Equitrac Reader Maintainer Tool User's Manual

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Document Title	**Equitrac Reader Maintainer Tool User's Manual**
Document ID & Version Code	PDI-RM01 v4.0 (Released)
Working Version	v3.5
Released	January 15, 2014
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Release History

Ver.	Released	Author	Affected	Description of Change
1.0	May 27, 2010	Tara Brown	All	Initial Release
2.0	Jul 8, 2010	Kevin Tessner	All	Updated for v1.05.00 of the tool Added Removal section Added Troubleshooting section
3.0	Sep 16, 2010	Kevin Tessner	Section 5 Section 7 Section 9	Updated for v1.05.01 of the tool Added driver removal instructions Added reader information section
4.0	Jan 15, 2014	Kevin Tessner	All Section 6.2, 6.3, 10.4 Section 6.4.1 Section 6.6 Section 9.1 Section 10.1 Section 11	Updated for v1.11.01 of the tool Added HID and Magswipe reader notes Stock Configuration usage changed Added Tool Settings section Updated Reader Types Symptoms changed in v1.11.01 Updated EQ_RDR Dev address

Table of Contents

1 Purpose

This document provides the steps necessary to work with the Equitrac Reader Maintainer tool and Reader Adaptor Box to read project cards and identify and/or modify an Equitrac card reader's firmware and configuration.

2 Scope

This document pertains to the use of the Equitrac Reader Maintainer Tool with any Equitrac card reader. Also included in this document is the use of a Reader Adaptor Box (10B-0034), which may be required along with the Reader Maintainer Tool for certain reader types (Ie. EPA, Internal, Mini-DIN).

3 Responsibilities

1. It is the responsibility of all persons using this instruction to utilize only qualified components and equipment.
2. Anyone handling an internal card reader shall ensure adequate electrostatic discharge (ESD) precautions are used to protect the electronics from ESD damage.
3. Approval authorities listed on the cover page of this instruction are responsible to ensure their appropriate team members are aware of this document and the importance of following it as it is written.
4. All persons reading this document are responsible to submit suggestions for improvement for the process described in this document to the author and approval authorities of this instruction.

4 Required Equipment and Materials

1. 3510_Equitrac_Reader_Maintainer_1_11_01.zip file
2. Equitrac card reader
3. 10B-0034 Reader Adaptor Box (if item 2 is non-USB)
4. Windows PC with available USB port (2 ports if item 2 is non-USB)

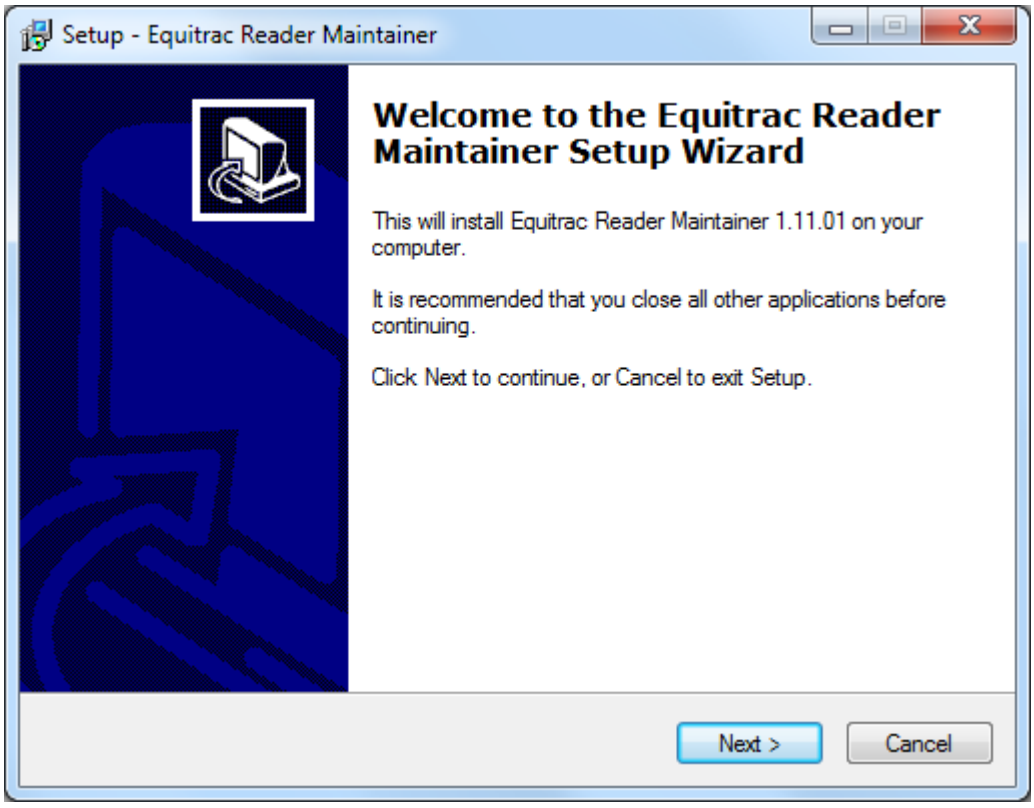
5 Installing the Software and Drivers

1. Follow the instructions for removing the Equitrac Reader Maintainer tool and drivers in section 7 if the PC already has previous versions of the tool and drivers installed.

2. Unzip the *3510_equitrac_reader_maintainer_1_11_01.zip* file to the *C:* folder of the Windows computer using the password ”Equitrac” (without quotes), and ensuring that the *Use folder names* option is selected.

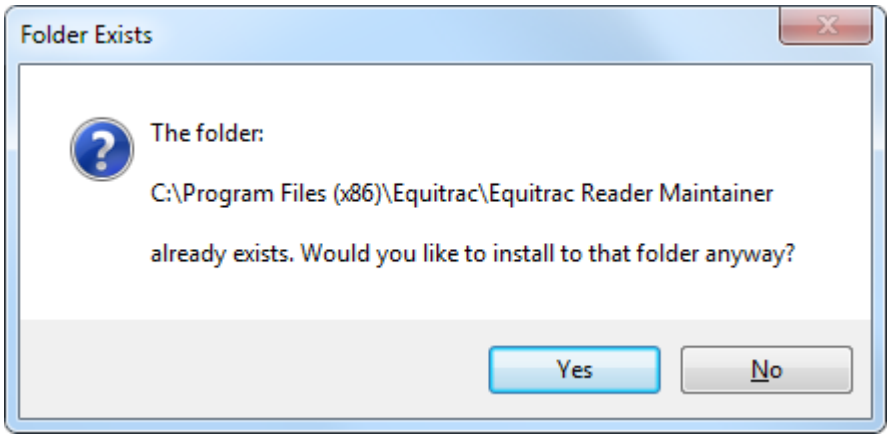
This creates a *C:\Equitrac* folder containing all necessary files.

3. Launch the 3510_equitrac_reader_maintainer_1_11_01.exe file found in the *C:\Equitrac* folder. The following window appears:



4. Click *Next* twice to proceed through the wizard with the default options.

5. If the *Equitrac Reader Maintainer* tool has previously been installed on your PC, a prompt similar to the following may appear:



   Click *Yes* to proceed to the next step of the setup wizard.

6. Click *Next* then *Install* to begin the software installation.

7. Once installation has completed, click *Finish* to close the setup program.

The remaining steps are required only if you will be using an Equitrac Reader Adapter box to work with non-USB card readers.

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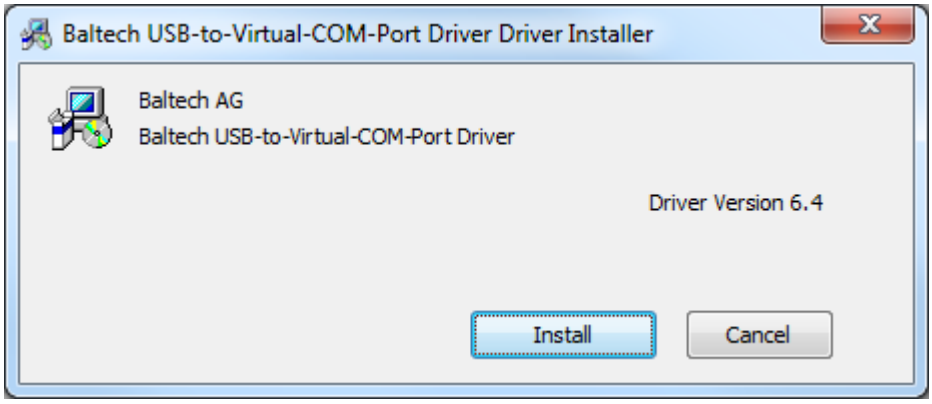
8. Launch the BaltechVCPInstaller.exe file found in the C:\Equitrac\2100_usb_to_virtual_com_port_driver_6_04_00 folder.

9. If an *Open File – Security Warning* dialog appears asking whether you wish to run the software, click *Run*.

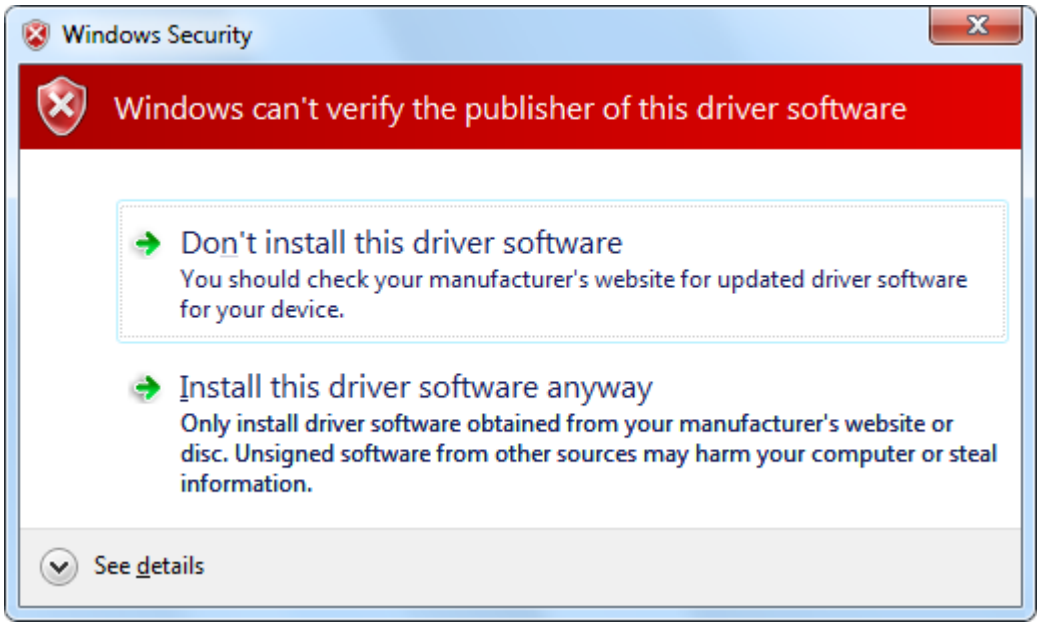
10. If a *User Account Control* dialog appears asking whether you wish to allow the program to make changes to your computer, click *Yes*.

11. The following window appears:



12. Click *Install*.

13. If alerted that Windows can't verify the publisher of the driver software (or that the software has not passed Windows logo testing on Windows XP), click *Install this driver software anyway:*



Note that this may happen one additional time.

14. If prompted that you must restart your computer, click *Yes*.

6 Using the Equitrac Reader Maintainer Tool

6.1 Opening The Tool and Connecting a Reader

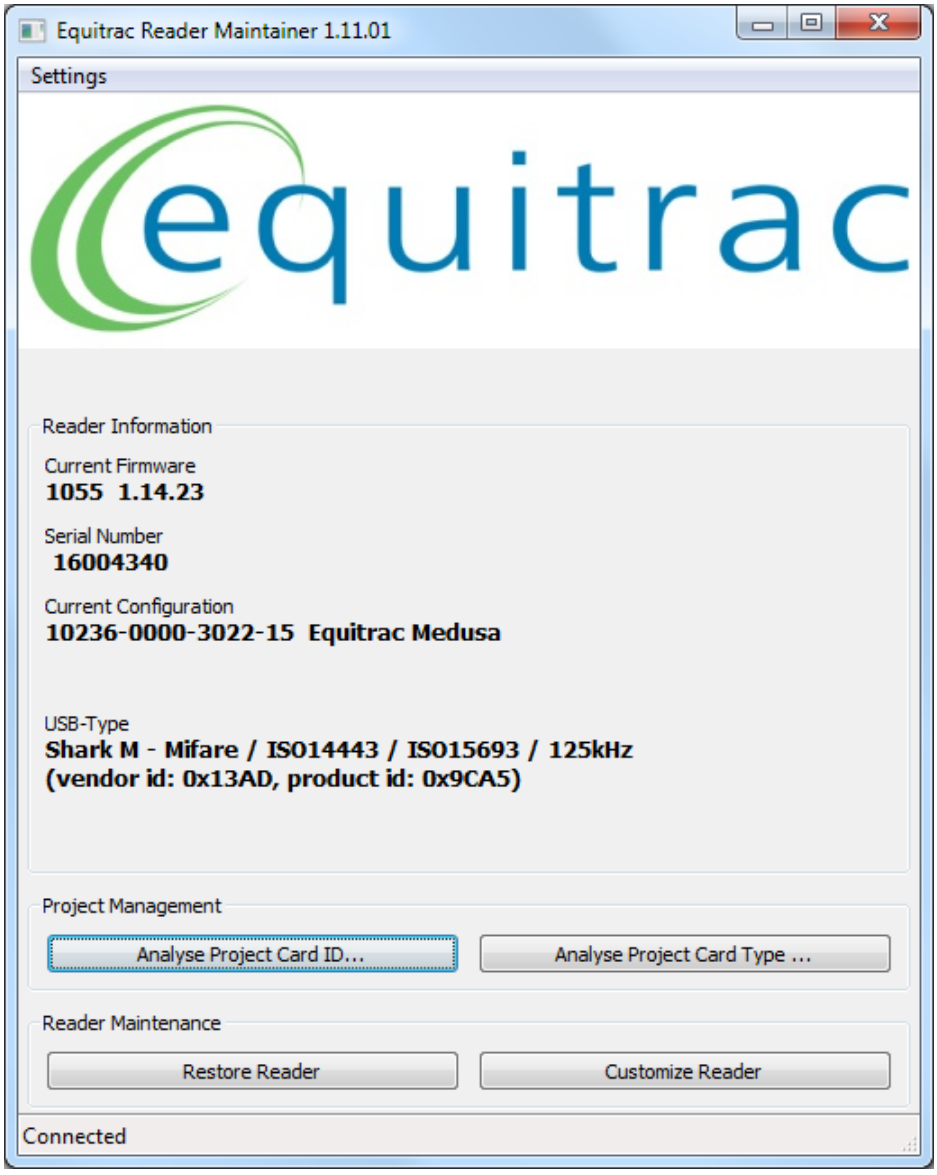
1. Select *Start Menu> All Programs> Equitrac> Equitrac Reader Maintainer* to run the Equitrac Reader Maintainer tool. The following window appears:

If a reader is not connected to the computer, the tool indicates *Not Connected* in the bottom left corner.

