

**Table 6-1** MC32N0 Accessories (Continued)

Accessory	Part Number	Description
<b>Cables</b>		
Charge Only Cable	25-70103-03R	Provides power to the MC32N0. Requires power supply PWRS-14000-249R.
USB Client Charge Cable	25-67868-03R	Provides USB client communication capabilities and charges the MC32N0.
RS232 Charge Cable	25-67866-03R	Provides RS232 communication capabilities and charges the MC32N0.
Vehicle Charge Cable	VCA3000-01R	Changes the MC32N0 using a vehicle's cigarette lighter.
Zebra Printer Cable	25-91513-01R	Provides printer specific communication capabilities.
Single Slot Cradle RS232 Cable	25-63852-01R	Provides serial host communication through the Single Slot Serial/USB cradle.
Single Slot Cradle USB Cable	25-68596-01R	Provides USB communication through the Single Slot Serial/USB cradle.
Headset Adapter Cable	25-124411-02R	Connects an RCH51 headset to the MC32N0. Contains 2.5 mm jack with unique locking screw.
<b>Miscellaneous</b>		
Magnetic Stripe Reader	MSR3000-100R	Reads magnetic stripe cards.
2740 mAh Battery	BTRY-MC32-01-01 BTRY-MC32-01-10	Replacement standard capacity (1X) battery. Replacement standard capacity (1X) battery (10-pack).
4800 mAh Battery	BTRY-MC32-02-01 BTRY-MC32-02-10	Replacement extended capacity (2X) battery. Replacement extended capacity (2X) battery (10-pack).
Replacement Tether	KT-73440-01R	Replacement non-elastic tether for MC32N0-R and MC32N0-S (3-pack).
MC32XX-R/S Stylus and Tether Kit	11-43912-03R	Replacement stylus and tether kit (3-pack).

**Table 6-1** MC32N0 Accessories (Continued)

Accessory	Part Number	Description
MC32N0-G Stylus and Tether	KT-81680-03R	Replacement stylus and tether for MC32N0-G (3-pack).
	KT-81680-50R	Replacement stylus and tether for MC32N0-G (50-pack).
MC32N0-G Handstrap Button	KT-97258-01R	Replacement button for MC32N0-G handstrap (250-pack).
MC32N0-G Handstrap	SG-MC3123242-01R	Replacement handstrap for MC32N0-G.
MC32N0-G Handstrap	SG-MC3123342-01R	Replacement handstrap for MC32N0-G (5-pack).
MC32N0-R/S Handstrap	SG-MC3123243-01R	Replacement handstrap for MC32N0-R and MC32N0-S.
Plastic Holster	8710-050005-01R	Provides a clip on holder for the MC32N0-R and MC32N0-S.
Fabric Holster	11-69293-01R	Provides a soft, clip on holder and a shoulder strap for the MC32N0-R and MC32N0-S.
Fabric Holster	SG-MC3021212-01R	Provides a soft, clip on holder and a shoulder strap for the MC32N0-G.
Shoulder Strap	58-40000-007R	Universal shoulder strap.
Belt	11-08062-02R	Belt for fabric holster.
MC32N0-G Rubber Boot	11-72959-04R	Provides additional protection for both the MC32N0-G laser and imager configurations.
MC32N0-S Rubber Boot	11-70899-04R	Provides additional protection for both the MC32N0-S laser and imager configurations.
MC32N0-R Rubber Boot	11-72096-04R	Provides additional protection for the MC32N0-R.
Mounting Bracket	KT-136648-01	Used to mount four slot cradles onto a wall.

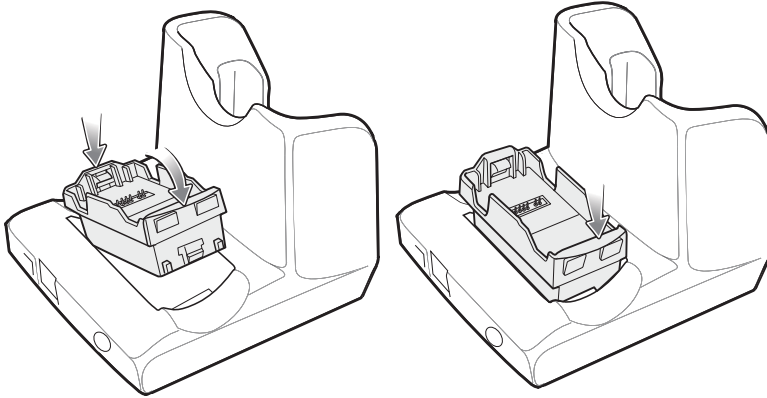
## Battery Adapter

Use the Battery Adapter with the Single Slot Serial/USB Cradle and the Four Slot Battery Charger to allow charging of the MC32N0 batteries.

## Installing the Battery Adapter

The Battery Adapter is required to charge MC32N0 batteries in the Single Slot Serial/USB cradle, the Four Slot Battery Charger or the UBC Adapter.

1. Remove power from the cradle or charger.
2. Insert the end of the Battery Adapter into the battery slot.
3. Rotate the Battery Adapter down into the battery slot.

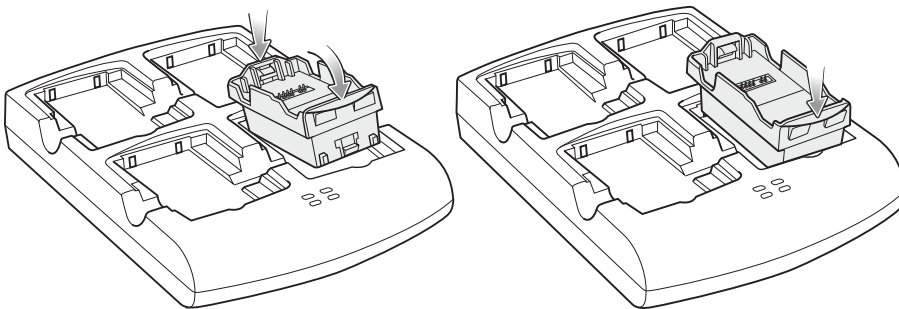


**Figure 6-1** *Battery Adapter in Single Slot Serial/USB Cradle*

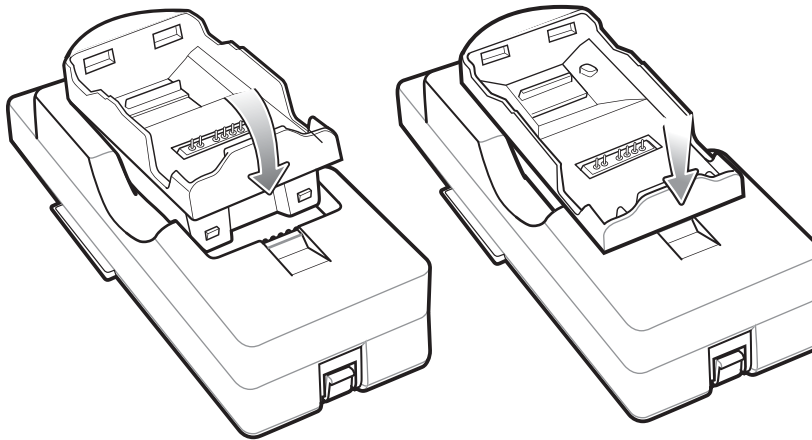


**NOTE** On the Four Slot Battery Charger, install the Battery Adapter into the two front slots before installing into the two rear slots.

If charging both MC3200 and MC3100 batteries in the charger, install the MC3200 battery adapter in the back slots and install the MC3100 batteries in the front slots.



**Figure 6-2** *Battery Adapter in Four Slot Battery Charger*

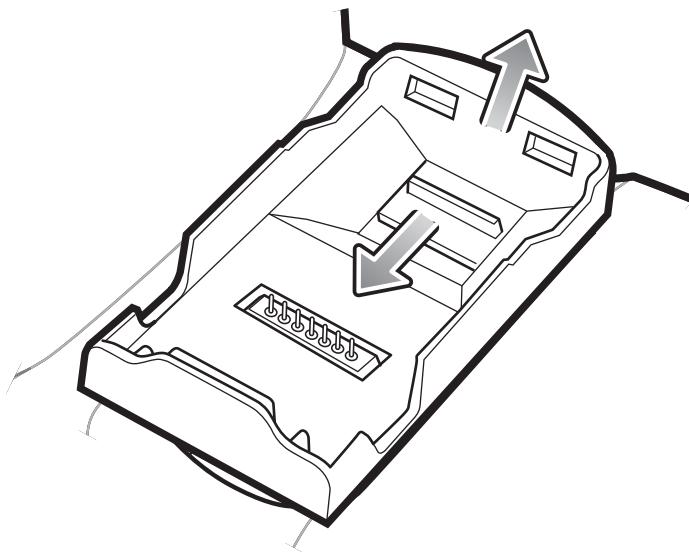


**Figure 6-3** *Battery Adapter in UBC Adapter*

4. Press the Battery Adapter down to ensure that it is properly seated.
5. Reconnect power.

### Removing the Battery Adapter

1. Remove power from the cradle or charger.
2. Remove the battery from Battery Adapter.
3. Slide the release latch toward the contact pins.



