

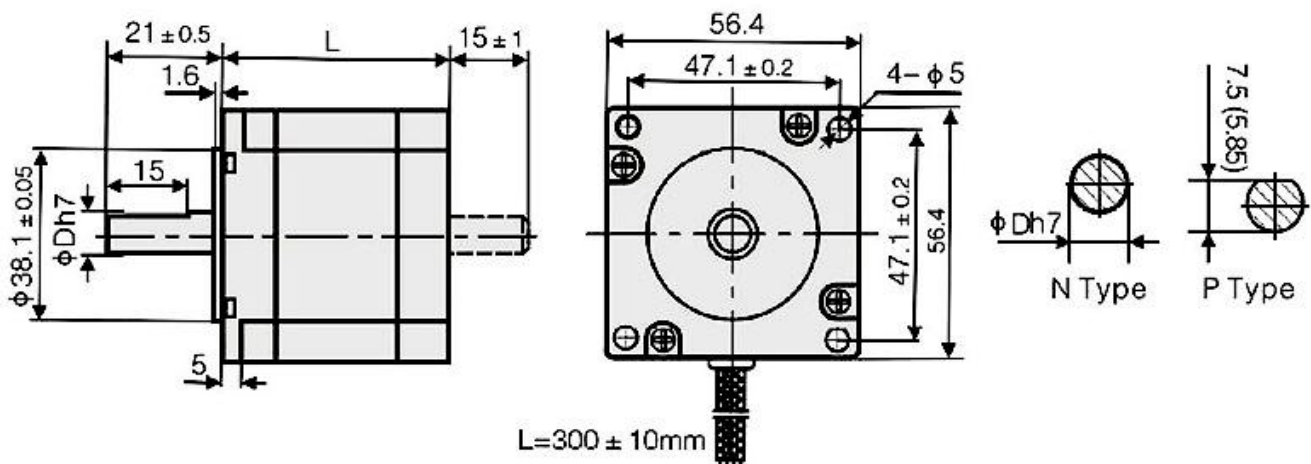
Nema 23 Stepper Motor

Nema 23 hybrid bipolar stepper motor is a permanent magnet stepper motor with an end face size of 56mm x 56mm. Nema 23 stepper motor is simple structure, small size and easy assembly. ATO high torque stepper motor at factory price, including 2 phase open loop, 3 phase open loop and 2 phase closed loop, can be controlled by AC or DC digital stepper drivers for precise position control.

