

**RoHS** RoHS-Compliant  
2-Phase Stepping Motor and Driver Package

## CMK Series

**NEW** Motor Frame Size: 2.22 inch High-torque type  
Motor Frame Sizes: All motor frame sizes now feature encoders



\* Motor and/or encoder cables are included with the High-torque and Encoder versions

The **CMK** Series is a package that consists of a 2-phase stepping motor and 24 VDC input microstep driver.

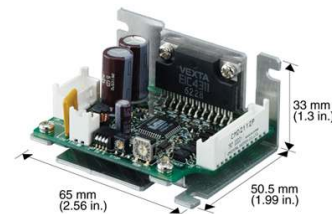
### Wide Motor Lineup

- 5 frame sizes from 28 to 60 mm (1.10 to 2.36 in.).
- 4 types of 2-phase stepping motors to select from.
- Choose with or without encoder, 200 or 400 pulse/rev, 2 or 3 channel.



### Driver Features

- One of the smallest microstep drivers in the industry
- 5 preset step angles, maximum microstep resolution of 16 divisions
- Operating current is set by a digital switch, easy to use.



### Product Line

Type	Feature	Motor Frame Size		Basic Step Angle [deg/step]	Maximum Holding Torque
		w/o Encoder	w/ Encoder		
 <b>High-Torque Type</b>	A high-torque motor has approx. 1.3 ~ 1.5 times more torque when compared to a standard 2 phase stepping motor.	□28 mm (□1.10 in.)	□28 mm (□1.10 in.) <b>NEW</b>	1.8	0.05 ~ 0.09 N·m (7.1 ~ 12.7 oz-in)
		□35 mm (□1.38 in.)	□35 mm (□1.38 in.) <b>NEW</b>		0.16 ~ 0.3 N·m (22 ~ 42 oz-in)
		□42 mm (□1.65 in.)	□42 mm (□1.65 in.) <b>NEW</b>		0.39 ~ 0.75 N·m (55 ~ 106 oz-in)
		□56.4 mm (□2.22 in.) <b>NEW</b>	□56.4 mm (□2.22 in.) <b>NEW</b>		0.46 ~ 1.73 N·m (65 ~ 240 oz-in)
 <b>High-Resolution Type</b>	A high-resolution type offers higher positioning accuracy with the basic step angle of 0.9° /step.	□42 mm (□1.65 in.)	□42 mm (□1.65 in.) <b>NEW</b>	0.9	0.16 ~ 0.32 N·m (22 ~ 45 oz-in)
		□56.4 mm (□2.22 in.)	□56.4 mm (□2.22 in.) <b>NEW</b>		0.37 ~ 1.35 N·m (52 ~ 191 oz-in)
 <b>Standard Type</b>	The basic model offering a good balance of torque and low vibration/noise characteristics.	□42 mm (□1.65 in.)	□42 mm (□1.65 in.) <b>NEW</b>	1.8	0.16 ~ 0.32 N·m (22 ~ 45 oz-in)
		□50 mm (□1.97 in.)	□50 mm (□1.97 in.) <b>NEW</b>		0.56 ~ 1.2 N·m (79 ~ 170 oz-in)
		□56.4 mm (□2.22 in.)	□56.4 mm (□2.22 in.) <b>NEW</b>		0.36 ~ 1.35 N·m (51 ~ 191 oz-in)
 <b>SH Geared Type</b>	Geared stepping motors are effective for inertia reduction, increasing torque, higher resolution and suppressing vibration. Six gear ratios are available.	□28 mm (□1.10 in.)	□28 mm (□1.10 in.) <b>NEW</b>	0.05 ~ 0.25	0.3 ~ 0.4 N·m (42 ~ 56 oz-in)
		□42 mm (□1.65 in.)	□42 mm (□1.65 in.) <b>NEW</b>	0.05 ~ 0.5	0.2 ~ 0.8 N·m (1.77 ~ 7 lb-in)
		□60 mm (□2.36 in.)	□60 mm (□2.36 in.) <b>NEW</b>		1 ~ 4 N·m (8.8 ~ 35 lb-in)

## ORIENTAL MOTOR U.S.A. CORP.

**Technical Support** Tel: 800-468-3982 7:30A.M.-7:00P.M. C.S.T. (M-F) E-mail: techsupport@orientalmotor.com

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● Global Support

## Product Number Code

High-Torque Type, High-Resolution Type, Standard Type

# CMK 2 4 3 M A P A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Series	<b>CMK: CMK Series</b>	
②	2: 2-Phase		
③	Motor Frame Size	<b>2:</b> 28 mm (1.10 in.) <b>3:</b> 35 mm (1.38 in.) <b>4:</b> 42 mm (1.65 in.) <b>5:</b> 50mm (1.97 in.) <b>6:</b> 56.4 mm (2.22 in.)	
④	Motor Case Length		
⑤	Motor Type	<b>P:</b> High-Torque Type <b>M:</b> High-Resolution Type Blank: Standard Type	
⑥	Shaft Type	<b>A:</b> Single Shaft <b>B:</b> Double Shaft	
⑦	Signal I/O Mode of Driver	<b>P:</b> Photocoupler	
⑧	U.S.A. Version		

High-Torque Type, High-Resolution Type, Standard Type with Encoder

# CMK 2 4 3 M A P A - R 1 5

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

①	Series	<b>CMK: CMK Series</b>	
②	2: 2-Phase		
③	Motor Frame Size	<b>2:</b> 28mm (1.10 in.) <b>3:</b> 35 mm (1.38 in.) <b>4:</b> 42 mm (1.65 in.) <b>5:</b> 50mm (1.97 in.) <b>6:</b> 56.4 mm (2.22 in.)	
④	Motor Case Length		
⑤	Motor Type	<b>P:</b> High-Torque Type <b>M:</b> High-Resolution Type Blank: Standard Type	
⑥	Shaft Type	<b>A:</b> Single Shaft	
⑦	Signal I/O Mode of Driver	<b>P:</b> Photocoupler	
⑧	U.S.A. Version		
⑨	Encoder Version		
⑩	Encoder Output	<b>1:</b> 2-Channel A, B <b>2:</b> 3-Channel A, B, I	
⑪	Encoder Resolution	<b>5:</b> 200 P/R <b>6:</b> 400 P/R	

SH Geared Type

# CMK 2 4 6 A P A - S G 10

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Series	<b>CMK: CMK Series</b>	
②	2: 2-Phase		
③	Motor Frame Size	<b>2:</b> 28 mm (1.10 in.) <b>4:</b> 42 mm (1.65 in.) <b>6:</b> 60 mm (2.36 in.)	
④	Motor Case Length		
⑤	Shaft Type	<b>A:</b> Single Shaft <b>B:</b> Double Shaft	
⑥	Signal I/O Mode of Driver	<b>P:</b> Photocoupler	
⑦	U.S.A. Version		
⑧	Gearhead Type	<b>SG: SH Geared Type</b>	
⑨	Gear Ratio		

SH Geared Type with Encoder

# CMK 2 4 3 P A R 1 5 S 10

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

①	Series	<b>CMK: CMK Series</b>	
②	2: 2-Phase		
③	Motor Frame Size	<b>2:</b> 28 mm (1.10 in.) <b>4:</b> 42 mm (1.65 in.) <b>6:</b> 60 mm (2.36 in.)	
④	Motor Case Length		
⑤	Signal I/O Mode of Driver	<b>P:</b> Photocoupler	
⑥	U.S.A. Version		
⑦	Encoder Version		
⑧	Encoder Output	<b>1:</b> 2-Channel A, B <b>2:</b> 3-Channel A, B, I	
⑨	Encoder Resolution	<b>5:</b> 200 P/R <b>6:</b> 400 P/R	
⑩	Gearhead Type	<b>S: SH Geared Type</b>	
⑪	Gear Ratio		

# Product Line

## Notes:

- This documentation is to support additional products not found in the 2009/2010 General Catalog.
- For motors with encoder, Specifications and Speed-Torque Characteristic, Permissible Overhung Load and Permissible Thrust Load are same as motors without an encoder, please refer to Specifications for Basic Motor Model without an encoder.
- Refer to page 7 of this document for Permissible Overhung Load and Permissible Thrust Load.
- Refer to the 2009/2010 General Catalog for the Driver Specifications (Page C-193), General Specifications (Page C-193) and Connection and Operation (Page C-200).

