EZCommunicator 4 Wire Navigator APS System
Operation Manual

The EZCommunicator 4 Wire Navigator System from Polara Engineering is a pedestrian operated Push Button Station for installation at each end of a pedestrian crosswalk. Each Push Button Station provides a vibro-tactile arrow button and audible signals to give pedestrians valuable crossing information in alternative formats. This 4 Wire system is an alternative to the Polara EZCommunicator 2 Wire Navigator.

The primary applications for the EZCommunicator 4 Wire Navigator are for locations where only one or two crosswalks of an intersection are being installed and cost savings is a consideration, at locations where there are no pedestrian push buttons or wiring and the pedestrian signals are cycled automatically, or where the 2 Wire system was not usable due to substandard field wiring.

For each Push Button Station there is one PHCU4W Control Unit required. It is typically mounted inside the pedestrian signal head. The Control Unit input side connects to the Pedestrian Signal Walk and Don't Walk AC light wiring. The output side connects via 4 wires to the Push Button Station. The PHCU4W operates on 120 VAC, 60 Hz, 6VA. The output to the Push Button Station is nominally 18 VDC, rated for 0.5A maximum. The PHCU4W only provides power and Walk/Don't Walk status to the 4 Wire Navigator.

All setup options for the Push Button Station are accomplished with the E-Configurator (a handheld remote unit), or by connecting to the Push Button Station through its USB port with a personal computer. Either method allows you to select from a variety of built-in sounds for the "Don't Walk", "Walk", and "Clearance" intervals of the pedestrian signal cycle. In addition, custom sounds may be ordered from the factory, or your own audio files may be easily uploaded into the Push Button Station to tailor the sound for the specific location. Any factory supplied sound may be replaced by the user's own sound file within the allowable time length limit.

While the EZCommunicator 4 Wire Navigator works well for locations without push button wiring, the Push Button Station supports push button wires and will place a pedestrian call to the intersection controller.

The system comes from the factory initialized with settings used for typical intersections. Many locations need only a few changes, however, there are a large number of options, supporting a wide variety of requirements.

EZCommunicator 4 Wire Navigator with External Speaker

This version of the Navigator adds a second audio channel to drive a higher mounted speaker directed into the crosswalk. This provides a more concentrated sound area for sight impaired pedestrians while in the crosswalk. The Walk sound and Clearance sound come only from the external speaker, while the Locate sound and other sounds come only from the internal speaker in the EPBS.

Please carefully read the contents of this manual in its entirety so you gain a good working knowledge of the many functions and options the system provides. Polara recommends that anyone new to this system should spend time experimenting with the system in a shop environment prior to working with a system on the street.

Notable Standard Features

- Independent minimum and maximum volume settings for Locate Sounds, Walk/ Clearance Sounds with and without an extended button push. Separate minimum volume setting for information message.
- Locate Sound — Plays a brief sound at selectable interval to assist a visually impaired pedestrian in walking toward the Push Button Station (EPBS).
- Optional clearance sounds or audible countdown of remaining seconds during clearance available; complements or replaces visible countdown displays.
- Secure configuration prevents unauthorized tampering.
- Button rated for 20 million+ operations with < 3 lb. actuation force.
- Audio volume auto-adjusts to ambient noise level over a maximum possible dynamic range of 60 dB.
- Optional announcement of direction of travel (Ex: "traveling west") can tag the information message or be used alone.
- Adjustable extended push time from 0 to 6 seconds in .5 second increments can be set by installer.
- USB interface supports firmware and audio file updates, diagnostics and configuration options.
- Ped Station Monitor feature continuously checks for walk sound or button vibration in absence of a walk sign indication.

Custom Message and Sound Options

- Custom Information Message(s) — Typically announces the street names at the location and identifies which street is being crossed. The message can include other relevant information. The system supports access to custom messages in a second language.
- Custom Walk Message(s) — Typically announces the Walk sign and the name of street the pedestrian is crossing. This also supports a second language.
- Clearance Sounds/Countdown — The Clearance sound may be distinct from the other sounds so pedestrians know they are in the Clearance interval. The specific sound and repetition rate can be uniquely chosen for this interval. A verbal countdown of time remaining is also a built-in selectable option.

Special Accessories

- The 850-288-12 and 850-288-25 are pre-cut 4-wire cables used to connect the EPBS to the PHCU4W.
- The EZ410 Setup Box is a compact bench-top unit for inside pre-configuration of 4 Wire EPBSs. This device simulates a pedestrian signal head and will operate one or two EPBSs. The ped signals can be operated manually or set to cycle automatically with preset intervals.
- The EZ510 Security Box provides a simplified, more automated method of performing product upgrades and maintenance. It features one-button operation and uses a common USB flash drive and a USB cable to transfer updates to EZCommunicator devices. Once the flash drive is prepared, a computer is no longer necessary. This can simplify the process of updating multiple units in the field.

System 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 Station (EPBS) on the pole. A 4 wire cable (18 AWG stranded, Belden 8489 or equivalent) must be routed between each EPBS and its associated PHCU4W. The EPBSs 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. Polara stocks the Belden 8489 cable in pre-cut 12' (850-288-12) and 25' (850-288-25) lengths, and can be purchased 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. Belden 27326A or Allied Wire & Cable 1108 is a tray cable rated for direct burial.

In an application where the wiring must be run externally on the pole (i.e. wood pole mount), the small lower cover may be drilled and tapped for a ½" threaded pipe allowing conduit to be run to the bottom of the unit.

To install an eight push button system when the ped heads are on the same pole it is estimated to take a 2 man crew 8 hours or less (assuming no complications).

System Operational Check Following Installation

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

1. Shortly after power up, the red LED above the EPBS should flash rapidly for about 5 seconds. This is a power-on self-test of the Ped Station Monitor function and it verifies that this feature is working properly. About 2 seconds later, the locate tone should start playing. If the EPBS is powered on while the Walk Sign is on, the PSM power-on self-test will not occur.

2. Push each EPBS button and verify that the red LED above the push button turns on with the first push, and that an audible sound 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 sound is heard and the push button vibrates during the next Walk interval.

4. Verify that a Clearance sound is heard during the Clearance interval.

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

When you are satisfied that all units are working properly, install sign and lower access cover on each EPBS.

Evaluate sound levels and responsiveness to ambient noise. Using the E-Configurator (or the software USB interface), make any volume adjustments as needed to each EPBS.

Diagnostic LED Indicators

With the small cover at the bottom of the EPBS removed, you will see three small LEDs located in the area above the terminal blocks. When the unit is powered up and is in normal operation the LED's will blink at various frequencies. The meaning of the various flashing codes is described below:

MODE:
Don't Walk — On steady
Walk — Rapid flash (10/sec)
Clearance — Slow flash (1/sec)

DATA:
4-Wire — Shorter blink when sending play command from the MP to the AP.

AUDIO:
On steady while a sound clip is playing. Flashes during USB firmware or USB audio file updates.

Setting Up EN4 Sounds to Match N4 Sounds

When installing an EN4 button at an intersection that has older N4 buttons installed, some of the sounds may not match between the two buttons with the same configuration. Any messages utilized in an EN4 button which are desired for use in the same way as an N4 button 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 on the EPBS.

If a customer needs a "Click" sound as the Push Confirmation Message for use in an EN4 EPBS to match other N4 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.

Changing Sounds and Functional Features

Sound settings and functional features can be changed using an E-Configurator, or the Polara EZ APS ToolBox with USB A/B cable. Information manuals and downloads for the products can be found at www.polara.com.