



OMRON

Model **E6C-NN5C**

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  
Manufacturer: OMRON CORPORATION, Shiokoji Horikawa, Shimogyo-ku, Kyoto 600-8530 JAPAN  
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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Precautions for Safe Use

- 1) 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.
- 2) 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.
- 3) 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.
- 4) Since improper pulses may occur when the power is turned on or off, use the devices connected to this product at least 0.1 before or after the power is turned on or off.

Precautions for Correct Use

- 1) Since the product consists of high-precision components, handle it with utmost care.
- 2) Be careful not to expose the product to water or oil.
- 3) Be careful when wiring, such as being careful with the polarities of the power supply. Incorrect wiring may break or burn the product.
- 4) 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.
- 5) Do not short-circuit the load. Doing so may break or burn the product.
- 6) If the product is mounted and wired with a cord, do not pull the cord with force greater than 29.4N.
- 7) If securing the product with screws, tighten the screws to a torque of less than 0.49N·m.
- 8) 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.
- 9) 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.
- 10) When inserting the shaft in the coupling, do not use excessive force (by striking it with hammer, for example).
- 11) When installing or removing the coupling, do not apply an excessive being, compressing, or tensile force.

RATINGS

Power supply voltage	12 to 24V DC (±10%) ripple (p-p) : 5% max.
Current consumption	80mA max.
Resolution	Single-turn 500 (/revolution) Multi-turn —128 to 127 turns ※1
Output code	Binary code
Alarm output	Multi-turn data overflow ※3
Output circuit configuration	NPN Open-collector Sink current : 10mA max. (Alarm output : 30mA max.) Applied voltage : 30V max. Residual voltage : 0.4V max.
Output logic	Negative logic: H = 0, AL = 1
Revolution direction	Clockwise
Reset input	Single-turn data reset, Multi-turn data reset
Input current	1mA max.
Input logic	Negative (1V max.)
Input times	100ms min.
Maximum response frequency	12.5kHz
Starting torque	2.94Nm max.
Shaft loading	Radial 29.4N Axial 19.6N
Slewing speed	1500 r/min
Ambient temperature	Operating : -10 to +55°C
Ambient humidity	35 to 85%RH
Degree of protection	IEC60529 : IP50

- ※1. With the main power off, do not turn the shaft out of the ±80° range from the last-time position. Otherwise the proper rotation data will be error.
- ※2. Just when the main power is turned off, all the data output is interrupted. No data can then be accepted.
- ※3. An error output is given when the value of the multi-rotation counter is less than -128 or more than 127. The error flag is reset when the counting data comes back into from -128 to 127.
- ※4. Put in a single-rotation data reset signal to reset the single-rotation data to Address 0. And put in a multi-rotation data reset signal to reset the multi-rotation data to Turn 0.
- ※5. Run the device being coupled with the encoder shaft within the same operating temperature range.

WIRING

E6C-NN5C

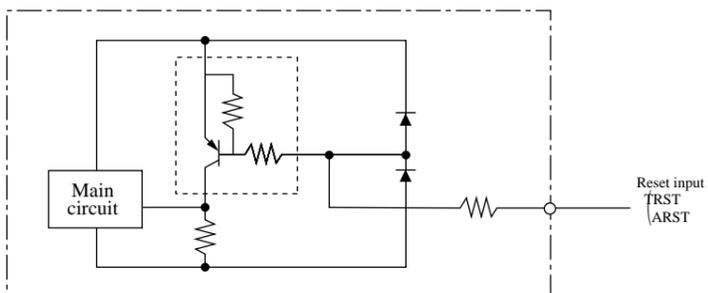
Cable color : Gray				Cable color : Black			
Line color	Symbol	Signal name		Line color	Symbol	Signal name	
Brown	ABS0	Single-turn output	2 <sup>0</sup>	Brown	TKN0	Multi-turn output	2 <sup>0</sup>
Orange	ABS1		2 <sup>1</sup>	Orange	TKN1		2 <sup>1</sup>
Yellow	ABS2		2 <sup>2</sup>	Yellow	TKN2		2 <sup>2</sup>
Green	ABS3		2 <sup>3</sup>	Green	TKN3		2 <sup>3</sup>
Blue	ABS4		2 <sup>4</sup>	Blue	TKN4		2 <sup>4</sup>
Purple	ABS5		2 <sup>5</sup>	Purple	TKN5		2 <sup>5</sup>
Gray	ABS6		2 <sup>6</sup>	Gray	TKN6		2 <sup>6</sup>
White	ABS7		2 <sup>7</sup>	White	TKN7		2 <sup>7</sup>
Pink	ABS8		2 <sup>8</sup>	Pink	COF		Counter overflow alarm
Pale blue	ARST	Single-turn reset		Pale blue	TRST	Multi-turn reset	
Black	GND	0V	※ 6	Black	GND	0V	※ 6
Red	VCC	12 to 24V DC	※ 6	Red	VCC	12 to 24V DC	※ 6
—	SHIELD	shield		—	SHIELD	Shield	

