AXIOMTEK

Case Study

Subdermal Noninvasive Monitoring System

(CAPA500)

Peripheral artery disease (PAD) diagnostic system for subdermal noninvasive monitoring

As peripheral artery disease (PAD) puts thousands of patients around the world at risk of mortality or amputation, it is still a disease that is comparatively underdiagnosed and undertreated. Currently, nearly 50% of PAD patients are unaware of the disease and have no symptoms to identify. Therefore, medical doctors and researchers are committed to developing a noninvasive and portable diagnostic system to obtain the result as quickly and accurately as possible.

Challenges

The customer is a start-up company in the field of medical equipment manufacturing. It has developed a portable medical device that is designed to screen, stage, and monitor diabetic foot and PAD as early as possible to prevent amputation or ischemia in the worst-case scenario. To develop the most capable system, the customer turns to single board computer (SBC) to provide the system with computing, dashboard display, wireless connection, and rich I/O for sensors.

The customer was looking for a 3.5" embedded board to integrate into its portable PAD diagnosis system. This industrial-grade motherboard aims to process massive data such as blood flow, oxygen flow in the foot, the severity of ulcers or gangrene, and infection, and then display a dashboard on a monitoring screen to provide real-time information to the doctor. It is required to support the high-performance Intel® Core™ processor. Considering the CPU shortage, the customer specifically pointed out that the SBC should be in-stock and ready to ship.

Main Requirements

- Compact 3.5-inch embedded board
- Intel® Core™ processor
- Various display outputs choices
- Great expansion for more storage capacity
- Rich I/O connectivity
- Wide operating temperature range
- In-stock and ready to ship

Axiomtek's 3.5" embedded SBC CAPA500 provides capable performance

After a careful evaluation of CPU performance and the inventory, Axiomtek has proposed its CAPA500, a high-performance 3.5" embedded SBC. This industrial-grade SBC is powered by the 7th/6th gen Intel® Core™ i7/i5/i3 processor. It comes with triple view displays with one VGA, one HDMI, and one LVDS. Once it's integrated with the system, which allows doctors to gain a clear view of the dashboard of various medical data; it's equipped with three USB 3.0 ports and USB 2.0 ports for a variety of sensors. For more storage space or expansion, the CAPA500 features a full-sized PCI Express Mini Card slot with mSATA supported for data storage. The small form factor embedded platform also features two GbE LAN ports for the internet connection to transmit data and patient records; if there's a need for a wireless connection, the system can gain a 4G/Wi-Fi connection via an additional module. The SBC has a ZIO connector for additional PCIe x1, LPC and USB ports.

