

ZB111 Wireless Barcode Readers Provide Immediate Fault Reporting to Minimise Downtime at New Distribution Centre

IDC's ZB111 wireless bar code reader is helping to minimise maintenance downtime and costs in a major (100,000m²) new distribution centre (DC) that IDC has recently automated for a global retailer. The small, battery-powered ZB111 enables supervisors and maintenance engineers at the DC to be notified of problems the moment they arise; this enables fast rectification of problems, such as conveyor jams and chute full conditions, which affect the DC output.

The hand- held ZB111 addresses a problem that is common in most automated distribution centres, where there are can be hundreds of conveyors transferring product/cartons from one area to another. To illustrate this, the DC in IDC's latest project has 250 variable speed conveyor drives, - not to mention 20 Print and Apply Machines, 10 Omni Barcode Scanning Points, 25 Line Scanners, and 75 Handheld Barcode Readers. In distributed systems of this scale, the conveyor drives are usually controlled from a central PLC, which controls the conveyors in sequence using photocells to detect when a box is present on each conveyor.

Under normal operation this is fine, until, that is, maintenance is required on one of the conveyor drive belts. In this situation, adjusting the belt tension for a single conveyor in a long line of conveyors, involves independently stopping and starting of the troublesome conveyor out of sequence. Usually this is an awkward procedure performed using local controls on the front of the electrical control panel, which can be a long distance from the drive in question, and impractical; alternatively local controls can be provided for each drive but this is expensive, both in terms of equipment and installation costs.

In its latest DC project, IDC has overcome all of these problems and made the tensioning operation much quicker and safer, using a ZB111 wireless barcode reader. The ZB111 connects over the ZigBee wireless network to the server, and then to the PLC in the central control panel.

As part of IDC's system, each electrical control panel at the DC has a maintenance/normal run keyswitch; and each drive is fitted with a simple barcode which is a unique number. The maintenance operative first selects the 'maintenance position' on the control panel; he then goes to the drive and scans the barcode on the drive he wants to control. The LCD display on the ZB111 then displays the relative drive number and the conveyor is started using the keypad. Importantly the ZB111- based system is easily configured for variable speed drives and increased safety applications, using a wireless heartbeat update which stops the drive automatically in case of wireless network failure.

The ZB111 is also used to improve operations in the DC by enabling system alarms to be received by specific operators during normal day- to- day operations. For example, maintenance operatives can receive alarms generated by the control system for motor overload or low air pressure and take immediate action. Similarly a supervisor can receive an alarm or warning condition for potential delays, such as conveyor jams and chute full conditions.

The ZB111 has an internal buzzer which sounds when the alarm message is received and displayed on the LCD. A designated button on the keypad is then pressed to accept the alarm, which registers the time it was acknowledged on the server. As a small handheld unit, the ZB111 is ideal for this type of operation: it only requires a small battery is a fraction of the weight of Wi-Fi, Windows CE devices, and can be conveniently worn on a lanyard or carried in a pocket.

IDC supports the ZB111 – and its complete ZigBee wireless range – with its own software solutions, including a standard OPC server interface and a Software Development Kit (SDK), which enables Microsoft Visual Studio .Net developers to develop their own solutions with no requirement for an in depth knowledge of ZigBee wireless networking.

About the ZB111

Designed for wireless mesh operation with licence-free IEEE 802.15.4/ZigBee wireless sensor networks, the ZB111 wireless bar code reader reads all commonly used barcodes and can be used for a variety of industrial, logistics and maintenance applications.

The unit offers the operational benefit of being highly ruggedised, and the cost saving advantages of not requiring cabling, power supplies, or installation. It has low power requirements and is rechargeable from a standard 5vDC/ mains charger.

Easy to use, the ZB111 is provided with a keypad featuring ten keys – which can be individually customised if required – and a graphical display, enabling barcode and interactive messages, commands and prompts to be sent to central Warehouse Management and Manufacturing Execution server- based systems.

The ZB111 is a key component in IDC's comprehensive ZB family of ZigBee modules, which includes Ethernet and serial gateways, routers, micro- controller and handheld devices, These devices provide a comprehensive single source for complete wireless solutions, ranging from simple cable elimination to large- scale, site- wide telemetry systems in a distributed control system architecture.

IDC Ltd

Intelligent Distributed Controls (IDC Ltd) is based in Derby. The company has a highly skilled team of dedicated hardware and software design, development and application engineers. These personnel have specialist application knowledge of control systems applied to logistics, warehouse distribution and manufacturing. This applications experience has IDC enabled to develop key skills in real time control, RFID and wireless technology, and to develop niche products for these industries and related OEMs. IDC's customer base includes Toyota, Toys R Us, BAE, ASDA, GE Aerospace, Balfour Beatty and Vestas Wind Systems A/S
