

VERY IMPORTANT - PLEASE READ

MOST COMMON ISSUES ENCOUNTERED DURING INSTALLATION

Polara's 2-Wire Accessible Pedestrian System transmits power **and data** between the iCCU Central Control Unit and each Push Button Station (PBS). It is not simply voltage/power carried over the PBS wires. This equipment must be wired correctly, and the wiring must be of good quality for data to transmit properly. The following are the **most common problems** installers experience when installing Polara's 2-Wire system. Please read the items listed below, then thoroughly read the attached Quick Start Installation Guide and make sure each step is understood before proceeding.

1. PROPER WIRING:

- A. **Never apply 120 VAC to a PBS, ICB or iCCU terminal block. This will cause damage and void the warranty.**
- B. For proper operation, a dedicated pair of #14 or #12 AWG wire is required between each PBS and the Interconnect Board (ICB) / iCCU to ensure good communication. It is not recommended to share button wires between buttons.

2. PROPER POWER UP SEQUENCE:

- A. **DO NOT CONNECT AC POWER TO THE iCCU UNTIL INSTALLATION OF ALL SYSTEM WIRING IS COMPLETE!**
- B. Once all cabinet wiring is complete and all PBSs are mounted and connected to the button wires, power up the iCCU-S2 by connecting the power cord to the iCCU-S2 AC inlet, or if using an iCCU-C2, slide it into the rack.
- C. Each PBS should beep, and then after a short time, its LED should flash with a 2-flash sequence, while the PBSs attempt to communicate with the iCCU. Once a PBS is communicating with the iCCU, it will begin to flash in a four-flash pattern.
- D. If after a few minutes any PBS continues in a two-flash pattern, this indicates the PBS has not established communication with the iCCU. Typically, this is corrected by changing the communication channel. See Advanced Communications, Settings Sections 5.3 (iOS App) in the iNS2 System Manual (or Section 1.3 in Android manual) before proceeding with system setup. The manual is available in the Field Service apps, or on our website www.polara.com. *****(Do not change the gain settings)***** If changing the channel does not bring a PBS out of a two-flash pattern, contact Polara Tech support for assistance @ 903-366-0300 EXT 4 or 888-340-4872. **ALL buttons must have a four-flash pattern to proceed with setting up the system.**
- E. If installing an iCCU-C2 and there is a two-flash sequence on **all** buttons, verify wiring complies with that shown in the iCCU-C2 Quick Start Guide or Section 3.3 of Manual.

3. PASSWORD ISSUES: The iCCU can be connected to thru Wi-Fi. The buttons can be connected to thru Bluetooth.

- A. Once Wi-Fi is turned on at the iCCU, the Wi-Fi password is **DEFAULT1** (ALL CAPS).
- B. Following power up, each button will say "change password" every 30 seconds, until the default password is changed. There is one shared password for logging into an iCCU and all PBS connected to it. The factory default password is **1234**. Using a Field Service app, use 1234 to log into the iCCU or any PBS the first time, and change the password. This changes the password for all PBS and the iCCU. See Section 5.2 in the Manual for details.
- C. If the password is unknown, a **Password Reset** requires a call to Polara Tech Support.

4. iCCU and PBS FIRMWARE VERSIONS:

- A. The system will not work properly if it does not have the latest, or correct firmware. Once the system is powered up and operating, **the firmware must be upgraded** to the latest version, **first on each PBS**, then on the iCCU using the Polara Intelligent Config PC app, or the Polara iOS / Android Field Service apps. **UPGRADE BUTTONS FIRST**

5. CHANGING SYSTEM SETTINGS:

- A. A button can be logged into to change its settings. If desired, those settings can be uploaded to all buttons.

6. Operating in BIU/SDLC mode:

- A. **A connection from the iCCU-S2 to the Traffic Controller's Logic Ground must be established using a Polara manufactured SDLC cable because standard SDLC cables do not pass-through Logic Ground connections.** Polara offers a straight SDLC cable with an external ground wire, or a "Y" cable with internal ground. **If a Polara made SDLC cable is not used, then the CABLE-C-LG supplied with every iCCU-S2, must be used. Not doing this can cause damage to the iCCU and other equipment connected to the SDLC bus.** Request document 350-079 for details.

