Polara

iNS/iDS 3-Wire System Manual

Note: Model iDS3 is equivalent to iNS3 in all aspects, but includes iDetect functionality. Anywhere iNS3 is used in this manual, applies to iDS3 also.

350-078 Rev. G-26043

12/12/2023

Contents

1. Safety Information

 Caution! The equipment covered in this manual must be installed and operated as specified in this manual. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

 Caution! Risk of electric shock. The installer must be aware of the presence of hazardous voltage levels which may be exposed during the installation of this equipment.

For personal safety, the use of insulating gloves and safety glasses is recommended.

 EARTH GND (ground) protective conductor terminal.

2. System Description

2.1 iNS3 Accessible Pedestrian Signal Station

The iNS3 is an Accessible Pedestrian Signal pushbutton station (PBS). These PBSs are typically used in pairs, mounted on poles at each end of a pedestrian crosswalk. Its purpose is to transmit a request for a Walk Sign to a traffic signal controller by pressing its pushbutton, then to provide audible and vibro-tactile feedback to the pedestrian, indicating the current status of the pedestrian signal sign. The iNS3 is designed for operation with the iPHCU3S. Each iNS3 / iPHCU3S operates independently of any other with the exception that units with their (PED call) button terminals connected in parallel are all activated by a single button push. Alternatively, the iNS3 has a Wireless Sync feature to provide a link between PBSs on the same PED phase, such that a button press on one unit enables Walk and Clearance sounds on the linked unit. Wireless Sync supports both standard and extended push modes. Configuration of the iNS3 via Bluetooth may only be performed on a single PBS at a time.

2.1.1 Technical Specification

Operating Voltage/Current: 24VDC / 0.125A max

External Connections:

3 wires to iPHCU3S, optional 2 wires to cabinet PED call inputs

Maximum voltage across PED wires (from PED call inputs): 20VDC or 15VAC rms

Bluetooth Low Energy for setup and maintenance

Operating Temperature Range: -34°C to +74°C

Relative Humidity: 95% for Operating Temp.

Storage Temperature Range: -40°C to +85°C

Ingress Protection: NEMA 4X (IP65), follow instructions for proper protection

Pushbutton Operating Force Range: 1 to 3 lbs.

Maximum Audio Output Level: 100 dBA @ 1 meter

Dimensions W x D x H: 129 x 69 x 355 (mm)

Weight: 4.4 lbs.

Designed for Outdoor Use, Wet Location and Overvoltage Category: NEMA 250 4X

2.2 iPHCU3S – PED Head Control Unit iNS3-Wire

2.2.1 Technical Specifications

Input Voltage / Current: 110-220 VAC 18 VA max, 50/60Hz Cl. I

Output: 24V⎓, 0.12A

Operating Temperature Range: -34°C to +74°C

Relative Humidity: 95% for Operating Temp.

Storage Temperature Range: -40°C to +85°C

Dimensions W x D x H: 152 x 36 x 89 (mm)

Weight: 0.6 lbs.

Designed to be mounted in an all-weather (PED Head) enclosure provided by the customer, Overvoltage Category: NEMA 250 Type 1

Environmental Conditions:

- Mains supply voltage fluctuations up to ±10% of the nominal voltage
- Overvoltage Category ll
- Pollution Degree 2

Circuit Breaker Specification

Voltage Rating: 120VAC

Current Rating: 1A

Time Characteristics: Medium Time Large

3. System Installation

Prior to system installation, a 3-wire cable must be installed between the Pedestrian Signal Head and the pole where the PBS will be mounted. AWG 18 wire is recommended for this installation and should meet all applicable regulatory requirements. 3-wire cable can be purchased when ordering your iNS3 system, if desired.

Removing power from the pedestrian signal head during installation is recommended for protection from electric shock. Safety protections may be compromised and warranty voided if installed, utilized, or configured in any way different from factory instructions.

INSTALLATION NOTE: To complete this installation, you MUST install the Polara Field Service App on your iOS or Android device or the Intelligent Config PC App on a laptop with the Polara iN-DGL Bluetooth. Polara suggests downloading it at this time. If using an Android device, please refer to the "iN3 Polara FS Android Application Manual" when using the FS App.

- All of the available setup and maintenance procedures MUST be performed using a compatible iOS device or Android device or PC with iN-DGL. Your device must have iOS version 9.0 or higher or Android 5.0 (Lollipop) or higher.
- The Polara FS App will need to be installed on your device. It is available on the Apple App Store and the Google Play Store. The Intelligent Config PC App is available at www.polara.com.
- For more information on installation, please visit Polara's web site - www.polara.com.

Note: An iNS2 PBS can operate as an iNS3 PBS (standalone Ped-Head Based System). It comes with a 3-position terminal block capable of connecting a 3-Wire Cable to a Ped-Head Control Unit (iPHCU3S). If changing an installed/existing iNS2 PBS to operate as an iNS3, you must disconnect the ped wires in the cabinet from the Polara Interconnect Board and land to standard ped input terminals.

Equipment needed for complete iNS3 installation:

iNS3 Push Button Station (PBS)
iPHCU3S (Ped Head Control Unit)
3-Wire Cable (Polara supplied or equiv.)

3.1 iNS3 PBS

Place intersection in PED recall.

Plan PBS (push button station) locations if they have preprogrammed special messages. If special messages are not used, or will be programmed once each PBS is installed, proceed to next step.

The iNS3 PBS must be mounted only in the upright orientation with the connection terminals at the bottom, any other mounting orientation will void the warranty. If retrofitting these buttons on an intersection with existing buttons, remove existing buttons. Typical push button frames have the wire exit hole in the pole directly behind the center of the button (at least 3.5" below lower mounting hole). Because our PBS requires the wires to reach the bottom of the unit, verify 8" of wire extends beyond wire exit hole in pole. If enough wire is not available, evaluate whether a new, lower wire exit hole that would line up with the terminal block access point in the bottom of the PBS would provide adequate wire length. If yes, drill and reroute wires, the optimal position of this hole is approx. 6.5" below the lower mounting hole. If not, you need to figure out a way to achieve more wire length.

The iNS3 PBS is a modular device consisting of a backplate, electronics module, speaker module, arrow button diaphragm, button cover, sign, and optional sign backplate (for larger signs). The PBS is shipped partially assembled to secure it during transport. To prepare for mounting, remove 3 screws from the lower cover. Remove all screws securing the sign and sign backplate if present. Remove EARTH GND (ground) screw located between the two terminal blocks at the bottom of the unit. Store this screw in a safe place, it ensures the unit is grounded to the pole and must be re-installed. Verify the arrow on PBS module is oriented toward the associated crosswalk. If necessary, the button diaphragm

assembly may be taken off and rotated as needed. Secure the button diaphragm in the correct orientation by tightening the two retaining screws with a Phillips-head screwdriver. **Please use caution as the metal button diaphragm is sharp.** Remove the electronics module and speaker module together from the back plate.

Position back plate on pole at correct height and orientation so arrow points to ending of crosswalk on the opposite side of the street. Orientation is very important because a blind person uses the arrow and face of the sign to orient themselves to the direction of travel. Mark mounting bolt locations if existing holes not correctly located. MUTCD max. height is 48". Typical recommended height is 42", but can be lower. Drill and tap ¼-20 bolt holes and wire access hole (if necessary). Route the iN3-Cable (General Cable C2831A, or equiv.) between the pedestrian signal head and the pole.

Position the backplate against the pole and route the wires forward near the bottom end of the backplate. Position the wire such that 3 or 4 inches of wire is available at the bottom of the backplate.

Attach the backplate to the pole using the provided ¼-20 bolts with washers.

Re-install the electronics/speaker modules. Re-install the sign (and sign backplate if using), securing the PBS Module in place before wiring. Re-install EARTH GND (ground) connection screw to location between terminal blocks.

Connect the two wires from the traffic signal cabinet (if available) to the terminals of the larger black terminal block labeled BUTTON/PLC. Wire polarity is not important. Connect the 3-wire cable to the terminal block on the right. Make sure the wiring matches at both ends according to the DAT, GND, and PWR labels at the terminals.

Note, to maintain corrosion protection, leave the blue dielectric grease intact while tightening the screws.

Install iPHCU3S per Section 3.2 below.

With the power on, check that the PBS is operational. Recheck tightness of all connections. Re-install the lower cover.

For programming and configuration of the iNS3 PBS, launch the Polara Field Service App and complete the **Section 5.1** through **Section 5.6.**

The iNS3 PBS is now ready to use. If you wish to customize more available settings, please review Section 5.7 You may also change configurations and settings with the Polara Field Service App for PC User Guide (**Section 10**).

3.1.1 Connecting an External Button

The iNS3 PBS supports connection of an external button such as the Polara Bulldog BDSP-014. Pressing the external button is equivalent to pressing the iNS3 button, but without the associated push confirmation sound. The button wire pair should connect to the large terminal block labeled “Button/PLC” with one wire to each terminal. Polarity is not important. The external button would be connected in parallel with the button wires to the traffic signal cabinet. More than one external button is acceptable.

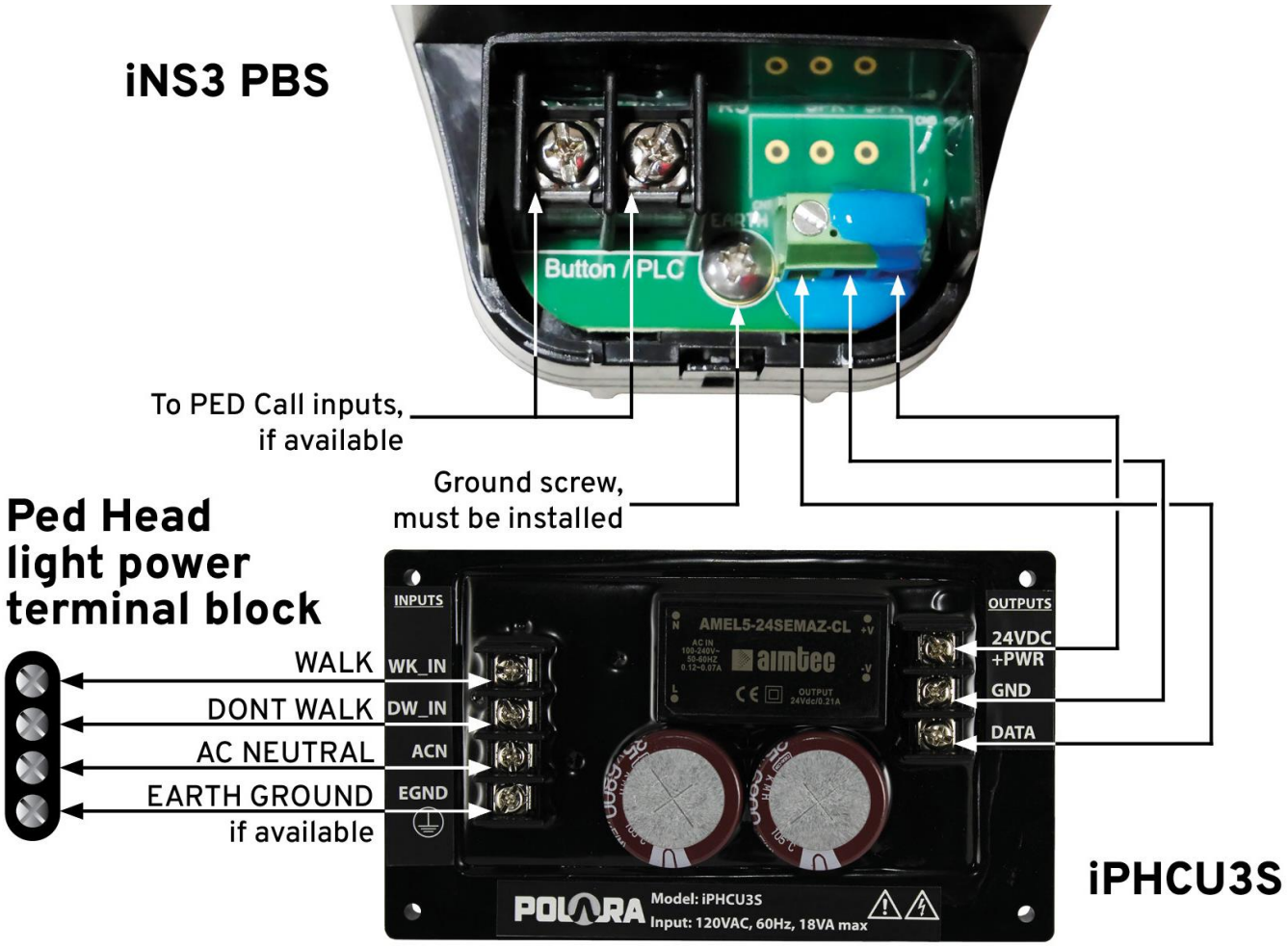
3.2 iPHCU3S

Note: Removing power from the pedestrian signal head during installation is recommended for protection from electric shock.

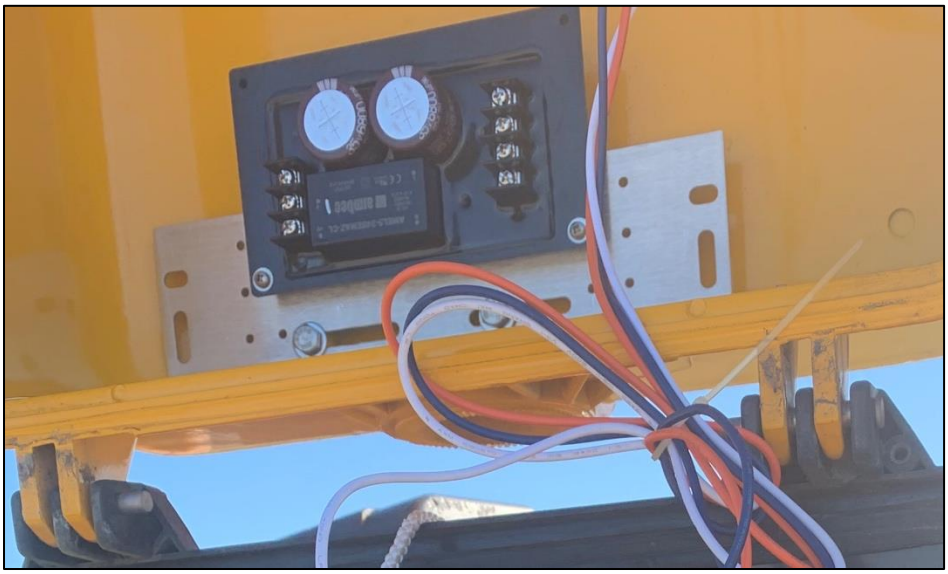
The iPHCU3S normally installs inside the Pedestrian Signal Head (PED Head). It is supplied with a hardware kit which includes a mounting plate and associated screws and nuts. The photo shows an example of a typical installation. Typically, tapped ¼-20 holes are present. If they are not, a hole (or holes) to match the mounting plate needs to be drilled and tapped. While a single screw is sufficient to secure the iPHCU3S bracket to the PED Head, a second screw may be used for additional stability. Distance between holes should be 9.3”.

Attach the iPHCU3S to the mounting plate with the supplied hardware. Insert the 6-32 screws and secure with the 6-32 nuts.

Fasten the assembly to the ped head with the ¼-20 screws.



iPHCU3S and iNS3 PBS Wiring (Reference Only)



iPHCU3S Installed in PED Head

Install jumper wires to connect the light power terminal block to the iPHCU3S input power terminal block. Install jumper wires for AC Neutral, Walk, and Don't Walk. AWG 18 or larger wire is recommended for this installation and should meet all applicable regulatory requirements.

Connect the wires from previously installed 3 wire cable to the output terminal block of the iPHCU3S. **Once all wire connections are made and double-checked for correct landings, restore power to PED Head.**

4. Technical Support Contract

Polara @ 903-366-0300 EXT 4 or 888-340-4872

Polara Enterprises, LLC
1497 CR 2178
Greenville, TX 75402

The latest version of this manual is available in PDF format at www.polara.com.

5. Using The Polara Field Service App for iOS to Change PBS Settings

All of the available setup and maintenance procedures may be performed using a compatible iOS device. Your device must have iOS version 9.0 or higher.

The Polara Field Service App will need to be installed on your device. For more information on installation, please visit Polara's web site - www.polara.com.

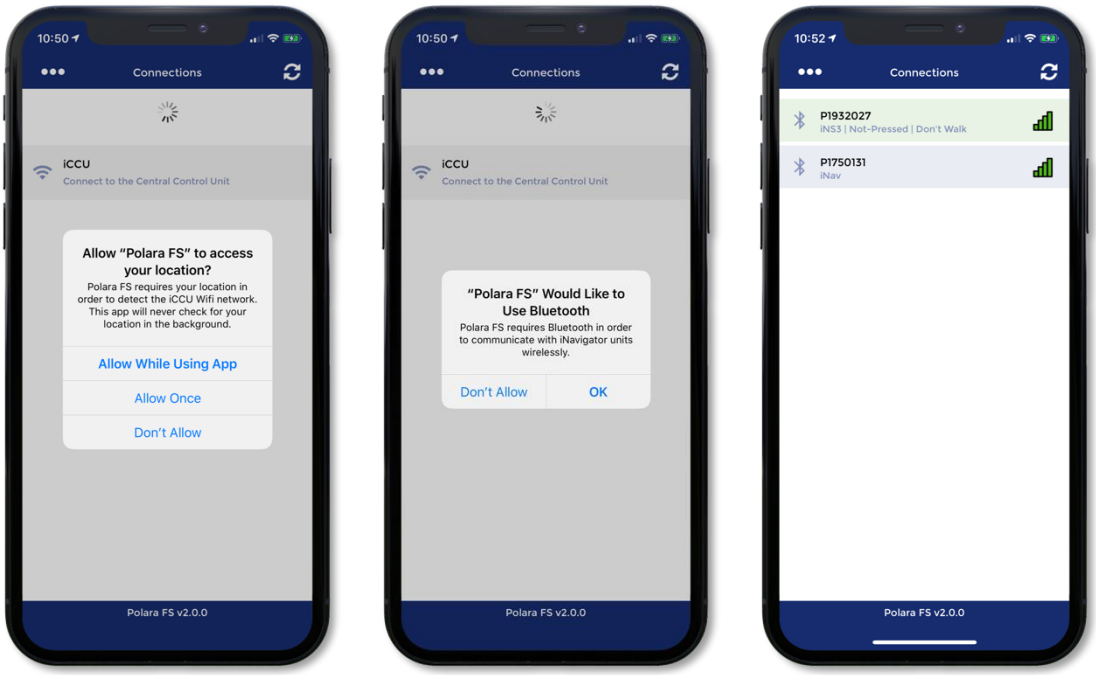
5.1 Bluetooth Connection

Before starting the Polara Field Service App, make sure your device has Bluetooth set to ON in Settings. Start the app.

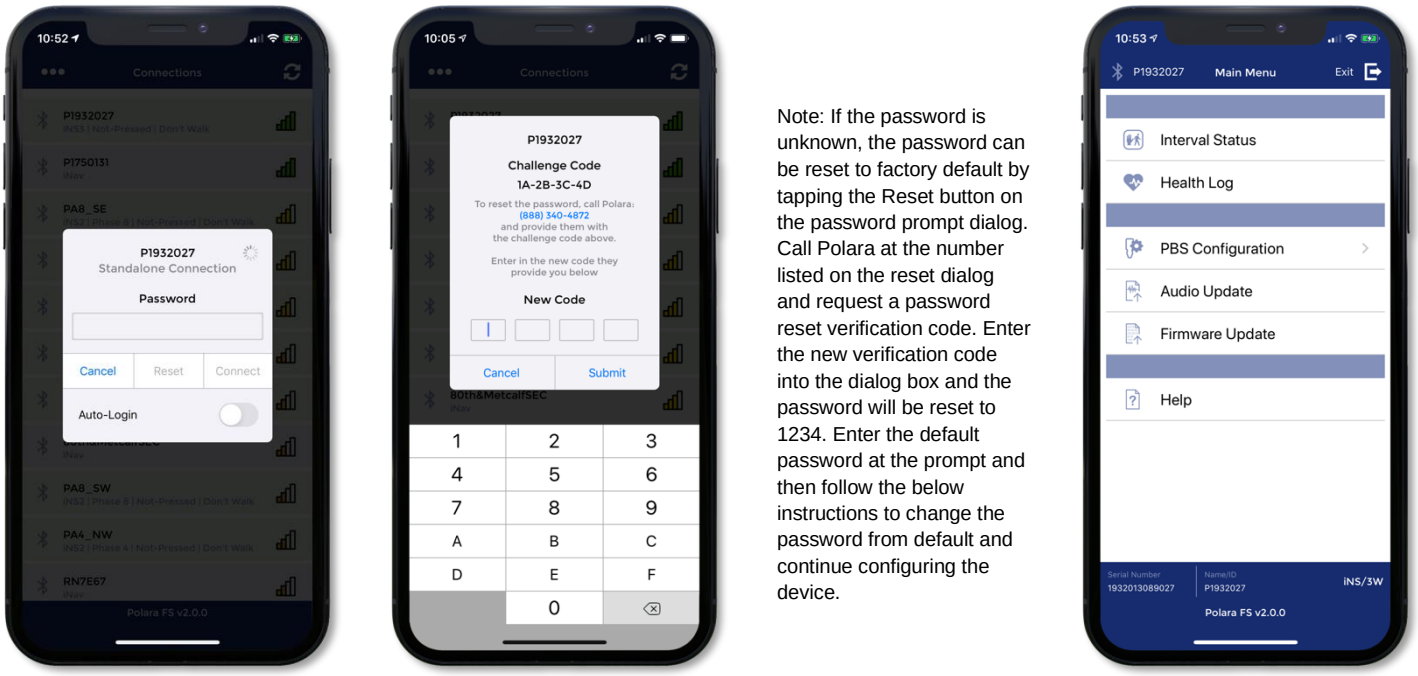
Upon first run of the Polara FS app, you will be prompted with two iOS dialogs for granting access. The Polara FS app needs access to iOS Location Services in order to gain access to the WiFi network information allowing the app to detect and connect to iCCU units. The app also needs access to Bluetooth in order to communicate with iNavigator units. Tap the appropriate action to allow the app to access these resources.

Note: Location is never tracked in the app and is never run in the background. Access to this feature is only necessary to gain the name of the connected WiFi network in order to detect iCCU units.

Tap the refresh symbol at the top right or pull down to refresh. This will display a list of all available devices within range. Tap a name to select, enter the password (factory default is 1234), then tap “Connect”. This will display the main menu.



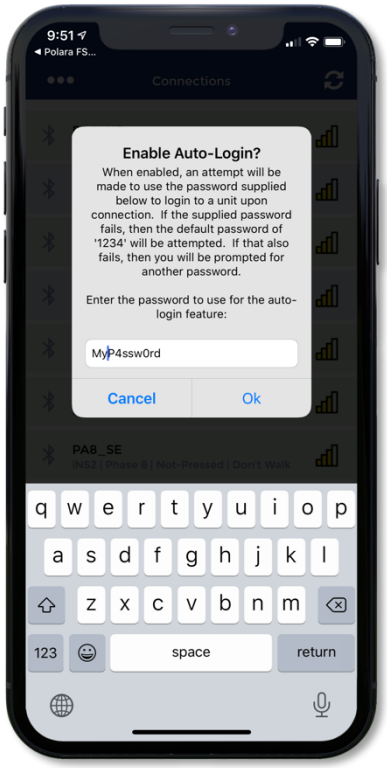
Enabling Location Services, Bluetooth and Device Connection Screens



Note: If the password is unknown, the password can be reset to factory default by tapping the Reset button on the password prompt dialog. Call Polara at the number listed on the reset dialog and request a password reset verification code. Enter the new verification code into the dialog box and the password will be reset to 1234. Enter the default password at the prompt and then follow the below instructions to change the password from default and continue configuring the device.

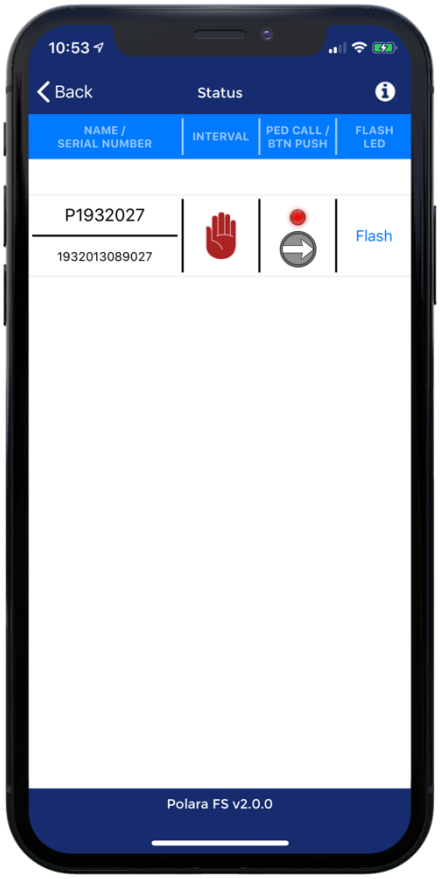
Password Prompt, Password Reset, and Main Menu

5.2 Auto-Login



For customers where the majority or all of the intersections used within an area have the same password, a feature is available to enable logging in without having to re-enter the password. After tapping on a device in which to connect, at the password prompt, flip the switch for Auto-Login and a prompt will appear for a password that will be stored. Once this password has been stored, upon any new connections, that password will automatically be tried. If that password fails, then the default password of 1234 will be attempted. If both password attempts fail, then the standard password prompt will appear.