2. Connect the reader to a USB port on the computer.

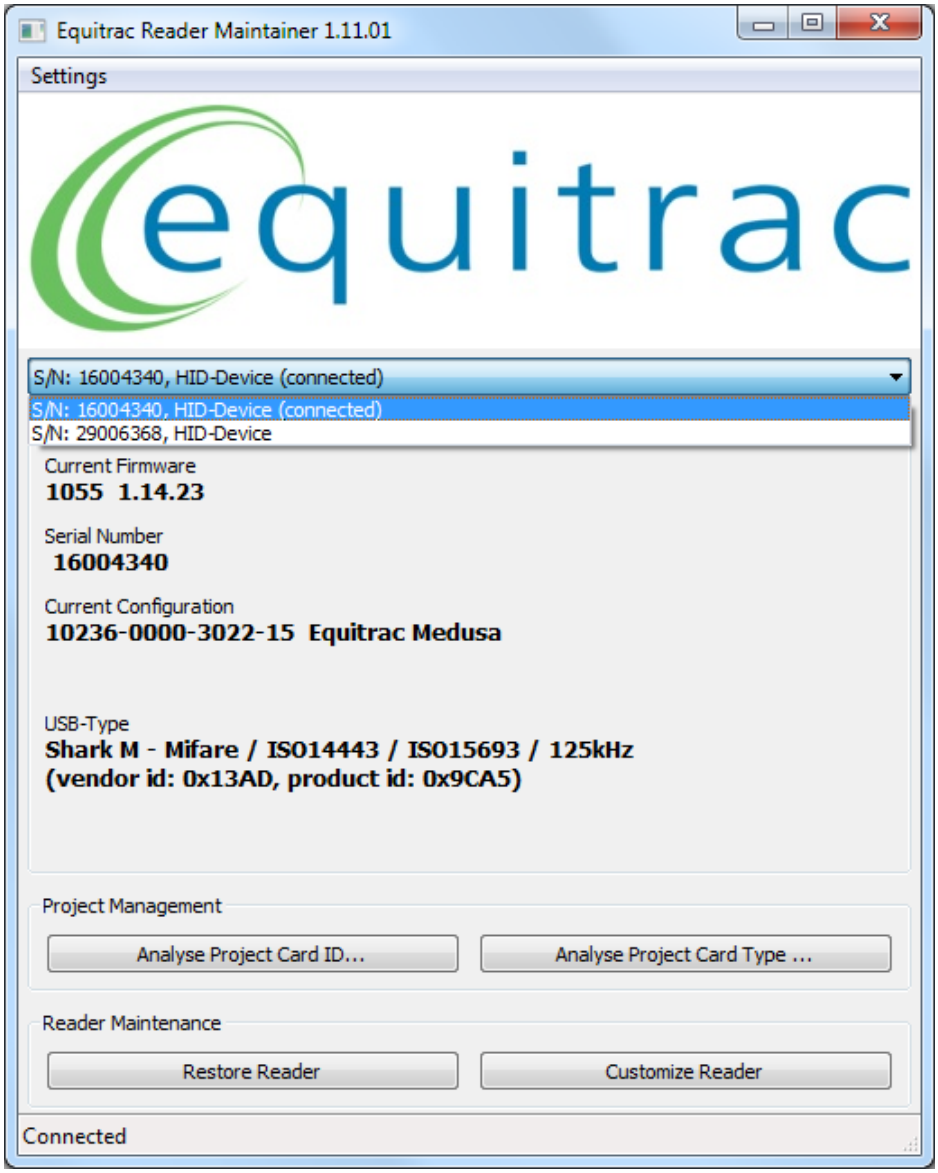
If the reader is non-USB, connect the Reader Adaptor Box as per section 8 and then proceed with the following steps.

The Equitrac Reader Maintainer reports the connected reader's firmware, serial number, and configuration; as in the following example:



Record the current configuration of the reader in case it is needed for future reference.

3. The Reader Maintainer Tool connects to only one reader at a time. When multiple readers are installed on your computer, a drop list allows you to change the reader to which you are connected by selecting it via its serial number:

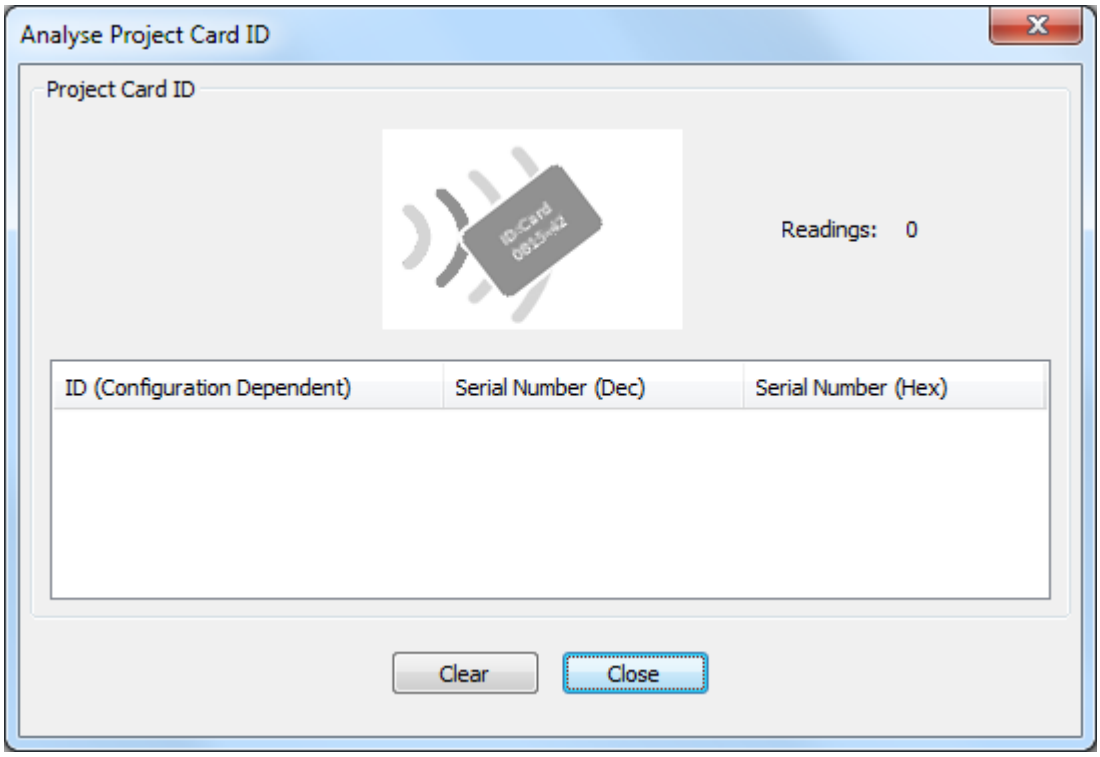


6.2 *Analyzing Project Card ID*

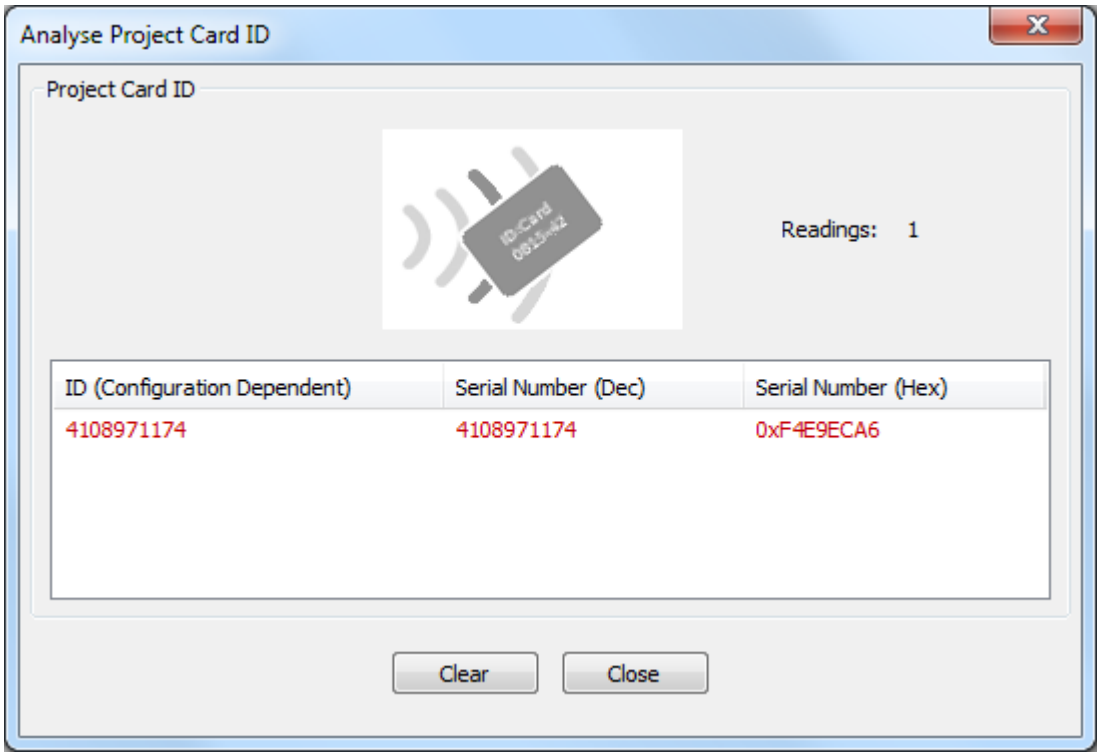
This function displays the ID that the reader returns in the end user application.

By default this is a card's chip serial number or raw magnetic swipe track information, but readers programmed with a custom configuration may return alternate information derived from the card's contents.

1. With the Equitrac Reader Maintainer tool open and a reader connected (section 6.1), click on the *Analyse Project Card Id…* button. The following dialog appears:



2. Present a compatible project card to the reader. Once detected in the read field, its *ID* and *Serial Number* information is displayed in the dialog:

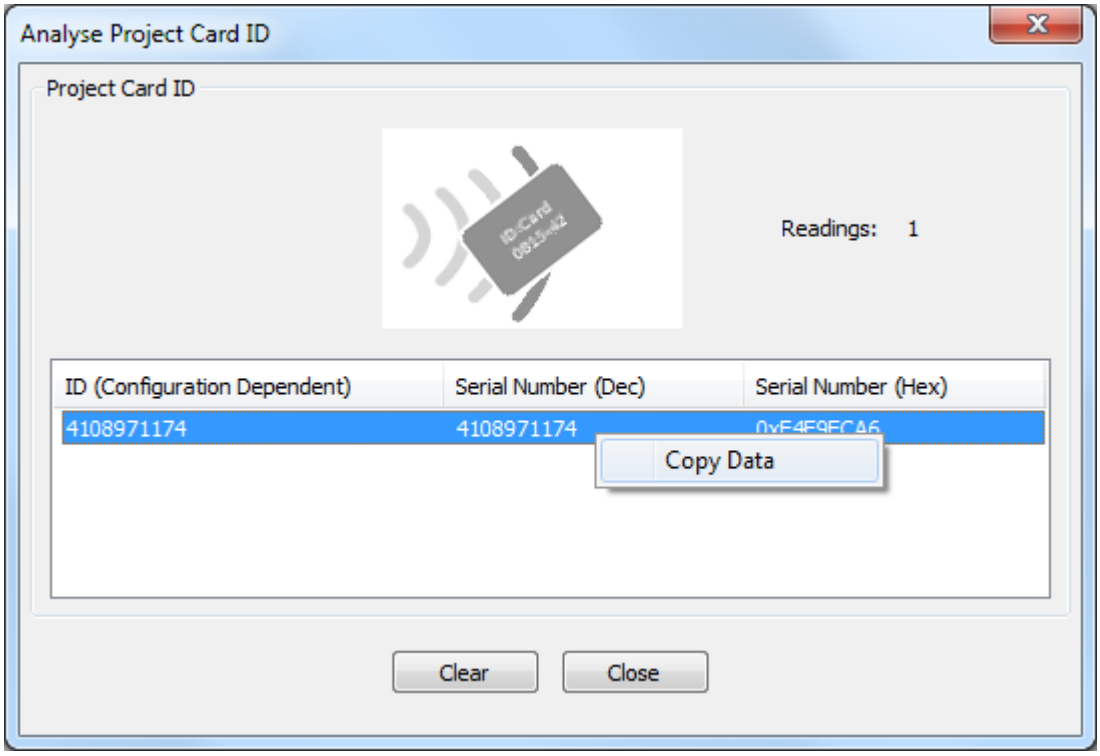


Additional cards may be presented one at a time without closing or clearing the information in the dialog. Their information will be displayed on additional lines, with the most recently detected ID line highlighted in red.

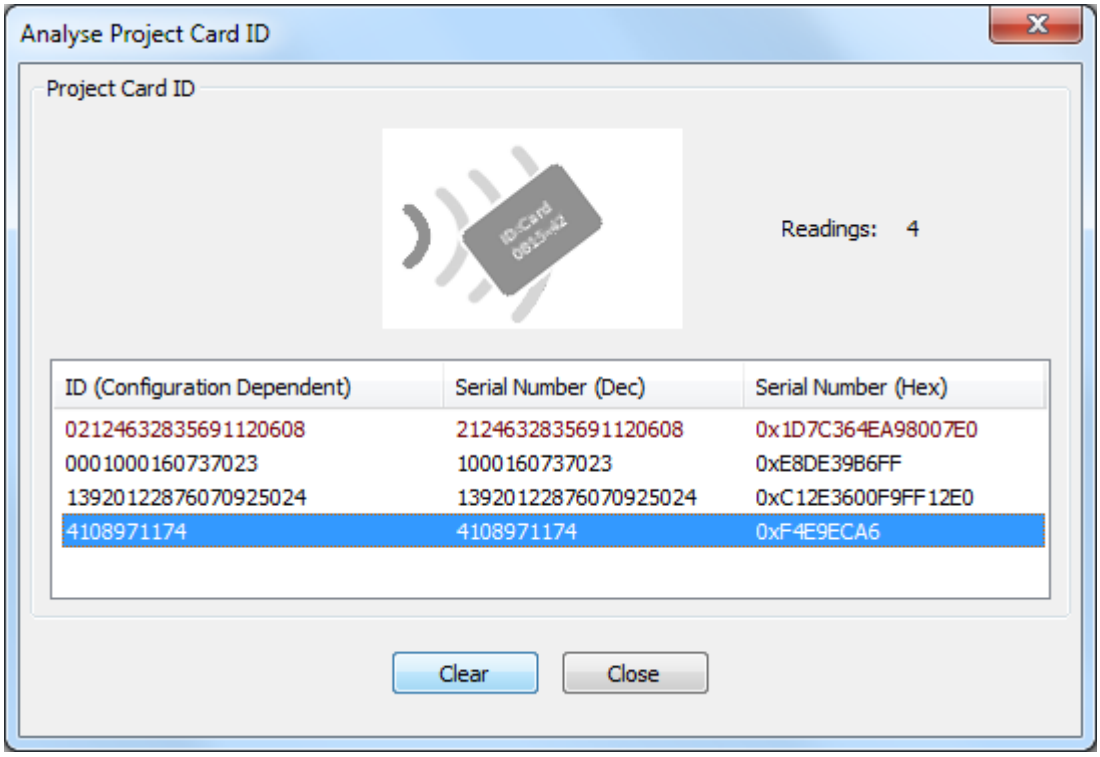
When working with Magnetic Swipe or older HID Proximity card readers, the Serial Number (Dec) and Serial Number (Hex) columns will show “no information”. This is normal.

Some cards; particularly in the HID, EM-Marin, and Hitag families; may be multi-typed and return one of several different results when read. Leaving an unknown card in the read field for 30 seconds allows the reader to detect and return IDs from all transponders contained within the card.

