



Singapore Oriental Motor is now on Facebook!



To create a social community between our valued customers, supporters and the Oriental Motor team, a Facebook Page has been set up to fulfill the great purpose.

With the aim of increasing interactivity and providing the required support to our customers, we look forward to your utmost participation!

Do add Orientalmotor <Singapore> on www.facebook.com now!

Singapore Oriental Motor is also proud to present the dates of the upcoming events:

Metaltech Kuala Lumpur	04 May 2011 ~ 06 May 2011
Semicon Singapore	11 May 2011 ~ 13 May 2011
Nepcon Penang	14 June 2011 ~ 16 June 2011

We look forward to see you at our booth!



■ Gear

A gear is a machine part consisting of 'teeth' called cogs. When there are 2 or more gears working together, a transmission device is formed.

This device can be used to change the speed, alter the direction of movement and amplify the output force.

Orientalmotor

SALES NETWORK

Oriental Motor Provides You with Full Support



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New motion

ORIENTAL MOTOR NEWS

17
2011



■ Highlights

New Affordable Standard AC Motors

■ New Products Introduction

Stepping Motor Unit *αSTEP*

■ Teach Me Please! Ms. Ori

How do you choose a Geared-Type Stepping Motor?

■ Information

Singapore Oriental Motor is now on Facebook!

GO LITE.

Paying only for what you need to have - an electric motor to move your conveyor, or any application.

Unveiling the new **World K Series**



Competitively Priced, Uncompromised Performance

No
Minimum
Quantity

Short
Delivery
Leadtime

New
Affordable
Prices

Conforms
to Single
Phase
230VAC

Output
Power
6W~90W

CE and
CCC*
Safety
Standards

Standard AC Motor • Asia Voltage Compliant Model

World K Series



*Not applicable for Three Phase 200/220VAC.



Stepping Motor Unit α STEP High-Efficiency ARL Series



1 High Performance
High Reliability,
High Efficiency and Energy Saving

2 Compact, yet High Torque
Unique Advantages of Stepping Motors

3 Powerful Lineup with Competitive Prices

4 High Accuracy & High Permissible Torque
PS Geared Type
Planetary Gear Mechanism

The **ARL** Series is cost effective, yet highly efficient.



POINT! 1 High Performance

The user-friendliness of a stepping motor is combined with the reliability of closed loop control.

The high-efficiency motor offers energy-saving performance.

It's a high-performance motor that is reliable, efficient and energy-saving!

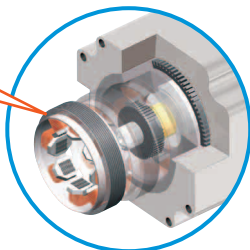


High Reliability

Incorporating Oriental Motor's unique closed-loop control

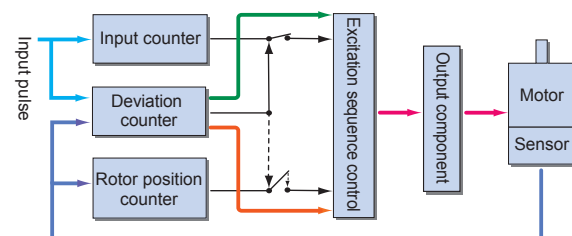
Rotor Position Detection Sensor

The rotor position detection sensor monitors the rotation. When an overload condition is detected, it will instantaneously regain control using the closed-loop mode.



● Image of sensor

Control block diagram



Normal (Positioning deviation is less than $\pm 1.8^\circ$)

Overload Condition (Positioning deviation is more than $\pm 1.8^\circ$)

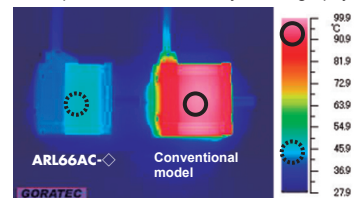
Operation runs on open-mode control (same as stepping motor).

The closed loop mode is engaged to maintain the positioning operation.

