



# OMRON

## Model E6F-AG

### ROTARY ENCODER

#### INSTRUCTION SHEET

Thank you for selecting OMRON product. This sheet primarily describes precautions required in installing and operating the product.  
Before operating the product, read the sheet thoroughly to acquire sufficient knowledge of the product. For your convenience, keep the sheet at your disposal.

**TRACEABILITY INFORMATION:**  
Representative in EU: OMRON EUROPE B.V. Wegalaan 67-69, 2132 JD Hoofddorp, The Netherlands  
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Ayabe Factory, 3-2 Narutani, Nakayama-cho, Ayabe-shi, Kyoto 623-0105 JAPAN

The following notice applies only to products that carry the CE mark:  
Notice: This is a class A product. In residential areas it may cause radio interference, in which case the user may be required to take adequate measures to reduce interference.

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#### RATINGS

Items	Type	E6F-AG5C-C	E6F-AG5C	E6F-AG5B
Supply voltage		12 to 24 V DC (+15% / -10%)		
Current consumption		60mA max.		
Output code		Gray		
Resolution		256,360,720	256, 360, 720, 1024	
Output configuration		NPN open-collector output		PNP open-collector output
Output capacity		Applied voltage : 30V DC max. Sink current : 35mA max. Residual voltage : 0.4V max. ( Sink current : 35mA)		Source current : 35mA max. Residual voltage : 0.4V max. (Source current : 35mA)
Maximum response frequency		20kHz		
Output logic		Negative logic		Positive logic
Rotation direction		Output code increases in clockwise direction when viewed from shaft		
Starting torque		9.8mN · m max. at room temperature, 14.7mN · m max. at low temperature		
Shaft loading	Radial	120N		
	Thrust	50N		
Maximum permissible rotation		5000r / min		
Ambient temperature		Operating : -10 to +70°C ,Storage : -25 to +80°C with no icing		
Ambient humidity		Operating : 35to85% RH, Storage : 35to95% RH with no condensation		
Degree of protection		IEC60529 IP65		
Accessory		Instruction sheet, Mounting bracket, (*) Hexagon socket, (*) Coupling		

(\*) Not supplied together with the E6F-AG5C-C

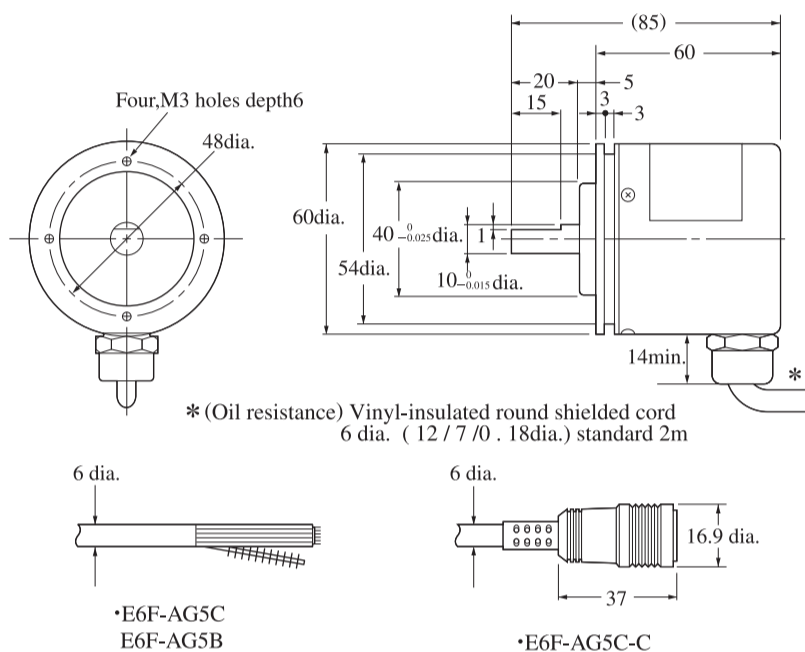
#### Precautions for Safe Use

- Do not use the product in excess of the rated voltage. Applying voltages beyond the rated voltage range may cause the product to break or burn.
- Avoid wiring the product's cables parallel to power lines or high-voltage lines. Doing so may cause the product to malfunction due to induction or may cause the damage the product.
- If surge occurs in the power supply, connect a surge absorber between the power supply terminals to absorb the surge.  
Minimize the wiring length to prevent the product from being affected by noise, etc.
- Since improper pulses may occur when the power is turned on or off, use the devices connected to this product at least 0.1 seconds before or after the power is turned on or off.

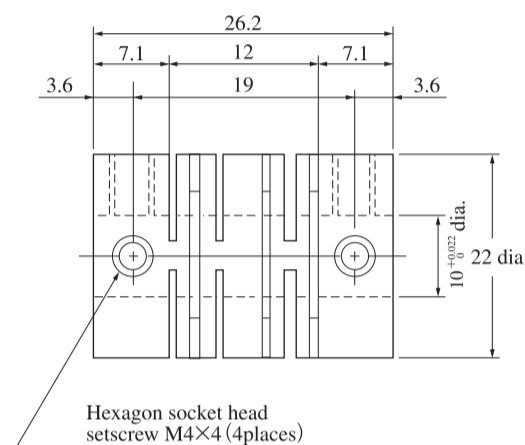
#### Precautions for Correct Use

- Since the product consists of high-precision components, handle it with utmost care.
- Be careful not to expose the product to water or oil.
- Be sure to turn off the power supply before wiring. If the output line contacts the power supply line while the power is being supplied, the output circuit may be damaged.
- Do not short-circuit the load. Doing so may break or burn the product.
- If the product is mounted and wired with a cord, do not pull the cord with force greater than 29.4N.
- If securing the product with screws, tighten the screws to a torque of less than 1.76N · m.
- Be careful not to apply excessive load to the shaft. Excessive load may cause the product break.  
Especially when linking with a chain, timing belt, or gears, connect a separate bearing before the coupling to the product.
- If an installation error such as misalignment is too large, (in case using the coupling or without coupling) the shaft will be subjected to an excessive load which will damage it or shorten its service life. Be careful when installing.
- When inserting the shaft in the coupling do not use excessive force (by striking it with hammer, for example).
- When installing or removing the coupling, do not apply an excessive being, compressing, or tensile force.
- Do not use the encoder under the environment with explosive or ignition gas.
- Never disassemble, repair nor tamper with the product.

