



Industrial Fanless Mini PCs Provide Micro Markets Wide Expandability and Reliability

Premio Benefits

1. Motherboard customization to support eight dedicated USB ports (Premio Universal I/O supplies 4x USB or 2x COM or 4x LAN/PoE)
2. 4G LTE mobile broadband connectivity through mini-PCIe and SIM card for real-time data management and analysis.
3. Fanless and cableless system design protects internal electronic components and extends product longevity.

Real-World Challenge

The Internet of Things (IoT) revolution has introduced a new wave of advanced self-service convenience that incorporates new technology for better customer-centric features and accessibility. Interactive kiosk machines are increasingly expanding their capabilities with smarter functions utilizing IoT sensors, scanners, cameras, wireless connectivity, and more. These innovative applications have provided forward-thinking businesses with a competitive advantage through enhanced customer service and user-friendly interfaces.

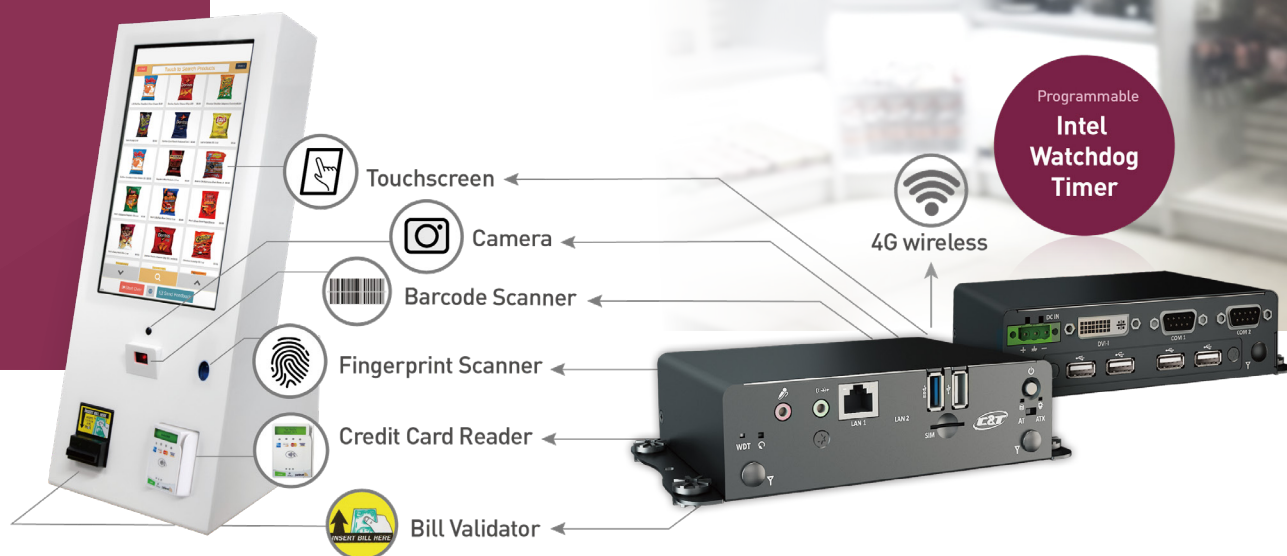
Micro markets are a rapidly growing retail environment designed for an unattended shopping experience complete with automated self-checkout technology that are replacing outdated vending machines in workplace breakrooms, campus lounges, and other similarly controlled locations. Compared to antiquated vending solutions, [micro markets experience increases of sales on average of 80%](#) thanks to better variety, efficiency, and self-services. This opportunity brings forward new innovations to improve

management systems so that micro market operators have the flexibility to streamline their inventory, merchandising, and logistics with real-time data analytics. In addition, as more devices and edge computers are being interconnected, there is a demand for better device intelligence that can assist on forecasting and planning strategy for future decision making.

Premio's client, a micro market startup with a vision to maximize ROI for independent business operators, was looking for a hardware partner to successfully integrate into their interactive kiosks throughout their entire fleet of micro markets worldwide. Initially using commercial-off-the-shelf (COTS) mini computers as their compute solution, they quickly found that it was not reaching their full technical requirements as demand for their micro market rose. By relying on consumer mini pcs to drive the various sensors, scanners, and devices, the startup had to include a USB hub for each individual system to enable the essential functions for their smart kiosk. In addition to adding potential points of failure, the consumer mini pc did not sustain a long-term supply and was lacking the necessary features to fully integrate with their software system.

In order to fulfill their hardware requirements, Premio partnered with the micro market startup to customize a professional grade industrial fanless mini pc that consolidated every needed function into one compact solution. Premio's customized [BCO-1010 Series](#) fit the bill and provided industrial features that reduced the total cost of ownership and delivered peace of mind with a reliable long-term product supply for continued growth.

Application Diagram BCO-1010



Premio's Application Solution

By leveraging Premio's strong hardware expertise, the micro market startup was able to define their exact technical specifications to successfully power their interactive kiosks' multiple key functions with durability that lasts. To support the wide connectivity necessary, Premio provided a customized motherboard for the [BCO-1010](#) to add two additional USB ports coupled with a 4-port USB module through an onboard Universal I/O bracket to supply enough dedicated ports to power every device without an external peripheral hub. Each micro market kiosk needed a minimum of seven USB ports to control the touch screen, security webcam, fingerprint reader, cash bill reader, credit card scanner, bar code scanner, and a keyboard/mouse for troubleshooting.

Incorporating the core of IoT is a major advantage for how micro markets manage merchandise inventory in real-time by utilizing data analytics each time purchases are made. This is made possible by the [BCO-1010](#)'s mini-PCIe module fitted with a 4G LTE chip optimized for Machine to Machine (M2M) communication and IoT applications. With access to mobile broadband through major wireless carriers such as T-Mobile, Verizon, and AT&T, each micro market kiosk ensured that the cloud software management system was up to date when dedicated internet was not guaranteed on-location. With real-time data aggregation, market operators are able to efficiently and remotely track, route, stock, and schedule services precisely when needed. Furthermore, each system is supported with Intel Watchdog Timer to minimize operational downtime through remote monitoring and testing of hardware diagnostics.

Designed for professional applications, the [BCO-1010 Series](#) offers several industrial features that helped solidify its position for replacing the consumer mini pc in the micro market kiosk. On top of having a smaller physical footprint, the [BCO-1010](#) is also a fanless and cableless solid state solution that can sustain the rigors of worldwide shipment and transportation by eliminating moving parts and mechanical weak points. [Industrial fanless mini pcs](#) are more reliable as they protect internal components from dust and debris that active fan cooling introduces, thus removing the risk of thermal complications due to either dust buildup or fan failures. Premio's BCO-1010 fanless mini pcs are validated to operate continuously throughout an extended temperature range of -20°C to 50°C and are rated to withstand shock and vibration levels of 50G and 5Grms.

As the micro market industry continues to expand with new IoT functionalities in diverse environments, Premio's industrial fanless pcs delivers a custom application solution that works exactly to the startup's required specifications for optimal results. The micro market startup is now able to have peace of mind knowing that their interactive kiosks are supplied with a professional system that minimizes maintenance costs, builds brand recognition, and guarantees long-term supply.



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