## High-Torque Type without Encoder

Model	Reference Page # for	
	Specifications and Speed-Torque Characteristics	Dimensions
CMK223PAP	2009/2010 General Catalog C-185	2009/2010 General Catalog C-195
CMK223PBP		
CMK224PAP		
CMK224PBP		
CMK225PAP		
CMK225PBP		
CMK233PAP	2009/2010 General Catalog C-186	2009/2010 General Catalog C-196
CMK233PBP		
CMK235PAP		
CMK235PBP		
CMK244PAP		
CMK244PBP		
CMK246PAP	This Document Page 6	This Document Page 9
CMK246PBP		
CMK264PAPA		
CMK264PBPA		
CMK266PAPA		
CMK266PBPA		
CMK268PAPA		
CMK268PBPA		

## High-Torque Type with Encoder

Model	Basic Model w/o Encoder	Reference Page # for		
		Specifications and Speed-Torque Characteristics	Dimensions	
CMK223PAP-R15	CMK223PAP	2009/2010 General Catalog C-185	This Document Page 9	
CMK224PAP-R15	CMK224PAP			
CMK225PAP-R15	CMK225PAP			
CMK233PAP-R15	CMK233PAP	2009/2010 General Catalog C-186		
CMK233PAP-R16				
CMK233PAP-R25				
CMK233PAP-R26				
CMK235PAP-R15	CMK235PAP			
CMK235PAP-R16				
CMK235PAP-R25				
CMK235PAP-R26				
CMK244PAP-R15	CMK244PAP		This Document Page 10	
CMK244PAP-R16				
CMK244PAP-R25				
CMK244PAP-R26				
CMK246PAP-R15	CMK246PAP			
CMK246PAP-R16				
CMK246PAP-R25				
CMK246PAP-R26				
CMK264PAPA-R15	CMK264PAPA	This Document Page 6		This Document Page 10
CMK264PAPA-R16				
CMK264PAPA-R25				
CMK264PAPA-R26				
CMK266PAPA-R15	CMK266PAPA			
CMK266PAPA-R16				
CMK266PAPA-R25				
CMK266PAPA-R26				
CMK268PAPA-R15	CMK268PAPA			
CMK268PAPA-R16				
CMK268PAPA-R25				
CMK268PAPA-R26				

● High-Resolution Type without Encoder

Model	Reference Page # for	
	Specifications and Speed-Torque Characteristics	Dimensions
CMK243MAPA	2009/2010 General Catalog C-187	2009/2010 General Catalog C-196
CMK243MBPA		
CMK244MAPA		
CMK244MBPA		
CMK245MAPA		
CMK245MBPA		
CMK264MAP		2009/2010 General Catalog C-197
CMK264MBP		
CMK266MAP		
CMK266MBP		
CMK268MAP		
CMK268MBP		

● High-Resolution Type with Encoder

Model	Basic Model w/o Encoder	Reference Page # for	
		Specifications and Speed-Torque Characteristics	Dimensions
CMK243MAPA-R15	CMK243MAPA	2009/2010 General Catalog C-187	This Document Page 10
CMK243MAPA-R16			
CMK243MAPA-R25			
CMK243MAPA-R26			
CMK244MAPA-R15	CMK244MAPA		
CMK244MAPA-R16			
CMK244MAPA-R25			
CMK244MAPA-R26	CMK245MAPA		
CMK245MAPA-R15			
CMK245MAPA-R16			
CMK245MAPA-R25	CMK264MAP		
CMK245MAPA-R26			
CMK264MAP-R15			
CMK264MAP-R16	CMK266MAP		
CMK264MAP-R25			
CMK264MAP-R26			
CMK266MAP-R15	CMK268MAP		
CMK266MAP-R16			
CMK266MAP-R25			
CMK266MAP-R26			
CMK268MAP-R15			
CMK268MAP-R16			
CMK268MAP-R25			
CMK268MAP-R26			

● Standard Type without Encoder

Model	Reference Page # for	
	Specifications and Speed-Torque Characteristics	Dimensions
CMK243APA	2009/2010 General Catalog C-188	2009/2010 General Catalog C-196
CMK243BPA		
CMK244APA		
CMK244BPA		
CMK245APA		
CMK245BPA		
CMK256AP		2009/2010 General Catalog C-197
CMK256BP		
CMK258AP		
CMK258BP		
CMK264AP		
CMK264BP		
CMK266AP	2009/2010 General Catalog C-189	
CMK266BP		
CMK268AP		
CMK268BP		

● Standard Type with Encoder

Model	Basic Model w/o Encoder	Reference Page # for	
		Specifications and Speed-Torque Characteristics	Dimensions
CMK243APA-R15	CMK243APA	2009/2010 General Catalog C-188	This Document Page 10
CMK243APA-R16			
CMK243APA-R25			
CMK243APA-R26			
CMK244APA-R15	CMK244APA		
CMK244APA-R16			
CMK244APA-R25			
CMK244APA-R26	CMK245APA		
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CMK245APA-R16			
CMK245APA-R25	CMK256AP		
CMK245APA-R26			
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CMK258AP-R26	CMK266AP		
CMK264AP-R15			
CMK264AP-R16			
CMK264AP-R25	CMK268AP		
CMK264AP-R26			
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CMK266AP-R25			
CMK266AP-R26			
CMK268AP-R15			
CMK268AP-R16			
CMK268AP-R25			
CMK268AP-R26			

● SH Geared Type without Encoder

Model	Reference Page # for	
	Specifications and Speed-Torque Characteristics	Dimensions
CMK223AP-SG7.2	2009/2010 General Catalog C-190	2009/2010 General Catalog C-198
CMK223AP-SG9		
CMK223AP-SG10		
CMK223AP-SG18		
CMK223AP-SG36		
CMK223BP-SG7.2		
CMK223BP-SG9		
CMK223BP-SG10		
CMK223BP-SG18		
CMK223BP-SG36		
CMK243APA-SG3.6	2009/2010 General Catalog C-191	2009/2010 General Catalog C-199
CMK243APA-SG7.2		
CMK243APA-SG9		
CMK243APA-SG10		
CMK243APA-SG18		
CMK243APA-SG36		
CMK243BPA-SG3.6		
CMK243BPA-SG7.2		
CMK243BPA-SG9		
CMK243BPA-SG10		
CMK243BPA-SG18	2009/2010 General Catalog C-192	2009/2010 General Catalog C-199
CMK243BPA-SG36		
CMK264APA-SG3.6		
CMK264APA-SG7.2		
CMK264APA-SG9		
CMK264APA-SG10		
CMK264APA-SG18		
CMK264APA-SG36		
CMK264BPA-SG3.6		
CMK264BPA-SG7.2		
CMK264BPA-SG9	2009/2010 General Catalog C-192	2009/2010 General Catalog C-199
CMK264BPA-SG10		
CMK264BPA-SG18		
CMK264BPA-SG36		
CMK264PAR-SG3.6		
CMK264PAR-SG7.2		
CMK264PAR-SG9	2009/2010 General Catalog C-192	2009/2010 General Catalog C-199
CMK264PAR-SG10		
CMK264PAR-SG18		
CMK264PAR-SG36		
CMK264PAR15S3.6		
CMK264PAR16S3.6		
CMK264PAR25S3.6	2009/2010 General Catalog C-192	2009/2010 General Catalog C-199
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CMK264PAR25S7.2		
CMK264PAR26S7.2		
CMK264PAR15S9	2009/2010 General Catalog C-192	2009/2010 General Catalog C-199
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CMK264PAR26S18		
CMK264PAR15S36	2009/2010 General Catalog C-192	2009/2010 General Catalog C-199
CMK264PAR16S36		
CMK264PAR25S36		
CMK264PAR26S36		
CMK264PAR15S36		
CMK264PAR16S36		
CMK264PAR25S36	2009/2010 General Catalog C-192	2009/2010 General Catalog C-199
CMK264PAR26S36		
CMK264PAR15S36		
CMK264PAR16S36		
CMK264PAR25S36		
CMK264PAR26S36		

