



## **USPS Engineering Software Development**

# **Wearable Scan and Display Unit (WSDU) User Manual**

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## REVISION HISTORY

Date	Rev	Change Description	Author
01/31/2019	1.0	Document Genesis	MG
02/07/2019	1.1	Updated content and some descriptions	DG, LK, MG

## 1. Introduction

The Wearable Scan and Display Unit (WSDU) is a purpose-built, extremely lightweight (less than 150gm) wearable barcode scanner. It is used with the Manual Sortation Appliance (MSA) and communicates with the MSA server via a 915MHz ISM band “wireless cable” communications channel. The WSDU provides a base node with USB virtual COM port capabilities for transmitting decoded barcode information as plain ASCII.

The barcode scanner within the WSDU is triggered by a 3-axis gyroscope accelerometer. The WSDU detects the absence of movement by the WSDU operator's arm, then initiates the scanning, decoding and transmission of labeling information to the MSA. The movement detection algorithm is designed to minimize false triggers to the extent possible to conserve battery life of the WSDU.

Upon transmission of a successful barcode read, there is a beep acknowledgement by the WSDU:

- All scans are acknowledged by a sound indicator: single chip beep for a successful scan, double down-tone chip for a failed or no scan.
- A single high-pitched positive acknowledgement indicates that the MSA has received and successfully processed the scan.
- A low pitched down-tone is a negative acknowledgement which indicates either the MSA did not receive the scan or the scan requires some user attention—it might be a no route, no result or bad barcode which did not result in a usable sort destination.

There are three buttons on the display: Blue, White and Red.

- Blue: On button; the Select button when in sub-menus
- White: Vol Down for audible control; Scroll Down when in sub-menus
- Red: Vol Up for audible control; Scroll Up keys when in sub-menus

Global motion movement along with the absence of in-motion triggering is implemented. The WSDU is bilaterally neutral with respect to usability (handedness). The need for cumbersome mounting schemes along with left-right hand device management is eliminated. The default configuration is wearing the WSDU on the right wrist but it can easily be configured for wearing on the left wrist via the left-hand wrist cuff strap.

## 2. WSDU Parts

### 3. WSDU Unit

Wrist-worn barcode scanner with a display and 3 buttons (blue, white and red).

### 4. Wrist Cuff

The cuff is adjustable around the wrist and clothing.

### 5. Adjustable Strap

Insert strap into the wrist cuff mount on the display side, then install the WSDU onto the wrist cuff.

### 6. USB-C Charging Cable and Wall Charger

Each WSDU comes with a Wearable Unit, Wrist Cuff, 3 adjustable wrist straps and a USB-C charging cable and wall supply. The wrist straps come in three sizes (S, M and L) to accommodate the wearing comfort of the user. Each Wearable Unit has a built-in battery which needs to be charged regularly for its operation.



Figure 1: WSDU Scanner Parts

## 2. WSDU Preparation

- Insert the proper length size (S, M and L) Wrist Strap through the Wrist Cuff mount on the side of the Wrist Cuff under the WSDU display and buttons.
- Curl/wrap the Wrist Cuff into a large round loop or doughnut shape large enough for putting your hand through the opening.
- Install the WSDU unit onto the Wrist Cuff mount by sliding the unit starting from the back of the unit with the USB-C port, engage the mounting rails, slide and snap into place.
- Slide the Wrist Cuff with WSDU Unit installed over your hand (through the round loop).
- Tighten and reposition the Wrist Cuff for proper fit.
- Tighten Wrist Strap by looping the strap through the second Wrist Cuff mount and cinch down the strap to the desired tightness.
- Reposition Wrist Cuff with WSDU Unit installed as desired.



Figure 2: Wrist Cuff and Strap Set-up

Looping Wrist Strap through the second Wrist Unit mount



Position the Wrist Unit and Wrist Cuff for proper fit and ease of use. Make sure the combination is comfortable and doesn't wiggle side-to-side very much during use.



The Wrist Strap end under the display and buttons should always remain securely attached. Any adjustment is performed via the outside second Wrist Cuff mount attachment.



## 7. Power On and Use

Now that the scanner is all setup, press the blue button once, there should be a double beep after a short moment and then the WSDU Unit will begin the start-up process and display the USPS logo on the display.



Once the WSDU Unit is powered on and ready for use, the display should signal the unit is in Standby mode and the battery status is displayed in the upper right-hand corner. If the battery is significantly depleted, it should be recharged.



The WSDU Unit's audible beeper volume has 4 settings and can be adjusted Up or Down via the white button (Up) or the red button (Down) while in Standby mode.

## 8. Advanced Display Menus

There are three buttons on the display: blue, white and red. The blue **On** button is also the **Select** button when used in sub-menus. The white and red buttons act as **Vol Down** and **Vol Up** for audible control (4 levels) as well as for **Scroll Up** and **Scroll Down** within sub-menus.

### Battery Status



### Network Status



## Scanner Status



## System Status



**Handedness** selects Right or Left display orientation, default is Right Handed



Selecting **Reset** does a complete reset of the WSDU Unit

Selecting **Power Off** turns the WSDU Off and displays the following message:

