



10/25/12

EZCommunicator 2 Wire Navigator APS System

Operation Manual

This Manual

A copy of this manual and the companion Installation Manual should be kept in the traffic signal controller cabinet. The information in this manual applies to EZ Communicator systems containing version 4.00 and later firmware. If you have existing product with version 3.XX, it may be upgraded to take advantage of the new features using either; the EZ510 Security Box (preferred), or a PC and USB cable. All of the necessary files for upgrading are available from your local distributor, or by contacting Polara Tech Support at www.polara.com in the Support section.. When upgrading, it is important to update the CCU2EN and every EPBS on an intersection. For more information, see section **"How to Update Firmware in the E-Navigator System"** on page 26 of this manual.

EZ APS ToolBox

Polara offers the EZ APS ToolBox PC application which provides a graphic user interface to all the available maintenance and monitoring functions available for the EZ Communicator Navigator system. This includes live status monitoring, a health log, a calendar function, system setup, audio file uploading, and firmware updating. The software has built in guidance for every operation. This software is available at www.polara.com in the Support section. A standard USB A/B Cable is required and an optional Ethernet cable may be used at the CCU2EN.

Part Number Descriptions

CCU – Original 2 Wire CCU (No Ethernet Capability)
CCU2EN – EZCommunicator CCU with Ethernet
PBS – Original 2 Wire Push Button Station (N2xxxx-x)
EPBS – EZCommunicator 2 Wire Push Button Station (EN2xxxx-x)

System Installation

Please refer to the companion Installation Manual for the complete installation procedure for the EZ Communicator 2 Wire Navigator system.

Mode Switch

The CCU2EN back panel has a two position mode selection switch. The positions are labeled EN2 and N2. In order to take advantage of all the latest features of this system, it must run in EN2 mode. Also, every installed push button station must be an EPBS. The information in this manual applies primarily to operation in EN2 mode. For more information, see the **"Backward Compatibility"** section in the Installation Manual.

Setting IDs

Each push button station must have a unique ID assigned, using either the Polara E-Configurator or by using Polara's EZ APS ToolBox software, with a PC connected to the EPBS. The ID consists of a letter matching the connected channel and a number from 1 to 4. If an EPBS ID is set to NONE (factory default), the only sound it will play is a special voice message "SET ID". If an EPBS has an ID and is moved to a different CCU2EN channel, its ID will be changed to NONE.

Setup Button

After setting EPBS IDs the SETUP button on the back of the CCU2EN must be pressed (for at least 2 seconds) for the CCU2EN to recognize them. A green light will appear on the front panel for each EPBS found. If you have set IDs and neglect to press this button, the system will periodically play a special voice message "PRESS SETUP BUTTON". For more information, see the "**CCU2EN/Navigator Self Check Feature**" section in the Installation Manual.

Fault Light

If you see the fault light on the front of the CCU2EN, one or more detectable faults have occurred. You may connect a PC to the CCU2EN and use the Polara EZ APS ToolBox software to read the contents of the Health Log to determine the type of fault(s) detected. In order to clear the fault light and fault relay, the CCU2EN must be power cycled. For more information, see section "**Health Log Fault/Event Descriptions**" on page 28 of this manual.

Software Information

Polara EZ APS Toolbox software provides a full set of monitoring and maintenance utilities to support the EZ Communicator 2 Wire Navigator system. Remote access is possible using the CCU2EN Ethernet port. See the "**Network Configuration**" section in the Installation Manual for complete instructions on installation and operation.

Default Ethernet Address for Status Page:

<http://192.168.1.223/>

The Rest of the Manual ☺

If you have read this far, we applaud you. If you still have questions about the products, **please** read the rest of the manual.

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Overview

Polara's "EZCommunicator 2 Wire Navigator" Accessible Pedestrian Signal (APS) System provides vibro-tactile and audible information to all pedestrians. A system consists of a set of push button stations (EPBS) connected to a central control unit (CCU2EN). These connections typically use existing push button wiring from the traffic signal controller cabinet to the push button locations, with no additional field wiring required. The EZCommunicator 2 Wire Navigator APS is an updated version of our original 2 Wire Navigator with several significant improvements. These improvements include:

1. Ethernet connectivity for remote access
2. Audio file updating via USB
3. Firmware updating via USB
4. Higher quality, pure digital audio
5. Support for 16 push button stations (4 channels with 4 EPBS per channel) with one CCU2EN
6. Save up to four user customized configurations in the E-Configurator

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 setup 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-configured with standard performance options suitable for most intersections. However, should you have a special performance need, the system has a large number of options to cover virtually all special requirements.

The 2 Wire Navigator's preferred field wiring is to have a pair of wires (+ and -/common) for each CCU2EN channel with from one to a maximum of four 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.

If two or more phases/channels share a common, we strongly recommend you install our Ped Station Monitor to help ensure against false walks/conflicts.

Polara cannot guarantee a 2 wire 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 on 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 this Operations Manual.

The EZCommunicator Push Button Stations (EPBS) and CCU2EN are backward compatible with earlier N2 Navigator Systems. However, any combination of old with new will only have the features of the older system and the N2 installation and operating manuals apply. Only when you have a CCU2EN with all EPBS will you be able to take advantage of all the EZCommunicator System's extra features.

The CCU2EN has a compatibility MODE switch on the rear panel. Position N2 must be used whenever one or more older PBSs is connected to the CCU2EN. N2 mode sets the CCU2EN to supply 22 volts DC to the Navigator PBSs while EN2 mode changes the voltage to 18 volts DC. The PBSs recognize the difference in voltage and operate in N2 mode whenever the voltage is 22 volts DC. In N2 mode, the operation is identical to older PBSs. If all are EPBSs, then use the EN2 switch position.

Standard Features

Two Wire Advantage

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

System Features

- Has independent minimum & maximum volume settings for pre-walk 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; complements 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 push buttons can fail open.
- Adjustable extended push time from 0 to 6 seconds in .5-second increments can be set by installer.
- Ethernet port for remote access to status.
- Audio messages can be customized and changed via USB port on EPBS.
- EPBS and CCU2EN firmware updating via USB.
- CCU2EN can operate with all old version PBSs, all new EPBSs or a mixture of the two types of PBS.

Custom Message and Sound Options

- **Custom 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 two different languages can be programmed.
- **Custom Walk Message(s)** – Typically gives name of street the pedestrian is crossing. Up to two different languages can be programmed.

- **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 two different languages can be programmed in.

Advanced Sound Options

Custom Messages 1-3

These messages override any currently playing sound and play once each time the assigned input is activated. User sound files can replace default messages. See Advanced Options section for more information.

Factory Default Messages

- **Custom Message #1** – “Emergency vehicle approaching, clear intersection immediately.”
- **Custom Message #2** – “Train is approaching, clear tracks immediately.”
- **Custom Message #3** – <blank>

Safety

The EZCommunicator Central Control Unit (CCU2EN) AC Line is fused with a 250VAC 5A fast-blow fuse. The CCU2EN chassis is grounded through an earth ground connection to prevent shock hazard. All General Purpose Inputs are optically isolated and transient protected to protect any other equipment interfaced to the CCU2EN.

