An AutoPower Corporation White Paper

400 Technology Park
Lake Mary, FL 32746
407-695-7300
AutoPower.com

Steps to installing the AutoPower WMS Barcode Module

Tom Hill
Client Services

January 25, 2012

1. Introduction:

The AutoPower Warehouse Management System (WMS) Barcode System utilizes Radio Frequency (RF) technology to perform data collection and upload/download functions for capturing business transactions throughout the distribution facility. RF Barcode Systems use barcode technology and equipment coupled with specialized software for improving the efficiency and accuracy of managing warehouse and store inventories.

Hardware technology includes POS (point-of-sale) handheld scan guns, Shop Labor Scan Stations, wireless scan guns, remote wireless access points, and label printers. Software technology includes programs for scanning shop mechanic labor time onto Repair Orders, scanning product at time of sale, scanning product during the stock receiving process, inventory cycle counting, stock adjustments, stock relocation, stock inquiry, printing product labels, and bin labels.

2. Terminology

Terminology can often create confusion when discussing any type of technology. Barcode technology can be just as confusing, so you should be familiar with some of the common terms used throughout this document:

- **RF Gun** = radio frequency barcode gun. Some types of barcode guns can operate without the use of attached wires or power cords. Using "RF" technology, this type of wireless barcode gun communicates with the computer using radio wave technology. Mounted from the ceiling, or high vantage point, is an antenna that continuously communicates to the wireless RF gun. Located anywhere in the warehouse, the RF gun is then capable of sending and receiving data from the server.
- **POS Scan Gun** = handheld scan gun, wedge scanner, that is wired to the keyboard of the PC. Such scan guns are used at point-of-sale for scanning the barcode on the part's package to enter the item onto a sales order. This type of scan gun is also used at a Labor Entry station in the shop for logging the time a mechanic spends on a work order.
- **UPC** = Universal Product Code. This 12-digit number is used to print a barcode on a product label. The product label contains additional information that identifies the product part number and may also contain descriptions, Unit of Measure and other data on the label itself. The use of the Manufacturers UPC code is the preferred barcode methodology to be used by the WMS Barcode Module.
- **3 of 9 Barcode** = Barcode labels using the 3 of 9 format can be used when the manufacturer does not provide or does not use UPC barcodes. Be aware that a 3 of 9 barcodes is generated from the part number and is not a fixed length. This can result in a barcode that exceeds the real estate available on a small label. Scanning a 3 of 9 barcode will translate into the part number stored in the AutoPower Inventory Master record.

The AutoPower application will print 3 of 9 labels when the UPC field in the Inventory Master Record is blank.

- I-NUM = Internal Number. This Internal Number is AutoPower's substitution of the UPC code that is created to be assigned to part numbers that do not have a UPC and also require a fixed length barcode. Use of our internally generated barcode has limitations which can create confusion by warehouse staff during the receipt of product into inventory and the desire to scan the part with the RF Gun. This option should only be used when absolutely necessary, such as barcoding product on a showroom floor when the manufacturer does not provide a product UPC.
- **Barcode Label** = 4" x 1" label with a barcode and other product information. The part number's barcode and product information are printed giving in the clear part number, description, and bin location. Should the barcode label be printed during the stock receiving process then additional information such as PO#, Supplier#, receiving date is also printed on the label.
- **Intermec EasyCoder PF8t Printer** = The Intermec EasyCoder PF8t printer features thermal transfer printing, offers compact size, sturdiness, and silent operation, and is perfect for printing barcode labels. The inexperienced or busy user will appreciate Intermec's Connect to Print concept, a standard feature on the EasyCoder PF8t, which makes setting up and printing a quick and easy task. This small label printer is used for printing the barcode labels. It contains a ribbon roll and a roll of 4" x 1" labels. Labels may be purchased through AutoPower.
- **WAP** = Wireless Access Point is designed to address the wireless and wired connectivity needs of the small to medium distribution warehouse. The AP 5131 provides a single-box solution that integrates all services required to extend secure broadband access of the RF equipment to the main server.

3. Considerations

To prepare your facility for implementing the WMS Barcode Module, several tasks or steps need to be considered before fielding an operational barcode system.

A. Determining your equipment needs to implement a complete WMS Barcode Module.

- How many MC9090 RF Scan Guns are needed for receiving inventory into stock, performing cycle counting & physical inventory, shipping/packing, and/or order picking?

.

- How many Wireless Access Points are needed to support the RF Guns purchased to allow for communication with your network? Each antenna has a range of approximately 120 to 300 feet.

- Where will you setup the Intermec Printers for printing bar code labels? Will labels be printed at time of receiving inventory stocks? How many printers are needed?

- Will you be using Wedge devices for scanning barcodes at Point of Sale (POS) for input into sales orders? If yes, how many of these scan guns are needed to connect to your keyboards?

- Cat-5 cable runs will be needed from your switch to the Wireless Access Point and for each Intermec Printer used for barcode labeling. The RJ45 cable run between the switch and Wireless Access Point should not exceed 333 feet.

B. Once you have determined your equipment needs and installed the equipment described above, the AutoPower Warehouse Management System Software modules listed below can be implemented.

