APPLIED WIRELESS ID

LR-3000 Reader and Tags – Quick Installation Guide

***If you are new to the LR-3000 Reader, or if this is your first long-range reader installation,
we suggest that you call AWID Technical Support at 408-825-1100.***

The LR-3000 Reader is a long-range Radio Frequency Identification reader that uses AWID's UHF vehicle tags and hand-held cards. This Guide describes installation using the *Wiegand* interface. For *RS-232* interface, download AWID's Technical Reference.

➔ ***Before you start the installation, download and study the LR-3000 Installation & Operation Manual.***

Preparation

- **Layout Plan**: Ideal conditions for the installation site are –
  - ► 1 vehicle length or more between the reader and the gate.
  - ► Vehicles driving in the lane that is nearest the reader, in a straight line, at up to 15 miles per hour.
  - ► Reader mounted on a bracket with pan-and-tilt adjustable head for aiming the reader.
  - ► Reader location and height to match vehicle type and tag type.
  - ► Reader and tags aligned, facing each other head-on (parallel to each other) at the reading distance – up to 25 feet.
  - ► Good tag location in vehicles determined by tests *before* attaching the tags.
- **Power Supply**: A separate dedicated DC power supply for each LR-3000 reader, connected to nothing else. For a 12-14 volt DC supply, current rating = 2 amperes or more, linear rated, regulated DC out. Install power supply 12 feet *or more* from the reader.
- **Cable**: May be separate cables for data and for power, or may be combined for data and power together. Max. length = 500 feet.
  For *power* alone – 18 gauge, 2 conductors, stranded wires, color-coded, overall 100% shielded, high quality.
  For *data* alone – 22 gauge, 3 conductors, stranded wires, color-coded, not twisted pairs, overall 100% shielded, high quality.
  For *combined* cable – 18 gauge, 5 conductors, stranded wires, color-coded, not twisted pairs, overall 100% shielded, high quality.
- **Mounting**: Adjustable pan-and-tilt bracket (Part No. LR-MB-0-0), required in most installations.

Pre-Installation Testing   *(See Quick Installation Guide for LR-KIT Installation Kit)*

- *Before* installing at the site, run these tests at your shop. ➔ Cut off and discard the connector on the reader's cable.
1. Installation Kit (Pt.No. LR-KIT-0-0): Provides beep and LED color. No need to mount the reader or interface to the system.
2. Connections: Connect the 3 negative wires (**black** wires) on the reader, test unit, and power supply, plus the reader's <mark>yellow</mark> wire.
   Connect the reader's **orange** wire to the test unit's **orange** wire.
   Connect the 3 positive power wires (**red** wires) on the reader, test unit, and power supply. See Figure 1 for test wiring.
3. Holding test tags: Squeeze in fingertips at edge of tag. Hold tag at arm's length to your side. Tag and reader facing each other.
4. Procedure: When the test unit's LED is lighted **red**, present one of the test tags from the Kit to the reader. Measure (a) the maximum distance "R" where reads occur, and (b) the width "W" of the effective RF field at half of maximum reading distance.
5. Results: Tags should read at about 3 reads per second, inside the "balloon" (Figure 2). Maximum range "R" may be 35-40 feet.
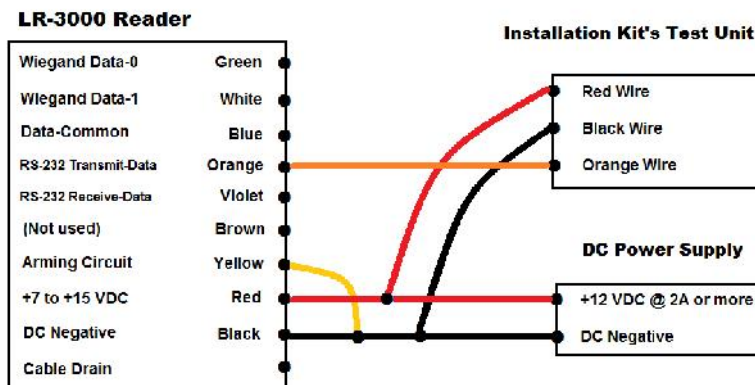

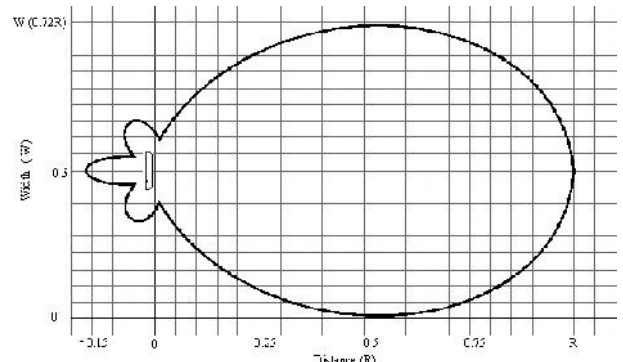**Figure 1. Connections for Pre-Installation Testing**

Figure 2. Effective RF Field for LR-3000 Reader

Mounting the Reader and the Remote Antenna *(See LR-3000 Installation & Operation Manual, Sections 5, 8 and 9)*

1. Fasten the mounting bracket to the pole, post, pedestal, wall or beam. Leave space for the reader unit's pan-and-tilt adjustment.
2. Fasten the reader to the bracket with 2 ¼"-20 screws. The LR-MB bracket includes fasteners.
3. Aim the reader toward the location of tags when they are mounted on vehicles, for the reading distance (up to 25 feet).

