Datasheet	PRODUCT SPECIFICATION	**Rev:** A **Page:** 1/5
Model: MR-10115	**Document:** Digital Serial Bus Servo Motor	

1. Description

MR-10115 is a high-torque digital serial bus servo motor designed for robotics and embedded motion control. It integrates a 12-bit magnetic encoder, metal gear transmission, and PID control algorithm. The servo supports TTL half-duplex serial communication with configurable ID and baud rate and provides telemetry feedback (position, speed, load, voltage, current, temperature).

2. Key Features

- TTL half-duplex asynchronous serial (8N1)
- ID range: 0 to 253; baud rate: 38,400 bps to 1 Mbps
- 360° absolute position control, 12-bit (4096 counts)
- Built-in PID control; telemetry feedback available
- Protection: overload, overcurrent, overvoltage, overtemperature

3. Quick Specifications

Parameter	Value
Input voltage (recommended)	4.0 V to 7.4 V
Rotation range	360° (0 to 4096 counts)
Resolution	0.088° per count
Stall torque (7.4V)	19.5 kg · cm
Stall current (7.4V)	2.5 A
Weight	55 g ±1 g

Note: Use a supply capable of peak current up to 2.5 A per servo under stall conditions.

4. Operating Conditions

Storage temperature	-30°C to 80°C
Operating temperature	-20°C to 60°C
Standard test temperature	25°C ±5°C
Standard test humidity	65% ±10%

5. Electrical Characteristics (Typical)

Parameter	6V	7.4V
No-load speed	0.238 s/60° (42 RPM)	0.192 s/60° (52 RPM)
No-load current	130 mA	150 mA
Stall torque	16.5 kg · cm	19.5 kg · cm
Stall current	2.0 A	2.5 A
Idle current	6 mA	6 mA
Rated torque	4 kg · cm	5 kg · cm
Rated current	500 mA	650 mA
Motor resistance	2.5 Ω	
Kt constant	8 kg · cm/A	

6. Control and Communication

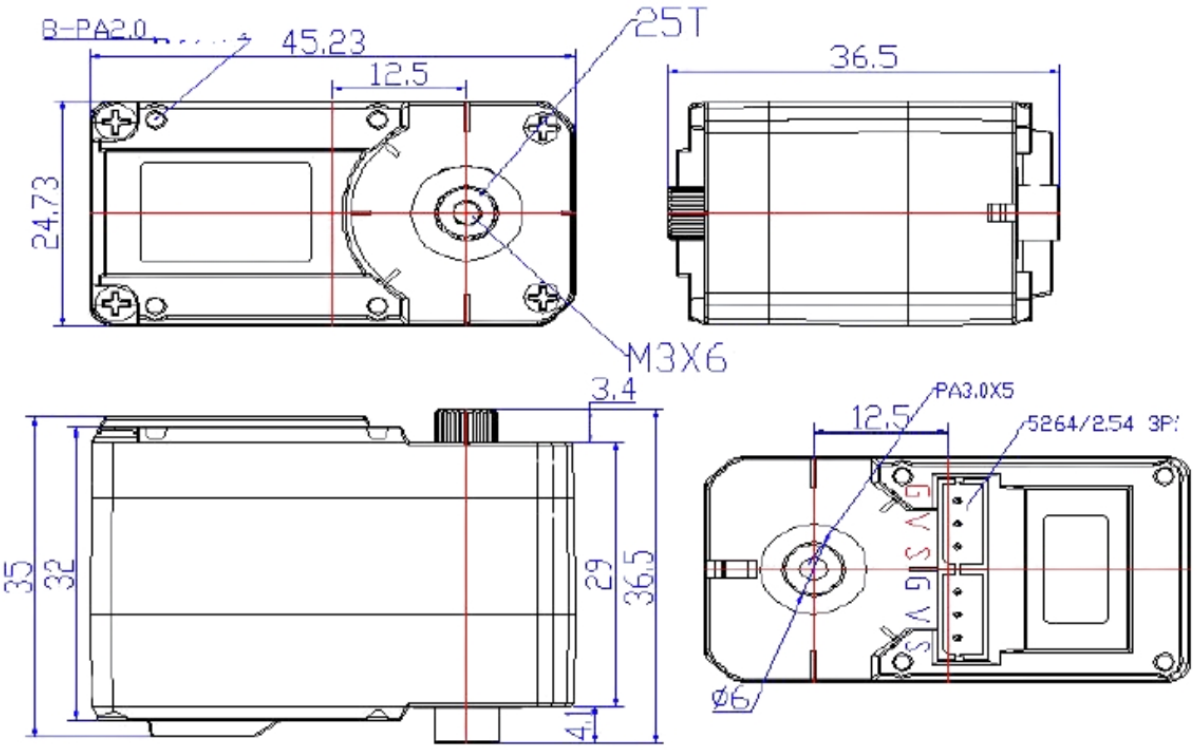
Protocol	Half-duplex asynchronous serial
Signal level	TTL
Frame format	8-bit, 1 stop bit, no parity
Baud rate	38,400 bps to 1 Mbps
ID range	0 to 253
Control algorithm	PID (configurable)
Feedback	Load, Position, Speed, Voltage, Current, Temperature

