7.0 Tag Manual:

3D-iD Hardware Installation and Maintenance Manual
PinPoint Local Positioning Systems.

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The devices discussed in this manual comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes and modifications not expressly approved by PinPoint Corporation could void the user's authority to operate the equipment.

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3.Symbols used in this manual
This is a warning symbol. This highlights text that concerns safety and other major issues. This is a note symbol. This highlights text that contains information that might not be obvious and deserves attention. This is the warranty symbol. It highlights actions that will void your warranty.

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About 3D-iD
3D-iD is the world's first Local Positioning System (LPS). The system allows end-users the ability to locate, track, and secure their inventory or valuable assets. The hardware system uses Cell Controllers to continually track PinPoint's tags in real-time. Using high-frequency radio signals, 3D-iD can read Tags at long distances (no line of sight is required) and track their movement within a facility or around its perimeter. For example, a warehouse manager can maximize the efficiency of his fork lift moves by instantly knowing the location of the closest fork lift to the inventory that needs to be moved. The hardware system is based on three components. These are the Tags, the Antennas, and the Cell Controllers. Tags: The 3D-iD Tags are attached to valuable assets, inventory, or personnel. The Tag receives 2.4GHz spread spectrum radio signals from the system's Antennas and responds with a 5.8GHz signal that includes Tag identification data, known as the Tag Serial Number. The Tags are designed around PinPoint's proprietary L^{3}RF (Long-Range, Long Life, Low Cost Radio Frequency) technology. As a result, 3D-iD Tags can be read at long ranges compared to conventional RFID (Radio Frequency Identification) systems while exhibiting a long battery life at a reasonable cost.

5.Antennas: The 3D-iD Antennas are mounted components that transmit and receive the radio signals generated by the Cell Controller and the Tags, respectively. They connect to the Cell Controller via special low-loss Coaxial Cables. Cell Controllers: The 3D-iD Cell Controllers coordinate the exchange of radio signals between the Antennas and the Tags. The Cell Controllers generate and send the 2.4GHz to the Tags via the Antennas. As stated above, the Tags receive the signal and transmit it back at 5.8GHz. The Cell Controller receives the retransmitted signal and calculates the time-delay between when the initial (2.4GHz) signal was sent and when the return signal (5.8GHz) was received. Using this information, the exact distance from the Antenna to the Tag can be calculated.

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Antenna Installation and
Maintenance

7.Warnings
This 3D-iD Antenna is intended for indoor use only. Use of the Antenna outdoors can cause damage to its internal components. Contact your PinPoint sales representative for details regarding outdoor use of the 3D-iD system.
Do not mount the Antenna in places that are excessively humid or where it is likely to get wet. When placing your antenna, keep in mind that metallic objects, dense walls, microwave ovens and other obstacles can alter radio signals and limit the Antenna's effectiveness. Contact your certified 3D-iD system integrator for proper Antenna placement.
The Antenna must be installed so that there is at least a 6-inch gap between it and any possible contact with people.
Failure to install it in this fashion may invalidate the user’s license to operate this product. Changes and modifications not expressly approved by PinPoint Corporation could void the user’s authority to operate the equipment.

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Included in the Antenna Package
1-4 Antenna(s)
1-4 Antenna mount(s), each including:
1 base plate
1 mount post
1 mounting Plate
2 screws
2 washers
1 Allen wrench (5/32 in.)
1 Antenna Card (optional)
Additional Tools Required:
Pliers

9.Antenna Placement Tips
A certified 3D-iD systems integrator will determine the exact location of Antennas. The Antennas will be positioned to optimize the locating capability of the system. The Antennas should be mounted in locations that prevent accidental contact or intentional destruction. Mounting the Antennas near ceilings and out of reach is strongly recommended. The Antennas should not be placed very close to metal walls, microwave ovens or other objects that will hinder their performance. Metallic objects and dense walls can alter the radiation pattern of the Antennas. Note: An Antenna must be placed close enough to its corresponding Cell Controller so that the Coaxial Cable connecting the two can be installed without stretching, tightly bending or otherwise damaging the cable. The Antenna must be installed so that there is at least a 6 inch gap between it and any possible contact with people. Failure to install it in this fashion may invalidate the user’s license to operate this product.

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Mounting the Antenna
The Antenna mount is intended for flat walls of varying construction. Please contact your certified 3D-iD system integrator for other mounting applications.

1. Using the appropriate hardware, securely attach the circular baseplate of the mount to a flat surface in the desired location. Note: As shown, ensure that at least 12″ of clearance is left between the baseplate and any nearby ceilings and walls to allow for full adjustment of the Antenna once it is mounted.
2. Attach the mount's post to the base plate. Tighten the lock nut with your pliers.
3. Prepare the Antenna by attaching the small, rectangular mounting plate to the back of the Antenna with the two (2) included screws and washers.
4. Attach the Antenna to the mount by aligning the mounting plate on the Antenna with the threaded bolt at the end of the post and rotating the Antenna until it stops. Tighten the locknuts to secure the Antenna.

