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Smart Technology!

ISO 14443-4 USB reader

e-Document reader (SmartReader/extA)

&

ISO 14443-4 USB reader with OCR

Installation guide

Integrated Engineering

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Table of content

1. Introduction

1.1 Document purpose

This document describes the software installation procedure for Integrated Engineering's ISO 14443-4 USB reader. This installation procedure consists of two parts:

1. Installation of the ISO 14443-4 USB reader windows drivers.
2. Installation of RTE2501 drivers
3. Installation of BSI (Bundesamt für Sicherheit in der Informationstechnik) LDS GoldenReader tool.

1.2 Document version history

Version 1.1 22nd of November 2005 revised document. Installation guide for Integrated Engineering ISO 14443-4 USB reader, ISO 14443-4 USB with OCR and BSI GoldenReader tool (GRT for short) under Microsoft Windows 2000 and Windows XP Professional.

1.3 Document validity

This document applies only for Microsoft Windows 2000 and Windows XP Professional.

1.4 Remarks

1. The ISO 14443-4 USB reader (e-Document reader (SmartReader/extA)) complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
    a. This device may not cause harmful interference.
    b. This device must accept any interference received, including interference that may cause undesired operation.
2. The ISO 14443-4 reader is powered from the PC's USB port. To function the reader requires a USB port that supplies 5 Volt. The reader will not function on USB ports that supply 3.3 Volt.
3. The ISO 14443-4 reader with OCR is powered by an AC/DC adapter 5V DC 1,25A, which is included.
4. BSI's GoldenReader tool is a demonstration tool. The tool is <u>not</u> intended for benchmarking.

2. ISO 14443-4 reader -USB driver installation

2.1 General procedure overview

This procedure describes the installation steps for the ISO 14443-4 USB reader USB driver. These installation steps are valid only for Windows 2000 and Windows XP Professional.

2.2 Prerequisites

1. *Before proceeding make sure that the PC is switched on and running.*
2. *Make sure the CD is placed in the CDROM player.*
3. *This installation instruction requires that Windows plug-and-play for USB devices is enabled.*
4. *USB driver installation is only required when an Integrated Engineering USB reader is connected to a PC for the very first time.*

2.3 Step1: Connect the reader to the PC

Connect the reader to a USB port of the PC.

⇒ The reader will respond with a beep when the PC is running and the USB port is functioning properly.

2.4 Step 2: Installing the USB driver

When the reader is plugged in the USB port and Windows plug-and-play for USB devices is functioning properly, Windows will display the "Found new Hardware" dialog displayed in Figure 1. The Integrated Engineering ISO 14443-4 reader is recognised by Windows as SmartID/Pro or SmartID/CCID.

Note:

The following examples show the installation of the SmartID/Pro reader. The installation of the SmartID/CCID reader is identical.

Figure 1: Windows Found new Hardware dialog

After searching its internal driver database Windows will display the Found New Hardware Wizard to allow the installation of the USB driver for the reader see Figure 2.

Figure 2: Windows Found new hardware wizard dialog

Click on the "Next" button to proceed with the installation of the USB driver. The "Found new hardware wizard" displays a new screen see Figure 3.

Figure 3: Select hardware drivers location

Select "Search for a suitable driver for my device (recommended)" to allow Windows to locate the correct drivers automatically. Click on the "Next" button to proceed. The Found new hardware wizard will display a new screen to specify the locations to search for the required drivers see Figure 4.

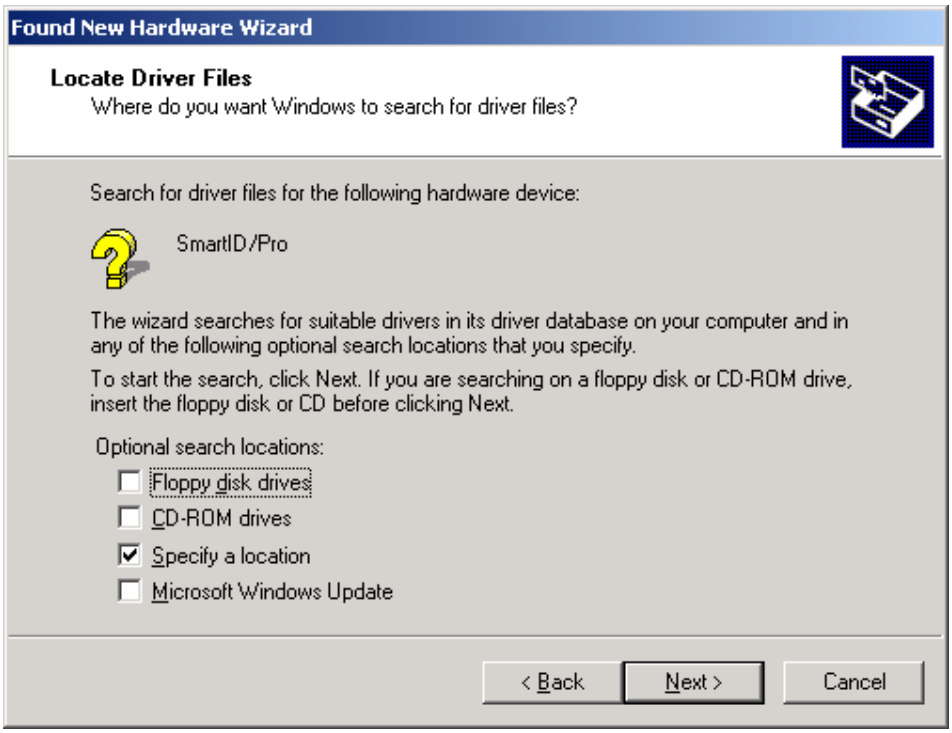

Figure 4: Select location to search for drivers

Place a "Check mark" in the Specify a location field and remove all other "Check marks" by clicking in the field next to options. The value of the options will toggle if you click a field more than once. Press "Next" to proceed. The installation driver dialog Figure 5 opens.

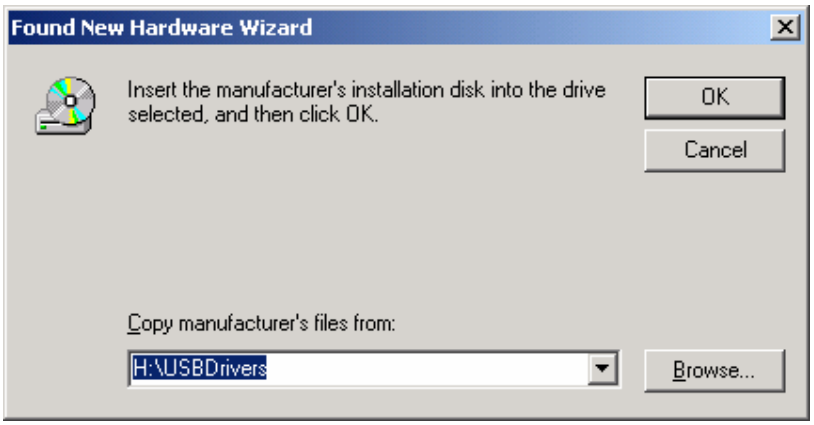

Figure 5: Driver location dialog

Click on the "Browse…" button to open the browse dialog see Figure 6.