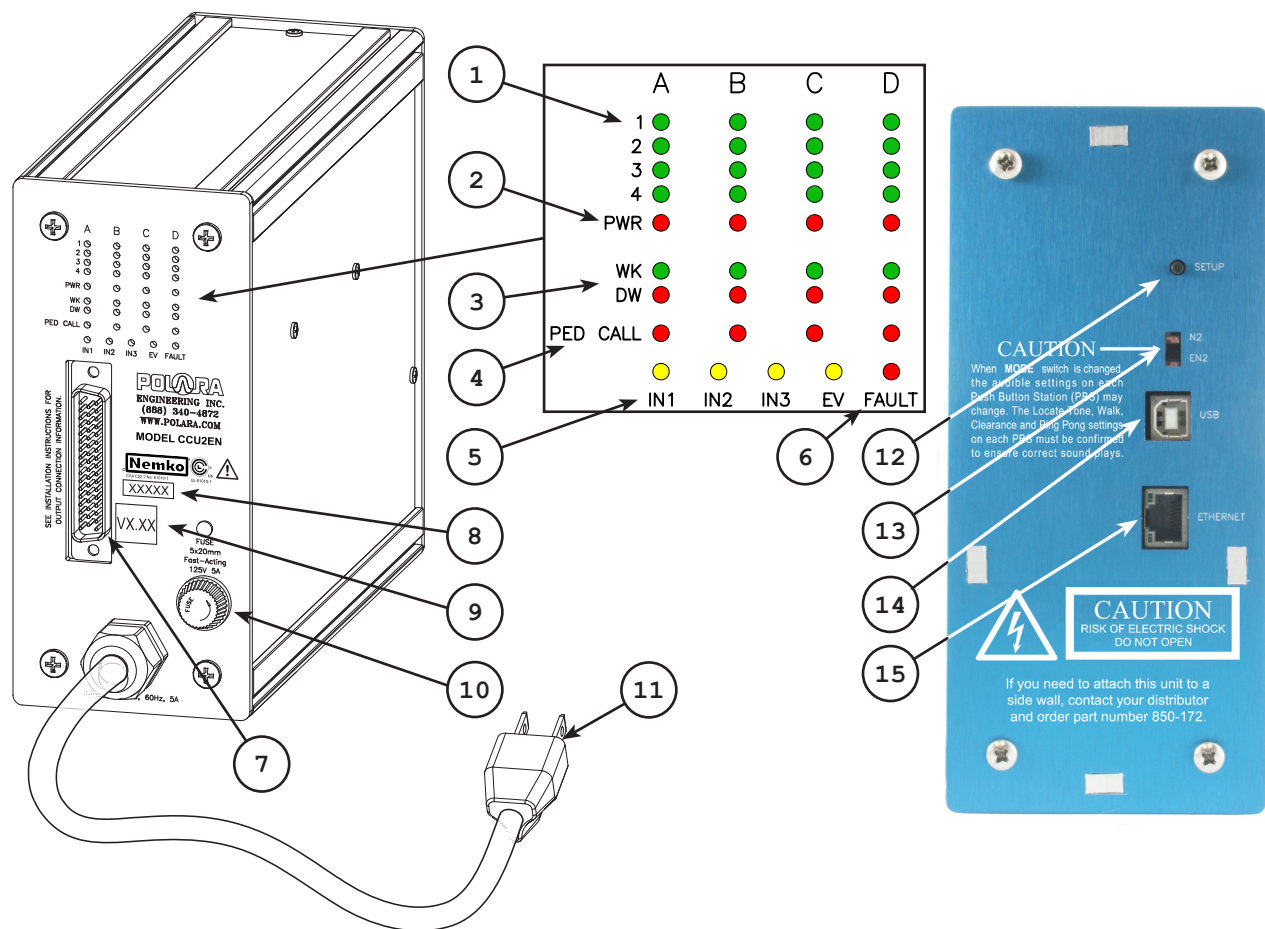
The CCU2EN is provided with a hard wired power cord with quick-disconnect capability. **Polara recommends that the CCU2EN be powered from the same 115 VAC lightning protected source and circuit breaker that powers the Traffic Controller. It should not be connected to a GFI protected outlet.**

EZCommunicator 2 Wire Navigator System (System)

EZCommunicator Central Control Unit (CCU2EN)

The CCU2EN installs inside the Traffic Cabinet and is powered by the AC supply mains (115 VAC). The CCU2EN is the power supply and signaling interface between the Traffic Signal Controller and the Push Button Stations which are located in the field. One CCU2EN can control up to 16 Push Button Stations (4 push buttons maximum per phase). The CCU2EN supports up to four Pedestrian phases. For each phase used, the minimum required connections are to the ped head walk and don't walk signals, and the ped call input. Additional functions can be obtained by utilizing its General Purpose Inputs.

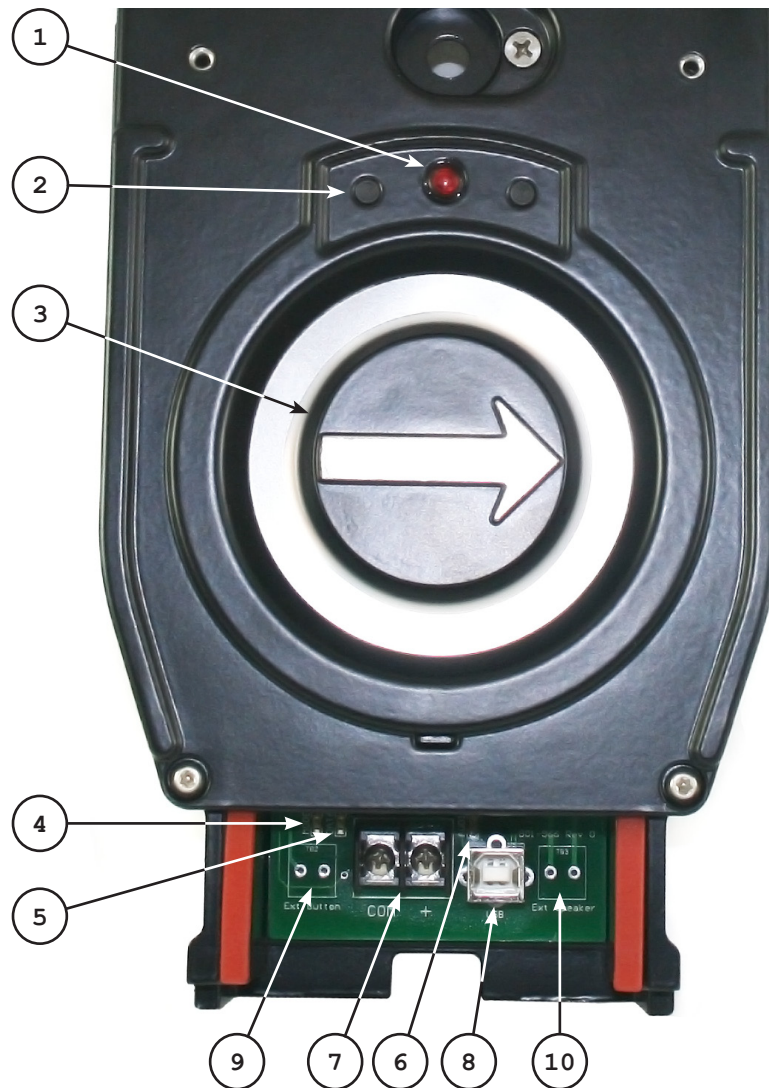
The Ethernet Central Control Unit can be used with older 2-Wire Navigator PBSS (N2). Preferably, the Navigator version should be 1.12 or later. Likewise, EN2 Navigator EPBSs may be used with older CCUs.



