

# PTLogger User Guide



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March 31, 2014

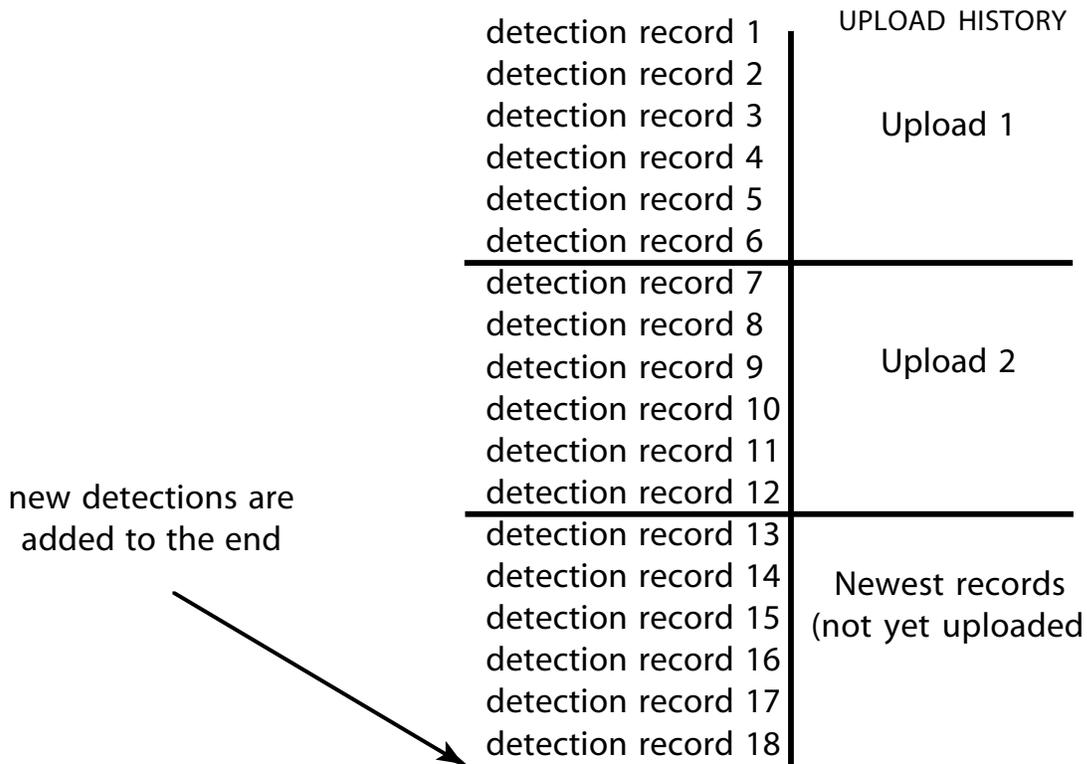
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# Detection history

The Oregon RFID reader timestamps tag detections and stores them on a flash memory card. Event messages are also stored which include parameter changes and system exceptions such as low voltage.

There is room in the history file for nearly 10 million records along with time-based records every minute for 10 years.

To organize these records, the datalogger segments the data into uploads that are shown in a list of **upload histories**. An upload is added to the history list after new data is retrieved. The upload is numbered to allow retrieving the same records again later on.



# Detection record

The datalogger displays each detection as long as a tag is in the field.

```
2014-03-30 18:15:33.22 00:00:00.00 HA 900_228000000076 1 41
2014-03-30 18:15:33.22 00:00:00.10 HA 900_228000000076 2
2014-03-30 18:15:33.22 00:00:00.20 HA 900_228000000076 3
2014-03-30 18:15:33.22 00:00:00.30 HA 900_228000000076 4
2014-03-30 18:15:33.22 00:00:00.40 HA 900_228000000076 5
2014-03-30 18:15:33.22 00:00:00.50 HA 900_228000000076 6
2014-03-30 18:15:33.22 00:00:00.60 HA 900_228000000076 7
2014-03-30 18:15:33.22 00:00:00.70 HA 900_228000000076 8
2014-03-30 18:15:33.22 00:00:00.70 HA 900_228000000076 8 41 DETECT
```

These multiple detections are summarized in the final record marked with the word DETECT at the end. In the above example a tag was detected 8 times with a duration of .70 seconds. Only the final line is written to the log file to record the event.

