

CHAPTER 5 ACCESSORIES

Introduction

The wearable terminal accessories provide a variety of product support capabilities. Accessories include cradles, cables and scanners. [Table 5-1](#) lists the major accessories available for the wearable terminal:

Table 5-1 *Wearable Terminal Accessories*

Accessory	Description
Single Slot USB Cradle	Charges the wearable terminal main battery and a spare battery. It also synchronizes the wearable terminal with a host computer through a USB connection.
Four Slot Ethernet Cradle	Charges up to four wearable terminals (with main battery installed) and provides communication through an Ethernet connection.
Four Slot Spare Battery Charger	Charges up to four spare batteries.
RS409 Scanner	Provides 1D scanning capability.
RS419 Scanner	Provides 1D scanning capability.
RS309 Scanner	Provides 1D scanning capability.
RS507 Scanner	Provides wired or wireless imaging capability.
Wrist Mount	Provides a means for wearing the wearable terminal on the arm for hands-free applications.
Hip Mount	Provides a means for wearing the wearable terminal on a belt for hands-free applications.
Headset	For audio playback/recording during voice-enabled applications.
Headset Adapters	Connect an optional headset to the wearable terminal.
Replacement Batteries	Standard Capacity Battery: 2330 mAh (minimum) Extended Capacity Battery: 4600 mAh (minimum)

Table 5-1 Wearable Terminal Accessories (Continued)

Accessory	Description
Standard Capacity Battery Freezer Pouch	Allows the user to use the wearable terminal with standard capacity battery in a freezer environment on the hip or wrist for use in voice picking applications.
Extended Capacity Battery Freezer Pouch	Allows the user to use the wearable terminal with extended capacity battery in a freezer environment on the hip or wrist for use in voice picking applications.
USB Adapter	Connects the Single-slot cradle to USB hubs, mice, keyboards and memory. The adapter has a USB mini-A connector on the cradle side and a USB A Female connector on the other side.
Connector Shroud	Protects the connector of an accessory that connects to the wearable computer.
Screen Protectors	Package of 3 screen protectors.
Arm Sleeve	Extra layer sleeve to wear under wrist mount for extra comfort and hygiene.
RCH50 Rugged Cabled Headset	Enables hands-free voice-directed mobility communication. An audible mono headset with noise cancelling boom microphone helps survive harsh environments.
Software	<p><i>Enterprise Mobility Developer Kits available at:</i> http://www.motorola.com/enterprisemobility/support.</p> <p>Device Configuration Package (DCPforWT41x0c50) and Platform SDK (PSDK41x0c50) for WT41x0, available at: http://www.motorola.com/enterprisemobility/support.</p>

Single Slot USB Cradle



CAUTION Ensure that you follow the guidelines for battery safety described in *Battery Safety Guidelines* on page 6-3.

This section describes how to use a Single Slot USB cradle (Figure 5-1) with the wearable terminal. For USB communication setup procedures refer to the *WT41N0 Integrator Guide*.

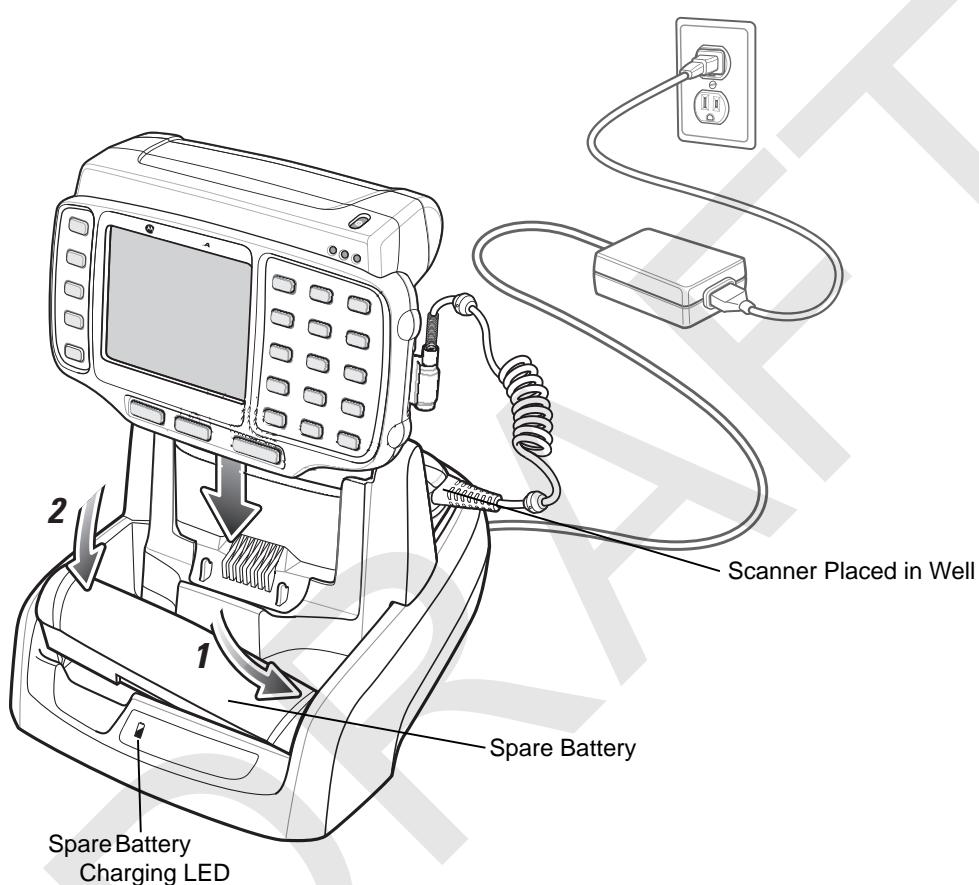


Figure 5-1 Single Slot USB Cradle

The Single Slot USB Cradle:

- Provides 5.4 VDC power for operating the wearable terminal.
- Provides USB port for data communication between the wearable terminal and a host computer or other serial devices (e.g., a printer).

✓ **NOTE** The normal function of the product may be disturbed by Strong Electro Magnetic Interference (for example, static electricity). If so, simply remove and re-insert the terminal to resume normal operation. In case the function does not resume, please use the product in another location.

- Synchronizes information between the wearable terminal and a host computer. (With customized or third party software, it can also be used to synchronize the wearable terminal with corporate databases.)
- Charges the wearable terminal's battery and a spare battery.
- Provides a location for storing a scanner when a wearable terminal is docked in the cradle.

Battery Charging Indicators

The Single Slot USB cradle can charge the wearable terminal's main battery and a spare battery simultaneously.

The wearable terminal's amber Charge Status LED indicates the status of the battery charging in the wearable terminal. See [Table 1-2 on page 1-7](#) for charging status indications.

The amber Spare Battery Charging LED on the cradle (see [Figure 5-1 on page 5-3](#)) indicates the status of the spare battery charging in the cradle. See [Table 5-2](#) for charging status indications. The standard capacity battery fully charges in less than four hours and the extended capacity battery fully charges in less than eight hours.

Table 5-2 Spare Battery LED Charging Indicators

Spare Battery LED (on cradle)	Indication
Off	No spare battery in well; spare battery not placed correctly; cradle is not powered.
Fast Blinking Amber	Charging error: <ul style="list-style-type: none">• Temperature is too low or too high.• Charging has gone on too long without completing (typically eight hours).
Slow Blinking Amber	Spare battery is charging.
Solid Amber	Charging complete.

Four Slot Ethernet Cradle



CAUTION Ensure that you follow the guidelines for battery safety described in *Battery Safety Guidelines* on page 6-3.

This section describes how to use a Four Slot Ethernet cradle (Figure 5-2) with the wearable terminal. For Ethernet communication setup procedures refer to the *WT41N0 Integrator Guide*.

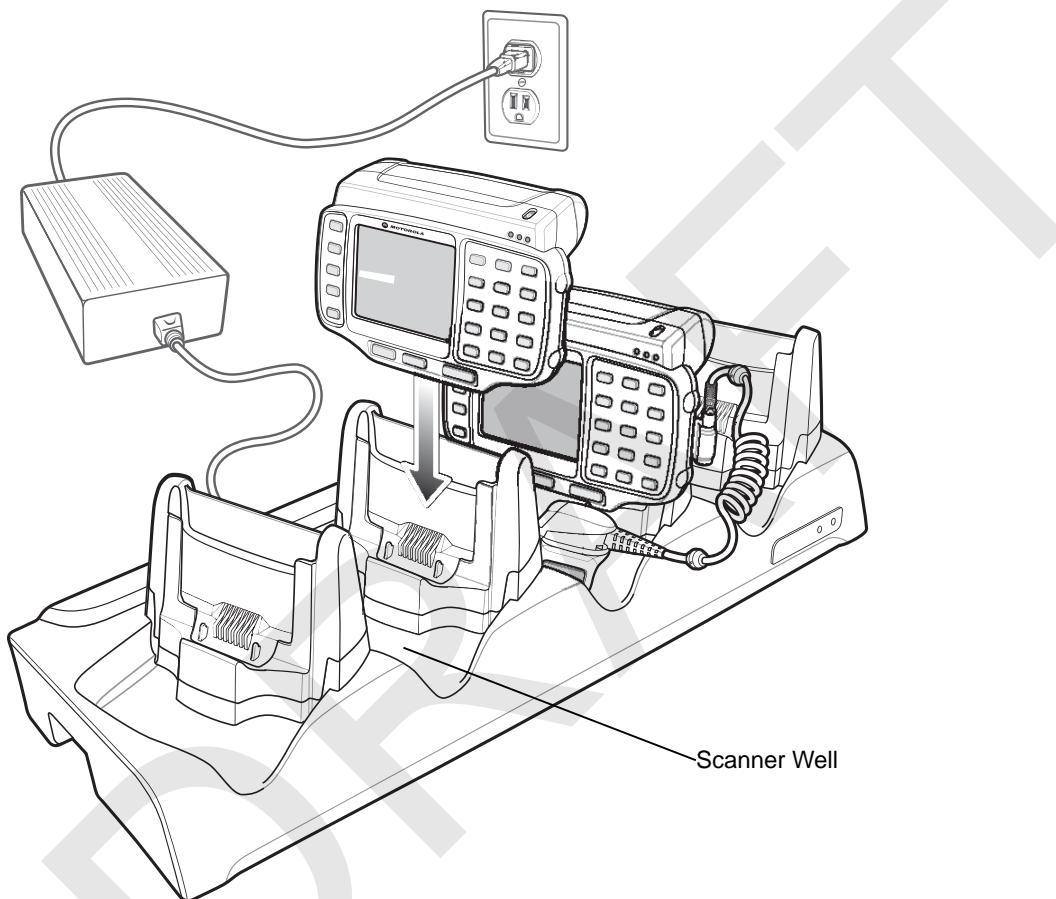


Figure 5-2 Four Slot Ethernet Cradle

The Four Slot Ethernet cradle:

- Connects up to four wearable terminals to an Ethernet network.
- Provide 5.4 VDC power for operating the wearable terminal and charging the battery.
- Simultaneously charges up to four wearable terminals (with batteries installed).

You cannot ActiveSync using the Four Slot Ethernet cradle. To ActiveSync with a host computer use the Single Slot USB cradle.

Battery Charging

The four slot Ethernet cradle can charge up to four wearable terminals simultaneously. To charge the wearable terminal:

1. Slide the wearable terminal into the wearable terminal slot.
2. The wearable terminal amber Charge Status LED indicates the wearable terminal battery charging status. The standard capacity battery usually charges in less than four hours and the extended capacity battery fully charges in less than eight hours. See [Table 5-2](#) for charging status indications.
3. When charging is complete, remove the wearable terminal from the cradle.

LED Charge Indications

The Four Slot Ethernet cradle uses the wearable terminal amber Power LED to indicate the battery charging status. See [Table 5-2 on page 5-4](#) for charging status indications.