E6C-NN5C-C

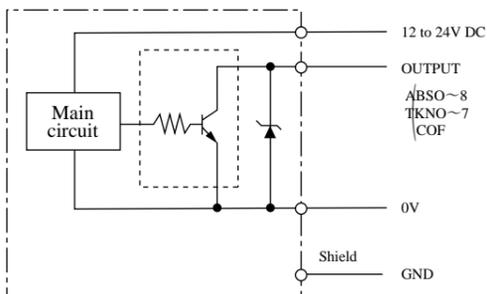
Pin NO.	Symbol	Signal name	Pin NO.	Symbol	Signal name		
A1	ABS0	Single-turn output	B1	TKN0	Multi-turn output		
A2	ABS1		2 <sup>1</sup>	B2		TKN1	2 <sup>1</sup>
A3	ABS2		2 <sup>2</sup>	B3		TKN2	2 <sup>2</sup>
A4	ABS3		2 <sup>3</sup>	B4		TKN3	2 <sup>3</sup>
A5	ABS4		2 <sup>4</sup>	B5		TKN4	2 <sup>4</sup>
A6	ABS5		2 <sup>5</sup>	B6		TKN5	2 <sup>5</sup>
A7	ABS6		2 <sup>6</sup>	B7		TKN6	2 <sup>6</sup>
A8	ABS7		2 <sup>7</sup>	B8		TKN7	2 <sup>7</sup>
A9	ABS8		2 <sup>8</sup>	B9		COF	Counter overflow alarm
A10	ARST	Single-turn reset	B10	TRST	Multi-turn reset		
A11	GND	0V	※ 6	B11	GND	0V	※ 6
A12	VCC	12 to 24V DC	※ 6	B12	VCC	12 to 24V DC	※ 6
A13	SHIELD	shield		B13	SHIELD	Shield	

- ※6. To keep the unit in full capacity, connect both the VCC and GND lines.

