



Wasp WWS650 2D Wireless Scanner



Quick Reference Guide

Wasp Barcode Technologies

1400 10th Street
Plano, Texas USA 75074
Telephone: (214) 547-4100

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This product is covered by one or more of the following patents:

Design patents: EP002158717, USD723563, ZL201330271434.1

Utility patents: EP0996284B1, EP0997760B1, EP0999514B1, EP1114390B1, EP1128315B1, EP1396811B1, EP1413971B1, EP1828957B1, EP2275966B1, EP2517148B1, EP2521068, EP2649555B1, JP4435343B2, US6478224, US6512218, US6513714, US6561427, US6808114, US6997385, US7053954, US8245926 US7075663, US7234641, US7387246, US7721966, US8113428, US8561906, US8888003, US8915443, US9430689, ZL200980163411.X

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The number of arbitrators will be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties will appoint a third arbitrator who will act as chairman of the proceedings. Vacancies in the post of chairman will be filled by the president of the SIAC. Other vacancies will be filled by the respective nominating party. Proceedings will continue from the stage they were at when the vacancy occurred. If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator will be the sole arbitrator, provided that the arbitrator was validly and properly appointed. All proceedings will be conducted, including all documents presented in such proceedings, in the English language. The English language version of these terms and conditions prevails over any other language version.

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Software Product Policy

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To arrange for a Software Maintenance and Support Agreement please contact your Wasp sales person.

Wasp WWS650

Description

With rich feature sets and extensive options, the WWS650 product series from Wasp represents the premium level of data collection equipment for general purpose applications. The Wasp WWS650 readers have enhanced optics with improved motion tolerance allowing codes placed on fast moving objects to be easily and quickly captured, creating the ideal reader for tasks requiring high throughput like those found in retail and light industrial environments.

| | |
|-----------------------------------|---|
| Omni-Directional Operation | <p>To read a symbol simply aim the reader and pull the trigger. The WWS650 is a powerful omni-directional reader, so the orientation of the symbol is not important.</p> <p>Wasp's exclusive patented 'Green Spot' for good-read feedback helps to improve productivity in noisy environments or in situations where silence is required. When using the product with the cradle at a 45° position, the Green Spot can work as an aiming system to aid in positioning the bar code for quick and intuitive reading.</p> |
| Decoding | <p>Reliably decodes all standard 1D (linear) and 2D bar codes, including GS1 DataBar™ linear codes, Postal Codes (China Post), Stacked Codes (such as GS1 DataBar Expanded Stacked, GS1 DataBar Stacked, GS1 DataBar, Stacked Omnidirectional).</p> <p>The data stream — acquired from decoding a symbol — is rapidly sent to the host. The reader is immediately available to read another symbol.</p> |

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 8).
3. Link to the Base Station (see page 11).
4. Select the Interface Type (see page 21).
5. Configure the Reader starting on page 14 (optional, depends on settings needed).

Locking the Reader to the Base

The Base Station provides a locking mechanism to ensure electrical contact between Reader and Base, in case of inadvertent movements.



To Lock the Reader in the Base

1. Insert the Reader into the Base. The lock lever rests in its natural disengaged position toward the bottom of the Base.

Figure 1. Lock lever disengaged



2. Engage the locking mechanism by pushing up the lever as far as it will go.

Figure 2. Lever in locked position



NOTE

It is good practice to put the scanner in the locked condition at the end of the working shift, or when not in use for an extended period of time. This will ensure that the scanner is fully seated for complete battery recharge.

Connecting the Base Station

Figure 3 on page 5 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. Connect the interface cable before applying power to the Base Station.



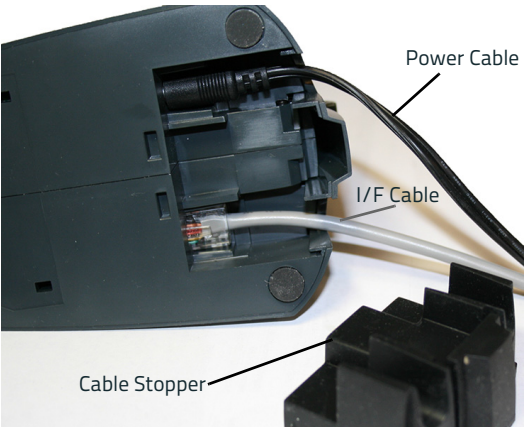
NOTE

The Wasp WWS650 reader can also be Powered by the Terminal. When powered by the Terminal, the battery charger is automatically set as Slow charge.

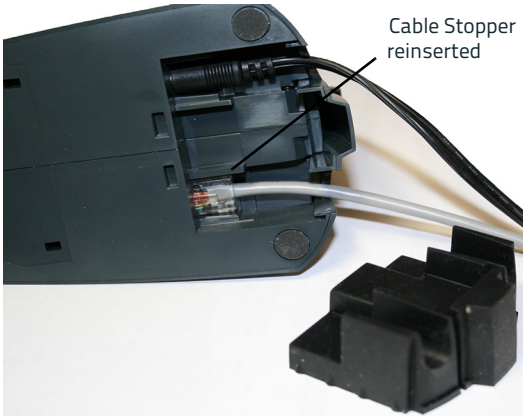
For some specific interfaces or hosts or lengths of cable, the use of an external power supply may be recommended for full recharging capability (see "Technical Specifications" on page 31 for more details).