**Figure 6-4** *Release Latch*

4. Rotate the Battery Adapter up.
5. Remove the Battery Adapter from the battery slot.
6. Reconnect power.

---

## Single Slot Serial/USB Cradle



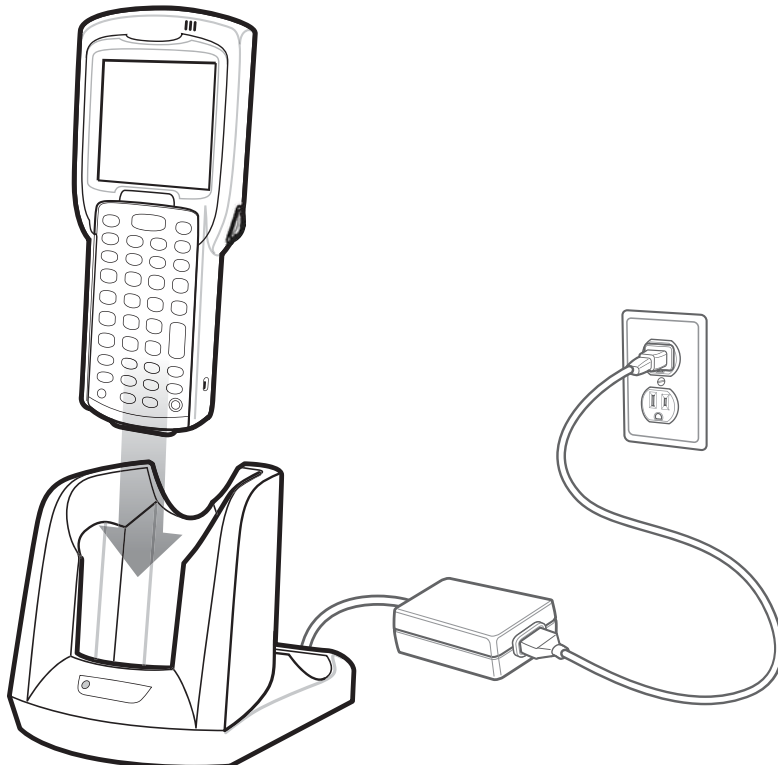
**CAUTION** Ensure that you follow the guidelines for battery safety described in [Battery Safety Guidelines on page 7-2](#)

The Single Slot Serial/USB cradle:

- Provides 5.4VDC power for operating the mobile computer, charging the battery and charging a spare battery.
- Provides a serial port and a USB port for data communication between the mobile computer and a host computer or other serial devices (e.g., a printer).
- Synchronizes information between the mobile computer and a host computer. With customized or third party software, it can also synchronize the mobile computer with corporate databases.
- Provides serial connection through the serial pass-through port for communication with a serial device, such as a host computer.
- Provides USB connection through the USB pass-through port for communication with a USB device, such as a host computer.

### Charging the MC32N0 Battery

1. Ensure that the cradle is connected to power.
2. Slide the mobile computer into the slot in the cradle. The mobile computer amber Charge LED Indicator, indicates the mobile computer battery charging status.



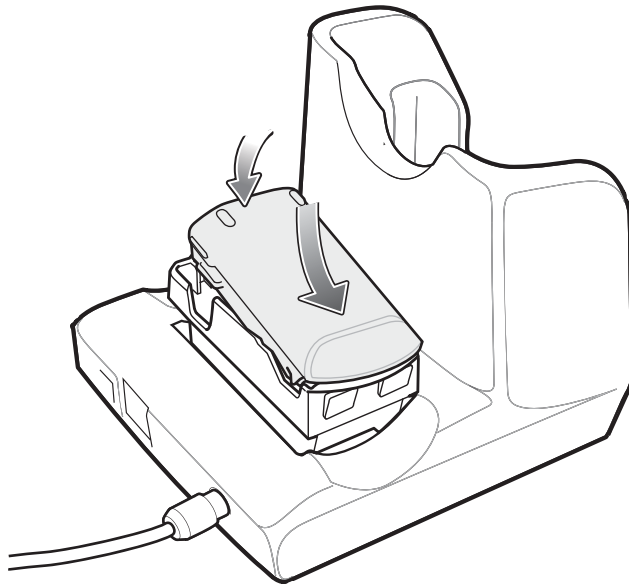
**Figure 6-5** MC32N0 Battery Charging

3. Gently press down on the device to ensure proper contact.

4. When charging is complete, remove the mobile computer from the cradle slot.

### Charging an MC32N0 Spare Battery

1. Ensure that the cradle is connected to power.
2. Ensure that the Battery Adapter into the spare battery slot on the cradle. See Battery Adapter.
3. Insert the spare battery into the battery adapter, bottom first, and pivot the top of the battery down onto the contact pins.



**Figure 6-6** MC32N0 Spare Battery Charging

4. Gently press down on the battery to ensure proper contact.  
The Spare Battery Charging LED on the front of the cradle indicates the spare battery charging status.
5. When charging is complete, press the battery clip and lift the battery out of the slot.

### Battery Charging in Single Slot Serial/USB Cradle

The Single Slot Serial/USB cradle charges the M32N0's main battery and a spare battery simultaneously.

The MC32N0's Charge LED indicates the status of the battery charging in the MC32N0. See Features - Front View for charging status indications.

The spare battery charging LED on the cradle indicates the status of the spare battery charging in the cradle. See below for charging status indications.

**Table 6-2** Spare Battery LED Charging Indicators

Spare Battery LED (on cradle)	Indication
Slow Blinking Amber	Spare battery is charging.
Solid Amber	Charging complete.

**Table 6-2** Spare Battery LED Charging Indicators (Continued)

Spare Battery LED (on cradle)	Indication
Fast Blinking Amber	Error in charging; check placement of spare battery.
Off	No spare battery in slot; spare battery not placed correctly; cradle is not powered.

### Charging Temperature

Charge batteries in temperatures from 0 °C to 40 °C (32 °F to 104 °F). Charging is intelligently controlled by the MC32N0.

To accomplish this, for small periods of time, the MC32N0 or cradle alternately enables and disables battery charging to keep the battery at acceptable temperatures. The MC32N0 or cradle indicates when charging is disabled due to abnormal temperatures via its LED.

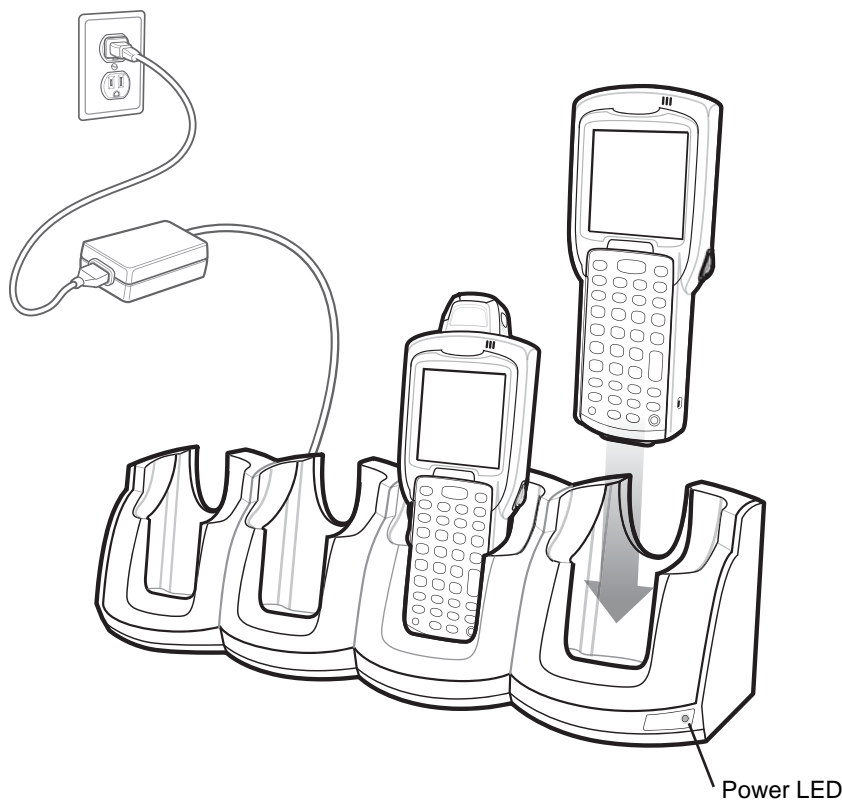
## Four Slot Charge Only Cradle



**CAUTION** Ensure that you follow the guidelines for battery safety described in [Battery Safety Guidelines on page 7-2](#)

The Four Slot Charge Only cradle:

- Provides 5.4 VDC power for operating the mobile computer and charging the battery.
- Simultaneously charges up to four mobile computers.



**Figure 6-7** Four Slot Charge Only Cradle

### Charging the MC32N0 Battery

1. Ensure that the cradle is connected to power.
2. Slide the mobile computer into the slot in the cradle. The mobile computer amber Charge LED Indicator, indicates the mobile computer battery charging status.
3. Gently press down on the device to ensure proper contact.
4. When charging is complete, remove the mobile computer from the cradle slot.

### Battery Charging in the Four Slot Charge Only Cradle

The MC32N0's Charge LED indicates the status of the battery charging in the MC32N0. See [LED Charge Indicators on page 1-15](#) for charging status indications.



The Standard Battery charges in less than five hours and the Extended Battery charges in less than eight hours.

### Charging Temperature

Charge batteries in temperatures from 0 °C to 40 °C (32 °F to 104 °F). Charging is intelligently controlled by the MC32N0.

To accomplish this, for small periods of time, the MC32N0 or cradle alternately enables and disables battery charging to keep the battery at acceptable temperatures. The MC32N0 or cradle indicates when charging is disabled due to abnormal temperatures via its LED.

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## Four Slot Spare Battery Charger



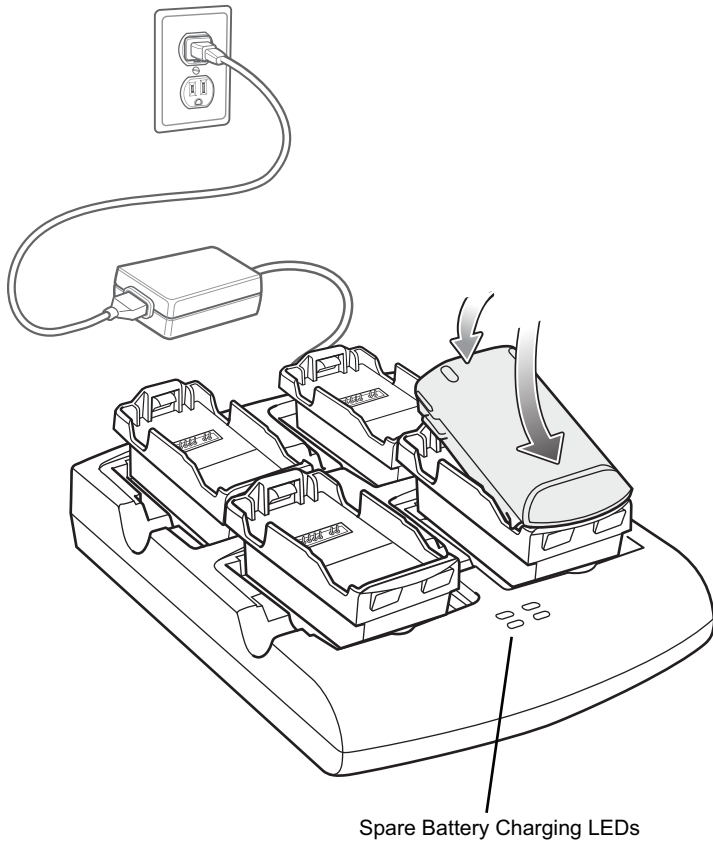
**CAUTION** Ensure that you follow the guidelines for battery safety described in [Battery Safety Guidelines on page 7-2](#)

The Four Slot Battery Charger charges up to four MC32N0 spare batteries.