2 Phase Open Loop Stepper Motor



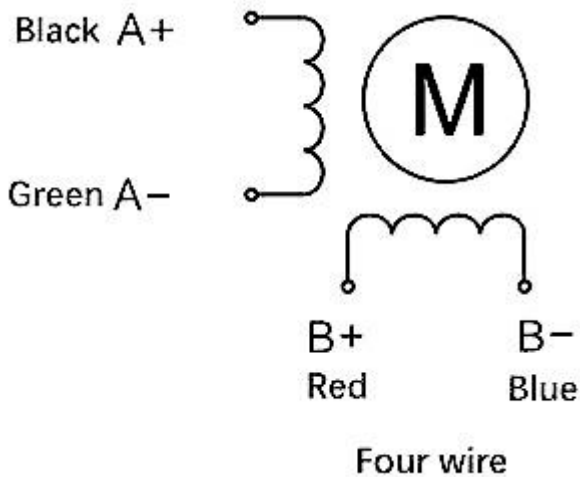
Specification



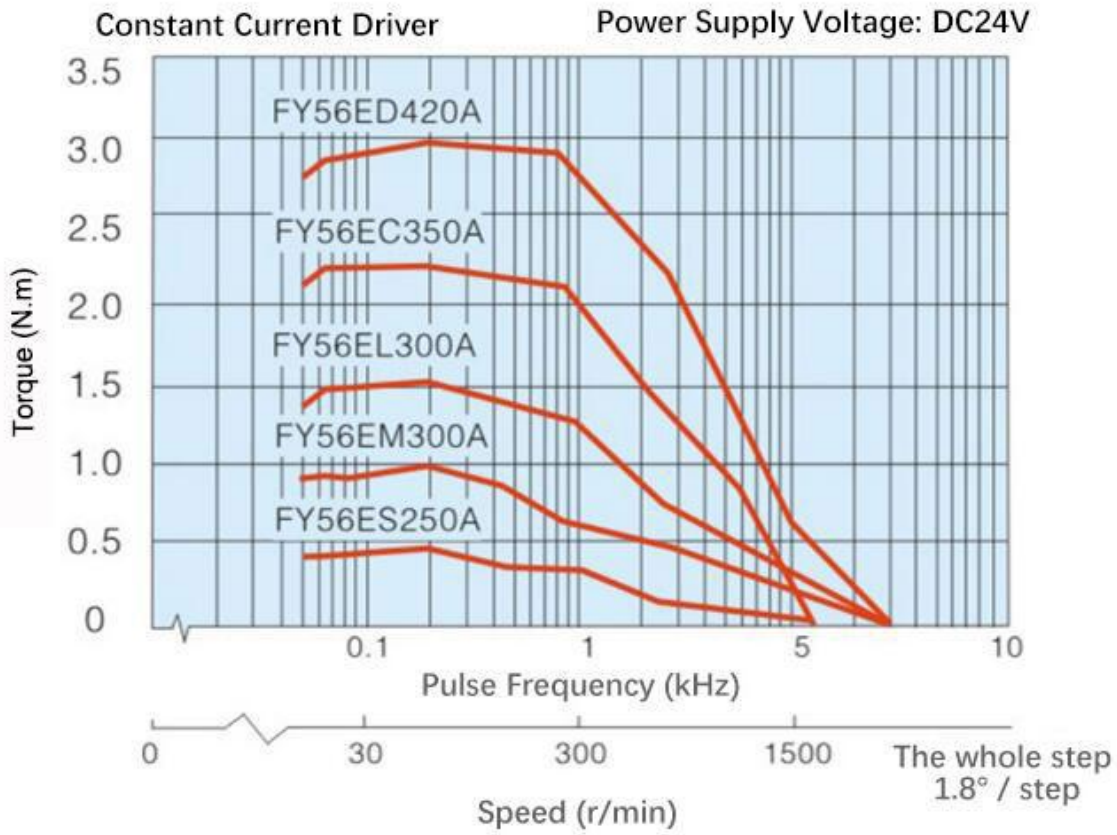
| Model | Step Angle (°) | Motor Length (mm) | Rated Current (A) | Holding Torque (N.m) | Phase Resistance (Ω) | Phase Inductance (mH) | Rotor Inertia (g.cm ²) | Lead Wires (NO.) | Motor Weight (Kg) |
|------------|----------------|-------------------|-------------------|----------------------|----------------------|-----------------------|------------------------------------|------------------|-------------------|
| FY56ES250A | 1.8 | 41 | 4.2 | 0.40 | 1.4 | 1.4 | 150 | 4 | 0.47 |
| FY56EC350A | | 82 | 3.5 | 2.20 | 0.9 | 3.0 | 520 | 4 | 1.20 |
| FY56EL300A | | 76 | 3.0 | 1.00 | 1.0 | 3.5 | 460 | 4 | 1.00 |
| FY56EM300A | | 54 | 3.0 | 1.00 | 0.9 | 5.2 | 260 | 4 | 0.70 |
| FY56ED420A | | 100 | 4.2 | 3.00 | 0.7 | 2.9 | 680 | 4 | 1.50 |

| Technical Specification | |
|-------------------------|---------------------------------------|
| Shaft Diameter | 8mm/ 6.35mm |
| Step Angle Accuracy | ±5% (Full Step, No Load) |
| Resistance Accuracy | ± 10% (20°C) |
| Inductance Accuracy | ±20% (1KHz) |
| Temperature Rise | 80°C Max. (rated current, 2 phase on) |
| Ambient Temperature | -20°C~+50°C |
| Insulation Resistance | 100MΩ Min. 500VDC |
| Dielectric Strength | 1Min. 500VAC |
| Shaft Radial Play | 0.02Max. 450g Load |
| Shaft Axial Play | 0.08Max. 450g Load |
| Radial Max. Load | 28N |
| Axial Max. Load | 10N |
| Warranty Period | 12 months |
| Certificate | CE, ROHs, FCC |