11.Positioning the Antenna
1. Loosen both set screws on the mount with the enclosed allen wrench. Align the Antenna so it is oriented in the
direction indicated in the completed site survey. Tighten both set screws.
2. Attach the Antenna to its appropriate Coaxial Cable (see the Coaxial Cable Installation section of this manual for
further information). For tension relief, insert a tie wrap through the guide on the back of the Antenna and secure
the Coaxial Cable with the tie-wrap. Note: When placing your Antenna, keep in mind that metallic objects, dense walls, microwave ovens and other obstacles can alter radio signals, limiting the Antenna's effectiveness. See your certified system integrator for proper Antenna placement.

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Technical Specification
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Frequency:
Tx: 2.44 GHz
Rx: 5.80 GHz
Power: 12 V DC (supplied from Coaxial Cable)
Radiation Pattern: Ellipto-conical (62° azimuth, 32° elevation)
Dimensions: 10″ x 7″ x 2″
Environment: 5°C – 35°C (operating range)
5% - 95% humidity, no condensation

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14. PinPoint Local Positioning Systems
Cell Controller Installation and Maintenance
15.Warnings
Always place the Cell Controller in a well ventilated area. Never block the Cell Controller's air vents.
Keep the Cell Controller away from water. Never attach the Antenna cables while the Cell Controller is powered on! Equipment damage may result! Do not overtighten the Coaxial Cables! (max. 8 inch-lbs.) Do not tightly bend (< 0.5″ bend radius) the Coaxial Cables! Changes and modifications not expressly approved by PinPoint Corporation could void the user's authority to operate the equipment.

Included in the Cell Controller package
1 Cell Controller
1 AC power cord

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Cell Controller Placement
A Cell Controller must be placed close enough to its corresponding Antennas so that the Coaxial cables connecting the two can be installed without stretching, kinking (< 0.5″ bend radius) or otherwise damaging them. The Cell Controller must be located in proximity to a standard AC power outlet (grounded) and an appropriate 10Base-T
Ethernet jack. Note: The Cell Controller must be placed in a location with adequate ventilation. The Cell Controller must have at least one foot of clearance above it and six inches behind it. Nothing should be placed above the Cell Controller's ventilation slots.

17.Mounting the Cell Controller
The Cell Controller may be placed upon any sufficiently sturdy, flat surface such as a table or a desk. Ensure that it will not fall or tip over. Remember to allow for adequate ventilation. Please contact your PinPoint sales representative or certified 3D-iD system integrator for other mounting options.

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Installing the Cell Controller
1. Attach the enclosed power cord to the AC outlet on the Cell Controller. Plug the power cord into a grounded wall outlet. Ensure the outlet is not overloaded.
2. Attach the appropriate network cable (ethernet) to the Cell Controller.
3. Carefully attach up to 16 Antennas (depending upon the system layout) to the Antenna ports using the specified 3D-iD Coaxial Cables (shipped separately). Never attach the Antenna cables while the Cell Controller is powered on! Equipment damage may result! Do not overtighten the Coaxial Cables (max. 8 inch-lbs.)! Do not kink (< 0.5″ bend radius) the Coaxial Cables!

19.4. Turn on the Cell Controller using the power switch. You will be greeted by one of six beep patterns:
1. An ascending trill indicates the Cell Controller is starting up normally.
2. A descending trill indicates that the Cell Controller is shutting down normally.
3. A high-low tone indicates the Cell Controller can not detect an appropriate network connection. This is generally not a cause for concern as the Cell Controller will automatically reboot every five minutes until it detects the appropriate network.
4. Two beeps indicate that the Cell Controller is using a static IP. This is normal.
5. A high high high low tone indicates a hardware or driver failure. Attempt to restart the Cell Controller. If failure continues, contact your certified system integrator.
6. A high low, high low sound indicates a fatal error. Attempt to restart the Cell Controller. If failure continues, contact your certified system integrator.

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Maintaining the Cell Controller
Once operating, the Cell Controller will continue to function with minimal maintenance.

Dust Screen
There is a permanent dust screen covering the ventilation fan that should be checked approximately every six months. If necessary, the guard and screen should be removed, cleaned or replaced. Be sure to power off the Cell Controller before cleaning the screen.

Fuse
The Cell Controller's fuse (#3A Fast Acting Fuse 120 AVC, 3 amp) can be replaced if necessary.

21.Technical Specifications
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Frequency:
Tx: 2.44 GHz
Rx: 5.80 GHz
Radiated Power: <1 W EIRP
AC Power: 110/220V AC, 50/60 Hz
Dimensions: 18″ x 17.5″ x 6″
Environment: 5°C – 35° C (operating range)
5% - 95% humidity, no condensation

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Coaxial Cable Installation

23.Warnings
Do not tightly bend or kink (< 0.5″ bend radius) the coaxial cable. This will severely deteriorate the performance of
the cable and the 3D-iD system. Understand your specific cable requirements. Use Plenum rated cables where needed such as in suspended ceilings. Check your local fire codes for more information. Changes and modifications not expressly approved by PinPoint Corporation could void the user's authority to operate the equipment.