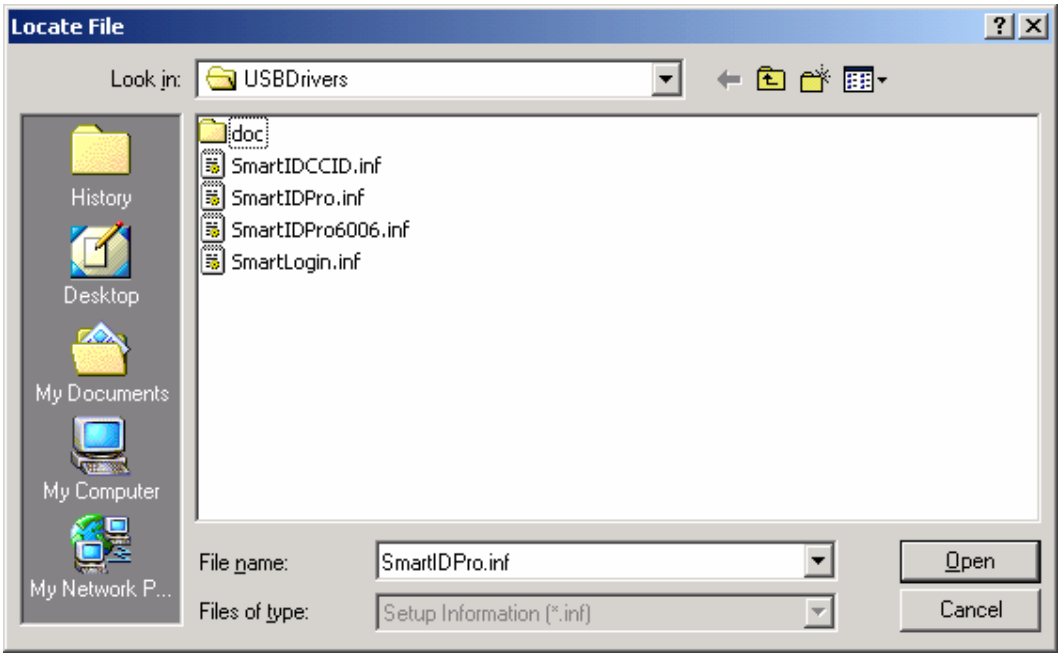

Figure 6: Locate driver file(s) dialog

Make sure the CDROM with the "GoldenReader" tool that holds the USB drivers is placed in the CDROM drive. Navigate with the Locate File dialog to the "USBDriver" directory on the CD. Select the file SmartIDPro.inf and click on the Open button. The Found New Hardware Wizard will display a screen to display the search results Figure 7.

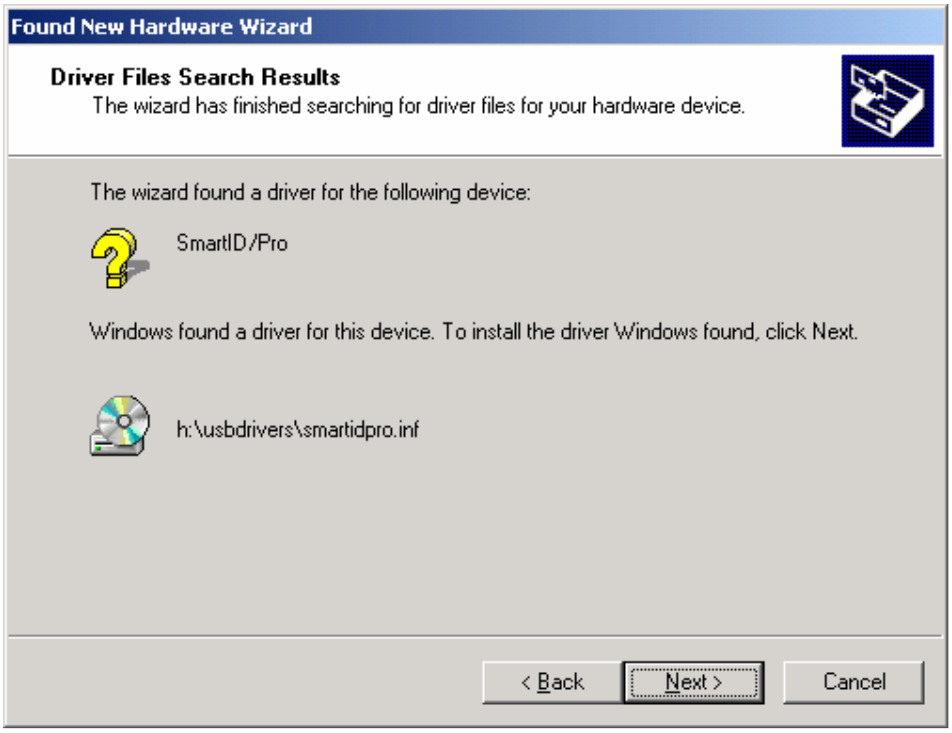

Figure 7: Driver Files Search Results

Click on the Next button to confirm the installation of the displayed driver. The Found New Hardware Wizard displays the final screen to confirm that the driver is installed Figure 8.

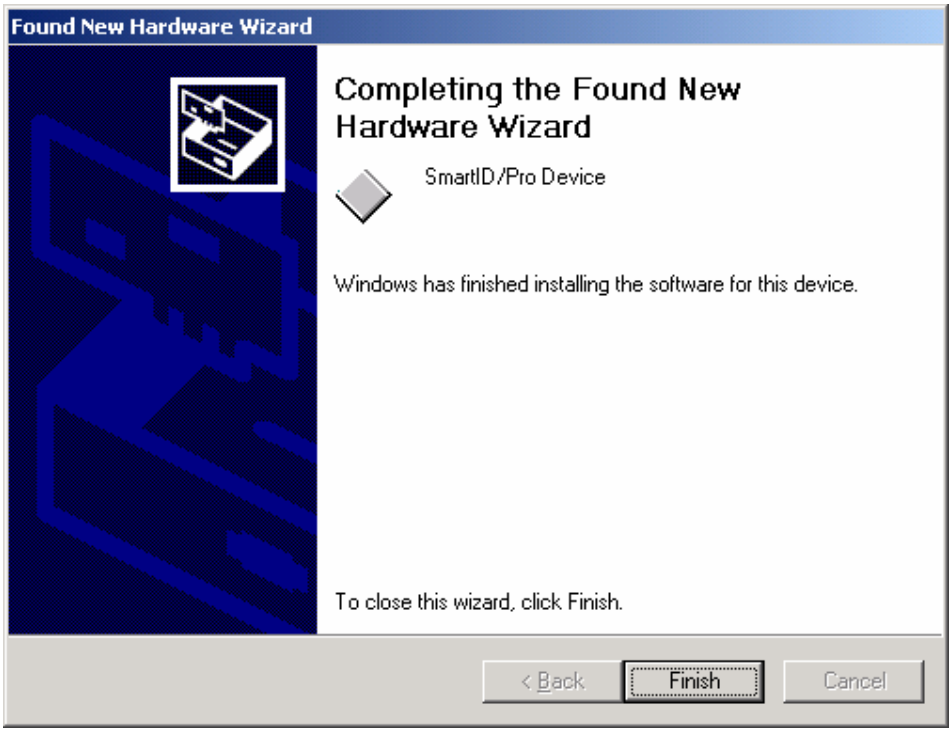

Figure 8: Confirmation of installed driver

The installation of the USB driver for the reader is completed, click on Finish to close the Found New Hardware Wizard.