This is the log file record for the detection.

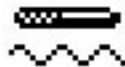
```
D 2014-03-30 18:15:33.22 00:00:00.70 HA 900_228000000076 8 41
```

The D indicates it is a detection record (rather than an event record). The date and time of the detection is shown along with the total duration. The H indicates it is an HDX tag and an A is displayed when an ICAR registered animal tag is detected. Other possible characters would be R for non-ICAR tags and W for writeable tags. The tag number in decimal format shows the manufacturer code and the unique tag number. The tag was seen 8 times and there were 41 empty scans before this tag was detected.

# Graphic Interface

PTLogger is a graphic interface program for the Oregon RFID reader that runs on Palm PDAs. Most any modern Palm with a memory card slot will work. PTLogger also supports Bluetooth for a wireless link to the reader.

PTLogger is used to configure the reader, monitor its operation and upload datalogger records to the Palm for transfer to a desktop or laptop computer.



PTLogger

PTLogger can be downloaded from

<http://www.oregonrfid.com/software/>

Copy the program **PTLOGGER.PRC** to the Palm, then start it.

# Status pane

The Status pane shows the realtime status of the reader.

Single antenna reader

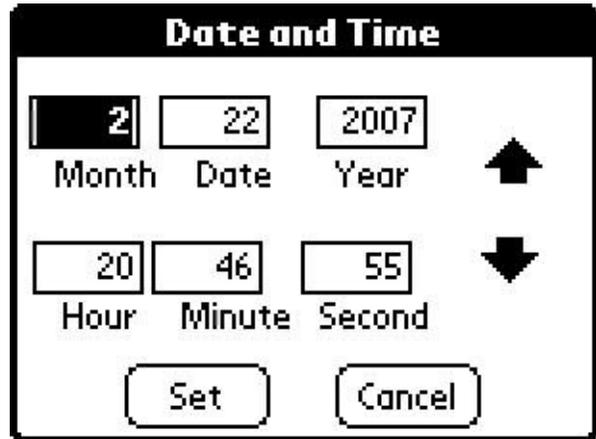
<b>Smith Creek</b>			
05/27/08 00:14:28			
0000_0000000114023569			
Since last	Count	Duration	
:08	9	0:00:00.8	
Scn/sec	Noise	Volts	Amps
10.0	0	14.5	.3
Last Upload			
5/26/2008 23:09			
<b>Status</b>   <b>Setup</b>   <b>Archive</b>			

Multiple antenna reader

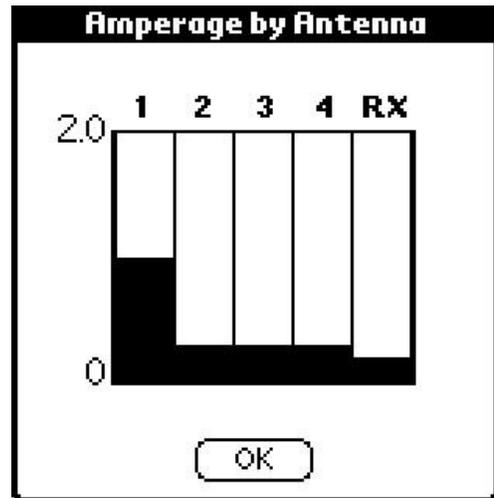
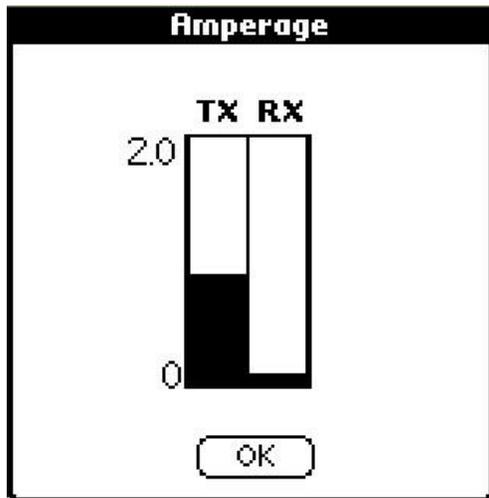
<b>Smith Creek</b>					
02/22/07 20:46:44					
Scans			Time		
Ant	/sec	Count	since last	Noise	Amp
1	2.0	0	03:58	0	1.0
2	2.0	0	03:58	0	.3
3	2.0	0	03:58	0	.3
4	2.0	0	03:58	0	.3
Supply Volts			Last Upload		
13.8			2/21/2007 9:51		
<b>Status</b>   <b>Setup</b>   <b>Archive</b>					

