



WHITE PAPER

Understanding aSa Barcoding Solutions



| The Complete Rebar Solution®

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Overview

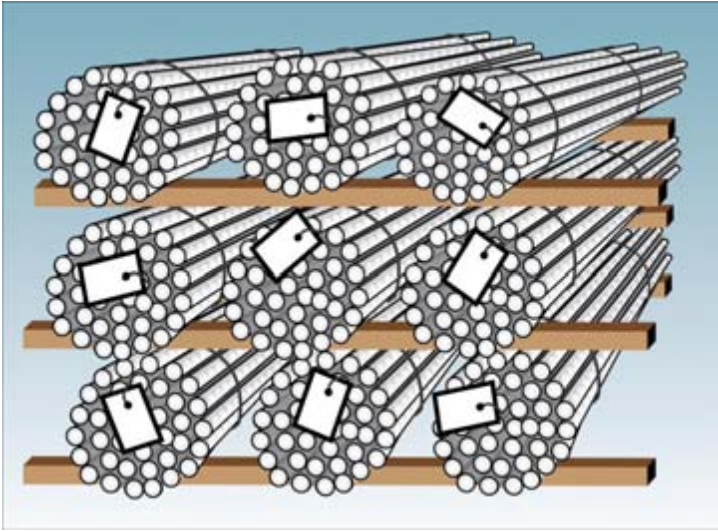
aSa has developed a unique approach for tracking vital information in terms of equipment, operator, material, cast/heat number, and other critical data that is centered around the powerful Bundle Inventory, Material Tracking, and Load Tracking modules.

The aSa TouchTracker operates with any type of machine or process, regardless of the level of automation. We use an industrialized touch panel computer that is positioned near each piece of equipment; the touch panel is attached to the local area network either by a standard CAT5e cable or via a wireless connection. A 2D barcode scanner with a USB cable (or optional Bluetooth) is connected to the touch panel for scanning bundle tags and other barcodes, such as operator badges and mill bundle barcodes. A serial wire connects each touch panel to a corresponding automatic rebar machine. This connection allows the TouchTracker to send automated cutting and bending instructions to the machine. Interaction between the operator and TouchTracker eliminates missed or blind barcode scans. After every barcode scan, the operator receives instant feedback on the touch panel screen showing the completed scan. In the event of an error condition, the operator is alerted to the situation, and the problem can be corrected before going on to the next step. Our touch panel connects to a variety of equipment with vastly different capabilities. Our unique approach and extensive experience provides our customers with the most thorough data collection capabilities in the rebar industry.

Wireless handheld barcode scanners enable mobile scanning for activities such as inventory counts and trailer loading. The handheld units also have a screen that allows for interaction between the mobile tracker and the operator. Wireless mobile scanners play an important role in the overall Bundle Inventory, Material Tracking, and Load Tracking process.

The following sections describe just a few of the many ways aSa barcoding solutions validate, capture, and manage critical fabrication data using TouchTracker and Mobile Tracker devices.

Tracking On-Hand Material



When stock bundles arrive from the mill, they can be easily received into the aSa system:

- If your mill uses the industry standard barcode format developed by the Concrete Reinforcing Steel Institute (CRSI), simply scan the mill bundle tag.
- If mill bundle tags do not have the industry standard barcode, a simple input screen can be used to record the bundle receipts.

Based on receipts, the system stores the material characteristics of the stock steel, including grade, diameter, coating, the producing mill, and heat/cast information. When the stock bundle is opened for fabrication, the operator scans the bundle inventory tag.

When the *bundle inventory* tag is scanned, the TouchTracker:

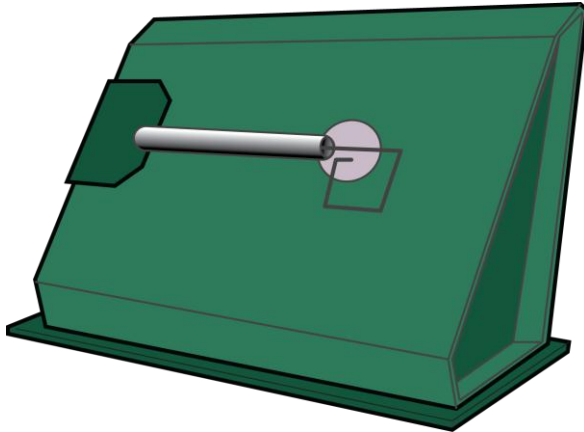
- Relieves on-hand inventory
- Validates that the material in the stock bundle matches the material to be produced

If you don't use all the pieces in a stock bundle, simply enter the quantity remaining, and the system tracks the partial bundle automatically. If cutting results in re-usable remnant lengths, you can print inventory tags to track your remnant bundles. At any point, you can create reports and inquiries that show the exact status of your on-hand inventory. Wireless scanners have a special book-to-physical mode that allows you to reconcile database values with actual counts from the plant floor.

Fabricating Steel

The following describe a few of many possible scenarios for tracking fabrication in a rebar plant.

Coil Machine



At the start of the coil machine operation, an inventory tag is scanned. Critical information such as diameter, grade, quantity, length, and producing mill is presented to the operator. Now that the coil information is available, the operator can start fabricating the order by scanning the *item* tags that need to be produced.

When the *item* tag is initially scanned, the TouchTracker:

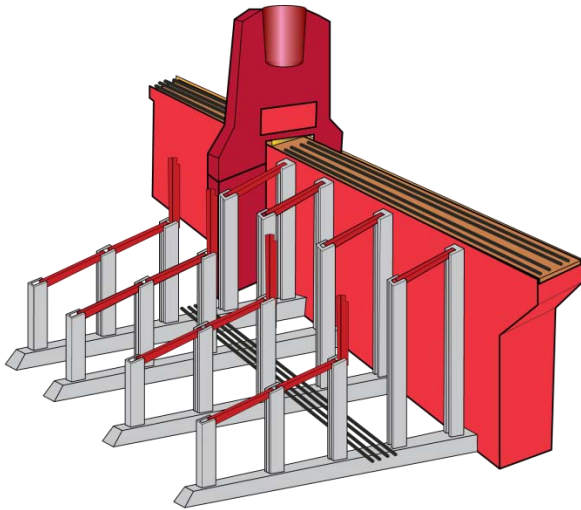
- Downloads the cutting and bending data to the coil machine for fabrication
- Associates the heat/cast number to that specific fabricated item
- Captures the start time of the bending process for the bundle of steel

When fabrication is complete, the operator scans the item tag a second time. The TouchTracker:

- Calculates the elapsed bending time and updates the database
- Records the bundle's fabrication status — including the operator, machine, and date and time of the operation — in the database
- Integrates with aSa Plant Manager, providing real-time production status information

If the open bundle is not complete, the TouchTracker prompts the operator accordingly and allows the bundle to be paused or suspended, temporarily allowing the operator to work on another bundle. When the unfinished bundle tag is scanned again, the process clock starts and work resumes.

Shearline

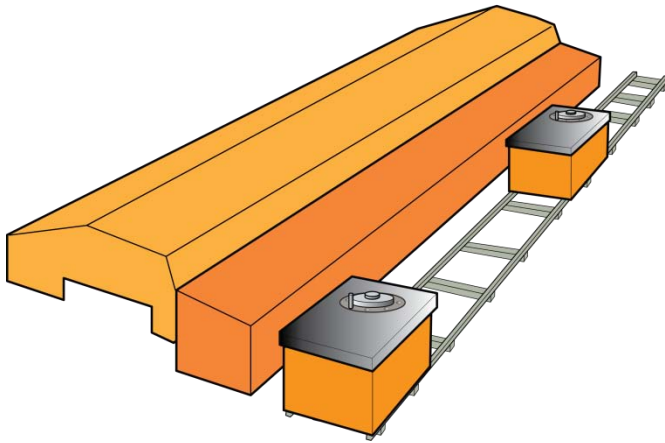


At the start of the shearline operation, an inventory tag is scanned. Critical information such as diameter, grade, quantity, length and producing mill is presented to the operator. Now that the stock information is available, the operator can start shearing the orders.

