



Wand Reader-B

User's Manual

Congratulations on the purchase of your new **Avid Wand Reader-B** with **Bluetooth®** low energy technology. This reader is capable of reading **Avid** RFID microchips, as well as many other brands of RFID microchips using the **FECAVA**, **Trovan**, and **ISO** (FDX-B) protocols. It can also send microchip ID numbers to your tablet, smart phone or computer with Bluetooth low energy support.

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1 Getting to Know your Wand Reader-B

1.1 Reader and Antenna Wand

Your Wand Reader-B consists of two main parts, connected together by a cable. The rectangular plastic housing contains the display, battery, and all of the reader electronics, while the black wand contains the antenna which reads the microchips. The antenna is in the loop at the end of the wand handle.

The antenna, handle and green push button are waterproof and can be completely immersed underwater as long as the rectangular reader housing itself is kept out of the water. If you need to use the Wand Reader-B in conditions where the main reader housing may get splashed, then it is recommended to protect the main reader housing with a plastic bag.

1.2 Battery Compartment

The reader is powered by one 9-volt battery. An alkaline battery is recommended for longer battery life. The battery is located in the battery compartment on the lower back side of the reader housing. To replace the battery, slide the cover straight off to access the battery compartment. After replacing the battery, slide the cover back to its original position, making sure the wires are securely inside the compartment.

1.3 Power Switch

The power switch is located on the main reader housing. Slide it to ON to turn on the reader. When the reader is turned on, it will beep and show its operating mode on the display. If the reader does not beep and display some text, then check the battery.

To turn the reader off, slide the switch back to the OFF position. If left on, the reader will beep several times after every three minutes of inactivity to remind you to turn it back off after use.

1.4 Display

The reader displays microchip ID numbers and status messages with the display on the front of its main housing. When you turn on the reader, it will briefly display:

AVID/FEC/TR/ISO

to indicate that it can read Avid, FECAVA, Trovan, and ISO (FDX-B) microchips. The display will then show the current Bluetooth interface mode, and will continue showing the current mode until you try to read a microchip. The mode display looks like:

AVID *NNNNN mode*

where *NNNNN* is a unique identifier for your reader, and *mode* is the current Bluetooth interface mode. Bluetooth modes will be covered in detail in section 3.2.

1.5 Read Buttons

The Wand Reader-B has two read buttons: a small black button marked READ on the rectangular housing, and a larger green button on the antenna wand. The green button on the wand is waterproof, but the black button on the main reader housing is not.

Pressing and holding either read button tells the reader to begin looking for a microchip. The display will show:

Looking

until a microchip is found or you release the read button.

When a microchip is found, the reader will beep twice with a high tone and show the number on the display. If you release the read button before the reader finds a microchip, the reader will beep once with a low tone the display will show:

No ID Found

2 Reading Microchips with your Wand Reader-B

The reader antenna is located in the round loop on the end of the wand handle. This provides communications between the microchip and the reader. While pressing down either read button, move the loop at the end of the antenna wand in a circular pattern while moving it toward the animal's head, starting from the middle of the animal's back:

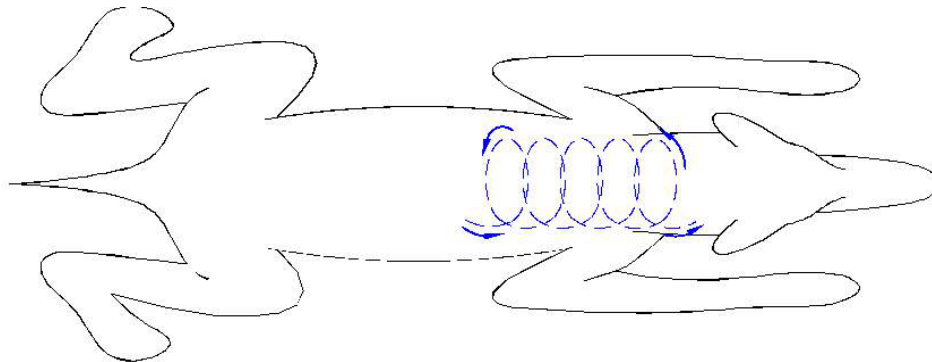


Figure 1: Search Pattern

The reason for this scanning pattern is that microchip orientation plays a major role in reading distances. In Figure 2, CHIP A, in a parallel orientation to the antenna loop, will achieve its maximum reading distance towards the center of the loop. CHIP B, in a perpendicular orientation to the loop antenna, will achieve its maximum read distance towards the outside edges of the loop. It is therefore recommended to move the antenna in a circular motion so that the loop antenna and the microchip will be optimally oriented at some point in the scanning pattern.

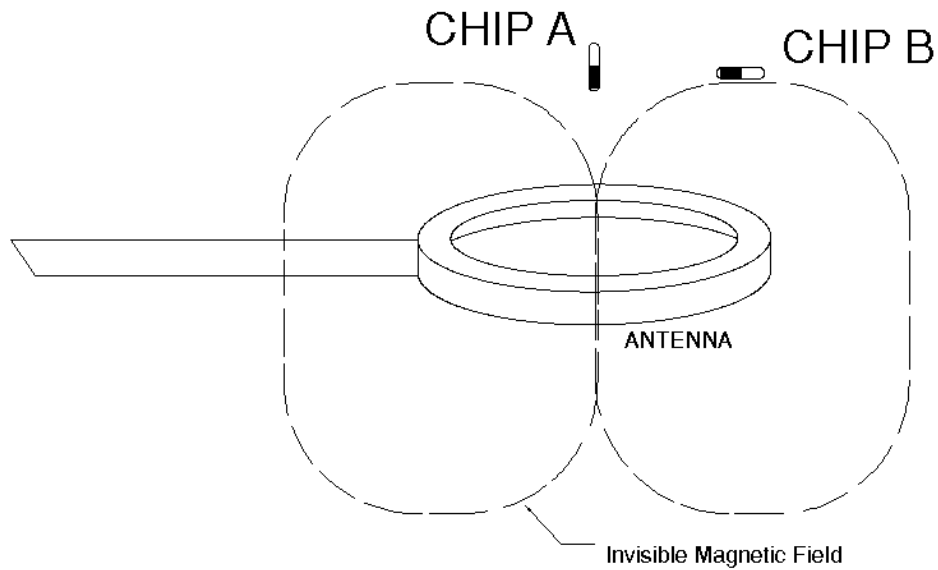


Figure 2: Microchip Orientation

The reader will continue scanning for a microchip until either it finds one, or you release the read button. Once the reader finds a microchip, it will beep twice with a high tone and show the microchip ID number on its display. The display format will vary, depending on what type of tag was read. Here are some examples of what different tag types will look like on the display:

Microchip Type	ID Number Sample
Avid Protocol	AVID*123*456*789
ISO Protocol	977200000979956
FECAVA Protocol	22A2426F10
Trovan protocol	00-0132-824F

If you release the read button before the reader finds a microchip, then it will beep once with a low tone and show:

No ID Found

Metal objects (especially ferrous metals) absorb electromagnetic fields. Operating the reader antenna or placing the microchip too close to metal objects can severely limit the reading range of the reader. If you are experiencing reduced operating range, check for metal tabletops, doors, cage walls, etc. in close proximity (a few inches) to any part of the microchip and/or reader. Also, make sure that you are using a fresh battery, because using a weak battery will reduce microchip read range.

3 Bluetooth Low Energy Interface

Your reader can send each microchip ID number that it reads directly to a device with Bluetooth low energy support, such as a tablet, smart phone or computer. The reader will appear as a wireless keyboard to the device. No special software or driver is required on the paired device, as long as it has hardware and operating system support for a Bluetooth low energy wireless keyboard. The MiniTracker 3-B can be used with any software which can accept keyboard input, such as a spreadsheet, text editor, web browser, etc. Before the reader can talk to your device, you need to pair them to each other as described in section 3.4.

