



HARDWARE: LOCOMOTIONS & MECHANICAL DESIGN (2-ACTUATORS)

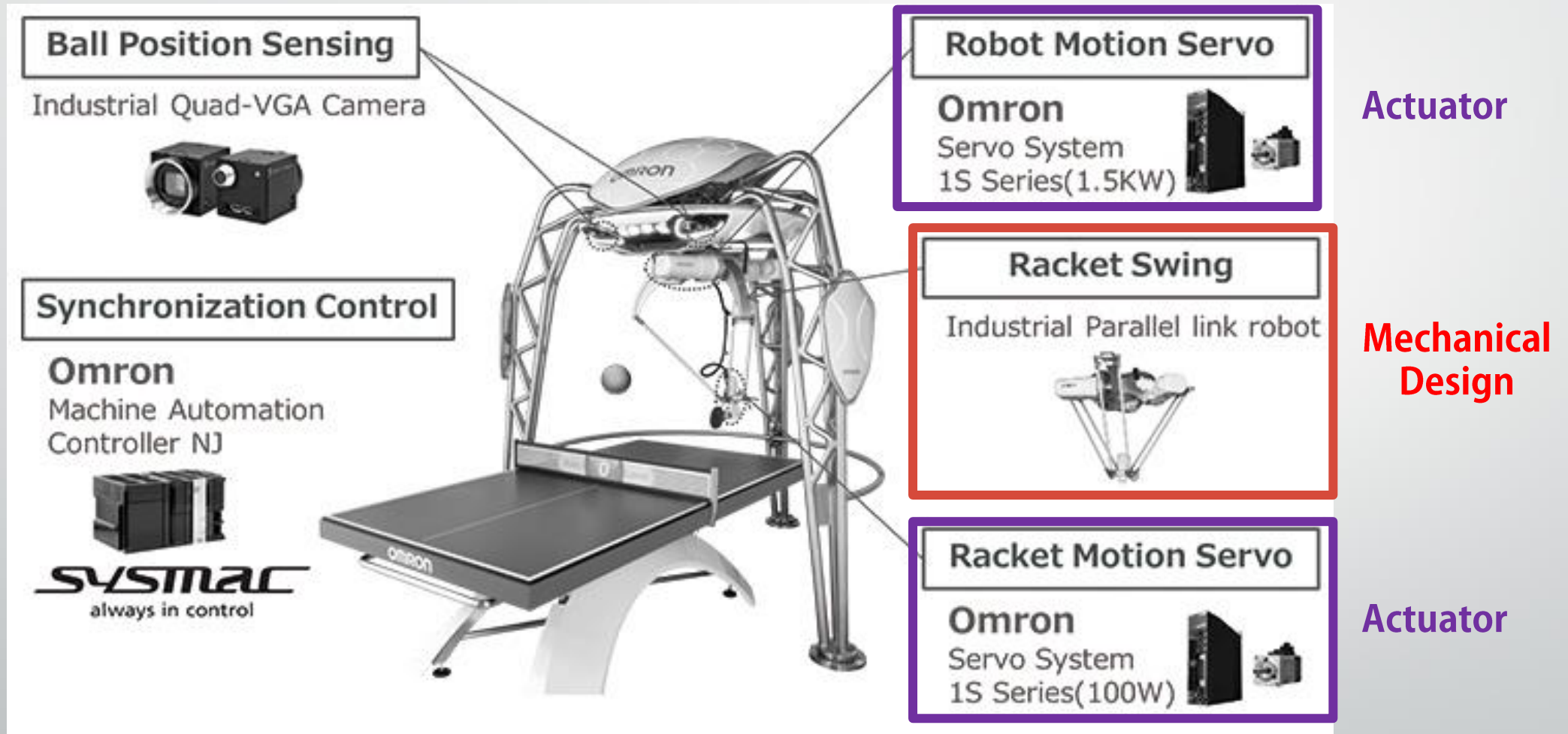
- Basic Motion Principle
- Hardware Components (Specifications, Brands and Price)

Contents

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1. STATIONARY ROBOT

a) Omron Forpheus Robot



The **basic motion principle** of this robot uses the concept of **Parallel Link Robot**. A parallel link robot is composed of a mobile platform connected to a fixed base by a set of identical parallel kinematic chains, which are called legs. The end-effector is fixed to the mobile platform.

1. STATIONARY ROBOT

a) Omron Forpheus Robot

- Actuators Hardware Components (Robot Motion Servo)

Omron 230 V 1.5 kW Servo Motor, 3000 rpm, 14.3 Nm Max Output Torque



RS Stock No.: 215-3431 | Mfr. Part No.: R88M-1L1K530H-S2 | Manufacturer: Omron



1 In Global stock for delivery within 4 - 6 working days

- 1 + units

Add to basket

Real time qty checker

Price Each
MYR10,905.63

Attribute	Value
Maximum Output Torque	14.3 Nm
Supply Voltage	230 V
Output Speed	3000 rpm
Power Rating	1.5 kW

units	Per Unit
1 +	MYR10,905.63

1. STATIONARY ROBOT


a) Omron Forpheus Robot

- Actuators Hardware Components (**Racket Motion Servo**)




Image shown is a representation only. Exact specifications should be obtained from the product data sheet.

R88M-G10030L

Digi-Key Part Number	Z10012-ND
Manufacturer	Omron Automation and Safety
Manufacturer Product Number	R88M-G10030L
Description	SERVOMOTOR 3000 RPM 100V
Manufacturer Standard Lead Time	4 Weeks
Detailed Description	- AC Motor Servomotor 3000 RPM 100W Incremental 100VAC
Customer Reference	Customer Reference
Datasheet	 Datasheet

1 In Stock

Can ship immediately
Factory Stock: 2 

QUANTITY

[Add to Cart](#)[Add to List](#)

All prices are in MYR

Bulk

QTY	UNIT PRICE	EXT PRICE
1	RM3,912.02000	RM3,912.02

Voltage - Rated

100VAC

RPM

3000 RPM

Torque - Rated (oz-in / mNm)

45.32 / 320

Power - Rated

100W

2. WHEELED ROBOTS & TRACKED ROBOTS

a. Single Wheel BB-8

How it Works

My BB-8 uses two robots that work independently. One to drive the body motion and the other to balance the head.

Balance

BB-8's head is kept on top of its body by a robot who has one job - balance. It uses information from its gyroscope and accelerometer to magically counter the motion of the body.

