



BARCODE TECHNOLOGIES

WASP WWS652



QUICK REFERENCE GUIDE

Wasp Barcode Technologies

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<https://github.com/lz4/lz4/blob/dev/LICENSE>

2. JPEG

2.1 Available Under License: free
<https://jpegclub.org/reference/libjpeg-license/>

3. TIFF

3.1 Available Under License: BSD like
<https://gitlab.com/libtiff/libtiff/-/blob/master/COPYRIGHT>

4. CMSIS DSP Library

4.1 Available Under License: Apache 2.0
https://arm-software.github.io/CMSIS_5/General/html/index.html#License

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WASP WWS652

ABOUT THE SCANNER

The WWS652 represents the entry level 2D scanners for general purpose applications. It has been specifically created for small to medium size Retailers, such as groceries and convenience stores, operating in both food and non-food sectors. Providing the quickest response to the operator for its class of products, the WWS652 scanner is able to capture whatever barcode, hard-to-read, poorly printed or damaged. It easily scans from mobile devices and through plexiglass barriers. Lightweight and easy to handle, it is a reliable and seamless companion throughout the whole shift.

The WWS652 scanner features a precise aiming system developed with the unique intent to reduce visual stress of the operator during the daily scanning activities.

This sophisticated, extreme precision aimer, consists of two blue LED triangles pointing at the targeted barcode.

The Green Spot confirms the good read, being perfectly centered on the barcode and between the two triangles.

Very responsive at the pull of the trigger, the WWS652 provides a superior robustness for its class of products, thanks to an accurate design and quality of parts, right there where the product is mostly stressed.

Perfect for manual reading, the WWS652 uses Motionix™ motion detection technology that detects the operator's natural actions to automatically switch the scanner into “ready to read” scan mode.

The WWS652 Cordless model provide maximum flexibility and solves most end user applications, by increasing both the autonomy and the radio range.

SETTING UP THE READER

Follow the steps below to connect and get your reader up and communicating with its host.

1. Configure the Base Station starting on this page.
2. Charge the Batteries (see page 10).
3. Link to the Base Station (see page 13).
4. Select the Interface Type (see page 15).
5. Configure the Reader starting on page 16 (optional, depends on settings needed)



NOTE: According to recent modification of Regulation for shipping Li-Ion based battery packs, the products and their spare battery packs parts are shipped with a very low residual charge (low state of charge).

Hence the needs:

- **that a new product must be fully recharged before starting to use it.**

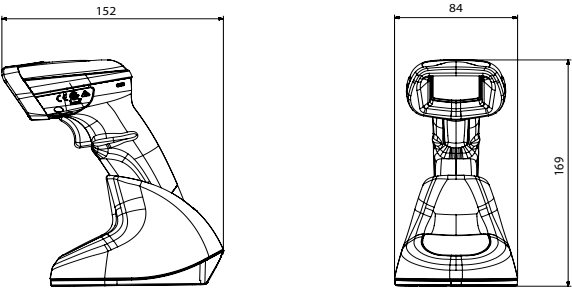
and

- **that battery packs of the stocked product WWS652 and spare battery pack parts must be periodically recharged. For instance, by using a WWS652BS cradle powered up with a 12V AC/DC adapter (cod.8-0935) for at least 30 minutes each 3 months or connecting the reader to an USB Type-C cable for the same time.**

Positioning the Base Station

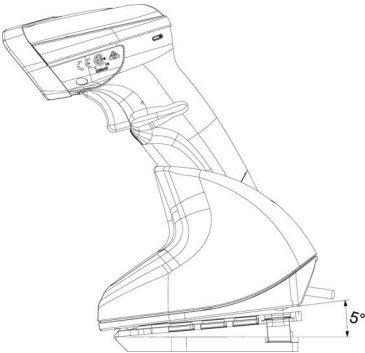
The base station/charger may be set up in desk application standalone or with the additional tilting platform, which allows to adjust the inclination of the scanner to provide the most comfortable use depending on the needs.

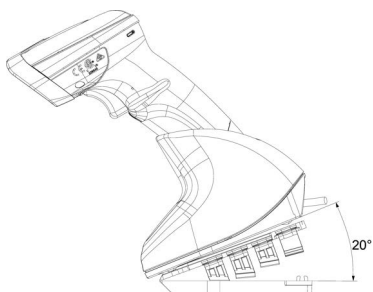
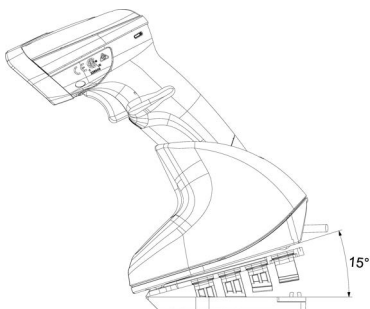
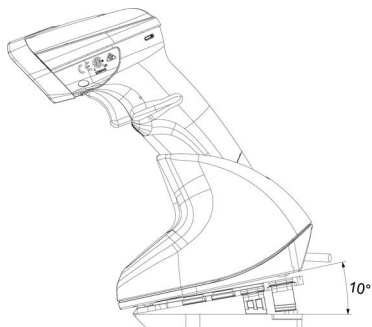
Figure 1 - Presentation Position



This position is preferred, if the scanner is to be used in stand mode and not needed to be often removed from base station.