To change a previously stored password, turn off the Auto-Login switch and then turn it back on.



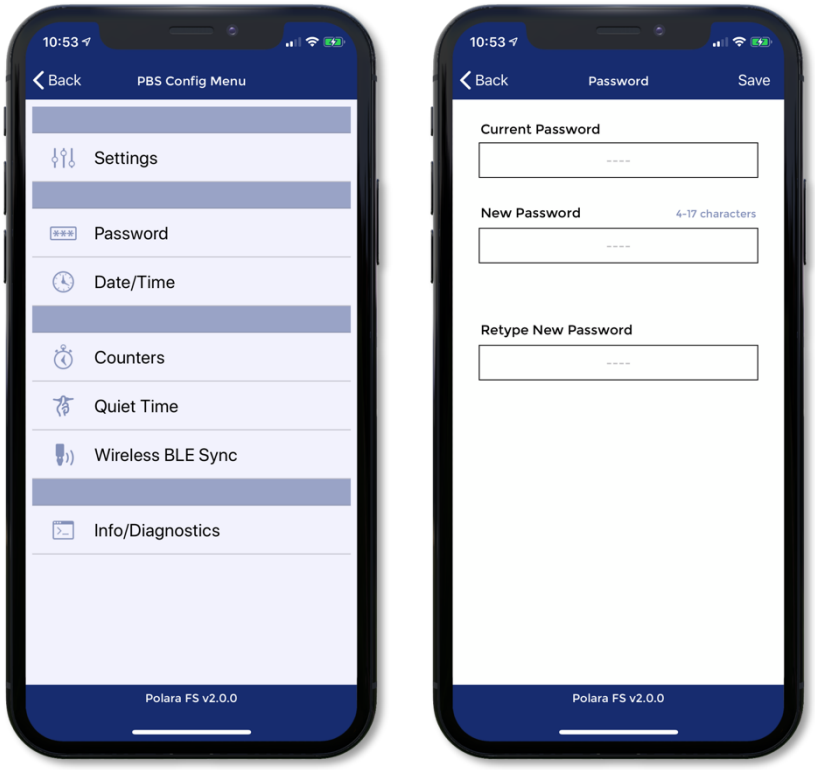
5.3 Interval Status

On the Status screen, the information is shown live from what is occurring in the PBS.

Tapping on the Flash button will flash the pilot LED on the PBS for a few seconds.

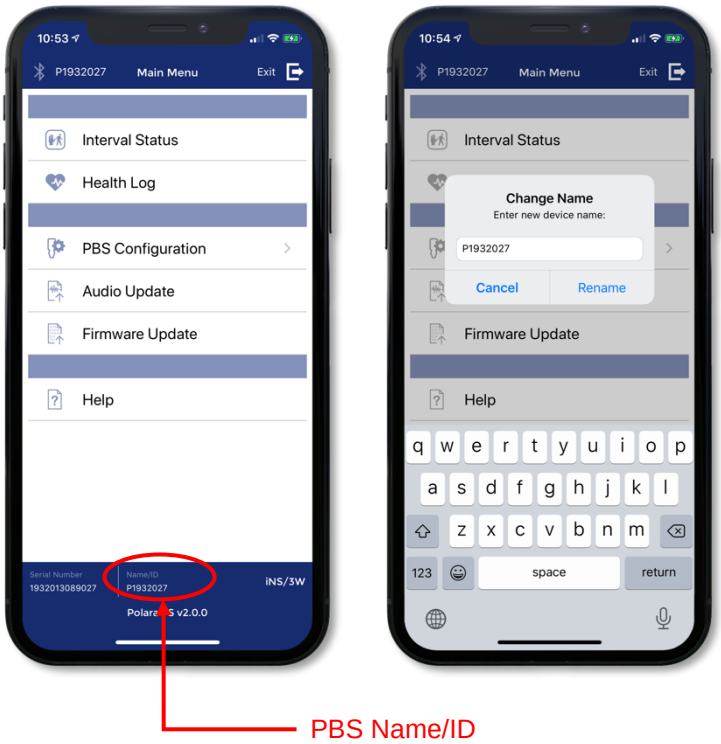
5.4 Changing the PBS Password

Each unit will require that the password be changed from default in order to avoid the repeating “Change Password” voice message. At the main menu, tap “PBS Configuration. Tap “Password” at the bottom of the screen. Tap in the boxes and enter the old and new passwords as shown on the screen below. Tap “Save” in the upper right corner.



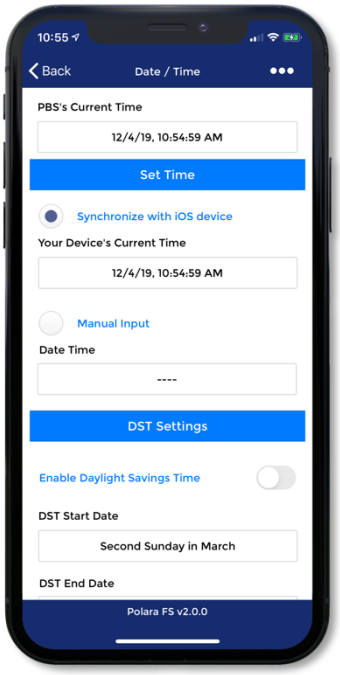
5.5 Assigning a Name to a PBS

Each PBS may be given a name to help identify it while performing configuration and updates. You may want to use a name that will include the location. While viewing the home page, tap on the current name at the bottom of the page. Tap in the name box and type a new name as desired, then tap “Rename”.



Note: The name can also be changed in the Info/Diagnostics screen within the PBS Configuration menu.

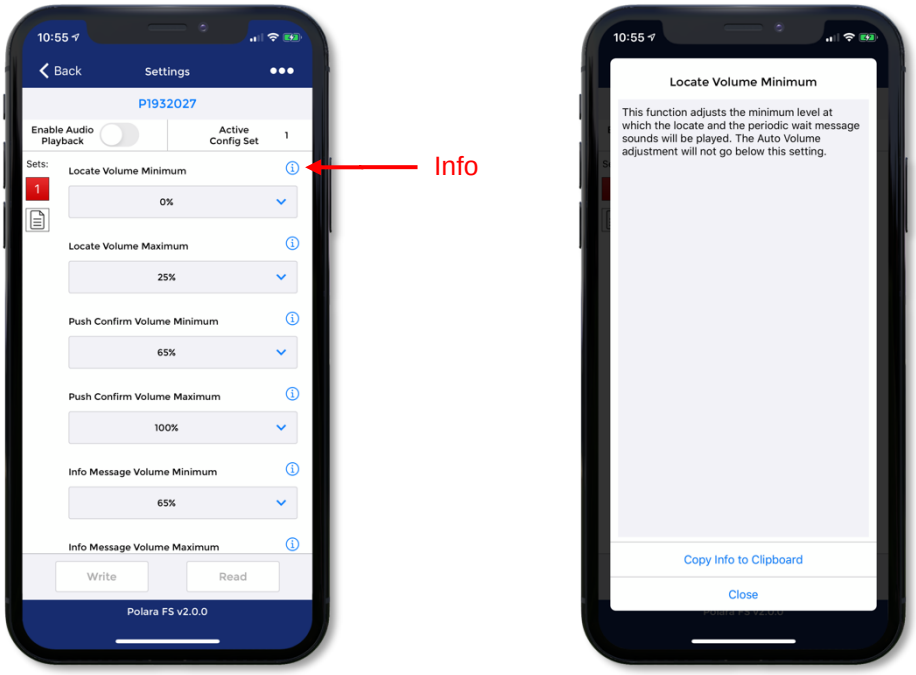
5.6 Setting the PBS Time and Date



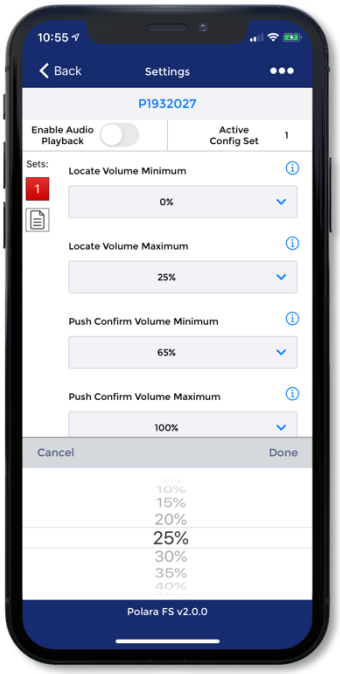
While viewing the main menu, select PBS Configuration, then select Date/Time. Tap to choose a method of obtaining the time, then tap on “Save” to update the PBS clock.

5.7 PBS Configuration Settings

From the main menu, select PBS Configuration and select Settings. This presents an extensive list of operational settings that may be adjusted according to desired operation. You can swipe the list up and down to find the setting to be changed. To the right of each setting title is an information button. Tap this button for a description of the setting.



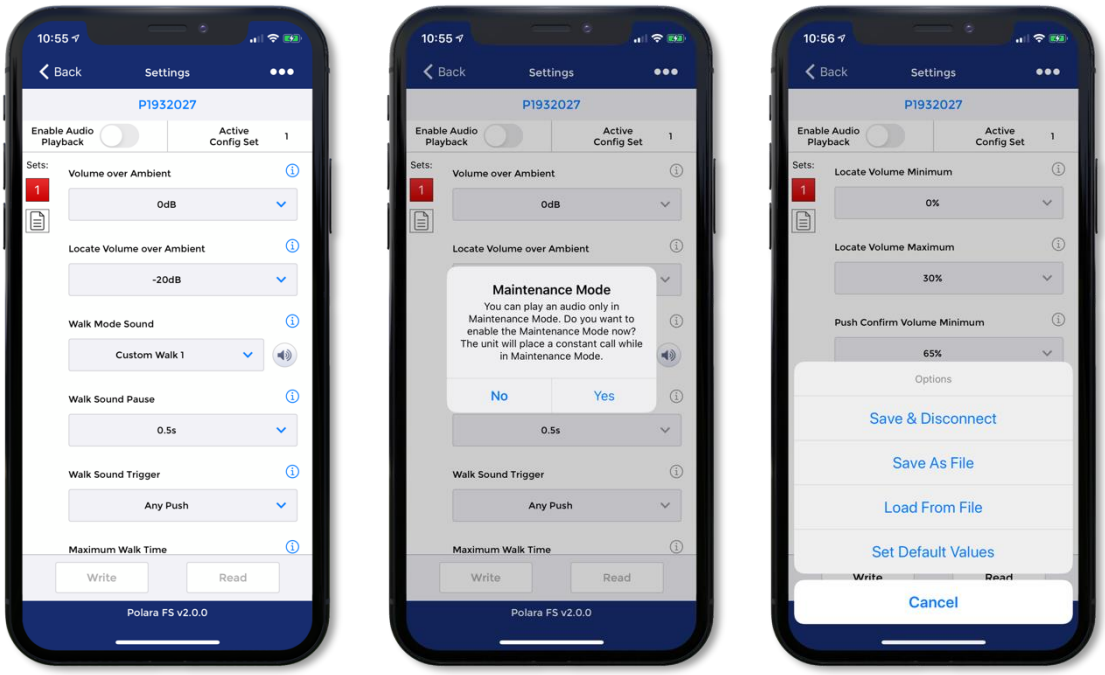
Tap in the option box to access the options for that setting. Swipe up or down to select an option. Press “Done” to select a new option or “Cancel” to proceed without any change. Tap the “**i**” (info button) for more information regarding the setting.



Options for selecting sounds have a button with a speaker symbol. To listen to sounds, use the slider to Enable Audio Playback. Then, tap the speaker symbol to listen to a sample of the sound. Sounds will play out of the PBS’s speaker. For

safety, the unit will need to go into Maintenance Mode and the LED will perform a three-flash pattern. Press Yes on the confirmation dialog to enable Maintenance Mode. In this mode, the unit's main button will not operate or respond to interval changes so a pedestrian cannot use it.

Tap the speaker symbol to listen to the selected sound. Sounds will play out of the PBS's speaker. Turn off the Enable Audio Playback switch to resume the unit's normal operation.



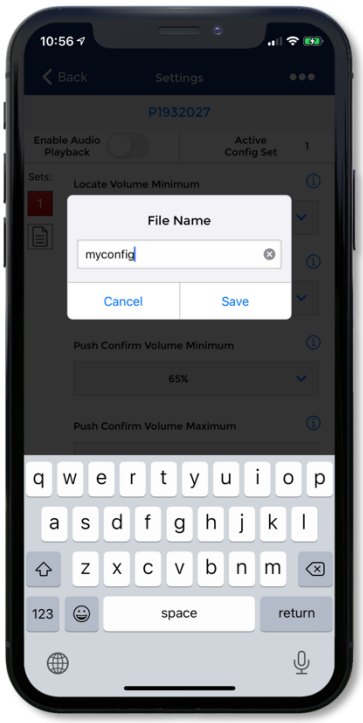
When you are finished selecting desired settings, tap the Write button to write the settings to the connected button. Tap the menu symbol at the top right to access additional options. After saving new settings to buttons, walk the entire intersection to test each PBS for proper operation to verify that the new settings work as intended.

The currently displayed settings may be saved to a file and recalled for later uploading to other PBSs. Tap “Save As File” from the options menu and enter a file name to create a file.

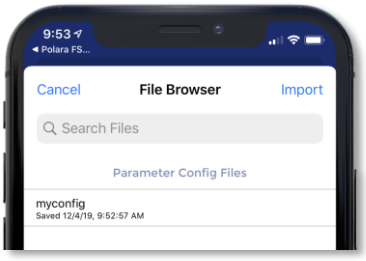
Tap “Load From File” to browse previously saved configuration files. Tap a file name and then tap “Select File” to load the settings into the iOS device’s clipboard. Tap the 1 to select the device configuration and then tap WRITE to save settings to the PBS.

Note: The configuration files only save the PBS Settings listed on this screen and do not apply to additional parameters on other screens such as Quiet Time or Wireless BLE Sync and also do not save audio files. Audio files must be extracted and uploaded separately.

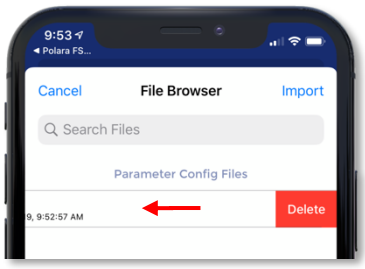
While in the File Browser, you can delete files, if necessary. To delete files, swipe from the right to the left to show the Delete button, then tap the Delete button. The configuration files are the same between all apps (iOS, Android, & PC) and can be used interchangeably.



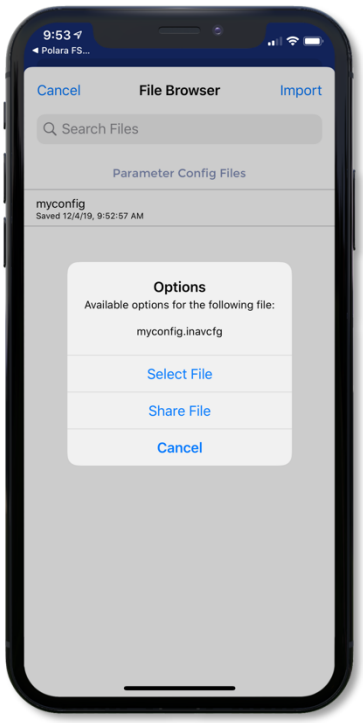
Save Dialog



Load From File



Swipe to Delete File



File Options

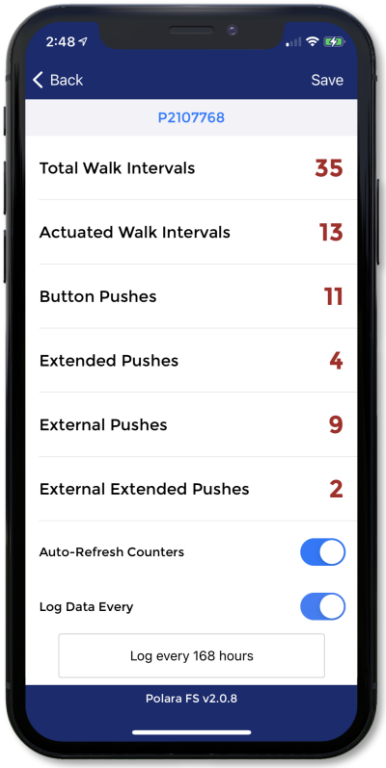
To email a file to another device, tap “Email File”. Enter an email address and tap “Send”.

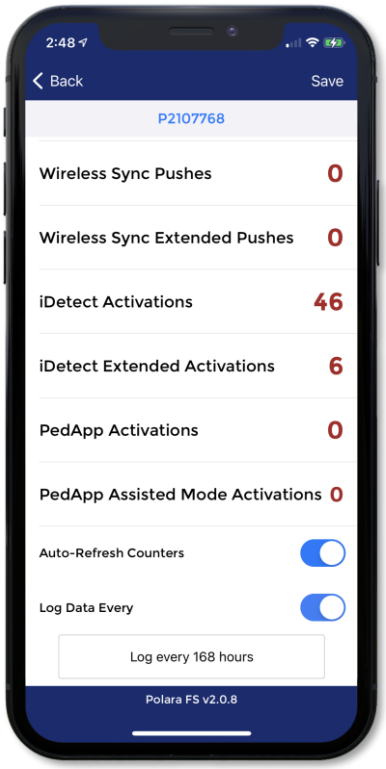
The button push force can also be adjusted from the PBS Configuration screen. Scroll down the page to find “Button Push Force”. Tap inside the setting box. Swipe to select Light, Medium, or Firm, then tap “Done”. Save the new setting as described previously.

5.8 Button Counters

From the Main Menu, select PBS Configuration, then select Counters. Each PBS keeps a count of events that have occurred in the button from the date of manufacture. These numbers act as a kind of odometer for the unit and cannot be reset. The counts are:

- Total Walk Intervals
  - The number of walk intervals the unit has received. This includes walk intervals which have been initiated by this PBS as well as walk intervals that occur while the intersection is in recall.
- Button Pushes
  - The total number of button pushes that have been detected by the PBS's arrow button. This does not include any detected button pushes that were caused by other PBSs on the same phase.
- Actuated Walk Intervals
  - The number of walk intervals which occurred following an internal button push. If the walk audio and button vibration occurred during a walk indication, then this counter is incremented.
- Extended Pushes
  - The number of extended pushes the PBS has detected on the arrow button.
- External Pushes / External Extended Pushes
  - Presses originating from another unit connected to the same button terminals. Short presses are listed as External Pushes, and long presses are listed as External Extended Pushes.
- Wireless Sync Pushes / Wireless Sync Extended Pushes
  - Short and Extended presses originating from a unit connected via the Wireless Sync feature.
- iDetect Activations / iDetect Extended Activations (iDS units only)
  - Pedestrian activations detected by the iDetect feature.
- PedApp Activations / PedApp Assisted Mode Activations
  - Pedestrian activations initiated using the PedApp.





In order to relate the above data to relative time, a logging feature is included which will add health log entries including all counters along with a timestamp at specific intervals. For example, if you want to log the data to find out how the counts change in a week, then enable Log Data Every and enter 168 hours. Tap Save in the upper right corner. Then, once a week, log entries will be added which include the counters.

5.9 Quiet Time

The iNS3 PBS has a feature to easily allow the button to become quieter at a specified time of day. This is useful, for example, when a residential street experiences a lot of traffic during the day, but very little in the evening. In this scenario, it may be useful to have the iNS3 PBS set loud enough to be heard over traffic during the day, but be nearly inaudible in the evening hours, as not to disturb residents living nearby. Quiet Time allows for a reduction in volume between a specified time interval within a 24-hour day.

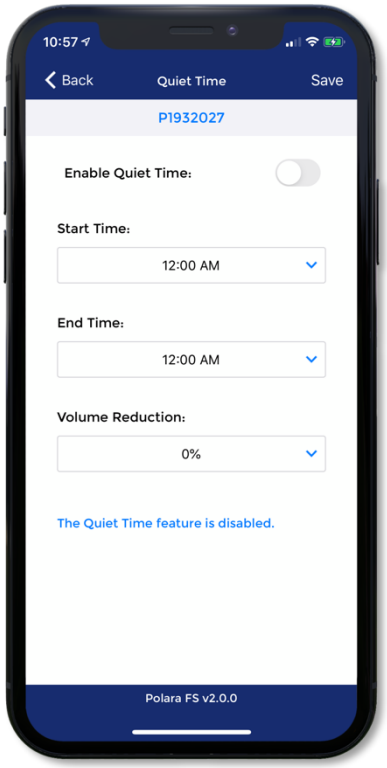
The details of the feature's operation is such that if the current time of day falls between the selected start and end time of the Quiet Time period, then all Minimum and Maximum volume settings will be reduced by the specified reduction amount.

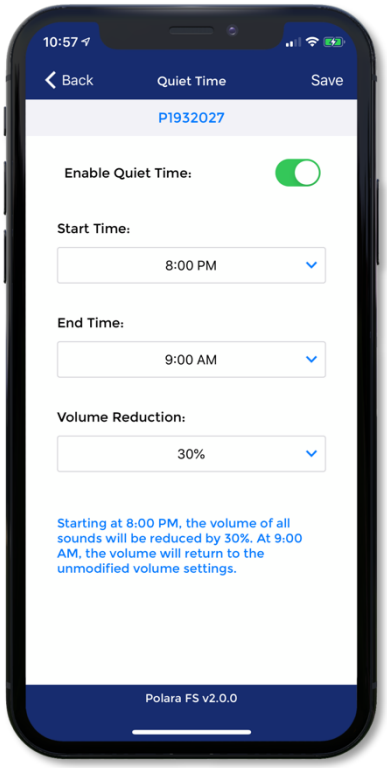
Note: The "Minimum" volume setting can be reduced down to 0%, but the "Maximum" volume setting will only be reduced down to 25%. This follows what is settable in the configuration parameters or settings screen.

The table below shows what the effective volume settings would be with the Quiet Time set to reduce the volume by 30%. With the values set as shown in the screenshots, between the hours of 9:00am and 7:59pm, the volume will be as set configured in settings (shown in the "set value" column). At 8:00pm to 8:59am the following morning, the volumes will be reduced as shown in the "reduced value" column.

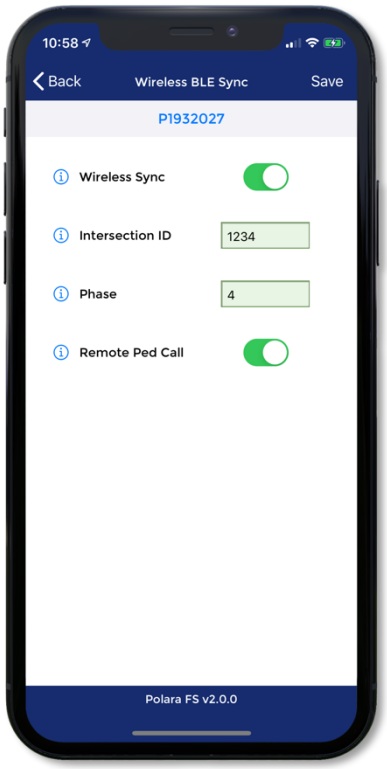
Setting Name	Set Value	Reduced Value
Locate Volume Minimum	0%	0%
Locate Volume Maximum	50%	25%
Information Message Minimum	65%	35%
Information Message Maximum	100%	70%
Std Walk Minimum	30%	0%
Std Walk Maximum	60%	30%
Ext Walk Minimum	60%	30%
Ext Walk Maximum	80%	50%

From the PBS Configuration Menu, select the Quiet Time icon at the bottom right of the page. Enter the desired settings, then tap the Save button.


10:57
Back
Quiet Time
Save
P1932027
Enable Quiet Time:
Start Time:
12:00 AM
End Time:
12:00 AM
Volume Reduction:
0%
The Quiet Time feature is disabled.
Polara FS v2.0.0


10:57
Back
Quiet Time
Save
P1932027
Enable Quiet Time:
Start Time:
8:00 PM
End Time:
9:00 AM
Volume Reduction:
30%
Starting at 8:00 PM, the volume of all sounds will be reduced by 30%. At 9:00 AM, the volume will return to the unmodified volume settings.
Polara FS v2.0.0

5.10 Wireless Sync



Use this feature to configure PBS to PBS wireless links for units that do not have PED call wiring to the traffic signal controller. This function provides a link between PBSs on the same PED phase such that a button press on one unit enables the Walk and Clearance sound on the other units. Both standard and extended push status is transmitted.

Display the main Configuration page. Tap ‘Information’ at the bottom of the screen. On the Information screen, tap ‘Wireless Sync’.

