WS50/WS50 RFID

Enterprise Wearable Solution

Quick Start Guide

ZEBRA

MN-004765-03EN Rev A

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Device Features

The WS50 is a wearable computer that offers flexible hands-free operation for right or left-hand users. The WS50 RFID is Zebra's RFID option and features a built-in encoder/reader.

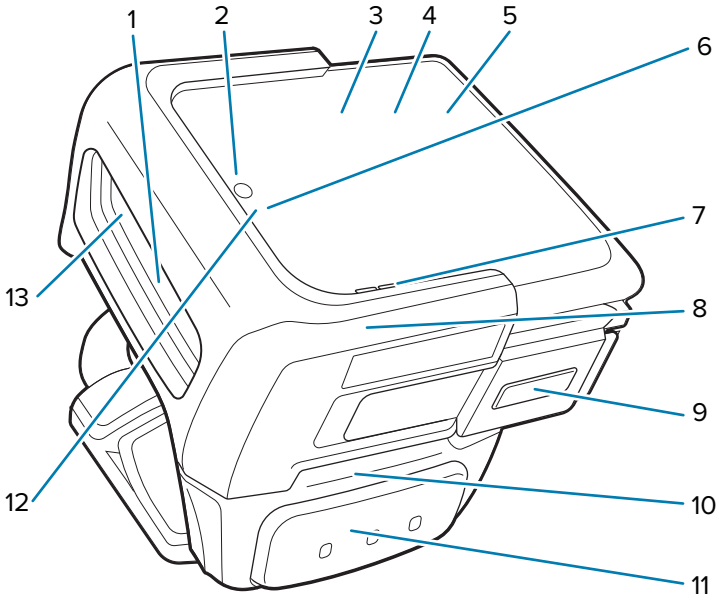
The devices are available in two configurations:

- Scanner
- Camera

Scanner Features

The Scanner is worn on the operator's index and middle fingers and utilizes a thumb-operated trigger. It has a touch panel, a trigger assembly, an SE4770 scan engine, and other features.

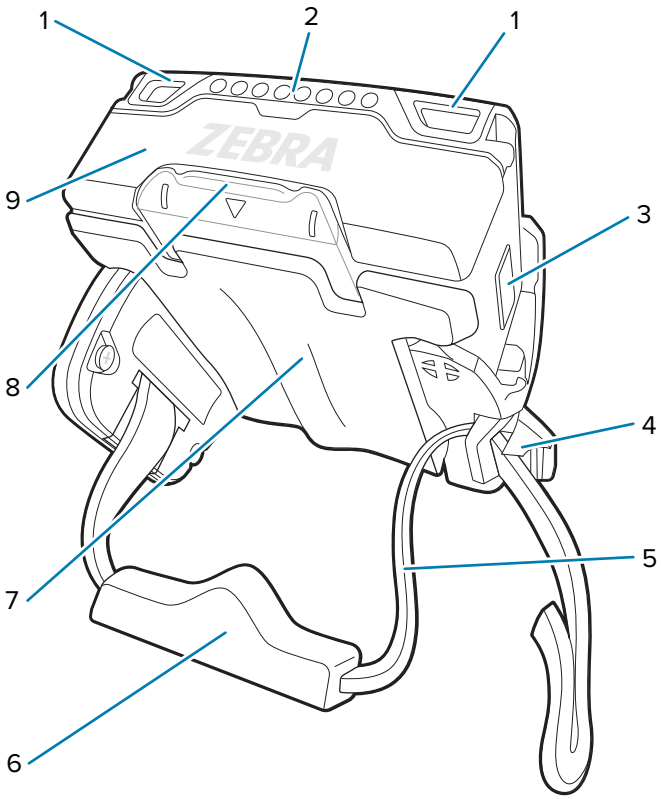
Front View



1	Scanner window	Provides data capture using the imager.
2	Microphone	Use for voice communications or audio recordings.
3	Display	Displays all information needed to operate the device.
4	Ambient light sensor (under the display)	Determines ambient light for controlling display backlight intensity.
5	NFC antenna (under the display)	Provides communication with other NFC-enabled devices.
6	Charging LED	Indicates the battery charge state while charging.
7	Speaker	Use for voice communication or audio playback.
8	Deflector	Protects the device. **NOTE:** The deflector includes mandatory laser safety warning markings and must always be fitted when in use.

9	Left button	User programmable; defaults to **Back** button.
10	Trigger assembly	Consists of a finger strap and a scan trigger; rotatable to provide left-hand or right-hand use.
11	Scan trigger	Initiates barcode data capture when a scan-enabled application is active.
12	Notification LED	Indicates an application notification is received.
13	Proximity sensor (optional)	Detects objects close to the device, enables the SE4770.

Rear View



1	Scan/Custom LED	Indicates data capture and custom applications-controlled status.
2	Interface connector	Provides USB host and client communication, and device charging via cables and accessories.
3	Right button	User programmable; defaults to **Home** button; presses to power on the device.
4	Strap buckle	Tightens or loosens the finger strap on the fingers.
5	Finger strap	Use for securely holding the device on the fingers. Comes pre-installed on every Converged Scanner.
6	Finger wedge	Cushions and stabilizes fingers within the strap.
7	Finger comfort pad	Cushions the fingers from the device.
8	Shell release tab	Press down to release the device from the shell.
9	Battery	High capacity 1300 mAh battery, provides power for operating the device.

NOTE: To use the Scanner with the back of hand (BOH) mount, replace the trigger assembly with the BOH mount. See Installing the Back of Hand Mount on page 11 for more details.

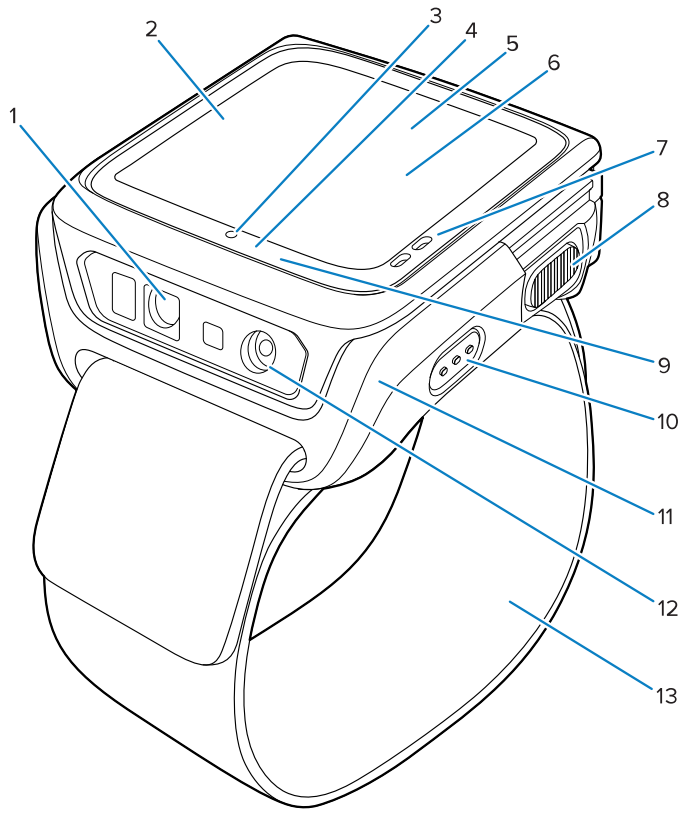
See Also

Installing the Trigger and Shell Assembly for the Scanner
Changing the Trigger Position for the Converged Scanner
Removing the Trigger and Shell Assembly

Camera Features

The Camera has a touch panel, four buttons, a wrist strap, and other features.

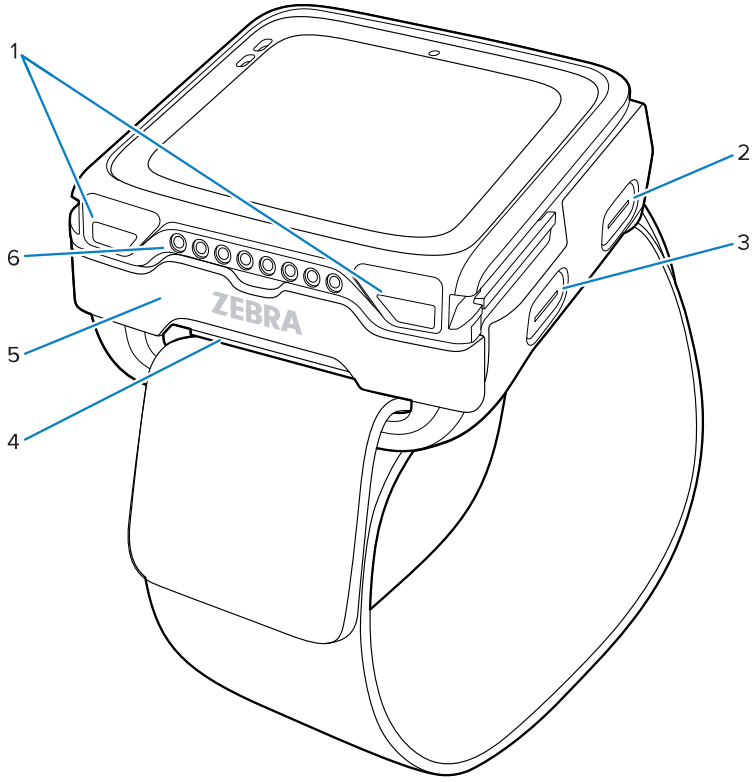
Front View



1	Camera	Takes photos and videos (available on configurations with camera only).
2	Display	Displays all information needed to operate the device.
3	Microphone	Use for voice communications or audio recordings.
4	Charging LED	Indicates the battery charge state while charging.
5	Ambient light sensor (under the display)	Determines ambient light for controlling display backlight intensity.
6	NFC antenna (under the display)	Provides communication with other NFC-enabled devices.

7	Speaker	Use for voice communication or audio playback.
8	Left 2 button	User programmable; defaults to **Back** button.
9	Notification LED	Indicates an application notification is received.
10	Left 1 button	User programmable
11	Wrist mount assembly	Consists of a device holder and a wrist strap; protects and holds the device in the shell.
12	Camera flash	Provides illumination for the camera (available on configurations with the camera only).
13	Wrist strap	Use for securely holding the device on the wrist.

Rear View



1	Scan/Custom LED	Indicates data capture and custom applications-controlled status.
2	Right 1 button	User programmable; defaults to initiate data capture.
3	Right 2 button	User programmable; defaults to **Home** button; presses to power on the device.
4	Wrist mount assembly release tab	Press down to release the device from the wrist mount assembly.
5	Battery	Standard capacity 800 mAh battery provides power for operating the WS50 Camera; 1600 mAh for use with the WS50 Scanner.
6	Interface connector	Provides USB host and client communication, and device charging via cables and accessories.

See Also

Installing the Wrist Mount Assembly

Removing the Wrist Mount Assembly

Setting Up the Device

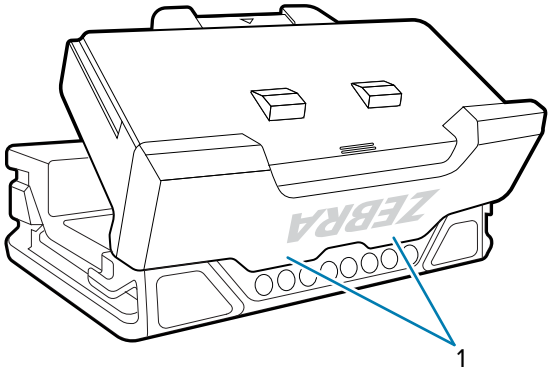
To start using the device for the first time:

1. Install the battery.
2. Install the wearable assembly.
   - Finger trigger assembly
   - Wrist mount
3. Charge the device using one of the charging accessories.
4. Power on the device.

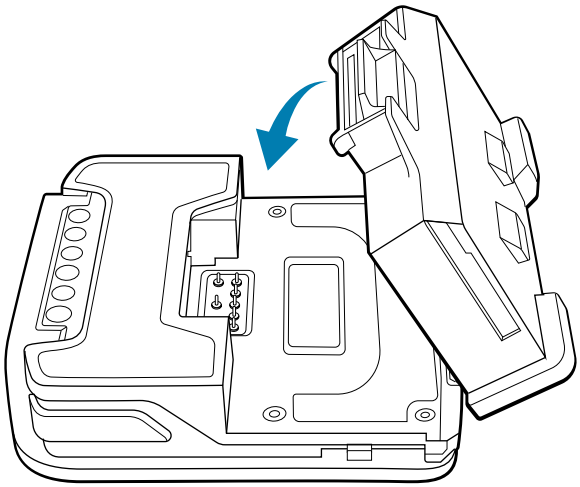
Installing the Battery

Install the 1300 mAh battery to the WS50 Scanner. Install the 800 mAh battery to the WS50 Camera. Install the 2400 mAh battery to the WS50 RFID Camera.

1. Align the battery so that the battery bottom engages the locking slots (1).



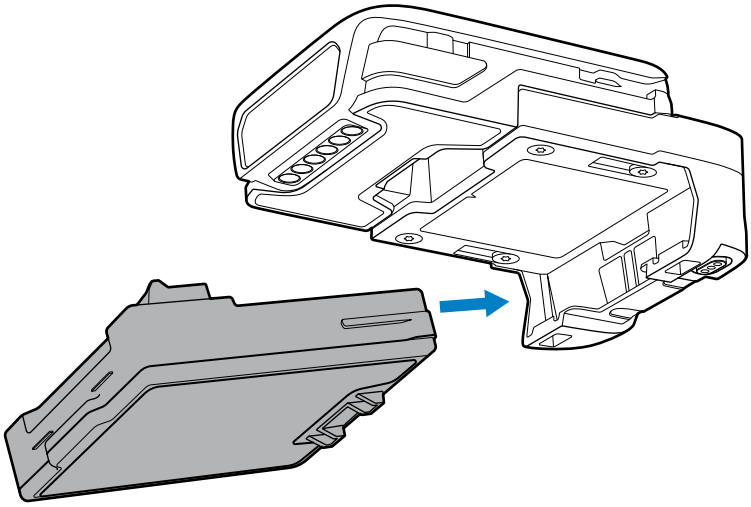
2. Press the battery down into the battery compartment until the battery release latches snap into place.