In some occasions Windows will display a message requesting a reboot of the PC to finalise the installation of the driver. Please reboot the PC by following the instructions on the screen.

3. RTE MRTD Reader – USB/Serial Port driver installation

Note:

This section does only comply to the SmartReader ISO14443-4 USB with OCR.

Skip this section for SmartReader ISO14443-4 USB without OCR and proceed with chapter 4.

It's recommended to copy the folder RTE2501 driver to the PC

3.1 Installing the USB driver

After installing the SmartReader USB driver, the RTE driver needs to be installed. Windows will display the "Found new Hardware" dialog displayed in figure 9.

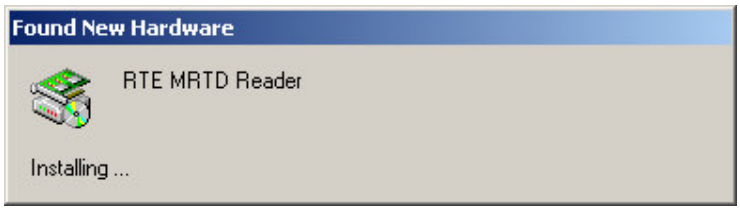

Figure 9: Windows Found new Hardware dialog

After searching its internal driver database Windows will display the Found New Hardware Wizard to allow the installation of the USB driver for the reader see Figure 10.

Figure 10: Windows Found new hardware wizard dialog

Click on the "Next" button to proceed with the installation of the USB driver. The "Found new hardware wizard" displays a new screen see Figure 11.

Figure 11: Select hardware drivers location

Select "Search for a suitable driver for my device (recommended)" to allow Windows to locate the correct drivers automatically. Click on the "Next" button to proceed. The Found new hardware wizard will display a new screen to specify the locations to search for the required drivers see Figure 12.

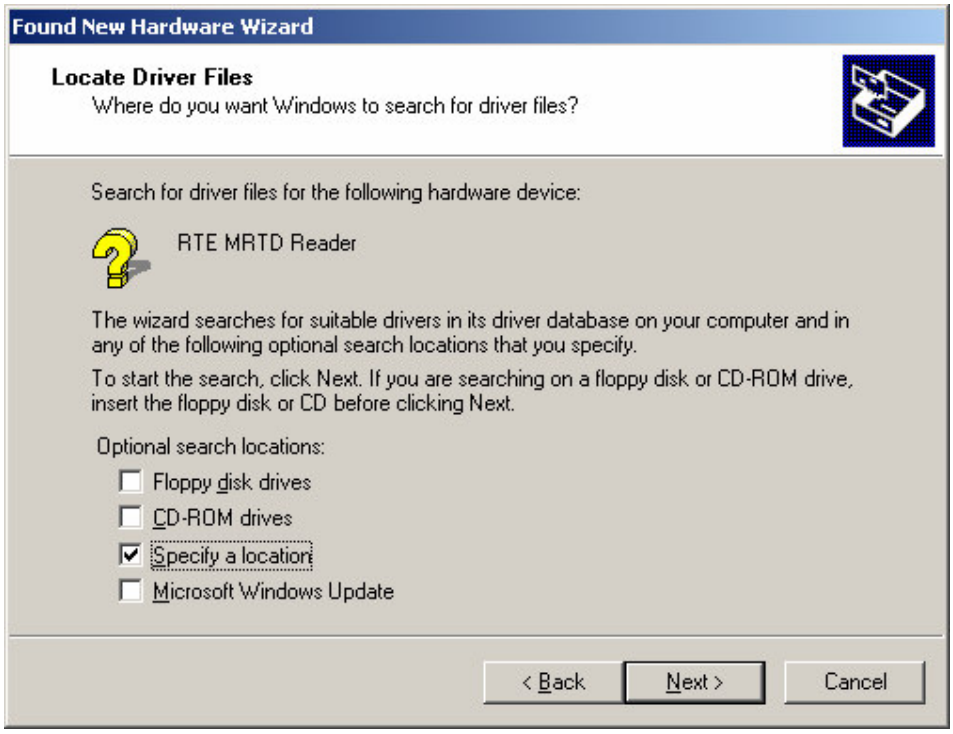

Figure 12: Select location to search for drivers

Place a "Check mark" in the Specify a location field and remove all other "Check marks" by clicking in the field next to options. The value of the options will toggle if you click a field more than once. Press "Next" to proceed. The installation driver dialog Figure 13 opens.

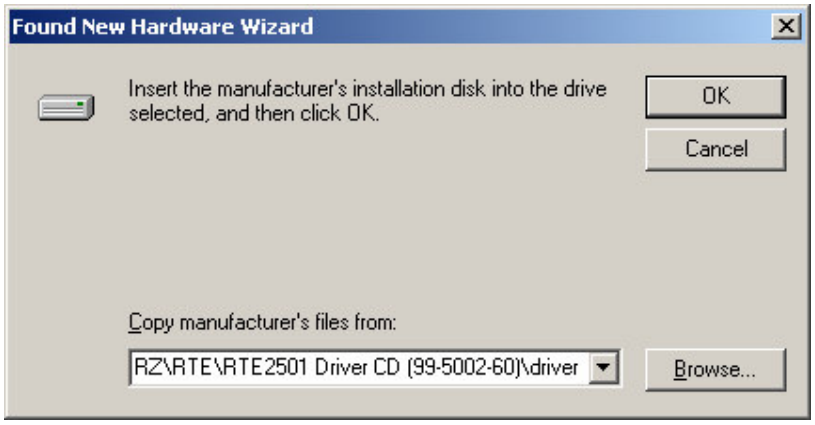

Figure 13: Driver location dialog

Navigate with the Locate File dialog to the "Driver" directory you've created. Select the file "ftdibus.inf" and click on the Open button. The Found New Hardware Wizard will display a screen to display the search results Figure 14.