Base Station Connection and Routing

1. Remove the rubber Cable Stopper from the bottom of the Base Station.
2. Securely plug the Power Cable and Interface (I/F) Cable connectors into their respective ports in the underside of the Base Station.

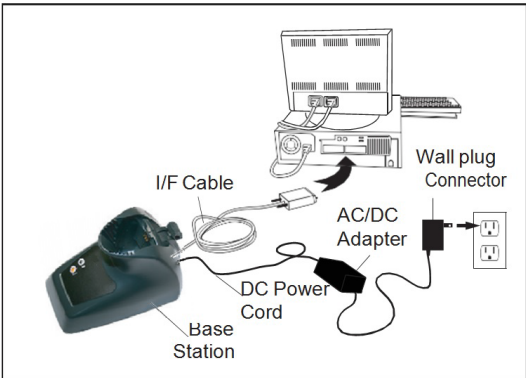


3. After the cables are plugged in, reinsert the Cable Stopper.



4. Connect to an AC Adapter, and plug the AC power cord into the (wall) outlet.

Figure 3. Connecting the Base Station



Host Connection — Verify before connection that the reader's cable type is compatible with your host equipment.



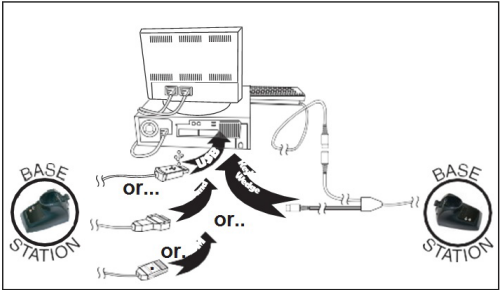
NOTE

The Wasp WWS650 reader can be set up to require a PIN code when connecting to the host. If you are adding new equipment to a system that uses a custom security PIN, please see the PRG for information before proceeding.

Most connections plug directly into the host device as shown in [Figure 4](#). Keyboard Wedge interface cables have a 'Y' con-

nection where its female end mates with the male end of the cable from the keyboard and the remaining e.nd at the key-board port on the terminal/PC.

Figure 4. Connecting to the Host

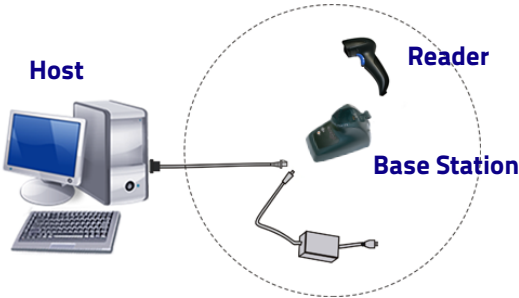


Power Connection — Plug the AC Adapter into an approved AC wall socket with the cable facing downwards (as shown in Figure 3) to prevent undue strain on the socket.

System and Network Layout

Typical Setup with Cradle and Host

Figure 5. Reader Layout



Using the BC2030™ Radio Base

Radio Base LEDs

LEDs on the Wasp Base provide information about the Base as well as battery charging status, as shown in [Figure 6](#).

Figure 6. Base LEDs

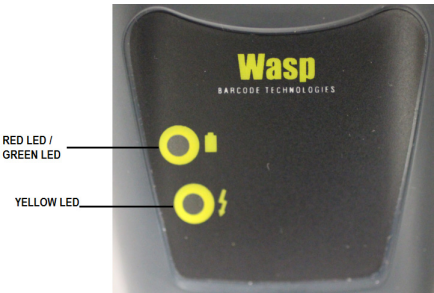




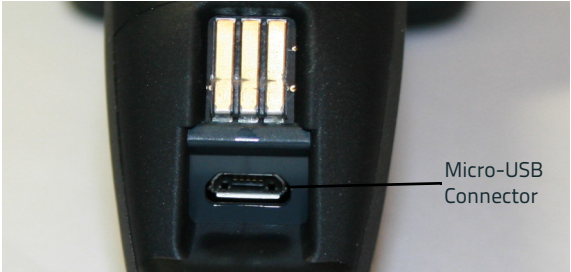


Table 1. Radio Base LEDs

| | LED | STATUS |
|---|-----------------------------|---|
|  | Power on / Data | Yellow On = Base is powered Yellow Blinking = Base receives data and commands from the Host or the Reader. |
|  | Charging | Red On = the Battery is charging. |
|  | Charge completed | Green On = the Battery is completely charged. |
|  | Charging + Charge completed | Red and Green Blinking together = the Reader is not correctly placed onto the Base. |

Charging the Batteries

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



Alternatively, simply insert the WWS650 into the base. When the scanner is fully seated in the cradle, it will sound a 'chirp' to indicate that the cradle has detected the scanner connection.

