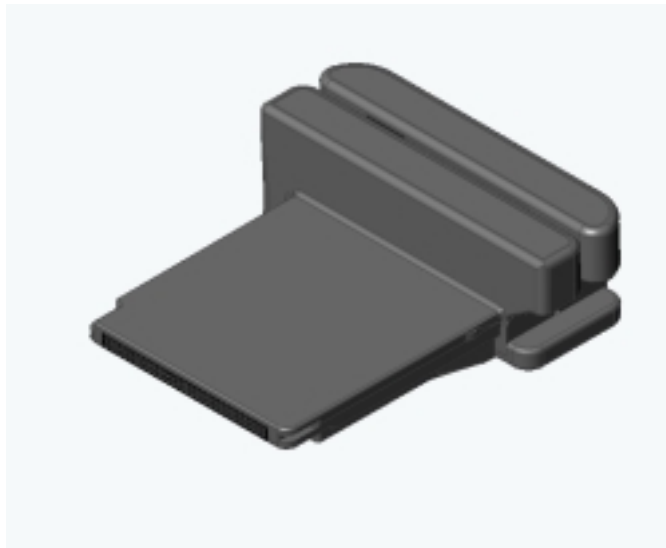

CardTool™ Quick Reference Guide

3-Track Magnetic Card Reader
with 2 Mbytes Flash Memory



Revision: 1.0
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INTRODUCTION

The TokenWorks™ CardTool™ inserts into the Springboard™ slot located on the backside of the Handspring™ Visor™.

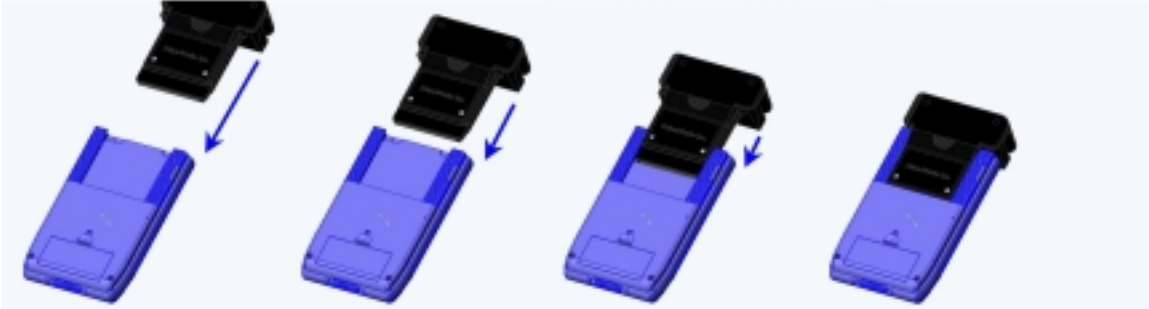
It is designed to read Magnetic stripe cards when inserted into the expansion slot of Visor Handspring handheld computer. The CardTool has a three-track head and supports numerous decoding algorithms including a raw data mode.

This document is a quick reference for the CardTool that ships with a sample demonstration application ('CardDemo') installed in the CardTool's internal memory. For more detailed information on writing custom applications, please consult the programmers documentation included in the system development kit.



Inserting the CardTool

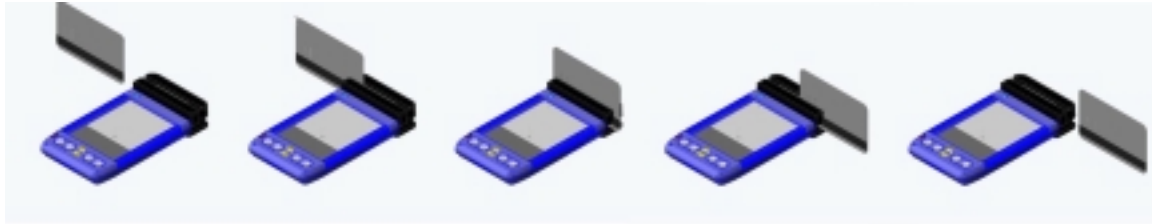
To insert the CardTool, align the unit with the Handspring expansion slot (see figure 1) and gradually insert the unit. It should insert smoothly until it makes contact with the expansion slot stops. Do not force the unit into the expansion slot. If resistance is significant, withdraw CardTool and ensure there are no foreign objects in the expansion slot and that CardTool is properly aligned with the Visor expansion slot.



