2016   BELT-WAY WIRELESS QUICK-START GUIDE

Part Numbers:
BWWIRELESS-S
BWWIRELESS-S-LR
BWWIRELESS-AP

Table of Contents

1. Introduction

The Belt-Way wireless kit enables long range wireless communication from a Belt-Way integrator to a remote display or Plant-Connect modem. The wireless kit decreases installation time and cost by eliminating long cable runs from the conveyor to a control tower or office. When properly installed, a wireless kit will provide a reliable connection with little ongoing maintenance. The wireless kit will work only with the new style Belt-Way integrator.

2. What is in the Box?

1. Transmitter with Internal Antenna (BWWIRELESS-S or BWWIRELESS-S-LR)
2. Transmitter with External Antennas (BWWIRELESS-AP)
3. Outdoor Rated Ethernet Cables with sealing tape
4. Mounting pipes and hardware

3. Wireless Kit Specifications

Transmitters
Wireless Standard: **802.11 b/g/n**
Frequency: **2.4 Ghz**
Transmit Power: **up to 28 dBm**
Antenna (BWWIRELESS-S): **8 dbi Internal Directional**
Antenna (BWWIRELESS-S-LR): **11 dbi Internal Directional**
Antenna (BWWIRELESS-AP): **2 x 4 dbi External Omnirectional**
Coverage with supplied antennas:
1 - 2 miles with ideal placement and clear line of sight
Environmental: **IP65**
Power: **12 - 24 vdc Power over Ethernet**
          (supplied by Scale integrator or Remote Display)
Cable
25, 50, or 75 ft Cat 5e UV rated weatherproof cable
Small length of weatherproof sealing tape
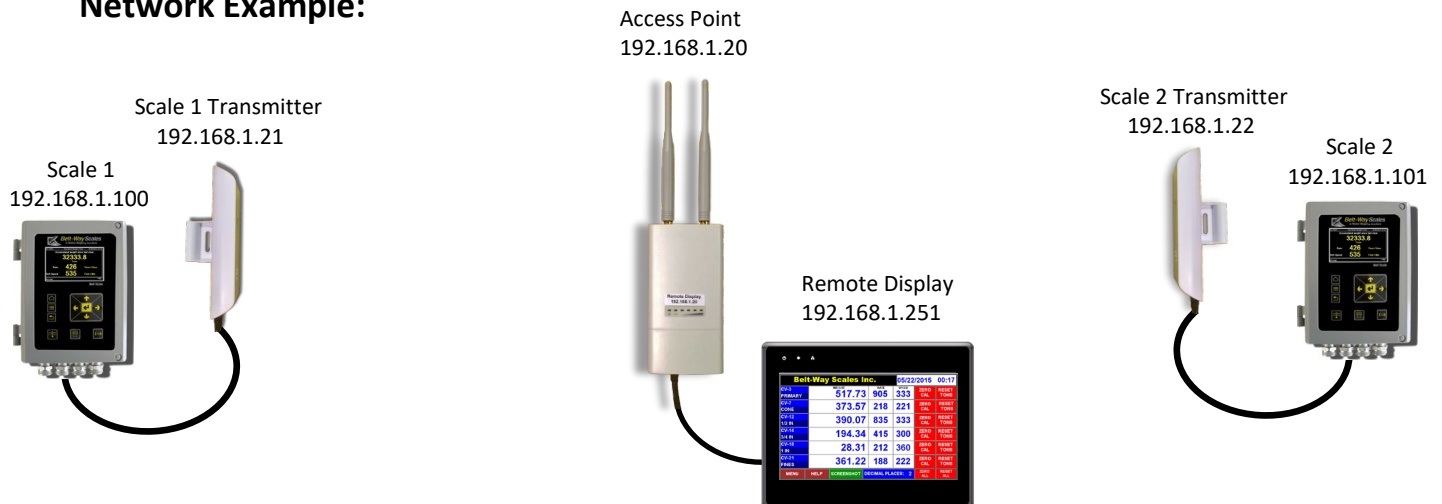**Hardware**
1 - 48" galvanized mounting pipe
2 - 3/8" U Bolts
2 - 2" Hose Clamps