The count field shows the number of consecutive readings. The 'since last' field shows the time since the last tag was seen. The duration is the amount of time a tag is held in the field.

Tapping the name or date field will display a dialog to change it.



Tapping on the amperage value on the status screen displays a realtime plot of the average for transmit and receiving. The plot is updated twice a second.



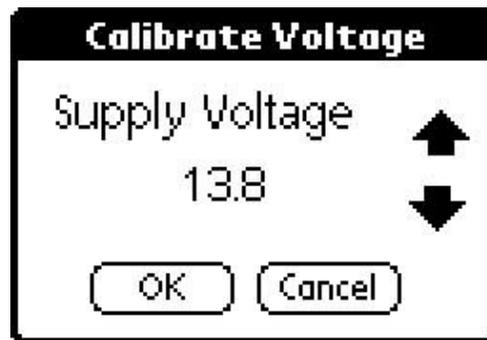
The transmit and receive amperages are plotted. The amperage for each antenna is shown for multiplexer readers.

The tuning of individual antennas can be performed by finding the maximum value while turning the fine tuning adjustment screw.

# Voltmeter

The reader has an internal voltmeter that is displayed on the Status screen and the value is recorded every minute to the SD card to monitor the voltage over time.

The calibration is adjusted by tapping the voltage value on the Setup screen to bring up a dialog to edit it.





# Charge pulse width

The amperage used by the reader increases significantly when sending the charge pulse. The longer the pulse, the faster the battery will drain. Battery life can be increased by shortening the pulse time or increasing the listen time.

## Listen time and read rate

The read rate (scans per second) is determined by the sum of the charge and listen times.

$$\text{read rate} = \frac{1}{\text{charge} + \text{listen time}}$$

The shortest listen time is 20 ms which is the length of the message from the RFID tag. With a 50 ms charge time, the read rate is  $1 / 0.070$  or 14 reads per second.

Some synchronization modes extend the listen time in order to watch for other readers that are out of synch. With wireless and wired synchronization the minimum listen time is 40 ms or 11 reads per second.

The fastest possible read rate using the shortest charge time is  $15+20$  ms or 26 reads per second.

# Automatic shutdown voltage

The shutdown voltage is the minimum voltage for the reader to run. When the voltage is below this level the reader will shut off to prevent discharging the battery completely.

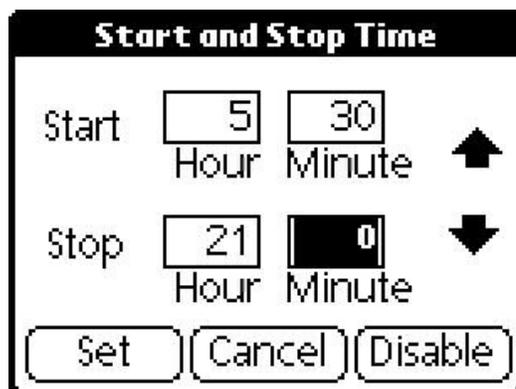
Any automatic shutdown events are logged to the flash memory whenever the reader is turned off. Unfortunately, the datalogger does not log when the reader is switched off. That removes the power to the memory card so it can't be recorded.