## Charging Spare Batteries

Before installing the battery, install the Battery Adapter into the battery slot in the Four Slot Spare Battery Charger. See [Battery Adapter on page 6-4](#).

1. Connect the charger to a power source.
2. Insert the battery into a battery adapter and gently press down on the battery to ensure proper contact.



**Figure 6-8** Four Slot Battery Charger

## Battery Charging

### Spare Battery Charging

Each Battery Charging LED indicates the status of the battery charging in each slot. The table below describes the Battery Charging LED status.

The Standard battery charges in less than five hours and the Extended battery fully charges in less than eight hours.

**Table 6-3** Battery LED Charging Indicators

LED	Indication
Off	No battery in slot. Battery is not charging. Battery Adapter is not inserted correctly in the slot. Battery is not inserted correctly in Battery Adapter. Charger is not powered.
Slow blinking amber	Battery is charging.

**Table 6-3** Battery LED Charging Indicators (Continued)

LED	Indication
Solid amber	Charging complete.
Fast blinking amber	Charging error.

### Charging Temperature

Charge batteries in temperatures from 0 °C to 40 °C (32 °F to 104 °F). Charging is intelligently controlled by the MC32N0.

To accomplish this, for small periods of time, the changer alternately enables and disables battery charging to keep the battery at acceptable temperatures. The charger indicates when charging is disabled due to abnormal temperatures via its LED.

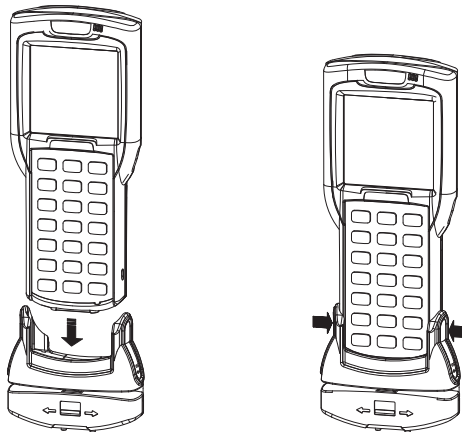
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## Magnetic Stripe Reader

The Magnetic Stripe Reader (MSR) snaps on to the bottom of the MC3200 mobile computer to allow easy data capture with the swipe of a magnetic stripe card. Simply remove the MSR when not in use.

### Installing the MSR

1. Insert the mobile computer into the MSR, and push in the two locking tabs.



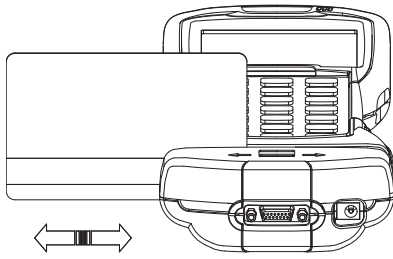
**Figure 6-9** Installing the MSR

2. Insert the mobile computer into the MSR, and push in the two locking tabs.

### Using the MSR

To use the MSR, ensure the mobile computer has an application which accepts magnetic stripe data.

1. Swipe the magnetic stripe card through the MSR, orienting the magnetic stripe in either direction, from left to right, or right to left. Data encoded on the magnetic stripe displays in the mobile computer window.

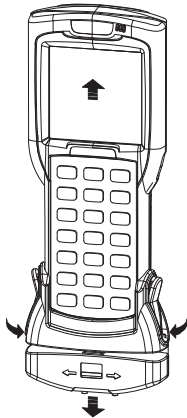


**Figure 6-10** Card Swipe

2. For best results, gently press down on the card while swiping to ensure contact with the bottom of the MSR.

## Removing the MSR

1. Push in the bottom of the two locking tabs.



**Figure 6-11** Removing the MSR

2. Pull the MSR from the mobile computer.

---

## MC32N0 Cables



**CAUTION** Ensure that you follow the guidelines for battery safety described in [Battery Safety Guidelines on page 7-2](#)

The cables are available with a variety of connection capabilities.

Communication/Charge cables:

- Provide the mobile computer with operating and charging power when used with the Symbol approved power supply.
- Synchronize information between the mobile computer and a host computer. With customized or third party software, it can also synchronize the mobile computer with corporate databases.
- Provide serial connection through the serial pass-through port for communication with a serial device, such as a host computer. For communication setup procedures, refer to the MC32N0 Integrator Guide.
- Provide USB connection through the USB pass-through port for communication with a USB device, such as a host computer. For communication setup procedures, refer to the MC32N0 Integrator Guide.

The following Communication/Charge cables are available:

- Serial (RS232) Charge cable (9-pin D female with power input receptacle)
- USB Client Charge cable (standard-A connector and a barrel receptacle for power).

Dedicated Printer cables, provide communication with a dedicated printer.

The following printer cables are available directly from the printer manufacturer:

- O'Neil printer cable
- Zebra printer cable
- Monarch printer cable.

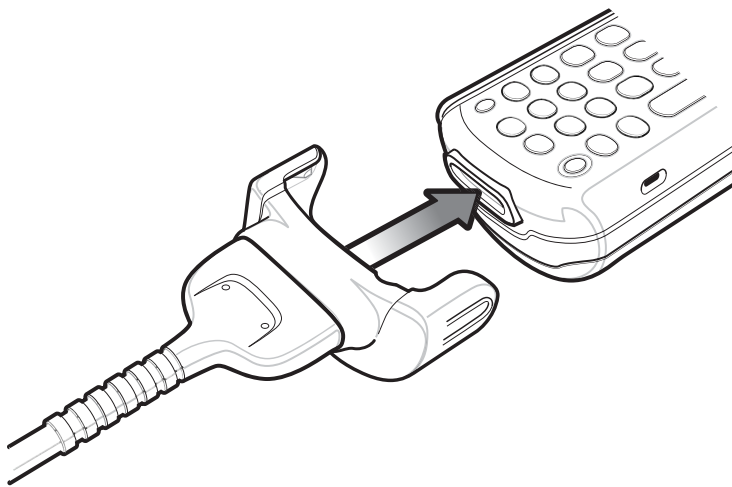


Figure 6-12 Cable Cup

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## Universal Battery Charger Adapter



**CAUTION** Ensure that you follow the guidelines for battery safety described in [Battery Safety Guidelines on page 7-2](#)

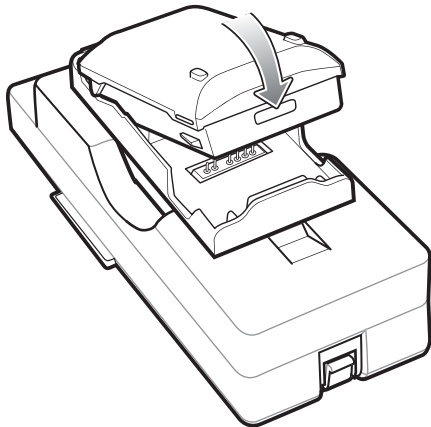
The Universal Battery Charger (UBC) Adapter can be used with a power supply as a standalone spare battery charger or it can be used with the four station UBC2000 to simultaneously charge up to four spare batteries. For additional information on the UBC 2000, see the *UBC 2000 Quick Reference Guide* p/n 70-33188-xx.

### Charging a Spare Battery in the UBC Adapter

Before installing the battery, ensure that the Battery Adapter has been installed into the battery slot in the Universal Battery Charger Adapter. See Battery Adapter.

Ensure that the adapter is connected to power source.

1. Insert the battery into a battery adapter and gently press down on the battery to ensure proper contact.



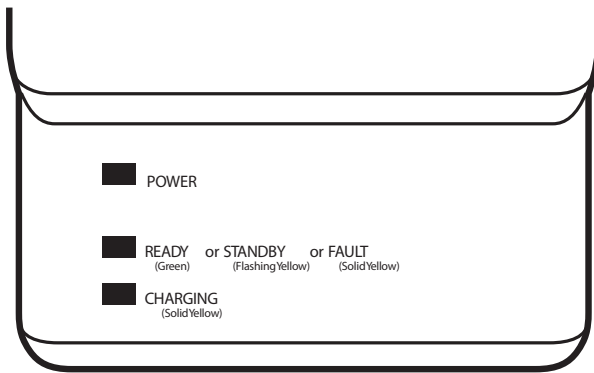
**Figure 6-13** Universal Battery Charger Adapter

2. Press down on the battery to ensure it is seated properly.

## UBC Adapter Battery Charging

### Spare Battery Charging

The UBC Adapter charging LEDs indicate the battery charging status. The Standard Battery usually charges in less than five hours and the Extended Life Battery usually charges in less than eight hours.