If you have questions, or encounter issues during installation, call our Tech Support line at **888-340-4872** between 7:30 AM and 5:00 PM CDT/CST.

Installation Quick Start Guide for iN2/iCCU-S System

See “iNavigator 2 Wire System Manual” Rev. J or newer for complete Installation and Operation instructions. Sections referenced below are from this manual. Installation is covered in Section 3.

Polara offers a free iOS app that can be downloaded from the Apple Store, and a free PC app that can be downloaded at www.polara.com. Either of these can be used to change the password, adjust settings, upload custom messages and update firmware. The website also has tutorial videos that show how to do most processes.

Note: Pay special attention to Steps #10 and #11 below. The firmware versions in the iCCU and Push Button Stations may not be compatible depending on when each was manufactured. The only way to ensure compatibility and proper operation of the system is to update with the latest released firmware to each push button station first, then the iCCU.

ALWAYS UPDATE THE BUTTONS FIRST, THEN UPDATE THE iCCU.

Instructions

1. Place intersection in PED recall.
2. Determine iCCU-S location in cabinet and place/install. For cabinets with EIA standard rack, Polara offers a bracket to hold the iCCU-S. See Accessories section of iN2 Intelligent Navigator page at www.polara.com.
3. Determine Interconnect Board (iN2-ICB) location and install. The EZ200 Interconnect Board is an acceptable alternative to the iN2-ICB. See Section 3.2 of the Manual.
4. Attach 50 pin connector/cable assembly to front of iCCU-S. Route cables to hook up locations. See section 3.2 of Manual, or pages 3-5 of this Quick Start Guide depending upon type of cabinet. **Note: Cable #1 exists for legacy reasons. If present, it must be taped off according to the section “Cable #1 Special Instructions” on page 2 of this Quick Start Guide (details of the cable functions can be found in section 3.4 of the Manual).**
5. If using SDLC and an open SDLC port is available in the cabinet, connect one end of SDLC cable to front of iCCU-S and other end to open port location. If an open SDLC port is not available, Polara offers a “Y” cable. See iN2-SDLC-YCABLE in the Control Unit section of iN2 Intelligent Navigator page at www.polara.com.
6. Polara recommends that the AC power cord be connected to a source of AC that is switched off during flash. See section 3.1 of Manual. **DO NOT CONNECT POWER TO iCCU-S UNTIL SYSTEM INSTALLATION IS COMPLETED. THE POWER CORD SHOULD NOT BE CONNECTED TO A GFI PROTECTED SOURCE.**
7. Plan PBS (push button station) locations if they have preprogrammed special messages. If special messages are not used, or will be programmed once each PBS is installed, proceed to next step.
8. Remove existing push buttons if present and verify at least 8” of wire extends beyond wire exit hole in pole. If enough wire is not available, evaluate whether a new, lower wire exit hole that would line up with the terminal block access point in the bottom of the PBS would provide adequate wire length. If yes, drill and reroute wires. If not, you need to figure out a way to achieve more wire length. Make sure arrow on button is pointing in correct direction. Position unit on pole at correct height and orientation so arrow points to ending of crosswalk on the opposite side of the street. Orientation is very important because a blind person uses the arrow and face of the sign to orient themselves to the direction of travel. Mark mounting bolt locations if existing holes not correctly located. Drill and tap ¼-20 bolt holes. Drill wire access hole (if necessary). Mount PBS to pole. Connect button wires. Install bottom cover. Install sign, making sure sign arrow direction matches button arrow direction. See video titled “iN2 APS System Installation - iN2 PBS” for example/guidance.
9. Once all cabinet wiring is complete and all PBSs are mounted and connected to the button wires, power up the iCCU-S by connecting the power cord to the iCCU-S AC inlet. Each PBS will beep, then it’s LED should blink in a four sequence pattern. If any PBS flashes in a two sequence pattern, this indicates the PBS has not established communication with the iCCU. See Advanced Communications Settings Sections 5.3 (iOS App) or 10.6 (PC App), in the iNavigator 2 Wire System Manual before proceeding to step 10.

Note: Wi-Fi default password is “DEFAULT1” (all caps, no quotes), iN2/iCCU-S default password is “1234”.

