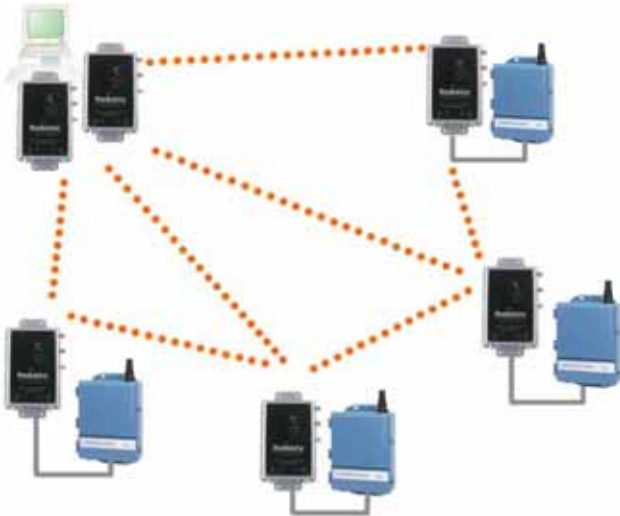


Techniques for Interconnecting Smart Wireless Gateways to ProSoft RadioLinx[®] Devices

EMERSON WIRELESS NETWORKS: PERVASIVE FIELD NETWORKS



Pervasive Field Networks (PFN) are a straight forward solution to collecting and sending field data back to the right place. This paper is to assist with the installation of ProSoft RadioLinx devices with Smart Wireless Gateways for use in a PFN.

INTRODUCTION

Before beginning the installation of a ProSoft PFN it is recommended the installer view the video at the following location on the Internet:

http://www.prosofttechnology.com/training/EmersonVideo/Pervasive_Field_Network/Emerson_Smart_Network_9.html

This video gives a good overview of the PFN, ProSoft, Smart Wireless, and considerations for installing. Referenced in this video is ProSoft's Wireless Designer software. The use of this program will help the installer pick the correct model of ProSoft radio needed.



The model of ProSoft radio referenced in this white paper is RadioLinx RLIX-IHN-W(C). If a different radio model is used, the installer should compare the two radios and note any differences.

The installation and wiring information given in this document is for "typical" installations. Local regulations and codes have precedence and must be adhered too if they differ from this installation guide.

PFN

OVERVIEW

The ProSoft RadioLinx radio has two ways of being powered. One way is through its Ethernet PoE port and the other way of powering is through a separate power connector. See Appendix B for physical details.

The input ratings of the two power ports are:

- The power supply for the PoE port is to be rated at 48 VDC, 0.35Amp IEEE 802.3af compliant (overall power consumption is under 6 Watts continuous.)
- The power supply for the power port is 10 to 24 VDC and rated for at least 6 Watts continuous operation.

To connect and power the Gateway and the RadioLinx device the installer has a number of choices. These choices differ by where and what is the ultimate source of power, i.e., AC mains, battery, or 12 or 24 VDC power.

The Gateway works from a range of 10 to 30 VDC and is rated for 3.3 Watts continuous operation. The Gateway has a power bridge internal between its input power connector and the powered Ethernet port on the gateway. In this way, the voltage impressed upon the input power connectors on the Gateway can be routed down the Ethernet cable through the powered Ethernet connector. So if the gateway is powered by a 12 VDC source, 12 VDC will be routed to the powered Ethernet port and down the Ethernet cable. The Gateway powered Ethernet connector is not an IEEE 802.3af source. The maximum current rating of the internal power bridge in the Gateway is 0.33 Amps DC.

RECOMMENDED CONFIGURATIONS

There are 3 possible wiring configurations for connecting the Gateway to the ProSoft radio (assuming the power source is at the Gateway).

1. **12 VDC only Separate Wires** (See Appendix A Wire Routing Diagram 1: Separate Wires)

This configuration lends itself well to a single 12 or 24 VDC power source such as you would find in a solar powered or UPS/battery powered application. In this application, two separate cables are run: one for power and one for the Ethernet. Connections are made as shown in Appendix A Wire Routing Diagram 1: Separate Wires.

