

Volume

1



Smart Card Reader

User Guide for Windows Mobile



Smart Card Reader Users Guide

Users Guide for BT100 and BT200 Smart Card Readers

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1 Introduction

With the Universal Bluetooth Smart Card Reader, Apriva introduces mobile smart card readers to the Pocket PC platform with secure, wireless technology. This document covers the installation, pairing and operation of the Apriva Smart Card Readers, models BT100 and BT200. Most questions regarding the Apriva Readers are covered in this manual, but the user can contact Apriva Customer Support should they have any further questions or problems.

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1.1 Background

DoD PKI enablement requires the use of Smart Cards and card readers. Mobile Smart Card readers present many barriers to PKI enablement. The Apriva readers support Smart Card operations with a unique design.

Apriva designed the Universal Bluetooth Smart Card Reader to address a number of real-world, operational requirements:

1. Provide strong security to mitigate all Bluetooth security threat vectors, including enforced lockdown of all normal Bluetooth services in the handheld.
2. Usable without complex configuration and setup procedures.
3. Include a FIPS 140-2 Level 3 crypto module to encrypt all wireless links.
4. No requirement for a cable connection except for occasional tethered pairing operations and charging.
5. Rechargeable battery life up to a month with normal use.
6. Stowable in a briefcase or purse and still able to operate at full speed.
7. Assure zero RF emissions when the card is removed and trusted firmware loaded.
8. Include a high quality soft landing card reading mechanism to limit connection pad abrasions on the BT100.
9. Reader cases available to support wearable lanyard configuration.
10. Reader designed to also function as a USB Notebook Smart Card Reader when necessary to avoid bringing two readers on trips in support of a notebook and a PDA.

1.2 Operational Warning and Conditions

In accordance with FCC and IC requirements, the Apriva Smart Card Reader operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. Any changes or modifications to the device not expressly approved by Apriva voids the user's authority to operate the reader.

2 Operations

The Apriva BT100 and BT200 are designed for easy plug and play operation. After the initial tethered pairing with your device, operation of the reader is as simple as inserting a Smart Card.

Users only have five operational concerns:

1. Charging the unit's internal, rechargeable Li-ion+ battery when required using the jack labeled PC.
2. Performing a one time tethered pairing to connect the card reader to a given device and begin secure wireless operations using the jack labeled PDA.
3. Inserting a Smart Card to turn on the BT100 and begin normal S/MIME email or other operations. The BT200 has an ON/OFF switch to enable leaving the card in the reader.
4. Removing the Smart Card to turn the BT100/200 off ensures zero RF emissions. Turning off the BT200 with the switch also ensures zero RF emissions.
5. The Smart Card Reader should be kept within 25 feet of the handheld unit. Effective Bluetooth distances will vary depending on wall materials.

Note

Tethered USB connections to a handheld should be used only for pairing or emergency power for the PDA. Per the USB specification, up to 500ma can be drawn from the BT100/200 to the handheld to charge the handheld's battery. In other words, if the handheld unit's battery is low, it can materially affect the BT100/200 battery life if the USB connection is sustained beyond the quick pairing operation.



Figure 1 – BT100 and BT200 Universal Bluetooth® Smart Card Reader

2.1 Pairing

Before the reader can be used with a device, a passkey exchange procedure must be performed. For optimum security, only a tethered connection using the USB cable is supported for this pairing. Ad-hoc pairing via Bluetooth can be performed after the initial exchange. Each passkey exchange generates new RSA keys for the link between the reader and handheld devices. The RSA keys are used to authenticate the devices to each other and protect the exchange of session keys while providing strong AES-256 encryption.

To pair with the Sensa Secure Mobile Email System for the first time after a Sensa client installation, use the following steps:

1. Install the Sensa client on the PDA by running the appropriate .CAB file. After the install, the handheld will software reset and the Sensa Guard data-at-rest PIN pad will be displayed. Sensa Guard is now configured for a tethered, USB pairing process.
2. Connect the BT100/200 to the handheld with the USB cable and supplied adapter. Make sure you are using the **PDA** jack on the BT100/BT200.
3. Insert your Smart Card (Press the *ON/OFF* switch on the BT200) and enter your Smart Card PIN to unlock the handheld unit.
4. On the handheld, open the Start menu and select the Programs shortcut. Locate and run the Sensa Utility program.

