

E58 Series

Shaft Type/Hollow Shaft Type/Blind Hollow Shaft Type Ø58mm Incremental Rotary Encoder

■ Features

- Ø58mm flange type
- Suitable for measuring angle, position, revolution, speed, acceleration and distance
- Power supply: 5VDC, 12-24VDC ±5%

■ Applications

- Various tooling machinery, packing machine and general industrial machinery, etc.

⚠ Please read "Safety Considerations" in operation manual before using.



■ Ordering Information

E58SC	10	8000	3	N	24
--------------	-----------	-------------	----------	----------	-----------

Series (Ø58mm)	Shaft diameter	Pulses/revolution	Output phase	Control output	Power supply	Cable
SC: Shaft Clamping	External 10 Ø10mm	Refer to resolution	2: A, B 3: A, B, Z 4: A, \bar{A} , B, \bar{B} 6: A, \bar{A} , B, \bar{B} , Z, Z	T: Totem pole output N: NPN open collector output V: Voltage output L: Line driver output	5: 5VDC ±5% 24: 12-24VDC ±5%	No mark: Axial/Radial cable type C: Axial/Radial cable connector type CR: Axial connector type CS: Radial connector type
SS: Shaft Synchro	6 Ø6mm					
H: Hollow shaft	Inner 12 Ø12mm					
HB: Blind hollow shaft						

※Please refer to 'connection' in the specifications for the detailed information about cable.

■ Specifications

Item	Shaft Type/Hollow Shaft Type/Blind Hollow Shaft Type Ø58mm Incremental Rotary Encoder	
Resolution (PPR) ^{※1}	*1, *2, *5, 10, *12, 15, 20, 23, 25, 30, 35, 40, 45, 50, 60, 75, 100, 120, 125, 150, 192, 200, 240, 250, 256, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1500, 1800, 2000, 2048, 2500, 3000, 3600, 5000, 6000, 8000	
Output phase	A, B, Z phase (line driver output: A, \bar{A} , B, \bar{B} , Z phase)	
Phase difference of output	Output between A and B phase: $\frac{T}{4} \pm \frac{T}{8}$ (T=1 cycle of A phase)	
Electrical specification	Control output	
	Totem pole output	• [Low] - Load current: max. 30mA, residual voltage: max. 0.4VDC=
	NPN open collector output	• [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=
	Voltage output	Load current: max. 30mA, residual voltage: max. 0.4VDC=
Electrical specification	Line driver output	Load current: max. 10mA, residual voltage: max. 0.4VDC=
	Response time (rise, fall)	• [Low] - Load current: max. 20mA, residual voltage: max. 0.5VDC=
	Totem pole output	• [High] - Load current: max. -20mA, output voltage (power voltage 5VDC=): min. 2.5VDC=, output voltage (power voltage 12-24VDC=): min. (power voltage-3.0)VDC=
	NPN open collector output	Max. 1μs (cable length: 2m, I sink = 20mA)
Electrical specification	Voltage output	Max. 0.5μs (cable length: 2m, I sink = 20mA)
Electrical specification	Line driver output	Max. 0.5μs (cable length: 2m, I sink = 20mA)
Electrical specification	Max. response frequency	300kHz
Electrical specification	Power supply	• 5VDC= ±5% (ripple P-P: max. 5%) • 12-24VDC= ±5% (ripple P-P: max. 5%)
Electrical specification	Current consumption	Max. 80mA (disconnection of the load), Line driver output: max. 50mA (disconnection of the load)
Electrical specification	Insulation resistance	Over 100MΩ (at 500VDC megger between all terminals and case)
Electrical specification	Dielectric strength	750VAC 50/60Hz for 1 min (between all terminals and case)
Electrical specification	Connection	• SC/SS/HB type: axial cable type, axial cable connector type, axial/radial connector type • H type: radial cable type, radial cable connector type
Mechanical specification	Starting torque	• SC/SS type: max. 40gf·cm (0.004N·m) • H/HB type: max. 90gf·cm (0.009N·m)
	Moment of inertia	• SC/SS type: max. 15g·cm ² (1.5×10 ⁻⁶ kg·m ²) • H/HB type: max. 20g·cm ² (2×10 ⁻⁶ kg·m ²)
	Shaft loading	• SC/SS type-Radial: max. 10kgf, Thrust: max. 2.5kgf • H/HB type-Radial: max. 2kgf, Thrust: max. 1kgf
	Max. allowable revolution ^{※2}	5,000rpm
Mechanical specification	Vibration	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours
Mechanical specification	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
Mechanical specification	Protection structure	IP50 (IEC standard)
Mechanical specification	Cable	Ø5mm, 5-wire (line driver output: 8-wire), 2m, Shield cable (AWG24, core diameter: 0.08mm, number of cores: 40, insulator out diameter: Ø1mm)
Mechanical specification	Accessory	Coupling (SC type: Ø10mm, SS type: Ø6mm), Bracket
Mechanical specification	Approval	CE (except for line driver output)
Weight ^{※3}	Cable type, Cable connector type	• SC type: approx. 420g (approx. 310g) • SS type: approx. 395g (approx. 285g) • H/HB type: approx. 380g (approx. 270g)
	Connector type	• SC type: approx. 340g (approx. 230g) • SS type: approx. 315g (approx. 205g) • HB type: approx. 310g (approx. 200g)