Speed LED

The green Speed LED lights to indicate that the transfer rate is 100 Mbps. When it is not lit it indicates that the transfer rate is 10 Mbps.

Link LED

The yellow Link LED blinks to indicate activity, or stays lit to indicate that a link is established. When it is not lit, it indicates that there is no link.

Battery Charging Indicators

The wearable terminal's amber charge LED indicates the status of the battery charging in the wearable terminal. See [Table 1-2 on page 1-7](#) for charging status indications.

The standard capacity battery fully charges in less than four hours and the extended capacity battery fully charges in less than eight hours.

Four Slot Spare Battery Charger



CAUTION Ensure that you follow the guidelines for battery safety described in *Battery Safety Guidelines* on page 6-3.

This section describes how to use the Four Slot Spare Battery Charger to charge up to four wearable terminal spare batteries.

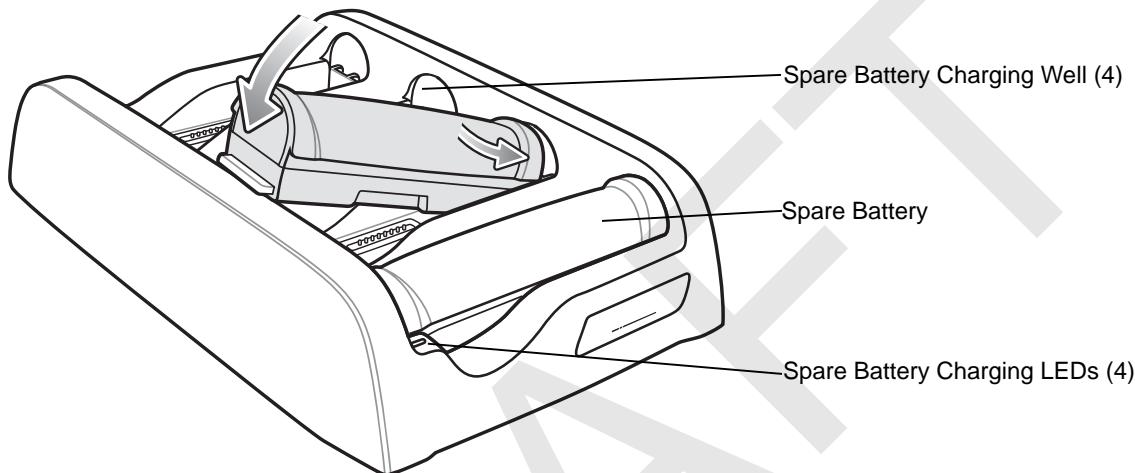


Figure 5-3 Four Slot Spare Battery Charger

Spare Battery Charging with the Four Slot Spare Battery Charger

Insert the battery into a spare battery charging slot and gently press down on the battery to ensure proper contact.

Battery Charging Indicators

An amber LED is provided on each battery charging well. See [Table 5-3](#) for charging status indications. The standard capacity battery usually charges in less than four hours and the extended capacity battery fully charges in less than eight hours.

Table 5-3 Spare Battery LED Charging Indicators

LED	Indication
Off	No spare battery in slot; spare battery not placed correctly; cradle is not powered.
Fast Blinking Amber	Charging error: <ul style="list-style-type: none"> Temperature is too low or too high. Charging has gone on too long without completing (typically eight hours).
Slow Blinking Amber	Spare battery is charging.
Solid Amber	Charging complete.

RS409/RS419 Scanner

To connect the RS409 or RS419 scanner to the wearable terminal:

- ✓ **NOTE** There are two scanner configurations available. The short cable configuration connects the scanner to the wearable terminal mounted on the arm. The extended cable configuration connects the scanner to the WT41N0 mounted on the hip.

1. Remove the rubber plug from the wearable terminal interface connector.
2. Connect the scanner interface cable to the wearable terminal interface connector. If the wearable terminal is mounted on the arm, connect the cable to the interface connector closest to the wrist.

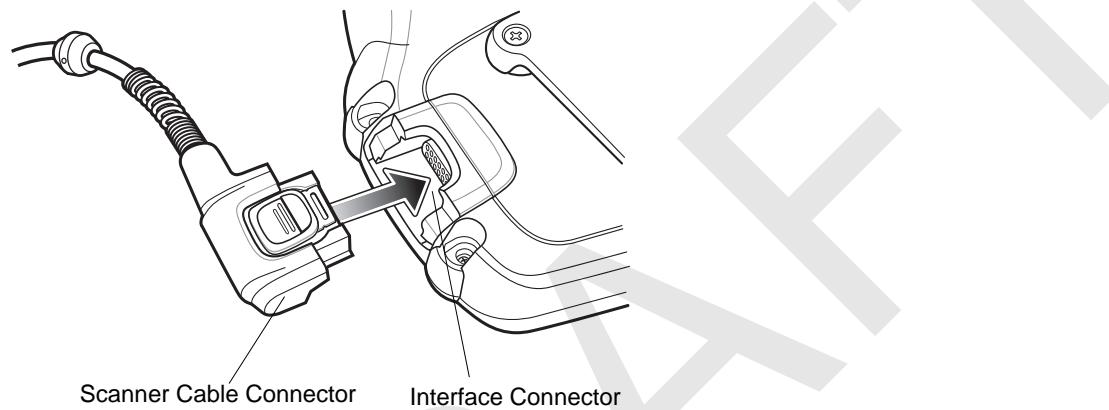


Figure 5-4 Connecting Scanner to Wearable Terminal

3. If using the extended cable configuration, route the scanner cable up to the shoulder and down to the hand that the scanner mounts on. Attach two cable clips to clothing and secure cable to cable clip.

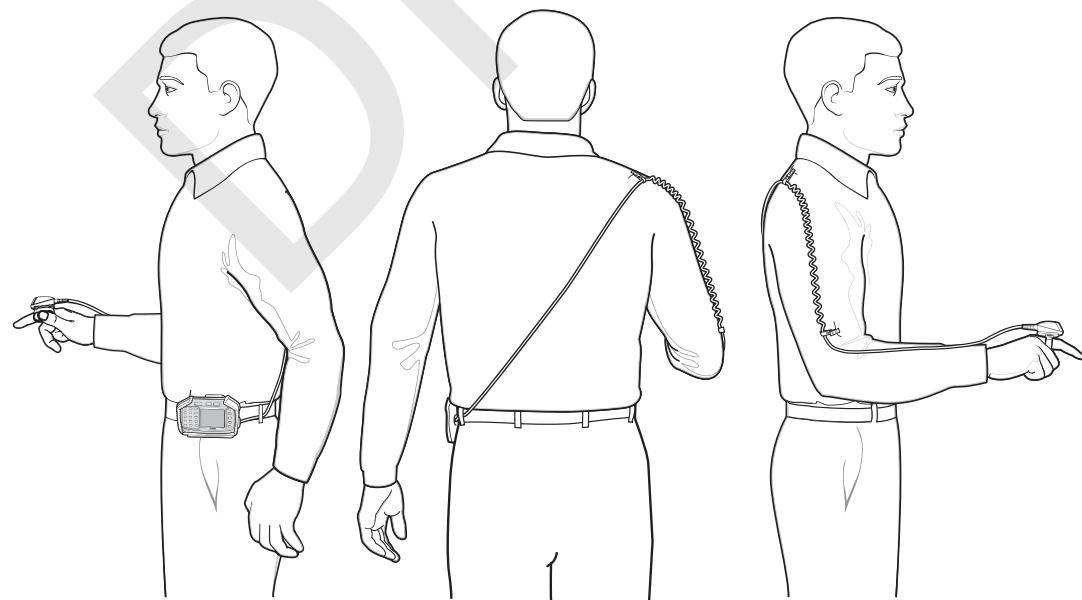


Figure 5-5 Cable Clip Installation

4. Rotate the trigger assembly to the correct position for the hand that the scanner mounts to.

5. Slide the scanner onto the index finger with the scan trigger next to the thumb.

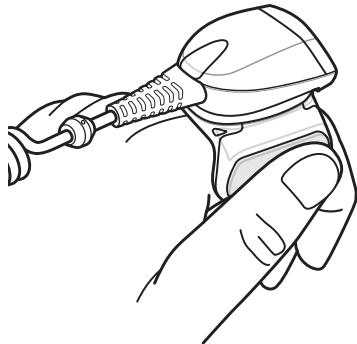


Figure 5-6 Place the Scanner on Index Finger

6. Tighten the finger strap.

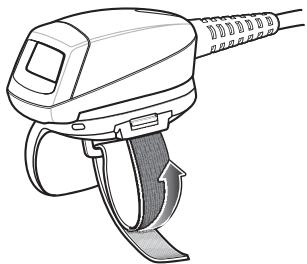


Figure 5-7 Tightening Straps

7. If required, cut excess finger strap material.

After connecting the scanner, warm boot the wearable terminal. See *Resetting the Wearable Terminal* on page 2-17 for information on performing a warm boot.

RS309 Scanner

The RS309 connects to the wearable terminal and mounts on the back of either hand using the RS309 glove.

1. Remove the rubber plug from the wearable terminal interface connector.
2. Connect the RS309 trigger cable to the back of the RS309.

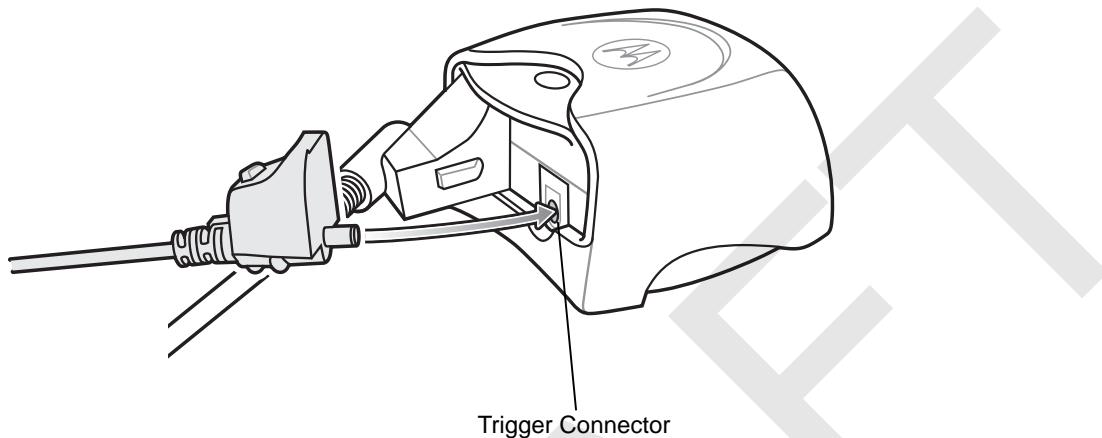


Figure 5-8 Connecting Trigger Cable to RS309

3. Connect the end of the RS309 interface cable to the wearable terminal interface connector. If the wearable terminal is mounted on the arm, connect the cable to the interface connector closest to the wrist.
4. If the wearable terminal is mounted on the hip, route the interface cable up to the shoulder and down to the hand that the scanner mounts on. Attach two cable clips to clothing and secure cable to cable clip.