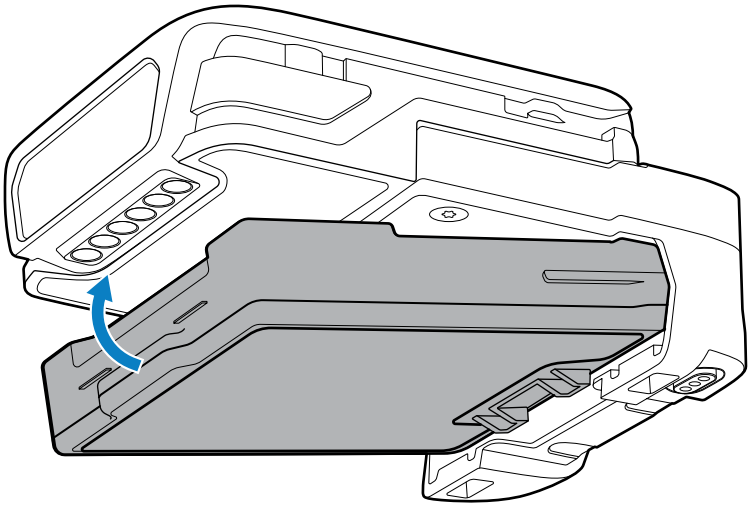
Installing the Battery for the WS50 RFID Scanner

Install the 2400 mAh battery into the WS50 RFID Scanner.

1. Align the battery so that the battery bottom engages the locking slots.



2. Press the battery into the battery compartment until it snaps into place.



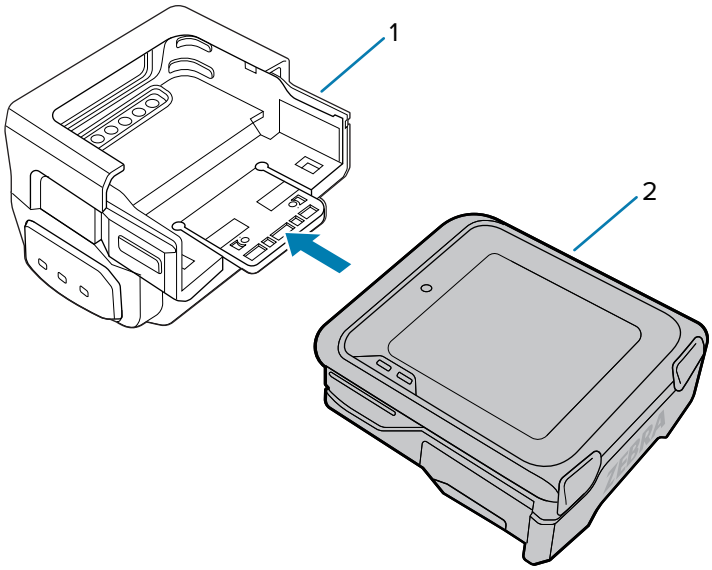
Installing the Trigger and Shell Assembly for the Scanner

Install the device to the trigger and shell assembly to utilize a thumb-operated trigger.

1. Ensure the touch panel of the device faces upward.

2. Slide the device (2) into the trigger and shell assembly (1) until the shell release latch snaps into place.

NOTE: Install the battery to the device before sliding the device into the shell.



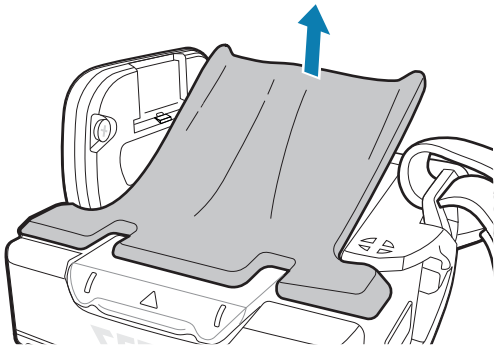
Changing the Trigger Position for the Converged Scanner

The trigger assembly can be changed to accommodate left-hand or right-hand use.

Determine whether the WS50 Converged Scanner is used on the right or left hand so that the Scan Trigger is positioned next to the thumb.

NOTE: The described procedures are applicable to both right-handed and left-handed users. The illustrations in this section show the steps to change the trigger position from right to left as an example.

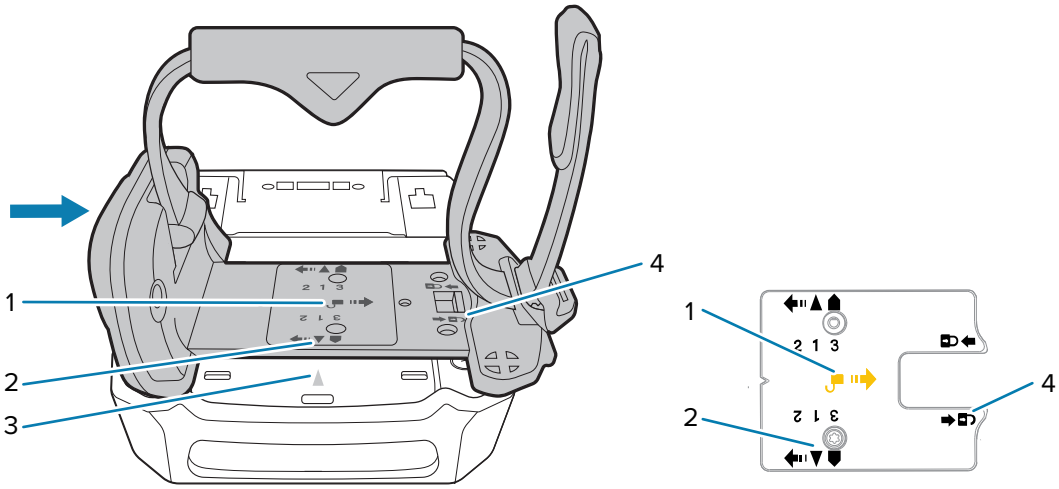
1. On the bottom of the device, lift the finger comfort pad from the front of the device, and then lift it from the rear.



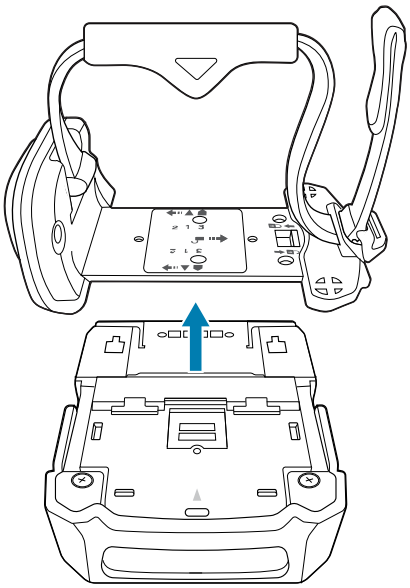
2. Follow the instructions on the back of the device to unmount the trigger assembly.

a) Unlock the trigger assembly by pushing the release latch to Unlock (4).

b) Slide the trigger assembly following the Unlock (1) direction until the black triangle (2) is aligned with the engraved triangle (3).

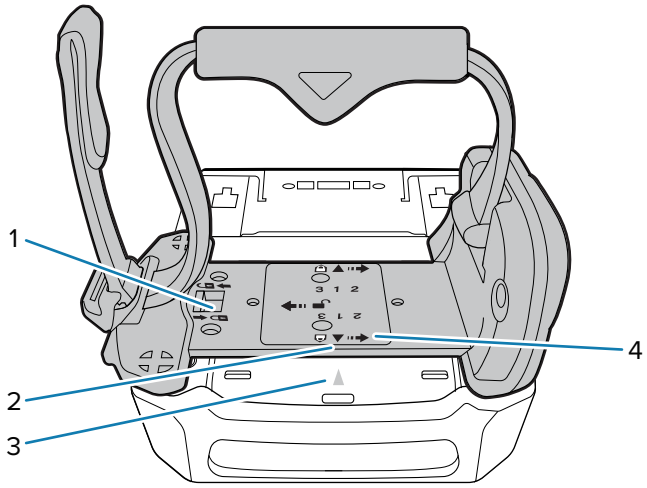


c) Lift the trigger assembly.



3. Rotate the trigger assembly so that the scan trigger is positioned next to the thumb.

4. When replacing the trigger assembly onto the back of the core in the shell, ensure the black triangle (2) is aligned with the engraved triangle (3).



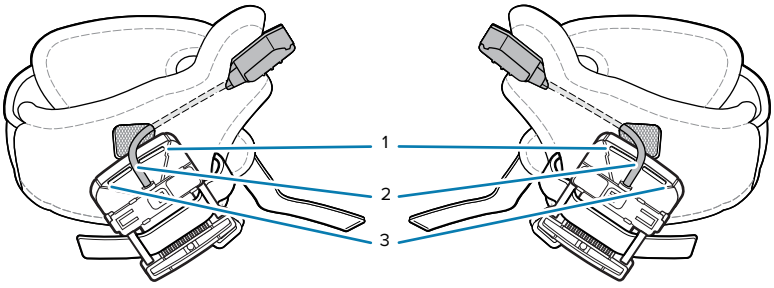
5. Slide the trigger assembly following the Lock (4) direction.
6. Lock the trigger assembly by pushing the latch to the Lock (1) position, if necessary.
7. Reattach the finger comfort pad onto the bottom of the device.

Installing the Back of Hand Mount

Mount the Back of Hand (BOH) mount to the hand wrap, and then install the device in the shell onto the BOH mount.

Determine whether the device is used on the right or left hand.

NOTE: The described procedures are applicable to both right-handed and left-handed users. The steps in this section is using a right-hand wrap as an example.

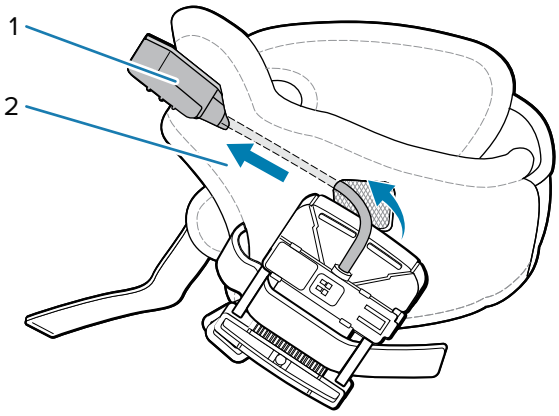


The BOH mount has three slots for the user to position the trigger cable. Insert the trigger cable into one of the slots according to the size of the user's hand:

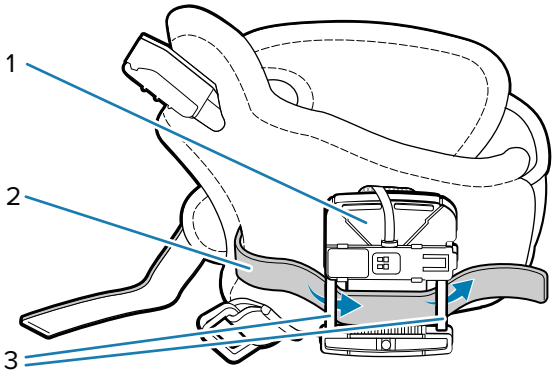
1	For large-hand users
2	For medium-hand users
3	For small-hand users

1. To mount a BOH mount to the hand wrap:

   a) Insert the trigger cable and button (1) through the trigger slot of the hand wrap (2).

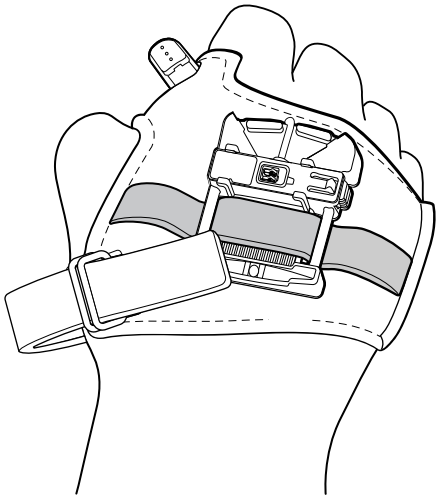


   b) Insert the strap (2) through one of the strap slots (3) on the BOH mount (1).

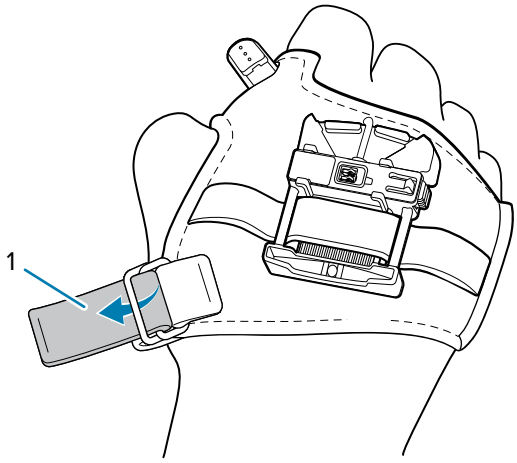


   c) Insert the strap through the other slot of the mount, and then fasten it with the hook and loop fastener.

2. Position the hand wrap on the hand by sliding your hand through the hand wrap, with your thumb through the smaller opening and your remaining four fingers through the larger opening.

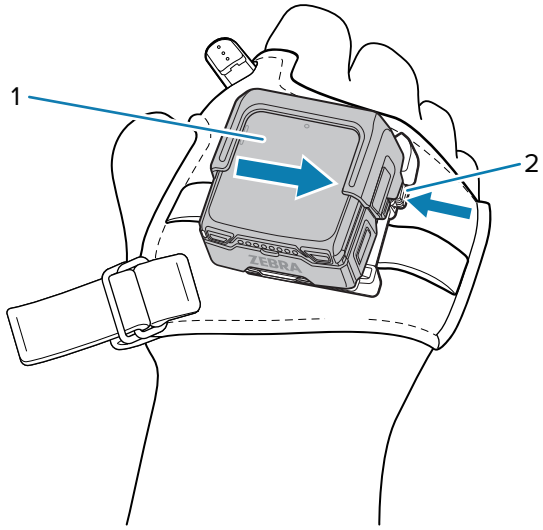


3. Slide the strap (1) through the buckle and secure the end of the strap in place with the hook and loop fastener.



Adjust the strap to a comfortable position to fit securely by tightening or loosening the strap.

4. Position the trigger button so that the button is easy-access to your thumb, and then secure it on the hand wrap using the hook and loop fastener.
5. Slide the device (1) in the shell onto the BOH mount.Press the BOH mount button (2) when mounting.



