ADLINK
Leading EDGE COMPUTING

Solution Blueprint

MLC Series Medical Panel Computers Enable Top-Level Patient Care in Digital OR

Digital OR requires high-quality medical panel computers to provide high-quality medical services



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Providing quality medical care is a paramount mission of hospitals and clinics nowadays. Digitalization, in particular, helps effectively enhance efficiency of medical care, save time and money, reduce the burden on healthcare personnel, lowers the chance of medical accident, and ultimately boosts patient satisfaction. In the operating room, where time efficiency and zero tolerance of errors are crucial, requirements for the efficiency, hygiene, and safety specifications, among others, are even stricter. It is particularly necessary to adopt medical panel computers that completely meet such needs (Figure 1). One such need is the ability to steadily operate over an extended period of time, process and display surgical images and patient information in real time, and simultaneously transmit and store at a distance. Another is the ability to connect and control respective pieces of equipment, including the operating lamp, the operating table, the suspension arm, the anesthesia machine, the blood oxygen machine, various types of endoscopes, the physiological analyzer, the C-arm X-ray machine, and the environmental camera, among others, for data synchronization and integrated control. And also, there is a need for not interfering with the surgery, while at the same time ensuring patient life and safety and facilitating maintenance and cleaning by healthcare personnel. Only medical panel computers with such capabilities can fulfill current needs in the digital operating room and provide high-quality medical services.

Considerations when choosing a medical panel computer for the OR

A famous medical equipment manufacturing and system integration service provider in the greater China area, for example, indicates the following requirements according to the application features and purpose just mentioned when selecting a medical panel computer to be integrated in its digital operating room solution:

Complex and demanding system integration

As the software framework and data volume are becoming more complex and the demand for real-time medical imaging and data transmission is higher, the system requirements for medical panel computers have also risen. A medical panel computer nowadays has to be able to steadily run multiple systems at the same time over a lengthy surgical procedure, such as the picture archiving and communication system (PACS) and the patient data management system (PDMS), among others. It must also provide healthcare professionals with various intra-operative patient images and information in real time plus integration control over respective pieces of equipment. All of these requirements can be met only with a high-performance medical panel computer with outstanding quality, which allows for smooth long-time operation and effectively enhance the efficiency of medical care.



Figure 1: In the operating room requirements for the efficiency, hygiene, and safety specifications are stricter, making it particularly necessary to adopt medical panel computers that completely meet such needs.

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Hygienic design prevents against infection

Fans continue to be used in some medical computers nowadays for heat dissipation purposes, yet they tend to generate noise and vibration, which may interfere with both the patient and the healthcare professional. In addition, if the non-sealed vent design is adopted, dust tends to enter or accumulate at the fans and nearby vents, giving bacteria the chance to grow in the gaps; they are not easily cleaned, making it impossible to meet the hygienic requirements of an operating room. Therefore, aside from the basic requirement of antiseptic coatings for the external cover, a completely sealed, fanless heat dissipation design should also be adopted for OR medical panel computers. The panel needs to be IP65-rated so that dust will not enter and undermine operating stability. It must be easy to clean to prevent growth of bacteria in the gaps.

Compliance with safety and performance standards to protect the patient and the equipment

In order to protect the patient and the equipment inside the operating room, a medical panel computer must pass the strict IEC/EN 60601-1 standard for the safety and essential performance of medical electronic equipment to prevent against static interference with other equipment during surgery, which can significantly impact the patient. Even just a mild electric shock can cause the patient's heart to stop beating. Such standard has been constantly updated since its first edition in 1977; along with advancing medical equipment and increased knowledge we have of how it affects patient safety.

Application-specific requirements

Medical panel computers must accommodate the installation of other equipment to meet the needs of each customer, equipment such as a multi-channel image acquisition card and an environment camera to support image inputs from other medical equipment in the operating room.

ADLINK MLC Series Medical Panel Computers Fully Satisfy Various Needs of the Digital Operating Room

For the requirements of a medical panel computer to be used in the operating room as indicated above by the famous medical equipment manufacturing and system integration service provider, ADLINK MLC Series medical panel computers are equipped with the following features and functions to effectively satisfy each of the requirements indicated (Figure 2):