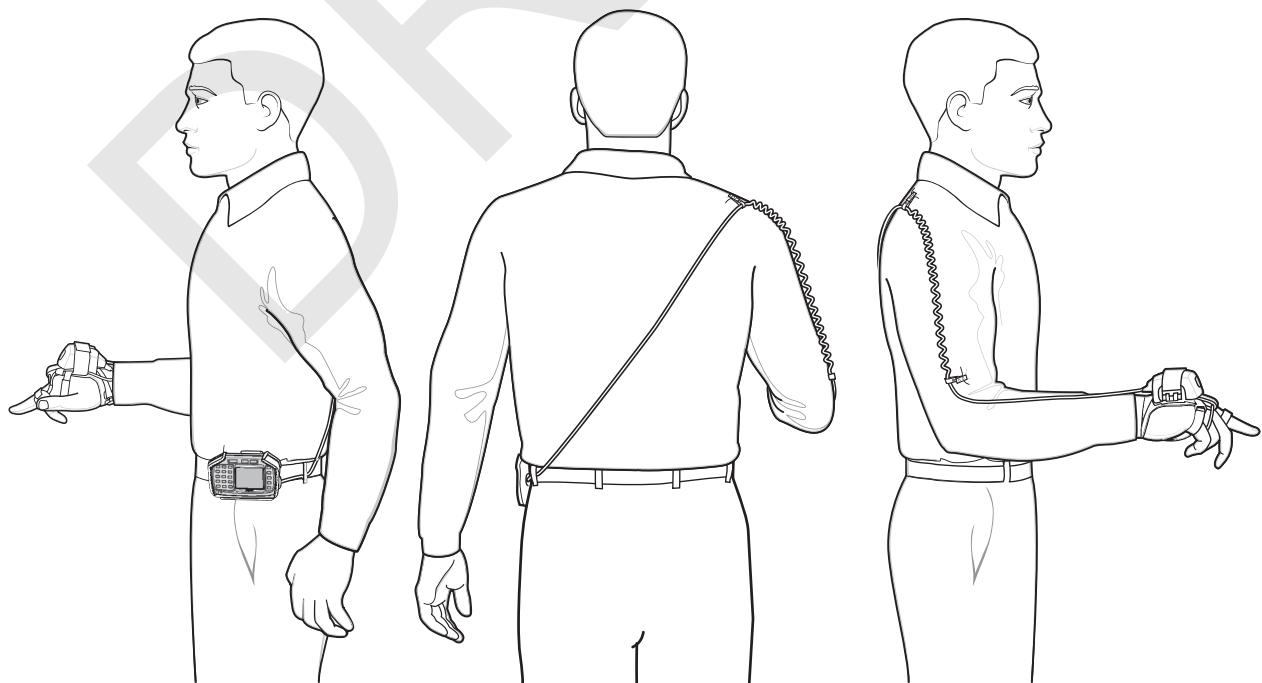


Figure 5-9 Cable Clip Installation

5. Mount the RS309 on the RS309 glove. Refer to the RS309 Glove Installation Guide for information on mounting the RS309.
6. Route the trigger cable around the side of the RS309, next to the index finger.
7. Slide the trigger mount on the index finger, with the button positioned next to the thumb, and adjust the velcro strap.

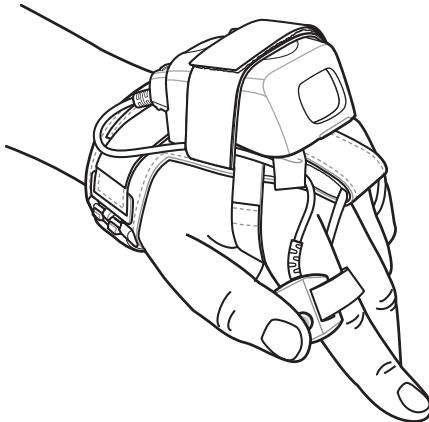


Figure 5-10 RS309 on Back of Hand

After connecting the scanner, warm boot the wearable terminal. See *Resetting the Wearable Terminal* on page 2-17 for information on performing a warm boot.

RS507 Imager

Refer to the *RS507 Hands-free Imager Quick Reference Guide*, p/n 72-115987-xx and the *RS507 Hands-free Imager Product Reference Guide*, p/n 72E-120802-xx for detailed information.

Freezer Pouch



NOTE Wearable computers with standard capacity batteries must use the Standard Capacity Battery Freezer Pouch while wearable computers with extended capacity batteries must use the Extended Capacity Battery Freezer Pouch. See [Table 5-1 on page 5-1](#) for more information.



CAUTION Do not use the wearable terminal with touch screen in the freezer pouch or in environments that are below -20°C (-4°F).

The freezer pouch allows the user to use the wearable terminal in a freezer environment on the hip or wrist for use in voice picking applications. An RS309, RS409 or RS419 scanner with an extended cable is required when mounting the freezer pouch on the hip mount, if scanning is also part of the application.

In order to keep the wearable terminal at a safe operating temperature in a meat or ice cream freezer, the freezer pouch insulates the wearable terminal to keep the heat generated by the wearable terminal within the pouch. The pouch is not heated. There are no batteries to worry about or electronics within the pouch.

The freezer pouch can be either hip-mounted or wrist-mounted. For hip-mounting, there is a belt loop on its back for attached a belt (sold separately). For wrist-mounting, customers can buy either a set of standard-length or longer-length wrist straps and use them with the pouch. The longer-length wrist straps are recommended for wrist-mounting over coats. The freezer pouch has openings on each side for wearable scanners and headset adapters.

While the freezer pouch is designed to allow workers to use the wearable terminal in meat and ice cream freezers, there are some very important limitations to follow:

- Do not use in environments that are below -30°C (-22°F).
- Do not allow the wearable terminal (with or without the freezer pouch) to remain in the suspend mode in environments below -20°C (-4°F) for more than 10 minutes. This prevents the wearable terminal from cooling down to the ambient freezer temperature. The pouch maintains the wearable terminal at a sufficient temperature while it is in use, but lengthy periods of inactivity bring the wearable terminal below its operating temperature.
- Do not store wearable terminals in the meat or ice cream freezer. As explained above, this would allow the wearable terminals to chill to the ambient freezer temperature, which is below their operating temperature. Furthermore, if batteries were left in wearable terminals stored in the freezer, the batteries themselves could freeze, which could damage them. At the least, they would not function while frozen.
- Batteries cannot be charged below 0°C (32°F). Motorola cradles and battery chargers have an automatic shut-off to insure this.
- If using wearable scanners with the wearable terminal in the meat or ice cream freezer for a shift, remember that the RS309 freezer configuration is the correct scanner to choose, due to its lower operating temperature range and its desiccant pack to remove condensation.

Slide the wearable terminal into the freezer pouch.

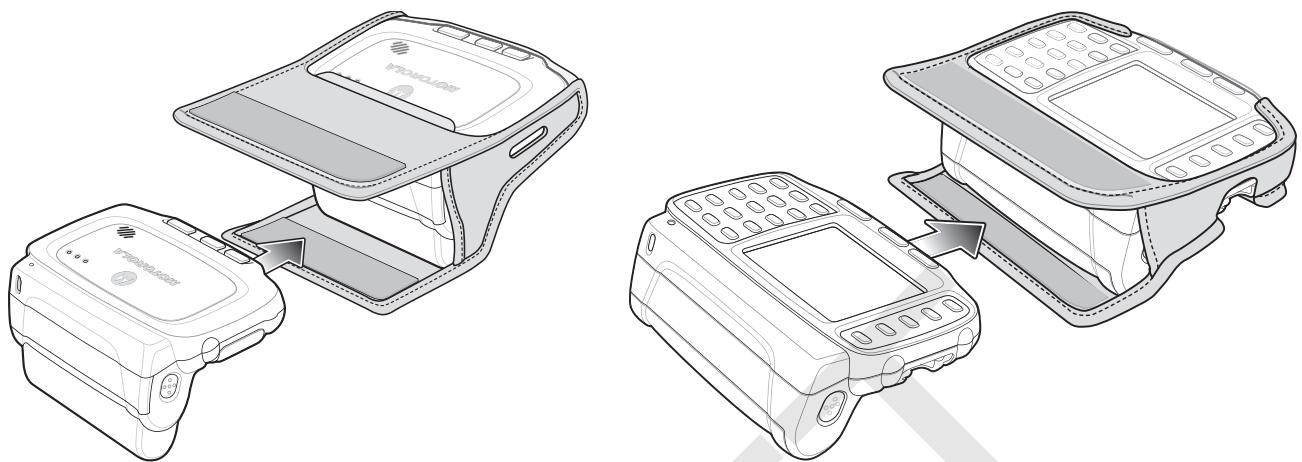


Figure 5-11 Insert Wearable Terminal into Freezer Pouch

Close the front flap followed by the back flap.

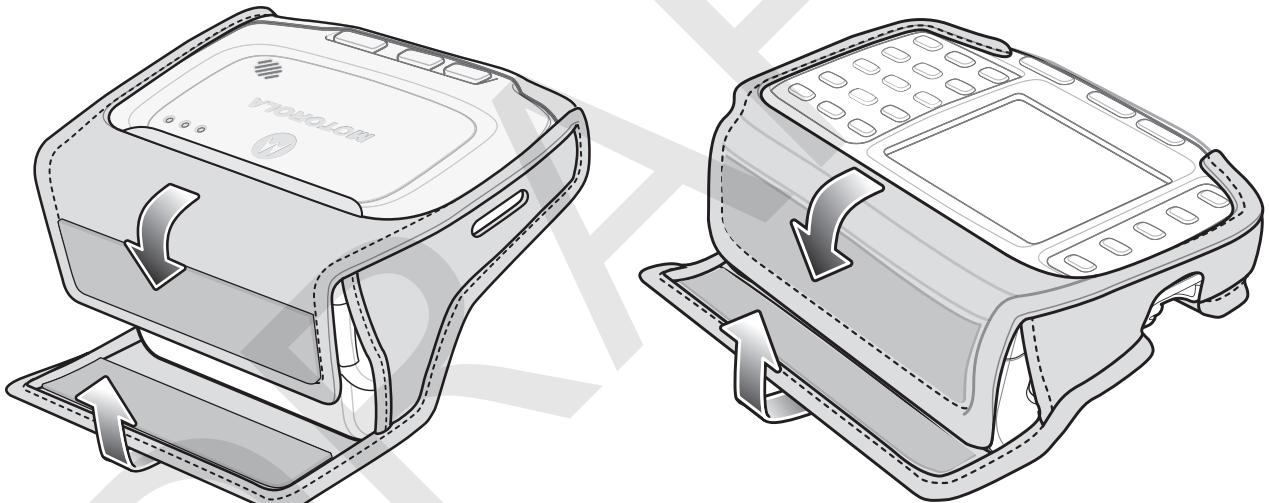


Figure 5-12 Close Freezer Pouch Flaps

Slide a belt through the belt loop on the back of the freezer pouch. The wearable terminal can be mounted right-side up or up-side down depending upon user preference or application.

Wired Headset

You can use a mono headset with a microphone for audio communication with an audio enabled application. The Headset Cable Adapter is required to connect a headset with the wearable terminal.