Figure 2 - Tilting Platform Position



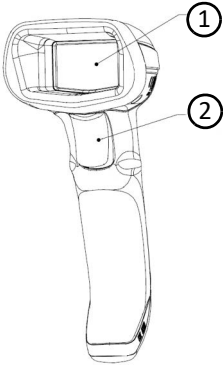


This optional tilting platform allows to adjust the scanner inclination to different angle positions.

Reader, Cradle and LEDs Description

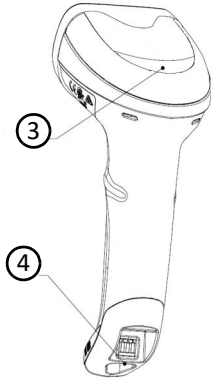
LEDs on the gun provide information about the battery charging status as well as data transmission.

Figure 3 - Reader and Cradle Features Description



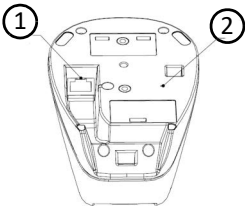
1. Scan Window

2. Trigger



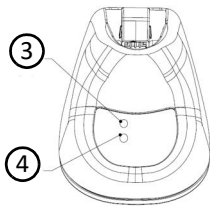
3. Battery & Recharge LED

4. USB Port



1. Communication Port

2. Service Button



3. Battery Charging Status LED

4. Power LED

Connecting the Base Station

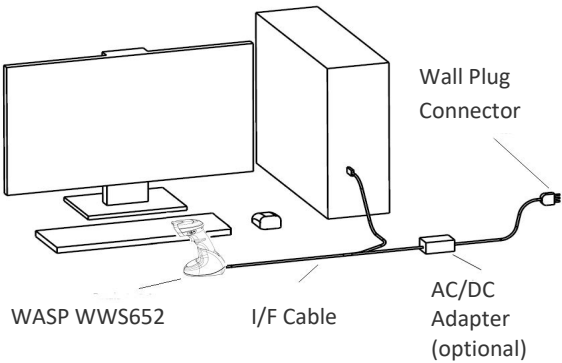
This section shows how to connect the Base Station to a terminal, PC or other host device. Turn off the host before connection and consult the manual for that equipment (if necessary) before proceeding.



NOTE: The WWS652 can also be Powered by the Terminal. When powered by the Terminal, the battery charger is automatically set as Slow charge. For some specific interfaces or hosts or lengths of cable, the use of an external power supply is recommended for full recharging capability (See "Technical Specifications" on page 28 for more details).

Base Station Connection and Routing — Fully insert the Interface (I/F) Cable connector into the port in the underside of the Base Station. Then optionally connect an AC/DC adapter to the proper external power cable to charge the device faster.

Figure 4 - Connecting the Base Station



SYSTEM AND NETWORK LAYOUTS

Stand Alone Layouts

Figure 5 - Single Reader Layout

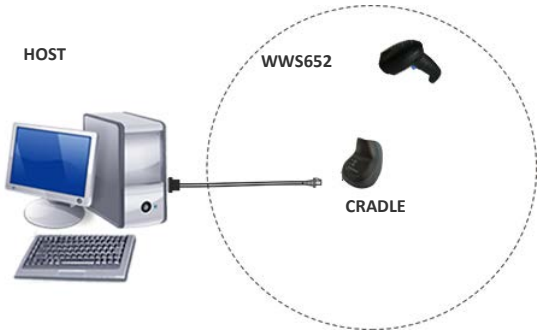
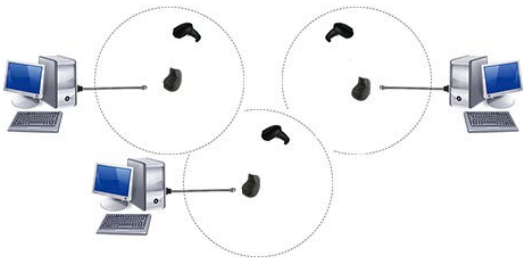


Figure 6 - Multiple Stand Alone Layout



Many stand alone connections can operate in the same physical area without interference, provided all readers and cradles in the system have different addresses.

USING THE WWS652 SCANNER

Scanner LEDs

Specific LEDs on the WWS652 Scanner provide information about: good reading result, battery status and charging status (with USB Type-C only). The Battery Status information can be easily retrieved by double-tapping with your fingers on top of the head of the scanner. The following table explains the main colors' combinations provided by the Battery Status LED.

Table 1 - Battery LED

COLOR		BATTERY STATUS
Blinking color (1s ON - 1s OFF)	Green (charge = 50% - 99%) Red (charge less than 1%) NOTE: Scanner is unusable until 1% is reached	Charge in Progress through USB Type-C
Solid Green (charge = 100%)	It goes OFF when Scanner's unplugged	Charge Complete through USB Type-C
Solid color (3s time-out)	Green (charge = 50% - 100%) Amber (charge = 2% - 50%) Red blinking (charge less than 2%)	Battery Status

THE WWS652BS RADIO BASE

Radio Base LEDs

LEDs on the Base provide information about the Base as well as battery charging status, as shown in [Table 2](#).