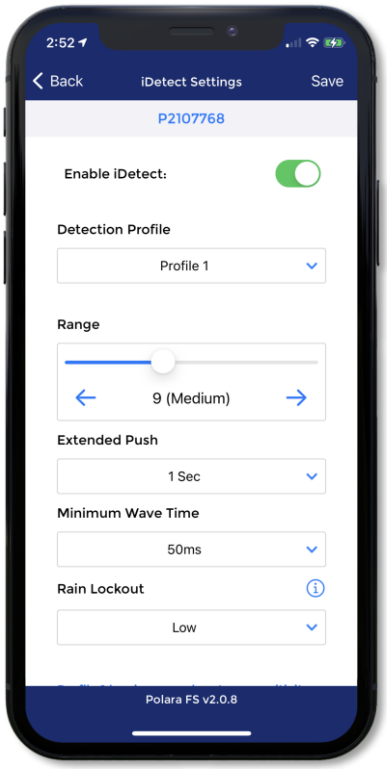
Enable this function by tapping the ‘Wireless Sync’ switch at the top of the screen.

The Intersection ID is used to prevent any possible interference between nearby intersections which are also using this feature. Tap the ‘Intersection ID’ box and enter a number (up to 9 digits) and tap ‘Save’. Any number is acceptable as long as it is different from that used on any nearby intersection. In the same manner, enter the PED phase number for this PBS. Each PBS should be configured using the same procedure. PBS units with the same Intersection ID and Phase numbers will exchange button push information. Note: The Intersection ID is shared between the Wireless Sync feature and the PedApp feature. The ID can be changed in both the Wireless Sync settings page and the PedApp Intersection Info screen, but they refer to the same ID.

When the Remote Ped Call option is enabled, if that unit receives a button push indication from a Wireless Sync transmission, then it will also cause a Ped Call indication in the form of a contact closure on the terminal block wires to the traffic cabinet. This can be useful if one side of intersection has button wires to the traffic cabinet but the other side does not. Then any button pushed form the unit without wires can transmit the button press status wirelessly to the other unit causing a Ped Call to be asserted. In this situation, only the units with button wires going to the traffic cabinet should have this option enabled.

Note: In iNavigator (iN3) units, when the Wireless Sync feature is active, the PBS will not accept Bluetooth connections from the Field Service app. However, 5 seconds after an Extended Push, the PBS will accept connections until the start of the next Clearance cycle. iNS units do not have this limitation.

5.11 iDetect Settings



iDetect brings touchless actuation to APS and is an added feature in all iDS APS buttons. There are many technologies that can facilitate touchless actuation, but each has strengths and weaknesses. Polara has chosen to use radar technology because of its performance, reliability, and resistance to vandalism. The intent of iDetect is to provide touchless actuation within a sensing range of 2" to 6". A basic configuration of iDetect is necessary after installation is complete (e.g., the APS is mounted to the pole properly, the button cover is installed, and the sign is installed).

Settings for the performance of iDetect functionality can be modified in the iDetect Settings screen. This screen can be found from the Main Menu by selecting PBS Configuration and then iDetect Settings.

The iDetect function can be completely disabled by turning off the Enable iDetect switch. This switch must be enabled in order for iDetect to be operational.

Make the desired setting selections based on the information below. When the desired settings have been selected, tap the Save button to apply the settings.

5.11.1 Detection Profile

The Detection Profile selects sensitivity and detection schemes.

- Profile 0 (zero) uses a basic wave detection scheme. It is not recommended for use in new installations and only remains for backward compatibility. It is recommended to update the iDS unit to the latest firmware and use Profile 1 for greater sensitivity.
- Profile 1 (one) has increased system sensitivity and includes a Minimum Wave Time setting.

5.11.2 Range

The Range setting adjusts how close or far away the iDetect feature will detect movement. This setting may need to be modified based on which size sign is installed in order to optimize the detection range. A lower setting will limit the user's hand to a very close proximity (~2") to the unit before detection occurs, whereas a higher number will open detection to a slightly further distance (~6") before detection occurs. The settable range goes from a setting of 0 to 24. The factory default value is 9.

5.11.3 Extended Push

The Extended Push setting will change how Extended Pushes are handled by iDetect. The settable options include disabling the detection of Extended Pushes (Off), Override Short Push, and detection times of 1 second to 3 seconds in ½ second increments. The factory default value is 1 second. When this option is set, the user must continuously move their hand near the unit for the set time. When the user's hand first approaches the unit, the "Wait" (or configured Button Push Confirmation sound) will play. Then as they continue to move their hand (e.g., in a circular pattern near the unit), after 1 second the configured Information Message sound will play. If Override Short Push is selected, then instead of the "Wait" sound, the Information Message will be heard and the Extended Push volumes will take effect for the Walk and Clearance intervals.

5.11.4 Minimum Wave Time

Minimum Wave Time (Profile 1 only) sets the amount of time that a wave must be performed before the call is activated. The settings are in milliseconds and the available options are 0ms, 50ms, 250ms and 500ms. The factory default is 50ms. This setting can be adjusted if false activations are common. Note: The Minimum Wave Time does not increase the timing of the Extended Push, so if the Minimum Wave Time is set to 500ms (which is ½ second), the user must wave for ½ second to hear the "Wait" sound. Then, if the Extended Push setting is set to 1 sec, the user must continue waving for another ½ second to hear the Extended Push sound. If the Extended push setting is set to 1.5 sec, then the user will wave for ½ second to hear "Wait" and then continue waving for another full second to hear the Extended Push sound.

5.11.5 Rain Lockout

The Rain Lockout feature (Profile 1 only) temporarily disables iDetect for the selected duration of time if the iDetect sensor detects activations during an active walk cycle. The expectation is that pedestrians would not be attempting to activate the PBS while the walk message is playing and the button is vibrating. Therefore, if activations are detected during that time, then it is assumed that they are likely caused by rain so the Rain Lockout feature will disable additional ped calls for the set duration. The feature is disabled when the setting is set to Off. See the table below for the behavior for the remaining settings.

Setting	If activations are detected during the walk cycle, iDetect will be disabled for the following duration:	Lockout automatically turns off if no additional activations occur during the following duration:
Low	15 minutes	1 minute
Medium	30 minutes	2 minutes
High	1 hour	3 minutes

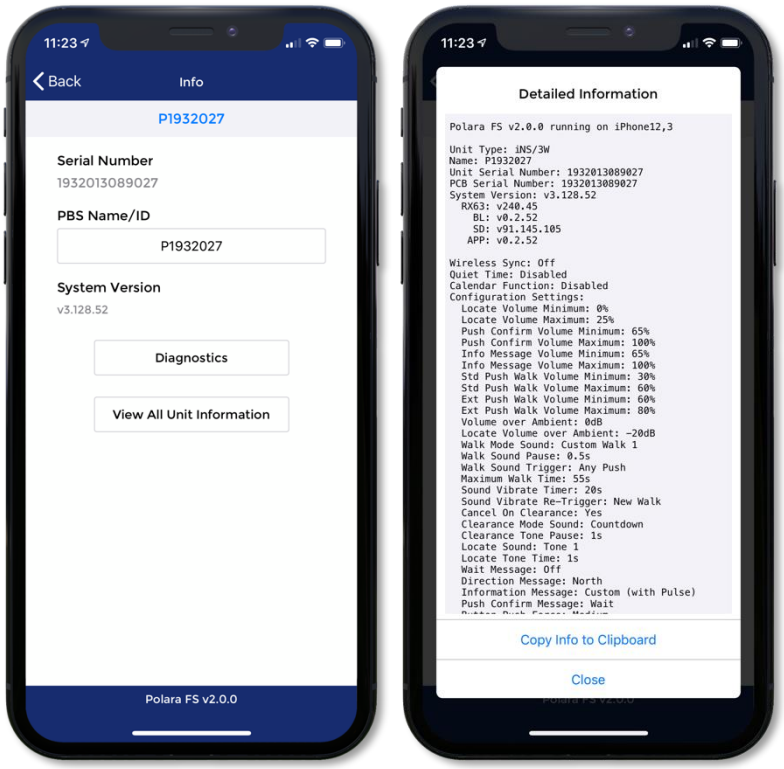
5.12 PedApp Settings

The iNS can be configured to work with the Polara PedApp, which is available for iOS via the App Store and for Android via Google Play. When the buttons at an intersection are configured for use with the PedApp, they allow pedestrians to place calls for the desired crossing, without touching the buttons. Additional features to help the visually impaired include text-to-speech to speak the street names of the intersection and increased locate tones for the target button, to help find the button associated with the desired crossing.

To configure the iNS for use with the PedApp, please refer to the PedApp Configuration Guide available in the Help menu of each Field Service application and also on the Polara website.

5.13 Viewing iNS3 Button Information

Tap on Info/Diagnostics when viewing the PBS Configuration menu and you will be presented with the PBS Information screen. In this screen, you can view the serial number, ID, and Firmware version of the iNS3 unit. You can rename the unit by tapping on the name. If you tap on the “View All Unit Information” button, you will be presented with a dialog containing all information about the factory and user-settable settings within the unit. Note: This information is also prepended to the health log when exported to file.



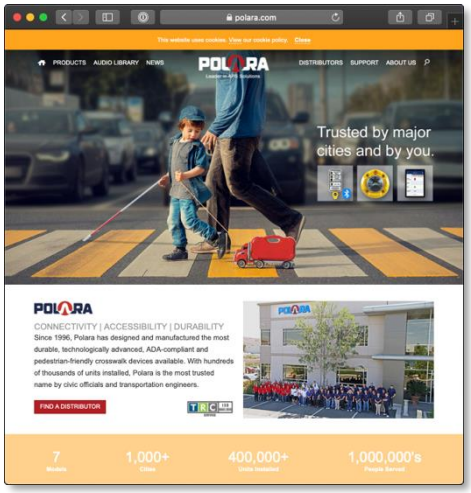
6. Using the Polara Field Service App for iOS to Upload Audio Files

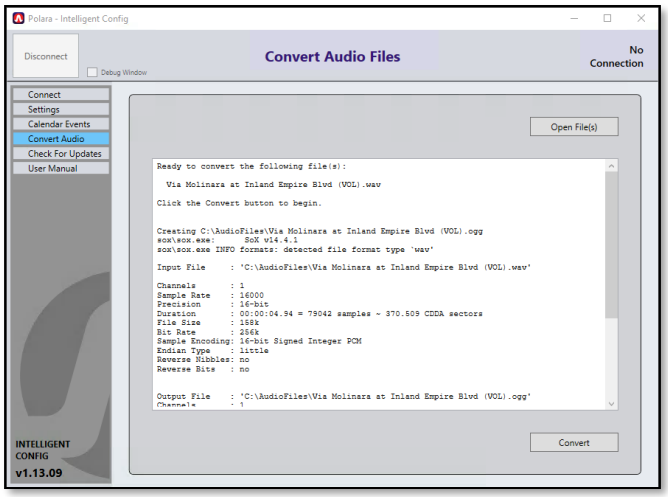
6.1 Preparing Audio Files

The audio files which are played in the iNav units are encoded using the open-source Ogg Vorbis codec. Polara provides professionally recorded custom audio files on the website. Go to Polara.com and click on the Audio Library option. You can search for audio files which have already been recorded if the streets on the desired intersection are common. However, you can also request to have messages recorded for you by clicking on the Request Custom Message option and filing out the form on the website.

If you wish to record your own messages or already have messages in another format (such as .wav or .mp3), these messages can be converted to the specific Ogg Vorbis format needed by the iNav devices by downloading the Intelligent Config application (also available on the Polara.com website) and using the Convert Audio option.

Note: Customer-recorded audio messages must use the Intelligent Config app to convert to the proper audio format. The built-in Ogg compressor in other audio programs will not use the proper settings and the audio will sound garbled when installed in an iNavigator.





Once you have your .ogg files prepared, they must be transferred onto your iOS device. Files can be transferred to the Polara FS app using a variety of methods:

- E-mail the file to an account on your iOS device and tap the file, then choose Open in Polara FS. Note: This works best in either the built-in Mail app. Some apps like Microsoft Outlook do not offer the option to open the file in the Polara FS app. If this is the only mail application available, use one of the alternative methods to import the file.

- Store the file or files using a cloud-based storage utility such as Dropbox, iCloud Drive, Google Drive, Microsoft OneDrive, and others. Then use the iOS “Files” app to copy the files into the Polara FS audio directory or access the Share feature of the file to open the file in Polara FS. This method can be used to import large groups of messages into the Polara FS app.

- Download the ogg file from the Polara.com website into the iOS Downloads directory and then import it using iOS the Files app. This method is demonstrated in detail in the following pages.

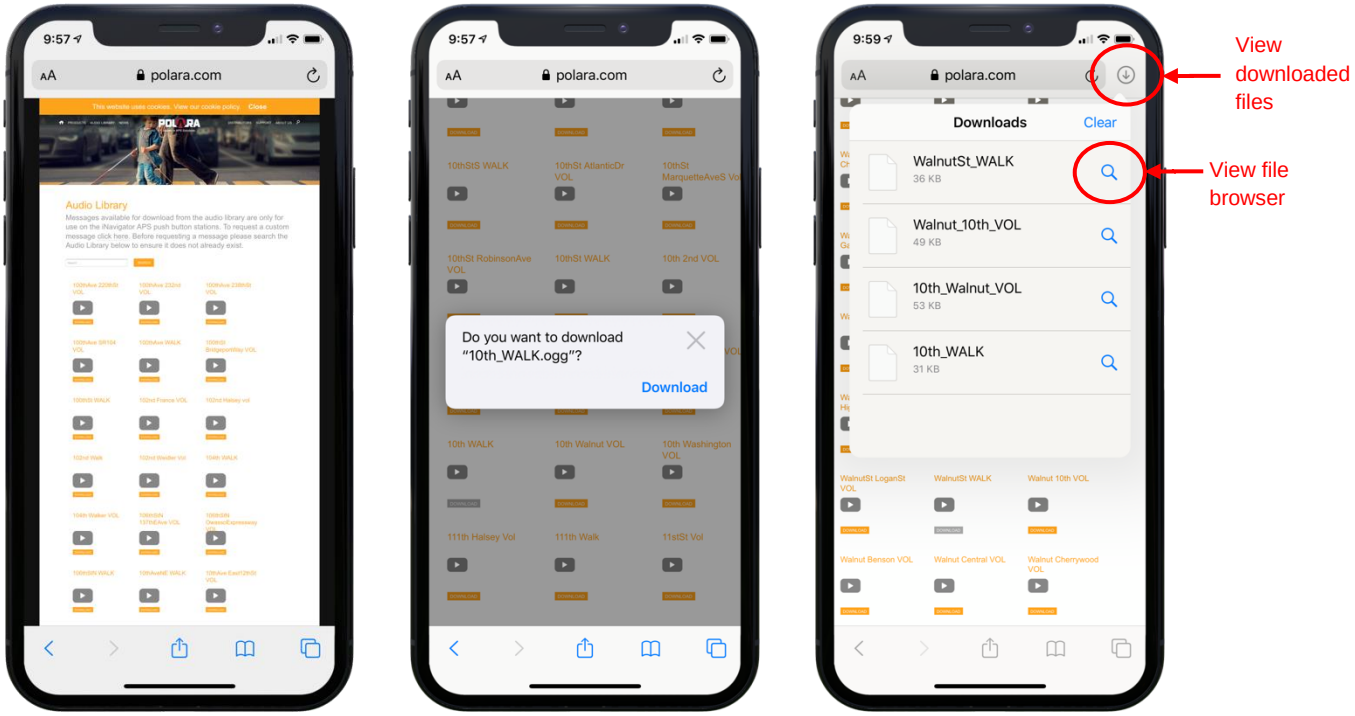
- Within the Polara FS app while not connected to a device, tap the three dots in the upper left corner and select Audio Files, then tap the Import button in the upper right corner of the File Browser. This will open a system file browser that will allow you to select files that have been downloaded into the iOS file system and access files from cloud-based storage apps.

6.2 Download Audio Files from Polara.com

The following procedure is demonstrated using iOS 13. Other versions of iOS may behave differently.

Open the Safari app and browse to Polara.com, then zoom in and tap the Audio Library link on the top left of the page. Search for the audio message(s) of your chose. Then zoom in and tap the Download button. A confirmation box will appear. Tap the Download button. The file will download, and a new button will appear in the top left of the screen with file transfer status. Tap the download button for other audio messages until all the desired messages have been transferred to the Downloads folder.

Tap the icon with the circle and down arrow to access the Downloads folder and tap the magnifying glass next to one of the files.

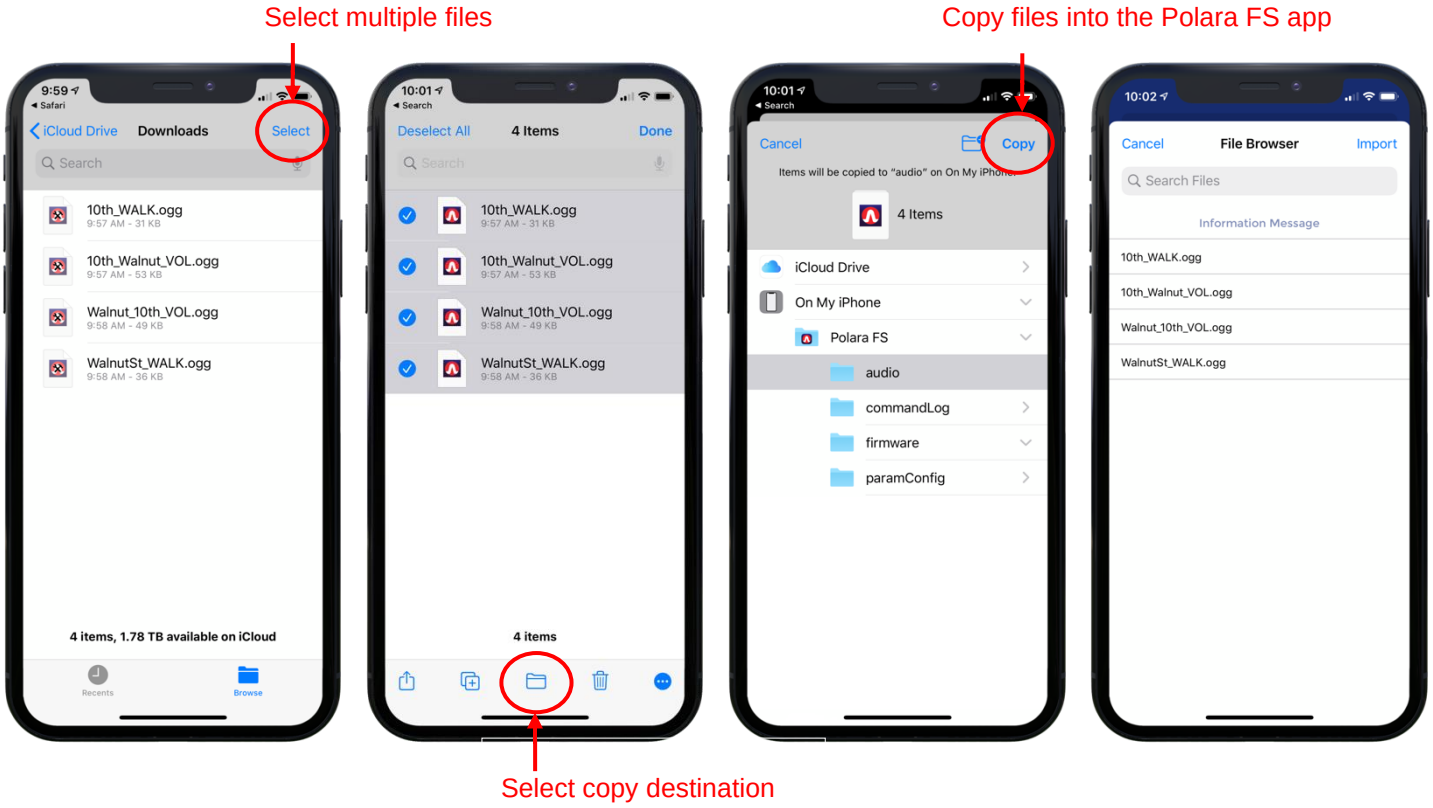


A file browser will open to the Downloads folder. Tap the Select button in the upper right corner of the screen, then tap on each file you wish to import into the Polara FS app.

Tap the folder icon at the bottom center of the screen. This will bring up another browser which allows you to select the destination folder for the files. Tap to expand the On My iPhone folder, then select Polara FS and choose the audio folder. Then tap the Copy button in the upper right corner.

This will copy all selected files into the Polara FS app.

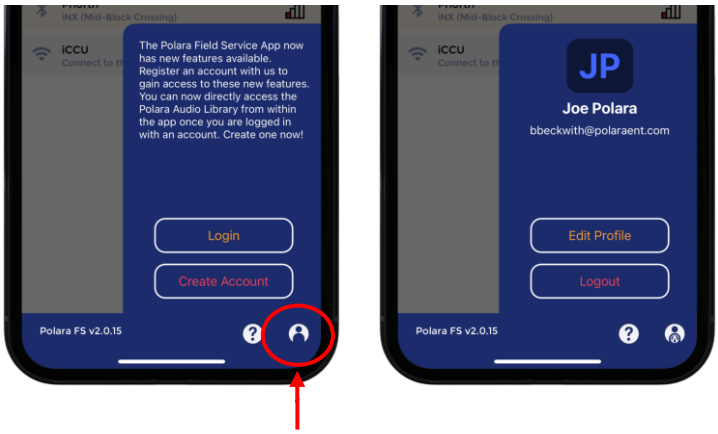
Open the Polara FS app and open the Audio Files browser and the imported files will appear.



6.2.1 Audio Library

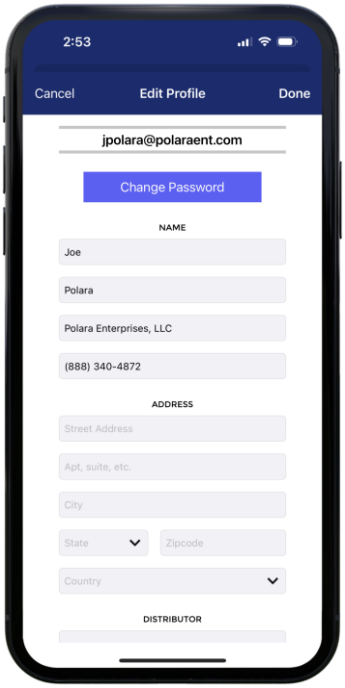
The library of audio files that have been recorded and are available from Polara on the website is accessible directly via the Field Service App through the Audio Library screen.

Access to the Audio Library is available only after creating a user account through the app's profile interface. Tap the User Profile icon in the bottom right corner of the app to open the menu and tap Create Account. Only a name, e-mail address, and password are required to create an account. Once the account is created, a verification e-mail will be sent. Enter the code from the e-mail into the verification code field on-screen to finish account creation. Once you are logged into your account, your name and e-mail are shown in the User Profile menu.



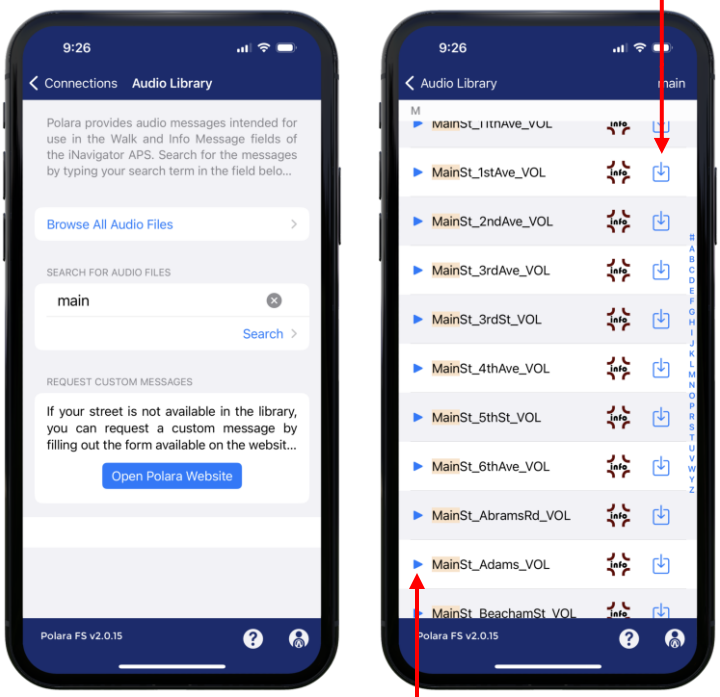
Tap to open User Profile screen.

You can add additional information by editing your profile. This will allow you to associate an address, phone number, and company name to the user profile.



Once you are logged in, then tap on the Audio Library option in the main menu to access the search screen. Enter the name of the street to search for and tap Search. A results screen will appear with all audio files containing the search term(s). Tap on the play icon to hear the audio file. Tap on the download button to import the file into the app. Once the file is imported, the file can be uploaded to an iNav by following the instructions on the following pages.

