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2 Wire Navigator Accessible Pedestrian Signal

Operation Manual

Polara's "2 Wire Navigator" Accessible Pedestrian Signal (APS) System is a revolutionary new approach to making intersection crosswalks accessible to the visually impaired. Typical APS devices are usually stand alone devices that work independently of each other, and require the installation of significant additional wiring to each push button station. Their sounds are typically not coordinated and they do not provide the ability to mute the sounds on a non-actuated crosswalk.

Polara's "2 Wire Navigator System" is a coordinated system that significantly reduces the amount of labor required to install and program an APS system on an intersection, and it is extremely easy to customize the system to meet the needs of complex intersections. In addition, it synchronizes all of the sounds on the intersection and can be set up to allow the user to mute the sounds on all other crosswalks except for the one they are using.

The system comes from the factory pre-setup and programmed with virtually all standard type performance requirements for most intersections. However, should you have a special performance need, the system has extra Inputs and Outputs that you can program for those special needs.

The most revolutionary feature of the system is that if you already have buttons on an intersection, with two wires (one pair) running from the intersection control cabinet to each button, or buttons on the same phase, there are no additional field wires required. The system sends power and data to each push button station over the single pair of wire.

The 2 Wire Navigators preferred field wiring is to have a pair of wires (+ and -/common) for each CCU channel with from one to a maximum of three Push Button Stations on a channel. If there is not a separate common for each channel, a single common dedicated to all PBS units should be adequate. The PED common should not be the same wire(s) that are used for AC Neutral supplying lights in the intersection. **Polara cannot guarantee the system will work properly in all instances, especially if a single common to the buttons and signal lighting is shared. Each case will have to be tried and proven because it depends upon the condition of the wires, splices, etc... In the event the 2 Wire system does not work, Polara will swap it out for a 4 Wire system as long as there is no damage to the units.**

Please carefully read the contents of this manual in its entirety so you fully understand the many functions and options the system provides. For a successful installation you must thoroughly read the Installation Manual. For correct setup of features you must be very familiar with pages 6-13 of this manual.

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Standard Features

Two Wire Advantage
- Uses existing pushbutton wiring, only two wires; very easy to hook up.
- Significantly reduced installation cost due to no additional wires required.
- Synchronizes all sounds on an intersection.

System Uniqueness
- Has independent minimum & maximum volume settings for information message, Locate Sounds, Clearance & Walk Sounds, for both standard and extended push operating conditions.
- Allows for global configuration changes (setup one and save changes to all vs. setup per individual push button station).
- Optional clearance sounds or audible countdown of remaining seconds during clearance available; compliments or replaces visible countdown displays.
- Secure configuration (password protection) prevents unauthorized changes.
- Button rated for 20 million+ operations with < 3 lb. actuation force.
- Multiple language option available; user selectable by length of button push.
- Maximum volume dynamic range 60 dB.
- Optional announcement of direction of travel (Ex: "traveling west") can be set as the directional message or added (in field) to the custom information message.
- Allows for extended push priority (mutes entire intersection except selected crosswalk to minimize confusion caused by other sounds).
- Has synchronized sounds throughout intersection; reduces noise clutter.
- All inputs and outputs are optically isolated; eliminates need for ped button isolators.
- Can provide special messages throughout intersection such as "Emergency vehicle approaching, clear intersection immediately", or a similar warning message regarding an approaching train if desired.
- Push button or system failure defaults to transmitting a constant pedestrian call; standard pushbuttons can fail open.
- Adjustable extended push time from 0 to 6 seconds in .5-second increments can be set by installer.

Custom Message and Sound Options

- Locate Sound – Plays a sound at selectable interval to assist a blind pedestrian in locating the Push Button Station.
- Custom Information Message(s) – Typically gives street being crossed with cross street, and other vital information. Up to three different languages can be programmed in.
- Custom Walk Message(s) – Typically gives name of street the pedestrian is crossing. Up to three different languages can be programmed in.
- Custom Clearance Sounds/Countdown – Plays a sound to let pedestrian know of clearance phase. This optional tone can be unique, or sound similar to the locate sound but played at a faster rate, or verbally count down the number of seconds in the clearance phase. Up to three different languages can be programmed in.

Advanced Sound Options

- Custom Message #1 – Message overrides all other sounds or messages and plays once every time its assigned input is activated on the Central Control Unit. Units shipped with standard message "Emergency vehicle approaching, clear intersection immediately."
- Custom Message #2 - Message overrides all other sounds or messages and plays once every time its assigned input is activated on the Central Control Unit. Units shipped with standard message "Train is approaching, clear tracks immediately."

Messages can be changed and customized. See Advanced Options section for more information.

Safety

The Central Control Unit (CCU) AC Line is fused with a 5 amp fast-blow fuse. The CCU chassis is grounded through an earth ground connection to prevent shock hazard. All General Purpose Inputs and Outputs are optically isolated and transient protected to protect any other equipment interfaced to the CCU.

The CCU is provided with a hard wired power cord with quick disconnect capability. **Polara recommends that the CCU be powered from the same 115 VAC lightning protected source and circuit breaker that powers the Traffic Controller. It should not be connected to a GFI protected outlet. If the CCU is not powered from the same source that powers the Traffic Controller, the Fail-Safe Interconnect Board <u>must</u> be used to ensure pedestrian calls get locked-in in the event of loss of power to the CCU.**

2 Wire Navigator System (System)

Central Control Unit (CCU)

The CCU installs inside the Traffic Cabinet and is powered by the AC supply mains (115 VAC). The CCU is the power supply and signaling interface between the existing Intersection Traffic Control Unit and the Push Button Stations which are located in the field. One CCU can control up to 12 Push Button Stations **(3 push buttons maximum per phase)**. The CCU controls up to four Pedestrian phases, receiving its timing from the Walk and Don't Walk signals. Additional advanced configurations can be obtained by utilizing its general purpose Inputs and Outputs.