7. Reliability Testing

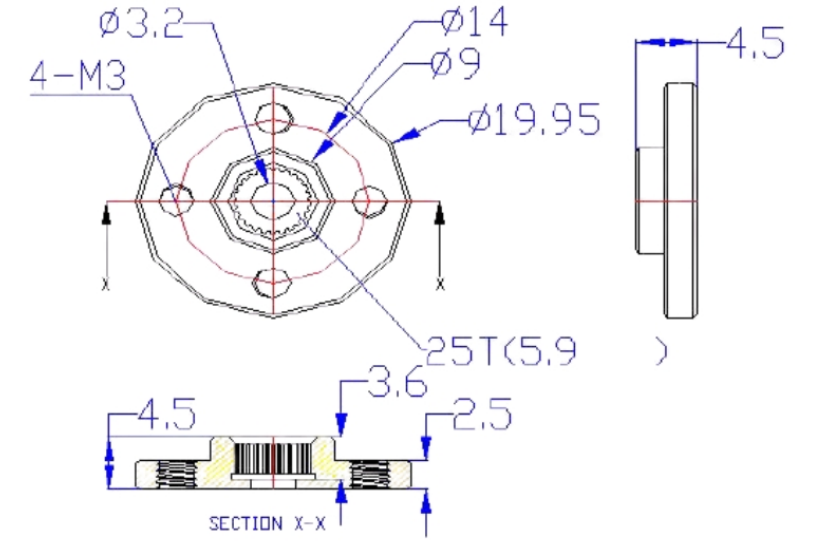
No.	Item	Specification
1	Life test	>100,000 cycles
2	Motor noise (30 cm)	45 ±5 dB
3	Servo noise (30 cm)	60 ±5 dB
4	Waterproof performance	No

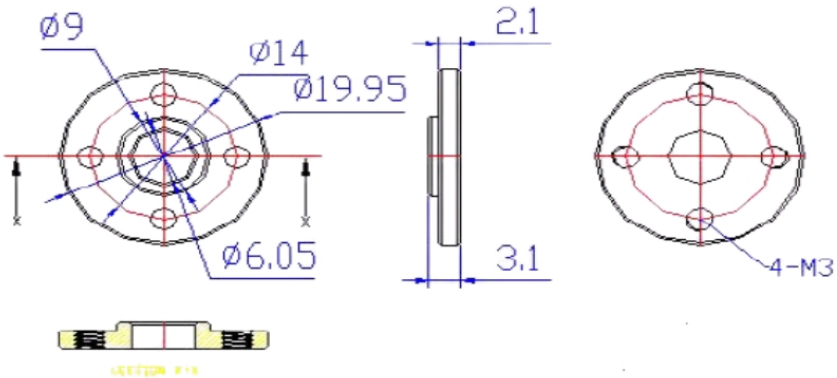
Note: Life test cycle: 60° forward 0.25 s, stop 0.5 s, 60° reverse 0.25 s, stop 0.5 s = 1 cycle.

8. Outside Dimension (Unit: mm)



9. Servo Horn Dimensions (Unit: mm)





10. Connector Pin Definition

Pin	Name	Description
1	GND	Ground reference
2	VCC	Supply input (4.0 V to 7.4 V)
3	SIG	TTL serial signal (half-duplex)

11. Typical Half-Duplex TTL Interface Circuit (Reference)