Tap to download audio message

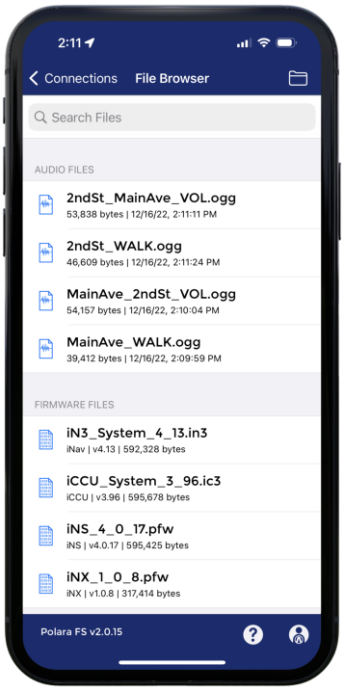


Tap to hear audio message

Note: A connection to the internet is required to create a user account and search for audio messages.

Audio files can be managed by tapping the File Browser option in the Main Menu.

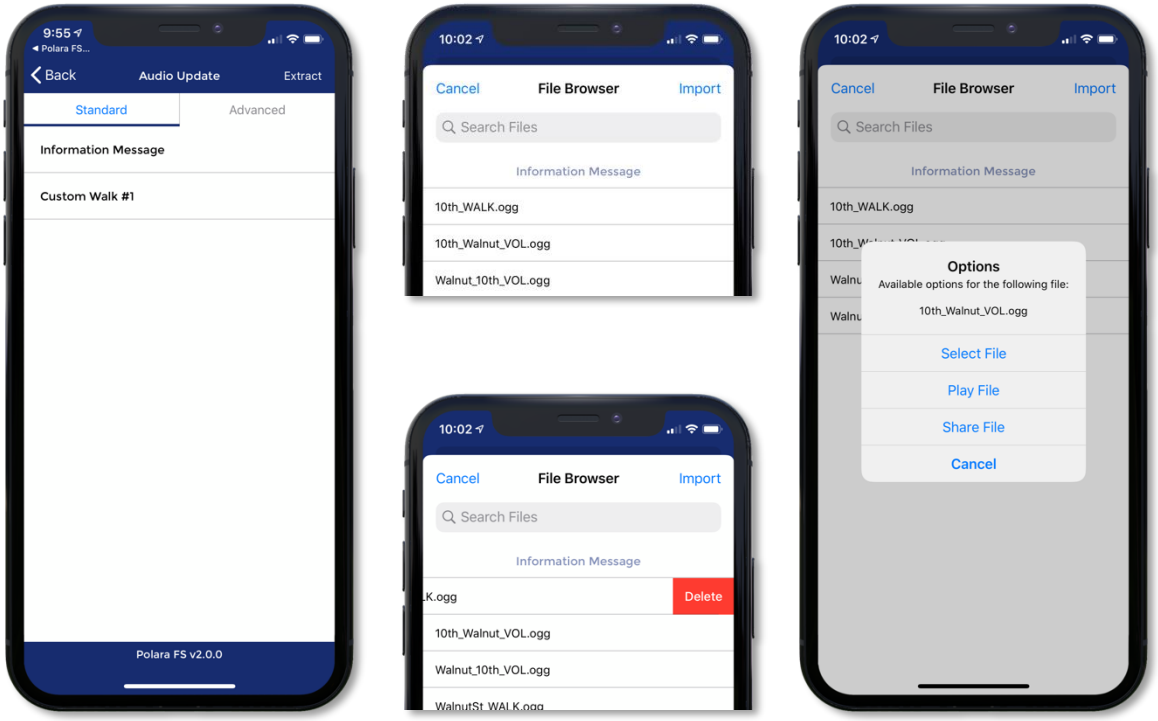
You can play, export, or delete files from the File Browser.



6.3 **Sending Audio Files to iNav Device**

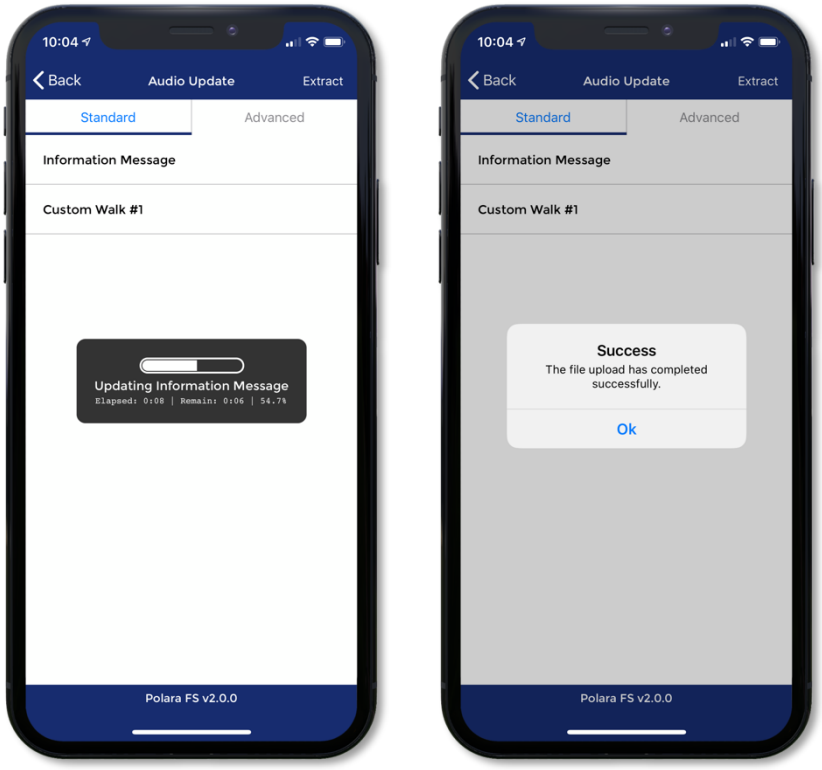
From the Polara App main menu, Tap on “Audio Update”.

To add a new Information Message file, tap on “Information Message”. This displays a list of available voice files loaded into the Polara FS App. Tap on the name of the file you wish to load as the Information Message sound in the PBS. Then tap the Select File button. You can also preview the file by pressing Play File or Share the file through E-Mail and other services. To delete files, swipe from the right to the left to show the delete button, then tap the Delete button.



Note: Files ending with the suffix VOL should be loaded as an Information Message and files with the suffix WALK should be loaded as Custom Walk.

As soon as the Select File button is tapped, the file will begin to upload. Once the file has completed uploading, press OK on the dialog box to return to the Audio Update screen.

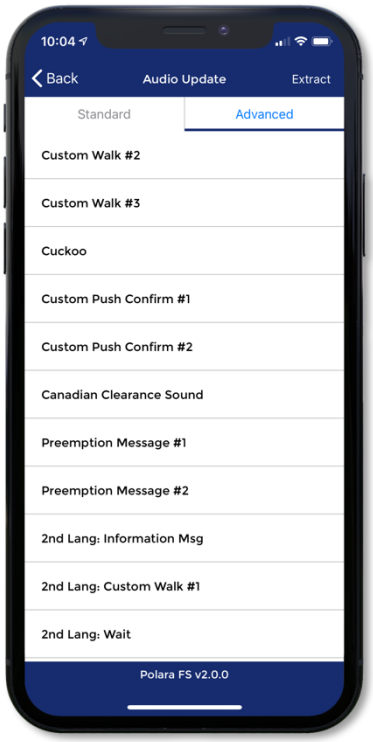


Repeat this process for each file to be uploaded. Typically, a custom set will include two files, one for Information Message and one for Custom Walk #1. To enable these new custom files, go to PBS Configuration and set the Information Message option to “Custom”, and set the Walk Mode Sound option to “Custom Walk #1”.

Finish by walking the intersection to confirm the system is both operating properly and playing correct messages.

Additional sounds can be modified for specific circumstances. The following view shows the additional sounds that can be uploaded using the iOS app by tapping the Advanced tab.

If additional audio sound customization is required beyond what is listed in the Audio Update screen, use the Intelligent Config PC Application for more audio upload options, including adding additional second language audio files or replacing Countdown files. An iN-DGL dongle is required for connection to an iNav unit using the PC. Contact your distributor to obtain an iN-DGL if you do not already have one.



6.4 Extract Audio Files

The same messages that are available to be changed via Audio Update can be extracted from the PBS. This feature requires firmware version v3.199 or greater in the iNav unit.

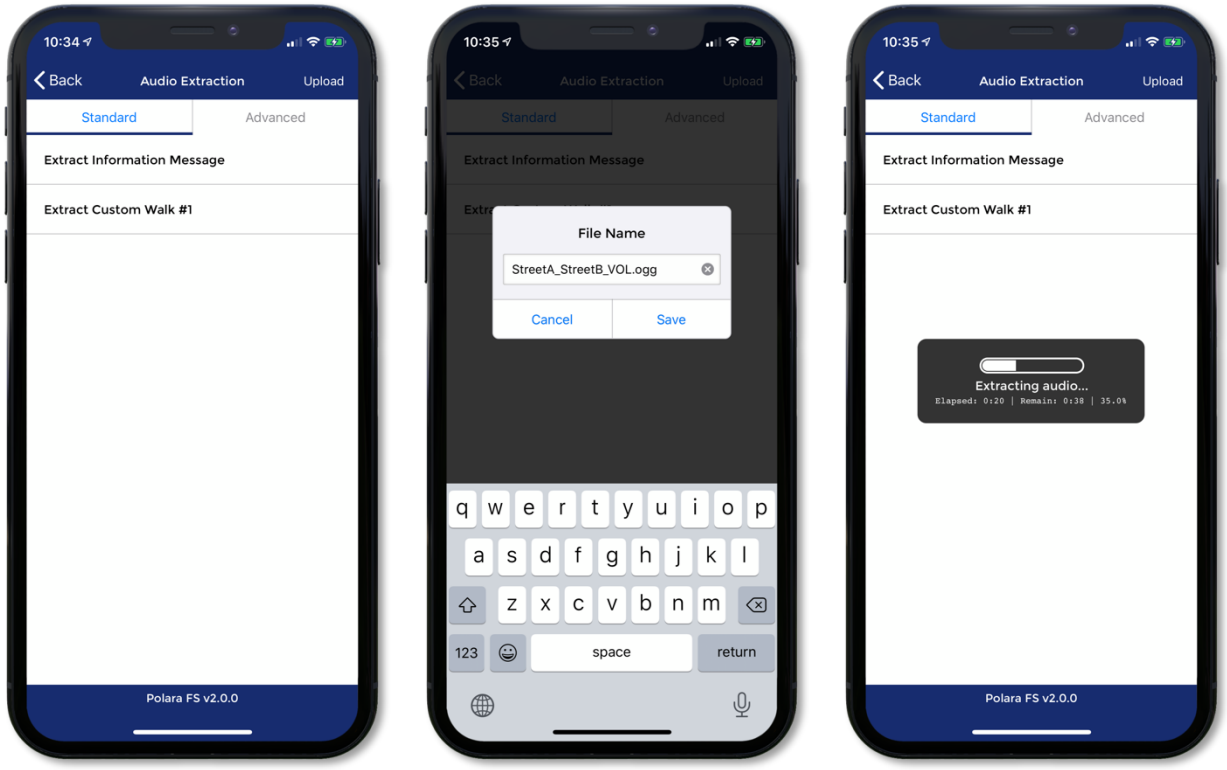
From the Polara App main menu, Tap on “Audio Update”

Tap the “Extract” button in the upper right corner of the Audio Update screen.

All options on screen should change to add the word “Extract” to the front to indicate that you will be extracting the selected message from the unit.

It is recommended that you listen to the message prior to extracting it so you know how the message should be named. Perform an extended push on the unit to hear the Information Message and then wait to hear the Walk message, or use the sound play feature in the Settings screen.

To extract the Information Message, tap the Extract Information Message option.



You will be prompted to add a filename for the extracted file. Name the file appropriately for the intersection streets. For example, the intersection of Broadway and Main would have an information message named “Broadway_Main_VOL” and the corresponding walk message would be “Broadway_WALK”.

Tap Save to begin extraction.

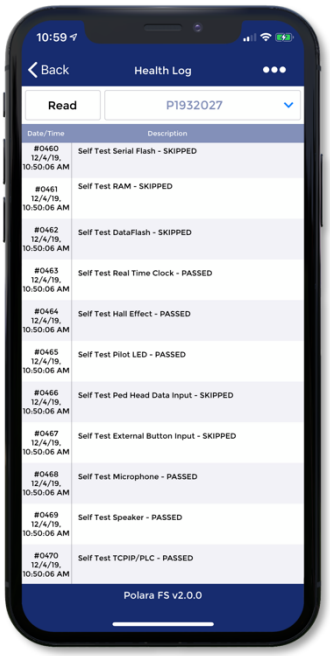
Once extraction is complete, you can extract additional messages from the unit or tap the Upload button to switch to upload mode.

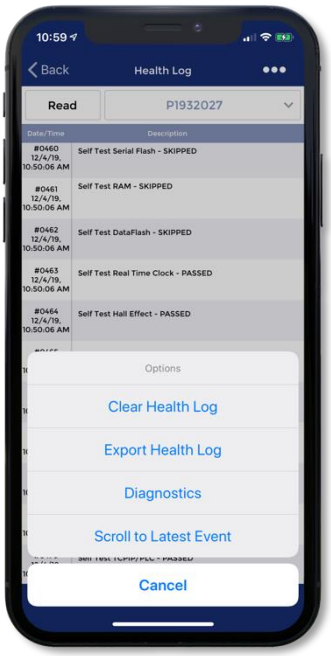
You can view the extracted messages by disconnecting from the iNav unit and tapping on the three dots in the upper left corner of the screen and selecting the “Audio Files” option. From this screen you can play the audio files or send them to another application, such as e-mail or Dropbox.

7. Using the Polara Field Service App for iOS to Access the Health Log

The Health Log contains a list of events, including both normal conditions and error conditions. Each PBS maintains a separate log. These can be very useful for troubleshooting.

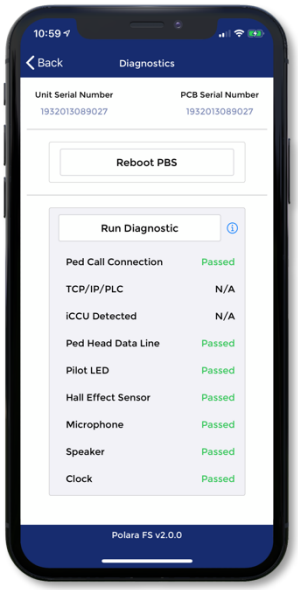
Select “Health Log” in the Polara App main menu. The Name / ID of the currently connected device is visible at the top. To read the Health Log from this device tap “Read”. The current log is downloaded and displayed. Swipe the screen to browse through the log. Tap the menu symbol at the top right to access a list of actions. The menu symbol is shown as three dots. You can choose to clear the log, export the log to an email address, or access diagnostics. For help with a particular issue, or a message of concern, email the log to support@polara.com. Note: You must tap the Read button prior to exporting the health log, otherwise the health log export will only include device information and not the entire health log of the unit.





Selecting “Diagnostics” will show some self-testing and maintenance options as shown in the sample screens below.

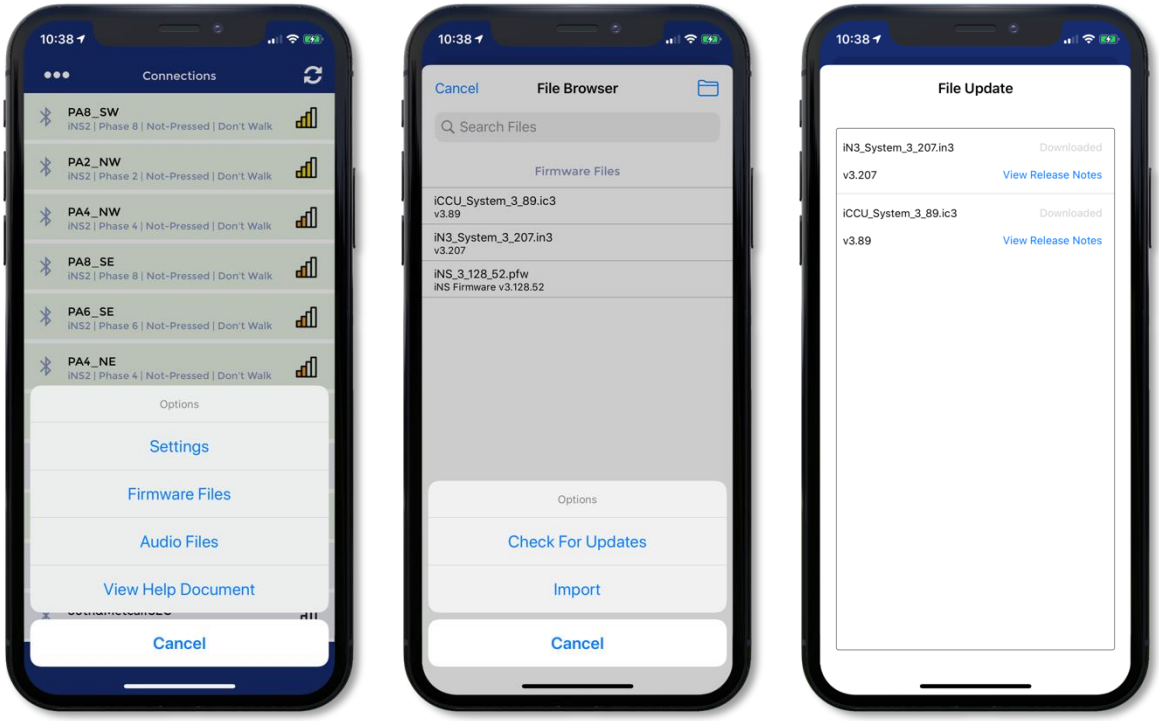
This screen is also accessible by tapping the Diagnostics button in the Info/Diagnostics screen.



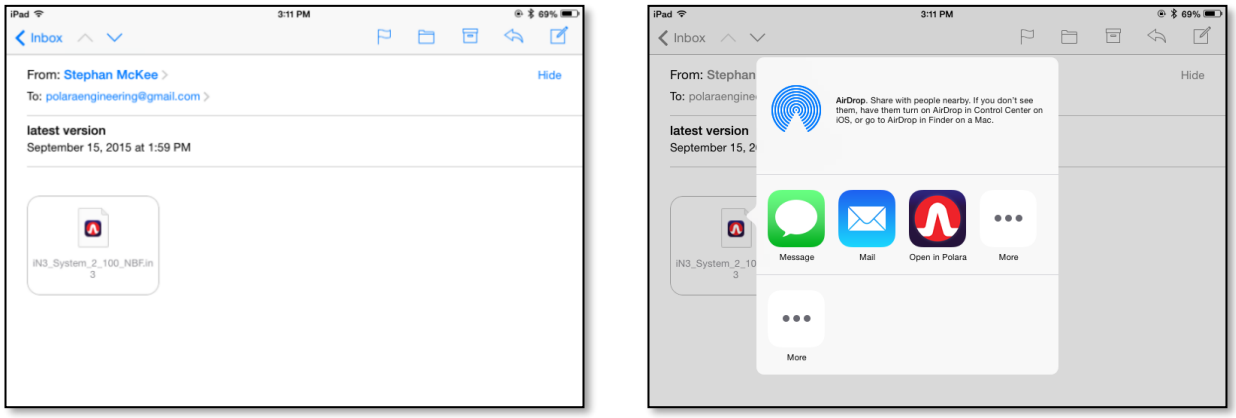
8. Using the Polara Field Service App for iOS for Firmware Updates

Firmware files are automatically bundled with the Polara Field Service App. The latest firmware at the time of App release is ready and pre-installed for updating.

The iOS App also has the ability to connect to polara.com to check for new updates directly from within the App. Your device must be connected to the internet in order to perform the check. While disconnected from any units, tap the three dots on the upper left of the connection screen. Tap on the Firmware Files option to browse all firmware files on your iOS device. Tap the three dots in the upper right corner of the File Browser screen. Tap the Check For Updates button. The device will connect to the internet and check for the latest firmware files from polara.com and provide them for download. You can tap on View Release Notes to see what the changes are from the previous version or tap the Download button to download the file to your device.

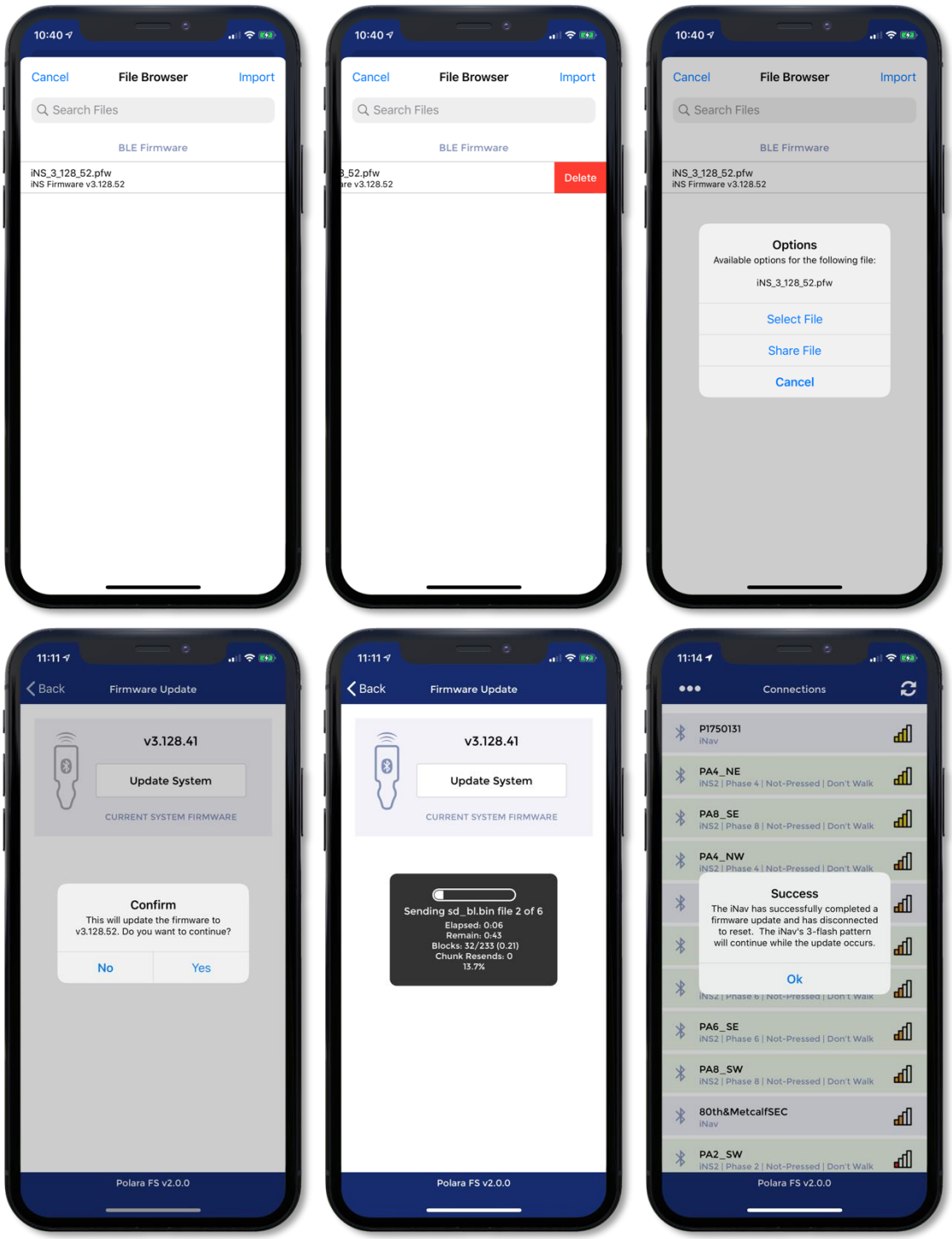


Firmware files to be uploaded can also be received as an email attachment on your iOS device. With the email app open and the message displayed, tap on the attachment, then tap “Open in Polara”.



To update the firmware of the connected device, tap the Update Firmware button. The list of available firmware update files will appear. Tap the file you wish to upload and tap Select File to begin the firmware update process. When the

process is complete, a message is displayed confirming the success. To delete files, swipe from the right to the left to show the delete button, then tap the Delete button.



9. Using the Polara Field Service App for iOS to Program Calendar Features

The calendar feature can no longer be used via the iOS Application. Due to the complexity of the feature, it must be enabled and configured using the PC application only.

10. Using Polara Field Service App for PC to Change PBS Settings

10.1 Download Polara Field Service App for PC (Intelligent Config) Application

The Intelligent Config application is available for download from www.polara.com.

10.2 iN-DGL BLE Dongle

The Intelligent Config application requires the use of the Polara iN-DGL BLE dongle to communicate with the Polara iNS3 PBS.

