

0.72°/0.36°/Geared Stepper Motor and Driver Package

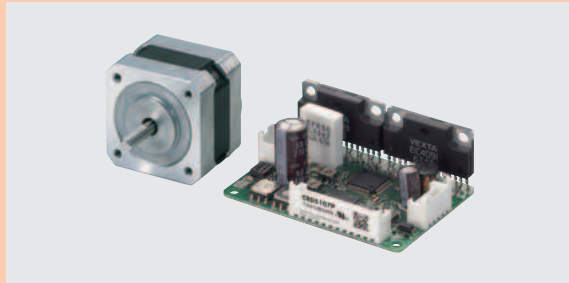
CRK Series

For details on this product please refer to our website.

www.orientalmotor.com/catalog



For detailed information about regulations and standards, please see the Oriental Motor website.



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The **CRK** Series features two types of motor and driver packages which combines a high-performance, 0.72°/0.36° stepper motor with a compact and low-vibration microstep driver, with Oriental Motor's proprietary Smooth Drive Function.

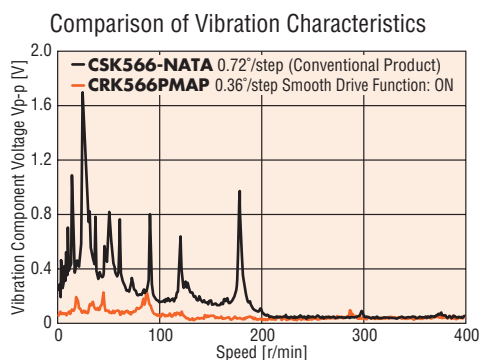
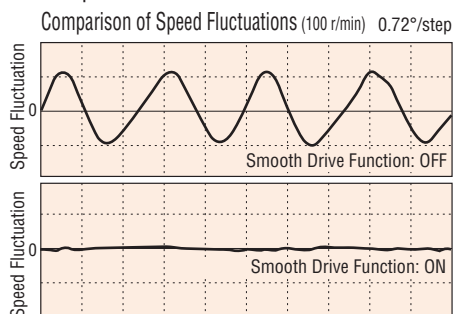
Features

Compact, Lightweight Microstep Drivers

Drivers achieve microstep drive with compact and lightweight bodies.

● Smooth Drive Function for Enhanced Ease of Use

The Smooth Drive Function automatically implements microstep drive based on the same traveling amount and traveling speed used in the full step mode, without changing the pulse input settings. This function is particularly useful when the system is operated in the full-step or half-step mode.



● Low Vibration and Low Noise Achieved by Microstep Drive

The basic step angle of the motor can be divided into a maximum of 250 microstep angles without using any mechanical element such as a speed reduction mechanism.

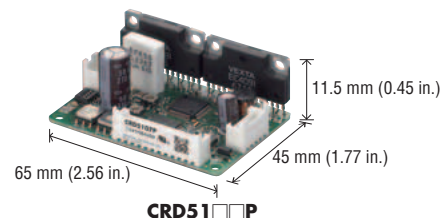
As a result, vibration and noise are further reduced.

Two Driver Types are Available

Two types of drivers are available, a Pulse Input Package and a Built-in Controller Package, to suit the control method required.

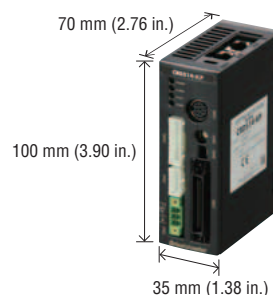
● Pulse Input Package

The motor is controlled from a pulse generator (not supplied), and a compact and lightweight [40 g (0.09 lb.)] driver.



● Built-in Controller Package*

The **CRK** Series with Built-in Controller is a compact, space saving stepper motor and driver package with a powerful, feature-rich controller built-in. The driver supports stand alone or RS-485 communications with multi-drop capability for network operation and I/O control.



*For Product Name, pricing and specifications on the Built-in Controller Package, please see the Oriental Motor website.

