1. Description

MD-10117 is a high-torque digital PWM servo motor designed for robotics, automation systems, RC vehicles, and industrial embedded applications. The servo uses a core motor with metal gear transmission and aluminum middle case for improved durability and heat dissipation.

The device supports PWM control with a wide input voltage range from 4V to 8.4V and provides up to 28.5 kg·cm stall torque at 8.4V.

2. Key Features

- High torque digital servo motor
- Aluminum middle case construction
- Metal gear transmission
- Wide voltage range: 4V – 8.4V
- PWM control interface
- 180° rotation control
- Ball bearing output shaft
- Overload electronic protection

3. Environmental Conditions

Storage temperature	-20°C to 80°C
Operating temperature	-10°C to 60°C
Standard test temperature	25°C ±5°C
Standard humidity	65% ±10%

4. Electrical Characteristics

Parameter	6V	7.4V	8.4V
No load speed	0.181 s/60°	0.158 s/60°	0.139 s/60°
Running current	120 mA	140 mA	160 mA
Stall torque	21.6 kg·cm	25.3 kg·cm	28.5 kg·cm
Stall current	2.3 A	2.9 A	3.4 A
Idle current	6 mA	6 mA	6 mA
Rated torque	7.2 kg·cm	8.4 kg·cm	9.5 kg·cm
Rated current	700 mA	900 mA	1100 mA

5. Mechanical Specifications

Dimensions	40.16 × 20.16 × 40.05 mm
Weight	64.5 g ±1 g
Case material	Aluminum
Gear material	Copper
Bearing type	Ball bearings
Gear ratio	1:275
Horn type	25T / 5.9 mm
Cable length	30 cm
Motor type	Core motor
Backlash	0.5°

6. Control Specifications

Control signal	PWM (Pulse Width Modulation)
Operating travel	180° ±5°
Neutral position	1500 µs
Pulse width range	500 µs – 2500 µs
Dead band width	4 µs
Centering deviation	1°
Rotation direction	Counterclockwise (500 → 2500 µs)
Signal period	20 ms
High level voltage	2V – 5V
Low level voltage	0 – 0.45V

7. Reliability Testing

No.	Item	Specification
1	Life test	>100000 cycles
2	Motor noise	45 ±5 dB
3	Servo noise	65 ±5 dB
4	Waterproof rating	IP54

8. Mechanical Dimensions

9. Servo Horn Dimensions

10. Product Appearance

11. Connector Pin Definition

Pin	Name	Description
1	Signal	PWM control input
2	VCC	Power supply (4V – 8.4V)
3	GND	Ground reference