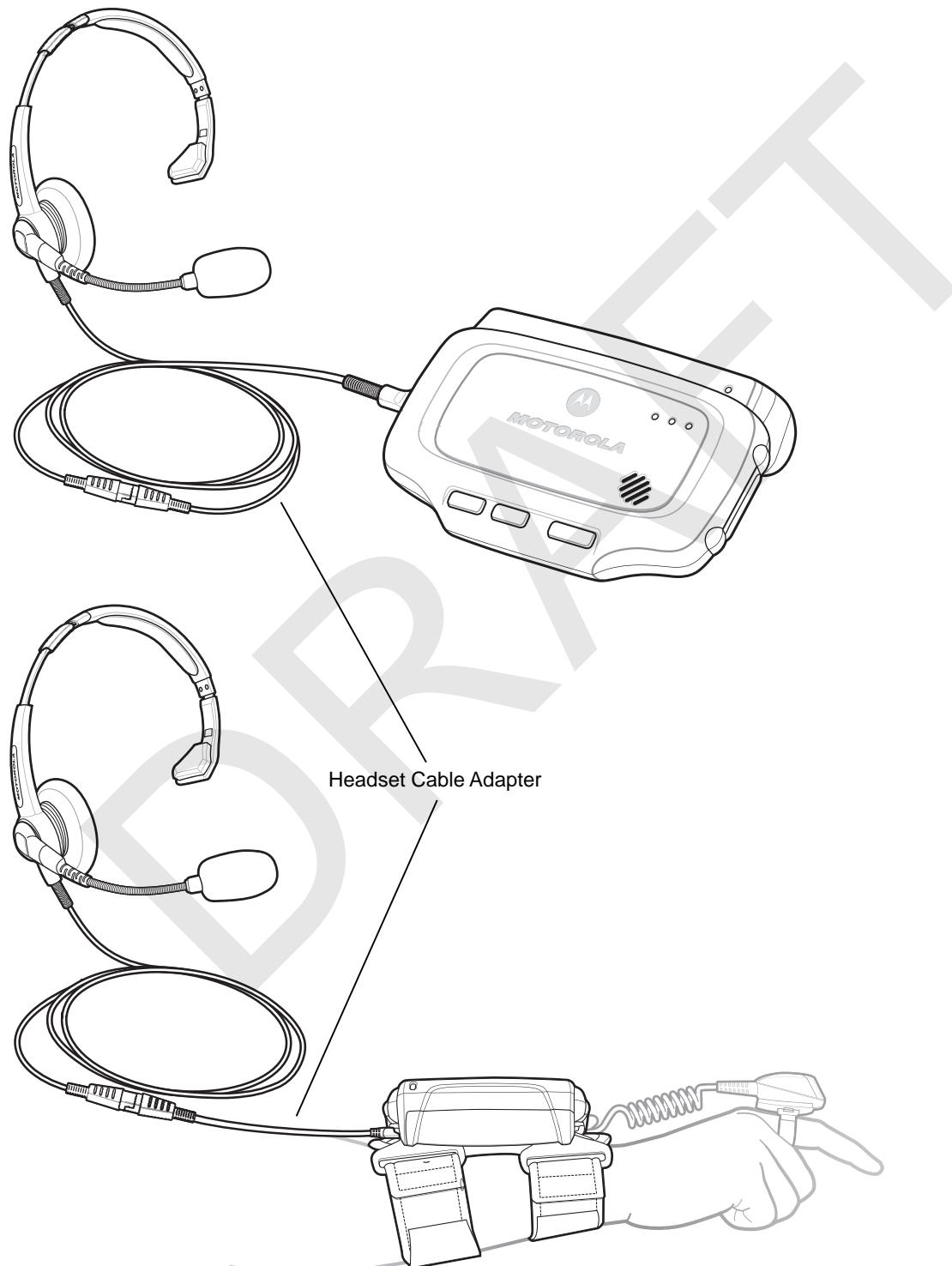


Figure 5-13 Typical Headset Connected to Headset Adapter

The headset cable adapter connects the headset to the wearable terminal. Connect the headset connect end of the adapter to the headset connector. Plug the other end of the adapter to the wearable terminal interface connector.

 **NOTE** Not all headset plugs are compatible with the headset cable adapter.

 **CAUTION** When disconnecting the headset from the headset adapter, pull the two connectors away from each. Do not bend connectors to disconnect.

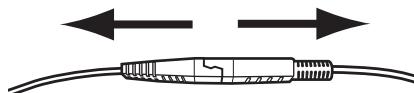


Figure 5-14 Disconnecting Headset from Headset Adapter

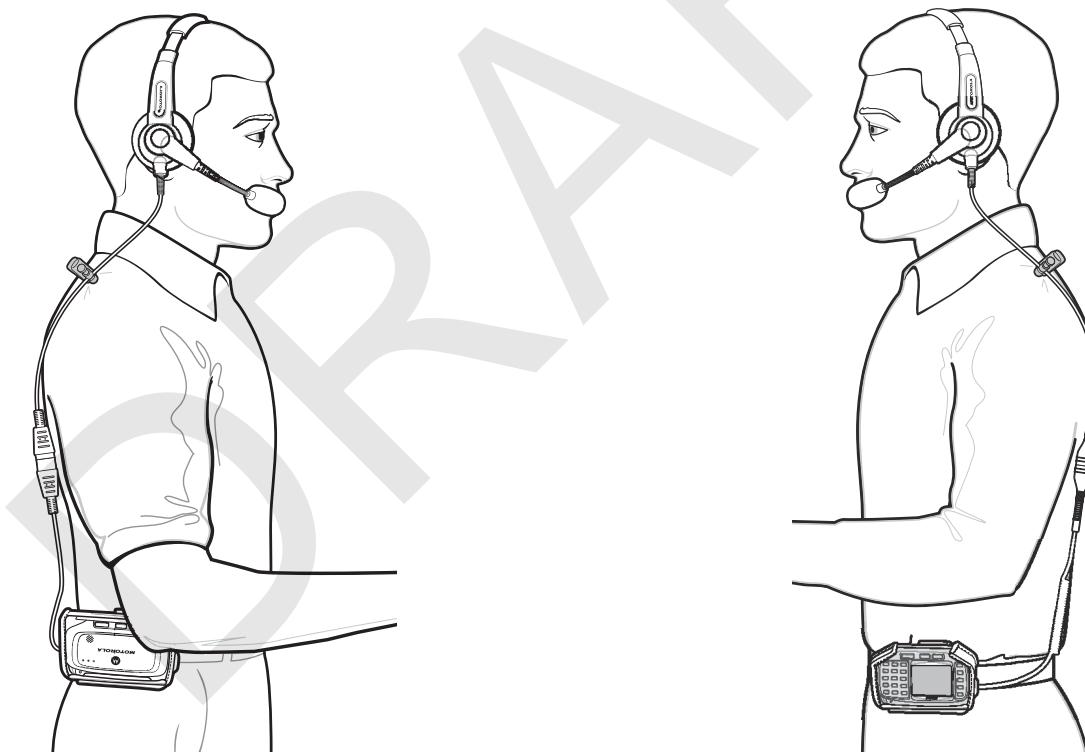


Figure 5-15 Headset Connected to wearable Terminal on Hip

Connector Shroud

Assembly

1. Remove cable from wearable terminal, if required.
2. Align the cable connector with the connector shroud bottom housing. Ensure that the disconnect button on the connector faces up.

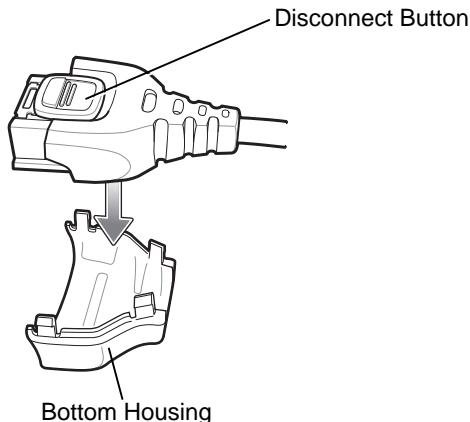


Figure 5-16 *Installing Bottom Housing*

3. Place the cable connector into the shroud bottom housing as shown.

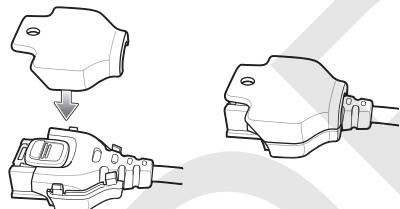


Figure 5-17 *Installing Top Housing*

4. Press the top housing into the bottom housing. The housings will snap together.
5. Plug the cable connector into the wearable terminal connector.

Disconnecting the Cable from the Wearable Terminal

 **NOTE** Follow the instructions below when disconnecting the cable connector and shroud from the wearable terminal. Once the shroud is installed on the connector, do not disassemble the shroud by prying it apart.

1. Turn the wearable terminal over to expose the top housing of the shroud.
2. Push the tip of a ball-point pen through the hole in the connector shroud top housing. The connector disengages from the wearable terminal.

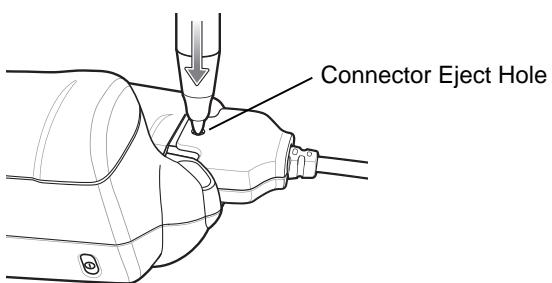


Figure 5-18 Disconnecting Connector with Shroud

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CHAPTER 6 MAINTENANCE & TROUBLESHOOTING

Introduction

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

Maintaining the Wearable Terminal

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

- Do not scratch the touch screen of the wearable computer. When activating with the wearable computer touch screen, use finger tips. Never use a pen or pencil or other sharp object on the surface of the screen.
Motorola requires using a screen protector, p/n KT-114032-01R or KT-114032-02R.
- A screen protector is applied to the wearable computer touch screen. Motorola requires 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 touch surface with tactile feel
 - Abrasion and chemical resistance
 - Keeping the device's screen looking new
 - Quick and easy installation.
- Protect the wearable terminal with a touch screen from temperature extremes.
- Do not store or use the wearable terminal with a touch screen in any location that is extremely dusty, damp, or wet.
- Use a soft lens cloth to clean the wearable terminal display/touch panel.
- Periodically replace the rechargeable Li-Ion battery to ensure maximum battery life and product performance. Battery life depends on individual usage patterns.
- The screen of the wearable terminal contains glass. Take care not to drop the wearable terminal or subject it to strong impact.

- Regularly replace all Velcro® straps on the wrist mount and wearable scanners, to ensure adequate adhesion of the Velcro.

Wrist Mount Cleaning Instructions

It may be necessary to wash the wrist mount straps and replaceable pad when they become soiled.

Remove the straps and pad from the wrist mount. Hand wash in cold water with a mild detergent (such as Woolite®). Do not use bleach. Air dry. Do not use a dryer.

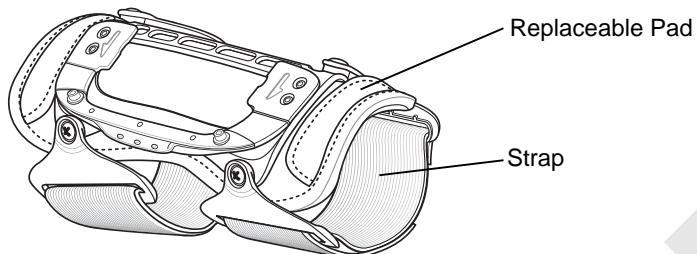


Figure 6-1 Wrist Mount Soft Goods

Arm Sleeve Cleaning Instructions

It may be necessary to wash the arm sleeve when it become soiled.

Hand wash in cold water with a mild detergent (such as Woolite®). Do not use bleach. Air dry. Do not use a dryer.

Removing the Screen Protector



NOTE Not using a screen protector on a wearable terminal with a touch screen can affect warranty coverage. To purchase replacement protectors, contact your local account manager or Motorola, Inc. These include screen protector installation instructions. Part number: KT-114032-01R or KT-114032-02R Screen Protector 3/pk.

A screen protector is applied to the wearable terminal with touch screen. Motorola recommends using this to minimize wear and tear. Screen protectors enhance the usability and durability of touch screen displays.

To remove the screen protector, lift the corner using a thin plastic card, such as a credit card, then carefully lift it off the display.