3. **PED SIGNAL LEDs** – The red DW LED and the green WK LED should match exactly what the associated crosswalk ped sign shows. If both are off or both on, the channel power will be off.
4. **PED CALL LEDs** – These red LEDs turn on during a pbs button press, and during some fault conditions, indicating a ped call to the traffic signal controller.
5. **GP IN LEDs** – These yellow LEDs indicate an active General Purpose Input.
6. **Fault LED** – This red LED indicates a detected fault. View the Health Log to identify the fault type. A power cycle will clear the Fault LED.
7. **50 Pin Connector** – Provides the electrical interface to the traffic signal controller and the push button stations. Matching cable assembly is included.
8. **Date/Lot Code** – Can be traced to manufacturing information.
9. **Firmware Version** – Composite code identifying all internal versions.
10. **Fuse** – Replace only with same type and rating.
11. **Power Cable** – Connect to 115 VAC.
12. **Setup Button** – Clears stored IDs used for self test and searches connected PBSSs to store IDs. Only IDs found at time of Setup Button press are included in self test. Should be pressed for a minimum of 1/4 second after setting IDs and any time an ID is added or removed.
13. **Mode Switch** – Set to EN2 (down) position if all PBSSs are EPBS units. Set to N2 if any older N2 units are connected. EN2 mode operates PBSSs at 18 VDC. N2 mode operates at 22 VDC. EPBS's switch modes automatically by sensing the voltage. N2 PBSSs will power on in EN2 mode, but will not be recognized by the CCU2EN, since no data communication is possible due to protocol differences.
14. **USB Connector** – Connect to a PC using a standard USB A/B cable. Using Polara EZ APS Toolbox software, all monitoring and maintenance functions are available.
15. **Ethernet Connector** – Connect to a PC or network. Using Polara EZ APS Toolbox software, all monitoring and maintenance functions are available.

EZCommunicator Push Button Station (EPBS)

The EPBS is the pedestrian interface to the Navigator system. All sounds emanate from the EPBS. 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 EPBS. Both a momentary or extended button push will be registered by the EPBS by the latching on of the LED on the front of the EPBS. If the unit has been programmed with custom voice messages, the pedestrian can activate an information message with a (typically extended) push of the button. The system can provide custom messages in two different languages based on how long the button is pushed.



1. **Red LED** – This LED illuminates and latches on when the PBS button is pressed during Don't Walk or Clearance. It is off during Walk.
2. **Lenses for Configurator** – These lenses are used for transmission and reception of infrared signals while using the E-Configurator. Always point the E-Configurator top end toward these lenses.

3. **EPBS Button** – This button should be pressed to place a ped call. The raised arrow indicates the direction through the crosswalk. The button vibrates to indicate the Walk sign is on.
4. **Mode LED** – This LED can be used to monitor how the EPBS follows the pedestrian cycle. On solid indicates Don't Walk. Rapid flash indicates Walk. Slow flash indicates Clearance.
5. **Data LED** – This LED illuminates to show data activity in either direction.
6. **Audio LED** – This LED illuminates while sound is playing and flashes during certain USB activity.
7. **Terminal Block** – This is the connection point for the wire pair coming from the traffic control cabinet. Correct polarity must be observed.
8. **USB Connector** – Connect to a PC using a standard USB A/B cable. Use Polara EZ APS ToolBox software to access EPBS options and features.
9. **External Button Terminals** – If a terminal block is installed in this location, an external push button (contact closure) may be connected here. The external button will place a ped call and enable the walk sound just as the internal button does.
10. **External Speaker Terminals** – If a terminal block is installed in this location, this unit should have an external speaker connected to these terminals.

E-Configurator

The E-Configurator is a battery operated hand-held device for making changes to the operating characteristics of Polara Navigator and EZ Communicator Push Button Stations (EPBS). It uses two-way infrared communication while held in front of a EPBS and pointed toward the red LED above the EPBS arrow button. The older model Configurator has a black case while the new E-Configurator has a gray case. The E-Configurator is backward compatible with older Navigator units, **but older Configurators are not compatible with EZ Communicator systems operating in EN2 mode.** This figure shows the most commonly used functions for each of the keys on the front of the E-Configurator.



E-Configurator Operation - Getting Started

The EPBS should be powered on and operating. There should be an audible response when the EPBS button is pressed. Normally, a locate tone will be heard.

Hold the E-Configurator in front of the EPBS such that the Transmit and Receive Lenses are aimed toward the red LED lens above the EPBS arrow button. A good working distance is 4 to 6 inches. If bright sunlight is shining on the LED lens or the E-Configurator lenses, use your body, or an assistant, to provide shade. Press the POWER key. The E-Configurator will attempt to communicate with the EPBS. It is a good idea to hold the unit steady while it is operating. When communication is successful, you will be asked for a four character security code. The factory supplied code is AAAA. To change a character, use the Left/Right Arrow keys. To accept a character, press the Down Arrow key. Do this for each character. After the fourth Down Arrow, the code is checked for a match.

The EPBS will compare the system security code with the code entered on the E-Configurator. If the code matches, you will have an opportunity to change the code. Press NO to continue on without any change. Press YES if you want to change to a new security code at this time. Entering a new code uses the same technique just described, using the Left/Right and Down keys. It is necessary to use a security code different from the default AAAA. Failure to change the code will cause a periodic message to play – “CHANGE PASSWORD”.

What to do if MATCH FAILS

If “MATCH FAILS” using the E-Configurator, the first response to this should be to turn the E-Configurator off. Wait for the Locate tone to return, then try once more. If the next attempt fails, then try powering down the system for a few seconds to reset it. Try using other EPBSs on the intersection. If all attempts on all EPBSs consistently fail, then it is likely the code is actually different from what is expected. If the code was changed or corrupted and it is now unknown, there is a method available to reset to default. It will be necessary to connect a PC to the system and run Polara’s EZ APS Toolbox software. The security page provides the instructions to complete this procedure, which includes contacting Polara for a special code. If you get a code match at any EPBS, then you have the correct security code, and failure at one or more EPBSs is caused by some other issue preventing the normal communication between the CCU2EN and the EPBS. If only one EPBS fails, the problem could be either the EPBS or the wired connection to the CCU2EN. The EPBS can be checked by connecting it using known good wiring.

E-Configurator Operation – Mode and Version Display

After the security code entry is finished, the E-Configurator displays a device mode and a version. The device mode identifies the PBS type as follows:

- N2 – Original 2-Wire Navigator or EZ Comm 2-Wire Navigator operating in N2 mode
- N4 – Original 4-Wire Navigator
- EN2 – EZ Communicator 2-Wire Navigator
- EN4 – EZ Communicator 4-Wire Navigator

The version number displayed represents the firmware version of the Main control IC in the unit. This may be different than the version marked on the outside of the unit, which may represent a composite version number based on all of the programmable devices in the unit.

E-Configurator Operation – Browse Mode

When the E-Configurator is powered on, it sends data for an EPBS and expects a response. If no EPBS is available, the E-Configurator switches to Browse Mode if no response is received within about 10 seconds. Browse Mode will not attempt to communicate with an EPBS, but otherwise, all functions are available. You may read and save data using the built in storage locations, and browse the various menu item options. The device mode will default to EN2, where the largest number of menu options is available. Browse Mode may be cancelled by turning off the power using the Power key. If you are in Browse Mode and want to start working with an EPBS, you may skip the power off and press the UP key only if the display reads “PRESS EITHER READ SETTINGS” and while the E-Configurator is pointing at an operating EPBS.

