Improving the Combination of RFID with Other Technologies by Means of a Multi-service Device

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Abstract

Complexity in management and control systems of companies is growing everyday. The increasing number of product references involved in production and distribution lines, together with the demand of customers and companies for having updated information of their ordered products are contributing enormously. Moreover, customers are increasingly in favour of the use of new technology when placing their orders, such as on-line booking and purchasing, and their requirements are increasingly greater. These requirements of flexibility and access to information have often been achieved by means of the combination of RFID systems, networks of sensors, etc. However, for companies, it is not always easy to find the best combination of technology. This paper proposes the integration of RFID systems with sensors and wireless networks using one single multi-service controller board. With this device, an analysis of the application of accessing information in real-time, related to a product's condition along the manufacturing and supply chain, has been made possible. To achieve this purpose, several specific operation modules connect with the main board. The modules are active or passive RFID readers, modules with sensors or actuators, or modules for data storage. Furthermore, some other communication modules have been connected to form WLAN, ZigBee or GPRS networks. The use of this device provides a flexible and adaptable solution for companies which look for the best technology to use. Using it, companies have a more reliable and faster access to information in many manufacturing and logistics scenarios. The advantages are clear when all this technology works together: new functions and applications appear with interesting results for different case studies.