit)	TS: Signal pulse(7bit)	TS: Signal pulse(7bit)	128	TS : Signal pulse(9bit)	TS: Signal pulse(7bit)	TS: Signal pulse(7bi			
			-division	TS:4°±25'	TS:4°±25'	TS:8°±25'	-division	TS: 2.8125°±15'	TS:2.8125°±15'	TS:5.625°±15'			
		hase/Output	180	TS: Signal pulse(9bit)					TS: Signal pulse(8bit)				
l _	angle			TS:2°±25'	TS:2°±25'	TS:4°±25'		TS:1.406°±15'	TS:1.406°±15'	TS:2.8125°±15'			
specification				TS: Signal pulse(10bit)					TS: Signal pulse(9bit)				
gat					TS:1°±25'	TS:2°±25'		TS:0.703°±15'	TS:0.703°±15'	TS:1.406°±15'			
ijj			720	TS: Signal pulse(11bit)					TS: Signal pulse(10bit)				
sbe		DND	-division	TS:0.5°±25'	TS:0.5°±25'	TS:1°±25'	-division	TS:0.3515°±15'	TS:0.3515°±15'	TS:0.703°±15'			
	PNP open Control collector output		Output voltage: min. (Power supply-1.5)VDC=-, load current: max. 32mA										
Electrical	output	NPN open collector output	Load curi	rent: max. 32mA, resid	ual voltage: max. 1VD0)==							
-	Respons	se time (rise, fall)	Ton=800i	nsec, Toff=max. 800nse	ec (cable: 2m, I sink = 3	32mA)							
	Max. res	sponse frequency	35kHz		,	,							
	Power s	upply	• 5VDC= ±5% (ripple P-P: max. 5%) • 12-24VDC= ±5% (ripple P-P: max. 5%)										
	Current consumption		Max. 100mA (disconnection of the load)										
		n resistance	Over 100MΩ (at 500VDC mega for all terminals and case)										
		c strength	750VAC 50/60Hz for 1 minute (all terminals and case)										
	Connect		Axial cable type (cable gland)										
gia	Starting	torque of inertia ading owable revolution ^{*1}		• SC/SS type: max. 40gf·cm (0.004N·m) • HB type: max. 90gf·cm (0.009N·m)									
igani	Moment	of inertia		type: max. 15g·cm² (1.		B type: max. 20g·cm² (
ecit	Shaft loa	ading		type: radial: 10kg·f, thru	ıst: 2.5kg·f • H	B type: radial: 2kg·f, th	rust: 1kg·1	1					
⊠ g	Max. allo	owable revolution*1	3,000rpm										
Vibra			1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours										
Shoo	ck	I	Approx. max. 50G										
Envir	onment	Ambient temp.	-10 to 70°C, storage: -25 to 85°C										
		Ambient humi	35 to 85%RH, storage: 35 to 90%RH										
	ection stru	ucture	IP50(IEC standard)										
Cabl	e essories			5-wire, 2m, Shield cab		rookot							
-			Ø10mm (SC type) / Ø6mm (SS type) coupling, fixing bracket										
Appr			CE	545 /	105 \ 001	505 /	445 \	110.	2 / 440)				
Weig	int~-		 SC type 	: approx. 545g (approx	. 435g) • SS type:	approx. 525q (approx.	415g)	 HB type: approx. 520 	Jg (approx. 410g)				

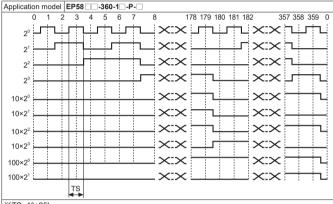
X1: Make sure that Max, response revolution should be lower than or equal to max, allowable revolution when selecting the resolution.

[Max. response revolution(rpm) = $\frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{sec}$]

※2: The weight includes packaging. The weight in parenthesis in for unit only.

X Environment resistance is rated at no freezing or condensation

360-division Output Waveform (BCD code output)



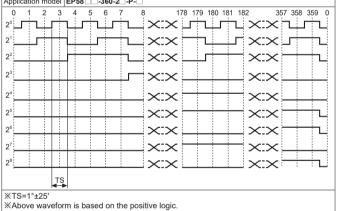
XTS=1°+25

(The output waveform of negative logic is opposed.)