Push Button Station (PBS)

The PBS is the pedestrian interface to the Navigator system. All sounds emanate from the PBS. A Locate Tone is typically always playing during the Don't Walk and PED Clearance phases. The locate tone is what the blind pedestrian listens for to locate the PBS. Both a momentary or extended button push will be registered by the PBS by the latching on of the LED on the front of the PBS. If the unit has been programmed with custom voice messages the pedestrian can activate an information message with (typically an extended) push of the button. The system can provide custom messages in up to three different languages based on how long the button is pushed. The PBS uses the existing push button wires at the intersection for both power and signaling between itself and the CCU.

Configurator

The Navigator Configurator is a hand held remote used for configuring the Navigator System. Complete system configuration is performed with this remote. Just stand within a few feet in front of a PBS, point the Configurator at the PBS, turn it on and select your options. The Configurator communicates via infrared with the PBS and CCU. One Configurator is all you need for maintaining multiple intersections! All of the configuration options in the CCU and the PBS are set with the Configurator. The beauty of the Navigator system is its interactive operation. For example, if you select one of the optional sounds you hear your choice as you select it! When adjusting volume levels you hear the level you select! After configuring the features in one PBS, you can upload your choices to just that PBS or to all of the PBS's on the entire intersection with a single button push! **Note: Direct sunlight on the infrared windows of either the Configurator or Pole Unit can impair communication. Providing shade while using the Configurator may be necessary.**

Note: The 2-Wire Navigator System requires good wiring with low noise interference from each Push Button Station to the Control Cabinet. If you are installing a system on an intersection with very old wiring and/or with numerous old splices, you must carefully verify the system's proper operation per the tests in the Final Operational System Check listed on page 9 in the 2 Wire Navigator Installation Manual.

If the 2-Wire System does not work correctly due to bad wires/splices, new wires need to be pulled, or 4-Wire Navigators should be installed instead of the 2-Wire system. Polara will swap the 2-Wire system for a 4-Wire system as long as there is no damage to the units.

System Installation Overview

Installation involves installing the CCU in the intersection control cabinet and the PBS's in the field. The PBS's replace any existing pedestrian push buttons mounted on poles, and connect to the same pair of wires normally used for the push buttons. Inside the traffic signal control cabinet, the CCU is wired between the push button wires and the PED button inputs to the traffic signal system. The CCU is also wired to the PED WALK and DON'T WALK load switches, and to a constant source of lightning protected AC line voltage. Additional wiring, for advanced functions, is optional. The PBS's receive operating power from the CCU over the two wires connected to them, and send and receive digital data over the same wires. **NOTE: This means that you can never temporarily substitute a standard push button for a PBS unless you rewire the cabinet back to normal for that phase, and use all standard push buttons for that phase.**

An experienced two man crew should be able to install an 8 push button intersection in 4 hours or less.

SEE 2 WIRE NAVIGATOR INSTALLATION MANUAL FOR DETAILED INSTALLATION INSTRUCTIONS.

If the PBS is going to be mounted on a wooden pole, mounting diagrams are available for download at http://www.polara.com/assistance.htm (or click on support button on main page). You can also contact Polara at (888) 340-4872 for more information.

System Configuration

Configuring the Navigator System is easy to learn due to the simple user interface. The best way to understand the Navigator System is to read the descriptions of each option that follows, write down your preferences for each (if you have one), then actually step through each choice on the Configurator. The majority of installations will typically require few configuration changes from the factory defaults (See Page 14). A wide range of configuration options is made available to adapt to special intersection needs.

Configurator Power Up and Communications
After pressing the Configurator POWER button the Configurator performs a display test then displays the Software Version of the Configurator. Then the Configurator will display "Searching for Pole Unit" and attempt to communicate with the PBS. If you are just practicing and learning the Configurator and are not pointing it at a PBS, wait until it says "Press Either Read Settings", then press the Push Button Station Read Settings keypad. This will bring you to the first option "Locate Vol Min". Pushing the Yes/No keys will show you that option's setting choices. Pushing the Menu Down/Menu Up keys will take you through the other options in descending or ascending order. **Note: If you do not press a button within a 30 second period, the Configurator will turn itself off.**

If you are actually programming a PBS, point the Configurator at the red LED on the PBS while holding it 3"-12" away and push the Power button. You will see it list the same messages as above. As long as you are standing in front of the PBS within a 5' range communications will normally be maintained. **Note: Direct sunlight on the infrared windows of either the Configurator or Pole Unit can impair communication. Providing shade while using the Configurator may be necessary.**

If the link is successful then you will be prompted with:

"ENTER SECURITY CODE AAAA" (Default is "AAAA")
A 4 character code is required to access the functions of the Configurator. The Security Code can be both Alpha and or Numeric providing you with over 1.6 million possible combinations. The purpose of the Security Code is so that each municipality can maintain full control without any concerns of tampering. If for some reason the Security Code is forgotten or lost, call Polara Engineering for instructions on how to proceed. Press <YES and NO> to change the character over the cursor. Press UP or DOWN to move the cursor. When the cursor is under the 4th character, the DOWN key will submit your entry. Following a code match, you have the next option.

CHANGE SECurity CODE?
Press <YES to enter a new security code or NO> to skip. The purpose of this option is to change the Security Code to a code of your choice. It is recommended that the Code be set to something that would be difficult for someone to guess. The new code is entered as above and saved by pressing the DOWN key at the 4th character. Make a note of your code BEFORE you save it. The new code is actually stored in the Central Control Unit and therefore it applies to all the pole units connected to it.

<u>PBS and CCU Software Versions</u>
The Configurator will briefly display version numbers for the PBS and CCU you are communicating with. This will allow you to verify that the versions you have are compatible with each other. Contact Polara for any known compatibility issues.

