SUCCESS STORY

ASUS IoT Mini ITX Motherboard Fits Comfortably in Kiosk Applications

Embedded systems play a critical role in a host of applications, and those certainly include both industrial and commercial. On the industrial side, the platforms serve as the backbone of automation, control, and monitoring processes. Looking at commercial applications, embedded systems are used to streamline operations, gather data, improve efficiency, and provide an enhanced customer experience. Some common applications include point-of-sale (PoS) systems or kiosks, digital signage, smart appliances and home automation, and smart retail and inventory management.

To properly operate in a commercial application, the embedded system requires several key features to ensure reliability, functionality, and compatibility with the intended use case. Some essential features include:

- Scalability
- Security
- Remote management
- Power efficiency

Two additional characteristics that could be added to the list, depending on the application, are interoperability and a user interface. In one real-world example, LG is deploying a series of kiosks that interact with people. In most cases, they have been deployed in cafes, restaurants, and supermarkets. In such environments, the user interface is a make or break feature of the kiosk. If it's not very usable by the non-technical audience, it would be considered a failure.

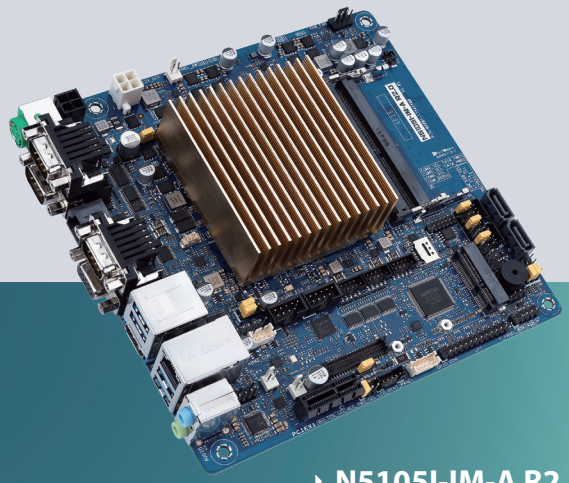
To fit that application, the embedded system within the kiosk had to hit a series of specifications. There were relatively few environmental constraints because the kiosks all operate indoors. However, there's still a need for relatively low power, as the establishment shouldn't have to supply supplemental power for the kiosk, and does not want to absorb large energy costs.

Size is definitely an issue, as the kiosk is typically fitting into a space after the establishment has been constructed. It also would be operational for long durations, and operated by untrained, non-technical users. In addition, the kiosk may be

in place for years at a time, so field upgrades would be desired, hence the need for remote management. At the same time, on-site maintenance can be costly, so doing as little as possible is needed. And even then, if maintenance can be scheduled, rather than "as needed," it could reduce down time and costs. And it goes without saying that security is paramount in this application.

This LG kiosk is based on an embedded computer from ASUS IoT, the N5105I-IM-A R2.0. The Mini-ITX motherboard is designed with an Intel Celeron N5105 quad-core processor, and offers a host of I/O. That would include two SO-DIMM slots, PCIe 3.0/2.0 x1, mini PCIe, six COM and eight USB, plus 12 Vdc out and 12 Vdc in, in case an extra display is desired. Triple-display support comes with the inclusion of HDMI and LVDS (colay with eDP) connectivity.

The Intel Celeron N5105 quad-core processor offers energy efficiency, more than enough performance for everyday tasks, and enhanced multitasking abilities. It is rated high compared to competitors for single-threaded performance. With its quad-core architecture, it provides smoother multitasking experiences and efficient handling of commercial applications like the kiosk described here. It supports a slew of connectivity options, ensuring compatibility with a range of devices and peripherals. Overall, the Intel Celeron N5105 strikes a balance between efficiency and performance.



› N5105I-IM-A R2.0

Designed for Kiosk Applications

As the design team had kiosks in mind for the N5105I-IM-A R2.0, it offers key connections for PoS applications, including USB, COM, HDMI, VGA and Ethernet and Ethernet. And of course, it offers a durable design, engineered to operate in a wide temperature range, from 0°C to 60°C.

Enhanced User Experience

As LG will attest to, the specs of the N5105I-IM-A R2.0 make it a great choice for a kiosk application, thanks to its rugged design, wide temperature range, and Mini-ITX form factor that allows it to be integrated into tighter housings. Its stable computing performance ensure a smooth end-user purchasing experience on the kiosk and low-power features are a great benefit in kiosk applications. It also includes an MSR/RFID reader for credit card payment and an RJ11/DIO connector for cash drawers. It's also equipped with a 3-W amplifier for the mono-out and an integrated buzzer for sending notifications in retail applications.

Versatility Beyond Kiosks

Aside from kiosks, applications could include customer displays, barcode scanners, credit card readers, receipt or thermal printers, or RFID readers. The RJ11 connector provides either 12- or 24-V power to the cash drawer and the GPIO (DIO) header is available for programming and checking the status of the cash drawer. The on-board magnetic-stripe reader (MSR) header can be used for card-reader connections to process payments.

As one of the world's top motherboard brands, ASUS IoT offers industrial motherboards with durable, industrial-grade components for reliable 24/7 operation in harsh environments and use in different vertical markets, including kiosks. The company's wide product selection allows for relatively simple customer upgrades. ASUS empowers a faster time-to-market by leveraging over 30 years of design-and-innovation expertise, world-class after sales service, the ability to respond rapidly to forecast changes and long-term technical support.

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