3. To copy card data to the Windows clipboard for use in other applications, *Right-click* the desired line and select *Copy Data*:



4. If the display becomes too crowded with data from multiple cards, click the *Clear* button:



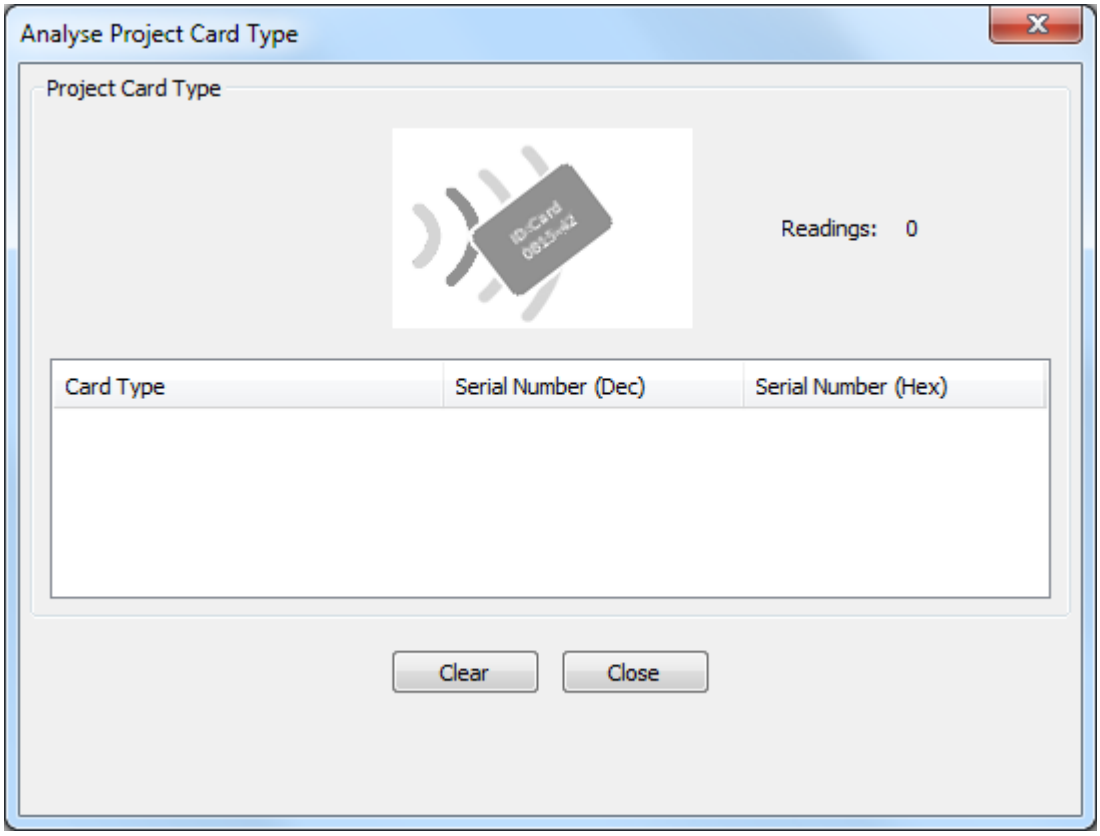
5. When finished, close the dialog by clicking *Close*.

6.3 *Analyzing Project Card Type*

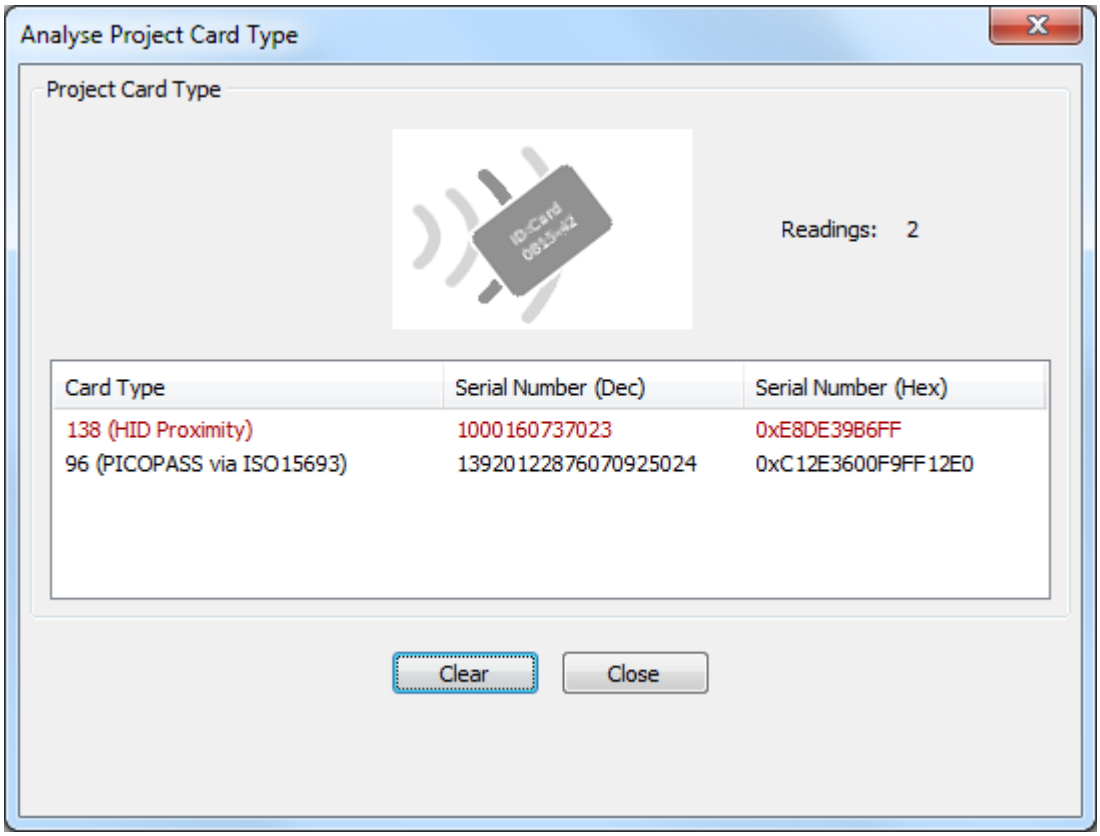
This function displays card type information independent of any programmed custom reader configuration.

When working with multi-type cards, this function is used to determine which type corresponds to the desired information, so that the correct single-type Stock Solution may be programmed (section 6.4.1).

1. With the Equitrac Reader Maintainer tool open and a reader connected (section 6.1), click on the *Analyse Project Card Type…* button. The following dialog appears:



2. Present a compatible project card to the reader. Once detected in the read field, its *Type* and *Serial Number* information is displayed in the dialog:

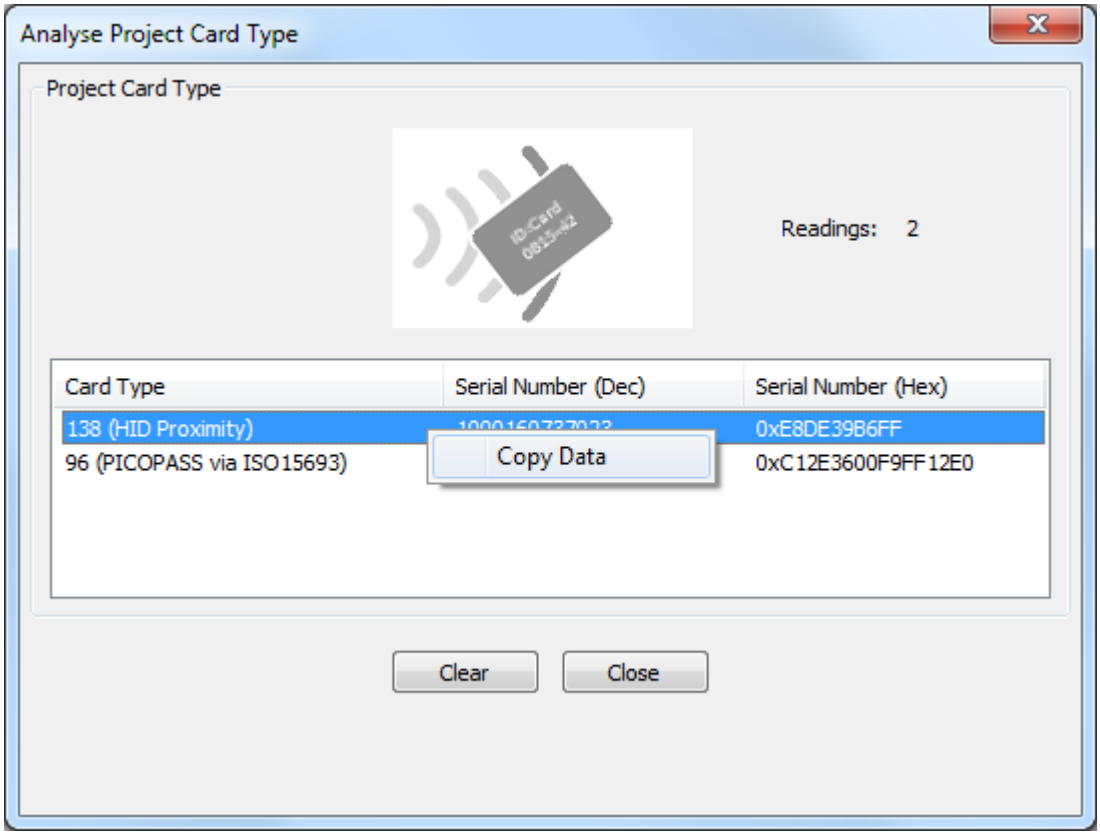


Additional cards may be presented one at a time without closing or clearing the information in the dialog. Their information will be displayed on additional lines, with the most recently detected information highlighted in red.

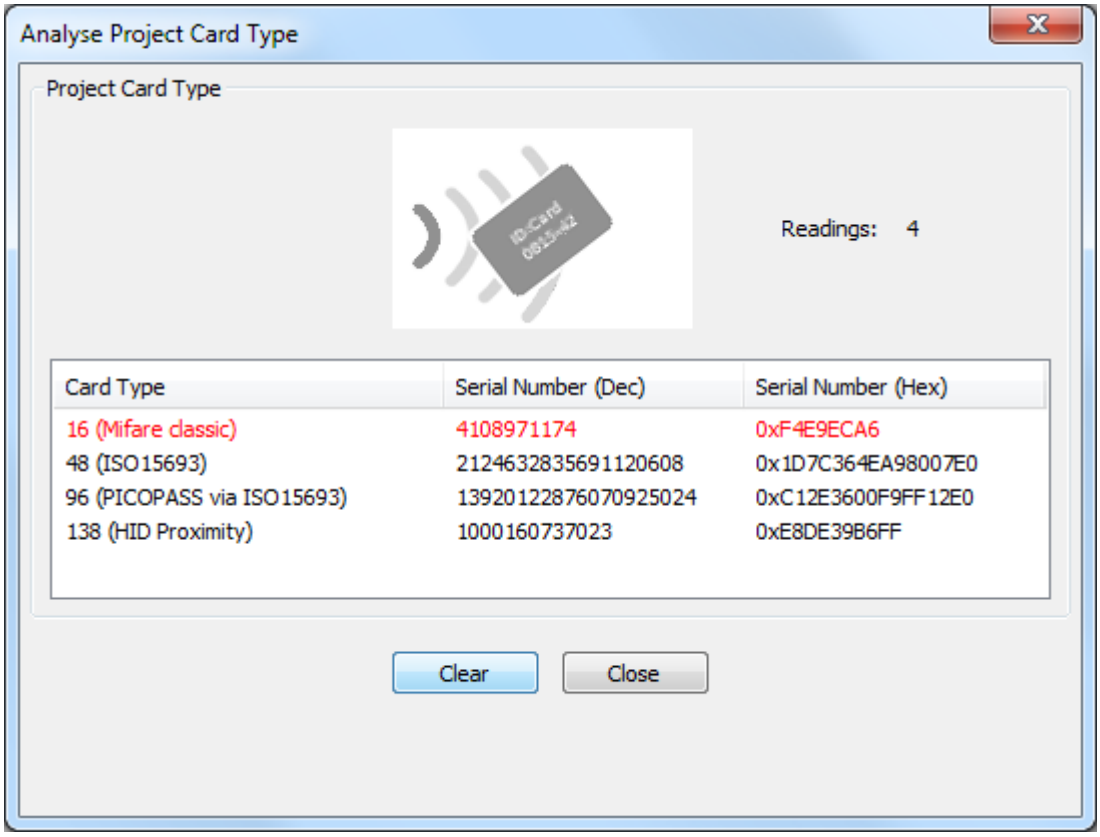
When working with Magnetic Swipe or older HID Proximity card readers, the reader LED will blink but no data appears. This is normal, as Card Types and Serial Numbers do not apply with these reader models.

Some cards; particularly in the HID, EM-Marin, and Hitag families; may be multi-typed and return one of several different results when read. Leaving an unknown card in the read field for 30 seconds allows the reader to detect and return the data from all transponders contained within the card.

3. To copy card data to the Windows clipboard for use in other applications, *Right-click* the desired line and select *Copy Data*:



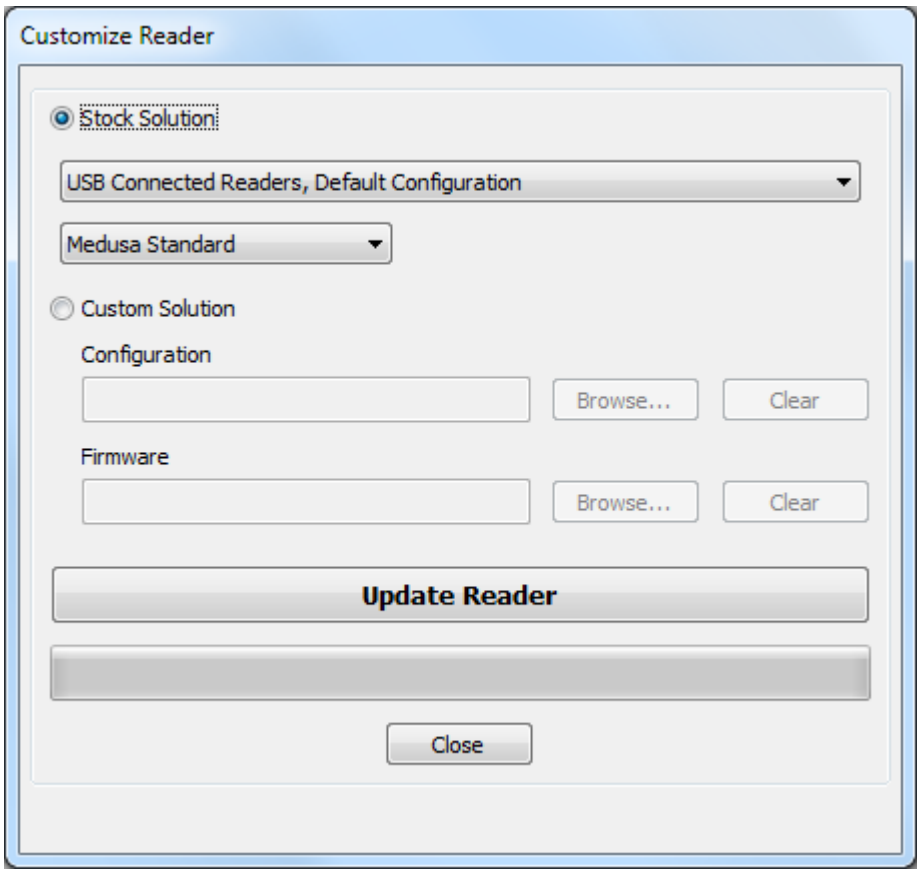
4. If the display becomes too crowded with data from multiple cards, click the *Clear* button:



5. When finished, close the dialog by clicking *Close*.

6.4 Customizing a Reader

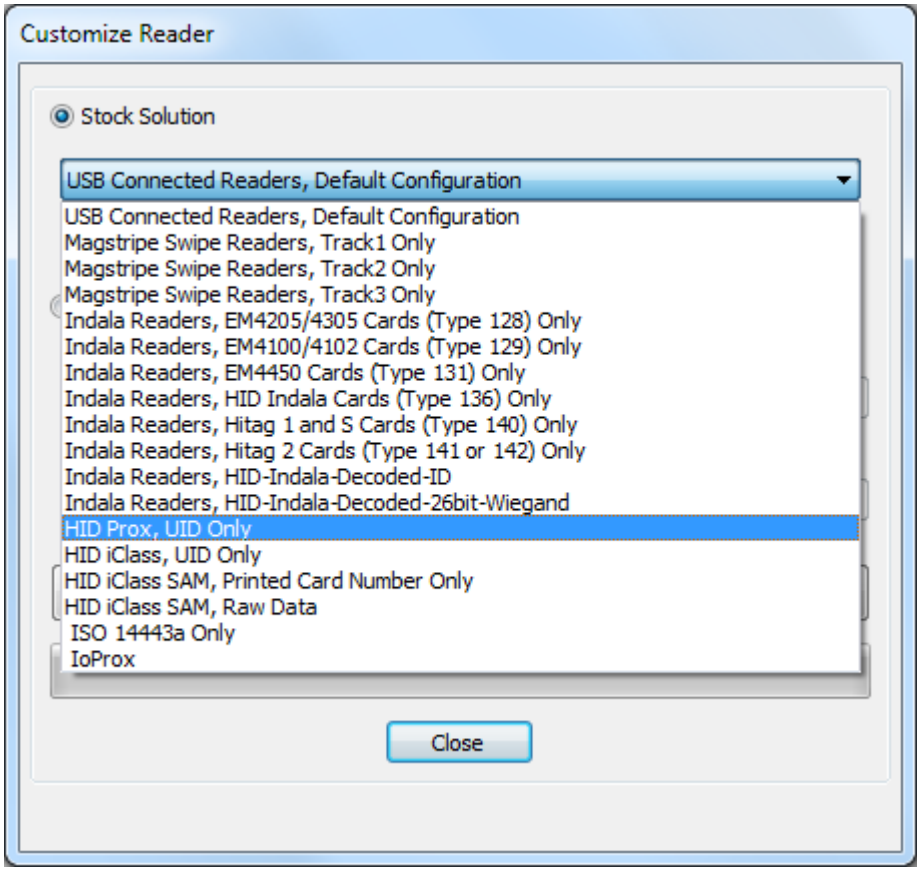
1. With the Equitrac Reader Maintainer tool open and a reader connected (section 6.1), click on the *Customize Reader* button. The following dialog appears:



6.4.1 Programming a Stock Solution

Several 'Stock Solutions' have been developed to address a number of common situations. Configurations to return just a single track from a magnetic swipe card or a specific type from a multi-typed card exist within the Reader Maintainer Tool.

1. In the *Customize Reader* dialog, click the *Stock Solution* button, then use the drop list to select the desired configuration:



Due to the proliferation of RFID enabled financial and identity cards, coupled with the ability of the card readers to work with multiple transponder types, it is ***strongly advised*** that a Stock Solution be used to restrict the card reader to work only with the desired project cards (refer to section 6.3, Analyzing Project Card Type).

This prevents the card reader returning erroneous ID information from other RFID transponders that may unknowingly be carried by the user.

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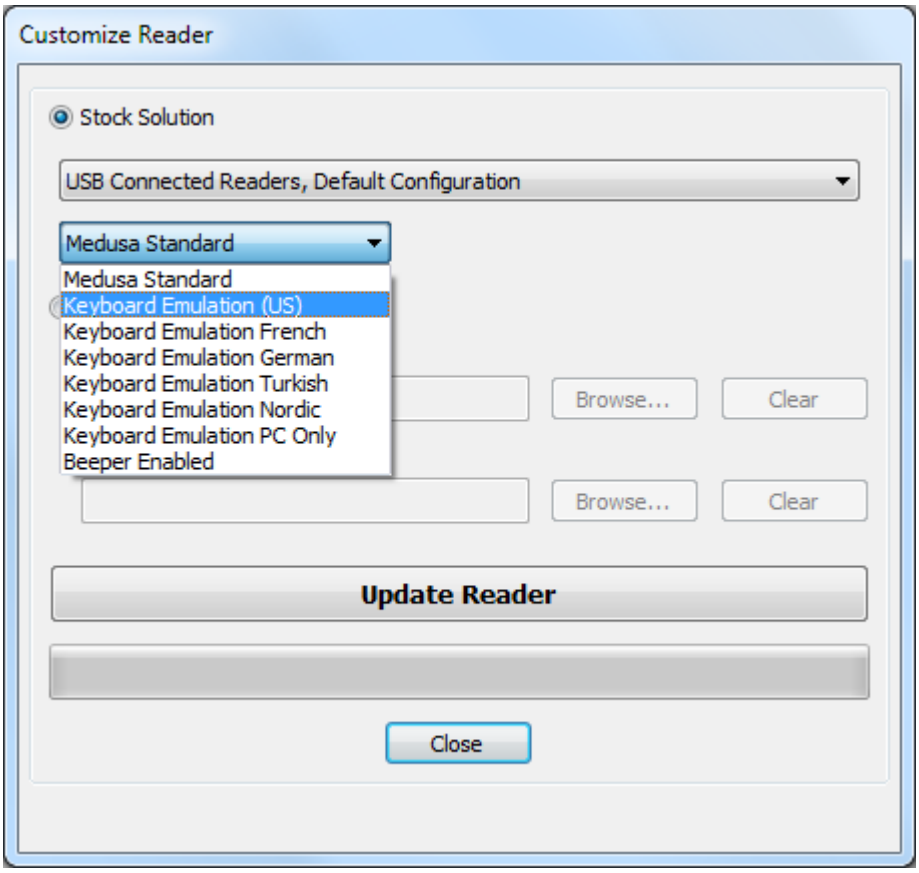
2. This base configuration can then be modified with one of several USB HID Keyboard emulations, or a beeper enabled configuration:

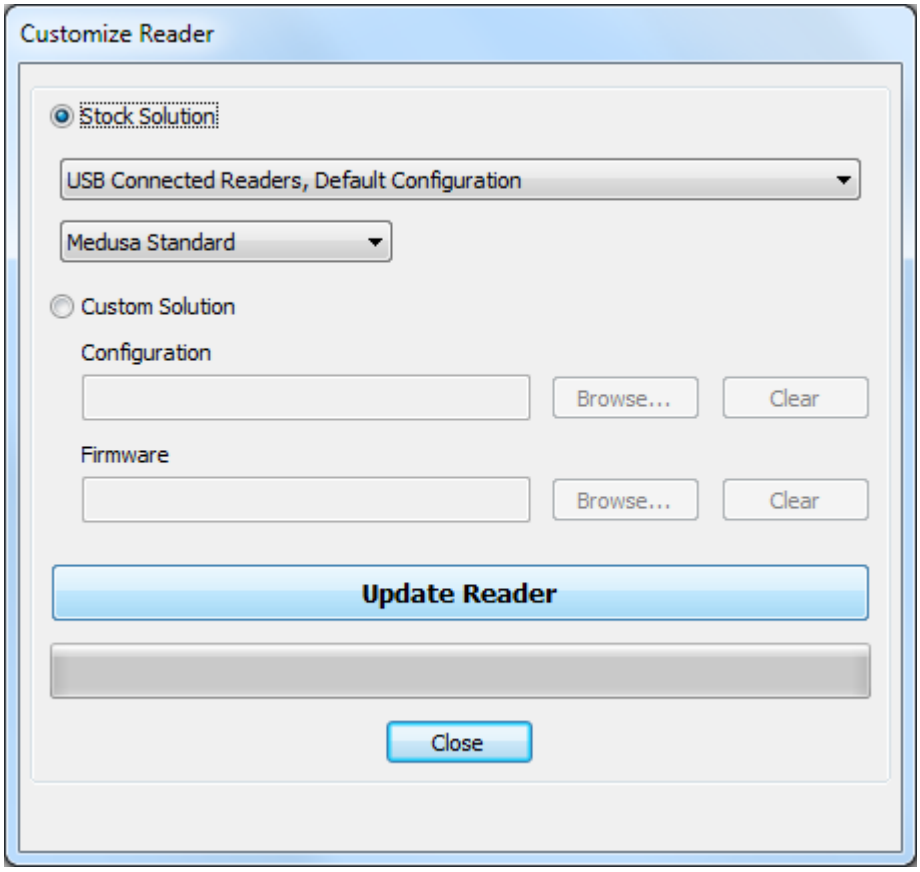


Keyboard emulation returns keystrokes, not characters, so the symbolic lead character is actually a combination of a Shift key and numeric or other key, which varies by regional keyboard layout.

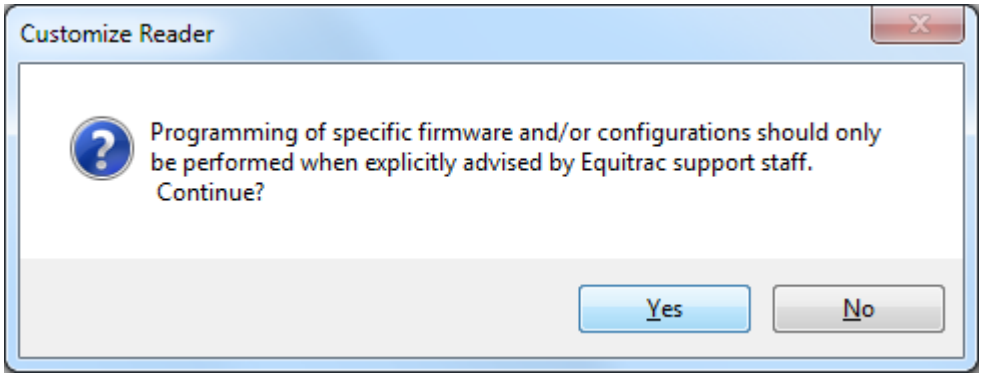
For proper operation it is crucial that the emulation chosen matches that of the regional settings on the device to which the card reader will be connected.

The PC Only emulation returns the ID read from the card without a symbolic lead character, for use with the Release Station or other application where the ID is required without any leading character.

3. To update the connected reader, click *Update Reader*:

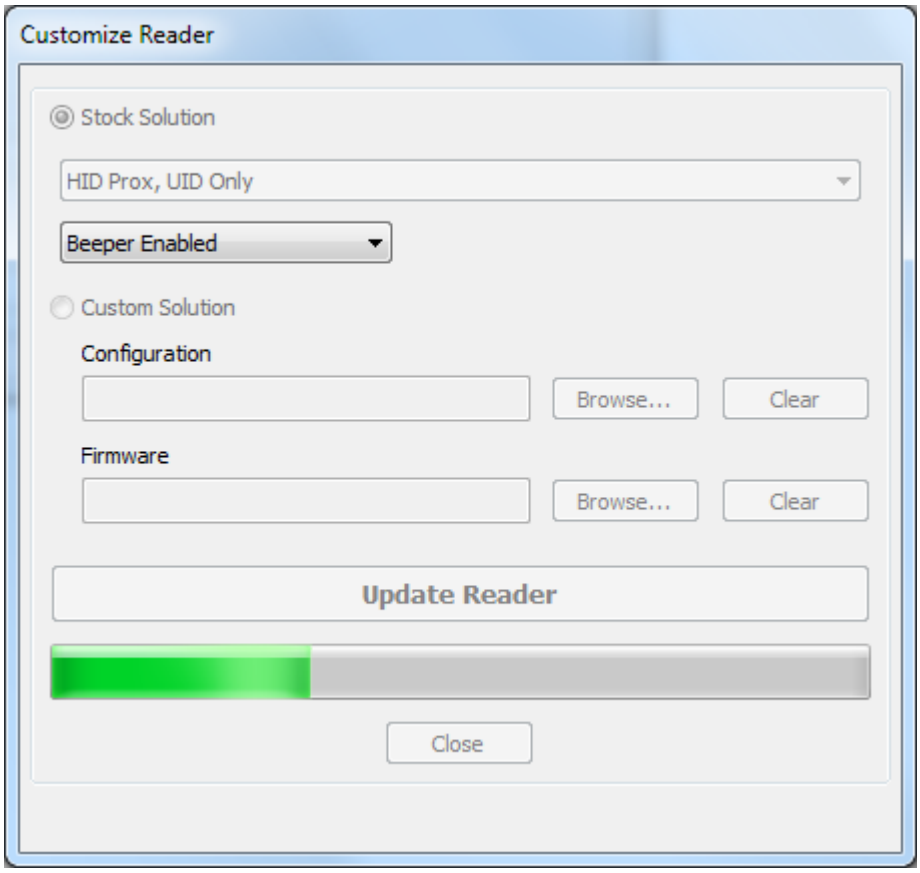


4. The following warning appears:



Click *Yes*.

5. The reader firmware and configuration are then updated as necessary. The dialog controls are disabled and a progress bar appears during this process:

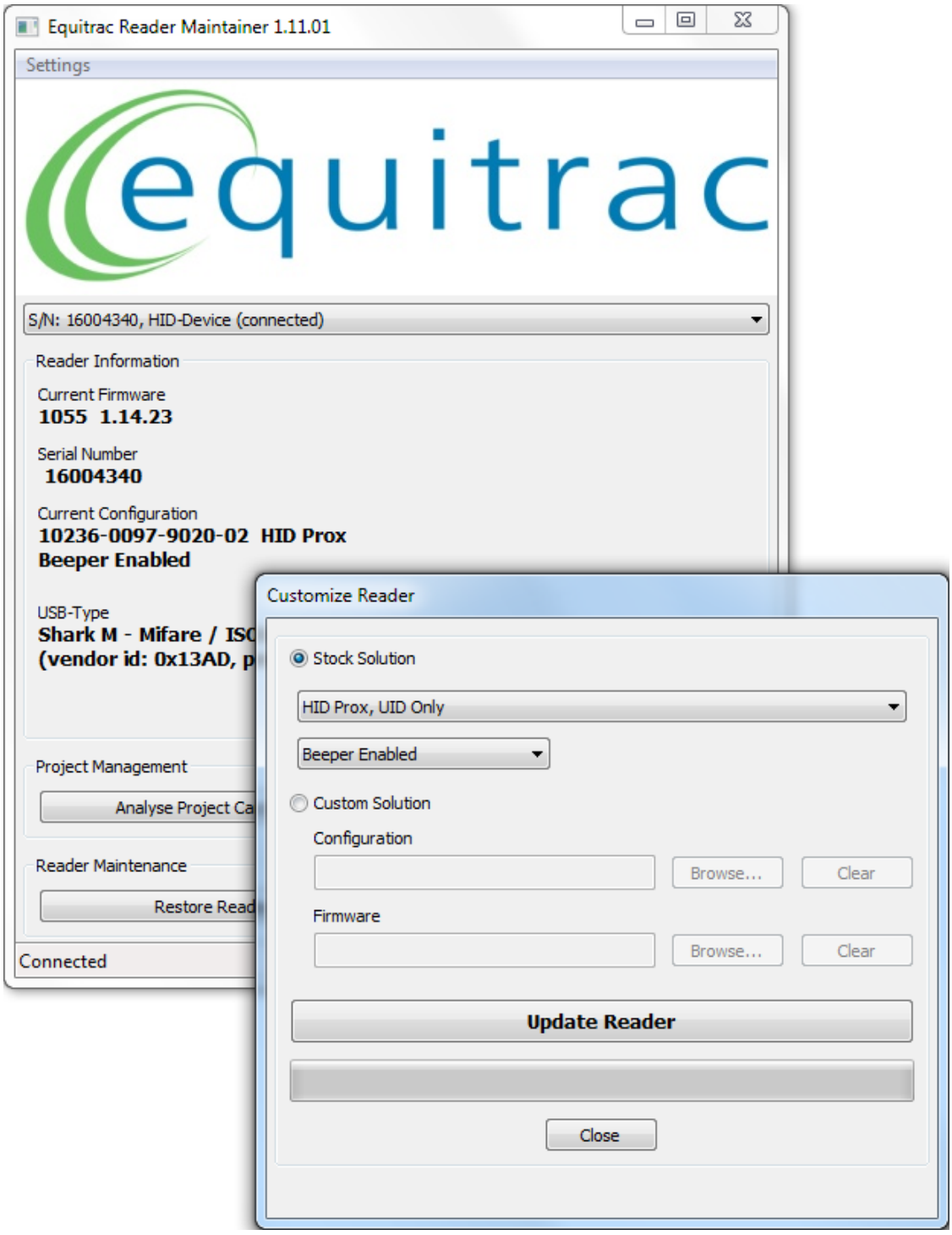


The message "*Please wait until the reader is found"* may appear one or more times. If it does not disappear within 20 seconds, there may have been a glitch during the update process. Click *Cancel* and refer to section 10 for troubleshooting instructions.