Figure 7 - WWS652BS Base LEDs

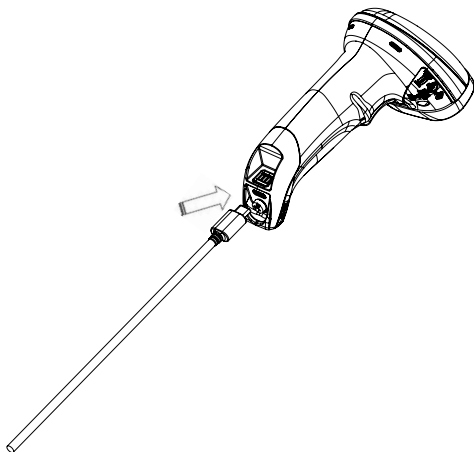


Table 2 - Radio Base LEDs

LED		STATUS
1	Power ON / Data	Green On = Base is powered Green Blinking = Base receives data and commands from the Host or the Reader.
2	Charging	Green On = the battery is completely charged Green blinking = battery level 51 to 99% Amber blinking = battery level 1 to 50% Red blinking = pre-charge

CHARGING THE BATTERIES

The battery can be charged by connecting the reader directly to a host through the USB Type-C connector available in the bottom of the handle, as shown.



Alternatively, simply insert the WWS652 into the base. When the scanner is fully seated in the cradle, it will make a sound to indicate that the cradle has detected the scanner connection.

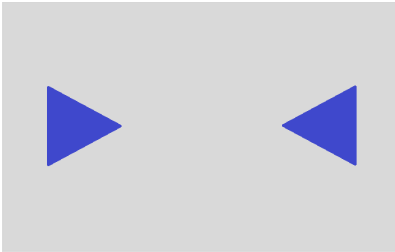
The LEDs on the base (shown in [Table 2](#)) will indicate the status of the battery.



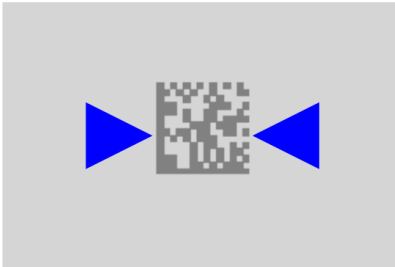
NOTE: Before using the battery, read "[Replacing the Battery Pack](#)" on page 37. Wasp recommends annual replacement of rechargeable battery packs to ensure maximum performance.

USING THE WWS652

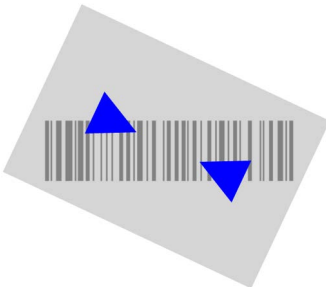
The WWS652 normally functions by capturing and decoding codes. The reader is equipped with an internal Motionix™ motion-sensing function which activates the aiming system on device motion. The intelligent aiming system indicates the field of view which should be positioned over the bar code:



Aiming System



Relative Size and Location of Aiming System Pattern on 2D Matrix Symbol

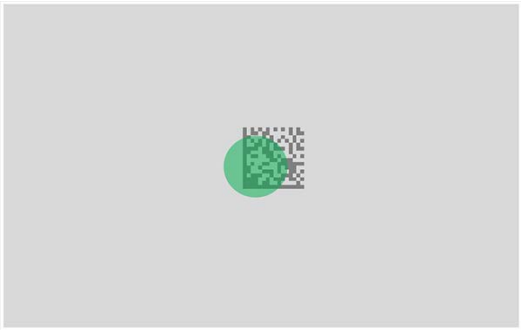


Relative Size and Location of Aiming System Pattern on Linear bar code

A red beam illuminates the label. The field of view indicated by the aiming system will be smaller when the reader is closer to the bar code and larger when it is farther from the code. Symbologies with smaller bars or elements (mil size) should be read closer to the unit. Symbologies with larger bars or elements (mil size) should be read farther from the unit.

If the aiming system is centered and the entire bar code is within the aiming field, you will get a good read. Successful reading is signaled by an audible tone plus a good-read green spot LED indicator.

Relative Size and Location of Green Spot



LINKING THE READER

Link WASP Devices to Base

Before configuring the interface, it is necessary to link the handheld with the base.

To link the handheld and the base, simply put it into the base. If the reader was previously linked to another base, you must first scan the **Unlink** bar code before re-linking it to the new base.



Unlink

Link Scanner as Serial Device to a Bluetooth Host

Use this procedure to let the scanner communicate with a Bluetooth host using the Bluetooth Serial Port Profile (SPP).

1. If using a Bluetooth adapter on the host device, install any driver provided with the adapter.
2. Scan the **Link to Host in SPP mode** label below to make the scanner visible to the host device.
3. Use the Bluetooth manager of the host device to “Discover new devices” and select “WWS652...”.
If you receive an error message, it may be necessary to change the security settings on either the host device or the scanner.
4. Use an RS-232 terminal program to see incoming data on the port designated by the Bluetooth manager of the host device.



Link to Host in SPP Mode

Link Scanner as HID device to a Bluetooth host

Use this procedure to send data to a Bluetooth host using the Bluetooth HID profile.