A. Select the **Smart Card Reader** button.

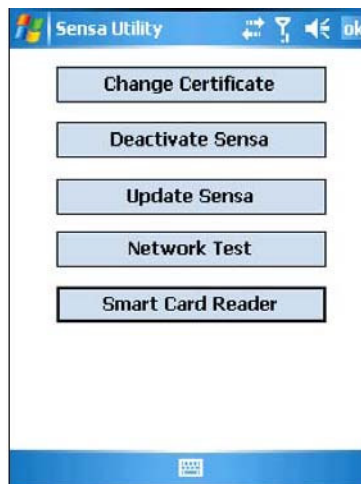


Figure 2 – Selecting Smart Card Reader Button

B. Select **USB** (the default) and then the **Pair** button. The tethered pairing operation will take 40-60 seconds to complete.

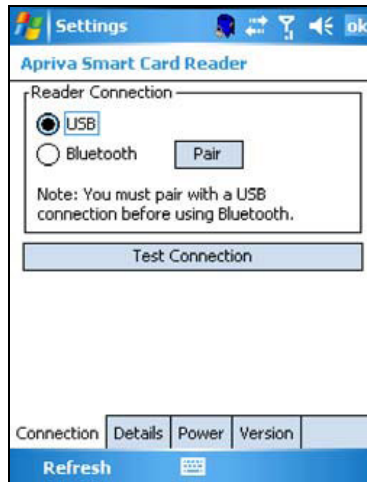


Figure 3 – Selecting USB and Pairing Button

C. Upon display of a “Pairing Complete” message, select **OK** to close the message box and select the connection method **Bluetooth**.

Note

Do not remove the cable or Smart Card until the hourglass disappears. If you do, you will have to repeat the pairing process for proper transition to Bluetooth operations.



Figure 4 – Pairing Complete and Bluetooth Connection Selection

D. Disconnect the USB cable.

E. The reader is now ready for wireless operations. When a Smart Card is inserted and the reader is turned on, the reader will be available for Bluetooth operation.

Note

There are no RF emissions once the Smart Card is removed. This is also true when the BT200 is turned off with the ON/OFF switch.

2.2 Testing the Smart Card Reader

The **Smart Card Reader** button within the Sensa Utility program takes you to the control panel where you can verify the operational status. The **Test Connection** button tests the basic USB or Bluetooth communications with the Smart Card Reader as well as the internal reader components. If all components do not indicate “Pass,” the Smart Card Reader must be replaced.