Wiring Diagram



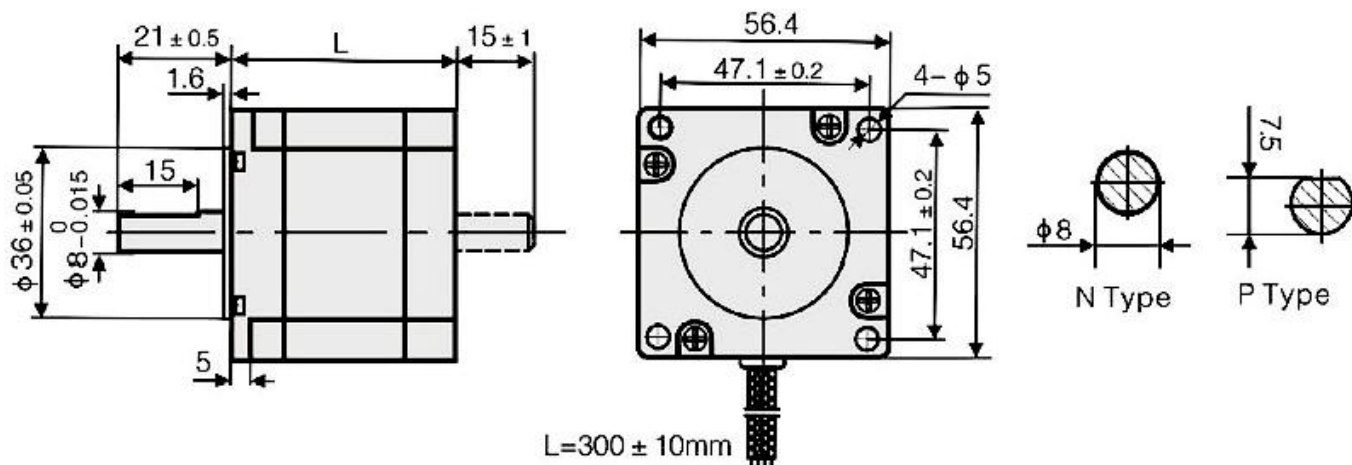
Speed-Torque Curve Diagram



3 Phase Open Loop Stepper Motor



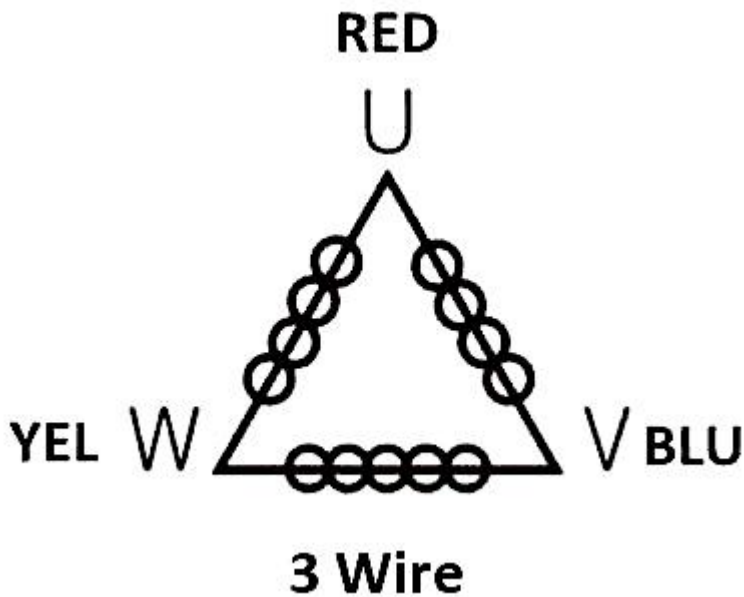
Specification



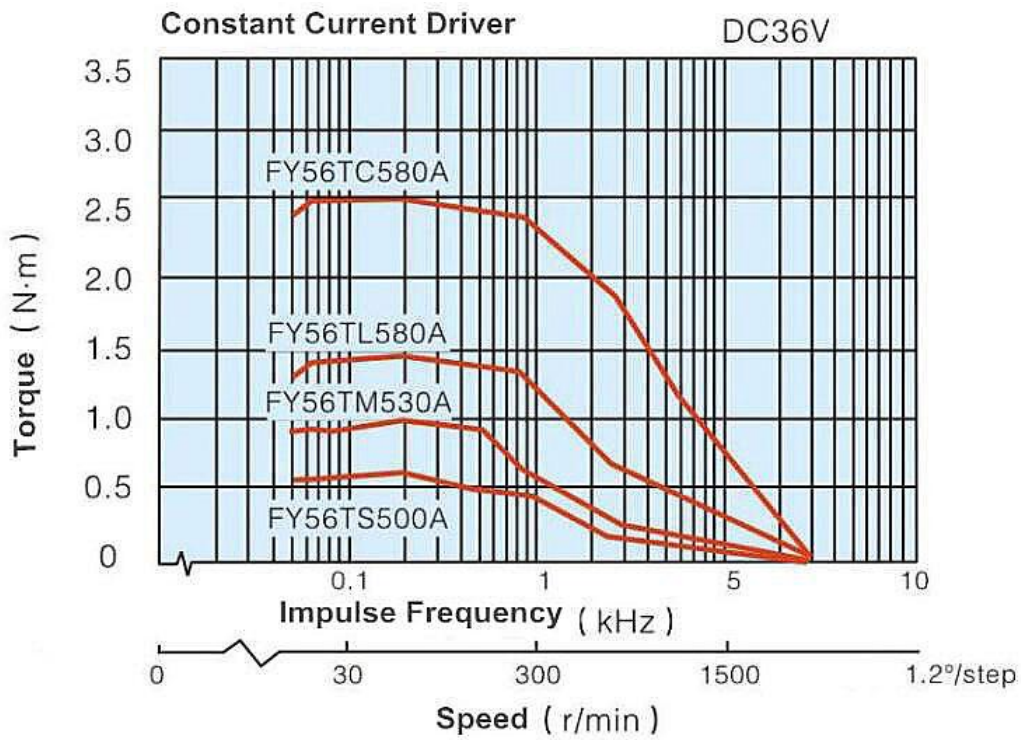
| Model | Step Angle (°) | Motor Length (mm) | Rated Current (A) | Holding Torque (N.m) | Phase Resistance (Ω) | Phase Inductance (mH) | Rotor Inertia (g.cm ²) | Lead Wires (NO.) | Motor Weight (Kg) |
|------------|----------------|-------------------|-------------------|----------------------|----------------------|-----------------------|------------------------------------|------------------|-------------------|
| FY56TM530A | 1.8 | 54 | 5.3 | 0.90 | 0.35 | 1.1 | 300 | 3 | 0.70 |
| FY56TL580A | | 76 | 5.8 | 1.50 | 0.55 | 1.7 | 480 | 3 | 1.00 |
| FY56TC580A | | 106 | 5.8 | 2.50 | 0.57 | 1.2 | 720 | 3 | 1.80 |

| Technical Specification | |
|-------------------------|---------------------------------------|
| Shaft Diameter | 8mm |
| Step Angle Accuracy | ±5% (Full Step, No Load) |
| Resistance Accuracy | ± 10% (20°C) |
| Inductance Accuracy | ±20% (1KHz) |
| Temperature Rise | 80°C Max. (rated current, 2 phase on) |
| Ambient Temperature | -20°C~+50°C |
| Insulation Resistance | 100MΩ Min. 500VDC |
| Dielectric Strength | 1Min. 500VAC |
| Shaft Radial Play | 0.02Max. 450g Load |
| Shaft Axial Play | 0.08Max. 450g Load |
| Radial Max. Load | 75N |
| Axial Max. Load | 15N |
| Warranty Period | 12 months |
| Certificate | CE, ROHs, FCC |