● SH Geared Type with Encoder

Model	Basic Model w/o Encoder	Reference Page # for					
		Specifications and Speed-Torque Characteristics	Dimensions				
CMK223PR15S7.2	CMK223AP-SG7.2	2009/2010 General Catalog C-190	This Document Page 11				
CMK223PR15S9							
CMK223PR15S10							
CMK223PR15S18							
CMK223PR15S36							
CMK243PAR15S3.6	CMK243APA-SG3.6	2009/2010 General Catalog C-191	This Document Page 12				
CMK243PAR16S3.6							
CMK243PAR25S3.6							
CMK243PAR26S3.6	CMK243APA-SG7.2			2009/2010 General Catalog C-191	This Document Page 12		
CMK243PAR15S7.2							
CMK243PAR16S7.2							
CMK243PAR25S7.2							
CMK243PAR26S7.2	CMK243APA-SG9					2009/2010 General Catalog C-191	This Document Page 12
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CMK243PAR16S9							
CMK243PAR25S9	CMK243APA-SG10	2009/2010 General Catalog C-191	This Document Page 12				
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CMK243PAR15S10							
CMK243PAR16S10							
CMK243PAR25S10	CMK243APA-SG18			2009/2010 General Catalog C-191	This Document Page 12		
CMK243PAR26S10							
CMK243PAR15S18							
CMK243PAR16S18	CMK243APA-SG36					2009/2010 General Catalog C-191	This Document Page 12
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CMK243PAR26S18							
CMK243PAR15S36							
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CMK243PAR25S36							
CMK243PAR26S36							
CMK264PAR15S3.6	CMK264APA-SG7.2			2009/2010 General Catalog C-192	This Document Page 12		
CMK264PAR16S3.6							
CMK264PAR25S3.6							
CMK264PAR26S3.6	CMK264APA-SG9					2009/2010 General Catalog C-192	This Document Page 12
CMK264PAR15S7.2							
CMK264PAR16S7.2							
CMK264PAR25S7.2							
CMK264PAR26S7.2	CMK264APA-SG10	2009/2010 General Catalog C-192	This Document Page 12				
CMK264PAR15S9							
CMK264PAR16S9							
CMK264PAR25S9	CMK264APA-SG18			2009/2010 General Catalog C-192	This Document Page 12		
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CMK264PAR15S10							
CMK264PAR16S10							
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CMK264PAR26S10							
CMK264PAR15S18							
CMK264PAR16S18	CMK264APA-SG36	2009/2010 General Catalog C-192	This Document Page 12				
CMK264PAR25S18							
CMK264PAR26S18							
CMK264PAR15S36							
CMK264PAR16S36	CMK264APA-SG36			2009/2010 General Catalog C-192	This Document Page 12		
CMK264PAR25S36							
CMK264PAR26S36							

# High-Torque Type Motor Frame Size 56.4 mm (2.22 in.)

## Specifications RoHS

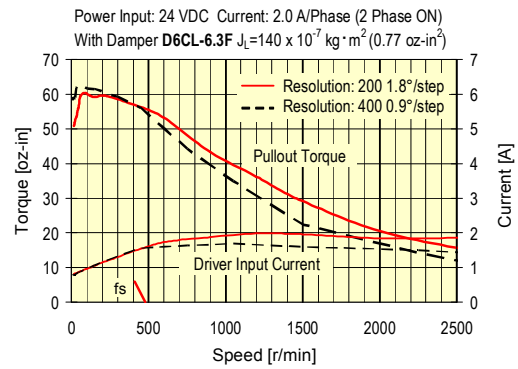
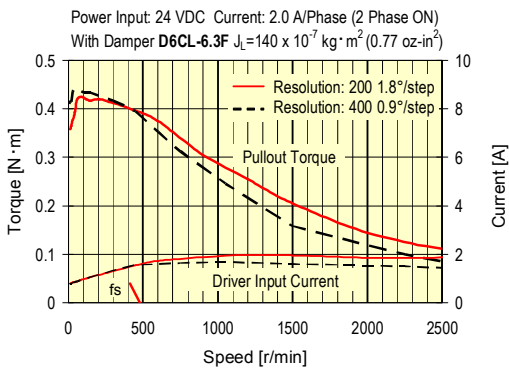
Model	Single Shaft	<b>CMK264PAPA</b>	<b>CMK266PAPA</b>	<b>CMK268PAPA</b>	
	Double Shaft	<b>CMK264PBPA</b>	<b>CMK266PBPA</b>	<b>CMK268PBPA</b>	
	With Encoder	<b>CMK264PAPA-R</b> <span style="background-color: black; color: white;">■</span> <sup>*2</sup>	<b>CMK266PAPA-R</b> <span style="background-color: black; color: white;">■</span> <sup>*2</sup>	<b>CMK268PAPA-R</b> <span style="background-color: black; color: white;">■</span> <sup>*2</sup>	
Maximum Holding Torque <sup>*1</sup>	N·m (oz-in)	0.46 (65)	0.99 (140)	1.73 (240)	
Rotor Inertia J	kg·m <sup>2</sup> (oz-in <sup>2</sup> )	120 × 10 <sup>-7</sup> (0.66)	290 × 10 <sup>-7</sup> (1.59)	490 × 10 <sup>-7</sup> (2.7)	
Rated Current	A/Phase	2			
Basic Step Angle		1.8°			
Power Source		24 VDC ± 10% 2.9 A			
Excitation Mode		Microstep			
Mass	Motor	kg (lb.)	0.46 (1.01)	0.73 (1.61)	1.1 (2.4)
	Driver	kg (lb.)	0.05 (0.11)		

\*1 The holding torque (2-phase excitation) is the maximum holding power (torque) the stepping motor has when power is being supplied but the motor shaft is not rotating (rated current). At motor standstill, the driver's automatic current cutback function reduces the maximum holding torque by approximately 40%.

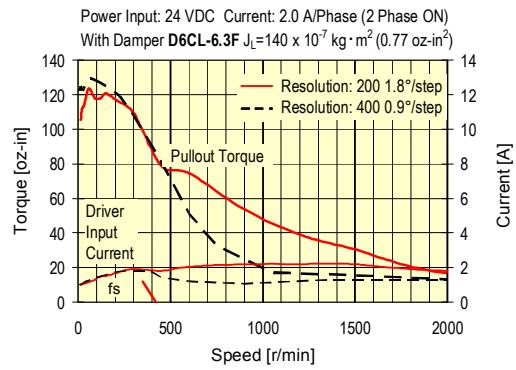
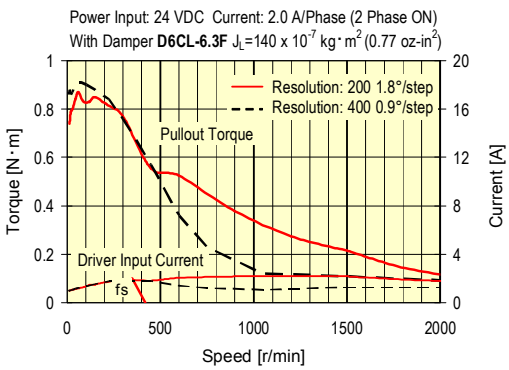
\*2 Enter the encoder code (15, 16, 25 or 26) in the box (■) within the model name.