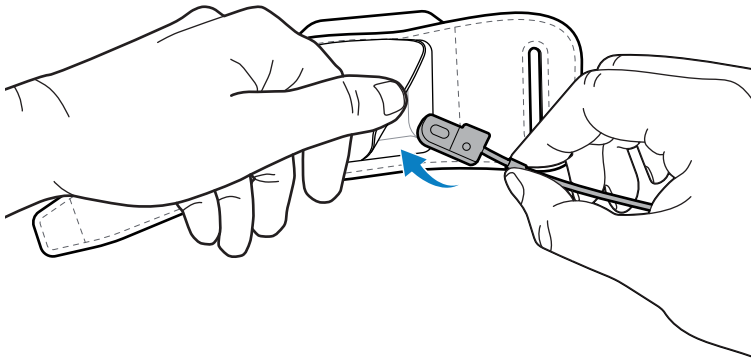
Release the button (2) when the device snaps into place on the BOH mount.

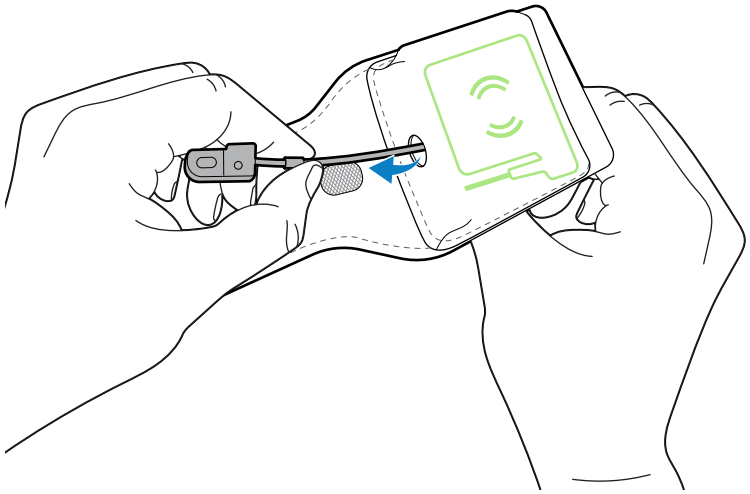
6. Reposition the mount on the hand wrap to align the mount with the middle finger knuckle.
7. Tighten or loosen the hand wrap strap, if necessary.

To unmount the device in the shell from the BOH mount, press the BOH mount button and slide the device in the shell away from the BOH mount button.

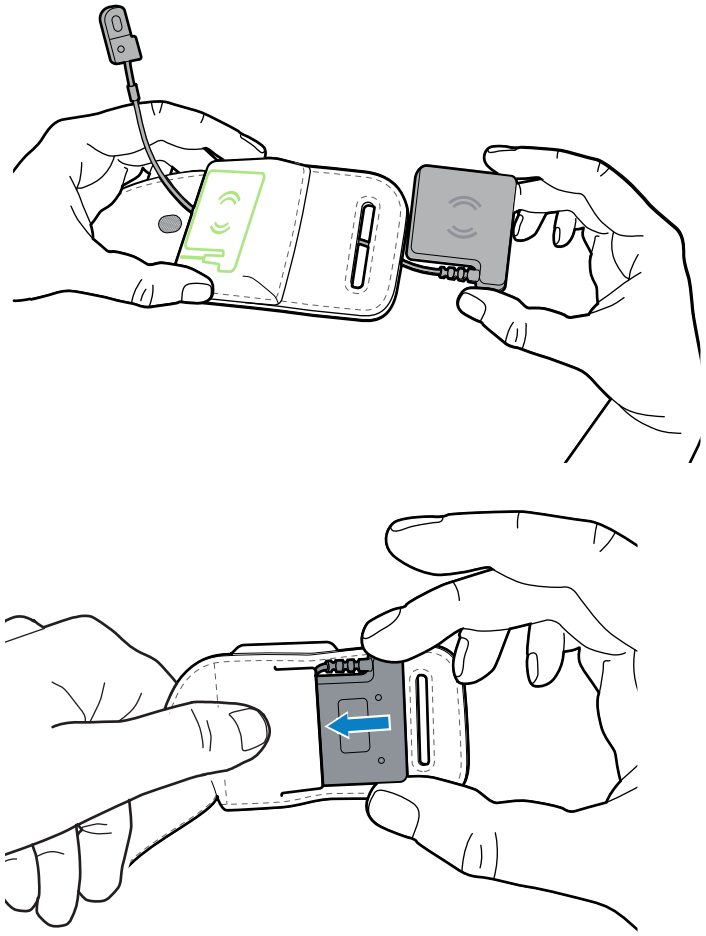
Assembling the Back of Hand Mount with the External Antenna

1. Insert the cable into the pocket, and then pull the cable through the pocket slot.

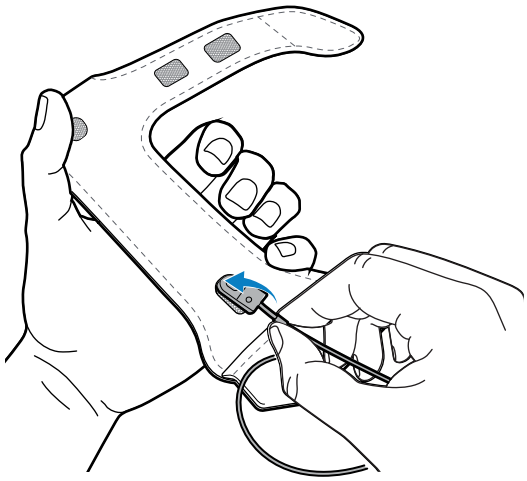




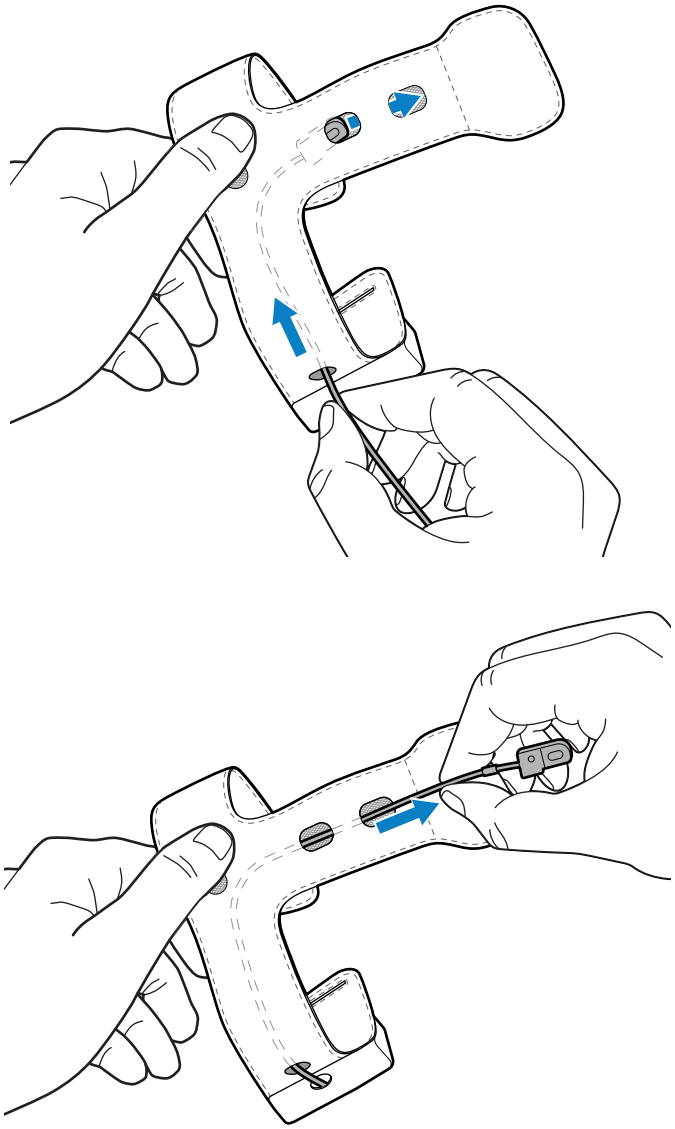
2. Orient the antenna to match the image on the pocket, and then insert the antenna into the pocket.



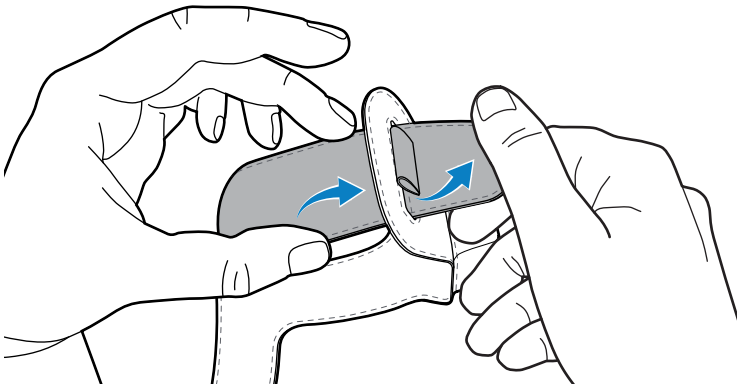
3. Insert the cable into the slot closest to the antenna.



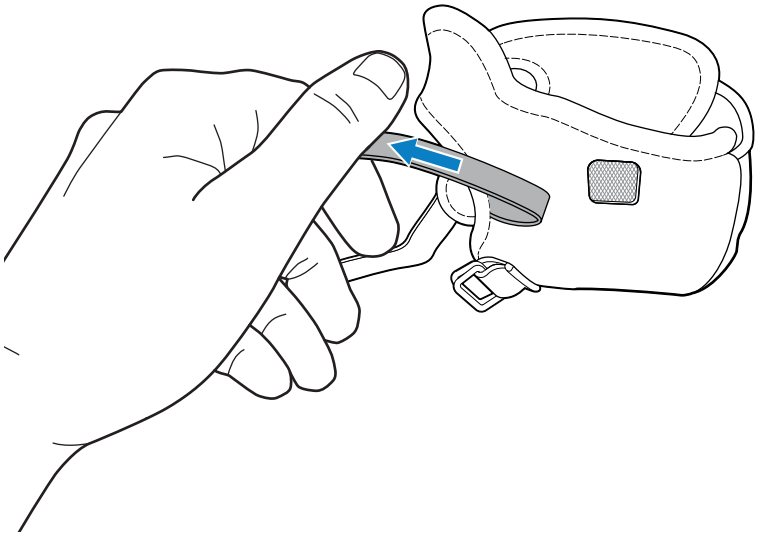
4. Feed the cable through the wrist strap turning it at the junction, and then pull the cable out through the furthest slot as seen in the figure. Use one hand to feed the cable while the other directs it.



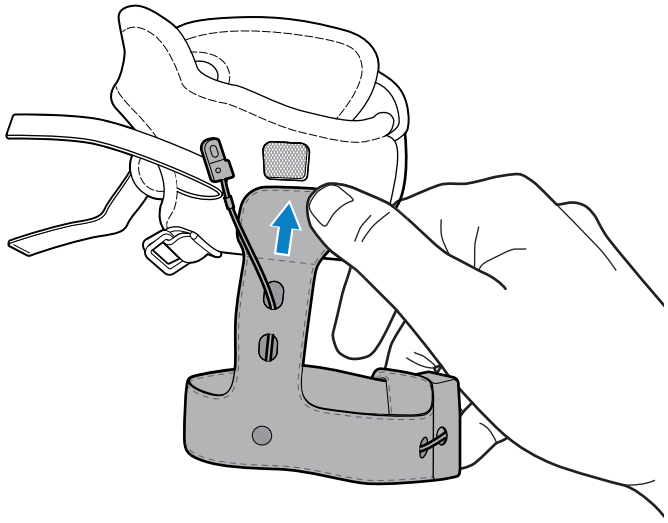
5. Insert the wrist strap end into the narrow opening.



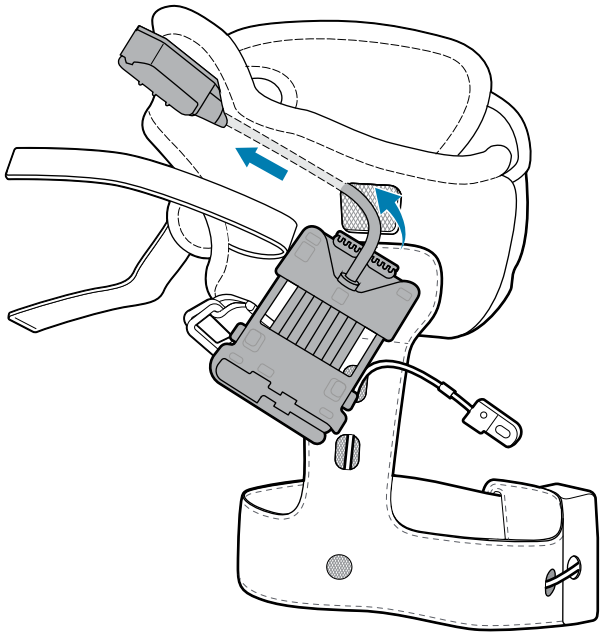
6. Pull back the strap located on the hand wrap.



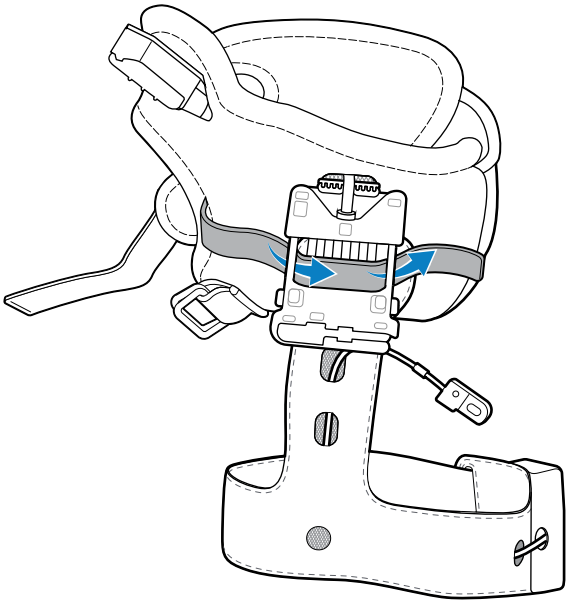
7. Attach the wrist strap to the hand wrap by pressing them together using the hook and loop fastener.