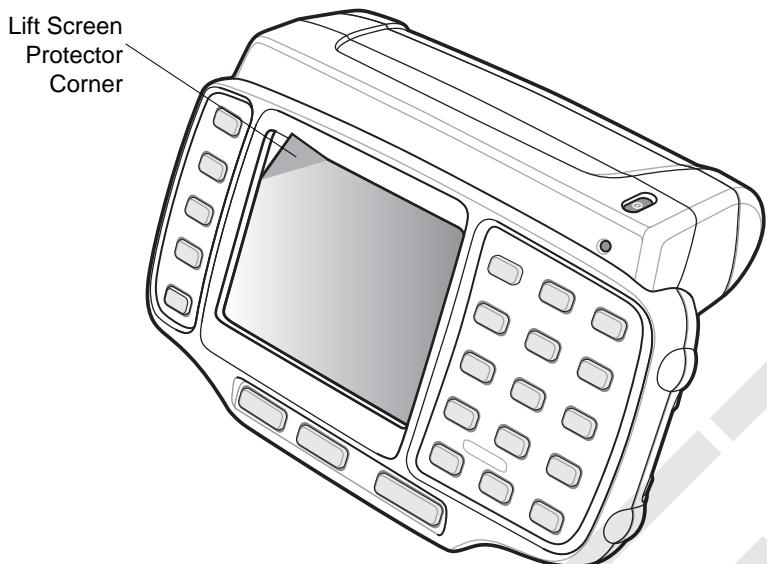


Figure 6-2 Removing the Screen Protector



CAUTION Do not use a sharp object to remove the protector. Doing so can damage the touch screen.

Battery Safety Guidelines

- 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.
- 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 0 °C and +40 °C (+32 °F and +104 °F).
- 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 Motorola Enterprise Mobility support.
- 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 promptly 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 Motorola Enterprise Mobility support to arrange for inspection.

Cleaning



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.



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 Motorola for more information.

Materials Required

- Alcohol wipes
- Soft lens cloth
- Cotton tipped applicators
- Isopropyl alcohol
- Can of compressed air with a tube.

Cleaning the Wearable Terminal

Housing

Using the alcohol wipes, wipe the housing including keys and in-between keys.

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. For WT41N0 with touch panel, only use a soft lens cloth to clean the touch panel overlay surface.

Connectors

Clean all three connectors, two interface connectors on the sides of the wearable terminal and the cradle connector on the back.

1. Remove the main battery from mobile computer. See *Installing and Removing the Main Battery* on page 1-6.
2. Remove connector rubber plugs, if required.

3. Dip the cotton portion of the cotton tipped applicator in isopropyl alcohol.
4. Rub the cotton portion of the cotton tipped applicator back-and-forth across each connector. Do not leave any cotton residue on the connector.
5. Repeat at least three times.
6. Use the cotton tipped applicator dipped in alcohol to remove any grease and dirt near the connector area.
7. Use a dry cotton tipped applicator and repeat steps 4 through 7.
8. Spray compressed air on the connector areas by pointing the tube/nozzle about $\frac{1}{2}$ inch away from the surface.



- CAUTION** Do not point nozzle at yourself and others, ensure the nozzle or tube is away from your face.
9. Inspect the area for any grease or dirt, repeat if required.
 10. Replace connector rubber plugs, if required.

Cleaning the RS309, RS409, RS419 and RS507

Housing

Using the alcohol wipes, wipe the housing including keys and in-between keys.

Scanner Exit Window

Wipe the scanner exit window periodically with a lens cloth or other material suitable for cleaning optical material such as eyeglasses.

Connectors

1. Disconnect the scanner 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 pins. 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 3 through 5.
7. Spray compressed air on the connector area by pointing the tube/nozzle about $\frac{1}{2}$ inch away from the surface.



- CAUTION** Do not point nozzle at yourself and others, ensure the nozzle or tube is away from your face.
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 let 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 $\frac{1}{2}$ inch away from the surface.
6. Ensure that there is no lint left by the cotton tipped applicator, remove lint if found.
7. If grease and other dirt can be found on other areas of the cradle, use lint free cloth and alcohol to remove.



CAUTION 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.

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. However when used in dirty environments it may be advisable to periodically clean the ring scanners' exit windows to ensure optimum scanning performance.

Troubleshooting

Wearable Terminal

Table 6-1 Troubleshooting the Wearable Terminal

Problem	Cause	Solution
Wearable terminal does not turn on.	Lithium-ion battery not charged.	Charge or replace the lithium-ion battery in the wearable terminal.
	Lithium-ion battery not installed properly.	Ensure battery is installed properly. See <i>Installing and Removing the Main Battery</i> on page 1-6.
	System crash.	Perform a warm boot. If the wearable terminal still does not turn on, perform a cold boot. See <i>Resetting the Wearable Terminal</i> on page 2-17.
Rechargeable lithium-ion battery did not charge.	Battery failed.	Replace battery. If the wearable terminal still does not operate, try a warm boot, then a cold boot. See <i>Resetting the Wearable Terminal</i> on page 2-17.
	Wearable terminal removed from cradle while battery was charging.	Insert wearable terminal in cradle and begin charging. The standard capacity battery fully charges in less than four hours and the extended capacity battery fully charges in less than eight hours.
	Ambient temperature of the cradle is too warm or too cold.	Move the cradle to an area where the ambient temperature is between 0 °C and 40 °C (32 °F and 104 °F).
Cannot see characters on display.(not applicable to voice only configuration)	Wearable terminal not powered on.	Press the Power button.
	Screen protective is scratched or hazy.	Replace screen protector.
Display is hard to read. (not applicable to voice only configuration)	Screen protective is scratched or hazy.	Replace screen protector.

Table 6-1 Troubleshooting the Wearable Terminal (Continued)

Problem	Cause	Solution
During data communication, no data was transmitted, or transmitted data was incomplete.	Wearable terminal removed from cradle or unplugged from host computer during communication.	Replace the wearable terminal in the cradle, or reattach the Synchronization cable and re-transmit.
	Incorrect cable configuration.	See the System Administrator.
	Communication software was incorrectly installed or configured.	Perform setup. Refer to the <i>WT41N0 Integrator Guide</i> for details. Ensure that Microsoft ActiveSync 4.5 or greater is installed on the host computer.
No sound is audible.	Volume setting is low or turned off.	Adjust volume. Change volume settings by selecting Start > Settings > Control Panel > Volume & Sounds icon > Volume tab . Move the slider to change the volume level or use volume control on voice application.
Wearable terminal turns itself off.	Wearable terminal is inactive.	The wearable terminal turns off after a period of inactivity. If the wearable terminal is running on battery power, this period can be set to 30 sec., 1, 2, 3, 4, 5 or 6 minutes. If the wearable terminal is running on external power, this period can be set to 1, 2, 3, 5, 10, 15 and 30 minutes. Check the power settings by selecting Start > Settings > Control Panel > Power icon > Power Off tab . Change the setting if you need a longer delay before the automatic shutoff feature activates.
	Voice Only WT41N0 was set to suspend.	Return Voice Only WT41N0 suspend setting to factory default (disabled).
	Battery is depleted.	Replace or recharge the battery.
	Battery is not inserted properly.	Insert the battery properly (see <i>Installing and Removing the Main Battery on page 1-6</i>).
	The wearable terminal's battery is low and it powers down to protect memory content.	Replace or recharge the battery.
A message appears stating that the wearable terminal memory is full.(not applicable to voice only configuration)	Too many files stored on the wearable terminal.	Delete unused memos and records. You can save these records on the host computer.
	Too many applications installed on the wearable terminal.	If you have installed additional applications on the wearable terminal, remove them to recover memory. Select Start > Settings > Control Panel > Remove Programs icon . Select the unused program and select Remove .

Table 6-1 Troubleshooting the Wearable Terminal (Continued)

Problem	Cause	Solution
The wearable terminal does not accept scan input.	Scanning application is not loaded.	Verify that the unit is loaded with a scanning application. See the System Administrator.
	Unreadable bar code.	Ensure the symbol is not defaced.
	Distance between exit window and bar code is incorrect.	Ensure wearable terminal is within proper scanning range.
	Wearable terminal is not programmed for the bar code.	Ensure the wearable terminal is programmed to accept the type of bar code being scanned.
	Wearable terminal is not programmed to generate a beep.	If a beep on a good decode is expected and a beep is not heard, check that the application is set to generate a beep on good decode.
	Battery is low.	If the scanner stops emitting a laser beam when the trigger is pressed, check the battery level. When the battery is low, the scanner shuts off before the wearable terminal low battery condition notification. Note: If the scanner is still not reading symbols, contact the distributor or Motorola.
Wearable terminal goes into IPL mode after cold boot.	Headset adapter without a headset is connected to the wearable terminal during a cold boot.	Disconnect the headset adapter prior to performing a cold boot. Update to a newer operating system (OEM version 05.30.0000 or higher).
	Scanner trigger is held down during a cold boot.	Do not press trigger during a cold boot.
	P1 or P2 key is held down during a cold boot.	Do not press the P1 or P2 key during a cold boot.
If all three LEDs are lit solid.	Voice Only WT41N0 is in IPL mode.	Perform cold boot. See <i>Resetting the Wearable Terminal</i> on page 2-17.
WLAN connection is lost when the wearable terminal is connected to a host computer using ActiveSync.	Microsoft security feature prevents connection to two separate networks.	Disconnect from the WLAN network prior to connecting to a host computer using ActiveSync.

Table 6-1 Troubleshooting the Wearable Terminal (Continued)

Problem	Cause	Solution
Wearable terminal 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.
	The Bluetooth device(s) nearby are not turned on.	Turn on the Bluetooth device(s) you wish 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.

Four Slot Ethernet Cradle

Table 6-2 Troubleshooting the Four Slot Ethernet Cradle

Problem	Cause	Solution
Wearable terminal amber Charge Status LED does not light when wearable terminal inserted.	Cradle is not receiving power.	Ensure the power cable is connected securely to both the cradle and to AC power.
	Wearable terminal is not correctly seated.	Remove and re-insert the wearable terminal into the cradle, ensuring it is correctly seated.
Wearable terminal battery is not charging.	Wearable terminal was removed from cradle or cradle was unplugged from AC power too soon.	Ensure cradle is receiving power. Ensure the wearable terminal is seated correctly. If the wearable terminal battery is fully depleted, it can take up to four hours to fully recharge a standard capacity battery and it can take up to eight hours to fully recharge an extended capacity battery.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	The wearable terminal is not fully seated in the cradle.	Remove and re-insert the wearable terminal into the cradle, ensuring it is correctly seated.
	Ambient temperature of the cradle is too warm or too cold.	Move the cradle to an area where the ambient temperature is between 0 °C and 40 °C (32 °F and 104 °F).
During data communication, no data was transmitted, or transmitted data was incomplete.	Wearable terminal removed from cradle during communication.	Replace wearable terminal in cradle and retransmit.
	Incorrect cable configuration.	See the system administrator or refer to the <i>WT41N0 Integrator Guide</i> .
	Ethernet connection error. Link LED is not lit (see <i>Link LED</i> on page 5-6).	See the system administrator. Probable Ethernet connection error.
Wearable terminal's main batteries not charging.	Ambient temperature of the cradle is too warm or too cold.	Move the cradle to an area where the ambient temperature is between 0 °C and 40 °C (32 °F and 104 °F).

Four Slot Spare Battery Charger

Table 6-3 Troubleshooting The Four Slot Spare Battery Charger

Symptom	Possible Cause	Solution
Batteries not charging.	Battery was removed from the charger or charger was unplugged from AC power too soon.	Re-insert the battery in the charger or re-connect the charger's power supply.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	Battery contacts not connected to charger.	Verify that the battery is oriented properly and firmly seated in the battery well correctly with the contacts facing down. See Figure 5-3 on page 5-7 for proper battery orientation.
	Ambient temperature of the charger is too warm or too cold.	Move the charger to an area where the ambient temperature is between 0 °C and 40 °C (32 °F and 104 °F).

