

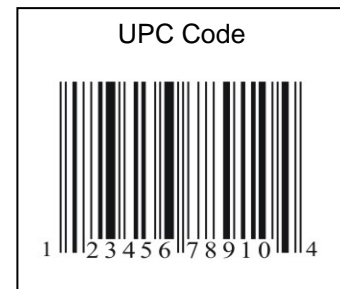


Software Data Sheet Barcode Tracking

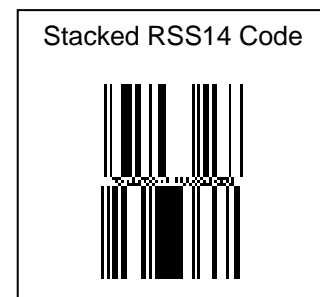
BellHawk® consists of many software modules that make extensive use of barcodes to track raw, WIP, and finished goods materials as they progress through a plant or warehouse from the receiving dock to the shipping dock. Barcodes are also used to track the status of orders, jobs, batches, people, and machines.

Some of the common types of barcode found in a manufacturing plant are:

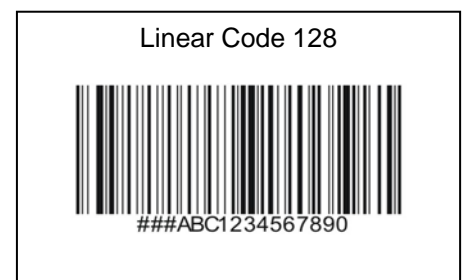
UPC barcodes: placed on finished goods for retail distribution. These consist of a set of bars and stripes that are scanned by a linear or one dimension (1D) barcode scanner. The bars and stripes are coded to hold the UPC assigned manufacturer's code and the manufacturer's assigned product code. UPC codes have consisted of 5 digits for manufacturers followed by 5 digits of product code but are now being extended to include more manufacturer digits as they are coming to be used world wide. The barcode has edge bars for use by the scanner in recognizing the barcode and also has a built-in checksum for error detection.



Stacked barcodes: designed for use by the medical community and other end users wanting to track serialized and dated products. The barcode holds 70 alphanumeric characters consisting of the UPC code plus a serial number and a date. They can be small enough to be placed on a pill casing so that hospitals can verify and record drug dosages using barcode scanning. Stacked barcodes are scanned using two dimensional (2D) barcode scanners, which are typically much more expensive than one dimensional (1D scanners).



Linear barcodes: used for product and material tracking and data entry throughout factories and warehouses. These barcodes have a number of ways of encoding data in the bars and stripes according to their code designation, such as code 39 and code 128. Code 128 is the most commonly used as it can represent all 128 ascii characters that can be typed into a keyboard. Typically code 128 barcodes hold about 16 characters and numbers in a 2x1 inch barcode. They can also be scanned using robust, inexpensive barcode scanners making them ideal for industrial use.



Two dimensional barcodes: used for transferring larger amounts of data. A typical 2D barcode can hold over 1000 ascii characters in a 2x1 inch barcode but requires an expensive 2D laser or imaging scanner to read the barcode. They are typically used for transferring data on shipping labels



between plants and/or warehouses. Typical data encoded in a 2D barcode might include part number, quantity, lot number, manufacturer, date produced, as well as other product specific data such as color or physical properties.

The reasons that BellHawk makes extensive use of barcodes are:

1. Eliminates the need for factory floor or warehouse people to key data directly into an ERP or accounting system. These systems are difficult to use as a result of having many screens with many data entry boxes. This “bloatware” results from trying to produce a software product usable in standard form by hundreds of thousands of organizations. Many of the people who work on a factory floor or warehouse have poor skills in reading and writing English (often English is a second language and many also suffer from learning disabilities such as dyslexia) and, as a result, make many mistakes in data entry.
2. Eliminates the need for people in the warehouse or factory to write down operational tracking data on paper forms and the need for someone in the office to type this data into the computer. This is the classic response to operational employees not being able to do direct data entry into an ERP system. Unfortunately the same people also make mistakes in writing down data, such as transposing digits in a part number. Some of these are caught by the office data entry person and some are not. Also studies indicate that people keyboarding in data typically make at least one keystroke error in 40. This means that every fourth 10 digit part number is wrong, which is one reason that inventory data in traditional systems is never accurate.
3. Eliminates the time that valuable people such as supervisors, managers, and information technology people have to spend trying to find and correct errors in the production and material tracking data. Today, with lean staffs and high material velocities, managers, supervisors and lead people increasingly rely on the computer to help them run their operations. But, the more inaccurate the data, the less use the computer is in helping manage operations. So a lot of time is wasted finding and correcting data-entry errors, especially when they have propagated throughout an ERP systems database.
4. Eliminates time delays in collecting and entering data into an ERP system. With manual data collection and data entry there is often a 24 hour delay between an action occurring in the factory floor or warehouse and the transaction being reported in the ERP system. We speak of the “data lag” between the velocity of material through the plant or warehouse and the velocity of data. Lean manufacturing places great emphasis on minimal inventories with just-in-time delivery and high velocities of many diverse materials flowing through a plant or warehouse. Managers and supervisors cannot keep track of this if the data lags 24 hours on the movement of materials. What is needed is real-time data.



The advantages of using barcodes for data collection are:

1. High degree of accuracy. When a barcode is scanned correctly, the scanner beeps, otherwise it keeps trying to scan as long as the trigger is pressed. The rate of false reads is about 1 misread in 10 million. This does not avoid the problem of someone scanning the wrong barcode but this can be solved by the use of software, such as BellHawk, that does extensive data validation of each item as it is scanned. BellHawk checks each data item, as it is scanned, against the data in its data base and warns the operator in real-time that he or she has made a mistake and that a different barcode needs to be scanned. This avoids getting bad data into an ERP system.
2. Real-time data entry. When a data item is scanned, it is captured and verified in real-time, and then relayed to the operational database server as soon as communications can be established. There is no more delay waiting for someone to key in data that has been written down by hand. The data in the computer now reflects the real-time status of operations and can be used as a valuable management tool to efficiently run factory or warehouse operations.
3. Reduction in labor cost. It takes a lot of time to write down information, then to keyboard it, then to correct the errors. This can amount to many expensive hours each day. With barcode scanning, data collection takes place in less than 1 second per data item.
4. Multi-lingual. Barcode scanning does not require knowledge of any specific language. The employee simply points and scans. This is facilitated by software such as BellHawk that makes extensive use of graphic icons to direct employees as to which barcode to scan. This software also makes extensive use of positional clues, such as on a barcoded traveler or picking form, so that employees intuitively scan the correct barcode.
5. Ease of training. It is much easier to train people to scan barcodes than it is to train them how to write data down on a paper form or to enter the data directly into an ERP system. This is especially true with software such as BellHawk that only takes in one item at a time and prompts the user with icons as to which barcode to scan.

Barcode scanning can be performed using corded or cordless scanners attached to PCs or by using mobile computers with integral barcode scanners. The PCs verify the correctness of the scan and then relay the data over the plant LAN to an operational database server. From here the data may be relayed to an ERP or accounting system. Each mobile computer verifies each transaction against data in its local database and saves up each transaction in this database until the database changes can be synchronized with the server.

BellHawk is designed to be customized so that the data-collection scan sequences can be tailored to the exact requirements of each factory or warehouse data collection situation. This ensures rapid and easy data collection and enables situation specific code to be inserted for data entry validation purposes. Customers are given the Access/VBA source code and can modify this themselves or with the assistance of BSC's technical staff.

For more information please call 1-508-865-8070 x308, or send Email to sales@BellHawk.com, or see our website at www.BellHawk.com.