The LEDs on the base (shown in [Table 1 on page 7](#)) will indicate the status of the battery.



NOTE

Before using the Battery, read “Battery Safety” in the “Regulatory and Safety” insert. Wasp recommends annual replacement of rechargeable battery packs to ensure maximum performance.

Replacing the Battery Pack



NOTE

Before proceeding, read **"Battery Safety"** in the Regulatory and Safety insert. Wasp recommends annual replacement of rechargeable battery packs to ensure maximum performance.

1. Using a coin or screwdriver, unscrew the bottom of the battery pack until it is disengaged.



The battery pack will rise slightly in the rear, pushed by the contact springs.

2. Extract the battery pack by slightly rotating the pack and pulling away from the reader.



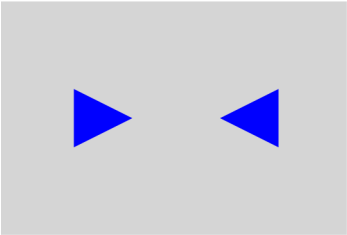
To mount the new battery pack reverse the process:

1. Insert the top of the new pack inside the reader's handle.
2. Rotate the battery pack downward while pressing the bottom side of the battery pack (to seat securely into the contacts springs) so that the edges of the pack and the handle board are aligned, while replacing the screw in the bottom of the handle.

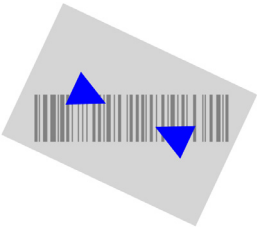
Using the Wasp WWS650

The Wasp WWS650 normally functions by capturing and decoding codes. The aiming system is activated on trigger pull and indicates the center of the field of view which should be positioned over the bar code:

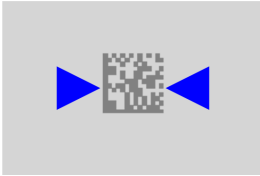
Aiming System



Relative Size and Location of Aiming System Pattern



Linear bar code



2D Matrix symbol

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

If the aiming system is centered you will get a good read. Successful reading is signaled by an audible tone plus a good-read green spot LED indicator.

Linking the Reader

Link Wasp RF Devices to Base

For RF devices, before configuring the interface it is necessary to link the handheld with the base.

To link the handheld and the base, press the trigger to wake up the handheld and mount it into the base. If the reader was previously linked to another base, you must first press and hold the button on the base (>5 seconds), then scan the **Unlink** bar code before re-linking to the new base.



Unlink

Linking to a Bluetooth Adapter in Serial Port Profile Mode

1. Install any drivers provided with the Bluetooth adapter.
2. Scan the **Enable RF Link to Server** label below to make the scanner visible to the host computer.
3. Use the host computer's Bluetooth manager to 'Discover new devices' and select "Wasp Scanner." If you receive an error message, it may be necessary to disable security on the device.
4. Use an RS-232 terminal program to see incoming data on the port designated by the computer's Bluetooth manager.



Enable RF Link to Server

Linking to a Bluetooth Adapter in HID mode

1. Install any drivers provided with the Bluetooth adapter.
2. Scan the **Link to PC in HID** label below..
3. Use the host computer's Bluetooth manager to "Discover new devices" and select "Wasp Scanner." If you receive an error message, it may be necessary to disable security on the device.
4. Use a text editor to see incoming data on the port designated by the computer's Bluetooth manager.



Link to PC in HID



NOTE

The WWS650 reader can be set up to require a PIN code when connecting. If you want to set up a PIN, or when adding new equipment to a system that uses a custom security PIN, please see the PRG for information.

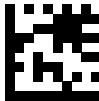
Variable PIN Code

Some Bluetooth drivers on the Host (such as WIDCOMM and BlueSoleil 8) require a Variable PIN Code. When attempting connection, the application presents a window that includes a PIN Code which is to be input using the WWS650. Please read the bar code "Variable PIN Code" and restart the sequence from step 2 above.



Variable PIN Code

When you hear the beep and see the Green LED blinking indicating the reader is waiting for an alphanumeric entry, enter the required variable PIN Code by scanning the corresponding bar codes in the '[Hex-Numeric Keypad](#)' section at the back of this manual for alphanumeric entry. Finish by scanning the [Exit HID Variable PIN Code](#) label.



Exit HID Variable PIN Code

HID Country Mode

When the Reader is connected with a Bluetooth Adapter in HID mode, you may want to set the country for which your PC is localized. Go to "Country Mode" on page 16" and read one of the configuration command labels.

HID Caps Lock State

This option specifies the format in which the reader send-character data. See "Caps Lock State" on page 20 for programming labels.

Programming

The reader is factory-configured with a set of standard default features. After scanning the interface bar code from the Interfaces section, select other options and customize your reader through use of the programming bar codes available in the Product Reference Guide (PRG).

Using Programming Bar Codes

This manual contains bar codes which allow you to reconfigure your reader. Some programming bar code labels 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.

