

## Hollow Shaft Type Ø100mm Incremental Rotary Encoder

### ■ Features

- Great environmental resistance
- High stability of output
- Exclusive for Elevator

**⚠ Please read "Safety Considerations" in the instruction manual before using.**



### ■ Ordering Information

<b>E100H</b>	<b>35</b>	<b>10000</b>	<b>6</b>	<b>L</b>	<b>5</b>
Series	Shaft diameter	Pulses/revolution	Output phase	Control output	Power supply
Ø100mm, hollow shaft type	Ø35mm	512, 1024, 10000	3: A, B, Z 6: A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$	T: Totem pole output N: NPN open collector output V: Voltage output L: Line driver output	5: 5VDC $\pm$ 5% 24: 12-24VDC $\pm$ 5%

### ■ Specifications

Item	Hollow Shaft Type Ø100mm Incremental Rotary Encoder		
Resolution (PPR) <sup>※1</sup>	512, 1024, 10000		
Electrical specification	Output phase	A, B, Z phase (line driver output A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$ phase)	
	Phase difference of output	Phase difference between A and B: $\frac{T}{4} \pm \frac{T}{8}$ (T=1 cycle of A phase)	
	Control output	Totem pole output	• [Low] - Load current: max. 30mA, residual voltage: max. 0.4VDC= • [High] - Load current: max. 10mA, output voltage (power voltage 5VDC= $\bar{=}$ ): min. (power voltage-2.0)VDC= $\bar{=}$ , output voltage (power voltage 12-24VDC= $\bar{=}$ ): min. (power voltage-3.0)VDC= $\bar{=}$
		NPN open collector output	Load current: max. 30mA, residual voltage: max. 0.4VDC= $\bar{=}$
		Voltage output	Load current: max. 10mA, residual voltage: max. 0.4VDC= $\bar{=}$
		Line driver output	• [Low] - Load current: max. 20mA, residual voltage: max. 0.5VDC= $\bar{=}$ • [High] - Load current: max. -20mA, output voltage (power voltage 5VDC= $\bar{=}$ ): min. 2.5VDC= $\bar{=}$ , output voltage (power voltage 12-24VDC= $\bar{=}$ ): min. (power voltage-3.0)VDC= $\bar{=}$
	Response time (rise/fall)	Totem pole output	Max. 1 $\mu$ s (cable length: 2m, I sink = 20mA)
		NPN open collector output	
		Voltage output	
		Line driver output	
	Max. response frequency	300kHz	
	Power supply	• 5VDC= $\bar{=}$ $\pm$ 5% (ripple P-P: max. 5%) • 12-24VDC= $\bar{=}$ $\pm$ 5% (ripple P-P: max. 5%)	
	Current consumption	Max. 80mA (disconnection of the load), Line driver output: max. 50mA (disconnection of the load)	
	Insulation resistance	Over 100M $\Omega$ (at 500VDC megger between all terminals and case)	
Dielectric strength	750VAC 50/60Hz for 1 minute (between all terminals and case)		
Connection	Radial connector type		
Mechanical specification	Starting torque	Max. 300gf·cm (0.03N·m)	
	Moment of inertia	Max. 800g·cm <sup>2</sup> (8 $\times$ 10 <sup>-5</sup> kg·m <sup>2</sup> )	
	Shaft loading	Radial: max. 5kgf, Thrust: max. 2.5kgf	
	Max. allowable revolution <sup>※2</sup>	3,600rpm	
Vibration	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours		
Shock	Approx. max. 75G		
Environment	Ambient temperature	-10 to 70°C, storage: -25 to 85°C	
	Ambient humidity	35 to 85%RH, storage: 35 to 90%RH	
Protection structure	IP50 (IEC standard)		
Cable	Ø5mm, 5-wire (line driver output: Ø6mm, 8-wire), 2m, Shield cable (AWG24, core diameter: 0.08mm, number of cores: 40, insulator out diameter: Ø1mm)		
Accessory	Bracket: 2		
Approval	CE (except for line driver output)		
Weight <sup>※3</sup>	Approx. 1400g (approx. 1130g)		

※1: Not indicated resolutions are customizable.

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

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

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

※Environment resistance is rated at no freezing or condensation.