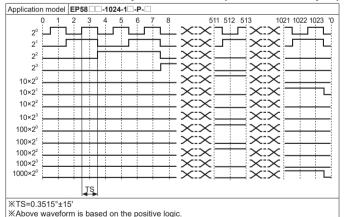
(The output waveform of negative logic is opposed.)

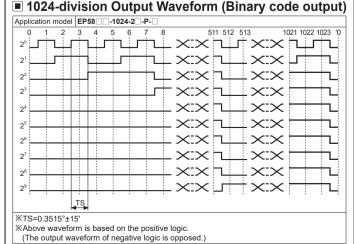
(The output waveform of negative logic is opposed.)

360-division Output Waveform (Binary code output)

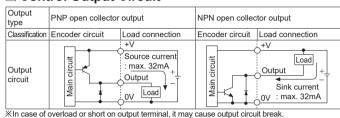


1024-division Output Waveform (BCD code output)





Control Output Circuit



Connections

O BCD Code

	Resolution	45-	64-	90-	128-	180-	256-	360-	512-	720-	1024
Color		division	division	division	division	division	division	division	division	division	-division
Power	White	+V									
Fower	Black	GND (0V)									
	Brown	2°									
	Red	2 ¹									
	Orange	2 ²									
	Yellow	2 ³									
	Blue	2°×10									
	Purple	2 ¹ ×10									
Output	Gray	2 ² ×10									
wire	White/Brown	N·C		2 ³ ×10							
	White/Red	N·C			2°×100						
	White/Orange	N·C					2 ¹ ×100				
	White/Yellow	N·C							2 ² ×100		
	White/Blue	N·C									2 ³ ×100
	White/Purple	N·C									2°×1000
	Shield wire	F.G.									

	Resolution		64-	90-	128-	180-	256-	360-	512-	720-	1024
Color		division	division	division	division	division	division	division	division	division	-divisio
Power	White	+V									
rowei	Black	GND (0	OV)								
	Brown	2°									
	Red	2 ¹									
	Orange	2 ²									
	Yellow	2 ³									
	Blue	2 ⁴									
	Purple	2 ⁵									
Output wire	Gray	N·C		2 ⁶							
	White/Brown	N·C				2 ⁷					
	White/Red	N·C						2 ⁸			
	White/Orange	N·C								2 ⁹	
	White/Yellow	N·C									
	White/Blue	N·C									
	White/Purple	N·C									
	Shield wire	F.G.									

*The shield cable and metal case should be grounded (F.G.) XN:C (Not Connected): Not using

*Please make sure that short is not occurred when wiring output lines because an exclusive driver IC is used at output circuit. *Do not apply tensile strength over 30N to the cable.

Cautions during Use

- 2. 5VDC, 12-24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.

 3. For using the unit with the equipment which generates noise (switching regulator, inverter,
- servo motor, etc.), ground the shield wire to the F.G. terminal.

 4. Ground the shield wire to the F.G. terminal.
- 5. When using switching mode power supply, frame ground (F.G.) terminal of power supply
- should be grounded.

 6. Wire as short as possible and keep away from high voltage lines or power lines,
- to prevent inductive noise. 7. Check the wire type and response frequency when extending wire because of distortion of waveform or residual voltage increment etc by line resistance or capacity between lines.
- This unit may be used in the following environments.
 Olndoors (in the environment condition rated in 'Specifications')
- ②Altitude max. 2.000m
- ③Pollution degree 2
- 4 Installation category II

Major Products

- Photoelectric Sensors Temperature Controllers ■ Temperature Controllers
 ■ Temperature/Humidity Tran
 ■ SSRs/Power Controllers
- Fiber Optic Sensors

- Door Side Sensors
- Area Sensors
- Proximity Sensors
 Pressure Sensors
- Panel Meters
 Tachometer/Pulse (Rate) Meters ■ Rotary Encoders
- Display Units ■ Connector/Sockets ■ Sensor Controllers

Counters

■ Timers

- Switching Mode Power Supplies
 Control Switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper Motors/Drivers/Motion Controllers
- Graphic/Logic Panels
 Field Network Devices
 Laser Marking System (Fiber, CO₂, Nd: YAG)

Autonics Corporation

DRW171379AC

■ E-mail: sales@autonics.com ■ Laser Welding/Cutting System

TFL: 82-51-519-3232