10. The first step is to update the firmware on each PBS. For each PBS, connect to the PBS and perform a firmware update. See section 8.1 of Manual if using the iOS app, or section 14 of Manual if using the PC app. The PBS will reset after the firmware upgrade is completed.
11. Next, connect to the iCCU-S and perform a firmware update. See sections 5.1 and 8.1 of Manual if using the iOS app. See sections 10.4 and 14 if using the PC app. The iCCU-S will reset after the firmware upgrade is complete.
12. Each PBS will play the message “Change Password” until the password is changed. It is now necessary to change the password and perform channel and PED phase setup of the iCCU-S. Use the iN2/iCCU-S default password as the “Current” password. See sections 5.2-5.4 of Manual if using the iOS app, or sections 10.5-10.7 of Manual if using the PC app.

13. Once the channel and phasing is set for the iCCU-S, each PBS must be assigned to a phase. See section 5.5 of Manual if using the iOS app, or section 10.8 of Manual if using the PC app.
14. Once each PBS phase is assigned, the settings of each PBS can be configured as needed. See section 6 of Manual if using iOS app, or section 12 of Manual if using PC app.

Note: Demonstration Videos on various features and setups are available at www.polara.com > Support > Shortcut to Documents, Videos, and Downloads

Advanced Communications Settings

All iN2 PBSs connected to the interconnect board communicate with the iCCU via the field wires, using one of three communication channels, A, B or C.

The iN2 PBSs and the iCCU need to be on the same channel in order to communicate with each other. Anytime an iN2 PBS is powered and electrically connected to an iCCU but is not communicating with the iCCU, the iN2 will automatically perform a recalibration. The iN2 will recalibrate by resetting itself, identifying the correct communications channel, and adjusting its signal until it establishes communication with the iCCU. This process typically takes 1-3 minutes. Once calibrated, each iN2 will save its communications settings in non-volatile memory and use them during any subsequent restart. Once a PBS's communications settings are calibrated and it makes a successful connection to the iCCU, it will flash its pilot light in a four flash pattern. This four flash pattern will continue until the PBS is assigned to a phase that is receiving pedestrian Walk, Don't Walk, or Clearance intervals.

There may be field conditions that make one communication channel work better than another. Upon installation, customers should place calls and observe proper operation during at least 3 full ped cycles. Next, connect to any iN2 and confirm that the health log of every other iN2 and the iCCU can be read without error. If either of these steps fail, try the other communication channel. It is only necessary to change the channel of the iCCU, as the iN2 PBSs will automatically configure to the appropriate channel. To change the communication channel on the iCCU with the iOS App: from the main menu, choose Advanced Options, then Communication Settings. Next, select Channel A, B or C and then Save. Make sure the target device is the iCCU and not an iN2. Within a few minutes, all iN2 PBS devices should establish a connection to the iCCU. The process is similar with the Intelligent Config PC App.

If any PBS exhibits a two flash pattern, see Advanced Communications Settings, Sections 5.3 (iOS App) or 10.6 (PC App), in the iNavigator 2 Wire System Manual.

Because of the various types and states of field wiring, PLC communication may not work in all field wiring conditions, so Polara cannot guarantee an iN2 system will work on all intersections. If the steps in the Advance Communications Settings sections of the iNavigator 2-Wire System Manual fail in establishing reliable communication between a PBS and iCCU, a 3-Wire system is the only option.

Cable #1 Special Instructions

This cable exists for legacy reasons and is only used for preemption/emergency vehicle (EV) inputs. All other wires of Cable #1 must not have any exposed copper and must be taped off in the following manner:

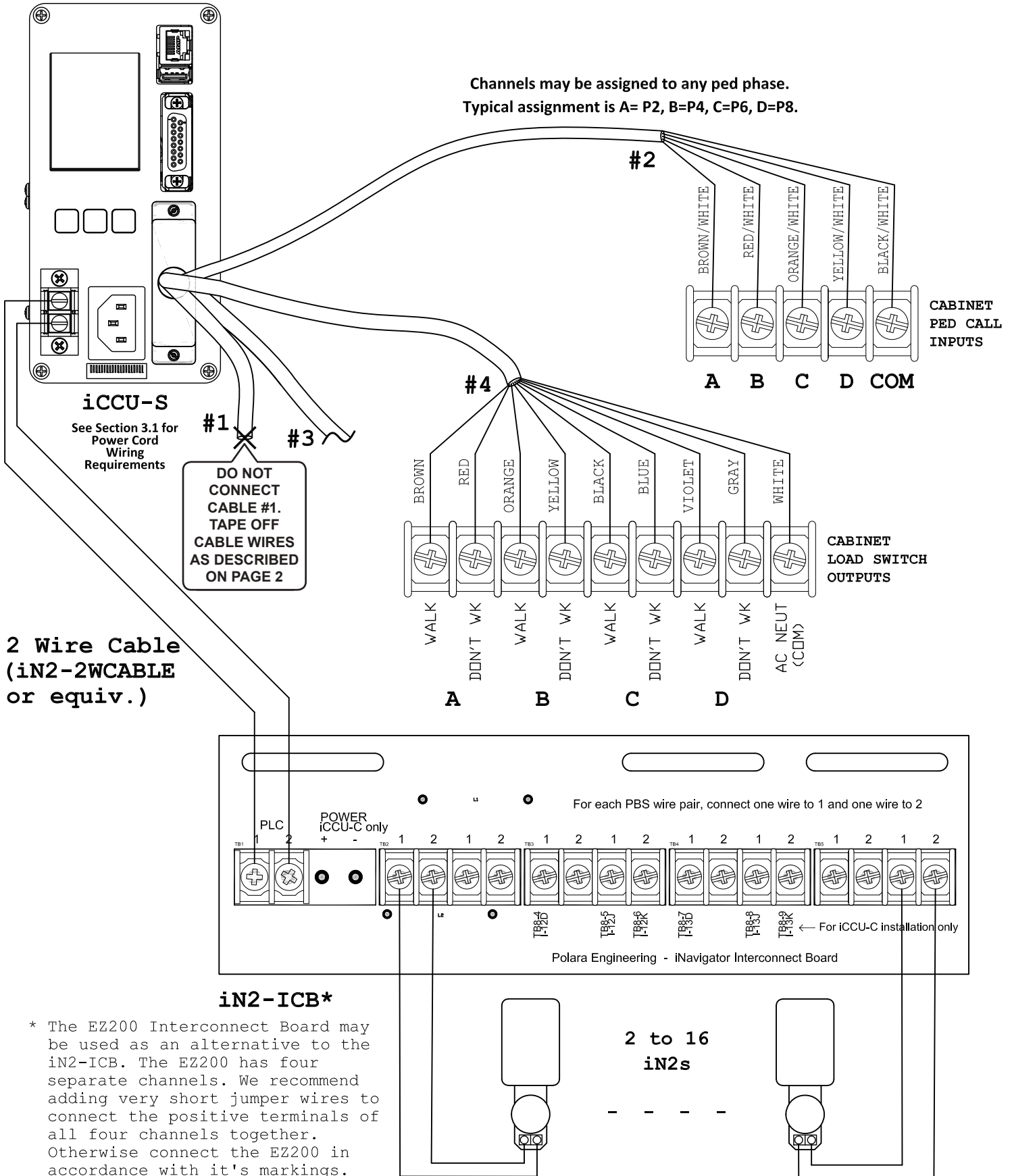
- On the brown, red, orange, and yellow wires it is recommended to trim the leads of these wires and tape together the ends with electrical tape (must be taped separately from wires below).
- On black and green wires, trim the wires as above and tape together the ends (must be taped separately from wires above).
- The blue wire is for EV inputs. If not using this feature, trim the wire and tape off the end. Refer to the diagram in section 3.2.4 of the Manual.