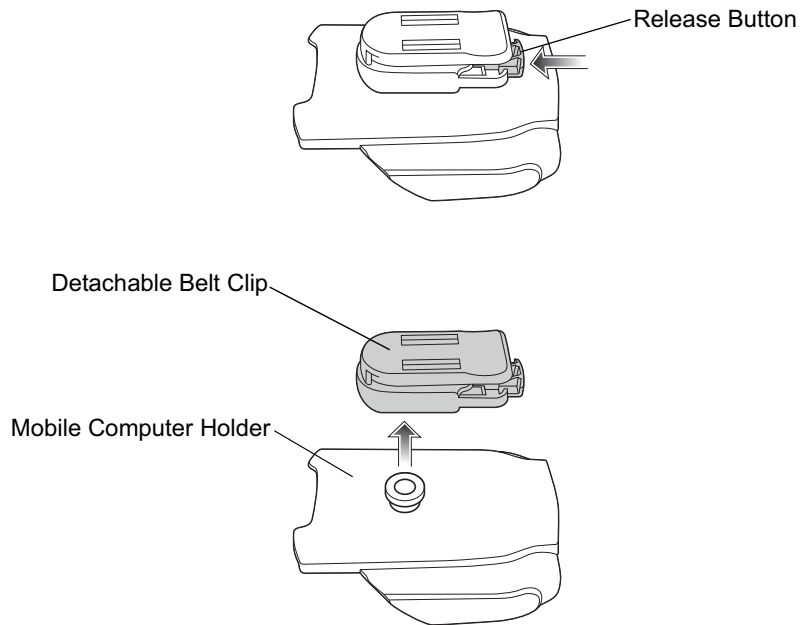
**Figure 6-14** UBC Adapter LEDs

**Table 6-4** UBC Adapter Charge LED Status Indications

LED	Indication	Description
POWER	Green	Power is connected to the UBC Adapter.
READY or	Green	Charging complete.
STANDBY or	Flashing-Yellow	The battery was deeply discharged and is being trickle charged to bring the voltage up to the operating level. After operating level voltage is achieved, the battery charges normally.
FAULT	Yellow	Charging error, check placement of mobile computer/spare battery.
CHARGING	Yellow	Normal charge.

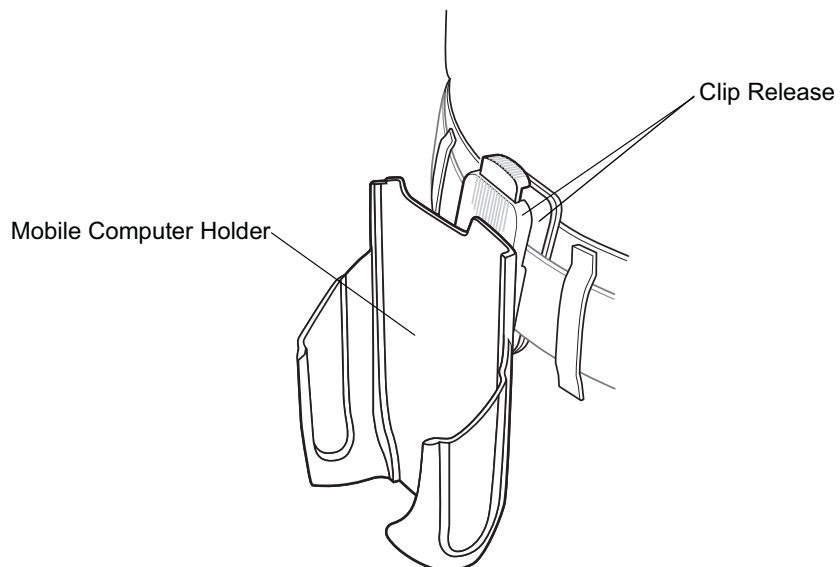
## Plastic Holster

The Plastic Holster provides a holder for the mobile computer. It consists of a mobile computer holder and a detachable belt clip. Press the release button to remove the detachable belt clip.



**Figure 6-15** *Plastic Holster*

The Plastic Holster provides a holder for the mobile computer. It consists of a mobile computer holder and a detachable belt clip. Press the release button to remove the detachable belt clip.

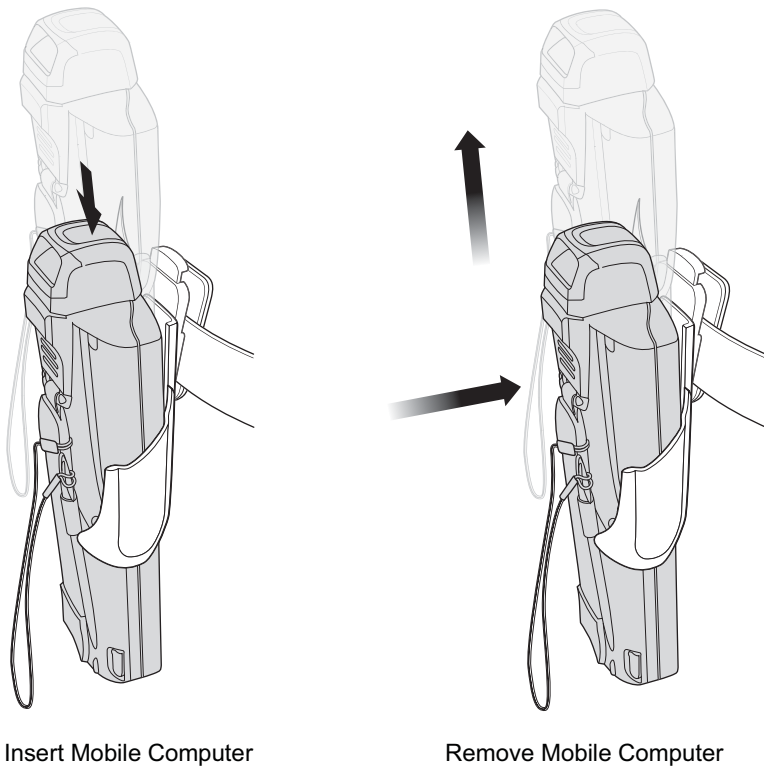


**Figure 6-16** *Attaching the Plastic Holster*

The Plastic Holster holds the mobile computer on a belt or waist band.

To insert the mobile computer, slide the mobile computer into the Plastic Holster with the screen facing the user.

To remove the mobile computer, press and lift to remove the mobile computer.



Insert Mobile Computer

Remove Mobile Computer

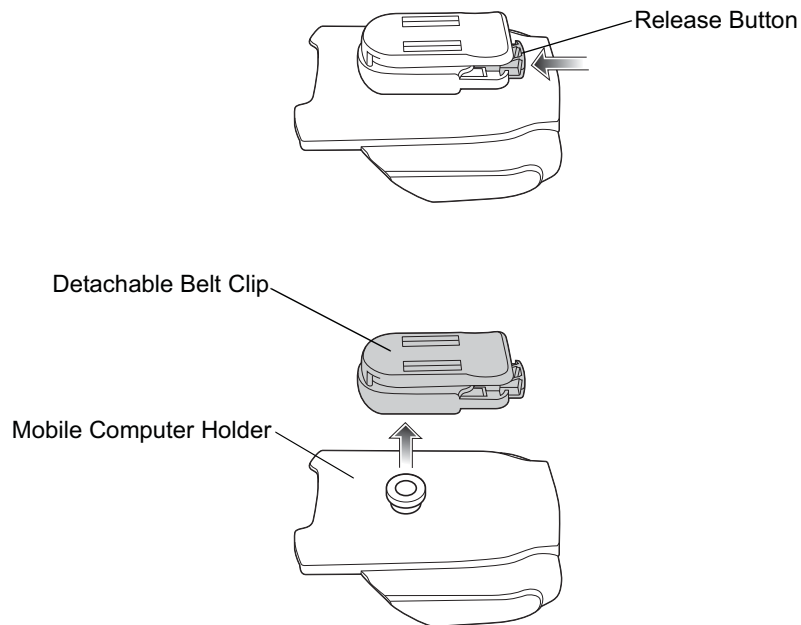
**Figure 6-17** *Insert and Remove the Mobile Computer*

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## Fabric Holster

The Fabric Holster provides a soft holder for the mobile computer. It consists of a fabric mobile computer holder, a detachable shoulder strap and a detachable belt clip. Press the release button to remove the detachable belt clip. See figures below to remove the detachable clip and to attach the Fabric Holster to a belt and shoulder strap.





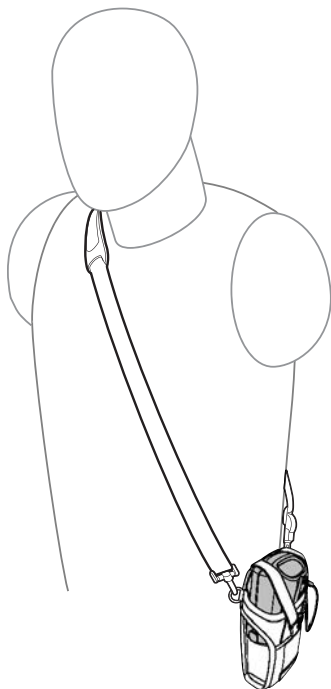
**Figure 6-18** *Fabric Holster Detachable Belt Clip*

## Belt Clip

Pinch the clip release and attach the Fabric Holster to a belt or waist band.

## Shoulder Strap

Remove the detachable belt clip and attach the shoulder strap.

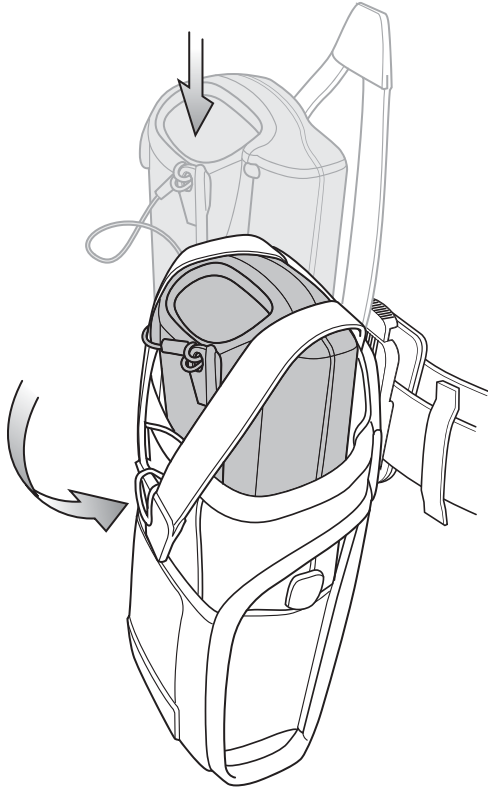


**Figure 6-19** *Attach the Fabric Holster to the Shoulder Strap*

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The Fabric Holster holds the mobile computer on a belt or waist band.