#### DIMENSION



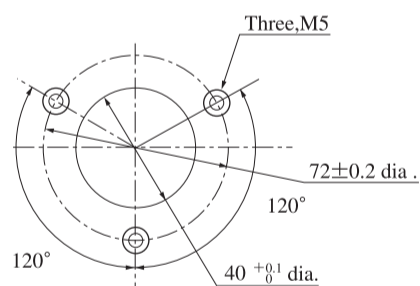
#### COUPLING (Separate order)



Not supplied together with the E6F-AG5C-C.

#### MOUNTING

• Processing of mounting holes when using the accompanying fixture.

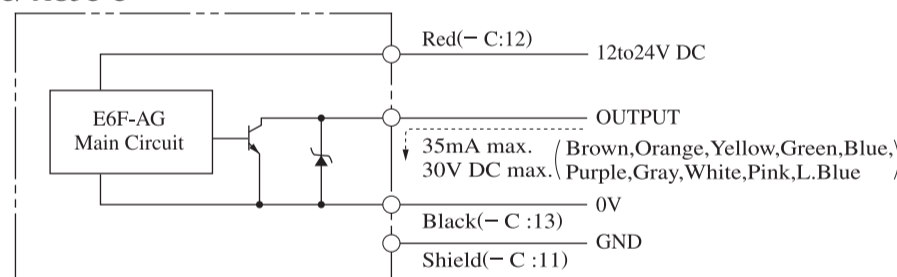


Tighten the mounting screws with less than 1.76 N · m.

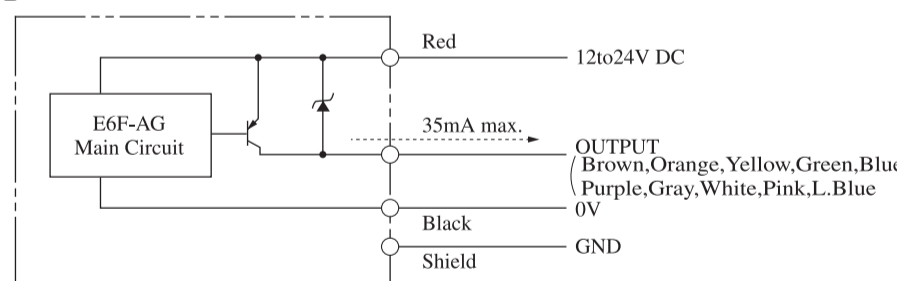
#### OUTPUT CIRCUIT DIAGRAMS

• Be sure to connect a load in place.

E6F-AG5C/-AG5C-C



E6F-AG5B



#### CONNECTIONS

Lead wire color	Output						
	E6F-AG5C/-AG5B			Terminal No.	E6F-AG5C-C		
	8bit(256)	9bit(360)	10bit(720,1024)		8bit(256)	9bit(360)	10bit(720)
Brown	2 <sup>0</sup>	2 <sup>0</sup>	2 <sup>0</sup>	1	Connected	OPEN	2 <sup>9</sup>
Orange	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2		2 <sup>8</sup>	2 <sup>8</sup>
Yellow	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	3	2 <sup>5</sup>	2 <sup>5</sup>	2 <sup>5</sup>
Green	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	4	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>
Blue	2 <sup>4</sup>	2 <sup>4</sup>	2 <sup>4</sup>	5	2 <sup>0</sup>	2 <sup>0</sup>	2 <sup>0</sup>
Purple	2 <sup>5</sup>	2 <sup>5</sup>	2 <sup>5</sup>	6	2 <sup>7</sup>	2 <sup>7</sup>	2 <sup>7</sup>
Gray	2 <sup>6</sup>	2 <sup>6</sup>	2 <sup>6</sup>	7	2 <sup>4</sup>	2 <sup>4</sup>	2 <sup>4</sup>
White	2 <sup>7</sup>	2 <sup>7</sup>	2 <sup>7</sup>	8	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>
Pink	Non-Connected	2 <sup>8</sup>	2 <sup>8</sup>	9	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>
L.Blue	Non-Connected	Non-Connected	2 <sup>9</sup>	10	2 <sup>6</sup>	2 <sup>6</sup>	2 <sup>6</sup>
Shield	GND			11	GND		
Red	12to24V DC			12	12to24V DC		
Black	0V(COMMON)			13	0V(COMMON)		

#### Output code

Resolution	Address
256	0 to 255
360	76 to 435(Gray code signal with a remainder of 76)
720	152 to 871(Gray code signal with a remainder of 152)
1024	0 to 1023

#### Suitability for Use

THE PRODUCTS CONTAINED IN THIS SHEET ARE NOT SAFETY RATED. THEY ARE NOT DESIGNED OR RATED FOR ENSURING SAFETY OF PERSONS, AND SHOULD NOT BE RELIED UPON AS A SAFETY COMPONENT OR PROTECTIVE DEVICE FOR SUCH PURPOSES. Please refer to separate catalogs for OMRON's safety rated products.

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of the products in the customer's application or use of the product.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used. Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM. See also Product catalog for Warranty and Limitation of Liability.

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