1. If using a Bluetooth adapter on the host device, install any driver provided with the adapter.
2. Scan the **Link to Host in HID mode** label below to make the scanner visible to the host device.
3. Use the Bluetooth manager of the host device to "Discover new devices" and select "WWS652...". If you receive an error message, it may be necessary to change the security settings on either the host device or the scanner.
4. On the host device, open the program that is meant to receive the incoming data.

The data transmitted by the scanner will appear in the program as if it was typed using the keyboard of the host device.



Link to Host in HID mode



NOTE: The WWS652 can be set up to authenticate the remote system when connecting, by entering a Bluetooth passkey or a PIN code. If you want to set the security level and authentication options suitable for your application, or when adding new equipment to a system that requires authentication or uses a custom security PIN, please see the PRG for information.

POWER OFF

Scan the bar code below to shut off power to the hand-held until the next trigger pull.



Power Off

SELECTING THE INTERFACE TYPE

Upon completing the physical connection between the reader and its host, proceed directly to Interface Selection below for information and programming for the interface type supported by the reader and scan the appropriate bar code to select your system's correct interface type, according to your application.

Interface Selection

The reader will support all the following host interfaces:

- RS-232 STD
- RS-232 WN
- IBM46XX port 9b (a specific cable is required)
- USB HID POS
- USB Toshiba TEC
- USB (Keyboard, COM, OEM)
- USB Composite (Keyboard + COM)

Information and programming options for each interface type are provided in this section.

CONFIGURING THE INTERFACE

Scan the appropriate programming bar code to select the interface type for your system.



NOTE: Unlike some other programming features and options, interface selections require that you scan only one programming bar code label. **DO NOT** scan an ENTER/EXIT bar code prior to scanning an interface selection bar code.

Some interfaces require the scanner to start in the disabled state when powered up. If additional scanner configuration is desired while in this state, pull the trigger and hold for 5 seconds. The scanner will change to a state that allows programming with bar codes.

RS-232
 Select RS232-STD RS-232 standard interface
 Select RS232-WN RS-232 Wincor-Nixdorf
 Select RS-232 OPOS RS-232 for use with OPOS/UPOS/JavaPOS
 Select USB-COM-STD^a USB Com to simulate RS-232 standard interface

a. Download the correct USB Com driver from www.wasppbarcode.com

USB-OEM

Select USB-OEM

USB-OEM (can be used for OPOS/UPOS/JavaPOS)

USB-COMPOSITE

Select USB-Composite

USB-Composite (Keyboard + COM)

IBM46XX

Select IBM46xx Port 9b

ADDITIONAL INTERFACES

Select USB HID POS



Select USB Toshiba TEC

Keyboard Interface

Use the programming bar codes to select options for USB-Keyboard Interface.

KEYBOARD
 ★ Select USB Keyboard (USB Keyboard with standard key encoding)
 Select USB Alternate Keyboard (USB Keyboard with alternate key encoding)

★ = default value

Country Mode

This feature specifies the country/language supported by the keyboard. Only the following interfaces support ALL Country Modes.

- USB Keyboard with alternate key encoding
- USB Keyboard with standard key encoding

All other interfaces support ONLY the following Country Modes: U.S., Belgium, United Kingdom, France, Germany, Italy, Spain, Sweden.

COUNTRY MODE**ENTER/EXIT PROGRAMMING MODE**

★ Country Mode = U.S.



Country Mode = Belgium



Country Mode = Croatia*



Country Mode = Czech Republic*



Country Mode = Denmark*



Country Mode = France

COUNTRY MODE (CONTINUED)



Country Mode = French Canadian*



Country Mode = Germany



Country Mode = Hungary*



Country Mode = Italy



Country Mode = Japanese 106-key*



Country Mode = Lithuanian*



Country Mode = Norway*

COUNTRY MODE (CONTINUED)

Country Mode = Poland*



Country Mode = Portugal*



Country Mode = Romania*



Country Mode = Slovakia*



Country Mode = Spain



Country Mode = Sweden



Country Mode = Switzerland*

COUNTRY MODE (CONTINUED)



Country Mode = United Kingdom

- ★ = default value
- * Supports only the interfaces listed in the Country Mode feature description.

PROGRAMMING

The reader is factory-configured with a set of standard default features.

Using Programming Bar Codes

This manual contains bar codes which allow you to reconfigure your reader. Some programming bar code labels, like the "Reset Default Settings" on [page 22](#), require only the scan of that single label to enact the change.

Other bar codes require the reader to be placed in Programming Mode prior to scanning them. Scan an ENTER/EXIT bar code once to enter Programming Mode; scan the desired parameter settings; scan the ENTER/EXIT bar code again to accept your changes, which exits Programming Mode and returns the reader to normal operation.

Resetting Product Defaults

If you are not sure what programming options have been set in your reader, or you have changed some options and want your custom factory settings restored, scan the bar code below to reset the reader to its initial configuration.



NOTE: Factory defaults are based on the interface type. Be sure your reader is configured for the correct interface before scanning this label. See "Selecting the Interface Type" on [page 15](#) for more information.



Reset Default Settings

READING PARAMETERS

Move the reader toward the target and center the aiming pattern and illumination system to capture and decode the image. See ["Using the WWS652" on page 11](#) for more information.

The aiming system will briefly switch off after the acquisition time, and if no code is decoded will switch on again before the next acquisition. The illuminator will remain on until the symbol is decoded.

As you read code symbols, adjust the distance at which you are holding the reader.