CardDemo Application Installation

After plugging in the CardTool, the built in demonstration program, 'CardDemo' automatically installs and welcome screen appears. This screen is where a developer would display welcome information specific to their application. The CardDemo application displays TokenWorks Logo. After the user selects OK, the main screen appears. See the CardDemo section for more information on this program. Note: The C source code is provided in the development kit.

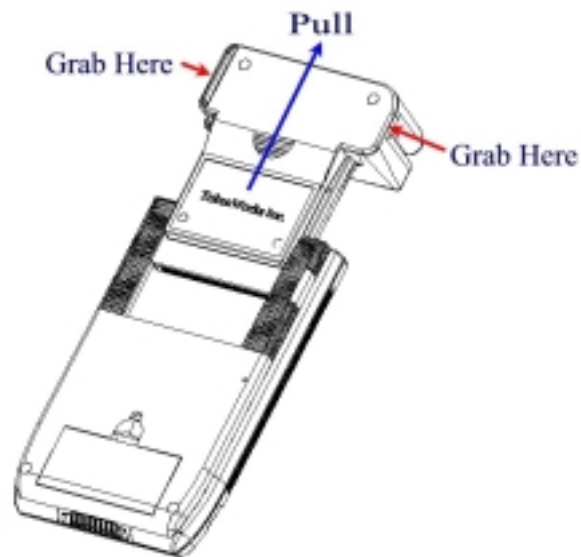
Swiping a Magnetic Card



1. With the CardDemo application running on the screen of the Handspring Visor, hold the unit in either the left or right hand. If the CardDemo is not active, select the CardDemo application icon from the 'desktop' or 'home' screen that shows all the application icons.
2. When the CardTool is first inserted, the CardDemo application defaults to decoding information on Track 1 with the ISO decode algorithm. Subsequent insertion default to the previous configuration. Ensure CardDemo application decode algorithm matches the encoding algorithm used on the card to be swiped.
3. Using your other hand, position a magnetic card with the magnetic stripe (black stripe on back of card) facing the Handspring Visor at either end of the CardTool's card slot.
4. While ensuring that the magnetic card's edge remains in contact and parallel to the base of the card slot, swipe the card completely through the card slot.
5. It does not matter which way the card is swiped, but it is important that the card not be skewed during the swipe. Skewing occurs if the card is tilted or rotated as it is swiped through the slot. Tip: hold the magnetic card in the center and maintain pressure on the edge as it travels through the slot. Experiment with the orientation of the Handspring Visor. Some find it easier to hold the Handspring Visor with the screen facing left or right and swiping the card vertically through the card slot.
6. The 'CardDemo' application will display the decoded data on the screen after a successful swipe and store it in the database.

CardTool Removal

To remove the CardTool, either use the thumb stop on the back of the unit to gradually push it out of the expansion slot or grab the CardTool at the base of the card slot and pull it away from the Handspring Visor in the same plane as the expansion slot. Try not to grab the CardTool by the top and bottom but rather each side at the base of the card slot. Grabbing the top and bottom of the CardTool will generate a force component, which will increase the friction and make it harder to remove.



When the CardTool is removed from the Handspring Visor, the following takes place.

Applications that were automatically installed when the CardTool was inserted are automatically uninstalled from the Visor application menu.

Note: If the Visor is turned off, removal of the CardTool (or any other module) turns the Visor on.

Maintenance and General Care

- The CardTool is not waterproof. Do not expose to rain or moisture
- Do not drop the CardTool or subject it to strong impact.
- Protect it from temperature extremes. Do not leave on the dashboard of a car on a hot day and keep it away from heaters and other heat sources.
- Do not store or use your CardTool in any location that is extremely dusty, damp or wet.
- Ensure the magnetic heads are occasionally cleaned with commercially available magnetic cleaning cards.
- Clean exterior of case with a dry lint free cloth and do not use abrasive cleaning products.

Battery Life

The CardTool does not have its own battery but instead uses the main batteries of the Handspring Visor. When the CardTool is installed in the Handspring Visor, it will draw current from the main batteries and thus reduce the life of these batteries. This is true of all Springboard modules that do not have their own internal batteries. Every effort has been made to reduce the power consumption of the CardTool and this section should help users understand how the CardTool will change the normal life expectancy of the Handspring Visor's main batteries.