E-Configurator Operation – Loading and Saving Configuration Settings

After the startup dialog, the display will show "PRESS EITHER READ SETTINGS". This is where configuration options may be changed. The E-Configurator has seven internal storage locations, each of which holds one complete set of configuration data for all versions of Polara Navigator Push Button Stations (PBS or EPBS). Three of these are read-only and are identified as Default 1, Default 2, and Default 3. The remaining four are identified as User 1, User 2, User 3, and User 4. They are accessed by using the PBS Read Settings key and PBS Update Settings key. The PBS Read Settings key provides a list of sources for retrieving a set of configuration data. The PBS Update Settings key provides a list of available destinations for the data. The source or destination can be an EPBS or a storage location. After pressing the Read or Update key, the first option is displayed. The other options may be viewed by pressing the Left and Right Arrow keys. Pressing the Down Arrow key selects the displayed option. When a source is selected, the data from that source is transferred into the Working Area. In the Working Area, all the available settings and options may be viewed and changed as desired. While in the Working Area, the UP and DOWN keys move through the individual MENU items and the YES and NO keys display the various options for the current MENU item. If you change an option, then press an UP or DOWN key, the data in the Working Area is changed. When the settings match your preferences, the Update key will allow transfer of the new settings in the Working Area to the destination of your choice.

During the Update process, it is not always the case that every setting is updated. When the source is a storage location, every setting is automatically flagged for update. When the source is an EPBS, no settings are initially flagged. Only those MENU items where a Left/Right key was operated following the read, are flagged for update. If you need to copy all the settings from one EPBS to another, then use the procedure in the first two examples listed below.

When the Update process is complete the display returns to "PRESS EITHER READ SETTINGS".

Saving the configuration from an EPBS to a User storage location

1. Press the PBS Read Settings key. The display will show "FROM THIS PBS". Press the Down Arrow key. The EPBS's settings are loaded into the E-Configurator Working Area. Press the Up/Down keys to review the settings to make sure the desired options are displayed.
2. Once you have reviewed/made all setting changes, and are ready to store them, press the PBS Update Settings key. The display will show "ONLY THIS PBS". Press the Left/Right (YES/NO) keys until the display shows your preferred User location (1 – 4). Press the Down Arrow key. The settings are saved in that location.

Configuring an EPBS from a User storage location

1. Press the PBS Read Settings key. The display will show "FROM THIS PBS". Press the Left/Right (YES/NO) keys until the display shows the User location where you previously stored the desired settings for the current EPBS. Press the Down Arrow key. The settings are transferred into the Working Area of the E-Configurator. Press the Up/Down keys to review the settings to make sure the desired options are displayed.

2. Once you have reviewed/made all setting changes, and are ready to store them, press the PBS Update Settings key. The display will show "ONLY THIS PBS". Press the Down Arrow key. The settings are transferred to the EPBS.

E-Configurator Operation – Power Off

The E-Configurator may be powered off by pressing the Power key. This brings up a confirmation screen. Press YES to power off or NO to cancel. The E-Configurator has an automatic power-off feature which will shut down after 30 seconds of no activity after disconnection from an EPBS.

E-Configurator Operation – System Status

The System Status feature shown at the bottom of the E-Configurator, which was accessed by pressing and holding the HELP key, is not implemented in the EZ Communicator EPBS. The E-Configurator does still have the ability to read the system's status but only when used with the older N2 Navigator.

System Configuration

The following applies to EPBS and a CCU2EN set to the EN2 mode. These setting options may be accessed using either an E-Configurator or a PC with Polara's EZ APS ToolBox software:

In the following menu options list, where upper and lower case letters are mixed, the upper case letters represent the abbreviated display as viewed on the E-Configurator.

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 at which the LOCATE Sound will be played. 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 = 0%)

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 = 65%)

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 = 30%)

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 = 60%)

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 can increase the playback volume of all sounds except the locate tone, 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)

LOCate Tone VOLume OVER AMBient

This setting raises or lowers the volume of the locate tone with respect to the ambient noise level. The choices are -24dB, -18dB, -12dB, -6dB, -3dB, 0dB, +3dB, +6dB. (8 choices)
(Default = 0dB)

WALK INTERVAL SOUND OPTIONS

WALK MODE SOUND

This function selects the preferred sound played during the Walk phase.

The following 14 choices are as follows:

NONE, CUCKOO (North/South), CHIRP (East/West), Standard MesSaGe (Rapid Tick #4), CUSTOM MesSaGe 1, CUSTOM MesSaGe 2 ("Walk Sign is On"), CUSTOM MesSaGe 3, WALK SIGN is on for ALL Xs (Crossings), RAPID TICK 1, RAPID TICK 2, RAPID TICK 3, CANadian MELODY, AUSTRALIAN Melody,
(Default = Standard MesSaGe (Rapid Tick #4))

Special Note: If you select any of the above options listed after Custom Message 1, then change the operating mode from EN2 to N2, the Walk Mode Sound option will change to Standard 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. If no trigger event takes place, Locate Tone continues to play as in the Don't Walk period. 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 possibly not receive 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, or to limit the Walk sound time in the event of a system failure.

(Default = 20 SECONDS)

The Sound/Vibration Time setting can optionally shorten the amount of time the walk sound plays and the button vibrates during the walk sign. 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 sign. There are settings available that can help reduce the risk to pedestrians in the event of such a malfunction.

The options available for Sound/Vibration Time are:

1. **Full Walk:** The selected walk sound will repeat until the walk sign ends. This option includes an automatic safety feature that limits the sound and vibration to the shorter of the last two Walk intervals + two seconds. On power-up this limits is initialized to 50 seconds.
2. **1 Message:** The selected walk sound will play one time, or until the walk sign ends, whichever occurs first.
3. **2 Messages:** The selected walk sound will play two times, or until the walk sign ends, whichever occurs first.

4. **3 Messages:** The selected walk sound will play three times, or until the walk sign ends, whichever occurs first.
5. **Time in seconds from 4 – 50:** The selected walk sound will play through the amount of time specified, or until the walk sign ends, whichever occurs first. Polara recommends using this option and specifying a value that is two seconds longer than the Walk interval.

For each of the above options, if Cancel on Clearance is set to YES (default = YES), any currently playing sound clip will be truncated at the time the walk sign 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.

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 interval.

(A) NEW WALK (Interval) – After timeout, a new WALK Interval is required before the next WALK Sound or Message is played which is also complemented with the Vibrator. See the separate discussion on how to set the Sound Vibration Timer.

(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, TONE 4, CANadian MELODY, COUNTDOWN (Default = TONE 1)

Special Note: If Tone4 or Canadian Melody is the selected Clearance Mode Sound and the operating mode is changed from EN2 to N2, the selected sound will change to 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)

Additional Information Regarding the Countdown Feature

When Countdown is enabled, the EPBS must have a CLEARANCE INTERVAL time measurement in order to operate. Whenever the EPBS is powered down or reset, the measured time information is lost. Performing an update with the E-Configurator would be considered a reset. Also a Calendar-triggered configuration change would be a reset. When no measurement is available, the EPBS must have at least one interval to measure before the Countdown will play. During this first measured interval, no sound at all will play.