Wide Variety of Motors

This series offers motors ranging from the high-torque type and standard type, as well as various geared types.

Find a product meeting the specific torque, resolution or other needs from a wide range of specifications.

● High-Resolution Motor

◇ Improved Stopping Accuracy

The positioning accuracy of a stepper motor is affected by the friction of the load.

The step angle 0.36° High-Resolution type achieves high accuracy and reliability based on Oriental Motor's latest precision machining technology. The motor resolution is increased to double the level of the step angle 0.72° standard type to reduce the displacement angle against load torque, thereby achieve high positioning accuracy. Vibration is also reduced.

Standard type: 50 teeth

Resolution: **500** steps per rotation
= 0.72°/step

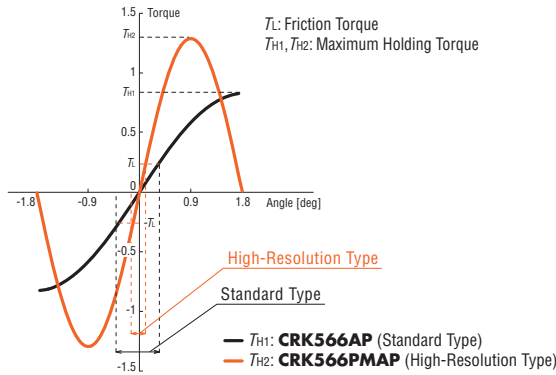
High-Resolution type: 100 teeth

Resolution: **1000** steps per rotation
= 0.36°/step



Resolution is increased!

Comparison of Angle – Torque Characteristics

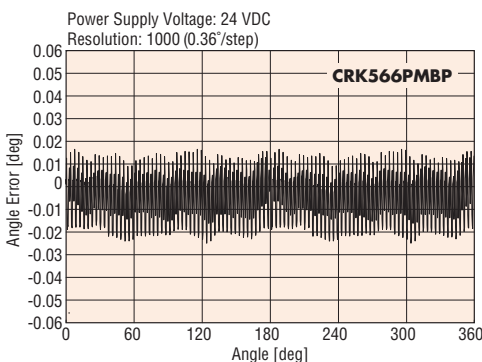


◇ Stop Position Accuracy of ± 2 arcmin

The high-resolution type is designed with a stop position accuracy of ± 2 arcmin ($\pm 0.034^\circ$) [Standard Type: ± 3 arcmin ($\pm 0.05^\circ$)].

The reduced error helps improve the positioning accuracy of the equipment.

Static Angle Characteristics



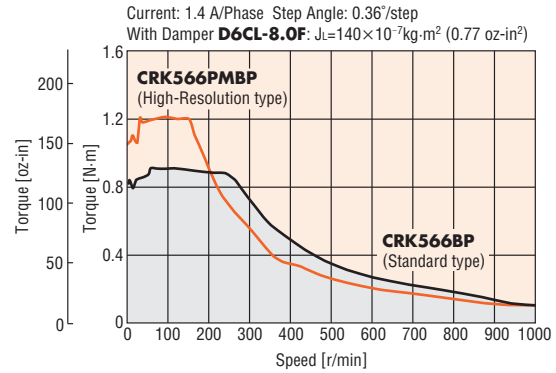
● High-Torque Motor

The high-resolution type and high-torque type employ a newly designed high-torque motor that widens the range of applications.

- The smaller motor allows for compact device design.
- The motor current is reduced to suppress heat generation.

Example) Avoidance of temperature rise in precision applications

Comparison of Speed – Torque Characteristics



● Encoder Option Available

Pulse Input Package: TTL, 500 or 1000 pulse/rev, 3 channel.

Built-in Controller Package: Differential, 500 or 1000 pulse/rev, 3 channel.

Motor rotations can be detected by taking in encoder output signals into a programmable controller (not supplied with **CRK** pulse input package).