4. Wireless Network Overview

The wireless scale network requires one BWWIRELESS-AP (access point) installed near the remote display or Plant Connect modem and one BWWIRELESS-S (scale) installed at each scale integrator. Multiple scale transmitters can connect to a single access point. Each transmitter is preprogrammed with an IP address that must be on the same IP network as the remote display and scale integrators. The access point default IP address is 192.168.1.20. Scale 1 transmitter default IP addresses is 192.168.1.21, Scale 2 is 192.168.1.22, Scale 3 is 192.168.1.23, etc. The transmitters are labeled with their default IP address. Take care to install each transmitter at its proper location.

Network Example:

Access Point
192.168.1.20

Scale 1 Transmitter
192.168.1.21

Scale 1
192.168.1.100

Scale 2 Transmitter
192.168.1.22

Scale 2
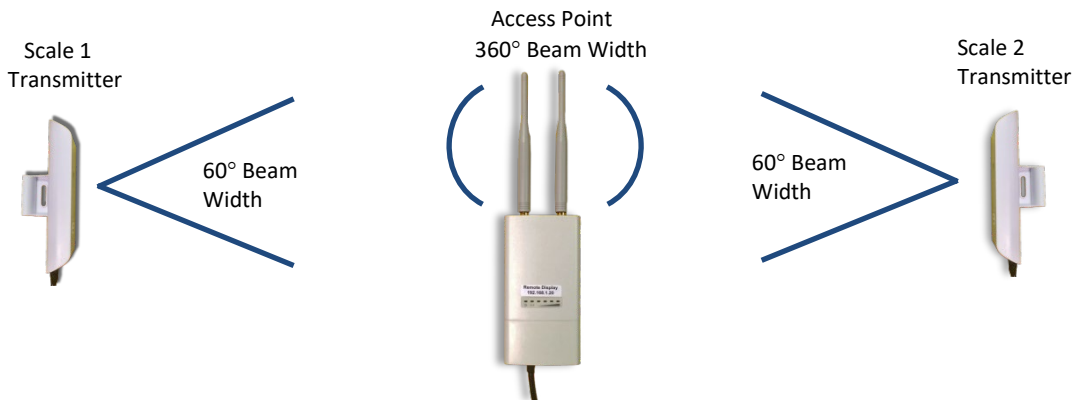192.168.1.101

Remote Display
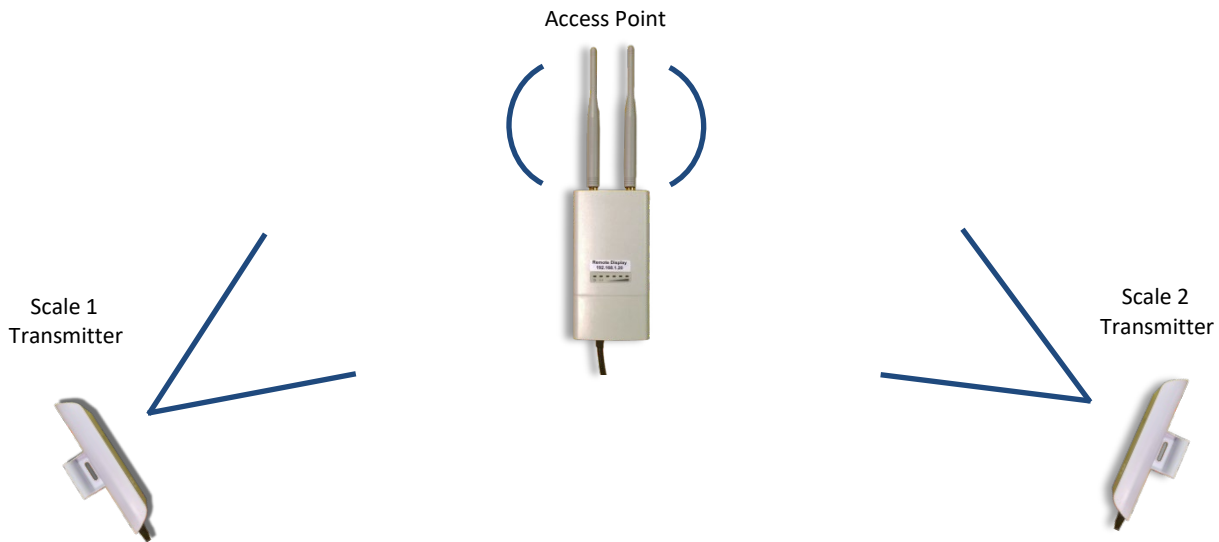192.168.1.251

5. Wireless Connection Overview

Line of sight between the antennas is important for reliable performance. Carefully choose the mounting location for the transmitters to minimize the number of obstructions. Increasing the height of the transmitters will usually improve the signal strength. Use taller mounting poles and longer cables if necessary. The BWWIRELESS-AP includes 2 omnidirectional antennas which can receive a signal from 360°. The BWWIRELESS-S and BWWIRELESS-S -LR include directional antennas with a 60° beam width. They must be pointed at the Access Point to work properly. The transmitters can be installed at different elevations as long as the directional antennas are pointed toward the omnidirectional antenna.