<u>Configuring the Navigator Push Button Station</u>
After the Software version display the next screen is:
"ENTER ID#"
"A1" is the default choice. The identification numbers only need to be set once. **It is recommended that all of the ID's of the PBS's in the intersection be set first before beginning any configuration operation! Each PBS in the intersection must have its own unique ID number.**

The ID choices are A1,A2,A3, B1,B2,B3, C1,C2,C3, D1,D2,D3. The A,B,C, & D ID's would be wired to its respective A,B,C, & D outputs of the Central Control Unit (CCU). For example on a standard crosswalk with two PBS's the ID's "A1" & "A2" would be wired to the CCU phase "A" Power Supply output. So the "1" & "2" in the ID means that the two PBS's are installed on each side of one crosswalk. The"3" in the ID is only assigned to a PBS that is installed on an island in the crosswalk. Starting with CCU revision 2.0, each ID has a status LED on the front of the CCU.

Press <YES/NO> buttons to select the desired ID. When the correct ID is displayed, press Down. The new ID is saved at this point. If you are only setting ID's, you can now move to the next PBS.

After making your ID selection you will see the message "PRESS EITHER READ SETTINGS". If you wish to download the current settings within the PBS as a starting point, press the READ SETTINGS button under the Configure PBS key group. After the data transfer, you will see the first menu item. Lets now go through all of the Navigator menu items and their choices.

Special Notes:
1. The Configurator has a built in shortcut which can make it easier to go from station to station and establish communication. Whenever the display shows "PRESS EITHER READ SETTINGS", you can walk over to another station and press the UP key. This causes communication to start over again allowing for rapid changes. Alternatively you can press the power key, turn the Configurator off, and then turn it on again.

2. Due to the limited number of characters that can be displayed on the Navigator Configurator LCD, some of the descriptions are abbreviated but are spelled out for clarity in this document! For example the function EXTENDED PUSH WALK VOLUME MINIMUM, is abbreviated to EXT WALK VOL MIN on the LCD display and EXTended (Push) WALK VOLume MINimum in this document. Note the word (Push) is inserted in parenthesis to further improve clarity.

3. As you move through the options, only those options where a setting was changed using the left and right buttons are flagged for update. **If you want a particular setting updated, you must change the setting, even if you change it back to its previous value.** This method reduces the amount of data and hence the time required to perform the update. **No setting changes are saved until the update function is performed by pressing an UPDATE key. If you lose communication before updating, everything you changed will be lost.**

4. When you push the Push Button Station Update Settings key it will ask you, Update All, Yes, No? Answering Yes will send the changes to all Push Button Stations on the intersection. Answering No will update just the Push Button Station you are communicating with. Note: It is possible some data settings may not take so at final inspection the settings at each PBS should be checked if update all is chosen.

VOLUME SETTINGS
The volume levels are entered as a percent from 0% to 100%. The volume difference between 0% and 100% is 60dB. The steps are 5% which represents a volume change of approximately 3dB.

LOCATE VOLume MINimum
This function adjusts the minimum level that the LOCATE Sound will be played at. The Auto Volume adjustment will not go below this setting.
This volume level is adjustable from 0% to 75% of the maximum volume output in 5% steps. (16 choices) (Default = 10%)

Pressing the MENU DOWN button at the desired choice will remember your choice and move on to the next menu item. You can also push Menu Up key and work backwards through the list.

LOCATE VOLume MAXimum
This function adjusts the maximum level that the LOCATE Sound will go up to. The Auto Volume adjustment will not go above this setting.
This volume level is adjustable from 25% to 100% of the maximum volume output in 5% steps. (16 choices)
(Default = 50%)

INFOrmation MeSsaGe VOLume MINimum
This function adjusts the minimum level for the information message and button confirmation "tick" sound. The message and tick will never play at less than this level, which can be set from 0% to 100% in 5% steps. (21 choices)
(Default = 60%)

STandarD WALK VOLume MINimum
This function adjusts the minimum volume level for the WALK Sound. The Auto Volume adjustment will not go below this setting.
This volume level is adjustable from 0% to 75% of the maximum volume output in 5% steps. (16 choices)
(Default = 40%)

STandarD WALK VOLume MAXimum
This function adjusts the maximum volume level for the WALK Sound. The Auto Volume adjustment will not go above this setting.
This volume level is adjustable from 25% to 100% of the maximum volume output in 5% steps. (16 choices)
(Default = 70%)

EXTended (Push) WALK VOLume MINimum
This function adjusts the minimum volume level for the WALK Sound following an extended push. The Auto Volume adjustment will not go below this setting.
This volume level is adjustable from 0% to 75% of the maximum volume output in 5% steps. (16 choices)
(Default = 60%)

EXTended (Push) WALK VOLume MAXimum
This function adjusts the maximum volume level for the WALK Sound following an extended push. The Auto Volume adjustment will not go above this setting.
This volume level is adjustable from 25% to 100% of the maximum volume output in 5% steps. (16 choices)
(Default = 80%)

VOLume OVER AMBIENT
This function changes the PBS sensitivity and response to ambient sound. The higher the setting, the louder (with less ambient noise) the output volume will play relative to the measured ambient sound pressure, but still be constrained within the set Minimum and Maximum settings. This compensation function is adjustable from 0dB to 10dB over ambient in 5dB steps. Seldom should you ever need to use a setting higher than 0dB or +5dB.
(Default = 0dB)

WALK PHASE SOUND OPTIONS

WALK MODE SOUND
This function selects the preferred sound played during the Walk phase.
The following 9 choices are as follows:
NONE, CUCKOO (North/South), CHIRP (East/West), STandarD (Verbal Walk) MesSaGe, CUSTOM (Verbal Walk) MesSaGe, CUCKOO + STandarD (Walk Message), CUCKOO + CuSToM (Walk Message), CHIRP + STandarD (Walk Message), CHIRP + CuSToM (Walk Message).
(Default = STandarD (Walk) MesSaGe)

WALK SOUND PAUSE
This function selects the length of silence between the WALK Sounds.
The choices are:
.5 second to 3 seconds in .5 second steps and 3-10 seconds in 1 second steps.
(Default = .5 Second)

WALK SOUND TRIGger
This function selects the condition that will play Walk Sounds at the next pedestrian walk cycle. The choices are:
ALWAYS ON (Recall Mode Conditions – Plays every walk cycle)
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 could not get a walk indication.
(Default = ANY PUSH)

