

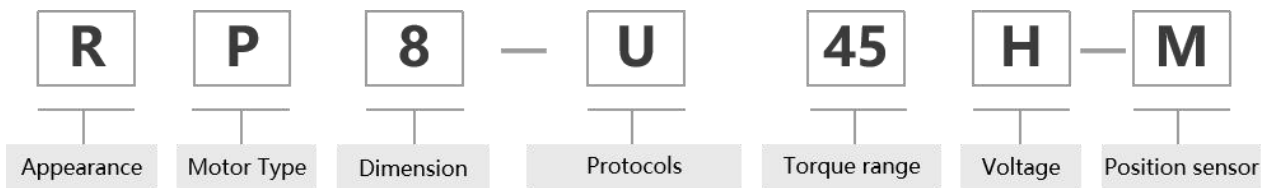
UART Bus Servo Actuator 50KG Series (D-shaft)



Features

- Integrated design of brushless motor, reducer, magnetic absolute encoder and controller.
- UART protocol with baud rate up to 1Mbps.
- 12-bit magnetic absolute encoder, supporting arbitrary angle setting as the zero-position.
- Supports multi-turn angle control within a range of $\pm 368,640^\circ$
- Angle memory ensures position data is retained after power-off.
- Trapezoidal acceleration and deceleration control profile generates a smoothed motion curve, improving overall system performance.
- Automatically detects power during operation and reduces it to a safe level once the threshold is exceeded.
- Three Stop Modes: Locking force hold, Locking force release and Damping .
- Equipped with comprehensive protection functions including thermal shutdown, voltage protection, stall detection, and current/power limitation.
- Graphical configuration tools with simulation capabilities.

Model definition



Appearance	R: Dual-shaft H: Single-shaft	
Motor type	X: Brushless	P: Coreless A/L: Cored
Dimension	6: 31.5×21×27.6mm	8: 40×40×20mm 18: 63×34×47mm
Protocols	U: UART/TTL	R: RS-485 C: CAN Bus
	A: PWM(programmable)	P: PWM
Voltage	[-]: 7.4V	H: 12V W: 24V
Position Sensor	[-]: Potentiometer	M:12-bit magnetic absolute encoder

Models available for order

- RX8-U51H-M
- HX8-U51H-M

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1 Specifications

1.1 Basic

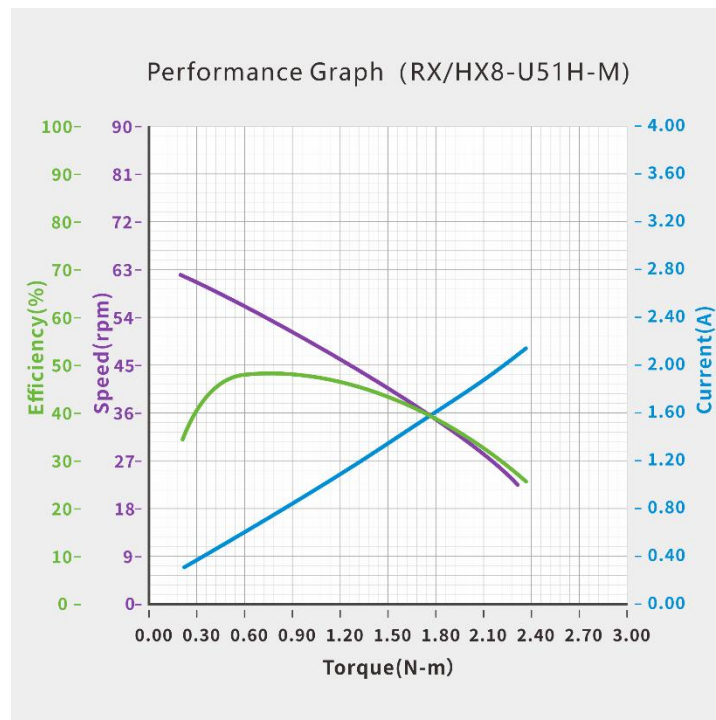
Item	Specifications
Input Voltage	9.0-12.6v
Motor Type	Brushless motor
Position Sensor	12-bit magnetic absolute encoder
Effective Angle Range	±180° (Single-turn Angle Control Mode) ±368,640° (Multi-turn Angle Control Mode)
Resolution	4,096/360° (0.088°)
Processor	32bit MCU
Protocol Type	UART/TTL Half-Duplex
Baud Rate	9,600bps~1Mbps
ID Range	0~254
Reduction Ratio	387:1
Output Spline Specification	Stainless steel / Ø6mm / D-shaft
Gear Material	Fully stainless steel gear set
Interface	PH2.0-3Pin
Case Material	CNC aluminum alloy housing
Dimensions(W×H×D)	40×40×20mm
Weight	83g
Operating Temperature	-10~60°C
Operating Mode	Single-turn Angle Control Mode Multi-turn Angle Control Mode Damping Mode

