



Accessible Pedestrian Signal (APS) Specification
Guardian Independent 5.0 (PN 501-0821)
Bluetooth Optional Add-on (PN 501-0650)

1. System Operational Requirements:

- I. Shall meet the intent and functionality identified and defined in “Manual on Uniform Traffic Control Devices”
Section 4E
Federal Highway Administration 2009
<http://mutcd.fhwa.dot.gov/htm/2009/part4/part4e.htm>
- II. Shall meet The United States Access Board’s
“Revised Draft Guidelines for Accessible Public Rights-of-Way”
Chapter R3: Technical Provisions
Sub section: R306
Dated: November 23, 2005
<http://www.access-board.gov/prowac/draft.htm#Text>
- III. Shall be independent of a central control unit with a Pedestrian Display to Pedestrian Station ratio of 1:1.
- IV. Shall have non-contact actuation with no exclusivity or proprietary apps, available to 100% of all pedestrians.
- V. Shall detect non-contact actuation at 2” – 3” distance from sensor.
- VI. Shall have a distinct “no contact” locating tone allowing blind pedestrians to identify the no contact actuation.
- VII. Shall have confirmation indications at momentary (< 1 second) button activation (Press) via latching LED, sound or verbal “wait”, and optional Vibrotactile bounce.
- VIII. Shall provide a verbal location information message and optional functional actions (destination beaconing, extended walk timing, EPAPS) with an extended (>1 second, user selectable) button activation (Press). (“Wait to cross “Street Name” at “cross Street Name”).
- IX. Shall have locating tone during pedestrian clearance phase (with options of countdown and beaconing).
- X. Shall provide a verbal walk indication with installations where there is less than ten feet of separation between stations and a rapid percussive tone where there is greater than ten feet of separation between stations.
- XI. Shall have a Vibrotactile indication that has adjustable intensity, on-the push button, active during the WALK cycle.
- XII. Shall support a variety of voice messages, languages, tones, and sounds; downloadable from an indications database, via Bluetooth® or USB interface.

- XIII. Shall have all sounds adjust automatically to ambient noise levels over a 60dB range.
 - i. Shall have a maximum volume of 100dB.
- XIV. Shall have min and max volume levels independently set for locator and non-locator indications.
- XV. Shall provide EPAPS (Accessible Pedestrian Signals only with Extended Press) functionality (TAC mode).
- XVI. Shall have fail safe operations leading to constant call and play an error message in a fault condition.
- XVII. Shall reverts to standard push button operations with local power outage.
- XVIII. Shall have time of day, day of week calendaring functionality providing different operating characteristics for identified time of day, and day of week.
- XIX. Shall have downloadable utility for collection of pedestrian data.

2. Mechanical Requirements of the Push Button Station:

- I. Shall meet The United States Access Board's
"Revised Draft Guidelines for Accessible Public Rights-of-Way"
Chapter R3: Technical Provisions
Sub section: R306
Dated: November 23, 2005
<http://www.access-board.gov/prowac/draft.htm#Text>
- II. Shall have a housing of machined aluminum with full gaskets on matching surfaces.
- III. Shall have forward facing speaker.
- IV. Shall have optional baffles for sound directionality control.
- V. Shall have a raised tactile arrow on the push button.
- VI. Shall have non-contact actuation sensors near push button
- VII. Shall have a solid-state switch rated at > 100 X 10⁶ operations.
- VIII. Shall have a #6 Barrier Terminal connection on station allowing pedestrian station to connect to existing wiring.
- IX. Shall have a cover plate for the Barrier Terminal connections bay.
- X. Shall be capable of displaying a 5 X 7 ¾" sign directly affixed onto the station using mounting screws, without the use of an adapter plate or sign bracket.
- XI. Shall be capable of displaying a 5 X 9", 6 X 9", 9 X 12", and 9 X 15" sign with the use of an adapter plate and mounting screws.
- XII. Base Station shall have an optional adjustable articulating mounting bracket which allows for accurate arrow alignment.
- XIII. Shall have the ability to be programmed while only connected to USB as a power source.

3. Environmental Requirements for the Push Button Station:

- I. Shall be fully operational between temperatures of -34°C to +74°C.
- II. Sensor shall detect in all light conditions: day or night.
- III. Sensor shall not place false calls in extreme weather conditions
- IV. Sensor shall not change sensitivity in operational temperatures
- V. Shall have a weatherproof speaker.

- VI. Shall have a NEMA 250 Type 4X rated enclosure.
- VII. PCBA shall be encapsulated in a UL 1446 rated epoxy resin.

4. Signal Power Interface (SPI):

- I. Shall have a Signal Power Interface (SPI) installed in the Pedestrian Display housing.
- II. SPI shall interface with Pedestrian Display via incoming Walk, DW, and Neutral inputs.
- III. SPI shall interface with Pedestrian station via a 4 wire conductor.
- IV. SPI shall have a 4 position; #8 Barrier Terminal connector for the 4 conductor cable to be pulled to the pedestrian station.
- V. Signal Power Interface (SPI) shall operate properly over power sources ranging from 85 VAC to 220 VAC.

5. Programming and Configuration:

- I. The Accessible Pedestrian Signal will be configured at the factory for true “Plug and Play” operations.
- II. Shall have firmware capable of creating reusable templates, flashing software, uploading audio files, and configuring stations.
- III. Shall have optional Bluetooth® capability to allow full configuration and file transfer via Bluetooth, iOS and Android.
- IV. Configuration utility shall provide full screen display with integrated hover help menus.
- V. The Accessible Pedestrian Signal will be field upgradeable via USB or Bluetooth® connection with free publicly available firmware operating on **Windows 7** and newer revisions.
- VI. The Accessible Pedestrian Signal will allow any audible indication in a .wav mono format to be uploaded via USB or Bluetooth connection with free publicly available software operating on Windows 7 and newer revisions.

6. Testing Conformance

Test Type	Compliance
Functionality	MUTCD 2009 - 4 E
Temperature and Humidity	NEMA TS2
Transient Suppression	NEMA TS2
Transient Voltage Protection	IEC 61000-4-4, IEC 61000-4-5
Electronic Noise	FCC Title 47, Part 15 Class A & B
Mechanical Shock and Vibration	NEMA TS2

Guardian PBS enclosure	NEMA 250 – Type 4X
Electrical Reliability	NEMA TS4
Bluetooth® Specifications	Bluetooth® SIG Member

7. Electrical Parameters

Parameter	Value
Power Rest	0.85 W
Current Rest	17mA RMS
Max Power (100% output)	3.0 W
Input Voltage	120 VAC or 240 VAC
Output Voltage	12 VDC

8. Warranty:

- I. APS devices must have a 3-year warranty