Overview,
Product
Series

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AR

0.36°/Geared
Q_{STEP}
Absolute
AZ

0.72°/Geared
RKII

DC Input
Motor &
Driver

0.36°/Geared
Q_{STEP}
AR

0.36°/Geared
Q_{STEP}
Absolute
AZ

0.72°/0.36°
/Geared
CRK

1.8°/Geared
RBK

1.8°/0.9°
/Geared
CMK

0.72°
All-in-One
PKA

Motor Only

1.8°/0.9°
PKP/PK








Geared
PKP

0.72°/0.36°
PKP

Accessories

Product Line of Motors

Characteristics Comparison for Motors

Type	Features	Permissible Torque/ Max. Instantaneous Torque [N·m (oz-in)]	Backlash [arcmin (degrees)]	Basic Resolution [deg/step]	Output Shaft Speed [r/min]	
High-Resolution Type 	<ul style="list-style-type: none"> The basic step angle is 0.36°/step, which is half that of the standard type High positioning accuracy 	Maximum Holding Torque 2.3 (320)	—	0.36	4000	
High-Torque Type 	<ul style="list-style-type: none"> Higher torque of approximately 1.3 to 1.5 times compared with the standard type 	Maximum Holding Torque 0.42 (59)	—	0.72	4000	
Standard Type 	<ul style="list-style-type: none"> Basic motor of CRK Series 	Maximum Holding Torque 1.66 (230)	—	0.72	4000	
Low Backlash	TH Geared Type (Parallel Shaft) 	<ul style="list-style-type: none"> A wide variety of low gear ratios for high-speed operation Gear ratios: 3.6, 7.2, 10, 20, 30 	4 (35)*	60 (1°)	0.024	500
	PS Geared Type (Planetary Gear) 	<ul style="list-style-type: none"> High permissible/max. instantaneous torque A wide variety of gear ratios for selecting the desired step angle Centered shaft Gear ratios: 5, 7.2, 10, 25, 36, 50 	Permissible Torque 8 (70)*	35 (0.59°)	0.0144	600
Non-Backlash	PN Geared Type (Planetary Gear) 	<ul style="list-style-type: none"> High speed (low gear ratios), high positioning accuracy High permissible/max. instantaneous torque A wide variety of gear ratios for selecting the desired step angle Centered shaft Gear ratios: 5, 7.2, 10, 25, 36, 50 	Permissible Torque 8 (70)*	3 (0.05°)	0.0144	600
	Harmonic Geared Type (Harmonic Drive) 	<ul style="list-style-type: none"> High positioning accuracy High permissible/max. instantaneous torque High gear ratios, high resolution Centered shaft Gear ratios: 50, 100 	Permissible Torque 8 (70)*	0	0.0072	70

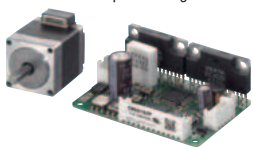
*The unit of the value in the parentheses of the geared type is [lb-in].

Note

The values shown above must be used as reference. The actual values vary depending on the motor frame size and gear ratio.

Wide Variety

The following motor frame sizes area available. ["□42 (□1.65)" indicates a motor frame size of 42 mm (1.65 in.).]

	High-Resolution Type	High-Torque Type	Standard Type	TH Geared Type	PS Geared Type	PN Geared Type	Harmonic Geared Type
Pulse Input Packages 	□28 (□1.10) □42 (□1.65)* □60 (□2.36)*	□20 (□0.79) □28 (□1.10) □42 (□1.65)*	□42 (□1.65)* □60 (□2.36)*	□28 (□1.10) □42 (□1.65)* □60 (□2.36)*	□28 (□1.10) □42 (□1.65)* □60 (□2.36)*	□28 (□1.10) □42 (□1.65) □60 (□2.36)	□20 (□0.79) □30 (□1.18) □42 (□1.65)* □60 (□2.36)*

