



DFI

The Server Motherboard With Industrial-Grade Durability Allows Customers To Build A More Stable And Reliable MRI System

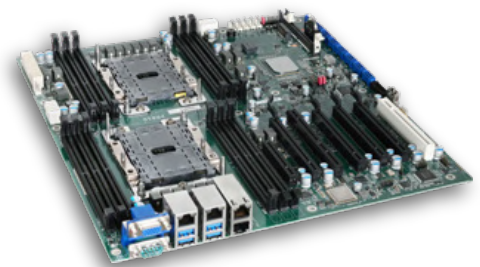
The magnetic resonance imaging (MRI) instrument puts the human body in a highly magnetic field environment, uses radio waves to excite the hydrogen atoms in the body to generate a resonance signal, and then combines a series of 2D images from different angles through computational calculations to form a 3D image. To diagnose changes in the patient's condition, physicians need to compare the old and the new photos of the patient's MRI scan. Due to its precision and time efficiency, machine learning technology has become the application field of artificial intelligence for MRI. With fast product sample delivery, customized service, and meticulous product quality, DFI's industrial-grade server motherboard has been used as the cornerstone of a new generation of MRI systems by Japanese manufacturers.

Region: **Japan**

Industry: **Medical**

Application: **Magnetic Resonance Imaging System**

Solution: **Customized System Based On PR810-C622
Industrial Server Motherboard**





Magnetic resonance imaging (MRI) is a medical imaging technique that uses a magnetic field and computer-generated radio waves to create detailed images of the organs and tissues in the human body. The position and type of the nucleus can be drawn into an image of the object's internal structure. Applying this technology to the imaging of the internal structure of the human body has become a revolutionary medical diagnostic tool. The application of the rapidly changing gradient magnetic field has dramatically accelerated the speed of MRI, making the application of this technology into a reality for clinical diagnosis and scientific research. It has extensively promoted the rapid development of medicine, neurophysiology, and cognitive neuroscience.

During the decades from discovering nuclear magnetic resonance to the maturity of this technology, nuclear magnetic resonance research has won six Nobel Prizes in four fields (physics, chemistry, physiology, and medicine), illustrating the

importance of derivative technology.

On account of the patient's need to hold their breath during the process, the MRI time will determine their medical experience. How to speed up to reduce the diagnosis and treatment time, from obtaining various parallel imaging technologies, correction algorithms, to make full use of the new generation of computing processors, and so on, has also become the direction of research and development by machine manufacturers. In Japan, an MRI manufacturer uses DFI's PR810 dual Intel Xeon industrial server motherboards, and DFI customized its system to create its new generation of products.

The main reasons that this Japanese manufacturer chose DFI are as follows:

- ▲ MRI system requires reliable, durable, and long-supplied industrial-grade system motherboards.