3.1 Change Cards

Your Wand Reader-B comes with two special cards which you use to configure its Bluetooth low energy interface. You read them with your reader just like any RFID microchip to change configuration settings. One is labeled **Mode Change Card**, and the other is labeled **Format Change Card**:



Figure 3: Mode Change Card

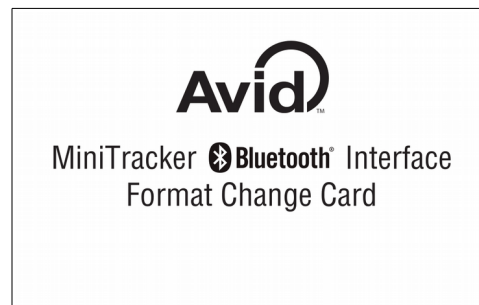


Figure 4: Format Change Card

Keep the two change cards away from the reader's antenna during normal use, so that they will not interfere with reading other microchips.

3.2 Mode Change Card

Each time you read the Mode Change Card with your Wand Reader-B, the reader will change its current Bluetooth interface mode and then show which mode it has just changed to on the display. The display will look like:

AVID *NNNNN mode*

where *NNNNN* is a unique identifier for your reader, and *mode* is the new Bluetooth interface mode.

The possible modes are:

Mode	Pairing Required?	Description
OFF	No	Bluetooth low energy interface is disabled.
PAIR	No	Allow the reader to pair with a new device. This mode times out in two minutes. When a new pairing is created, the reader automatically switches to the NONE mode after the timeout. If no new pairing is created, then the reader forgets its existing pairing and switches to the OFF mode.
NONE	Yes	Bluetooth low energy keyboard emulation mode with no trailing key after the microchip ID number.
ENTR	Yes	Bluetooth low energy keyboard emulation mode with ENTER key after the microchip ID number.
TAB	Yes	Bluetooth low energy keyboard emulation mode with TAB key after the microchip ID number.

The "pairing required" modes are only available if the reader has been paired with another device, as described in section 3.4.

3.3 Format Change Card

Each time you read the Format Change Card with your Wand Reader-B, the reader will change how it formats Avid protocol microchip ID numbers when they are sent over the Bluetooth low energy interface. Four formats are available:

Avid Microchip ID Number Format
AVID*123*456*789
123*456*789
A123456789
123456789

The default format is A123456789, but you can choose whichever format is convenient for use with your software. No matter which format you choose, Avid protocol microchip ID numbers will always be displayed in AVID*123*456*789 format on the reader's display, and the formatting of other types of microchip ID numbers will not be affected.

3.4 Pairing with your Device

Before you can use your Wand Reader-B with your tablet, smart phone, computer, or other device with Bluetooth low energy support, you need to pair them together. Start by reading the Mode Change Card until the reader is in PAIR mode. The display will look like:

AVID *NNNNN* PAIR

where *NNNNN* is a set of six characters that is unique to your reader.

Now, while the reader is in PAIR mode, set it up as a wireless keyboard on your device, following your device manufacturer's instructions. Your MiniTracker 3-B should appear as "AVID *NNNNN*" on your device, where *NNNNN* is the same unique sequence of numbers and/or letters that is displayed on the reader's display. Set up your device to treat the reader as a US English keyboard.

3.5 Using the Bluetooth Low Energy Interface

Once the reader is paired with your device and connected to it, put the device's cursor on its device screen where you want a microchip number typed in. Read a microchip with your reader and then the microchip number will appear on the paired device as though the number had been typed in from a US English keyboard.

Many devices will hide their on-screen keyboard when any wireless keyboard is connected. Just turn off your reader when you need to access the on-screen keyboard on one of these devices.

