POWER TRACKER III™
MANUAL
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RFID READER WITH MEMORY

Manufactured under one or more of the following patents:

5,266,926 - 5,559,507

FCC ID: IOL-125-AV1018

The device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

WARNING: This equipment has been tested and found to comply with the limits for Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference in which case the user will be required to correct the interference at his own expense.

The user is cautioned that changes and modifications made to the equipment without approval of the manufacturer could void the user's authority to operate this equipment.

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AVID Power TracKer III RFID Reader
Operating Manual

1 Description

The AVID Power Tracker III Multi Mode Reader is a hand-held identity tag reader with memory and code mapping. It can be used with AVID and FECAVA coded radio frequency identification tags.

Figure 1. PowerTracKer III

1.1. POWER Switch

The *POWER Switch* is on the top right side of the reader and turns the unit ON and OFF. Press the *POWER Switch* once and the unit will turn ON. The LCD will display " AVID ID READY" and the reader will produce a beep. Press the *POWER Switch* again to turn the unit OFF. The LCD will go blank.

WHEN NOT IN USE, TURN THE READER OFF. **The reader sounds a "reminder" beep every 3 minutes when powered on and not in use.**

1.2. READ Switch

The *READ Switch* is located on the top left side of the reader and is used to scan for an ID tag. Press and hold the *READ Switch* to seek an ID tag. The LCD will display "**LOOKING**". When the Reader locates and reads an ID tag, it will display the ID tag number, sound two high-pitched beeps and flash the LED up to five seconds, or until you release the *READ Switch*.

After releasing the *READ Switch* the LCD will continue to display the found ID tag number. If the READ Switch is released before the Reader reads an ID tag, it will sound a low-pitched tone, and the LCD will display "**No ID Found**".

As soon as an ID is found and the number is displayed on the LCD, the reader stops looking for ID tags. The *READ Switch* must be released and pressed again if another ID tag is to be read.

1.3. LCD Display

The *LCD* is located on the top center of the reader. It displays reader functions and ID tag numbers.

1.4. MENU Keypad

The *Menu Keypad* is located on the top of the reader around the LCD.

The keypad consists of three parts: the **LEFT (←)**, **RIGHT (→)** and **SELECT** keys.

Pressing any of the keys will bring up the menu.

The **RIGHT** arrow → is used to advance to the **NEXT** menu item.

The **LEFT** arrow ← is used to recall the **PREVIOUS** menu item.

The **SELECT** key is used to select the function displayed on the LCD.

1.5. BATTERY Compartment

The *BATTERY Compartment* is located on the back of the reader. When you do not intend to use the reader for an extended period, remove the battery and store the reader and battery in a dry location protected from sunlight, high heat and humidity.

Figure 2. Battery Compartment

To open, rotate the battery cap counterclockwise. To close, rotate the battery cap clockwise.

The positive end of the battery has a raised button on it. Make sure the positive end of the battery goes in first. The spring contact on the battery compartment cap should press firmly against the flat end of the battery.

WARNING! MAKE SURE THE BATTERY IS INSERTED IN THE PROPER DIRECTION. INCORRECT POLARITY CAN DESTROY THE BATTERY AND READER. USE ONLY THE AVID SUPPLIED 8.4V NiMH RECHARGEABLE BATTERY. DISPOSE OF BATTERY WITH EXTREME CARE AND IN ACCORDANCE WITH LOCAL REGULATIONS. BATTERY MAY EXPLODE IF DISPOSED OF IN FIRE OR WATER.

1.6. READ Antenna

The *Reader Antenna* is located on the bottom of the reader and is the interface between the reader and the ID tag. The *Reader Antenna* emits a low frequency electromagnetic signal to activate the ID tag.

1.7. BATTERY Charger

The Power Tracker III comes equipped with an AVID 8.4V NiMH battery and charger. The charger will charge the AVID NiMH battery in 14 to 16 hours. It is recommended that each new battery be fully charged before using the reader.