## Speed – Torque Characteristics fs: Maximum Starting Speed

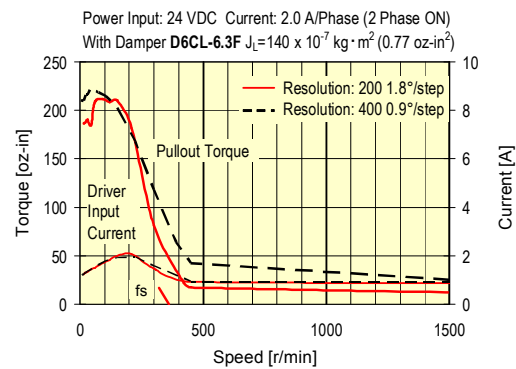
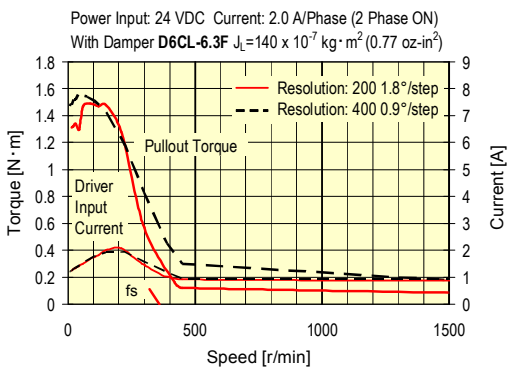
### CMK264PAPA/CMK264PBPA/CMK264PAPA-R



### CMK266PAPA/CMK266PBPA/CMK266PAPA-R



### CMK268PAPA/CMK268PBPA/CMK268PAPA-R



- Enter the encoder code (15, 16, 25 or 26) in the box (■) within the model name.
- The pulse input circuit responds to approximately 100 kHz with a pulse duty of 50%.

#### Notes:

- Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F).
- The driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 40%.

## ■ Permissible Overhung Load and Permissible Thrust Load

Unit = N (lb.)

Type	Model	Permissible Overhung Load					Permissible Thrust Load		
		Distance from Shaft End							
		0 mm (0 in.)	5 mm (0.2 in.)	10 mm (0.39 in.)	15 mm (0.59 in.)	20 mm (0.79 in.)			
High-Torque Type	CMK223P◇P CMK224P◇P CMK225P◇P	25 (5.6)	34 (7.6)	52 (11.7)	-	-	The permissible thrust load shall be no greater than the motor mass.		
	CMK233P◇P CMK235P◇P	20 (4.5)	25 (5.6)	34 (7.6)	52 (11.7)	-			
	CMK244P◇P CMK246P◇P	20 (4.5)	25 (5.6)	34 (7.6)	52 (11.7)	-			
	CMK264P◇PA CMK266P◇PA CMK268P◇PA	49 (11)	60 (13.5)	79 (17.7)	110 (24)	-			
	High-Resolution Type	CMK243M◇PA CMK244M◇PA CMK245M◇PA	20 (4.5)	25 (5.6)	34 (7.6)	52 (11.7)		-	
		CMK264M◇P CMK266M◇P CMK268M◇P	54 (12.1)	67 (15)	89 (20)	130 (29)		-	
Standard Type		CMK243◇PA CMK244◇PA CMK245◇PA	20 (4.5)	25 (5.6)	34 (7.6)	52 (11.7)		-	
	CMK256◇P CMK258◇P	54 (12.1)	67 (15)	89 (20)	130 (29)	-			
	CMK264◇P CMK266◇P CMK268◇P	54 (12.1)	67 (15)	89 (20)	130 (29)	-			
	SH Geared Type	CMK223◇P-SG7.2 CMK223◇P-SG9 CMK223◇P-SG10 CMK223◇P-SG18 CMK223◇P-SG36	15 (3.3)	17 (3.8)	20 (4.5)	23 (5.1)		-	10 (2.2)
		CMK243◇PA-SG3.6 CMK243◇PA-SG7.2 CMK243◇PA-SG9 CMK243◇PA-SG10 CMK243◇PA-SG18 CMK243◇PA-SG36	10 (2.2)	15 (3.3)	20 (4.5)	30 (6.7)		-	15 (3.3)
		CMK264◇PA-SG3.6 CMK264◇PA-SG7.2 CMK264◇PA-SG9 CMK264◇PA-SG10	30 (6.7)	40 (9)	50 (11.2)	60 (13.5)		70 (15.7)	30 (6.7)
CMK264◇PA-SG18 CMK264◇PA-SG36		80 (18)	100 (22)	120 (27)	140 (31)	160 (36)			

● Enter A (single shaft) or B (double shaft) in the box (◇) within the model name.

## Encoder Specifications

□28 mm (□1.10 in.)

Encoder Code	R15	
Model	E4 Series (US-Digital)	
Type	Incremental	
Resolution (P/R)	200	
Output	2-Channel A, B	
Input Current (mA)	15 (Typ.)	
Input Voltage (V)	5 ± 10%	
Output Type	TTL	
Output Voltage	Low	0.4 volts @ 8mA (Max.)
	High	2.4 volts @ -0.2mA (Min.)
Response Frequency (kHz)	60 (Max.)	
Operating Temperature (°C)	-40 to +100	

□35 mm (□1.38 in.), □42 mm (□1.65 in.), □56.4 mm (□2.22 in.), □60 mm (□2.36 in.)

Encoder Code	R15	R16	R25	R26
Model	E5 Series (US-Digital)			
Type	Incremental			
Resolution (P/R)	200	400	200	400
Output	2-Channel A, B		3-Channel A, B, I	
Input Current (mA)	17 (Typ.)		57 (Typ.)	
Input Voltage (V)	5 ± 10%			
Output Type	TTL			
Output Voltage	Low	0.4 volts @ 3.2mA (Max.)	0.5 volts @ 8mA (Max.)	
	High	2.4 volts @ -40 μ A (Min.)	2.4 volts @ -200 μ A (Min.)	
Response Frequency (kHz)	100 (Max.)			
Operating Temperature (°C)	-40 to +100			

## Encoder Pin-outs

□28 mm (□1.10 in.)

Pin	Lead Color	Encoder Code R15
1	Red	+5 VDC power
2	Blue	A Channel
3	Black	GND
4	Yellow	B Channel

□35 mm (□1.38 in.), □42 mm (□1.65 in.), □56.4 mm (□2.22 in.), □60 mm (□2.36 in.)

Pin	Lead Color	Encoder Code	
		R15, R16	R25, R26
1	Brown	GND	
2	Purple	N.C.	Index Channel
3	Blue	A Channel	
4	Orange	+5 VDC power	
5	Yellow	B Channel	





# Dimensions Unit = mm [in.]

## ◇ High-Torque Type with Encoder

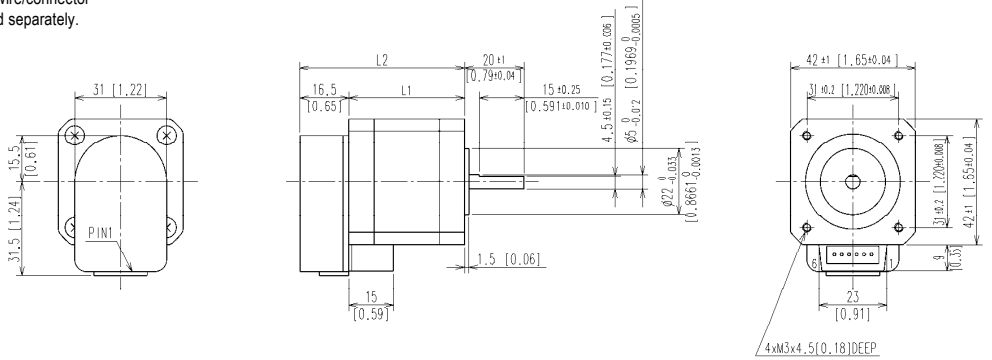
### ④ □42 mm (□1.65 in.)