High Efficiency

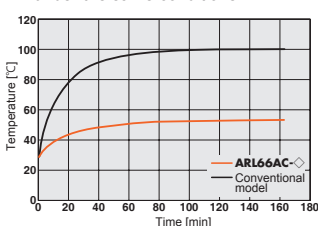
The **AR** Series utilizes high-efficiency technology to achieve a significant reduction in the amount of heat generated from the motor.

Temperature distribution by thermography



Comparison of operation under the same conditions

Motor surface temperature comparison under the same conditions



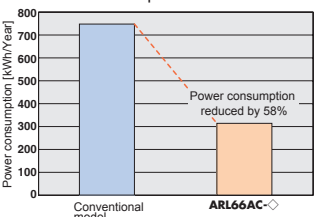
Energy Saving

Power Consumption reduced by 58% compared to conventional Oriental Motor model.

CO₂ emission: 58% reduction compared to conventional Oriental Motor model

Operating conditions:
Speed: 1000 r/min, Load factor: 50%,
Operating time: 24 hours of operation
(70% operating, 25% standing by, 5% standstill)
365 days/year

Power consumption

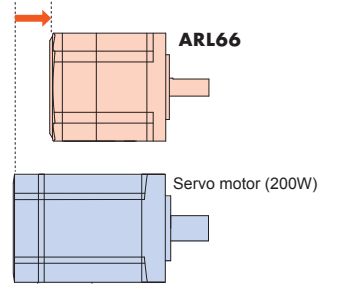
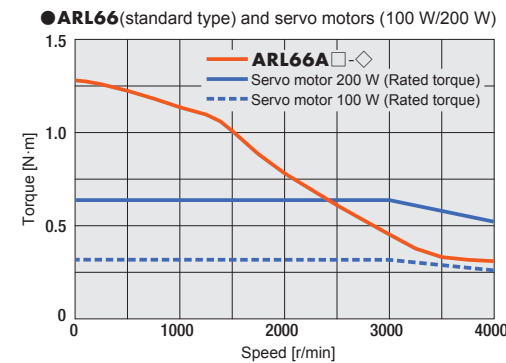


POINT! 2 Compact, yet High Torque

Stepping motors generate high torque with a compact body. Device space is reduced due to its shorter overall length compared to a servo motor of the same frame size (also produced by Oriental Motor).



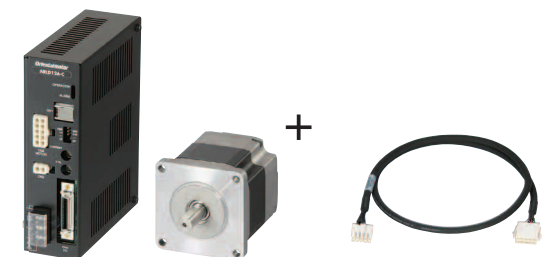
Comparison with servo motors of the same frame size



POINT! 3 Powerful Lineup with Competitive Prices

Oriental Motor offers a wide range of motors from geared motors to electromagnetic brake types, along with a driver lineup that supports different networks.

Motor and driver combinations come with a cable (1-3 m) at competitive prices.



Motor



Driver



Information can be found from Oriental Motor website.

Detailed information of **PS Geared Type** motor is on the next page.

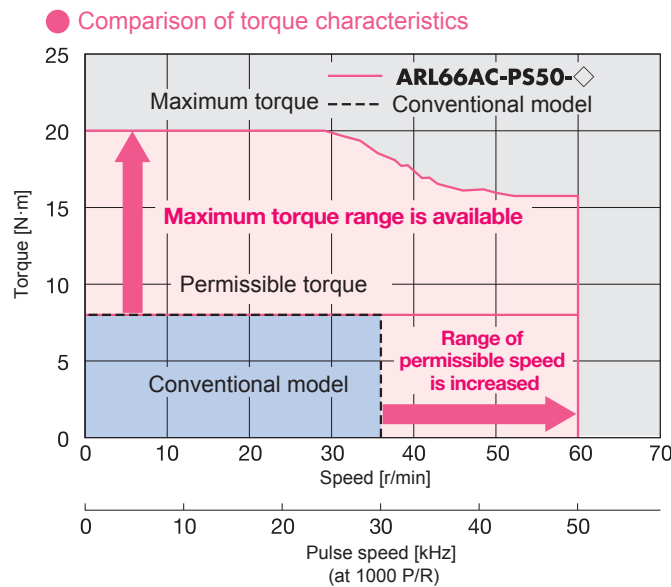
URL: <http://www.orientalmotor.com.sg/>
<http://www.orientalmotor.com.my/>
<http://www.orientalmotor.co.th/>