You may hear Windows' USB disconnection and reconnection sounds during this process, followed by the appearance of one or more "*New hardware found"* or "*Installing drivers"* notices. This is normal.

If the reader already has a similar configuration, the update occurs quickly and the dialog returns to normal almost immediately.

6. Upon completion of the update, the dialog re-enables and the window behind it refreshes to reflect the new firmware and configuration of the reader:



7. To update another reader, simply unplug all original readers and plug in the next; then click the *Update Reader* button again.

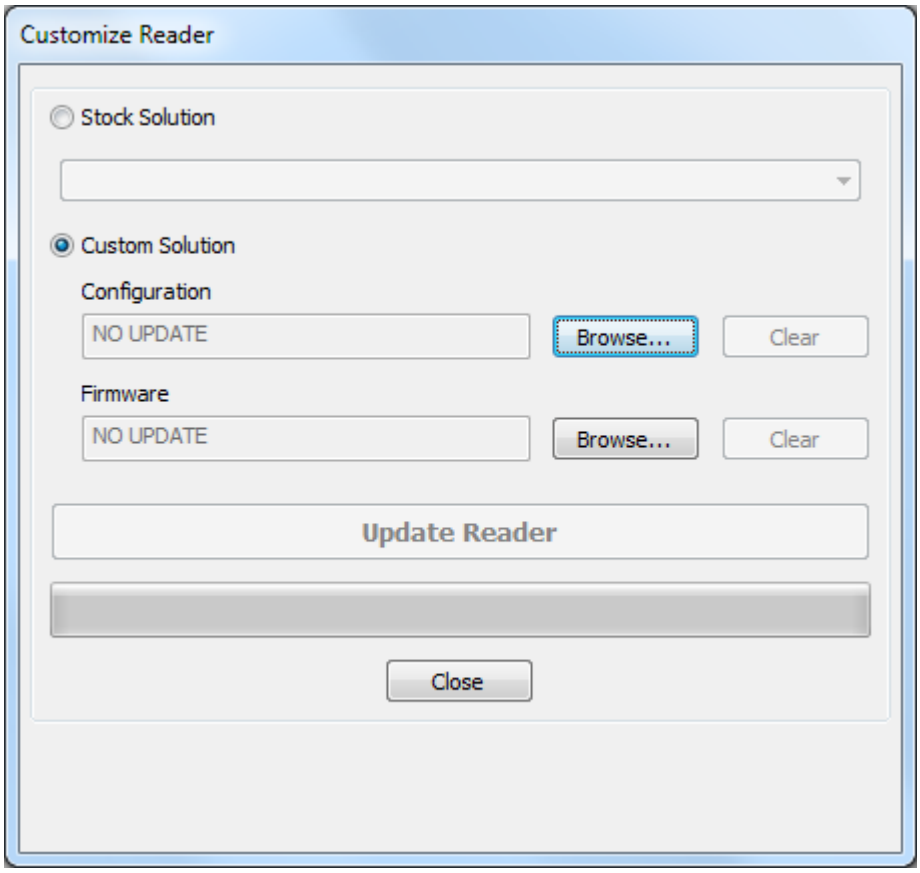
The window behind the *Customize Reader* dialog refreshes to reflect the firmware and configuration of the currenty connected reader in realtime.

8. Repeat step 7 for each additional reader to be updated.

6.4.2 Programming a Custom Solution

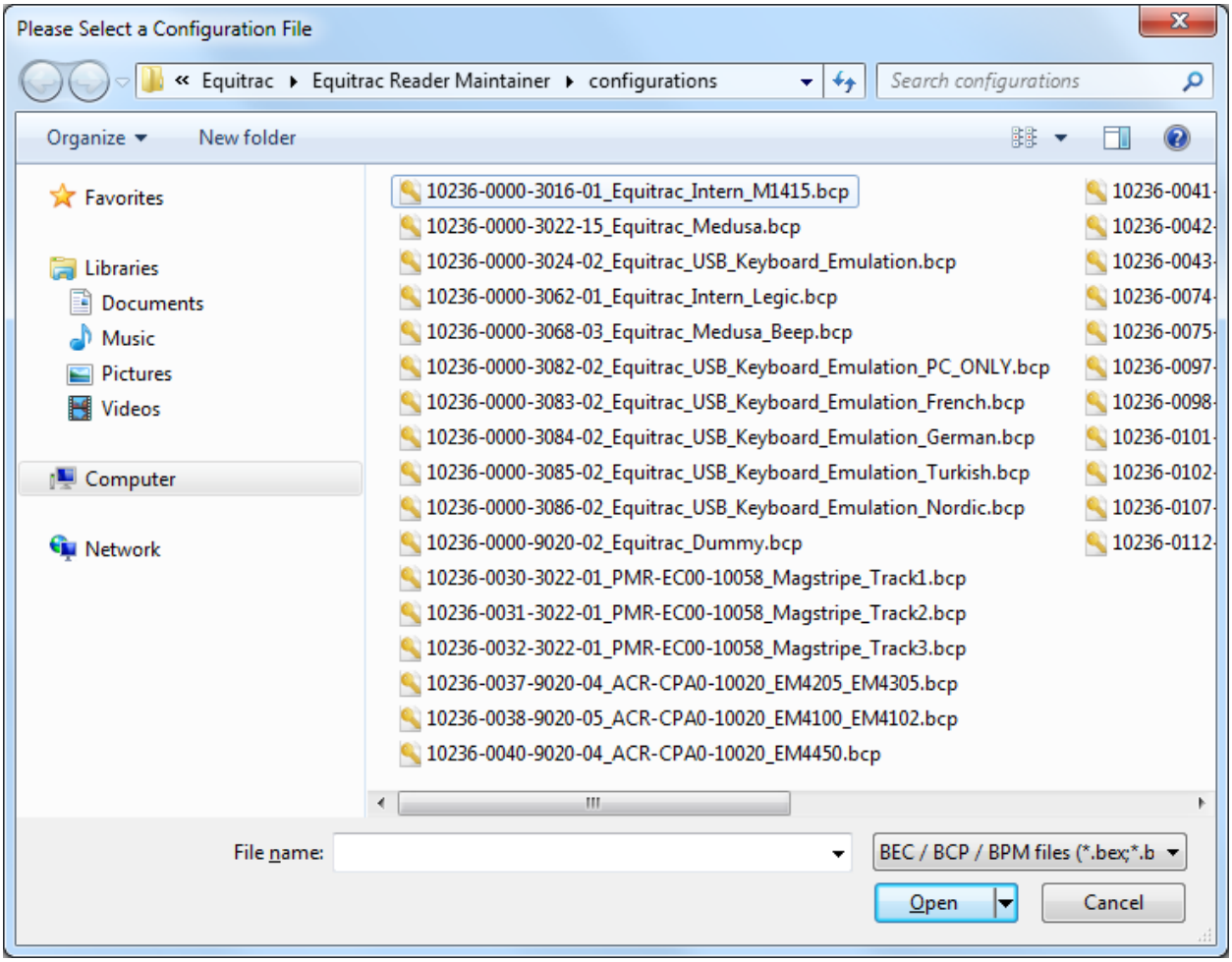
Sometimes, a project-specific solution is required which will be produced and provided to you by Nuance or authorized partners. To program a custom solution:

1. In the *Customize Reader* dialog, click the *Custom Solution* button:



This enables the *Browse* buttons that allow you to select the specific configuration and/or firmware files which have been provided to you.

2. Click the *Browse…* button corresponding to the component, either configuration or firmware, to be programmed in the reader. A file selection dialog appears:



Select the desired file and click *Open*.

If the custom solution consists of both a firmware file and a configuration file, click the *Browse…* button for the other component and select it in similar fashion.

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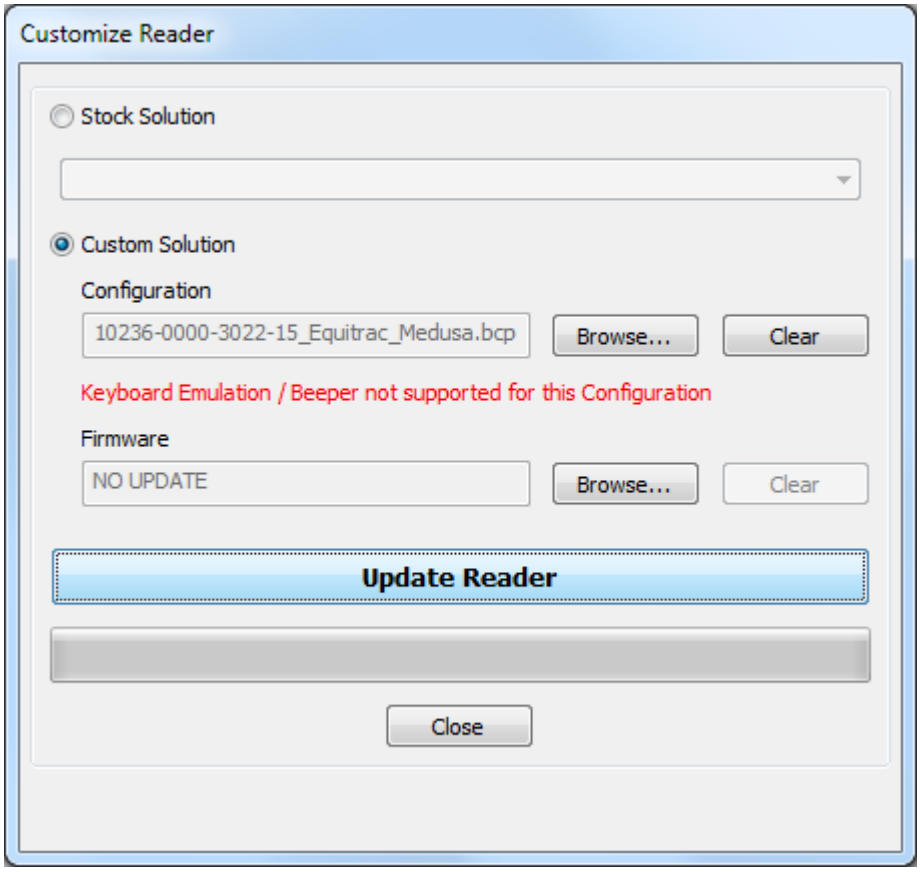
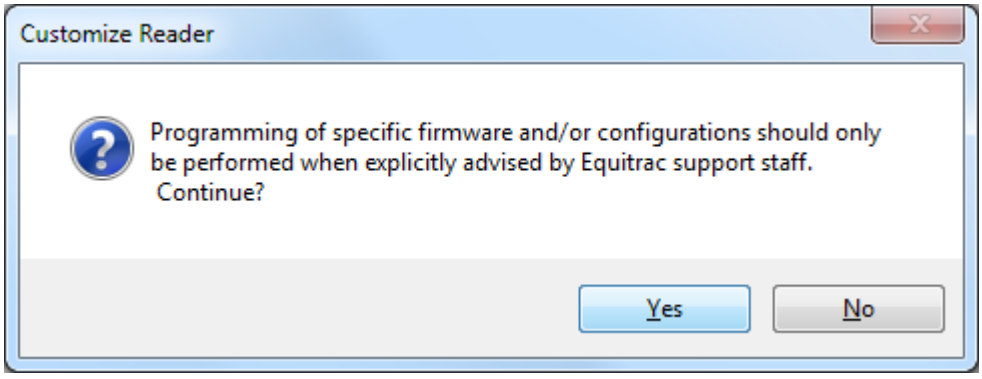
3. Click *Update Reader*:

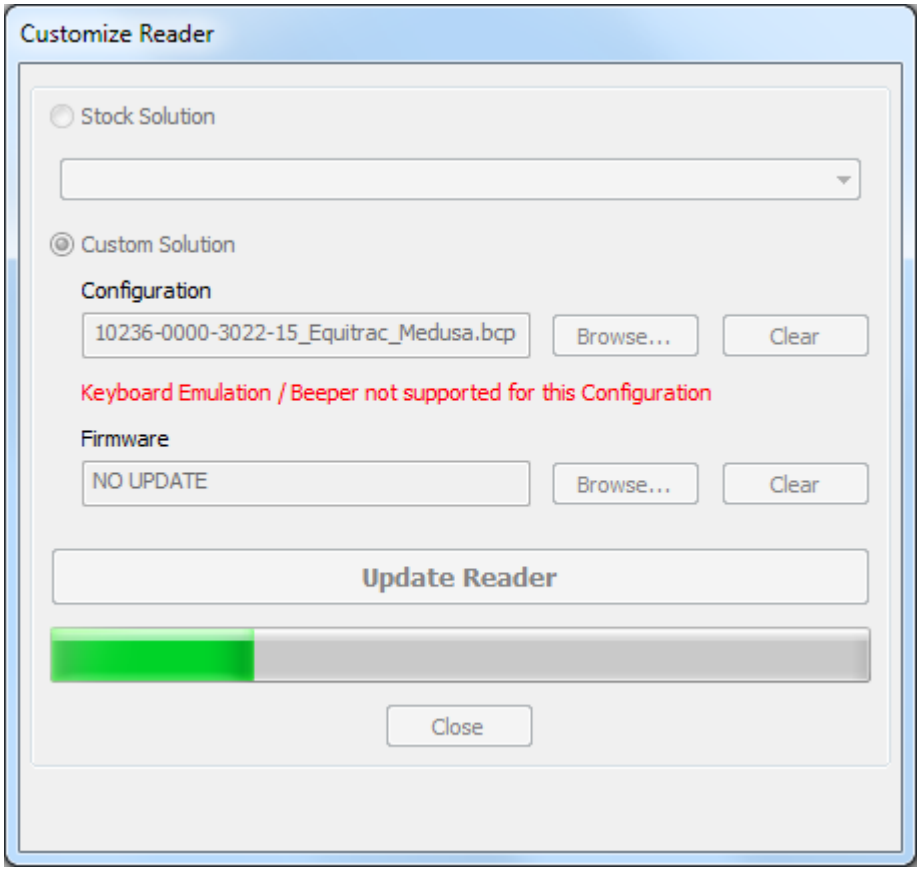


4. The following warning appears:



Click *Yes*.