Model	Motor Model	L1	L2	Mass Kg (lb.)
<b>CMK244PAP-R</b> ■	<b>PK244PAR</b> ■	39 [1.54]	55.5 [2.19]	0.32 (0.70)
<b>CMK246PAP-R</b> ■	<b>PK246PAR</b> ■	59 [2.32]	75.5 [2.97]	0.52 (1.14)

● Enter the encoder code (15, 16, 25 or 26) in the box (■) within the model name.  
Lead wire/connector assemblies of 0.6 m (2 ft.) for motor and encoder are included with the package. UL Style 3265, AWG24  
If you are purchasing only a motor for maintenance purpose, etc., lead wire/connector assemblies and connector will not be supplied. They must be purchased separately.

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- Applicable Connector for Motor  
Connector housing: 51103-0600 (MOLEX)  
Contact: 50351-8100 (MOLEX)  
Crimp tool: 57295-5000 (MOLEX)
- Applicable Connector for Encoder:  
Connector housing: 50-57-9450 (MOLEX)  
Contact: 16-02-0104 (MOLEX)  
Crimp tool: 63811-8700 (MOLEX)



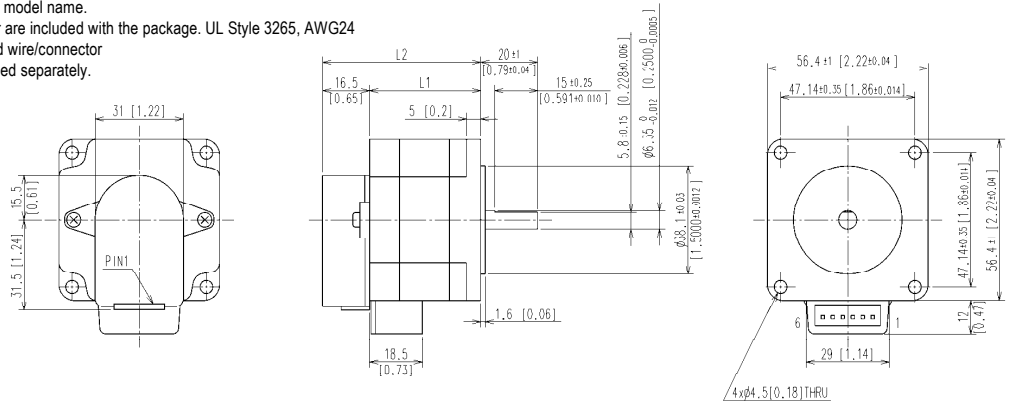
### ⑤ □56.4 mm (□2.22 in.)

Model	Motor Model	L1	L2	Mass Kg (lb.)
<b>CMK264PAPA-R</b> ■	<b>PK264PAAR</b> ■	39 [1.54]	55.5 [2.19]	0.48 (1.06)
<b>CMK266PAPA-R</b> ■	<b>PK266PAAR</b> ■	54 [2.13]	70.5 [2.78]	0.75 (1.65)
<b>CMK268PAPA-R</b> ■	<b>PK268PAAR</b> ■	76 [2.99]	92.5 [3.64]	1.12 (2.46)

● Enter the encoder code (15, 16, 25 or 26) in the box (■) within the model name.  
Lead wire/connector assemblies of 0.6 m (2 ft.) for motor and encoder are included with the package. UL Style 3265, AWG24  
If you are purchasing only a motor for maintenance purpose, etc., lead wire/connector assemblies and connector will not be supplied. They must be purchased separately.

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- Applicable Connector for Motor:  
Connector housing: 51067-0600 (MOLEX)  
Contact: 50217-9101 (MOLEX)  
Crimp tool: 57189-5000 (MOLEX) or 57190-5000 (MOLEX)
- Applicable Connector for Encoder:  
Connector housing: 50-57-9450 (MOLEX)  
Contact: 16-02-0104 (MOLEX)  
Crimp tool: 63811-8700 (MOLEX)



## ◇ High-Resolution Type with Encoder, Standard Type with Encoder

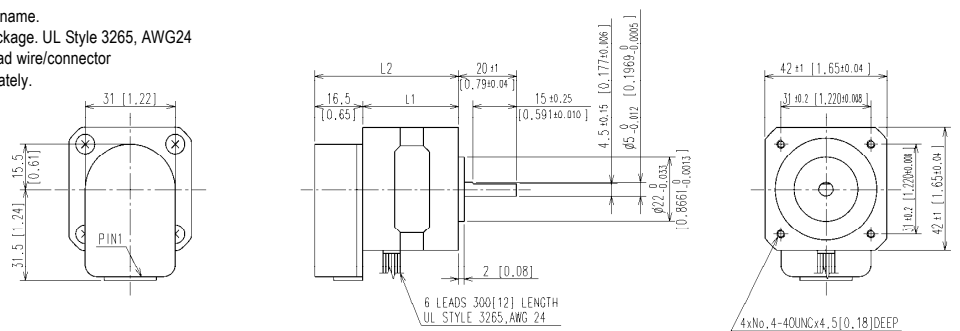
### ⑥ □42 mm (□1.65 in.)

Model	Motor Model	L1	L2	Mass Kg (lb.)
<b>CMK243APA-R</b> ■	<b>PK243-01AAR</b> ■	33 [1.3]	49.5 [1.95]	0.23 (0.53)
<b>CMK243MAPA-R</b> ■	<b>PK243MAAR</b> ■			0.26 (0.57)
<b>CMK244APA-R</b> ■	<b>PK244-01AAR</b> ■	39 [1.54]	55.5 [2.19]	0.29 (0.64)
<b>CMK244MAPA-R</b> ■	<b>PK244MAAR</b> ■			0.32 (0.70)
<b>CMK245APA-R</b> ■	<b>PK245-01AAR</b> ■	47 [1.85]	63.5 [2.5]	0.37 (0.81)
<b>CMK245MAPA-R</b> ■	<b>PK245MAAR</b> ■			0.39 (0.86)

● Enter the encoder code (15, 16, 25 or 26) in the box (■) within the model name.  
Encoder lead wire/connector assembly of 0.6 m (2 ft.) is included with the package. UL Style 3265, AWG24  
If you are purchasing only a motor for maintenance purpose, etc., encoder lead wire/connector assembly and connector will not be supplied. They must be purchased separately.

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- Applicable Connector for Encoder:  
Connector housing: 50-57-9450 (MOLEX)  
Contact: 16-02-0104 (MOLEX)  
Crimp tool: 63811-8700 (MOLEX)



### ◇ Standard Type with Encoder

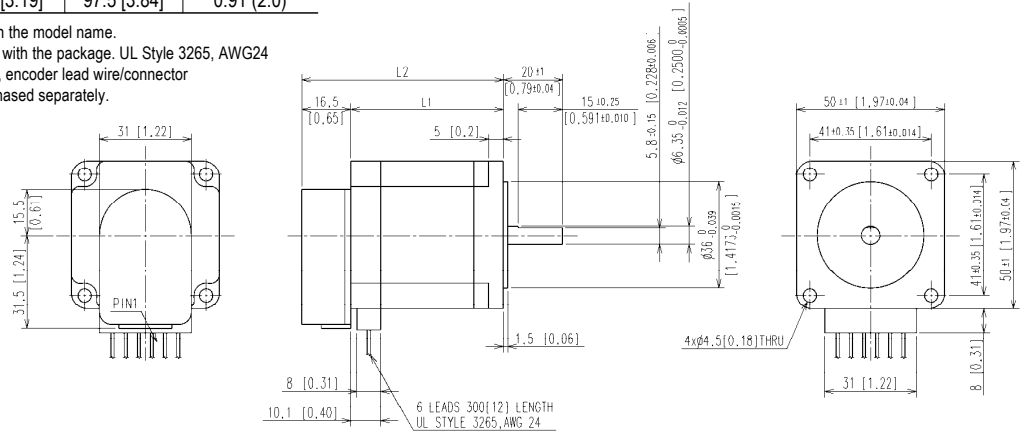
⑦ □50 mm (□1.97 in.)