Good Read Green Spot Duration

Successful reading can be signaled by a good read green spot. Use the bar codes that follow to specify the duration of the good read pointer beam after a good read.

GOOD READ GREEN SPOT DURATION	
	ENTER/EXIT PROGRAMMING MODE
	Disable
	★ Short (300 ms)

GREEN SPOT DURATION (CONTINUED)	
	Medium (500 ms)
	Long (800 ms)

★ = default value

OPERATING MODES

Scan Mode

The reader can be set to operate in one of several scanning modes:

Trigger Single (Default) This mode is associated with the typical handheld reader operation. When the trigger is pulled, illumination is turned on and the scanner attempts to read a label.

Scanning is activated until one of the following occurs:

- the programmable Scanning Active Time expires
- a label has been read
- the trigger is released

Trigger Hold Multiple - When the trigger is pulled, scanning starts and the product scans until the trigger is released or Scanning Active Time expires. Reading a label does not disable scanning. Double Read Timeout prevents undesired multiple reads while in this mode.

Trigger Pulse Multiple - Scanning begins when the trigger is pulled and continues after the trigger is released, until the trigger is pulled again or until the programmable Scanning Active Time expires. Reading a label does not disable scanning. Double Read Timeout prevents undesired multiple reads while in this mode.

Flashing - The reader illuminator flashes on and off regardless of the trigger status. Code reading takes place

only during the Flash On Time. Double Read Timeout prevents undesired multiple reads.

Always On - The illuminator is always ON and the reader is always ready for code reading. Double Read Timeout prevents undesired multiple reads.

Object Detection - The scanner looks for changes within its field-of-view. The Aiming Pattern is always on to show the optimum reading area. If a predefined amount of movement is detected, the red illumination switches on. Scanning continues until a label is read or Scanning Active Time expires.

SCAN MODE
 ENTER/EXIT PROGRAMMING MODE
 ★ Trigger Single
 Trigger Hold Multiple
 Trigger Pulse Multiple

SCAN MODE (CONTINUED)	
	Scan Mode Flashing ^a
	Scan Mode Always ON
	Stand Mode

a. Controlled by Flash On Time and Flash Off Time.

★ = default value

PICK MODE

This option specifies the ability of the reader to decode labels only when they are close to the center of the aiming pattern, which is the area indicated by the red cross. Pick Mode is a Decoding and Transmission process where bar codes that are not within the configurable distance from the center of the aiming pattern are not acknowledged or transmitted to the host. It is active only while the scanner is in Trigger Single mode. If the scanner switches to a different Read Mode, Pick Mode is automatically disabled.



NOTE: This feature is not compatible with Multiple Labels Reading in a Volume.

PICK MODE
ENTER/EXIT PROGRAMMING MODE
★ Pick Mode = Disable
Pick Mode = Enable

★ = default value

TECHNICAL SPECIFICATIONS

The following table contains Physical and Performance Characteristics, User Environment and Regulatory information.

PHYSICAL CHARACTERISTICS	
Color	Black
Dimensions	Gun only (lhp): 68 x 159 x 107mm (6.25" x 4.2" x "2.7") Cradle only (lhp): 84 x 83 x 119mm (4.7" x 3.3" x 3.3") Gun on Cradle (lhp): 84 x 170 x 144mm (6.7" x 5.7" x 3.3")
Weight	WWS652 and battery pack included is approx. 206.5g (7.3 oz.). Battery Pack is approx. 71g (2.50 oz.) WWS652BS is approx. 148.5g (5.2 oz.)
ELECTRICAL CHARACTERISTICS	
Power Supply	Gun TypeC Port: 5V +/- 5% Cradle Port: 4.5V to 14V
Consumption (Typical)	Cradle Only: 45mA @5V (Operating) Cradle with gun during recharge: 500mA (5V USB Host Power Supply) 1100mA (5V Type-C Host Power Supply) 500mA (12V External Power Supply) Gun charging through Type-C port: 500mA (USB Type-A Host port, no Scan) 1040mA (Wall Adapter, no Scan) 1040mA (USB Type-C Host port, no Scan)
Battery Capacity	Li-Ion 3.6V, 3250mAh (11.7 W/h)
Recharge Time (Typical)	Gun Only: - USB Type-A Host to Type-C connector: 5h 30m - USB Wall Adapter to Type-C connector: 3h -USB Type-C Host to Type-C connector: 3h Gun on Cradle: - USB Type-A Host: 8h - External 12V Power Supply: 4h - USB Type-C Host: 4h
Max. Scan Rate	60 frames/sec
Reading Indicators	Top illumination, Good Read Spot, Beep

ENVIRONMENTAL CHARACTERISTICS

Operating Temperature	0 °C to + 50 °C (+32° F to +122 °F)
Storage Temperature	-40 °C to + 70 °C (-40 ° F to +158 °F)
Humidity	0 - 95% non condensing
Drop Resistance	IEC 60068-2-31 Tested 1,5 m (4,9 ft)
ESD Protection	16 KV
Protection Class	IP52
Cable Length	Refer to www.waspbarcode.com