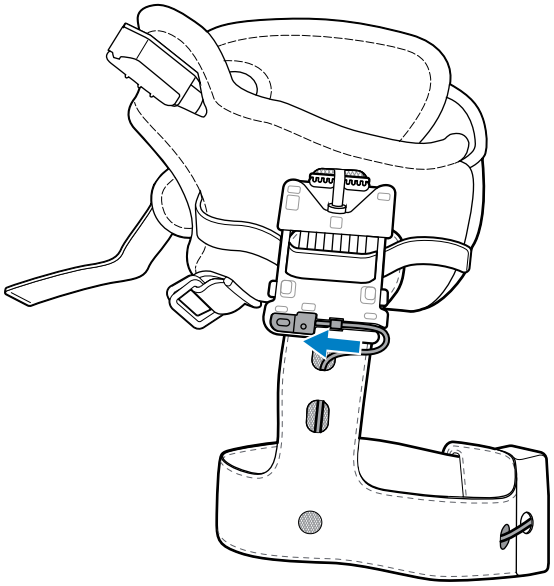
8. Insert the trigger cable and button through the trigger slot of the hand wrap.



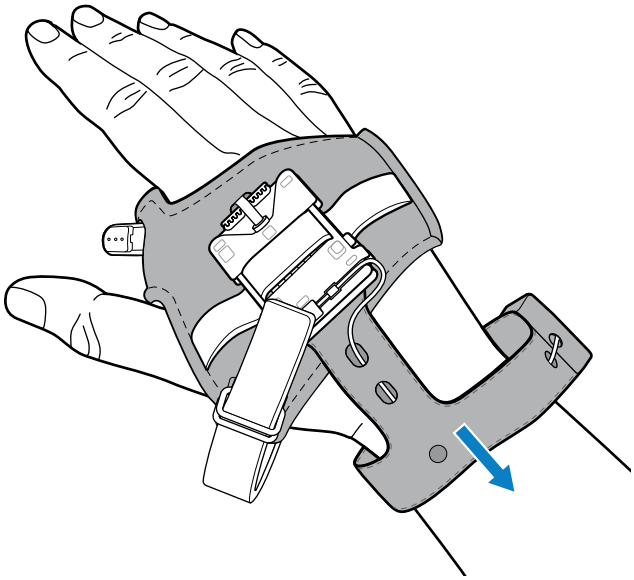
9. Insert the strap through the strap slots on the hand mount, and then fasten it with the hook and loop fastener.



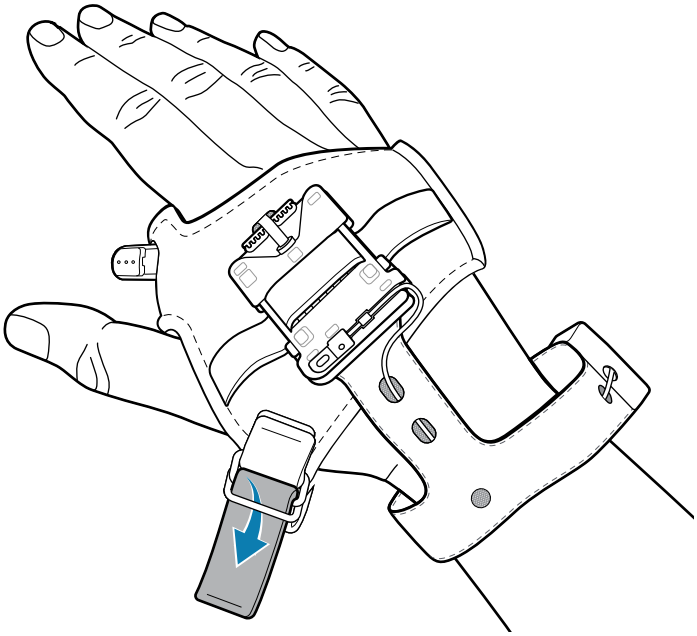
10. Connect the cable to the hand mount.



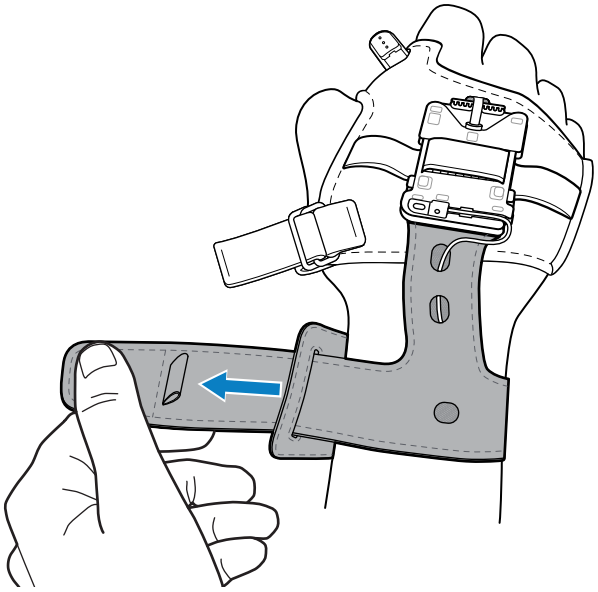
11. Position the hand wrap by sliding your hand through the wrist strap and hand wrap, with your thumb through the smaller opening and the remaining fingers through the larger opening.

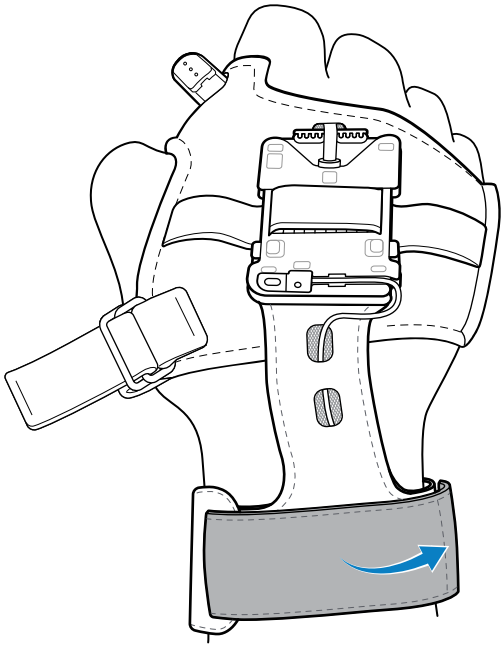


12. Slide the strap through the buckle and secure the end of the strap in place with the hook and loop fastener. Adjust the hand strap to a comfortable position and to fit securely by tightening or loosening the strap.

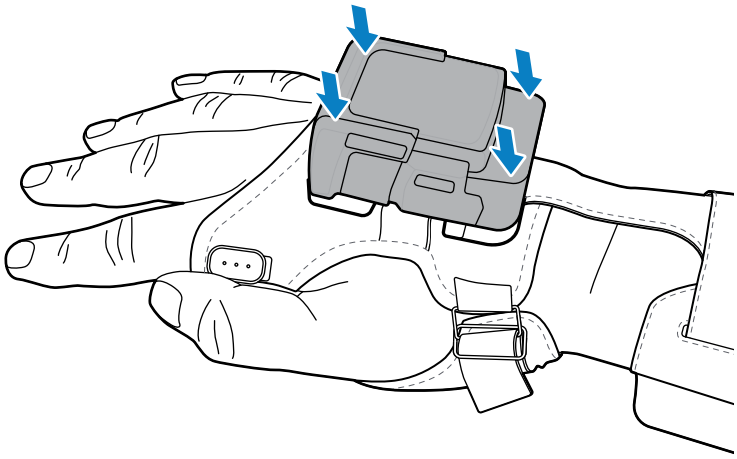


13. Adjust the wrist strap to a comfortable position by tightening or loosening the strap, and then secure the end of the strap in place with the hook and loop fastener.

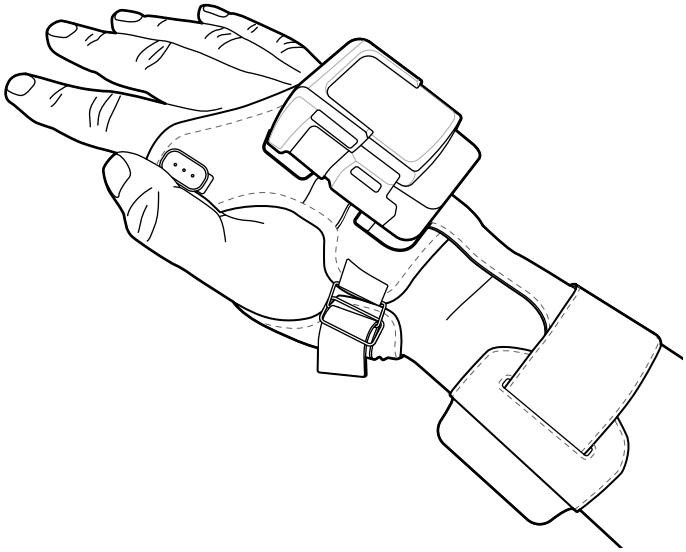




14. Attach the device to the hand mount.



The final assembly appears as follows.

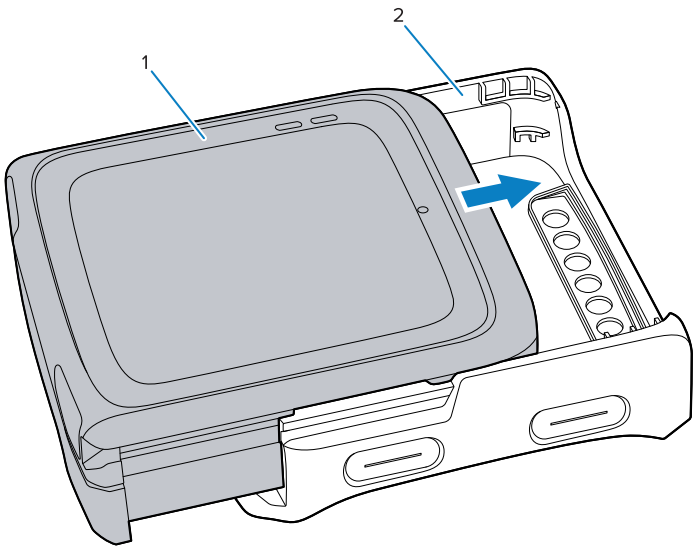


Installing the Wrist Mount Assembly

The wrist mount assembly allows the operator to wear the camera on the wrist. Install the device back onto the wrist mount assembly after battery charging.

NOTE: Install the battery to the device before placing the device into the wrist mount assembly.

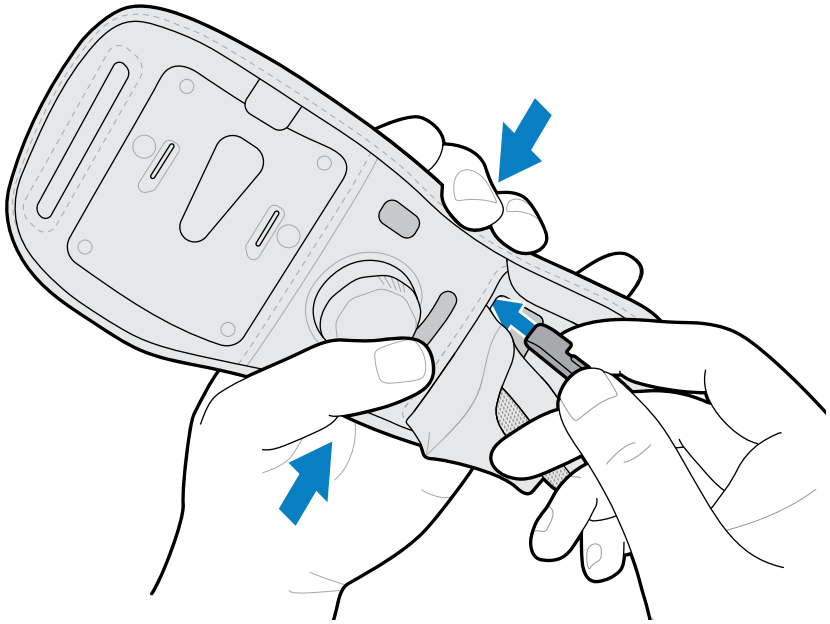
Slide the device (1) into the wrist mount assembly (2) until the wrist mount release tab snaps into place.



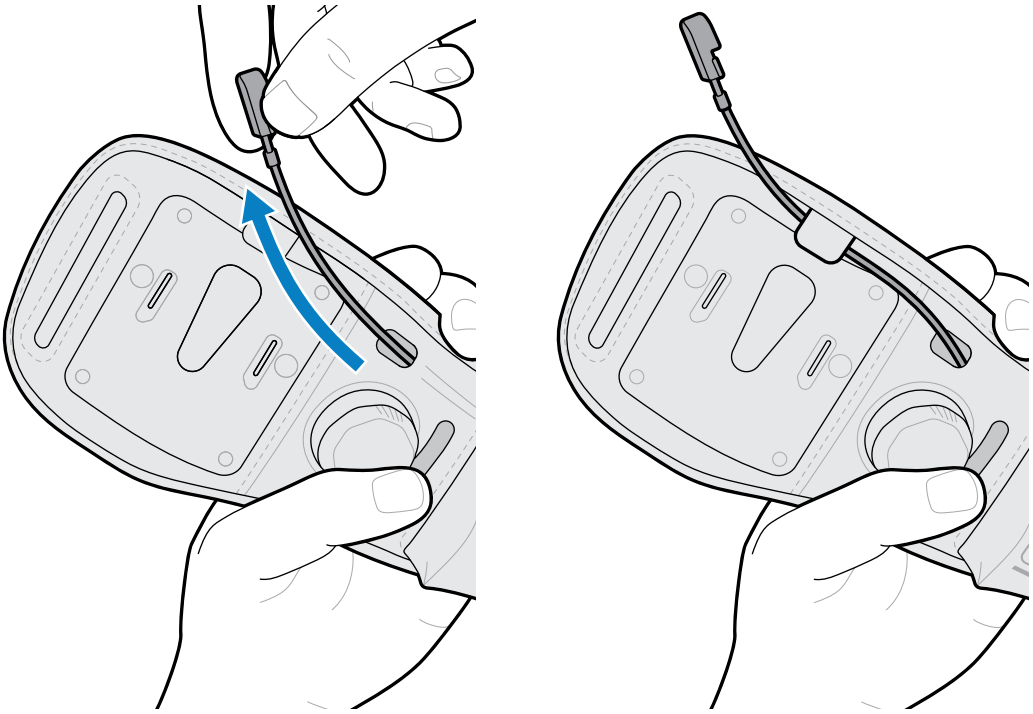
Assembling the Wrist Mount

This section describes how to assemble the wrist mount.