Model	Motor Model	L1	L2	Mass Kg (lb.)
CMK256AP-R ■	PK256-02AR ■	51.5 [2.03]	68 [2.68]	0.55 (1.21)
CMK258AP-R ■	PK258-02AR ■	81 [3.19]	97.5 [3.84]	0.91 (2.0)

● Enter the encoder code (15, 16, 25 or 26) in the box (■) within the model name.  
Encoder lead wire/connector assembly of 0.6 m (2 ft.) is included with the package. UL Style 3265, AWG24  
If you are purchasing only a motor for maintenance purpose, etc., encoder lead wire/connector assembly and connector will not be supplied. They must be purchased separately.

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● Applicable Connector for Encoder:  
Connector housing: 50-57-9450 (MOLEX)  
Contact: 16-02-0104 (MOLEX)  
Crimp tool: 63811-8700 (MOLEX)



### ◇ High-Resolution Type with Encoder, Standard Type with Encoder

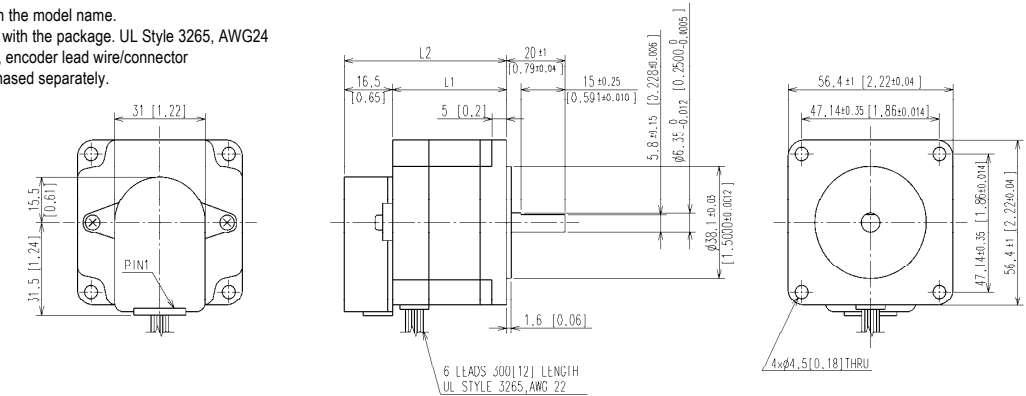
⑧ □56.4 mm (□2.22 in.)

Model	Motor Model	L1	L2	Mass Kg (lb.)
CMK264AP-R ■	PK264-02AR ■	39 [1.54]	55.5 [2.19]	0.47 (1.03)
CMK264MAP-R ■	PK264MAR ■			
CMK266AP-R ■	PK266-02AR ■	54 [2.13]	70.5 [2.78]	0.72 (1.58)
CMK266MAP-R ■	PK266MAR ■			
CMK268AP-R ■	PK268-02AR ■	76 [2.99]	92.5 [3.64]	1.02 (2.24)
CMK268MAP-R ■	PK268MAR ■			

● Enter the encoder code (15, 16, 25 or 26) in the box (■) within the model name.  
Encoder lead wire/connector assembly of 0.6 m (2 ft.) is included with the package. UL Style 3265, AWG24  
If you are purchasing only a motor for maintenance purpose, etc., encoder lead wire/connector assembly and connector will not be supplied. They must be purchased separately.

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● Applicable Connector for Encoder:  
Connector housing: 50-57-9450 (MOLEX)  
Contact: 16-02-0104 (MOLEX)  
Crimp tool: 63811-8700 (MOLEX)



### ◇ SH Geared Type with Encoder

⑨ □28 mm (□1.10 in.)

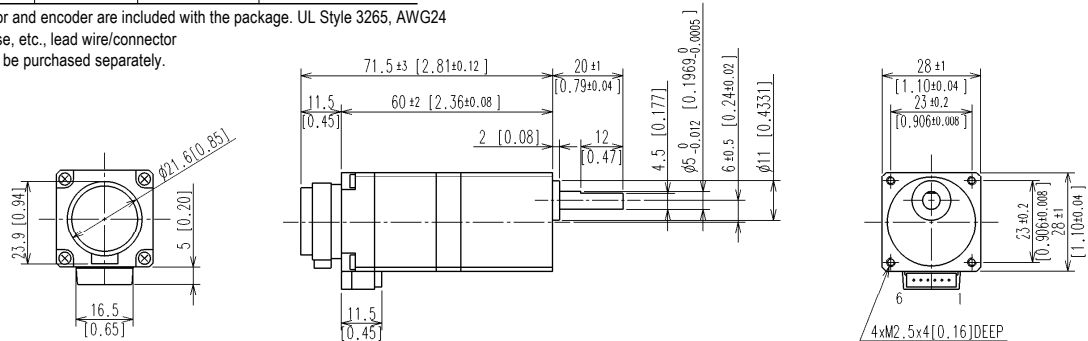
Model	Motor Model	L1	L2	Mass Kg (lb.)
CMK223PR15S7.2	PK223PAR15S7.2	60 [2.36]	71.5 [2.81]	0.16 (0.35)
CMK223PR15S9	PK223PAR15S9			
CMK223PR15S10	PK223PAR15S10			
CMK223PR15S18	PK223PAR15S18			
CMK223PR15S36	PK223PAR15S36			

● Lead wire/connector assemblies of 0.6 m (2 ft.) for motor and encoder are included with the package. UL Style 3265, AWG24  
If you are purchasing only a motor for maintenance purpose, etc., lead wire/connector assemblies and connector will not be supplied. They must be purchased separately.

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● Applicable Connector for Motor:  
Connector housing: 51065-0600 (MOLEX)  
Contact: 50212-8100 (MOLEX)  
Crimp tool: 57176-5000 (MOLEX)

● Applicable Connector for Encoder:  
Connector housing: 51021-0400 (MOLEX)  
Contact: 50079-8000 (MOLEX)  
Crimp tool: 63819-0400 (MOLEX)



### ◇ SH Geared Type with Encoder

⑩ □42 mm (□1.65 in.)

Model	Motor Model	L1	L2	Mass Kg (lb.)
CMK243PAR■S3.6	PK243A1AR■S3.6	59 [2.37]	75.5 [2.97]	0.35 (0.78)
CMK243PAR■S7.2	PK243A1AR■S7.2			
CMK243PAR■S9	PK243A1AR■S9			
CMK243PAR■S10	PK243A1AR■S10			
CMK243PAR■S18	PK243A1AR■S18			
CMK243PAR■S36	PK243A1AR■S36			

● Enter the encoder code (15, 16, 25 or 26) in the box (■) within the model name.

Encoder lead wire/connector assembly of 0.6 m (2 ft.) is included with the package. UL Style 3265, AWG24

If you are purchasing only a motor for maintenance purpose, etc., encoder lead wire/connector assembly and connector will not be supplied. They must be purchased separately.