While Countdown is the selected Clearance Mode Sound, every CLEARANCE INTERVAL will be measured. The EPBS retains the last two CLEARANCE INTERVAL measurements. If there is a difference, the shorter of these two is the measurement used. If only one measurement has been made, it will be used. If for some reason the CLEARANCE INTERVAL timing changes to a shorter time, the first Countdown following the change will be based on the timing prior to the change. If the timing changes to a longer time, the first two Countdowns following the change will be based on the prior shorter timing.

If a Walk interval completes without a Walk Sound Trigger event, the Locate Tone will play through the Walk interval and the Clearance interval as well. If the walk sound plays in the Walk interval, then the Countdown will play, as long as a measurement is available.

EZ Communicator versions of the Navigator offer spoken Countdown times up to 59 seconds. If the CLEARANCE INTERVAL is longer than the available Countdown, the Default Clearance tone will play once per second during the period outside the range of the available spoken count.

If the EPBS button is pressed while the Countdown is playing, the sound associated with the button will take precedence over the Countdown sound. If there is an Extended Push with an Information Message, the message will play instead of the Countdown. When the message is finished, the Countdown will resume, with the correct timing. If a Special Message is activated by a CCU2EN input, such as the Emergency Vehicle Preemption message, it will likewise override the Countdown.

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, TONE 4
(Default = TONE 1)

Special Note: If Tone 4 is the selected Locate Sound and the operating mode is changed from EN2 to N2, the selected sound will change to 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. 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 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)

INFORMATION 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 Information 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 EPBS 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 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)

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)

With this feature enabled, any EPBS extended button push puts that channel in priority mode for the next pedestrian cycle. This means that upon the next walk interval for that channel, the other three channels will be muted until the end of the next clearance interval. The feature is designed such that more than one channel may be in priority mode. If a EPBS receives an extended push while muted, that channel will immediately cancel the muting.

WALK PING PONG

This is another unique function which, when enabled, will play the WALK Sound or Message first on one EPBS, then across the street, back and forth until the WALK phase ends. The ODD setting means that this unit will play on the odd numbered repetitions of the WALK Sound, while the EVEN setting plays on the even numbered repetitions.

The choices are: OFF, ODD, EVEN

(Default = OFF)

Special Note: If ODD or EVEN is the selected Ping Pong option and the operating mode is changed from EN2 to N2, the selected option changes to YES.

CLEARANCE PING PONG

Like the WALK PING PONG above, this option will play the CLEARANCE Sound first on one EPBS, then across the street, back and forth until the CLEARANCE phase ends. The ODD setting means that this unit will play on the odd numbered repetitions of the CLEARANCE Sound, while the EVEN setting plays on the even numbered repetitions.

The choices are: OFF, ODD, EVEN

(Default = OFF)

Special Note: If ODD or EVEN is the selected Ping Pong option and the operating mode is changed from EN2 to N2, the selected option changes to YES.

Help Function

The Help function is quite basic, but can get you familiar with what all the buttons do on the E-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.

Restore Factory Settings

If for some reason you need to restore the factory default settings, turn on the E-Configurator and establish communications with the EPBS, Enter Security Code and menu down through the ID number. You will get a "PRESS EITHER READ SETTINGS" message. To update the CCU, press UPDATE SETTINGS for CCU. This will restore the default settings to the CCU. To update an EPBS, press Read Settings for Push Button Station. Select Default 1 as the source for the read. After the read, press the PBS Update Settings key and select the desired destination using the Yes/No keys. Press the Down key to complete the update.

General E-Configurator Operational Notes

The E-Configurator has an automatic shut off function. As long as it has an established Communication connection with the EPBS, the E-Configurator will not shut off. The Auto Shut Off timer is reset every time there is E-Configurator Communications or any button is pressed. If neither of these conditions happen within a 30 second period, the E-Configurator will Auto Shut Off. The E-Configurator may also 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 E-Configurator Communication Link can be broken for up to 15 seconds and reestablished without losing setting changes. If communication is broken for more than 15 seconds, the EPBS will return to normal operation and all menu choice settings changed during that session will be lost.**

Recommendations

For situations where the walk sign does not rest in walk, Polara recommends setting the Sound/Vibration Time to two seconds longer than the walk sign period. This will always provide sound and vibration for the full length of the walk sign. In the event of a major malfunction where the EPBS might get stuck in walk mode, the walk sound would be extended by two seconds beyond the walk sign. Setting the Sound/Vibration Time to the same number of seconds as the walk sign may also work acceptably, however, if the EPBS Sound/Vibration Timer expires prior to the walk sign, the EPBS will not play the specified clearance sound. It will skip directly to the specified locate tone played during the Don't Walk period. This may be undesirable in cases where the clearance sound selected is different than the locate tone.

Polara also recommends setting the Sound/Vibration Retrigger to New Walk. The factory default configuration has been changed to include this. This setting will prevent any walk sound or vibration following a button push until the EPBS receives a new walk code from the CCU. In the event that a EPBS is stuck in walk mode, once the Sound/Vibration Time expires, a button push will not restart the walk sound.

Advanced Options

Configuring the General Purpose Inputs

The CCU Emergency Vehicle (EV) inputs correspond to Input #4.

INPUT #1 FUNCTION
INPUT #2 FUNCTION
INPUT #3 FUNCTION
INPUT #4 FUNCTION (EV)

All Inputs are typically driven by general purpose traffic controller outputs or by preemption device outputs. This allows complete timing coordination of all pedestrian operations within the intersection. Each input can be assigned to enable an Alternate Configuration or three possible custom messages. These functions can be assigned to a single channel, a pair of channels or all channels.

The Alternate Configuration function allows an input to switch the EPBSs on the affected channels to a separate set of configuration options. This Alternate Configuration can be read or updated using the E-Configurator Read Settings and Update Settings functions. This allows you to instantly change any or all of the configuration options by the application of an external signal. Some examples of uses for this would be to change volume levels, change voice messages, or turn off the locate tone. The Alternate Configuration would remain in effect only for the duration of the applied signal. The EPBSs power on in normal configuration, so a power failure would cause a change to Alternate Configuration to be lost.

The Special or Custom Messages can be used to enhance pedestrian safety. For example Message #1 default says: "Emergency Vehicle Approaching, Clear Intersection Immediately". The message can be triggered by the signal from a Preemption Sensor, which should give Blind Pedestrians advance notice before the Emergency Vehicle actually reaches the intersection. Message #2 default says: "Train is Approaching, Clear Tracks Immediately". The message can be triggered by the Train Preemption signal, which should give Blind Pedestrians advance notice before the Train actually reaches the railroad crossing. The MeSsaGe VOLume levels for the selected input determine the volume of the Special Message.

INPUT #4 (EV) is primarily intended for the Special Messages. It has four separate inputs and a separate Common (EV COM) which would typically connect to +24 volts. Connection of any EV Input to Logic Ground will trigger the message. Each time the signal is applied, the message will play. If the signal remains on, the message will not repeat.

Note: Other custom messages can also be programmed in these three locations!

