Smart Lock Motor GM2140FD

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Smart Lock Motor GM2140FD

Main Applications

Smart Door Locks

Drive for latch / bolt transmission mechanisms requiring compact packaging, low-voltage operation and repeatable ope

Electronic Cabinet & Locker Locks

Suitable for compact electromechanical locking mechanisms where installation space and controlled actuation are important.

Hotel / Access-Control Lock Mechanisms

Can be evaluated for lock-body actuation requiring repeated cycles and consistent low-voltage drive performance.

Customized Locking Mechanisms

For non-standard lock bodies, the motor, ratio, pinion/interface, lead wire and terminal can be evaluated against the customer's mechanism and test standard.

FAQ

Q1. How can noise be reduced in a smart lock gear motor?

Low-noise performance depends on motor speed, gear material and accuracy, gear ratio, backlash, lubrication, assembly consistency, lock-body resonance, and the control profile. For reliable evaluation, noise should be tested in the actual smart lock mechanism, including startup, running, reversing, and end-position impact, rather than relying only on no-load motor noise.

Q2. Can a smart lock motor still provide enough torque when the battery is low?

Yes, but the motor and gearbox must be selected based on the minimum operating voltage of the battery, not only the rated voltage. Low-voltage testing should simu conditions such as increased latch friction, door pressure,

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low temperature, and repeated unlocking to verify starting current, [redacted] torque margin, and temperature rise.

Q3. How should stall or jam protection be handled in a smart lock motor system?

Stall protection should be handled by the motor, lock mechanism, and control system together. Common methods include current detection, operation timeout, end-position detection, reverse recovery, mechanical limits, and fault alarms. Peak current and stall duration should also be controlled to reduce the risk of motor overheating or mechanical damage.

Q4. How do I place an order with Shunli Motor?

Please send us your application requirements or motor specifications. Our engineering team will develop a suitable solution, confirm the technical details, and provide samples for evaluation. Once the samples are approved, we will arrange mass production. Shipping methods can be selected based on your delivery requirements.

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Product Overview

12 VDC Micro DC Gear Motor for High-Torque Lock Actuation The GM2140FD-0001 Smart Lock Motor is a 12 VDC micro DC gear motor designed for electronic lock and access-control mechanisms requiring low-speed, high-torque actuation in a slim housing. The engineering drawing specifies a 1:169.2 gear ratio, 77±10% RPM no-load speed, 60±10% RPM rated speed, >4.0 kgf·cm rated torque, and >16 kgf·cm stall torque. Its 6.6–14 VDC working range, CW/CCW rotation, external 18-tooth module-1.0 output gear, and compact 110.5 mm-class body support integration into smart door locks, cabinet locks, and customized locking mechanisms. Final selection should be validated against latch load, duty cycle, supply voltage, stall-protection strategy, and mounting interface.

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Model Information

Model	Motor Type	Category

GM2140FD-0001	DC Brushed Gearmotor	Smart Lock / Electronic Lock Motor

Main Parameters

Technical Data

Rated Voltage	12 VDC
Working Voltage	6.6–14 VDC
Gear Ratio	1:169.2 (engineering drawing)
No-Load Speed	77±10% RPM
Rated Speed	60±10% RPM
Rated Torque	>4.0 kgf·cm
Stall Torque	>16.0 kgf·cm
Noise	≤60 dB (L = 70 cm)

Technical Data

Gearmotor Model	Ratio	Voltage	No-Load Speed	No-Load Current	Rated Speed
GM2140FD-0001	1:169.2	12 VDC	77±10% RPM	≤160 mA	60±10% RPM