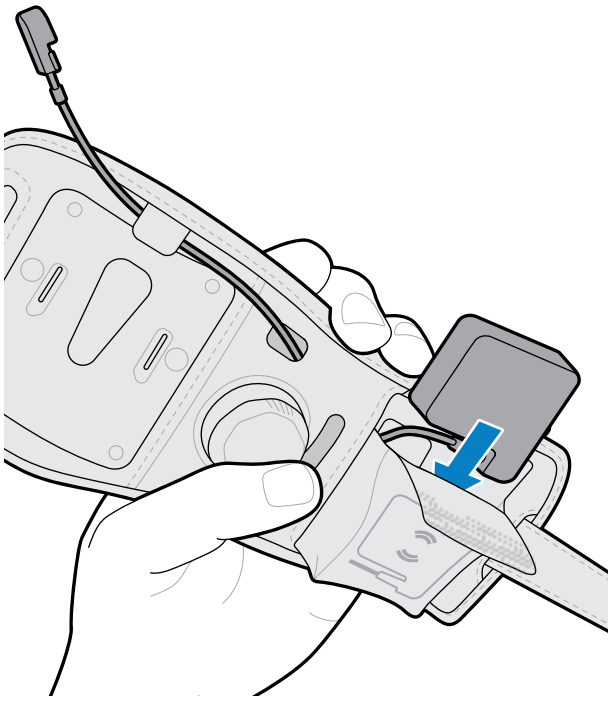
1. Open the antenna pocket and insert the cable into the pocket slot. Squeeze the strap to allow the cable to pass through.



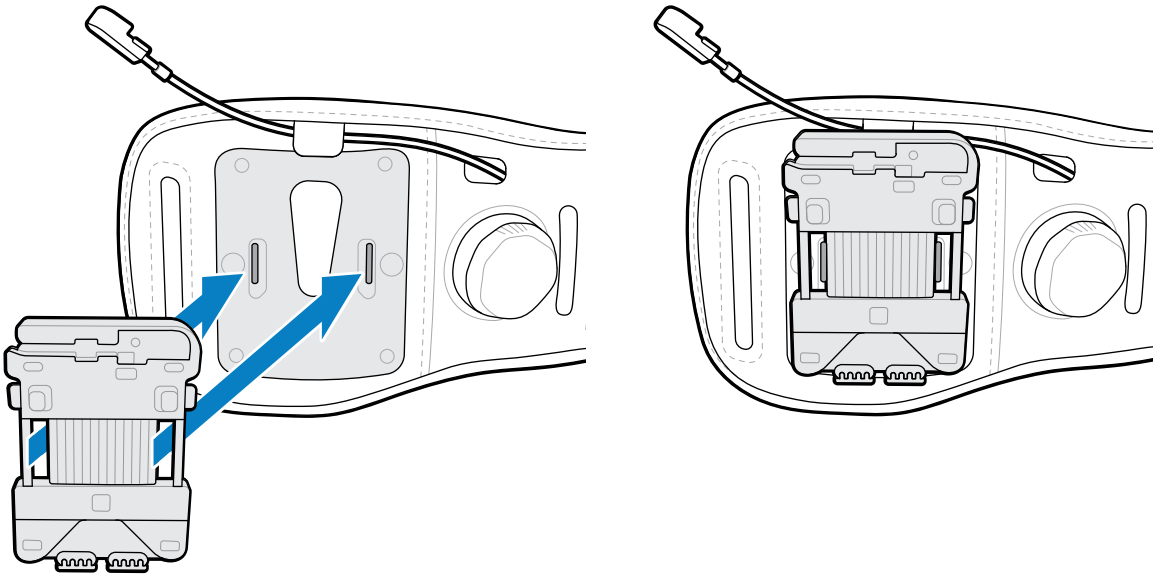
2. Feed the cable through the pocket slot and out the shaped cutout. For right-handed units, use the tab to secure the cable in place.



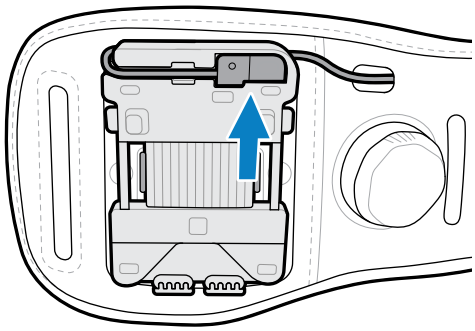
3. Orient the antenna to match the image on the pocket, and then insert the antenna into the pocket.



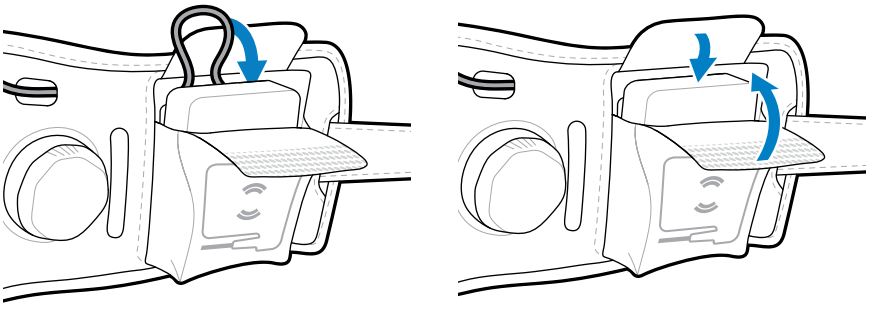
4. Attach the mounting plate to the wrist strap.



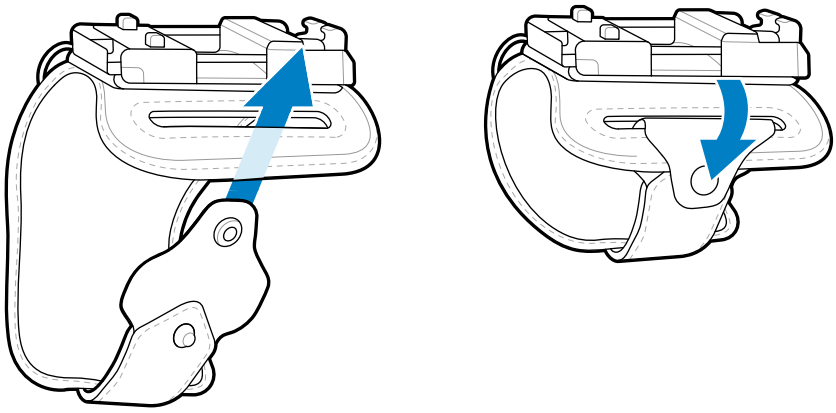
5. Connect the cable to the mounting plate. For right-handed units, gently bend the cable backward and connect.



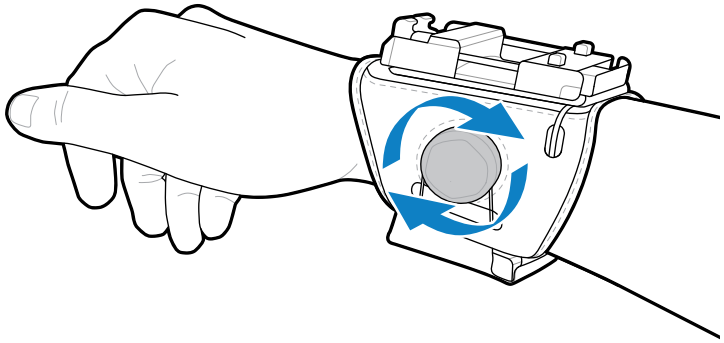
6. Roll any excess cable under the antenna and close the pocket with the hook and loop closure.



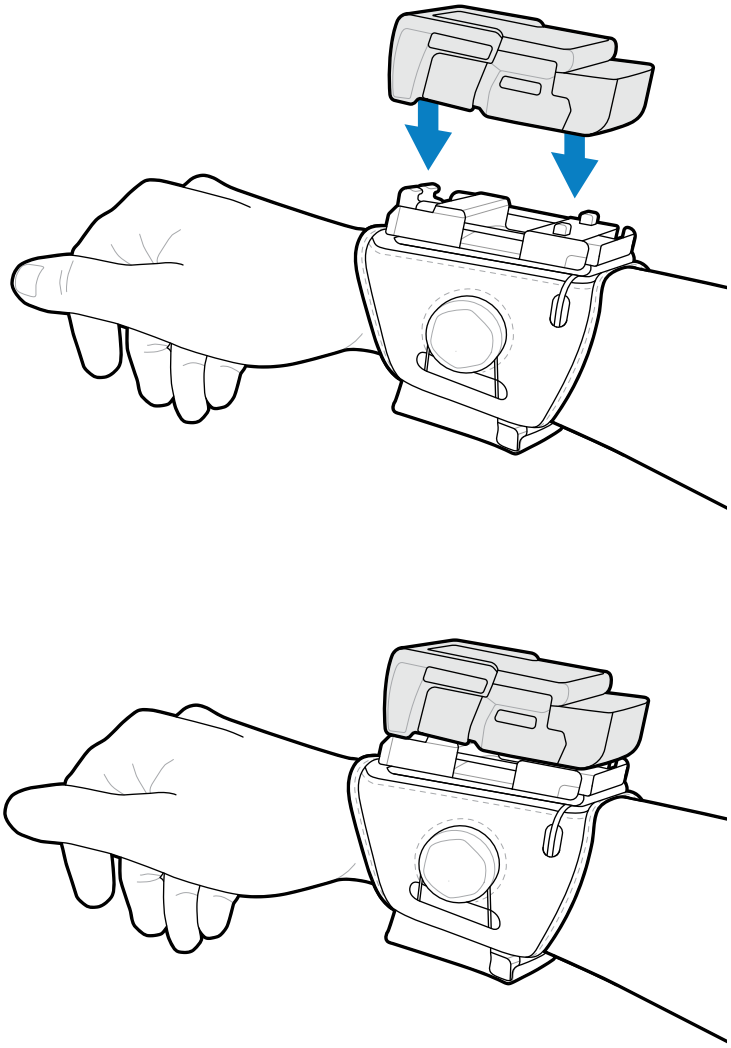
7. Pass the end fastener of the wrist strap through the narrow opening, and then snap the fasteners together.



8. Attach the wrist strap, and then turn the knob to tighten it.



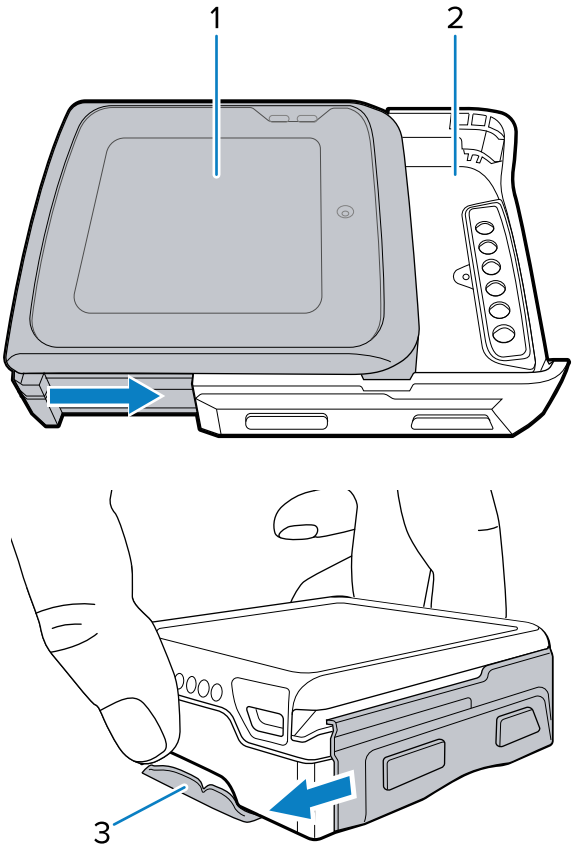
9. Attach the device to the mounting plate.



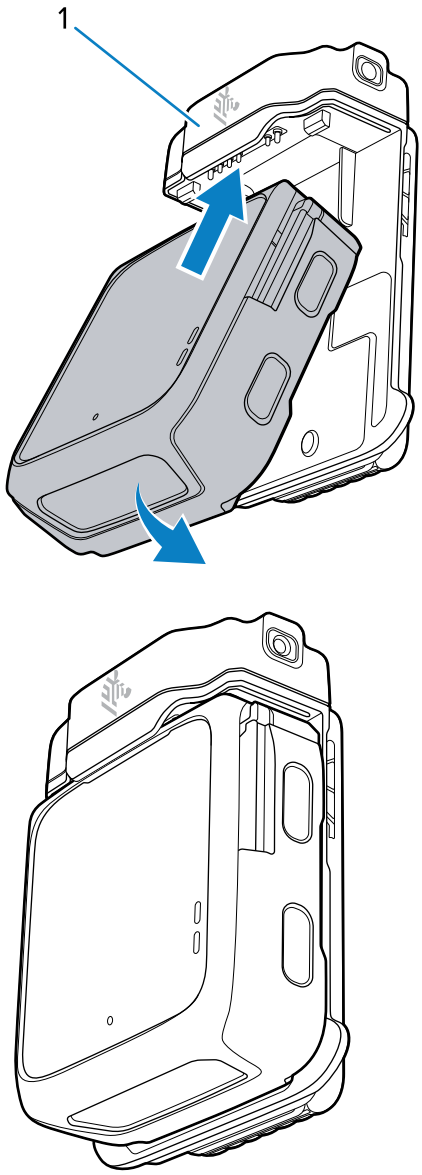
Installing the Device into the Clip Mount

The clip mount lets the operator wear the device on a belt, shirt pocket, or lapel-style. Install the device onto the clip mount after the battery is charged.

1. Slide the device (1) into the shell (2) until the shell release (3) snaps into place.



2. Insert the shell assembly, top first, into the clip mount (1), and then rotate it until it locks in place, sitting flush with the clip mount.