Single Slot USB Cradle

Table 6-4 Troubleshooting the Single Slot USB Cradle

Symptom	Possible Cause	Solution
Charge Status LEDs do not light when wearable terminal or spare battery is inserted.	Cradle is not receiving power.	Ensure the power cable is connected securely to both the cradle and to AC power.
	Wearable terminal is not seated firmly in the cradle.	Remove and re-insert the wearable terminal into the cradle, ensuring it is firmly seated.
	Spare battery is not seated firmly in the cradle.	Remove and re-insert the spare battery into the charging slot, ensuring it is firmly seated.
Wearable terminal battery is not charging.	Wearable terminal was removed from cradle or cradle was unplugged from AC power too soon.	Ensure cradle is receiving power. Ensure wearable terminal is seated correctly. Confirm main battery is charging. If a wearable terminal battery is fully depleted, it can take up to four hours to fully recharge a standard capacity battery and up to eight hours for an extended capacity battery (if the wearable terminal is off, and longer if the wearable terminal is operating). View battery status by selecting Start > Settings > Control Panel > Power icon.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	The wearable terminal is not fully seated in the cradle.	Remove and re-insert the wearable terminal into the cradle, ensuring it is firmly seated.
	Ambient temperature of the cradle is too warm or too cold.	Move the cradle to an area where the ambient temperature is between 0°C and 40°C (32°F and 104°F).
Spare battery is not charging.	Battery inserted incorrectly.	Verify that the battery is oriented properly and firmly seated in the battery well correctly with the contacts facing down. See Figure 5-3 on page 5-7 for proper battery orientation.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	Ambient temperature of the cradle is too warm or too cold.	Move the cradle to an area where the ambient temperature is between 0 °C and 40 °C (32 °F and 104 °F).

Table 6-4 Troubleshooting the Single Slot USB Cradle (*Continued*)

Symptom	Possible Cause	Solution
During data communications, no data was transmitted, or transmitted data was incomplete.	Wearable terminal removed from cradle during communications.	Replace wearable terminal in cradle and retransmit.
	Incorrect cable configuration.	See the System Administrator.
	Communications software is not installed or configured properly.	Perform setup as described in the <i>WT41N0 Integrator Guide</i> . Ensure that Microsoft ActiveSync 4.1 or greater is installed on the host computer.
Cannot ActiveSync with Host Computer	Wrong USB cable used.	Ensure that the cable has a USB A connector on one end and a USB mini B connector on the other end.
	Host computer not configured properly.	Ensure that ActiveSync on the host computer is set to allow USB connections.
	The wearable terminal is not fully seated in the cradle.	Remove and re-insert the wearable terminal into the cradle, ensuring it is firmly seated.

APPENDIX A SPECIFICATIONS

Technical Specifications

The following tables summarize the wearable terminal's intended operating environment and general technical hardware specifications.

Wearable Terminal

The following table summarizes the wearable terminal's intended operating environment.

Table A-1 Technical Specifications

Item	Description
Physical and Environmental Characteristics	
Dimensions	With standard battery: 5.7 inches L x 3.7 inches W x 1.0 inch H (14.2 cm L x 9.3 cm W x 2.6 cm H) With extended battery: 5.7 inches L x 4.2 inches W x 1.0 inch H (14.2 cm W x 10.7 cm H x 2.6 cm D)
Weight	With standard battery: 11.3 oz. (320 g) With extended battery: 12.2 oz. (345 g).
Keyboard	WT41N0: Two-color Alphanumeric Keypad Voice Only WT41N0: Three programmable function keys
Display	WT41N0: Color 2.8 inch QVGA non-touch or touch screens Voice Only WT41N0: None
Main Battery	Removable, rechargeable 3.7 VDC Lithium Ion battery. Standard capacity: 2330 mAh (minimum) Extended capacity: 4600 mAh (minimum)
Backup Battery	Two NiMH batteries (rechargeable) 15 mAh 2.4 VDC (not user accessible)
Performance Characteristics	
CPU	OMAP 4 processor at 1 GHz
Operating System	Microsoft Windows CE 7.0 Professional

Table A-1 Technical Specifications (Continued)

Item	Description
Memory	2 GB Flash/512 MB RAM
Application Development	PSDK, DCP and EMDK
Data Capture Options	RS309 scanner RS409 scanner RS419 scanner RS507 Hands-free imager
User Environment	
Operating Temperature	-4 °F to 122°F (-20 °C to 50 °C)
Storage Temperature	-40 °F to 158 °F (-40 °C to 70 °C)
Battery Charging Temperature	32 °F to 104 °F (0 °C to +40 °C) ambient temperature range.
Humidity	5% to 95% non condensing
Drop Specification	Multiple 4 ft.(1.2 m) drops to concrete across operating temperature range
Tumble	500 half-meter tumbles at room temperature (1,000 drops)
Environmental Sealing	IP54 Category 2
ESD	± 15k VDC air discharge ± 8k VDC direct discharge ± 8k VDC indirect discharge
WLAN Wireless Data Communications	
WLAN radio	802.11a/b/g/n
Operating Channels	Channel 8 - 169 (5040 - 5845 MHz) (4920 - 4980 MHz) Japan only Channel 1 - 13 (2412 - 2472 MHz) Channel 14 (2484 MHz) Japan only Actual operating frequencies depend on regulatory rules and certification agency
Security	WPA2, WEP (40 or 128 bit), TKIP, TLS, TTLS (MS-CHAP), TTLS (MS-CHAP v2), TTLS (CHAP), TTLS-MD5, TTLS-PAP, PEAP-TLS, PEAP (MS-CHAP v2), AES, LEAP, CCX v3
Voice Communication	Runs voice recognition engines and text-to-speech engines for voice picking applications
Output Power	100 mW U.S. and International
Data Rate	802.11a: up to 54Mb per second 802.11b: up to 11Mb per second 802.11g: up to 54Mb per second
Frequency Range	802.11a: 5 GHz; country-dependent 802.11b: 2.4 GHz; country-dependent 802.11g: 2.4 GHz; country-dependent
Antenna	Internal
WPAN Wireless Data Communications	
Bluetooth	Bluetooth Version 1.2

Table A-1 Technical Specifications (Continued)

Item	Description
Peripherals and Accessories	
Cradles	Single Slot USB Four Slot Ethernet
Printers	Supports extensive line of approved printers, cables and accessories
Charger	Four Slot Battery Charger
Other Accessories	Headset adapter, freezer pouch, hip mount and wrist mount.

RS309 Scanner

Table A-2 RS309 Technical Specifications

Item	Description
Physical and Environmental Characteristics	
Dimensions (standard version without cables attached)	2.7 inch L x 2.4 inch W x 1.5 inch H (6.8 cm L x 6.1 cm H x 3.8 cm)
Weight (standard version without cables attached)	3.525 oz. (98 gm)
Current	140 mA typical, 180 mA max
Standby Current	60 µA max
Voltage	3.1 to 3.6 VDC
Vcc Noise Level	200 mV p-p max.
Performance Characteristics	
Light Source	650 nm LASER, 1.06 mW
Scan Rate	35 (\pm 5) scans/sec (bidirectional)
Nominal Working Distance	Density 5 mil 7.5 mil 13 mil 20 mil 55 mil Code Type 39 39 UPC 39 39 Far (inches) 7 9.75 20.25 29.25 54.5 (Guaranteed) Far (inches) 9.5 15.25 27.25 42.5 84.75 (Typical)
Yaw	\pm 50 degrees from normal
Roll	\pm 20 degrees from vertical
Pitch	\pm 65 degrees from normal
User Environment	
Operating Temperature	-22 °F to 122 °F (-30 °C to 50 °C)
Storage Temperature	-40 °F to 140 °F (-40 °C to 60 °C)
Humidity	5% to 95% non condensing
Drop Specification	4 ft.(1.8m) drop to concrete
Environmental Sealing	IP54 sealing

Table A-2 RS309 Technical Specifications (Continued)

Item	Description		
Ambient Light Immunity	Indoor: 450 foot-candles (4,844 lux) Outdoor: 8,000 foot-candles (86,111 lux)		
Regulatory			
Electrical Safety	Certified to CSA C22.2 No. 60950-1, EN60950-1, IEC 60950-1		
EMI/RFI	FCC Part 15 Class B, ICES-003 Class B, European Union EMC and R&TTE Directives, Australian AS/NZS 4268		
Laser Safety	CDRH Class II, IEC 60825-1 Class 2		
Laser Decode Capability	Code 39 Codabar Interleaved 2 of 5 MSI UPC/EAN supplementals Webcode	Code 128 Code 11 EAN-8 UPCA Coupon Code Chinese 2 of 5	Code 93 Discrete 2 of 5 EAN-13 UPCE Trioptic 39 RSS

RS409 Scanner

Table A-3 RS409 Technical Specifications

Item	Description																																
Physical and Environmental Characteristics																																	
Dimensions	1.9 in. L x 1.4 in. W x 1.9 in. H (4.8 cm L x 3.6 cm H x 4.8 cm H)																																
Weight (standard version without cables attached)	2.0 oz. (56.7 gm)																																
Current	92 mA typical, 121 mA max																																
Standby Current	12µA typical/60 µA max																																
Voltage	3.1 to 3.6 VDC																																
Vcc Noise Level	100 mV p-p max.																																
Performance Characteristics																																	
Light Source	650 nm LASER, 1.55 mW																																
Scan Rate	104 (\pm 12) scans/sec (bidirectional)																																
Nominal Working Distance	<table> <tr> <td>Density</td> <td>5 mil</td> <td>7.5 mil</td> <td>10 mil</td> <td>13 mil</td> <td>20 mil</td> <td>40 mil</td> <td>55 mil</td> </tr> <tr> <td>Code Type</td> <td>39</td> <td>39</td> <td>39</td> <td>UPC</td> <td>39</td> <td>39</td> <td>39</td> </tr> <tr> <td>Far (inches)</td> <td>4.75</td> <td>8.75</td> <td>13.25</td> <td>17.25</td> <td>21.5</td> <td>22.25</td> <td>27 (Guaranteed)</td> </tr> <tr> <td>Far (inches)</td> <td>8.75</td> <td>14.25</td> <td></td> <td>24.25</td> <td>35.75</td> <td></td> <td>50.5 (Typical)</td> </tr> </table>	Density	5 mil	7.5 mil	10 mil	13 mil	20 mil	40 mil	55 mil	Code Type	39	39	39	UPC	39	39	39	Far (inches)	4.75	8.75	13.25	17.25	21.5	22.25	27 (Guaranteed)	Far (inches)	8.75	14.25		24.25	35.75		50.5 (Typical)
Density	5 mil	7.5 mil	10 mil	13 mil	20 mil	40 mil	55 mil																										
Code Type	39	39	39	UPC	39	39	39																										
Far (inches)	4.75	8.75	13.25	17.25	21.5	22.25	27 (Guaranteed)																										
Far (inches)	8.75	14.25		24.25	35.75		50.5 (Typical)																										
Yaw	\pm 50 degrees from normal																																
Roll	\pm 35 degrees from vertical																																
Pitch	\pm 65 degrees from normal																																
User Environment																																	

Table A-3 RS409 Technical Specifications (Continued)

Item	Description		
Operating Temperature	-4 °F to 122 °F (-20 °C to 50 °C)		
Storage Temperature	-25 °F to 160 °F (-40 °C to 70 °C)		
Humidity	5% to 95% non condensing		
Drop Specification	4 ft.(1.8m) drop to concrete		
Environmental Sealing	IP54 sealing		
Ambient Light Immunity	Indoor: 450 foot-candles (4,844 lux) Outdoor: 8,000 foot-candles (86,111 lux)		
Regulatory			
Electrical Safety	Certified to CSA C22.2 No. 60950-1, EN60950-1, IEC 60950-1		
EMI/RFI	FCC Part 15 Class B, ICES-003 Class B, European Union EMC and R&TTE Directives, Australian AS/NZS 4268		
Laser Safety	CDRH Class II, IEC 60825-1 Class 2		
Laser Decode Capability	Code 39 Codabar Interleaved 2 of 5 MSI UPC/EAN supplementals Webcode	Code 128 Code 11 EAN-8 UPCA Coupon Code Chinese 2 of 5	Code 93 Discrete 2 of 5 EAN-13 UPCE Trioptic 39 RSS