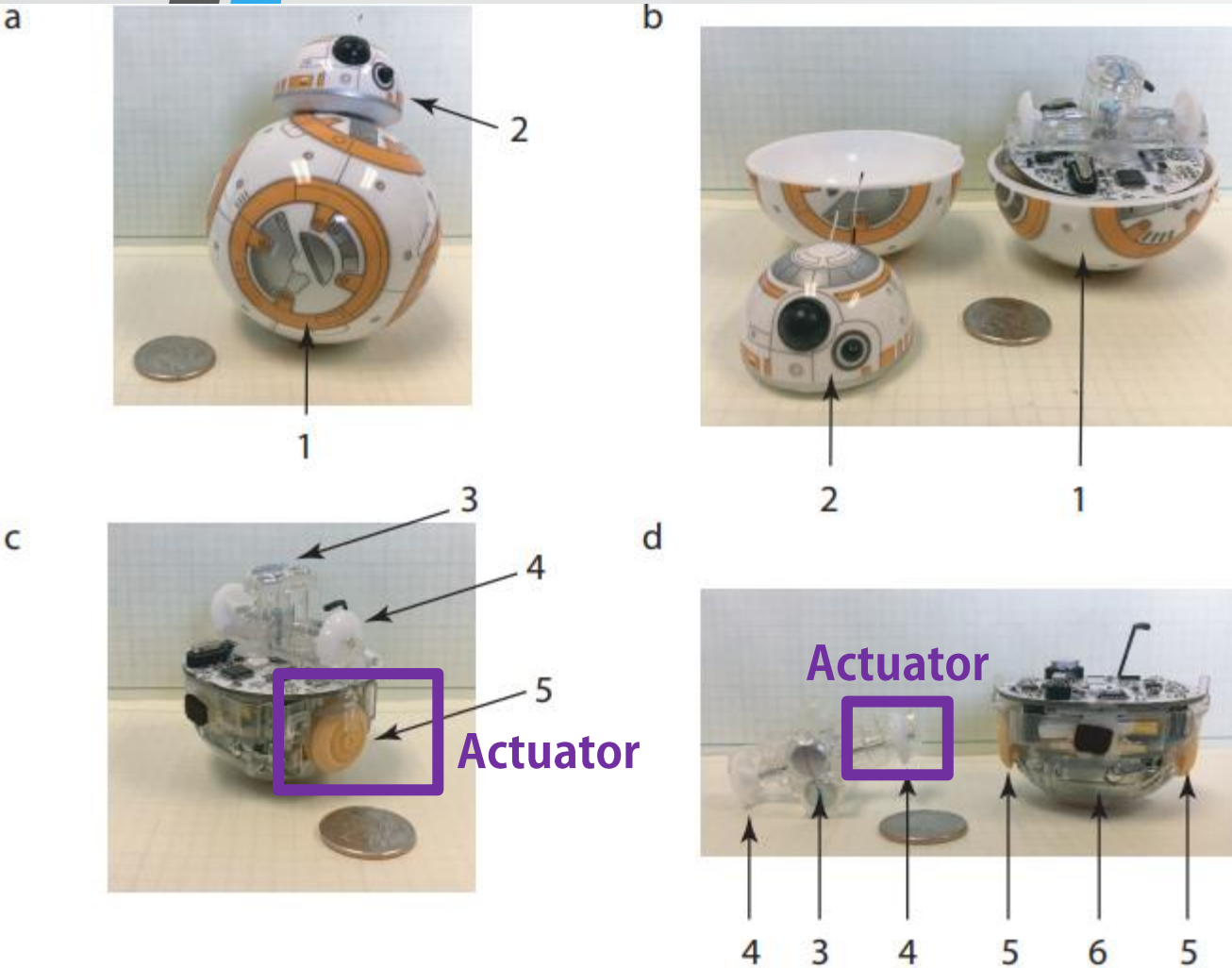
Drive

BB-8 can roll in any direction thanks to a robot housed inside, running like a hamster in its ball. It can take direction via WiFi or follow a pre-programmed path.



2. WHEELED ROBOTS & TRACKED ROBOTS

a. Single Wheel BB-8



- a. The robot in motion showing the spherical shell
- b. Deconstructed robot following cutting the spherical shell into hemispheres and removal of cap
- c. The inner mechanism of the robot showing one of the two wheels
- d. Image of the inner mechanism showing the pair of wheels used to locomote the spherical shell and the pendular mechanism.

- 1. The spherical cap
- 2. The Cap
- 3. The Pendular Mechanism
- 4. The Pair of Wheels to help maintain contact
- 5. The Two Wheels to locomote the spherical shell
- 6. The Induction coil

2. WHEELED ROBOTS & TRACKED ROBOTS

a. Single Wheel BB-8

- Actuators Hardware Components (**Stepper Motors**)



Stepper motor -
NEMA 17 size - 200
steps/rev, 12V 350mA

Product ID: 324

\$14.00

In stock

 Order now to ship today

1

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Qty	Discount
1-9	\$14.00
10-99	\$12.60
100+	\$11.20

