

Technical Reference

LR-2000 Reader – Mounting Inside Protective Housing

Change History

Version	Date	Author	Comments
1.0	29 July 2011	L. Hickcox	First release.

AWID's LR-2000 long-range reader is protected from direct rain and snow, and from hot sunlight, by installing the reader **inside** a plastic housing. This memo uses The Housing Company's Model PCH196 Lexan housing to describe popular methods of securing the reader inside the housing. Besides environmental protection, this housing offers space for mechanical assembly and cable junctions. Lexan plastic is ideal because it causes negligible reduction in RF field strength. AWID's Model LR-MB supports the housing well.

A. Mounting the Reader Inside the Housing

Either of these 3 reader-mounting techniques may be used.

1. Reader attached inside the housing's door

Material: Velcro hook-and-loop fastener sets, roll or strips, 1 inch wide, self-adhesive.

- Cut 2 strips of the hook-and-loop fastener set, each strip 8 inches long. Orient the reader with the "AWID" logo at the upper left corner, so that it can be read normally. Peel the protective paper from the adhesive on one side of the strip sets. Press the strip horizontally at the upper and lower edges of the reader's front face.
- Peel the protective paper from the adhesive on the other side of the strips. Press the reader tightly to the inside of the housing's hinged door, away from the lock.
- Cut the white 10-pin connector from the reader's cable. Keep the wire pigtails as long as possible.
- Drill a clearance hole for the cable at a convenient location through the back or bottom of the Lexan housing. The first junction of the reader's integrated 10-conductor cable and the cable for power and data to the system may be either inside the housing or outside. Feed the cable through the housing's clearance hole. Provide strain relief for the cable inside the housing's wall.
- Connect 7 wires in the reader's cable – yellow to black to arm the reader's RF generator; red & black to the power supply's positive and negative DC; green & white & blue to the panel's reader port for Data-0, Data-1 and Data-Common; and drain (bare silver) to the shields on power and data cables. (To arm the RF generator remotely, use a relay to switch the yellow-to-black connection.)
- Apply sealant at the housing's hole to seal the cable.

2. Reader fastened inside the housing's back surface – screws with locknuts

Material: 2 machine screws, 1/4"-20 X 1-3/4" long, hex head, rust-proof steel
4 nuts, 1/4"-20, rust-proof steel
2 fender washers for 1/4" screw, rust-proof steel

- Drill two clearance holes for 1/4" screws near the center of the back surface of the housing. Measure the distance between the two capture-nuts in the aluminum plate behind the LR-2000 reader for the spacing between the two drilled holes.
- Cut the white 10-pin connector from the reader's cable. Keep the wire pigtails as long as possible.
- Drill a clearance hole for the cable at a convenient location through the back or bottom of the Lexan housing. The first junction of the reader's integrated 10-conductor cable and the cable for power and data to the system may be either inside the housing or outside. Feed the cable through the housing's clearance hole. Provide strain relief for the cable inside the housing's wall.
- Insert a machine screw through one of the slots in the LR-MB bracket's adjustable head, and then through the appropriate hole in the back of the housing.
- Inside the housing, slip a fender washer over the screw, and then thread 2 nuts on the screw to about the center.

- (f) Repeat step (d) and (e) for the second screw, using the bracket's other slot and the housing's other hole.
- (g) Using fingers only, thread the two screws into the reader's capture-nuts.
- (h) Firmly tighten the two locknuts on each screw, one back against the fender washer inside the back of the housing, and one forward against the reader's aluminum plate.
- (i) Connect 7 wires in the reader's cable as shown in step 1.(e) above.
- (j) Apply sealant at the housing's hole to seal the cable.

3. Reader fastened inside the housing's back surface – *threaded spacers*

Material: 2 machine screws, 1/4"-20 X 1" long, hex head, rust-proof steel
2 threaded studs, 1/4"-20 X 1" long, rust-proof steel
2 threaded nipples or stand-offs, 1/4"-20 X 1" long, hex cross-section, rust-proof steel
2 fender washers for 1/4" screw, rust-proof steel