RS419 Scanner

Table A-4 RS419 Technical Specifications

Item	Description							
Physical and Environmental Characteristics								
Dimensions	1.9 in. L x 1.4 in. W x 1.9 in. H (4.8 cm L x 3.6 cm H x 4.8 cm H)							
Weight (standard version without cables attached)	2.0 oz. (56.7 gm)							
Current	92 mA typical, 121 mA max							
Standby Current	12µA typical/60 µA max							
Voltage	3.1 to 3.6 VDC							
Vcc Noise Level	100 mV p-p max.							
Performance Characteristics								
Light Source	650 nm LASER, 1.55 mW							
Scan Rate	104 (\pm 12) scans/sec (bidirectional)							
Nominal Working Distance	Density	5 mil	7.5 mil	10 mil	13 mil	20 mil	55 mil	100 mil Reflective
	Code Type	39	39	128	UPC	39	39	39
	Far (inches)	1.20	1.10	1.20	1.60	1.40	-	24
	Far (inches)	12.5	18.5	19.0	27.0	52.0	100	204

Table A-4 RS419 Technical Specifications (Continued)

Item	Description		
Yaw	± 50 degrees from normal		
Roll	± 35 degrees from vertical		
Pitch	± 65 degrees from normal		
User Environment			
Operating Temperature	-4 °F to 122 °F (-20 °C to 50 °C)		
Storage Temperature	-25 °F to 160 °F (-40 °C to 70 °C)		
Humidity	5% to 95% non condensing		
Drop Specification	4 ft.(1.8m) drop to concrete		
Environmental Sealing	IP54 sealing		
Ambient Light Immunity	Indoor: 450 foot-candles (4,844 lux) Outdoor: 8,000 foot-candles (86,111 lux)		
Regulatory			
Electrical Safety	Certified to CSA C22.2 No. 60950-1, EN60950-1, IEC 60950-1		
EMI/RFI	FCC Part 15 Class B, ICES-003 Class B, European Union EMC and R&TTE Directives, Australian AS/NZS 4268		
Laser Safety	CDRH Class II, IEC 60825-1 Class 2		
Laser Decode Capability	Code 39 Codabar Interleaved 2 of 5 MSI UPC/EAN supplementals Webcode	Code 128 Code 11 EAN-8 UPCA Coupon Code Chinese 2 of 5	Code 93 Discrete 2 of 5 EAN-13 UPCE Trioptic 39 RSS

RS507 Scanner

Table A-5 RS507 Technical Specifications

Item	Description	
Physical and Environmental Characteristics		
Dimensions	Triggerless, standard battery: 2.9 x 5.3 x 7.4 cm (1.16 x 2.1 x 2.92 in.) Triggerless, extended battery: 3.6 x 5.3 x 7.4 cm (1.42 x 2.1 x 2.92 in.) Triggered, standard battery: 2.9 x 5.3 x 7.4 cm (1.16 x 2.1 x 2.92 in.) Triggered, corded (cord length not included): 3.3 x 5.3 x 7.4 cm (1.3 x 2.1 x 2.92 in.)	
Weight (standard version without cables attached)	Triggerless, standard battery: 121.4 g (4.3 oz.) Triggerless, extended battery: 146.4 g (5.2 oz.) Triggered, standard battery: 134.8 g (4.8 oz.) Triggered, corded: 140.8 g (5.0 oz.)	
Performance Characteristics		
Optical Resolution	WVGA 752 H x 480 V pixels (gray scale)	
Skew	± 60 ° from normal	

Table A-5 RS507 Technical Specifications (Continued)

Item	Description				
Roll	360°				
Pitch	± 60° from normal				
Aiming Element	655 nm ± 10 nm Visible Laser Diode				
Illumination Element	637 nm ± 5 nm Red LEDs				
Field of View	Horizontal: 39.6°; Vertical: 25.7°				
Nominal Working Distance	Density 1D Code Type Near Far	5 mil 39 2" 7.4"	7.5 mil 39 10.5"	20 mil 39 24.6"	13 mil UPC 1.5" 15.4"
	Density 2D Code Type Near Far	6.67 mil PDF417 3.3" 7.0"	10 mil PDF417 10"	15 mil PDF417 14.6"	
Ambient Light Immunity	From total darkness Indoor: 450 ft. candles (4,845 lux). Outdoor: 9,000 ft. candles (96,900 lux).				
Motion Tolerance	63.5 cm (25 inches) per second, typical.				
Supported Symbologies	<p>1D enabled by default: Codabar, Code 39, Code 128, EAN-13, EAN-8, Interleaved 2 of 5, UPC-A and UPC-E.</p> <p>Additionally supported by 1D: Code 11, Code 32 Pharmaceutical (PARAF), Code 93, MSI, Reduced Space Symbology (RSS-14, RSS Limited, RSS Expanded), Straight 2 of 5 IATA (two-bar start/stop), Straight 2 of 5 Industrial (three-bar start/stop), Trioptic, UPC-E1.</p> <p>2D enabled by default: 4-CB (4-State Customer Bar code), Aztec, MicroPDF417, PDF417, MaxiCode.</p> <p>Additionally supported by 2D: Australian Post, British Post (4 state code and "infomail"), Data Matrix, Japanese Post, KIX (Netherlands) Post, Planet Code, Postnet, QR Code, EAN/UCC Composite, TCIF Linked Code 39 (TLC39).</p>				
Supported Aiming Modes	Class 2 Laser, cross hair with bright center for sunlight visibility; Pick List mode option.				
Interface	<p>Cordless: Bluetooth: Class II, v 2.1 with Adaptive Frequency Hopping (AFH).</p> <p>Supported profiles: Serial Port Profile (SPP), Human Interface Device Profile (HID), Service Discovery Application Profile (SDAP).</p> <p>Pairing: by reading terminal BT address as bar code off the display or from a printed label.</p> <p>Corded (to WT41N0): Serial.</p>				

Table A-5 RS507 Technical Specifications (Continued)

Item	Description
Field Replaceable Parts	Batteries, corded adaptor, trigger clamp, triggerless clamp, comfort pad, straps and strap buckle.
User Interface	
LED	Two (parallel), multi color, rear left and rear right.
Beeper	Rear center, up to 80 dBA SPL @ 10 cm.
Restore Key	User accessible for emergency boot up and Bluetooth reconnect (after excessive disconnection period).
Scan Triggering	Manual or automatic using Interactive Sensing Technology (IST).
User Environment	
Operating Temperature	-20 °C to 55 °C (-4 °F to 131 °F)
Storage Temperature	-40° to 70° C (-40° to 158° F) excluding battery -40° to 60° C (-40° to 140° F) including battery
Humidity	5% to 85% non condensing
Drop Specification	1.8 m (6 ft.) multiple drops to concrete across operating temperature range.
Environmental Sealing	IP54
Electrostatic Discharge (ESD)	±15kV air discharge, ±8kV direct discharge.
Power	
Cordless	Standard battery: Li-Ion 970 mAh, 3.7 V with up to 35,000 scans (continuous) or up to 10 hours with 900 scans per hour on a single charge using fresh batteries. Extended battery: Li-Ion 1940 mAh, 3.7 V with up to 70,000 scans (continuous) or up to 20 hours with 900 scans per hour on a single charge using fresh batteries.
Corded	Corded adaptor to WT41N0.
Regulatory	
Electrical Safety	Certified to UL60950-1, CSA C22.2 No. 60950-1, EN60950-1, IEC 60950-1.
EMI/RFI	FCC Part 15 Class B, ICES-003 Class B, European Union EMC and R&TTE Directives, Australian AS/NZS 60950.1
Laser Safety	CDRH Class II, IEC 60825-1 Class 2
RoHS	Compliance with RoHS standards.

GLOSSARY

A

API. An interface by means of which one software component communicates with or controls another. Usually used to refer to services provided by one software component to another, usually via software interrupts or function calls

Application Programming Interface. See **API**.

ANSI Terminal. A display terminal that follows commands in the ANSI standard terminal language. For example, it uses escape sequences to control the cursor, clear the screen and set colors. Communications programs support the ANSI terminal mode and often default to this terminal emulation for dial-up connections to online services.

ASCII. American Standard Code for Information Interchange. A 7 bit-plus-parity code representing 128 letters, numerals, punctuation marks and control characters. It is a standard data transmission code in the U.S.

B

Bar. The dark element in a printed bar code symbol.

Bar Code. A pattern of variable-width bars and spaces which represents numeric or alphanumeric data in machine-readable form. The general format of a bar code symbol consists of a leading margin, start character, data or message character, check character (if any), stop character, and trailing margin. Within this framework, each recognizable symbology uses its own unique format. See **Symbology**.

Bit. Binary digit. One bit is the basic unit of binary information. Generally, eight consecutive bits compose one byte of data. The pattern of 0 and 1 values within the byte determines its meaning.

Bits per Second (bps). Bits transmitted or received.

Bit. Binary digit. One bit is the basic unit of binary information. Generally, eight consecutive bits compose one byte of data. The pattern of 0 and 1 values within the byte determines its meaning.

bps. See **Bits Per Second**.

Byte. On an addressable boundary, eight adjacent binary digits (0 and 1) combined in a pattern to represent a specific character or numeric value. Bits are numbered from the right, 0 through 7, with bit 0 the low-order bit. One byte in memory is used to store one ASCII character.

boot or boot-up. The process a computer goes through when it starts. During boot-up, the computer can run self-diagnostic tests and configure hardware and software.

C

CDRH. Center for Devices and Radiological Health. A federal agency responsible for regulating laser product safety. This agency specifies various laser operation classes based on power output during operation.

CDRH Class 1. This is the lowest power CDRH laser classification. This class is considered intrinsically safe, even if all laser output were directed into the eye's pupil. There are no special operating procedures for this class.

CDRH Class 2. No additional software mechanisms are needed to conform to this limit. Laser operation in this class poses no danger for unintentional direct human exposure.

Character. A pattern of bars and spaces which either directly represents data or indicates a control function, such as a number, letter, punctuation mark, or communications control contained in a message.

Codabar. A discrete self-checking code with a character set consisting of digits 0 to 9 and six additional characters: (-\$:/,+).

Code 128. A high density symbology which allows the controller to encode all 128 ASCII characters without adding extra symbol elements.

Code 3 of 9 (Code 39). A versatile and widely used alphanumeric bar code symbology with a set of 43 character types, including all uppercase letters, numerals from 0 to 9 and 7 special characters (space, minus (-), plus (+), period (.), dollar sign (\$), slash (/), and percent (%)). The code name is derived from the fact that 3 of 9 elements representing a character are wide, while the remaining 6 are narrow.

Code 93. An industrial symbology compatible with Code 39 but offering a full character ASCII set and a higher coding density than Code 39.

Cold Boot. A cold boot restarts the wearable terminal and erases all user stored records and entries.

COM port. Communication port; ports are identified by number, e.g., COM1, COM2.

Cradle. A cradle is used for charging the terminal battery and for communicating with a host computer, and provides a storage place for the terminal when not in use.

D

DCP. See **Device Configuration Package**.

Decode. To recognize a bar code symbology (e.g., UPC/EAN) and then analyze the content of the specific bar code scanned.

Decode Algorithm. A decoding scheme that converts pulse widths into data representation of the letters or numbers encoded within a bar code symbol.

Decryption. Decryption is the decoding and unscrambling of received encrypted data. Also see, **Encryption** and **Key**.

Depth of Field. The range between minimum and maximum distances at which a scanner can read a symbol with a certain minimum element width.

Device Configuration Package. The Symbol Device Configuration Package provides the Product Reference Guide (PRG), flash partitions, Terminal Configuration Manager (TCM) and the associated TCM scripts. With this package hex images that represent flash partitions can be created and downloaded to the wearable terminal.

Discrete 2 of 5. A binary bar code symbology representing each character by a group of five bars, two of which are wide. The location of wide bars in the group determines which character is encoded; spaces are insignificant. Only numeric characters (0 to 9) and START/STOP characters may be encoded.