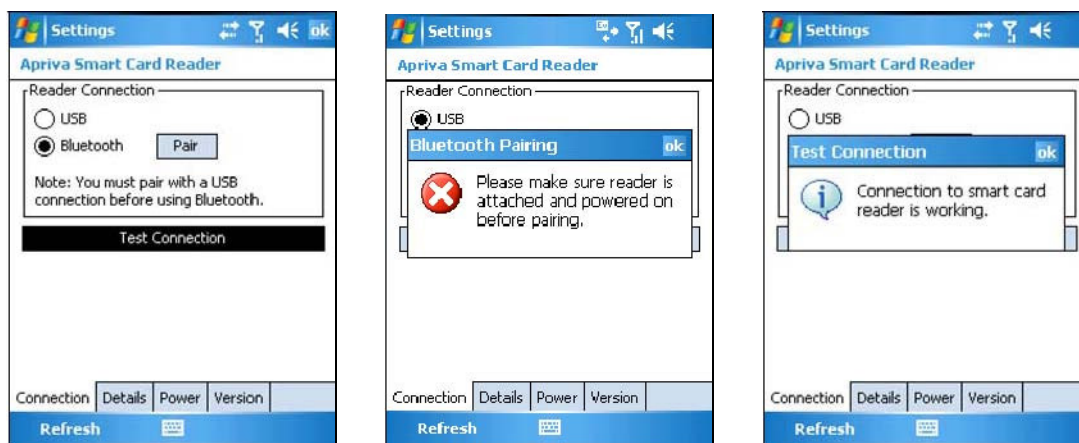


Figure 5 – Smart Card Reader Test Buttons and Results

There are three additional tabs at the bottom of control panel. “Details” and “Power” will display miscellaneous reader information, and the “Version” tab will display the current reader firmware version and a method to update it from an Apriva supplied .bin file.

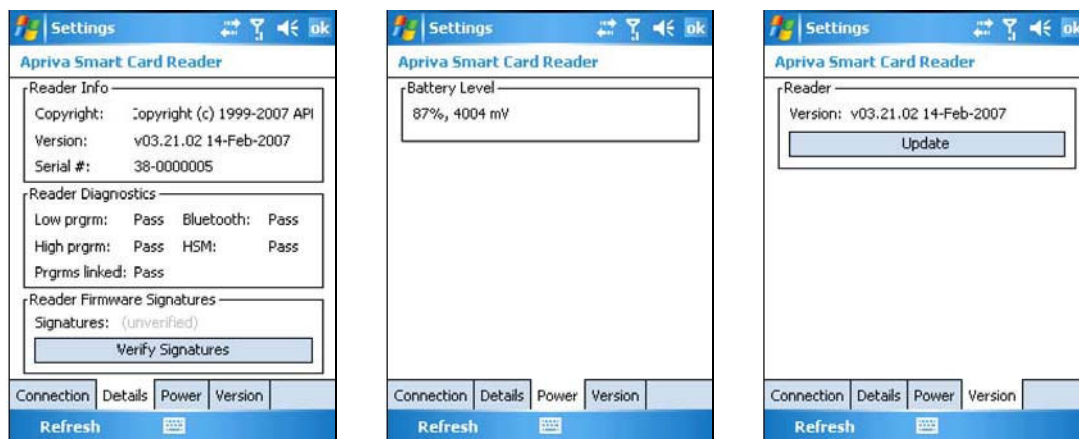


Figure 6 – Smart Card Reader Test Buttons and Results

2.3 Security Impact

After installing Sensa on a handheld, all normal Bluetooth services are actively policed and disabled to pass Government security validations. In other words, Bluetooth earpieces, discovery, file transfer, etc. will cease to operate after Sensa is installed. These services can not be re-installed or enabled. The convenience of secure, wireless Smart Card Reader operations would not be possible without these lockdowns.

2.4 LED Indicator Summary

Figure 7 summarizes all of the available status indicators. The primary purpose of the LED indicators is to provide visual clues for the battery status.

Action	LED Indicator	Meaning
When card is first inserted (initial 4 seconds)	Solid GREEN	Battery over 75% charged, ready for card operations
	Flashing GREEN every 4 seconds	Battery between 25% and 75%, ready for card operations
	Solid RED	Battery less than 25% charged, user should charge immediately
Card Inserted 4 or more seconds	Flashing GREEN every 4 seconds	Battery over 25% charged, ready for card operations
	Flashing RED every 4 seconds	Battery less than 25% charged, ready for limited card operations, user should charge
	Flashing GREEN or RED every 1 second	Connection between device unit and reader is established, ready for card operations
PC/ USB Cable Connected	Solid GREEN	Reader is in charging state, no card operations are possible
Card/Charge Cable Removed	GREEN and RED flash once	The reader is powered off and transmitting zero RF emissions

Figure 7 – LED Indicator Summary

Note

If the BT100/200 LED indicators are not illuminated after turning the power button on, this means the reader will need to be charged. Charge the reader for at least 1 hour. The user will need to insert a Smart Card to view the LED indicators and verify the reader has been charged.

