Wireless Advanced Accessible Pedestrian System (WiAAPS) User's Manual

906-0035

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Revision History		
Revision	Revised By	Date
A	Brad	10/19/17
B	Brad - Revised to incorporate firmware/webpage changes	1/29/18
C	Travis – Updated to 5.0 WiAPB plus Wave features	2/5/21

Firmware and Software Versions	
Component	Version
APC Firmware	VER:WiAAPS:1.2
APB Firmware	V(Wi) 3.4
APB Bootloader	V (Wi) 3.2

1   Table of Contents

2   Introduction

2.1   Purpose of this Document

The purpose of the document is to describe the operation of the Wireless Advanced Accessible Pedestrian System (WiAAPS). This document does not cover the installation of the WiAAPS.

2.2   Additional Information

- See the WiAAPS Installation Guide for installation instructions.
- Reference the PedSafety Intersection Planning Sheet for location specific information.
- See the WiAAPS Installation Quick Guide for a brief graphical installation guide.
- See the Guardian/WiAAPS Base Station Mounting Template for an easy to use hole pattern for mounting APBs.
- These documents are available on the PedSafety website www.pedsafety.com

2.3   Contact Information

The first line of contact should be the distributor that the system was purchased from. If you are unable to contact the distributor, contact PedSafety Tech Support directly at 208-345-7459 option 2.

3   Overview

3.1   Product Overview

The WiAAPS is an Accessible Pedestrian System (APS) based on network communications. Communication from the traffic controller cabinet to the pedestrian station is done wirelessly. Power for the pedestrian stations can be provided via 2 wires running from the Advanced Pedestrian Coordinator (APC), which resides in the cabinet, or from an alternate source (solar powered or PedSafety's Signal Power Interface (SPI). In many cases, the two conductors for power are already at the intersection from the previous pedestrian detector system.

The WiAAPS uses a web browser-based interface to manage and monitor the system. This web browser can be viewed on any device with a network connection to the APC. Desktop computers, laptops, and even handheld devices can connect and operate the system as long as they share a network connection.

The WiAAPS provides all of the standard features for an APS as defined by the MUTCD as well as additional features based on local specifications. A locator tone tells a pedestrian that the crossing is equipped with APS and where it can be found. An extended press provides specific crossing information and access to additional functions. The audible walk tone or message is accompanied by a vibro-tactile indication during the visual walk display. Optional clearance phase indications may provide additional information to the pedestrian where appropriate.

Each WiAAPS is pre-configured at the factory based on the documentation provided by the customer. Configuring the WiAAPS can be done entirely through the APC management webpage, so the customer can re-configure the system as needed. In addition, audio files and operating firmware can be updated directly on an APB through a USB connection.

3.2   Features

- Capable of using existing pedestrian field wiring to provide power to the push button stations reducing costs in retrofit installations
- Ethernet access for network/remote configuration
  - All configurable settings available over network via web browser including audio message upload
- Time of day functions including nighttime audio volumes
- Pedestrian call count data
- Independent volumes for locator and non-locator audio messages
- Independent station volumes
- Automatic Gain Control (AGC) available for all audio messages
- Accepts audio messages in WAV format

- Audio messages and station configuration backed up on the APC enables quick recovery after a station knock-down
- Clearance interval options including beaconing and audible countdown
- Available with touchless "Wave" active infrared sensor.

3.3   Components

There are three primary components to the WiAAPS; the WiAPC, a Termination Board, and one or more Wireless Advanced Pedestrian Buttons (WiAPB).

The WiAPC is the center point of the WiAAPS. It provides both power and pedestrian signal information to all of the WiAPBs. The WiAPC is also the point at which the system is configured. The WiAPC is installed in the traffic controller cabinet. It connects to the 120VAC load switch outputs for the pedestrian signals and the low voltage pedestrian call inputs.

The termination board is installed in the traffic controller cabinet with the WiAPC. It provides a convenient place to land all the power connections to the WiAPBs. The termination board also provides current-limiting protection to each field connection. If alternate power is provided to the WiAPBs, the termination board is not required.

The WiAPB is the point of interaction with the pedestrian.

3.3.1   WiAPB "Wave"

The WiAPB "Wave" feature provides pedestrians a secondary, no-contact form of actuation that protects against the spread of germs and viruses. The WiAPB "Wave" uses active infrared to detect the presence of a pedestrian's hand typically 1 – 6 inches away from the device. This distance can be adjusted to increase the detection range to typically 1 – 9 inches or decrease the detection range to typically 1 – 3 inches from the device. The "Wave" sensor detection sensitivity can be adjusted so the device actuates with slower or faster hand movements.

