



Field Wire Recommendations for iNavigator 2-Wire Accessible Pedestrian Signals (APS)

Because Polara's 2-Wire APS buttons transmit power and data over a single pair of wires, it is very important that the wire be of good quality, the right size, and without stretched sections, kinks, splices, or damaged insulation.

Stretched sections, kinks and splices can cause high impedance points that disrupt the transmission of data.

Damaged or cracked insulation can cause stray voltages, which generates noise that impedes data transmission, especially if the wires are next to high voltage wires, or in conduit with water/moisture.

For optimum performance and to help ensure successful installation and operation, Polara recommends the following.

- 1.** A dedicated cable with two (or three for a spare) conductors run from the Traffic Cabinet to each APS button. We recommend IMSA 50-2 cable. This cable includes a shield, but connecting the shield is not required/recommended. Twisted pair is not required, but would be acceptable. Cable similar to 50-2 without the shield and drain wire would be acceptable.
- 2.** If the distance from the cabinet to the farthest APS button is less than 300', #14 AWG solid or stranded wire should be fine. If the distance is greater than 300', #12 stranded wire should be used.
- 3.** If dedicated pairs cannot be pulled/provided, at a minimum a single pair daisy chained to two buttons on a corner of an intersection typically works. A 3-wire cable per corner with the common wire shared by the two buttons on the corner also typically works, but with either option in place of dedicated pairs, you may encounter data transmission reliability issues.
- 4. A common wire for 120 VAC lights must never be used as the button common.**

Our 2-Wire APS has been successfully installed on 100,000+ intersections. We know that many of these intersections had multi-conductor cables pulled to each pole, and conductors in these cables were used for our buttons. Because high voltage is on some of the conductors in these cables, there is a greater chance for noise that can affect the data transmission on the wires used for the buttons, especially over long runs/distances. The longer the distance to the farthest button, the greater the chance of data transmission problems. Very few installations have been unsuccessful. As long as the conductors are without stretched sections, kinks, splices, or damaged insulation, and the conductors are of good quality, a successful installation can usually be achieved, even when providing dedicated pairs of wires to each button is not possible.

In the very rare instances where a 2-Wire installation cannot be made to work, installation of 3-wire units is the next best option. Often times when just the farthest button will not operate correctly, just that button (or crosswalk) is used as a 3-Wire.

NOTE: The above information does not apply to ENavigator installations. REV 02/28-2020