



The Motorola MC9500-K intelligent battery:

Reduce costs, increase productivity and protect profitability through more efficient battery management



Featuring Motorola Mobility Architecture eXtensions (MAX)

Motorola Mobility Architecture eXtensions (MAX) allows Motorola mobile computers to deliver extraordinary value — a truly unprecedented return on investment (ROI) and total cost of ownership (TCO). This unique set of Motorola features turbo charges Motorola mobile computers, driving ease-of-use, ease-of-management, flexibility, modularity, lifecycle and overall system performance to new heights. Features in the MC9500-K include...



MAX Rugged

With MAX *Rugged*, you can count on a device built for the most demanding business environments. A minimum of three specifications — industry leading mechanical stress and endurance tests plus environmental sealing — insures dependable performance and maximum lifecycle.



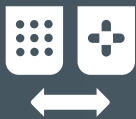
MAX FlexWAN

Customer upgradeable 3.5G WAN offers true WAN technology independence. Purchase the MC9500-K with or without the WAN subsystem and add or change WAN technologies (GSM/CDMA) as needed right in the backroom — no need to return the device to a service center.



MAX Backroom Management

This game-changing backroom management approach eliminates the high cost of 'rip and replace' in the backroom with a future-proof Universal Accessory System that supports the Motorola MC9500-K, popular existing Motorola mobile computers as well as future generations of Motorola mobile computers.



MAX Keypad

A modular keypad architecture allows the exchange of keypads in minutes, right in the backroom, allowing the mobile computer to adapt to changing application requirements and enabling instant on-site replacement in the unlikely event of keypad damage.



MAX Battery

Information indicators integrated into the battery itself, displaying the state of charge and the state of health. Users can be sure that they start the day with a battery capable of lasting a full shift — and backroom managers can more efficiently manage the battery pool.



MAX Sensor

Offers true enterprise class Interactive Sensor Technology (IST), including dynamic screen orientation, power management, free fall detection and the ability to integrate motion-related data into customized applications.



MAX Secure

MAX *Secure* provides the security features required to ensure secure data transmissions over either the WLAN or the WWAN — including highly sensitive applications in government and public safety.



MAX Data Capture

Integrate best-in-class advanced data capture functionality, including: 1D, 2D and DPM bar code scanning; signature capture; high resolution image and document capture; RFID and more.



MAX Locate

Best-in-class implementation of locationing technology, such as GPS, for line-of-business applications that further increase user productivity and ensure business continuity.

Motorola's unique new battery offers an industry first — an integrated display that provides state of charge and state of health. The resulting real-time battery information enables better battery management, reducing battery related costs and protecting end user uptime.

The challenge — the high cost of inefficient battery management

For mobile computer users, proper battery management is just as important as the performance of the mobile computer itself. Lack of battery power can affect everything from customer service to profitability — and in some cases even human lives. First responders and military personnel rely on voice-enabled mobile computers for critical communications as well as the collection of crucial data. Direct store delivery (DSD) drivers depend on mobile computers to complete on-the-spot order processing and invoicing. Field maintenance personnel count on mobile computers to access information required to service business-critical equipment. And salespeople count on mobile computers to check inventory, pricing and place orders.

In order to ensure full shift operation, users need to start the day with a battery that is not only fully charged, but also healthy enough to hold a full charge. But charging status is often not easy to access, and information on the health of the battery is typically non-existent. While battery charging status is typically visible whether batteries are charged in a standalone battery charger or in a mobile computer that is in a charging cradle, it is not intuitive or easy to determine the state of charge or state of health once batteries are placed into the battery pool, such as a pile or bin. In addition, the health of the battery is typically determined in an informal fashion through trial and error — users discover that a fully charged battery did not last as long as expected, and may or may not remember to report that fact at the end of the shift. The lack of easy access to real-time battery information can result in the selection of a battery with a partial charge, or a battery that is no longer capable of holding a full charge. Either of these events can result in device and user downtime in the field, which could be costly.

To ensure ample battery power for a full shift, enterprises typically maintain a battery pool large enough to allow users to carry a minimum of one spare battery at all times — with additional spares to compensate for aging batteries that have not yet been identified and removed. However, in an economy where businesses are pressured to cut costs, this approach increases capital and operational costs. In addition to the cost of the batteries, there is the time and effort required to manage and maintain a larger battery pool, the time users spend managing batteries and the impact of downtime in mission-critical mobility applications when battery power is not available.