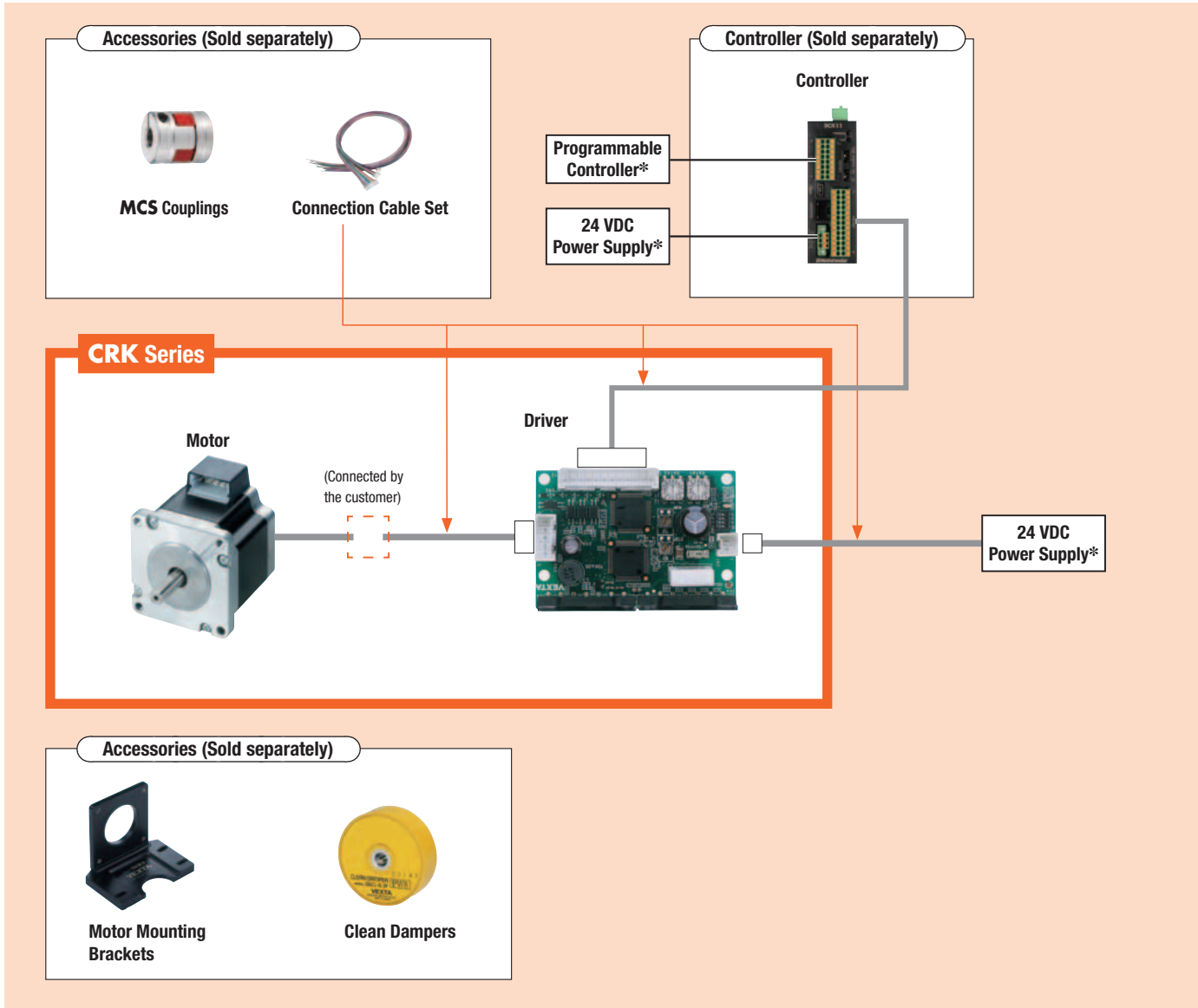
*An encoder type is available.

System Configuration

Pulse Input Packages

An example of a system configuration with the **SCX11** controller.

*Not supplied



● The system configuration shown above is an example. Other combinations are available.