INPUT CIRCUIT

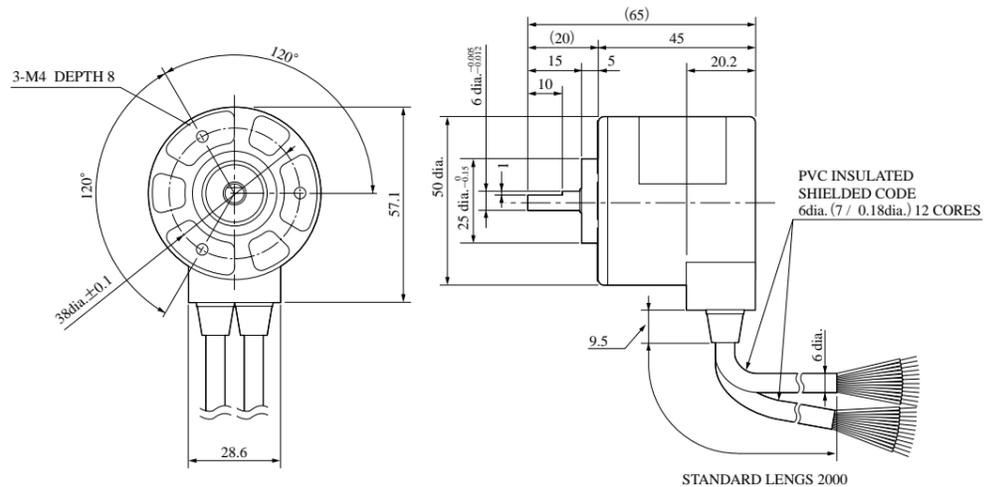


OUTPUT CIRCUIT

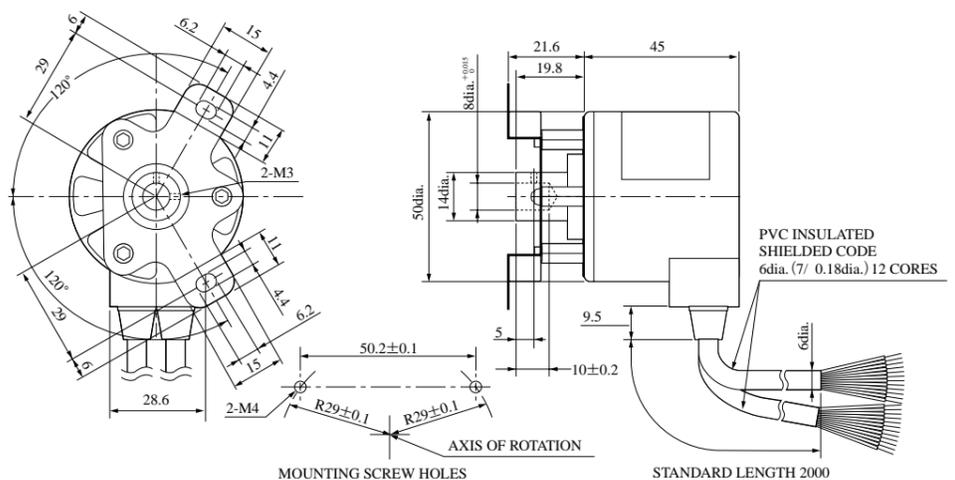


OUTLINE DRAWING

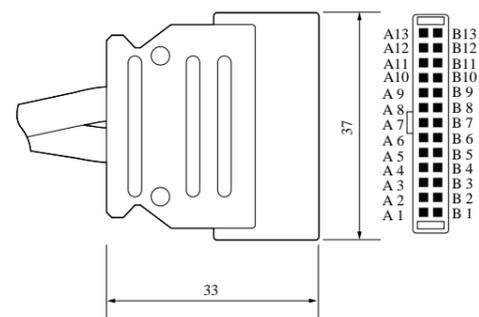
E6C-NN5C



E6C-NN5CA



E6C-NN5C-C CONNECTOR



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.

Japan Aviation Electronics Industry  
PS-D4C26  
PS-HD26(Hood)

EUROPE  
OMRON EUROPE B.V. Sensor Business Unit  
Carl-Benz Str.4, D-71154 Nufringen Germany  
Phone:49-7032-811-0 Fax: 49-7032-811-199

NORTH AMERICA  
OMRON ELECTRONICS LLC  
One Commerce Drive Schaumburg, IL 60173-5302 U.S.A.  
Phone:1-847-843-7900 Fax: 1-847-843-7787

ASIA-PACIFIC  
OMRON ASIA PACIFIC PTE. LTD.  
No. 438A Alexandra Road #05-05-08(Lobby 2),  
Alexandra Technopark, Singapore 119967  
Phone : 65-6835-3011 Fax :65-6835-2711

CHINA  
OMRON(CHINA) CO., LTD.  
Room 2211, Bank of China Tower,  
200 Yin Cheng Zhong Road,  
PuDong New Area, Shanghai, 200120, China  
Phone : 86-21-5037-2222 Fax :86-21-5037-2200

OMRON Corporation  
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