Configure Other Settings

Additional programming bar codes are available to allow for customizing programming features, if your installation requires different programming than the standard factory default settings. Reference the PRG.

Resetting Standard Product Defaults

Reference the PRG for a listing of standard factory settings. If you aren't sure what programming options are in your reader, or you've changed some options and want the factory settings restored, scan the bar code below to copy the factory configuration for the currently active interface to the current configuration.



NOTE

Factory defaults are based on the interface type. Configure the reader for the correct interface before scanning this label.



Standard Product Default Settings

HID Alt Mode

Read the configuration command label below for the HID Alt Mode feature.

| |
|--|
|  ENTER/EXIT PROGRAMMING MODE |
|  ◆ HID Alt Mode = OFF |
|  HID Alt Mode = ON |

Power Off

Scan the bar code below to shut off power to the handheld until the next trigger pull.



Country Mode




The following bar codes can be used either while in HID mode (when reader is connected using Bluetooth) or for configuring the base.

HID configuration: Scan any one of the bar codes in the table below to set the country for which your PC is localized.

Base configuration: Only the following interfaces support ALL Country Modes:

- USB Keyboard (without alternate key encoding)
- AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/ Std Key Encoding
- Keyboard Wedge for IBM AT PS2 with standard key encoding but without external keyboard
- AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 without Alternate Key
- Keyboard Wedge for IBM AT PS2 without alternate key encoding but without external keyboard

All other interfaces support ONLY the following : U.S., Belgium, Britain, France, Germany, Italy, Spain, Sweden.

| COUNTRY MODE |
|---|
| <div></div> <div>ENTER/EXIT PROGRAMMING MODE</div> |
| <div></div> <div>Country Mode = U.S.</div> |
| <div></div> <div>Country Mode = Belgium</div> |
| <div></div> <div>Country Mode = Britain</div> |

COUNTRY MODE (continued)

Country Mode = Croatia*



Country Mode = Czech Republic*



Country Mode = Denmark*



Country Mode = France



Country Mode = French Canadian*



Country Mode = Germany

*Supports only the interfaces listed in the Country Mode feature description (Base configuration only)

COUNTRY MODE (continued)



Country Mode = Hungary*



Country Mode = Italy



Country Mode = Japanese 106-key*



Country Mode = Lithuanian*



Country Mode = Norway*



Country Mode = Poland*

*Supports only the interfaces listed in the Country Mode feature description (Base configuration only)

COUNTRY MODE (continued)

Country Mode = Portugal*



Country Mode = Romania*



Country Mode = Spain



Country Mode = Sweden



Country Mode = Slovakia*



Country Mode = Switzerland*





*Supports only the interfaces listed in the Country Mode feature description (Base configuration only)

Caps Lock State



The following bar codes can be used either while in HID mode (when reader is connected using Bluetooth) or for configuring the base.

This option specifies the format in which the reader sends character data.
When using the Base Interface, this applies only to keyboard wedge interfaces. It does not apply when an alternate key encoding keyboard is selected.

| CAPS LOCK STATE | |
|---|---|
|  | ENTER/EXIT PROGRAMMING MODE |
|  | Caps Lock State = Caps Lock OFF |
|  | Caps Lock State = Caps Lock ON |
|  | Caps Lock State = AUTO Caps Lock Enable |

Selecting the Base Interface Type

Upon completing the physical connection between the base and its host, proceed directly to Interface Selection below for information and programming for the interface type the base is connected to (for example: RS-232, Keyboard Wedge, USB, etc.) and scan the appropriate bar code to select your system's correct interface type.

Interface Selection

The base will support the following host interfaces:

- RS-232
- RS-232 OPOS
- USB
- Keyboard Wedge






Configuring the Interface

Scan the programming bar code which selects the appropriate interface type for the system the reader will be connected to.



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 a disabled state when powered up. If additional configuration is desired in this state, pull the trigger and hold for 5 seconds to change to a state that allows programming with bar codes.

| |
|---|
| RS-232 |
| <div>RS-232 standard interface</div> <div></div> <div>Select RS232-STD</div> |
| <div>RS-232 Wincor-Nixdorf</div> <div></div> <div>Select RS232-WN</div> |
| <div>RS-232 for use with OPOS/UPOS/JavaPOS</div> <div></div> <div>Select RS-232 OPOS</div> |
| <div>USB COM to simulate RS-232 standard interface</div> <div></div> <div>Select USB-COM-STD^a</div> |
| <div>a. Download the correct USB COM driver from www.waspbarcode.com</div> |
| USB-OEM |
| <div>USB-OEM (can be used for OPOS/UPOS/JavaPOS)</div> <div></div> <div>Select USB-OEM</div> |

Keyboard Interface

Use the programming bar codes to select options for USB Keyboard and Wedge Interfaces.