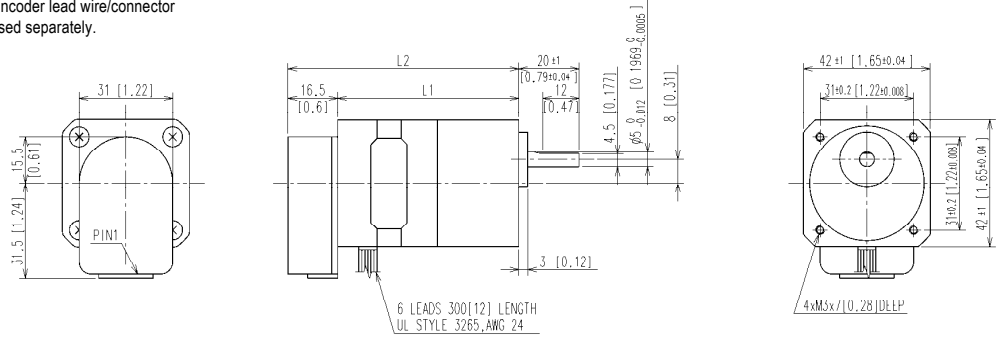
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● Applicable Connector for Encoder:

Connector housing: 50-57-9450 (MOLEX)

Contact: 16-02-0104 (MOLEX)

Crimp tool: 63811-8700 (MOLEX)



⑪ □60 mm (□2.36 in.)

Model	Motor Model	L1	L2	Mass Kg (lb.)
CMK264PAR■S3.6	PK264A2AR■S3.6	79 [3.11]	95.5 [3.76]	0.77 (1.7)
CMK264PAR■S7.2	PK264A2AR■S7.2			
CMK264PAR■S9	PK264A2AR■S9			
CMK264PAR■S10	PK264A2AR■S10			
CMK264PAR■S18	PK264A2AR■S18			
CMK264PAR■S36	PK264A2AR■S36			

● Enter the encoder code (15, 16, 25 or 26) in the box (■) within the model name.

Encoder lead wire/connector assembly of 0.6 m (2 ft.) is included with the package. UL Style 3265, AWG24

If you are purchasing only a motor for maintenance purpose, etc., encoder lead wire/connector assembly and connector will not be supplied. They must be purchased separately.

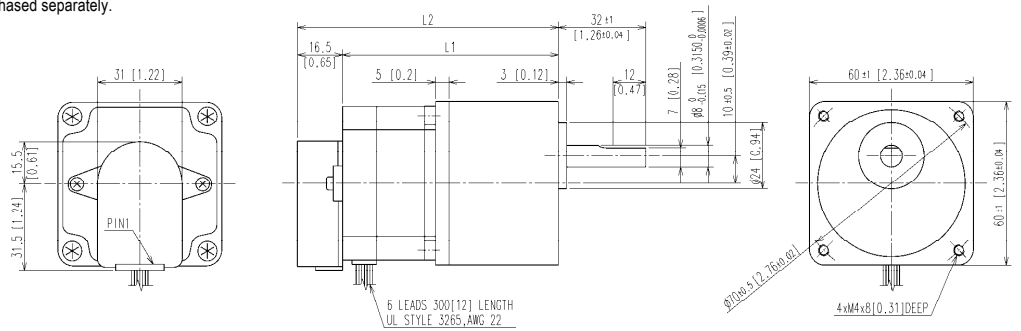
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● Applicable Connector for Encoder:

Connector housing: 50-57-9450 (MOLEX)

Contact: 16-02-0104 (MOLEX)

Crimp tool: 63811-8700 (MOLEX)



## ■ List of Motor and Driver Combinations

Model names for motor and driver combinations are shown below.

Type	Model	Motor Model	Driver Model	Type	Model	Motor Model	Driver Model
High-Torque Type without Encoder	CMK264PAPA	PK264PAA	CMD2120P	High-Resolution Type with Encoder	CMK243MAPA-R15	PK243MAAR15	CMD2109P
	CMK264PBPA	PK264PBA			CMK243MAPA-R16	PK243MAAR16	
	CMK266PAPA	PK266PAA			CMK243MAPA-R25	PK243MAAR25	
	CMK266PBPA	PK266PBA			CMK243MAPA-R26	PK243MAAR26	
	CMK268PAPA	PK268PAA			CMK244MAPA-R15	PK244MAAR15	CMD2112P
	CMK268PBPA	PK268PBA			CMK244MAPA-R16	PK244MAAR16	
CMK223PAP-R15	PK223PAR15	CMK244MAPA-R25	PK244MAAR25				
CMK224PAP-R15	PK224PAR15	CMK244MAPA-R26	PK244MAAR26				
CMK225PAP-R15	PK225PAR15	CMK245MAPA-R15	PK245MAAR15				
CMK233PAP-R15	PK233PAR15	CMK245MAPA-R16	PK245MAAR16				
CMK233PAP-R16	PK233PAR16	CMK245MAPA-R25	PK245MAAR25				
CMK233PAP-R25	PK233PAR25	CMK245MAPA-R26	PK245MAAR26				
High-Torque Type with Encoder	CMK233PAP-R26	PK233PAR26	CMD2112P		CMK264MAP-R15	PK264MAR15	CMD2120P
	CMK235PAP-R15	PK235PAR15			CMK264MAP-R16	PK264MAR16	
	CMK235PAP-R16	PK235PAR16			CMK264MAP-R25	PK264MAR25	
	CMK235PAP-R25	PK235PAR25			CMK264MAP-R26	PK264MAR26	
	CMK235PAP-R26	PK235PAR26			CMK266MAP-R15	PK266MAR15	
	CMK244PAP-R15	PK244PAR15			CMK266MAP-R16	PK266MAR16	
	CMK244PAP-R16	PK244PAR16			CMK266MAP-R25	PK266MAR25	
	CMK244PAP-R25	PK244PAR25			CMK266MAP-R26	PK266MAR26	
	CMK244PAP-R26	PK244PAR26			CMK268MAP-R15	PK268MAR15	
	CMK246PAP-R15	PK246PAR15			CMK268MAP-R16	PK268MAR16	
	CMK246PAP-R16	PK246PAR16			CMK268MAP-R25	PK268MAR25	
	CMK246PAP-R25	PK246PAR25			CMK268MAP-R26	PK268MAR26	
	CMK246PAP-R26	PK246PAR26	CMK243APA-R15	PK243-01AAR15	CMD2109P		
	CMK264PAPA-R15	PK264PAAR15	CMK243APA-R16	PK243-01AAR16			
	CMK264PAPA-R16	PK264PAAR16	CMK243APA-R25	PK243-01AAR25			
	CMK264PAPA-R25	PK264PAAR25	CMK243APA-R26	PK243-01AAR26			
	CMK264PAPA-R26	PK264PAAR26	CMK244APA-R15	PK244-01AAR15	CMD2112P		
	CMK266PAPA-R15	PK266PAAR15	CMK244APA-R16	PK244-01AAR16			
	CMK266PAPA-R16	PK266PAAR16	CMK244APA-R25	PK244-01AAR25			
	CMK266PAPA-R25	PK266PAAR25	CMK244APA-R26	PK244-01AAR26			
	CMK266PAPA-R26	PK266PAAR26	CMK245APA-R15	PK245-01AAR15			
	CMK268PAPA-R15	PK268PAAR15	CMK245APA-R16	PK245-01AAR16			
	CMK268PAPA-R16	PK268PAAR16	CMK245APA-R25	PK245-01AAR25			
	CMK268PAPA-R25	PK268PAAR25	CMK245APA-R26	PK245-01AAR26			
CMK268PAPA-R26	PK268PAAR26	CMK256AP-R15	PK256-02AR15	CMD2120P			
		CMK256AP-R16	PK256-02AR16				
		CMK256AP-R25	PK256-02AR25				
		CMK256AP-R26	PK256-02AR26				
		CMK258AP-R15	PK258-02AR15				
		CMK258AP-R16	PK258-02AR16				
		CMK258AP-R25	PK258-02AR25				
		CMK258AP-R26	PK258-02AR26				
		CMK264AP-R15	PK264-02AR15				
		CMK264AP-R16	PK264-02AR16				
		CMK264AP-R25	PK264-02AR25				
		CMK264AP-R26	PK264-02AR26				
		CMK266AP-R15	PK266-02AR15				
		CMK266AP-R16	PK266-02AR16				
		CMK266AP-R25	PK266-02AR25				
		CMK266AP-R26	PK266-02AR26				
		CMK268AP-R15	PK268-02AR15				
		CMK268AP-R16	PK268-02AR16				
		CMK268AP-R25	PK268-02AR25				
		CMK268AP-R26	PK268-02AR26				

## ■ List of Motor and Driver Combinations

Model names for motor and driver combinations are shown below.