Technical Support Contact

Polara @ 888-340-4872

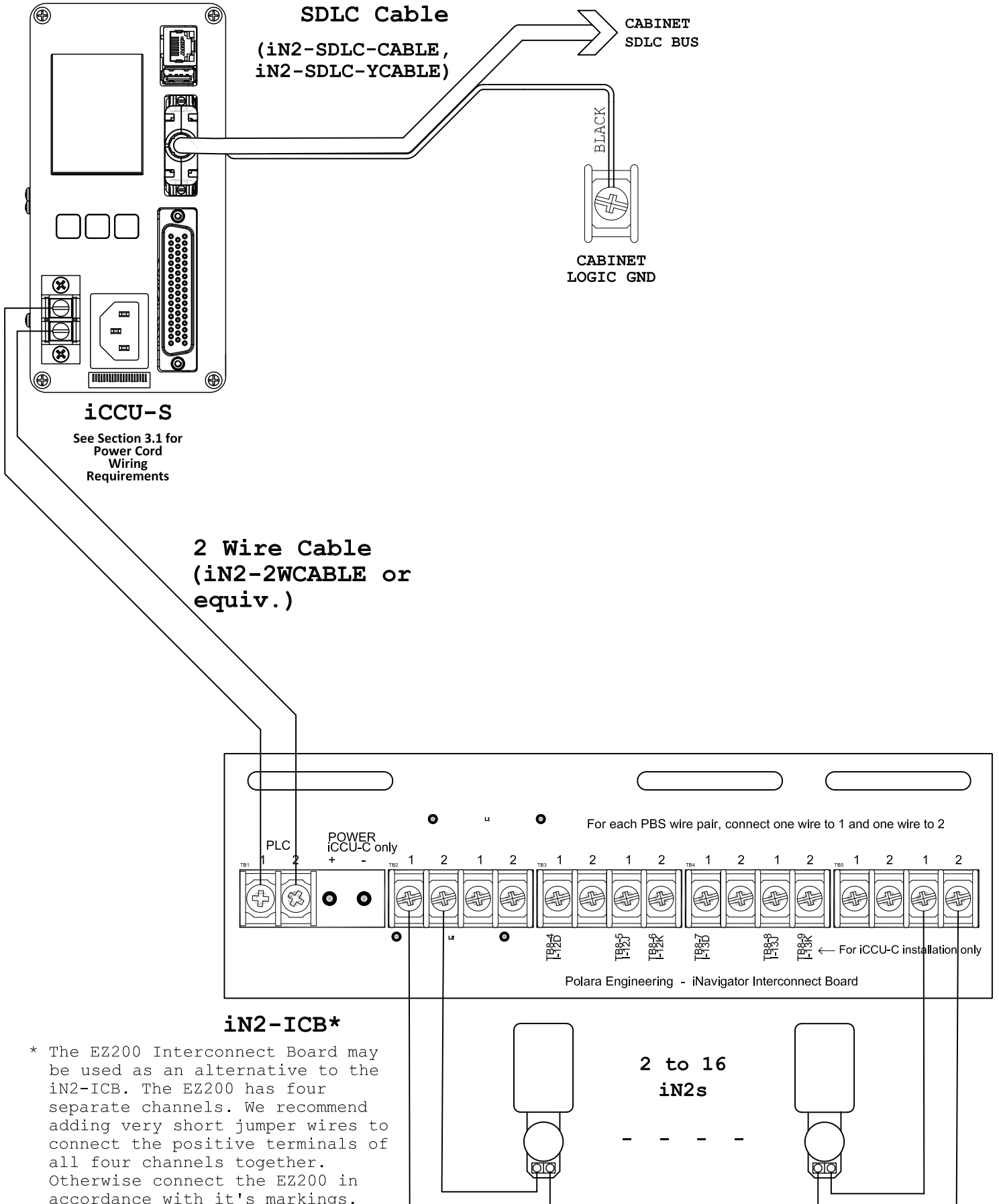
The latest version of the complete manual is available in PDF format at www.polara.com.

