12/15/06

4 Wire Navigator Accessible Pedestrian Signal

Operation Manual

CE

The 4 Wire Navigator System from Polara Engineering provides a vibro-tactile arrow button and audible signals to give pedestrians valuable crossing information in alternative formats. The design is based on the 2 Wire Navigator and has much in common with that system.

The primary intended use for the 4 Wire Navigator is in locations where only one or two crosswalks of an intersection are being installed, where there are no pedestrian pushbuttons and the pedestrian signals are cycled automatically, or where the 2 wire system was not usable due to poor/inadequate field wiring.

For each Pushbutton Station there is one Control Unit required. The Control Unit input side connects to the Walk and Don't Walk AC light wiring. The output side connects via 4 wires to the Pushbutton Station and provides approximately 18 VDC.

All setup options for the Pushbutton Station are accomplished with the Configurator, a handheld remote unit. It allows you to select sounds for each "Don't Walk", "Walk", and "Clearance" phase of the pedestrian signal cycle, plus custom information and sounds if they have been programmed in.

While the 4 Wire Navigator is primarily intended for locations without pushbutton wiring, the Push Button Station does accept pushbutton wires and will transmit a pedestrian call to the intersection controller.

The system comes from the factory pre-setup with settings used for typical intersections. However, the available options allow customizing for virtually all situations.

Please carefully read the contents of this manual in its entirety so you fully understand the many functions and options the system provides.

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Standard Features

- Independent minimum & maximum volume settings for Locate Sounds, Clearance & Walk Sounds with or without an extended button push. Separate minimum volume setting for information message.
- Optional clearance sounds or audible countdown of remaining seconds during clearance available; compliments or replaces visible countdown displays
- Secure configuration prevents unauthorized tampering.
- Button rated for 20 million+ operations with < 3 lb. actuation force.
- Maximum volume dynamic range 60 dB.
- Optional announcement of direction of travel (Ex: "traveling west") can be added (in field) to location message.
- Adjustable extended push time from 0 to 6 seconds in .5-second increments can be set by installer.

Custom Message and Sound Options

- Custom Locate Sound – Plays a sound at selectable interval to assist a visually impaired 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 (must be specified at time of order).
- Custom Walk Message(s) – Typically gives name of street the pedestrian is crossing. Up to three different languages can be programmed in (must be specified at time of order).
- Custom Clearance Sounds/Countdown – Plays a sound to let pedestrian know they should clear intersection crosswalk. This optional tone typically would sound similar to the locate sound but is played at a faster rate or counts down the number of seconds in the clearance phase. Up to three different languages can be programmed in.

Specifications

Push Button Station (PBS)
See product drawing/specification N45XN0-X

Navigator Ped Head Control Unit (PHCU4W)
See product drawing/specification PHCU4W for 115 VAC applications and PHCU4W-220 for 220 VAC applications.

4 Wire Navigator System

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 phase. The locate tone is what the visually impaired 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 a Location Message with an extended push of the button. The system can provide, based on how long the button is pushed, custom messages in up to three different languages (must be specified at time of order or be recorded and programmed by customer using optional voice programming kit (VPK)).

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. One Configurator is all you need for maintaining multiple intersections! All of the configuration options in 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! **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.**

Ped Head Control Unit (PHCU4W)
The PHCU4W is typically installed inside the pedestrian signal head associated with the Push Button Station (PBS) but can also be installed in a separate housing on the pedestrian light pole. Two mounting brackets are provided with a variety of holes to facilitate mounting in most common ped head types. Note: The Control Unit will not fit in old dual transformer neon light ped heads. The input terminals connect to the AC ped head light wiring, and the output terminals connect to the PBS. The output voltage is typically 18VDC.

System Installation

Please read these installation instructions completely before beginning an installation.