5. The reader firmware and configuration will be updated as necessary. The dialog controls are disabled and a progress bar appears during this process:

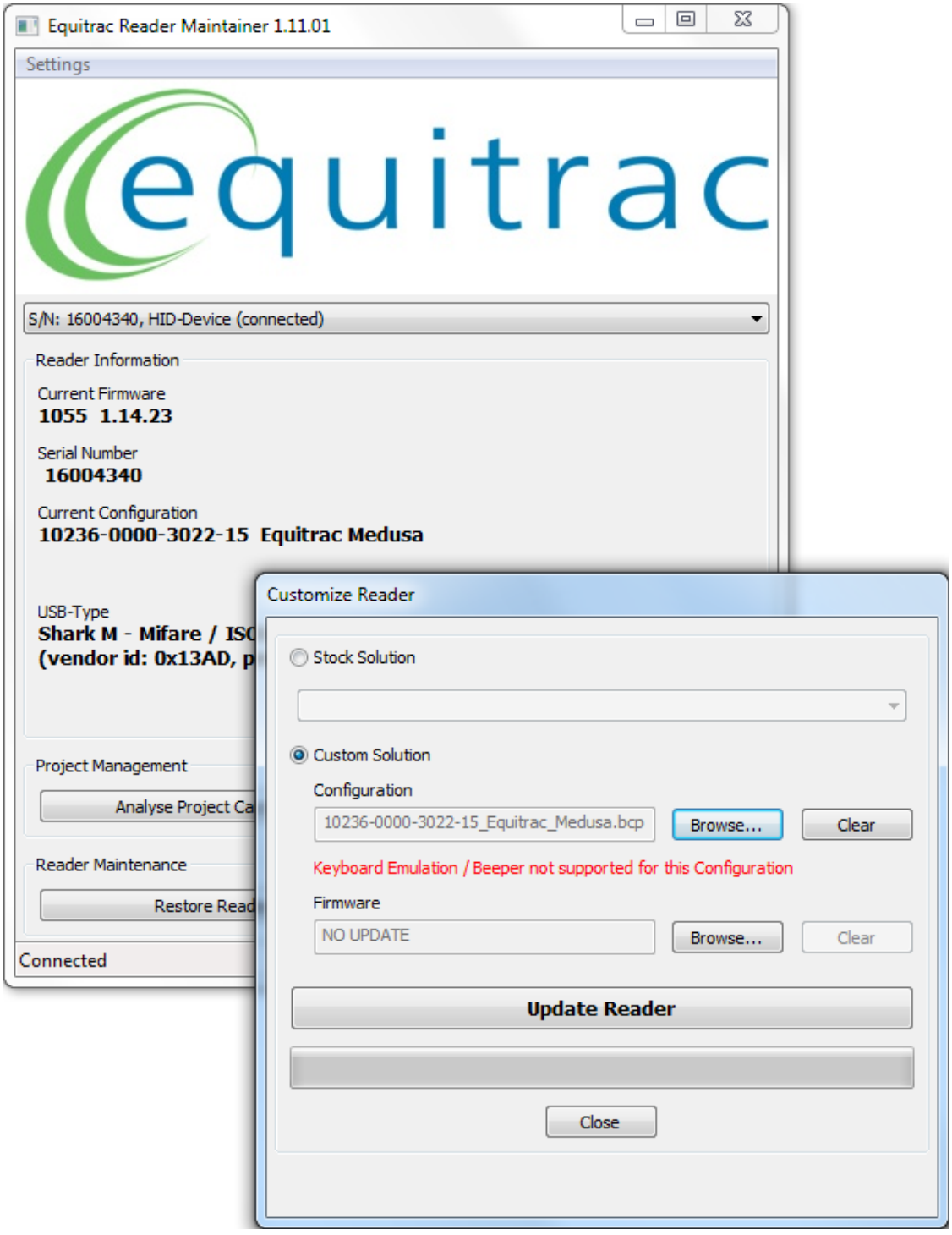


The message "*Please wait until the reader is found"* may appear one or more times. If it does not disappear within 20 seconds, there may have been a glitch during the update process. Click *Cancel* and refer to section 10 for troubleshooting instructions.

You may hear Windows' USB disconnection and reconnection sounds during this process, followed by the appearance of one or more "*New hardware found"* or "*Installing drivers"* notices. This is normal.

If the reader already has a similar configuration, the update occurs quickly and the dialog returns to normal almost immediately.

6. Upon completion of the update, the dialog re-enables and the window behind it refreshes to reflect the new firmware and configuration of the reader:



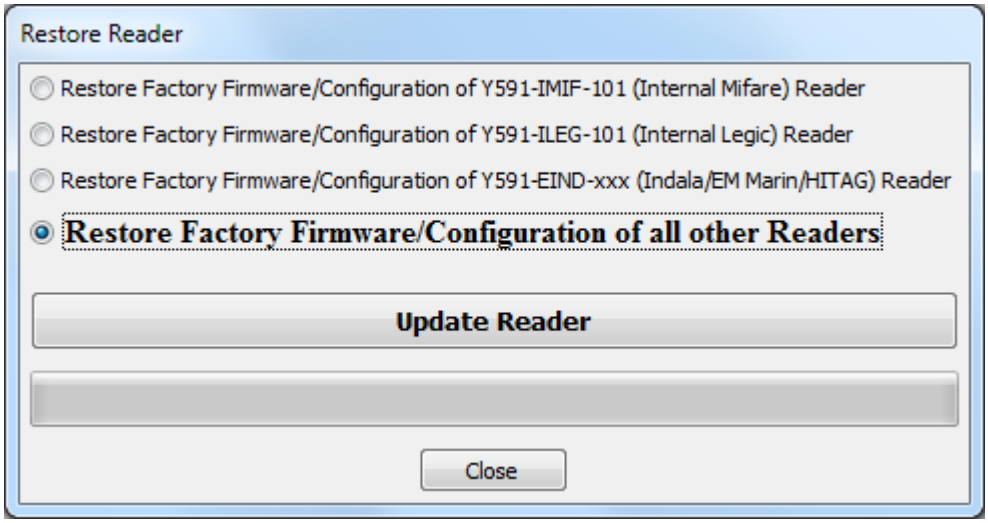
7. To update another reader, simply unplug all original readers and plug in the next; then click the *Update Reader* button again.

The window behind the *Customize Reader* dialog refreshes to reflect the firmware and configuration of the currently connected reader in realtime.

8. Repeat step 7 for each additional reader to be updated.

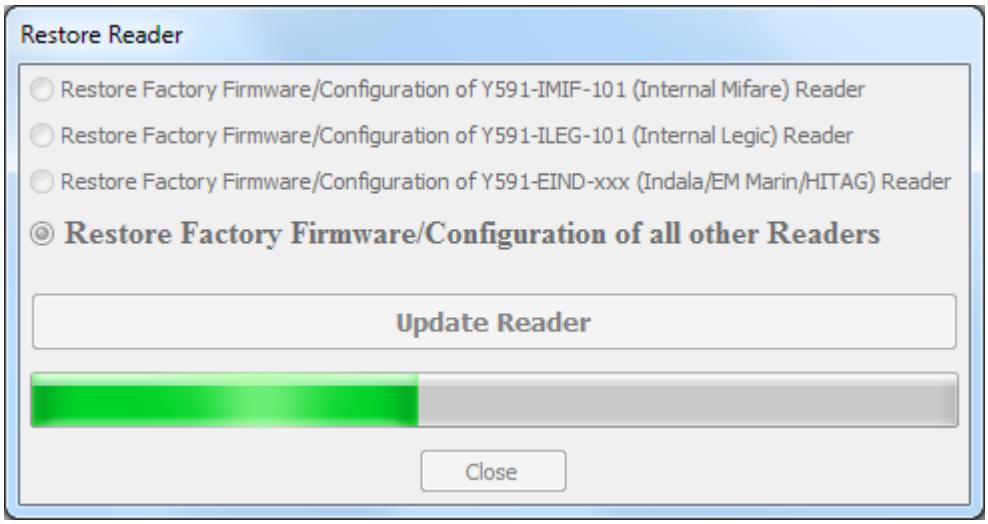
6.5 Restoring Factory Default Behaviour

1. With the Equitrac Reader Maintainer tool open and a reader connected (section 6.1), click on the *Restore Reader* button. The following dialog box appears:



2. Select the correct option based on the type of reader connected, either an *Internal Mifare* reader, *Internal Legic* reader, *Indala/EM Marin/HITAG* reader, or the *All Other Readers* option.

3. Click *Update Reader*. The dialog controls disable and a progress bar appears during the update process:



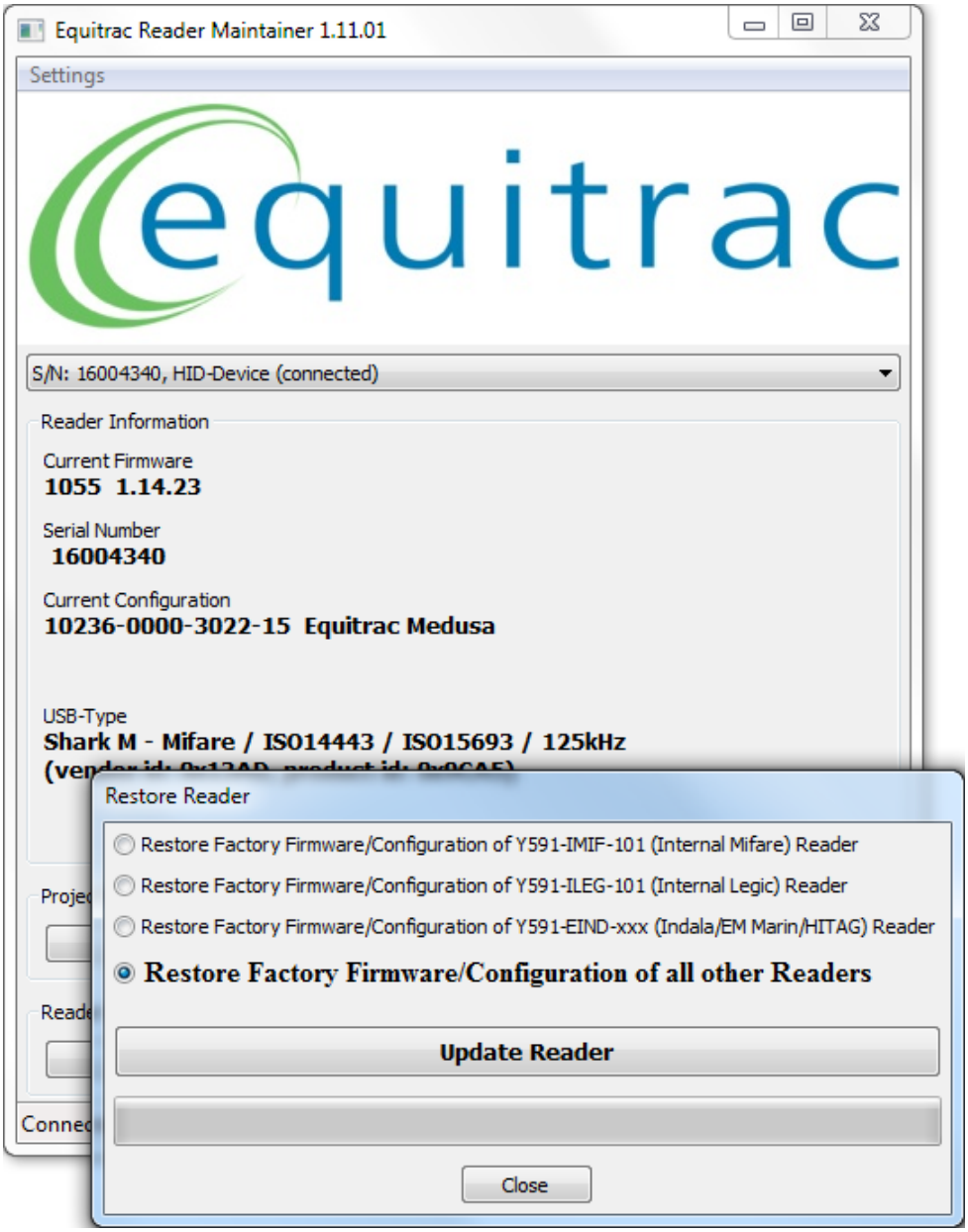
The message "*Please wait until the reader is found"* may appear one or more times. If it does not disappear within 20 seconds, there may have been a glitch during the restoration process. Click *Cancel* and refer to section 10 for troubleshooting instructions.

You may hear Windows' USB disconnection and reconnection sounds during this process, followed by the appearance of one or more "*New hardware found"* or "*Installing drivers"* notices. This is normal.

4. If the message "*Failed to update the reader*" appears, click *OK* to close the message then click *Update Reader* again.

Should the second update also fail, refer to section 10 for troubleshooting instructions.

5. Upon completion of the restore operation, the dialog re-enables and the main window behind it refreshes to reflect the new firmware and configuration of the reader:



The firmware and configuration installed during restoration are those shipped for the selected option at the time of the Equitrac Reader Maintainer tool's release, and may not match those contained in the reader as originally shipped. It is the factory default ***behaviour*** which is restored by this option.

6. To restore another reader, simply unplug all original readers and plug in the next; then click the *Update Reader* button again.

The window behind the *Restore Reader* dialog refreshes to reflect the firmware and configuration of the currently connected reader in realtime.