SOUND/VIBration TIMER
This function selects the number of times (1, 2 or 3) or the length of time in seconds the WALK Sound or Message is played. Use this function to limit the sound time for Rest in Walk situations.
Note: Do not use 1, 2 or 3 if PBS revision is 1.10 or earlier.
The choices are:
FULL WALK (Duration)
1, 2 or 3 for walk message to play 1, 2 or 3 times if walk time allows.
4 SECONDS to 50 SECONDS, allows setting exact play time for time greater than 4 seconds
(Default = FULL WALK)

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SOUND/VIBration RETRIGger
This function is primarily used when Menu Item SOUND/VIB(ration) TIMER timeout
is not set for 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 sign 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
phase, just like a Rest in Walk timeout. The choices below determine the
response to a button push while the locate tone is playing during the walk
phase.

The choices are:
(A New) 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 Walk phase.
(A) NEW WALK (Phase) – After timeout, a new WALK Phase is required before the
next WALK Sound or Message is played which is also complemented with the
Vibrator. The NEW WALK is intended for applications in Canada where a
supplemental triggering (relay) system is used to force the controller to cycle.
If this supplemental system is not present, do not use NEW WALK option.
(Default = BUTTON PUSH)

CANCEL ON CLeaRaNCE
This function gives the choice to cancel or complete the WALK Sound or Message
when the intersection timing changes from the Walk Phase to the Clearance Phase.
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 Cycle Sounds into the Clearance Cycle time. Regulations may not
allow this function so changing the default must be carefully considered.
The choices are: YES, NO
(Default = YES, cancels walk message upon start of clearance phase)

CLEARANCE PHASE SOUND OPTIONS
CLEARance MODE SOUND
This function allows the choice of different Clearance Sounds, a customer
specified tone or verbal Clearance Countdown. Note: 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.
The choices are: NONE, TONE 1, TONE 2, TONE 3 (CuSToM), COUNTDOWN
(Default = TONE 1)

CLEARance TONE PAUSE
This function selects the length of silence between the CLEARANCE Sounds.
The choices are: STANDARD, .5 SECONDS TO 3 SECONDS IN .5 SECOND STEPS.
(Default = STANDARD, 1 sec)

DON'T WALK PHASE SOUND OPTIONS
LOCATE SOUND
This function allows the choice of a few standard LOCATE Sounds or a customer
specified tone.
The choices are: NONE, TONE 1, TONE 2, TONE 3 (CuSToM)
(Default = TONE 1)

LOCATE TONE TIME
This function selects the start to start repetition time of the LOCATE Sounds.
The choices are: STANDARD, .5 SECOND TO 5 SECONDS IN .5 SECOND STEPS
Current MUTCD guidelines specify a repeat rate of once per second.
(Default = STANDARD, 1 sec)

WAIT MeSsaGe

The wait message is an optional feature which will switch the locate tone to a verbal "wait" following a button push. With software versions prior to 1.30, the message is heard every four seconds and cancels when the walk starts. Following the walk and clearance cycle, the normal locate tone resumes. The Wait Message is not available if the Walk Sound Trigger option is set to Extended Push.

The choices are: YES, NO
(Default = NO)

Beginning with version 1.30 of Navigators, Configurators and CCUs, the Wait Message has new options. There are 4 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. Also, the volume of the Wait Message is set by the STD WALK VOL MIN and MAX or by the EXT WALK VOL MIN and MAX, depending on the length of the button push. The CCU version update is only required in order to synchronize the Wait Message across all the Navigators on an intersection.

The choices are: ANY PUSH 4 SEC, OFF, ANY PUSH 6 SEC, ANY PUSH 8 SEC, ANY PUSH 10 SEC, EXT PUSH 4 SEC, EXT PUSH 6 SEC, EXT PUSH 8 SEC, EXT PUSH 10 SEC
(Default = OFF)

If you are using a newer Configurator with an older Navigator and wish to configure the Wait Message, you must limit your choices to ANY PUSH 4 SEC or OFF. If you are using and older Configurator with a newer Navigator, your only options will be YES or NO, where YES is equivalent to ANY PUSH 4 SEC.

INFORMATIONAL MESSAGE OPTIONS

DIRECTION MesSaGe

This function can be setup to give the blind pedestrian more information on the direction they are traveling without having to use a Custom Message.

For example if there is no custom Informational Message, an extended push can be selected to say "Traveling North".

The word "Traveling" will precede the following choices:

NORTH, NORTHEAST, EAST, SOUTHEAST, SOUTH, SOUTHWEST, WEST, NORTHWEST
(Default = NORTH)

INFOrmation MESSAGE

This is an optional custom message that gives blind pedestrians additional information. It typically gives the street they are crossing and the cross street. The following choices are:

NONE, DIRECTION, CUSTOM, CuSToM + DIRection
(Default = NONE)

CANCEL ON WALK

This function gives the choice to immediately cancel or complete the INFORMATION MESSAGE when intersection timing changes to the Walk Phase while playing the INFORMATION MESSAGE.

Note: It must be carefully examined before changing this option to "NO" since it can falsely shorten the Walk Cycle.

