

Guardian Accessible Pedestrian Signal

Guardian User's Manual

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Document Revision History		
Revision	Revised By	Date
A	James – Added 5.0 Features	1/29/20
B	Travis – Added Wave Features and Bluetooth info	11/19/20
C	Travis – Added Composite Station info and updated other info	05/10/24

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2 Introduction

2.1 Purpose of this Document

The purpose of this document is to describe the operation of the Guardian Accessible Pedestrian Signal, including the Guardian Wave and Guardian Mini.

2.2 Additional Information

- See the Guardian Installation Guide for installation instructions.
- See the PedSafety Intersection Planning Worksheet for location specific information.
- See the Guardian Wiring Quick Guide for a brief graphical installation guide.
- See the Base Station Mounting Template for an easy-to-use hole pattern for mounting Guardian Base Stations.
- See the PedConnex Utility User Manual on how to program and configure the stations.

These documents are available on the PedSafety Website
<http://www.pedsafety.com/product-installation-guides/>

2.3 Contact Information

The first line of contact should be your regional distributor that the system was purchased from. If you are unable to contact the distributor, contact PedSafety directly. PedSafety Tech Support 1-208-345-7459 Option #2

3 Overview

3.1 Product Overview

The Guardian is an Accessible Pedestrian Signal (APS) designed for simple, stand-alone operation.

The Guardian provides all the standard features for an APS as defined by the MUTCD as well as additional modes of operation for 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 intersection 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 Guardian APS is configured at the factory based on the specifics provided by the customer on the intersection planning sheet. PedSafety's PedConnex utility provides an easy and straightforward interface for programming and configuration.

3.2 Features

- Independent operation – no control unit in cabinet
- Rugged Design to withstand extreme impacts and weather conditions
- Independent volumes for locator and non-locator audio messages
- Automatic Gain Control (AGC) available for all audio messages
- Time of day function for nighttime audio volume
- Proprietary design of Guardian station provides directed sound where it is needed
- Designed to operate with an optional PedSafety APS Beacon
- Ability to synchronize multiple stations for beaconing utilizing existing field wiring
- Does not require home run for fixed time intersections
- Clearance interval options including beaconing and audible countdown
- Easy configuration with PedConnex utility through a laptop with a USB-B to USB-A as well as through an Android mobile device with USB-B to USB-C
- Bluetooth® connection for PedConnex Utility is an available add-on. Contact your distributor to learn how to purchase Bluetooth®

3.3 Components

There are two primary components to the Guardian; the Guardian station, and a Signal Power Interface (SPI) paired with each station. The SPI takes the Walk and Don't Walk signals from the pedestrian signal head and converts them to low voltage control signals to operate the Guardian APS station.

The Guardian station is the pedestrian's point of interaction. The station is available in several form factors including:

- Guardian: A fully integrated pedestrian station (figure 1)
- Guardian Wave: A fully integrated pedestrian station with no-contact actuation (figure 2)
- Guardian Mini: A miniature rectangular station designed to replace a standard Push Button and button cup (figure 3)

In addition to different form factors, the stations are available in a variety of colors.

Bluetooth® can be purchased as an additional add-on and is used to communicate with the stations through a mobile version of PedConnex.



Figure 1
Guardian APS
501-0811C



Figure 2
Guardian Wave APS
501-0821C



Figure 3
Guardian Mini APS
501-0711C

3.4 Custom Audio Messages

The Guardian comes fully programmed with audio files from the factory. Several free applications such as Audacity give you the option to create your own custom messages or tones in a simple .wav or .opus format that can be easily uploaded via a USB port. Second languages, gender narrative, and special percussive tones can be easily created and uploaded.

4 System Configuration

The Guardian comes with the user friendly PedConnex utility to configure the station. While Guardians come configured from the factory, some installations require modifications to audible messages, volumes, or functionality to best fit the needs of the crosswalk location.

PedConnex can be downloaded and launched on any number of computers running Windows 7 (with the latest updates) or newer operating systems. The PedConnex utility includes a detailed electronic version of the PedConnex User's Manual which will be referred to in this document. This Guardian User's Manual will direct you to main areas of interest in the PedConnex User's Manual. Please refer to the PedConnex User's Manual for more detailed information on programming and configuration.

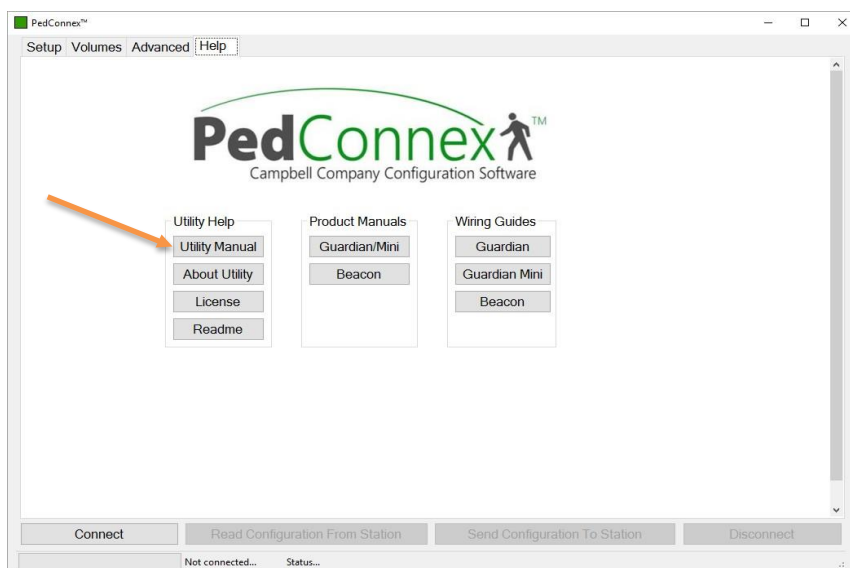
A mobile version of PedConnex can be downloaded in the Apple App Store and the Google play store and used on both iOS 12.0 or later devices and Android 7.0 or later devices when purchased with the Bluetooth® add-on.