Overview

Installation involves installing the PHCU4W in the Pedestrian Signal Head (ped head) or on the pole in its own enclosure and the Push Button Stations (PBS) on the pole. A 4 wire cable (Belden 8489 or equivalent) must be routed between each PBS and its associated PHCU4W. The PBS's replace any existing pedestrian push buttons mounted on poles, and connect to the push button wires, if available, in addition to the 4 wires from the PHCU4W. Note: Each PBS is supplied with a permanent four conductor cable that is designed to be connected to the wires from the PHCU4W via silicone filled insulation displacement butt connectors (3M Scotchlok UAL – Polara P/N: 801-540) supplied by Polara. The wire from the PHCU4W to the PBS cannot be larger than #18 AWG stranded wires. Polara stocks the Belden 8489 cable so you can purchase it from Polara if needed.

If the cable needs to be routed from one pole through underground conduit to another pole (ped head and associated button are not on same pole), the installer must supply the appropriately rated cable for underground applications. **The Belden 8489 is not rated for underground applications.**

To install an eight (8) push button system should take a 2 man crew 8-12 hours (assuming no complications). To install an eight push button system when the ped heads are on the same pole will take a 2 man crew 8 hours or less.

SEE 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 for more information.

System Operational Check Following Installation

Following installation and power up of units, check the following:

1. The pole unit should start playing the locate tone within about 5 seconds of power up. This assumes the unit is in DON'T WALK mode.

2. Push each PBS and verify that the red LED above the push button turns on with the first push, and that a tick is heard for each push. If button wires to the traffic controller exist, verify that the PED call is transmitted to the traffic signal controller.

3. Following a button push, verify that a walk message is heard and the push button vibrates during the next walk cycle.

4. Confirm the proper sound plays during clearance. If unit is set for countdown, during the first clearance cycle after power up, the unit should be silent. During the second or later cycle, the pole unit should play a voice countdown of the seconds remaining to end of clearance.

5. Proceed to Configuration (see next section for details). Once all units are configured as desired, recheck each unit for a full cycle to ensure all options and features operate as desired.

   When you are satisfied that all units are working properly, install sign on each PBS.

   Evaluate sound levels and responsiveness to ambient noise.

   Using the Configurator, make any volume adjustments as needed to each PBS.

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. Keep in mind that the majority of installations will typically require few configuration changes from the factory defaults. But, the 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. 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 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, stand 1-3 feet in front of it, point the Configurator at it 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 code is held in the PBS for that intersection, not the Configurator. Thus any Configurator can be used, but the security code must be changed at each PBS.

PBS Software Version

The Configurator will briefly display the software version number for the PBS you are communicating with. This will allow you to verify that the Configurator and PBS are compatible with each other. Contact Polara for any known compatibility issues.

Configuring the Navigator Push Button Station

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. Alternatively you can press the power key, turn the Configurator off, 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 the UPDATE key. If you lose communications before updating, everything you changed will be lost.**

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 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 = 80%)

INFOrmation MeSsaGe VOLume MINimum

This function adjusts the minimum level for the information message. The message 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 = 80%)

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 = 70%)

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 =100%)

VOLume OVER AMBIENT
This function is at the heart of the Auto Volume adjustment. The output volume level will be played relative to the measured ambient sound pressure but constrained within the set Minimum and Maximum settings. This compensation function is adjustable from 0dB to 20dB over ambient in 5dB steps.
(Default = 0dB)

<u>WALK PHASE SOUND OPTIONS</u>

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 13 choices are as follows:
.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)

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. Sound starts immediately with button push.
(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.
(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.
WARNING: 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)

<u>CLEARANCE PHASE SOUND OPTIONS</u>
CLEARance MODE SOUND
This function allows the choice of a few standard 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 = COUNTDOWN)

CLEARance TONE PAUSE
This function selects the length of silence between the CLEARANCE Sounds.
The following 11 choices are as follows:
STANDARD, .5 SECONDS TO 5 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 following 11 choices are as follows:
STANDARD, .5 SECOND TO 5 SECONDS IN .5 SECOND STEPS
(Default = STANDARD, 1 sec)