To charge an AVID NiMH battery, inspect the charger to insure that no foreign materials are in the charging well or on the charging contacts. Connect the transformer to the charger and plug it in. Place the battery, positive anode end first (see Figure 3 below), into the top of the charger. The LED will light up RED indicating that the charger is on and working. After approximately 14 -16 hours, the LED will change from RED to a GREEN pulsing light indicating that the battery is now fully charged and reasy for use.

Caution: *Do not use around water. Do not allow the charger to get wet. Keep the charger on a clean, dry area and insure that dirt, dust, and foreign objects are kept out of the hole and off the charging contacts. Do not try charging any other battery except the AVID supplied NiMH battery.*

Figure 3. NiMH Battery Charger

1.8. PC Interface / AC Power Adapter Cable

The connector is a standard DB-9 and provides a pigtail for an external power connection as well as a PC connection to the reader. It can only be used with an AVID AC Power Adapter (AVID4004). See Figure 4

The AVID Interface/Power cable is 6 feet in length. You may add additional cable to the PC side by using a standard DB-9 male-female extension cable if a longer length is required.

1.9. Specifications

Operating Frequency:	125 kHz
Baud Rate	9600 bits per second
Hardware handshaking	None
Software handshaking	XON/XOFF
Serial format	No parity bit, 8 data bits, 1 stop bit
Battery:	AVID 8.4V NiMH rechargeable battery only
Battery Life:	Approximately 3,000 reads per charge, assuming 2 seconds per read operation
FCC Information:	FCC ID: IOL-125-AV1018
AC Power Adapter:	**Input:** 100-240VAC, 50-60Hz
	Output: 8.4VDC @ 500ma.
Display	16 character LCD
Operating Temperature:	0° to 50°C (32° to 122°F)
Storage Temperature:	-20° to 65°C (-4° to 149°F)

2. Standalone Operation of the Reader

2.1. Software Revision Numbers

The Power Tracker III does not report the Reader board software revision number, instead it reports the Memory/Translation module software revision number.

To display the revision number of the Memory/Translator module, press all three of the Menu Keys (RIGHT arrow →, LEFT arrow ←and SELECT key) at the same time. The LCD will display the software name (datasavr.c) and revision number.

2.2. How To Read an ID Tag

To read an ID tag with the AVID Power Tracker III, position the reader directly on the subject with the READ Switch depressed. Search for the ID tag using slow circular motions while following the Scanning Pattern shown in Figure 5. Scan slowly, moving the Reader in a circular pattern toward the head, starting from the middle of the back.

When the reader locates an ID tag, it will display the number on the LCD, sound the beeper, flash the green LED, and send the information out on the serial port.
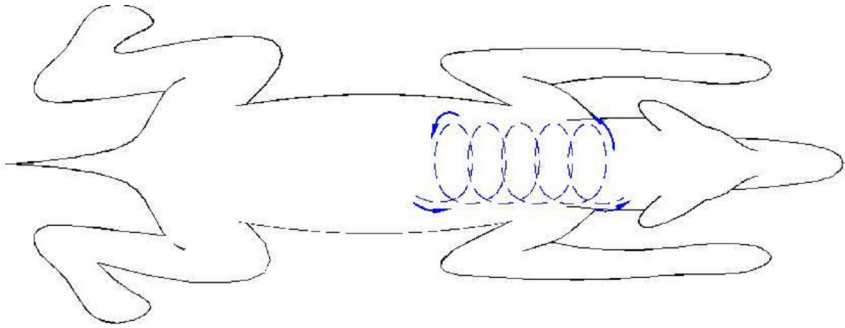
Figure 5. Scanning Technique

The orientation of the reader antenna to the ID tag affects the range and ability to read. For the best reading performance, a circular motion is recommended.

2.3. Interference From RF Sources And Metal Objects

The AVID Power Tracker III Reader senses variations in electromagnetic fields in order to read ID signals from the ID tags. Computer terminals and video screens produce interference and nearby metal objects can reduce the strength of the read field.

If you are experiencing a decrease in reading distance, it may be that the Reader is being affected by electromagnetic interference or nearby metal objects. Try changing locations.