OPTICAL CHARACTERISTICS

Optical Format	1/4"
Active Imager Size	3896 um (H) x 2453 um (V)
Active Pixels	1280 H x 800 V
Illumination System	LED source Red Emission (wavelength - 617 nm)
Aiming System	LED source Blue Emission (wavelength - 468nm)
Ambient Light	Up to 110,000 lux
Tilt Tolerance	0° - 360°
Pitch Tolerance	± 65°
Skew Tolerance	± 65°
Field of View	35° x 22°
PCS (Wasp Test Chart)	minimum 15%

DOF - DEPTH OF FIELD (TYPICAL)^A

Symbology	DOF Range
Code 39	5 mil: 0.5 - 25.0 cm (0.19" - 9.8") 10 mil: 0.5 - 38 cm (0.19" - 14.9")
EAN13	13 mil: 0.5 - 51.0 cm (0.19" - 20.1")
PDF417	6.7 mil: 0.5 - 21.0 cm (0.19" - 8.3")
Datamatrix	10 mil: 0.5- 21.5 cm (0.19" - 8.5")
Code 128	5 mil: 2 - 21.5 cm (0.8" - 8.5")
QR Code	20 mil: 0- 37 cm (0" - 14.6")
Max Resolution	1D Min = 3 mil PDF417 Min = 3 mil Datamatrix Min = 5 mil

a. All labels grade A, typical environmental light, 20°C, label inclination 10°

DECODE CAPABILITY

1D Bar Codes

UPC/EAN/JAN (A, E, 13, 8); UPC/EAN/JAN (including P2 /P5); UPC/EAN/JAN (including; ISBN / Bookland & ISSN); UPC/EAN Coupons; Code 39 (including full ASCII); Code 39 Trioptic; Code39 CIP (French Pharmaceutical); LOGMARS (Code 39 w/ standard check digit enabled); Danish PPT; Code 32 (Italian Pharmacode 39); Code 128; Code 128 ISBT; Interleaved 2 of 5; Standard 2 of 5; Interleaved 2 of 5 CIP (HR); Industrial 2 of 5; Discrete 2 of 5; Matrix 2 of 5; IATA 2of5 Air cargo code; Code 11; Codabar; Codabar (NW7); ABC Codabar; EAN 128; Code 93 ; MSI; PZN; Plessey; Anker Plessey; GS1 DataBar Omnidirectional; GS1 DataBar Limited; GS1 DataBar Expanded; GS1 DataBar Truncated; DATABAR Expanded Coupon.

2D / Stacked Codes

The WWS652 scanner is capable of decoding the following symbologies using multiple frames (i.e. Multi-Frame Decoding):
Data Matrix; Inverse Data Matrix; Data Matrix is configurable for the following parameters:; Normal or Inverted; Square or Rectangular Style; Data length (1 - 3600 characters); Maxicode; QR Codes (QR, Micro QR and Multiple QR Codes); Aztec; Postal Codes - (Australian Post; Japanese Post; KIX Post; Planet Code; Postnet; Royal Mail Code (RM45CC); Intelligent Mail Barcode (IMB); Sweden Post; Portugal Post); LaPoste A/R 39; PDF-417; MacroPDF; Micro PDF417; GS1 Composites (1 - 12); French CIP13^a; GS1 DataBar Stacked; GS1 DataBar Stacked Omnidirectional; GS1 DataBar Expanded Stacked; GSI Databar Composites; Chinese Sensible Code; Inverted 2D codes^b.

- a. It is acceptable to handle this with ULE
- b. The SW can apply the Normal/Reverse Decoding Control to the following symbologies: Data Matrix, QR, Micro QR, Aztec and Chinese Sensible Code.

REGULATORY

See Regulatory Addendum

RADIO CHARACTERISTICS

Wireless Technology	Bluetooth
Range (Line Of Sight)	50 m
Max number of devices per base station	1

LED AND BEEPER INDICATIONS

The imager's beeper sounds and its illumination flashes or changes color to indicate various functions or errors on the reader. A "Green Spot" also lights to indicate a good read. The tables below list these indications.

INDICATION	LED	BEEPER
Power-up	Upper LED flashes/blinks on power-up, however, this may be too rapid to view. With a USB interface, the LED blinks until enumeration with the host is completed.	Imager beeps four times at highest frequency and volume upon power-up.
Good Read	Upper green LED comes on for programmed time (default). LED behavior for this indication is configurable using Aladdin utility.	One beep at current frequency, volume, mono/bi-tonal setting upon a successful label scan.
ROM Failure	200ms on / 200ms off	Imager sounds one error beep at highest volume for 200 ms.
Limited Scanning Label Read	N/A	Imager 'chirps' six times at the highest frequency and current volume.
Imager Disabled	The LED blinks continuously 100mS on / 900 ms off	N/A

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Nothing happens when the scan button is pulled.	No power to the imager.	Check system power. Ensure power supply is connected.
	Interface or power cables are loose.	Ensure all cable connections are secure.
LED comes on, but bar code is not decoded.	Imager not programmed for correct bar code type.	Ensure reader is programmed to read the type of bar code scanned.
	Bar code label is unreadable.	Check the label to ensure it is not defaced. Try to scan another bar code type.
	Distance between reader and bar code is incorrect.	Move imager closer to or further from the bar code.
Bar code is decoded but not transmitted to the host.	Imager not programmed for the correct host type.	Scan the appropriate host type bar code.