2. **12 VDC only Combined Wires** (See Appendix A Wire Routing Diagram 2: Combined Wires)

This configuration also lends itself well to a single 12 or 24 VDC power source such as you would find in a solar powered or UPS/battery powered application. In this application, one cable is run for both power and Ethernet. Connections are made as shown in Appendix A Wire Routing Diagram 2: Combined Wires. While this configuration allows for one cable, it does have the inconvenience of requiring the installer to make up a splitter. Typically category 5e Ethernet cable using 24 AWG conductors is sufficient to handle these voltages and current levels described for this application. Please check local regulations and codes and the supplier of the actual cable for actual limits and ratings.

3. **Wired for PoE 802.3af** (See Appendix A Wire Routing Diagram 3: Wired for PoE)

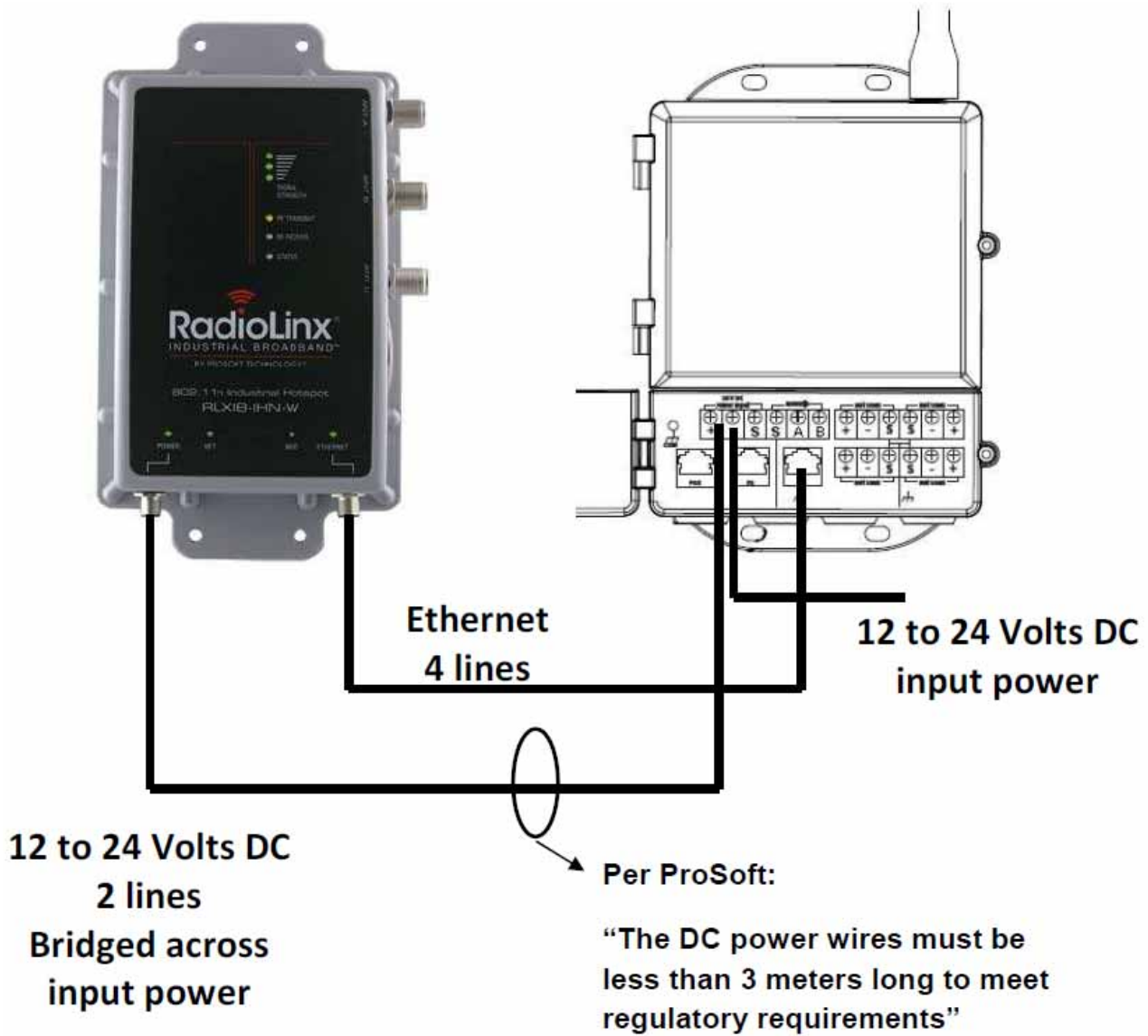
This configuration requires a 48 VDC power source. ProSoft offers several such power sources (sometimes called PoE injector). Please contact your ProSoft representative to determine the best model of PoE injector for your particular model RadioLinx unit. In this application, one cable is run on for power and Ethernet. Connections are made as shown in Appendix A Wire Routing Diagram 3: Wired for PoE.