3. Memory and Translation Module

The Power Tracker III will read AVID and FECAVA coded ID tags. The memory and translation module may be used in either of two modes: Data Saver or Lookup.

3.1. DataSaver Mode

When operating in DataSaver mode, the reader can log up to 2000 tag ID numbers with the date and time they were read to the reader's internal memory and it also outputs the tag number to the serial port. The output from the serial port is selectable as to whether it includes a date & timestamp.

 The reader **cannot** translate tags while being used as a data logger.

3.2. Lookup Mode

When operating in Lookup mode, the reader tries to find the tag ID number in one of 32 lookup tables, called "Studies". If the reader finds an entry for the tag in one of the studies, it translates the tag ID number to a study number, which it displays and outputs. If it cannot find the tag, it displays and outputs the tag number in its native format. For example, AVID*123*456*789 can be displayed as BARN123 -0000001. The reader is capable of storing 2,000 ID tag numbers and their respective translations. The format of the study numbers is **XXXXXXXX-nnnnnnn**, where **XXXXXXXX** can be any string of eight characters (including spaces), and **nnnnnnn** is a number from 0-65535, zero-padded to seven digits. Numbers within a study need not be sequential. A Study Name may not start with a space character.

When the reader is in the Learn Mode, a tag which is not in one of the studies is added to the end of the study the reader is "Learning" and the tag's newly assigned study number will be displayed.

In Lookup mode, the memory is being used to store the Study information, so there is nowhere to store a timestamp. However, it can append a timestamp to the number that is output from the serial port at the time the tag is read.

3.3. Menu

The menu is used to operate the less-frequently-used features.

3.3.1. Keypad Lock

The reader has a feature called "Keypad Lock". This allows the keypad access to be limited, so that a user in the field cannot access all of the menu functions.

With Keypad Lock engaged, only the menu items SHOW MEMORY, READER ID, and QUIT will be available.

Use the **k** and **K** serial commands to enable and disable Keypad Lock

3.3.2. Menu Items

The arrow keys can be used to scroll through the following functions.

Show Memory

This shows how many more tags may be stored. A newly initialized reader will store 2000 tags.

Press SELECT, and it will display" Remaining ####", where #### is the four-digit number of records remaining, until you release the button.

Reader ID

Each reader can be given an ID number, which appears in the header of information downloaded to a computer. This is useful in environments where more than one reader is being used. Since the Reader ID can be set via the serial port, it is not guaranteed to be unique. The number set at the factory is the reader's serial number.

Press SELECT, and the reader ID number will be displayed until you release the button.

Timestamp Mode

This option lets you choose whether a timestamp is appended to the ID number sent out the serial port when it's read.

Press SELECT and the display will show either "Output Timestamp" or "No Timestamp". Press the arrow keys to change what it's displaying. When it's displaying what you want to do, press the SELECT key.

Set Time

This allows you to set the time on the clock that generates the timestamp.

Press SELECT, and the display will show "SET HOUR HH: mm", where HH and mm represent the hours and minutes of the current time.

The arrow keys increment and decrement the hour value. Use the arrow keys to set the hours, then press SELECT.

The display will show "SET MIN HH: mm", where HH and mm represent the hours and minutes of the current time.

Use the arrow keys to increment and decrement the minutes value. When the minutes are what you want, press SELECT.

Set Date

This allows you to set the date on the clock that generates the timestamp.

Press SELECT, and the display will show "Set Day DD/MM/YY", where DD represents the day of the month, MM represents the month of the year, and YY represents the last two digits of the year.

Use the arrow keys to change the day, then press SELECT.
The display will show "Set Mon DD/MM/YY".
Use the arrow keys to set the correct month, then press SELECT.
The display will show "Set Yr DD/MM/YY".
Use the arrow keys to set the correct year, then press SELECT.

Download Memory

This function allows you to download the records stored in memory to a computer via the serial port.

Set up your computer with a serial link at 9600 baud, no parity, 8 data bits, 1 stop bit (often referred to as 9600, 8, N, 1), and get it ready to receive data. The Power Tracker uses the XON/XOFF protocol to avoid losing data.

