

Power Tracker VIII™

Manual

©AVID

Multi Mode Reader With Memory

Manufactured under one or more of the following U.S. Patents:

4,333,072 5,214,409 5,235,326 5,257,011 321,069 5,266,926
318,658

5,465,556 5,484,403 5,499,017 4,262,632 5,559,507

Other Patents Pending, U.S. and International

FCC ID: IOL-128-AV1004

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 TrackKer VIII Multi Mode Reader OPERATING MANUAL

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1. Introduction

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

2. Functional Description

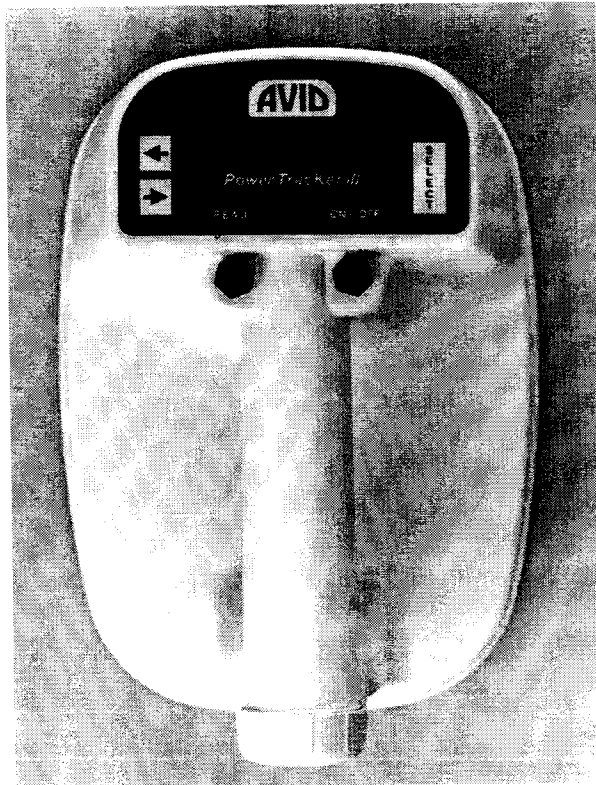


Figure 1. Power TrackKer VIII

2.1 POWER Switch

The *POWER Switch* is located 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 will sound a "reminder" beep every 3 minutes when powered on and not in use.

2.2 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 down 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 and sound two high-pitched beeps. The LED will flash continuously for up to 5 seconds, or until you release the *READ Switch*.

When you release the *READ Switch* the LCD will continue to display the found ID tag number. If the reader has not located an ID tag, it will sound a low-pitched single beep, and the LCD will display "NO ID FOUND".

As soon as an ID tag number is found and displayed on the LCD, the reader stops looking for another ID tag. The *READ Switch* must be pressed each time a new ID tag is to be read.

2.3 LCD Display

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

The *LCD* displays the following messages:

"AVID ID READY"	Displays when reader is first turned ON and battery is OK.
"LOOKING"	Displays when seeking an ID tag.
"NO ID FOUND"	Displays after termination of "LOOKING" when no valid ID tag is read.
"LOW BATTERY"	Displays when low battery is sensed, either when the unit is switched ON or instead of "LOOKING" when the READ Switch is depressed.
AVID*123*456*789	Sample display for a valid AVID ID tag.

2.4 MEMORY Keypad

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

The keypad consists of 3 parts: the **LEFT** (←), **RIGHT** (→) and **SELECT** keys. The **RIGHT** arrow → brings up the first keypad function menu and then is used to advance to the **NEXT** menu item. The **LEFT** arrow ← is used to recall the **PREVIOUS** menu item. The **SELECT** keypad is used to select the function displayed on the LCD.

2.5 MEMORY and TRANSLATION Module

2.5.1 MODES OF OPERATION

The Power Tracker 8 may be used in either of two modes:

DataSaver Mode

When operating as a data saver, the reader simply logs the tag id number and a timestamp. The output from the serial port is selectable as to whether it includes a timestamp.

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.

If the reader is Learning new tags (Learn Mode), then a tag which is not in one of the studies is added to the end of the study the reader is "Learning". 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, the reader still knows the time and date, and can be made to append a timestamp to the number that is output from the serial port.

2.5.2 Menu

Most of the time, the reader is used simply as a reader. Push the read button and the reader will try to read a tag. The menu is used for the less-frequently accessed features.

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 may be given a unique 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.

Press SELECT, and it will display the ID until you release the button.

ISO NUMBER STYLE

This allows you to choose which format the reader displays and outputs. ISO standards 11784 and 11785 do not define a standard display format. We at AVID like to separate the country/manufacture code from the ID number so it's a little easier to read.

A sample animal tag in this format looks like: 999.123456789012

A sample non-animal tag looks like: 999*123456789012

Some applications need to keep the whole ID numeric.