1.2 Characteristic

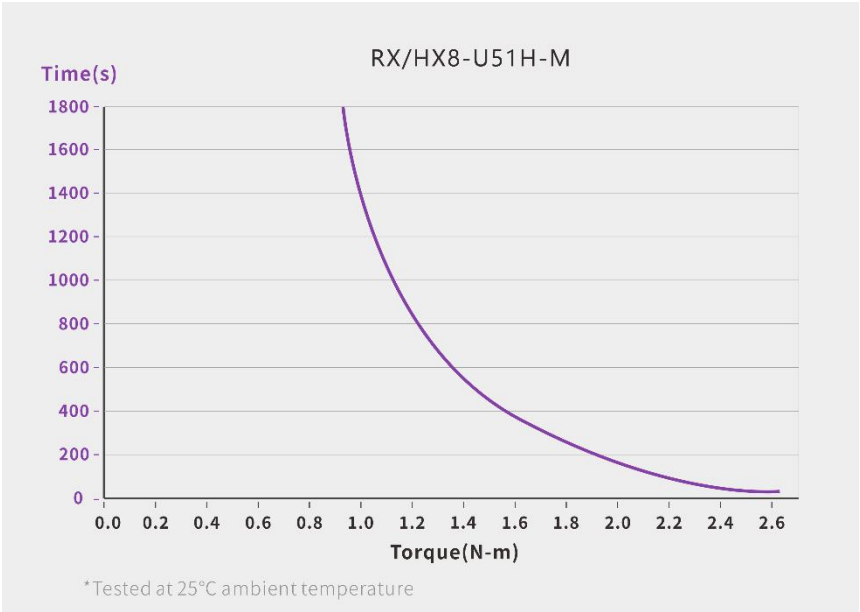
Items	Specifications (12v)
Max Stall Torque	4.90N·m (50kg·cm)
Max Continuous Torque	2.26N·m (23kg·cm)
Rated Torque	0.88N·m (9kg·cm)
Rated Speed	52rpm (0.192sec@60°)

No Load Speed	66rpm (0.151sec@60°)
No Load Current	< 300mA
Standby Current	< 40mA
Peak Current	5.5A
Axial Load	20N
Radial Load	40N