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Description

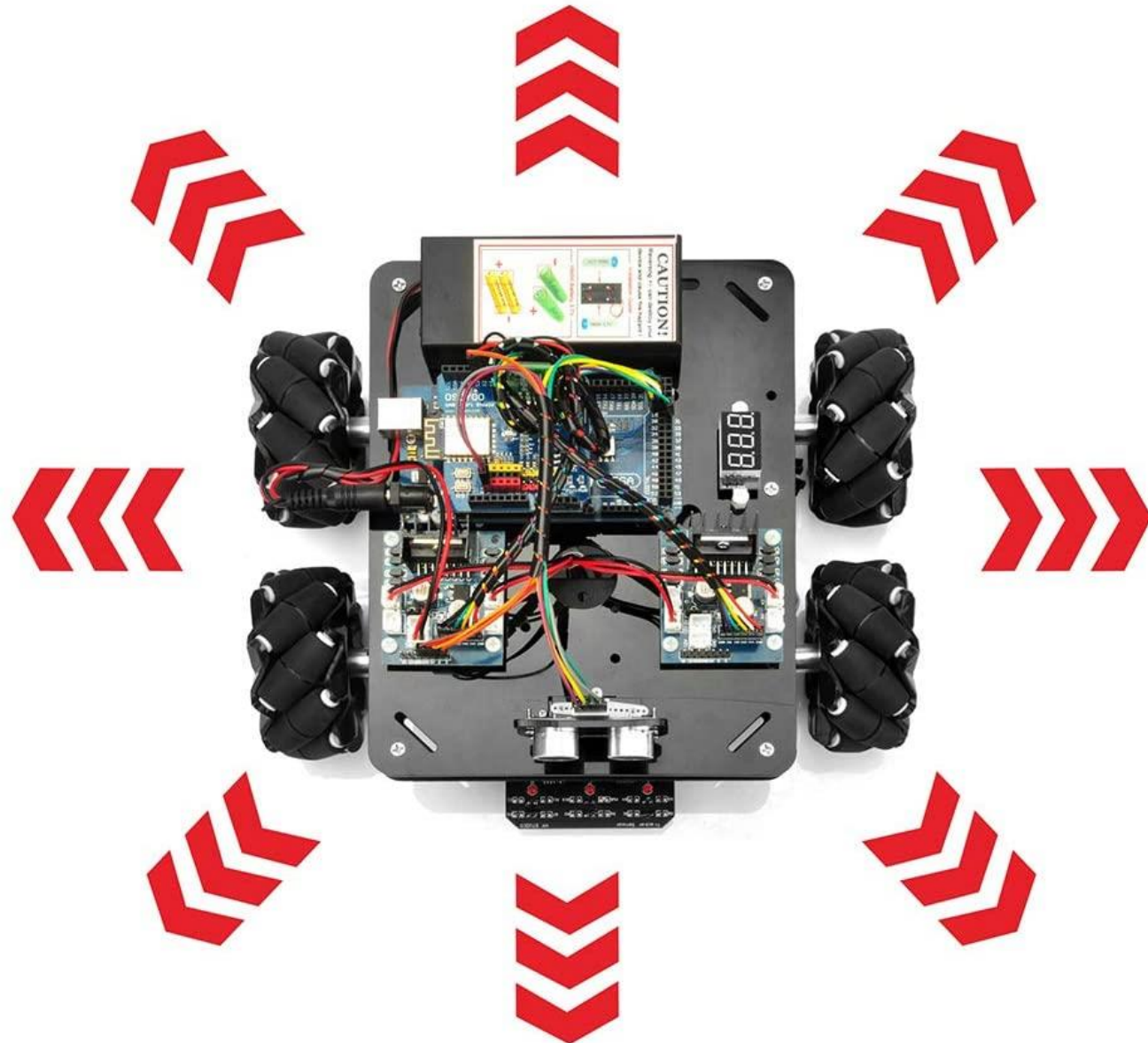
Technical Details

- 200 steps per revolution, 1.8 degrees
- Coil #1: Red & Yellow wire pair. Coil #2 Green & Brown/Gray wire pair.
- Bipolar stepper, requires 2 full H-bridges!
- 4-wire, 8 inch leads
- 42mm/1.65" square body
- 31mm/1.22" square mounting holes, 3mm metric screws (M3)
- 5mm diameter drive shaft, 24mm long, with a machined flat
- 12V rated voltage (you can drive it at a lower voltage, but the torque will drop) at 350mA max current
- 28 oz*in, 20 N*cm, 2 Kg*cm holding torque per phase
- 35 ohms per winding