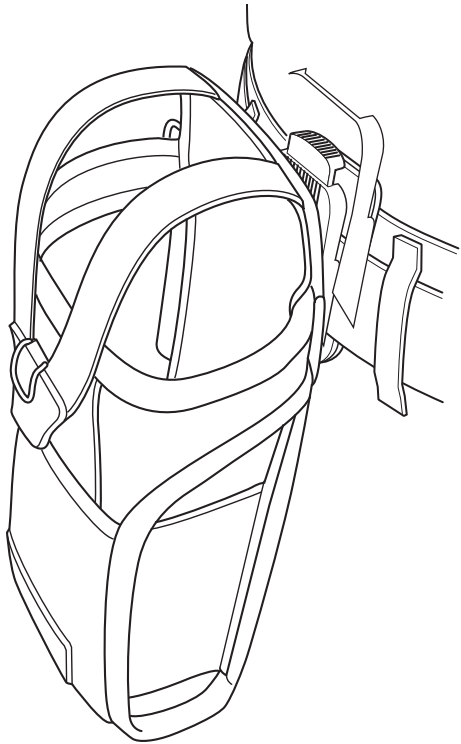
- To insert the mobile computer, slide the mobile computer into the Fabric Holster with the screen facing the user.
- Pull restraining strap over mobile computer and secure in the clip.
- To remove the mobile computer, pull down on restraining strap to release from clip and lift retaining strap clear.
- Lift mobile computer out of Fabric Holster.



**Figure 6-20** *Insert and Remove the MC32N0.*

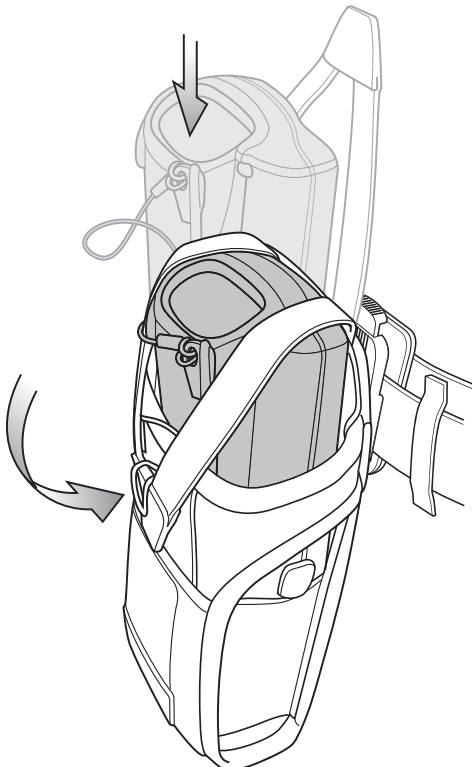
### Using the Belt Clip

1. Pinch the clip release.
2. Attach the Fabric Holster to a belt or waist band.



**Figure 6-21** *Attaching the Fabric Holster To a Belt*

3. Lift the strap and insert the MC32N0 into the holster.

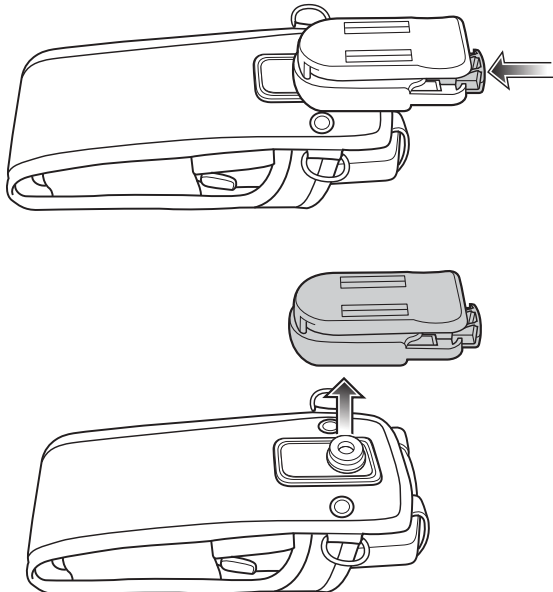


**Figure 6-22** *Insert MC32N0 in Holster*

4. Secure the strap to hold the MC32N0 in place.

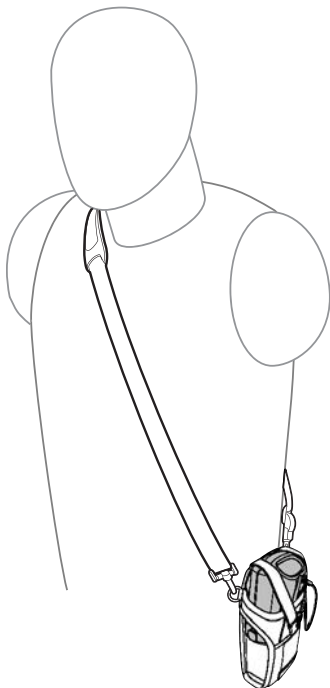
## Using the Shoulder Strap

1. Press the release button on the top of the belt clip.
2. Remove the clip from the holster.



**Figure 6-23** *Remove Belt Clip*

3. Connect the clips on the shoulder strap to the rings on the fabric holster.
4. Place the shoulder strap over your head and rest on your shoulder.



**Figure 6-24** *Shoulder Strap*

5. Lift the strap and insert the MC32N0 into the holster.
6. Secure the strap to hold the MC32N0 in place.

# CHAPTER 7 MAINTENANCE AND TROUBLESHOOTING

---

## Introduction

This chapter includes instructions on cleaning and storing the device, and provides troubleshooting solutions for potential problems during operation.

---

## Maintaining the MC32N0

For trouble-free service, observe the following tips when using the MC32N0:

- Do not scratch the screen of the MC32N0. When working with the MC32N0, use the supplied stylus or plastic-tipped pens intended for use with a touch-sensitive screen. Never use an actual pen or pencil or other sharp object on the surface of the MC32N0 screen.
- The touch-sensitive screen of the MC32N0 is glass. Do not drop the MC32N0 or subject it to strong impact.
- Protect the MC32N0 from temperature extremes. Do not leave it on the dashboard of a car on a hot day, and keep it away from heat sources.
- Do not store or use the MC32N0 in any location that is dusty, damp, or wet.
- Use a soft lens cloth to clean the MC32N0. If the surface of the MC32N0 screen becomes soiled, clean it with a soft cloth moistened with a diluted window-cleaning solution.
- Periodically replace the rechargeable battery to ensure maximum battery life and product performance. Battery life depends on individual usage patterns.
- A screen protector is applied to the MC32N0. Zebra recommends using this to minimize wear and tear. Screen protectors enhance the usability and durability of touch screen displays. Benefits include:
  - Protection from scratches and gouges
  - Durable writing and touch surface with tactile feel
  - Abrasion and chemical resistance
  - Glare reduction
  - Keeping the device's screen looking new
  - Quick and easy installation.

---

## Battery Safety Guidelines



**WARNING!** Failure to follow these guidelines may result in fire, explosion, or other hazard.

- The area in which the units are charged should be clear of debris and combustible materials or chemicals. Particular care should be taken where the device is charged in a non commercial environment.
- Follow battery usage, storage, and charging guidelines found in this guide.
- Improper battery use may result in a fire, explosion, or other hazard.
- To charge the mobile device battery, the battery and charger temperatures must be between +32 °F and +104 °F (0 °C and +40 °C)
- Do not use incompatible batteries and chargers. Use of an incompatible battery or charger may present a risk of fire, explosion, leakage, or other hazard. If you have any questions about the compatibility of a battery or a charger, contact Zebra Customer Support Center.
- Do not disassemble or open, crush, bend or deform, puncture, or shred.
- Severe impact from dropping any battery-operated device on a hard surface could cause the battery to overheat.
- Do not short circuit a battery or allow metallic or conductive objects to contact the battery terminals.
- Do not modify or remanufacture, attempt to insert foreign objects into the battery, immerse or expose to water or other liquids, or expose to fire, explosion, or other hazard.
- Do not leave or store the equipment in or near areas that might get very hot, such as in a parked vehicle or near a radiator or other heat source. Do not place battery into a microwave oven or dryer.
- Battery usage by children should be supervised.
- Please follow local regulations to properly dispose of used re-chargeable batteries.
- Do not dispose of batteries in fire.
- Seek medical advice immediately if a battery has been swallowed.
- In the event of a battery leak, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with large amounts of water and seek medical advice.
- If you suspect damage to your equipment or battery, contact Zebra Customer Support to arrange for inspection.

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## Cleaning Instructions



**CAUTION** Always wear eye protection.

Read warning label on compressed air and alcohol product before using.

If you have to use any other solution for medical reasons please contact the Global Customer Support Center for more information.



**WARNING!** Avoid exposing this product to contact with hot oil or other flammable liquids. If such exposure occurs, unplug the device and clean the product immediately in accordance with these guidelines.

## Approved Cleanser Active Ingredients

100% of the active ingredients in any cleaner must consist of one or some combination of the following: isopropyl alcohol, bleach/sodium hypochlorite, hydrogen peroxide or mild dish soap.

## Harmful Ingredients

The following chemicals are known to damage the plastics on the device and should not come in contact with the device: ammonia solutions, compounds of amines or ammonia; acetone; ketones; ethers; aromatic and chlorinated hydrocarbons; aqueous or alcoholic alkaline solutions; ethanolamine; toluene; trichloroethylene; benzene; carbonic acid and TB-lysoform.

## Cleaning Instructions

Do not apply liquid directly to the device. Dampen a soft cloth or use pre-moistened wipes. Do not wrap the device in the cloth or wipe, but gently wipe the unit. Be careful not to let liquid pool around the display window or other places. Allow the unit to air dry before use.

## Special Cleaning Notes

Many vinyl gloves contain phthalate additives, which are often not recommended for medical use and are known to be harmful to the housing of the device. The device should not be handled while wearing vinyl gloves containing phthalates, or before hands are washed to remove contaminant residue after gloves are removed. If products containing any of the harmful ingredients listed above are used prior to handling the device, such as hand sanitizer that contain ethanolamine, hands must be completely dry before handling the device to prevent damage to the plastics.