PLEASE WAIT MeSsaGe
This option, when set to YES, replaces the locate tone following a button push with a verbal “WAIT”, which plays every four seconds. This function is also supported by the second and third language options. Following the next Walk/Clearance Cycle, the normal locate tone resumes. **(NOTE: You cannot use this function if Walk sound trigger is set to extended push.)**
The choices are: YES, NO
(Default = NO)

INFORMATIONAL MESSAGE OPTIONS
DIRECTION MesSaGe
This function can be setup to give the visually impaired pedestrian more information about 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)

INFOrmational MESSAGE
It is typically a custom message that gives visually impaired pedestrians information about where they are and where they are heading.
The following choices are:
NONE, DIRECTION, CUSTOM, CuSToM + DIRection
(Default = NONE)

CANCEL ON WALK
This function gives the choice to cancel or complete the INFORMATIONAL MESSAGE immediately when intersection timing changes to the Walk Phase while playing the INFORMATIONAL MESSAGE.
WARNING: It must be carefully examined before turning this function off 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 = 2.5 Seconds)

SECOND & THIRD LANGUAGE OPTIONS

SECOND LANGUAGE
This function allows a SECOND LANGUAGE to be played for the Informational 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 Informational Message is immediately played in the selected language. The Walk Message and Countdown will also be played in the selected language. Walk phases following this walk cycle 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 Informational 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 Informational Message is immediately played in the selected language. The Walk Message and Countdown will also be played in the selected language. Walk phases following this walk cycle will revert to the default primary language.
The choices are: YES, NO
(Default = NO)

Help Function
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.

Display Contrast Adjust
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. The change will be stored permanently or until changed again.

Restore Factory Settings

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 READ SETTINGS” message. To restore the factory settings, press Update Settings for push button station.

General Configurator Operational Notes

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 which the PBS will return to normal operation and all menu choice setting changes within the Configurator will be lost.

CONFIGURATOR BROWSE MODE

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.

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)								
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	70%								
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								
PLEASE 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: _____

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Default and Field Settings (page 2 for islands)

		ID:			
		Phase:			
	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	70%				
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				
PLEASE 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: _____

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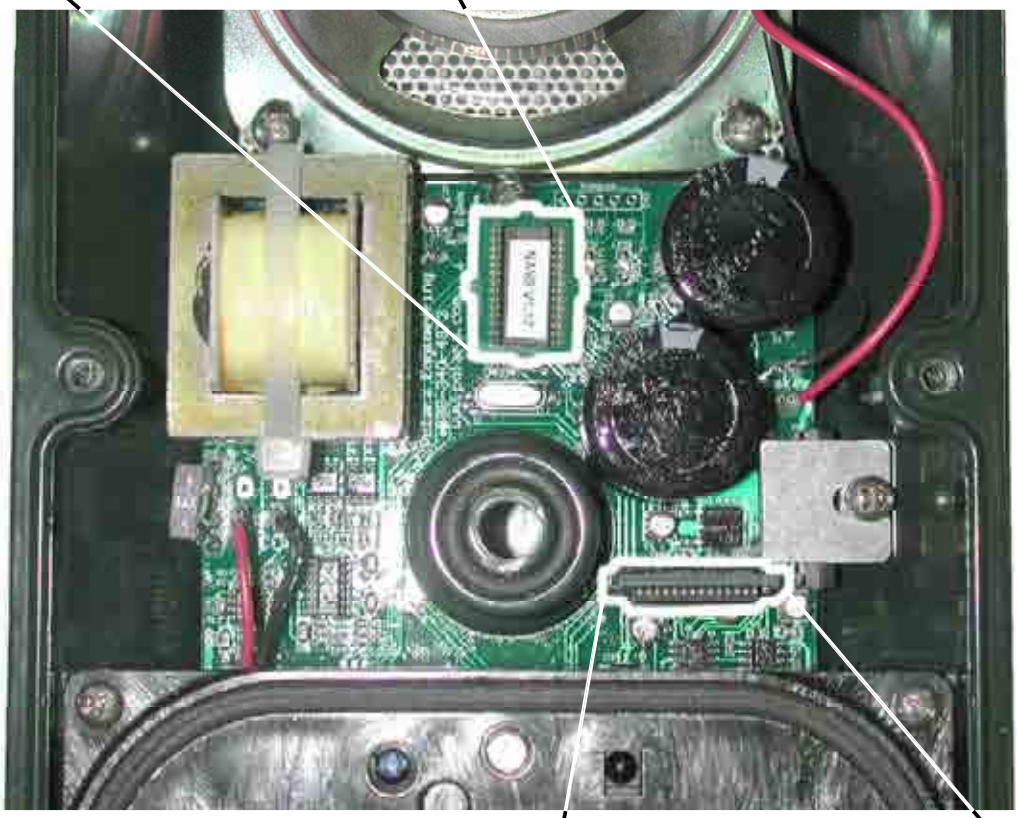
Changing Control Chip and Voice Chip in the Field

