

## KnarrTek Data Sheet Material Tracking System (MTS)

### Introduction

The KnarrTek Materials Tracking System (MTS) is an industrial warehouse and stock-room management solution that uses License-Plate-Number (LPN) container tracking methods, the same as are used by Amazon, FedEx, and UPS.



MTS tracks containers of materials by lot number, and expiration date, as well as individually serialized items. MTS can also track inventory and assets, by customer and project, at multiple different locations.

MTS is used to track raw, intermediate, and finished goods inventory, as well as floor stock, in manufacturing companies and is used in industrial distribution applications, especially where secondary operations, such as kitting, are performed. MTS is also used for food, medical and pharmaceutical materials tracking, can track the quality control status of materials, and is a CFR 21 Part 11 compliant barcode-tracking system.



In License-Plate-Number (LPN) container tracking, a unique tracking barcode is placed on each container or materials or serialized items that we wish to track. This barcode is then scanned when the container is received, moved, or shipped and also when materials are added or withdrawn from the container.

This is different from conventional inventory tracking or warehouse management systems which track the static quantities of materials at each location in a warehouse. Instead, MTS is able to track materials as they move dynamically within warehouses, as well between warehouses and to and from a production floor. This gives MTS the ability to give its users a real-time view of their inventory at multiple different locations, including materials in-transit and at field locations.

This use of LPN methods gives MTS the ability to track a mixture of materials on each pallet, as materials are added to the pallet in boxes and as individually tracked, serialized items. Movement and shipment of pallets can then simply be recorded by scanning the barcode on the outermost pallet.

Nested container data, captured by MTS, enables compliance with materials tracking standards, such of that of the Department of Defense and the FDA. It also enables MTS to provide and use Advanced Shipment Notice (ASN) data for supply-chain data exchange purposes.



Please see the separate KnarrTek data sheet on License-Plate-Number (LPN) Container Tracking Methods for more details.

## MTS Capabilities

MTS perform the following warehouse management functions:

- Entry or import of Purchase Orders (POs).
- Tracking Vendor vs Internal Part Numbers.
- Recording the receipt and put-away of materials against POs.
- Tracking raw, intermediate and finished materials by floor location or container or bin
- Tracking withdrawal of materials from containers or locations for production or secondary operations
- Recording return of unused materials from production operations as well as returns from customers
- Tracking materials by lot and serial number as well as by expiration date
- Tracking materials in nested containers such as cartons and pallets
- Can enter or import pick orders and perform picking using barcoded picking sheets
- Supports entry or import of Ship Orders
- Records the picking, packing and shipping of materials against Ship Orders in nested containers
- Manages shipping dock operations, including tracking the loading of trucks and prevents loading materials on the wrong trucks
- Performs “Cycle Counting” of inventory as well as perform “Blind” inventory auditing
- Records inventory adjustments and reason codes
- Provides real-time reports and Excel exports for inventory status
- Tracks who entered, moved or withdrew inventory and when
- Tracking assets, such as tools, who they were issued to, and where they are located.
- Can track materials in multiple stock rooms and warehouses, including off-site warehouses as well as floor stock in manufacturing plants.
- Can track the quality control (QC) status of materials and prevent their picking or shipping if they have not yet passed inspection.
- Maintains materials traceability records, recording who materials were received from and shipped to.
- Can be used in warehouse-on-wheels and delivery applications.
- Can keep materials separated by project and record when materials are transferred from one project to another.



## MTS Technology



The KnarrTek MTS software consists of a specialized website and a SQL server database, which run on a Windows Server computer. This software can be installed at a client's own data center or used on servers managed by KnarrTek at secure data centers in the USA through its BellHawk Online service.

Each organization gets their own private website and database. This ensures privacy of data for long-term users of MTS through BellHawk Online. It also enables clients to quickly start out using MTS using BellHawk Online and then to easily transition to installing the software on their own server.

With MTS, data can be collected using any web-browser based device with an integral or attached barcode scanner. No special software is required to be installed. Just point the device's web-browser to the URL of the client's MTS website and start collecting data.

Information collected in the SQL Server database can then be viewed from any web-browser based device, including mobile phones, over a secure encrypted data link, anywhere a user has an Internet or Intranet connection.

The MTS software is based on a rules-based expert-systems engine that enables the MTS system to be readily configured and customized for a wide-variety of applications by clients importing rules in the form of Excel spreadsheets.