WHAT IS POE AND IEEE 802.3AF?

The term PoE can be confusing, especially when comparing older equipment (equipment made before June 2003). While it means “power over the Ethernet (cabling)” the specifics of the power can be different. In June of 2003 the IEEE adopted specification IEEE 802.3af. Since then, this has generally become the industry standard for supplying power over Ethernet wiring. In 2009 the specification was modified to accommodate higher power levels. There are older pieces of equipment and power sources listed as “PoE” that are incompatible with IEEE 802.3af. If installing into an existing system with PoE, please check the version PoE utilized. The IEEE specification defines sending 48 VDC down the Ethernet cabling to power another unit. The specific wiring for this depends whether the unit is IEEE 802.3af active (power sent on data pairs) or IEEE 802.3af passive (power sent on spare wires). The ProSoft RadioLinx radio listed is IEEE 802.3af compliant. If using this feature on the RadioLinx unit, please follow the ProSoft recommended wiring for your specific model.

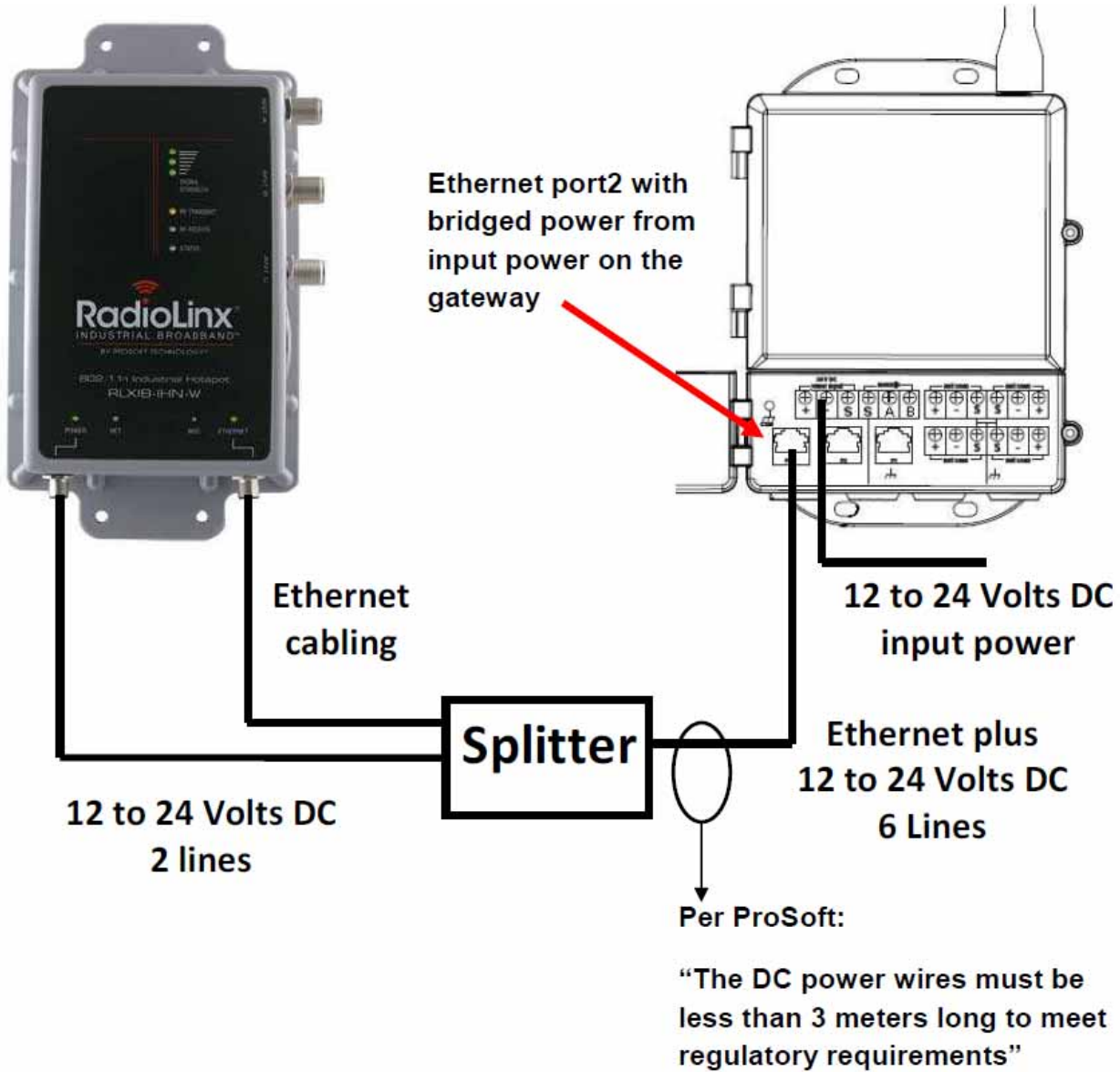
APPENDIX A

Wire Routing Diagram 1: Separate Wires

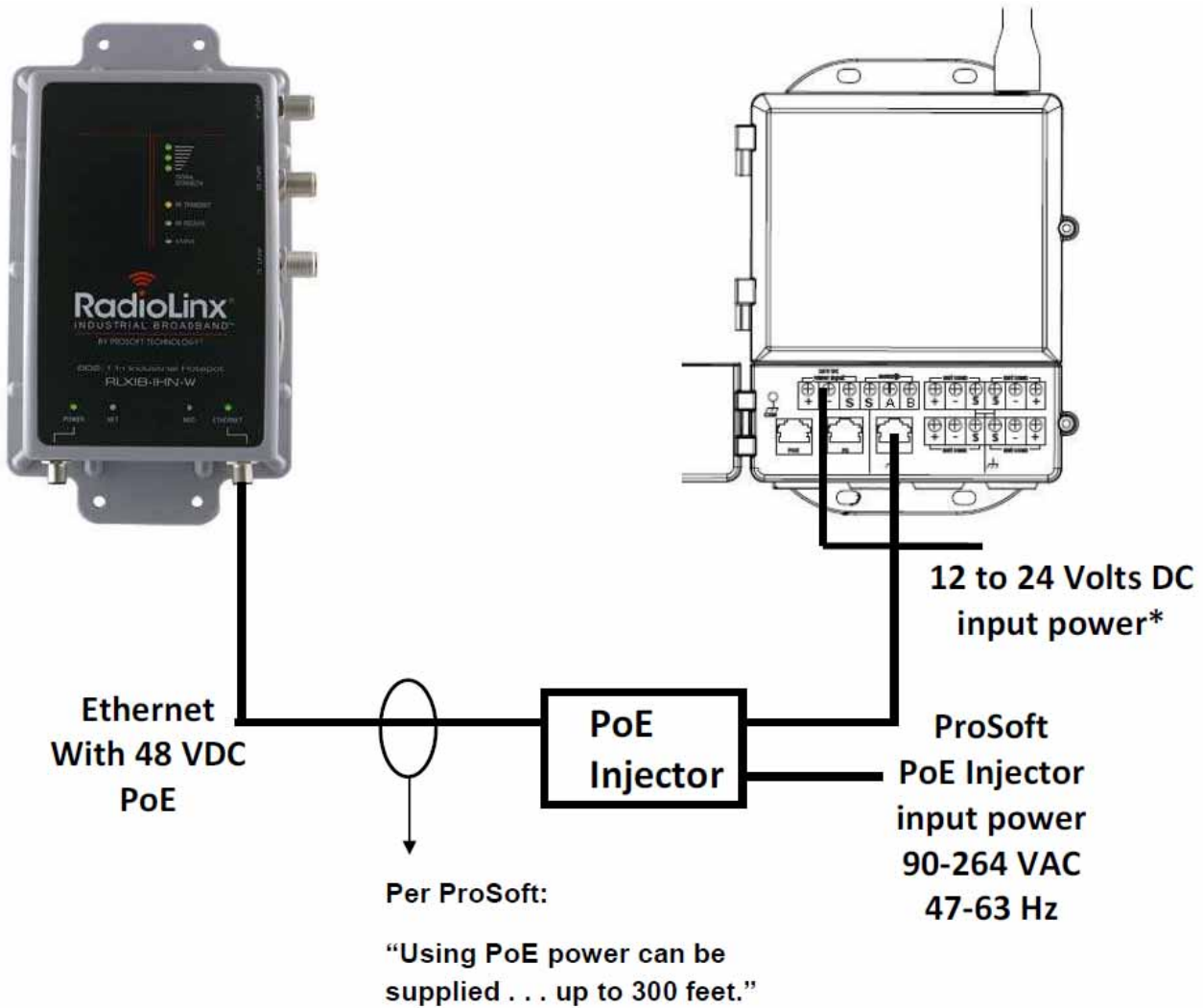


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Wire Routing Diagram 2: Combined Wires



