FRONTGRADE

THE ELECTRONICS BACKBONE BEHIND MISSION-CRITICAL SYSTEMS

# Limited Angle Torque Motors



## Fast, precise direct-drive torque for mission-critical pointing, scanning, and stabilization.

Frontgrade's Limited-Angle Torque (LAT) motors are designed for high-response angular positioning and stabilization. The LAT motor delivers smooth, bidirectional torque over a defined range of rotation. Its direct-drive architecture eliminates gearing and mechanical commutation, reducing backlash, friction, wear, and maintenance.

A high torque-to-inertia ratio enables rapid acceleration and disturbance rejection. When integrated with a position sensor and servo controller, the motor supports accurate position, velocity, and torque control for demanding pointing, scanning, steering, and actuation systems.

Frontgrade can configure the LAT motors with application-specific windings, angular travel, bearings, position feedback, mechanical interfaces, and environmental protection. Compact and lightweight construction makes it especially suitable for size-, weight-, and power-constrained systems.

### FEATURES:

- Direct-drive, backlash-free rotary motion
- High torque-to-weight and torque-to-inertia ratio
- Smooth bidirectional torque with low friction and mechanical hysteresis
- Configurable angular range and feedback

### APPLICATIONS:

- Gimbal, turret, and sensor positioning
- EO/IR payload stabilization
- Radar, optical terminal, communications control
- Missile fin, seeker, and guidance mechanisms
- Solar-array and antenna deployment



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| Part Number | Peak / Continuous Torque (in-oz) | Peak Power (W) | Angular Excursion (°) | Torque Sensitivity $\left(\frac{in-oz}{A}\right)$ | Winding Resistance @ 25°C (Ω) | Mass (lbs) | Size (OD x ID x W, inches) |
|---|---|---|---|---|---|---|---|
| TQ18-25PH-1 | 5.8/1.44 | 39.0 | ± 20 | 7.2 | 60 | 1.85 | 1.8 X 0.5120 X 0.350 |
| TQ18-25PJ | 5.8/1.44 | 38 | ± 20 | 7.2 | 60 | 1.85 | 1.8 X 0.5120 X 0.350 |
| TQ18W-35P | 20/6 | 100 | 120 | 2.00 | 2.7 | 3.80 | 1.7187 X 0.1873 X 0.700 |
| TQ18W-37P-1 | 3/1.5 | 30 | 120 | 2.8 | 26 | 3.80 | 1.7187 X 0.1873 X 0.350 |
| TQ18W-57P | 3/1.5 | 8.0 | ± 40 | 34.0 | 1025 | 3.80 | 1.7187 X 0.1873 X 0.700 |
| TQ25W-15PA | 15.8/5.5 | 65.0 | ± 60 | 3.9 | 3.95 | 4.00 | 2.500 X 0.2500 X 0.500 |
| TQ34-2PFKA | 130/40 | 220 | ± 13.1 | 29.18 | 9.2 | 21.50 | 3.375 X 0.2500 X 0.725 |
| TQ34N-2PAK | 190/60 | 225 | ± 20 | 54.0 | 25 | 24.00 | 3.375 X 0.500 X 0.781 |
| TQ34W-1PD-1 | 40/30 | 65 | 120 | 21 | 18 | 13.00 | 3.313 X 0.3750 X 0.625 |
| TQ34W-1PF | 40/30 | 75 | 120 | 21 | 18 | 13.00 | 3.313 X 0.3750 X 0.635 |
| TQ35W-2PA | 45/9 | 230 | 120 | 18 | 37 | 18.00 | 3.500 X 0.2500 X 0.760 |
| TQ40N-7FKA | 51.75/29.9 | 95 | 120 | 23 | 9.5 | 48.00 | 4.0 X 0.3750 X 1.196 |
| TQ40W-11PAK | 150/60 | 240 | ± 60 | 21.8 | 5.2 | 30.00 | 4.000 X 0.800 X 0.850 |
| TQ40W-1PD | 260 | 250 | 120 | 31 | 3.5 | 47.00 | 3.985 X 1.500 X 1.5626 |
| TQ64W-5PA | 480/120 | 250 | ± 45 | 80 | 2.3 | 252.0 | 6.500X 1.1875 X 2.212 |

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| Part Number | Peak / Continuous Torque (in-oz) | Peak Power (W) | Angular Excursion (°) | Torque Sensitivity $\left(\frac{in-oz}{A}\right)$ | Winding Resistance @ 25°C (Ω) | Mass (lbs) | Size (OD x ID x W, inches) |
|---|---|---|---|---|---|---|---|
| TQ64W-5PA | 627/156 | 190 | ± 45 | 104.5 | 3.0 | 252.0 | 6.500X 1.1875 X 2.212 |



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