

## OPERATING MANUAL

### Stepping Motor PKP Series Encoder

#### Introduction

This manual explains the description and specification about the encoder for the stepping motor PKP Series encoder type. Refer to the operating manual of the PKP Series for the motor itself.

#### The following items are supplied with the PKP Series encoder type

- Connection cable for encoder [0.6 m (2 ft.)]..... 1 pc. \*
  - OPERATING MANUAL (this manual)..... 1 copy
- \* Only for the product supplied with a connection cable

#### How to identify the product model

PKP246D15A-R2EL - L

-L: With connection cables for motor and encoder  
Blank: Without connection cable

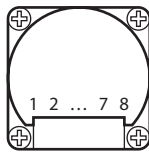
Resolution	200p/r	400p/r	500p/r
Line driver output	R2EL	R2FL	R2GL
Voltage output	R2E	R2F	R2G

#### Precautions for use

- The encoder uses semiconductor elements. Handle the driver with care since static electricity may damage semiconductor elements. Also, effective measures must be taken against static electricity.
- Do not make a strong impact on the motor output shaft or encoder. Doing so may cause damage to the encoder.
- In order to protect the encoder, use the motor so that the surface temperature on the motor case does not exceed 85 °C (185 °F).
- Use the product in a condition that the ambient temperature is -10 to +50 °C (+14 to 122 °F) (Non-freezing).
- Do not connect or disconnect the connector while the power is supplied.
- For the power supply, use a DC power supply with reinforced insulation on its primary and secondary sides. Failure to do so may cause electric shock.

#### Connection

##### Pin assignment



Pin No.	Lead color *	Encoder model code		Function
		R2EL, R2FL, R2GL	R2E, R2F, R2G	
1	Black	GND	GND	Power supply input (GND)
2	Red	A+	A	A-phase output +
3	Brown	A-	N.C.	A-phase output -
4	Green	B+	B	B-phase output +
5	Blue	B-	N.C.	B-phase output -
6	Yellow	Z+	Z	Z-phase output +
7	Orange	Z-	N.C.	Z-phase output -
8	White	Vcc	Vcc	Power supply input (+5 V)

\* These are colors of the lead wires of the supplied "connection cable for encoder."

##### Conforming connector and cable

Connector	Housing: 51021-0800 (Molex) Contact: 50079-8X00 (Molex) Crimping tool: 57177-5000 (Molex)
Cable	Conforming cable: AWG28 to 26 (0.08 to 0.128 mm <sup>2</sup> ) Outer sheath diameter: ø0.5 to 1.04 mm (0.02 to 0.04 in.) Length of the insulation cover which can be peeled: 1.4 to 1.9 mm (0.06 to 0.07 in.)

Thank you for purchasing an Oriental Motor product.

This Operating Manual describes product handling procedures and safety precautions.

- Please read it thoroughly to ensure safe operation.
- Always keep the manual where it is readily available.

#### Note

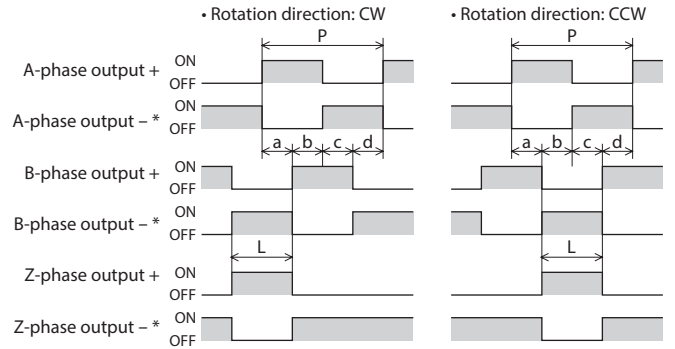
Use the shielded cable when extending the wiring or suppressing the effect of noise. Also, wire it away from the power lines such as the motor cable and power cable, and keep it as short as possible.

#### Specification

Encoder model code	R2EL	R2FL	R2GL	R2E	R2F	R2G
Encoder type	Incremental					
Output circuit	Line driver output *			Voltage output		
Resolution (p/r)	200	400	500	200	400	500
Output signals	A-phase, B-phase, Z-phase; 3-channel					
Output circuit						
Maximum current	20 mA					
Output voltage	H-level	2.5 V or more			4.3 V or more (with no load)	
	L-level	0.5 V or less				
Response frequency	200 kHz or less			100 kHz or less		
Power supply voltage	5 VDC±10%					
Current consumption (With no load)	30 mA or less			45 mA or less		

\* Equivalent to 26C31

##### Output waveform



\* Line driver output only

##### Waveform precision

- Duty cycle: 50%±12.5% for both A-phase output and B-phase output
- Z-phase output:  $P/4 \leq L \leq 3P/4$
- Phase difference: a, b, c, d =  $P/4 \pm P/8$
- Rise time and fall time of signals: 1 μs or less (At connector terminals)

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