KEYBOARD

AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/
Standard Key Encoding



Select KBD-AT

Keyboard Wedge for IBM AT PS2 with standard key encoding
but without external keyboard



Select KBD-AT-NK

AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95
w/Alternate Key










Select KBD-AT-ALT

Keyboard Wedge for IBM AT PS2 with alternate key encoding
but without external keyboard



Select KBD-AT-ALT-NK

| |
|--|
| <div>KEYBOARD (continued)</div> |
| <div>PC/XT w/Standard Key Encoding<div></div><div>Select KBD-XT</div></div> |
| <div>Keyboard Wedge for IBM Terminal 3153<div></div><div>Select KBD-IBM-3153</div></div> |
| <div>Keyboard Wedge for IBM Terminals 31xx, 32xx, 34xx, 37xx make only keyboard<div></div><div>Select KBD-IBM-M</div></div> |
| <div>Keyboard Wedge for IBM Terminals 31xx, 32xx, 34xx, 37xx make break keyboard<div></div><div>Select KBD-IBM-MB</div></div> |
| <div>USB Keyboard with alternate key encoding<div></div><div>Select USB Alternate Keyboard</div></div> |

| KEYBOARD (continued) |
|--|
| <p>USB Keyboard for Apple computers</p>  <p>Select USB-KBD-APPLE</p> |
| <p>Keyboard Wedge for DIGITAL Terminals VT2xx, VT3xx, VT4xx</p>  <p>Select KBD-DIG-VT</p> |
| <p>USB Keyboard with standard key encoding</p>  <p>Select USB Keyboard</p> |

Scancode Tables

Reference the WWS650 PRG for information about control character emulation which applies to keyboard interfaces.

Country Mode




This feature specifies the country/language supported by the keyboard when configured through the base. See "Country Mode" on page 16 for programming bar codes and information.

Caps Lock State

This option specifies the format in which the reader sends character data. See "Caps Lock State" on page 20 for programming bar codes and information.

Numlock

This option specifies the setting of the Numbers Lock (Numlock) key while in keyboard wedge interface. This only applies to alternate key encoding interfaces. It does not apply to USB keyboard.

| NUMLOCK |
|---|
| <div></div> <div>ENTER/EXIT PROGRAMMING MODE</div> |
| <div></div> <div>Numlock = Numlock key unchanged</div> |
| <div></div> <div>Numlock = Numlock key toggled</div> |

Reading Parameters

Point the reader at the target and pull the trigger to enable the aiming system and the illuminator (red beam) to decode the barcode label. The aiming system will briefly switch off during 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.

Aiming System

A number of options for customizing control of the Aiming System are available. See the PRG for more information and programming bar codes.

Good Read Green Spot Duration

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

| GOOD READ GREEN SPOT DURATION | |
|---|---|
|  | ENTER/EXIT PROGRAMMING MODE |
|  | Green Spot Duration = Disable (Green Spot is Off) |
|  | ♦ Green Spot Duration = Short (300 msec) |
|  | Green Spot Duration = Medium (500 msec) |
|  | Green Spot Duration = Long (800 msec) |

Scan Modes

The imager can operate in one of several scanning modes.

Trigger Single — When the trigger is pulled, scanning is activated until one of the following occurs:

- a programmable duration¹ has elapsed
- a label has been read
- the trigger is released

This mode is associated with typical handheld reader operation.

Trigger Hold Multiple — When the trigger is pulled, scanning starts and the product scans until the trigger is released or a programmable duration¹ has elapsed. Reading a label does not disable scanning. Double Read Timeout¹ prevents undesired multiple reads while in this mode.

Trigger Pulse Multiple — When the trigger is pulled and released, scanning is activated until programmable duration¹ has elapsed or the trigger has been pulled again to transition to another state. Double Read Timeout¹ prevents undesired multiple reads while in this mode.

Flashing — The reader flashes¹ on and off regardless of the trigger status.

Always On — No trigger pull is required to read a bar code. Scanning is continually on. If the trigger is pulled, the reader acts as if it is in Trigger Single Mode. Double Read Timeout¹ prevents undesired multiple reads while in this mode.

1. See the Product Reference Guide (PRG) for more information

SCAN MODES

ENTER/EXIT PROGRAMMING MODE



♦ Scan Mode = Trigger Single



Scan Mode = Trigger Hold Multiple



Scan Mode = Trigger Pulse Multiple



Scan Mode = Flashing



Scan Mode = Always On



Scan Mode = Stand Mode

Pick Mode

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. See the PRG for more information.

| PICK MODE |
|--|
| <div></div> <div>ENTER/EXIT PROGRAMMING MODE</div> |
| <div></div> <div>◆ Pick Mode = Disable</div> |
| <div></div> <div>Pick Mode = Enable</div> |

Multiple Labels in a Volume

Enables/disables the ability of scanner to decode multiple labels in the same image. Several programming options are available for this feature, see the PRG for more information.