2.5 Emergency Battery Operations

The BT100/200 can be used to charge the handheld's battery in an emergency. Simply attach the USB cable between the BT100/200 PDA jack the handheld – the same as for tethered pairing. This could enable an important last call on the handheld when the handheld's battery is extremely low. This will of course, substantially reduce the reader's battery life since up to 500ma can be drawn by the handheld.

3 Maintenance

Storage of the BT100/200 can be in a purse, briefcase, or on a lanyard as long as it is within close proximity of the handheld. If you store the BT100/200 in a purse or briefcase, make sure it is reasonably secure and will not be crushed. The plastic case is designed for good strength; however, care is suggested.

3.1 Checking the Battery

Insert a Smart Card and observe the LED indicator lights (see Figure 7 under the LED Indicator Summary section of this document). A green LED for a few seconds indicates a battery with a good charge. A solid red LED indicates that the battery charge is low. With a low charge, the reader may still be used, but should be recharged within the next few days. The battery should last at least a month with typical operations.

Note

The Control Panel can display the battery voltage. For example 4004mv = 4.004 volts. A fully charged Li-ion+ battery will measure between 4.1 and 4.2 volts.

3.2 Charging the Battery

Using the supplied cable, insert the Mini-B USB plug into the Smart Card Reader jack labeled **PC**. Connect the other end to a notebook/desktop with a USB port. The green LED will light continuously with occasional quick flashes to indicate the Smart Card Reader is charging.

The internal Lithium Ion battery charger works as follows:

1. A fast charge mode is in effect until the battery reaches an 80% charge state.
2. After 80%, the battery is charged with a slow rate of charge.

Use the following guidelines for charging the reader:

- From 0% to 100% - 2 hours
- From 0% to 80% - 1 hour
- From 80% to 100% - 1 hour

Note

All reader operations are disabled while charging. You must remove the charge cable and insert a Smart Card to continue normal operations.

3.3 Updating Firmware

The Sensa Utility program supports Smart Card Reader software updates in the field. Factory exchanges are not required should a firmware update be required.

If the reader was previously paired with a handheld unit, the pairing is not affected by the software update process – no re-pairing is required. You must, however, switch the reader connection to USB before performing the software update and then switch it back to Bluetooth to continue normal operations. If you are operating the Smart Card Reader in a tethered-only mode, you do not have to anything since you are already in a USB connection mode.

1. Connect the BT100/200 to the handheld with the USB cable and supplied adapter. Insert a Smart Card to ensure the reader is powered on.
2. On the handheld, run the Sensa Utility program using the Programs shortcut.
 - A. Select the **Smart Card Reader** button.
 - B. Select **USB** reader connection button.
3. Select the **Version** tab. Then, select the **Update** button.

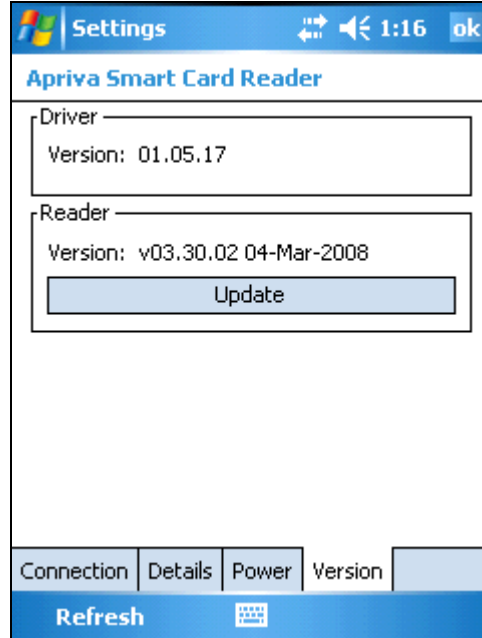


Figure 8 – Firmware Update

- A. Select the desired firmware update file using the standard file browser. Please note that the version ID is embedded in the file name. The file is validated before the update begins to protect the operation. Select the **Yes** button to begin the firmware update.

B. A successful update message is displayed when the BT100/200 is ready for normal operations.

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