Press SELECT to start the download. The display will change to "Downloading..." until you release the key, when it will return to the menu, downloading the memory in the background. Eventually it will display "#### Downloaded", where #### is the number of records downloaded. Don't forget to do whatever is necessary on your computer program to close the received file and store it.

If you try to start downloading while the Power Tracker is already downloading, the display will show "TX Busy" until you release the SELECT key.

Downloading does not destroy the stored data. If an error occurs while downloading, just wait until the download is complete and then try it again.

Init as Saver

This function initializes the PowerTracker III in the Data Saver mode, where tags read are stored with a date & timestamp. This initialization also clears the memory of any existing records and will cause you to lose your data, so it should be used very carefully.

Press SELECT to begin. Because initializing can cause you to lose data, the Power Tracker asks you to confirm that initializing is what you intended to do. The display will show "Confirm Init?" To confirm the initialization, press **BOTH** arrow keys at the same time. The Power Tracker will initialize the memory, losing any stored data. The display will show" Remaining ####", where #### is the number of records available. Pressing the SELECT key instead of both arrows will cause the display to show "Not Confirmed" and nothing will have happened to any saved data.

Init as Lookup

This function initializes the Power Tracker in the Lookup mode, where tags read are translated into a Study number. This initialization also clears the memory of any existing records and will cause you to lose your stored data, so it should be used very carefully.

Press SELECT to begin. the Power Tracker will ask you to confirm that initializing is what you intended to do. The display will show "Confirm Init?"

Pressing the SELECT key at this point will cause the display to show "Not Confirmed" and nothing will have happened to any saved data.

To confirm the initialization, press **BOTH** arrow keys at the same time. The Power Tracker will initialize the memory, losing any stored data. The display will show "Remaining: ####", where #### is the number of records available.

Learn Mode

The Learn Mode is only applicable in the Lookup Mode. It's an easy way to add new ID tags to a Study.

Press SELECT, and the display will show the name of one of the 32 studies that can be stored in the Power Tracker at any given time, or "Learn Mode Off".

To add tags to a study, use the arrow keys to move through the list of names until the study you want to add to is displayed. Press SELECT, and you'll be back in the menu. Now when you read a tag that has not previously been assigned to any study, it will be added to the end of the study you selected. The newly assigned study number will be displayed and output.

To stop adding tags to a study, press SELECT at the Learn Mode menu item, then use the arrow keys until the display shows "Learn Mode Off". Press SELECT.

Quit

The Quit command will change the display to "Ready", and the next time you press a key to enter the menu mode, you'll start at the top of the menu item list. The Power Tracker will always read tags when you press the read button, and will generally respond to commands from the serial port, unless Study data is being uploaded to the reader. It will not restart downloading if a download is already in progress.

4. Using the reader with computers

4.1. Serial Communications

Any communications program that allows you to upload a raw ASCII or text file to the reader can be used. Programs known to work include HyperTerm in Windows. Some adjustment of the settings may be required for optimum performance. If it is possible with the software that you're using, set both the inter-character pacing and the line pacing to one millisecond.

Set the serial interface at:

9600 baud, No Parity, 8 Data Bits, 1 Stop Bit, Handshaking: XON/XOFF (or None)

Figure 4.   AVID Interface/Power Cable (AVID4011)

Attach the Reader to your PC using the AVID PC Interface/AC Power adapter Cable (AVID4011, Figure 4).

All characters displayed on the LCD are also sent to the reader's serial port.

WARNING: USE ONLY THE AVID INTERFACE CABLE WITH THE POWER TRACKER III. USE ONLY THE AVID AC POWER ADAPTER (AVID4004).

THE USE OF ANY OTHER CABLE OR AC POWER ADAPTER COULD CAUSE PERMANENT DAMAGE TO THE READER.

4.2. Software Revision Numbers

To display the Memory/Translator card revision number, send the reader the **=** command. It will respond with five lines, identical to the header sent when downloading data, and documented in that section of the manual. The # Settings line will have the name of the memory card's software (datasavr.c) and revision number as the last two things on the line.