Proper Installation Examples:

1. Transmitters installed at same elevation as access point with good line of sight.
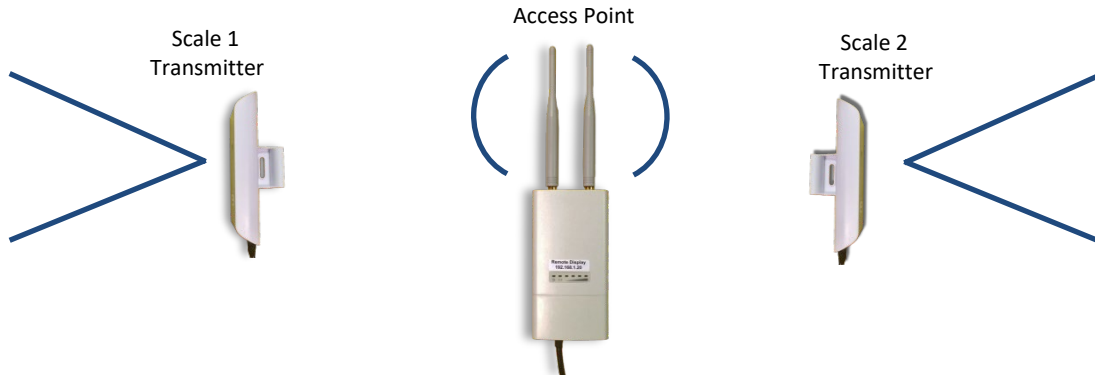   Increase height of transmitters to get above conveyors, piles, buildings, etc.

2. Transmitters installed at different elevations.
    Angle directional antennas to focus the signal at the omnidirectional antennas.

Improper Installation Examples:

1. Directional antennas pointed away from Access Point.

Scale 1
Transmitter

Access Point

Scale 2
Transmitter
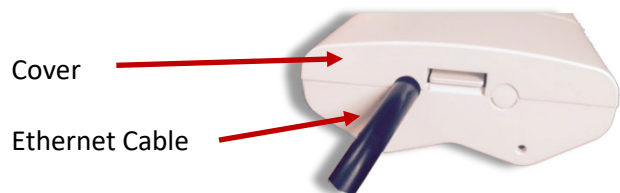
2. Poor line of sight causes low signal strength and connection failure.

6. Install the Ethernet Cable

Depress the locking tab and slide the cover off to access the Ethernet port.

Locking Tab on
Access Point

Locking Tab on
Scale Transmitter

Route the cable through the opening and plug into the Etherent Port. Press firmly until you hear the cable connector click into the port. Remove the sealing tape and replace the transmitter cover.

Network: beltway
Scale 1
192.168.1.21

Ethernet Port

Cable Opening

Cover

Ethernet Cable

Carefully wrap the weatherproof sealing tape around the cable where it enters the transmitter. Compress the tape to fill the opening to prevent water and dust from damaging the transmitter. **Failures due to water or dust penetration are NOT covered under warranty!**

Sealing Tape around Cable

7. Mount the Transmitters to the Pipe

This is the most important step in the installation process!
The transmitters must have enough Line of Sight to work properly !
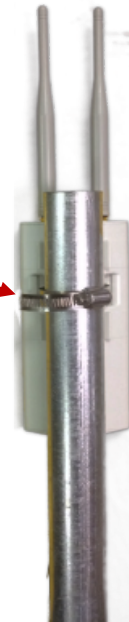**Install the Access Point FIRST and continue to the Site Survey**
section to find the best locations for each of the scale transmitters!