The choices for this input function are as follows: NONE, ALternate CONFIGuration, SPECIAL MeSsaGe 1, SPECIAL MeSsaGe 2, SPECIAL MeSsaGe 3
(Default = NONE)

INPUT #1 CONTROLS
INPUT #2 CONTROLS
INPUT #3 CONTROLS
INPUT #4 CONTROLS (EV)

This function controls which phase(s) the function is applied to. For example if a single crosswalk is to be controlled then choose the appropriate phase A, B, C or D. If you want to reduce the volumes at night but only want to do so on the phase(s) that are adjacent to a nearby residence you could do so.

The choices for this input function are as follows: A, B, C, D, AB, CD, ALL (ABCD)
(Default = ALL(ABCD))

IN#1 MeSsaGe VOLume MINimum
IN#2 MeSsaGe VOLume MINimum
IN#3 MeSsaGe VOLume MINimum
IN#4 MeSsaGe VOLume MINimum (EV)

This function sets the minimum volume level for the specified function. The Auto Volume adjustment will not go below this setting. This volume level is adjustable from 0% to 100% of the maximum volume output in 5% steps. (21 choices)
(Default = 5%)

IN#1 MeSsaGe VOLume MAXimum
IN#2 MeSsaGe VOLume MAXimum
IN#3 MeSsaGe VOLume MAXimum
IN#4 MeSsaGe VOLume MAXimum (EV)

This function sets the maximum volume level for the specified function. The Auto Volume adjustment will not go above this setting.

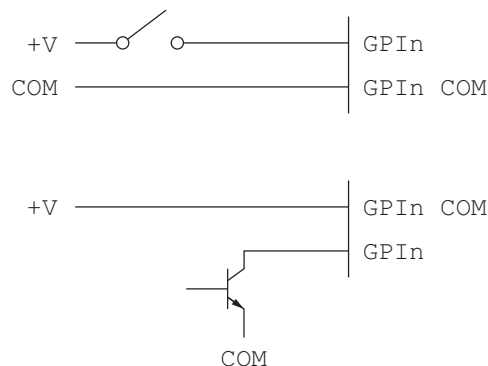
This volume level is adjustable from 0% to 100% of the maximum volume output in 5% steps. (21 choices)
(Default = 80%)

Using the General Purpose Inputs

The General Purpose Inputs (GPIn) are activated by applying a voltage. The recommended input is 12-36V AC or DC. The Inputs are optically isolated. These connections are located on cable #3.

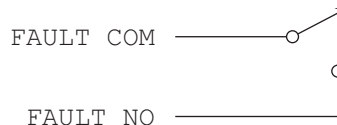
The recommended connection method uses the typically available +12 or +24 volts in the traffic cabinet, which may be connected to GP In COM or EV COM. Then the input is activated by a connection to Logic Ground.

If your input signal is a contact closure, you may use the +V output from the CCU as a voltage source as in the following examples:



Fault Output

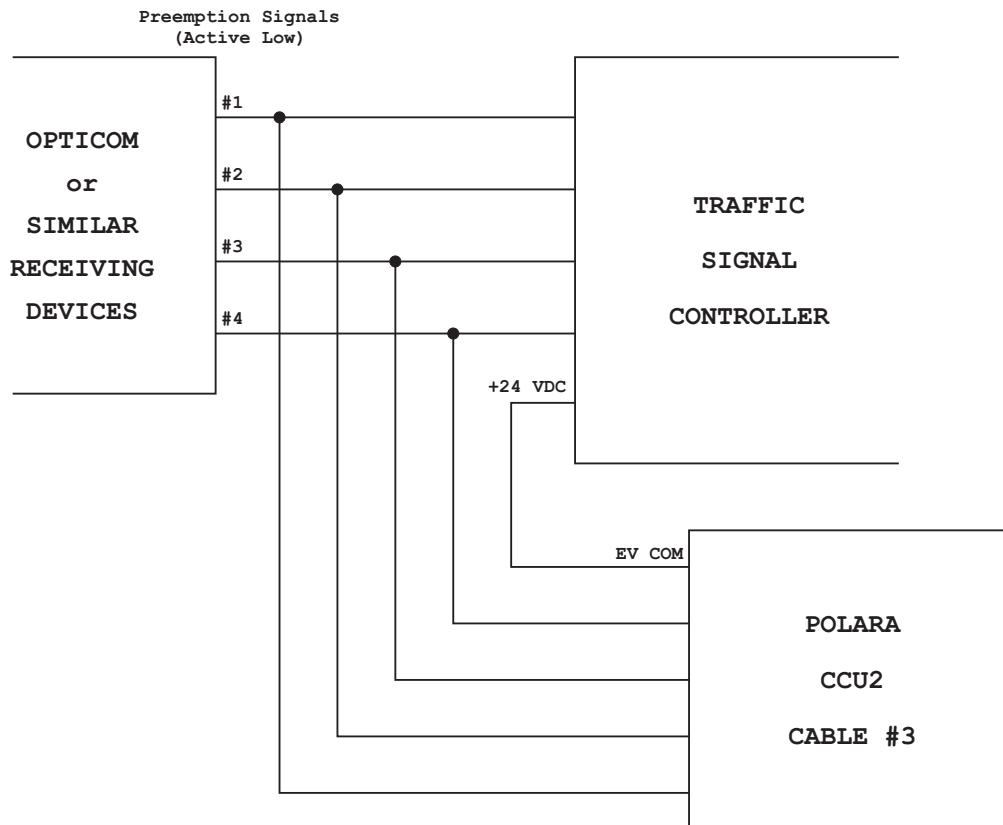
The Fault Output is a contact closure as shown:



This can be used to trigger an alert if there is an available means of doing so.

Any fault which results in lighting the Fault LED on the front of the CCU will activate the fault relay. In addition, the relay will be in the active state if the CCU2 AC input power is lost. To clear the fault condition, the CCU must be power cycled.

Example of Four-Way Emergency Vehicle Message Wiring



Ped Station Monitor – Technical Description

Polara's Ped Station Monitor (PSM) function is incorporated within the CCU2EN. The purpose of this feature is to prevent a push button station from indicating that a walk sign is on when it is actually off. Since the CCU2EN is directly connected to the ped sign wiring, it constantly monitors the status of the ped sign. Each EPBS has an ID assigned, which is included in a special code that is transmitted repeatedly to the CCU2EN while the EPBS is in WALK mode. Each time the CCU2EN receives one of these special codes, it checks to see if the walk sign is on. In the event that the walk sign is not on, the CCU2EN immediately transmits a Don't Walk command, then turns off power to the channel. This event is saved to the Health Log as a Data/PSM Fault, and the channel and received ID are listed with the fault. The channel power is restored after 10 seconds. If an identical event takes place within 5 minutes, the channel is again shut down and remains off until the Setup Button is pressed. This second event is similarly saved to the Health Log except as a EPBS PSM Failure. Polara offers a special test device, the EZ210 Conflict Tester, which can be used to test and verify operation of this feature.

EPBS Self Test – Technical Description

The CCU2EN and connected EPBS units exchange some special data every 30 seconds to verify that each EPBS is able to communicate. After all ID's are assigned, the Setup Button should be pressed. At this point, the CCU2EN sends separate requests for a response to every possible ID. Those ID's that respond are saved in the CCU2EN in non-volatile memory, so that a power off does not cause this data to be lost. During normal operation, at each 30 second interval, the CCU2EN sends a request to each saved ID to send a response. This can be observed on the CCU2EN LED's as a quick blink of all four PWR LED's followed by quick blinks of each of the illuminated ID LED's. If a EPBS fails to respond, its ID LED will turn off. The CCU2EN shuts off power to the channel to reset the EPBS units. If the same EPBS fails to respond at the next test, a EPBS Self Test Failure event is recorded in the Health Log, the associated green ID LED on the CCU2EN flashes, and the PED CALL for that channel is turned on. If, in a future 30 second test, this ID again responds, a EPBS Recovered event is recorded in the Health Log, the associated ID LED stops flashing and the PED CALL is turned off.