When the voltage returns to a few volts above the shutdown voltage, the reader will restart and the wakeup event will be written to the log file. The auto-shutdown feature can be disabled by setting the value to zero.



# Timer operation

The reader contains a timer that can be used to turn the reader on and off daily.



# Comments

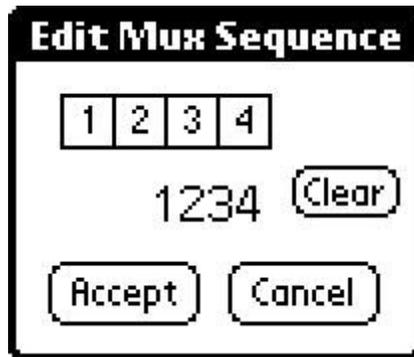
Comments can be added to the log file on the SD memory card. They are timestamped and will be uploaded along with the other detection records.



# Multiplexer antenna sequence

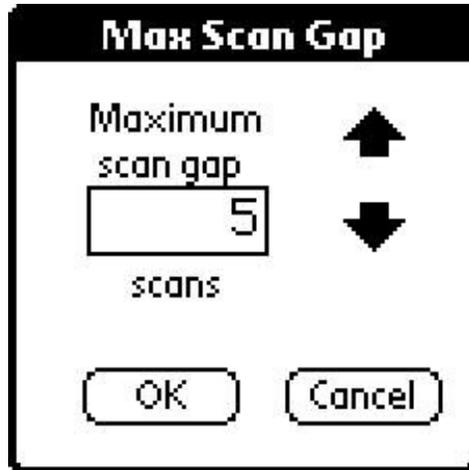
The sequence editor is used to define custom scan sequences or to select one antenna for tuning.

Custom sequences can be added to adjust relative read rates. For example, the sequence ``121314'' will scan antenna 1 twice as often as the others.



# Maximum scan gap

This parameter defines the number of gaps in consecutive scans to ignore. It filters out short breaks in the data stream to reduce the number of records written to the log file.



The duration in the scan zone will be measured from the first time a tag is seen until the last, including any gaps less than or equal to this value.

If a gap is greater than this parameter, the tag will be considered gone and cause a record to be created in the log file.

If the setting is zero, the datalogger will record every scan, including all gaps.

# Maximum scan gap example

The RFID reader repeatedly scans for tags many times per second. The rate is determined by the charge and listen time parameters.

Repeated detections are accumulated into records that show the duration and number of consecutive detections. This record shows that the tag was seen for 1.05 seconds for 12 consecutive scans. There was nothing in the field for the previous 59 scans.

```
09/07/2007 22:22:39.57 00:00:01.05 R 0000_00000000152364970 A3 12 59
```

Without the scan gap filter, a series of short detections will generate many records. In this example, all are single detections of the same tag with short gaps between them. This can be caused by a tag at the outer edge of the read zone where detections can be missed.

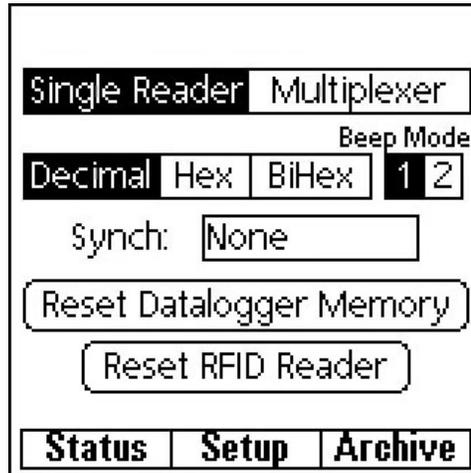
```
08/08/2008 15:44:39.24 00:00:00.00 R 0000_00000000152364970 A2 1 51
08/08/2008 15:44:40.13 00:00:00.00 R 0000_00000000152364970 A2 1 3
08/08/2008 15:44:41.01 00:00:00.00 R 0000_00000000152364970 A2 1 2
08/08/2008 15:44:41.89 00:00:00.00 R 0000_00000000152364970 A2 1 4
08/08/2008 15:44:42.78 00:00:00.00 R 0000_00000000152364970 A2 1 2
08/08/2008 15:44:43.33 00:00:00.00 R 0000_00000000152364970 A2 1 2
08/08/2008 15:44:44.33 00:00:00.00 R 0000_00000000152364970 A2 1 3
08/08/2008 15:44:45.33 00:00:00.00 R 0000_00000000152364970 A2 1 2
08/08/2008 15:44:46.32 00:00:00.00 R 0000_00000000152364970 A2 1 1
08/08/2008 15:44:47.20 00:00:00.00 R 0000_00000000152364970 A2 1 2
```