2. WHEELED ROBOTS & TRACKED ROBOTS

b. 4WD Omni-Directional Mobile Robot

Omni-Directional



Left/Right Parallel Shift



Forward/Backward



Upper Left/Right Diagonal shift

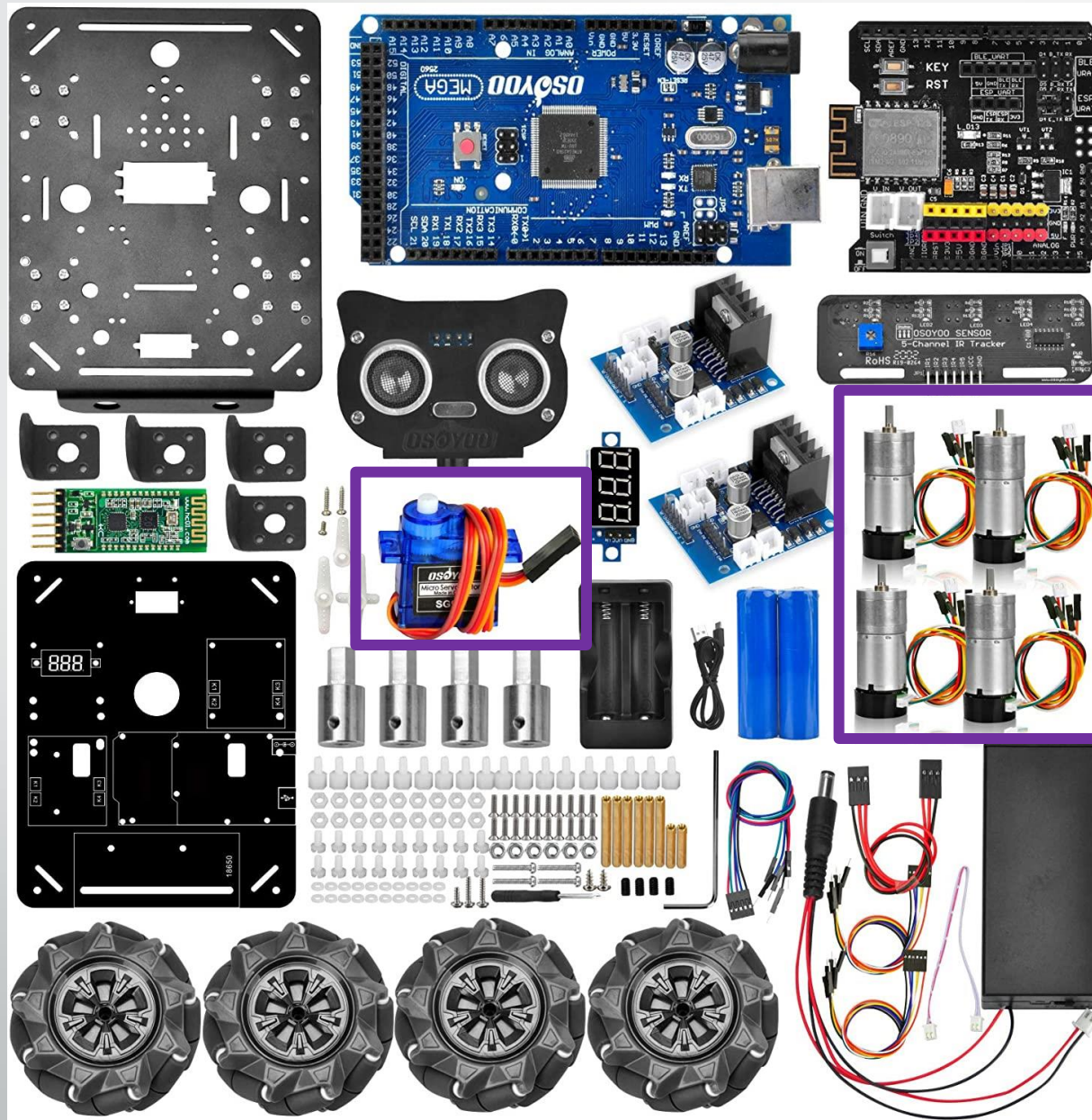


Lower Right/Left Diagonal



2. WHEELED ROBOTS & TRACKED ROBOTS

b. 4WD Omni-Directional Mobile Robot



Actuator

2. WHEELED ROBOTS & TRACKED ROBOTS

b. 4WD Omni-Directional Mobile Robot

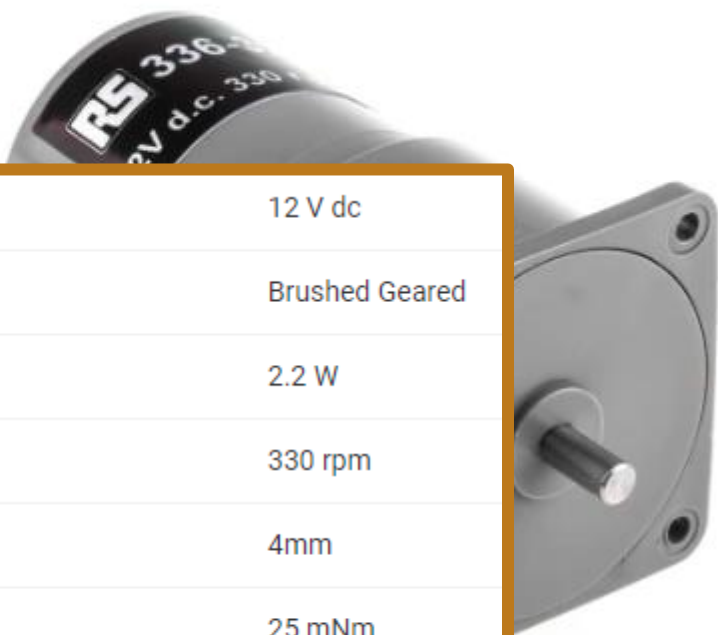
- Actuators Hardware Components (DC Gear Motor)

Philips

Brushed Geared DC Geared Motor, 2.2 W, 12 V, 25 mNm, 330 rpm, 4mm Shaft Diameter

PHILIPS

RS Stock No.: 336-321 | Mfr. Part No.: 9904 120 52602 | Manufacturer: Philips



Supply Voltage	12 V dc
DC Motor Type	Brushed Geared
Power Rating	2.2 W
Output Speed	330 rpm
Shaft Diameter	4mm
Maximum Output Torque	25 mNm
Gearhead Type	Spur
Current Rating	185 mA

29 In Global stock for delivery within 4 - 6 working days

-

1

+

 units

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Real time qty checker

Price Each

MYR283.63

units	Per Unit
1 +	MYR283.63

2. WHEELED ROBOTS & TRACKED ROBOTS

b. 4WD Omni-Directional Mobile Robot

- Actuators Hardware Components (Micro Servo Motor)



169

Digi-Key Part Number	1528-1076-ND
Manufacturer	Adafruit Industries LLC
Manufacturer Product Number	169
Description	SERVOMOTOR RC 5V TOWERPRO
Manufacturer Standard Lead Time	2 Weeks

Mfr	Adafruit Industries LLC
Series	-
Package	Bulk [?]
Part Status	Active
Type	DC Motor
Function	Servomotor, RC (Hobby)
Motor Type	Positional Rotation
Voltage - Rated	5VDC
RPM	-
Torque - Rated (oz-in / mNm)	22.22 / 156.9

Position DC Motor Servomotor, RC (Hobby) -

Reference

196 In Stock

Can ship immediately

QUANTITY

Quantity

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All prices are in MYR

Bulk

QTY	UNIT PRICE	EXT PRICE
1	RM25.11000	RM25.11

2. WHEELED ROBOTS & TRACKED ROBOTS

c. Wall Climbing Robot (Metal vs Wall vs Glass)

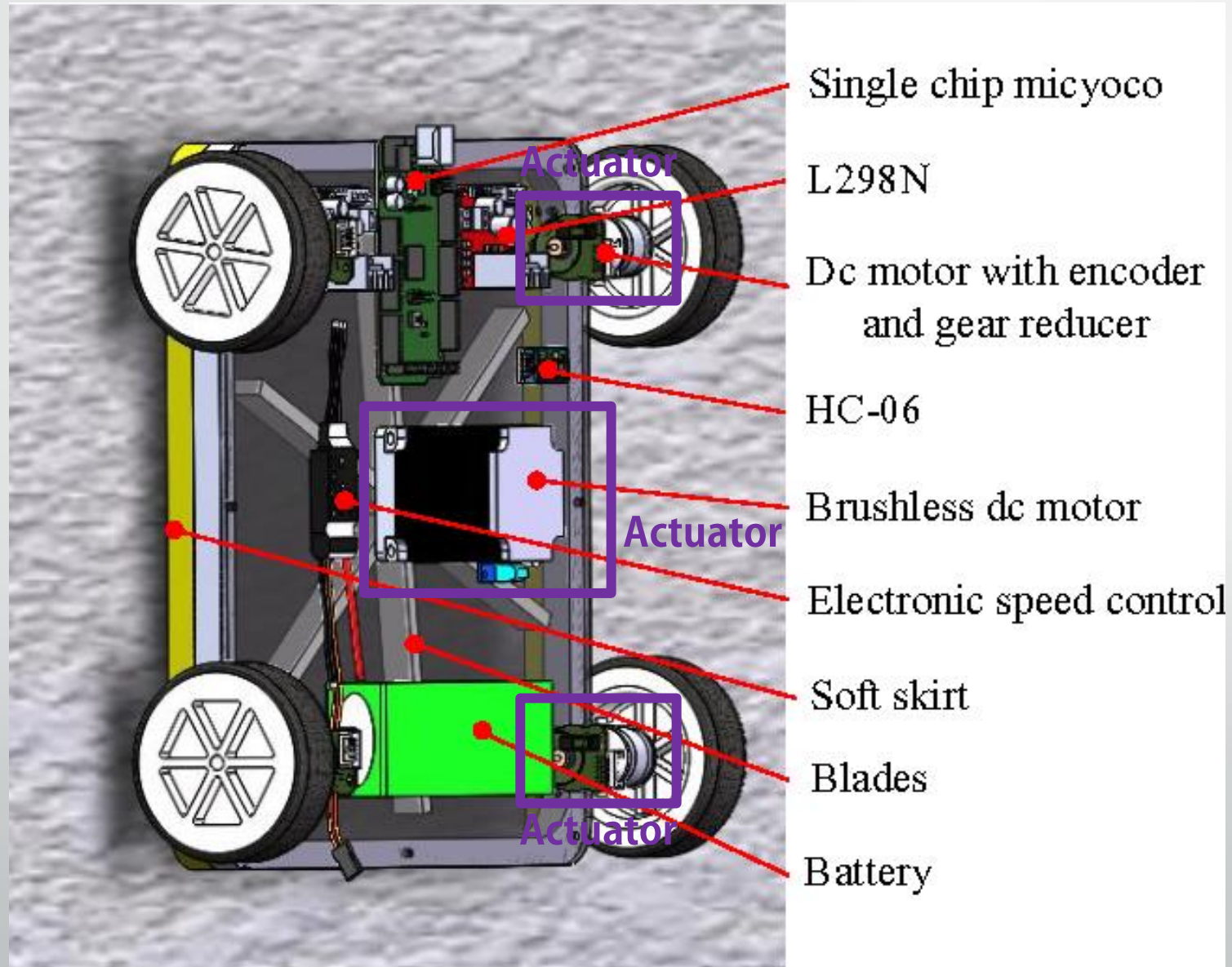


Figure 13. Schematic diagram of climbing robot

2. WHEELED ROBOTS & TRACKED ROBOTS

c. Wall Climbing Robot (Metal vs Wall vs Glass)