A sample animal tag looks like: 0999123456789012

A sample non-animal tag looks like: 1999123456789012

Press SELECT and the display will show you a sample animal tag the way the reader is currently displaying ISO tags. Press the arrow keys to change the way it displays. When it's displaying the way you want, press the SELECT key.

TIMESTAMP MODE

In Data Saver mode, the reader ALWAYS saves a timestamp. In Lookup mode, it CAN'T save a timestamp. However, in both modes, the reader puts the id number of the tag read out the serial port.

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 real-time 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 make the hours whatever you like, 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 real-time 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 value to the correct value, 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.

This seems as appropriate a time as any to talk about "Y2K compliance". The realtime clock chip used in this product only uses two digits, so it is not Y2K compliant. It is, however, Y2K compatible, in the sense that it will generate the correct date, including leap years, up through 2099. If you're reading this in 2100, 2200, or 2300, you're going to get a leap year that wasn't scheduled, so mark March 1 on your calendar. And have you considered getting some new equipment?

The real-time clock is only used for generating a time-stamp on saved data. The reader doesn't compute intervals or make decisions based on the time or date, it simply outputs the current time along with the tag id.

However, any software used to operate on the downloaded data is going to have to take the fact that the reader only supplies two digits of the year into account if it computes intervals or makes decisions based on the date in the timestamp.

DOWNLOAD MEMORY

This function allows you to download the records stored in memory to a computer via the serial port. It is also possible to do this (and it may even be easier to do this) using commands over 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 XON/XOFF protocol to avoid losing data, but some computers may be fast enough to accept the whole download without losing characters even without a protocol.

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 the attempt gets fouled up somehow, just wait til it's finished and try again. You can download the data as many times as you have the patience for.

INIT AS SAVER

This has two functions: One is to initialize the Power Tracker in Data Saver mode, where tags read are stored with a timestamp. The other is to clear memory of existing records. Because it can cause you to lose data, 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 really what you want to do. The display will show "Confirm Init?". Pressing the SELECT key at this point will cause the display to show "Not Confirmed" until the key is released, when the display will show the menu item. Nothing will have happened to any saved data.

To confirm the init, press BOTH arrow keys at the same time. (It doesn't matter if one gets pressed before the other, but they must BOTH be held down at the same time to initialize the Power Tracker)

The Power Tracker will initialize the memory, losing any stored data.

The display will show "Remaining: ####", where #### is the number of records available, until all buttons are released.

INIT AS LOOKUP

This has two functions: One is to initialize the Power Tracker in Lookup mode, where tags read are translated into a Study number. The other is to clear memory of existing records. Because it can cause you to lose data, 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 really what you want to do. The display will show "Confirm Init?". Pressing the SELECT key at this point will cause the display to show "Not Confirmed" until the key is released, when the display will show the menu item. Nothing will have happened to any saved data.

To confirm the init, press BOTH arrow keys at the same time. (It doesn't matter if one gets pressed before the other, but they must BOTH be held down at the same time to initialize the Power Tracker)

The Power Tracker will initialize the memory, losing any stored data.

The display will show "Remaining: ####", where #### is the number of records available, until all buttons are released.

LEARN MODE

Learn Mode is only applicable to 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. Also, it will not restart downloading if a download is already in progress.

2.5.3 Communications

Any standard communications program that allows you to upload a raw ASCII or text file to the reader may be used. Programs known to work include: ProComm, Windows 3.x, Term, Windows 95, HyperTerm. Some adjustment of the settings may be required for optimum performance. It is recommended to set the inter-character pacing to 2 milliseconds and the line pacing to 0.

Set your terminal to the following RS-232 specification:

baud rate:	9600
parity:	None
data bits:	8
stop bits:	1
handshake:	None

2.6 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 of time, remove the battery and store the reader and battery in a dry location protected from sunlight, high heat and humidity.

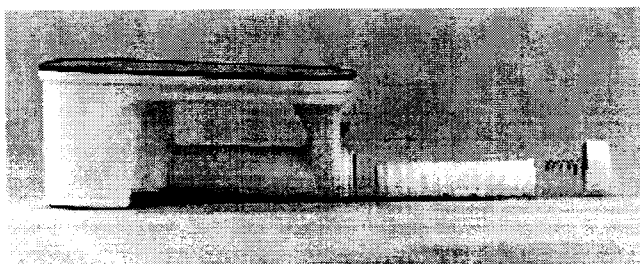


Figure 2. Battery Compartment

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

WARNING: MAKE SURE THE BATTERY IS INSERTED IN THE PROPER DIRECTION. (Figure 2.) INCORRECT POSITION CAN DESTROY THE BATTERY AND READER. USE ONLY AVID APPROVED NICAD RECHARGEABLE BATTERY. DISPOSE OF BATTERY WITH EXTREME CARE

AND IN ACCORDANCE WITH LOCAL REGULATIONS. BATTERY MAY EXPLODE IF DISPOSED OF IN FIRE OR WATER.

