

HDX Backpack PIT Tag Reader



User Guide



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Firmware Version 1.33

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Oregon RFID, Inc
Portland, Oregon

Single Antenna Reader with Mobile Kit

These items in our mobile kit use the ORSR Single Antenna Reader as a portable PIT tag reader that stores the time and location with each detection.

The kit includes:

- Backpack case (Cordura)
- Pole antenna
- Lithium battery in NEMA 4 polycarbonate enclosure
- Battery charger, adapter cable
- GNSS antenna (vertical)
- Power cable



Lithium Battery

The Oregon RFID Backpack Lithium Battery is 14.8 volts at 6 Amp-hours. With the factory settings it should run for around four hours.

Fully charging an empty battery can take five to six hours.

Speed vs runtime tradeoff

The amount of time that the reader will run from the battery can be adjusted by changing the read speed. When the reader runs slower, the overall power requirement lowers to extend the the run time.

Display Location in Log File Output

Every detection record stores almost 30 field, listed in the ORSR Single Antenna Reader User Guide. With the default settings the latitude and longitude are not displayed. This example shows how to add the LAT and LON fields with the FM command.

```
> FM
DTY SPC ARR DUR SPC TCH TTY SPC TAG EFA RCN
S 2019-03-24 00:32:31.900 U 00:00:00.600 HA 900.228000004931 0.7 0
> FM DTY SPC ARR DUR SPC TCH TTY SPC TAG EFA RCN LAT LON
S 2019-03-24 00:32:39.900 U 00:00:00.600 HA 900.228000004931 0.7 5 45.5053 -122.6550
```

Assembling the Pole Antenna

Line up the arrows on the black rubber connectors and press together.

When disconnecting, do not pull on the wires. Pull apart by gripping on the rubber sections only.



Using the Pole Antenna

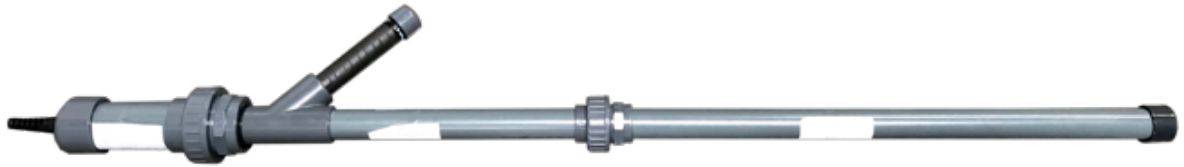
Antennas can be plugged and unplugged when the reader is in standby mode (the power LED is flashing).

The loop orientation can be changed depending on the expected orientation of the PIT tag. If multiple tags are in random orientations, the area should be scanned at different orientations to make sure they are all detected.



Mobile Antennas

Other antenna types can be used with the reader. The photo below shows a prototype stick antenna used to precisely locate tags.



This floating antenna is carried down a stream to map tag locations.

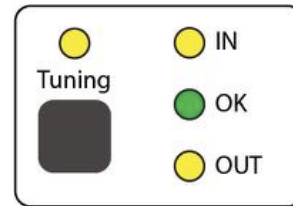


A PIT tag reader is integrated into this solar powered kayak with an antenna surrounding the bow.



Tuning the Slim Tuner

The pole antenna is tuned before shipping. The tuning indicator is used to tune other antennas or the pole antenna needs to be re-tuned.



The Tuning button is used to start the tuning process. The reader should not have any tags in the read zone when this is operating or it can affect the tuning.

The IN, OK and OUT LEDs show the tuning status when tuning is enabled. The tuning is adjusted by moving jumpers on the tuning capacitor board inside the pole antenna.

Loosen the black strain relief on the top of the pole antenna to loosen the grip on the twinax cable. Pull the cap up to access the tuning capacitor circuit board.



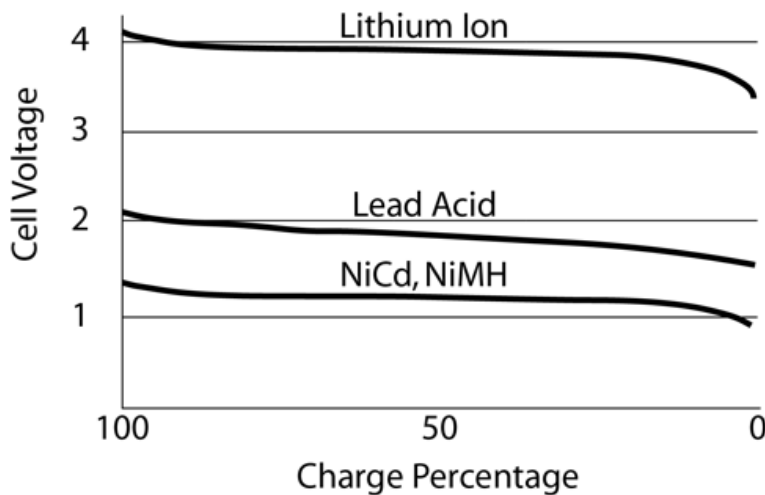
Remove all of the black jumpers except one in position marked "33nF S2". If the OUT LED is on, remove it, otherwise leave it in place. Next place a jumper in position S3 and if the OUT LED is on, remove it. Do this for each jumper position until S7. Finally, turn the fine tuning screw IN or OUT and stop when the green OK LED goes on.

After the OK LED is on continuously for 5 seconds the reader will start scanning again.

Guide to Lithium Batteries

Lithium batteries have a flat discharge curve that makes them ideal for use with a mobile PIT tag reader. The supply voltage stays nearly the same until just before it is empty.

Besides being three times heavier for the same capacity, lead-acid and other battery chemistries will have a decreasing voltage as they discharge which can cause the read range to decrease.



A charger that is designed for lithium batteries must be used. Always monitor the charging process to assure batteries are being charged properly. Never leave batteries unattended during charging. Charge batteries in a safe area away from flammable materials. Do not charge on wood surface or carpet.

Because of their high power density, lithium batteries rely on protective circuitry for safe operation, but any electronic device can fail. Do not drop, disassemble, short circuit, reverse-connect or put in fire. Stop using a battery if it expands or starts getting hot.

Transporting Lithium Batteries

Care should be taken when transporting lithium batteries. Check with the shipper for their specific requirements.

In the USA, TSA specifies that batteries up to 100 watt hours can be placed in checked luggage. Lithium batteries with more than 100 watt hours may be allowed in carry-on bags with airline approval, but are limited to two spare batteries per passenger.

