# E6CP-A

CSM E6CP-A DS E 6

# 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		256 (8-bit)	None	E6CP-AG3C 256P/R 2M
12 to 24 VDC	Open-collector output			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 e	Different end diameter	
	E69-C06M	Metal cons	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.

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# **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 cod	е	Gray code		
Output con	t 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 refrequency*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 fa output	II times of	1 μs max. (Control output voltage: 16 V, Load resistance: 1 kΩ, Output cable: 2 m max.)		
Starting tor	que	0.98 mN·m max.		
Moment of	inertia	$1 \times 10^{-6} \text{ kg} \cdot \text{m}^2 \text{ max}.$		
Shaft	Radial	30 N		
loading	Thrust	rust 20 N		
Maximum p speed	ermissible	1,000 r/min		
Ambient ter	nperature	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 r	esistance	$20 \text{ M}\Omega$ min. (at 500 VDC) between current-carrying parts and case		
Dielectric s	trength	500 VAC, 50/60 Hz for 1 min between current-carrying parts and case		
Vibration re	sistance	Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions		
Shock resis	tance	Destruction: 1,000 m/s <sup>2</sup> 3 times each in X, Y, and Z directions		
Degree of p	ree of protection*3 IEC 60529 IP50			
Connection method				Connector Models (Standard cable length: 2 m)
Material		Case: ABS, Main unit: PPS, Shaft: SUS416, Mounting	Bracket: Galvanized iron	•
Weight (pad	ked state)	Approx. 200 g		
Accessorie	S	Coupling (excluding Connector Models), Servo Mounting Bracket, Instruction manual		

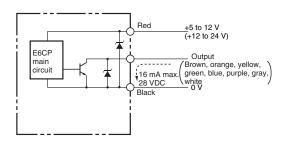
Maximum response frequency Maximum electrical response speed (rpm) = -Resolution

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.

<sup>\*1.</sup> 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:

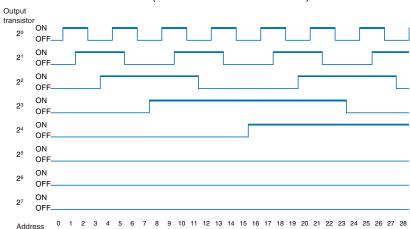
E6CP-AG3C, E6CP-AG5C E6CP-AG5C-C

# **Output Circuits**



# **Output mode**

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



#### 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 20		
Orange	Output 2 <sup>1</sup>		
Yellow	Output 2 <sup>2</sup>		
Green	Output 2 <sup>3</sup>		
Blue	Output 2 <sup>4</sup>		
Purple	Output 2 <sup>5</sup>		
Gray	Output 2 <sup>6</sup>		
White	Output 2 <sup>7</sup>		

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 <sup>5</sup>	
4	Output 2 <sup>1</sup>	
5	Output 2º	
6	Output 2 <sup>7</sup>	
7	Output 2 <sup>4</sup>	
8	Output 2 <sup>2</sup>	
9	Output 2 <sup>3</sup>	
10	Output 2 <sup>6</sup>	
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**



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

# **Ordering Information**

Model
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	<ul> <li>Origin compensation (zeroing)</li> <li>Rotation direction switching</li> <li>Angle display switching</li> <li>Teaching</li> <li>Pulse output</li> <li>Angle/number of rotations display switching</li> <li>Puncture *</li> <li>Angle advance</li> <li>Number of rotations alarm output</li> <li>Setting with support software (order separately) *</li> </ul>	

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

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# **Safety Precautions**

# Refer to Warranty and Limitations of Liability.

# **MARNING**

This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.



# **Precautions for Correct Use**

Do not use the Encoder under ambient conditions that exceed the ratings.

#### Mounting

For front-surface mounting, the maximum tightening torque is 1.76 N·m. (Effective screw length: 7 mm min.)

#### Wiring

Spurious pulses may be generated for outputs when power is turned ON. Wait at least 1 s after turning ON the power to the Encoder before using the connected device.

#### Connection

Spurious pulses may be generated when power is turned ON and OFF. Wait at least 1 s after turning ON the power to the Encoder before using the connected device, and stop using the connected device at least 1 s before turning OFF the power to the Encoder. Also, turn ON the power to the load only after turning ON the power to the Encoder.

(Unit: mm)

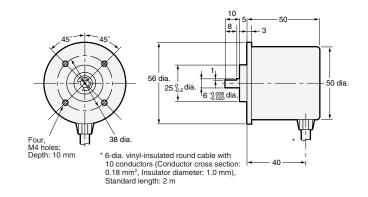
# **Dimensions**

Tolerance class IT16 applies to dimensions in this datasheet unless otherwise specified.

#### **Encoder**

E6CP-AG3C E6CP-AG5C

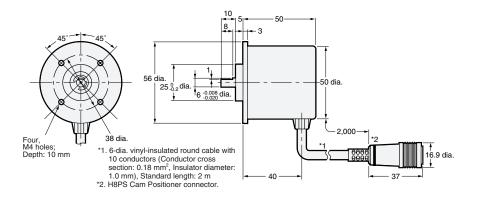




The E69-C06B Coupling is provided.

# E6CP-AG5C-C





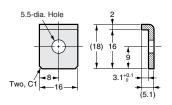
The E69-C06B Coupling is sold separately.

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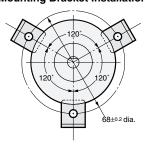
# **Accessories (Order Separately)**

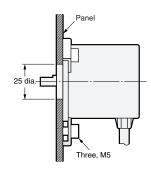
# **Servo Mounting Bracket**

# E69-2



# **Mounting Bracket Installation**



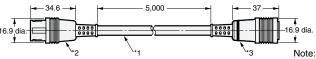


Note: Provided with the product.

#### **Extension Cable**

#### E69-DF5





- \*1. 6-dia. shielded cable with 12 conductors (Conductor cross section: 0.2 mm², Insulator diameter: 1.1 mm), Standard length: 5 m \*2. Connects to connector on E6CP-AG5C-C. \*3. Connects to H8PS Cam Positioner.

- Note: 1. The E69-DF5 (5 m) is also available with the following cable lengths: 10 m, 15 m, 20 m, and 98 m.
  - Cable can be extended to 100 m when the H8PS Cam Positioner is connected.

# **Couplings**

E69-C06B E69-C68B E69-C610B E69-C06M

Refer to Accessories for details.

#### Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments

#### Warranty and Limitations of Liability

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The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

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- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

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#### Disclaimers

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# **DIMENSIONS AND WEIGHTS**

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

#### PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

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In the interest of product improvement, specifications are subject to change without notice.