The choices are: YES, NO
(Default = YES, information message stops when WALK begins)

EXTended PUSH TIME

This function allows the EXTENDED PUSH TIME to be changed. This is the amount of time the Button on the PBS has to be pressed and held before enabling the Extended Push functions. The choices are: 0-6 SECONDS IN .5 SECOND STEPS.
(Default = 1.0 Seconds)

SECOND & THIRD LANGUAGE OPTIONS
SECOND LANGUAGE
This function allows a SECOND LANGUAGE to be played for the Information Message,
Walk Message and Countdown. This language is a custom option.
For example if the second language has been programmed in Spanish and enabled,
the pedestrian can access the language options by performing an Extended Push.
The primary language would be stated first then the secondary language.
"English", pause, "Spanish" (spoken in Spanish), pause, "English", etc…. The
pedestrian releases the button after they hear the 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.
The choices are: YES, NO   (Default = NO)

THIRD LANGUAGE
This function allows a THIRD LANGUAGE to be played for the Information Message,
Walk Message and Countdown. All three of these messages are custom options.
For example if all three of these custom messages have been programmed, the
primary in English, the second in Spanish and third in Chinese, the pedestrian
can access the language options by performing an Extended Push. The primary
language would be stated first then the secondary language, then the third
language. "English", pause, "Spanish" (spoken in Spanish), pause, "Chinese"
(spoken in Chinese), pause, "English", etc…. The pedestrian releases the button
after they hear the 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.
The choices are: YES, NO
(Default = NO)

ADDITIONAL SOUND OPTIONS

EXTended PUSH PRIORITY
This unique function when enabled is given priority to silence the entire
intersection with the exception of the crosswalk(s) that received an extended
push. This greatly reduces sound clutter to the blind pedestrian and allows them
to concentrate on the sounds relative to their crosswalk only.
The choices are: YES, NO
(Default = NO)

WALK PING PONG
This is another unique function which, when enabled, will play the WALK Sound or
Message first at the PBS that initiated the Walk Cycle then across the street,
back and forth until the WALK phase ends.
The choices are: YES, NO
(Default = NO)

CLEARance PING PONG
Like the WALK PING PONG above, this option will play the CLEARANCE Sound first
at the PBS that initiated the Walk Cycle then across the street, back and forth
until the CLEARANCE phase ends.
The choices are: YES, NO
(Default = NO)

<u>Help Function</u>
The Help function is quite basic, but can get you familiar with what all the buttons do on the Configurator keypad.
Press the HELP button at any time to get a description of what a particular button does. The button description will be scrolled on the display. Pressing HELP button again will return the display back where it was prior to pushing the HELP button.

<u>Display Contrast Adjust</u>
Press the MENU UP & MENU DOWN button simultaneously. Then press left arrow to dim the display and press right arrow to brighten display. Press any other buttons to exit the Display Contrast screen.

<u>Restore Factory Settings</u>
If for some reason you need to restore the factory default settings, turn on the Configurator and establish communications with the PBS. Enter Security Code and menu down through the ID number. You will get a "PRESS EITHER <u>READ</u> SETTINGS" message. To update the CCU, press <u>UPDATE</u> SETTINGS for CCU. It will immediately restore the default settings to the CCU. To update a PBS, press Update Settings for Pole Unit. You will be prompted with "UPDATE ALL?" Pressing Yes will update the entire intersection; pressing no will only update that single PBS with the factory default settings.

<u>General Configurator Operational Notes</u>
The Configurator has an automatic shut off function. As long as the Configurator has an established Communication connection with the PBS, the Configurator will not shut off. The Auto Shut Off timer is reset every time there is Configurator Communications or any button is pressed. If neither of these conditions happen within a 30 second period, the Configurator will Auto Shut Off. The Configurator may be shut off manually by pressing the POWER button. This gives a YES/NO option to power off. This function is active after you see a "PRESS EITHER READ SETTINGS". Selecting NO will return to "PRESS EITHER READ SETTINGS".

You may menu up or down through the choices as many times as needed, but nothing will be saved, unless the UPDATE SETTINGS button is pressed!
The Configurator Communication Link can be broken for up to 15 seconds, after that the PBS will return to normal operation and all menu choice settings within the Configurator will be lost.

<u>Configurator Browse Mode</u>
The Browse Mode is simply to allow a user to acquaint themselves with the Configurator at their desk or anywhere. To enter this mode just power up the Configurator. You will see the following messages: "SEARCHING FOR POLE UNIT…", "NO COMM LINK", "BROWSE MODE" and "PRESS EITHER READ SETTINGS". At this time you should press the Push Button Station Read Settings button. You can scroll through the menus and choices to familiarize yourself with the powerful capabilities of the Navigator APS system.

<u>Advanced Options</u>
The 2 wire Navigator CCU has general purpose inputs and outputs on cable #3 that can be used for various special functions. The most common uses are to trigger the emergency messages for approaching emergency vehicles or trains, or for turning volumes down at night.

Instructions on hook-up and programming to utilize the special inputs and outputs can be downloaded from our website at www.polara.com, or call us at (888) 340-4872 and ask for a copy.

Default and Field Settings

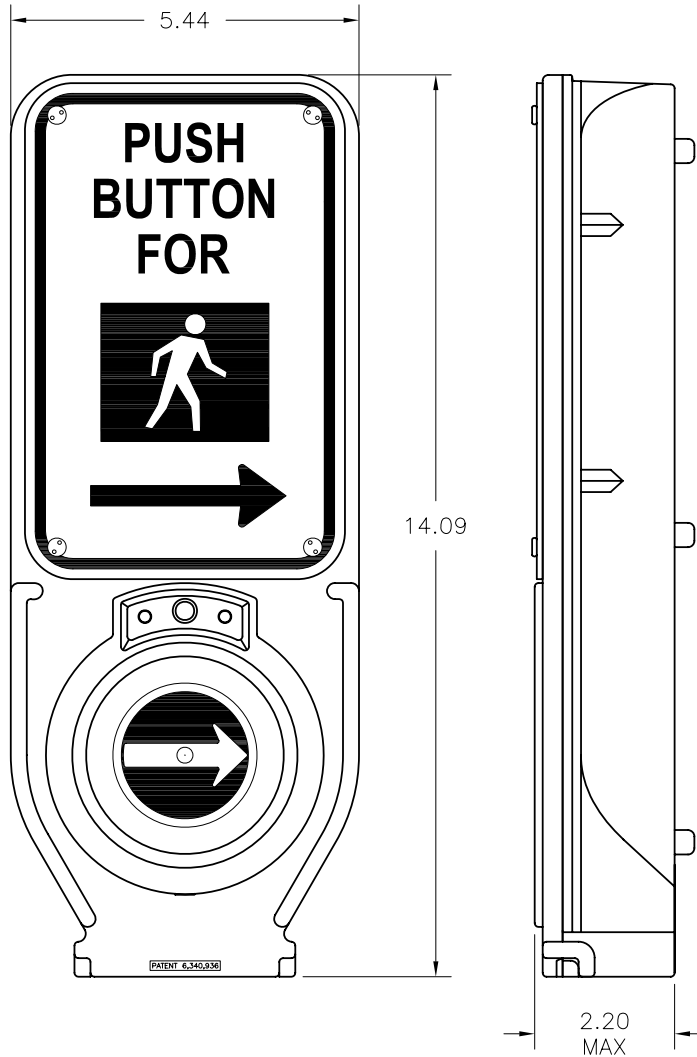City _____ State/Province _____ Install Date _____