## Cleaning Materials Required

- Alcohol wipes
- Lens tissue
- Cotton-tipped applicators
- Isopropyl alcohol
- Can of compressed air with a tube.

## Cleaning Frequency

The cleaning frequency is up to the customer's discretion due to the varied environments in which the mobile devices are used. They may be cleaned as frequently as required, but it is advisable to clean the camera window periodically when used in dirty environments to ensure optimum performance.

---

## Cleaning the MC32N0

### Housing

Using the alcohol wipes, wipe the housing including buttons.

### Display

The display can be wiped down with the alcohol wipes, but care should be taken not to allow any pooling of liquid around the edges of the display. Immediately dry the display with a soft, non-abrasive cloth to prevent streaking.

### Exit Window

Wipe the camera and exit window periodically with a lens tissue or other material suitable for cleaning optical material such as eyeglasses.

### Connector Cleaning

To clean the connectors:

1. Remove the main battery from mobile computer.
2. Dip the cotton portion of the cotton-tipped applicator in isopropyl alcohol.
3. Rub the cotton portion of the cotton-tipped applicator back-and-forth across the connector. Do not leave any cotton residue on the connector.
4. Repeat at least three times.
5. Use the cotton-tipped applicator dipped in alcohol to remove any grease and dirt near the connector area.
6. Use a dry cotton-tipped applicator and repeat steps 4 through 6.



**CAUTION** Do not point nozzle at yourself and others, ensure the nozzle or tube is away from your face.

7. Spray compressed air on the connector area by pointing the tube/nozzle about ½ inch away from the surface.
8. Inspect the area for any grease or dirt, repeat if required.

---

## Cleaning Cradle Connectors

To clean the connectors on a cradle:

1. Remove the DC power cable from the cradle.
2. Dip the cotton portion of the cotton-tipped applicator in isopropyl alcohol.
3. Rub the cotton portion of the cotton-tipped applicator along the pins of the connector. Slowly move the applicator back-and-forth from one side of the connector to the other. Do not leave any cotton residue on the connector.
4. All sides of the connector should also be rubbed with the cotton-tipped applicator.





**CAUTION** Do not point nozzle at yourself and others, ensure the nozzle or tube is away from your face.

5. Spray compressed air in the connector area by pointing the tube/nozzle about ½ inch away from the surface.
6. Remove any lint left by the cotton-tipped applicator.
7. If grease and other dirt can be found on other areas of the cradle, use a lint-free cloth and alcohol to remove.
8. Allow at least 10 to 30 minutes (depending on ambient temperature and humidity) for the alcohol to air dry before applying power to cradle.

If the temperature is low and humidity is high, longer drying time is required. Warm temperature and dry humidity requires less drying time.



## Troubleshooting the MC32N0

**Table 7-1** *Troubleshooting the MC32N0*



Problem	Cause	Solution
Mobile computer does not turn on.	Main battery not charged.	Charge or replace the main battery.
	Main battery not installed properly.	Ensure the battery is installed properly.
	MC32N0 not responding.	Perform a soft reset. If the mobile computer still does not turn on, perform a hard reset. For more information see <a href="#">Resetting the Device on page 2-15</a> .
Battery did not charge.	Battery failed.	Replace battery. If the mobile computer still does not operate, try a soft reset , then a hard reset. See <a href="#">Resetting the Device on page 2-15</a> .
	Mobile computer removed from cradle while battery was charging.	Insert mobile computer in cradle and begin charging. The Standard Battery requires up to five hours to recharge fully and the Extended Life Battery requires up to eight hours to recharge fully.
	Extreme battery temperature.	Battery does not charge if ambient temperature is below 32 °F (0 °C) or above 104 °F (40 °C).
Cannot see characters on screen.	Mobile computer not powered on.	Press the Power button.

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**Table 7-1** Troubleshooting the MC32N0 (Continued)

Problem	Cause	Solution
During data communication, no data was transmitted, or transmitted data was incomplete.	Mobile computer removed from cradle or unplugged from host computer during communication.	Replace the mobile computer in the cradle, or reattach the cable and re-transmit.
	Incorrect cable configuration.	See the system administrator or refer to the <i>MC32N0 Integrator Guide</i> .
Mobile computer does not emit sound.	Volume setting is low or turned off.	Click on the speaker icon to increase the volume.
MC32N0 turns itself off.	MC32N0 is inactive.	The mobile computer turns off after a period of inactivity. This period can be set from 15 seconds to 30 minutes.
	Battery is depleted.	Recharge or replace the battery.
A message appears stating that the mobile computer memory is full.	Too many applications installed on the mobile computer.	Remove user-installed applications on the MC32N0 to recover memory. Select  >  <b>Apps</b> > <b>Downloaded</b> . Select the unused programs and touch <b>Uninstall</b> .
The MC32N0 does not decode when reading bar code.	DataWedge is not enabled.	Ensure that DataWedge is enabled and configured properly. Refer to the <i>MC32N0 Integrator Guide</i> for more information.
	Unreadable bar code.	Ensure the symbol is not defaced.
	Distance between the MC32N0 and bar code is incorrect.	Place the MC32N0 within proper scanning range.
	MC32N0 is not programmed for the bar code type.	Program the MC32N0 to accept the type of bar code being scanned. Refer to the <i>MC32N0 Integrator Guide</i> for DataWedge configuration.
	MC32N0 is not programmed to generate a beep.	If the MC32N0 does not beep on a good decode, set the application to generate a beep on good decode.

**Table 7-1** *Troubleshooting the MC32N0 (Continued)*

Problem	Cause	Solution
MC32N0 cannot find any Bluetooth devices nearby.	Too far from other Bluetooth devices.	Move closer to the other Bluetooth device(s), within a range of 10 meters (32.8 feet).
	The Bluetooth device(s) nearby are not turned on.	Turn on the Bluetooth device(s) to find.
	The Bluetooth device(s) are not in discoverable mode.	Set the Bluetooth device(s) to discoverable mode. If needed, refer to the device's user documentation for help.
Cannot connect to WLAN.	Access Point (AP) does not broadcast country code.	Disable 802.11d feature. Touch  > <b>Wi-Fi</b> >  > <b>Advanced</b> . Deselect the <b>Enable 802.11d</b> checkbox.
When trying to open File Browser or other applications, the application automatically closes.	The Internal Memory is full.	Connect the MC32N0 to a host computer and delete files from Internal Memory using the host computer.



# CHAPTER 8 TECHNICAL SPECIFICATIONS

## Introduction

The following sections provide technical specification for the device.

## MC32N0 Technical Specifications

The following table summarizes the MC32N0's intended operating environment and technical hardware specifications.

**Table 8-1** MC32N0 Technical Specifications

Item	Description
<b>Physical Characteristics</b>	
Dimensions	<p><b>MC32N0-S:</b> 7.49 in L x 3.22 in W x 1.78 in D (190.4 mm L x 81.9 mm W x 45.2 mm D)</p> <p><b>MC32N0-R:</b> 8.37 in L x 3.22 in W x 1.57 in D (212.6 mm L x 81.9 mm W x 40.0 mm D)</p> <p><b>MC32N0-G:</b> 7.59 in L x 3.18 in W x 6.5 in D (192.7 mm L x 80.8 mm W x 166.0 mm H)</p>
Weight	<p>MC32N0-R (with standard battery) - 13.1 oz (372 g)</p> <p>MC32N0-S (with standard battery) - 12.88 oz (365 g)</p> <p>MC32N0-G (with extended battery) - 18.0 oz (509 g)</p>
Display	3.0 inch Color (TFT) (320 x 320) display
Touch Panel	Chemically strengthened glass, resistive touch

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**Table 8-1** MC32N0 Technical Specifications (Continued)

Item	Description
Backlight	LED backlight
Battery	Standard: Rechargeable Lithium-Ion 2740 mAh minimum (3.7V) Extended Life: Rechargeable Lithium-Ion 4800 mAh minimum (3.7V)
Expansion Slot	User accessible microSD slot. Supports up to 32 GB microSDHC.
Network Connections	Full-speed USB client, full-speed USB host, Bluetooth and WiFi. USB host mode available with appropriate cables only.
Notification	LEDs and audio notifications
Keypad Options	28-key Numeric 38-key Shifted Alpha (calculator-style integrated numeric keypad) 48-key Alpha-Numeric (calculator-style integrated numeric keypad)
Audio	Speaker, microphone, and headset connector (2.5 mm jack).
<b>Performance Characteristics</b>	
CPU	Dual core, OMAP 4 @ 800 MHz (Standard). Dual core, OMAP 4 @ 1 GHz (Premium).
Operating System	Android-based ASOP 5.1.1 (Premium only)
Memory	512 MB RAM, 2 GB Flash (Standard). 1 GB RAM, 4 GB Flash (Premium).
Output Power (USB)	USB: 5 VDC @ 500 mA max.
<b>User Environment</b>	
Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Storage Temperature	-40 °C to 70 °C (-40 °F to 158 °F) without battery
Charging Temperature	0 °C to 40 °C (32 °F to 104 °F)
Humidity	10% to 95% RH non-condensing
Drop Specification	Multiple 4 ft./1.2 m drop to concrete across the operating temperature range. Multiple 5 ft/1.5 m drops to concrete at ambient temperature 73 °F/23 °C. Meets and exceeds MIL-STD 810G.
Electrostatic Discharge (ESD)	±20kVdc air discharge, ± 10kVdc direct discharge, ± 10kVdc indirect discharge
Sealing	IP54 per IEC specification.
<b>Wireless LAN Data Communications</b>	
Wireless Local Area Network (WLAN) radio	IEEE® 802.11a/b/g/n with internal antenna