Attach the mounting pipe to the conveyor using the included u-bolts.
Avoid areas with excessive vibration. Mount the transmitters to the pipes using hose clamps.
Route the cable so it is protected from the moving belt, falling debris, and other sources of damage.
Use cable ties to give the cable strain relief so it can't be easily pulled out of the transmitter.

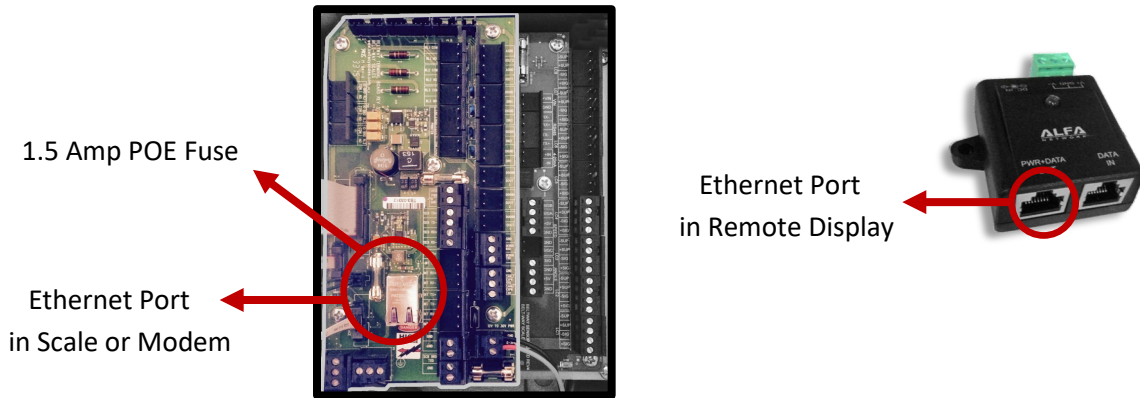U Bolts and Leveling Plates to mount pipe on conveyor frame
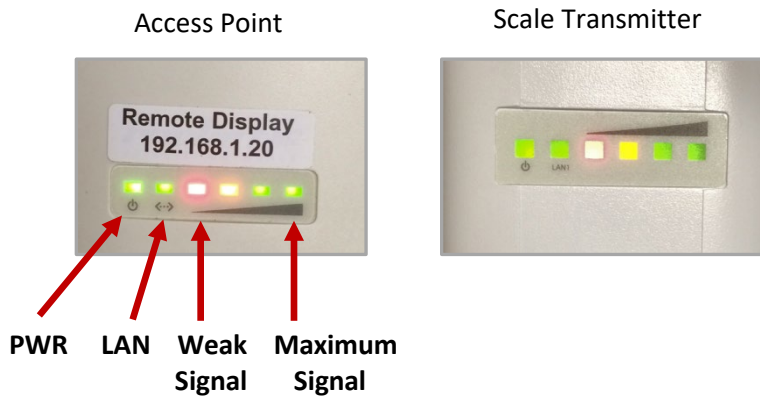
Hose Clamp or cable tie

8. Power the Transmitters

Connect the other end of the Ethernet cable to a scale integrator, remote display, or cell modem.
The ethernet cable passes power and data from the integrator or remote display to the transmitter.
A 1.5 Amp fuse is included in a pouch on the scale integrator door panel. The fuse must be installed near the ethernet port to activate POE and power the transmitter.

1.5 Amp POE Fuse

Ethernet Port
in Scale or Modem

Ethernet Port
in Remote Display

   The POWER and LAN lights turn on when the Ethernet cable is connected. The signal strength lights turn on **ONLY** when a wireless connection is completed between the Access Point and scale transmitters. If there are no signal lights then the transmitters on both ends must be repositioned to gain better line of sight. If there is only one signal light, then the connection is weak and should be improved for reliable long term performance. Raising the transmitters may be enough to increase the signal. If two, three, or four lights are on then the signal is strong and should work well.