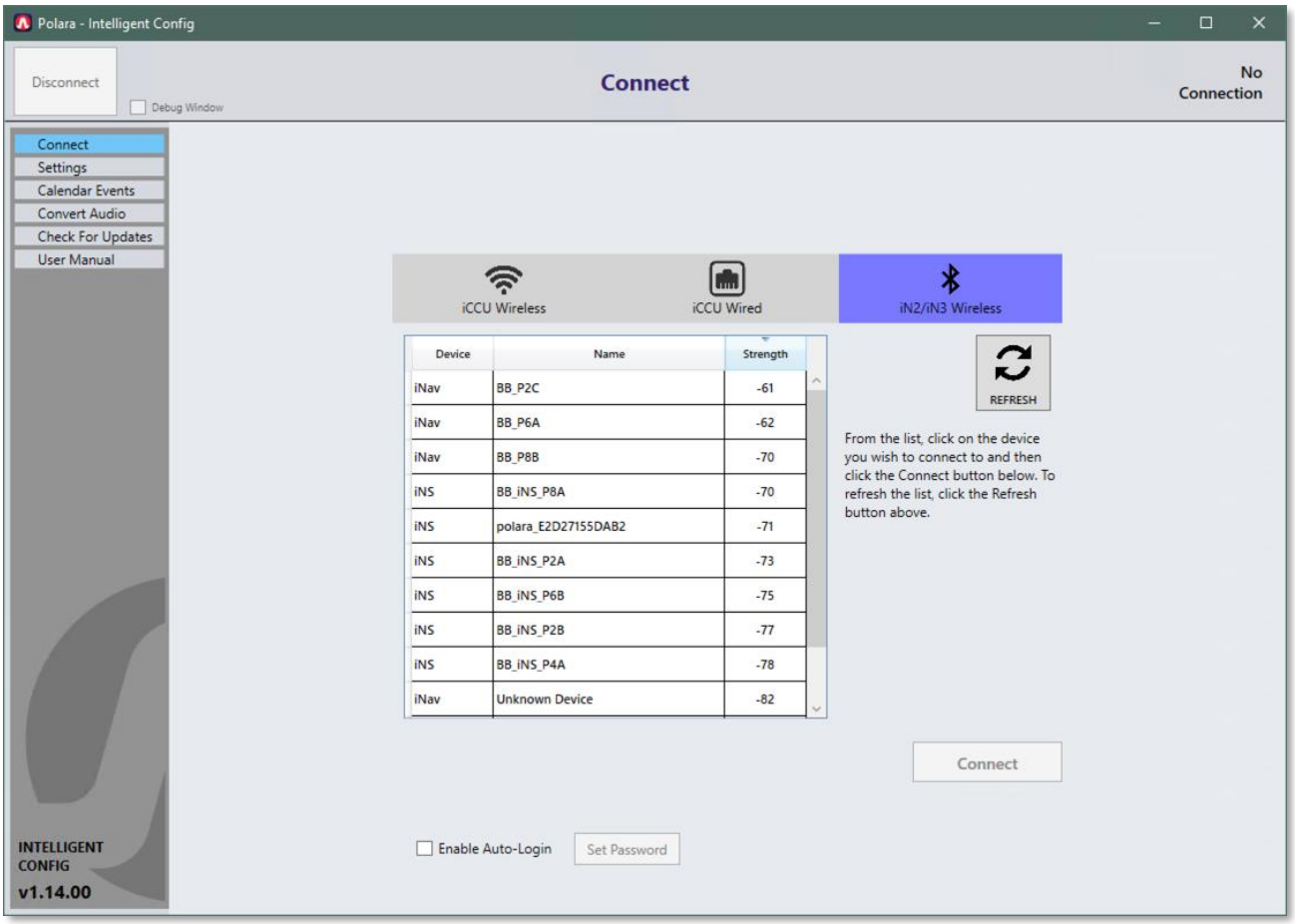
10.3 Application Installation

Your computer must be running Windows 7, 8, 8.1, or Windows 10. Also, you must have .NET Framework 4.0 or higher installed in order for the application to run. The installation process will include this step if necessary, however your computer must be connected to the internet to access those installation files. A driver program for the BLE dongle will be installed as needed. Locate the downloaded installation file, extract the IntelligentConfigSetupVxxxx.exe file if necessary, then double-click to begin. Follow the on-screen instructions to complete the installation.

10.4 Running the Application

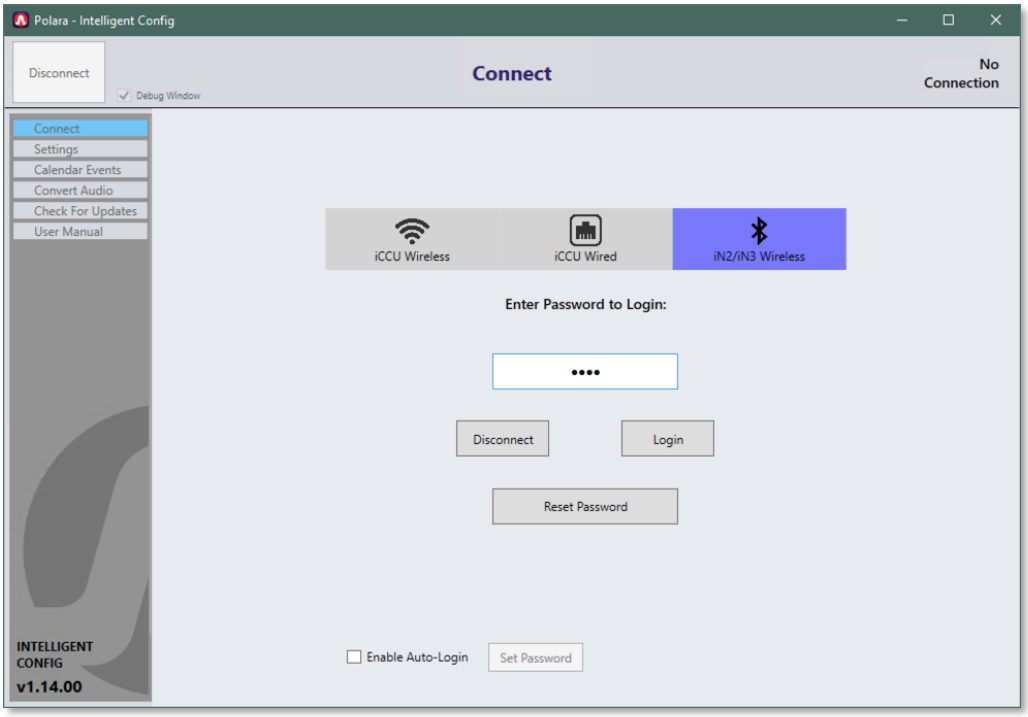
Make sure you have a Polara iN-DGL BLE Dongle connected to a USB port on your computer. Click on the Intelligent Config icon in the Start Menu to run the application.

A screen similar to this should appear.



10.5 Bluetooth Connection

Click on the name of the target unit and click ‘Connect’. This will take you to the login page.



Login Page

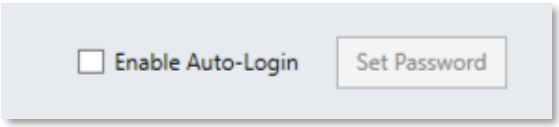
Type in the password (Factory default is 1234), and click ‘Login’. You may click ‘Disconnect’ to cancel, or click ‘Reset Password’ if the password is unknown. You will be prompted to call Polara for assistance in resetting the password.

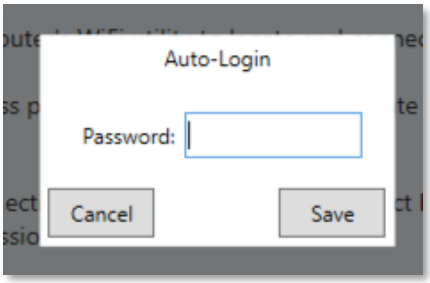
After login, the Status page will appear.

10.5.1 Auto-Login

[New Feature in v1.14.00] At the bottom of the connection screen is a new checkbox to enable Auto-Login.

For customers where the majority or all of the intersections used within an area have the same password, a feature is available to enable logging in without having to re-enter the password. Click the checkbox to enable the feature and you will be presented with a dialog box for the desired password to attempt upon connection to a device. Once this password has been stored, upon any new connections, that password will automatically be tried. If that password fails, then the default password of 1234 will be attempted. If both password attempts fail, then the standard password prompt will appear. To change a previously stored password, click the Set Password button. Note: When the Auto-Login feature is disabled, the stored password is immediately deleted and must be re-entered when enabling the feature.





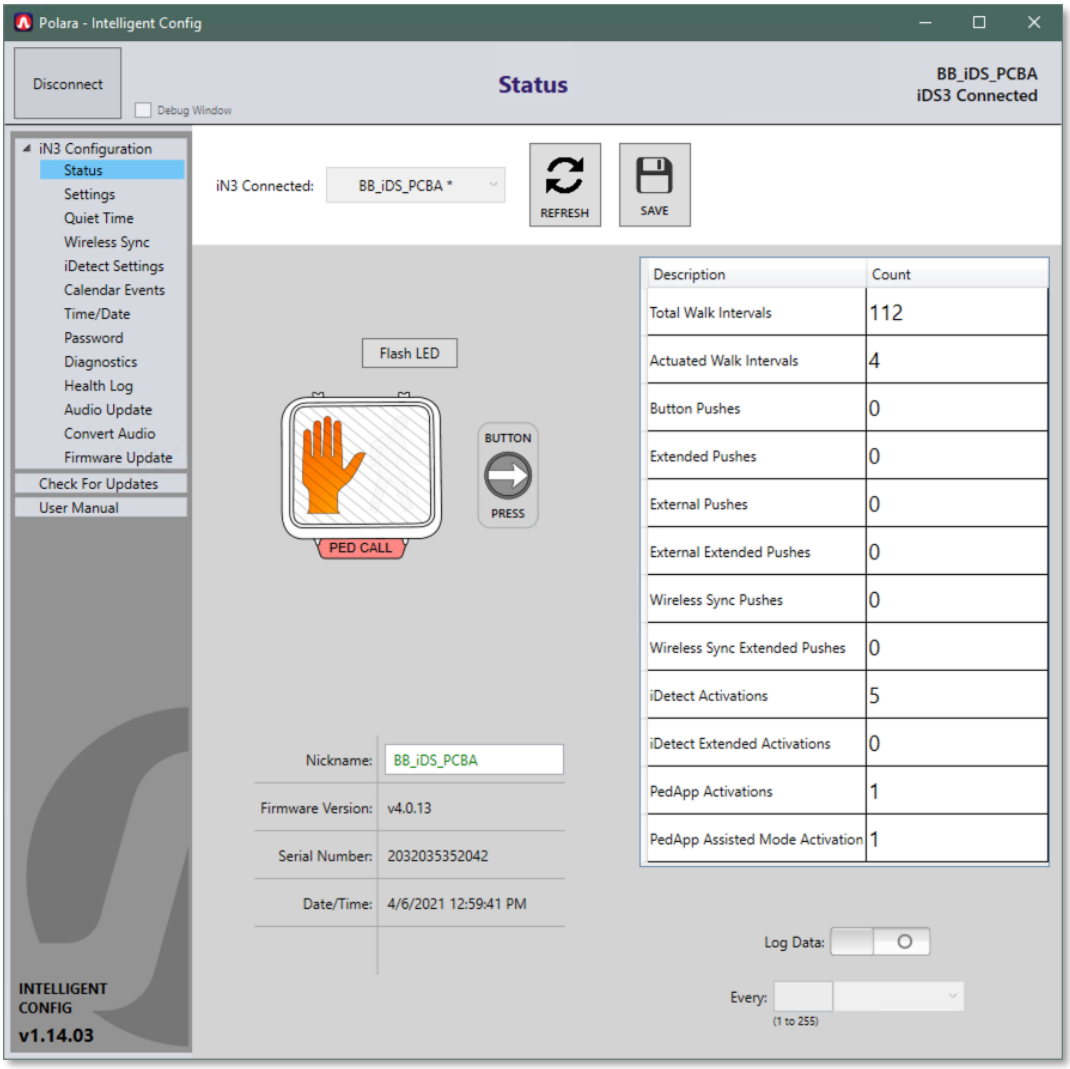
10.5.2 Initial System Setup

Once you have successfully logged in, you will then be presented with the PBS Status screen.

If the system has not yet been configured, it is recommended to start by renaming the unit to easily identify it by adding the phase and corner location (such as P2_NW).

If the PBS plays the “Change Password” notification periodically, it is an indication that the unit contains the factory default password (1234). To disable this notification, proceed to section 10.7 and change the password to something other than factory default.

10.6 Status Page



Status Page

The status page provides information about the connected PBS.

The panel on the left contains a menu of pages containing the various setup and maintenance functions.

10.6.1 Assigning a Name to a PBS

On the Status Page, enter the desired name into the Nickname field. Then click 'SAVE'. The name of the button is immediately changed. Subsequent Bluetooth connections to the PBS will use the new name.

10.6.2 Button Counts

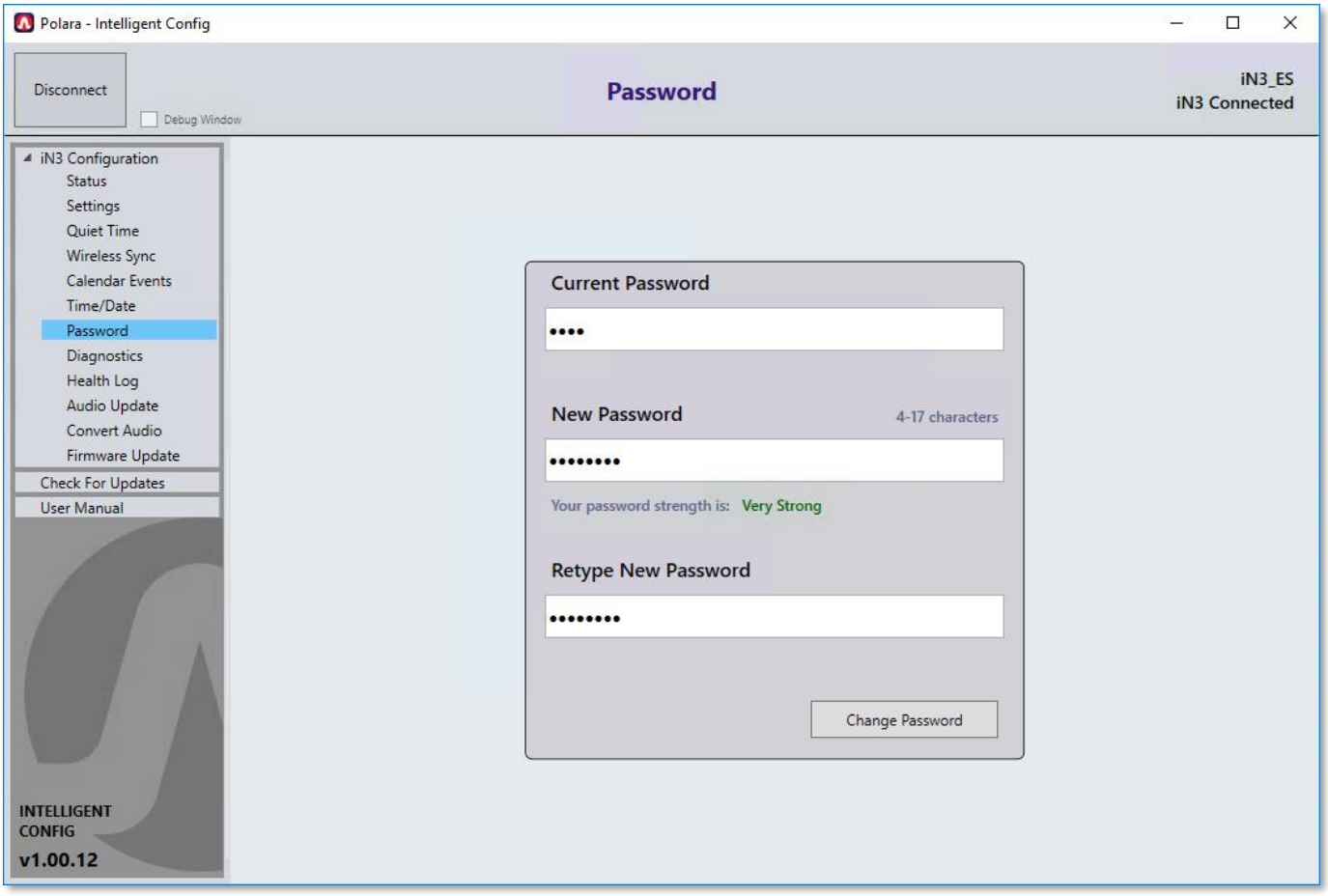
Each PBS keeps a count of events that have occurred in the button from the date of manufacture. These numbers act as a kind of odometer for the unit and cannot be reset. The counts are:

- Total Walk Intervals
  - The number of walk intervals the unit has received. This includes walk intervals which have been initiated by this PBS as well as walk intervals that occur while the intersection is in recall.
- Button Pushes
  - The total number of button pushes that have been detected by the PBS's arrow button. This does not include any detected button pushes that were caused by other PBSs on the same phase.
- Actuated Walk Intervals
  - The number of walk intervals which occurred following an internal button push. If the walk audio and button vibration occurred during a walk indication, then this counter is incremented.
- Extended Pushes
  - The number of extended pushes the PBS has detected on the arrow button.
- External Pushes / External Extended Pushes
  - Presses originating from another unit connected to the same button terminals. Short presses are listed as External Pushes, and long presses are listed as External Extended Pushes.
- Wireless Sync Pushes / Wireless Sync Extended Pushes
  - Short and Extended presses originating from a unit connected via the Wireless Sync feature.
- iDetect Activations / iDetect Extended Activations (iDS units only)
  - Pedestrian activations detected by the iDetect feature.
- PedApp Activations / PedApp Assisted Mode Activations
  - Pedestrian activations initiated using the PedApp.

In order to relate the above data to relative time, a logging feature is included which will add health log entries including all counters along with a timestamp at specific intervals. For example, if you want to log the data to find out how the counts change in a week, then enable Log Data Every and enter 168 hours. Then click the save button. Then, once a week, log entries will be added which include the counters.

10.7 Changing the PBS Password

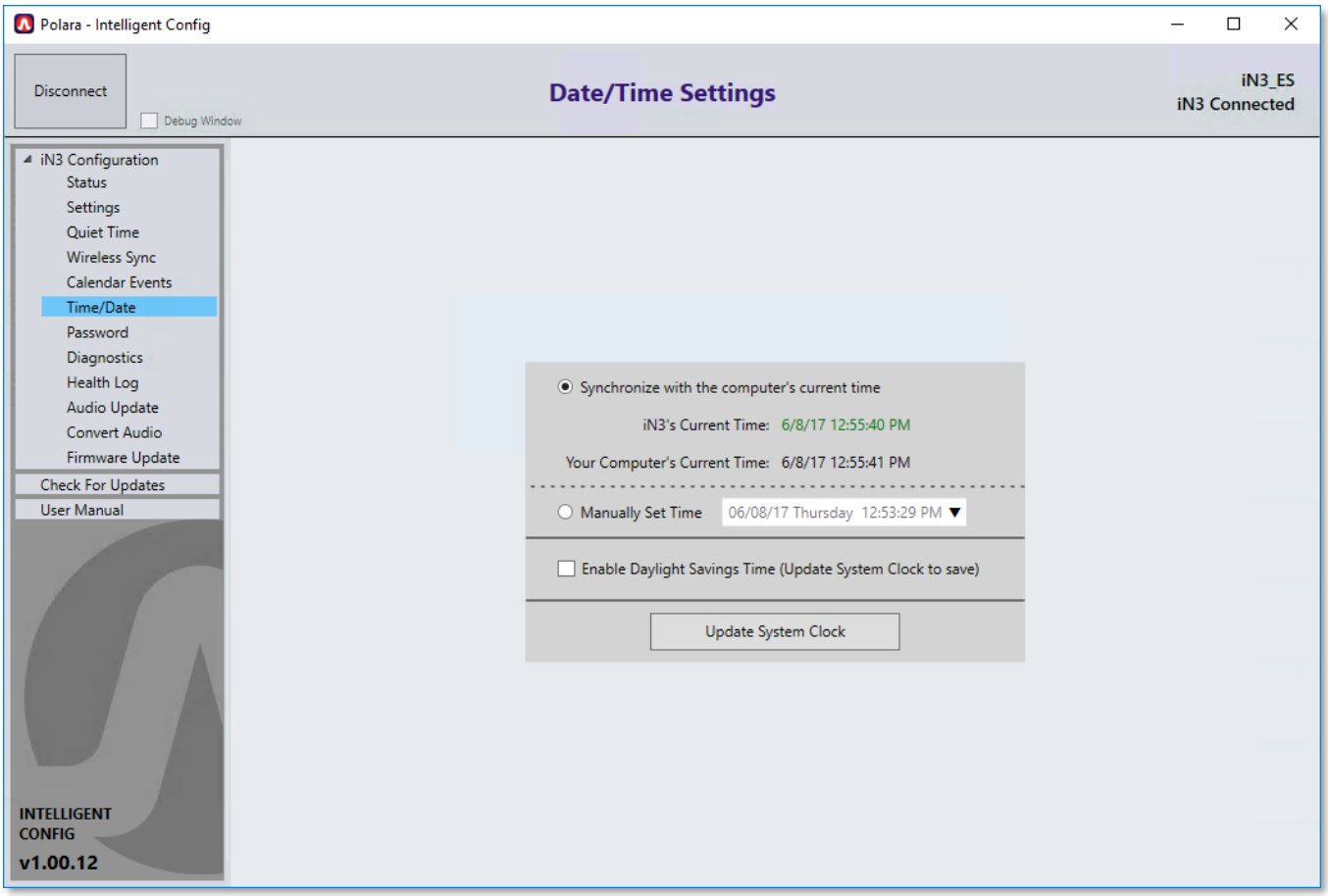
The factory default password is “1234”, but should be changed immediately after installation. Click ‘Password’ from the menu on the left. The Change Password page appears. Enter the appropriate information, then click ‘Change Password’. The password is now changed.



Password Page

10.8 Setting the PBS Time and Date

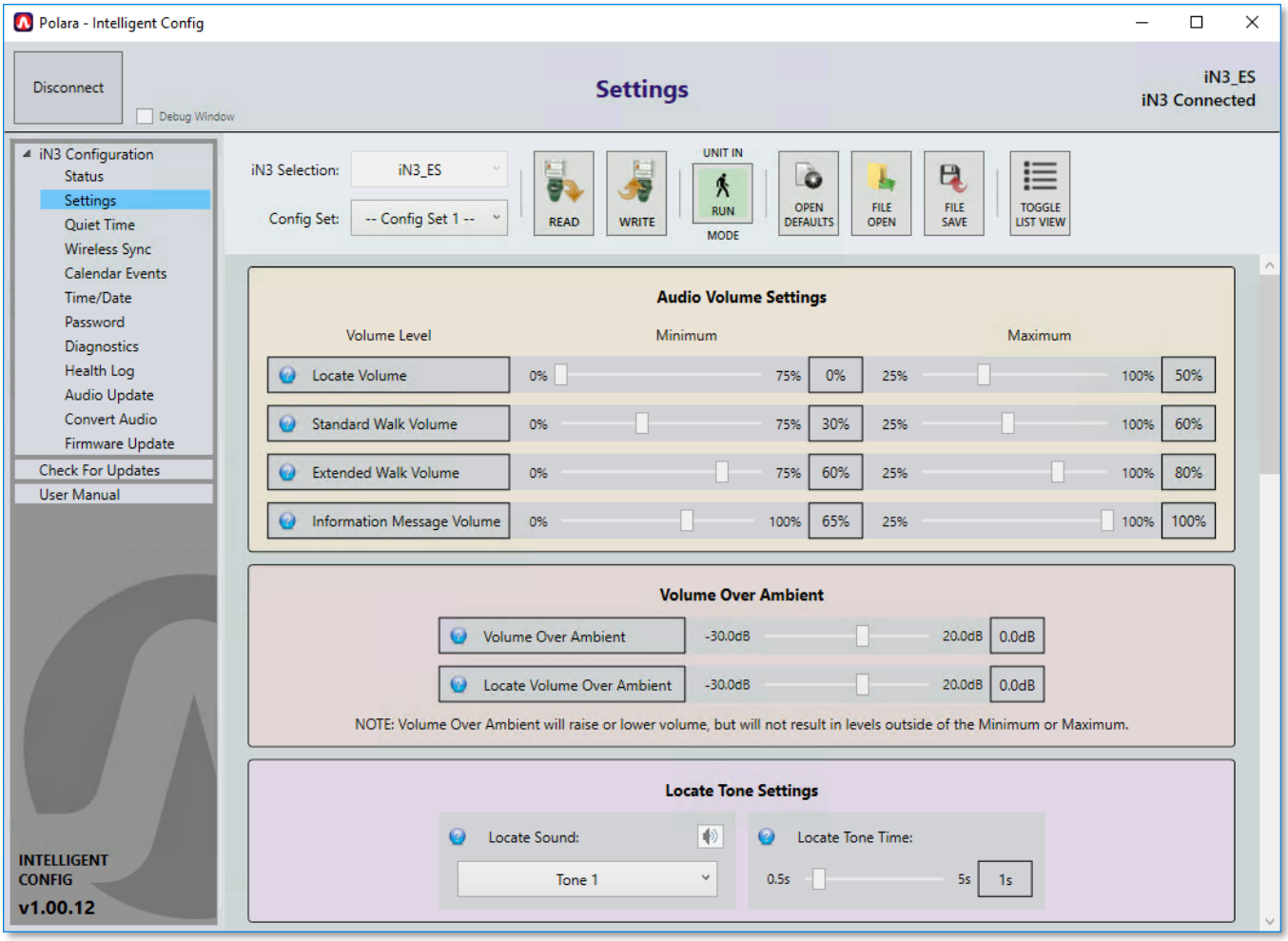
From the left menu, select ‘Time/Date’. Choose to synchronize from your computer’s clock, or manually set the time and date. Then click ‘Update System Clock’.