4.3. Prompts

Prompts are the strings such as " LOOKING" and " NO ID Found". If enabled, they will be sent over the serial port after the status is returned. The same information is available from the status, and whether or not an ID tag has been returned. Prompts begin with a space.

Use the **Q** and **q** serial commands to disable/enable prompts.

Use the **;** (semicolon) and **:** colon) commands to select termination of prompts by either CR/LF (DOS) or just LF (UNIX, PSION).

4.4. ID Tags and the Serial port

ID Tag information is always sent when read. The Quiet mode does *NOT* disable ID tag output.

4.5. Turning on Learn mode serially

If you send the reader l (lower case L) followed by eight characters of Study name followed by a line terminator, then the reader will Start learning that Study.

This lets you put the reader in Learn mode, and specify a name at the same time. The Study name must be exactly eight characters. If it is not eight characters, the Learn mode is disabled. If the Study name does not exactly match an existing Study name, then if there is a Study to which no tags are assigned, a new Study will be created.

4.6. Using HyperTerm with the reader

There is nothing in the reader that requires the use of HyperTerm, or of Windows. Most terminal programs offer some method of capturing received text to a file and of sending a text file over the serial port, and this is all that is required.

HyperTerm comes free with most Windows installations, so a large number of users already have it. There are, however, many different versions of HyperTerm that have shipped with various versions of Windows, and some of them may operate a little differently than described here.

These instructions were written using HyperTerm Private Edition 5.0. This program is available for free download from **http://www.hilgraeve.com/**

4.6.1. Configuring HyperTerm

You'll need to know to which serial port your reader is attached. On many desktop computers, COM1: (the first serial port) is used for the mouse and COM2: is

available. On many laptops, the mouse is on dedicated hardware and COM1: is available.

4.6.2. Using HyperTerm to Download or Upload the Memory Card

Downloading the Memory Contents

This assumes that you are running a correctly configured HyperTerm "connection", and that you already have some data saved in the reader. The saved data can be either Time-stamped reads of tags, or Lookup Tables.

Click on 'Transfer'. This will open a drop down menu.

Click on "Capture Text". This will open a file dialog where HyperTerm is asking you to name the file in which you want to save the text (your data). Enter that name (or browse around until you find the directory you want to use). When you click 'Start', HyperTerm will save characters that come in from the serial port to this file.

Press the **+** key. This is the command to send the data from the memory card to the computer. It is not specific to HyperTerm.

Another method is to move over to the reader, press 'SELECT', and scroll up or down until the reader shows 'Download Memory'. Press 'SELECT' again and when it's done, the reader will show the number downloaded.

When "**! EOF**" appears on the HyperTerm screen the memory download is done.

From HyperTerm, click again on 'Transfer'.

Click on 'Capture Text' and a menu with 'Stop' will appear.

Click on 'Stop'. All the text that appeared on the screen should now be saved to a text file named whatever you named it. You should edit it to remove the **+** at the beginning, if you started the download by sending the **+**.

Uploading to the Memory Card

Lookup Tables can be uploaded to the Memory Card. Time-stamped read information **cannot** be uploaded.

It is probably easiest to use Learn Mode to get the tag data for an entire Study, download the file of learned tags, edit the Study Name and number as desirable, then upload it again. You can generate Lookup Table information by hand, if you're very careful.

The format downloaded by the reader is suitable for uploading, except that if the text capture routine saved the **+** sent to start the data dump, the **+** should be deleted from the file. Otherwise, attempting to upload the file will start another download.

Assuming a properly edited file and that you're running a correctly configured HyperTerm connection:

Send the ^ upload command to the reader by pressing that key. The ^ (the caret) is located over the 6 on most keyboards.

Click on 'Transfer'. This will open a drop down menu.

Click on 'Send Text File'. This opens a file dialog. Find the file you want to send, or type the path and file name in the File name box. Click on "Open". HyperTerm will send the file to the reader, displaying it on the screen as it goes.

When the (**!**) (exclamation point) command shows up, the upload is complete. A line starting with (**!**) terminates the upload.

