OMRON

Rotary Encoder (Absolute)

E6CP

A Lightweight Absolute Rotary Encoder

256 bit grey code resolution ensures position identification even after power disruption.

Optical code reading eliminates error from brush noise and temperature fluctuations.

Digital output permits precise value setting.

Connector type plugs straight into H8PS cam positioner.

Ordering Information

Model	E6CP–AG5C	E6CP–AG5C–C
Supply voltage	12 to 24 VDC	
Resolution	8 bit (256 pulses per revolution)	
Connector for H8PS positioner	–	Yes

Specifications

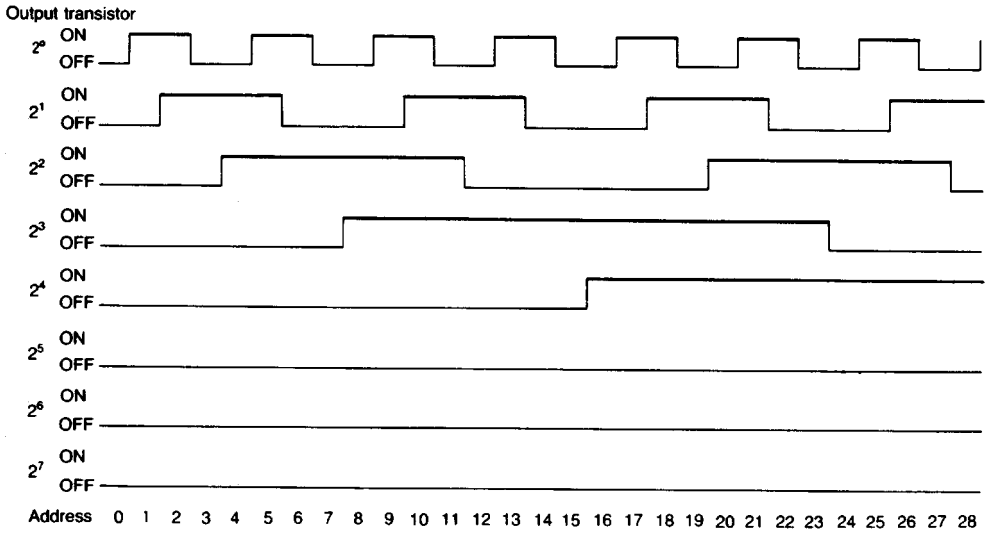
Model	E6CP–AG5C
Operating voltage	12 VDC – 10% to 24 VDC + 15% Ripple (p–p) 5% max.
Current consumption	70 mA max.
Output form	Open collector
Output capacity	Applied voltage: 28 VDC max. Sink current: 16 mA max. Residual voltage: 0.4 V max. (at 16mA of sink current)
Maximum response frequency	5 kHz
Output code	8 bits (Grey code)
Output logic	Negative logic: H=0, L=1
Accuracy	±1° max.
Response time	1µs max. (at a control output of 16 V, a load resistance of 1kΩ with 2m output cable)

Starting torque		10g–cm max.
Moment of inertia		10g–cm^2 max.
Shaft loading	**Radial**	3kg
	Axial	2kg
Slewing speed		1000 rpm
Ambient operating temperature		–10 to 55°C
Degree of protection		IEC: IP50
Vibration		Mechanical durability: 10 to 55 Hz 1.5mm double amplitude in X, Y and Z directions for 2 hours each
Shock		Mechanical durability: 100 G in X, Y and Z directions 3 times each
Weight		Approx. 200g

Engineering

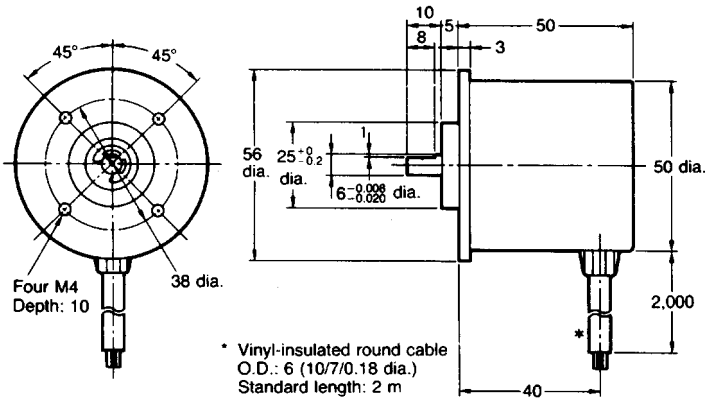
Output mode

Revolution direction: CW (as viewed from shaft)