PedConnex also incorporates “roll over” help bubbles that explain the various options and how to set them up.

To obtain PedConnex go to <http://www.pedsafety.com/downloads> and download the PedConnex utility.

4.1 Settings and Operational Mode Features in PedConnex

Note: See the PedConnex User Manual embedded in the PedConnex software for instructions on how to use the utility to manage the station configuration, and for additional information on these settings.



The primary operational settings are located on the “Setup” page and are as follows:

- APS Mode: APS Operational function.
 - Off – Same functionality as a 4EVR latching push button
 - MUTCD – Full APS functionality
 - RRFB – For use with a Rectangular Rapid Flashing Beacon (RRFB)
 - Beacon – For use with Beacons connected to the Guardian Station
 - TAC – Transportation Association of Canada APS functionality
 - Test – Allows functional testing of the Guardian APS
- Selectable Features:
 - EPCM – If selected, activates clearance function only after an extended press. This feature is usable with; Countdown, Always On, and Destination Beacon clearance modes.
 - VTO - If selected, the station shall vibrate tactile arrow button every time the walk interval is displayed.
 - EPA - If selected, the audible walk message will only be activated during the walk interval if the button is depressed for the Extended Press selected period. For the walkphase, the volumes can be increased to play at a set level.
 - AGCW - If selected, enables automatic gain control in walk. For use only with voice audio messages.
 - Recall - If selected, automatically places a new call at the beginning of clearance interval (walk message will play every time the walk interval is displayed).
 - WIR - designed for intersections with time-of-day recall set up through the traffic controller, walk message plays every time the crossing goes into walk.
- Extended Press Time: Time to hold the button to get an extended press (in milliseconds).
- Locator Period: Time in seconds between audio indication.
- Walk Timeout: Maximum time in seconds for walk message to play.
- Walk Audio Delay: An RRFB setting. The time delay, in milliseconds, before the Walk indication is played in the Walk cycle.
- Ack Repeat Time: Sets time in seconds between repeated acknowledgment message. Set to zero to disable.
- Sync Call: Synchronize outputs of two or more pedestrian stations.
- Fresh Walk: TAC mode that ensures a full walk cycle for the pedestrian.
- Clearance Mode: Audio indication during Flashing Don't Walk. Select among: Off, Always ON, Destination Beacon, and Countdown.
- VIB Intensity: Adjust the vibration intensity of the Walk indication.
- VIB Pulse Time: Time in milliseconds for the vibrator to run when the button is pressed.
- Location: City, State.
- Intersection: Cross Street for reference.
- CC#: Campbell Company Sales Order Number.

Volume and Sound Controls are located on the “Volumes” page.

- **Volume:** Two settings adjust volume for non-locator and locator tone independently
 - *Non-Locator Volume* – Adjusts the volume of the audible messages or percussive tones or indications
 - *Locator* – Adjusts the locator tone volume
- **Night Mode:** Night Mode changes the volume settings based on the time of day
- **Automatic Gain Control:** Automatic Gain Control (AGC) settings change the rate at which the unit volume output reacts to changes in the ambient noise level.

4.2 Audio Files in the Guardian

The Guardian APS comes fully programmed with audio files from the factory. PedSafety generates custom messages for the intersection from information on the intersection worksheet submitted for the Purchase Order. An electronic copy of the audible files is available to the customer at time of delivery and should be kept for future use. A full audio library is available at PedSafety should your requirements change.

In the case that a street name changes or the Guardian is being moved to a new location Tech Support can create new audio messages at no cost and can be contacted at techsupport@pedsafety.com.

5 Appendix A: Definitions

Term	Meaning
Accessible Pedestrian Signal	A device that communicates information about pedestrian signal in a non-visual format such as audible tones, verbal messages, and/or vibrating surfaces (MUTCD)
Adapter Plate	An aluminum plate that mounts to the base station to display crosswalk signs.
Audible Beaconsing	Use of sound to provide directional orientation and alignment information in the clearance phase.
Audio File	A file format for storing digital audio data on a computer system.
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, (and adapter plate if needed).
Clearance Interval Indication	Tones sounding during the pedestrian clearance interval that are differentiated from the WALK interval indicator (tones)
Clearance mode	<p><i>Sets what and how audio files are played in Flashing Don't Walk.</i></p> <ul style="list-style-type: none"> • <i>Off</i> – No FDW audio. Goes back to locating. • <i>Always On</i> – Plays Clearance indication every activated cycle. • <i>Destination Beaconsing</i> – Destination station provides target beaconsing (Clearance indication) for pedestrian to locate. The station pressed will not play clearance indication. • <i>Countdown</i> – Audible countdown of the clearance phase. <p>Note: Requires one cycle to calibrate Flashing Don't Walk time.</p>
COM Port	Serial communication port
Extended Press	On APS, holding the pedestrian push button for the extended period may activate special features, including audible beaconsing and extended pedestrian clearance interval.
Night Mode	An alternate configuration typically used to control audio volume at nighttime.
Signal Power Interface (SPI)	Power source that interfaces with Pedestrian Signal Head power for Base Station interface.
USB Port	USB connection on Guardian stations.
Utility	Computer software used to configure Guardian stations.
.wav file	An audio file format.
.opus file	An audio file format.