Power Down Reset

Any time the CCU2EN is powered off for more than one second, then powered on, it does an extensive power up sequence. It starts with a scan of the LED panel, then keeps the channels off for 10 seconds. This assures that in case of a power interruption, all the EPBSs are fully reset. Following this is a second scan of the LED panel, then the operating channels will power on one at a time. About 3 seconds after receiving power, the EPBS units should start operating normally. In order to ensure a complete power on reset it is recommended to leave the CCU2EN powered off for at least 10 seconds before re-powering it back on.

EN2 Mode / N2 Mode Differences

The EZ Communicator 2 Wire EPBS is capable of operating in two modes. EN2 mode makes available all of the new features, while N2 mode allows the EPBS to emulate the older generation of 2 Wire Navigators. N2 mode is designed to operate as closely as possible to the older models. Because of the new options available in the EPBS, switching between modes can possibly result in a change in operation. This will depend entirely on which configuration options are currently selected.

This is what to expect if you switch from EN2 mode to N2 mode:

If the current EN2 Walk Mode Sound one of these: CUSTOM MesSaGe 2 ("Walk Sign is On"), CUSTOM MesSaGe 3, WALK SIGN is on for ALL Xs (Crossings), RAPID TICK 1, RAPID TICK 2, RAPID TICK 3, CANadian MELODY, AUSTRALIAN Melody, the N2 Walk Mode Sound will change to Standard Msg.

If the current EN2 Clearance Mode Sound is one of these: TONE 4, CANadian MELODY, the N2 Clearance Mode Sound will change to TONE 1.

If the EN2 Locate Sound is TONE 4 the N2 Locate Sound will change to TONE 1.

If the EN2 Walk Ping Pong or Clearance Ping Pong is ODD or EVEN, the N2 option will change to YES.

This is what to expect if you switch from N2 mode to EN2 mode:

If the current N2 Walk Mode Sound one of these: CUCKOO + STandard, CUCKOO + CuSToM, CHIRP + STandard, CHIRP + CuSToM, the EN2 Walk Mode Sound will change to Standard Msg.

Clearance Mode Sound – No Change

Locate Mode Sound – No Change

If the N2 Walk Ping Pong or Clearance Ping Pong is YES, the EN2 option will change to ODD.

If operating in N2 mode and the desired sound is not available as a configurable option, the desired sound may be uploaded to the EPBS using the Polara EZ APS Toolbox software. Any messages utilized in EN2 mode which are desired for use in N2 mode must be programmed in a slot which exists in both modes. For example, if a customer needs Maryland Rapid Tick, then that sound must be programmed in Custom Message 1 location which is usable in both modes.

If a customer needs a "Click" sound as the Push Confirmation Message for use in N2 mode to match other units in the field, then the click sound must be programmed in the "Wait" sound location in the EPBS.

Default sounds/wave files must be requested. They are not provided with the programming software.

How to Create and Update Audio in the EPBS

See section "**Preparing Custom Messages**" in the Installation Manual for more information.

How to Update Firmware in the E-Navigator System

The EZ510 Security Box is the preferred method of performing firmware updates in the EZ Communicator products due to its simplicity. However, both the EZ APS ToolBox and the EZ510 Security Box are equally capable of performing firmware updates. **One important thing to note is that while performing firmware updates, neither the EPBSs or the CCU2EN can be operating in N2 Mode.** In order to ensure a trouble free firmware upgrade process, the following steps should be followed:

1. Ensure that the Mode switch on the back of the CCU2EN is in the EN2 position.
2. Unplug the 50-Pin connector from the front of the CCU2EN and press the Setup button on the back of the CCU2EN. This will remove all green lights showing detected buttons on the LED panel.
3. Plug the 50-Pin connector back into the CCU2EN. **DO NOT PRESS THE SETUP BUTTON AT THIS TIME.**
4. Upgrade all EPBSs and the CCU2EN using the EZ510 Security Box (Preferred Method) or the EZ APS ToolBox.
5. Once all equipment has been upgraded, set the IDs in the EPBSs, Change the CCU2EN Security Code, and press the Setup Button on the back of the CCU2EN.

How to Perform a Communications Test Between the CCU2EN and the EPBSs

If the CCU2EN and all EPBSs on a particular channel have SP1 firmware, you can perform a communications test to each individual EPBS. This can be very helpful in determining whether or not you have a reliable, low resistance connection between the CCU2EN and each EPBS. One particular instance in which this test is beneficial is when you get a "MATCH FAILS" message on the EZ Configurator when trying to log in at an EPBS. With a PC connected to the CCU2EN using a USB A/B cable, open the EZ APS ToolBox application and log in using your security code. Once logged in, click on the Communications tab near the top of the screen. If any SP1 EPBSs are installed there will be a Test button for each SP1 EPBS. Click on the Test button for the corresponding EPBS that you would like to test communication to. You will see in the grids on the right of the screen either 1's or 0's returned. If all 0's are returned and the background color for each cell in the grid is green, then there were no communication errors to that button. If any of the cells have 1's in them, then the background color of that cell will turn red indicating a communication failure. You can repeat the

testing as many times as you would like by clicking on the test button again. If you see that there are continual communication failures, inspect your wiring and make sure all crimps and splices are of good quality and that the overall loop resistance of that particular pair of field wires is less than 1.5 ohms.

How to Reset the Security Code

The Security Code is stored only in the CCU2EN and is requested from the CCU2EN by the EPBS when logging in at the button. What this means is, if you are able to log in at even just one EPBS on the intersection but you get a "MATCH FAILS" for other EPBSs on the intersection, the security code you are using is correct and the buttons that you are having trouble logging into have a communication problem back to the CCU2EN. If you are not able to log in to any EPBSs at the intersection then it is likely that the security code has been inadvertently changed. If this is the case, you can reset the password using the EZ APS ToolBox application. From the login screen, click the Generate Challenge Code button and you will see a pop-up window with a set of four numbers and a telephone number to call to receive a verification code. Enter the verification code in the fields on the login screen from left to right then click the Reset Password button. This will reset the security code to AAAA. You can now log in using the AAAA security code. It is recommended that you immediately go to the Setup/Security tab and change the security code to one of your choosing.

How to View SNMP Traps Sent from the CCU2EN

The CCU2EN with SP1 firmware is capable of automatically sending trap notices for the following events:

- PBS Self Test Failure
- PBS Low Voltage Failure
- PBS PSM Failure
- PBS Self Test Recovered
- CCU Restarted
- CCU Power Lost
- CCU Initial Defaults Written
- Password Changed via EConfigurator
- Password Changed via USB
- Password Changed via Ethernet
- Data PSM Fault
- Swapped Wires Fault
- Voice Message Runaway
- Password Reset to Default

In order to receive and manage the reception of trap notifications you will need a trap receiver software utility. Most SNMP managers have the ability to monitor for traps and there are many free dedicated trap receiver applications available for download online. Using the EZ APS ToolBox connected to the CCU2EN, click on the Setup/Security tab at the top of the window and change the trap IP addresses to the IP address of the PC's (up to 3) that you are going to use to monitor for trap notifications. Traps are sent to port 162 on your PC and this port will need to be unblocked from your firewall. Once you have your trap receiver application installed, you can configure it to send you automatic email notifications any time a trap is received.