- (a) Drill two clearance holes for 1/4" screws near the center of the back surface of the housing. Measure the distance between the two capture-nuts in the aluminum plate behind the LR-2000 reader for the spacing between the two holes.
- (b) Cut the white 10-pin connector from the reader's cable. Keep the wire pigtails as long as possible.
- (c) Drill a clearance hole for the cable at a convenient location through the back or bottom of the Lexan housing. The first junction of the reader's integrated 10-conductor cable and the cable for power and data to the system may be either inside the housing or outside. Feed the cable through the housing's clearance hole. Provide strain relief for the cable inside the housing's wall.
- (d) Using fingers only, screw the two threaded studs into the reader's capture-nuts.
- (e) Screw the two threaded nipples or stand-offs on the two studs at the back of the reader's aluminum plate.
- (f) Insert the two machine screws through the slots in the LR-MB bracket's adjustable head, and then through the holes in the back of the housing.
- (g) Inside the housing, slip the fenders washer over the screws.
- (h) Firmly tighten the two screws against the inside of the bracket's adjustable head.
- (i) Connect 7 wires in the reader's cable as shown in step 1.(e) above.
- (j) Apply sealant at the housing's hole to seal the cable.



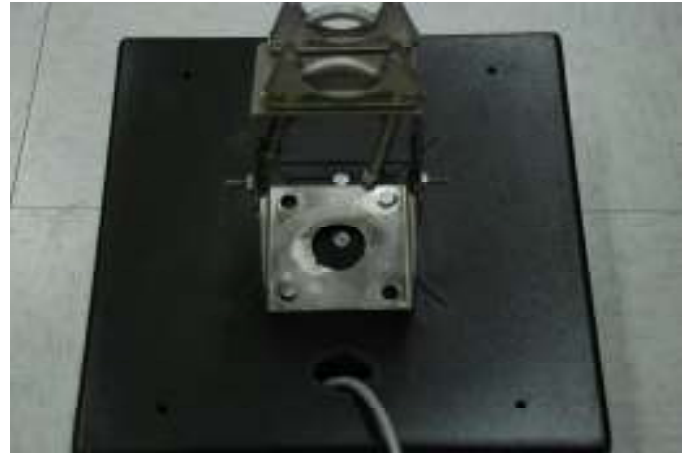
Note: The reader's power supply should *not* be installed inside the protective housing. To prevent possible RF interference, the power supply should be 12 feet or more of cable length, *and* 12 feet or more of distance (or metal-shielded), from the LR-2000.

B. Fastening the Housing to a Round Pole

1. If the reader requires pan-and-tilt adjustment

Material: Dual-U-bolt clamp for the pole's diameter
AWID's LR-MB Mounting Bracket
Required fasteners

- (a) Fasten the protective housing, containing the LR-2000 reader mounted as in section A above, to the adjustable head of the LR-MB bracket.
- (b) Fasten the U-bolt clamp's flat base to the LR-MB bracket's flat base, using suitable hardware and drilled holes.
- (c) Insert the U-bolts into the clamp. Tighten the nuts to position and aim the reader in the proper direction. Set the bracket's adjustable head for aiming toward tags on vehicles at the reading distance.



2. If the reader does not require adjustment for tilt

Material: Dual-U-bolt clamp for the pole's diameter
Adapter plate customized for the installation
Required fasteners

- (a) Prepare an adapter plate (metal or plastic or wood) with 2 clearance holes, spaced to match the capture-nuts in the reader's aluminum plate, and holes for fasteners to the base of the U-bolt clamp.
- (b) Insert two 1/4"-20 screws of suitable length to secure the reader's housing to the adapter plate.
- (c) Insert fasteners to secure the U-bolt clamp to the adapter plate.
- (d) Insert the U-bolts into the clamp. Tighten the nuts to position and aim the reader in the proper direction.

C. Fastening the Housing to a Flat Surface

1. If the reader requires pan-and-tilt adjustment

Material: AWID's LR-MB Mounting Bracket
Required fasteners

- (a) Fasten the protective housing, containing the LR-2000 reader mounted as in section A above, to the adjustable head of the LR-MB bracket.
- (b) Fasten the flat triangular base of the LR-MB bracket to the flat surface (square post, pedestal, gooseneck flange, cabinet, wall, etc.).
- (c) Set the bracket's adjustable head for aiming toward tags on vehicles at the reading distance.

2. If the reader does not require pan-and-tilt adjustment

Material: Adapter plate customized for the installation
Required fasteners

- (a) Prepare an adapter plate (metal or plastic or wood) with 2 clearance holes, spaced to match the capture-nuts in the reader's aluminum plate, and holes for fasteners to the flat surface.
- (b) Insert two 1/4"-20 screws of suitable length to secure the reader's housing to the adapter plate.
- (c) Insert fasteners to secure the adapter plate to the flat surface.