Type	Model	Motor Model	Driver Model	
SH Geared Type with Encoder	CMK223PR15S7.2	PK223PAR15S7.2	CMD2109P	
	CMK223PR15S9	PK223PAR15S9		
	CMK223PR15S10	PK223PAR15S10		
	CMK223PR15S18	PK223PAR15S18		
	CMK223PR15S36	PK223PAR15S36		
	CMK243PAR15S3.6	PK243A1AR15S3.6		
	CMK243PAR16S3.6	PK243A1AR16S3.6		
	CMK243PAR25S3.6	PK243A1AR25S3.6		
	CMK243PAR26S3.6	PK243A1AR26S3.6		
	CMK243PAR15S7.2	PK243A1AR15S7.2		
	CMK243PAR16S7.2	PK243A1AR16S7.2		
	CMK243PAR25S7.2	PK243A1AR25S7.2		
	CMK243PAR26S7.2	PK243A1AR26S7.2		
	CMK243PAR15S9	PK243A1AR15S9		
	CMK243PAR16S9	PK243A1AR16S9		
	CMK243PAR25S9	PK243A1AR25S9		
	CMK243PAR26S9	PK243A1AR26S9		
	CMK243PAR15S10	PK243A1AR15S10		
	CMK243PAR16S10	PK243A1AR16S10		
	CMK243PAR25S10	PK243A1AR25S10		
	CMK243PAR26S10	PK243A1AR26S10		
	CMK243PAR15S18	PK243A1AR15S18		
	CMK243PAR16S18	PK243A1AR16S18		
	CMK243PAR25S18	PK243A1AR25S18		
	CMK243PAR26S18	PK243A1AR26S18		
	CMK243PAR15S36	PK243A1AR15S36		
	CMK243PAR16S36	PK243A1AR16S36		
	CMK243PAR25S36	PK243A1AR25S36		
	CMK243PAR26S36	PK243A1AR26S36		
	CMK264PAR15S3.6	PK264A2AR15S3.6		CMD2120P
	CMK264PAR16S3.6	PK264A2AR16S3.6		
	CMK264PAR25S3.6	PK264A2AR25S3.6		
	CMK264PAR26S3.6	PK264A2AR26S3.6		
	CMK264PAR15S7.2	PK264A2AR15S7.2		
	CMK264PAR16S7.2	PK264A2AR16S7.2		
	CMK264PAR25S7.2	PK264A2AR25S7.2		
CMK264PAR26S7.2	PK264A2AR26S7.2			
CMK264PAR15S9	PK264A2AR15S9			
CMK264PAR16S9	PK264A2AR16S9			
CMK264PAR25S9	PK264A2AR25S9			
CMK264PAR26S9	PK264A2AR26S9			
CMK264PAR15S10	PK264A2AR15S10			
CMK264PAR16S10	PK264A2AR16S10			
CMK264PAR25S10	PK264A2AR25S10			
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CMK264PAR16S18	PK264A2AR16S18			
CMK264PAR25S18	PK264A2AR25S18			
CMK264PAR26S18	PK264A2AR26S18			
CMK264PAR15S36	PK264A2AR15S36			
CMK264PAR16S36	PK264A2AR16S36			
CMK264PAR25S36	PK264A2AR25S36			
CMK264PAR26S36	PK264A2AR26S36			

# Lead Wire/Connector Assembly RoHS

These lead wires with connector assemblies are available for use with the appropriate connector-coupled motors and/or encoder versions.

[Cables of 0.6 m (2 ft.) are included with the motor and driver packages.]



Motor cable for connector coupled motor



Encoder cable

## Product Line

### Motor Cables for Connector Coupled Motor

Model	Applicable Product	Applicable Motor	Length m (ft.)
LC2U06A	CMK22□PAP-R15	PK22□PAR15	0.6 (2)
LC2U10A	CMK223PR15S◆	PK223PAR15S◆	1 (3.3)
LC2U06B	CMK23□PAP-R■	PK23□PAR■	0.6 (2)
LC2U10B	CMK24□PAP-R■	PK24□PAR■	1 (3.3)
LC2U06C	CMK26□P◇PA CMK26□PAPA-R■	PK26□P◇A PK26□PAAR■	0.6 (2)
LC2U10C	CMK264PAR■S◆	PK264A2AR■S◆	1 (3.3)

- Enter the motor case length in the box (□) within the model name.  
Enter **A** (single shaft) or **B** (double shaft) in the box (◇) within the model name.  
Enter the encoder code (**15**, **16**, **25** or **26**) in the box (■) within the model name.  
Enter the gear ratio in the box (◆) within the model name.

### Encoder Cables

Model	Applicable Product	Applicable Motor	Length m (ft.)
LCR04060B	CMK22□PAP-R15 CMK223PAR15S◆	PK22□PAR15 PK223PAR15S◆	0.6 (2)
	CMK23□PAP-R15 CMK23□PAP-R16 CMK24□PAP-R15 CMK24□PAP-R16 CMK26□PAPA-R15 CMK26□PAPA-R16	PK23□PAR15 PK23□PAR16 PK24□PAR15 PK24□PAR16 PK26□PAAR15 PK26□PAAR16	0.6 (2)
	CMK24□MAPA-R15 CMK24□MAPA-R16 CMK26□MAP-R15 CMK26□MAP-R16	PK24□MAAR15 PK24□MAAR16 PK26□MAR15 PK26□MAR16	
	CMK24□APA-R15 CMK24□APA-R16 CMK25□APA-R15 CMK25□APA-R16 CMK26□APA-R15 CMK26□APA-R16	PK24□-01AAR15 PK24□-01AAR16 PK25□-02AR15 PK25□-02AR16 PK26□-02AR15 PK26□-02AR16	
	CMK243PAR15S◆ CMK243PAR16S◆ CMK264PAR15S◆ CMK264PAR16S◆	PK243A1AR15S◆ PK243A1AR16S◆ PK264A2AR15S◆ PK264A2AR16S◆	
	CMK23□PAP-R25 CMK23□PAP-R26 CMK24□PAP-R25 CMK24□PAP-R26 CMK26□PAPA-R25 CMK26□PAPA-R26	PK23□PAR25 PK23□PAR26 PK24□PAR25 PK24□PAR26 PK26□PAAR25 PK26□PAAR26	
	CMK24□MAPA-R25 CMK24□MAPA-R26 CMK26□MAP-R25 CMK26□MAP-R26	PK24□MAAR25 PK24□MAAR26 PK26□MAR25 PK26□MAR26	
	CMK24□APA-R25 CMK24□APA-R26 CMK25□APA-R25 CMK25□APA-R26 CMK26□APA-R25 CMK26□APA-R26	PK24□-01AAR25 PK24□-01AAR26 PK25□-02AR25 PK25□-02AR26 PK26□-02AR25 PK26□-02AR26	
	CMK243PAR25S◆ CMK243PAR26S◆ CMK264PAR25S◆ CMK264PAR26S◆	PK243A1AR25S◆ PK243A1AR26S◆ PK264A2AR25S◆ PK264A2AR26S◆	

- Enter the motor case length in the box (□) within the model name.  
Enter the gear ratio in the box (◆) within the model name.