DFI

Customized Solutions Bring More Accurate Positioning and More Proactive Maintenance

Affected by the raging COVID-19, the public avoids going out in fear of infection. Not only has e-commerce orders surged, but significant e-commerce companies must also expand the deployment of more advanced robots, such as shuttles between shelves, to increase the floor area ratio and improve storage efficiency. Based on the needs of a top e-commerce company in Taiwan, DFI quickly customized the EC700-BT system and added an expansion card to provide a COM port compatible with RS-232/422/485 protocols and with galvanic isolation protection. The sub-GHz Wi-SUN low-power IoT wireless network is introduced to improve the accuracy of indoor real-time positioning and information collection such as moving path distances to pre-determine the track sections and advanced maintenance for shuttles.
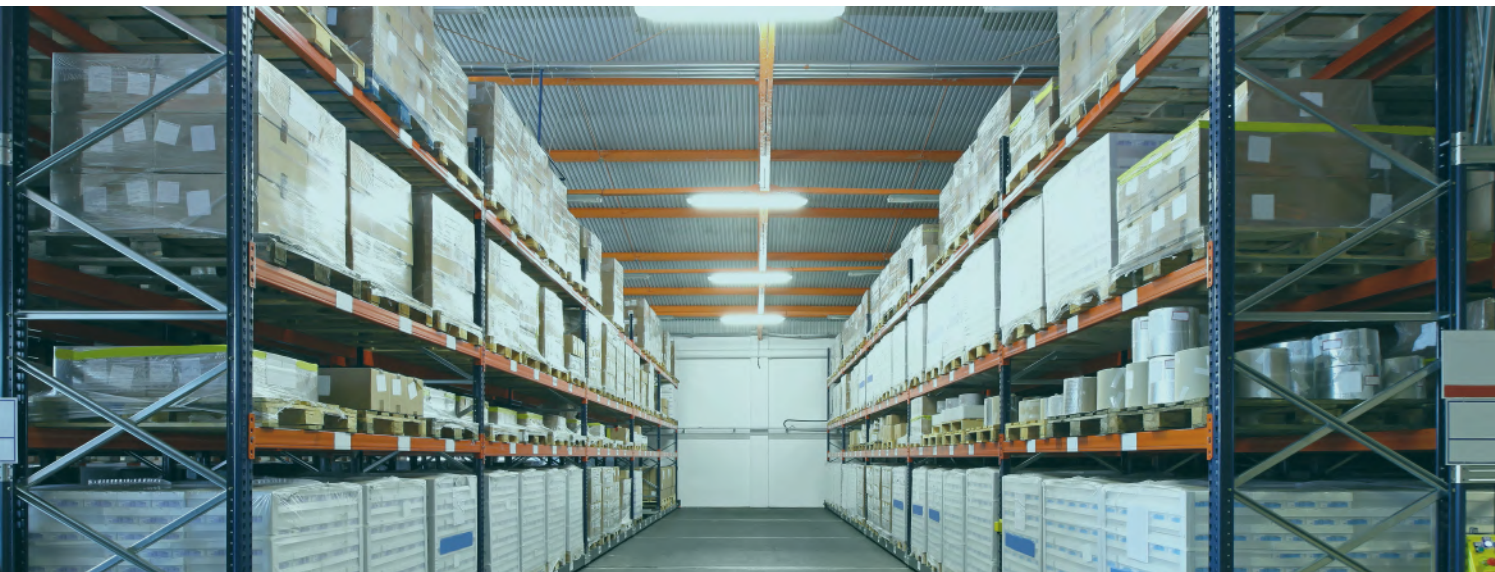
Region: **Taiwan**
Industry: **E-commerce**
Application: **Shuttle between shelves**
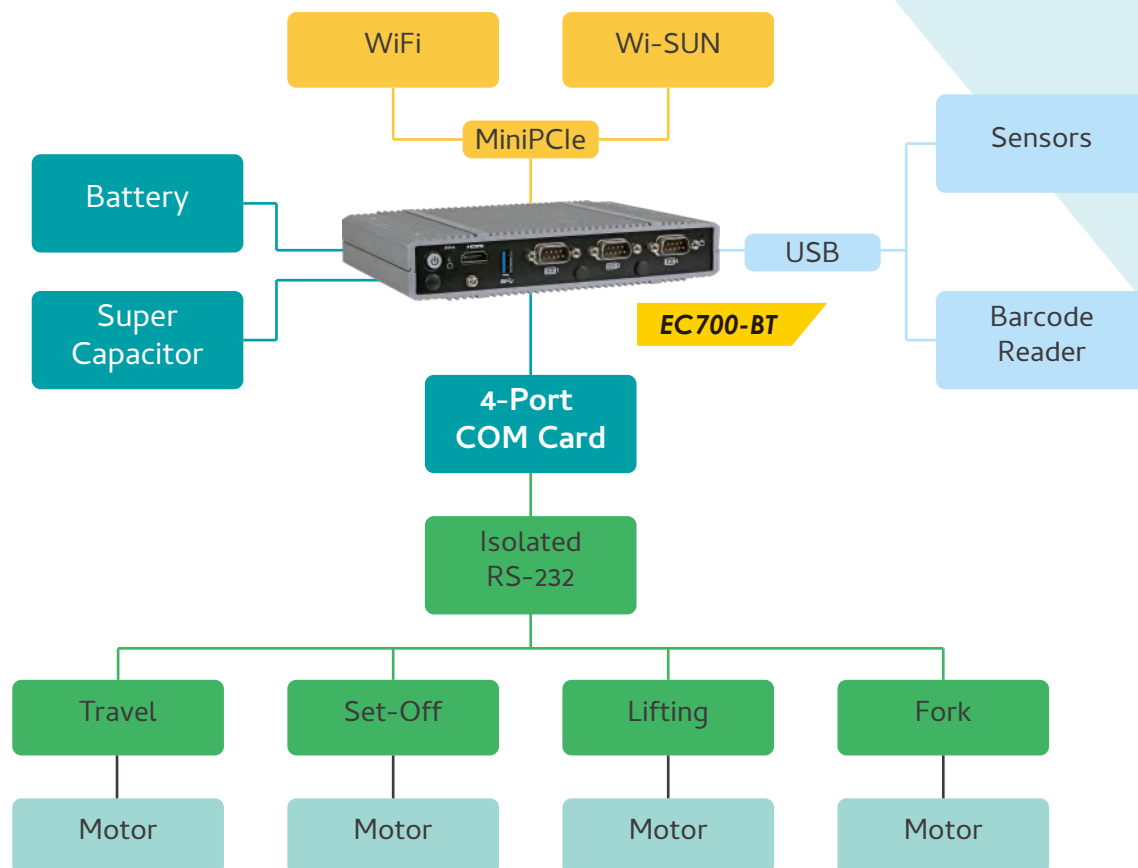Solution: **EC700-BT**