When uploading, if no match is found for the Study name, a new study of that name will be created, if there is a Study with no entries in the reader.

A line starting with **#** is considered to be a comment, and is ignored, thus a valid upload file is generated from a file dump. This allows you to add comments in the text file in which the study or studies are stored. Comment lines in the uploaded file are not stored in the reader. The 'Comment lines' generated by a download are just the current state of the reader.

Note that outside the **^** start upload and the (**!**) terminate upload command, the reader's receiving a **#** char will turn on the three-minute warning beep of the reader.

Upload Errors

If there are already 32 studies with entries, and an entry with a different Study Name is entered, the entry will be ignored, and an error message will be returned over the serial port

If a Study and number duplicate an existing Study and number, the entry will be ignored, and an error message will be returned over the serial port. This is true even if the entry uses the same tag number. i.e. attempting to load the same Study twice will cause many errors!

If a tag is already in use by a Study in the reader, the entry will be ignored, and an error message will be returned over the serial port.

If the tag text format is not recognized, the entry will be ignored, and an error message will be returned over the serial port.

Upload Non-Errors

The software for the memory card currently understands FDX A (FECAVA), FDX-B (ISO), AVID and TROVAN.

The Power TracKer III can read FDX A (FECAVA) and AVID tags. It is possible to upload a Lookup Table that contains a tag number of a type that the reader *cannot read*. This will **not** cause an error, but since it can't read that kind of tag, the number will never show up, either. This is another good reason for using Learn Mode to capture the Lookup Table when possible.

A Useful Trick

If you put the **^ (**start upload) command in the first line of the Lookup Table file, and leave the **!** terminate upload command at the end when you edit it, then you can upload that Lookup Table file just by sending it to the reader.

5. Serial Command Set

Commands are case-sensitive; that is, an uppercase **C** is a different command than a lowercase **c**. In general, uppercase commands turn features **on**, and lowercase commands turn them **off**.

In general, characters not on the following list will toggle the reader between Looking and stopped.

Nonvolatile in the description of a command means that the reader remembers this value even after being turned off.

5.1. Commands:

Q	Turns off prompt generation to serial port. Tag ID information is still sent. Also toggles between Looking and stopped when sent. Prompt generation is nonvolatile.
q	Turns on prompt generation to serial port. Also toggles between Looking and stopped when sent. Nonvolatile.
:	Prompts and tags are terminated by CR/LF. Also toggles between Looking and stopped when sent. Nonvolatile.
;	Prompts and tags are terminated by LF only (useful on PSION or UNIX). Also toggles between Looking and stopped when sent. Nonvolatile.
W	Write up to 16 characters to the LCD. More than 16 characters or a control character (such as CR) will terminate the command.
I	(upper case I) ISO numbers display as: **0999123456789012**
	The PowerTracker III does not read ISO tags.
=	Sends the reader's header information out the serial port. This lets you see the reader's current configuration. See Data formats for an explanation of the information.
+	Sends the reader's header information and the current stored tags out the serial port
-----	(five hyphens) Clears all current stored tags. Does not change the reader's initialization mode.
K	Allows all menu items to be accessed from reader keypad
k	Limits menu items on reader keypad to: Show Memory, Reader ID #, and Quit
L0	Initializes reader in DataSaver mode, clearing any stored entries
L1	Initializes reader in Lookup mode, clearing any stored entries
^	This puts the reader in accept upload mode. See **Using HyperTerm to Download or Upload the Memory Card**.
!	Terminates upload mode
U	Followed by up to nine digits of a reader ID number, sets the reader ID
D	Followed by 6 digits DDMMYY, where:
	DD = day of month MM = month of year YY = year
	Sets the date – does no checking – it's possible to set Feb 31, for example
T	followed by 6 digits HhMmSs, where:
	Hh = Hour of day, 0-24 Mm= Minute of hour, 0-59 Ss = Second of minute, 0-59
	Sets the time. Does no validity checking
l	(lowercase L) Turns off Learn mode (only in Lookup mode)

lnnnnnnnn   (lowercase L, only in Lookup mode)