Overview, Product Series

AC Input Motor & Driver

0.36°/Geared

*Q*STEP AR

0.36°/Geared

*Q*STEP Absolute AZ

0.72°/Geared

RKII

DC Input Motor & Driver

0.36°/Geared

*Q*STEP AR

0.36°/Geared

*Q*STEP Absolute AZ

0.72°/0.36°/Geared

CRK

1.8°/Geared

RBK

1.8°/0.9°/Geared

CMK

0.72°

All-in-One PKA

Motor Only

1.8°/0.9°

PKP/PK

Geared

PKP

0.72°/0.36°

PKP

Accessories

Product Number

Pulse Input Package

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

CRK 5 4 4 P M A P

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

CRK 5 4 4 P M A P - R 2 8

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

◇ Geared Type

CRK 5 2 3 P A P - N 7.2

① ② ③ ④ ⑤ ⑥ ⑦ ⑪ ⑫

CRK 5 4 3 A P R 2 7 PS 25

① ② ③ ④ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

①	Series Name	CRK: CRK Series
②	5-Phase	
③	Motor Frame Size	1: 20 mm (0.79 in.) 2: 28 mm (1.10 in.) 4: 42 mm (1.65 in.) 6: 60 mm (2.36 in.)
④	Motor Case Length	
⑤	Motor Type	
⑥	Resolution	Blank: High-Torque Type, Standard Type M: High-Resolution Type
⑦	Configuration	A: Single Shaft B: Double Shaft
⑧	Signal I/O Mode of Driver	P: Photocoupler
⑨	Encoder Version	
⑩	Encoder Output	2: 3-Channel A, B, Index
⑪	Encoder Resolution	7: 500 P/R 8: 1000 P/R

①	Series Name	CRK: CRK Series
②	5-Phase	
③	Motor Frame Size	1: 20 mm (0.79 in.) 2: 28 mm (1.10 in.) [30 mm (1.18 in.)] 4: 42 mm (1.65 in.) 6: 60 mm (2.36 in.)
④	Motor Case Length	
⑤	Motor Type	
⑥	Configuration	A: Single Shaft B: Double Shaft
⑦	Signal I/O Mode of Driver	P: Photocoupler
⑧	Encoder Version	
⑨	Encoder Output	2: 3-Channel A, B, Index
⑩	Encoder Resolution	7: 500 P/R
⑪	Gearhead Type	T: TH Geared Type PS: PS Geared Type N: PN Geared Type H: Harmonic Geared Type
⑫	Gear Ratio	

Built-in Controller Package

For Product Name, pricing and specifications on the Built-in Controller Package, please see the Oriental Motor website.

Product Line

Pulse Input Package

High-Resolution Type

Product Name (Single shaft)	List Price	Product Name (Double shaft)	List Price
CRK523PMAP	\$353.00	CRK523PMBP	\$355.00
CRK524PMAP	\$359.00	CRK524PMBP	\$361.00
CRK525PMAP	\$364.00	CRK525PMBP	\$367.00
CRK544PMAP	\$344.00	CRK544PMBP	\$347.00
CRK546PMAP	\$354.00	CRK546PMBP	\$357.00
CRK564PMAP	\$353.00	CRK564PMBP	\$356.00
CRK566PMAP	\$360.00	CRK566PMBP	\$363.00
CRK569PMAP	\$420.00	CRK569PMBP	\$423.00

High-Torque Type

Product Name (Single shaft)	List Price	Product Name (Double shaft)	List Price
CRK513PAP	\$357.00	CRK513PBP	\$362.00
CRK523PAP	\$343.00	CRK523PBP	\$346.00
CRK525PAP	\$355.00	CRK525PBP	\$357.00
CRK544PAP	\$335.00	CRK544PBP	\$337.00
CRK546PAP	\$344.00	CRK546PBP	\$347.00

Standard Type

Product Name (Single shaft)	List Price	Product Name (Double shaft)	List Price
CRK543AP	\$325.00	CRK543BP	\$328.00
CRK544AP	\$326.00	CRK544BP	\$329.00
CRK545AP	\$333.00	CRK545BP	\$336.00
CRK564AP	\$334.00	CRK564BP	\$337.00
CRK566AP	\$341.00	CRK566BP	\$344.00
CRK569AP	\$368.00	CRK569BP	\$372.00