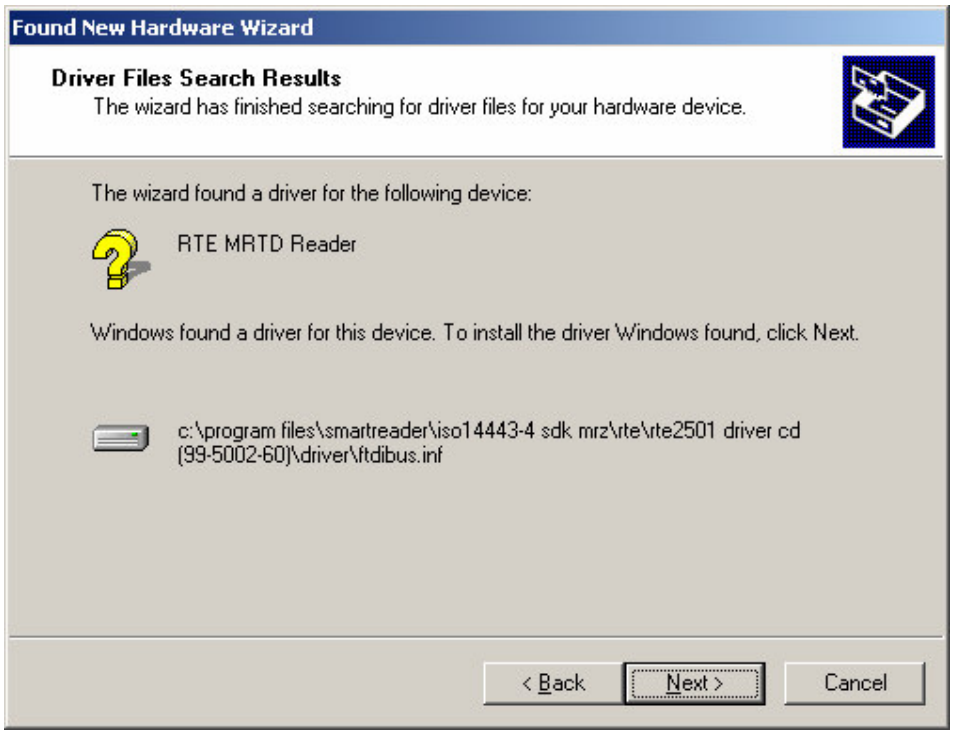

Figure 14: Driver Files Search Results

Click on the Next button to confirm the installation of the displayed driver. The Found New Hardware Wizard displays the final screen to confirm that the driver is installed Figure 15.

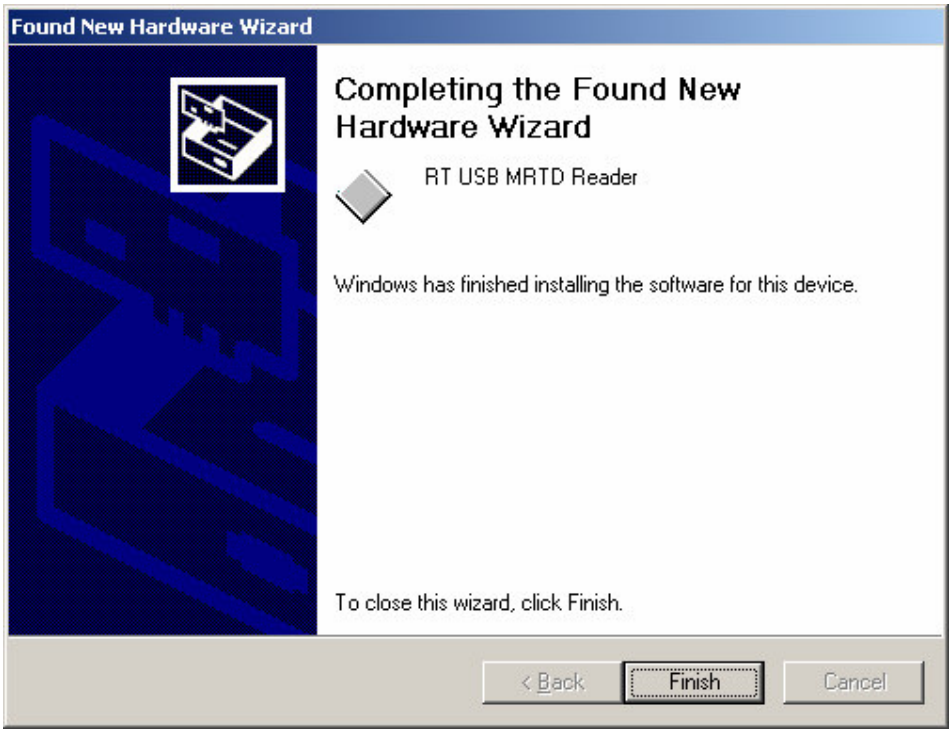

Figure 15: Confirmation of installed driver

The installation of the USB driver for the RTE MRTD Reader is completed, click on Finish to close the Found New Hardware Wizard.

3.2 Installing the USB Serial Port

The next Found New Hardware dialog will appear. See Figure 16.

Figure 16: Windows Found new Hardware dialog

After searching its internal driver database Windows will display the Found New Hardware Wizard to allow the installation of the USB Serial Port driver for the reader, see Figure 17.

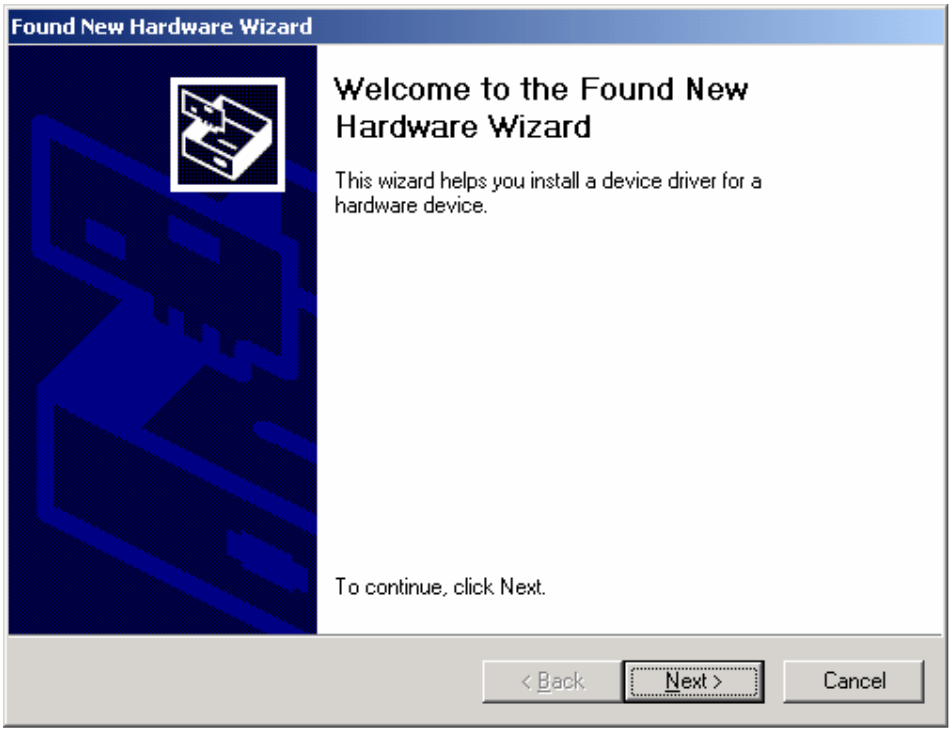

Figure 17: Windows Found new hardware wizard dialog

Click on the "Next" button to proceed with the installation of the USB driver. The "Found new hardware wizard" displays a new screen see Figure 18.

