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Technical Reference

LR-2000HiLo Long-Range Reader Set

APPLICATION: Mixed Trucks and Cars at Same Gate

*An advantage of the **LR-2000HiLoMA** reader set is the ability to have two long-range readers close together, aimed at different locations of the vehicle tags. This allows a mixture of big trucks and buses, and also passenger cars of all sizes, at the same gate. There is a single interface from the LR-2000HiLoMA to the controller panel. The features and options for this application are described below.*

Product Description

The LR-2000HiLoMA reader set consists of two similar units – a master reader and a remote antenna. The housings are the same as the standard LR-2000, except that a brass mini-coaxial connector has been added on one edge of both units. The LR-2000HiLoMA set includes a 6-foot-long coaxial cable that allows the two units to communicate with each other. Both units contain an antenna and an aluminum reflector plate, in an ABS plastic housing. Only the master reader has the integrated cable that connects DC power from an external power supply, and transmits code data to the host system.

The DC power specification is the same as for the standard LR-2000 long-range reader. The data interface to the host system is the same also – only a single reader input port is required at the host panel.

Function

The LR-2000HiLoMA reader set gives the installer a means of (a) spreading out the effective RF field in the same direction from the units, to enlarge the size of the field either horizontally or vertically – or of (b) creating two separated RF fields. The HiLo feature does not make the effective field *longer*, so the maximum read range or the guaranteed reading distance remains the same as with a standard LR-2000 reader.

Applications

The LR-2000HiLoMA reader set with the RF field **spread horizontally** is used where the vehicles turn as they approach or drive through the tag-reading zone near the reader, or where the roadway is wider than the usual single lane. This is common if the reader is at a driveway where vehicles turn from a through street, or if there is a curve in the lane at the tag-reading zone.

With the RF field **spread vertically**, tags on vehicles at a change in grade on the lane at the tag-reading zone can be read with assurance. This arrangement also applies to vehicles of different sizes in which the tags may be at different heights above the lane surface.

The two units of the LR-2000HiLoMA reader set can even be facing in **opposite directions** at a set of IN and OUT gates, for example, with the two reader units mounted back-to-back at the same height on the same pole. The master reader may be aimed at tags in entering vehicles, and the remote antenna may be aimed 180° away at tags in exiting vehicles. This application is practical if the system does not need to know whether the vehicle was entering or exiting the facility – only that it was an authorized vehicle with a valid tag code.

A special case occurs when the vehicles are of great diversity – say, passenger vehicles, and vans or pickups, and semi-trailer trucks or buses. In this case, the best results may come from use of different tag types on small and big vehicles. The LR-2000HiLoMA's units should be at different heights on a single pole, and the units aimed in different directions. Here are the details . . .

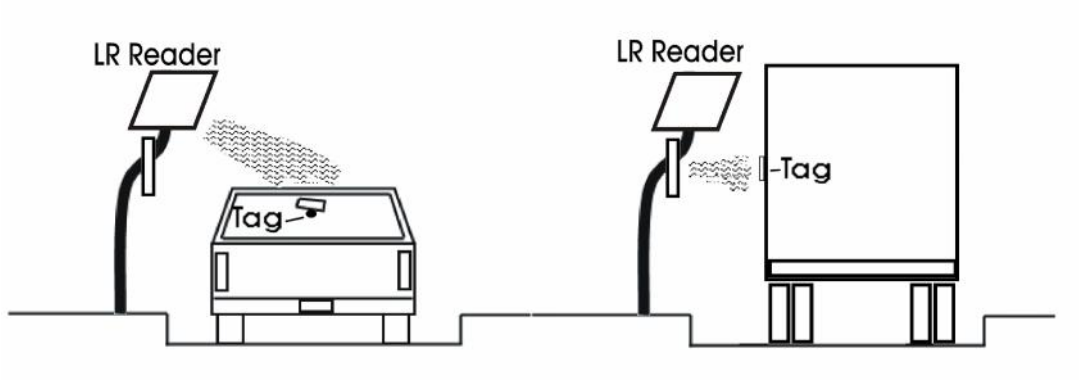
Mixing Passenger Cars and Big Trucks or Buses

A popular solution for this mix of vehicles is the LR-2000HiLoMA reader set with the two units mounted on LR-MB mounting brackets fastened to a single square pole or post at either side of the vehicle lane, close to the edge of the vehicle lane.

For the passenger cars (including sedans, vans, SUVs and pickup trucks), mount the reader so that it is about 7 feet above the lane's surface. Attach the selected vehicle tag (like the **WS-UHF** on the windshield) according to AWID's instructions, on the same side of the car as the reader. Aim the reader at the location of tags on the windshields when the distance between the reader's front face and the tags' locations on cars approaching the reader is 10 feet.

For the big trucks and buses, mount the reader so that it is about 4-1/2 feet above the lane's surface. Attach the **MT-UHF** tag with vertical orientation on the side of the truck, on a flat surface that is about 4-1/2 feet above the lane, on the same side of the truck or bus as the reader. Aim the reader's RF field horizontally across the lane, perpendicular to the path of the vehicles. The ideal distance between the reader's front face and the tag, when the tag is just opposite the reader, is between 4 feet and 10 feet.

It does not matter whether the LR-2000HiLoMA master reader or remote antenna is at the high or low position on the pole. It is usually best to have the master reader low (for the big trucks and buses), to keep the cable run from underground conduit shorter. Then the high remote antenna (for the passenger cars) is connected by the coaxial cable to the low master reader. Using the LR-MB mounting brackets, the two brackets may be as much as 4 feet apart vertically.



Alternative Plan

It is possible to use tags inside all of the vehicles for this mix of small and large vehicles. For example, if the **WS-UHF** windshield tags are used in both passenger cars and big trucks or buses, the LR-2000HiLoMA set's master reader may be at the 7 foot high bracket location to read tags inside the cars, and the remote antenna may be at a higher position, perhaps around 9 feet above the lane, to read tags inside the trucks or buses. In this case, both readers will be aimed at the location of their respective tags when the tags are at the typical 10 foot reading distance from the reader's front face. The goal is to have the tags and the face of the reader about parallel to each other when the tags are at the typical reading distance.

Site Layout

Other factors relating to the installation, as described in AWID's LR-2000 Installation & Owners Manual and Technical Reference issues, should be considered in all applications. These include . . .

- Location of the readers relative to the gate.
- Specifications for power supply and cables and wiring.
- Plastic enclosure for both of the reader units if they are mounted outdoors and exposed directly to precipitation, or exposed to bright sunlight in a location with high ambient temperature.
- Selection of 5 vehicle-mounted tags and 2 hand-held cards that work with the LR-2000 reader.
- Use of the LR-2000KIT Installation Kit.
- Vehicle path and speed.