

Transforming Surgery with AI Assistance – Precision Orthopedic Surgery



Background

Orthopedic surgery, particularly hip replacements, sees over 7.5 million procedures annually worldwide. Hospitals increasingly demand digital surgical tools that enhance precision, reduce variability, and integrate seamlessly with existing workflows.

Surgeon & Hospital Pain Points

The need for surgery arises from several challenges faced by surgeon and hospital's professionals:

- **Complex imaging needs:** Surgeons require high-resolution intraoperative visualization for accurate implant positioning.
- **Environment constraints:** Operating rooms need rugged, sterilizable computers that resist moisture and pathogens.
- **Mobility & reliability:** Tools must be portable for use with mobile OR carts, yet remain powered consistently during long procedures.
- **Data compliance:** Systems must meet medical certifications, withstand electrical interference, and support health-grade standards.

AI-Assisted Solution

Taking orthopedic surgery as an example, the treatment solution is expected to deliver,

- Pre-op 3D planning to optimize implant choice, size, and alignment.
- In-op guidance using AI navigation to ensure precision placement.
- Post-op verification and follow-up analytics.

AI-Assisted Surgery (Application Overview)



Role of Wincomm Products

Featuring on efficient computing performance, rich I.O. with waterproof IP54 housing, uninterrupted power support, and medical grade certification

The [WMP-XXP-IP54](#) Point of Care Medical Panel PC addresses these challenges by providing a comprehensive solution for AI-assisted surgery solution:

- ✓ **Crystal-clear image delivery**
Features 21.5 and 23.8" FHD AHVA diagnostic display with P-Cap multi-touch—ideal for real-time 3D anatomy viewing.
- ✓ **Sterile-ready & rugged**
Hospital-white, anti-bacterial housing resists infections. IP54 sealing and fanless design reduce contamination and facilitate cleaning.
- ✓ **Portable with uninterrupted power**
Supports hot-swappable battery and optional UPS—providing 8-10 hours runtime for mobile cart usage, critical for OR mobility
- ✓ **High performance & expandability**



Wincomm Corporation

Successful Story

Medical Grade Series

Powered by Intel 12th/13th Gen Core i-series, dual SSD storage, PCIe expansion (for video-capture or AI-acceleration), and isolation-I/O ensure smooth AI processing and OR-grade electrical safety.

✓ **Medical-certified safety**

Latest EMC/Safety standards (EN/IEC 60601-1-2) mean it can be used near patients and integrated into hospital IT systems securely.

Wincomm's WMP-xxP-IP54 brings the display quality, ruggedness, battery reliability, medical certifications, and expansion needed to fully enable AI surgical platform—transforming hip replacement procedures into a precise, integrated, and sterile digital workflow.

For more product information, please visit the Wincomm website at

<https://www.wincommusa.com/category-Medical-AIO-Core%E2%84%A2-Fanless-P1-1-6.html>