When the *item* tag is initially scanned, the TouchTracker:

- Validates that the correct stock material is being used for the item
- Associates the heat/cast number to that specific sheared item
- Records the bundle's fabrication status — including the operator, machine, and date and time of the operation — in the database
- Integrates with aSa Plant Manager, providing real-time production status information

Automated Double Bender



When the *item* tag is initially scanned, the TouchTracker:

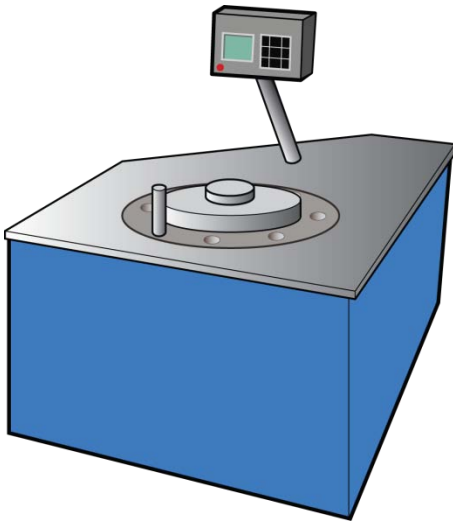
- Downloads the bending data to the machine for fabrication
- Captures the start time of the bending operation for the bundle

When the fabrication is complete, the operator scans the item tag a second time. The TouchTracker:

- Calculates the elapsed bending time and updates the database
- Records the bundle's fabrication status — including the operator, machine, and date and time of the operation — in the database
- Integrates with aSa Plant Manager, providing real-time production status information

If the open bundle is not complete, the TouchTracker prompts the operator accordingly and allows the bundle to be paused or suspended, temporarily allowing the operator to work on another bundle. When the unfinished bundle tag is scanned again, the process clock starts and work resumes.

Manual Table Bender



When the *item* tag is initially scanned, the TouchTracker:

- Captures the start time of the bending operation for the bundle

When fabrication is complete, the operator scans the item tag a second time. The TouchTracker:

- Calculates the elapsed bending time and updates the database
- Records the bundle's fabrication status — including the operator, machine, and date and time of the operation — in the database
- Integrates with aSa Plant Manager, providing real-time production status information

If the open bundle is not complete, the TouchTracker prompts the operator accordingly and allows the bundle to be paused or suspended, temporarily allowing the operator to work on another bundle. When the unfinished bundle tag is scanned again, the process clock starts and work resumes.

Machine Delay (currently under development)

At the beginning of each shift, the operator logs into the TouchTracker by scanning an employee badge. This initiates the machine clock. If the touch panel does not see activity through barcode scanning within a specified amount of time, the TouchTracker prompts the operator to choose from a list of reasons for the delay, such as:

- Waiting for stock material
- Waiting for fabricated material to be evacuated from machine
- Operator on break

- Machine broken
- Machine maintenance

The system allows you to add and modify the list of reasons for delays. The time that is associated with the delay is accumulated and recorded with a time/date stamp in the database, relative to the appropriate reason code, for subsequent management reporting and inquiry. The TouchTracker will switch back to a normal running state when the appropriate barcode is scanned or function is selected on the touch panel.

Loading Trailers for Shipment



To initiate the trailer loading process, the operator scans a special “load” tag that identifies the shipment. As bundles are loaded onto the trailer, they are scanned with wireless aSa scanners.

When the *item* tag is scanned at trailer loading, the Wi-Fi scanner:

- Validates that the bundle has completed all required fabrication steps, such as shearing, bending, and/or end preparation
- Validates that the bundle is being loaded onto the correct trailer
- Records the bundle’s load status — including the employee, trailer, and date and time loaded — in the database

At any point in the process, the operator can perform helpful inquiries on the scanner, such as viewing a list of bundles remaining to be loaded.

When the trailer is completely loaded and ready to depart for the jobsite, the *load* tag is scanned. The load scan:

- Records the date and time the shipment left the plant

Conclusion

In summary, the aSa tracking solutions capture the following valuable management information:

- When the item bundle is complete
- Which operator completed the bundle
- Which machine completed the bundle
- How long it took to complete the bundle
- How much tonnage was produced by the operator
- How much tonnage was produced by the machine
- The cast/heat number that was used to produce the bundle
- How long the machine was running (currently under development)
- How long the machine was idle and the specific reason why it was not running (currently under development)
- When each bundle was loaded for shipment
- When each shipment left your plant
- Real-time inventory of all on-hand stock and remnant bundles