In the shuttle racking system, the shuttle car operates on the rails between the racks according to the command. Compared with the previous driver driving the stacker and working between the rack rails, this can reduce the human resources and be more efficient, stable, and safe. In a warehouse of the same area, there is no need to reserve unique working channels, the floor area ratio can reach twice that of the standard rack. Therefore, for e-commerce, the shuttle racking system is the infrastructure that has to be introduced. The surge in e-commerce orders due to the COVID-19 has prompted e-commerce to be introduced to more advanced technologies in order to improve smart storage.

Due to software compatibility and data integrity, this certain e-commerce company must need Intel Atom E3800 series processors that support Memory Error-Correcting Code (ECC), more than 6 RS-232/422/485 COM ports, and galvanic isolation protection along with strict volume restrictions. However, this e-commerce company cannot find products that fully meet their needs in the market.

Therefore, based on the compact EC700-BT system, DFI quickly customized an expansion card with four additional COM ports, increasing the total number of COM ports to 8 ports. The onboard ECC memory also provides shock resistance and memory data integrity sufficient to withstand rail movement and cargo unloading. The two MiniPCIe can expand the wireless network and add Wi-SUN (Wireless Smart Utility Network) modules in addition to WiFi. The Sub-GHz wireless network enhances the stability of remote control, data transfer, and location. It can also improve indoor positioning accuracy and information collection such as the distance of the moving path to pre-determine the track section's shuttles that need to be maintained in advance.

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WiFi          Wi-SUN
       MiniPCIe                              Sensors
Battery                                      
               EC700-BT            USB
Super                                        Barcode
Capacitor                                    Reader
       4-Port
       COM Card
       Isolated
       RS-232
Travel    Set-Off    Lifting    Fork
Motor     Motor      Motor      Motor
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To improve computing efficiency, DFI cooperates intensely with this e-commerce company to provide a customized application programming interface (API). EC700-BT supports the 15-year long-term supply of CPUs to the fourth quarter of 2030, ensuring a highly integrated software and hardware architecture and a great investment return (ROI).

Founded in 1981, DFI is a leading global provider of high-performance computing technology across multiple embedded industries. With its innovative design and premium quality management systems, 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, mission-critical, and intelligent retail. A more highly integrated inter-shelf shuttle solution will also be the new frontier, where DFI will bring a higher value to e-commerce.

Please click or scan the QR code to fill out an inquiry form if you would like us to contact you.

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