Autonics

ROTARY ENCODER (INCREMENTAL TYPE) E40S/E40H/E40HB/E80H SERIES

E40H E40HB E80H

Thank you very much for selecting Autonics products. For your safety, please read the following before using.

Caution for your safety

*Please keep these instructions and review them before using this unit.

*Please observe the cautions that follow:

▲ Warning Serious injury may result if instructions are not followed. Product may be damaged, or injury may result if instructions are ▲ Caution Product may be not followed.

*The following is an explanation of the symbols used in the operation manual. ★: Injury or danger may occur under special conditions.

∧Warning

1. In case of using this unit with machinery(Medical equipment, vehicle, train, airplane, combustion apparatus, entertainment processing equipment, conveyor, elevator or safety device etc.), it is required to install fail-safe device. or contact us for information on type required.

It may cause serious human injury or a fire, property

∆Caution

- 1. Do not drop water or oil on this unit.
- 2. Please observe voltage rating.
- 3. Please check the polarity of power and wrong wiring.
- 4. Do not short circuit the load.

Outline

This unit is very useful to control position and speed by converting revolution value of shaft into number of pulse as an optical incremental Encoder.

Ordering information

E40S	6 .	- 5000	- <u>3</u>	- N -	- 24		
Series	Shaft diameter	Pulse / 1Revolution	Output phase	Output	Power supply	Cable	
E40S	* ø 6mm ø 8mm	*1,*2,*5,10,*12,15,20, 23,25,30,35,40,45,50,	2: A, B	T: Totem pole			
	Inside diameter	60,75,100,120,125,150 192,200,240,250,256,	3: A, B, Z 4: A. A. B. B	output		No mark: Normal type	
E40H E40HB	ø 6mm * ø 8mm	300,360,400,500,512, 600,800,1000,1024,1200,	6: A, \overline{A} , B, \overline{B} ,	N: NPN open collector output	5: 5VDC±5% 24: 12-24VDC	(*)C:	
	ø10mm ø12mm	1500,1800,2000,2048, 2500,3000,3600,5000	Z, Z	V: Voltage output	±5%	Cable outgoing connector type	
E80H	* ø 30mm ø 32mm	60,100,360,500 512,1024,3200	3: A, B, Z 6: A, Ā, B, B, Z, Z	L: Line Driver output			
W a light indicates the standard enseification of diameters							

- * 1, 2, 5, 12 P/R are output A, B phase only. (But Line Driver output A, A, B, B phase)

Control output diagram

Totem Po	le output	NPN open collector output		
Rotary encoder circuit	Load connection	Rotary encoder circuit	Load connection	
Sink current: N	Output +	Main circuit	Output Load + + V Sink current: Max. 30mA	
Voltage	output	Line Driver output		
Rotary encoder circuit	Load connection	Rotary encoder circuit	Load connection	
oirouit B B	Source current: Max.10mA Output +	Sircuit	+V DA phase output +	

** The output circuit of A, B, Z phase are the same. (Line Driver output is A, \bar{A} , B, \bar{B} , Z, \bar{Z} phase) ** Totem Pole output can be used for NPN open collector type(**1) or voltage output type(**2).

%The above specifications are subject to change and some models may be discontinued