Before changing either chip, power down the unit.

Polarity Dot

Control Chip:

To remove, pull chip directly out.
To replace, align connector on control chip with header on PCB and make sure polarity dot on chip is towards the top as shown.

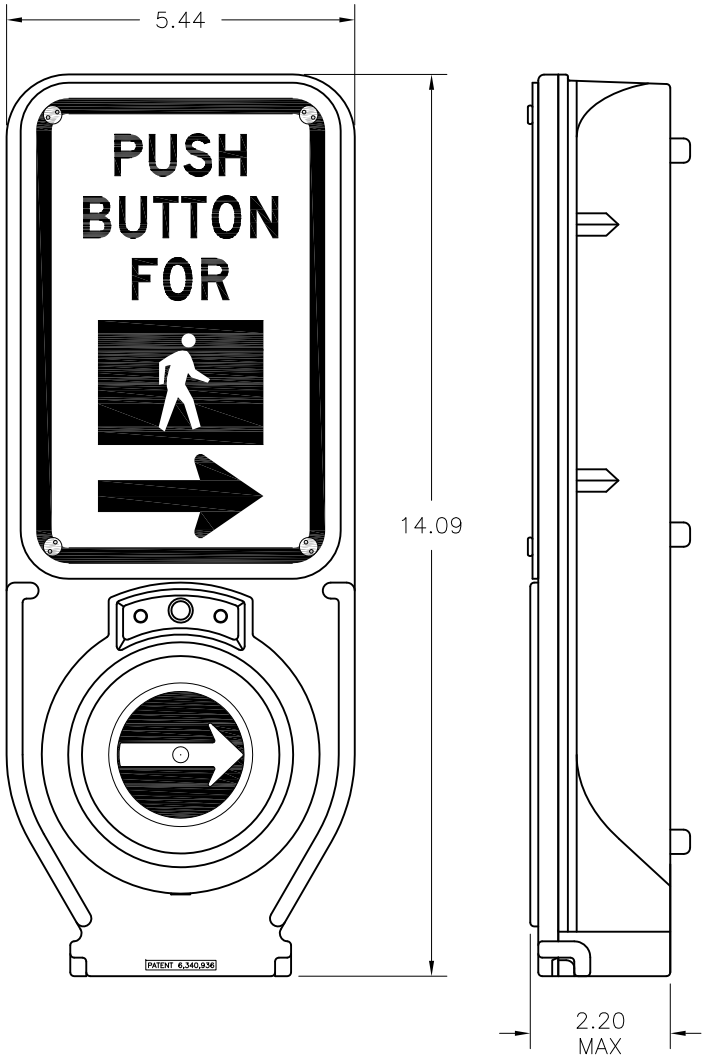


Match polarity dot on Voice Chip with dot on Main PCB (IC should face down).

Voice Chip:

To remove, pull chip directly out.
To replace, align connector on chip with header on PCB making sure the polarity dot on the chip matches with the polarity dot on the Main PCB.