Intersection: _____

Street:	_____	_____	_____	_____	_____	_____	_____	_____
Corner:	_____	_____	_____	_____	_____	_____	_____	_____
ID:	_____	_____	_____	_____	_____	_____	_____	_____
Phase:	_____	_____	_____	_____	_____	_____	_____	_____

Defaults (Effective with Configurator v1.12, Nav2 v1.17 and Nav4 v1.15)

	Defaults								
LOCATE VOL MIN	10%	_____	_____	_____	_____	_____	_____	_____	_____
LOCATE VOL MAX	50%	_____	_____	_____	_____	_____	_____	_____	_____
INFO MSG VOL MIN	60%	_____	_____	_____	_____	_____	_____	_____	_____
STD WALK VOL MIN	40%	_____	_____	_____	_____	_____	_____	_____	_____
STD WALK VOL MAX	70%	_____	_____	_____	_____	_____	_____	_____	_____
EXT WALK VOL MIN	60%	_____	_____	_____	_____	_____	_____	_____	_____
EXT WALK VOL MAX	80%	_____	_____	_____	_____	_____	_____	_____	_____
VOL OVER AMBIENT	0 dB	_____	_____	_____	_____	_____	_____	_____	_____
WALK MODE SOUND	STD MSG	_____	_____	_____	_____	_____	_____	_____	_____
WALK SOUND PAUSE	.5 SEC	_____	_____	_____	_____	_____	_____	_____	_____
WALK SOUND TRIG	ANY PUSH	_____	_____	_____	_____	_____	_____	_____	_____
SOUND/VIB TIMER	FULL WALK	_____	_____	_____	_____	_____	_____	_____	_____
SOUND/VIB RETRIG	BTN PUSH	_____	_____	_____	_____	_____	_____	_____	_____
CANCEL ON CLEARANCE	YES	_____	_____	_____	_____	_____	_____	_____	_____
CLEAR MODE SOUND	TONE 1	_____	_____	_____	_____	_____	_____	_____	_____
CLEAR TONE PAUSE	1 SEC	_____	_____	_____	_____	_____	_____	_____	_____
LOCATE SOUND	TONE 1	_____	_____	_____	_____	_____	_____	_____	_____
LOCATE TONE TIME	1 SEC	_____	_____	_____	_____	_____	_____	_____	_____
WAIT MSG	NO	_____	_____	_____	_____	_____	_____	_____	_____
DIRECTION MSG	NORTH	_____	_____	_____	_____	_____	_____	_____	_____
INFO MESSAGE	NONE	_____	_____	_____	_____	_____	_____	_____	_____
CANCEL ON WALK	YES	_____	_____	_____	_____	_____	_____	_____	_____
EXT PUSH TIME	1.0 SEC	_____	_____	_____	_____	_____	_____	_____	_____
SECOND LANGUAGE	NO	_____	_____	_____	_____	_____	_____	_____	_____
THIRD LANGUAGE	NO	_____	_____	_____	_____	_____	_____	_____	_____
EXT PUSH PRIORITY	NO	_____	_____	_____	_____	_____	_____	_____	_____
WALK PING PONG	NO	_____	_____	_____	_____	_____	_____	_____	_____
CLEAR PING PONG	NO	_____	_____	_____	_____	_____	_____	_____	_____

Special Notes: _____

_____

_____

_____

5.44

PUSH BUTTON FOR

14.09

PATENT 6,340,936

2.20 MAX

PUSH BUTTON STATION

The 2 Wire Navigator PBS is the pedestrian interface to the Navigator Accessible Pedestrian System. A system includes a Central Control Unit (CCU), a Configurator, and up to 12 Push Button Stations. The PBS provides valuable information and cues via both a vibrating arrow button and audible sounds making the intersection accessible for all pedestrians. All sounds emanate from the back of the unit. The weather-proof speaker is protected by a vandal resistant screen. A sunlight visible red LED latches "ON" to confirm the button has been pushed. PBS includes frame, sign, ADA compliant push button, and mounting hardware.

By interfacing with the Central Control Unit that installs in the traffic control cabinet the PBS can provide the following standard features.

- Confirmation of button push via latching LED, sound, and vibrotactile bounce.
- Direction of travel (with extended button push).
- Standard locating tone during Don't Walk (and clearance if desired).
- Cuckoo, chirp, or standard voice message during walk.
- Vibrating button during walk.
- Standard locating tone, custom sound, or verbal countdown during PED clearance.
- All sounds automatically adjust to ambient over 60dB range.
- Most sounds can have minimum and maximum volume independently set.
- All sounds are synchronized.
- Extended button push can turn on, boost volumes, and/or mute all sounds except those on activated crosswalk.
- Special emergency messages available.

Additional custom options listed on page 2.

