

Geakita's 21V Brushless Cordless Tool Platform: Motor, Battery, and Torque Engineering

Exploring Geakita's Integrated Approach to Brushless Motor Performance, Battery Efficiency, and High-Torque Power Delivery

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[Geakita](#) (Xiamen Tiangong Kaiwu Technology Co., Ltd.) has built its cordless power tool portfolio around a 21V lithium-ion platform that appears across impact wrenches, drill drivers, angle grinders, rotary hammers, and circular saws. The company's published product specifications consistently reference three engineering elements: brushless pure copper motors, multi-cell lithium-ion battery packs, and multi-stage electronic torque control.



Geakita (XiamenTiangong Kaiwu Technology Co., Ltd.)

For a buyer deciding whether to evaluate Geakita as a cordless power tool supplier, the most relevant starting point is the base platform rather than any single model. The 21V brushless impact wrench GKR05, for instance, is listed with 650 N·m actual torque and a no-load speed of 0–4,000 r/min. The GKR06, a heavy-duty version, is listed with 1,000 N·m actual torque and a no-load speed of 0–3,200 r/min. Both use pure copper brushless motors and 10-cell, 2,000 mAh lithium-ion battery configurations.

Industry context: cordless tools are moving toward higher performance

Demand for better-performing cordless tools is visible in market data. According to Grand View Research, the global cordless power tools market was valued at USD 13.44 billion in 2024 and is projected to reach USD 32.58 billion by 2033. China's power tools market reached USD 5.30

billion in 2024, according to Fortune Business Insights, with the country functioning as a major export hub for lithium-based cordless technology. Drilling and fastening tools accounted for the largest product segment, with a 36.51% revenue share in 2024, based on Horizon Databook data cited by Grand View Research.

Within that market, manufacturers face a common engineering problem: how to deliver higher torque without undesirable increases in weight, heat, or battery drain. Geakita's approach, based on its datasheets, is to standardize core components across a wide product family rather than treating each tool as a separate design.

Motor architecture: what the brushless pure copper motor specification means

Most of Geakita's 21V cordless tools specify a "brushless pure copper" motor. In general industry terms, a brushless motor uses electronic commutation instead of carbon brushes to switch current in the motor windings. This design approach is commonly associated with lower friction, reduced maintenance, and better heat behavior over time compared with brushed motors. The published specifications do not include efficiency curves or temperature test data, but the choice of brushless motors is consistent across the company's higher-torque models.

The torque figures are among the most concrete evidence of motor performance. Geakita's impact wrench range includes two models with distinctly different output classes:

The GKR05 is rated at 650 N·m actual torque, with a no-load speed range of 0–4,000 r/min.

The GKR06 is rated at 1,000 N·m actual torque, with a no-load speed range of 0–3,200 r/min.

Both models are built around pure copper brushless motors and 10-cell, 2,000 mAh lithium-ion packs.

For comparison, the company's 21V brushless impact wrench model 650NM uses a 10–15 cell configuration and the same 21V operating voltage, with a rated output of 650 N·m. This suggests that Geakita uses similar motor architecture across multiple SKUs, while adjusting battery configuration according to the tool's duty profile.

Battery system: cell count and capacity shape power delivery and runtime

In cordless power tools, the battery pack is not only an energy source; it defines how much current the motor can draw and how long the tool can operate before recharge. Geakita's published battery specifications show a range of configurations across its lineup:

Entry-level 16.8V tools such as the DK02 brushless drill use a 4-cell, 1,500 mAh per cell configuration.

The 21V drill family uses 5-cell, 10-cell, or 15-cell packs, with capacities from 1,300 mAh to 2,000 mAh per cell.

The PT24 brushless impact drill uses a 15-cell, 2,000 mAh pack and is rated at 150 N·m actual torque.

The PT20 uses a 10-cell, 1,300 mAh pack and is rated at 80 N·m actual torque.

These numbers illustrate a general procurement point: cell count and capacity affect both peak discharge capability and runtime. A 15-cell pack can support higher tool output in continuous workloads, while a smaller 5-cell pack may be sufficient for lighter fastening and drilling applications. Geekita does not publish a uniform runtime figure across models, so runtime should be assessed against the specific battery configuration and the task being performed.

Battery safety also matters at the system level. For portable applications, lithium-ion cells are commonly qualified against IEC/UL 62133, the international standard for secondary cells and batteries. Geekita's product documentation does not describe a customized battery-management algorithm, but the use of standard lithium-ion power batteries is repeatedly listed in the specification sheets.

Torque control: multi-stage settings for different fastening tasks

Several Geekita drills list a torque adjustment system described as "24+3" or "23+1." In practical terms, this means the user can select from a number of torque settings for screwdriving to prevent over-tightening, plus additional modes for drilling and impact operation. The PT22 brushless impact drill, for example, is specified with torque ratings of 35/100/120 N·m and a no-load speed range of 450–2,000 r/min. The DK02 brushless drill lists 24 torque gears plus three functions, with impact frequency of 7,000 times per minute in low gear and 24,000 in high gear.

This type of control is not just a convenience. In assembly work, the ability to set torque accurately affects joint quality and fastener life. In DIY and general maintenance, it allows one tool to handle both delicate wood screws and heavier bolts. The presence of multiple torque stages across Geekita's drill lineup is therefore a meaningful specification for buyers who need flexibility rather than a single maximum output.

Product line evidence: the same platform across different tool types

Geekita GKR05 brushless impact wrench.

The platform approach extends beyond impact wrenches and drills. Geekita's portfolio also includes:

The 21V Cordless Rotary Hammer RH01, which uses a 2,000 mAh, 10-cell pack and lists drilling

capacity of 26 mm in concrete, 13 mm in steel, and 26 mm in wood.

The 21V Cordless Lithium Circular Saw CS01, with a brushless pure copper motor and a 1,500 mAh, 10-cell battery configuration.

21V angle grinders, including brushless models JM01-02 and brushed model JM03, both rated at 12,000 r/min with a 100 mm cutting disc.

Impact screwdrivers such as the QZ02, a 16.8V tool with maximum torque of 35/100/120 N·m and three-speed control.

This breadth of categories makes it possible for buyers to source multiple tool types from one supplier using the same voltage platform—and in some cases the same battery platform. It also provides evidence of the company's stated specialization in power tool manufacturing.

Manufacturing and market reach

Geakita was founded in 2009 and operates an industrial base with approximately 40,000 square meters of floor space in Xiamen. The company says it employs more than 300 staff, including 25 engineers in R&D. According to its corporate profile, Geakita generated RMB 230 million in 2024 sales revenue from lithium power tools, including RMB 190 million domestically and RMB 40 million overseas, with total shipments of about 1.5 million units.

The export share is approximately 20% of total sales. The company's main markets are Europe, Southeast Asia, and the Middle East. Geakita also produces robotic pool cleaners and commercial cleaning robots, which extends its battery and electric motor experience beyond handheld tools.

How to read Geakita's cordless tool specifications

For a procurement team comparing Geakita with other cordless power tool suppliers, the available datasheets support the following checks:

Motor type: Confirm whether the model uses a brushless or brushed motor, as this affects efficiency and maintenance expectations.

Actual torque: Geakita lists values such as 80 N·m, 150 N·m, 650 N·m, and 1,000 N·m on different models. Compare these against the intended application.

Battery configuration: Cell count and per-cell capacity are published. Use them to judge the power delivery class of the tool.

Torque settings: Models such as PT20 through PT24 offer 24+3 settings; impact screwdrivers offer three speed and torque stages.

Tool type: The 21V platform spans drills, impact wrenches, rotary hammers, circular saws, and

angle grinders.

One gap exists: runtime in minutes and ingress protection (IP) ratings are not uniformly disclosed in the product data provided by the company. Buyers who need these values should request test reports or additional documentation during supplier qualification.

Outlook

The trajectory of Geekita's published specifications suggests a continued focus on higher torque, brushless motor architecture, and wider battery capacity. The 1,000 N·m impact wrench, in particular, points to applications in railway maintenance, heavy machinery, and steel-structure work. As the cordless power tool market grows, buyers are likely to judge suppliers not only by brand recognition but by the repeatability and transparency of their technical specifications.

Product catalog and contact

Geakita's corporate profile and 2026 product catalog are available for download at the following link: [GEAKITA Corporate Profile & Product Catalog 2026](#). The company website is www.geakita.com.

Geakita

Geakita (XiamenTiangong Kaiwu Technology Co., Ltd.)

+ +86 135-9954-5996

Flora@gearpioneer.com

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