With a scan gap value of 5, the short gaps would be ignored and the ten records above will appear as a single record in the logfile.

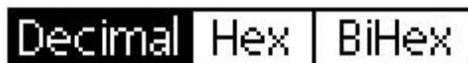
```
08/08/2008 15:44:39.24 00:00:08.35 R 0000_00000000152364970 A2 30 51
```

# Utilities

The Utilities screens are used for functions that are not changed very often. These include the type of reader, tag display format and synchronization mode selection.



Select Single or Multiplexer to match the type of reader.



Select the type of tag display you prefer.

Decimal format

900\_226000054795

Hexadecimal showing the raw tag data

8000E1349EA72A0B

BiHex used by the PTAGIS database

384.349EA72A0B

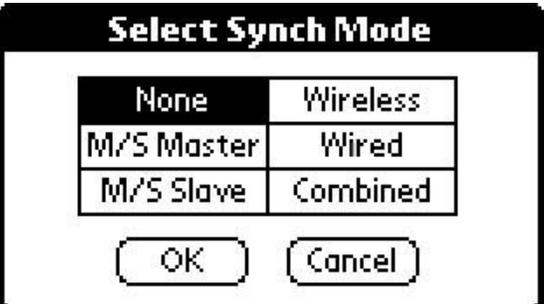


# Beep mode

Beep mode 1 makes a sound for every detection. Beep mode 2 makes a long beep at the start of each new tag detected to indicate that it is a different one. This is useful when moving an antenna across an area to locate tags.

# Reader synchronization settings

There are six synchronization mode settings. Only enable them when necessary.



Mode	Description
None	Reader synchronization disabled
Wireless	The reader will adjust its timing to match the transmit pulse heard from another reader.
Wired	A cable is used to transmit the synch pulse.
Combined	Both wired and wireless are enabled.
M/S Master	The reader generates a pulse over a cable to control others.
M/S Slave	The reader will transmit when it receives a pulse from a master over the synch cable.

# Wireless synchronization

Wireless mode is useful with a mobile reader when it passes near fixed ones. When multiple readers use this mode however, too many can delay and constantly be out of timing.

Extensive instructions for how to setup and configure the various synchronization modes are available from Oregon RFID technical support.

## Wired synchronization types

With Wired or Wireless synchronization, each reader listens for transmit pulses from other readers after it reads a tag ID. If a pulse is detected, the reader delays a short time to try to get in step with the other reader.

With Master/Slave, one reader is configured as the master and it sends out a pulse to the slaves. Slaves will not transmit without the signal. When the master is turned off, the system will stop.

# Reset the reader to factory settings

Reset Datalogger Memory

Reset RFID Reader

The “Reset Datalogger Memory” button will erase the database and delete all stored records.

The “Reset RFID Reader” button sets the reader to factory settings:

Charge time 50 ms  
Listen time 50 ms  
Synch mode off  
Single antenna reader

# Archive

The datalogger stores all detection and event records in the PDA. The PDA can be used to transfer detection files that are uploaded from multiple readers in the field.

Every time an upload file is created in the PDA, the date and time of that batch is written to the upload history list.