Included in the Coaxial Cable package
100' Plenum or Riser rated cables.

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Installing Coaxial Cables
1. Label each Coaxial Cable at both ends for quick identification.
2. Starting from the location of the Cell Controller, run the Coaxial Cable to the location where the Antenna will be mounted. Leave sufficient slack at the Cell Controller end for servicing (2-3 feet). **To prevent kinking (< 0.5″ bend radius) or sharp bending of the cable, wait until the cable is completely pulled before attaching either the Cell Controller or the Antennas.**
3. Coil the excess Coaxial Cable near the Antenna to allow for easier cable adjustment should the need arise to move the Antenna. This also prevents clutter near the Cell Controller.

4. Connect the SMA connectors of the Coaxial Cable to the Antenna and the Cell Controller, only after they are both
mounted. Do not overtighten the cable connections (max. 8 inch-lbs.)

25.Technical Specifications
Length: 100 feet
Weight: 2.8 lbs
Temperature: 5°C to 35°C (operating range)
Min. Bend Radius: 0.5″
Fire Rating: Plenum - UL/NEC Rated " CL2R/CATVR″
Riser – UL/NEC Rated
Shielding: 90dBm

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Tag Installation and Maintenance

27.Warnings
The 3D-iD Tags are water and shock resistant. However, prolonged immersion, high-pressure washing, or extreme force can damage the Tags. When installing the Tags, keep in mind that metallic objects and other radio absorbers and reflectors in the immediate area of a Tag will hinder its performance. The Tags may be washed with alcohol, diluted bleach, and diluted ammonia. Harsher solutions may cause damage to the Tag's exterior or seal. Changes and modifications not expressly approved by PinPoint Corporation could void the user's authority to operate the equipment.

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Included in the Tag Package

This package may include:
10 or 25 Tags
1 Tag Key

10 or 25 Asset Mount Kits consisting of:
1 Asset mount
2 Hose clamps
1 Rubber Pole Mount
Double-sided Tape
2 AA Batteries

10 or 25 Personnel Mount Kits consisting of:
1 Lanyard
1 ID Clip
1 Clip Plug

29.Mounting Tags - Asset Mount
The asset mount can be used to attach the Tag to any flat surface or curved surface (up to 2″ diameter), such as a narrow bar or a pole.

1. The Tag is inserted into the mount by placing the bottom of the Tag in the bottom of the mount and snapping the Tag into place.
2. Ensure the batteries are inserted the mount as shown.

Mounting to a flat surface
1. Affix the bottom of the mount to the desired surface using the double-sided tape or screw the mount to the asset using the three (3) screw holes as shown.
2. Place the Tag in the mount. Ensure that the logo is facing outwards, so that the mount does not block the Tag's antenna.
3. The Tag and Mount should appear as shown.

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Mounting to a curved surface
1. Place the rubber mount between the Asset Mount and the curved surface.
2. Run the hose clamps through the upper and lower channels of the mount.

Note: Other mechanisms may be used to secure the mount to a curved surface, including tie-wraps or security banding. Ask your certified 3D-iD system integrator for details.

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3. Attach the mount to the curved surface until the mount is in place.
4. Place the Tag in the mount as described earlier in this section. Ensure that the logo is facing outwards so that the mount does not block the Tag's antenna.
5. The Tag and Mount should appear as shown.

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Mounting Tags - Personnel Mount

Personnel Mounts are designed to enable a Tag to be worn around the neck or on a pocket.

1. Attach the ID Clip to the Tag as shown.
2. Insert the clip plug into the gap behind the clip. Be sure it is snug.
3. Using the ID Clip, affix the tag to a belt, or if desired, run a lanyard through the ID badge to wear the Tag as a necklace. Note: The Tag's logo must always be facing out as otherwise the wearer's body will block the Tag's antenna.

33.Maintaining the Tag

The ViewPoint Administrator software package contains a battery monitoring application, which will generate a report of all Tags that have a low battery (See the ViewPoint Software Manual for more information).

To change the Tag's battery:
1. If the Tag is mounted to the Asset Mount, remove the Tag from the Mount with the Tag Key.
2. Detach the battery covers by carefully unscrewing the two (2) battery compartments using the 2-pin tool.
3. Turn the Tag upside down to remove the button cell batteries. If necessary, remove the AA batteries in the asset mount, dispose of properly and replace.
4. Properly dispose of the old batteries.

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5. Install the new batteries as shown in the photo. Note: Pay particular attention to the battery orientation. If you install the battery backwards, the Tag won't work.
6. Reinstall the battery covers with the 2-pin tool.
7. If the Tag is from an asset mount, reattach the Tag to the mount following the instructions in the Tag Mounting section of this manual.

Technical Specifications
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Frequency:
Tx: 5.80 GHz
Rx: 2.44 GHz
Radiated Power: <0.5mW EIRP
Power Source: (2) 1.5V AgO_2 Batteries
Radiation Pattern: Semi-spherical (from front face of tag)
Dimensions: 2.5″ x 1.5″ x 0.2″
Environment: 0°C – 50°C (operating range)
Water-resistant

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