This information can be captured for every machine and work center in the plant, regardless of make and model of machinery, process, or automation level. You can create an unlimited number of reports and inquiries using aSa Customer Report Manager and Inquiry Manager.

aSa Plant Manager

PGH
Philadelphia
Charlotte

Outside Stock Yard
Employees

6/7/2009
6/13/2009

J.C. Rodriguez

JC

Bay 3

Percent Loaded	86%
Last Tag Scanned	1300530010
Date/Time Stamp	5/23/2009 10:56:24 AM
User	Brad Grace
Control Code	26T
Job Name	Grove Elementary School
Customer	Nutting Construction
Heat	09-65544
Load #	0902-00017
Trailer	TRL3
Bar Size	9
Grade	60
Coating	B

aSa Material Tracking / Bundle Inventory

TouchTracker and Scanner



Handheld WiFi Scanners



Motorola MC75A

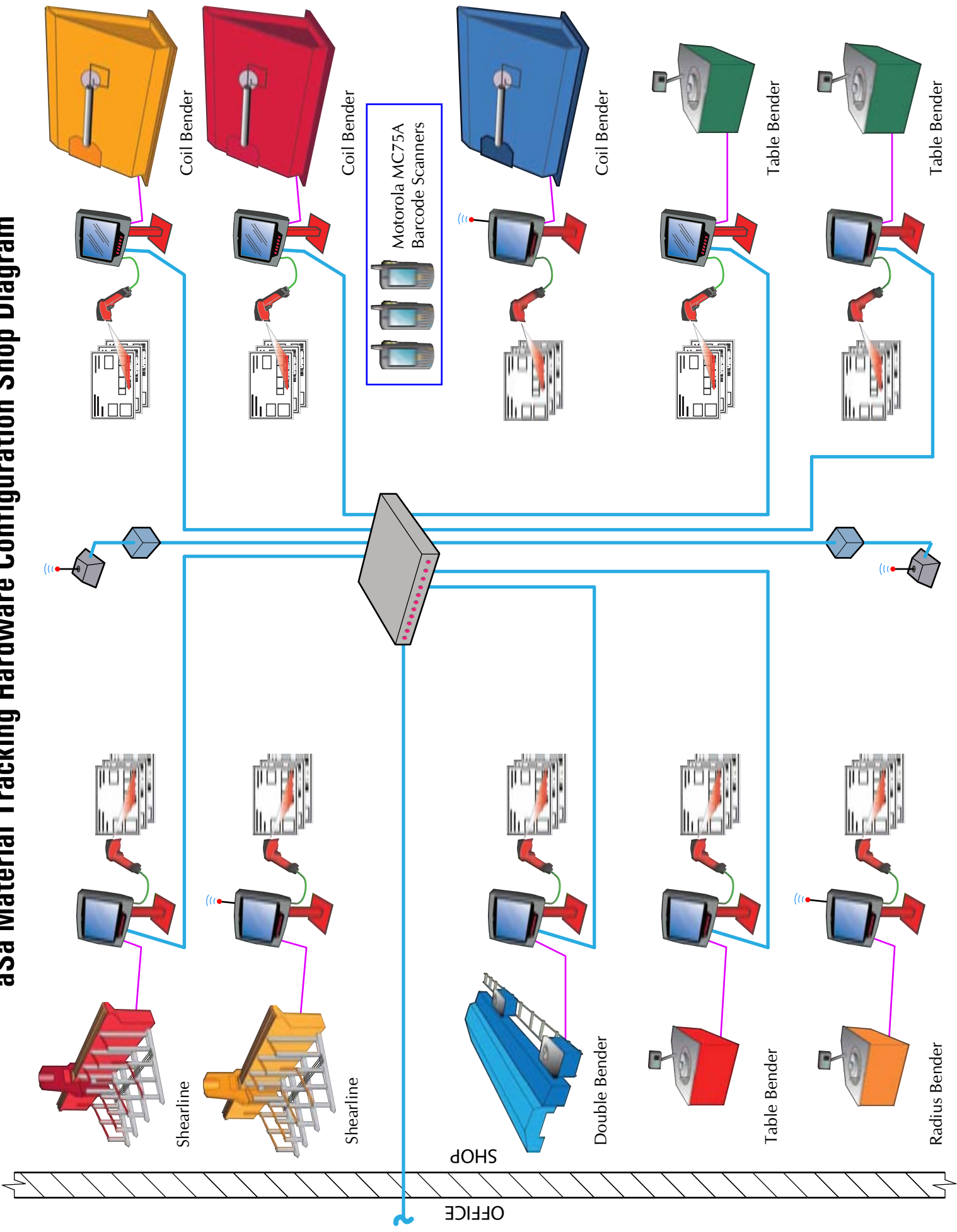


Motorola MT2090



Motorola MC9090

aSa Material Tracking Hardware Configuration Shop Diagram

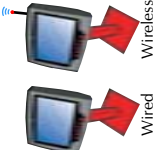