Access Point

Scale Transmitter

Remote Display
192.168.1.20

PWR   LAN   Weak   Maximum
              Signal   Signal

If the transmitters are placed very close together (75 feet or less) the excessive signal strength may overwhelm the access point. If the wireless connection is erratic when all four signal lights are illuminated, remove one antenna from the access point and see if the condition improves.

Contact Belt-Way Scales tech support at (815) 625-5573 for help with wireless installations.
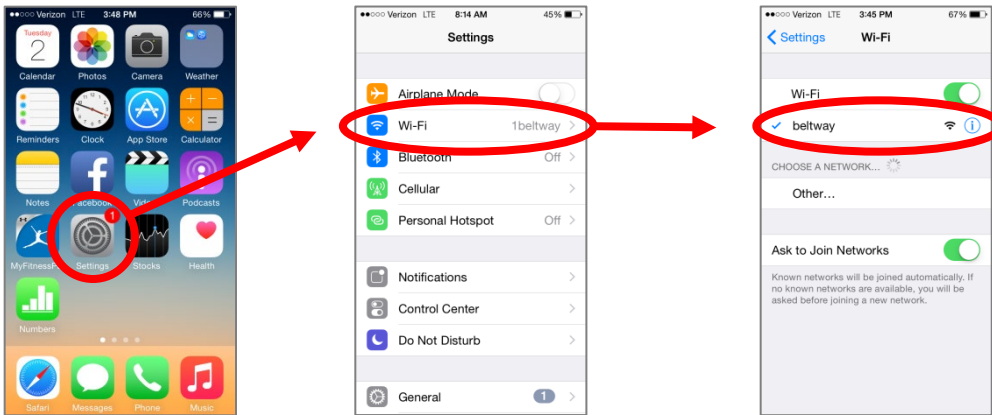
9. Site Survey

A site survey may be performed make sure the wireless connection will work properly.
 A smart phone is required for the following procedure.

1. Install the Access Point near the remote display / modem and power it up.

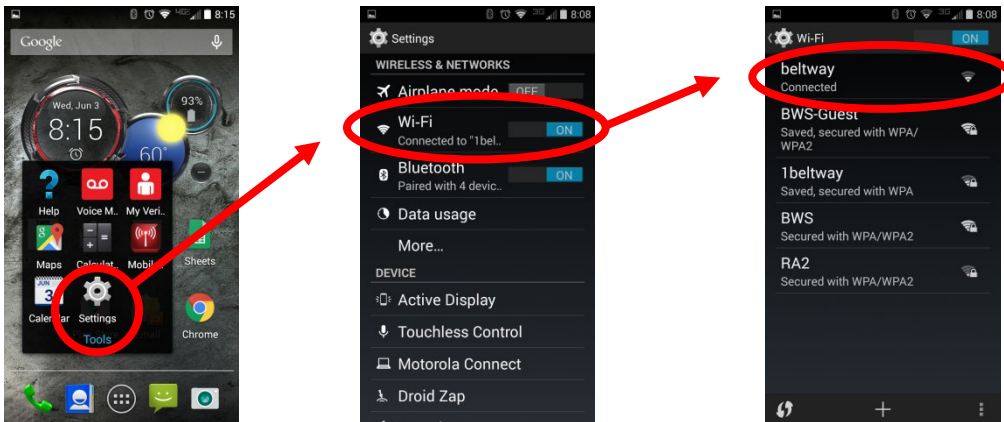2. Go to a point where a scale transmitter will be installed and search for the **beltway** wireless network.

 Apple IPhone Example
Click the **Settings** icon. Click **Wi-Fi.** Make sure **Wi-Fi** is enabled.

Android Phone Example
Click the **Tools > Settings** icon. Click **Wi-Fi.** Make sure **Wi-Fi** is enabled.

4. If the **beltway** network is visible, the connection should work from that exact location.

5. Continue to each scale and repeat the process to make sure all connections will be successful.