The "Wave" sensor works independently from the physical piezo driven push button on the APB and can be turned off if requested. The "Wave" sensor can detect various materials and skin tones to provide a non-exclusive form of actuation for all pedestrians. The sensor resides directly below the physical piezo push button.

Contact PedSafety Tech Support at 208-345-7459 option 2 if the sensor settings need to be changed.

3.4 Audio Messages

The WiAAPS comes fully programmed with audio files from the factory but we give you the option to create your own custom messages in a simple .wav format that can be easily uploaded via the APC network connection. Second languages, gender narrative, and special percussive tones can be easily created, uploaded, and saved via System Configuration.

3.5 Accessing the Utility

To make changes and view the WiAAPS utility, simply plug an Ethernet cable into the Ethernet port on the front of the APC. Then connect the Ethernet cable into your laptop.
Launch a web browser such as Google Chrome and type in the APC IP address into the address bar. (See Below)
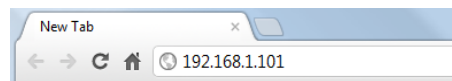
Figure 1 Webpage Address bar

You will see the following screen pop up looking for credentials. Default user name: admin Password: password.
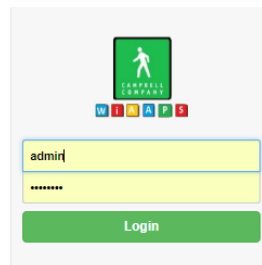
Figure 2 Authentication Page

The Webpage has several tabs with different functions. These tabs are:

The *Status* tab gives an overview of the system.
The *APC Settings* tab sets the APC configuration, including intersection information
The *Station Settings* tab allows for individual station settings to be adjusted
The *Station Setup* tab allows for new APBs to be connected wirelessly to the APC.
The *Audio Files* tab allows for audio files to be added or changed.
The *Time* tab allows for the time to be adjusted.
The *Network* tab allows for changes to the APC IP address.
The *Log Files* tab is where log files are located
The *APC Links* tab allows for all APC's IP addresses to be stored
The *Advanced* tab is where advanced settings can be found.
The *Log out* tab logs you out of the system.

The functions on these tabs are defined on the following pages.

3.6   Status Tab

The Pedestrian Signal Status shows the current state of the system configuration and the status of each of the connected APBs.

Wire Map			
Phase	Walk Input	Dont Walk Input	Call Output
1	DB25 Pin 19 Red/White	DB25 Pin 23 Green/White	DB9 Pin 1 Orange/Black
2	DB25 Pin 6 Blue/Red	DB25 Pin 10 Black	DB9 Pin 6 Green/Black
3	DB25 Pin 18 Green	DB25 Pin 22 Blue	DB9 Pin 2 Red
4	DB25 Pin 5 Red/Green	DB25 Pin 9 White	DB9 Pin 7 Red/Black
5	DB25 Pin 17 Blue/Black	DB25 Pin 21 Black/White	DB9 Pin 3 White
6	DB25 Pin 4 Green/Black	DB25 Pin 8 Red/Black	DB9 Pin 8 White/Black
7	DB25 Pin 16 Orange/Black	DB25 Pin 20 Red	DB9 Pin 4 Black
8	DB25 Pin 3 White/Red	DB25 Pin 7 Orange/Red	DB9 Pin 9 Blue

Time Configuration		
NTP Enabled	No	
NTP Servers		
Timezone	America/Boise	

Network Configuration	
Hostname	apc
DHCP	DHCP Server
IP Address	192.168.1.101
MAC Address	00:0c:c6:81:e7:4d
Netmask	255.255.255.0
Gateway	192.168.1.1
Broadcast	192.168.1.255
DNS Server	192.168.1.1
Ping Destination	192.168.1.1
Ping on Boot	No
Ping on Hour	No

Users		
Username	Real name	Access Level
admin	Default user	Can manage

WiAAPS: 0.1.0 B-0001. Page loaded in 0.86 seconds.

3.7 APC Settings

This tab is where the APC configuration is set, including intersection information

Active Stations – allows for a station to be set to active (On) or non-active (Off)

Intersection Identification
The intersection identification can be found here:
- Location:
- Intersection:
- CC#
- PO #

- An Intersection image can be selected here and then click "Submit Intersection Identification" to update APC

The APC can be set to normal operation (120V I/O Mode) or test (Simulator Mode). The simulator mode allows for the APC and APBs to be tested without being connected to the traffic controller.

