

# Custom DC Servo Motor & Drive Manufacturer from China: A Technical Analysis of XULONG's Tailored Motion Control Solution



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In the current landscape of global industrial automation, technical analysis reveals a decisive shift toward decentralized, high-efficiency power architectures. As manufacturing sectors transition from centralized control to distributed intelligence, the demand for precision motion components that offer both high integration and energy efficiency has surged. Within this context, **XULONG** Technology (Dongguan) Co., Ltd. has emerged as a significant player, specializing in customized low-voltage DC servo systems that bridge the gap between advanced hardware R&D and high-adaptability control algorithms.

Established in 2014, Xulong Technology, a **[Custom DC Servo & Drive Manufacturer from China](#)** has undergone a strategic evolution from a single-component supplier to a comprehensive solution provider. By integrating linear motion control with advanced servo drive technology, the company addresses the complex requirements of modern industrial machinery. Its operational headquarters in Dongguan serves as a hub for the development of the XULONG brand, which focuses on the small-power spectrum (5W to 1.5kW).

The company's product philosophy centers on three core pillars: high cost-performance, reliability, and ease of use. This approach is reflected in its structured product portfolio, which includes the ACL Low-Voltage DC Servo series (featuring hollow-shaft designs), the CCL Coreless Servo series, and the ICL Integrated Servo series. These systems are specifically engineered to meet the rigorous standards of mobile robotics, semiconductor manufacturing, medical instrumentation, and precision packaging.

## **Specialized Motor Architectures: Hollow Shaft, Coreless, and Integrated Designs**

To meet the spatial and functional constraints of specialized equipment, Xulong has developed several distinct motor architectures:

### **I ACL Series Hollow Shaft Motors**

The hollow shaft DC servo motor features a through-axis design, allowing for the passage of air pipes, light sources, or probes. This architecture is particularly advantageous in semiconductor and laser equipment where space is at a premium and pick-and-place accuracy is critical. Its lightweight nature makes it a preferred choice for ZR-axis modules and parallel robots (Delta robots).

**Reliably:** The shift toward battery-powered and mobile industrial equipment has necessitated motors that can operate reliably under fluctuating voltage conditions. The ACL series by Xulong covers a power range from 5W to 1500W, with standard flange sizes including 25mm, 40mm, 60mm, 80mm, and 130mm. These motors support a wide input voltage range of 18V to 80VDC, typically optimized for 24V, 36V, or 48VDC environments.

**Low-speed:** One of the defining technical characteristics of these motors is their superior low-speed performance. XULONG motors achieve stable operation at speeds as low as 1 RPM with minimal torque fluctuation. Conversely, they maintain high-speed capabilities, with rated speeds between 3000 and 5000 RPM, and maximum peaks reaching up to 5200 RPM. This dynamic range is supported by low-inertia designs that ensure rapid response times.

**Precision:** This is further guaranteed through versatile feedback options. While the standard configuration features a 2500 PPR incremental encoder, users can opt for 17-bit absolute encoders for applications requiring high-resolution positioning and absolute position retention.

### **I CCL Series Coreless Motors**

For ultra-fine control in compact spaces, the CCL series offers diameters ranging from 16mm to 42mm and power outputs from 36W to 155W. These motors are widely utilized in screw dispensing valves, medical equipment, and precision servo grippers, where smooth rotation and high power density are required.

### **I ICL Series Integrated Motors**

Addressing the industry trend toward decentralized control, the ICL series integrates the drive unit directly into the motor housing. This design eliminates complex external wiring, reduces electromagnetic interference, and saves significant installation space. With a power range of 100W to 400W and compatibility with Panasonic installation dimensions, these units are ideal for distributed architectures in automated production lines.

## **Advanced Hardware and Communication Capabilities of the IDS Drive Series**

The performance of a servo system is fundamentally tied to the processing power of its driver. The IDS Drive Series utilizes 32-bit high-performance MCUs, which facilitate high-speed response while maintaining low heat generation and acoustic noise. These drives operate within a broad voltage range of 18V to 72VDC, ensuring compatibility with various power supply standards.

Flexibility in feedback and communication is a hallmark of the IDS series. The drives support multiple feedback types, including Hall (HU/HV/HW) + ABZ, absolute encoders (17-bit or 23-bit Tamagawa), and even sensorless configurations. This versatility allows the hardware to be tailored to specific cost and precision requirements.

Regarding control interfaces, the system supports pulse (single-ended/differential), analog voltage, and several industrial bus protocols including CANOpen, RS485, and RS232. This enables seamless integration with various PLCs or standalone operation through IO control. Advanced features such as power-off memory for absolute values and built-in acceleration/deceleration algorithms ensure that equipment starts and stops smoothly without mechanical impact.

### **Competitive Advantages in Modern Industrial Applications**

The technical value proposition of Xulong's solutions can be summarized through several key functional advantages. First, the use of low-voltage DC (24-72V) ensures safety compliance for mobile and human-centric equipment. Second, the cost-performance ratio is optimized, offering performance metrics comparable to leading Japanese brands at a significantly lower total cost of ownership. Finally, the "plug-and-play" nature of the integrated units, supported by intuitive debugging software, lowers the technical barrier for system integrators.

These advantages translate into robust performance across five primary market segments:

- **Mobile Robotics (AGV/RGV):** Used for traction, lifting, and rotation, these motors handle battery voltage drops effectively and utilize CAN bus synchronization for multi-axis coordination in warehouse and inspection robots.
- **3C and Semiconductor:** In dispensing, soldering, and screw-locking machines, the high response and low vibration of the motors facilitate high-speed, high-precision motion.
- **Medical and Laboratory:** The low-noise and low-speed stability of the ACL and CCL series meet the stringent reliability and safety standards required for surgical instruments and diagnostic analyzers.
- **Packaging and Textile:** Providing constant torque and multi-axis synchronization, these systems are replacing traditional stepper motors in labeling, winding, and cutting applications to improve overall accuracy.
- **Smart Equipment:** In space-constrained scenarios like electric cylinders, grippers, and pedestrian gates, the integrated servo motors provide a streamlined power solution.

### **Technical Support and Strategic Implementation**

For engineering teams seeking to integrate these solutions, the selection process is guided by specific application parameters. Xulong suggests wide-voltage models for battery-operated devices, integrated servos for distributed control, and high-resolution absolute encoders for tasks requiring the utmost positioning stability.

Xulong Technology supports its hardware with a full-process technical service model. This includes initial parameter selection, the provision of high-precision 3D models for mechanical design docking,

and comprehensive OEM/ODM development. This technical synergy ensures that each motion control solution is precisely matched to the specific demands of the industrial equipment it powers. Detailed technical manuals and product samples are available through the company's official portal, providing a resource for engineers to evaluate performance data against their specific project requirements: <https://www.xulonggk.com>



## Media Contact

Xulong Technology(Dongguan)Co., Ltd.

\*\*\*\*\*@yeah.net

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