- Actuators Hardware Components (Gear Reducer DC Motor)



CHIHAIR MOTOR 12V DC Metal Gear Reducer
Motor GM37-3525 High Torque DC Gear Boxes
Motor - 130RPM

☆☆☆☆☆ No Ratings

Brand: No Brand | More Electrical from No Brand

RM23.70

-47%

Min. Spend RM15.00 ▼

Buy 2, Get 2% off; Buy 3, Get 3% off ▼

Model	Material	Voltage (V)	No Load		At Max. Efficiency			Stall	Size (mm)
			Speed (RPM)	Current (mA)	Speed (RPM)	Current (mA)	Torque (kg.cm)		
GM37-3525	Alloy Gear	DC12.0	80	≤170	60	≤450	4.0	25kg.cm	37*53
GM37-3525	Alloy Gear	DC12.0	130	≤170	100	≤450	2.5	20kg.cm	37*50

2. WHEELED ROBOTS & TRACKED ROBOTS

c. Wall Climbing Robot (Metal vs Wall vs Glass)

- Actuators Hardware Components (**Brushless DC Motor**)



Ready to Ship

✓ In Stock ✓ Fast Dispatch

Good quality **Nema 17** 2-Phase cnc small motor 12V Stepper Motor
1 buyer

1 - 10 Pieces

\$10.00

≥ 11 Pieces

\$9.50

Benefits: Quick refunds on orders under US \$1,000 [Claim now >](#)

Step Angle(deg... **1.8 degree**

Holding Torque : 0.22 N.M

US\$10.00

- 1 +

1 Pieces [Details](#)

Processing Time 5 days ⓘ

Shipping

US\$10.70

Seller's Shipping Method 4 [Change](#)

Total

US\$20.70

Estimated delivery 4/27-5/23

[Start Order](#)

[Contact Supplier](#)

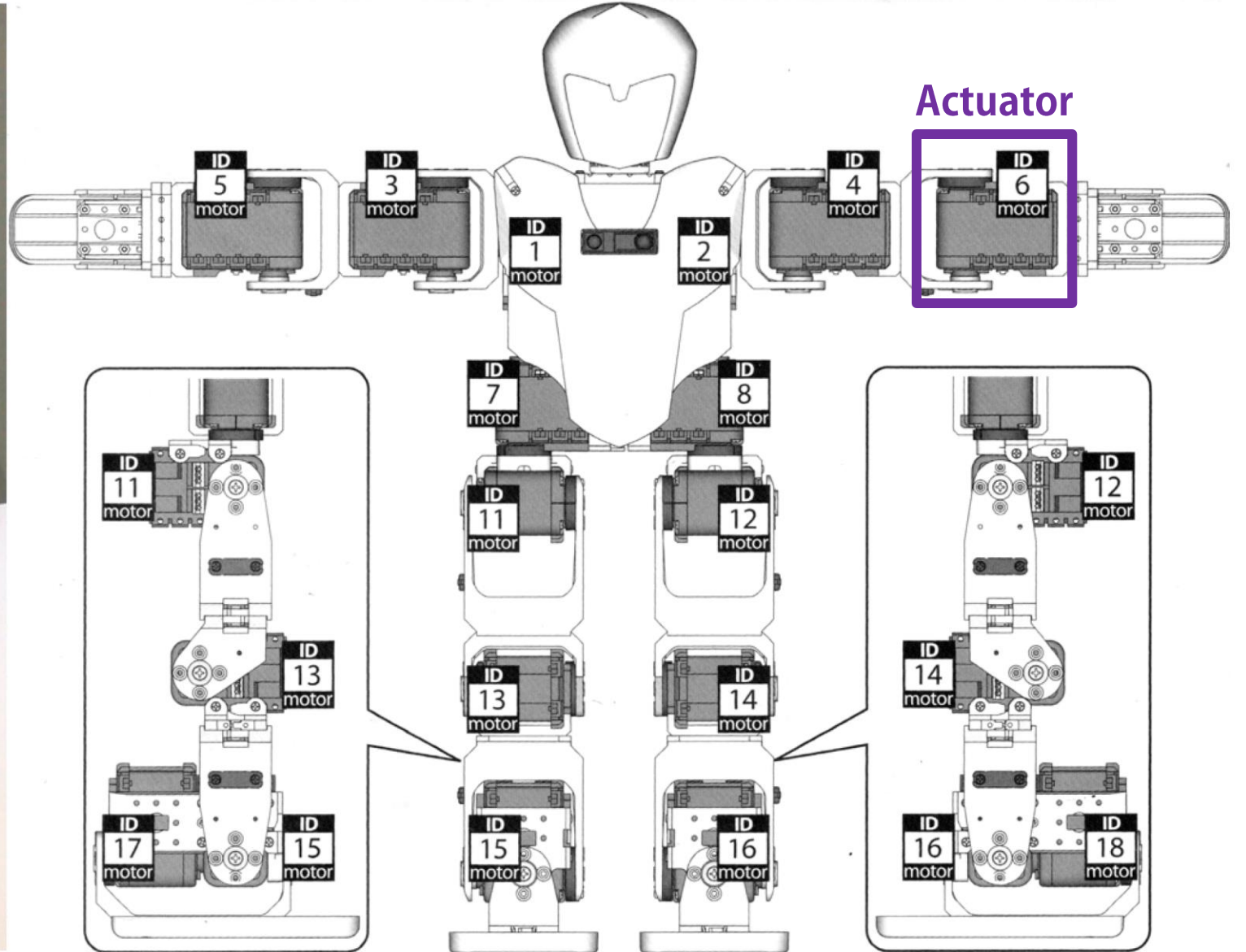
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Model	Phase number	Step angle (°)	Holding torque N.M	Rated current A	Phase inductance mH	Phase resistance Ohm
42A02	2	1.8	0.22	1.2	5.5	2.5
42A03	2	1.8	0.34	1.5	5.0	2.6
42A08	2	1.8	0.71	1.8	4.8	2.0
Model	Number of lead	Rotor inertia (g.cm ²)	Shaft diameter mm	Motor weight Kg	Motor body Length L(mm)	Shaft length L1(mm)
42A02	4	57	5	0.24	40	24
42A03	4	82	5	0.34	48	24
42A08	4	114	5	0.5	60	24