※1: ** pulse is only for A, B phase. (line driver output is for A, \bar{A} , B, \bar{B} phase) [In case of hollow shaft type, 6000, 8000 PPR excluded]

Not indicated resolutions are customizable.

※3: The weight includes packaging.

The weight in parenthesis is for unit only.

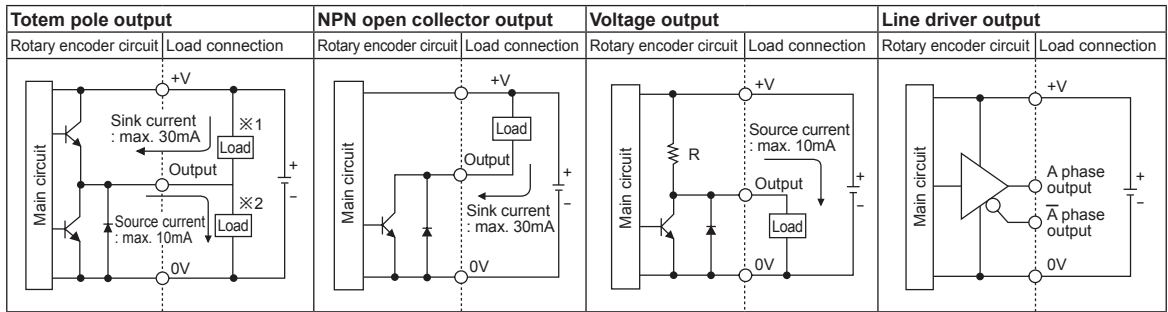
※2: Make sure that max. response revolution should be lower than or equal to max. allowable revolution when selecting the resolution.

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

※Environment resistance is rated at no freezing or condensation.

Incremental Ø58mm Shaft/Hollow Shaft/Blind Hollow Shaft Type

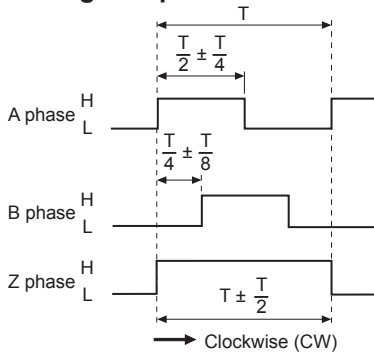
Control Output Diagram



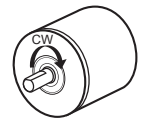
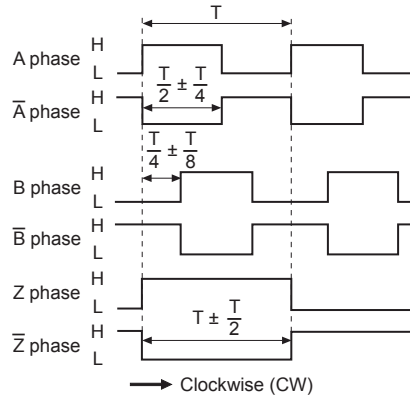
- All output circuits of A, B, Z phase are same. (line driver output is A, \bar{A} , B, \bar{B} , Z, \bar{Z})
- Totem pole output type can be used for NPN open collector type (※1) or voltage output type (※2).