3.8　　Station Settings Tab

Setting station IDs and individual station configuration is done on this tab.

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Station ID – allows for the stations to be assigned a specific station ID by using the station's MAC address, or change which station is assigned to a specific station ID. Utilizing the Station Identity function allows for the station to audibly identify its assigned station ID.

Please consult PedSafety Technical Support prior to using the Reboot, Bootloader or Reset Radio functionality.

All active stations will be shown in this tab. The following settings can be changed:
- Phase and Sync Call
- Station Mode
  - o MUTCD – allows the Stations to perform the assigned functions in accordance with MUTCD and the configuration created (utilized while in operation at the intersection)
  - o SET ID Mode – allows the stations to accept the setting or changing of the station's ID
  - o Audio Mode – allows the stations to accept the setting or changing of the stations audio files
- Station Walk Timeout
- Station Button Time
  - o Extended Press Time: Time in (ms) the contacts will closed to the traffic controller to signify an extended press was made.
- Button Vibration Time and Intensity
- Station Audio Timing Set
  - o Locator Tone Interval: The number of seconds between Locator Tones
  - o Repeated Acknowledgement: The number of seconds between repeats of the Acknowledgment message. (0 means the message will not be repeated)
- Station Active Infrared Sensor Configuration
  - o Wave settings can be adjusted to detect a pedestrian's hand from a typical distance of 3, 6, or 9 inches.
  - o IR on and IR off settings can be used to adjust how long the sensor needs to place a call.
  - o Please contact PedSafety Tech Support at 208-345-7459 option 2 before adjusting any IR Sensor settings.
- Station Daytime Locator Tone volume
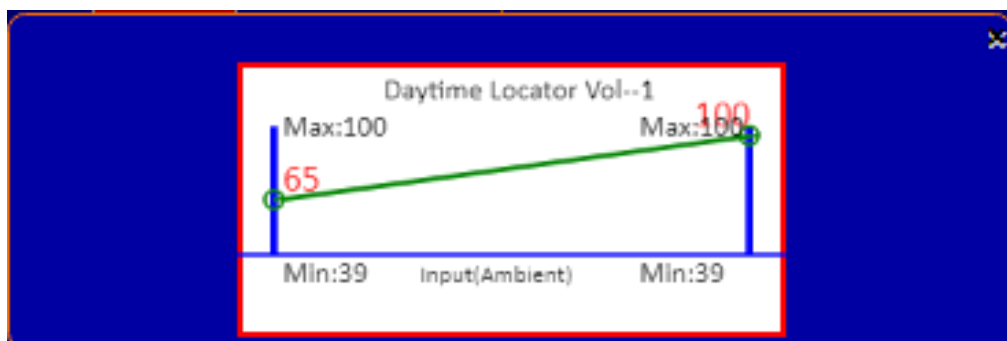
- Station Daytime all other messages volume (Daytime NON-Locator Volume)
- Station Time of Day. Note: the APC will update the APB time of day clock automatically once per week.
- Station Night Mode Start and End Time

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- Station Night Mode Locator Tone volume
- Station Night Mode all other messages volume (Nighttime NON-Locator Volume)

This tab also has certain wireless communication diagnostic information

- Signal strength from stations to APC
- Signal strength from station to station and APC
- Wireless transmission diagnostic data

3.9   Station Setup Tab

Adding stations is done on this tab.

The MAC address for the APB can be entered manually or chosen from a search list.

- To search for the APB wirelessly, it must be powered on. Then click on "Search for Stations" button. This list will show all available APB stations. It will note whether or not the APB has been previously connected to that APC. Verify that you have the correct address for the station you want to add before making the selection.
- To enter the MAC address manually, enter the 64-bit address in the "Add Radio MAC" fields. This can be done by typing the address, or pasting it from another file. Click on "Add Radio".

Station/Firmware update – allows for a firmware update to be applied to the station

3.10   Audio Files Tab

The Audio Files tab allows for audio files to be uploaded to individual stations.

a. The first step is to add sound files to the APC. Choose files from the list, or upload your own files. Click Choose File, select the specific file, then click "Save to APC."

b. On the Station Settings tab, set the APBs to Audio Mode.

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c. On the Audio Files tab, click on "Go to Audio File Transfer Mode". This will take the APBs out of service during the audio file transfer.