3. LEGGED

a. Humanoid Robot (BIOLOID)



3. LEGGED

a. Humanoid Robot (BIOLOID)

- Actuators Hardware Components (Servo Motor)

**LIFE TIME
WARRANTY**

**FREE
SHIPPING**



Specification:

Model: XL-320

Weight: 16.7g

Size: 24mm*36mm*27mm

Gear ratio: 238:1

Operating voltage: 6~8.4V (recommended voltage 7.4V)

Static torque: 0.39Nm

No-load speed: 114RPM

Motor: core motor

Minimum control angle: about 0.29°*1024

Operating range: steering gear mode: 300°, wheel mode: unlimited rotation

Operating temperature: -5°C~70°C

Command signal: data packet

Communication protocol: half-duplex asynchronous serial communication (8bit, 1 stop, no parity)

Physical connection: TTL multipoint bus (daisy chain connection)

ID: 253ID (0~252)

Baud rate: 7843~1Mbps

Feedback function: position, temperature, load, input voltage, etc.

Material: engineering Plastic

XL-320 Servo **Dynamixel X** Servo Core Motor 114RPM 0.39Nm
Torque for Darwin Robot

Condition: New

Quantity:

1

More than 10 available

Price: **US \$47.76**

Buy It Now

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30-day returns

Shipping: **FREE** SpeedPAK Economy | [See details](#)

International shipment of items may be subject to customs processing and additional charges. ⓘ

Located in: 深圳, China

Delivery:

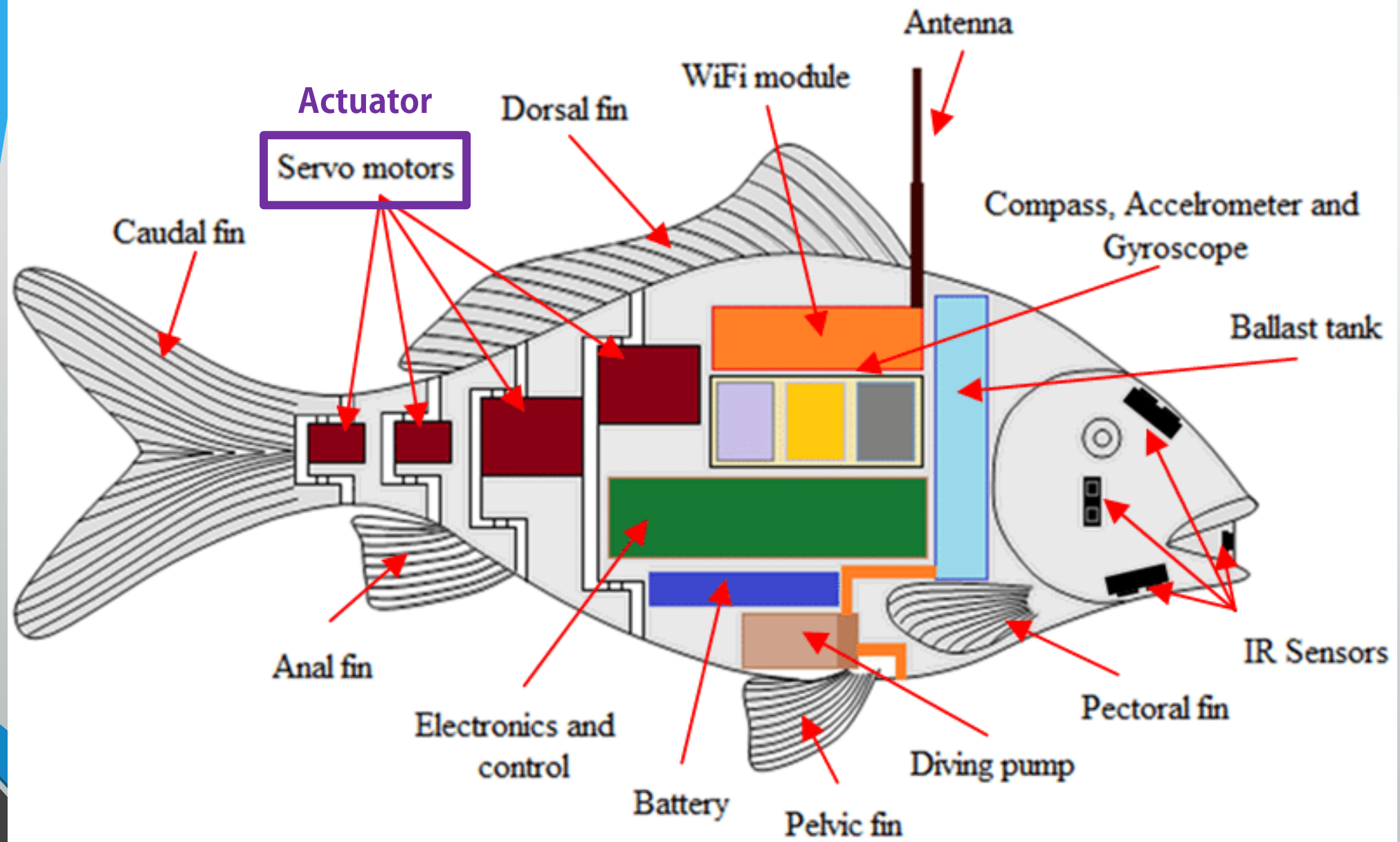


Estimated between **Thu, Jun 9** and **Thu, Jul 28** ⓘ

This item has an extended handling time and a delivery estimate **greater than 25 business days**

4. SWIMMING

a. Fish Robot



4. SWIMMING

a. Fish Robot

- Actuators Hardware Components (**Servo Motor**)

Water proof

Made of first-grade material ensure the longevity of the products.



Operating voltage: 4.8 - 6.0V
Operating speed (6.0V): 0.15 sec / 60 degrees
Stall torque (6.0V): 25kg/cm
Dead band: 4μs
Neutral position: 1500μs / 330hz
Bearing: 2BB
Connector wire: About 260mm
Gear type: Metal
Angle: 130-160°
Size: 40 * 40 * 20mm
Weight: 60g

Preferred **【TOP SALE】** **AUSTAR AX8601** 25KG Servo Waterproof 25kg Metal Gear Digital RC Servo climbing cars and remote control toys

5.0 ★★★★★

47 Ratings

68 Sold ?

RM99.88

RM47.89

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Guarantee Authentic or Money Back

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Free shipping for orders over RM15.00



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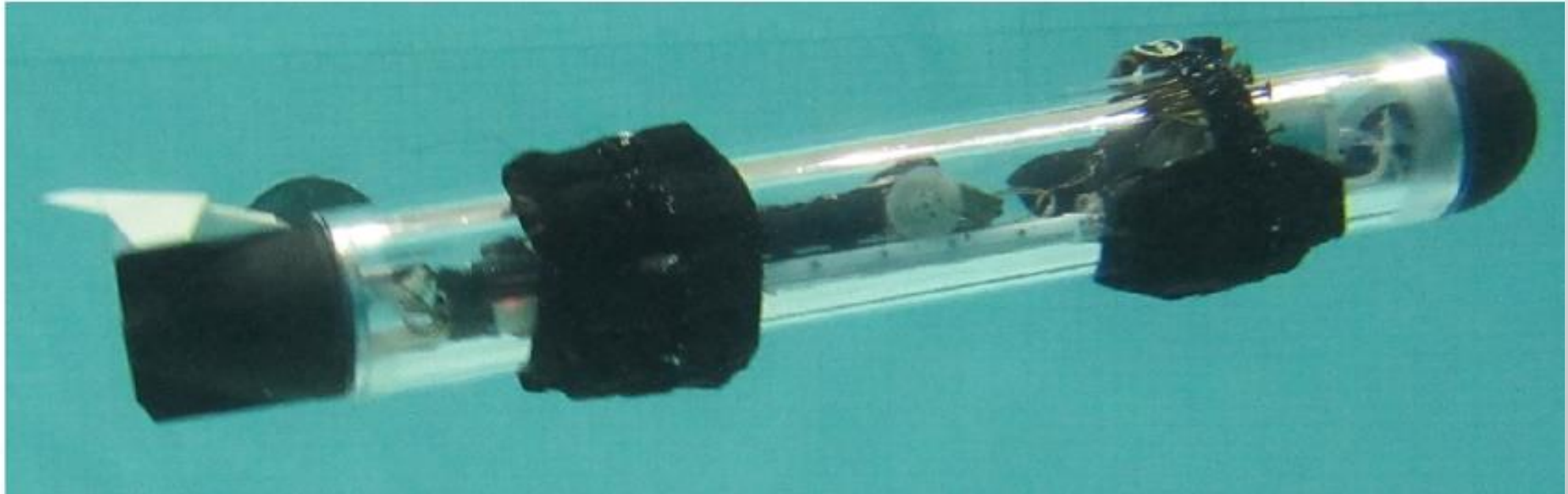
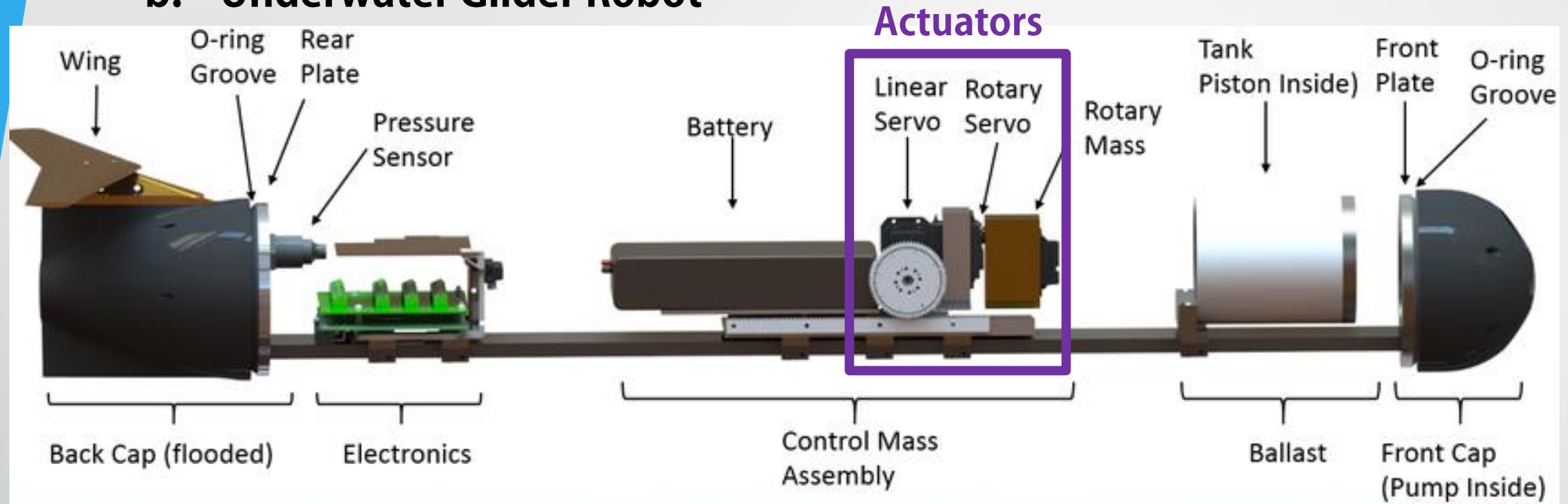
Mainland China to Gombak, Selangor ▾

Shipping Fee

RM0.00 ▾

4. SWIMMING

b. Underwater Glider Robot



4. SWIMMING

b. Underwater Glider Robot

- Actuators Hardware Components (**Linear Actuator**)

kokiya 35mm 12V 150mm Stroke 7mm/s 2000N
Electric Linear Actuator IP65 Waterproof

☆☆☆☆☆ No Ratings

Brand: No Brand | More Power Tools from No Brand

Free Shipping

RM300.72

~~RM501.00~~ -40%

- Material: Aluminum, Stainless Steel
- Voltage: 12V
- Outer tube Diameter: 35mm
- Inner tube Diameter: 20mm
- Stroke: 150mm
- Speed: 7mm/s
- Thrust: 2000N
- Hole diameter: 6mm
- Installment pitch of holes: 353mm/ 13.9inch

4. SWIMMING

b. Underwater Glider Robot

- Actuators Hardware Components (**Rotary Servo Motor**)