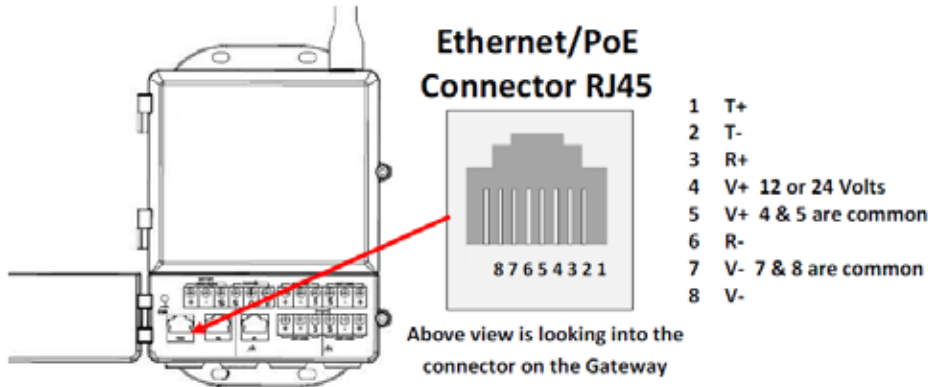
Wire Routing Diagram 3: Wired for PoE



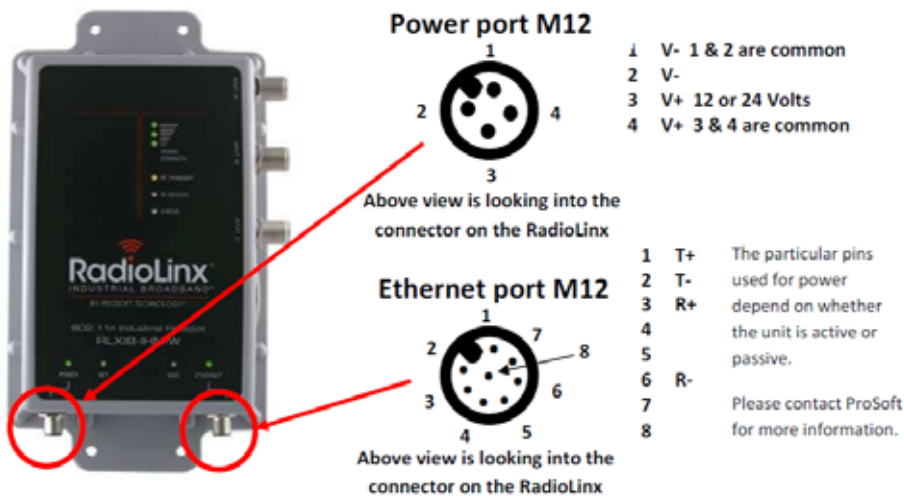
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APPENDIX B

Connectors and Pin outs



Gateway Ethernet/PoE connector; pin out connections listed



RadioLinX connectors; pin out connections listed

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**Emerson Process Management
 Rosemount Measurement**
 8200 Market Boulevard
 Chanhassen MN 55317 USA
 Tel (USA) 1 800 999 9307
 Tel (International) +1 952 906 8888
 Fax +1 952 906 8889

Emerson Process Management
 Blegistrasse 23
 P.O. Box 1046
 CH 6341 Baar
 Switzerland
 Tel +41 (0) 41 768 6111
 Fax +41 (0) 41 768 6300

Emerson FZE
 P.O. Box 17033
 Jebel Ali Free Zone
 Dubai UAE
 Tel +971 4 811 8100
 Fax +971 4 886 5465

**Emerson Process Management Asia Pacific
 Pte Ltd**
 1 Pandan Crescent
 Singapore 128461
 Tel +65 6777 8211
 Fax +65 6777 0947
 Service Support Hotline : +65 6770 8711
 Email : Enquiries@AP.EmersonProcess.com