**Table 8-1** MC32N0 Technical Specifications (Continued)

Item	Description
Data Rates Supported	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 6.5, 13, 19.5, 26, 39, 52, 58.5, 65, 72 Mbps (with SGI) Note that 802.11n data rates may be higher.
Operating Channels	Chan 36 - 165 (5180 – 5825 MHz), Chan 1 - 13 (2412 - 2472 MHz); actual operating channels/frequencies depend on regulatory rules and certification agency.
Security	<b>Security Modes:</b> WPA and WPA2 (Personal or Enterprise) <b>Encryption:</b> WEP40/WEP104, TKIP and AES <b>Authentication:</b> EAP-TLS; EAP-TTLS (MSCHAP, MSCHAPv2, PAP); PEAP (MSCHAPv2, EAP-GTC); LEAP; EAP-FAST (MSCHAPv2, EAP-GTC). <b>Authentication:</b> TLS; TTLS (MSCHAP, MSCHAPv2 or PAP; PEAP (MSCHAPv2, GTC); LEAP; FAST (MSCHAPv2, GTC). <b>Other:</b> Wi-Fi, CCXv4 certified, and supports IPv6 FIPS 140–2 certified
<b>Wireless PAN Data</b>	
Bluetooth	Class II, v 4.0 with EDR/LE; integrated antenna.
<b>Data Capture</b>	
Laser scanner	Captures 1D bar codes.
Imager	Captures 1D and 2D bar codes.
<b>Laser Scanner (SE965) Specifications</b>	
Optical Resolution	0.005 in. minimum element width
Roll	Condition: 20 mil Code 39 at 10 in. ± 35° from vertical
Pitch Angle	Condition: 20 mil Code 39 at 10 in. ± 65° from normal
Skew Tolerance	Condition: 20 mil Code 39 at 10 in. ± 40° from normal
Ambient Light	Tolerant to typical artificial indoor and natural outdoor (direct sunlight) lighting conditions. Fluorescent, Incandescent, Mercury Vapor, Sodium Vapor, LED: 450 ft. Candles (4,844 Lux) Sunlight: 10,000 Ft Candles (107,640 Lux) Note: LED lighting with high AC ripple content can impact scanning performance.
Scan Repetition Rate	104 (± 14) scans/sec (bidirectional)

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**Table 8-1** MC32N0 Technical Specifications (Continued)

Item	Description
Scan Angle	Wide (Default): 47° (typical) Medium: 35° (typical) Narrow: 10° (typical)
<b>2D Imager Engine (SE4750) Specifications</b>	
Field of View	Horizontal - 48.0° Vertical - 36.7°
Image Resolution	1280 horizontal X 960 vertical pixels
Roll	360°
Pitch Angle	+/- 60° from normal
Skew Tolerance	+/- 60° from normal
Ambient Light	Sunlight: 10,000 ft. candles (107,639 lux)
Focal Distance	From front of engine: 17.7 cm (7.0 in.)
Laser Aiming Element	Visible Laser Diode (VLD): 655 nm +/- 10 nm Central Dot Optical Power: 0.6 mW (typical) Pattern Angle: 48.0° horizontal, 38.0° vertical
Illumination System	LEDs: Warm white LED Pattern Angle: 80° at 505 intensity
<b>Supported Symbologies</b>	
1D	Chinese 2 of 5, Codabar, Code 11, Code 128, Code 39, Code 93, Discrete 2 of 5, EAN-8, EAN-13, GS1 DataBar, GS1 DataBar Expanded, GS1 DataBar Limited, Interleaved 2 of 5, Korean 2 of 5, MSI, TLC 39, Matrix 2 of 5, Trioptic, UPCA, UPCE, UPCE1, Web Code.
2D	Australian Postal, Aztec, Canadian Postal, Composite AB, Composite C, Data Matrix, Dutch Postal, Japan Postal, Maxicode, Micro PDF, Micro QR, PDF, QR Code, UK Postal, US Planet, US Postnet, US4State, US4State FICS.



# CHAPTER 9 MC32N0 KEYPADS

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## Introduction

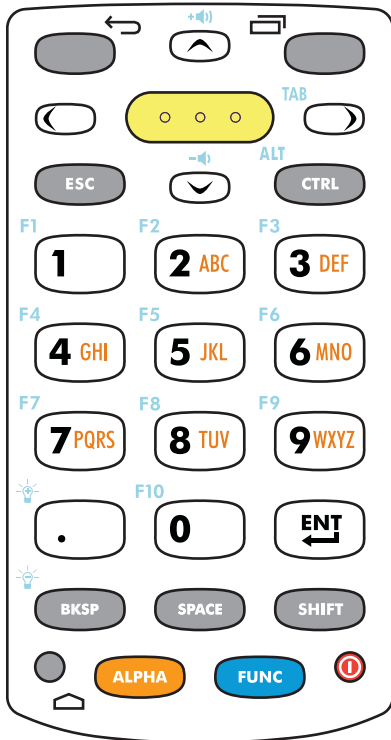
The MC32N0 offers three types of keypad configurations: 28 key, 38 key and 48 key.

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## MC32N0 28-Key Keypad






The 28-key keypad contains a Power button, application keys, scroll keys and function keys. The keypad is color-coded to indicate the alternate function key (blue) values and the alternate ALPHA key (orange) values. Note that keypad functions can be changed by an application so the mobile computer keypad may not function as described. See the tables below for key and button descriptions and keypad alternate functions.

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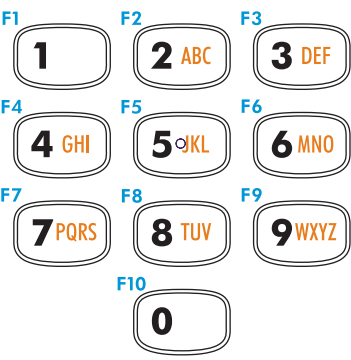






**Figure 9-1** 28-Key Keypad Configuration








**Table 9-1** 28-Key Keypad Descriptions

Key	Description
Power (red) 	Powers the mobile computer screen on and off (resume and suspend).
Back 	Displays the previous screen. Closes the on-screen keyboard if open.
Menu 	Opens a menu with items that affect the current screen or application.
Scan (yellow) 	Used in scanning applications, press to scan a bar code. This key has the same function as activating the side mounted scan buttons.
Scroll Up and Down 	Moves up and down from one item to another. Increases/decreases specified values.  Increases and decreases volume when the blue FUNC key is activated and the up and down arrow keys are pressed.

**Table 9-1** 28-Key Keypad Descriptions (Continued)

Key	Description
Scroll Left and Right 	Moves left and right from one item to another. Increases/decreases specified values. Produces a TAB when the blue FUNC key is activated and the right arrow key is pressed.
ESC	Produces the ESC function by default.
CTRL 	Press and release the CTRL key to activate the keypad alternate CTRL functions. The <b>C</b> icon appears in the Status bar. Press and release the CTRL key again to return to the default keypad functions. Press and release the blue FUNC key and then the CTRL key to activate the ALT functions. The <b>A</b> icon appears in the Status bar. Press and release the CTRL key two times to return to the default keypad functions.
Numeric/Alpha/Special Function 	Numeric, alpha or special function keys. Numeric by default. Produces a special function when the blue FUNC key is activated. Produces alpha values when the orange ALPHA key is activated. In Alpha state, produces the lower case alphabetic characters on the key. Each key press produces the next alphabetic character in sequence. For example, press and release the ALPHA key and then press the 4 key once to produce the letter 'g'; press and release the ALPHA key and then press the 4 key three times to produce the letter 'i'. When the SHIFT key is pressed in Alpha state, the upper case alphabetic characters on the key are produced. For example, press and release the ALPHA key, press and hold the SHIFT key and then press the 4 key once to produce the letter 'G'; press and release the ALPHA key, press and hold the SHIFT key and then press the 4 key three times to produce the letter 'I'.
Period/Decimal Point 	Produces a period for alpha entries and a decimal point for numeric entries by default. Increases brightness when the blue FUNC key is activated.
Enter 	Executes a selected item or function.
BKSP 	Backspace function by default. Decreases brightness when the blue FUNC key is activated.
SPACE 	Space function by default.

**Table 9-1** 28-Key Keypad Descriptions (Continued)

Key	Description
Shift 	Press and release the SHIFT key to activate the keypad alternate SHIFT functions. The  icon appears on the Status bar. Press and release the SHIFT key again to return to the default keypad functions.
ALPHA 	Press the orange ALPHA key to access the alternate ALPHA characters (shown on the keypad in orange). The  icon appears on the Status bar. Press and release the orange ALPHA key again to return to the default keypad functions.
FUNC 	Press and release the blue FUNC key to activate the keypad alternate functions (shown on the keypad in blue). The  icon appears on the Status bar. Press and release the blue FUNC key again to return to the default keypad functions.
Home 	Displays the Home screen with a single press. Displays recently used applications when held for a short period of time.

**Table 9-2** 28-key Keypad Input Modes

Key	Numeric State		Orange Key (Alpha Lowercase State)				Orange Key + Shift Key (Alpha Uppercase State)			
		SHIFT + Key	1st Press	2nd Press	3rd Press	4th Press	1st Press	2nd Press	3rd Press	4th Press
1	1	!	*							
2	2	@	a	b	c		A	B	C	
3	3	#	d	e	f		D	E	F	
4	4	\$	g	h	i		G	H	I	
5	5	%	j	k	l		J	K	L	
6	6	^	m	n	o		M	N	O	
7	7	&	p	q	r	s	P	Q	R	S
8	8	*	t	u	v		T	U	V	
9	9	(	w	x	y	z	W	X	Y	Z
0	0	)	0				0			
.	.	>	.				.			

**NOTE** An application can change the key functions. The keypad may not function exactly as described.

## MC32N0 38-Key Keypad

The 38-key keypad contains a Power button, application keys, scroll keys and function keys. The keypad is color-coded to indicate the alternate function key (blue) values. Note that keypad functions can be changed by an application so the mobile computer keypad may not function as described. The tables below provide key and button descriptions and keypad alternate functions.

