E6CP-A

General-purpose Absolute Encoder with External Diameter of 50 mm

- Absolute model.
- External diameter of 50 mm.
- Resolution: 256 (8-bit).
- Lightweight construction using plastic body.

⚠ Be sure to read *Safety Precautions* on page 5.

Ordering Information

Encoders [Refer to *Dimensions* on page 5.]

Power supply voltage	Output configuration	Resolution (divisions)	Connector for H8PS Cam Positioner	Model
5 to 12 VDC	Open-collector output	256 (8-bit)	None	**E6CP-AG3C 256P/R 2M**
12 to 24 VDC			None	**E6CP-AG5C 256P/R 2M**
			Supported	**E6CP-AG5C-C 256P/R 2M**

Note: When connecting to the H8PS, use the E6CP-AG5C-C, which is connected using a connector. It cannot be used on other models.

Accessories (Order Separately)
[Dimensions: Refer to *Accessories* for coupling dimensions and to page 5 for the dimensions of other accessories.]

Name	Model	Remarks
Couplings	**E69-C06B**	Provided with the E6CP-AG3C and E6CP-AG5C.
	E69-C68B	Different end diameter
	E69-C610B	Different end diameter
	E69-C06M	Metal construction
Servo Mounting Bracket	**E69-2**	Provided with the product. (Three brackets in a set.)
Extension Cable	**E69-DF5**	5 m
	E69-DF10	10 m — Models are also available with 15-m and 98-m cables.
	E69-DF20	20 m

Refer to *Accessories* for details.

Ratings and Specifications

Item	Model	E6CP-AG3C	E6CP-AG5C	E6CP-AG5C-C
Power supply voltage		5 VDC −5% to 12 VDC +10%, ripple (p-p): 5% max.	12 VDC −10% to 24 VDC +15%, ripple (p-p): 5% max.	
Current consumption*1		90 mA max.	70 mA max.	
Resolution (rotations)		256 (8-bit)		
Output code		Gray code		
Output configuration		Open-collector output		
Output capacity		Applied voltage: 28 VDC max. Sink current: 16 mA max. Residual voltage: 0.4 V max. (at sink current of 16 mA)		
Maximum response frequency*2		5 kHz		
Logic		Negative logic (high = 0, low = 1)		
Accuracy		±1° max.		
Direction of rotation		Output code incremented by CW (as viewed from the end of the shaft)		
Rise and fall times of output		1 μs max. (Control output voltage: 16 V, Load resistance: 1 kΩ, Output cable: 2 m max.)		
Starting torque		0.98 mN·m max.		
Moment of inertia		1×10^{-6} kg·m^2 max.		
Shaft loading	Radial	30 N		
	Thrust	20 N		
Maximum permissible speed		1,000 r/min		
Ambient temperature range		Operating: −10 to 55°C (with no icing), Storage: −25 to 85°C (with no icing)		
Ambient humidity range		Operating/Storage: 35% to 85% (with no condensation)		
Insulation resistance		20 MΩ min. (at 500 VDC) between current-carrying parts and case		
Dielectric strength		500 VAC, 50/60 Hz for 1 min between current-carrying parts and case		
Vibration resistance		Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions		
Shock resistance		Destruction: 1,000 m/s^2 3 times each in X, Y, and Z directions		
Degree of protection*3		IEC 60529 IP50		
Connection method		Pre-wired Models (Standard cable length: 2 m)	Connector Models (Standard cable length: 2 m)	
Material		Case: ABS, Main unit: PPS, Shaft: SUS416, Mounting Bracket: Galvanized iron		
Weight (packed state)		Approx. 200 g		
Accessories		Coupling (excluding Connector Models), Servo Mounting Bracket, Instruction manual		

*1. An inrush current of approximately 8 A will flow for approximately 0.3 ms when the power is turned ON.
*2. The maximum electrical response speed is determined by the resolution and maximum response frequency as follows:

$$\text{Maximum electrical response speed (rpm)} = \frac{\text{Maximum response frequency}}{\text{Resolution}} \times 60$$
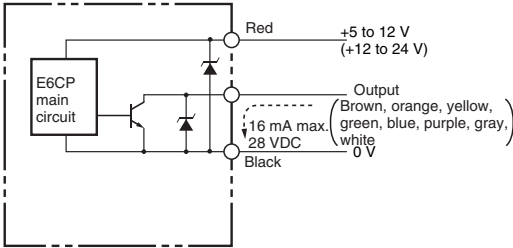
This means that the Rotary Encoder will not operate electrically if its speed exceeds the maximum electrical response speed.
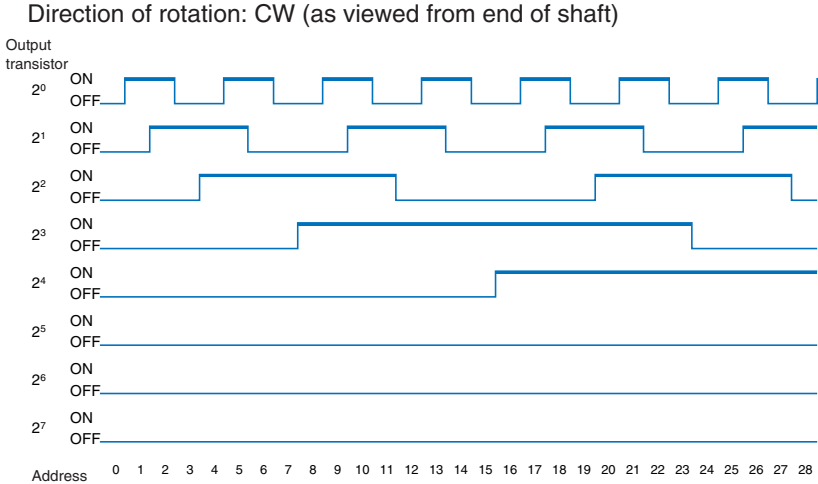*3. No protection is provided against water or oil.

I/O Circuit Diagrams

E6CP-AG3C, E6CP-AG5C	E6CP-AG5C-C

Output Circuits

E6CP main circuit

Red — +5 to 12 V (+12 to 24 V)

Output (Brown, orange, yellow, green, blue, purple, gray, white)

16 mA max. 28 VDC

0 V

Black

Output mode

Direction of rotation: CW (as viewed from end of shaft)

Output transistor: 2^0, 2^1, 2^2, 2^3, 2^4, 2^5, 2^6, 2^7 (ON/OFF)

Address: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

Connection

| Color	E6CP-AG3C	E6CP-AG5C
Red	Power supply 5 to 12 VDC	Power supply 12 to 24 VDC
Black	0 V (common)	
Brown	Output 2^0	
Orange	Output 2^1	
Yellow	Output 2^2	
Green	Output 2^3	
Blue	Output 2^4	
Purple	Output 2^5	
Gray	Output 2^6	
White	Output 2^7	

Note: The circuit is the same for all bit outputs.
Each E6CP Rotary Encoder has one main circuit.

Terminal No.	E6CP-AG5C-C
1	Connected internally
2	
3	Output 2^5
4	Output 2^1
5	Output 2^0
6	Output 2^7
7	Output 2^4
8	Output 2^2
9	Output 2^3
10	Output 2^6
11	---
12	Power supply: 12 to 24 VDC
13	0 V (common)

Note: The circuit is the same for all bit outputs.
Each E6CP Rotary Encoder has one main circuit.

Positioner Connection Example

H8PS Cam Positioner Connection

Rotary Encoder
E6CP-AG5C-C
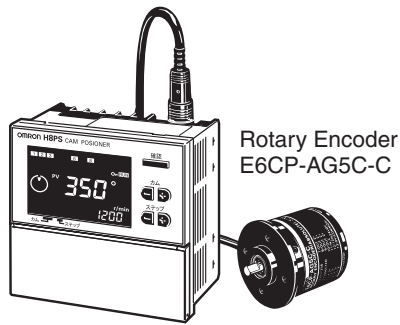
Note: The E6CP-AG5C cannot be connected to the H8PS.

Ordering Information

Model
H8PS-8A
H8PS-8AP
H8PS-8AF
H8PS-8AFP
H8PS-16A
H8PS-16AP
H8PS-16AF
H8PS-16AFP
H8PS-32A
H8PS-32AP
H8PS-32AF
H8PS-32AFP

Specifications

Rated voltage	24 VDC
Cam precision	0.5° (for 720 resolution), 1° (for 256/360 resolution)
No. of output points	8-point output type: 8 cam outputs, 1 RUN output, 1 pulse output 16-point output type: 16 cam outputs, 1 RUN output, 1 pulse output 32-point output type: 32 cam outputs, 1 RUN output, 1 pulse output
Encoder response	RUN mode, test mode: 256/360 resolution .... 1,600 r/min max. (1,200 r/min when advance compensation is set for four cams or more) 720 resolution .... 800 r/min max. (600 r/min when advance compensation is set for four cams or more)
Additional functions	• Origin compensation (zeroing) • Rotation direction switching • Angle display switching • Teaching • Pulse output • Angle/number of rotations display switching • Puncture * • Angle advance • Number of rotations alarm output • Setting with support software (order separately) *

Note: For 16-point and 32-point output types only

Programmable Controller Connection

Connection is possible with the CQM1H-CPU51 and CQM1H-ABB21.

Refer to the *CQM1H Programmable Controller Catalog* (P050) for details on the CQM1H Programmable Controller.