2.7 BATTERY Charger

The Power Tracker VIII comes equipped with an AVID Nicad battery charger. The charger will charge the AVID Nicad battery in 14 to 16 hours. It is recommended that each new battery be fully charged.

To charge an AVID Nicad battery, inspect the charger to insure that no foreign materials are in the charging area or on the charging contacts. Connect the transformer to the charger and plug in. The green light on the charger will begin to pulse. Place the battery, positive anode end first (Figure 3), into the top of the charger. The light will change to a solid green. After approximately 2 hours, the green light will begin to pulse again. This indicates that the charger is operating normally, it does not mean the battery is fully charged. The battery will need to be charged an additional 12 to 14 hours.

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 of the charging contacts. Do not try charging any other battery except the AVID supplied Nicad battery.

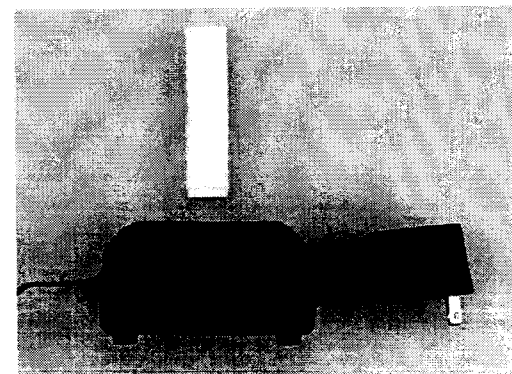


Figure 3. Nicad Battery Charger

2.8 PC Interface / AC Power Adapter Cable

The connector is a standard DB-9 and provides 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). To use a DB-25 connector, use a commercially available DB-9

to DB-25 adapter.

The AVID Interface/Power cable is 4 feet in length. You may add additional cable to the PC side by using the following connection chart:

TABLE 1.
RS-232 Serial Cable Pin Assignment

<u>Signal</u>	<u>DB-9 Pin #</u>
AC ADAPT	1
TXD1	2
RXD1	3
GND	5
DSR	6
GND (PW)	9

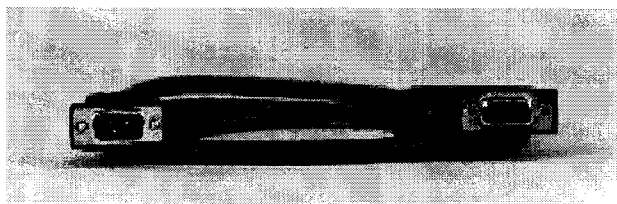


Figure 4. AVID Interface/Power Cable (AVID4011)

WARNING:USE ONLY THE AVID INTERFACE CABLE WITH THE POWER TRACKER VIII. 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.

2.9 READ Antenna

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

3. Normal Operations

3.1 How To Read an ID Tag

To read an ID tag with the AVID Power TrackKer VIII Reader, position the reader directly on the subject with the READ Switch depressed and search for the ID tag with slow circular motions shown in Scan Pattern 1 and 2. Scan slowly, keep the reader touching the subject during the entire procedure. Move the reader in small

circular motions (approximately 2-inch circles) as you follow the scan patterns. When the reader locates an ID tag, it will display the number on the LCD, sound the beeper and flash the green LED.

Scan Pattern 1

Scan Pattern 2

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.

3.2 Interference From RF Sources And Metal Objects

The AVID Power TrackKer VIII Reader senses variations in electromagnetic fields in order to read ID signals from the ID tags. Computer terminals, video screens and metal can reduce the read range of the reader.

If you are experiencing a decrease in reading distance, the reader is probably being affected by electromagnetic interference. Try moving locations.

4. Use With Computers

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

Open the PC's serial port using the PC interface parameters as described in section 2.5.4. Read the input as text lines (line sequential input). All characters displayed on the LCD are also sent to the reader's serial port, through the RS-232 cable to a PC or printer.

5. Specifications

Operating Frequency:	128 kHz
Battery:	AVID Nicad rechargeable batteries
Battery Life:	Approximately 3,000 read operations per recharge, assuming 2 seconds per read operation
FCC Information:	FCC ID: IOL-128-AV1004
AC Power Adapter:	Input: 110 volts, 60Hz or 220 volts, 50Hz Output: 8.4VDC @ 500ma. Interface cable required: AV4011
Display:	16 character LCD
Operating Temperature:	0° to 50°C (32° to 122°F)
Storage Temperature:	-20° to 65°C (-4° to 149°F)

6. Warranty and Service

The AVID Power TrackKer VIII 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.

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. (909) 371-7505.