A beep will sound when the device is correctly inserted into the clip mount.

NOTE:

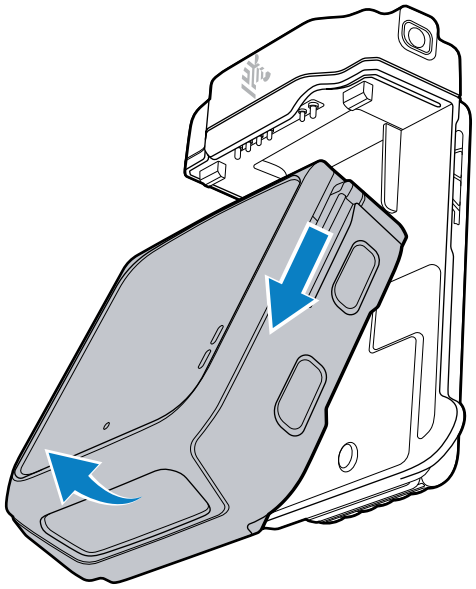
If using a Zebra headset with the clip mount:

1. Use the headset's volume control scroll to adjust it to the maximum level.
2. After installing the device into the clip mount, connect the headset.
3. Adjust the device's volume using a voice command, such as "Set volume to 8."

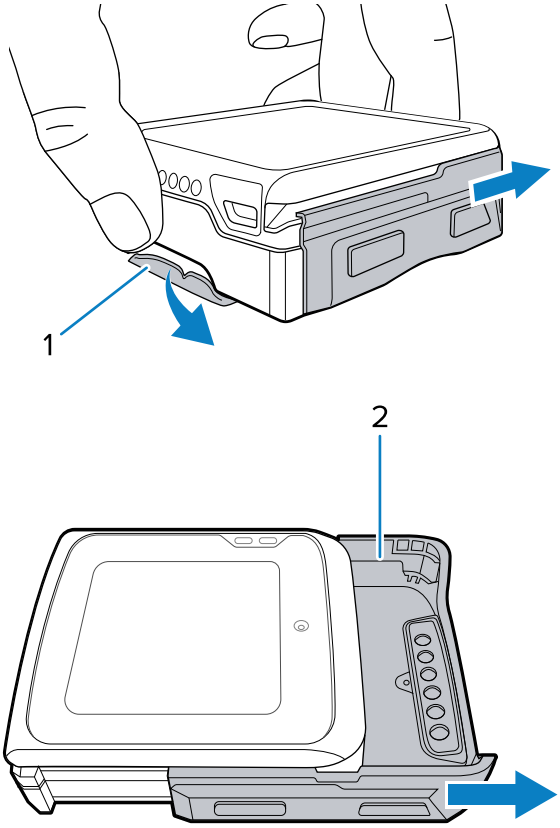
Removing the Device from the Clip Mount

This section describes how to remove the WS50 from the clip mount.

1. Rotate the shell assembly away from the clip mount, and then lift the shell assembly out.



2. Push down the shell latch (1), and then slide the device out of the shell (2).



Wearing the Device

The WS50 can be worn on a belt, apron, or vest.

Figure 1 Device Worn on a Belt

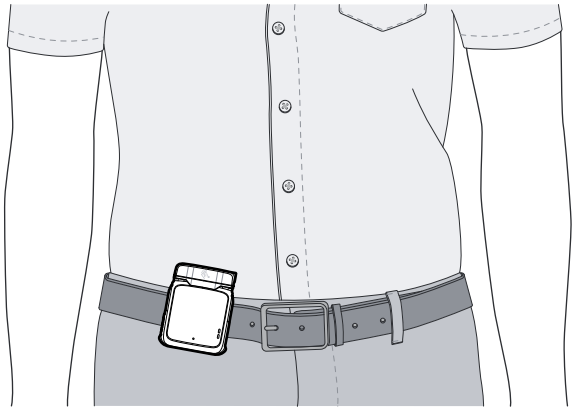


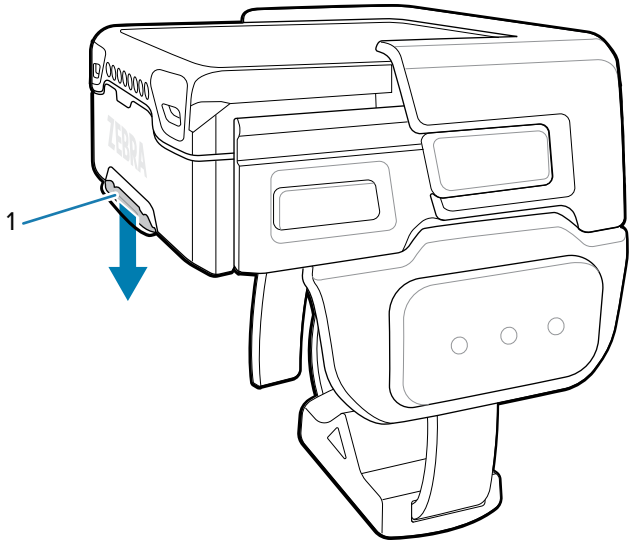
Figure 2 Device Worn on an Apron or Vest



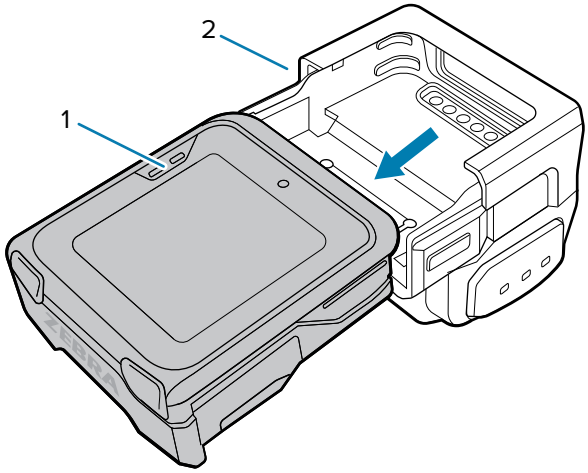
Removing the Trigger and Shell Assembly

Remove the device from the trigger and shell assembly when you need to change a battery.

1. Press down the shell release tab (1).



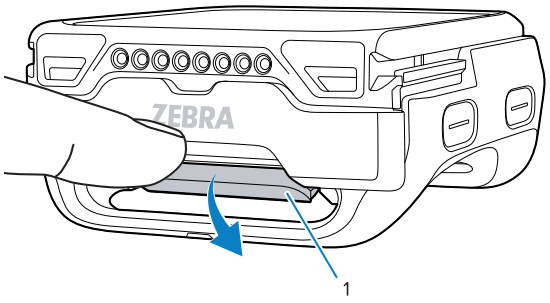
2. Slide the device (1) away from the trigger and shell assembly (2).



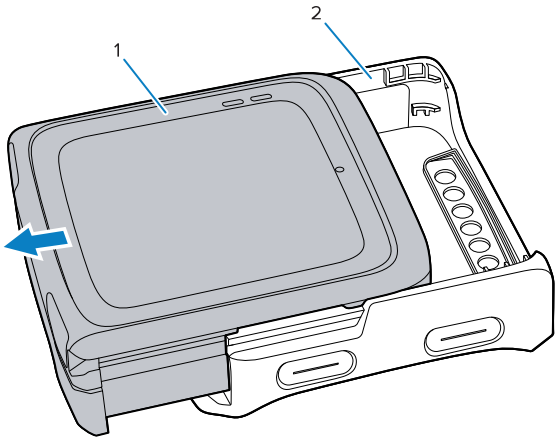
Removing the Wrist Mount Assembly

Unmount the device from the wrist mount assembly for charging. Reattach the device to the assembly after charging.

1. Press down on the wrist mount release tab (1).



2. Slide the device (1) away from the mount (2).



Replacing the Battery

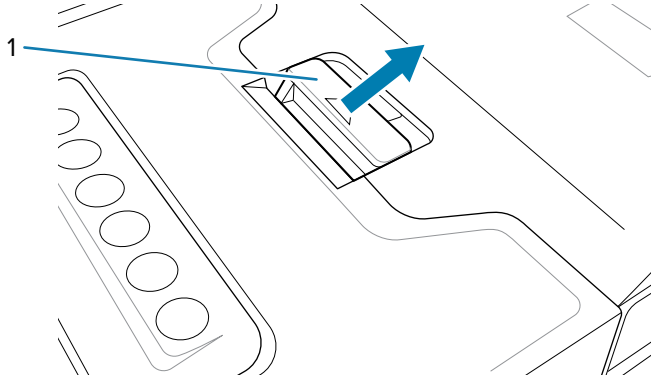
The device supports Hot Swap mode where the user can replace the battery without powering off the device. When the user removes the device from the shell, the display turns off and the device enters a

low power state (indicated by a single red flash of the scan/custom LED). Replace the battery within two minutes to preserve memory persistence.

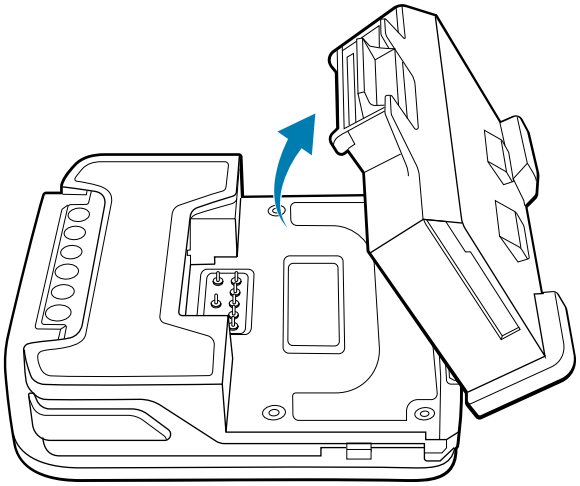
1. Remove the wearable assembly.

   For information about removing the finger trigger and wrist mount assemblies, see Removing the Trigger and Shell Assembly on page 32 and Removing the Wrist Mount Assembly on page 33.

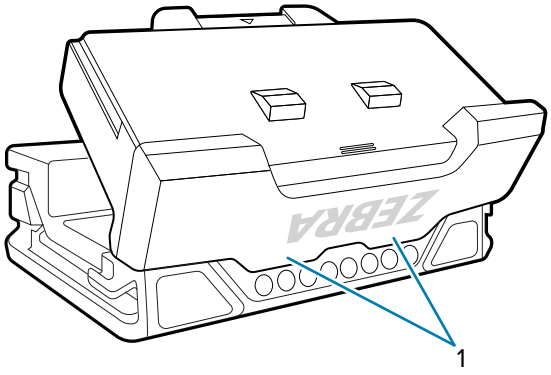
2. Rotate the device so that the touch screen is facing downward.
3. Push the battery release latch (1).



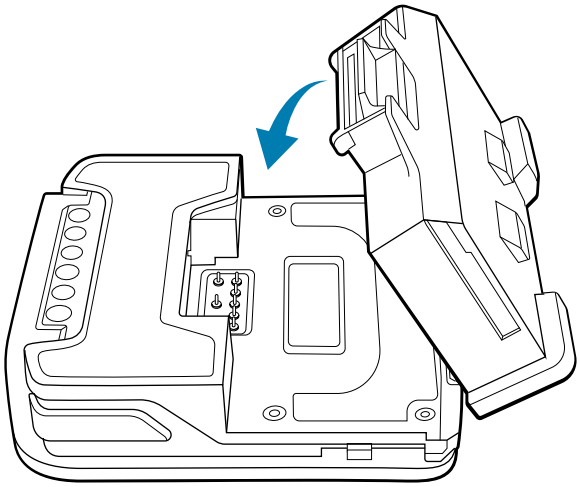
4. Lift the battery from the battery compartment.



5. Align the battery so that the battery bottom engages the locking slots (1).



6. Press the battery down into the battery compartment until the battery release latches snap into place.



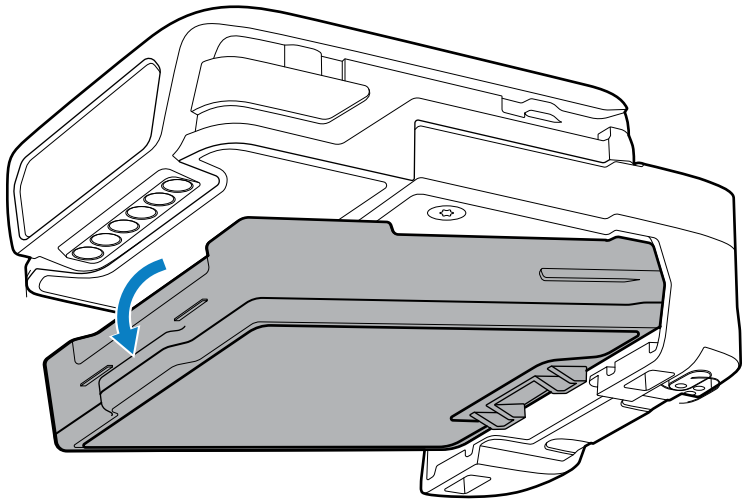
Removing the WS50 RFID Battery

This section describes how to remove the WS50 RFID battery.

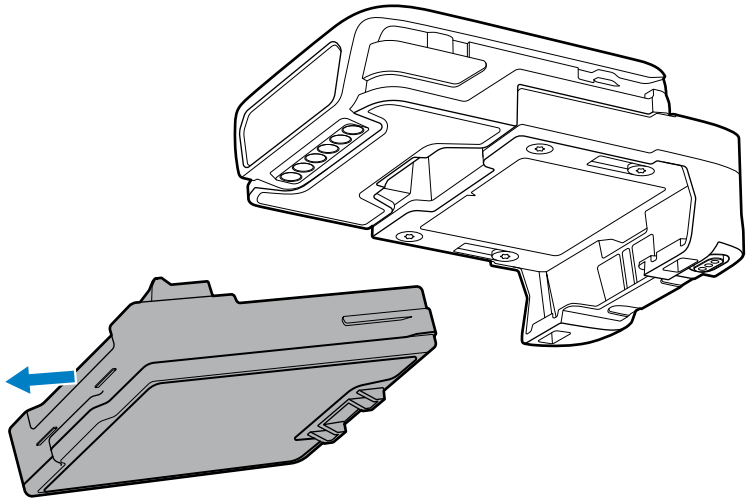
1. Remove the wearable assembly.

