



Advantech's POC-621 Elevates Robotic Surgery Capabilities

Background

With rapid technological advancements, robotic surgery has become increasingly prevalent, offering benefits such as minimal surgical wounds, reduced blood loss, and faster recovery. These advantages have made robotic systems essential in modern operating rooms. To enhance precision and efficiency, a leading robotic surgery company has continuously upgraded its systems. In its latest generation, the company integrated Advantech's medical-grade all-in-one computer, POC-621. With its powerful computational capabilities, the POC-621 efficiently handles the increased processing demands of upgraded software, further enhancing robotic surgery as a reliable surgical assistant.

A Key Hardware Foundation for Next-Generation Products

As an early entrant in the market, this robotic surgery company provides solutions for common procedures across various specialties, including general surgery, cardiovascular surgery, thoracic surgery, urology, obstetrics and gynecology, and ENT. To date, it has facilitated over seven million surgeries globally, with the number continually growing. To maintain market competitiveness, the company has consistently updated its product design over the years. For instance, its latest product launched in early 2024 features 150 innovative enhancements aimed at improving surgical accuracy and reducing operation times. Advantech's POC-621 has played a critical role in enabling these innovations.



Three Custom Designs Fully Meeting Client Needs

CH Wang, a Product Manager at Advantech, explained that the new generation of software demanded significant hardware resources. The existing hardware fell short in performance and appearance, prompting the company to integrate the POC-621 as an upgrade. The POC-621 features 11th Gen Intel® Core™ i5/i7 processors, delivering significantly enhanced performance compared to the older CPUs. The POC-621's compatibility with existing hardware minimizes risks during system upgrades and ensures ample computational resources for future software functionalities. Advantech also tailored the POC-621 with three custom designs to better meet client needs:

Integrated Video Capture and

Communication Features: The system is equipped with a video capture card to record the entire surgical process, a directional microphone for clear audio capture within a 3-5 meter range, and a 4K camera for clear imaging even in low light.

Revised I/O Cover

Placement: The computer's wiring outlet was moved from the base to the back of the screen, improving the robot's aesthetic appeal.

Durable Touch Panel:

To address end-user concerns about screen durability, Advantech incorporated IK09-rated glass for the touchscreen, enhancing resistance to impacts and maintaining positive user impressions of the product.

Two Major Benefits: Reduced R&D Time and Cost, and Practical Product Implementation

Jerry Hsiao, another Product Manager at Advantech, highlighted two key advantages of integrating the POC-621 into the robotic surgery company's system upgrade plans:

- **Reduced Development Time and Costs:** Advantech's streamlined design and extensive expertise helped the client save significant R&D time and costs. For example, the POC-621's design met the client's appearance requirements, eliminating the need for extensive customization and associated expenses.
- **Seamless Product Implementation:** Advantech's North America service team facilitated close communication with the client, ensuring that hardware exceeded expectations. Rigorous testing ensured features like the directional microphone and 4K camera met client standards.

Jerry Hsiao emphasized that Advantech's North America service team facilitated close communication with the client and promptly relayed requirements to the R&D and testing teams in Taiwan. Taiwan's dedicated team consistently exceeded client expectations with their service excellence.

For example, to meet the requirement for the directional microphone to capture clear audio within a 3-5 meter range, Advantech's testing team set up identical testing environments

within their office building. They installed test equipment and conducted signal measurements from various angles following the client's testing protocols, ensuring clear audio capture from all directions.

Additionally, Advantech utilized a 4K camera equipped with a high-end CMOS sensor for imaging tasks. The team conducted rigorous 4K testing based on the client's image recognition protocols and fine-tuned firmware settings based on test results to ensure the camera could accurately identify the speaker's identity, even in low-light conditions.

"The client had rigorous and comprehensive testing plans, making the integration and testing of components as time-intensive as developing a motherboard," CH Wang remarked with a smile. "Although time-consuming and resource-intensive, Advantech remains committed to investing labor and resources to ensure the safety and reliability of medical equipment, which directly impacts public health."

Looking ahead, Advantech plans to deepen its collaboration with the robotic surgery company by introducing more powerful all-in-one computers to enable advanced AI medical applications. Together, they aim to enhance medical efficiency and quality, providing patients with more precise healthcare services.