Output Waveforms

Totem pole output / NPN open collector output / Voltage output



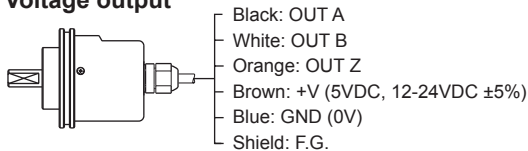
Line driver output



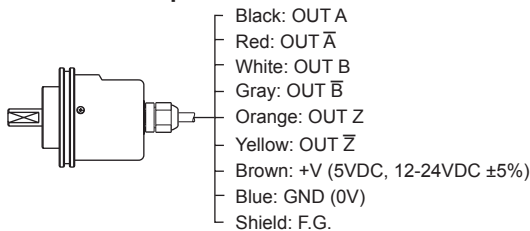
Connections

⊙ Axial/Radial cable type

- Totem pole output / NPN open collector output / Voltage output



- Line driver output



- ※ Unused wires must be insulated.
- ※ The metal cable and shield cable of encoder should be grounded (F.G.)
- ※ Do not apply tensile strength over 30N to the cable.

⊙ Axial/Radial cable connector type / Axial/Radial connector type

- Totem pole output / NPN open collector output / Voltage output
- Line driver output



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



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

- ※ F.G. (field ground): It should be grounded separately.

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) Door/Area Sensors

(D) Proximity Sensors

(E) Pressure Sensors

(F) Rotary Encoders

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

(H) Temperature Controllers

(I) SSRs / Power Controllers

(J) Counters

(K) Timers

(L) Panel Meters

(M) Tacho / Speed / Pulse Meters

(N) Display Units

(O) Sensor Controllers

(P) Switching Mode Power Supplies

(Q) Stepper Motors & Drivers & Controllers

(R) Graphic/ Logic Panels

(S) Field Network Devices

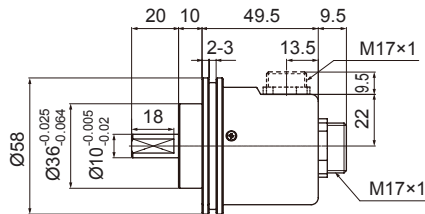
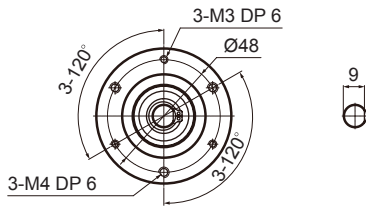
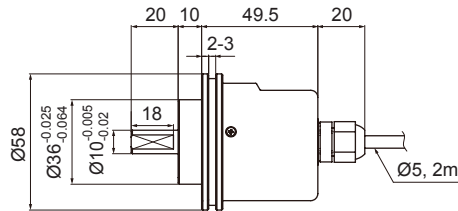
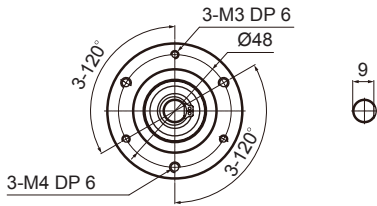
(T) Software

E58 Series

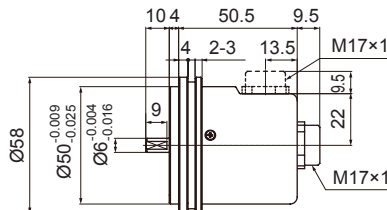
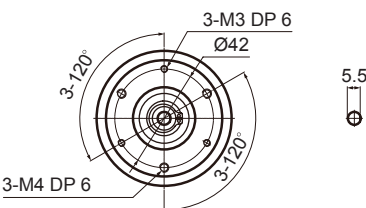
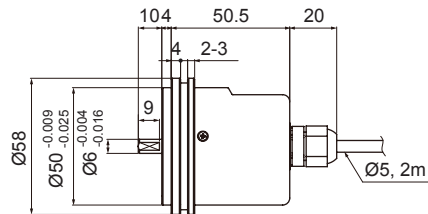
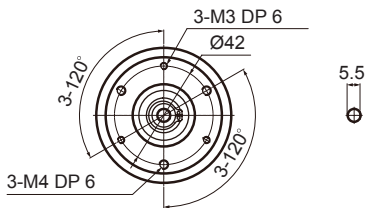
■ Dimensions

○ Shaft clamping type (SC)

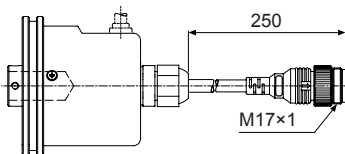
(unit: mm)



○ Shaft synchro type (SS)



● Axial / Radial cable connector type



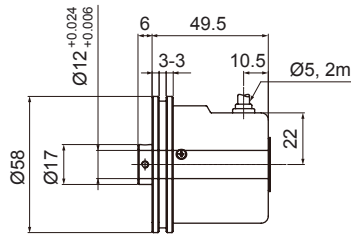
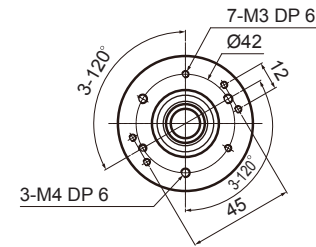
Cable for Axial/Radial cable connector type Ø5mm, 5-wire (line driver output: 8-wire), 250mm, Shield cable
--

※Connector cable is sold separately and refer to page G-10 for specifications.