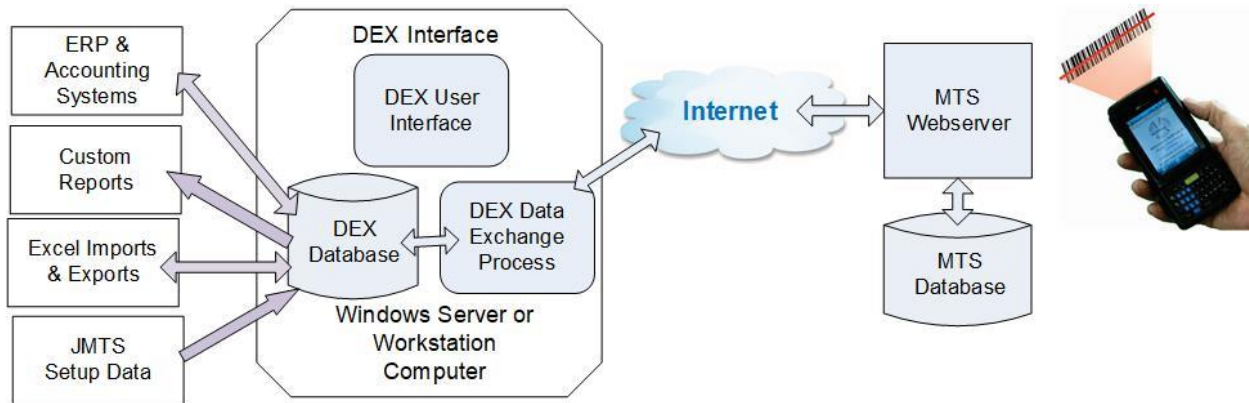
MTS does not need the use of a barcode label printer as barcoded picking sheets can be printed out using an office laser printer. MTS can also use preprinted rolls of LPN tracking barcodes to track containers of material.



Where printing of custom barcode labels is required, clients may use the optional TAG Barcode Label Printing software in conjunction with barcode label printers to print out barcode labels where needed.

The optional DEX interface provides a local "mirror" of the MTS database. Writing data to tables in this local database automatically causes the corresponding tables in the MTS database, which may be running at a remote data center, to be automatically updated. Also, all the transactional data captured by MTS is automatically mirrored into the local DEX database.

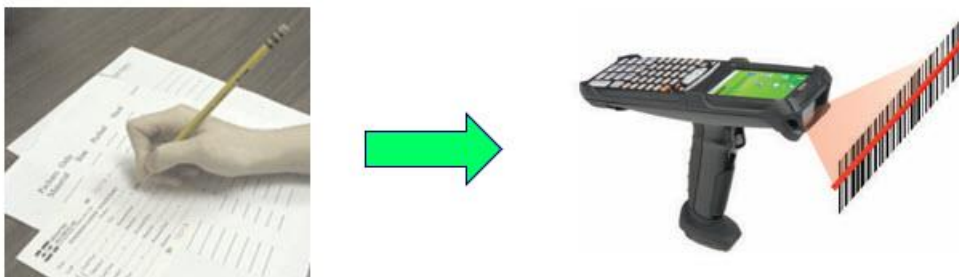
The DEX interface can be used to implement automated data exchange data with ERP, accounting, and CAD systems. Also, software, such as Access and Excel, or other report generation software, can be linked to the DEX database and used to produce custom reports.



DEX comes in two versions:

1. DEX2 – which is a computer program which can be installed on a user’s PC to exchange data between a local SQL Server Express DEX database and MTS. This can be used to send data to MTS and to create ad-hoc reports and Excel exports.
2. MDEX – which runs as a service on a client’s Windows Server and has a web-browser user interface. This is used for implementing automated interfaces with ERP, accounting, and other systems, as well as creating custom reports that will be used repeatedly.

### Benefits of MTS



1. Easy to use software saves the labor of manually writing data down on paper forms and manually keying it into a computer program and replaces it with rapid barcode scanning.
2. Gives real-time status of materials in multiple locations and warehouses, including materials at field and construction sites and on shop-floors.
3. Tracks materials at multiple locations, in multiple warehouses or on production floors, in-transit, or in the field or at a construction site.

4. Prevents mistakes in picking and shipping the wrong materials or in loading materials onto the wrong trucks/trailer.
5. Prevents mistakes in picking or using materials purchased for one project on another project.
6. Helps prevent mixing-up materials for different projects or belonging to different customers.
7. Prevents picking or shipping materials that have expired or not yet passed QC inspection.
8. Can automatically exchange data with a wide-range of ERP and accounting systems.
9. Can automatically print GS1 barcode labels in customer specific formats and use these as the basis of sending ASN data to customers and their distribution centers.
10. Can receive ASN data from supplier and use this to simplify and speed check-in of incoming materials.
11. Can track the contents of pallets containing many different materials with a single pallet tracking barcode.
12. Suitable for use in food and pharmaceutical warehouse and stock room applications.

### **Commentary**

The KnarrTek MTS Materials Tracking System is based on the BellHawk real-time work-in-process, job and material tracking software platform, which is licensed by KnarrTek from Milramco LLC. For more details about the BellHawk Software Platform, please see the “BellHawk Software Handbook”, which describes this software in great detail. The DEX interface is based on the MilramX™ automated information exchange software platform which is also licensed by KnarrTek from Milramco LLC.

### **For more information**

Please send an Email to [Sales@KnarrTek.com](mailto:Sales@KnarrTek.com) or see [www.KnarrTek.com](http://www.KnarrTek.com) for more details.