TH Geared Type

Product Name (Single shaft)	List Price	Product Name (Double shaft)	List Price
CRK523PAP-T7.2	\$522.00	CRK523PBP-T7.2	\$524.00
CRK523PAP-T10	\$536.00	CRK523PBP-T10	\$539.00
CRK523PAP-T20	\$536.00	CRK523PBP-T20	\$539.00
CRK523PAP-T30	\$536.00	CRK523PBP-T30	\$539.00
CRK543AP-T3.6	\$463.00	CRK543BP-T3.6	\$466.00
CRK543AP-T7.2	\$463.00	CRK543BP-T7.2	\$466.00
CRK543AP-T10	\$477.00	CRK543BP-T10	\$480.00
CRK543AP-T20	\$477.00	CRK543BP-T20	\$480.00
CRK543AP-T30	\$477.00	CRK543BP-T30	\$480.00
CRK564AP-T3.6	\$496.00	CRK564BP-T3.6	\$499.00
CRK564AP-T7.2	\$496.00	CRK564BP-T7.2	\$499.00
CRK564AP-T10	\$510.00	CRK564BP-T10	\$513.00
CRK564AP-T20	\$510.00	CRK564BP-T20	\$513.00
CRK564AP-T30	\$510.00	CRK564BP-T30	\$513.00

PS Geared Type

Product Name (Single shaft)	List Price	Product Name (Double shaft)	List Price
CRK523PAP-PS5	\$687.00	CRK523PBP-PS5	\$690.00
CRK523PAP-PS7	\$687.00	CRK523PBP-PS7	\$690.00
CRK523PAP-PS10	\$687.00	CRK523PBP-PS10	\$690.00
CRK545AP-PS5	\$645.00	CRK545BP-PS5	\$648.00
CRK545AP-PS7	\$645.00	CRK545BP-PS7	\$648.00
CRK545AP-PS10	\$645.00	CRK545BP-PS10	\$648.00
CRK543AP-PS25	\$698.00	CRK543BP-PS25	\$701.00
CRK543AP-PS36	\$698.00	CRK543BP-PS36	\$701.00
CRK543AP-PS50	\$698.00	CRK543BP-PS50	\$701.00
CRK566AP-PS5	\$729.00	CRK566BP-PS5	\$733.00
CRK566AP-PS7	\$729.00	CRK566BP-PS7	\$733.00
CRK566AP-PS10	\$729.00	CRK566BP-PS10	\$733.00
CRK564AP-PS25	\$807.00	CRK564BP-PS25	\$811.00
CRK564AP-PS36	\$807.00	CRK564BP-PS36	\$811.00
CRK564AP-PS50	\$807.00	CRK564BP-PS50	\$811.00

High-Resolution Type with Encoders

Product Name (Single shaft)	List Price
CRK544PMAP-R28	\$419.00
CRK546PMAP-R28	\$429.00
CRK564PMAP-R28	\$428.00
CRK566PMAP-R28	\$435.00
CRK569PMAP-R28	\$495.00

High-Torque Type with Encoders

Product Name (Single shaft)	List Price
CRK544PAP-R27	\$409.00
CRK546PAP-R27	\$419.00

Standard Type with Encoders

Product Name (Single shaft)	List Price
CRK543AP-R27	\$400.00
CRK544AP-R27	\$401.00
CRK545AP-R27	\$408.00
CRK564AP-R27	\$409.00
CRK566AP-R27	\$416.00
CRK569AP-R27	\$444.00

TH Geared Type with Encoders

Product Name (Single shaft)	List Price
CRK543APR27T3.6	\$538.00
CRK543APR27T7.2	\$538.00
CRK543APR27T10	\$552.00
CRK543APR27T20	\$552.00
CRK543APR27T30	\$552.00
CRK564APR27T3.6	\$571.00
CRK564APR27T7.2	\$571.00
CRK564APR27T10	\$585.00
CRK564APR27T20	\$585.00
CRK564APR27T30	\$585.00