The CardTool has three power states. The most common state is a sleep state that the CardTool enters whenever the CardTool application (e.g. CardDemo) is not active on the screen. In this mode, the CardTool consumes approximately 0.25mA of current. This happens whenever a non-CardTool application is running or the Handspring Visor is not powered-on. The next most common state is the idle power state that occurs whenever the CardTool application is running (active on the LCD), but no card is being swiped through the unit. In this mode, the unit consumes approximately 3mA of current. The least common state is when a card is being swiped through the unit. During this brief period, the power consumption is approximately 15mA.

To conserve batteries, it is suggested that:

- When not planning to read a card, either power off the Handspring Visor or select another application such as the address book, memo pad, etc. This will put the CardTool into its sleep mode.
- The Palm OS allows the buttons and certain icons in the graffiti area to be associated with any installed application. This allows the device to be powered up and the CardTool launched by just pushing one of the buttons on the face of the Visorup and the CardVisor launched instead of powering up the Handspring Visor and then selecting the CardDemo icon from the main screen in the event the Handspring Visor was not running the CardDemo when powered down
- If not planning to use the Handspring Visor for an extended period of time, remove the CardTool and/or the Handspring's main batteries (if applicable). Informal testing has shown that the normal 8 week alkaline battery life is shortened to approximately 3 weeks if this suggestion is not applied.

- For Handspring Visors with built-in rechargeable Lithium Ion batteries (Prism, Edge, Pro), return the unit to the charging base whenever not in use. Note: This is the normal operating procedure suggested by Handspring to ensure these models get their batteries constantly topped off.
- For Handspring Visors using alkaline batteries, consider purchasing rechargeable NiMH AAA batteries. A list of batteries/chargers is provided on the TokenWorks web site in the support section.

CardDemo Configuration Application

Via the configuration item in the main pull down menu, the user may select the following options:

Tracks Decoded: 1, 1 and 2, or 1,2 and 3

Decoding Algorithms: ISO, AAMVA, or 777

Raw Data Mode: On or Off

ISO mode decodes data using 7 bits/char. on track 1, 5 bits/char. on track 2, and 5 bits/char. on track 3. 777 mode decodes data using 7 bits/char on tracks 1, 2 and 3. AAMVA mode decodes data according to the American Association of Motor Vehicle Administrators specification.

Raw Data Mode turns off the decode algorithms and displays the ASCII encoded raw magnetic head data.

Check the TokenWorks web site for either newer versions of the CardDemo application or other 3rd party developed demonstration applications. These applications can be downloaded from the site and flashed into the CardTool reader's internal memory.

Trouble Shooting

Problem	Possible Problem	Possible Solution
CardTool is not working	Batteries on Visor are installed incorrectly.	Reinstall batteries correctly. Make sure the (+) and (-) signs on the batteries line up with the signs on the inside of the battery compartment.
	Batteries are dead	Install new batteries
	Visor hardware failure	Contact Handspring Technical support at www.handspring.com
CardDemo is not decoding card data - "decode error-swipe again"	CardDemo not configured with appropriate data decoding algorithm	Check CardDemo configuration via the main menu and ensure decode algorithm is appropriate for card. Note: Additional decode algorithms available to developers using System Development Kit (SDK).
	Magnetic Card may be damaged	Visually inspect magnetic stripe to ensure there is no obvious mechanical defects. Test card in another reader to ensure card has not become partially or totally demagnetized.
	CardTool is damaged	Run diagnostics item from main menu. If still experiencing problems, contact TokenWorks technical support.
	Magnetic Card may be mis-aligned during cardswipe	Ensure card is being held flush to base of card track during swipe. Try swiping at different speeds, in a different direction, holding the card at different locations, or changing the orientation of the Handspring.
Visor powers off during operation	The auto time off setting is turning off the Visor to save batteries.	Change the auto time off to the longest value or just turn the unit back on. Application designers should take this into consideration when developing programs.

Appendix A Magnetic Stripe Encoding of Financial Cards

Track Name	RECORDING DENSITY (bits per inch)	CHARACTER CONFIGURATION (including parity bit)	INFORMATION CONTENT (including control characters)
0.110" Track 1 IATA	210BPI	7 BITS PER CHARACTER	79 APHANUMERIC CHARACTERS
0.110" Track 2 ABA	75BPI	5 BITS PER CHARACTER	40 NUMERIC CHARACTERS
0.110" Track 3 Thrift	210BPI	5 BITS PER CHARACTER	107 NUMERIC CHARACTERS