Revised — 04/20/06

POLARA ENGINEERING INC.
4115 W. ARTESIA AVE. FULLERTON, CA. 92833

TOLERANCES: .XXX ±.005 .XX ±.02 (EXCEPT AS NOTED)				SCALE 1:3
DRAWN BY BB	CKR. CLM	ENG. MGR. LB	MFG. MGR. FB	SHEET 1 OF 2
DATE 03-14-03	DSN. ENG. WR	Q.A. APP. RVC	FINAL APP. JMc	USE

TITLE		DWG. NO.
2 WIRE NAVIGATOR PUSH BUTTON STATION (PBS)		N25AN0-X

REV. DATE	LTR	E.C.O. NO.	BY	CKR	ENG	DSN	MFG	QA	FNL

Custom message and sound options definable by customer include:

- Custom locating tone
- Informational message
- Custom walk sounds/message
- Custom clearance sound
- Multiple languages (up to three, selectable by user)
- Street name in Braille on the sign

All above features along with many more are field selectable using a Configurator. With the Configurator, a single PBS or all PBS's on the intersection can be changed/updated with a single button push.

Available in three standard colors — Black, Green & Yellow
—X at end of part number specifies color:
  —B = Black, —G = Green, —Y = Yellow

Environmental: −40°F (−40°C) to 150°F (65°C)
Push Button: ADA Compliant, raised tactile arrow on button, solid state switch rated to 20 million actuations minimum.
Construction: Die−cast aluminum, powder coated

The 2 Wire Navigator is designed to operate using existing button wires (a pair of wires + and Common) for each phase with from one to a maximum of three Push Button Stations on a phase. If there is not a separate common for each phase, Polara cannot guarantee the system will work properly in all instances. Each case will have to be tried and proven because it depends upon the condition of the wires, splices, etc., and whether the common is shared with the 115V light system. In the event the 2 Wire system does not work, Polara will swap it out for a 4 Wire system as long as there is no damage to the units.
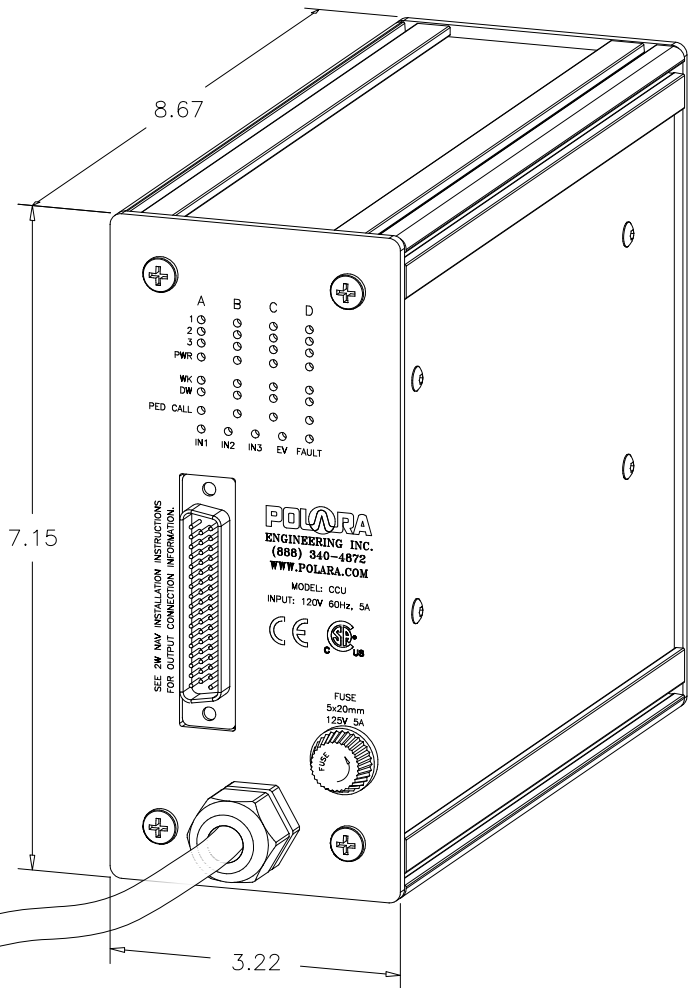
STANDARD SIGN OPTIONS

OPTION A
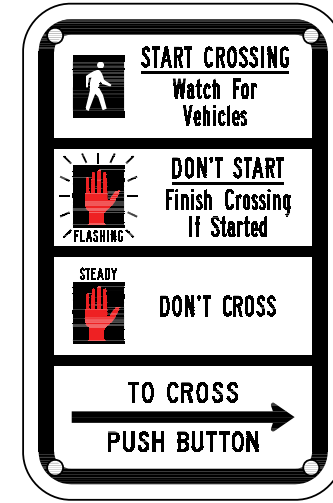
OPTION B

REV	REV. DATE 04−20−06	TOLERANCES: .XXX ±.005 .XX ±.02 (EXCEPT AS NOTED)	TITLE	DWG. NO.
ECO	DATE CREATED 03−14−03	SCALE 1:3	SHEET OF 2 2	USE	2 WIRE NAVIGATOR	N25AN0−X

CENTRAL CONTROL UNIT (CCU)

The CCU is to be installed inside the Traffic Cabinet and is powered by the AC supply mains (115 VAC). The CCU is the power supply and signaling interface between the existing Intersection Traffic Control Unit and the Push Button Stations which are located in the field. One CCU can control up to 12 Push Button Stations. The CCU controls up to four Pedestrian phases, receiving its timing from the Walk and Don't Walk signals. Additional advanced configurations can be obtained by utilizing its general purpose Inputs and Outputs. All Inputs and Outputs have full optical isolation and include Transient Voltage Protection.