4 Display Messages

The reader's display can show many different status and mode messages in addition to microchip ID numbers. Here is a summary of the various messages which you might see while using your reader.

Message	Timeout	Description
Battery Low	None	The battery voltage is very low. Please turn off the reader power and remove the weak battery immediately to prevent battery leakage, and replace it with a fresh battery.
Connected <i>NNN</i>	3 sec.	The reader has successfully connected with a Bluetooth device in NONE, ENTR, or TAB modes. <i>NNN</i> is the connection state code.
Disconnect <i>NNNN</i>	3 sec.	The reader has disconnected from a Bluetooth device. <i>NNNN</i> is the disconnection code.
No ID Found	None	The reader did not find a microchip before the read button was released.
Pair again	3 sec.	The existing pairing data was invalid. The reader automatically returns to OFF mode. The user may initiate pairing again by switching to PAIR mode.
Pair failed <i>NNNN</i>	3 sec.	The Bluetooth device cannot connect to the reader. The failure code <i>NNNN</i> indicates the problem with the Bluetooth device, e.g. device has outdated pairing information.
Paired <i>NNN</i>	None	The reader has successfully paired with a Bluetooth device in PAIR mode. <i>NNN</i> is the pairing state code.
Pairing outdated	3 sec.	The reader rejected pairing request. The pairing information on the rejected device is outdated.
Pairing removed	3 sec.	The PAIR mode timed out after 2 minutes. The existing pairing information on the reader has been removed.
Ready to read	3 sec.	The reader can accept more tag reads for Bluetooth keyboard entries.
Wait for ready	3 sec.	The Bluetooth keyboard entry queue is full. Wait for the Ready to read message before scanning another tag. The reader will display Ready to read when it is ready to read and transfer another tag.

5 Specifications

Operating Frequency:	125 kHz
Operating Temperature Range:	32° to 122° F (0° to 50° C)
Storage Temperature Range:	4° to 158° F (-20° to 70° C)
Power:	One 9-volt alkaline battery
Display:	16 character monochrome, reflective liquid crystal display (LCD)
Indicators:	Audible beeps and LCD
Microchip Compatibility:	Avid (125 kHz), FECAVA (125 kHz), Trovan (128 kHz) and ISO FDX-B (134.2 kHz) protocol microchips, produced by multiple manufacturers
Reader Dimensions:	2.4"W (6.1cm) x 6.9"L (17.5cm) x 0.86"H (2.2cm)
Antenna Wand Dimensions:	21"L (53.3cm) , 4.0"I.D. (10.1cm), 5.0"O.D. (12.7cm)
Combined Weight:	1 lb. (453.5grams)
Avid Injectable Microchip Read Range:	6" (15.3cm) typical*
FECAVA Injectable Microchip Read Range:	6" (15.3cm) typical*
ISO (FDX-B) Injectable Microchip Read Range:	5" (12.7cm) typical*
Trovan Injectable Microchip Read Range:	4.5" (11.4cm) typical*
Environment:	Antenna wand loop, handle, switch, and cable are waterproof and may be immersed. Reader housing is not waterproof, and should not be exposed to water.

* Reading ranges were measured using 12mm implantable microchip transponders. Reading distances will vary depending on the orientation and the size of the microchip transponder.

6 Regulatory Information

FCC ID	IOL-125-AV1043-B
Contains FCC ID	QOQBLE113

This equipment has been tested and found to comply with the limits for a class B digital device pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of the manufacturer could void the users authority to operate the equipment.

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7 Warranty and Customer Service

The Wand Reader-B is warranted to be free of manufacturing defects for a period of one year from the date of purchase. Defective readers will be repaired or replaced at the discretion of Avid Identification Systems, Inc.

Please contact an Avid representative for a Return Merchandise Authorization (RMA) number, or if you have any questions about using your Wand Reader-B.

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