Date/Time Page

10.9 Settings

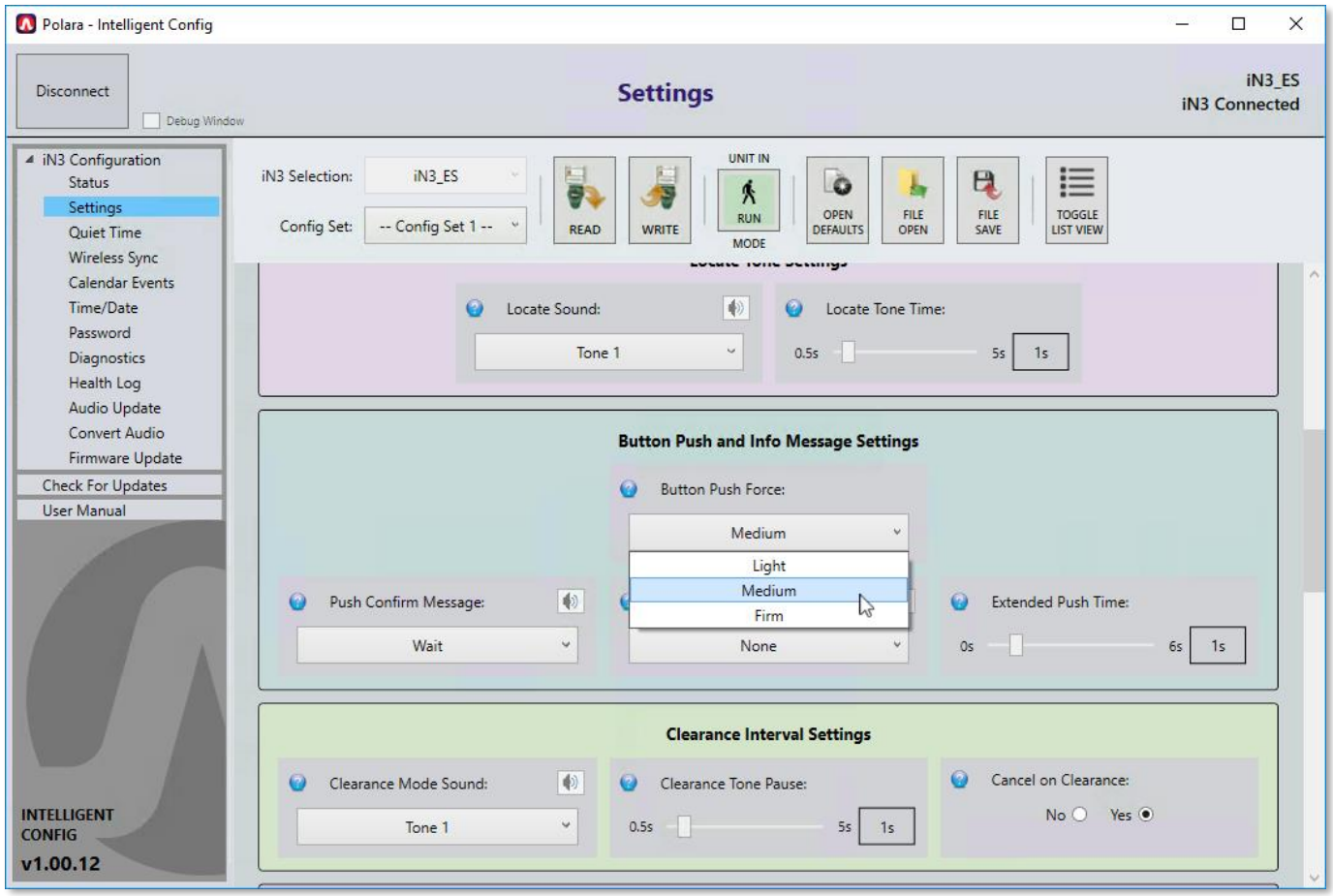
This is the main configuration page where the operating characteristics such as volume levels and sounds may be selected and uploaded. Settings may be saved to a file for later retrieval to write to multiple PBS units. When this page is opened, the settings in the PBS are not loaded automatically. Click the ‘READ’ button to load the PBS’s settings. Make any changes necessary and click the ‘WRITE’ button to write the settings to the connected PBS.



In order to test play sounds on the button, the PBS must be in maintenance mode. Click the ‘UNIT IN RUN MODE’ button at the top of the page to switch to Maintenance mode. Then the speaker icons next to some of the settings will be enabled.

10.9.1 Adjusting Push Force

Within the Settings page, in the Button Push and Info Message Settings section, click the dropdown for Button Push Force. Select Light, Medium, or Firm. When finished, be sure to click Write to save all changes.



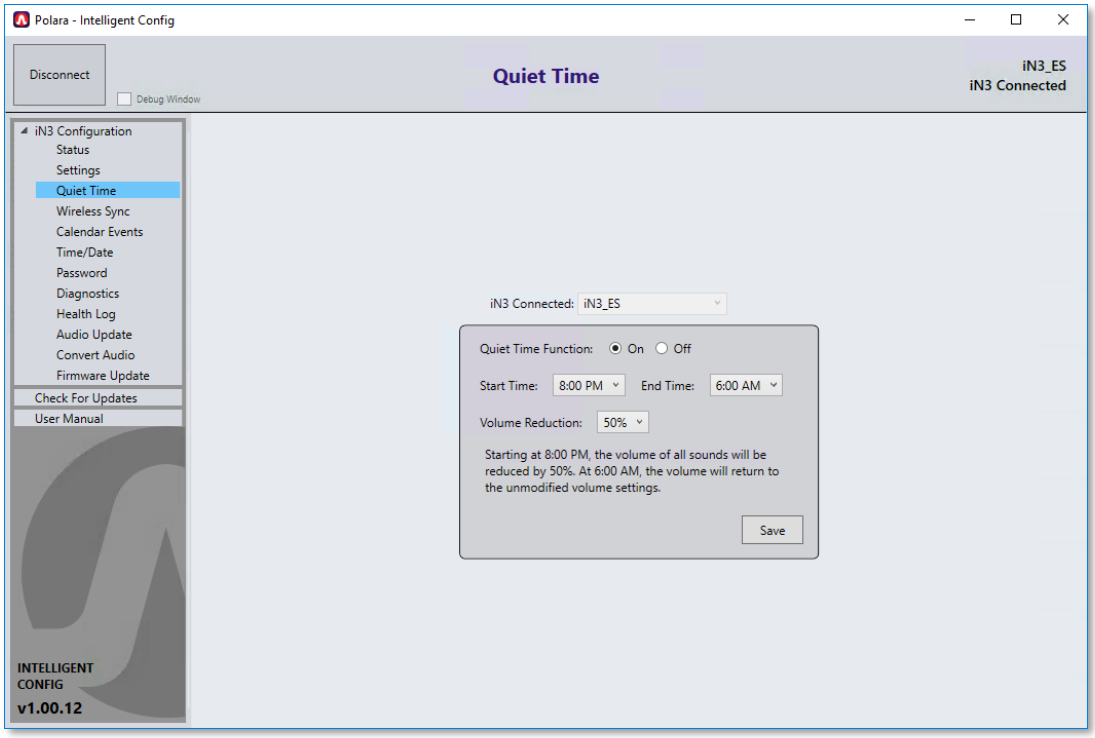
10.10 **Quiet Time**

The details of the feature's operation is such that if the current time of day falls between the selected start and end time of the Quiet Time period, then all Minimum and Maximum volume settings will be reduced by the specified reduction amount.

Note: The "Minimum" volume setting can be reduced down to 0%, but the "Maximum" volume setting will only be reduced down to 25%. This follows what is settable in the configuration parameters or settings screen.

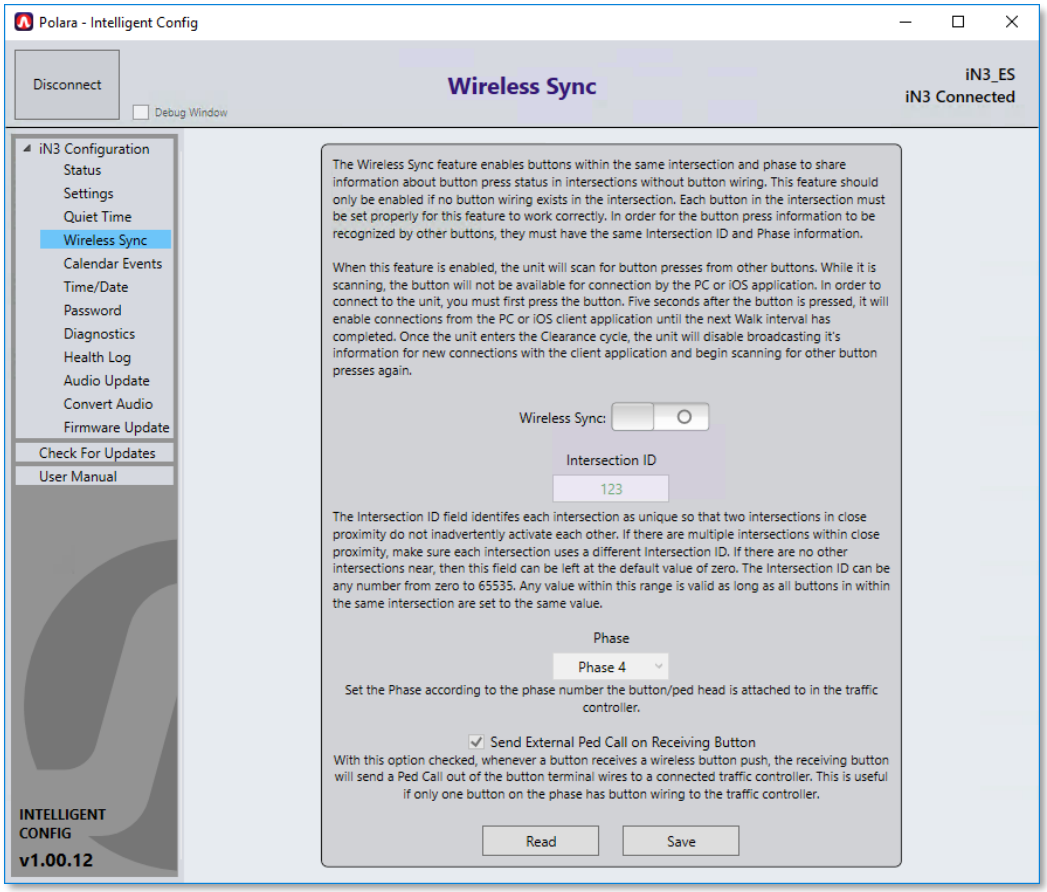
The table below shows what the effective volume settings would be with the Quiet Time set to reduce the volume by 30%. With the values set as shown in the screenshots, between the hours of 9:00am and 7:59pm, the volume will be as set configured in settings (shown in the "set value" column). At 8:00pm to 8:59am the following morning, the volumes will be reduced as shown in the "reduced value" column.

Setting Name	Set Value	Reduced Value
Locate Volume Minimum	0%	0%
Locate Volume Maximum	50%	25%
Information Message Minimum	65%	35%
Information Message Maximum	100%	70%
Std Walk Minimum	30%	0%
Std Walk Maximum	60%	30%
Ext Walk Minimum	60%	30%
Ext Walk Maximum	80%	50%



10.11 **Wireless Sync**

Use this page to configure PBS to PBS wireless links for units that do not have PED call wiring to the traffic signal controller. This function provides a link between PBSs on the same PED phase such that a button press on one unit enables the Walk and Clearance sound on the other units. Both standard and extended push status is transmitted.



To use this feature, click the enable switch in the center of the screen. Enter an Intersection ID, which can be any number (up to 9 digits). Select the correct PED phase for this PBS from the drop-down list. Click ‘Save’ to apply the settings to the PBS. Repeat these steps for each PBS, using the same Intersection ID for all units on the intersection.

After a button press, the button switches from scanning mode to BLE Connection mode. This means that the button is no longer scanning for additional button pushes from remote buttons. This causes the possibility of an extended push to be missed on the unit in which the first push originated. For example: There are pedestrians on two sides of the walkway. A pedestrian on the Southwest corner performs a short push on the unit. The unit on the Southeast corner receives the Wireless Sync indicator that a button press occurs and turns on its pilot light. If a pedestrian on the Southwest corner now performs an extended push, the unit on the Southeast corner will not get a notification that an extend push occurred. Therefore, the Southwest corner unit might play sounds at a different volume that the Southeast corner unit.

When the “Send External Ped Call on Receiving Button” option is enabled, if that unit receives a button push indication from a Wireless Sync transmission, then it will also cause a Ped Call indication in the form of a contact closure on the terminal block wires to the traffic cabinet. This can be used if one side of intersection has button wires to the traffic cabinet but the other side does not. Then any button pushed form the unit without wires can transmit the button press status wirelessly to the other unit causing a Ped Call to be asserted. In this situation, only the units with button wires going to the traffic cabinet should have this option enabled.

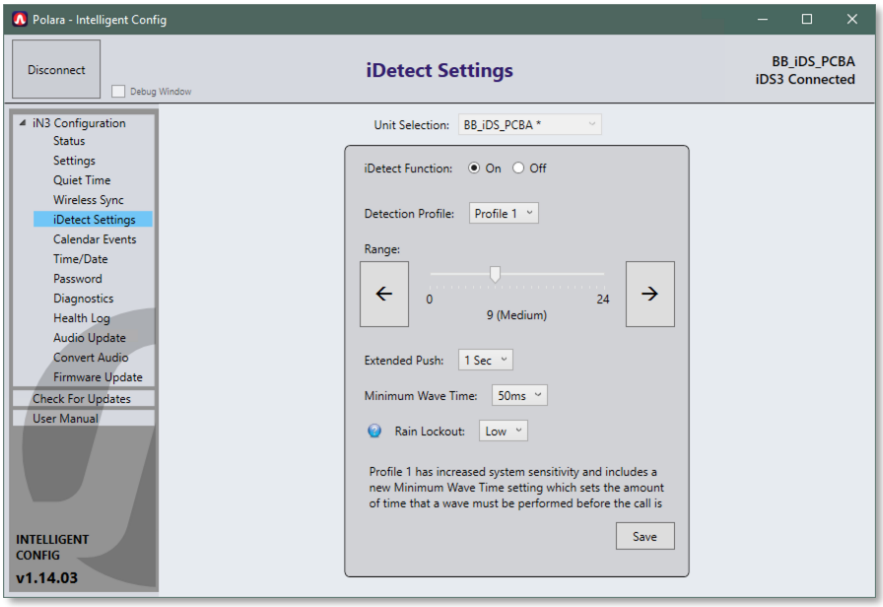
10.12 iDetect Settings

iDetect brings touchless actuation to APS and is an added feature in all iDS APS buttons. There are many technologies that can facilitate touchless actuation, but each has strengths and weaknesses. Polara has chosen to use radar technology because of its performance, reliability, and resistance to vandalism. The intent of iDetect is to provide touchless actuation within a sensing range of 2” to 6”. A basic configuration of iDetect is necessary after installation is complete (e.g., the APS is mounted to the pole properly, the button cover is installed, and the sign is installed).

Settings for the performance of iDetect functionality can be modified in the iDetect Settings screen.

The iDetect function can be completely disabled by turning off the Enable iDetect switch. This switch must be enabled in order for iDetect to be operational.

Make the desired setting selections based on the information below. When the desired settings have been selected, click the Save button.



10.12.1 Detection Profile

The Detection Profile select sensitivity and detection Schemes.

- Profile 0 (zero) uses a basic wave detection scheme. It is not recommended for use in new installations and only remains for backward compatibility. It is recommended to update the iDS unit to the latest firmware and use Profile 1 for greater sensitivity.
- Profile 1 (one) has increased system sensitivity and includes a Minimum Wave Time setting.

10.12.2 Range

The Range setting adjusts how close or far away the iDetect feature will detect movement. This setting may need to be modified based on which size sign is installed in order to optimize the detection range. A lower setting will limit the user’s hand to a very close proximity (~2”) to the unit before detection occurs, whereas a higher number will open detection to a slightly further distance (~6”) before detection occurs. The settable range goes from a setting of 0 to 24. The factory default value is 9.

10.12.3 Extended Push

The Extended Push setting will change how Extended Pushes are handled by iDetect. The settable options include disabling the detection of Extended Pushes (Off), Override Short Push, and detection times of 1 second to 3 seconds in ½ second increments. The factory default value is 1 second. When this option is set, the user must continuously move their hand near the unit for the set time. When the user’s hand first approaches the unit, the “Wait” (or configured Button Push Confirmation sound) will play. Then as they continue to move their hand (e.g., in a circular pattern near the unit), after 1 second the configured Information Message sound will play. If Override Short Push is selected, then instead of the “Wait” sound, the Information Message will be heard and the Extended Push volumes will take effect for the following Walk and Clearance intervals.

10.12.4 Minimum Wave Time

Minimum Wave Time (Profile 1 only) sets the amount of time that a wave must be performed before the call is activated. The settings are in milliseconds and the available options are 0ms, 50ms, 250ms and 500ms. The factory default is 50ms. This setting can be adjusted if false activations are common. Note: The Minimum Wave Time does not increase the timing of the Extended Push, so if the Minimum Wave Time is set to 500ms (which is ½ second), the user must wave for ½ second to hear the "Wait" sound. Then, if the Extended Push setting is set to 1 sec, the user must continue waving for another ½ second to hear the Extended Push sound. If the Extended push setting is set to 1.5 sec, then the user will wave for ½ second to hear "Wait" and then continue waving for another full second to hear the Extended Push sound.

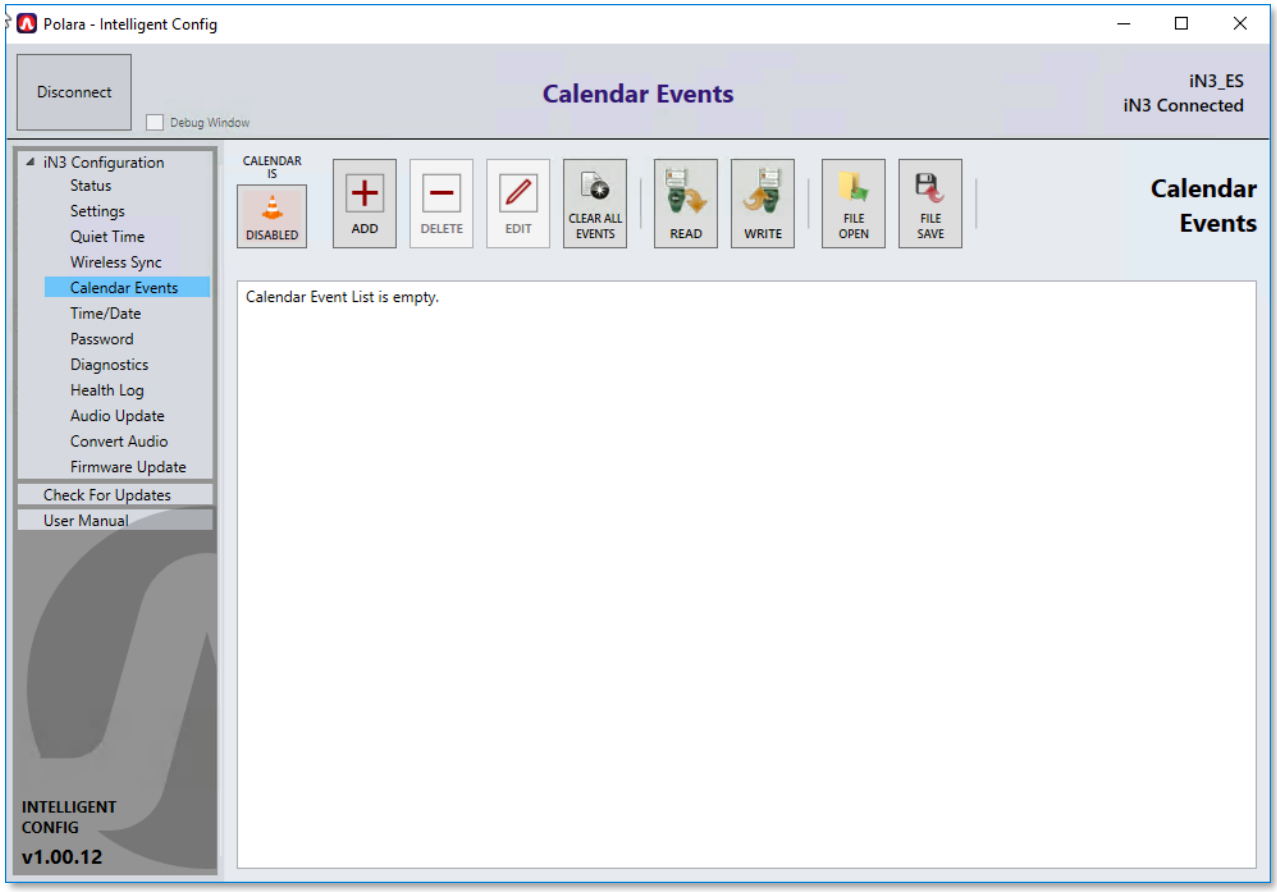
10.12.5 Rain Lockout

The Rain Lockout feature (Profile 1 only) temporarily disables iDetect for the selected duration of time if the iDetect sensor detects activations during an active walk cycle. The expectation is that pedestrians would not be attempting to activate the PBS while the walk message is playing and the button is vibrating. Therefore, if activations are detected during that time, then it is assumed that they are likely caused by rain so the Rain Lockout feature will disable additional ped calls for the set duration. The feature is disabled when the setting is set to Off. See the table below for the behavior for the remaining settings.

Setting	If activations are detected during the walk cycle, iDetect will be disabled for the following duration:	Lockout automatically turns off if no additional activations occur during the following duration:
Low	15 minutes	1 minute
Medium	30 minutes	2 minutes
High	1 hour	3 minutes

10.13 Calendar Events

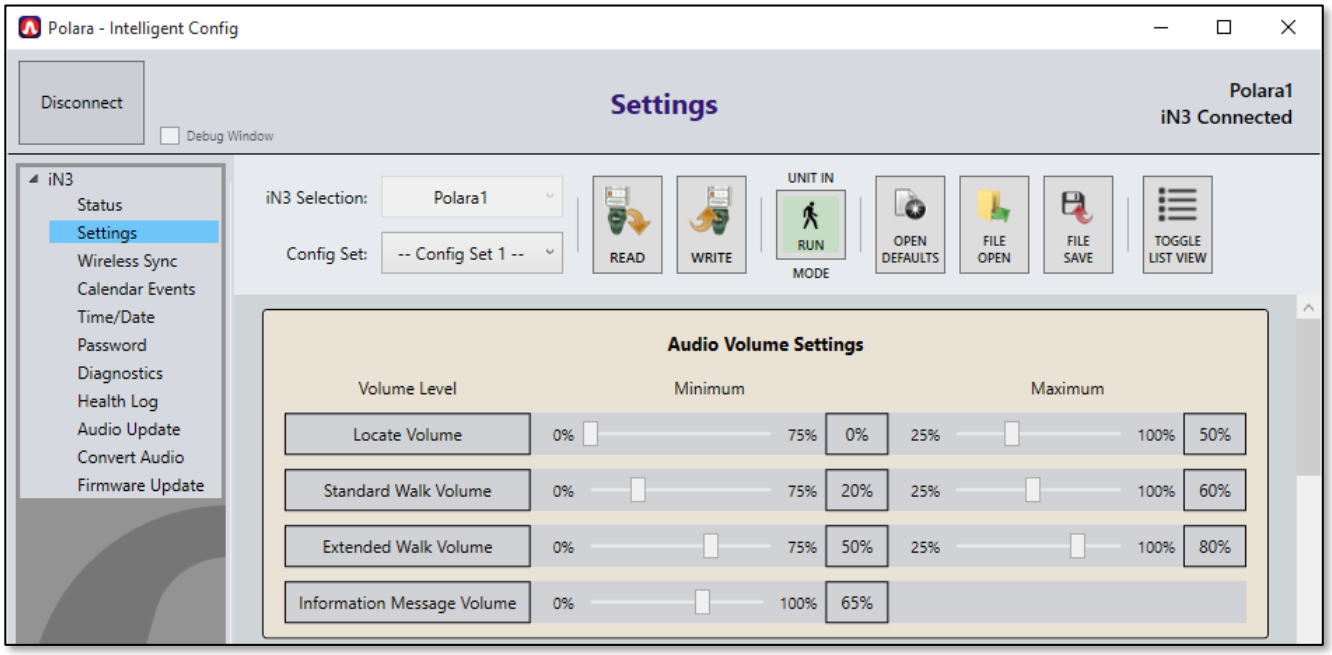
Calendar Events allow the configuration of time based changes to operating characteristics from four possible configuration sets. This feature enables changes to the settings based on the time of day, day of week, or specific day of the year. For example, you can have low volumes in the early morning and at night, while raising the volume during the day.