Technical Specifications

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

| Physical Characteristics | |
|---|---|
| Color | White or Black |
| Dimensions | Height 6.4"/163 mm Length 3.6"/91 mm Width 1.6"/41 mm |
| Weight (without cable) | Approximately 200 g (reader) 230 g (base charger) |
| Electrical Characteristics | |
| Battery Type | Li-Ion battery pack |
| Typical charge time for full charge from full discharge | 6 hours with Host Power through the micro USB cable connection |
| | 4 hours with Base and 12V external power supply adapter ^a |
| | Max 22 hours with Base and Host power (in this case no supply adapter is needed) ^a |
| Operating autonomy (continuous reading) | 30,000 reads (typical) |
| Cradle consumption and DC input supply range | Volt 4.75-14 VDC; Power <8W ^b ; Max 500mA when in host/bus powered mode ^b . |

| Performance Characteristics | |
|--------------------------------|-----------------------|
| Light Source | LEDs |
| Roll (Tilt) Angle ^c | Up to $\pm 180^\circ$ |
| Pitch Angle ^c | $\pm 40^\circ$ |
| Skew (Yaw) Angle ^c | $\pm 40^\circ$ |
| Field of View | 40° H x 26° V |

- a. Charge Times are much lower when battery is within daily typical operating condition.
- b. Typical input current measured under factory default configuration.
- c. Based on ISO 15423 specifications

| Depth of Field (Typical) ^a | |
|---------------------------------------|---|
| Symbology | |
| Code 39 | 5mil: 0.2" - 5.9" (0.5 - 15cm) 10mil: 0" - 8.7" (0 - 22cm) 20mil: up to 16" (40cm) |
| EAN | 7.5mil: 0" - 5.9" (0 - 15cm) 13mil: 0.2" - 13.8" (0.5 - 35cm) |
| PDF-417 | 6.6mil: 0.39" - 5.1" (1.0 - 130cm) 10mil: 0" - 8.3" (0 - 21cm) 15mil: 0.2" - 9.5" (0.5 - 24cm) |
| DataMatrix | 10mil: 0.39" - 5.1" (1.0 - 13 cm) 15mil: 0" - 7.1" (0 - 18cm) |
| QR Code | 10mil: 0.2" - 5.1" (0.5 - 13cm) 15mil: 0" - 7.1" (0 - 18cm) |
| Minimum Element Width | Standard Range: 1D Min Resolution = 4 mil PDF-417 Min Resolution = 5 mil Datamatrix Min Resolution = 7.5 mil |
| Print Contrast Minimum | 25% minimum reflectance |

- a. 13 mils DOF based on EAN. All other 1D codes are Code 39. 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; Datalogic 2 of 5 (China Post Code/Chinese 2 of 5); IATA 2of5 Air cargo code; Code 11; Codabar; Codabar (NW7); ABC Codabar; Code 93; MSI; PZN; Plessey; Anker Plessey; Follet 2 of 5; GS1 DataBar Omnidirectional; GS1 DataBar Limited; GS1 DataBar Expanded; GS1 DataBar Truncated; DATABAR Expanded Coupon.

2D / Stacked Codes

The Wasp WWS650 scanner is capable of decoding the following symbologies using multiple frames (i.e. Multi-Frame Decoding): PDF-417; QR Code; Aztec; Datamatrix; Inverse Datamatrix; Datamatrix 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 Bar Code (IMB); Sweden Post; Portugal Post; LaPoste A/R 39; 4-State Canada; PDF-417; MacroPDF; Micro PDF417; GS1 Composites (1 - 12); Codablock F; French CIP13^a; GS1 DataBar Stacked; GS1 DataBar Stacked Omnidirectional; GS1 DataBar Expanded Stacked; GS1 Databar Composites; Chinese Sensible Code; Inverted 2D codes.

Note: The reader can apply the Normal/Reverse Decoding Control to the following symbologies: Datamatrix, QR, Micro QR, Aztec and Chinese Sensible Code.

Interfaces Supported^b

RS-232 Std, RS-232 Wincor-Nixdorf, RS-232 OPOS, USB Com Std., USB Keyboard, USB Alternate Keyboard, USB OEM, Keyboard Wedge (AT with or w/o Alternate Key, IBM AT PS2 with or w/o Alternate Key, PC-XT, IBM 3153, IBM Terminals 31xx, 32xx,34xx, 37xx make only and make break keyboard, Digital Terminals VT2x, VT3xx, VT4xx, and Apple).

| User Environment | |
|--|---|
| Operating Temperature | 32° to 122° F (0° to 50° C) |
| Charging Temperature | 32° to 104° F (0° to 40° C) |
| Storage Temperature | -4° to 158° F (-20° to 70° C) |
| Humidity | Operating: 5% to 90% relative humidity, non-condensing |
| Drop Specifications | Scanner withstands 18 drops from 1.5 m (4.9 feet) to concrete |
| Ambient Light Immunity | Up to 100,000 Lux |
| Contaminants Spray/rain Dust/ particulates | IEC 529-IP42 (scanner only) |
| ESD Level | 16 KV |
| Regulatory | |
| Electrical Safety | UL 60950, CSA C22.2 No. 60950, IEC 60950 |
| EMI/RFI | See Regulatory addendum |
| Radio Features | |
| Frequency Range | 2400 to 2483.5 MHz |
| Range (in open air) | 25 m |

- a. It is acceptable to handle this with ULE
- b. See "Interface Selection" on page 21 for a listing of available interface sets by version type.