E

EAN. European Article Number. This European/International version of the UPC provides its own coding format and symbology standards. Element dimensions are specified metrically. EAN is used primarily in retail.

ENQ (RS-232). ENQ software handshaking is also supported for the data sent to the host.

ESD. Electro-Static Discharge

F

Flash Disk. An additional megabyte of non-volatile memory for storing application and configuration files.

Flash Memory. Flash memory is nonvolatile, semi-permanent storage that can be electronically erased in the circuit and reprogrammed. Wearable terminals use Flash memory to store the operating system (ROM-DOS), the terminal emulators, and the Citrix ICA Client for DOS.

File Transfer Protocol (FTP). A TCP/IP application protocol governing file transfer via network or telephone lines. See **TCP/IP**.

FTP. See **File Transfer Protocol**.

Flash Memory. Flash memory is responsible for storing the system firmware and is non-volatile. If the system power is interrupted the data is not be lost.

H

Hard Reset. See **Cold Boot**.

Hz. Hertz; A unit of frequency equal to one cycle per second.

Host Computer. A computer that serves other terminals in a network, providing such services as computation, database access, supervisory programs and network control.

I

IEC. International Electrotechnical Commission. This international agency regulates laser safety by specifying various laser operation classes based on power output during operation.

IEC (825) Class 1. This is the lowest power IEC laser classification. Conformity is ensured through a software restriction of 120 seconds of laser operation within any 1000 second window and an automatic laser shutdown if the scanner's oscillating mirror fails.

IEEE Address. See **MAC Address**.

Interleaved 2 of 5. A binary bar code symbology representing character pairs in groups of five bars and five interleaved spaces. Interleaving provides for greater information density. The location of wide elements (bar/spaces) within each group determines which characters are encoded. This continuous code type uses no intercharacter spaces. Only numeric (0 to 9) and START/STOP characters may be encoded.

IOCTL. Input/Output Control.

Interleaved Bar Code. A bar code in which characters are paired together, using bars to represent the first character and the intervening spaces to represent the second.

Interleaved 2 of 5. A binary bar code symbology representing character pairs in groups of five bars and five interleaved spaces. Interleaving provides for greater information density. The location of wide elements (bar/spaces) within each group determines which characters are encoded. This continuous code type uses no intercharacter spaces. Only numeric (0 to 9) and START/STOP characters may be encoded.

Internet Protocol Address. See **IP**.

I/O Ports. interface The connection between two devices, defined by common physical characteristics, signal characteristics, and signal meanings. Types of interfaces include RS-232 and PCMCIA.

Input/Output Ports. I/O ports are primarily dedicated to passing information into or out of the terminal's memory. Wearable terminals include Serial and USB ports.

IP. Internet Protocol. The IP part of the TCP/IP communications protocol. IP implements the network layer (layer 3) of the protocol, which contains a network address and is used to route a message to a different network or subnetwork. IP accepts "packets" from the layer 4 transport protocol (TCP or UDP), adds its own header to it and delivers a "datagram" to the layer 2 data link protocol. It may also break the packet into fragments to support the maximum transmission unit (MTU) of the network.

IP Address. (Internet Protocol address) The address of a computer attached to an IP network. Every client and server station must have a unique IP address. A 32-bit address used by a computer on a IP network. Client workstations have either a permanent address or one that is dynamically assigned to them each session. IP addresses are written as four sets of numbers separated by periods; for example, 204.171.64.2.

IPX/SPX. Internet Package Exchange/Sequential Packet Exchange. A communications protocol for Novell. IPX is Novell's Layer 3 protocol, similar to XNS and IP, and used in NetWare networks. SPX is Novell's version of the Xerox SPP protocol.

IS-95. Interim Standard 95. The EIA/TIA standard that governs the operation of CDMA cellular service. Versions include IS-95A and IS-95B. See CDMA.

K

Key. A key is the specific code used by the algorithm to encrypt or decrypt the data. Also see, **Encryption** and **Decrypting**.

L

laser scanner. A type of bar code reader that uses a beam of laser light.

LASER. Light Amplification by Stimulated Emission of Radiation. The laser is an intense light source. Light from a laser is all the same frequency, unlike the output of an incandescent bulb. Laser light is typically coherent and has a high energy density.

LCD. See **Liquid Crystal Display**.

LED Indicator. A semiconductor diode (LED - Light Emitting Diode) used as an indicator, often in digital displays. The semiconductor uses applied voltage to produce light of a certain frequency determined by the semiconductor's particular chemical composition.

Liquid Crystal Display (LCD). A display that uses liquid crystal sealed between two glass plates. The crystals are excited by precise electrical charges, causing them to reflect light outside according to their bias. They use little electricity and react relatively quickly. They require external light to reflect their information to the user.

Light Emitting Diode. See **LED**.

M

MDN. Mobile Directory Number. The directory listing telephone number that is dialed (generally using POTS) to reach a mobile unit. The MDN is usually associated with a MIN in a cellular telephone -- in the US and Canada, the MDN and MIN are the same value for voice cellular users. International roaming considerations often result in the MDN being different from the MIN.

MIL. 1 mil = 1 thousandth of an inch.

MIN. Mobile Identification Number. The unique account number associated with a cellular device. It is broadcast by the cellular device when accessing the cellular system.

N

Nominal. The exact (or ideal) intended value for a specified parameter. Tolerances are specified as positive and negative deviations from this value.

O

Open Data-Link Interface (ODI). Novell's driver specification for an interface between network hardware and higher-level protocols. It supports multiple protocols on a single NIC (Network Interface Controller). It is capable of understanding and translating any network information or request sent by any other ODI-compatible protocol into something a NetWare client can understand and process.

Open System Authentication. Open System authentication is a null authentication algorithm.

P

PAN. Personal area network. Using Bluetooth wireless technology, PANs enable devices to communicate wirelessly. Generally, a wireless PAN consists of a dynamic group of less than 255 devices that communicate within about a 33-foot range. Only devices within this limited area typically participate in the network.

Parameter. A variable that can have different values assigned to it.

PING. (Packet Internet Groper) An Internet utility used to determine whether a particular IP address is online. It is used to test and debug a network by sending out a packet and waiting for a response.

Print Contrast Signal (PCS). Measurement of the contrast (brightness difference) between the bars and spaces of a symbol. A minimum PCS value is needed for a bar code symbol to be scannable. $PCS = (RL - RD) / RL$, where RL is the reflectance factor of the background and RD the reflectance factor of the dark bars.

Q

QWERTY. A standard keyboard commonly used on North American and some European PC keyboards. "QWERTY" refers to the arrangement of keys on the left side of the third row of keys.

R

RAM. Random Access Memory. Data in RAM can be accessed in random order, and quickly written and read.

Resolution. The narrowest element dimension which is distinguished by a particular reading device or printed with a particular device or method.

RF. Radio Frequency.

ROM. Read-Only Memory. Data stored in ROM cannot be changed or removed.

Router. A device that connects networks and supports the required protocols for packet filtering. Routers are typically used to extend the range of cabling and to organize the topology of a network into subnets. See **Subnet**.

RS-232. An Electronic Industries Association (EIA) standard that defines the connector, connector pins, and signals used to transfer data serially from one device to another.

S

Scan Area. Area intended to contain a symbol.

Scanner. An electronic device used to scan bar code symbols and produce a digitized pattern that corresponds to the bars and spaces of the symbol. Its three main components are:

1. Light source (laser or photoelectric cell) - illuminates a bar code.
2. Photodetector - registers the difference in reflected light (more light reflected from spaces).
3. Signal conditioning circuit - transforms optical detector output into a digitized bar pattern.

SDK. Software Development Kit

Secure Sockets Layer (SSL). SSL is a commonly-used protocol for managing the security of a message transmission on the Internet. SSL uses a program layer located between the Internet's Hypertext Transfer Protocol (HTTP) and Transport Control Protocol (TCP) layers. SSL is included as part of both the Microsoft and Netscape browsers and most Web server products. Developed by Netscape, SSL also gained the support of Microsoft and other Internet client/server developers as well and became the de facto standard until evolving into Transport Layer Security. The "sockets" part of the term refers to the sockets method of passing data back and forth between a client and a server program in a network or between program layers in the same computer. SSL uses the public-and-private key encryption system from RSA, which also includes the use of a digital certificate.

Shared Key. Shared Key authentication is an algorithm where both the AP and the MU share an authentication key.

SID. System Identification code. An identifier issued by the FCC for each market. It is also broadcast by the cellular carriers to allow cellular devices to distinguish between the home and roaming service.

SMDK. Symbol Mobility Developer's Kit.

Soft Reset. See Warm Boot.

Subnet. A subset of nodes on a network that are serviced by the same router. See Router.

Subnet Mask. A 32-bit number used to separate the network and host sections of an IP address. A custom subnet mask subdivides an IP network into smaller subsections. The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets. Default is often 255.255.255.0.

Substrate. A foundation material on which a substance or image is placed.

Symbol. A scannable unit that encodes data within the conventions of a certain symbology, usually including start/stop characters, quiet zones, data characters and check characters.

Symbology. The structural rules and conventions for representing data within a particular bar code type (e.g. UPC/EAN, Code 39, PDF417, etc.).

T

TCP/IP. (Transmission Control Protocol/Internet Protocol) A communications protocol used to internetwork dissimilar systems. This standard is the protocol of the Internet and has become the global standard for communications. TCP provides transport functions, which ensures that the total amount of bytes sent is received correctly at the other end. UDP is an alternate transport that does not guarantee delivery. It is widely used for real-time voice and video transmissions where erroneous packets are not retransmitted. IP provides the routing mechanism. TCP/IP is a

routable protocol, which means that all messages contain not only the address of the destination station, but the address of a destination network. This allows TCP/IP messages to be sent to multiple networks within an organization or around the world, hence its use in the worldwide Internet. Every client and server in a TCP/IP network requires an IP address, which is either permanently assigned or dynamically assigned at startup.

Telnet. A terminal emulation protocol commonly used on the Internet and TCP/IP-based networks. It allows a user at a terminal or computer to log onto a remote device and run a program.

Terminal. See Wearable Terminal.

Terminal Emulation. A “terminal emulation” emulates a character-based mainframe session on a remote non-mainframe terminal, including all display features, commands and function keys. The WT41N0 Series supports Terminal Emulations in 3270, 5250 and VT220.

TFTP. (Trivial File Transfer Protocol) A version of the TCP/IP FTP (File Transfer Protocol) protocol that has no directory or password capability. It is the protocol used for upgrading firmware, downloading software and remote booting of diskless devices.

Tolerance. Allowable deviation from the nominal bar or space width.

Transmission Control Protocol/Internet Protocol. See **TCP/IP**.

Transport Layer Security (TLS). TLS is a protocol that ensures privacy between communicating applications and their users on the Internet. When a server and client communicate, TLS ensures that no third party may eavesdrop or tamper with any message. TLS is the successor to the Secure Sockets Layer (SSL).

Trivial File Transfer Protocol. See **TFTP**.

U

UPC. Universal Product Code. A relatively complex numeric symbology. Each character consists of two bars and two spaces, each of which is any of four widths. The standard symbology for retail food packages in the United States.

UDP. User Datagram Protocol. A protocol within the IP protocol suite that is used in place of TCP when a reliable delivery is not required. For example, UDP is used for real-time audio and video traffic where lost packets are simply ignored, because there is no time to retransmit. If UDP is used and a reliable delivery is required, packet sequence checking and error notification must be written into the applications.

U

Visible Laser Diode (VLD). A solid state device which produces visible laser light.

W

Warm Boot. A warm boot restarts the wearable terminal by closing all running programs. All data that is not saved to flash memory is lost.

Wearable Terminal. In this text, wearable terminal refers to the Symbol WT41N0 that can be set up to communicate with a network, using wireless radio technology.

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