> Starts learning Study **nnnnnnnn**, where **nnnnnnnn** is an 8-character Study name. The Study name must be exactly eight characters. If it is not eight characters, Learn mode is disabled. Non-volatile.

t0   Turns off time-stamping of serial output of reads

t1   Turns on time-stamping of serial output of reads

> The t0 and t1 commands affect the serial output that occurs when reading a tag. Non-volatile

Commands below this point, and characters not explicitly mentioned as commands, are not used by the memory/translation module, but are sent on to the reader card. They have the effect of toggling between Reading and Stopped. In addition, characters whose ASCII representation is an odd number will enable the 3-minute warning beep, and characters whose ASCII representation is an even number will disable the 3-minute warning beep.

$ 3 minute warning beep off -- separate from beep on/off. Also toggles between Looking and stopped when sent.

3 minute warning beep on -- separate from beep on/off. Also toggles between Looking and stopped when sent.

6. Data formats and data manipulation

There are only a few different types of data that come from the reader. They are combined in each mode to create the download formats.

Timestamp Format

Timestamps are used several places on downloads, and can be sent after each tag read in "real time" as well.

Timestamps start with an @ sign. The timestamp is organized as two digits each of year, month, day, hour, minute, second, hundredths of a second. Or, for short:

@YYMMDDHHmmsshh

Sorting on the timestamp will put the records in time order. Some software will not handle 14-digit integers without expressing it in exponential format. Sorting on the ASCII representation will also put it in time order.

It takes longer than a hundredth of a second to read a tag, and there is some overhead in formatting it for display, so the timestamp is not accurate to that precision. However, tags with later timestamps will always have been read after tags with earlier timestamps.

6.1. Header and Trailer Format

The downloads for Data Saver and Lookup mode both start with 5 "header" lines that look like this:

```
# Reader ID 9999999999@02122615423624
# Initialized as: Data Saver
# Settings:  q:#Kt1I0l        datasavr.c 1.XX
# Last cleared @02122611323648
# Current timestamp @02122611340199
```

They end with two "Trailer" lines that look like this:

```
# 5 Downloaded
!EOF
```

Reader ID

Reader ID is a number stored in the memory module. In a multiple reader project, it can be useful to know which reader took the data. The Reader ID is time-stamped every time the Reader ID is written.

By default, the Reader ID is set to the reader's serial number when it leaves the factory.

The # Reader ID should be followed by up to a nine digit number justified right in a ten-character space, followed by a timestamp. That is, the number of spaces to the right of the "# Reader ID" string will be 10-(the number of digits in the Reader ID number). Since the Reader ID number only goes to nine digits, there will always be at least one space.

Example:

```
# Reader ID         1@01010112010100
```

In this example there are nine spaces before the Reader ID of 1, which was stored in the computer on Jan 1, 2001, at 12:01:01 PM, and zero hundredths.

Initialized as:

Initialized as: should be followed by a space and either "Data Saver" or "Lookup"

Settings:

"Settings:" is a line of commands that, when sent to the memory card, would result in its current configuration.

The memory card firmware and version number follows that information.

Although the # Settings line includes the ISO FDX-B tag output status, the Power TracKer III does not read ISO FDX-B tags.

There should be a space after "# Settings" followed by:

Q or **q**	for Quiet mode or not in quiet mode
; or **:**	(semicolon or colon) for LF only or CR/LF line end
# or **$**	for 3-minute warning beep or no warning beep
K or **k**	for reader Keys enabled or reader keys disabled
t1 or **t0**	for timestamping of output enabled or not enabled
l	(lower case L) followed by either the 8 character Study Name the

reader is learning (if in Learn mode), or eight spaces (if not in Learn mode)
The remainder of the line is the firmware and revision number.

Last cleared

The "Last cleared" line gives you the timestamp when the reader was last cleared. This can be from either clearing or initializing the reader. No Data Saver mode data should be any older than this if the reader's timestamp hasn't been changed.

Current timestamp

The "Current timestamp" line has the timestamp at the time the data was downloaded. No Data Saver mode data should be any newer than this if the reader's timestamp hasn't been changed.