The solution — an intelligent battery display with information indicators

The patent-pending battery in Motorola's MC9500-K mobile computer offers a unique battery strategy that addresses these issues, allowing both users and backroom managers to better manage batteries — and to substantially reduce battery-related business costs. This simple solution enables literally anyone to select a fully charged healthy battery — eliminating guesswork along with the need to analyze batteries and decipher results.

Information indicators on the battery itself provide end users and backroom managers with instant access to the two crucial battery statistics:

- **State of charge:** Reveals whether or not the battery is fully charged.
- **State of health:** Reveals whether the battery is still capable of holding a full charge or if there is permanent capacity loss that translates into an increase in downtime.

Figure 1: MC9500-K Battery Display — Intelligent Information Indicators



Since the display indicators are integrated directly into the battery, the information is available at all times — regardless of whether the battery is installed in an MC9500-K mobile computer, a battery charger or in a pile of spare batteries in a box. When batteries are in a charger, the display is automatically activated. Whether batteries are installed in the MC9500-K or standalone, a quick press of the status button activates the display. As a result, battery status is always available, removing the guesswork entirely from your battery management practices.

End-user benefits

When end users pick up their MC9500-K mobile computer at the beginning of the workday, they can easily determine if the battery has enough charge and if it is healthy enough to last a full shift. In the event users carry a backup battery as well, workers can easily locate and select a fully charged healthy battery from the battery pool. As a result, workers always start the shift with healthy batteries capable of providing full shift power, which in turn:

- **Protects worker productivity.** Users no longer need to spend time locating and installing a healthy battery. In addition, the real-time

connection to needed business applications throughout the workday is no longer at risk. Continuity of the connection to back-end business systems protects workflows, ensuring that the workforce can perform transactions when and where required — ultimately protecting customer service, satisfaction and retention.

Backroom manager benefits

The unique display on the MC9500-K provides a multitude of benefits for the backroom manager:

- **Easy and cost-effective maintenance of a healthy battery pool.** Backroom managers can instantly spot batteries that have exceeded their useful life, enabling prompt removal and replacement. The battery pool now contains only healthy batteries. Backroom manager productivity is improved — hours previously spent testing batteries can now be spent on more business critical tasks.
- **Streamlined battery procurement.** Rugged mobile computers typically have a lifecycle of approximately three to five years. Throughout the course of this period, the primary battery

and spare battery pool will generally require replenishment one or two times. For enterprises with long purchasing lead times, lack of visibility into real-time battery health information may make it difficult for backroom managers to start the purchasing process early enough to maintain an ample supply of healthy batteries for the mobile workforce. But the real-time visibility into the health of each and every one of your batteries allows backroom managers to better project and execute battery replenishment.

Enterprise benefits

In addition to specific benefits for end-users and backroom managers, the patented MC9500-K battery also provides a number of benefits for the enterprise as a whole:

- Reduces battery costs.** Visibility into the real-time health of the battery and battery spares pool reduces required battery inventory levels — and the costs associated with replenishing and managing batteries.
- Improves field workforce productivity.** Workforce downtime due to lack of battery power is virtually eliminated, protecting worker productivity and eliminating the high cost of an idle worker.
- Improves backroom manager productivity.** The hours required to determine the health of the battery pool is nearly eliminated, improving workforce utilization and freeing backroom managers to handle additional tasks.
- Protects cash flow and data accuracy as well as customer service, satisfaction and retention levels.** If your field workforce is unable to execute a transaction in the field, service levels and revenue can be impacted. If a sales person is unable to place an order on the spot, the order may be lost. If a direct store delivery driver cannot create an updated invoice that accounts for any returns and additions to the order, a manual invoice must be generated, which can add days and even weeks to the order-to-cash cycle — further increasing the likelihood of errors. The ability to consistently provide your field workforce with dependable and healthy batteries ensures continuity of connection to your business systems — ultimately protecting your customer base and your profitability.

Battery management that delivers a real return on investment (ROI)

As the tables below illustrate, the ability to easily determine the state of charge and state of health of a battery can translate into major direct and indirect tangible cost savings. The following company profile was utilized to compute savings:

Company profile: mid-to-large size enterprise

20 locations
 30 MC9500-K mobile computer users per location
 (1) 8-hour shift per day
 600 total users

Battery direct cost savings

The following table illustrates how the MC9500-K intelligent battery can help a mid to large size enterprise achieve a capital savings of approximately 36 percent on hard battery costs.