Wiring the Reader (for Wiegand Interface) *(Study Figure 3 carefully. There is no wiring for the reader's LEDs.)*

1. Check the power supply and cable(s) for power and data to be certain that they meet AWID's specifications ("Preparation", p. 1).
2. Connect the wires -- yellow to **black** at the reader; **black** and **red** to the power supply; **green** and white and **blue** to the controller.
3. Connect the reader's **drain** (shield) wire to the shields of all cables. **Do not ground** drain and shields – they must float.
4. Keep the reader's **orange** wire available for connecting the LR-KIT's test unit. Insulate **violet** and **brown** wires separately.
5. Do not tape or bead the wire junctions until the complete system has been tested thoroughly. Keep all junctions accessible.
6. Test the reader using the LR-KIT Installation Kit. A tag, held in fingertips, will be indicated by beeper and LED on the test unit.
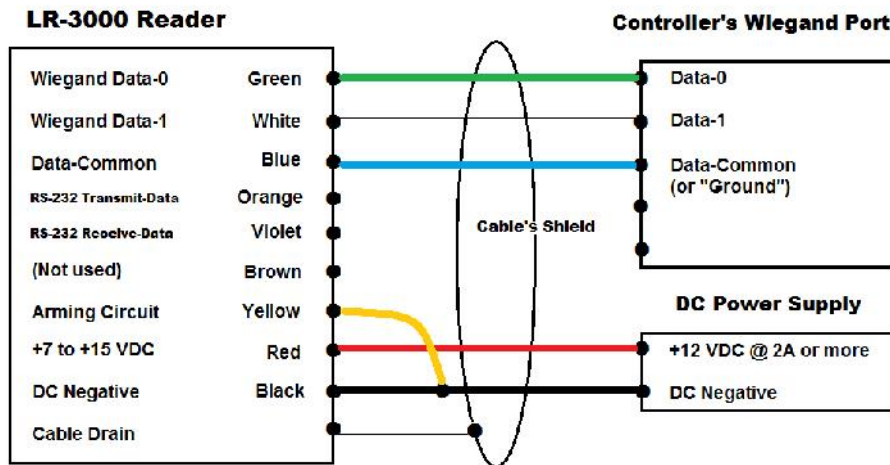

Figure 3. Wiring the Complete System for Wiegand Interface

The blue wire must connect to the panel's terminal that serves as Data Common. Look for a "Common" terminal. If none, use the "Ground" terminal.

Using Tags and Cards

- Select a location for the tags that has clear line-of-sight to the reader. Tags should be aligned with the reader, facing it head-on, about parallel to the reader at the reading distance. Test the tags using both "landscape" and "portrait" orientation.

VT-UHF Visor Tag: Clip the tag on the sun visor. At the reading distance, the driver lowers the visor so the tag faces the reader.
HT-UHF Hangtag: Hang the tag on the inside rearview mirror's post. Or hold the tag, by fingertips at its hook, inside the vehicle.
RV-UHF Mirror Tag: Using the tag's adhesive, press the tag smoothly on the frame of the inside rearview mirror, facing the reader.
WS-UHF Windshield Tag: Using the tag's adhesive, press the tag firmly inside the glass, 2 inches or more from edge of windshield.
MT-UHF Metal-Mount Tag: Fasten outside or inside the vehicle, by its adhesive, screws, rivets, wire ties, or hook & loop tape.
CS-UHF Clamshell Card and **GR-UHF Graphics Card**: Hold facing reader with fingers at edge of card. (Use with UA-612 also.)

Programming the System

1. Complete the LR-3000 reader's interface to the host access control or vehicle identification system.
2. Program the applications system for the type of reader, and for the tags' code format, facility (or site) code, and card numbers.
3. Assign suitable programming for the individual tags in the cardholders' database – gate groups, time zones, priority levels, etc.
4. Program the applications for the action to be taken for each valid read – gate motor operation, data recording, reports generation.

Testing the Completed System

1. Drive a vehicle with a mounted tag into the read range on the lane. Observe the code registered by the system for accuracy.
2. Test operation of all functions by driving a vehicle with an authorized tag code past the reader and through the gate repeatedly.
3. Study the PC monitor's data display for full and correct information about events on the system. Watch for "Access granted".
4. Enter the command for a report of events in the system – for individual vehicles in a time period and for history at a single gate.

If a Problem Occurs

1. Use the LR-KIT Installation Kit to measure performance of the reader with hand-held test tags. *Isolate* the problem.
2. On AWID's Web site, get the Technical Support memo "Support 4 – Trouble-Shooting". It will identify and cure problems.
3. Visit AWID's web site (www.awid.com) for product data and downloads. For technical support questions visit … www.awid.com/support or call **1-800-369-5533** (in the U.S.) or **1-408-825-1100** from 8:00 a.m. to 7:00 p.m. Eastern Time.