LED and Beeper Indications

The reader's beeper sounds and its LED illuminates to indicate various functions or errors on the reader. An optional 'Green Spot' also performs useful functions. The following tables list these indications. One exception to the behaviors listed in the tables is that the reader's functions are programmable, and so may or may not be turned on. For example, certain indications such as the power-up beep can be disabled using programming bar code labels.

| Indication | Description | LED | Beeper |
|-----------------------------|---|---|---|
| Power-up Beep | The reader is in the process of power-ing-up. | N/A | Reader beeps four times at highest frequency and volume upon power-up. |
| Good Read Beep | A label has been successfully scanned by the reader. | LED behavior for this indication is configurable via the feature 'Good Read: When to Indicate' (see the PRG for information.) | The reader will beep once at current frequency, volume, mono/ bi-tonal setting and duration upon a successful label scan. |
| ROM Failure | There is an error in the reader's software/programming | Flashes | Reader sounds one error beep at highest volume. |
| Limited Scanning Label Read | Indicates that a host connection is not established when the IBM or USB interface is enabled. | N/A | Reader 'chirps' six times at the highest frequency and current volume. |
| Reader Active Mode | The reader is active and ready to scan. | The LED is lit steadily ^a | N/A |
| Reader Disabled | The reader has been disabled by the host. | The LED blinks continuously | N/A |

| Indication | Description | LED | Beeper |
|---|--|-----|--------|
| Green Spot ^a flashes momentarily | Upon successful read of a label, the software shall turn the green spot on for the time specified by the configured value. | N/A | N/A |

a Except when in sleep mode or when a Good Read LED Duration other than 00 is selected

Programming Mode - The following indications ONLY occur when the reader is in Programming Mode.

| Indication | Description | LED | Beeper |
|--|---|-------------------------|--|
| Label Programming Mode Entry | A valid programming label has been scanned. | LED blinks continuously | Reader sounds four low frequency beeps. |
| Label Programming Mode Rejection of Label | A label has been rejected. | N/A | Reader sounds three times at lowest frequency and current volume. |
| Label Programming Mode Acceptance of Partial Label | In cases where multiple labels must be scanned to program one feature, this indication acknowledges each portion as it is successfully scanned. | N/A | Reader sounds one short beep at highest frequency and current volume. |
| Label Programming Mode Acceptance of Programming | Configuration option(s) have been successfully programmed via labels and the reader has exited Programming Mode. | N/A | Reader sounds one high frequency beep and 4 low frequency beeps followed by reset beeps. |
| Label Programming Mode Cancel Item Entry | Cancel label has been scanned. | N/A | Reader sounds two times at low frequency and current volume. |

Error Codes

Upon startup, if the reader sounds a long tone, this means the reader has not passed its automatic Selftest and has entered FRU (Field Replaceable Unit) isolation mode. If the reader is reset, the sequence will be repeated. The following table describes the LED flashes/beep codes associated with an error found.

| Number of LED Flashes/ Beeps | Error | Corrective Action |
|---------------------------------|---------------|---------------------------------|
| 1 | Configuration | Contact Helpdesk for assistance |
| 2 | Interface PCB | |
| 6 | Digital PCB | |
| 12 | Imager | |

Base Station Indications

| Indication | LEDs |
|---|---|
| Power-up Complete | Yellow LED on |
| Reader Disabled by the HOST or the communication with HOST is not established | Yellow LED blinking ~1Hz |
| Data/labels are transmitted to the HOST | Yellow LEDs turned off for 100mSec |
| Programming Mode | Yellow LED blinks quickly |
| Configuration alignment with the HH is in progress | Red LED blinks quickly |
| Battery charger in progress | Red LED on |
| Battery charger complete | Green LED on |
| Battery charger error | Green LED and Red LEDs blink alternatively ~1Hz |
| No HH is placed on the cradle | Red and Green LEDs off |

Wasp Technologies Limited Factory Warranty

Warranty Coverage

Wasp warrants to Customer that Wasp's products will be free from defects in materials and workmanship for a period of three years from product shipment. Wasp Barcode Technologies ("Wasp") hardware products are warranted against defects in material and workmanship under normal and proper use. The liability of Wasp under this warranty is limited to furnishing the labor and parts necessary to remedy any defect covered by this warranty and restore the product to its normal operating condition. Repair or replacement of product during the warranty does not extend the original warranty term. 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. If Wasp determines that a product has defects in material or workmanship, Wasp shall, at its sole option repair or replace the product without additional charge for parts and labor, or credit or refund the defective products duly returned to Wasp. To perform repairs, Wasp may use new or reconditioned parts, components, sub-assemblies or products that have been tested as meeting applicable specifications for equivalent new material and products. Customer will allow Wasp to scrap all parts removed from the repaired product. The warranty period shall extend from the date of shipment from Wasp for the duration published by Wasp for the product at the time of purchase (Warranty period). Wasp warrants repaired hardware devices against defects in workmanship and materials on the repaired assembly for a 90 day period starting from the date of shipment of the repaired product from Wasp or until the expiration of the original warranty period, whichever is longer. Wasp does not guarantee, and it is not responsible for, the maintenance of, damage to, or loss of configurations, data, and applications on the repaired units and at its sole discretion can return the units in the "factory default" configuration or with any software or firmware update available at the time of the repair (other than the firmware or software installed during the manufacture of the product). Customer accepts responsibility to maintain a back up copy of its software and data.

