APPLIED WIRELESS ID

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# Technical Reference

# SHIELDS FOR AWID'S READERS

*AWID's readers are rated for outdoors installation, where they may be exposed to precipitation, wind and sunlight. In some instances the readers' performance may be optimized if the readers are protected from precipitation, and shaded from direct sunlight in a hot environment. Several suggestions are offered below.*

## Applications

**Rain**: AWID's SR-2400 and MM-6800 readers are fully potted with epoxy resin. They are suitable for direct exposure to water. SP-6820 and MR-1824 readers have internal protection against moisture. KP-6840 and LR-911 readers should be protected from strong weather conditions when they are installed. Planning for environmental protection should consider even an occasional garden-hose attack.

**Wind**: It is rare for wind to have an effect on a reader. In an extreme environment it is possible for windborne dust to leave a residue inside the housing. UHF radiation from the LR-911 reader could be affected by unusually dusty environment. Typical mounting methods prevent wind from changing the reader's position.

**Sunlight**: AWID's proximity readers are rated for operation in ambient temperatures up to 150 degrees F (65 degrees C). The LR-911 long-range reader may be rated up to 113 degrees F (45 degrees C) for a new model at continuous duty. Exposure of a reader to direct, bright sunlight when the ambient temperature is high may cause the reader's internal electronic components to exceed their design rating, resulting in temporary reduction of read range. Normal operation returns when the reader is shaded

**Special enclosure**: A reader that is mounted inside a vehicle may be exposed to temperature at the high end of AWID's rated range, because of the vehicle's greenhouse effect. It will help to use the optional *beige* reader color, and to assure that the reader is shaded from sunlight.

## Fabricated Shields

The installers of AWID's readers occasionally devise a shield for a particular condition. For protection from precipitation, a clear plastic hood that covers the top and sides of the reader can be attractive and inconspicuous. For shading from sunlight, the plastic should be opaque, and large enough to block sunlight from the reader during the hottest hours of the day.

For all AWID readers, the material of the shield should be plastic or other non-metallic material. For the LR-911 long-range reader, the shield should be large enough to avoid intercepting the effective RF field (the "surveillance zone") at the front of the reader, because some materials can attenuate the radiation. Metal can block or reflect the UHF field.

## The Housing Company's Enclosures

The Housing Company produces a family of enclosures using Lexan polycarbonate material. This plastic has the advantage of being "transparent" to 125 kHz RF, used in proximity readers and credentials, and of minimal interference with the LR-911 reader's and tags' 902-928 MHZ transmission. Therefore the readers may be mounted inside the housings effectively. To keep the read range as long as possible, the reader is best mounted close to the inside of the housing's door.

If the housing's door is left in place on its hinge, the locked door provides protection against vandalism and a secure place for cable terminations. If the housing's door is removed from its hinge, the housing serves as an open hood for protection from weather and sunlight.

The Housing Company's line of housings and pedestals, and their contact information, are shown on their Web site, www.thehousingcompany.com.

## Special Cases

AWID's **LR-911-HiLo** (Master-Antenna) reader set uses a coaxial cable for communications with the remote antenna. Both housings in the "HiLo" set have a coaxial connector built into one edge of the plastic housings. AWID recommends that the installer mount both housings of the "HiLo" set so that the coaxial connector is on the low side of the housing. This effectively keeps rain from entering the housing. A little RTV sealant around the coaxial cable's connector helps further to eliminate internal moisture. (This mounting causes the "AWID" logos to be upside-down. This should raise no objection because the logos are barely visible in the typical installation.)

LR-911 readers perform best if any buildup of snow, ice, or even water is avoided. Water in any of its physical forms attenuates the RF used in this reader and its tags. A suitable shield or enclosure can keep the reader free of buildup.