SENSORS

CONTROLLERS

MOTION DEVICES

SOFTWARE

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) LIDAR

(D) Door/Area Sensors

(E) Vision Sensors

(F) Proximity Sensors

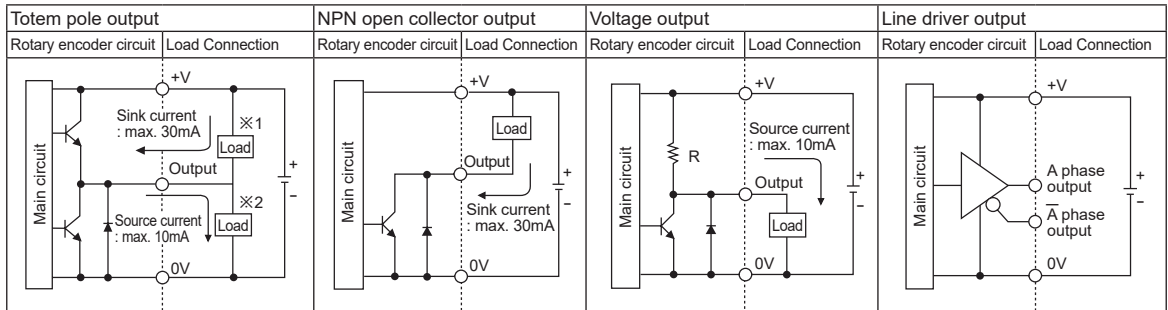
(G) Pressure Sensors

(H) Rotary Encoders

(I) Connectors/ Connector Cables/ Sensor Distribution Boxes/ Sockets

# E100H Series

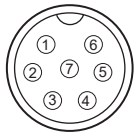
## Control Output Diagram



- Totem pole output type can be used for NPN open collector output type (※1) or Voltage output type (※2).
- All output circuits of A, B, Z phase are same. (line driver output is A, A-bar, B, Z, Z-bar)

## Connections

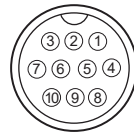
### ○ Totem pole output / NPN open collector output / Voltage output



SCN-16-7P

Pin No.	Function	Cable color
①	+V	Brown
②	GND	Blue
③	OUT A	Black
④	OUT B	White
⑤	OUT Z	Orange
⑥	F.G.	Shield
⑦	N-C	N.C

### ○ Line driver output



SCN-20-10P

Pin No.	Function	Cable color
①	+V	Brown
②	GND	Blue
③	OUT A	Black
④	OUT A-bar	Red
⑤	F.G.	Shield
⑥	OUT B	White
⑦	OUT B-bar	Gray
⑧	OUT Z	Orange
⑨	OUT Z-bar	Yellow
⑩	N-C	N.C

※N-C (not connected)

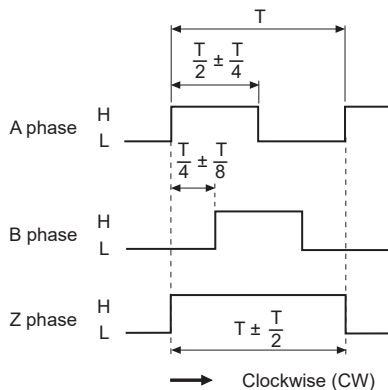
※Unused wires must be insulated.

※The metal case and shield cable should be grounded (F.G.).

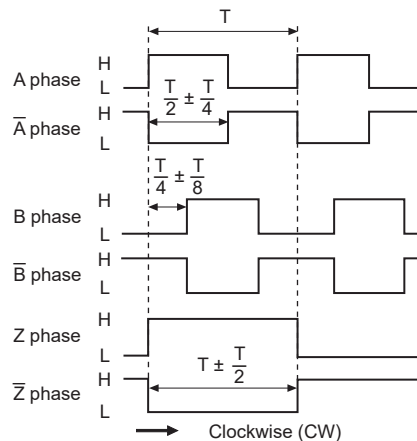
※Do not apply tensile strength over 30N to the cable.

## Output Waveform

### ○ Totem pole output / NPN open collector output / Voltage output

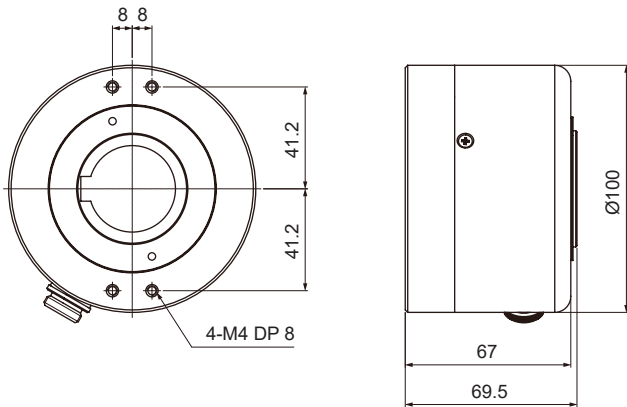


### ○ Line driver output

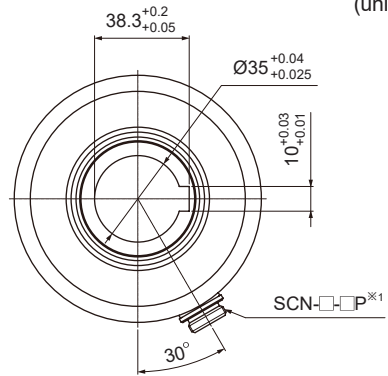


# Incremental Ø100mm Hollow Shaft Type

## ■ Dimensions



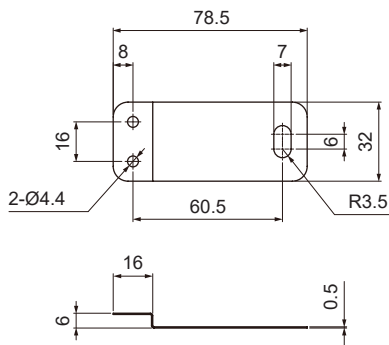
(unit: mm)



※1

Control output	Connector
Totem pole output	SCN-16-7P
NPN open collector output	
Voltage output	SCN-20-10P
Line driver output	

## ○ Bracket



※Fix the unit or a coupling by a wrench under 0.15N·m of torque.

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(I) Connectors/  
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