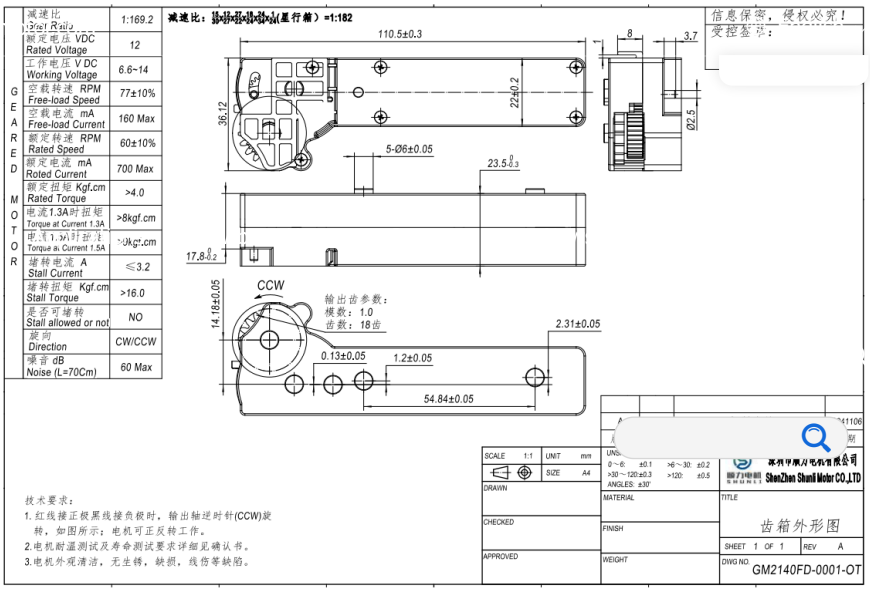
Technical Data

Main body length shown	110.5 ± 0.3 mm
Main body width shown	36.12 mm
Main body thickness shown	22 ± 0.2 mm
Output gear	Module 1.0, 18 teeth
Output gear diameter shown	Ø14.18 ± 0.05 mm
Mounting holes shown	5 × Ø6 ± 0.05 mm
Rotation reference	CW / CCW
Stall operation	Not allowed

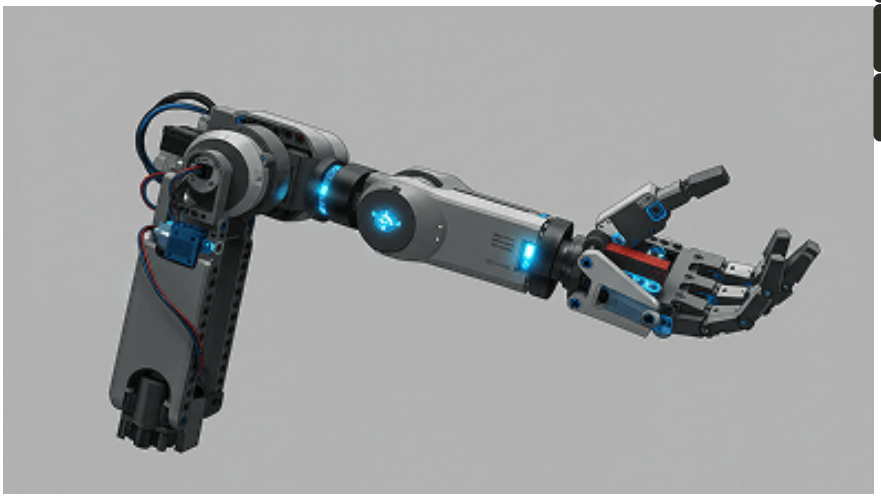
Dimension Drawing

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Main Applications



Industrial Automation

Industrial valves, dampers, gates, low-speed rotary platforms, adjustment mechanisms, and compact actuators requiring right-angle transmission.

Customization Range

- Electrical Configuration
- Working voltage / winding configuration, rotation direction, lead wire length and terminal options.
- Performance Matching
- Gear ratio, target output speed, rated load point, current limit and torque margin based on the real lock mechanism.
- Mechanical Interface
- Output pinion / shaft interface, mounting features and connection to the customer's lock-body transmission.
- Noise & Reliability

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- Gear meshing, backlash, lubrication, motor operating point, assembly consistency and complete-lock resonance optimization.
- Control / Feedback Integration
- Hall sensor, encoder or other feedback functions can be evaluated when required by the project; availability depends on the final structure and specification.