PS Geared Type with Encoders

Product Name (Single shaft)	List Price
CRK545APR27PS5	\$720.00
CRK545APR27PS7	\$720.00
CRK545APR27PS10	\$720.00
CRK543APR27PS25	\$773.00
CRK543APR27PS36	\$773.00
CRK543APR27PS50	\$773.00
CRK566APR27PS5	\$805.00
CRK566APR27PS7	\$805.00
CRK566APR27PS10	\$805.00
CRK564APR27PS25	\$883.00
CRK564APR27PS36	\$883.00
CRK564APR27PS50	\$883.00

Overview, Product Series

AC Input Motor & Driver

0.36°/Geared
Q_{STEP} AR

0.36°/Geared
Q_{STEP} Absolute AZ

0.72°/Geared
RKII

DC Input Motor & Driver

0.36°/Geared
Q_{STEP} AR

0.36°/Geared
Q_{STEP} Absolute AZ

0.72°/0.36°/Geared
CRK

1.8°/Geared
RBK

1.8°/0.9°/Geared
CMK

0.72° All-in-One
PKA

Motor Only

1.8°/0.9°
PKP/PK

Geared
PKP

0.72°/0.36°
PKP

Accessories

◇ PN Geared Type

Product Name (Single shaft)	List Price	Product Name (Double shaft)	List Price
CRK523PAP-N5	\$944.00	CRK523PBP-N5	\$947.00
CRK523PAP-N7.2	\$944.00	CRK523PBP-N7.2	\$947.00
CRK523PAP-N10	\$944.00	CRK523PBP-N10	\$947.00
CRK544AP-N5	\$707.00	CRK544BP-N5	\$710.00
CRK544AP-N7.2	\$707.00	CRK544BP-N7.2	\$710.00
CRK544AP-N10	\$707.00	CRK544BP-N10	\$710.00
CRK566AP-N5	\$982.00	CRK566BP-N5	\$986.00
CRK566AP-N7.2	\$982.00	CRK566BP-N7.2	\$986.00
CRK566AP-N10	\$982.00	CRK566BP-N10	\$986.00
CRK564AP-N25	\$1,155.00	CRK564BP-N25	\$1,159.00
CRK564AP-N36	\$1,155.00	CRK564BP-N36	\$1,159.00
CRK564AP-N50	\$1,155.00	CRK564BP-N50	\$1,159.00

◇ Harmonic Geared Type

Product Name (Single shaft)	List Price	Product Name (Double shaft)	List Price
CRK513PAP-H50	\$1,125.00	CRK513PBP-H50	\$1,131.00
CRK513PAP-H100	\$1,125.00	CRK513PBP-H100	\$1,131.00
CRK523PAP-H50	\$995.00	CRK523PBP-H50	\$998.00
CRK523PAP-H100	\$995.00	CRK523PBP-H100	\$998.00
CRK543AP-H50	\$999.00	CRK543BP-H50	\$1,002.00
CRK543AP-H100	\$999.00	CRK543BP-H100	\$1,002.00
CRK564AP-H50	\$1,336.00	CRK564BP-H50	\$1,340.00
CRK564AP-H100	\$1,336.00	CRK564BP-H100	\$1,340.00

The following items are included with each product.

Motor, Parallel Key*1, Driver, Driver Connector, Connection Cable*2, Encoder Connection Cable*3, Operating Manual

*1 Only for the products with a key slot on the output shaft

*2 Only for connector-coupled motor

*3 Only for the products with an encoder

◇ Harmonic Geared Type with Encoders

Product Name (Single shaft)	List Price
CRK543APR27H50	\$1,074.00
CRK543APR27H100	\$1,074.00
CRK564APR27H50	\$1,412.00
CRK564APR27H100	\$1,412.00



For details (specifications, characteristics, dimensions and others) on these products please refer to either to our website, contact technical support or your nearest Oriental Motor sales office.

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PKP

Accessories