7. Repeat step 6 for each additional reader to be restored.

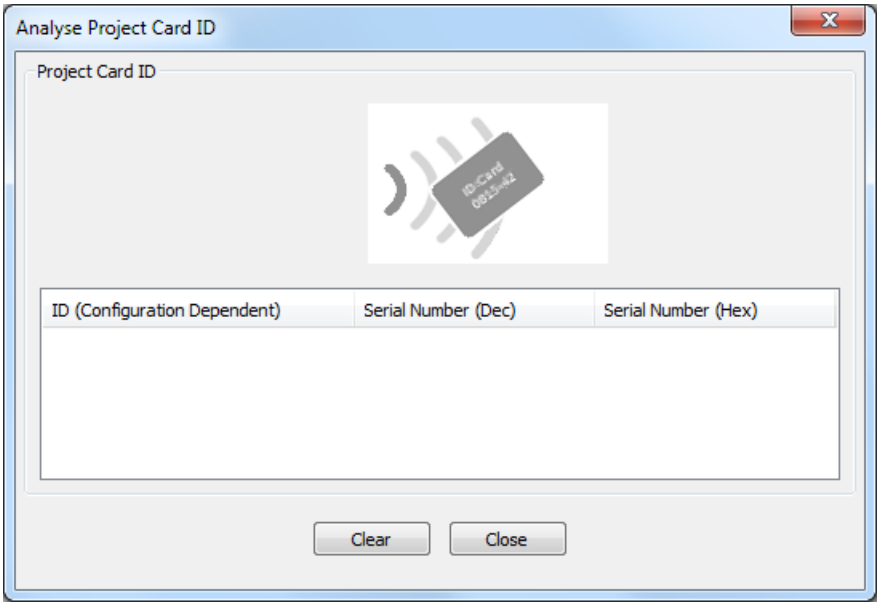
6.6 Tool Settings

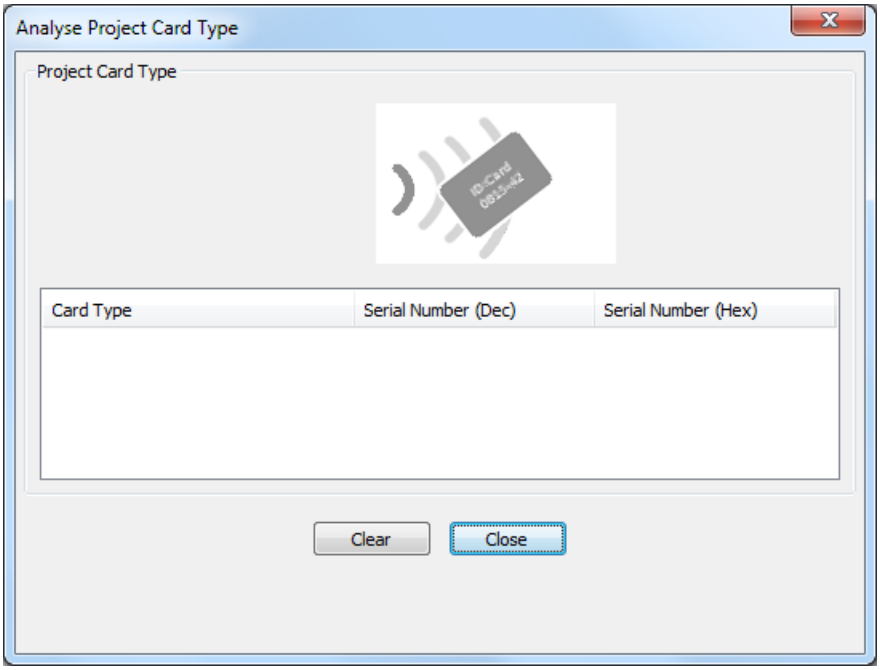
The main window of the Reader Maintainer Tool contains a Settings menu at the top left:

6.6.1 Read Counter

The *Read Counter* setting controls the presence of the Readings count in the *Analyse Project Card ID* and *Analyse Project Card Type* windows.

The default *Read Counter* setting is enabled, when disabled the aforementioned windows no longer contain the Readings count:





7 Removing the Equitrac Reader Maintainer Tool & Drivers

7.1 On Windows XP

1. Open the *Add or Remove Programs* window by selecting *Start menu> Control Panel* and then double-clicking *Add or Remove Programs*.

2. In the *Currently installed programs* box, select *Equitrac Reader Maintainer* then click *Remove*.

3. When prompted "*Are you sure you want to completely remove Equitrac Reader Maintainer and all of its components?*", click *Yes*.

4. In the *Currently installed programs* box, select *Baltech USB-to-Virtual-COM-Port Driver (Driver Removal)* then click *Change/Remove*.

5. When the *Baltech USB-to-Virtual-COM-Port Driver Driver Uninstaller* appears, click *Uninstall*.

6. If prompted to reboot the PC click *Yes*, otherwise simply close the *Add or Remove Programs* window.

7.2 On Windows 7 or Windows Vista

1. Open the *Programs and Features* window by selecting *Start button> Control Panel> Programs> Programs and Features*.

2. Double click *Equitrac Reader Maintainer* in the programs list or select it and click *Uninstall*.

3. When prompted "*Are you sure you want to completely remove Equitrac Reader Maintainer and all of its components?*", click *Yes*.

4. Double click *Baltech USB-to-Virtual-COM-Port Driver (Driver Removal)* in the programs list or select it and click *Uninstall/Change*.

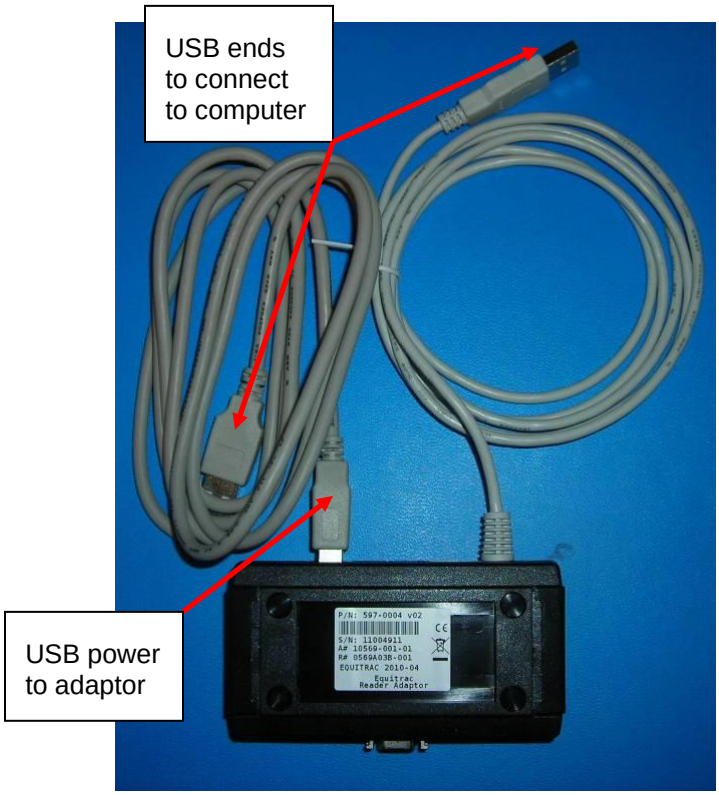
5. When the *Baltech USB-to-Virtual-COM-Port Driver Driver Uninstaller* appears, click *Uninstall*.

6. If prompted to restart your computer click *Restart Now*, otherwise simply close the *Programs and Features* window.

8 Connecting the Reader Adaptor Box

1. Connect the USB power cord to the Reader Adaptor Box and to the Windows PC.

2. Connect the Reader Adapter Box USB cable to the Windows PC.



3. Connect the card reader to the appropriate connector on the Reader Adaptor Box:

Mini-DIN connection

EPA connection

Internal reader connection

The ribbon cable provided with the Reader Adaptor Box must be used to connect to internal card readers.

9 Card Readers

There are many different Nuance/Equitrac card readers, depending on the application type and card technology.

9.1 Reader Types

Nuance/Equitrac card readers come in four different application types:

- Internal readers which are pre-installed in certain PageCounter models.
- Mini-DIN readers which connect to the PageCounter Mini, Xerox' Secure Access Unified ID System Controller, or TouchPoint Console
- EPA readers which connect to the EP Accessory interface port on select Fuji Xerox MFPs.
- USB readers which connect to the USB port of partner MFPs running Equitrac Embedded applications.

Various models of each type exist for compatibility with different card technologies:

- Magnetic swipe readers for use with magnetic swipe cards.
- Mifare readers for use with MiFARE and other 13.56 MHz ISO standards-based card technologies.
- Legic readers for use with LEGIC Prime and Advant cards.
- HID/Indala readers for use with various 125 KHz card technologies.
- Multi-Card readers for use with MiFARE, 13.56 MHz ISO standards-based, and various 125 KHz card technologies.

While support for a new card type can sometimes be added to existing readers via updated firmware, this may not be possible for all application types of a given model.

It is crucial that customer cards be qualified by Nuance personnel for compatibility with the desired application.

9.2 LED Behaviour

The behavior of the LED on the card reader is dependent on the reader application type.

9.2.1 Mini-DIN Readers

The host device directly controls the colour and state (solid, blinking, flashing) of the LED via dedicated signal lines in the mini-DIN cable. The LED does not directly react to card presentations.

As the mini-DIN reader's LED is entirely controlled by the host, it may not be lit even though the reader has power and is functioning properly!

9.2.2 EPA Readers

The LED has different colours and conditions (solid, blinking, flashing) dependent on the operating state of the host MFP, and does not directly react to card presentations. Card activity is communicated to the host, which changes its state (and therefore that of the LED) accordingly.

9.2.3 USB Readers

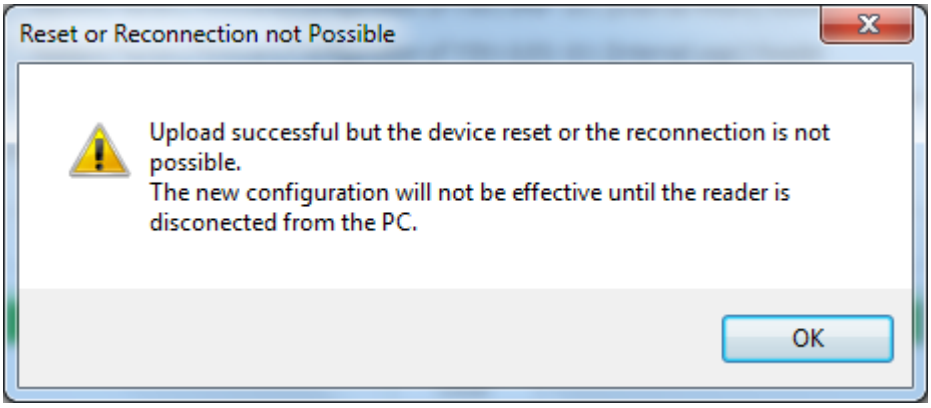
The LED becomes solid green upon application of power. When a card is detected the LED blinks off, returning to solid green if the card was readable or red if the card was unreadable.

The host may command the reader LED to reflect its login and server communications status. This is dependent upon the specific implementation of Equitrac Embedded, as not all MFP platforms permit this operation.

10 Troubleshooting

10.1 Reset or Reconnection Not Possible

Symptom: During an *Update Reader* operation the following dialog appears:

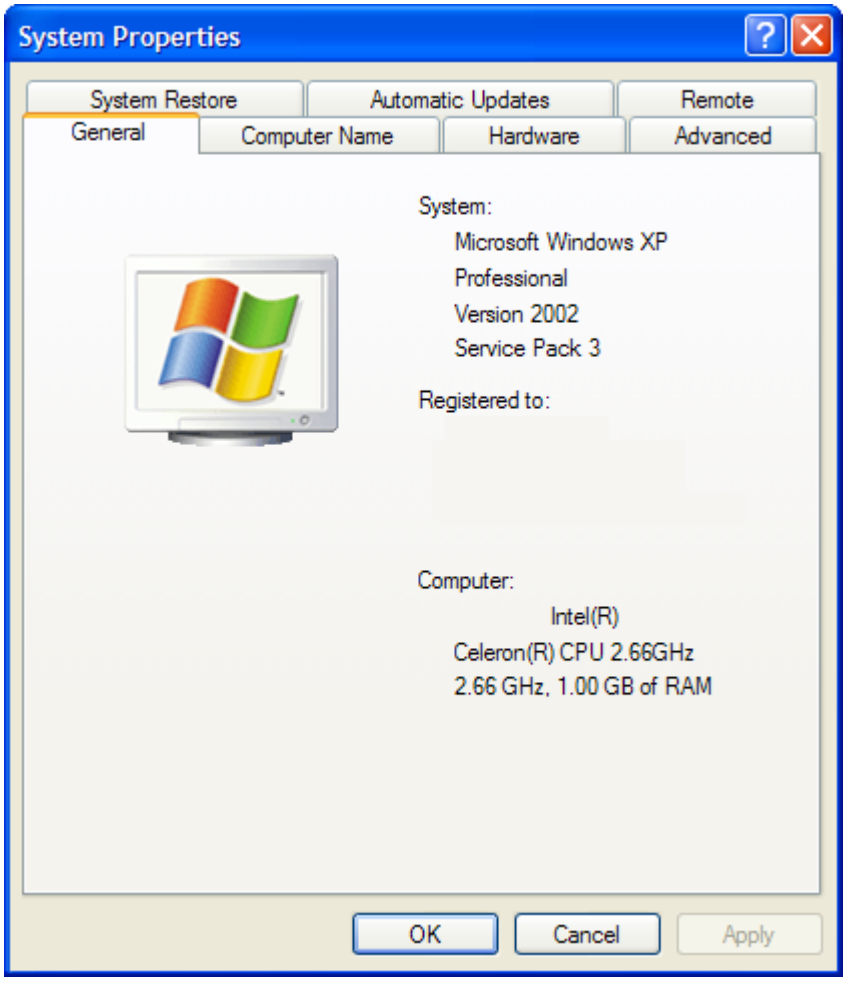


After disconnecting and reconnecting the reader to the PC as advised, the reader remains invisible/unavailable to the Reader Maintainer Tool.

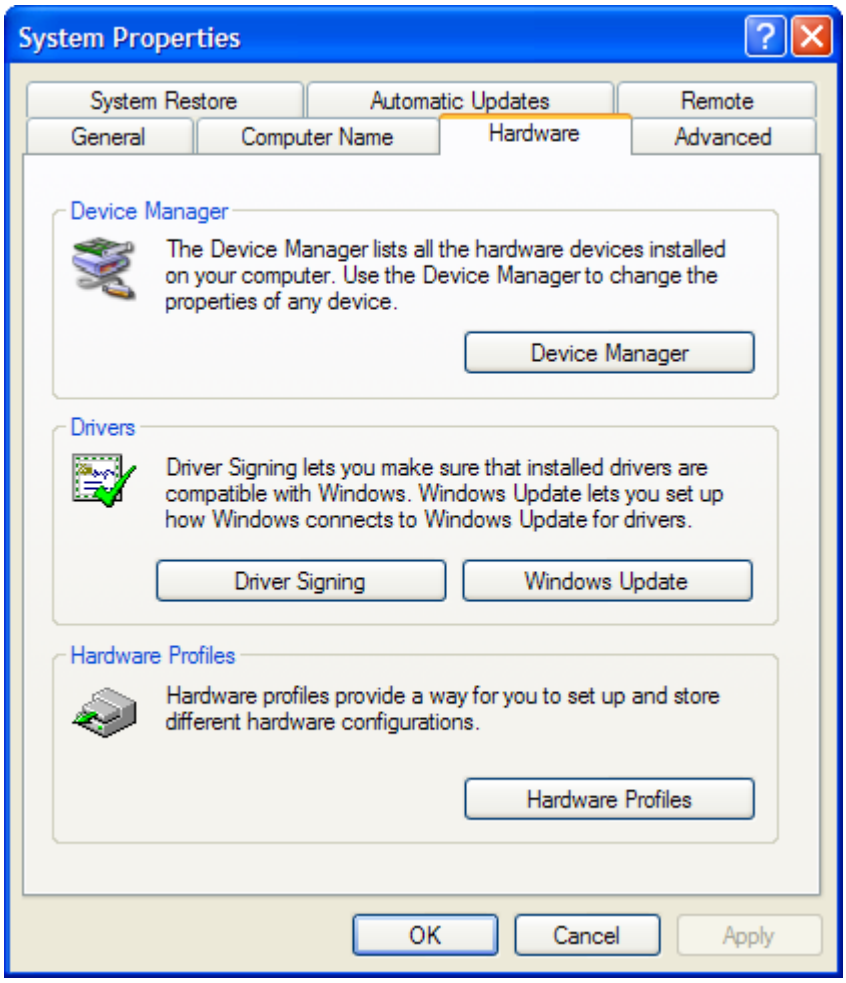
Cause: There is a mismatch between the new (or restored) reader capabilities and those of the driver and settings already associated with it by the operating system.