- Bar Code Software Package A consisting of the following modules:

  AutoPower RF Software Interface and License
  Bin-to-Bin Transfer Module
  Create PO Module
  Physical Inventory Module

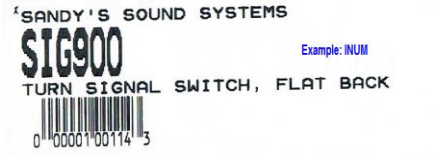
Product Label Program Module
Stock Adjustment Module
Stock Receiving Module

- Bar Code Software Package B consisting of the following modules:

  Order Picking module
  Shipping/Packing verification
  Shipping Label program
  Product Core Return Tag Software

C. Lead-time for the purchase and installation of equipment varies based on type equipment purchased and desired installation date. Usually a 3-week order/ship time is needed to get the purchased equipment delivered to our office and configured. One week configuration lead time is usually required to prepare the equipment for installation.

D. Now you need to decide which type of barcode symbol style (UPC, 3 of 9, I-Num) will be used and internally stored in the Inventory Master Record. The 3 formats supported by the WMS Module software, which were defined in the Terminology section above, are further discussed below. The Intermec barcode printer(s) can print all 3 types of barcodes.



(3 of 9 Label)) (UPC) (I-Num Label)

- UPC barcodes are a fixed length and the UPC data can be requested from your manufacturer for placement on your price update CD's. Not all manufacturers use UPC and some may support 3 of 9 barcodes. Uploading the UPC into the AutoPower Inventory master records is a required function prior to scanning a barcode label.
- 3 of 9 Barcodes are variable length and can present a set of problems that relate to the size of the label they are to print on. As a part number expands in number of characters per inch so to does the barcode become wider. 3 of 9 bar codes may exceed the 1 x 4 inch label size in some instances which would hinder labeling all parts This type of barcode will most certainly exceed the width of small 1 ½ inch price stickers.

- I-Num is a fixed length bar code that is created by the software and is similar to an UPC code. The use of an I-Num will only work with the AutoPower Warehouse Management System Module. It is not a universally recognized code and cannot be used by other activities. Be aware that I-Num labels must be printed for each stock receiver. Such labels must be applied to the stock before any scanning function can be performed.

4. Implementation

The largest task confronting the implementation of the AutoPower WMS Modules is the creation of the barcode labels, applying the printed labels to the product and/or bins. This is a heavy manpower intensive action and critical to efficient and effective use of the WMS Module. Therefore, proper resource planning is important.

- Identify those part numbers that do not have a barcode label. Discuss the best way to produce barcode labels for these products. Preferred order barcode preference is UPC, 3 of 9, then lastly I-Num.
- Upload the Inventory Master Records with the UPC barcode data received for your product lines. If the manufacturer UPC code is not listed as a field on your price file updates, request the product manufacturer provide a text file (or Microsoft Excel spreadsheet) containing the part number and UPC code. To load the UPC code file to the Inventory Master file (INV-MAST) use the Price File Update feature from within the AutoPower application. This step will take considerable time to contact your suppliers and upload the UPC data with the product master. You may have to consider this effort on 50 – 80% of your product lines. **This data is REQUIRED before you can begin using the barcode scanners.**
- To accomplish the update of the UPC manually with the AutoPower system you can take the following actions:

    1. Scan the part's UPC barcode during the receiving process in the warehouse and manually tell the system which part number to reference in the Inventory Master Record for that scanned barcode. The UPC will be updated to the inventory master record. Caution, this method slows the stock receiving process considerably.

    2. Use the RF gun to scan parts already on your shelf with UPC codes and manually tell the system which part number to reference in the Inventory Master Record for that scanned barcode.

    3. Ask the AutoPower software to produce INUM barcode labels which can be affixed to the part.

- The next undertaking is to print UPC barcode labels for each part or at the very minimum a UPC barcode for parts sitting in each stocking location. The average warehouse Distributor has 25 to 30 thousand parts on hand within 100 or so

product lines. This piece of the challenge is a big one and will require some thought and advance preparation.

- Print Bin Location labels to be placed on placards or shelving to properly organize the inventory into geographic zones.
- Assign the bin locations to the individual part numbers.
- Discuss with AutoPower staff the format of the barcode label printed during the Stock Receiving process.

1. Discuss the label content and suggest changes, if necessary. Describe the importance of what is printed and how the label content can be helpful.

2. Discuss the many barcode label variations that appear on the product packaging. Such labels are applied by the manufacturer and are meant for describing various data. For example, a label format may be used for Carton Quantity, or manufacturer warehouse routing, or truck loading routing. In most cases, at least one of the labels is the UPC Item Code. It will be this specific label that the warehouse and counterpersons will scan during the stock receiving process or at POS when adding the item to a customer sales order. So they should become familiar with the UPC barcode style.

- You can begin using the scanners at any time to scan barcodes that have already been loaded into the system. But until all product barcode information is loaded into the product master some barcodes may be meaningless since the system won't be able to translate them into your part number.
- It is also recommended that you complete a physical inventory beforehand if you plan to print your own barcode labels. Having accurate inventory on-hand quantities will assure that the correct number of product labels is printed.

5. Conclusion

Bar code systems, when introduced into the distributors warehouse and shop facilities, will either be a major waste of time and money or create more efficiency, higher productivity, provide for a more accurate inventory, and reduce overall cost of operating your warehouse. It is all dependent upon the commitment made by owners, managers, and warehouse staff during the installation phase of a Warehouse Management System Barcode System.

Good Luck!