Ped Walk / Don't Walk Inputs:
   Optically Isolated 80—150 Volts AC/DC 5mA Maximum
General Purpose Outputs & Ped Outputs:
   Optically Isolated 36 Volts AC/DC Peak
   .3A Solid State Fused Contact Closure
Fault Output:
   Normally Open and Closed Relay Contacts 125 Volts AC/DC 1A Maximum
A, B, C, D PBS Power Outputs:
   Nominal 22 Volts DC, Short Circuit Protected — Auto Recovering
General Purpose Inputs:
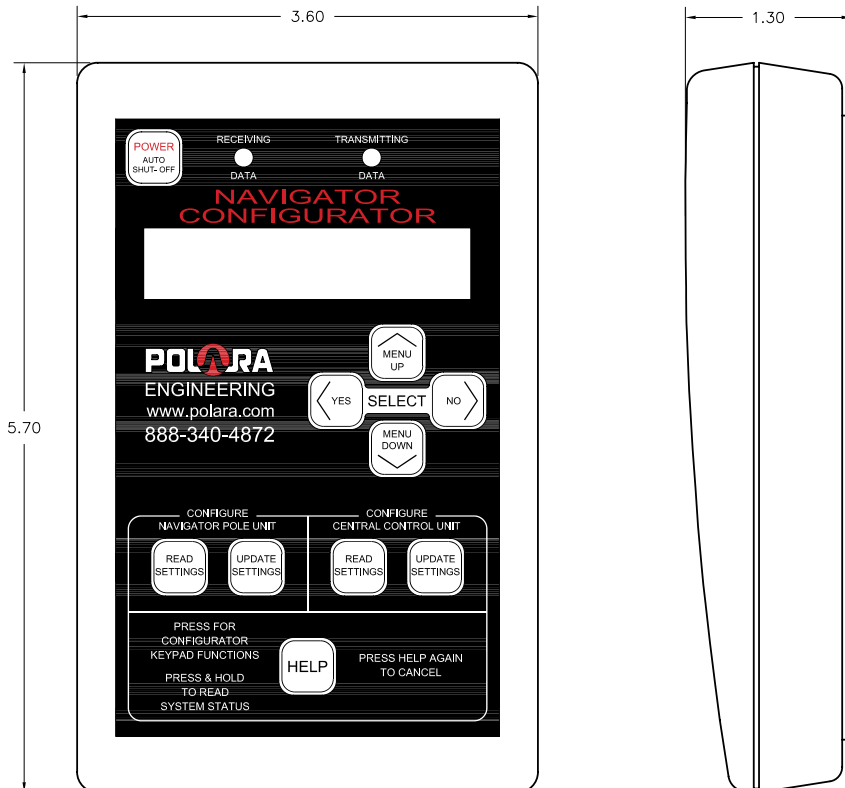   10 — 36 Volts AC/DC Peak 10mA Maximum, Optically Isolated
Environmental:
   Operating and Storage −30°F (−34°C) to 165°F (74°C) 0−100% Humidity Non−Condensing

8.67

7.15

3.22

Interface cable included but not shown

POLARA ENGINEERING INC.
(888) 340−4872
WWW.POLARA.COM
MODEL: CCU
INPUT: 120V 60Hz, 5A

SEE 2W NAV INSTALLATION INSTRUCTIONS
FOR OUTPUT CONNECTION INFORMATION.

FUSE
5x20mm
125V 5A

A B C D
1
2
3
PWR
WK
DW
PED CALL
IN1 IN2 IN3 EV FAULT

Revised − 08/21/08

POLARA ENGINEERING INC.
4115 W. ARTESIA AVE. FULLERTON, CA. 92833

TOLERANCES: .XXX ±.005 .XX ±.02 (EXCEPT AS NOTED)				SCALE 1:1
DRAWN BY BB	CKR.	ENG. MGR.	MFG. MGR.	SHEET 1 OF 1
DATE 03−14−03	DSN. ENG.	Q.A. APP.	FINAL APP.	USE 2W NAV

TITLE
2 WIRE NAVIGATOR
CENTRAL CONTROL UNIT

DWG. NO.
CCU

REV. DATE	LTR	E.C.O. NO.	BY	CKR	ENG	DSN	MFG	QA	FNL

3.60

1.30

5.70

POWER
AUTO
SHUT-OFF

RECEIVING
DATA

TRANSMITTING
DATA

NAVIGATOR
CONFIGURATOR

POLARA
ENGINEERING
www.polara.com
888-340-4872

MENU
UP

YES   SELECT   NO

MENU
DOWN

CONFIGURE
NAVIGATOR POLE UNIT

CONFIGURE
CENTRAL CONTROL UNIT

READ
SETTINGS

UPDATE
SETTINGS

READ
SETTINGS

UPDATE
SETTINGS

PRESS FOR
CONFIGURATOR
KEYPAD FUNCTIONS

PRESS & HOLD
TO READ
SYSTEM STATUS

HELP

PRESS HELP AGAIN
TO CANCEL

CONFIGURATOR

The Navigator Configurator is a hand held remote used for configuring a Navigator 2 Wire System or individual 4 Wire Navigator Push Button Stations (PBS). Just stand a few feet in front of a PBS, point the Configurator at the PBS, turn it on and select your options. The Configurator communicates via infrared with the PBS (and CCU of 2 Wire system). One Configurator is all you need for maintaining multiple intersections. All of the configuration options in the CCU and the PBS are set with the Configurator. The beauty of the Navigator system is its interactive operation. For example, if you select one of the optional Locate Sounds, you hear your choice as you select it. When adjusting volume levels, you hear the level you select. After configuring the features you want, you can upload your choices to just that PBS or to all of the PBS's on the entire intersection with a single button push. (Access is password protected to prevent unauthorized changes.)

Display: 2 Line x 16 Character
           LCD with backlight, adjustable contrast

Power: 4 X AA 1.5V Cell, Low battery warning
           auto or manual shut-off

Operating Temp: 0°C − 50°C

See the operation and instruction manual for 2 Wire and 4 Wire Products for more details.

Revised − 01/06/04

POLARA ENGINEERING INC.
4115 W. ARTESIA AVE. FULLERTON, CA. 92833

TOLERANCES: .XXX ±.005 .XX ±.02 (EXCEPT AS NOTED)				SCALE 1:1.5
DRAWN BY BB	CKR.	ENG. MGR.	MFG. MGR.	SHEET 1 OF 1
DATE 03−14−03	DSN. ENG.	Q.A. APP.	FINAL APP.	USE NAVGTR

TITLE
NAVIGATOR CONFIGURATOR

DWG. NO.
CONFIGURATOR

REV. DATE	LTR	E.C.O. NO.	BY	CKR	ENG	DSN	MFG	QA	FNL