DWG. NO.
N45AN0–X



PUSH BUTTON STATION

The 4 Wire Navigator PBS is the pedestrian interface to the Navigator Accessible Pedestrian Signal. 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 via a weather–proof speaker that is protected by a vandal resistant screen. A sunlight visible LED latches "ON" to confirm the button has been pushed. Each PBS connects to a Control Unit located inside its associated ped sign housing. A four wire cable connects the PBS to the power unit.

PBS includes:

Frame with Option "A" sign, ADA compliant push button, and mounting hardware.

By interfacing with the Control Unit that installs in the Pedestrian Walk Sign, 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.
- Extended button push can turn on and/or boost volumes during the next walk cycle.

Additional custom options listed on page 2.

REV.	DATE	LTR	E.C.O. NO.	BY	CKR	ENG	DSN	MFG	QA	FNL
	Revised – 04/24/06									

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.	ENG. MGR.	MFG. MGR.	SHEET 1 OF 2
DATE 09–08–03	DSN. ENG.	Q.A. APP.	FINAL APP.	USE 4W NAV

TITLE: 4 WIRE NAVIGATOR PUSH BUTTON STATION (PBS)

DWG. NO. N45AN0–X

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

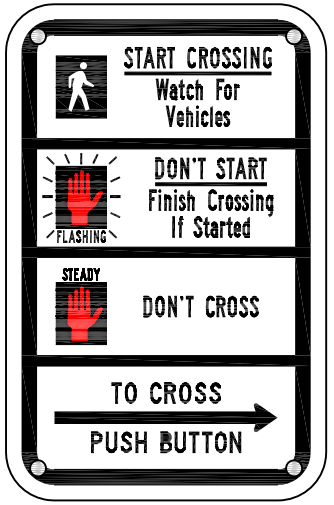
All above features along with many more are field selectable using a Configurator.

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

PLATE MARKING OPTIONS

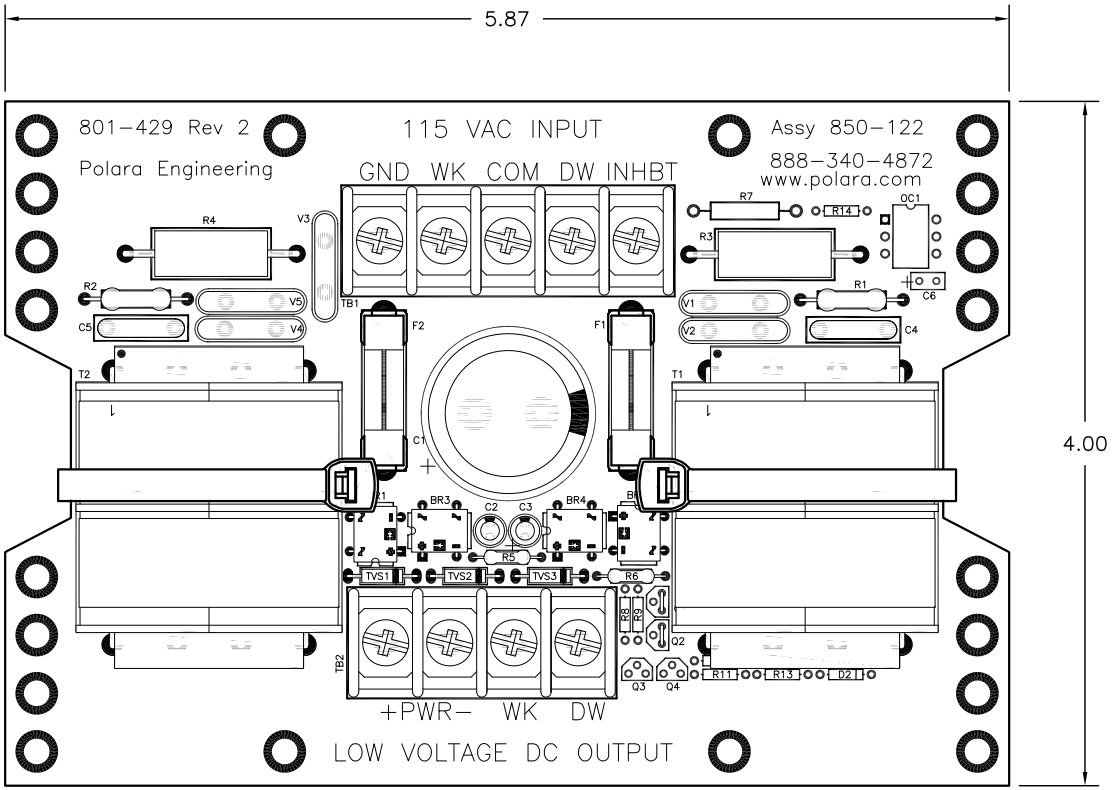
STANDARD OPTION A



OPTION B

REV	REV. DATE	TOLERANCES: .XXX ±.005 .XX ±.02 (EXCEPT AS NOTED)			TITLE	DWG. NO.
ECO	DATE CREATED	SCALE	SHEET OF	USE	4 WIRE NAVIGATOR PUSH BUTTON STATION (PBS)	N45AN0–X
	04–24–06	1:3	2 2	4W NAV		
	09–08–03					

DWG. NO.
PHCU4W



SPECIFICATIONS

INPUT CONNECTIONS: 115VAC, Walk, Don't Walk, Common, Protective Ground, from wiring inside a pedestrian sign (Ped Head).

OUTPUT CONNECTIONS: Approximately 20 Volts DC, Positive and Negative Power, Walk and Don't Walk, to a 4 Wire Push Button Station. The PCHU4W is provided with 2 mounting brackets and hardware which allow easy mounting inside all common types of pedestrian signs. It uses two ¼ amp 5x20mm fuses. It has built in surge protection and is epoxy coated for moisture protection. There are no settings or adjustments.

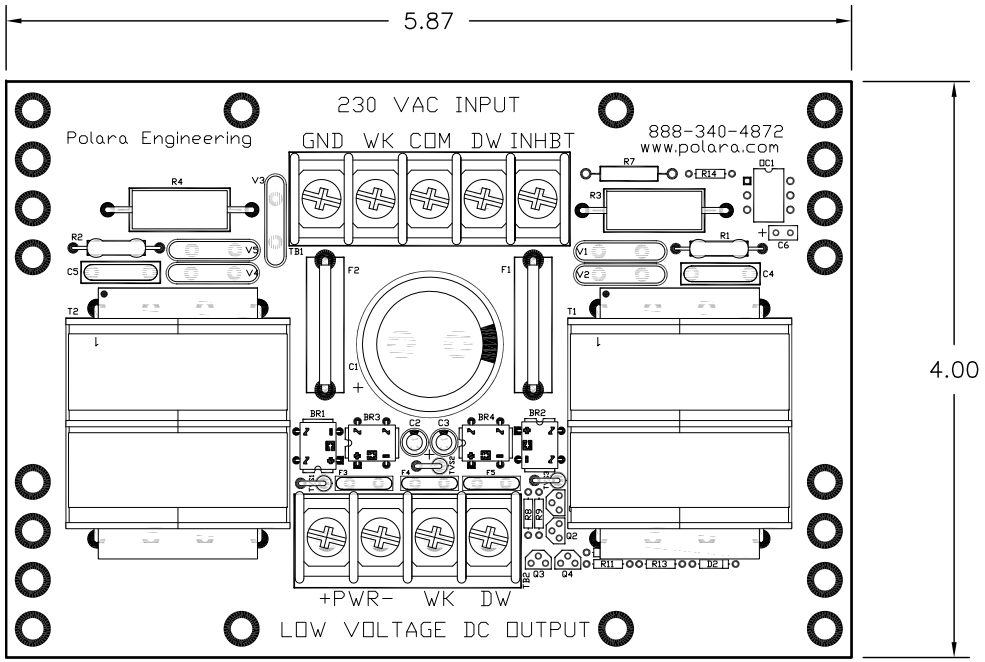
REV.	DATE	LTR	E.C.O. NO.	BY	CKR	ENG	DSN	MFG	QA	FNL
	Revised – 06/09/05									