Figure 18: Select hardware drivers location

Select "Search for a suitable driver for my device (recommended)" to allow Windows to locate the correct drivers automatically. Click on the "Next" button to proceed. The Found new hardware wizard will display a new screen to specify the locations to search for the required drivers see Figure 19.

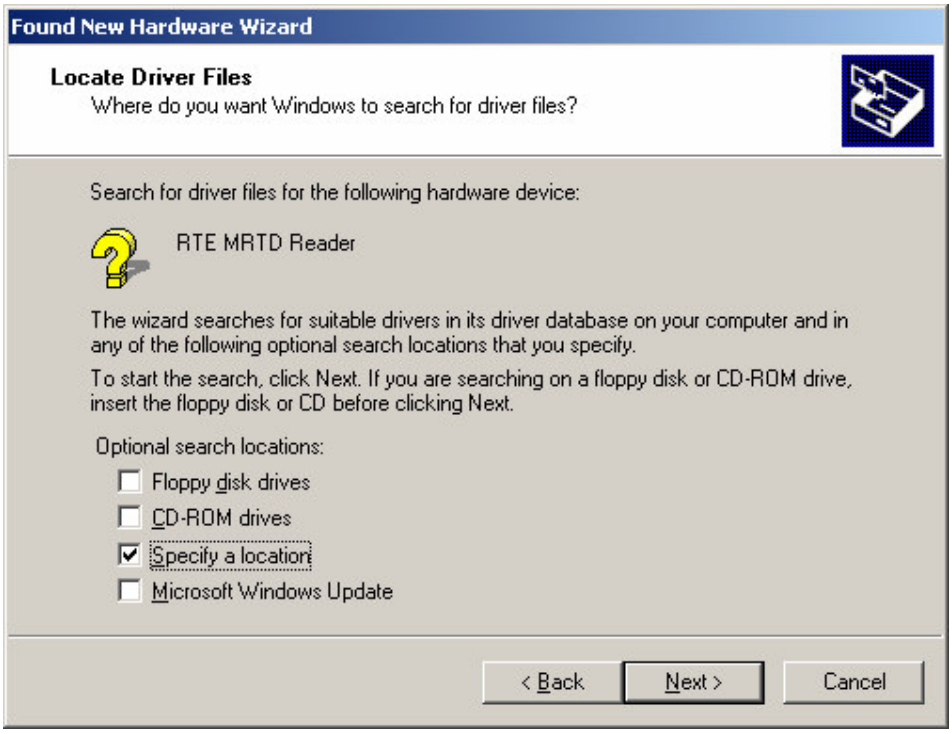

Figure 19: Select location to search for drivers

Place a "Check mark" in the Specify a location field and remove all other "Check marks" by clicking in the field next to options. The value of the options will toggle if you click a field more than once. Press "Next" to proceed. The installation driver dialog Figure 20 opens.

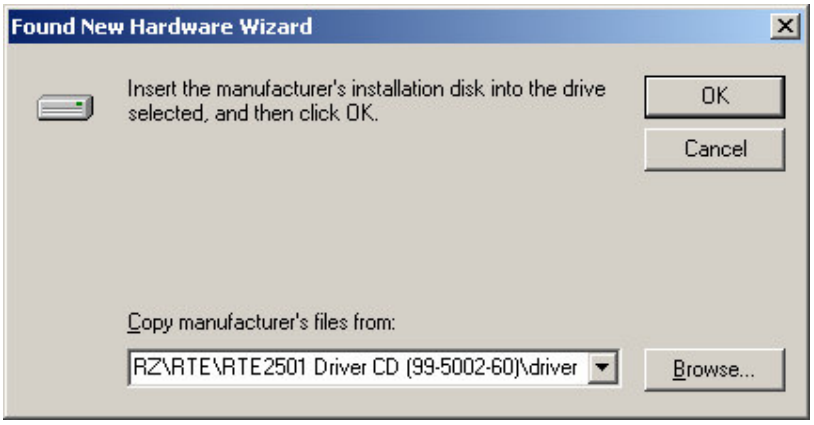

Figure 20: Driver location dialog

Navigate with the Locate File dialog to the "Driver" directory you've created. Select the file "ftdibus.inf" and click on the Open button. The Found New Hardware Wizard will display a screen to display the search results Figure 21.

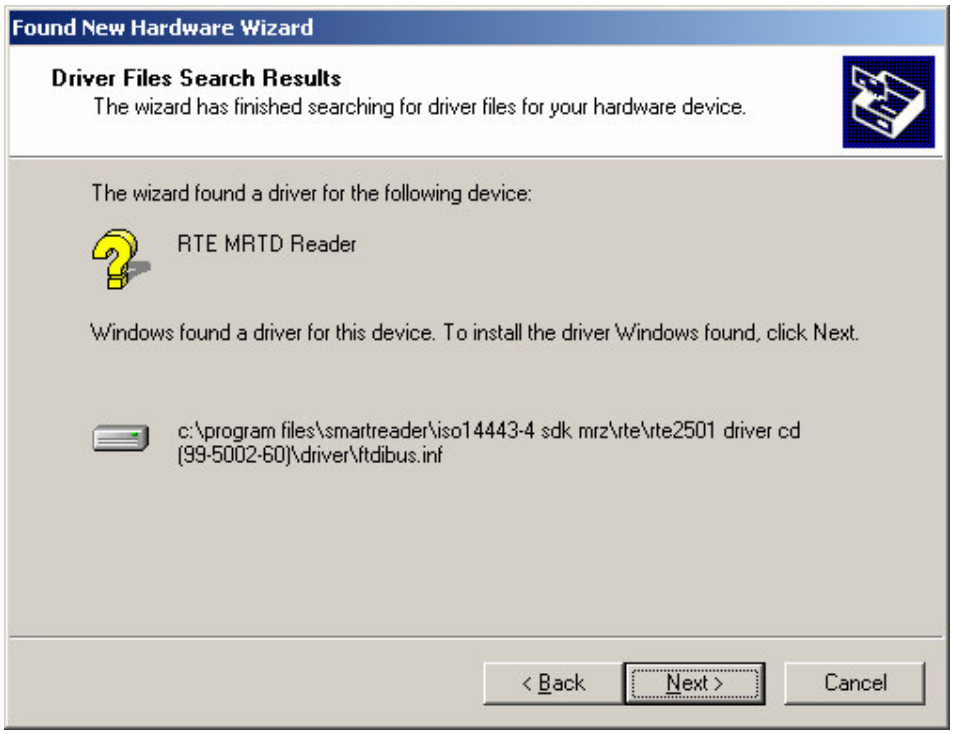

Figure 21: Driver Files Search Results

Click on the Next button to confirm the installation of the displayed driver. The Found New Hardware Wizard displays the final screen to confirm that the driver is installed Figure 22.