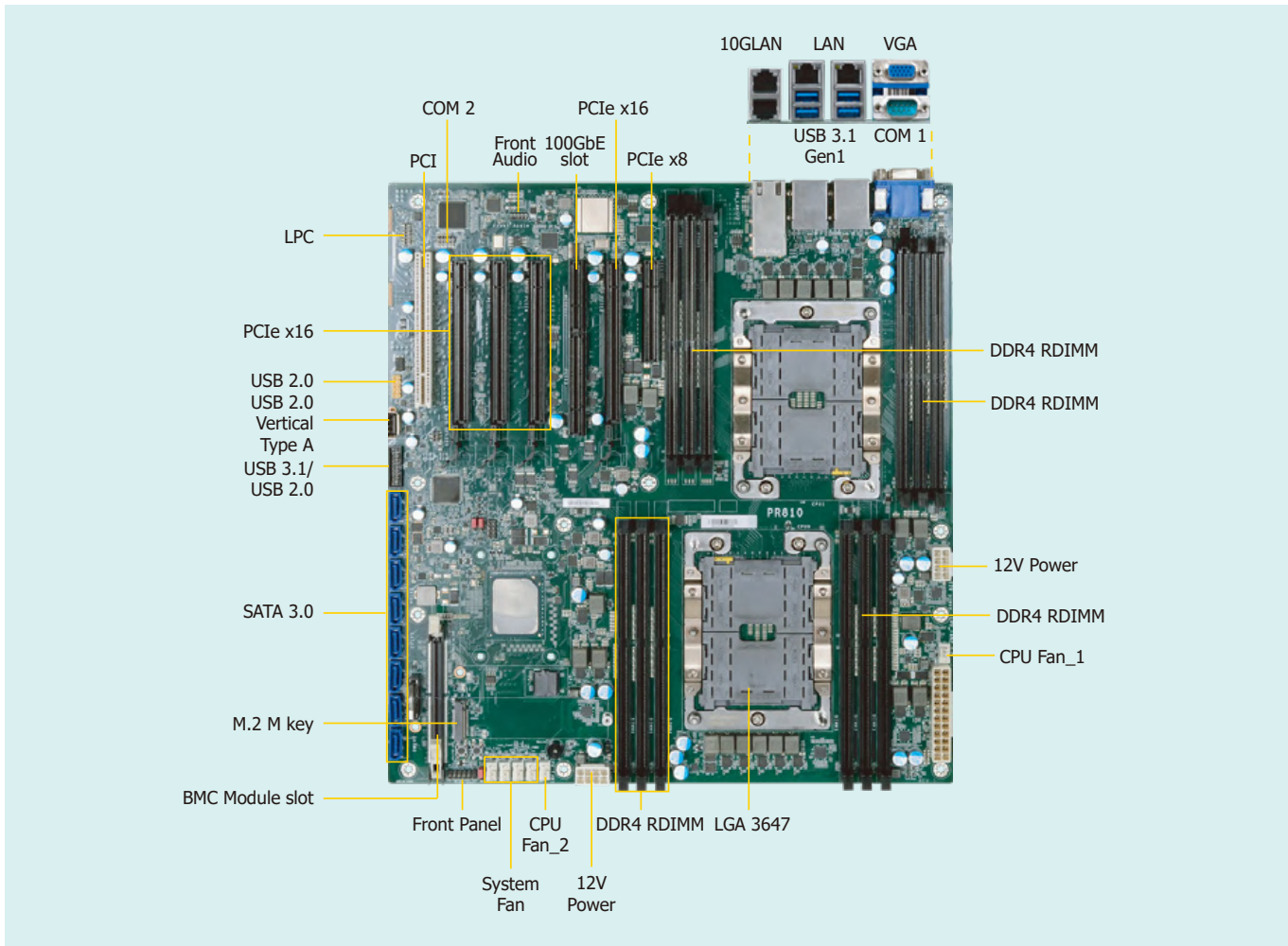
When the operating temperature of PR810-C622 is 40 degrees, the mean time between failures (MTBF) is still more than 300,000 hours, equal to 34 years. It supports an industrial version Intel Xeon processor that can withstand higher temperatures and be supplied until the third quarter of 2033. This is a requirement for the medical environment where the equipment is deployed for a long time.

▲ The MRI process will consume a lot of processor performance and memory capacity. PR810-C622 can support up to 48 processor cores and 384GB of system main memory. Intel DC Persistent memory with a more considerable capacity can be selected to

ensure plenty of room for performance upgrades.

▲ The second-generation Intel Xeon Scalable processor can significantly speed up the inference performance through the VNNI (Vector Neural Network Instructions) instruction set, which is convenient for continuously optimizing the recognition algorithm in the future.

▲ PR810-C622 retains the PCI bus, which can continue to leverage the PCI adapters used for many years and is difficult to replace, ensuring the investment in the past.



In addition, in response to particular needs, DFI actively customized the partner's 4U chassis and dedicated BIOS for this Japanese manufacturer and has integrated all peripheral devices, such as power supplies, solid-state drives, and DVD recorders, and combine the medical computing adapters developed by this manufacturer. This system will be installed in the MRI machine for medical safety certification.

With fast product sample delivery, customized services, and meticulous product quality, DFI's industrial server motherboard is used as the cornerstone of a new generation of MRI systems from Japanese manufacturers, demonstrating the unique value that ordinary commercial servers cannot achieve.

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DFI

Founded in 1981, DFI is a global leading provider of high-performance computing technology across multiple embedded industries. With its innovative design and premium quality management system, DFI's industrial-grade solutions enable customers to optimize their equipment and ensure high reliability, long-term life cycle, and 24/7 durability in a breadth of markets including factory automation, medical, gaming, transportation, smart energy, defense, and intelligent retail.

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