Application: The CAPA500 makes the medical examination safe and easy
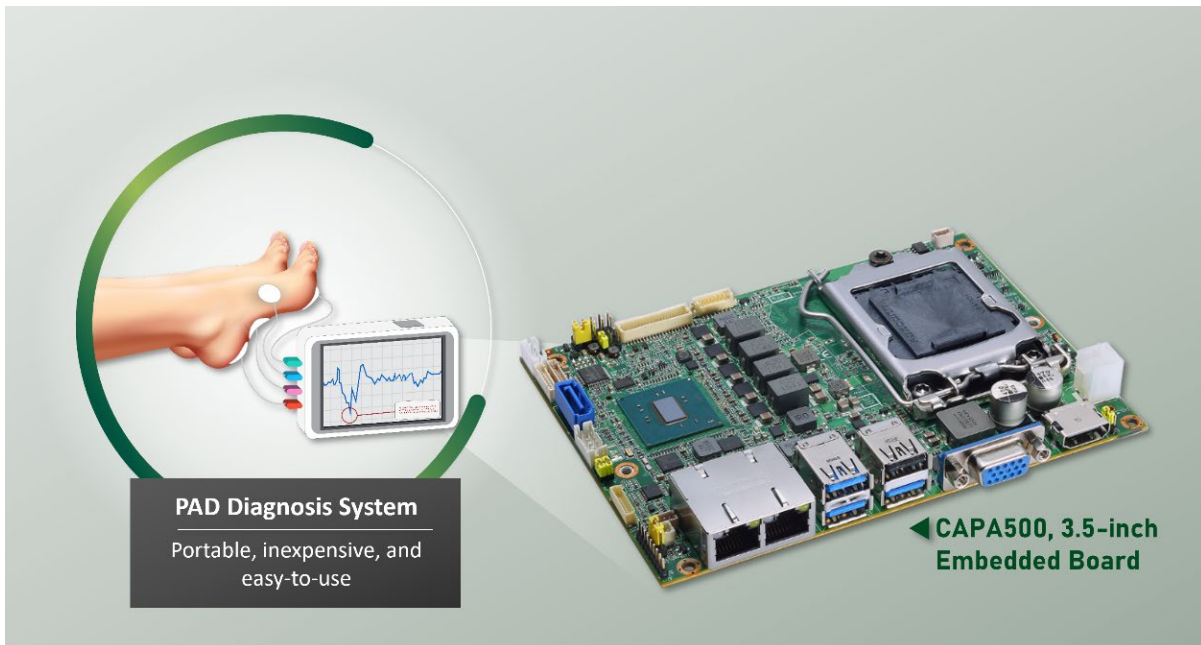
The customer has integrated the CAPA500 into its PAD diagnosis system for subdermal noninvasive monitoring. With the support of the PAD diagnosis system, the doctor can easily screen the patient's feet and evaluate the severity of the disease and make decisions on treatment. The device can show

the precise location and severity of the disease and can even be used during surgery. The examination is safe, and the system is relatively inexpensive and can transmit data via the cloud.

System Configurations: CAPA500

- LGA1151 socket 7th/6th gen Intel® Core™ i7/i5/i3 processor (codename: Kaby Lake/Skylake)
- Intel® H110 chipset (Q170 optional)
- 1 DDR4 SO-DIMM for up to 16GB of memory
- 3 USB 2.0 and 3 USB 3.0
- Intel® AMT 11 supported (optional)
- Dual-view for H110 chipset; triple-view for Q170 chipset

*For detailed specifications, please visit www.axiomtek.com or go to Products > Industrial & Embedded Motherboards>3.5-inch Embedded Board> for CAPA500

Why Axiomtek

Axiomtek's products meet the demand of the customer and become an essential part of the subdermal noninvasive monitoring system. Now the development of the system has been completed and received multiple patents. The examination is non-invasive and ionizing-radiation-free. Moreover, it is expected to be certified by the local authority.

"After we have approached Axiomtek from the website ads, its local partner sent us a display kit in a very short time. Since the short supply of chips remains in 2022, having a quick-respond service and ready stock to market is the main reason we choose to work with Axiomtek. It offered quick and proper option – CAPA500 – with 7th Intel® Core™ i5 and i3 processors to meet different needs in hospitals. Axiomtek shows its powerful coordinated ability and shrewd strategy in this competitive time," said the Chief Technology Officer of the PAD Diagnosis System Provider.

About Axiomtek Co., Ltd.

Axiomtek has experienced extraordinary growth in the past 30 years because of our people, our years of learning which resulted in our tremendous industry experience, and our desire to deliver well-

rounded, easy-to-integrate solutions to our customers. These factors have influenced us to invest in a growing team of engineers including software, hardware, firmware, and application engineers. For the next few decades, our success will be determined by our ability to lead with unique technologies for AIoT and serve our key markets with innovatively-designed solution packages of hardware and software – coupled with unmatched engineering and value-added services that will help lessen the challenges faced by our systems integrator, OEM and ODM customers and prospects alike. We will continue to enlist more technology partners and increase collaborations with our growing ecosystem who are leaders in their fields. With such alliances, we will create synergy and better deliver solutions, value, and the expertise our customers need.

Axiomtek is a Member of the Intel IoT® Solutions Alliance. A global ecosystem of more than 800 industry leaders, the Alliance offers its members unique access to Intel technology, expertise, and go-to-market support—accelerating the deployment of best-in-class solutions.