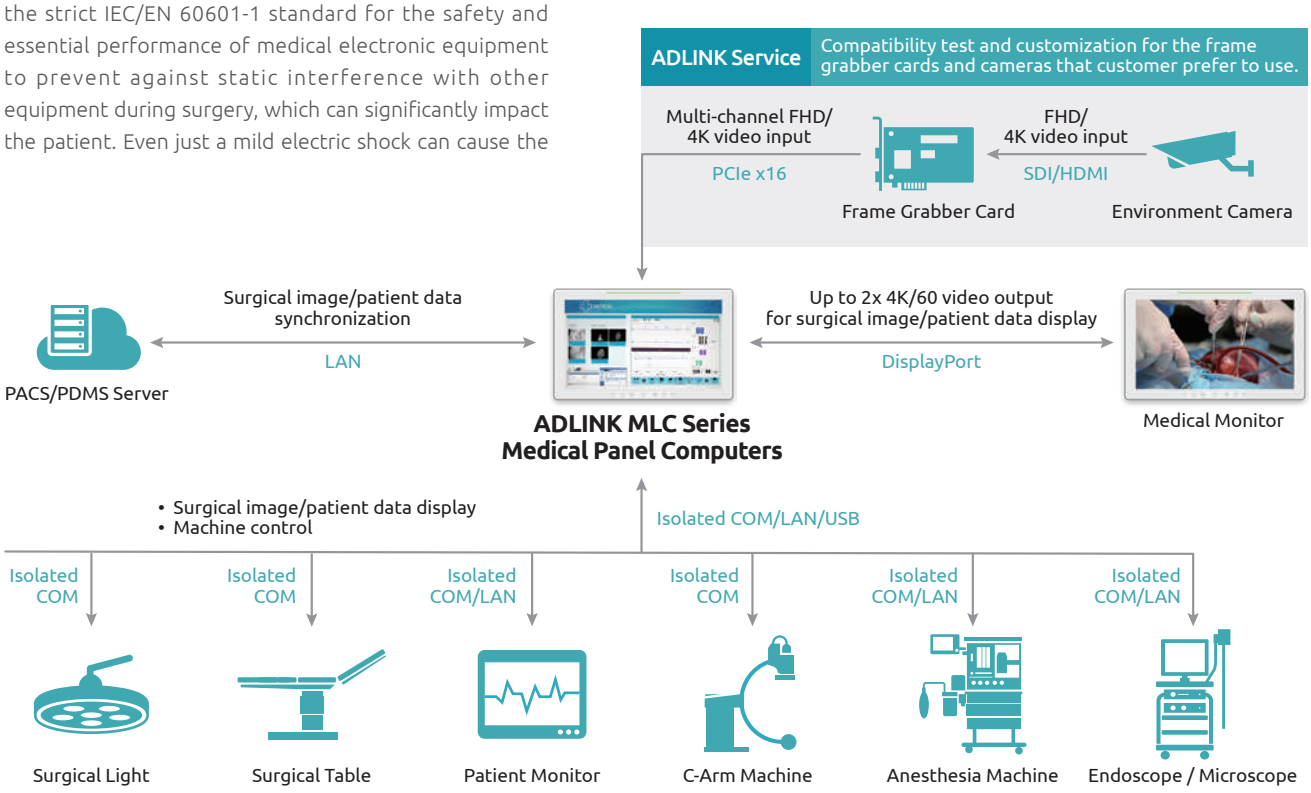


Figure 2: MLC Series in the OR.

Steady, long-term, high-performance operation

The outstanding design of the ADLINK MLC Series medical panel computers was approved by the customer after strict internal testing and assessment for their capability to run over an extended period of time; a high-performance quad-core Intel® Core™ processor ensures PACS and PDMS run smoothly to display and acquire medical images and patient data in real time, effectively boosting medical care and surgical efficiency and enhancing patient satisfaction.

Completely sealed fanless aluminum alloy cover

The fanless heat dissipation framework adopted for the ADLINK MLC Series is noiseless during operation, which effectively reduces interference to the healthcare professionals and the patient during surgery. The completely sealed design effectively reduces heat dissipation vents and minimizes invasion by dust and risk of bacterial growth. In addition, IP65 protection is provided for the whole unit to make maintenance and cleaning easier for healthcare professionals. The metal cover with antiseptic coatings is even more durable than plastic and can better avoid the brittleness and chipping that plastic covers are susceptible to over extended use.

Complete IEC/EN 60601-1 safety certification

For the sake of patient safety and to prevent against equipment damage, the MLC Series is IEC/EN 60601-1 certified for electromagnetic safety and is compliant with 2 x Means of Patient Protection (MOPP) standards. Meanwhile, by adopting the isolated COM/LAN/USB design, it avoids static interference with other pieces of electrical equipment in the operating room which may threaten patient safety. ADLINK MLC Series' manufacturing facility, moreover, has been certified to manufacture Medical Class I devices. It has also been certified to ISO 13485 for having met the international standards of the quality assurance system for medical devices, offering both the patient and the equipment better protection.

Customization and service meets customer demands

Meeting each customer's needs, ADLINK can install an optional image acquisition card in the PCIe x16 expansion slot inside the MLC Series. Meanwhile, for such customized demands, ADLINK can also test, among other equipment, the image acquisition card and the camera of the customer's choice to ensure their compatibility and operating stability in the long term. This not only reduces the additional costs associated with the compatibility test selected but also avoids subsequent possible compatibility issues and stability risks, effectively enhancing customer reliability and satisfaction (Figure 3).



Figure 3: Satisfying various needs of the digital OR is key.

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Provide top-class patient care with a medical panel computer that meets the OR needs

Digitalized operating rooms have become a trend among healthcare facilities. Compliance with IEC/EN 60601-1 is now a basic requirement for medical panel computers used in the operating room. ADLINK's MLC Series is designed with a completely sealed, fanless aluminum alloy cover that minimizes the risk of invasion of dust and growth of bacteria, ensuring steady, high-performance operation over an extended period of time. In addition, it can be tailored to meet customer-specific requirements, thus effectively boosting efficiency of medical care, saving time and money, reducing the burden on healthcare professionals and lowering the chance of medical accident, ultimately providing top-class patient care and the end goal of enhanced patient satisfaction.

ADLINK MLC Series Medical Panel Computers

- An all-in-one, high-performance medical panel computer with the 5th/8th gen Intel® Core™ processor
- 21.5" or 23.8" Full HD display with optical-glued PCAP multi-point panel and anti-glare coated safety glass to provide unparalleled display capability
- Completely sealed aluminum cover and fanless design compliant with IP65 water-proof rating to meet hygiene criteria
- Versatile I/O interfaces with isolation protection



For more detailed information on the ADLINK MLC Series medical panel computers, please contact your local ADLINK sales representative or visit https://www.adlinktech.com/en/Medical_Healthcare.aspx.

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