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FAQ

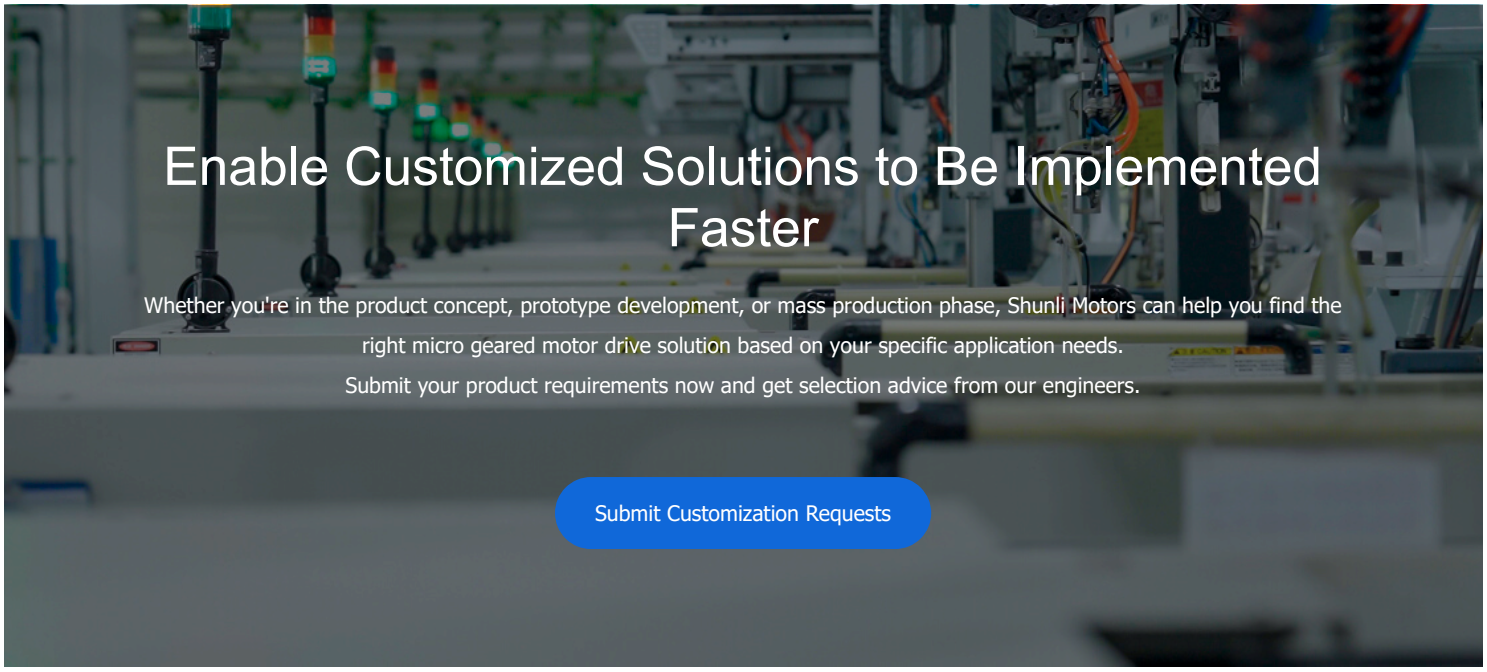
Q1: What types of projects are best suited to the GM5 Gear Motor?

Yes. Provide the product structure, space, load, and motion requirements, and our engineering team can assist with parameter conversion and solution evaluation.

Q2: What types of projects are best suited to the GM58EM DC Worm Gear Motor?

Q3: What types of projects are best suited to the GM58EM DC Worm Gear Motor?

Q4: What types of projects are best suited to the GM58EM DC Worm Gear Motor?



Enable Customized Solutions to Be Implemented Faster

Whether you're in the product concept, prototype development, or mass production phase, Shunli Motors can help you find the right micro geared motor drive solution based on your specific application needs.
Submit your product requirements now and get selection advice from our engineers.

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