30Kgs full waterproof HV coreless RC Servo

coreless servo rc servo waterproof rc servo

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Pin

Email

\$35.80

Specification

CLS5830HV

Size

Color

Weight

Dead band: 1 μ s

Working frequency: 1520 μ s / 330hz

Motor: Coreless

Operating Speed 6.0v 0.11 sec/60°

Operating Speed 8.4v 0.09 sec/60°

Stall Torque 6.0v 24.7 kg.cm

Stall Torque 8.4v 30.3 kg.cm

Dimensions: 40.5X20.2X38mm

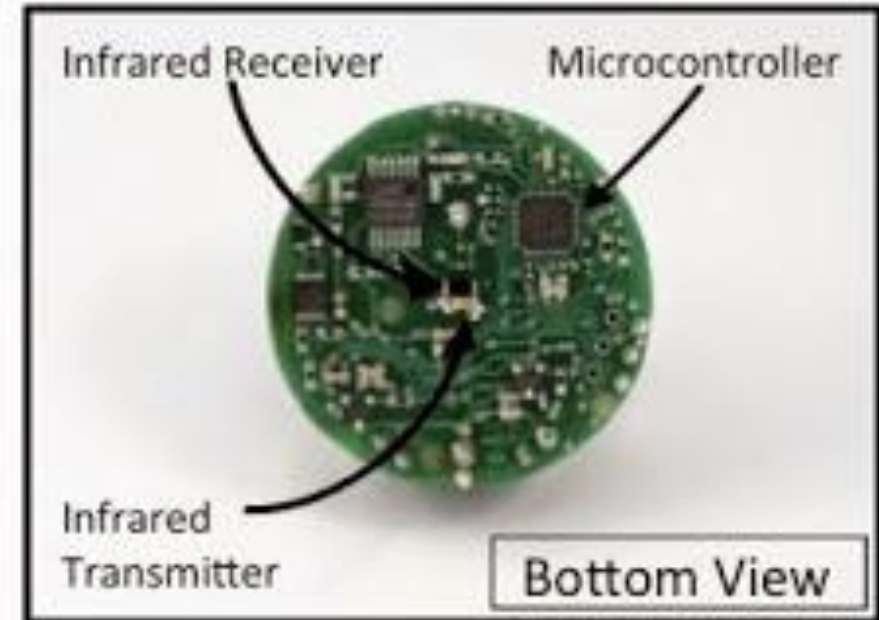
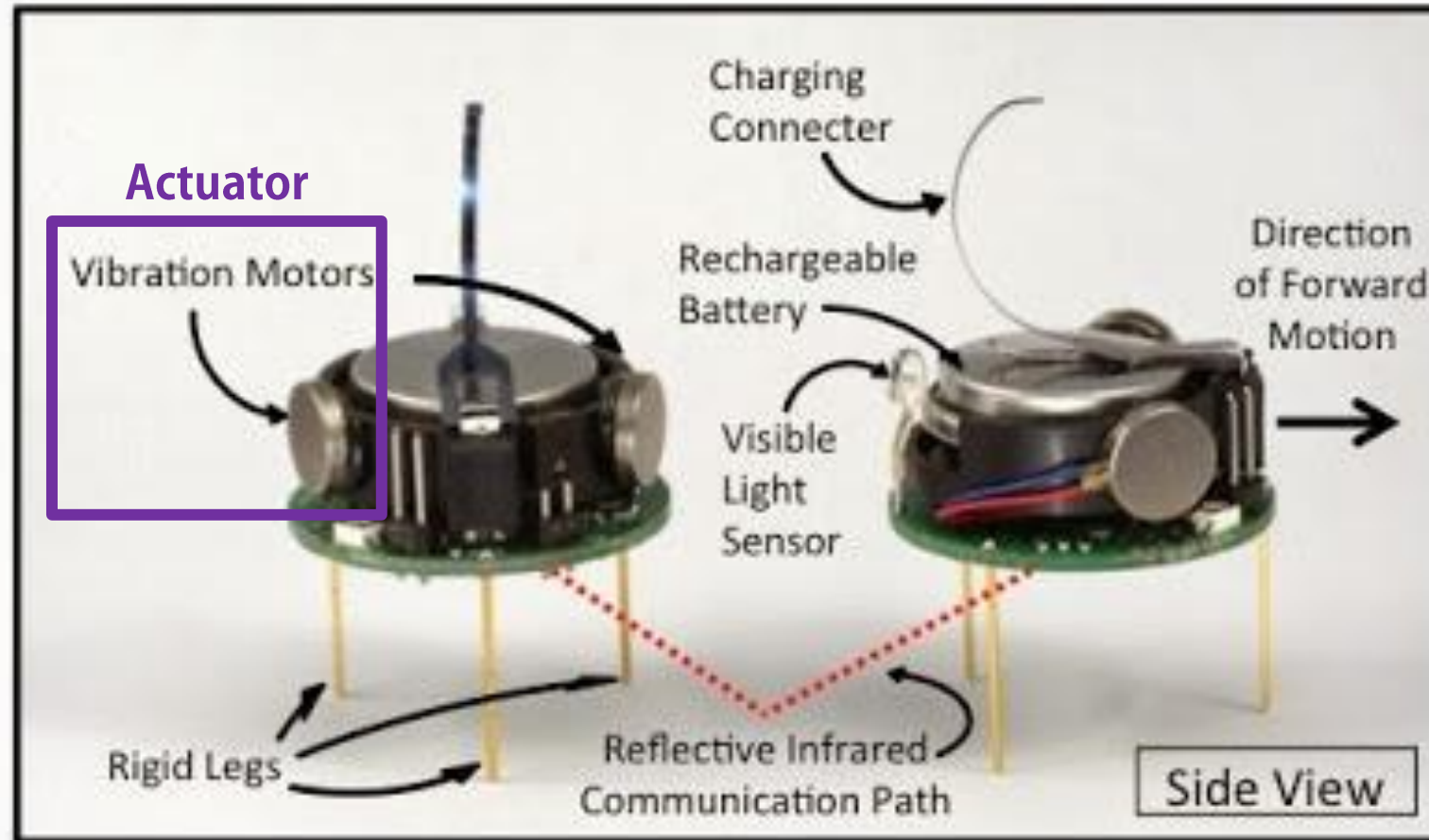
Weight: 58 g

Wire/Color: JR 265 mm/ -Brown +Red S Orange

Bearing: 2 ball bearings

5. OTHERS

a. Kilobot



5. OTHERS

a. Kilobot


- Actuators Hardware Components (Cell Phone Vibration Motor)

316040001

11,106 In Stock



Image shown is a representation only. Exact specifications should be obtained from the product data sheet.

Digi-Key Part Number	1597-1244-ND
Manufacturer	Seeed Technology Co., Ltd
Manufacturer Product Number	316040001
Description	VIBRATION ERM MOTOR 3V
Manufacturer Standard Lead Time	17 Weeks
Detailed Description	- DC Motor Vibration, ERM - - - 3VDC
Customer Reference	Customer Reference
Datasheet	 Datasheet

Can ship immediately

QUANTITY

Quantity

Add to Cart

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All prices are in MYR

Bulk

QTY	UNIT PRICE	EXT PRICE
1	RM5.06000	RM5.06

Type	DC Motor
Function	Vibration, ERM
Motor Type	-
Voltage - Rated	3VDC