Wiring Diagram



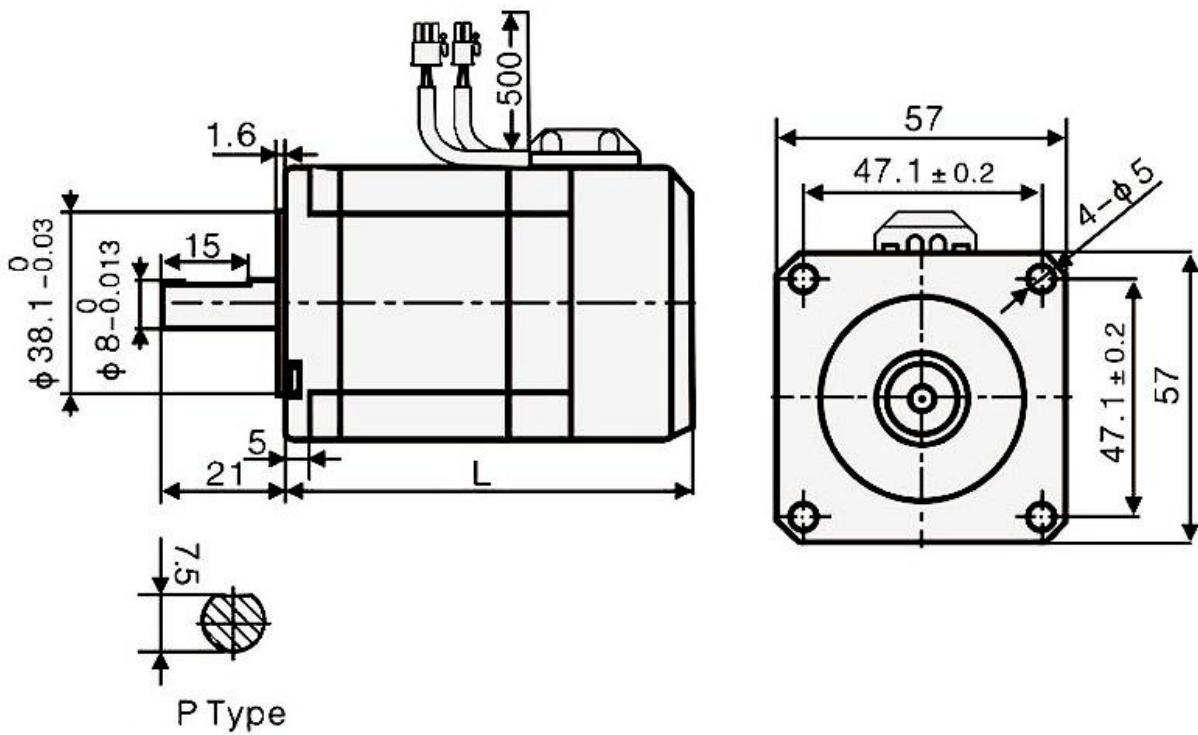
Speed-Torque Curve Diagram



2 Phase Closed Loop Stepper Motor



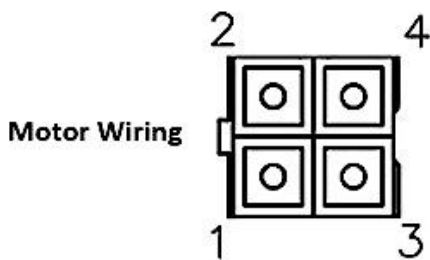
Specification



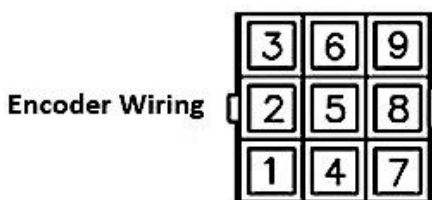
| Model | Step Angle (°) | Motor Length (mm) | Rated Current (A) | Holding Torque (N.m) | Phase Resistance (Ω) | Phase Inductance (mH) | Rotor Inertia (g.cm ²) | Lead Wires (NO.) | Motor Weight (Kg) |
|--------------|----------------|-------------------|-------------------|----------------------|----------------------|-----------------------|------------------------------------|------------------|-------------------|
| FY56EM420BC1 | 1.8 | 76 | 4.2 | 1.20 | 0.44 | 1.4 | 280 | 4 | 1.00 |
| FY56EC520BC1 | | 102 | 5.2 | 2.20 | 0.42 | 1.9 | 520 | 4 | 1.10 |
| FY56ED520BC1 | | 123 | 5.2 | 1.40 | 0.45 | 2.3 | 720 | 4 | 1.40 |

| Technical Specification | |
|-------------------------|---------------------------------------|
| Shaft Diameter | 8mm |
| Step Angle Accuracy | ±5% (Full Step, No Load) |
| Resistance Accuracy | ± 10% (20°C) |
| Inductance Accuracy | ±20% (1KHz) |
| Temperature Rise | 80°C Max. (rated current, 2 phase on) |
| Ambient Temperature | -20°C~+50°C |
| Insulation Resistance | 100MΩ Min. 500VDC |
| Dielectric Strength | 1Min. 500VAC |
| Shaft Radial Play | 0.02Max. 450g Load |
| Shaft Axial Play | 0.08Max. 450g Load |
| Radial Max. Load | 75N |
| Axial Max. Load | 15N |
| Warranty Period | 12 months |
| Certificate | CE, ROHs, FCC |

Motor & Encoder Wiring Diagram



| Motor End | Color | Function |
|-----------|-------|----------|
| 1 | Blue | B- |
| 2 | Red | B+ |
| 3 | Green | A- |
| 4 | Black | A+ |



| Encoder | Color | Function |
|---------|--------------|----------|
| 1 | Blue | EA+ |
| 2 | — | — |
| 3 | Blue/White | EA+ |
| 4 | Orange | EB+ |
| 5 | — | — |
| 6 | Orange/White | EB- |
| 7 | Red | VCC |
| 8 | Black | GND |
| Encoder | Shield | |

Speed-Torque Curve Diagram