aSa Material Tracking Hardware Configuration Office Diagram

SHOP



Machine (Shearline, Coil Bender, Straight Cut, Double Bender, Table Bender)



TouchTracker Terminal, Stand, and Mounting Arm (requires 110-220v power)*
Unit can be wired to network or wireless



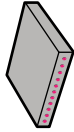
Honeywell 2D Barcode Scanner with USB Cable



aSa Barcoded Label/Tag



Motorola MC75 Wireless Scanner (base/charging unit requires 110-220v power)



Gigabit Switch/Wireless Access Control Unit (requires 110-220v power)



POE Injector for Wireless Access Point (requires 110-220v power)



Indoor Wireless Access Point/Outdoor Antenna (max. 300 ft. coverage)

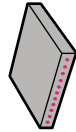


CAT5e Network Cable with RJ45 connectors*



DB9 Serial Cable (null modem - female to male)*

OFFICE



Gigabit Switch (requires 110-220v power)



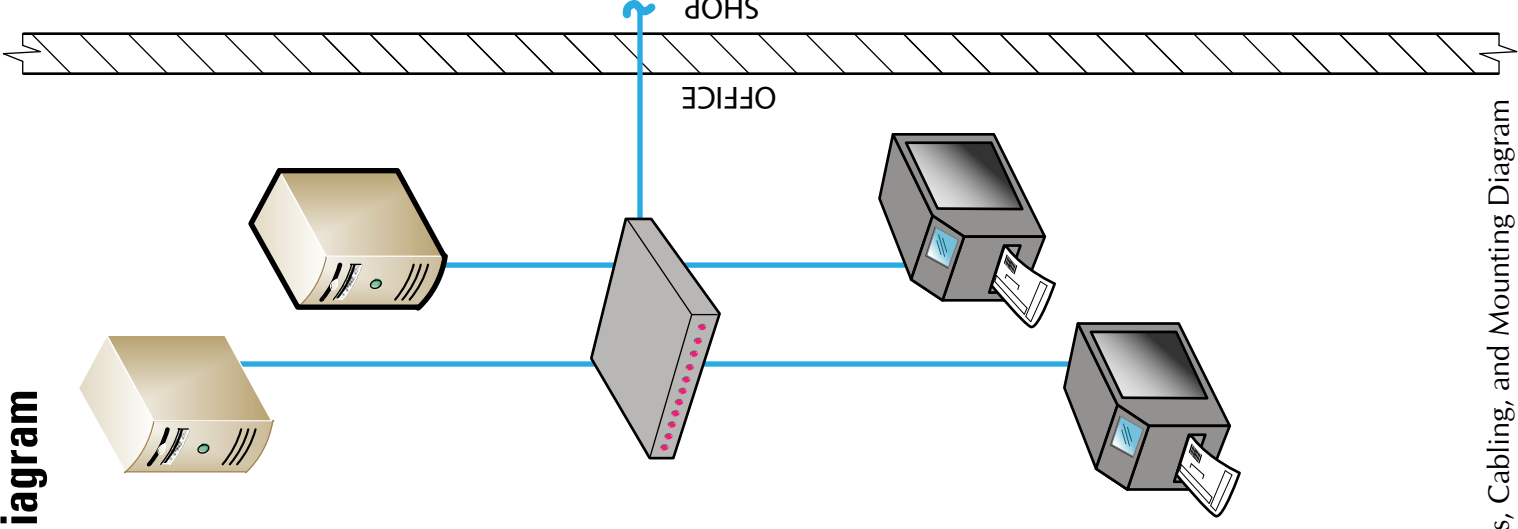
Database Server and Terminal Application Server (requires 110-220v power)