1.3 Performance Graph

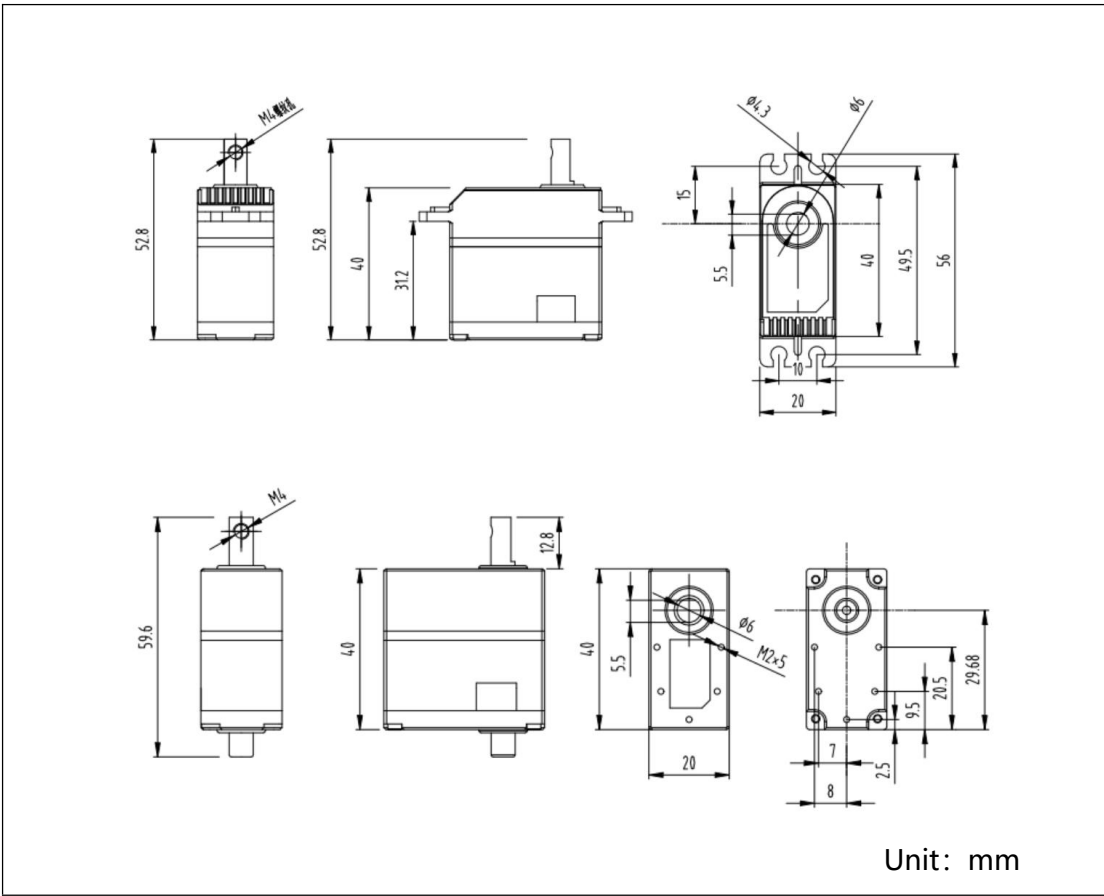


1.4 Overload Graph

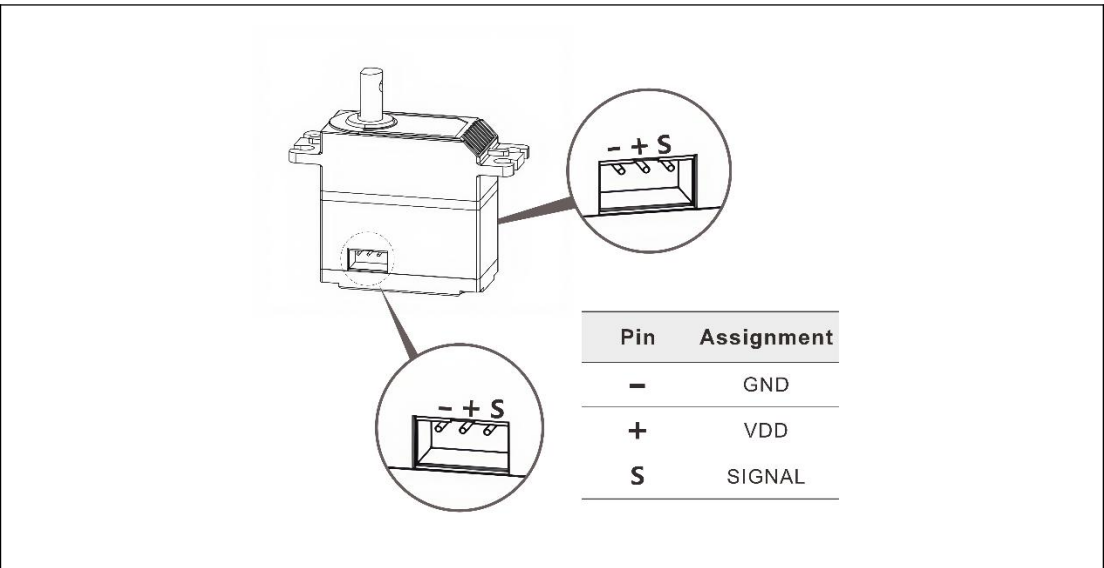


2 Drawings and Installation Instructions

2.1 CAD Dimensional Drawing

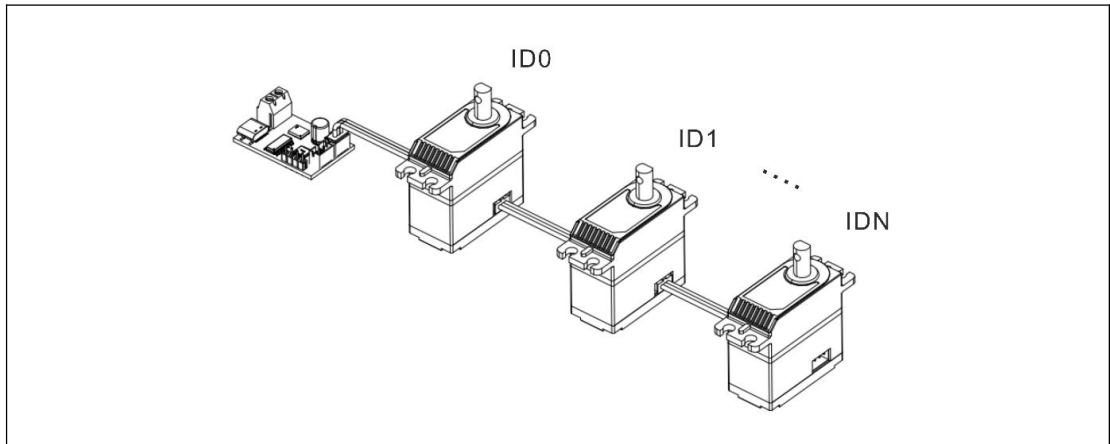


2.2 Interface Definition

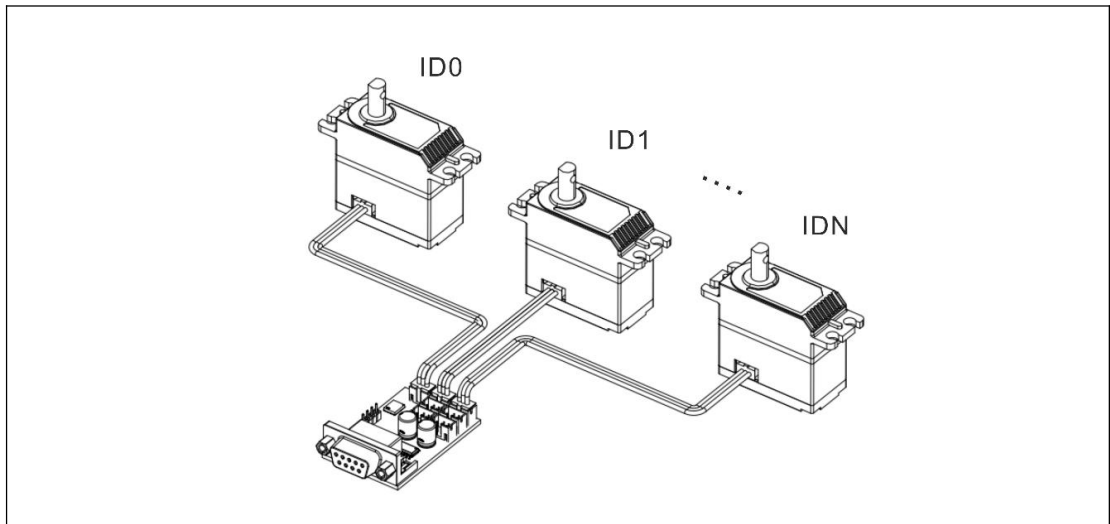


2.3 Wiring Diagram

- **Series Connection**



- **Parallel Connection**

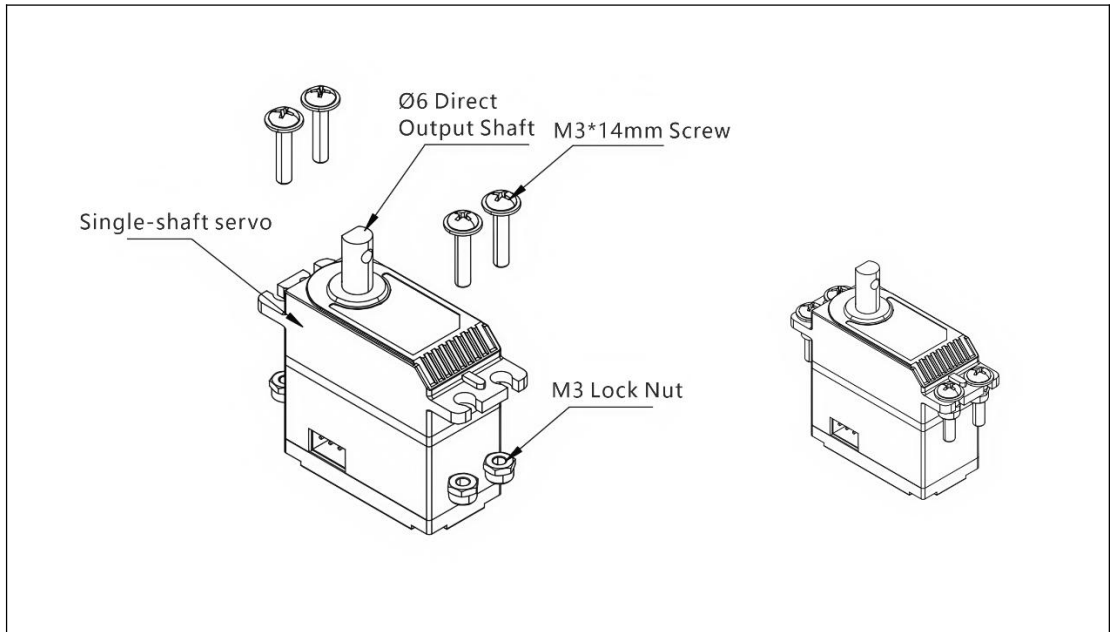


2.4 Accessories

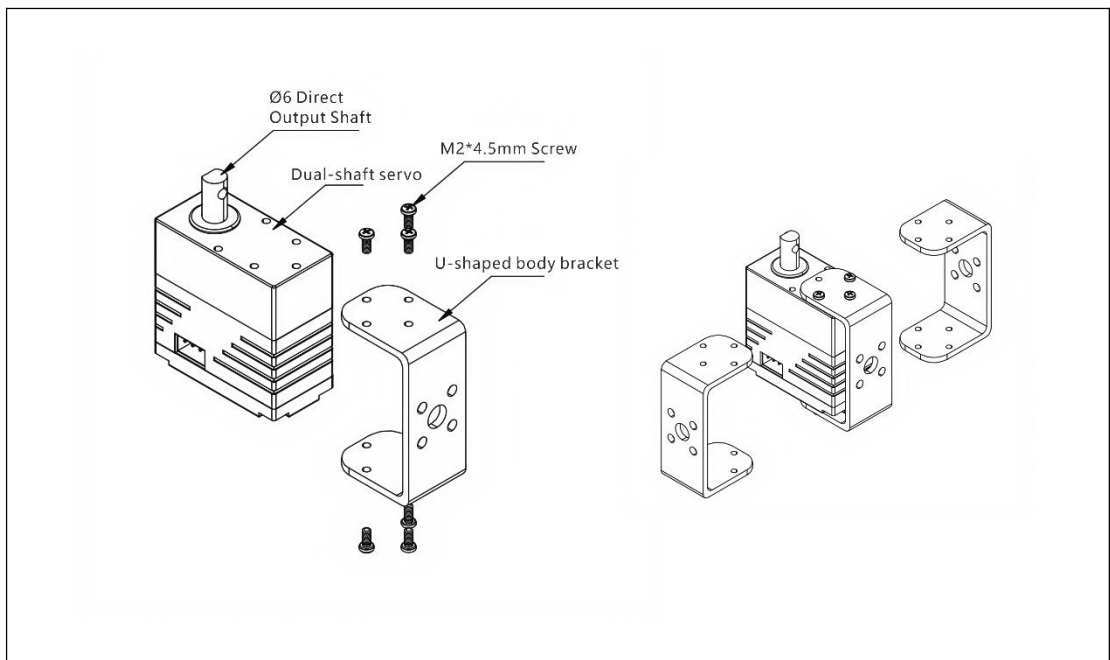
Item	Single-shaft (pcs)	Dual-shaft (pcs)
8-Hole Assistant Horn	-	1
PM M2*4.5mm Screw	-	18
PM M3*14mm Screw	4	-
M3 Lock Nut	4	-
200mm 3-pin Cable (PH2.0×2)	1	1

2.5 Installation Instruction

- **Single-shaft**



- **Dual-shaft**



3 Development & Compatibility

The bus servo series adopts a unified hardware platform and system architecture, fully addressing the needs for diversity and flexibility. Different models are seamlessly compatible with each other, uniformly supporting standard protocols and control commands, significantly simplifying system integration and development processes.

To accelerate the deployment of the project, we provide a reliable SDK (Software Development Kit) that includes code samples, drivers and detailed technical documents. The SDK supports multiple mainstream development environments and programming languages. Please refer to the table below to get more information.

For more technical resources, please visit our website : www.fashionrobo.com

Development Environment	STM32	• STM32F103 • STM32F407
	Raspberry Pi	• Pi 4B • Pi 5
	ESP32	• NodeMCU32s
	PLC	• Siemens • Inovance • Mitsubishi Electric
	Arduino	• UNO • Mega2560
	Windows	• Multi-version support
	Linux	• Ubuntu
Programming language	• Python • Micropython • C • C++ • C# • ROS	