   For information about removing the finger trigger and wrist mount assemblies, see Removing the Trigger and Shell Assembly on page 32 and Removing the Wrist Mount Assembly on page 33.

2. Rotate the battery within the support slot.



3. Lift the battery away from the battery compartment.

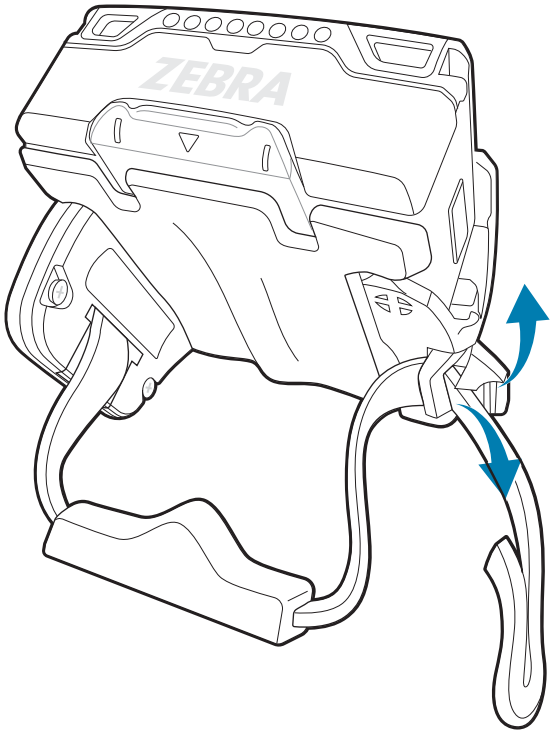


Mounting the Scanner

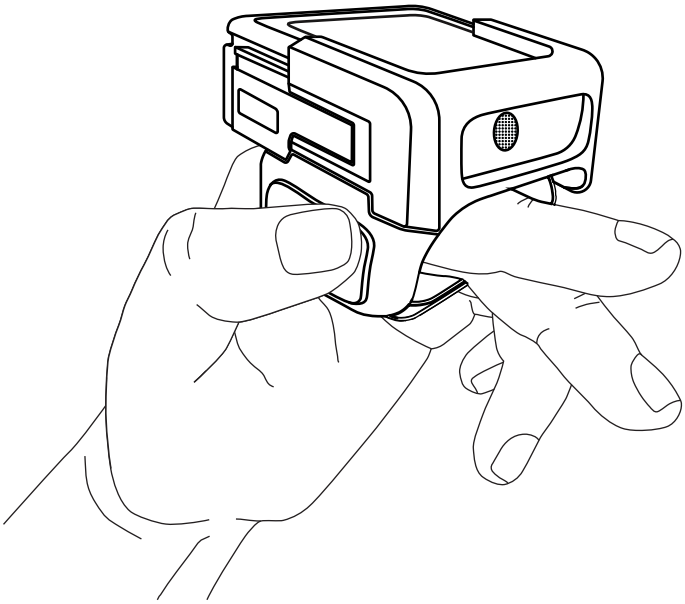
Wear the scanner on the index and middle fingers.

To change the orientation of the scan trigger, refer to the WS50/WS50 RFID Product Reference Guide.

1. Slide the scanner onto the index and middle fingers with the scan trigger next to the thumb.
2. Lift the strap buckle prior to loosening or tightening the finger strap.



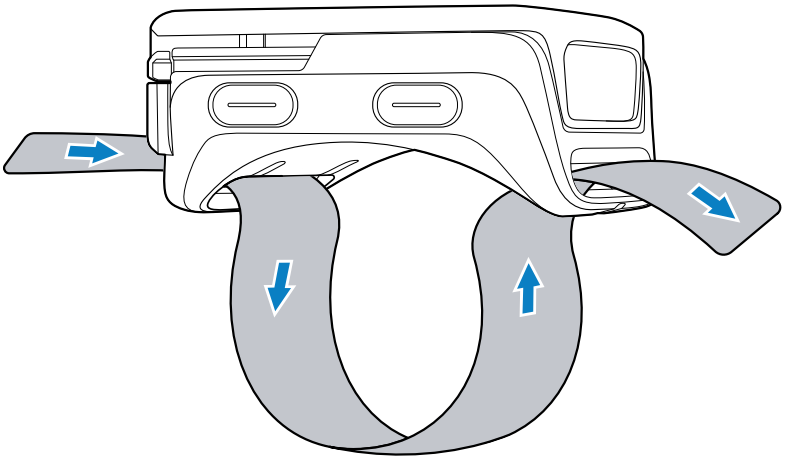
3. Adjust the strap through the strap buckle.



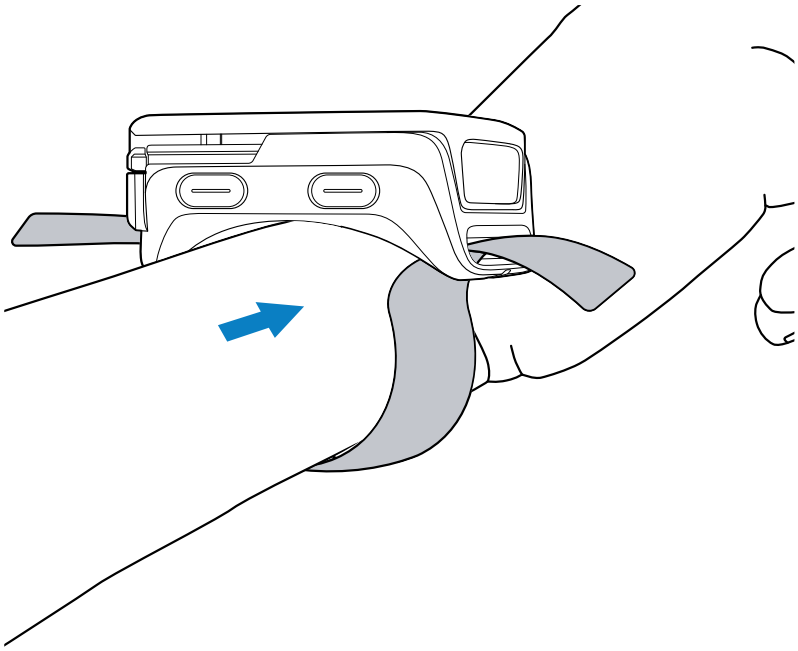
Mounting the Camera

The following instructions describe how to mount the Camera onto your wrist. The device can be worn on either the right or left hand.

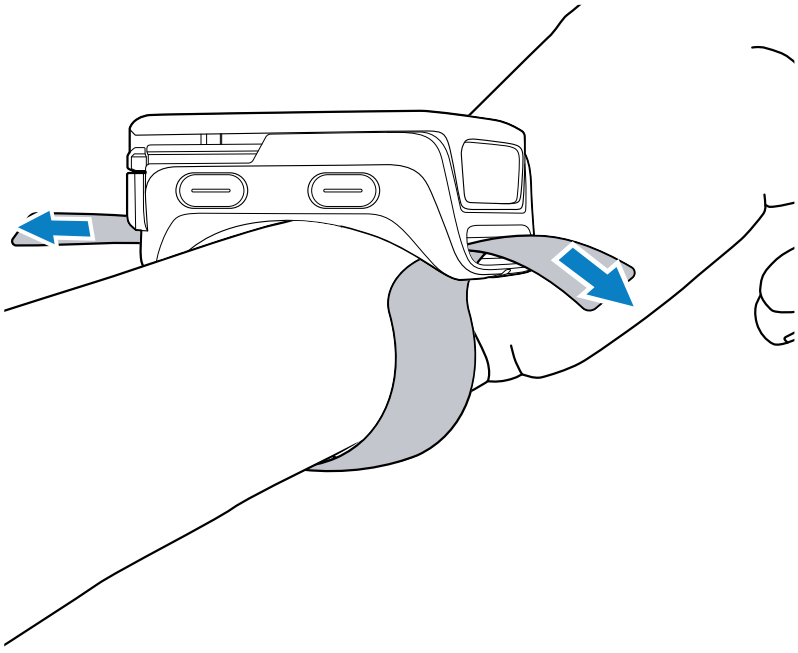
1. Insert the wrist strap through the slots of the wrist mount assembly, ensuring you leave enough slack for your hand to pass through.



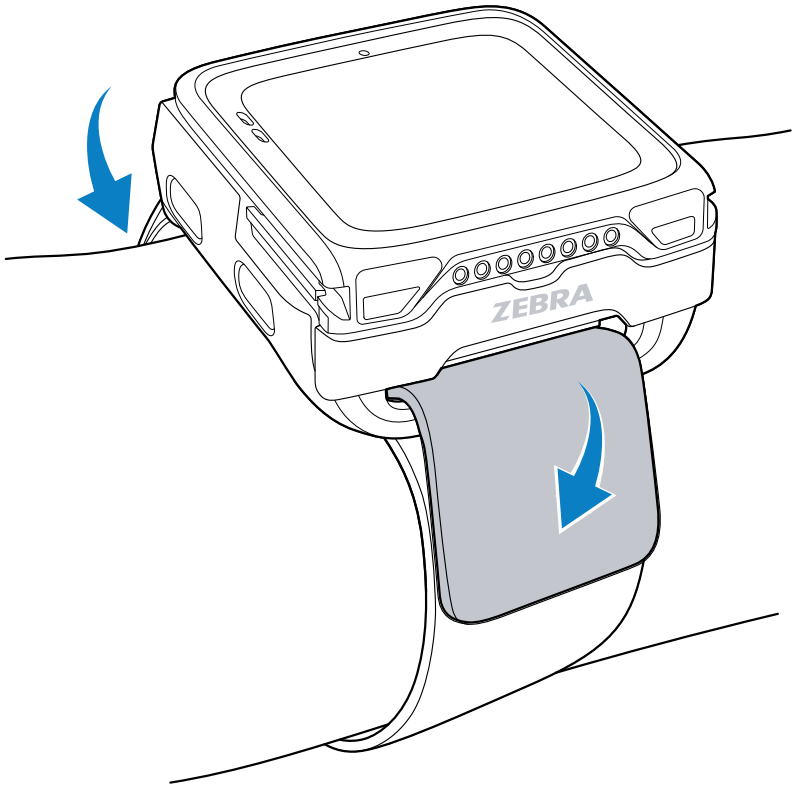
2. Insert your hand through the opening formed by the wrist strap and the wrist mount assembly.



3. Tighten the thin wrist strap by pulling each end to secure it comfortably around your wrist.



4. Fasten the strap at both ends using the hook-and-loop fasteners.



Charging the Device

Use one of the charging accessories to charge the device and/or spare battery.

Table 1 Charging Accessories

Accessories	Part Number	Charging		Communication	
		Battery (In device)	Spare Battery	USB	Ethernet
USB Charge Cable	CBL-WS5X-USB1-02	Yes	No	Yes	No
Converged Scanner and/or 1300 mAh Battery					
2-Slot Charge Only Cradle	CRD-WS5X-2SCV-01	Yes	No	No	No
10-Slot Charge Only Cradle	CRD-WS5X-10SCV-01	Yes	No	No	No
5-Slot Ethernet Cradle with 5-Slot Battery Charger	CRD-WS5X-5SECV-01	Yes	Yes	No	Yes
4-Slot Battery Charger	SAC-WS5X-4S13-01	No	Yes	No	No
20-Slot Battery Charger	SAC-WS5X-20S13-01	No	Yes	No	No
Wrist Mount and/or 800 mAh Battery					

Table 1 Charging Accessories (Continued)

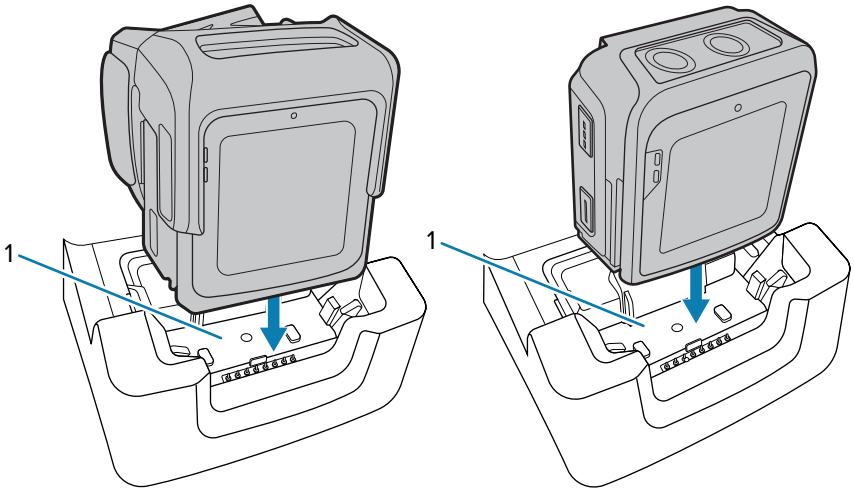
Accessories	Part Number	Charging		Communication	
		Battery (In device)	Spare Battery	USB	Ethernet
2-Slot Charge Only Cradle	CRD-WS5X-2SWR-01	Yes	No	No	No
10-Slot Charge Only Cradle	CRD-WS5X-10SWR-01	Yes	No	No	No
5-Slot Ethernet Cradle with 5-Slot Battery Charger	CRD-WS5X-5SEWR-01	Yes	Yes	No	Yes
4-Slot Battery Charger	SAC-WS5X-4S8-01	No	Yes	No	No
20-Slot Battery Charger	SAC-WS5X-20S8-01	No	Yes	No	No

Charging the Main Battery

Charge the battery in a device with one of the charge-only cradles or the USB charge cable.

CAUTION: Ensure that you follow the guidelines for battery safety described in the device Product Reference Guide.

1. Connect the charger to a power source.
2. Insert the device into a cradle slot (1) or attach it to the USB charge cable.



