



Maximizing Wireless Range

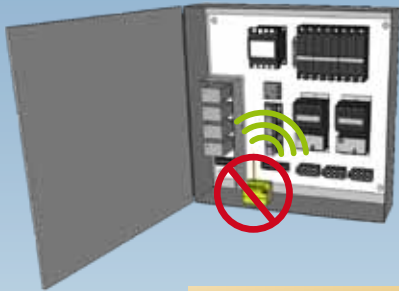
Field-proven practices for ensuring reliable wireless communications between EnOcean energy harvesting controls

1

Straighten Antenna Out & Away from Metal

1.1 Utility Boxes/Relay Panels

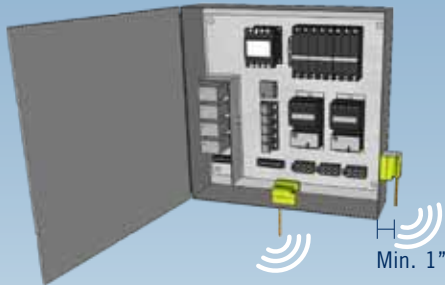
a)



Worst case

Antenna & receiver inside metal box

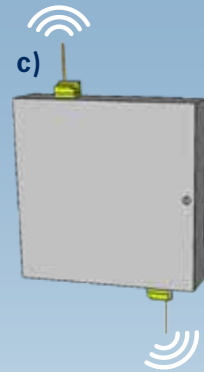
b)



Better

Antenna outside or receiver on side (min. 1" away)

c)



Best

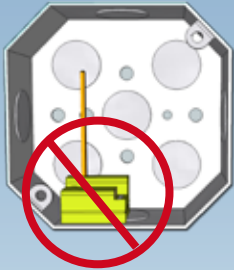
Antenna & receiver on top or bottom

1

Straighten Antenna Out & Away from Metal (cont.)

1.2 Junction Boxes

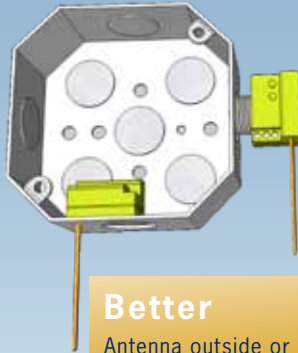
a)



Worst case

Antenna & receiver
inside J-Box

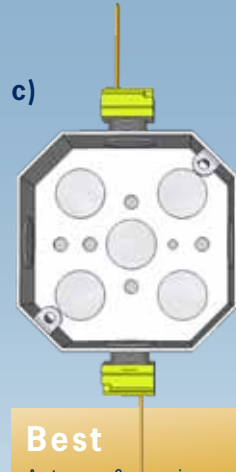
b)



Better

Antenna outside or receiver
on side (min. 1" away)

c)



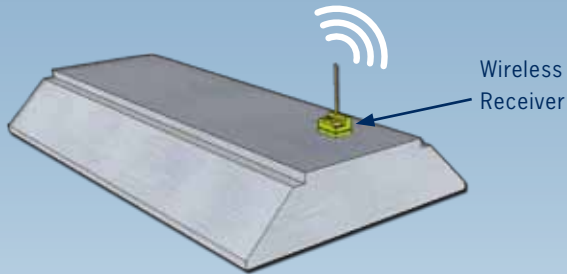
Best

Antenna & receiver on top
or bottom

1

Straighten Antenna Out & Away from Metal (cont.)

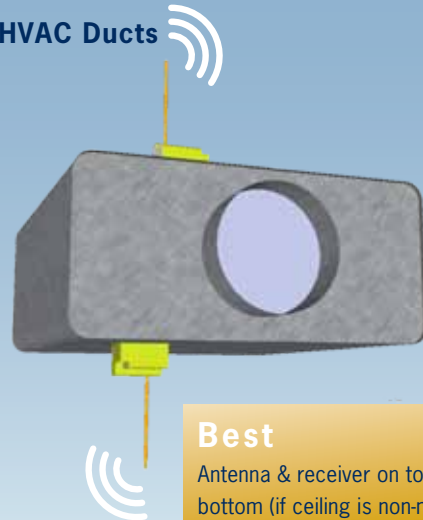
1.3 Fluorescent Light Fixtures



Best

Outside of fixture & away from “Keep Out” zones and ballasts (refer to section 2.1.)

1.4 HVAC Ducts



Best

Antenna & receiver on top or bottom (if ceiling is non-metal)

2

Create Separation Distance Away from Interfering Electronics

2.1 Fluorescent Lighting Ballasts



Worst case

Wireless receiver & antenna next to ballast or in "Keep Out" zones (refer to 2.1c)

Best

Maximize separation distance (between wireless receiver & ballast) & pull antenna outside of fixture

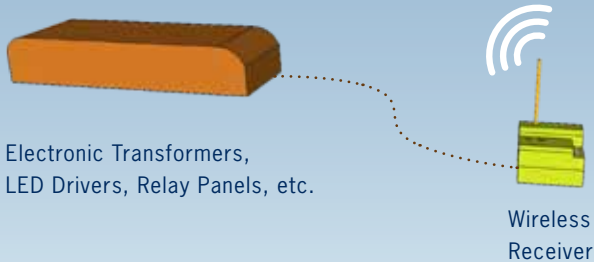
Avoid placing wireless receiver & antenna within 6" of tube sockets

2

Create Separation Distance Away from Interfering Electronics (cont.)

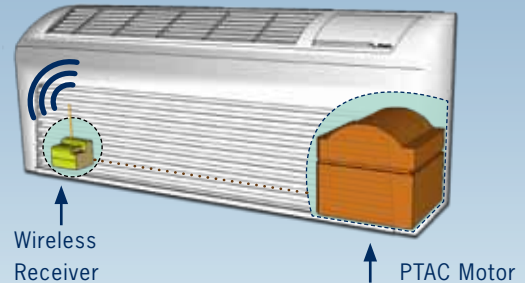
2.2 Lighting

Install wireless receiver away from electronics that cause radio interference



2.3 HVAC – PTAC Units

Install wireless receiver away from PTAC unit motor



3

General Guidelines

3.1. Wireless Range Reducers

Material	Range Reduction*
Wood, Drywall, Glass (uncoated, without metal)	0 – 10%
Brick, Particle board	5 – 35%
Metal, Ferro concrete, Mirrors	10 – 90%

* versus line-of-sight conditions

3.2. Wireless Range Testing

Site survey tools are available that can help fine-tune wireless communications. For example:

- Indicate wireless signal strength
- Evaluate longer range scenarios that might require enabling repeaters



Example of a Range Testing Tool – EnOcean EPM300C

3.3. Enable Repeater

If a lighting or HVAC device is not responding properly, try enabling receivers as repeaters.

Contact the wireless product manufacturer or refer to product user manual to learn how to enable a device as a repeater.

ENOCEAN ALLIANCE

The EnOcean Alliance is a consortium of companies dedicated to the advancement of self-powered, interoperable and wireless building control systems. Alliance members create interoperable solutions that help make buildings more energy-efficient, flexible and cost-effective. The EnOcean Alliance has the largest installed base of wireless building automation networks in the world.

www.enocean-alliance.org



ENOCEAN

EnOcean is the originator of patented energy harvesting wireless sensor technology. The company manufactures and markets maintenance-free wireless sensor solutions for use in buildings and industrial installations. EnOcean solutions are based on miniaturized energy converters, ultra-low-power electronic circuitry and reliable wireless. Combining these elements enables EnOcean and its product partners to offer sensor systems that are fundamental for energy-efficient buildings and innovative industry.

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