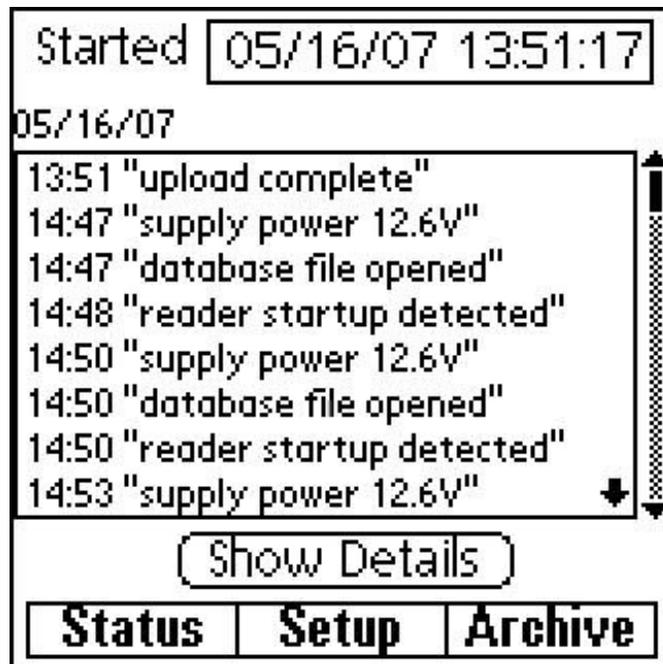
The starting date and time of a batch of upload records is displayed. It also includes the number of detection and event records in the batch.

Double tapping on a record will display the records in that upload.



# Detection records

An upload file consists of detection and event messages. The date and time of the start of the batch is in the upper corner.



Double tapping on one record in the archive will display the record detail.

Tap on the Archive field to return to the upload history list.

## Record detail

Two types of records are stored in the reader. Every tag detection generates a timestamped record with (information). Datalogger events are also stored which record when a parameter is changed or something notable has occurred (reader startup, auto-shutdown due to low power).

Initial detection		
2/21/2007 9:33:11.57		
Antenna	Duration	Type
1	0:00:00.00	W
Identifier		
0291 1220973608326776		
Count	Empty	
2	1	(Return)
<b>Status</b>	<b>Setup</b>	<b>Archive</b>

Event		
2/21/2007 9:26:49.99		
database file opened 13.8V		
0.0A		
<b>Status</b>	<b>Setup</b>	<b>Archive</b>

The detection record shows the time of initial detection to 0.01 second, the antenna number, the duration the tag was in the field, the type of tag (R for read, W for writeable), the 64 bit identifier in decimal or hex format, the count of consecutive readings and the number of empty scans before this detection. Tap on a field to return to the record list.

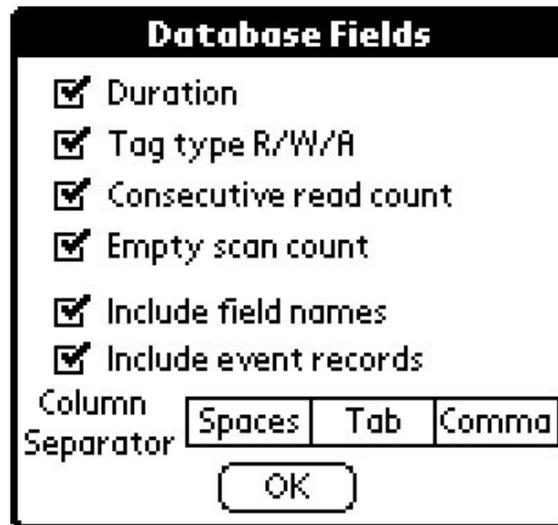
Tap on the Archive field to return to the upload history list.

## Define record format

The ASCII text file that is uploaded to the Palm's SD card will contain the tag ID and the date and time of detection. This dialog shows fields that can be included in the exported record.

The option "Include field names" will write one record at the start of the file with the name of each field. These will appear as column headings if the file is imported into a spreadsheet or word processor.

The datalogger stores both tag records and event records. The option "Include event records" causes the event records to be uploaded along with the tag records.



The data can be columnated with spaces, tabs or commas.

These settings determine the format of the record for uploading. The datalogger always records all values.