WARRANTY

Wasp warrants that the Products shall be free from defects in materials and workmanship under normal and proper use during the Warranty Period. Products are sold on the basis of specifications applicable at the time of manufacture and Wasp has no obligation to modify or update Products once sold. The Warranty Period shall be **five years** from the date of shipment by Wasp, unless otherwise agreed in an applicable writing by Wasp.

Wasp will not be liable under the warranty if the Product has been exposed or subjected to any: (1) maintenance, repair, installation, handling, packaging, transportation, storage, operation or use that is improper or otherwise not in compliance with Wasp's instruction; (2) Product alteration, modification or repair by anyone other than Wasp or those specifically authorized by Wasp; (3) accident, contamination, foreign object damage, abuse, neglect or negligence after shipment to Buyer; (4) damage caused by failure of a Wasp-supplied product not under warranty or by any hardware or software not supplied by Wasp; (5) any device on which the warranty void seal has been altered, tampered with, or is missing; (6) any defect or damage caused by natural or man-made disaster such as but not limited to fire, water damage, floods, other natural disasters, vandalism or abusive events that would cause internal and external component damage or destruction of the whole unit, consumable items; (7) use of counterfeit or replacement parts that are neither manufactured nor approved by Wasp for use in Wasp-manufactured Products; (8) any damage or malfunctioning caused by non-restoring action as for example firmware or software upgrades, software or hardware reconfigurations etc.; (9) loss of data; (10) any consumable or equivalent (e.g. cables, power supply, batteries, etc.); or (11) any device on which the serial number is missing or not recognizable.

THE WASP WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE. WASP SHALL NOT BE LIABLE FOR ANY DAMAGES SUSTAINED BY BUYER ARISING FROM DELAYS IN THE REPLACEMENT OR REPAIR OF PRODUCTS UNDER THE ABOVE. THE REMEDY SET FORTH IN THE WARRANTY STATEMENT IS THE BUYER'S SOLE AND EXCLUSIVE REMEDY FOR WARRANTY CLAIMS. NO EXTENSION OF THIS WARRANTY WILL BE BINDING UPON WASP UNLESS SET FORTH IN WRITING AND SIGNED BY WASP'S AUTHORIZED REPRESENTATIVE. WASP'S LIABILITY FOR DAMAGES ON ACCOUNT OF A CLAIMED DEFECT IN ANY PRODUCT DELIVERED BY WASP SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE PRODUCT ON WHICH THE CLAIM IS BASED. WASP SHALL NOT BE LIABLE FOR DAMAGES RELATING TO ANY INSTRUMENT, EQUIPMENT, OR APPARATUS WITH WHICH THE PRODUCT SOLD UNDER THIS AGREEMENT IS USED.

For Warranty Claims refer to:

<http://www.waspbarcode.com/support/warranty-claims>

ERGONOMIC RECOMMENDATIONS



CAUTION: In order to avoid or minimize the potential risk of ergonomic injury, follow the recommendations below. Consult with your local Health & Safety Manager to ensure that you are adhering to your company's safety programs to prevent employee injury.

- Reduce or eliminate repetitive motion
- Maintain a natural position
- Reduce or eliminate excessive force
- Keep objects that are used frequently within easy reach
- Perform tasks at correct heights
- Reduce or eliminate vibration
- Reduce or eliminate direct pressure
- Provide adjustable workstations
- Provide adequate clearance
- Provide a suitable working environment
- Improve work procedures.

SERVICES AND SUPPORT

Wasp Technologies provides several services as well as technical support through its website. Log on to www.waspbarcode.com and click on the links indicated for further information.

CLEANING PROCEDURE

Proper cleaning is needed on the external plastic surfaces, output window and electrical contacts to guarantee reliable scanning and charging of the battery.

A regular cleaning routine will remove the dust and dirt that may accumulate on the product over time. The maintenance activity may be repeated more frequently depending on the severity of the environment in which the scanner is used.

A periodic deeper cleaning is suggested once per month.

Cleaning plastic surfaces

A periodic deeper cleaning is suggested once per month.

Exterior surfaces and scan windows exposed to spills, smudges or debris accumulation require periodic cleaning to ensure best performance during scanning operations. Follow the procedures described in this instruction sheet to keep your Wasp device in good operating condition.



WARNING: Be sure to turn off power and unplug the device from electrical outlet before cleaning.



CAUTION: DO NOT use abrasive pads or cleaning agents.

Common Cleaning Solutions

The cleaners and disinfectants listed below are recommended for use on WWS652 Enclosures:

CLEANERS	DISINFECTANTS
Formula 409® Glass and Surface Cleaner	Clorox® Bleach (diluted 10:1)

CLEANERS	DISINFECTANTS
70% Isopropyl Alcohol	Hydrogen Peroxide 3%
Windex® Multi-Surface	
100% Gentle dish soap and water	



NOTE: Disinfectants may be harsh on metal. They are recommended for use only on enclosures.



CAUTION: DO NOT spray or pour cleaner directly onto the unit.
DO NOT use solutions in their concentrated form.
DO NOT use aerosols, solvents or abrasives.
DO NOT use paper towels or rough cloths to clean windows.

Cleaning enclosure and window surfaces

1. Moisten a soft cloth with a recommended cleaning solution. Be sure to apply the solution to your cloth first. Wring excessive liquid from the cloth.
2. Use the cloth to wipe down the surface of the unit. Use cotton swabs, lightly moistened, to reach in corners and crevices.
3. Use another clean dry cloth to remove any residue of the cleaning agent and ensure the unit is dry.