	Standard Battery	MC9500-K Battery
Total # of users	600	600
# Batteries allocated per person*	2.5	2
Total battery pool	1,500	1,200
Average battery cost	\$70	\$70
Total capital investment per battery pool	\$105,000	\$84,000
# Replenishments**	2.5	2
Total battery investment over the lifecycle of the mobile computer	\$262,500	\$168,000
Total capital savings with MC9500-K intelligent battery:		\$94,500 (36%)

* The reduction in the size of the battery pool is a result of the real-time visibility into the health of all batteries in the pool, eliminating guesswork in battery management.

** Real-time visibility into the health of all batteries in the pool prevents discarding of healthy batteries sooner than necessary.

Battery-related indirect cost savings — user productivity

The chart below illustrates that even if employees spend just one minute changing batteries, the time can add up to a substantial loss in employee productivity.

The cost of...	
# of business days	260
# of locations	20
# of users per location	30
Total # of users	600
# 8 hour shifts per day	1
# of minutes allocated to change batteries per day per user	1 minute
Total hours spent changing batteries (# users x # of business days x 1 minute/60)	2,600 hours
Fully loaded employee hourly cost	\$50
Total annual cost in lost employee productivity	\$130,000

Other indirect costs can include:

- The cost of downtime when a user in the field must return to the office for a new battery
- The impact of that downtime — inability to meet promised delivery times can result in lower customer satisfaction and even a lost customer

The MC9500-K and its intelligent battery combine with other unique MC9500-K power management features to enable a single battery to typically power a full shift. Field worker productivity and customer service are protected. And the hours the enterprise spends to manage batteries — as much as a staggering 2,600 man hours in a medium to large size business — can be much better spent on direct revenue generating activities.

Summary

The Motorola MC9500-K intelligent battery allows users and backroom managers to greatly improve battery management efficiency, and the enterprise to substantially improve the productivity of the field workforce. Users have the information they need to determine if the batteries in their devices are healthy, properly charged and able to provide full shift power. Backroom managers can ensure that each and every battery in the pool is healthy, properly charged at all times, capable of providing full-shift power. As a result:

- Battery inventory levels can be reduced, lowering capital and operational costs related to the purchase and management of the battery pool.
- Downtime due to lack of battery power is eliminated, improving utilization of the mobile computer, mobile computer battery and the field workforce.
- Backroom battery management processes are streamlined — time wasted testing batteries is eliminated, improving the utilization of the backroom workforce.
- A more dependable connection to your business systems protects customer service and satisfaction levels.
- Users can depend on ample battery power:
 - Improving business agility and protecting response times — your workers are always out in the field, ready to handle urgent requests, such as an urgent package pickup or an emergency repair
 - Improving productivity and workforce utilization — your existing field workforce can handle more sales calls, more deliveries, more service calls and more inspections, providing a real competitive advantage.

For more information on how you can benefit from the Motorola MC9500-K and its intelligent battery, please visit us on the Web at www.motorola.com/mc9500 or access our global contact directory at www.motorola.com/enterprisemobility/contactus

Why Motorola

Every day, organizations of all sizes all over the world count on Motorola Enterprise Mobility Solutions to maximize personnel effectiveness, improve services, and increase revenue potential. When you choose Motorola for your mobility solution, you get the peace of mind that comes with choosing an industry leader as your technology partner. Motorola offers the proven expertise and technology you need to achieve maximum value and a fast return on investment — as well as first hand experience in virtually every size organization in nearly every major industry. And our end-to-end solutions offer the simplicity of a single accountable source — regardless of the number of vendors involved.

Our comprehensive product offering includes: rugged and enterprise class mobile computers with extensive advanced data capture and wireless communications options; rugged two-way radios for always on voice communications; private wide area and local area wireless and outside the four walls — and to network multiple locations; comprehensive RFID infrastructure, including fixed, mobile and handheld RFID readers; a partner channel delivering best-in class applications; software solutions that enable centralized and remote management of every aspect of your mobility solution; and a complete range of pre-and post-deployment services to help get and keep your mobility solution up and running at peak performance every day of the year.



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