Typical NEMA TS1 Cabinet Connection with Interconnect Board



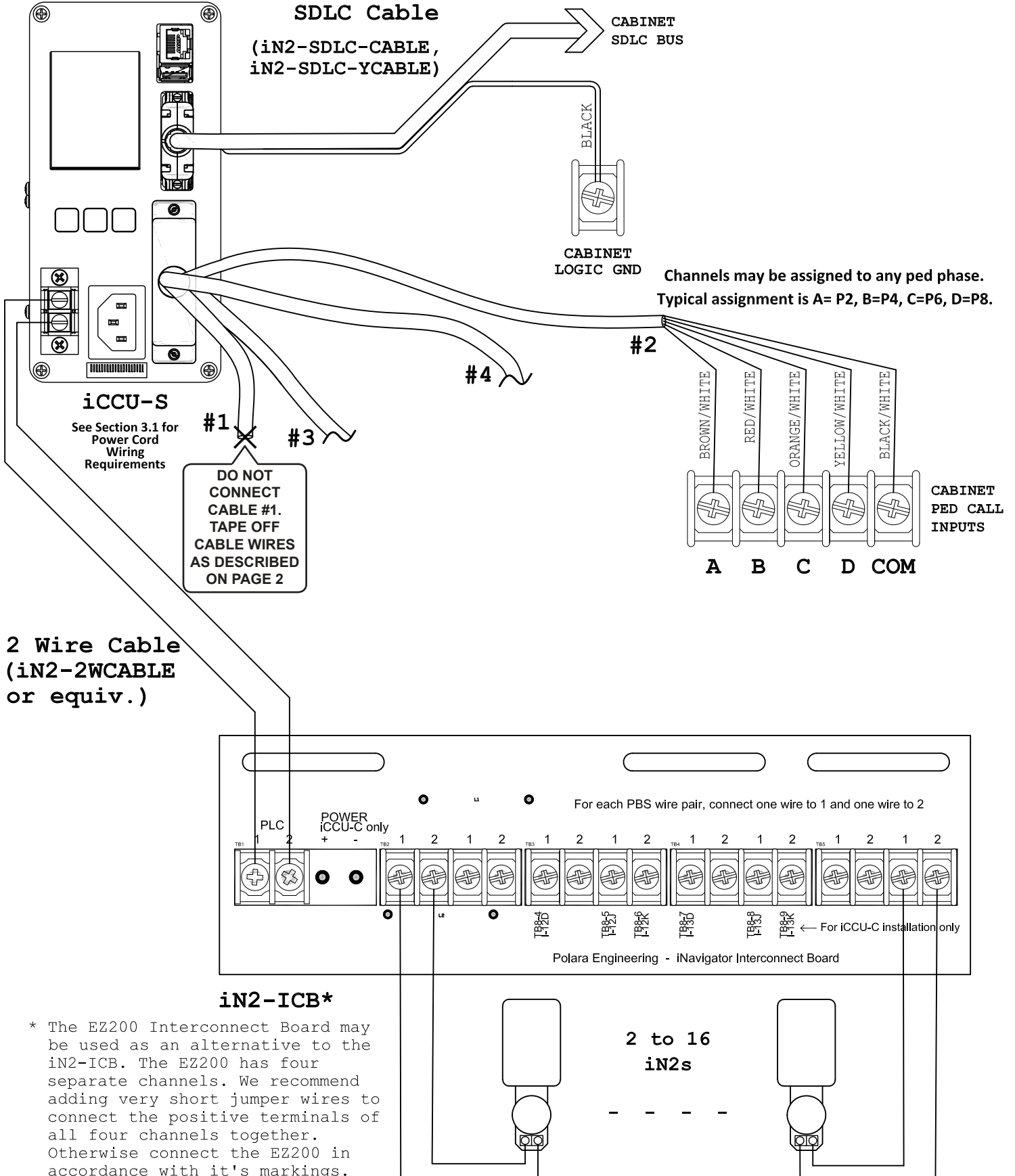
* The EZ200 Interconnect Board may be used as an alternative to the iN2-ICB. The EZ200 has four separate channels. We recommend adding very short jumper wires to connect the positive terminals of all four channels together. Otherwise connect the EZ200 in accordance with it's markings.

Typical NEMA TS2 Type 1 Cabinet Connection with Interconnect Board - iCCU-S in BIU Mode



* The EZ200 Interconnect Board may be used as an alternative to the iN2-ICB. The EZ200 has four separate channels. We recommend adding very short jumper wires to connect the positive terminals of all four channels together. Otherwise connect the EZ200 in accordance with it's markings.

Typical NEMA TS2 Type 1 Cabinet Connection with Interconnect Board - 50 Pin Cable Harness



* The EZ200 Interconnect Board may be used as an alternative to the iN2-ICB. The EZ200 has four separate channels. We recommend adding very short jumper wires to connect the positive terminals of all four channels together. Otherwise connect the EZ200 in accordance with it's markings.