Change APC Operational Mode (Stations must be in Audio Mode for Audio File Transfer Mode to work)		
Go Back To Intersection APC Mode		

Send Files From APC To Stations		
Message \ ID	1	All Stations
Locator	Send	Send
Acknowledgement	Send	Send
Location	Send	Send
Walk	Send	Send
Clearance	Send	Send
All Messages	Send	Send

Play Audio On Stations	
Message \ ID	1
Locator	Play
Acknowledgement	Play
Location	Play
Walk	Play
Clearance	Play

d. Files can be sent one at a time to a single station, one file to multiple stations, or multiple files to some or all of the APBs at one time.

e. The "Play Audio on Stations" function allows review of the messages programmed on the APB if the APC is set to the Audio File Transfer Mode and the APB is set to the Audio Mode (set on the "Station Settings" tab).

f. On the Stations Settings Tab, change the APBs back to MUTCD Mode.

g. When finished transferring all the necessary audio files, click on "Go back to Intersection APC Mode" to reboot the stations and return the intersection to normal operation.

3.11   Time Tab

The Time tab is used for setting up the Real-Time clock

There are three ways of setting the time:

    a.   Manually enter the time.
    b.   NTP enable (to get the current time from the internet). Note: the APC must be able to access the network and an IP address must be entered in the NTP server box.
    c.   Click the "Sync with PC time" option.

Once the time options are chosen click "Save APC Time". This will set the time, but also log you out of the webpage. You will need to log back in to continue.

3.12   Network Tab

In order to remotely communicate with the APC, the IP address must be set up.

Before changing settings consult you IT Department. Also, remember that the IP address is how access is granted to the webpage. If the IP address is changed document it.
If the IP address is lost, hold the B1 Button on front of APC and boot (turn on the unit). The IP address will be reset to the default. See Accessing the Webpage (paragraph 4.1)

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3.12.1 Log Files Tab

There are three sets of logs to be viewed: System log, Event log, and APB log.

- System logging reports changes made to the system.
- Event logging reports any conflicts and/or loss of station communication
- APB log reports ped call counts for each APB. Graphs are available that show history by week, month, and year for each APB.

3.12.2 APC Links Tab

APC links tab will keep track of all the APC's on your network on one APC.

1. Make sure the network APC is viewable on the network.
2. Enter a Name or the location of the network APC
3. Type the IP address of the network APC in the URL box
   a. Example: 192.168.1.101
4. Click APC box
5. Click **Add**

3.12.3   Advanced Tab

The Reboot button will do a software reboot. This must be done to set time and IP address for the APC.

Additional users can be created by clicking on the "Create User" link.

Change password: click on edit user: This will reset the password on the WiAAPS webpage **(Remember what you changed it to! Mark it on Intersection Planning Sheet and store in cabinet Doc Sleeve.)**

<u>Any changes to the advanced configuration section settings should only be done at the direction of Campbell Company. Please contact Campbell Company Technical Assistance before proceeding.</u>

1. Intersection Status Scan Interval (ms): How often the I/O is read.
2. Station Update Interval (ms): How often the buttons receive an update.
3. Display Update Interval (ms): How often the Front panel display is updated.
4. Display timeout (ms): Time before the front panel display times out (shuts off)
5. Wire map: The wire mapping can be changed
   a. Walk input: Able to choose phase assignment of pins by color code.
   b. Don't walk Input: Able to choose phase assignment of pins by color code.
   c. Call output: Able to choose what Pin/wire will place a call on a certain phase.

Settings for the wireless radios can be changed to create a unique configuration for each intersection. Click on "Go to Wireless Network Set Up Mode".

4   Appendix A: Acronyms, Abbreviations & Definitions

Term	Meaning
Accessible Pedestrian Signal (APS)	A device that communicates information about pedestrian timing in a non-visual format such as audible tones, verbal messages, and/or vibrating surfaces (MUTCD)
Actuated operation	A type of traffic control signal operation in which some or all signal phases are operated on the basis of actuation (MUTCD)
Audible Beaconing	Use of sound source to provide directional orientation and alignment information.
Automatic Gain Control (AGC)	An APS volume control that is automatically responsive to ambient (background) sound.
Base Station	Fully integrated APS station that contains the Micro-controller, push button, speaker, sign mounting.
Crosswalk	Any portion of a roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by lines or other marking on the surface (MUTCD)
DHCP	Dynamic Host Configuration Protocol
Night Mode	Ability to change audio volumes by time of day
Phase	Cycles assigned to a specified movement