POINT! **4 PS Geared Type (Planetary Gear Mechanism)**

We offer a line of high-precision **PS** Geared Type motors with high permissible torque at competitive prices.

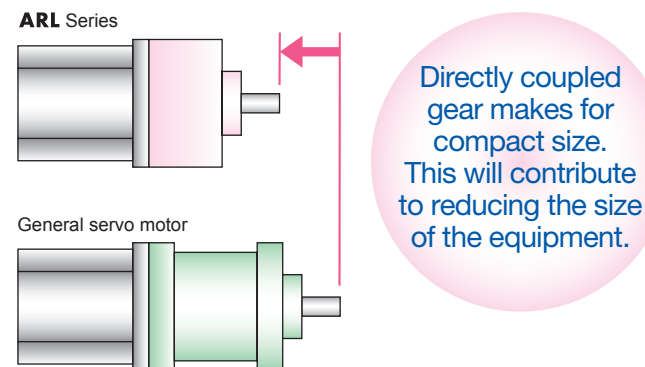
High Torque & Wide Permissible Speed Range

Maximum torque is now available on top of high permissible torque. The range of the permissible output gear shaft speed has been greatly expanded compared to our conventional products. This allows for a reduction in positioning time by operating in the maximum torque range when accelerating or decelerating. (Specifications vary by model. For details, please refer to the individual specifications.)

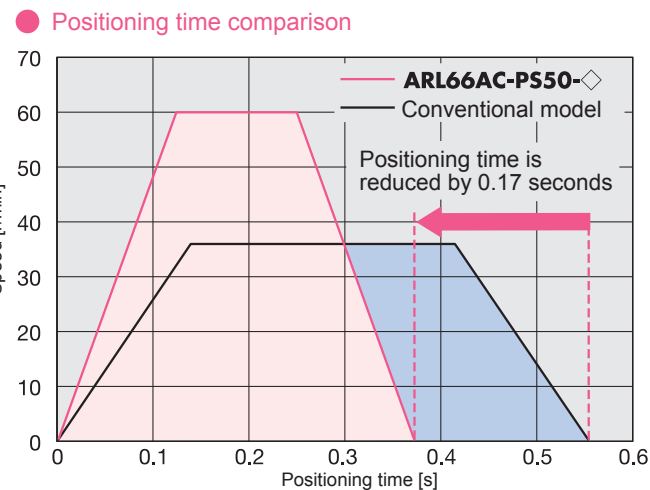


Compact Size

Compared to general geared servo motors, the size of the gear is smaller, reducing the overall length of the motor and gear. The frame size of the gear is the same as that of the motor regardless of the gear ratio, which reduces the size as well as allowing for a common design for equipment.



New Geared Type is Now Available!



A reduction in the positioning time is possible when operating under the conditions shown above. As a result, operating cycles are shortened by 48% compared to conventional models.

- *Operating conditions:
- Load: 300 mm (Thickness: 15 mm, Material: Steel)
 - Moment of load inertia: 942×10^{-4} [kg·m²]
 - Tilt angle: 90 degrees
 - Safety factor: 1.5 times
 - Operating time: 24 hours of operation (50% operating, 50% standing by)

Excellent Cost Performance

High performance offered at low prices.

• Specifications and prices of geared type motors (□60 mm, Gear ratio of 1:10)

	Spur Gear Mechanism		Planetary Gear Mechanism	
	TH Geared Type	PS Geared Type	PN Geared Type	PN Geared Type
Product Name	ARL66AC-T10-3	ARL66AC-PS10-3	ARL66AC-N10-3	ARL66AC-N10-3
Permissible Torque [N·m]	3	5	5	5
Maximum Torque [N·m]	—	11	11	11
Backlash min	15	20	2	2



Teach Me Please! Ms. Ori



Ms. Ori

How do you choose a Geared-Type Stepping Motor?



Mr. Vex

Mr. Vex: Umm...

Ms. Ori: You look like you're thinking of something. What's the matter?

Mr. Vex: A customer asked me to pick out a stepping motor to be used as the drive unit for an indexing table. Due to high load inertia, I am not able to find any suitable motors, even from the α STEP ARL Series.

[Table 1]

Product	Frame Size (mm)	Inertia ratio
α STEP ARL Series	42, 60, 85	30 or less
Stepping motor and driver package	20, 28	5 or less
	42, 60, 85	10 or less

* Except geared types

Ms. Ori: Did you try calculating with the geared types? The geared type motors are recommended for equipment that has large load inertia moment! Look at the formula in Table 2. Do you see that you can reduce the inertia ratio by selecting a geared type motor?

[Table 2]

$$\text{Inertia ratio} = \frac{\text{Overall moment of inertia of equipment [kg·m}^2\text{]}}{\text{Rotor Inertia moment of motor} \times \text{Gearhead gear ratio}^2 \text{ [kg·m}^2\text{]}}$$

Mr. Vex: I see! The geared type looks adequate for my customer's equipment. But there are so many types of geared stepping motors that I don't know which one to choose...

Ms. Ori: You compare the different specifications one by one. The catalogues include a list for easy comparison. For example, take a look at Table 3. Do you see the difference?

[Table 3]

Type	Specifications	Permissible Torque Maximum Torque [N·m]	Backlash [min]	Basic Resolution ["/step]	Output Shaft Speed [r/min]
Low Backlash	TH Geared (Parallel Shaft)	12	45	0.012	500
	PS Geared (Planetary Gear)	Permissible Torque 37 Maximum Torque 60	35	0.0072	600
Non-backlash	PN Geared (Planetary Gear)	Permissible Torque 37 Maximum Torque 60	3	0.0072	600
	Harmonic Geared (Harmonic drive)	Permissible Torque 37 Maximum Torque 55	0	0.0036	70

Mr. Vex: Well, the permissible torque is different. Oh, the backlash values are different, too. 'Backlash' means the clearance between mated gear teeth, right?

Ms. Ori: That's right. You need to check for the safety factor as well as whether or not the torque required for driving the equipment is within the permissible torque range. Moreover, unlike AC motors, precision positioning is required for stepping motors, which makes the backlash value a key point in selecting a stepping motor.

Mr. Vex: I get it! You can't choose a stepping motor just by calculating the inertia ratio and torque. I'll check with the customer for their positioning accuracy, and if they need better precision, I can suggest the PN Geared Type or Harmonic Geared Type. Oh, the gear ratio variation also varies by the series. Why are there such gear ratios like 1:3.6 and 1:7.2?

Ms. Ori: It relates to the resolution of the stepping motor. For example, how much does the α STEP ARL Series travel per pulse?

Mr. Vex: Let's see... α STEP ARL Series moves 0.36 degrees per pulse. Oh, but when the gear ratio is 3.6, the travel is 0.1 degrees per pulse at the gearhead output shaft. It's easy to determine the step angle.

Ms. Ori: See? Those specific gear ratios have a meaning. You need to select an appropriate gear ratio that produces a precise resolution for the desired angle. If a gear ratio doesn't allow the step angle to be a multiple of 360, it is no possible to make perfect rotation.

Mr. Vex: Right. Then I need to consider the customer's operating speed... I'll check their operating conditions and the equipment specifications before deciding which α STEP ARL Series geared type motor to use.

Ms. Ori: Wait! If your customer requires to have continuous operating duty, you can recommend AR Series.

Mr. Vex: Right. Operating duty isn't a concern. I'll still suggest cost effective ARL Series.

Ms. Ori: Mr. Vex, you're getting more and more knowledgeable about our products. Now, just be well prepared to do the calculations so you can select the products according to the customer's preferred conditions.

Mr. Vex: OK!