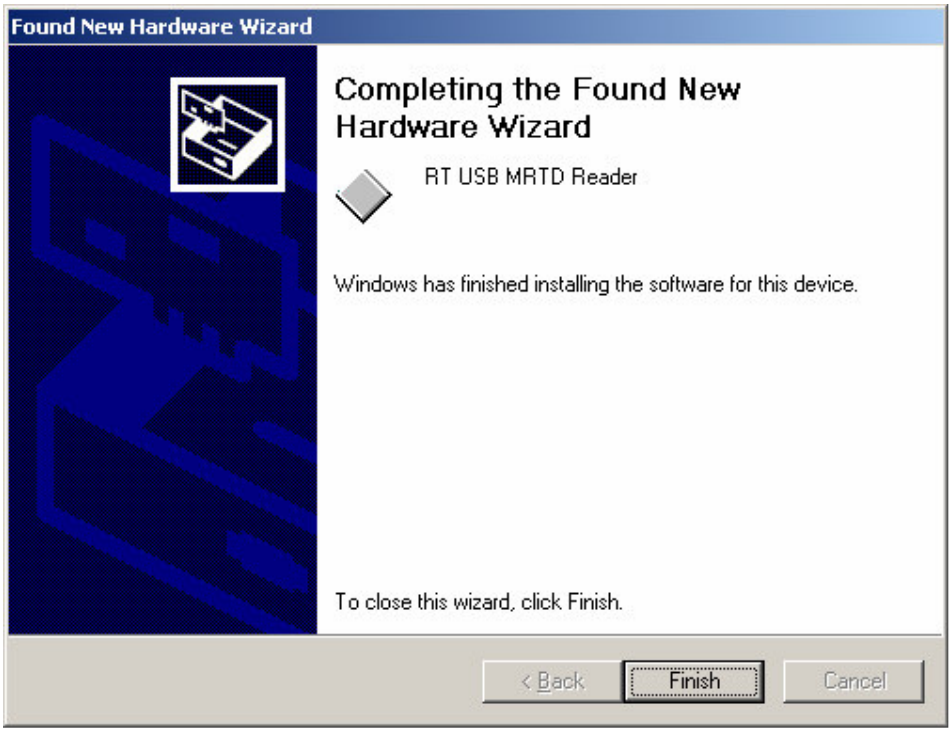

Figure 22: Confirmation of installed driver

The installation of the Serial Port driver for the RTE MRTD Reader is completed, click on Finish to close the Found New Hardware Wizard.

In some occasions Windows will display a message requesting a reboot of the PC to finalise the installation of the driver. Please reboot the PC by following the instructions on the screen.

3.3 Installing the RTE software keyboard wedge

The last step of installing the RTE driver is the installation of the RTE software keyboard wedge.

- Look in the Windows Device Manager which virtual com-port is created by the installation of the RTE USB serial port drivers.

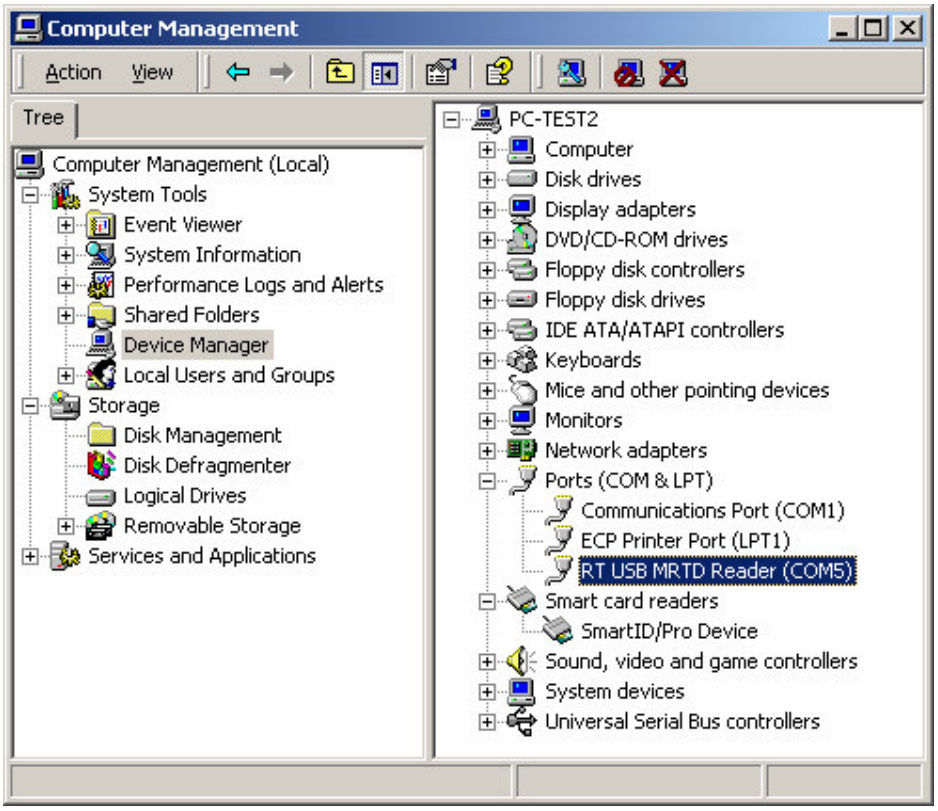

Figure 23: Screenshot Computer Management Ports

- Open Soft6700KBWedgeD.ini.
- Adjust the com-port behind the line PORT, and save the file.

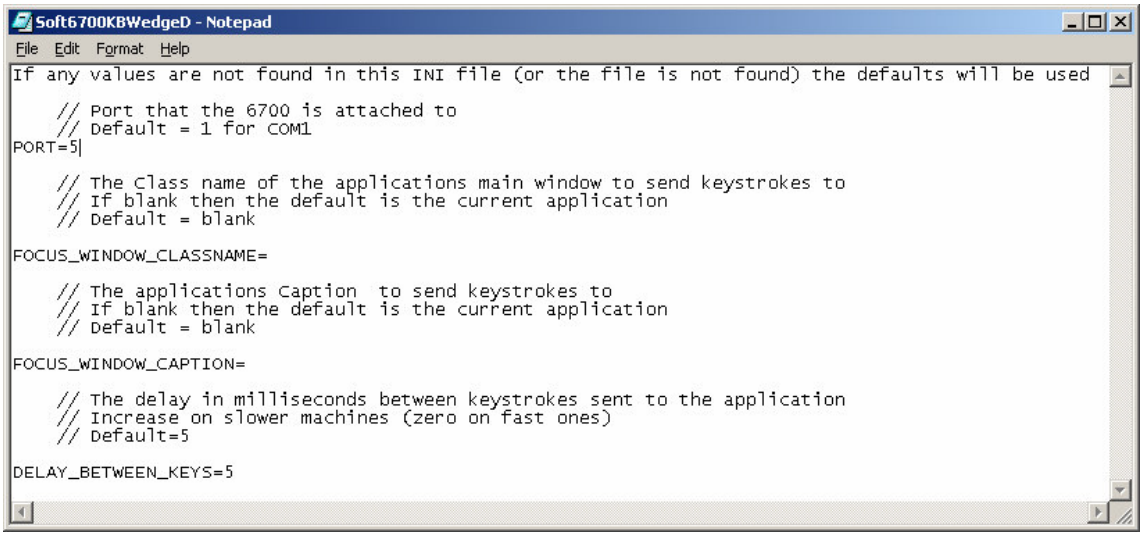

Figure 24: Screenshot Soft6700KBWedgeD

3.4 OCR Startup

Before the OCR reader can be used the keyboard wedge has to be started.