Specifications

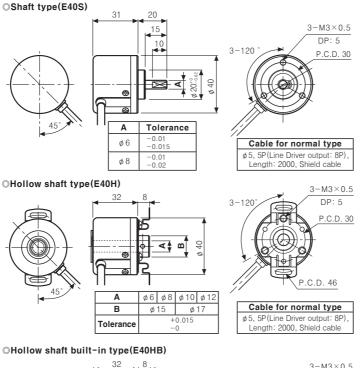
ncremental Rotary encoder	ø 40mm Shaft type	ø 40mm Hollow shaft type	ø 40mm Hollow shaft Built- in type	ø 80mm Hollow shaft type		
Totem Pole output	E40ST	E40HT	E40HBT-	E80HT		
NPN open collector output	E40SN	E40HN	E40HBN	E80HN		
NPN open collector output Voltage output	E40SV-	E40HV	E40HBV	E80HV		
Line Driver output	E40S	E40HL-	E40HB	E80HL-		
esolution(P/R)	*1, *2, *5, 10, *12, 15, 20, 23, 25, 30, 35, 512, 600, 800, 1000, 1024, 1200, 1500, 180	60, 100, 360, 500, 512, 1024, 3200				
utput phase(※1)	(★1) A, B, Z phase(Line Driver output: A, Ā, B, Ē, Z, Ā phase)					
Phase difference between output	Output between A and B phase: $\frac{T}{4}\pm\frac{T}{8}$ (T= 1cycle of A phase)					
Totem Pole output NPN open collector output	Load current: Max. 30mA, Residual voltage: Max. 0.4VDC High & Load current: Max. 10mA, Output voltage(Power voltage 5VDC): Min.(Power voltage -2.0)VDC, Output voltage(Power voltage 12-24VDC): Min. (Power voltage -3.0)VDC					
		Load current: Max. 30mA, Res	sidual voltage: Max. 0.4VDC			
Voltage output		Load current: Max. 10mA, Res	sidual voltage: Max. 0.4VDC			
Voltage output Line Driver output Totem Pole output NPN open collector output Voltage output United Driver output NPN open collector output Voltage output Line Driver output	Low & Load current: Max. 20mA, Residual voltage: Max. 0.5VDC High & Load current: Max20mA, Output voltage (Power voltage (Power voltage (Power voltage 12-24VDC): Min. (Power voltage -3.0)VDC					
Totem Pole output NPN open collector output	Max. 1⊭ (Cable length: 2m, I sink=20mA)					
Voltage output	max. 17- (Vaulo longilii Ent, 1 onik Ediliri)					
Voltage output	Max. 0.5 (Cable length: 2m, I sink=20mA)					
Max. Response frequency		300kHz		200kHz		
Power supply		SVDC ±5%(Ripple P-P: Max. 5%)	• 12-24VDC ±5%(Ripple P-P: Max. 5%)			
Current consumption Max. 80mA (disconnection of the load), Line Driver output: Max. 50mA(disconnection of the load)				oad)		
Insulation resistance	Min. 100№(at 500VDC megger between all terminals and case)					
Dielectric strength		750VAC 50/60Hz for 1 minute (B				
Connection	0. 6.7	Cable outgoing type, 250mm C logf·cm(0.004N·m), Hollow Type: Max. 50g				
Starting torque	Shaft Type: Max. 4	Max. 200gf·cm(0.02N·m)				
Moment of inertia		Max. 800g·cm²(8×10 ⁻⁵ kg·m²)				
Shaft loading Max allowable revolution (*2)		Radial: 5kgf, Thrust: 2.5kgf				
ω I man anomabio revolution (m.z)	4	5,000rpm	1 min.) in each X, Y, Z direction for 2 hours	3,600rpm		
bration		Max. 50G	i iiiii. jiii each X, Y, Z direction for 2 hours	Max. 75G		
. Ambient temperature		max. 50G -10 ~70℃, Stora	ige: −25 ~ 85°C	Wax. / JG		
Ambient humidity		35 ~ 85% RH, Stora				
rotection		IP50(IEC Si				
	ø5mm, 5P, Length: 2m, Shield cable(Line Driver output: ø5mm, 8P)					
able	(AWG 24, Core wire diameter: 0.08mm, No. of core wire: 40, Insulator out diameter: ø1mm)					
ccessory	ø 6mm coupling (Standard), ø 8mm coupling (Option)		Bracket			
pproval		C € (Except for Line)	ne Driver output)			
Init weight		Approx. 120g		Approx. 560g		

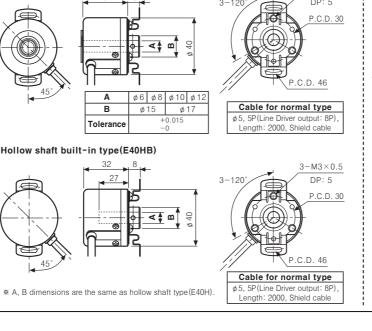
- \divideontimes 1: 1, 2, 5, 12 P/R are output A, B phase only.(But Line Driver output: A, \overline{A} , B, \overline{B} phase)
- * 2: Max. allowable revolution ≥ Max. response revolution [Max. response revolution (rpm) = Max. response frequency ×60 sec.] Please select the resolution to make lower max. revolution than max. allowable revolution.