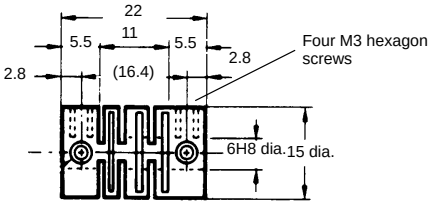


Dimensions

E6CP-AG5C
Weight: approx. 200 g

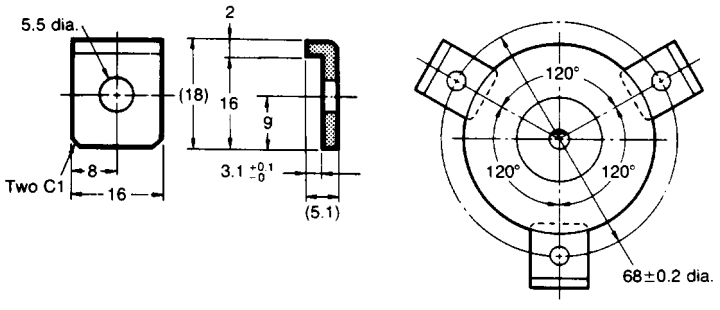


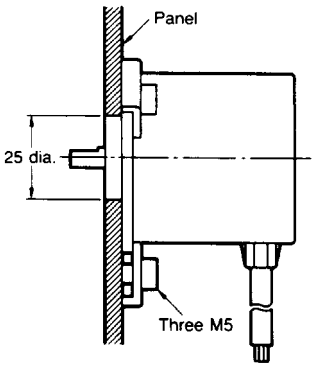
Coupling E69–C06B
(Order separately)



Material: Glass-reinforced polyacetal resin (GC-25)

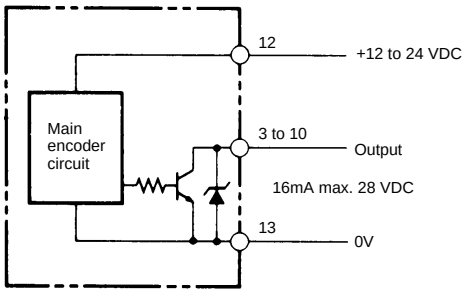
Mounting bracket (included)
Dimensions with mounting bracket attached





Connections

Output Stage Circuit Diagram



Terminals/Connections

Line colour	E6CP–AG5C
Red	12 to 24 V
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
Grey	Output 2^6
White	Output 2^7

Power application

The rotary encoder may output wrong pulses for 1 second on power application. Start operating the equipment connected to the encoder at least 1 second after the power has been applied to the encoder.

Reference (Grey to binary converter circuit)

Binary code

Binary code is a basic code for digital signal processing and consists of numerals 0 and 1 only. It is, however, difficult to change two or more digits simultaneously when a number represented by binary code changes. Consequently, the reading timing is very delicate, which may cause a read error.

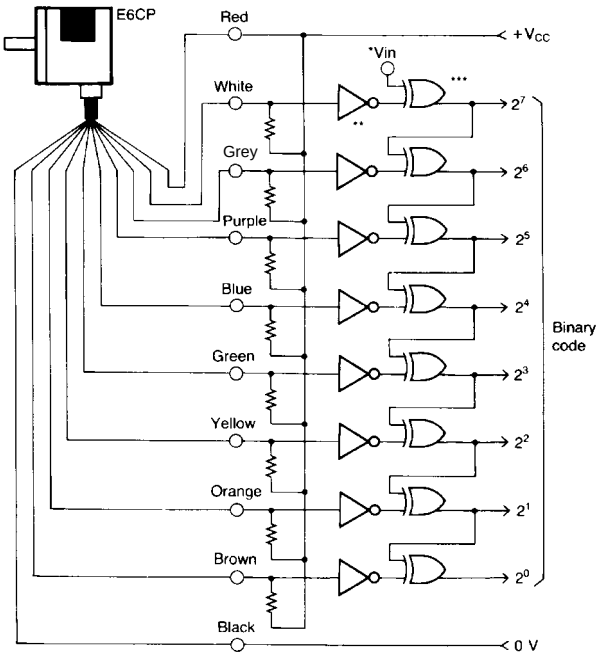
Grey code

As shown in the table below, only one digit changes when a number represented by grey code changes. When using Grey code therefore a read error hardly occurs and is employed in many rotary encoders (absolute) and electronic balances.

Output codes

Decimal	Binary				Grey			
	2^3	2^2	2^1	2^0				
0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	0	0	1
2	0	0	1	0	0	0	1	1
3	0	0	1	1	0	0	1	0
4	0	1	0	0	0	1	1	0
5	0	1	0	1	0	1	1	1
6	0	1	1	0	0	1	0	1
7	0	1	1	1	0	1	0	0
8	1	0	0	0	1	1	0	0
9	1	0	0	1	1	1	0	1
10	1	0	1	0	1	1	1	1
11	1	0	1	1	1	1	1	0
12	1	1	0	0	1	0	1	0
13	1	1	0	1	1	0	1	1
14	1	1	1	0	1	0	0	1
15	1	1	1	1	1	0	0	0

Note: Use the circuit below to current grey code into binary code



Note: * Grey code can be converted into positive logic binary code when the V_{IN} terminal is connected to 0 V.

** Inverter

*** Exclusive OR Gate