In order to illustrate the process of creating new Calendar Events, the below instructions show how to setup a Calendar Events scheme to lower the unit's volume from 6pm at night to 6am in the morning every day.

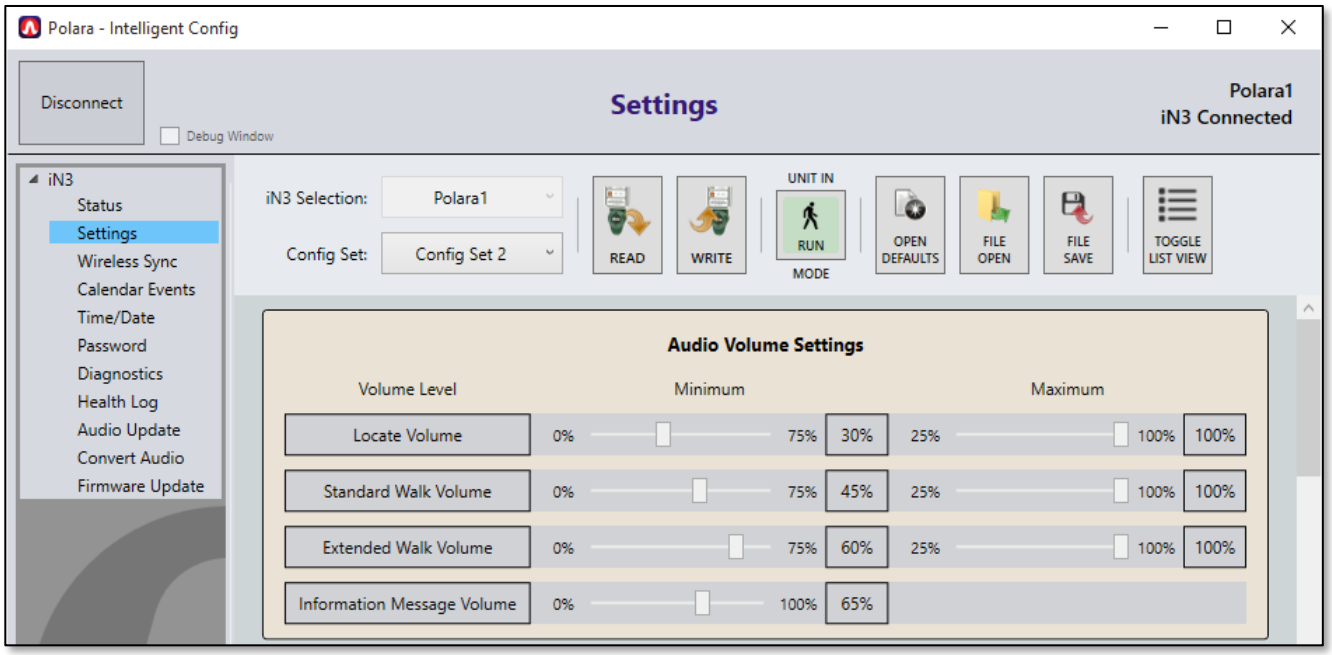
Step 1:

In the Settings page, 'WRITE' the low volumes in "Config Set 1".



Step 2:

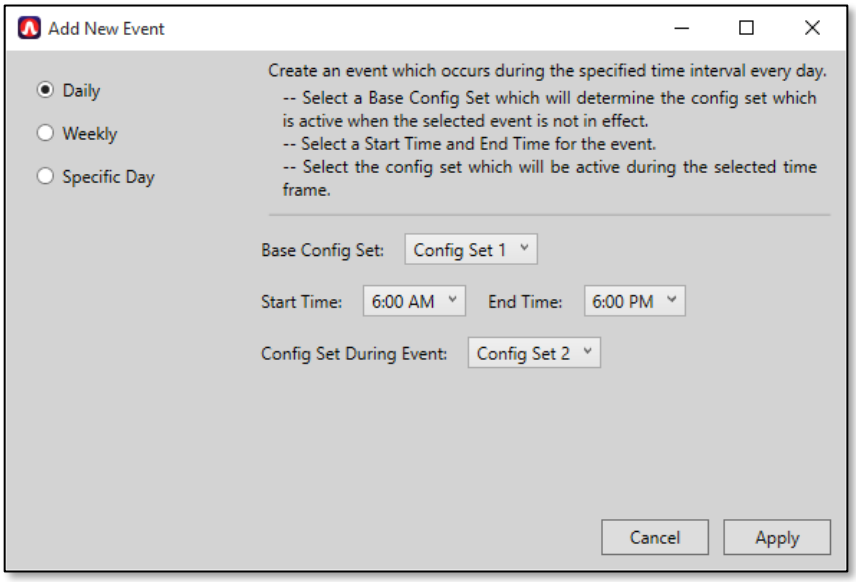
'WRITE' the higher volumes to "Config Set 2".



Step 3:

In the Calendar Events page, Click the ‘ADD’ button.

A dialog box will appear which will allow you to add a new event. Keep the Daily option selected, then choose ‘Config Set 1’ as the Base Config Set. Then select a start time of 6AM and an end time of 6PM. Then set the option for Config Set During Event to be ‘Config Set 2’.

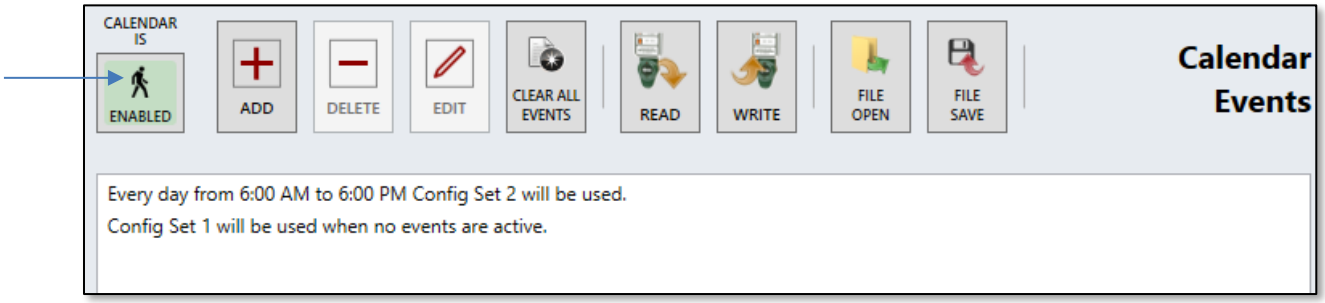


Then click ‘Apply’.

What this is doing is creating an event which occurs every day at 6am which changes the button’s active Config Set to 2. Then, at 6pm, the active Config Set will change back to 1.

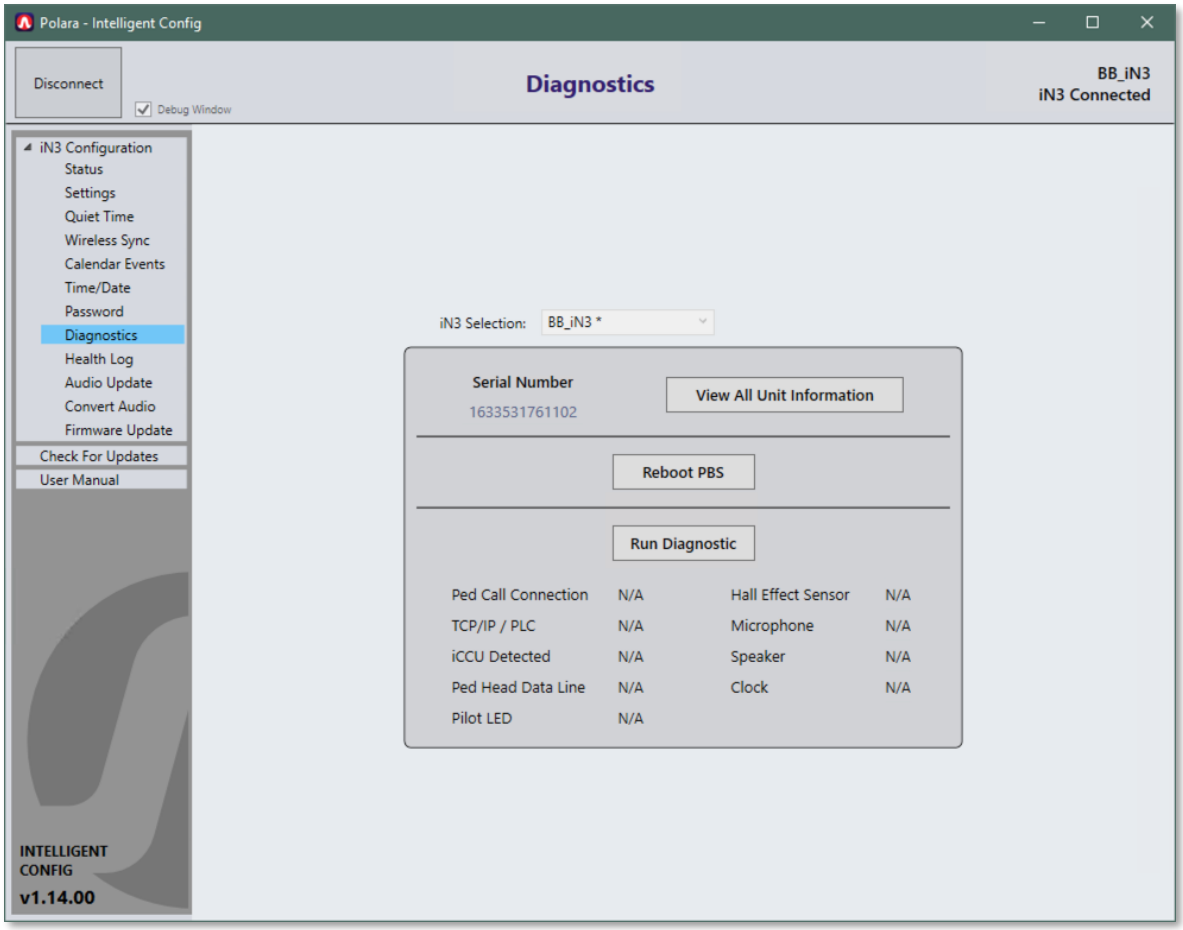
Step 4:

Click the button in the top right corner which says “CALENDAR IS DISABLED”. When clicked, it will change to “CALANDAR IS ENABLED”. The Calendar Events will not occur unless this option is enabled.



10.14 **Diagnostics**

Helps to determine if there is a problem with the PBS hardware, and allows a reboot.

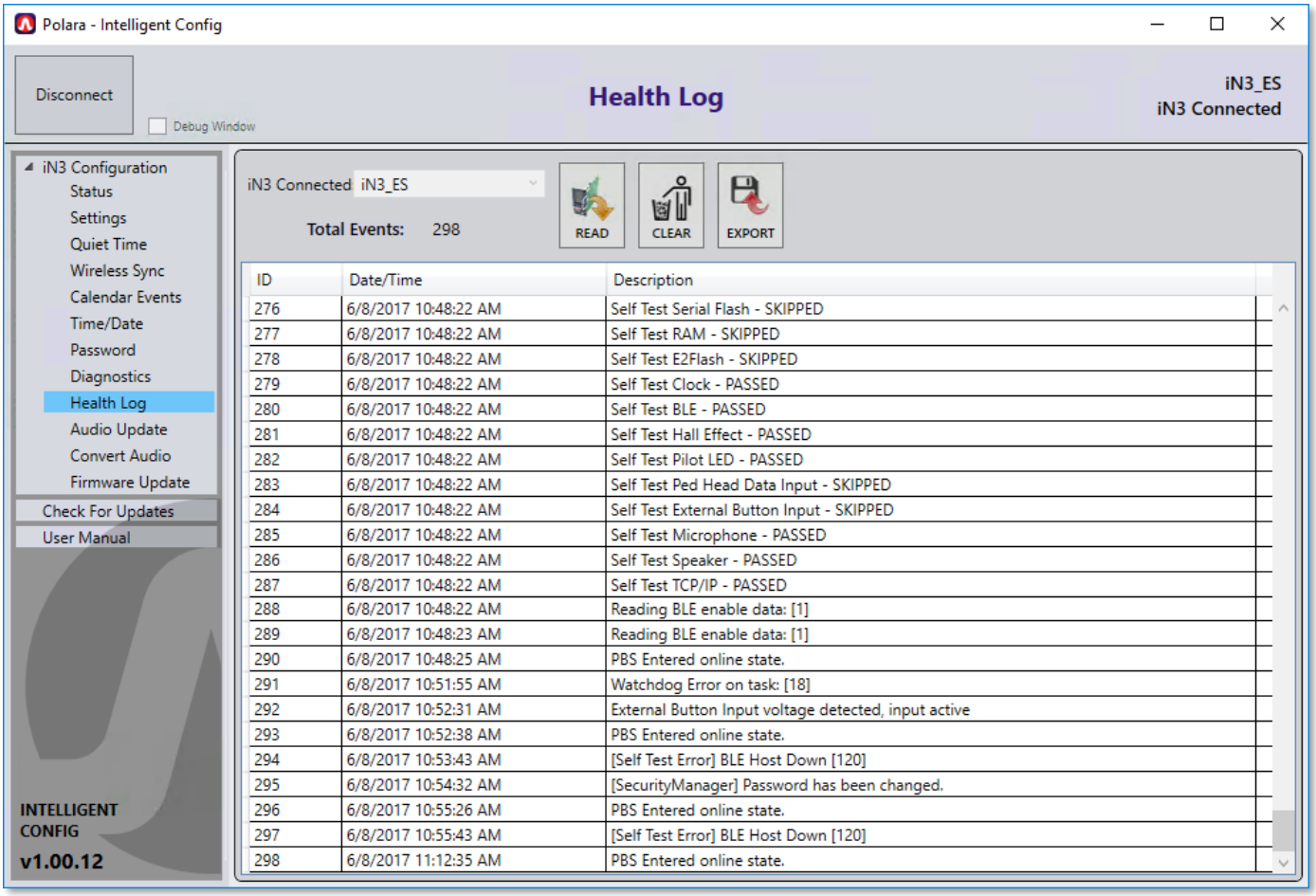


10.15 **Health Log**

The Health Log contains a list of events, including both normal conditions and error conditions. Each PBS maintains a separate log. These can be very useful for troubleshooting.

To read the Health Log, click the “Read” button. The current log is downloaded and displayed. Scroll the screen to browse through the log. Click “Clear” to erase all entries from the log. Click “Export” to generate a report with all health log entries and all unit information.

For help with a particular issue, or a message of concern, email the log to support@polara.com. Note: You must tap the Read button prior to exporting the health log, otherwise the health log export will only include device information and not the entire health log of the unit.

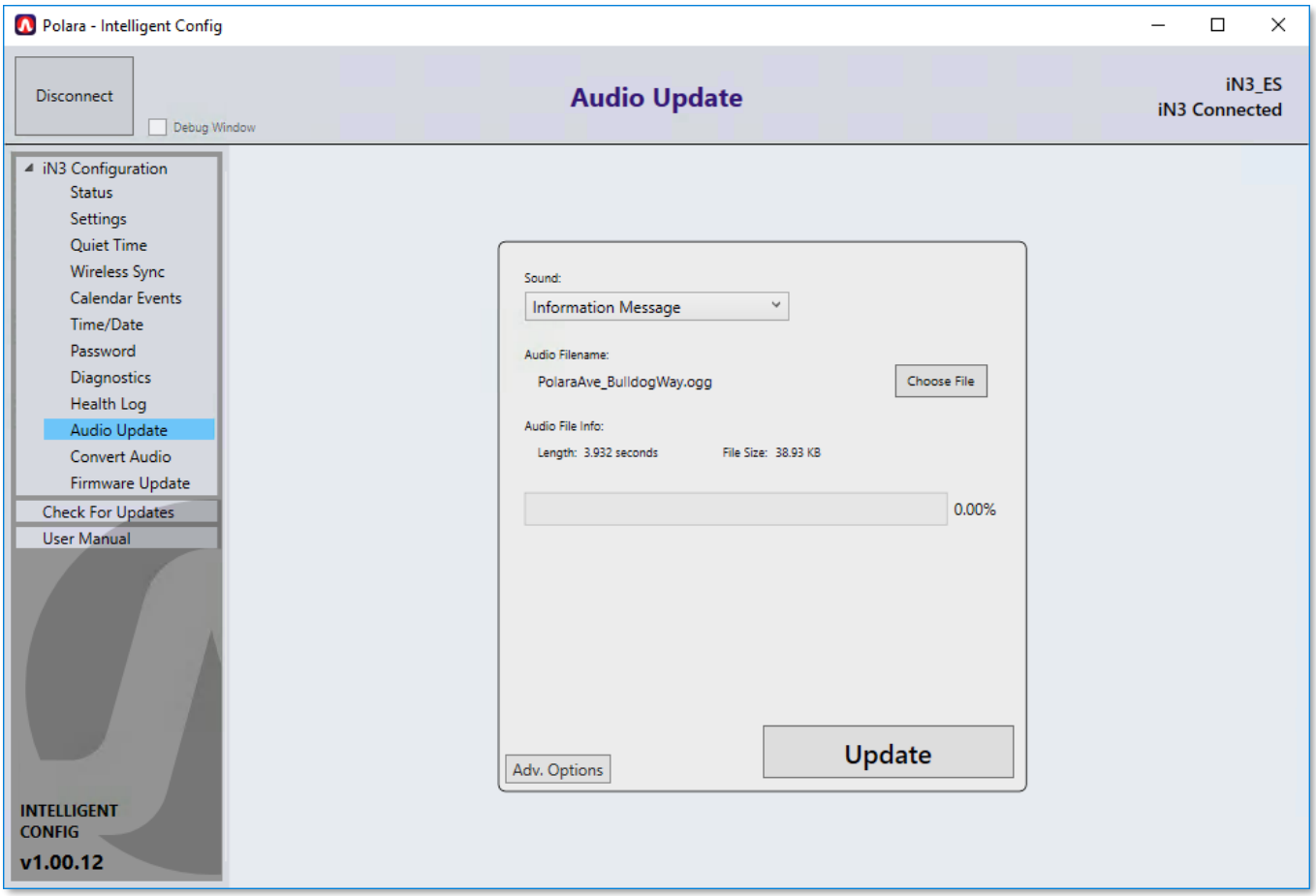


11. Using the Polara Field Service App for PC to Upload Audio Files

11.1 Audio Update

From the left menu, click ‘Audio Update’.

The Audio Update page allows you to upload audio files to provide new sounds. From the Sound dropdown, choose the sound slot to update, for example the “Information Message” slot. Then click ‘Choose File’ and select the file to upload to that sound slot. Click ‘Update’ to send the sound file to the PBS.



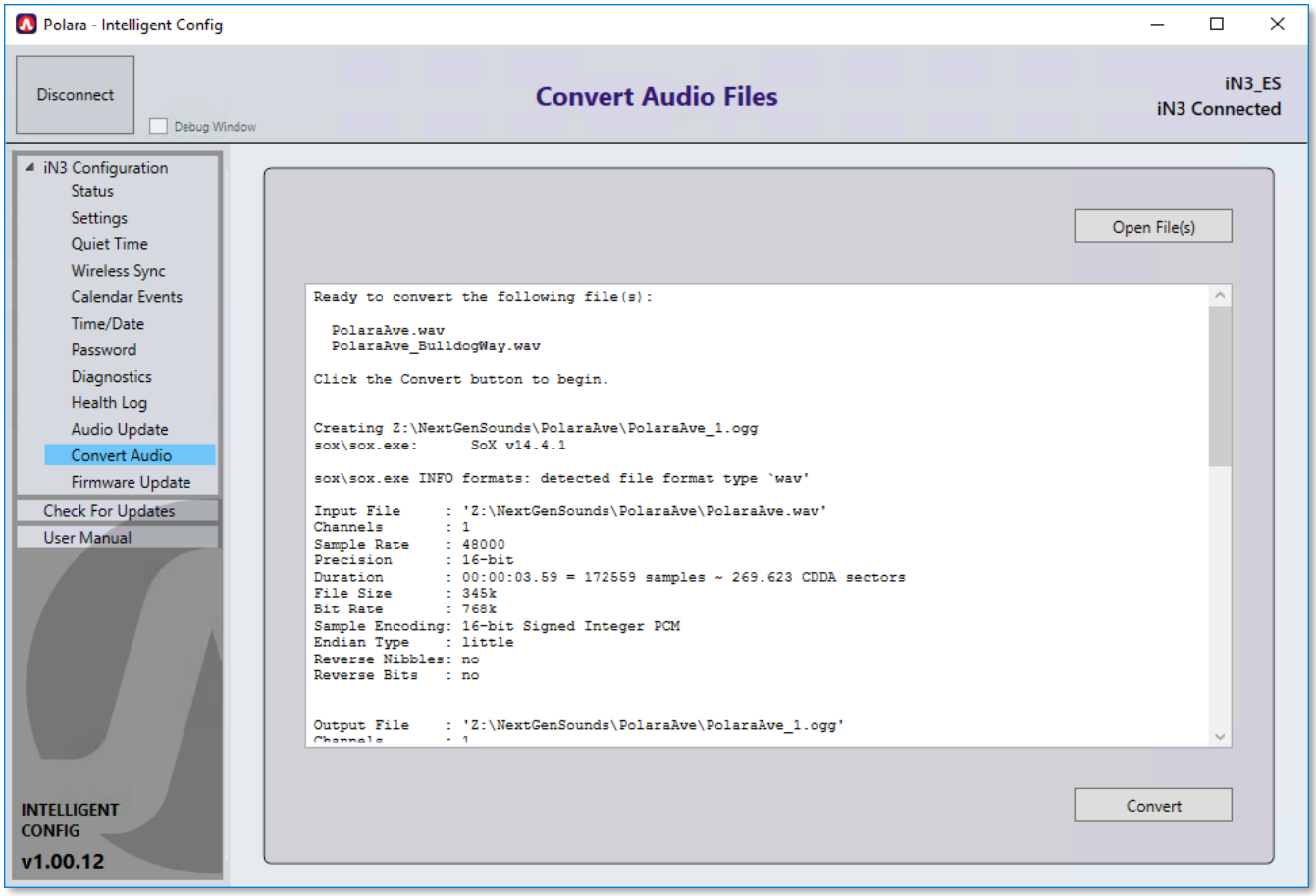
The Intelligent Config application has the ability to reprogram all standard sounds in the unit in order to reset the sounds back to factory default. To access this feature, click the Adv. Options menu and select “Reset/Verify Default Sounds”.

The Intelligent Config application also includes the ability to program sounds in Spanish for use with the Second Language option (see section 14.5.4). In the Adv. Options menu, select “Write Spanish Sounds” and a default set of walk and countdown sounds will be loaded into the unit.

To program additional sounds beyond those available in the Sound dropdown menu, select “Generate Example Audio Upload Script” in the Adv. Options menu and select a location. Then modify the script to add or remove the desired sounds to program. Then select “Upload Files Using Script…” and select the modified script to perform the update. Be sure to convert any custom-made sounds using the Convert Audio Files screen prior to uploading to the unit.

11.2 Convert Audio Files

Use this feature to convert audio files to the appropriate format for the iNS3 PBS. Simply click ‘Open Files’ and select the files you wish to convert. Then click ‘Convert’. The converted sound files will be saved to your PC, ready to upload to the PBS, as previously described.



11.3 Extract Audio Files

The same messages that are available to be changed via Audio Update can be extracted from the PBS. This feature requires firmware version v3.199 or greater in the iNx unit.