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

TOLERANCES: .XXX ±.005 .XX ±.02 (EXCEPT AS NOTED)				SCALE NONE
DRAWN BY BB	CKR.	ENG. MGR.	MFG. MGR.	SHEET 1 OF 1
DATE 09–08–03	DSN. ENG.	Q.A. APP.	FINAL APP.	USE 4W NAV

TITLE: 4 WIRE POWER UNIT
DWG. NO.: PHCU4W

DWG. NO.
PHCU4W–220



SPECIFICATIONS

INPUT CONNECTIONS: 210–240VAC, Walk, Don't Walk, Common, Protective Ground, from wiring that powers pedestrian sign lights.

OUTPUT CONNECTIONS: Approximately 18 Volts DC, Positive and Negative Power, Walk and Don't Walk, to a 4 Wire Push Button Station. The PCHU4W is provided with 2 mounting brackets and hardware which allow easy mounting inside all common types of pedestrian signs*. To protect against over current conditions, early models use two ¼ amp 5x20mm fuses (lager models have thermal self–resetting fuses). Unit has built in surge protection and is epoxy coated for moisture protection. There are no settings or adjustments.

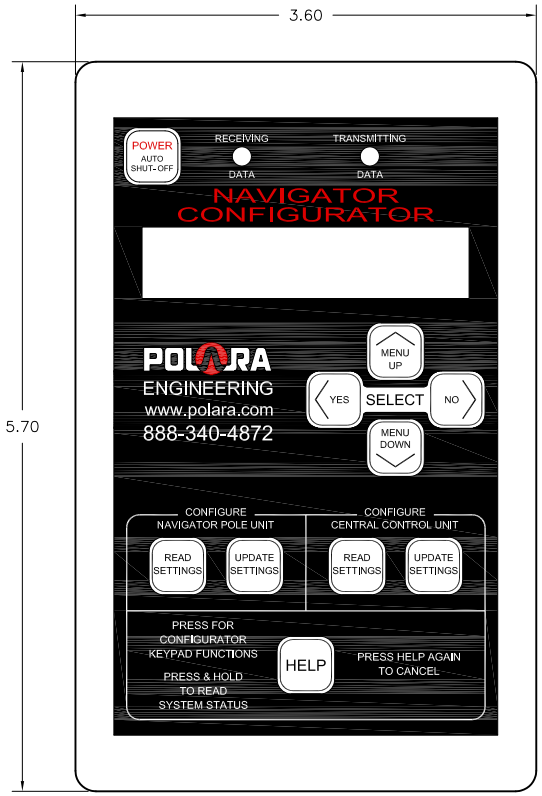
* Polara can supply this control unit mounted and pre–wired with cables in a Nema 4 box. To order this option, add –IB to the end of the part number.

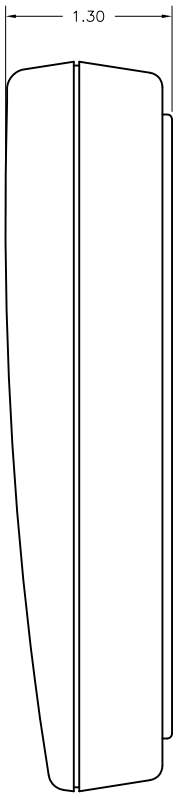
REV. DATE	LTR	E.C.O. NO.	BY	CKR	ENG	DSN	MFG	QA	FNL
Revised – 12/15/06									

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

TOLERANCES: .XXX ±.005 .XX ±.02 (EXCEPT AS NOTED)				SCALE 1:1.33
DRAWN BY BB	CKR.	ENG. MGR.	MFG. MGR.	SHEET 1 OF 1
DATE 12–15–06	DSN. ENG.	Q.A. APP.	FINAL APP.	USE 4W NAV
TITLE: 4 WIRE POWER UNIT, 220 VOLT				DWG. NO. PHCU4W–220

DWG. NO.
CONFIGURATOR





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.

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