

Technical Reference

Proximity Readers -- Basic Tests

Isolation Testing by Technicians

Change History

Version	Date	Author	Comments
2.1	11 April 2012	L. Hickcox	Change titles. General updating.

The following tests for AWID's proximity readers are useful (a) when you unpack a new reader from its carton, and (b) when you trouble-shoot a reader that is already installed. These procedures apply to readers with most firmware versions. The tests are designed to build your confidence about the condition of the reader and its ability to work as intended when it is interfaced with the system. (Although AWID's proximity readers are self-testing and self-diagnostic, they do not work stand-alone. They must be interfaced to an intelligent system for practical applications.)

This procedure can be used also to test an AWID proximity credential. Test the card or tag with a working AWID reader.

Material for Tests

- AWID proximity reader.
- 12 volt backup battery for all readers. Panel's DC terminals or small 9 volt battery for all except MR-1824 series.
- Clip leads for temporary wire connections.
- Cable from reader to controller panel – 22 gauge, 6 conductors, stranded, overall shielded.
- AWID proximity test card (or tag or wafer). If reader has firmware F/W:M, test with an HID prox credential also.
- Digital multimeter -- 20 volts DC voltage range and 1 ampere DC current range.

A. Reader Alone – Testing Beeper and LED

1. Connect the reader's ground and power wires to the DC power source – **black** to negative, and **red** to positive. Leave other wires disconnected and separated, touching nothing (floating). Measure the voltage across the reader's black and red wires. In readers with common firmware, the LED is steady **amber**.
2. (a) Present the card briefly to the reader. Then remove the card from the reader, outside its read range.
(b) The reader sounds a sequence of long and short beeps, and the LED changes to steady **red** indicating that the reader is initialized and ready to read cards.
3. (a) Present the card again briefly to the reader. Then remove the card from the reader, outside its read range.
(b) The reader sounds one short beep. The LED changes from **red** to **amber** for about ½ second, then returns to steady **red** for standby.
4. (a) Hold the card for about 5 seconds inside the reader's read range.
(b) The reader sounds one short beep. The LED changes from **red** to **amber**, then immediately shows alternating **green-red-green-red...** for as long as the card is held near the reader. When the card is removed, the LED returns to steady **red** for standby. This test shows all three LED colors – **red**, **amber** and **green**.
5. Conclusion: These results indicate normal reader operation. Each time that the beep sounds and the LED changes in Sections A.3 and A.4, the reader also transmits the card's code on its data lines. (Later tests make use of these data.)

B. Reader Alone – Testing Controllable Functions

1. Connect the reader's ground and power wires, as in Section A.1.
2. Initialize the reader, as in Section A.2. Then remove the card from the reader, outside its read range.

(continued)

3. **LED:** (Run this test only if the reader will be wired to the panel for external LED control.)
 - (a) Touch the reader's **brown** wire temporarily to the **black** wire. The LED is steady **green** as long as the **brown** wire touches the **black** wire. When the **brown** wire is removed from the **black** wire, the LED returns to steady **red**.
 - (b) The colors in Section 3.(a) may be reversed (**red** to **green**, and **green** to **red**) if necessary, using AWID's Color Changer Card. Please request this card if required from AWID's Inside Sales.
4. **BEEPER:** (Run this test only if the reader will be wired to the panel for external Beeper control.)
 - (a) Touch the reader's **yellow** wire temporarily to the **black** wire. The beeper sounds continually as long as the yellow wire touches the black wire.
 - (b) This creates the reader's Alarm mode. While the reader is in Alarm mode, the reader is unable to read a card.
5. **DATA HOLD:** (Run this test only if the reader will be wired to the panel for Hold control. Do not use on SR-2400.)
 - (a) Clip the reader's **blue** wire to the **black** wire. Present a card briefly to the reader. The reader reads this card – the reader beeps and the LED changes color briefly.
 - (b) Remove the **blue** wire from the **black** wire. There is no visible or audible change, although the reader did transfer its buffered data to the reader's data lines when the blue wire floats.
 - (c) The reader gives no indication that it is under external Hold control, that its buffer is holding card data, or when it is transmitting its data.

Note: When the Hold function is active, the reader reads every card that is presented, and buffers only the most recent card's code. When the **blue** wire floats, the interfaced reader immediately transmits the buffered code to the panel.

C. Reader Interfaced to Panel (Wiegand Interface)

1. Connect the reader's **black** and **red** wires, as in Section A.1. Connect the three data wires to the panel's reader input port – **green** for Data-0, **white** for Data-1, and again **black** for Data-Common (usually the Ground terminal).
2. Program the host system for the test card's code (format or number of bits, site code, and ID number) so that the system grants access for this card. If necessary, program the time zone, the door group, and the user's priority level.
3. Present the card to the reader. Observe the reader's beeper and LED, and the system's "Access Granted" report.
4. Connect also the reader's **brown** wire to the reader port's **LED** terminal. (If there are 2 terminals labeled "Red LED" and "Green LED", connect the **brown** wire to the "Green LED" terminal.) Observe the reader's beeper and LED, and the system's "Access Granted" report. The LED now changes from standby **red**, to very short **amber**, to **green** for the number of seconds that was programmed into the system to indicate either Door Unlocked or Access Granted.
5. If the panel provides external control for the reader's **Beeper** and **Alarm**, connect also the reader's **yellow** wire to the Beeper terminal. Observe the reader's beeper and test for its external control by the host system.
6. If the panel provides control for the reader's **Data Hold** circuit, connect also the reader's **blue** wire to the Hold terminal. (Hold control does not work on SR-2400.) Observe delayed transmission of the card's data from the reader to the panel, until the panel commands the reader to transmit its buffered data to the panel, by floating the **blue** wire.

Note: If the reader is interfaced to a controller or PC by **RS-232** serial lines, please contact AWID Technical Support.

D. Results and Action

1. See the reader's Installation Sheet for details about the reader's power supply, cable, wiring, installation, and operation.
2. Failure of the reader to pass all of the tests in Sections A and B indicates a problem with the reader. If not physically damaged, the reader may be returned to AWID on an RMA for in-warranty replacement or for repair if possible.
3. Failure of the reader to pass the tests in Section C indicates either loss of data transmission from the reader's data lines, or a cable or connection problem, or a panel or system programming problem.
4. To prove that a reader has failed, substitute a new reader for the "bad" reader, or interchange a "good" reader and a "bad" reader.
5. If the reader has firmware F/W:M, the reader initializes itself 3 seconds after power is connected. Test an F/W:M reader using both the AWID test card and an HID proximity card or tag.