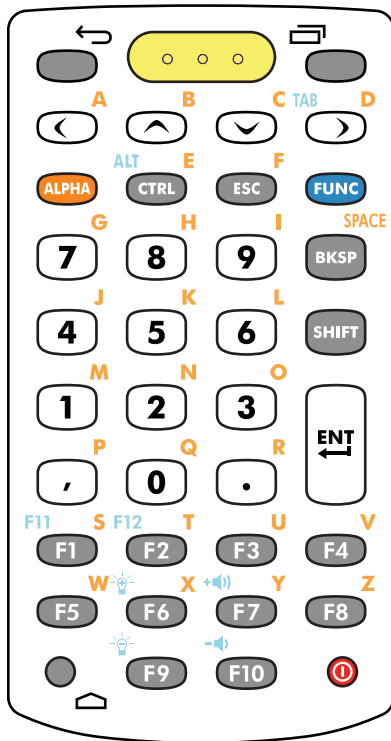




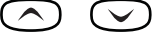









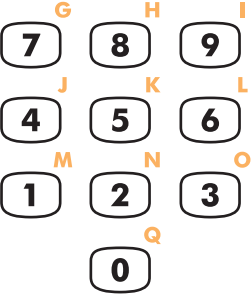





Figure 9-2 38-Key Keypad Android Configuration




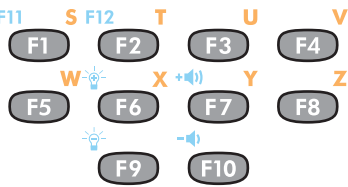

Table 9-3 38-Key Keypad Descriptions

Key	Description
Power (red) 	Powers the mobile computer screen on and off (resume and suspend).
Back 	Displays the previous screen. Closes the on-screen keyboard if open.
Menu 	Opens a menu with items that affect the current screen or application.
Scan (yellow) 	Used in scanning applications, press to scan a bar code. This key has the same function as activating the side mounted scan buttons.

**Table 9-3** 38-Key Keypad Descriptions (Continued)

Key	Description
Scroll Up and Down 	Moves up and down from one item to another. Increases/decreases specified values. Increases and decreases volume when the blue FUNC key is activated and the up and down arrow keys are pressed.
Scroll Left and Right 	Moves left and right from one item to another. Increases/decreases specified values. Produces a TAB when the blue FUNC key is activated and the right arrow key is pressed.
ALPHA 	Press the orange ALPHA key to access the alternate ALPHA characters (shown on the keypad in orange). The  icon appears on the Status bar. Press and release the orange ALPHA key again to return to the default keypad functions.
CTRL 	Press and release the CTRL key to activate the keypad alternate CTRL functions. The  icon appears on the Status bar. Press and release the CTRL key again to return to the default keypad functions. Press and release the blue FUNC key and then the CTRL key to activate the ALT functions. The  icon appears on the Status bar. Press and release the CTRL key two times to return to the default keypad functions.
ESC 	Produces the escape function.
FUNC 	Press and release the blue FUNC key to activate the keypad alternate functions (shown on the keypad in blue). The  icon appears on the Status bar. Press and release the blue FUNC key again to return to the default keypad functions.
Numeric/Alpha/Special Function 	Press for the default numeric value. Produces alpha values when the orange ALPHA key is activated.
BKSP 	Backspace function by default. Decreases brightness when the blue FUNC key is activated.
Shift 	Press and release the SHIFT key to activate the keypad alternate SHIFT functions. The  icon appears on the Status bar. Press and release the SHIFT key again to return to the default keypad functions.

**Table 9-3** 38-Key Keypad Descriptions (Continued)

Key	Description
Enter 	Executes a selected item or function.
Period 	Produces a period for alpha entries and a decimal point for numeric entries.
Comma 	Produces a comma by default.
Special Function/Alpha 	Special function by default or when the blue FUNC key is activated.
Home 	Displays the Home screen with a single press. Displays recently used applications when held for a short period of time.

**Table 9-4** 38-key Keypad Input Modes

Key	Normal	SHIFT + Key	Orange + Key	Orange + SHIFT + Key	Blue + Key
Right Arrow			a	A	
Up Arrow			b	B	
Down Arrow			c	C	
Left Arrow			d	D	Tab
CTRL			e	E	Ctrl
ESC			f	F	
7	7	&	g	G	-
8	8	*	h	H	=
9	9	(	l	l	/
BKSP	Backspace	Backspace	Space	Space	Backspace
4	4	\$	j	J	[

**Table 9-4** 38-key Keypad Input Modes (Continued)

Key	Normal	SHIFT + Key	Orange + Key	Orange + SHIFT + Key	Blue + Key
5	5	%	k	K	]
6	6	^	l	L	;
1	1	!	m	M	'
2	2	@	n	N	'
3	3	#	o	O	\
,	,	<	p	P	'
0	0	)	q	Q	0
.	.	>	r	R	-
F1			s	S	F11
F2			t	T	F12
F3			u	U	F13
F4			v	V	F14
F5			w	W	
F6			x	X	Increase Brightness
F7			y	Y	Increase Volume
F8			z	Z	
F9					Decrease Brightness
F10			*		Decrease Volume

**NOTE** An application can change the key functions. The keypad may not function exactly as described.

## MC32N0 48-Key Keypad

The 48-key keypad contains a Power button, application keys, scroll keys and function keys. The keypad is color-coded to indicate the alternate function key (blue) values. Note, that keypad functions can be changed by an application so the mobile computer keypad may not function as described. The tables below provide key and button descriptions and keypad alternate functions.



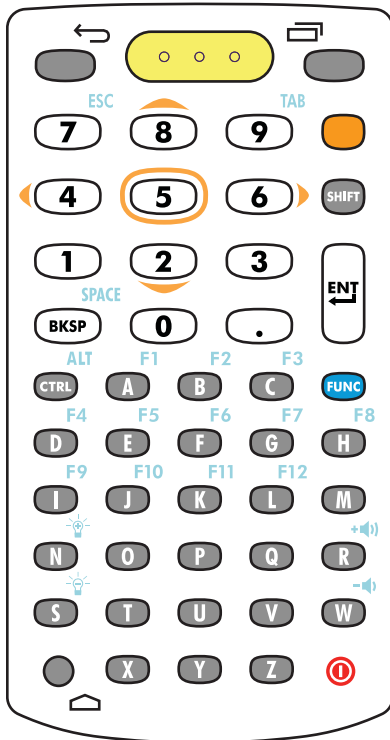

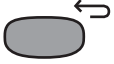



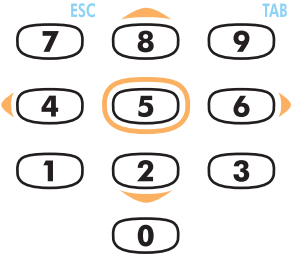








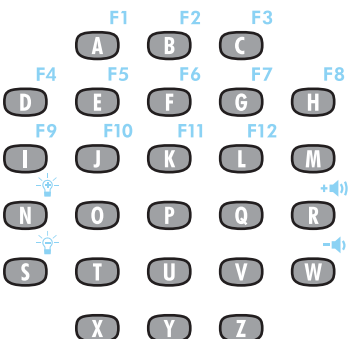


Figure 9-3 48-Key Keypad Android Configuration




Table 9-5 48-Key Keypad Descriptions

Key	Description
Power (red) 	Powers the mobile computer screen on and off (resume and suspend).
Back 	On Android device, displays the previous screen. Closes the on-screen keyboard if open.
Menu 	On Android device, opens a menu with items that affect the current screen or application.
Scan (yellow) 	Used in scanning applications, press to scan a bar code. This key has the same function as activating the side mounted scan buttons.
Orange 	Press the orange key to access the alternate navigation and selection functions. The  icon appears on the Status bar. Press and release the orange key again to return to the default keypad functions.

**Table 9-5** 48-Key Keypad Descriptions (Continued)

Key	Description
<p>Numeric/Scroll/Select</p> 	<p>Numeric, scroll, select keys. Numeric by default. With the orange key activated, the 2, 4, 6, and 8 keys produce scroll functions and the 5 key produces a select function. With the FUNC key activated, 7 produces the ESC function and 9 produces the TAB function.</p>
<p>Shift</p> 	<p>Press and release the SHIFT key to momentarily activate the keypad alternate SHIFT functions. The  icon appears on the Status bar. Press and release the SHIFT key a second time to lock the keypad into the Shift-Lock mode. The  icon appears on the Status bar. Press and release the SHIFT key again to return to the default keypad functions.</p>
<p>Enter</p> 	<p>Executes a selected item or function.</p>
<p>BKSP/SPACE</p> 	<p>BKSP, backspace function by default. Produces the SPACE function when the blue FUNC key is activated.</p>
<p>Period</p>	<p>Produces a period for alpha entries and a decimal point for numeric entries.</p>
<p>CTRL</p> 	<p>Press and release the CTRL key to activate the keypad alternate CTRL functions. The  icon appears on the Status bar. Press and release the CTRL key again to return to the default keypad functions. Press and release the blue FUNC key and then the CTRL key to activate the ALT functions. The  icon appears on the Status bar. Press and release the CTRL key two times to return to the default keypad functions.</p>
<p>Alpha/Special Function</p> 	<p>Alpha by default. Special function by default when the blue FUNC key is activated.</p>

**Table 9-5** 48-Key Keypad Descriptions (Continued)

Key	Description
FUNC 	Press and release the blue FUNC function key to activate the keypad alternate functions (shown on the keypad in blue). The  icon appears on the Status bar. Press and release the blue FUNC function key again to return to the default keypad functions.
Home 	Displays the Home screen with a single press. Displays recently used applications when held for a short period of time.

**Table 9-6** 48-key Keypad Input Modes

Key	Normal	SHIFT + Key	Blue + Key
A	a	A	F1
B	b	B	F2
C	c	C	F3
D	d	D	F4
E	e	E	F5
F	f	F	F6
G	g	G	F7
H	h	H	F8
I	i	I	F9
J	j	J	F10
K	k	K	F11
L	l	L	F12
M	m	M	
N	n	N	Increase Brightness
O	o	O	
P	p	P	
Q	q	Q	
R	r	R	Increase Volume
S	s	S	Decrease Brightness
T	t	T	
U	u	U	
V	v	V	

**Table 9-6** 48-key Keypad Input Modes (Continued)

Key	Normal	SHIFT + Key	Blue + Key
W	w	W	Decrease Volume
X	x	X	
Y	y	Y	
Z	z	Z	*
BKSP	Backspace	Delete	Space
1	1	!	
2	2	@	
3	3	#	
4	4	\$	
5	5	%	
6	6	^	
7	7	&	
8	8	*	
9	9	(	
0	0	)	

**NOTE** An application can change the key functions. The keypad may not function exactly as described.





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**MN-003006-02 Revision A - March 2017**