- Open Install2k.bat, and click "OK".
- Open Soft6700KBWedgeD.exe. The following dialog will appear.

Figure 25: Screenshot RTE670X Software Keyboard Wedge

- Click "OK".
- Now you can start GoldenReader Tools and use the OCR swipe.

Note:

When the power plug is disconnected it's recommend to restart the computer.

4. BSI – GoldenReader tool installation

4.1 Prerequisites

Before attempting to install BSI's GoldenReader tool make sure of the following:

1. *The PC is switched on and running.*
2. *The CD is placed in the CDROM player.*
3. *The USB driver of Integrated Engineering's ISO 14443-4 reader is loaded.*

4.2 Running the GoldenReader tool directly from CD

BSI's GoldenReader tool can run directly from the CD without installation on the PC hard disk. However due to practical reasons, like not being able to store configuration settings, this is not advised.

4.3 Installing GoldenReader tool on your hard disk

1. Start Microsoft Windows Explorer.
2. Double click on the "My Computer" Icon in the "Folder" pane on the left.
   ⇒ The "My Computer" folder will unfold.
3. Double click on the CDROM Icon
   ⇒ The right pane of Windows Explorer will display the contents of the CD.
4. Right mouse click on the "GoldenReaderTool" folder and select copy from the menu.
5. Double click on the "C: disk Icon" in the left pane of Microsoft explorer.
6. Right click on the "Program Files" folder and select paste.
   ⇒ The contents of the CDROM folder "GoldenReaderTool" is now copied to "C:\Program Files".
7. Click on the following folders: "Program Files", "GoldenReaderTool", "GoldenReader_xxx" * to navigate to the directory where the GoldenReader tool is installed.
   ⇒ The right pane of Windows Explorer displays the installed GoldenReader tool files.
8. Right click on "GoldenReader.exe" and select Send To => Desktop (create shortcut).

* "xxx" is the version number of GoldenReader Tool

4.4 Configuring the GoldenReader Tool

1. Start the GoldenReader tool by double clicking the "GoldenReader" Icon on your desktop.
   ⇒ The welcome screen of the GoldenReader tool will appear see Figure 23 in chapter 5. Appendix A - GoldenReader tool screens.
2. Click on the Configuration button.
   ⇒ The Configuration dialog will appear. See Figure 26 in chapter 5. Appendix A - GoldenReader tool screens.
3. Select the reader to use with GoldenReader Tool:
   ⇒ IE SmartID/CCID 0
   ⇒ Integrated Engineering Smart-ID
   ⇒ NMDA Tx-PR-400
   ⇒ Philips Pegoda
4. Click on the "OK" button to confirm and save the reader settings.
   ⇒ The GoldenReader tool is now ready for use.

Note:

For IE ISO14443-4 USB PCSC/CCID readers the configuration dialog will display:
⇒ IE SmartID/CCID 0

If more IE ISO14443-4 USB PCSC/CCID readers are connected they will be displayed as:
⇒ IE SmartID/CCID 0
⇒ IE SmartID/CCID 1
⇒ IE SmartID/CCID …

