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Situation:

The 2 Wire EZComm Navigator APS system was designed to allow communication to APS's using digital data over the existing button field wires. The central control unit (CCU2EN) utilizes four hardware independent channels which can support a maximum of four buttons per channel. Within the channel, communication is conducted using a bus, or party line method in which each button on a particular channel sees the data communicated on any other button connected to that channel.

In a few isolated cases customers have reported some unexpected behavior as a result of non-ideal installation or wiring conditions. In our installation manual we specify that each APS should have its own separate wire pair running from the button to the interconnect board. Some conditions that we have seen contribute to poor communications quality between the CCU2EN and the APS's are as follows:

- Common wires being shared between buttons on the same channel or separate channels. (i.e. each button does not have an individual pair of wires)
- Poor splice connections along the field wiring.
- Button field wires being run inside of a multi-conductor cable in which other high speed or high voltage signals are present on adjacent conductors which can disrupt data communication to the APS's.
- Long distance wire runs or small gauge wire resulting in an individual loop resistance greater than 1.5 ohms per wire pair.

Although Polara has designed the 2 wire system to operate in most typical situations, due to the vast environmental and installation variables, Polara cannot guarantee a 2 wire system will work without issue in every situation. There may be a rare occasion where reliable communication over the existing wiring may not be adequate. Each situation will have to be evaluated. If reliable communication cannot be established and maintained, the 4 wire system is a viable solution to the problem.

Solution:

The conditions above should be avoided in order to ensure reliable communication to the buttons in the field. Ensuring that the above conditions are met becomes particularly important when more than two buttons are connected to each channel. Each button adds a load to the communication line which reduces the overall signal amplitude. When there are 4 buttons on a channel it is important that the wiring be low resistance with low external interference in order to ensure that signal integrity is maintained. In installations where there are four buttons connected to one channel, but there are unused channels, we recommend that two buttons be split off onto the unused channel to reduce the affects of this loading.

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