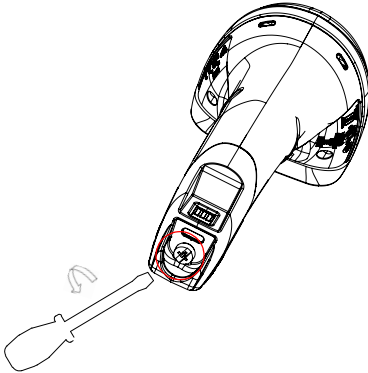
REPLACING THE BATTERY PACK



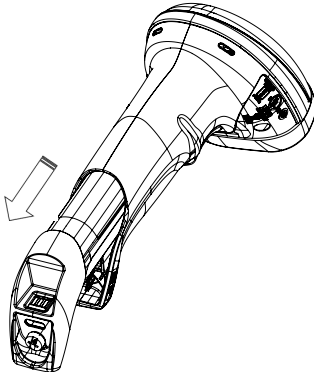
NOTE: Before using the battery, read "**Replacing the Battery Pack**" on page 37. Wasp recommends annual replacement of rechargeable battery packs to ensure maximum performance.

Use the following procedure to charge the reader's battery:

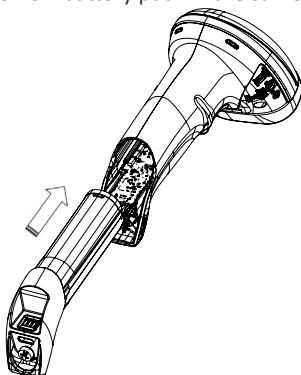
1. With a screwdriver, unscrew the battery pack screw.



2. Extract the battery pack from its slot.



3. Insert the new battery pack in the same position.



4. Screw it into place.



Battery Safety

To install, charge and/or perform any other action on the battery, follow the instructions in the manual.



Warning: Do not discharge the battery using any device except for the scanner. When the battery is used in devices other than the designated product, it may damage the battery or reduce its life expectancy. If the device causes an abnormal current to flow, it may cause the battery to become hot, explode or ignite and cause serious injury if exposed to abusive conditions. Be sure to follow the safety warnings listed on the following page.



Warning: Do not place the battery pack in fire or heat.

Do not connect the positive terminal and negative terminal of the battery pack to each other with any metal object (such as wire).

Do not carry or store the battery pack together with metal objects.

Do not pierce the battery pack with nails, strike it with a hammer, step on it or otherwise subject it to strong impacts or shocks.

Do not solder directly onto the battery pack.

Do not expose the battery pack to liquids, or allow the battery to get wet.

Do not apply voltages to the battery pack contacts.



Warning: In the event the battery pack leaks and the fluid gets into your eye, do not rub the eye. Rinse well with water and immediately seek medical care. If left untreated, the battery fluid could cause damage to the eye.



Caution: Always charge the battery at 32° – 104°F (0° – 40°C) temperature range.

Use only the authorized power supplies, battery pack, chargers, and docks supplied by your Wasp reseller. The use of any other power supplies can damage the device and void your warranty.

Do not disassemble or modify the battery. The battery contains safety and protection devices, which, if damaged, may cause the battery to generate heat, explode or ignite.



Caution: Do not place the battery in or near fire, on stoves or other high temperature locations. Do not place the battery in direct sunlight, or use or store the battery inside cars in hot weather. Doing so may cause the battery to generate heat, explode or ignite. Using the battery in this manner may also result in a loss of performance and a shortened life expectancy.



Caution: Do not place the battery in microwave ovens, high-pressure containers or on induction cookware.

Immediately discontinue use of the battery if, while using, charging or storing the battery, the battery emits an unusual smell, feels hot, changes color or shape, or appears abnormal in any other way.

Do not replace the battery pack when the device is turned on.

Do not remove or damage the battery pack's label.

Do not use the battery pack if it is damaged in any part.

Battery pack usage by children should be supervised.

As with other battery types, Lithium-Ion (LI) batteries will lose capacity over time. Capacity deterioration is noticeable after one year of service whether the battery is in use or not. It is difficult to precisely predict the finite life of a LI battery, but cell manufacturers rate them at 500 charge cycles. In other words, the batteries should be expected to take 500 full discharge/charge cycles before needing replacement.

This number is higher if partial discharging/recharging is adhered to rather than full/deep discharging.



Caution: Storage of batteries for long time at fully charged status or at fully discharged status should be avoided.



Caution: Only in case of long storage, to avoid deep discharge of the battery it is recommended to partially recharge the battery every three months to keep the charge status at a medium level.

As a reference, run a fast recharge for 20 minutes every three months on unused products to avoid any performance deterioration of the cell.

The useful life of LI batteries depends on usage and number of charges, etc., after which they should be removed from service, especially in mission critical applications. Do not continue to use a battery showing excessive loss of capacity, it should be properly recycled / disposed of and replaced.

Collect and recycle waste batteries separately from the device to comply with European Directive 2006/66/EC, 2011/65/EU, 2002/96/EC and 2012/19/EU and subsequent modifications, US and China regulatory and other laws and regulations about the environment.



[*www.waspbarcode.com*](http://www.waspbarcode.com)

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