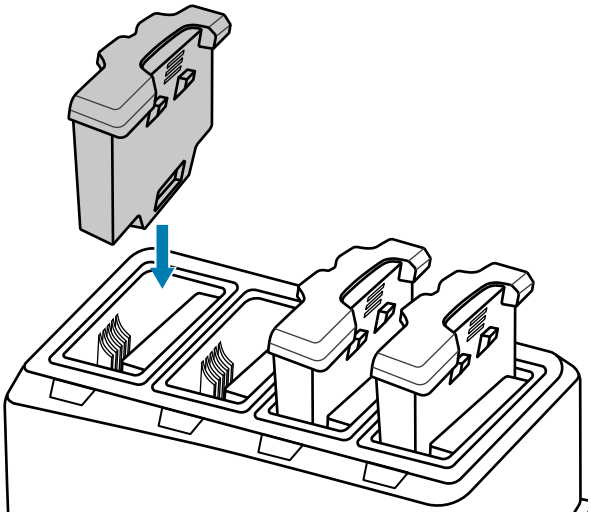
The device turns on and begins charging. The Notification LED on the touch panel shows amber while charging, then turns solid green when fully charged.

Charging the Spare Battery

Charge the spare battery with one of the battery chargers.

1. Connect the charger to a power source.

2. Insert the battery into a battery charging well.



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

   The spare battery charging LED on the battery charger indicates the status of the battery charging.

Charging Indicators

The spare battery charging LED on the cradle cup indicates the status of the spare battery charging.

Table 2 Spare Battery Charging LED Indicators

State	Indication
Off	The battery is not charging. The battery is not inserted correctly in the cradle or connected to a power source. Cradle is not powered.
Solid Amber	Healthy battery is charging.
Solid Green	Healthy battery charging is complete.
Fast Blinking Red (2 blinks/ second)	Charging error, for example: • Temperature is too low or too high. • Charging has gone on too long without completion (typically eight hours).
Solid Red	Unhealthy battery is charging or fully charged.

Charging Temperature

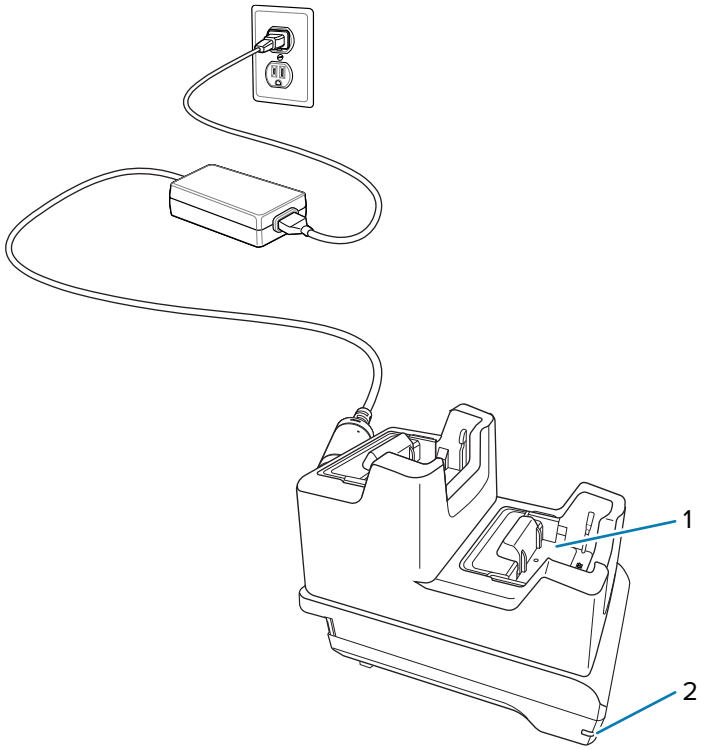
Charge batteries in temperatures from 2°C to 46°C (35.6°F to 114.8°F). The device or cradle always performs battery charging in a safe and intelligent manner. At higher temperatures (for example, approximately +37°C (+98°F)) the device or cradle may for small periods of time alternately enable and disable battery charging to keep the battery at acceptable temperatures. The device and cradle indicate when charging is disabled due to abnormal temperatures via its LED.

2-Slot Charge Only Cradle

2-Slot Charge Only Cradle:

- Provides 12 VDC (nominal) power for operating the device.
- Charges the device's battery.

Figure 3 2-Slot Charge Only Cradle



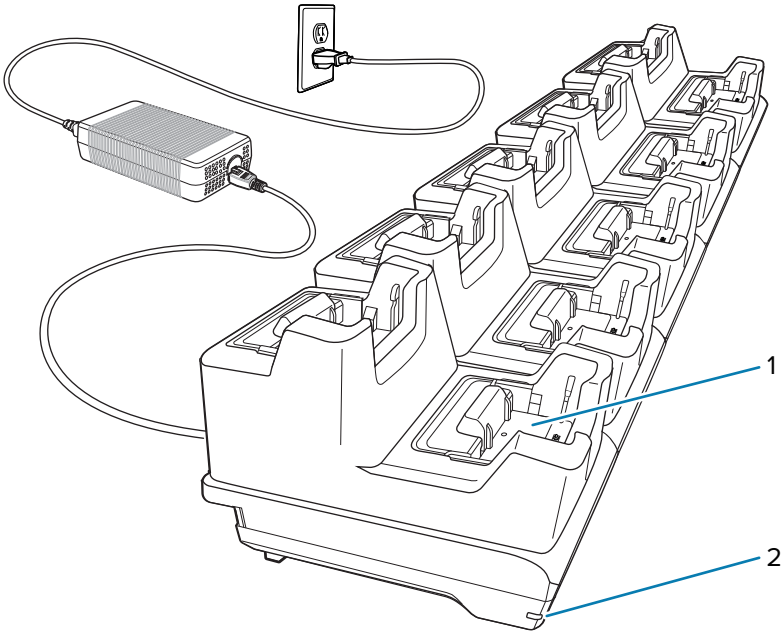
1	Device charging slot
2	Power LED

10-Slot Charge Only Cradle

10-Slot Charge Only Cradle:

- Provides 12 VDC (nominal) power for operating the device.
- Charges the device's battery.

Figure 4 10-Slot Charge Only Cradle



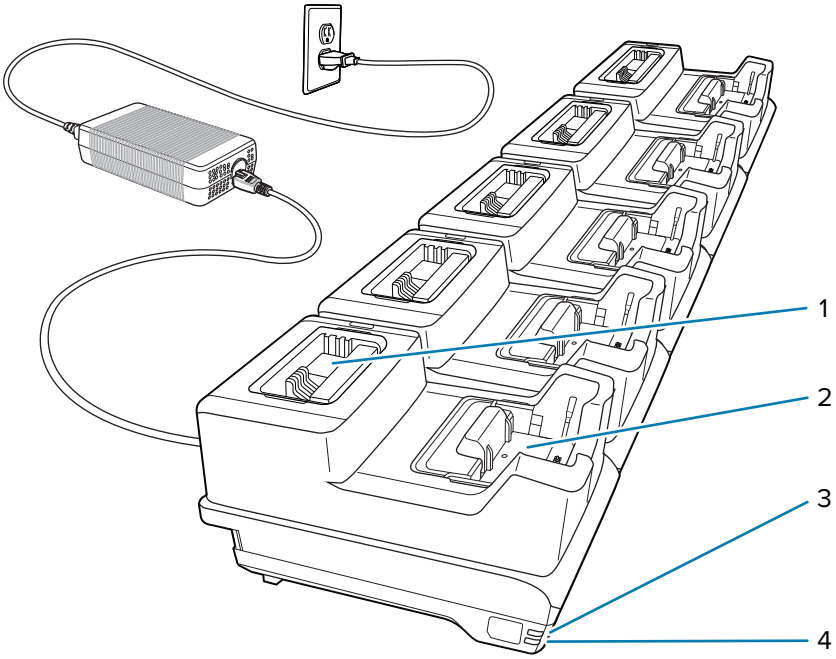
1	Device charging slot
2	Power LED

5-Slot Ethernet Cradle with Battery Charger

5-Slot Ethernet Cradle with Battery Charger:

- Provides 12 VDC (nominal) power for operating the device.
- Connects the device (up to five) to an Ethernet network.
- Simultaneously charges up to five devices and up to five spare batteries.

Figure 5 5-Slot Ethernet Cradle with Battery Charger

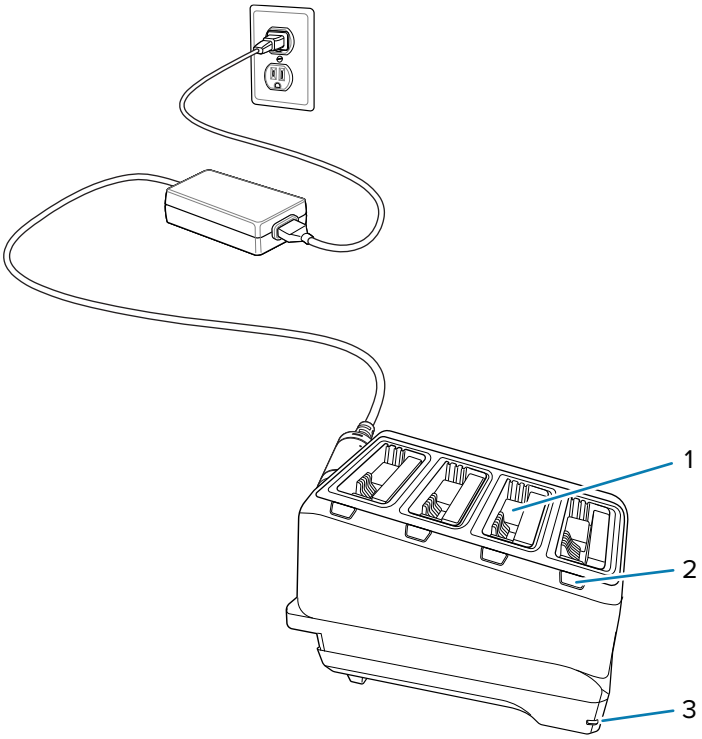


1	Battery slot
2	Device charging slot
3	1000 LED
4	100/100 LED

4-Slot Battery Charger

The 4-Slot Battery Charger charges up to four spare batteries.

Figure 6 4-Slot Battery Charger

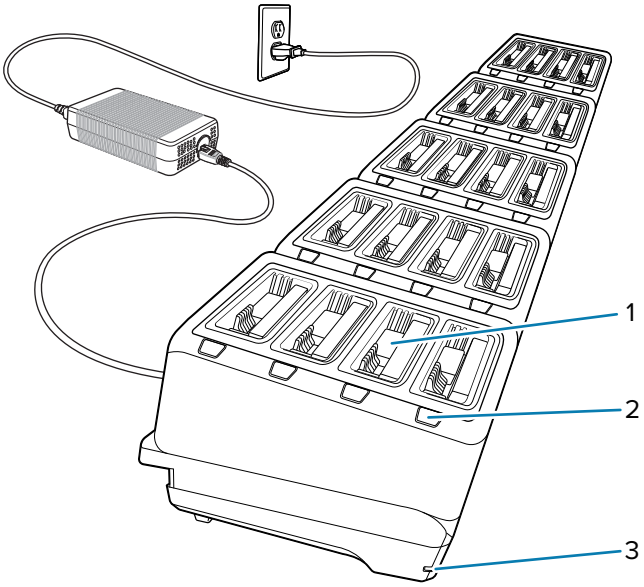


1	Battery slot
2	Battery charging LED
3	Power LED

20-Slot Battery Charger

The 20-Slot Battery Charger charges up to 20 spare batteries.

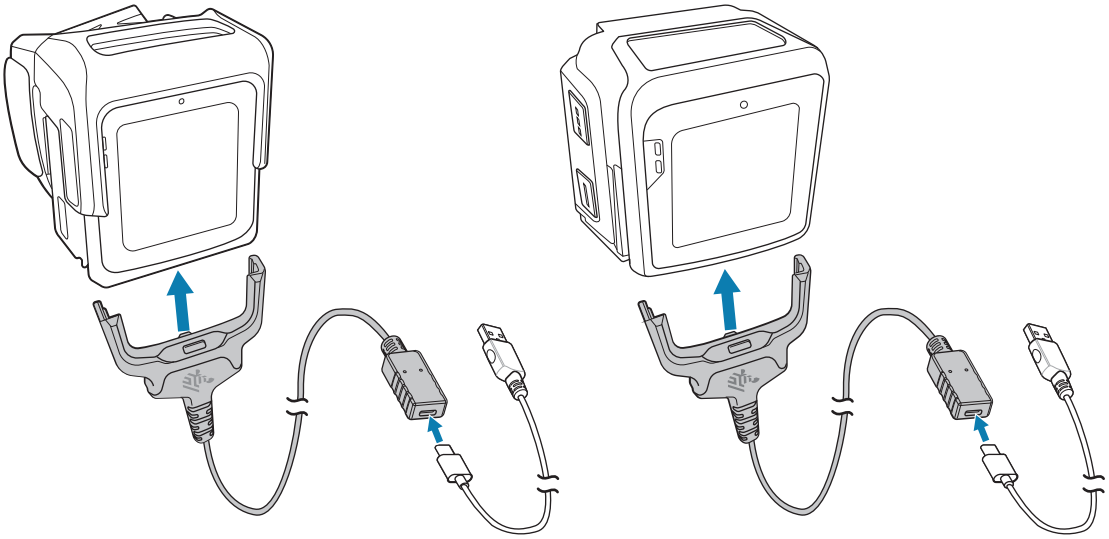
Figure 7 20-Slot Battery Charger



1	Battery slot
2	Battery charging LED
3	Power LED

USB Charge Cable

The USB Charge Cable snaps onto the bottom of the device and is easily removed when not in use. The cable charges the device and allows the device to transfer data to a host computer.



Ergonomic Recommendations

To avoid or minimize risk of ergonomic injury, follow the ergonomic recommendations.

- Ensure users are trained in proper and secure mounting of the Converged Scanner on the fingers.

- Ensure that the finger comfort pad is in place and the strap buckle is secured properly on the fingers with the Converged Scanner.
- Ensure that users are trained in proper and secure mounting of the Wrist Mount on the wrist.
- Ensure that the device is not worn near the wrist joint.
- Use a smaller wrist strap for small to medium wrist size. Use a larger strap for medium to large wrist size.
- Ensure that the device is mounted so that the display is oriented towards the user.
- Maintain and clean wearable components such as straps and soft goods.
- Reduce or eliminate unnecessary repetitive motion and activation.
- Maintain a neutral posture.
- Reduce or eliminate elevated or raised arm and shoulder postures.
- Reduce or eliminate excessive force.
- Keep objects that are used frequently within easy reach.
- Perform tasks at correct heights.
- Reduce or eliminate direct pressure.
- Provide adequate clearance.
- Provide a suitable working environment.
- Improve working procedures using the device.