Laser or Thermal Label/Tag Printers (requires 110-220v power)



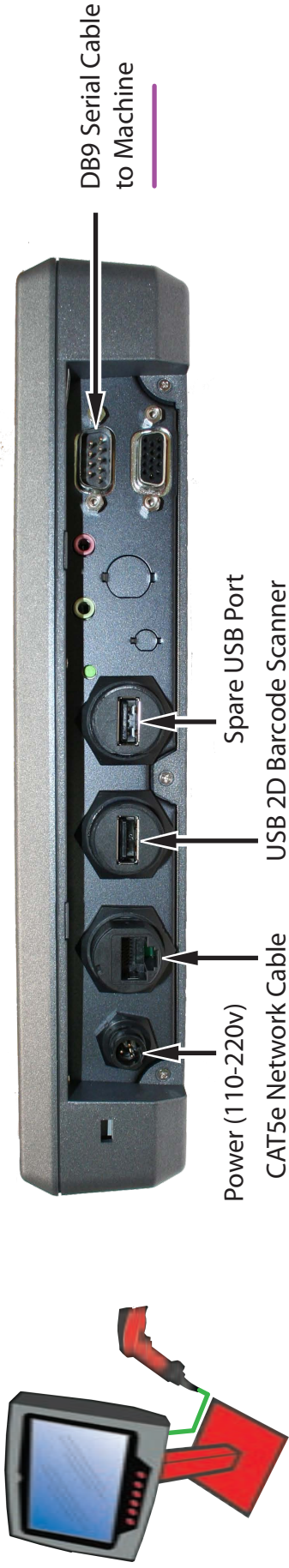
CAT5e Network Cable with RJ45 connectors*



LEGEND

* See aSa TouchTracker Connections, Cabling, and Mounting Diagram

aSa TouchTracker Connections, Cabling, and Mounting Diagram



Not included - purchased by customer based on regional standards



To TouchTracker Power

TouchTracker Power Brick and Cables (110-220v)

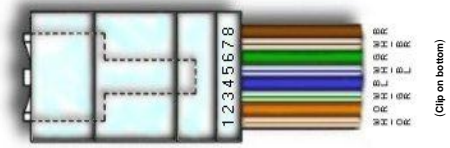
CAT5e Network Cable

DB9 Serial Cable to Machine

Industry Standard T-568B for CAT5e pinouts

On one end of the cable use the T-568B Industry standard pinouts:

Pin	Color	Name
1	orange/white	TxData +
2	orange	TxData -
3	green/white	RecvData+
4	blue	RecvData-
5	blue/white	
6	green	
7	brown/white	
8	brown	

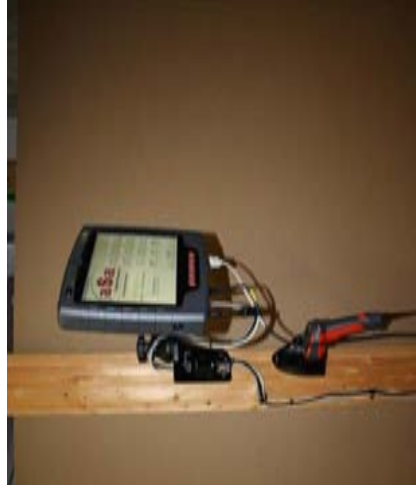


When viewed from the front of the connector, i.e. not the pins solder side.

The pin numbering layout used can be seen in the table below.

Signal	Pin(s)	Pin(s)
Transmit Data	TD	2
Receive Data	RD	3
Request To Send	RTS	7
Clear To Send	CTS	8
Signal Ground	SG	5
Data Set Ready	DSR	6 + 1
Carrier Detect	CD	4
Data Terminal Ready	DTR	4
		1 + 6
		5
		9
		6
		RD
		TD
		CTS
		RTS
		SG
		DTR
		CD
		DS

aSa TouchTracker Mounting and Scanner Options



Wireless Scanners



Motorola
MC9090



Motorola
MC75A



Motorola
MT2090