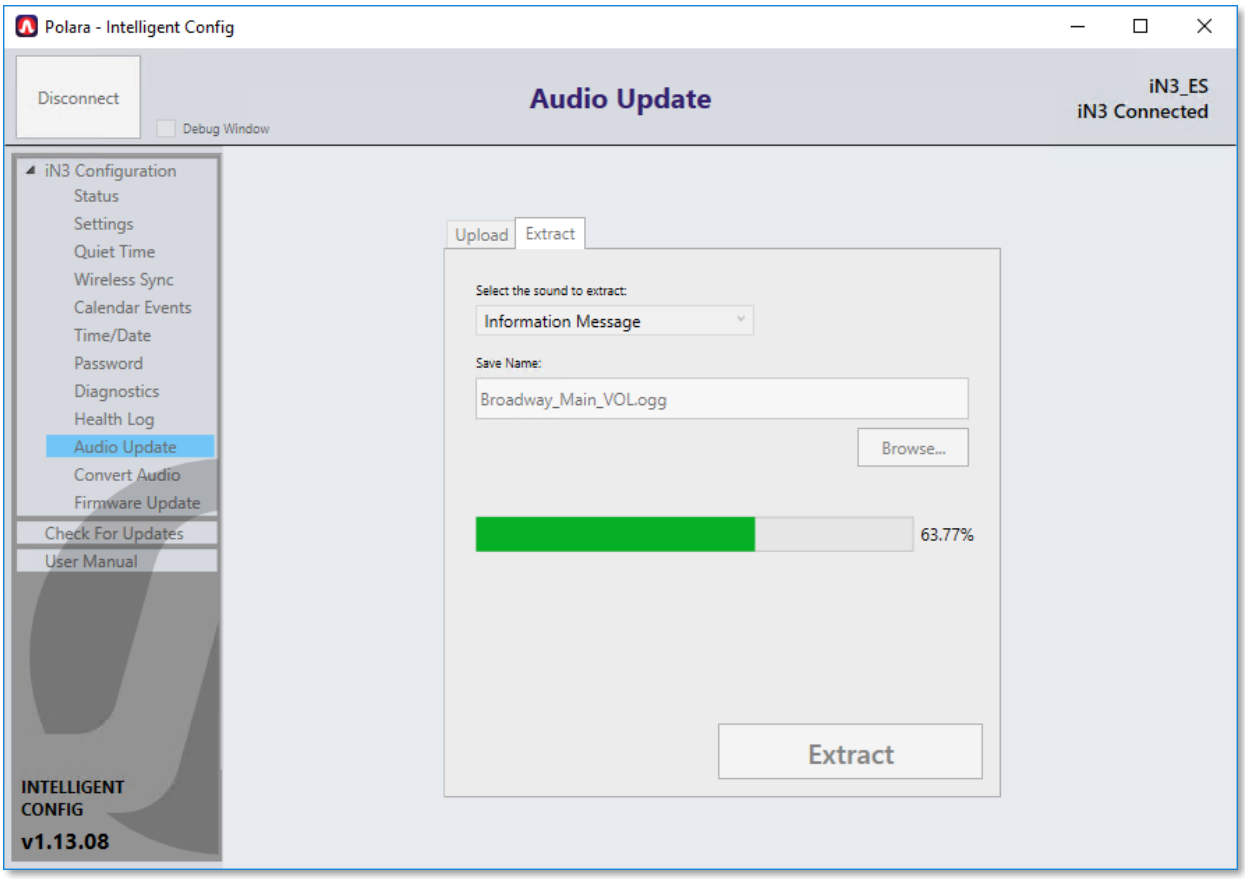
In the Audio Update screen, click the “Extract” tab in the upper portion of the window.

Select the message to extract in the dropdown menu.

It is recommended that you listen to the message prior to extracting it so you know how the message should be named. Perform an extended push on the unit to hear the Information Message and then wait to hear the Walk message, or use the sound play feature in the Settings screen.

Click the Browse… button to choose a location to save and then type a name for the file to be saved. Name the file appropriately for the intersection streets. For example, the intersection of Broadway and Main would have an information message named “Broadway_Main_VOL” and the corresponding walk message would be “Broadway_WALK”.

Click the Extract button to begin extraction.

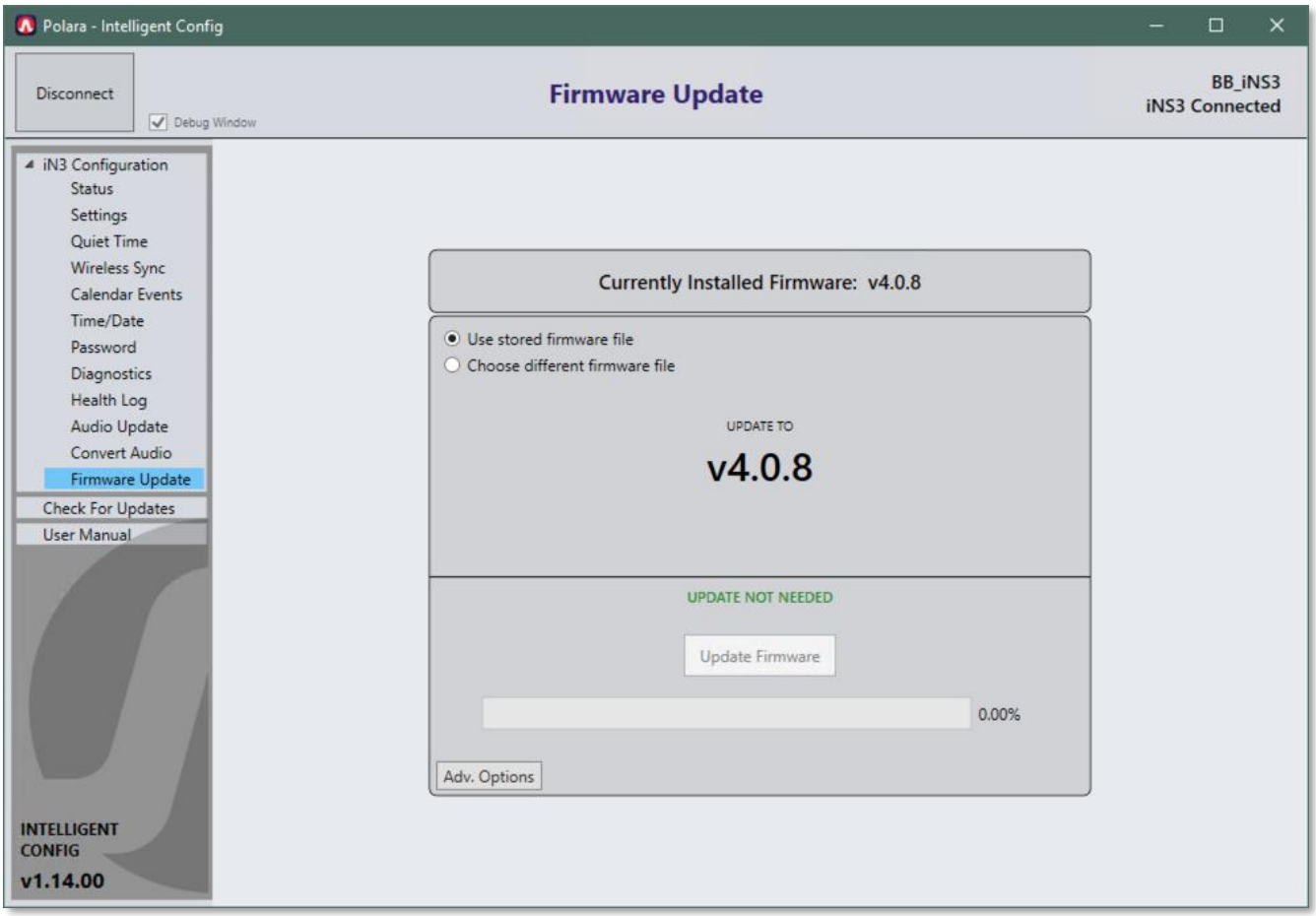


Once extraction is complete, you can extract additional messages from the unit or click the Upload tab to switch back to upload mode.

12. Firmware Update

From the left menu, click ‘Firmware Update’.

This page allows you to upload the latest firmware to the iNS3 PBS. The Intelligent Config App is bundled with a firmware file that represents the most up to date version available at the time the App was released. To use this version select “Use stored firmware file”. Additionally, the App will automatically check online for the latest version of firmware. Alternatively, you may obtain the latest firmware file from www.polara.com. To use a different firmware file, select “Choose different firmware file”. Click ‘Update Firmware’ to begin the update.

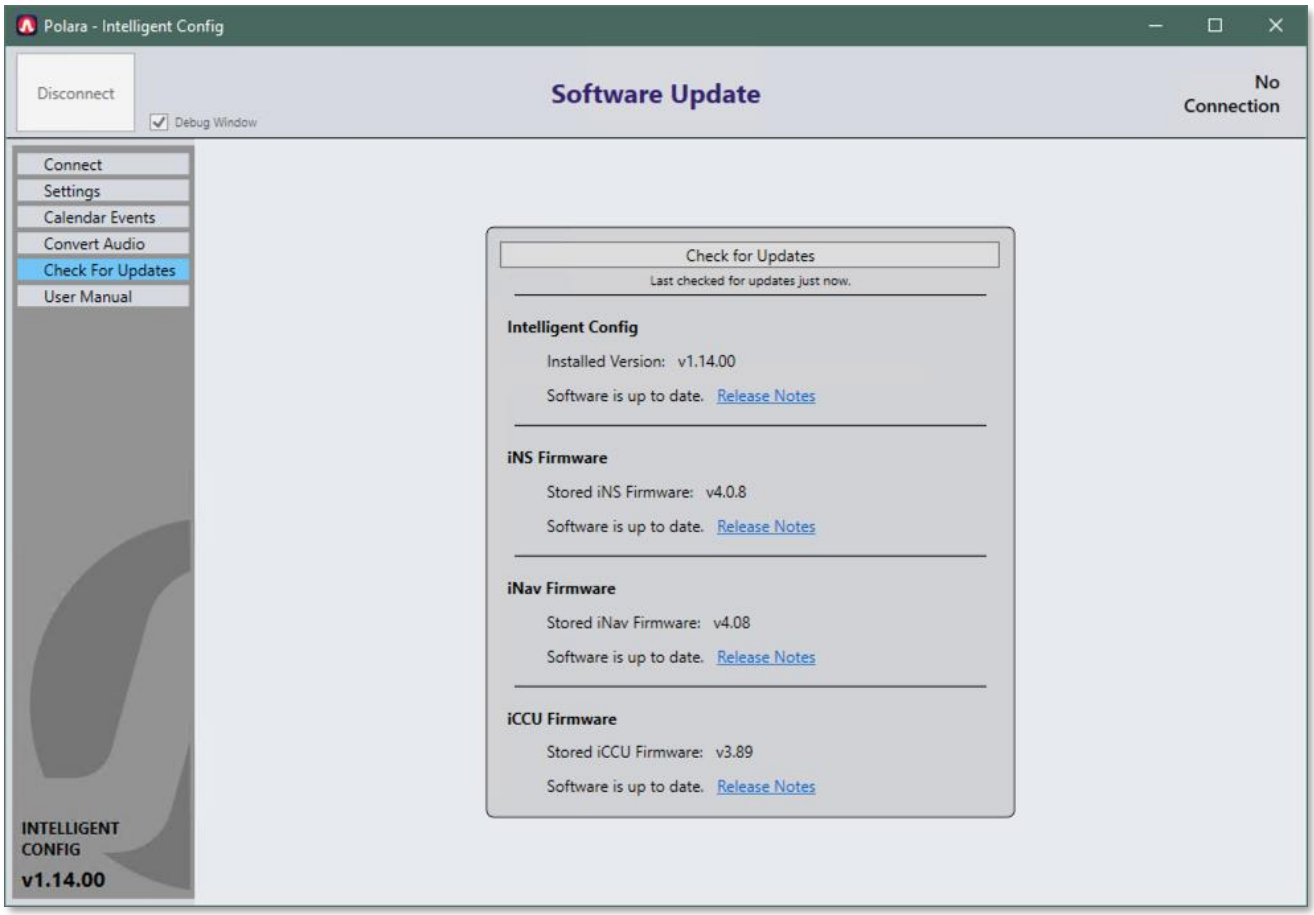


13. Keeping Up to Date

The Intelligent Config application is able to connect to the internet to check for new versions of itself and for new versions of the iNS3 firmware.

Make sure your computer has internet access in order to check for updates.

After opening the application, click on the ‘Check For Updates’ menu item and it will automatically connect to the internet and check for updates. If any updates are available, a button will appear allowing you to download and install the new update.



14. Configuration Settings Details

This section will provide details on each of the settings which can be accessed from the PBS Configuration / Settings screens on each application, PC or iOS. Most of the below information is available by tapping or clicking on the information button next to each setting in any application.

14.1 Volume Settings

The iNav PBS has an internal microphone which will detect ambient noise and will auto adjust the sound output volume to compensate for ambient noise. Each of the volume settings below have a minimum and a maximum setting. These settings control the limits at which the auto volume adjustment has control. The volume settings are entered as a percent from 0% to 100% in 5% increments. Minimum volume levels are available from 0% to 75% and maximum volume levels are available from 25% to 100%. If, for example, a minimum level is set to 20% and a maximum level is set to 60%, then the auto volume adjustment will never be lowered to below 20% of what the unit is capable of and will never be raised above 60% of what the unit is capable of.

14.1.1 Locate Volume

This function adjusts the volume level at which the Locate (14.4.1) sounds will be played.

Factory Default: Minimum 0%, Maximum 50%

14.1.2 Information Message Volume

This function adjusts the volume level at which the Information Message (14.4.5), Push Confirm Message (14.4.6), and periodic Wait Message (14.4.3) sounds will be played.

Factory Default: Minimum 65%, Maximum 100%

14.1.3 Standard Walk Volume

This function adjusts the volume level for the walk and clearance sounds when activated using a standard-length button push.

Factory Default: Minimum 30%, Maximum 60%

14.1.4 Extended Walk Volume

This function adjusts the volume level for the walk and clearance sounds when activated using an extended button push.

Factory Default: Minimum 60%, Maximum 80%

14.1.5 Volume Over Ambient

This function can increase or decrease the playback volume of all sounds except the locate sound relative to the measured ambient sound pressure, but still be within the set minimum and maximum settings. This compensation function is adjustable from -30dB to +20dB over ambient in 5dB steps.

Factory Default: 0dB

14.1.6 Locate Volume Over Ambient

This function can increase or decrease the playback volume of the locate sound relative to the measured ambient sound pressure, but still be constrained within the set minimum and maximum settings. This compensation function is adjustable from -30dB to +20dB over ambient in 2.5dB steps.

Factory Default: 0%

14.2 Walk Interval Settings

14.2.1 Walk Mode Sound

This function selects the preferred sound played during the Walk interval. The available options are: None, Cuckoo (N/S), Chirp (E/W), Standard Walk, Custom Walk 1, Custom Walk 2, Custom Walk 3, Walk Sign is On for All Crossings, Rapid Tick 1, Rapid Tick 2, Rapid Tick 3, Canadian Melody, Australian Walk, Walk Sign is On.

Note: The length of button vibration during the Walk interval matches the duration of the walk sound.

Factory Default: Standard Walk

14.2.2 Walk Sound Pause

This function selects the length of silence between walk sounds.

The available options are selected in seconds: 0, ½, 1, 1½, 2, 2½, 3, 4, 5, 6, 7, 8, 9, and 10

Factory Default: 0.5 seconds

14.2.3 Walk Sound Trigger

This function selects the condition that will play walk sounds at the next pedestrian Walk interval.

The available options are:

- Always On: Recall Mode Conditions - Plays every Walk interval.
- Any Push: Short or Extended button push.
- Extended Push: Extended push only.

Note: Do not use Extended Push on crosswalks set to Rest-in-Walk. If a blind person does not push and hold the button, and if a car never triggers the cross street, they may never get a Walk indication.

Factory Default: Any Push

14.2.4 Maximum Walk Time

This function selects the maximum time a walk message and vibrating button will activate during a Walk interval. This acts as a safety limit for the maximum possible time an intersection should ever be in Walk.

The available options are selected in seconds: 30, 35, 40, 45, 50, 55, 60, 90, 120, 150, 180, 210, 240, 300

Factory Default: 30 seconds

14.2.5 Sound/Vibrate Timer

This function selects the number of times (1, 2 or 3) or the length of the time in seconds the walk sound is played. Use this function to limit the sound timer for Rest-in-Walk situations, or to limit the walk sound time in the event of a system failure.

The Sound/Vibrate Timer setting can optionally shorten the amount of time the walk sound plays and the button vibrates during the Walk interval. There is no option that will extend the sound/vibration. Only a serious malfunction can result in an extended sound or vibration beyond the end of the Walk interval. There are settings available that can help reduce the risk to pedestrians in the event of such a malfunction.

The available options are:

- Full Walk: The selected walk sound will repeat until the Walk interval ends.
- 1 Message: The selected walk sound will play one time, or until the Walk interval ends, whichever occurs first.
- 2 Message: The selected walk sound will play two times, or until the Walk interval ends, whichever occurs first.
- 3 Messages: The selected walk sound will play three times, or until the Walk interval ends, whichever occurs first.
- Time in seconds from 4 - 50: The selected walk sound will play through the amount of time specified, or until the Walk interval ends, whichever occurs first.

For each of the above options, if Cancel on Clearance is set to Yes, any currently playing sound clip will be truncated at the time the Walk interval ends. Otherwise, the currently playing sound clip will complete. The repetition period for the walk sound will be the length of the sound clip plus the selected Walk Sound Pause time. The button vibration time is synchronized with the sound time.

Factory Default: 20 seconds

14.2.6 Sound/Vibrate Re-Trigger

This function is primarily used when the Sound/Vibrate Timer setting is not set to Full Walk and is intended for use in intersections set to Rest-in-Walk. It is also important in the following situation: If the Walk interval is able to turn on without a button push (Recall Mode) and the Walk Sound Trigger option is NOT set to Always On, the locate tone will continue into the Walk interval, just like in a Rest-in-Walk timeout. The choices below determine the response to a button push while the locate tone is playing during the Walk interval.

The available options are:

- Button Push - Typically used in Rest-in-Walk situations. After initial timeout, sound restarts immediately with button push as long as crosswalk is still in the Walk interval.
- New Walk - After timeout, a new Walk interval is required before the next walk sound is played which is also complemented with the vibrating button.

Factory Default: New Walk

14.3 Clearance Interval Settings

14.3.1 Cancel on Clearance

This function gives the choice to cancel or complete the walk sound when the intersection timing changes from the Walk interval to the Clearance interval. This function is primarily applicable where walk messages are quite long. It must be carefully examined before turning this function off since it can falsely extend the Walk interval sounds into the Clearance interval. Regulations may not allow this function, so changing the default must be carefully considered.

The available options are: No, Yes

Factory Default: Yes

14.3.2 Clearance Mode Sound

This function allows the choice of different clearance sounds.

The available options are: None, Tone 1 thru Tone 4, Countdown, Canadian Melody, Cuckoo

If the Countdown option is selected, the Countdown numbers are automatically selected based on the previous Clearance intervals. The starting number is chosen by measuring the length of the two previous Clearance intervals and choosing the shorter of the two. Due to the measurement necessity, the Countdown will not be heard until the third Clearance interval encountered after power up.

Note: If ped recycle is activated on the traffic controller and ped recycle can interrupt the clearance cycle, it is not recommended to use countdown due to the timing changes causing the count to be incorrect.

Note: If the Second Language option is enabled, the Countdown function is tied into the language options. The Countdown language will be in the same language the pedestrian selects when performing an extended push.

Factory Default: Tone 1

14.3.3 Clearance Tone Pause

This function selects the length of silence between clearance sounds.

The available options are selected in seconds: ½, 1, 1½, 2, 2½, 3, 3½, 4, 4½, 5

Factory Default: 1 second

14.4 Don’t Walk Interval Settings

14.4.1 Locate Sound

This function allows the choice of a few standard locate sounds.

The available options are: None, Tone 1 thru Tone 4

Factory Default: Tone 1

14.4.2 Locate Tone Time

This function selects the start to start repetition time of the locate sounds.

The available options are selected in seconds: ½, 1, 1½, 2, 2½, 3, 3½, 4, 4½, 5

Factory Default: 1 second

14.4.3 Wait Message

The Wait Message is an optional feature which will switch the locate sound to a verbal "Wait" following a button push and button push confirmation sound. There are four timing options of 4, 6, 8 and 10 seconds. Also, the Wait Message can be triggered by any push or only an extended push. The Wait Message is available regardless of the Walk Sound Trigger setting.

The available options are: Off, Any Push 4s, Any Push 6s, Any Push 8s, Any Push 10s, Extended Push 4s, Extended Push 6s, Extended Push 8s, Extended Push 10s

Factory Default: Off

14.4.4 Direction Message

This function selects the spoken direction to be played when a direction message is configured as part of the Information Message setting.

The available options are: N, NE, E, SE, S, SW, W, NW

Factory Default: North

14.4.5 Information Message

This option details what notice occurs when the button is held down for the extended push time. This typically allows for a custom message that gives blind pedestrians additional information on the street they are crossing and its cross street. The options noted as ‘with Pulse’ give a vibrotactile pulse at the beginning of a button push and a second pulse when the button is held down for the extended push time. The options noted as ‘no Pulse’ only have a vibrotactile pulse at the beginning of the button push and only the sound will play at the extended push time.

The sound options are:

- Tick: A click sound is heard. This is the same sound file that is configurable as Click in the Push Confirm Message setting.
- Custom: A special-ordered or programmed information message sound. If no custom sound has been loaded, then the Custom option contains the click sound.
- Direction: “Traveling North” or whichever direction is selected for the Direction Message option will play.
- Custom + Direction: The custom sound will play followed by “Traveling North” or whichever direction is selected for the Direction Message option.
- No Sound: No sound is played.

The available options are: Tick (no Pulse), Custom (with Pulse), Direction (with Pulse), Custom + Direction (with Pulse), No Sound (with Pulse), Custom (no Pulse), Direction (no Pulse), Custom + Direction (no Pulse)

Factory Default: Tick (no Pulse)

14.4.6 Push Confirm Message

This function selects the sound played directly following a standard button push.

The available options are: Click, Wait, Custom, Custom 2

Factory Default: Wait

14.5 Other Settings

14.5.1 Button Push Force

This function adjusts the necessary force required on the button to place a call.

The available options are: Light, Medium, Firm

Factory Default: Medium

14.5.2 Cancel on Walk

This function gives the choice to immediately cancel or complete the information message when the intersection changes to the Walk interval while playing the information message.

NOTE: It must be carefully examined before changing this option to “No” since it can falsely shorten the Walk interval.

The available options are: No, Yes

Factory Default: Yes

14.5.3 Extended Push Time

This function adjusts the amount of time the button on the PBS has to be pressed and held before enabling the Extended Push functions.

The available options are selected in seconds from 0 to 6 in ½ second increments.

Factory Default: 1 second

14.5.4 Second Language

This function allows for a Second Language to be played for the information message, walk message and countdown. This language is a custom programmed option. For example, if the second language has been programmed in Spanish and enabled, the pedestrian can access the language options by pressing and holding the push button. The primary language would be stated first then the secondary language. "English", pause, "Español", pause, "English", etc. The pedestrian releases the button after they hear their language of choice. The information message is immediately played in the selected language. The walk message and countdown will also be played in the selected language. Following this, all messages will revert to the default primary language.

NOTE: No second language sounds are included from the factory. These must be added by recording sounds and uploading them or ordering a custom option. If this option is enabled when no second language sound are programmed, the unit may not operate as expected. See section (11) for information on uploading audio files.

The available options are: No, Yes

Factory Default: No

14.5.5 Ping Pong

This function will play the walk/clearance sound first, on one PBS, then across the street, back and forth until the interval ends similar to a beaconing type of operation.

The feature can be enabled independently for walk sounds and clearance sounds. The ping pong feature can be configured to only activate upon an extended push if the “On for Extended Push” option is enabled.

Each unit must be configured to play first or play second. When there are two units per phase, then one unit should be set to play first and the other should be set to play second. If there are more than two units, then the settings should alternate for each unit in series, for example if there are three units (with one in a mid-crossing island) than the two units on the street corners should be set to play first while the island unit should be set to play second.

Note: There is no communication between units for synchronization of sounds. This feature relies on sound message length for synchronization. All units on each phase must have the same walk and clearance sounds configured to ensure proper ping pong timing.

Factory Default: Off

14.5.6 External Speaker Option

This option is only available on special ordered units with part number suffix –ES and must be specified at time of ordering. When enabled, all walk and clearance sounds emanate from an external speaker and all other sounds emanate from the internal speaker.

Factory Default: Disabled

14.5.7 Double Walk

This setting enables a unit to automatically generate a ped call and enable sound for two Walk and Clearance intervals. A second ped call is generated after the end of the first Walk interval enabling a second Walk interval to occur. This is typically used for crossings which have an island without a pushbutton present in order to prevent the possibility of a stranded pedestrian.

The available options are: No, Yes

Factory Default: No

14.5.8 Limit Push Recall

This option is only for use when Walk Sound Trigger is set to Extended Push and Sound/Vibrate Re-Trigger is set to New Walk. This option limits the ped call re-trigger to only occur when an extended push occurs during the Walk interval. If only a standard push occurs, no ped call will occur at the end of Walk.

An automatic call placed by the PBS at the end of Walk should only happen following an Extended Push during Walk. During Walk, only an Extended Push should latch the Pilot LED. During Walk, only an external button call for Extended Push duration should latch the Pilot LED. An Extended Push which starts during Don’t Walk and finishes during Walk should have the same result as an Extended Push completely within Walk.

The available options are: No, Yes

Factory Default: No

14.5.9 Pilot LED Recall

iNS3 Only: This feature turns on the Pilot LED and keeps it on during Clearance and Don’t Walk. The LED turns off during the Walk cycle. This is meant for use when the Traffic Controller is timed (PED Recall), not actuated.

The available options are: No, Yes

Factory Default: No

15. Fail Safety

The iNS3 includes fail safety operation that will automatically lock in a call when the following conditions arise:

1. If the iNS3 is not powered, the iNS3 will place a call.
2. If the iNS3 is powered but is unable to interpret the DATA line, the iNS3 will place a call.
3. If the iNS3 is placed into maintenance mode by enabling audio playback from within the Apps or performing a firmware update, the iNS3 will place a call.

16. Regulatory Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.