(Number) Downloaded

The "Downloaded" line gives the number of tag records that it downloaded. This does not count any of the lines in either the Header or Trailer. This is just the number of tag records.

The "downloaded" line allows you to verify that you received all the data the reader sent, but that's just a convenience for the user writing custom software.

> *!EOF*

The **!EOF** line is there so that downloaded Lookup mode records can be uploaded without much editing on the part of the user, though it, too, could be used by custom software.

6.2. Data Saver Download Format

When in Data Saver mode, the format of the output from the reader looks like this:

```
# Reader ID 9999999999@02122615423624
# Initialized as: Data Saver
# Settings:  q:#Kt1I0l        datasavr.c 1.XX
# Last cleared @02122611323648
# Current timestamp @02122611340199
131629152A@02122611332309
AVID*123*456*789@02122611332371
131629152A@02122611332434
131629152A@02122611332505
131629152A@02122611332580
# 5 Downloaded
! EOF
```

Data Saver mode data line organization is simple. It's just the tag number, followed by the @ sign and the timestamp. Note that tag numbers can be different lengths.

6.3. Lookup Mode Download Format

When in Lookup mode, the format of the output from the reader looks like this:

```
# Reader ID        1 @02122615423624
# Initialized as: Lookup
# Settings:  q:#Kt1I0lTstStudy datasavr.c 1.XXC
# Last cleared @02122615430625
# Current timestamp @02122615451303
TstStudy-0000001,AVID*123*456*789
TstStudy-0000002,131629153A
TstStudy-0000003,131629154A
TstStudy-0000004,131629155A
TstStudy-0000005,131629156A
# 5 Downloaded
!EOF
```

You'll notice the Lookup mode data line format is more complex than the Data Saver mode. It is:

> Eight characters of Study name
> A hyphen
> Seven digits of Study Number
> A comma
> Up to 16 digits of tag number (though there may be fewer)

Treat it as a "comma delimited" file. If the Study name and Study number get separated during manipulation of the data, and there's more than one study, there may be no way to associate them again.

Study Names can have spaces in them, but they may **not** begin with a space. A computer sees a difference between (space) Study (space) space) -0000001 and Study (space) (space) (space) -0000001, but a casual reader might find this confusing.

AVID uses a convention in the serial output of its readers that prompts always start with a space, and tag numbers don't. This allows simple-minded software to separate prompt messages from tags. Allowing spaces at the beginning of a Study Name would spoil this convention.

6.4. Data Manipulation

Text Editors

Since it's ASCII, almost any text editor can be used on the file. In Windows systems, WordPad is probably preferable to Microsoft Word.   You can use search and replace to rename Studies. Make sure they stay eight characters long

Spreadsheets

Microsoft Excel and most other spreadsheets have provisions for importing text files. In Excel, when you open the text file, Excel brings up a "wizard", which walks you through the process.
Both the Data Saver download and Lookup download formats should be treated as "delimited formats".

In Data Saver mode, the delimiter is the @ sign at the beginning of the timestamp.

In Lookup mode, the delimiter is the comma separating the Study number from the tag number. It is possible in Excel to add the hyphen as a delimiter, splitting the Study Name from the Study Number so that it appears in its own column.
However, if the Study Number is somehow separated from the Study Name during the manipulation of the data, there isn't any way to get them associated again.

Databases

Databases, like spreadsheets, also generally have methods available for importing text files.

7. Warranty and Service

The AVID Power TracKer III Multi Mode Reader is warranted against defects in material and workmanship, under normal use and service, for a period of 1 year from the date of shipment from AVID. This warranty will not apply if repairs, parts or adjustments are required due to accident, neglect, damage during transportation, or causes other than ordinary use. AVID's sole responsibility under this warranty shall be, at AVID's option, to either repair or replace any product, which fails during the warranty period. In no event shall AVID be liable for any indirect or consequential damages or loss of profits.

7.1. Return Material Authorization

A Return Material Authorization (RMA) number must be issued before a unit is returned to AVID for service. Contact AVID for a RMA number or other service questions. (951) 371-7505.