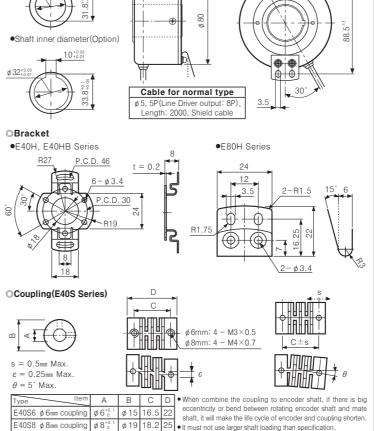
OHollow shaft type(E80H)

* Environment resistance is rated at no freezing or condensation

Dimensions







44.5

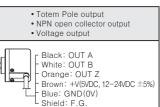
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Connections

ONormal type

Cable outgoing connector type · Totem Pole output NPN open collector ouput

Voltage output







• Line Driver output

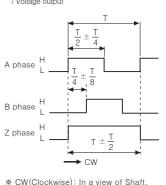
Silicia 1.a.	Pin No.	Ca
Line Driver output	PIII NO.	C
г Black: OUT A	1	ВІ
- Red: OUT Ā - White: OUT B	2	W
	3	Ora
Gray: OUT B Orange: OUT Z	4	Br
T - Yellow: OUT Z	5	В
- Brown: +V(5VDC, 12-24VDC ±5%)	6	Sh
- blue: GND(0V)		
L Shield: F.G.		\Box

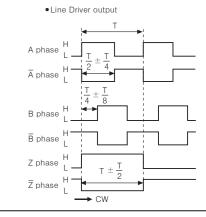
※ Non-using wires must be insulated. * The shield cable and metal case of encoder must be grounded (F.G.).

2 Red OUT A

Output waveform

• Totem Pole output / NPN open collector output





Caution for using

(Unit:mm)

① This unit is consisted of precision components. Therefore please treat this product carefully. (2) When you install this unit, if eccentricity and deflection angle are larger, it may shorten the life cycle of this unit.

Please do not use this unit with below environment, it results in malfunction.

- 1 Place where this unit or component may be damaged by strong vibration or impact.
- 2 Place where there are lots of flammable or corrosive gases.
- 3 Place where strong magnet field or electric noise are occurred.
- 4) Place where there is beyond of rating temperature or humidity
- (5) Place where strong acids or alkali near by. (6) Place where there is the direct ray of the sun.

3. Vibration and Impact

1 When the strong impact loads on this unit, the error pulse may occur as if the slit is revolving.

② Therefore please fix bracket firmly when mount this unit, because Rotary encoder with high resolution can be easily affected by impact.

Do not apply a tensile strength in excess of 30N to the cable.

- 2 When a high voltage or power line pass near by the encoder cable, be sure to wire the encoder cable in separated conduit to prevent malfunction.
- ③ When extend the cable, please use it after checking the cable and response frequency due to increment of residual voltage or distortion of waveform can be easily occurred. (Preferable shortest distance for operating) 4 Shield wire must be connected to F.G. terminal
- *It may cause malfunction if above instructions are not followed.

Major products

■ Fiber Optic Sensors ■ Temperature/Humidity Transducers

■ Door Side Sensors ■ Counters

Area Sensors

Proximity Sensors ■ Timers
■ Panel Meters

Pressure Sensors Tachometers/Pulse(I

■ Connector/Sockets
■ Sensor Controller

■ Switching Mode Power Supplies

Control Switches/Lamps/Buzzers

I/O Terminal Blocks & Cables

Graphic/Logic Panels

Field Network Devices ■ Laser Marking System(Fiber, Co₂, Nd:yag) ■ Laser Welding/Soldering System

Autonics Corporation

Trusted Partner In Industrial Automation

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EP-KE-09-0060M