10.1.1 Resolution on Windows XP

4. Press the **Windows** + **Pause/Break** key combination to open the *System Properties* dialog:

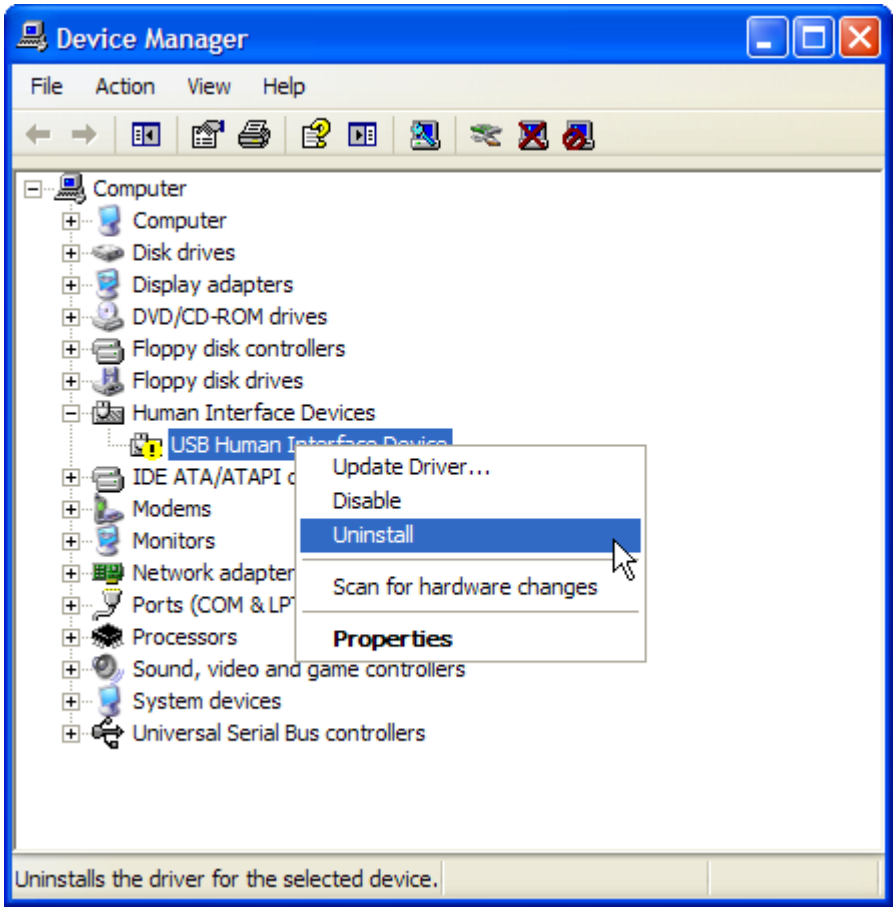


5. Select the *Hardware* tab, then click *Device Manager*:



6. In the Device Manager window that appears, the card reader appears as a *Human Interface Device* with a yellow warning exclamation.

   Right-click to select it, then click on *Uninstall*.



7. When prompted to *Confirm Device Removal*, click *OK*:

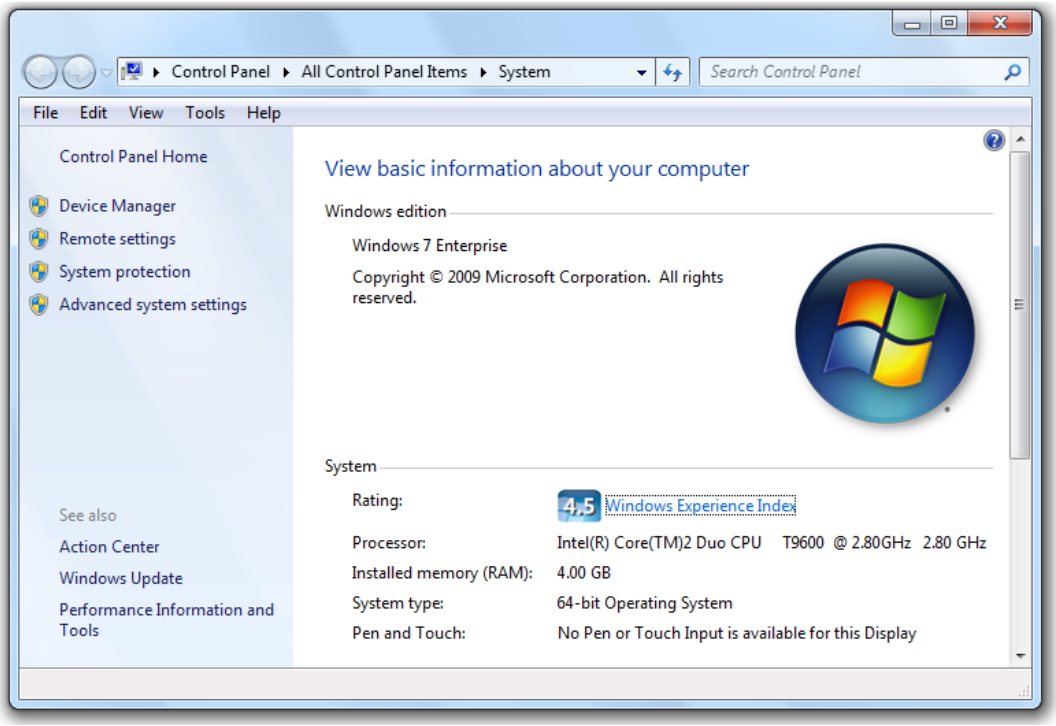
8. Disconnect and reconnect the card reader.

9. Windows reports *"New Hardware Found"* followed by *"Your hardware is installed and ready to use"*.

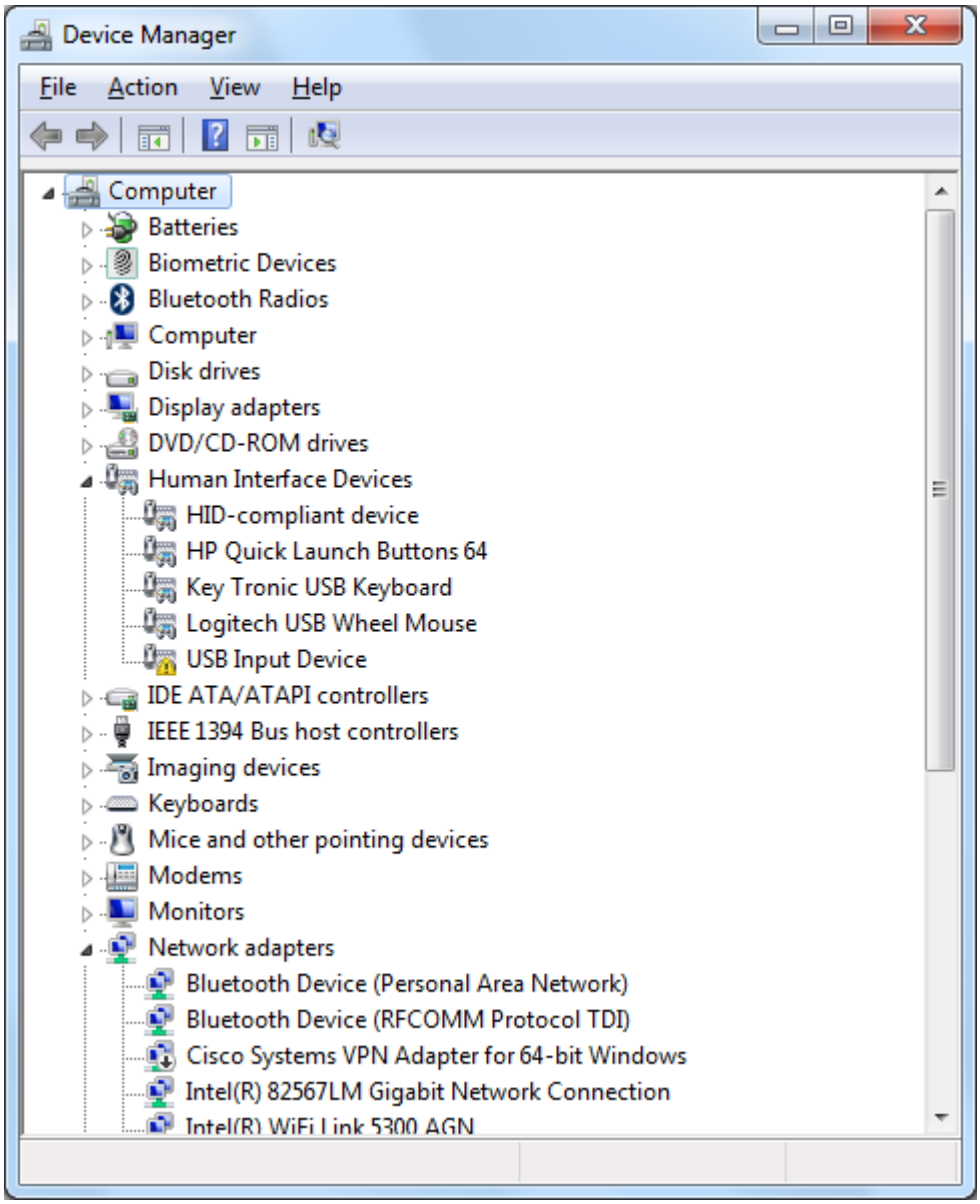
10. The Equitrac Reader Maintainer tool will again be able to connect to the card reader.

10.1.2 Resolution on Windows 7 or Windows Vista

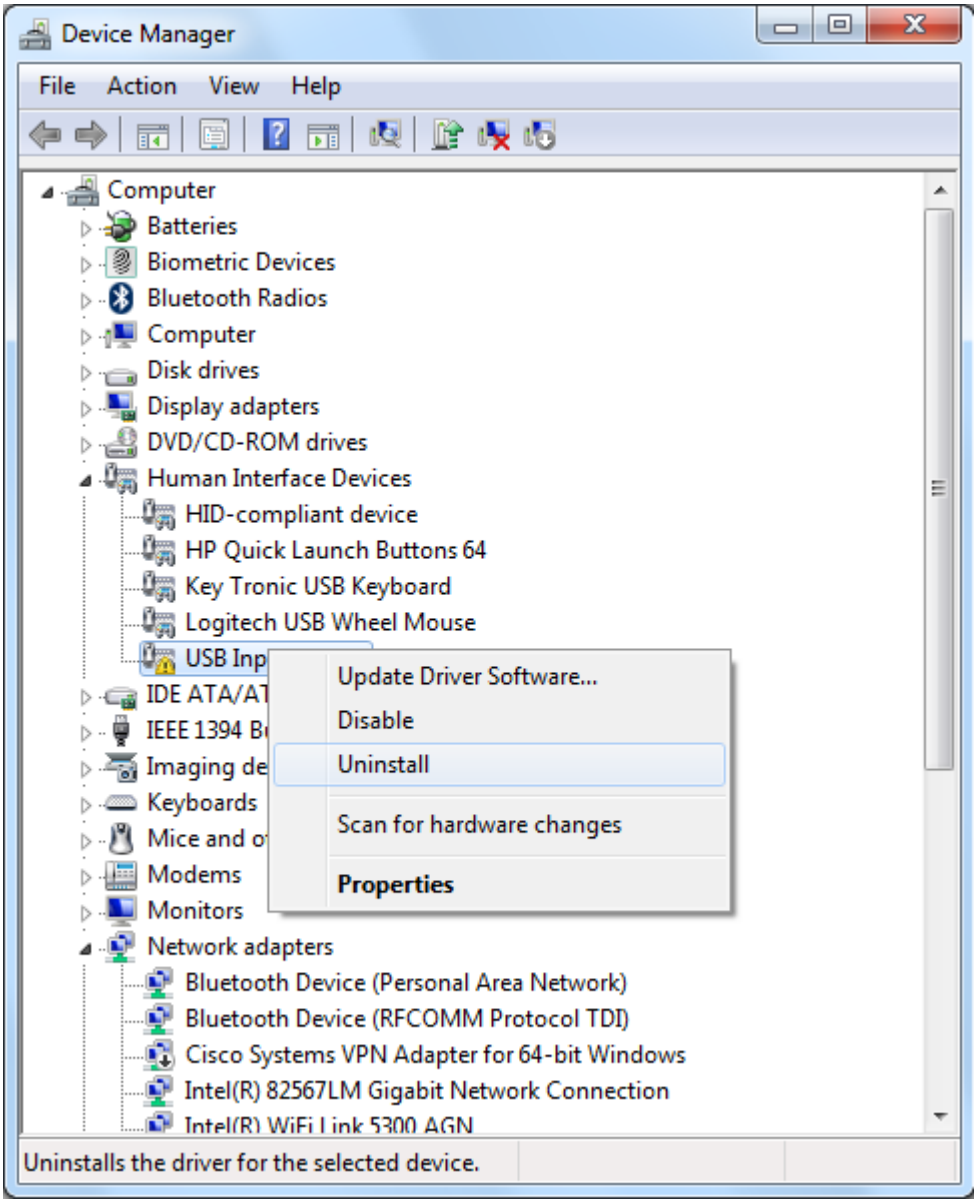
1. Press the **Windows** + **Pause/Break** key combination to open the *System Properties* window:



2. Click *Device Manager* to open the Device Manager window:



3. The card reader appears as a *Human Interface Device* with a yellow warning exclamation. Right-click to select it, then click on *Uninstall*:



4. When prompted to *Confirm Device Uninstall*, click *OK*:

5. Disconnect and reconnect the card reader.

6. Windows reports *"Installing device driver software"* followed by *"Your device is ready to use"*.

7. The Equitrac Reader Maintainer tool will again be able to connect to the card reader.

10.2 No Reader Information Shown

Symptom: A reader is connected and the status bar shows *"Connected to a reader, valid firmware"*, yet no reader information is shown:

Cause: The reader has been programmed with prototype development firmware which does not support re-configuration or re-programming.

Resolution: The reader can only be reprogrammed by disassembly at the factory. Special arrangements must be made through your Nuance or partner support representative.

10.3 Card not Detected by Analyse Project Card ID Dialog

Symptom: A reader is connected but no data appears in the *Analyse Project Card ID* dialog when a card is presented to the reader.

Possible Cause: The reader has been customized but the card presented is of a different type or configuration than that used by the customization. Since a configuration dependent Project ID cannot be retrieved, no result is displayed.

Confirmation: Use the *Analyze Project Card Type* function to detect the card. If the card is detected by this function, Restore the reader (section 6.5) and then use the *Analyse Project Card ID* function again to retrieve the default card ID.

10.4 Card not Detected by Analyse Project Card Type Dialog

Symptom: A reader is connected but no data appears in the *Analyse Project Card Type* dialog when a card is presented.

Possible Cause: A Magnetic Swipe or older HID Proximity reader is being used. In this case the LED will blink when a card is presented but no data is returned. This is normal, as Card Types and Serial Numbers do not apply with these reader models.

Possible Cause: The card type is not supported by the reader. If this is an unknown card from a new project, try it against both the Multi-Card and Legic card readers in their factory default configuration.

Project cards often come from a pre-existing security system installed at the customer site, and the IT personnel involved with the project may be mis-informed about the card type(s) used by their system.

Always try cards provided with a new project quotation against both the Multi-Card and Legic card readers in their factory default configuration.

Possible Cause: The card is damaged. If another card from the same project is available (or another card compatible with the reader model in use), try it against the same reader.

Possible Cause: The reader is damaged. If another reader of the same model is available, try the card against the other reader.

Possible Cause: The card type is not supported by any existing Equitrac reader model. *If the account is large enough to justify new development*, then escalate to eq_rdrdev@nuance.com for further analysis.

11 Contact Information

For questions, suggestions or concerns regarding this document, please email:

eq_rdrdev@nuance.com

Include reference number PDI-RM01 in the subject line of the email.