Health Log Fault/Event Descriptions

- PSM Self Test Failure

Every 30 seconds the CCU performs a self test which requests a response from each button on the intersection. If a button does not respond, the CCU will power off the channel to restart the button. 30 seconds later a request is sent again and if a button does not respond the second time, the CCU will log a PSM Self Test Failure in the log and it will lock in a Ped call. **Note: The self test functionality requires that all buttons have their ID's set correctly. If a EPBS does not have its ID set, it cannot participate in the self test and an event will not be logged.**

- PBS Low Voltage Failure

This event is logged whenever a channels voltage falls below an acceptable level for more than 5 seconds.

- PBS PSM Failure

This event is triggered whenever the internal Ped Station Monitor recognizes the first occurrence of a PSM fault. The specific ID or channel that the fault occurred on will be logged with the fault.

- PBS Self Test Recovered

This event is logged in the health log when a EPBS that was previously unresponsive and has failed the self test begins responding again to the self test.

- CCU Restarted

This event is logged any time the CCU powers on.

- CCU Power Lost

This event is logged any time the CCU loses power for more than 1 second.

- CCU Initial Defaults Written

This event is logged when the initial configurations are programmed into the unit at the factory.

- Password Changed via EConfigurator

This event is logged any time the password is changed via the EConfigurator.

- Password Changed via USB

This event is logged any time the password is changed via the EZ APS ToolBox.

- Password Changed via Ethernet

This event is logged any time the password is changed via an ethernet connection using the EZ APS ToolBox.

- Data PSM Fault

This fault is logged if two PSM Failures occur on the same channel/ID withing the span of 5 minutes. When this fault is logged, the channel that it occurred on will be powered off and a constant ped call will be placed until the setup button on the back of the CCU is pressed.

- Swapped Wires Fault

This fault is logged if the walk and don't walk wires connecting the CCU to the load switch outputs have been reversed.

- Voice Message Runaway

This event is logged if there is an error with trying to play an audio message.

- Password Reset to Default

This event will be logged any time the security code is reset to the default AAAA code.

Creating a Knockdown File

To create a knockdown file using the EZ APS ToolBox, navigate to the Firmware Updating tab while connected to an EN2 EPBS (or in EN2 Offline mode). Click the Make EZ510 Knockdown File button and enter the password for the EN2 EPBS you wish to perform the knockdown feature on. Follow the prompts to save the file to the desired location on your PC or Flash Drive. See the EZ510 operation manual for instructions on how to perform the knockdown function.

Loading and Saving Configurations using the EZ APS ToolBox

There are three options for loading and saving configuration profiles. One is that you can save just one individual configuration profile (Default, Alternate 1, Alternate 2, or Alternate 3). You can also save a profile that contains all four configuration profiles in the same file. Lastly, you can save an entire intersection profile, which will save all configurable settings (EPBS Configurations, CCU Configurations and Calendar Settings) for the CCU2EN and every SP1 EPBS located at the intersection into one single file.

The file extensions for these types of files and how to save/load them are as follows:

- **Individual Profile:**

From either the CCU Configuration Tab or the EPBS Configuration tab, click the Save button at the top of the configuration column. Follow the prompts and save the configuration profile to the desired location on your PC. These files can now be opened by clicking the Open button at the top of each configuration column. A CCU configuration profile will be saved with a .ccuc file extension. An individual EPBS configuration profile will be saved with a .en2c file extension.

- **Combined Default, Alt1, Alt2, and Alt3 Profile:**

To save a combined configuration profile for an EPBS, simply click File from the menu bar at the top of the application then click "Save EPBS Profile As..." and follow the prompts to save the file to the desired location on your PC. This file can now be loaded by clicking File, then "Open EPBS Profile". A combined configuration profile will be saved with a .ccup file extension.

- **Entire Intersection Profile:**

To save an entire intersection profile, navigate to the CCU Configuration tab while connected to an SP1 CCU through USB. Click the Save Current Intersection Configuration to File button. Follow the prompts to select a location to save the file. The CCU will then retrieve the configurations from each installed SP1 EPBS and will store this data along with the CCU configuration data into one file. An entire intersection configuration profile will be saved with a .prof file extension. You can not load this file by clicking the Restore Intersection Configuration from Profile button on the CCU Configuration tab. You can also compare this saved profile to an intersections current configurations and view a PDF stating if there are any discrepancies between the configurations stored in the file and the configurations currently active on the intersection. To do this, simply click the Compare Current Intersection to Saved Profile button and follow the prompts.

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Default and Field Settings

City _____ State/Province _____ Install Date _____

Intersection: _____

Street: _____

Corner: _____

ID: _____

Phase: _____

Defaults

LOCATE VOL MIN	0%	_____	_____	_____	_____	_____	_____	_____
LOCATE VOL MAX	50%	_____	_____	_____	_____	_____	_____	_____
INFO MSG VOL MIN	65%	_____	_____	_____	_____	_____	_____	_____
STD WALK VOL MIN	30%	_____	_____	_____	_____	_____	_____	_____
STD WALK VOL MAX	60%	_____	_____	_____	_____	_____	_____	_____
EXT WALK VOL MIN	60%	_____	_____	_____	_____	_____	_____	_____
EXT WALK VOL MAX	80%	_____	_____	_____	_____	_____	_____	_____
VOL OVER AMBIENT	0 dB	_____	_____	_____	_____	_____	_____	_____
LOC VOL OVER AMBIENT	0 dB	_____	_____	_____	_____	_____	_____	_____
WALK MODE SOUND	STD MSG	_____	_____	_____	_____	_____	_____	_____
WALK SOUND PAUSE	.5 SEC	_____	_____	_____	_____	_____	_____	_____
WALK SOUND TRIG	ANY PUSH	_____	_____	_____	_____	_____	_____	_____
SOUND/VIB TIMER	20 SEC	_____	_____	_____	_____	_____	_____	_____
SOUND/VIB RETRIG	BUTTON 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 MESSAGE	NO	_____	_____	_____	_____	_____	_____	_____
DIRECTION MSG	NORTH	_____	_____	_____	_____	_____	_____	_____
INFO MESSAGE	NONE	_____	_____	_____	_____	_____	_____	_____
PUSH CONFIRM MESSAGE	STD	_____	_____	_____	_____	_____	_____	_____
CANCEL ON WALK	YES	_____	_____	_____	_____	_____	_____	_____
EXT PUSH TIME	1.0 SEC	_____	_____	_____	_____	_____	_____	_____
SECOND LANGUAGE	NO	_____	_____	_____	_____	_____	_____	_____
THIRD LANGUAGE	NO	_____	_____	_____	_____	_____	_____	_____
EXT PUSH PRIORITY	NO	_____	_____	_____	_____	_____	_____	_____
WALK PING PONG	OFF	_____	_____	_____	_____	_____	_____	_____
CLEAR PING PONG	OFF	_____	_____	_____	_____	_____	_____	_____

Special Notes: _____

2-WIRE EZ COMMUNICATOR SYSTEM WIRING WITH OPTIONAL EMERGENCY MESSAGE AND GP INPUTS