5. Appendix A - GoldenReader tool screens

5.1 GoldenReader tool screens

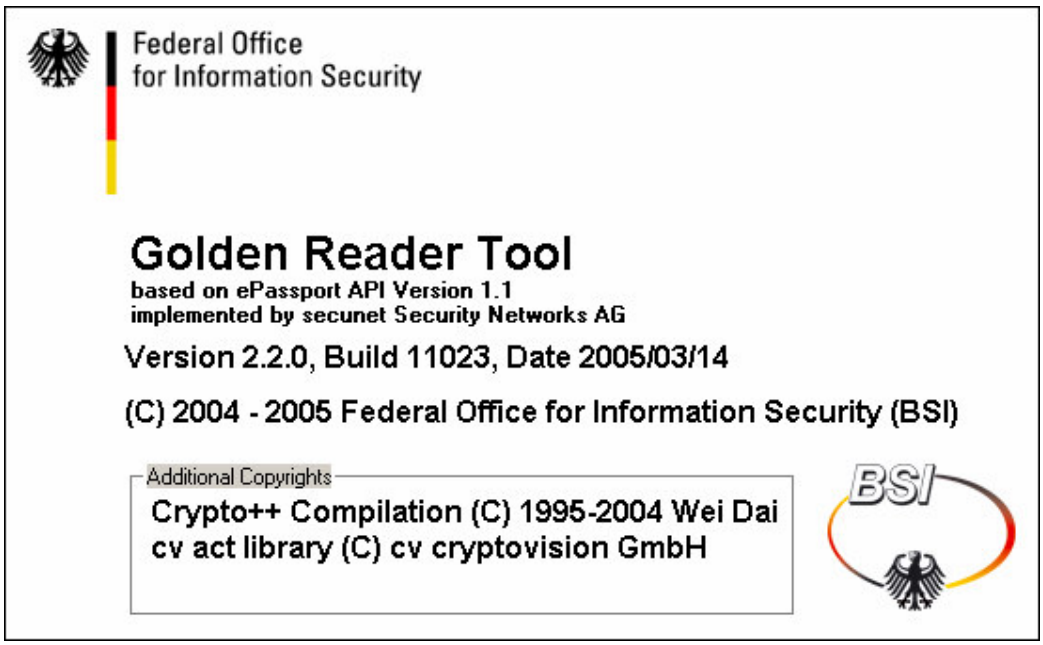

Figure 26: GoldenReader tool welcome screen

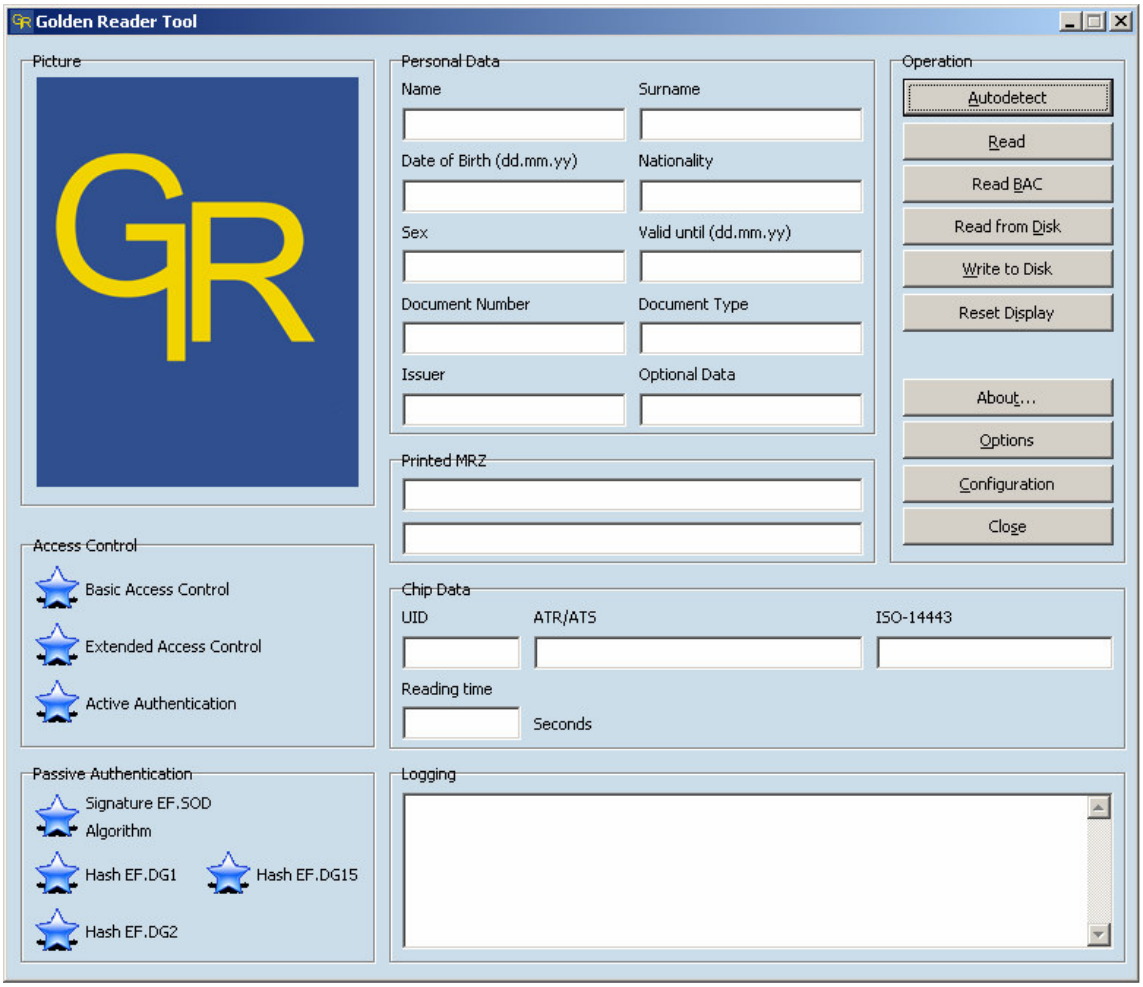

Figure 27: GoldenReader tool main window

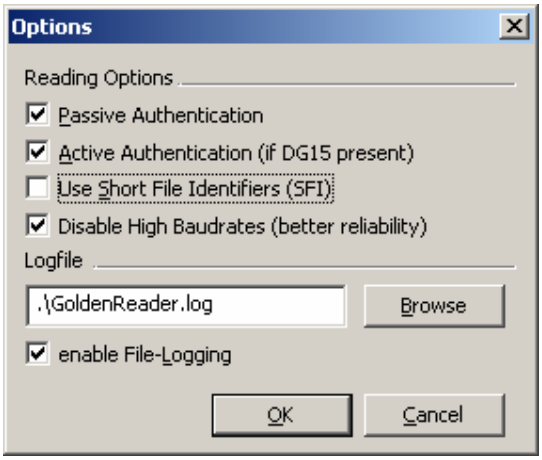

Figure 28: GoldenReader tool Options dialog

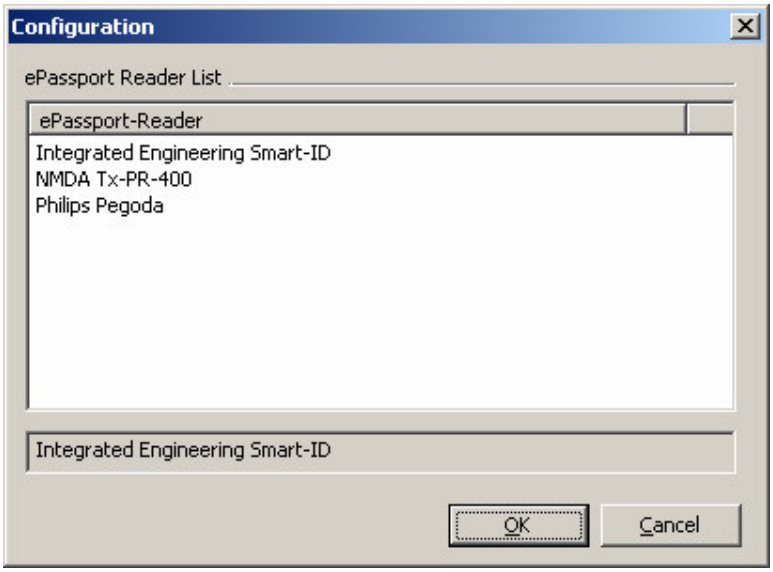

Figure 29: GoldenReader tool Configuration dialog

6. Appendix B - GoldenReader tool read-me file

READ-ME FILE

The Golden Reader Tool on this CD has been developed for the Bundesamt für Sicherheit in der Informationstechnik (BSI) in Bonn, Germany. BSI has allowed Integrated Engineering (IE) to supply this Golden Reader Tool (GRT) with the IE reader which has been integrated in this GRT.

The Golden Reader Tool has been developed to support, facilitate and promote interoperability between various chips and RFID readers. The GRT is subject to changes and/or updates.

The GRT you have now received represents the status of the GRT of the moment the release of this version by BSI. BSI wants to be able to communicate changes and/or updates in the GRT to its recipients. Therefore the Bundesamt für Sicherheit in der Informationstechnik will be informed by Integrated Engineering who receives the Golden Reader Tool through Integrated Engineering, including an E-mail address.

In case you need any support with the GRT please contact Integrated Engineering at +31 20 4620755, or by E-mail at info@smart-id.com

7. Appendix C – Notes on reading performance

7.1 Reading performance.

Reading speed from chip to application dependents on a number factors such as chip type, chip OS, application (like GoldenReader tool) and CPU speed.

To achieve maximum reading speed with the GoldenReader tool make sure to switch all the following application options in the GoldenReader tool: Passive authentication, Use SFI and extended file-logging.

BSI's GoldenReader tool is a demonstration tool. It is not intended for benchmarking. The following is a partial quote from communication between Secunet and Integrated Engineering:

```
QUOTE
The GRT is not optimized for speed. Due to the design of the rf_api
(which was developed during another project) there are several
redundant operations while receiving multiple files consecutiveley
(e.g. select DFs). But the GRT never should be a speed demonstration
tool. Stability was the first object while developing the rf-api.
Special Card Reader "speedups" are also not supported. PC/SC-Readers
are all handled equally. Just the special and serial readers are
initialized using highest possible speeds regarding to supplied
vendor examples.

What we discovered:
- Extended logging costs time due to the extensive logging of APDUs
- CPU speed affects transfer rates
- CPU type does not
UNQUOTE
```

Additionally the GoldenReader tool performance is dependent on the available processing power. Other processor intensive applications running at the same moment will influence the reading performance of the GoldenReader tool.

8. Appendix D – table of figures

8.1 Table of figures