# Upload reader to PDA

Detection records are uploaded to the PDA by pressing the “Upload Reader to PDA” button.

A dialog with the suggested file name made from a site code (up to 3 chars), last digit of the year, the month and day.

The site code should be unique to each reader in order to keep the data sets separated.

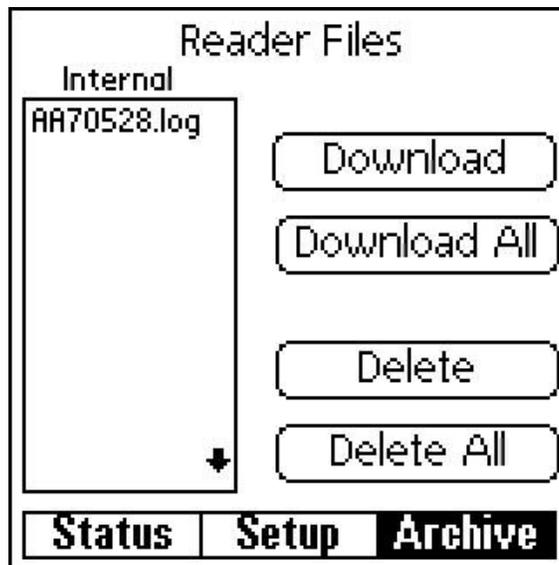


The site code can be edited in this dialog. Any changes are stored in the reader and will be used each time the reader is connected.

# Show PDA Files

Pressing the “Show PDA Files” button shows the uploaded files collected from readers. These files are stored on the SD memory card if the Palm has one. The card can be read by a PC to transfer them.

The Meazura PDA is sealed and has no removable memory card. The data can be transferred out the serial port and captured on a PC using Hyperterminal. Select a file and press “Download”.



# Capturing reader files sent over the serial port

The reader files stored in the PDA can be downloaded over the serial port to another computer. Hyperterminal can be used to capture the PDA output.



Select a destination and file name.



Press the Download button and when then the capture is complete, stop the capture file.

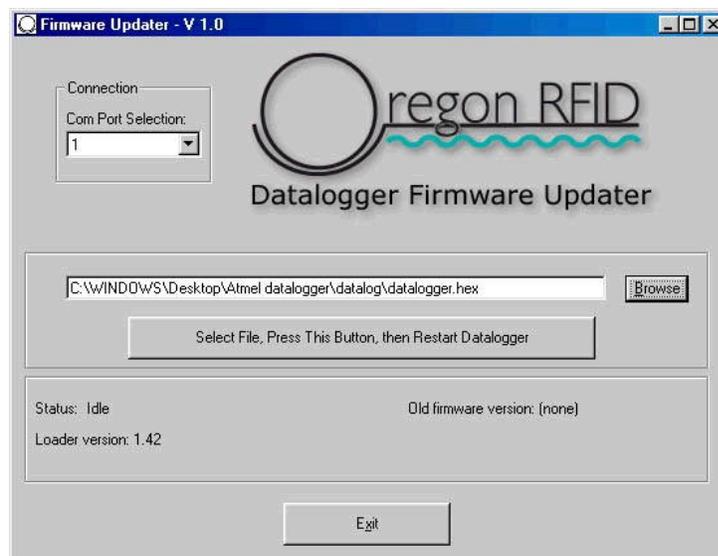


# Update datalogger firmware

The firmware in the datalogger uses a Firmware Updater program that runs under Windows. You only need to download and install that once.

The Firmware Updater accepts update files that are uploaded from the Oregon RFID web site.

<http://www.oregonrfid.com/software/>



- Download the latest update (.upd) file
- Connect the RFID reader to the PC or laptop serial port
- Start the Firmware Updater program
- Browse to find the update (.upd) file
- Start the Updater by pressing the button in the center
- Turn on the reader (if it's on already, turn it off, then on)
- The LEDs will flash in a repeating cycle
- Wait until the updater to complete

If the procedure is interrupted, it can be repeated from the start as often as needed.