Incremental Ø58mm Shaft/Hollow Shaft/Blind Hollow Shaft Type

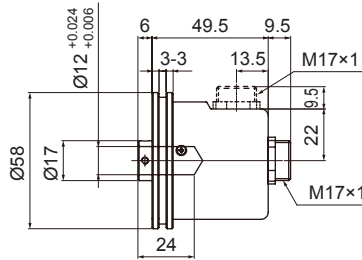
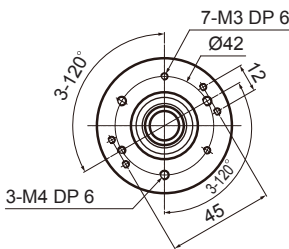
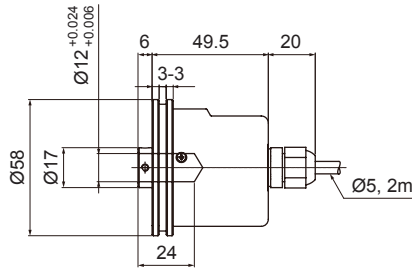
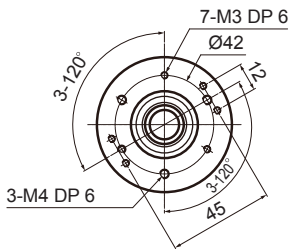
■ Dimensions

○ Hollow shaft type (H)



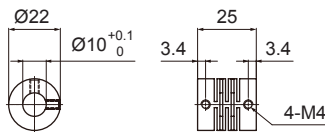
(unit: mm)

○ Blind hollow shaft type (HB)

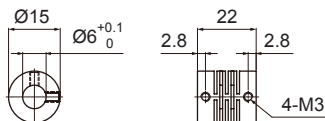


○ Coupling

● E58SC10



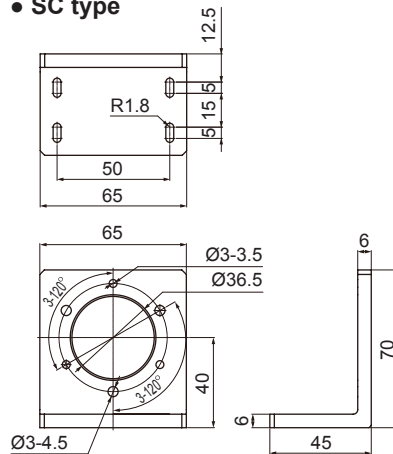
● E58SS6



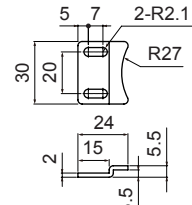
- Parallel misalignment: max. 0.25mm
- Angular misalignment: max. 5°
- End-play: max. 0.5mm

○ Bracket

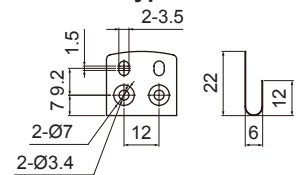
● SC type



● SS type



● H/HB type



- ※Do not load overweight on the shaft.
- ※Do 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 torque.
- ※When you install this unit, if eccentricity and deflection angle are larger, it may shorten the life cycle of this unit.
- ※For parallel misalignment, angular misalignment, end-play terms, refer to page F-87.
- ※For flexible coupling (ERB series) information, refer to page F-80.

(A)	Photoelectric Sensors
(B)	Fiber Optic Sensors
(C)	Door/Area Sensors
(D)	Proximity Sensors
(E)	Pressure Sensors
(F)	Rotary Encoders
(G)	Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets
(H)	Temperature Controllers
(I)	SSRs / Power Controllers
(J)	Counters
(K)	Timers
(L)	Panel Meters
(M)	Tacho / Speed / Pulse Meters
(N)	Display Units
(O)	Sensor Controllers
(P)	Switching Mode Power Supplies
(Q)	Stepper Motors & Drivers & Controllers
(R)	Graphic/ Logic Panels
(S)	Field Network Devices
(T)	Software