Refer to:

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

Warranty Claims:

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

Warranty Exclusions

The Wasp Factory Warranty shall not apply to:

- (i) any product which has been damaged, modified, altered, repaired or upgraded by other than Wasp service personnel or its authorized representatives;
- (ii) any claimed defect, failure or damage which Wasp determines was caused by faulty operations, improper use, abuse, misuse, wear and tear, negligence, improper storage or use of parts or accessories not approved or supplied by Wasp;
- (iii) any claimed defect or damage caused by the use of product with any other instrument, equipment or apparatus;
- (iv) any claimed defect or damage caused by the failure to provide proper maintenance, including but not limited to cleaning the upper window in accordance with product manual;
- (v) 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;
- (vi) any damage or malfunctioning caused by non-restoring action as for example firmware or software upgrades, software or hardware reconfigurations etc.;
- (vii) the replacement of upper window/cartridge due to scratching, stains or other degradation and/or
- (viii) any consumable or equivalent (e.g., cables, power supply, batteries, keypads, touch screen, triggers etc.).

No Assignment

Customer may not assign or otherwise transfer its rights or obligations under this warranty except to a purchaser or transferee of product. No attempted assignment or transfer in violation of this provision shall be valid or binding upon Wasp Technologies.

Wasp Technologies LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ORAL OR WRITTEN, STATUTORY OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NONINFRINGEMENT. WASP SHALL NOT BE LIABLE FOR ANY DAMAGES SUSTAINED BY CUSTOMER ARISING FROM DELAYS IN THE REPLACEMENT OR REPAIR OF PRODUCTS UNDER THE ABOVE. THE REMEDY SET FORTH IN THIS WARRANTY STATEMENT IS THE CUSTOMER'S SOLE AND EXCLUSIVE REMEDY FOR WARRANTY CLAIMS. UNDER NO CIRCUMSTANCES WILL WASP BE LIABLE TO CUSTOMER OR ANY THIRD PARTY FOR ANY LOST PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL, DIRECT, SPECIAL OR CONTINGENT DAMAGES REGARDLESS OF WHETHER WASP HAD ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES.

Risk of Loss

Customer shall bear risk of loss or damage for product in transit to Wasp Technologies. Wasp Technologies shall assume risk of loss or damage for product in Wasp Technologies possession. In the absence of specific written instructions for the return of product to Customer, Wasp Technologies will select the carrier, but Wasp shall not thereby assume any liability in connection with the return shipment.

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.

Cleaning

Exterior surfaces and scan windows exposed to spills, smudges or debris require periodic cleaning to ensure best performance during scanning operations. Contacts on the scanner and the base should also be cleaned as needed to ensure a good connection.

Be sure to unplug the reader and base before cleaning.

Use a soft, dry cloth to clean the product. If the product is very soiled, clean it with a soft cloth moistened with a diluted non-aggressive cleaning solution or diluted ethyl alcohol.



CAUTION

Do not use abrasive or aggressive cleansing agents or abrasive pads to clean scan windows, contacts or plastics.

Do not spray or pour liquids directly onto the unit.

Cleaning (continued)



Support through the Website

Wasp provides several services as well as technical support through its website. Log on

to www.waspbarcode.com and click on the **SUPPORT** link which gives you access to:

Downloads by selecting your product model from the drop-down list in the Search by

Product field for specific Data Sheets, Manuals, Software & Utilities, and Drawings;

Repair Program for On-Line Return Material Authorizations (RMAs) plus Repair

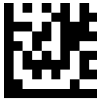
Center contact information;

Customer Service containing details about Maintenance Agreements;

Technical Support through email or phone.

Hex-Numeric Keypad

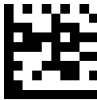
Use the bar codes that follow to enter numbers as you would select digits/characters from a keypad.



0



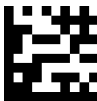
1



2



3



4



5

Hex-Numeric Keypad (continued)



6



7



8



9

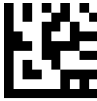


A



B

Hex-Numeric Keypad (continued)



C



D



E



F

For HID Variable Pin Code only

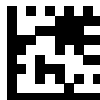
If you make a mistake, scan the **CANCEL** barcode below to abort and not save the entry string. You can then restart.



Cancel an incomplete HID Variable PIN Code

Finish by scanning the **Exit HID Variable PIN Code** label.

Exit HID Variable PIN Code



NOTES



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Wasp Barcode Technologies

1400 10th Street Plano, Texas | USA 75074
Telephone: (214) 547-4100



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