

3M Identity Management



3M™ CR100 Document Reader and 3M™ CR100M OCR/MSR Document Reader Getting Started Guide

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1 Introduction

1.1 Warnings, Cautions and Notes

This manual contains important information regarding the operation of the 3M™ CR100x OCR/MSR Document Reader series. For safe and reliable operation of the readers all users must ensure that they are familiar with and fully understand all instructions contained herein.



Danger indicates a hazardous situation which, if not avoided, **will** result in death or serious injury.



Warning indicates a hazardous situation which, if not avoided, **could** result in death or serious injury.



Caution indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



Notice indicates a situation which, if not avoided, could result in property damage only. This includes situations which require you to re-install your software or return your equipment to the manufacturer for recalibration.



Information indicates important information that helps get the optimum performance from your reader and will save you time during evaluation and deployment.

1.2 Proprietary Statement

By using the 3M™ CR100 Document Reader and the 3M™ CR100M OCR/MSR Document Reader products (the “Product”), you (the “User”), agree to be bound by the following terms and conditions.

Because use of the Product varies widely and is beyond the control of 3M Canada Company (“3M”), the user is responsible for determining whether the 3M Product is fit for a particular purpose and suitable for user’s application. Warranties, remedies and limitations may vary by product and jurisdiction.

3M Traffic Safety and Security offers a range of security products to protect against article and/or document identity counterfeit, alteration, diversion, duplication, simulation and substitution. However no security products can guarantee absolute protection against attempts to successfully accomplish these illegal activities.

Technical Information: The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Warranty, Limited Remedy and Limited Liability:

THE FOLLOWING IS MADE IN LIEU OF ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. 3M warrants that its Product will meet 3M’s written specifications at the time of shipment. 3M’s obligation and your exclusive remedy shall be, at 3M’s option, to replace or repair the 3M Product or refund the purchase price of the 3M Product. IN NO EVENT WILL 3M BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL OR

CONSEQUENTIAL DAMAGES INCLUDING, BUT NOT LIMITED TO LOSS OF PROFITS, IN ANY WAY RELATED TO THE PRODUCTS REGARDLESS OF THE LEGAL THEORY ASSERTED

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No part of this publication may be reproduced, transcribed, stored in a retrieval system or transmitted in any form whatsoever, without the prior written consent of 3M.

1.3 Notices

3M reserves the right to make changes to its Products at any time and without notice. The information furnished by 3M in this manual is believed to be accurate and reliable. The material contained herein is supplied without any representation or warranty of any kind. 3M therefore assumes no responsibility, consequential or otherwise, of any kind arising from the use of the Product.

1.4 Trademarks & Acknowledgements

3M, Dual Lock, Command and Scotch-Brite are trademarks of 3M Company. Used under license in Canada.

Windows, Windows Vista, Windows 7, Visual C++ and Visual Basic are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

CREWS is a trademark of RESA. The SITA name and CUTE® are trademarks or registered trademarks owned by the SITA group of companies around the world. Rockwell Collins' ARINC Multi-User System Environment (MUSE®) is a trademark of Rockwell Collins and/or ARINC Incorporated.

All other names contained herein are for reference only and are the property of their respective owners.

1.5 Electromagnetic Compatibility (EMC)

The Products are designed to be immune to levels of interference generated within an office environment and not to interfere with other equipment. In order to provide this level of compatibility the Product, its cabling and PSU (if supplied) or its installations, must not be modified in any way.

NOTICE

Modifications or changes to the Product or the interface cables not expressly approved by the manufacturer could void the User's authority to operate the Product and/or break local laws or regulations.

For further regulatory information or copies of certificates contact your local 3M representative or the manufacturer, see section 1.9 below.

EMC Compliance Europe



The Product meets the following European Council Directives:

EMC (2004/108/EC), LVD (2006/95/EC), RoHS 2011/65/EU

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

USA Radio Frequency Rules and Regulations (FCC Notice)

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

NO MODIFICATIONS. Modifications to the Product shall not be made without the written consent of 3M Company. Unauthorized modifications may void the authority granted under Federal Communications Commission Rules permitting the operation of this Product.

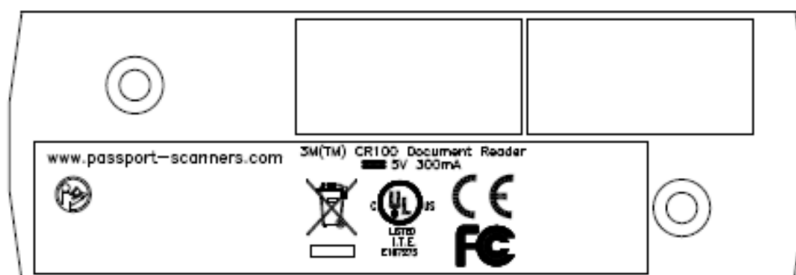
Industry Canada Radio Frequency Rules and Regulations 0

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

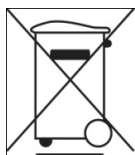
Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

1.6 Regulatory Label Position

The 3M™ CR100x OCR/MSR Document Reader has its regulatory labelling on the cable cover which may be covered by the desk mount. This can be removed as shown in section 6.1 below to show the labels. For reference the labels are:



1.7 Waste Electrical & Electronic Equipment Directive 2002/96/EC



Do not dispose of this equipment in domestic or general waste. These devices can be recycled and should be disposed of in accordance with your local and national regulations.

For more information contact your local 3M Office or visit <http://www.3m.com/>

1.8 Office Locations

Web: <http://www.3M.com/IdentityManagement>

United States and Latin America

3M Center
Building 225-4N-14
St. Paul MN55144-1000
USA
telephone: 1-800-581-2631

Europe, Middle East and Africa

3M United Kingdom plc
Cain Road
Bracknell RG12 8HT
United Kingdom
telephone: +44 (0) 8705 360036

Asia, Pacific and Australasia

3M Asia Pacific Pte Ltd
Security Systems Division
1 Yishun Avenue 7
Singapore 768923
telephone: +65 6450 8888
fax: +65 6458 5432

Canada

1545 Carling Avenue
Suite 700
Ottawa, Ontario
CANADA K1Z 8P9
telephone: +1 613 722 2070
fax: +1 613 722 2063

1.9 Global Technical Services

The Americas

direct line: +1 613-722-3629
main number: +1 613-722-2070
fax: +1 613-722-2063
email: 3M-AiT-gcs@mmm.com

United Kingdom

direct line: +44 (0) 1344 858 024
main number: +44 (0) 1344 858 000
email: gcs-uk@mmm.com

Asia, Pacific and Australasia

telephone: +65 6450 8888
fax: +65 6458 5432

1.10 Summary of Hazards

The 3M™ CR100x OCR/MSR Document Reader is intended for use by trained and untrained operators, indoors or in protected environments for the purposes of reading travel and other similar identity or fiduciary documents.

NOTICE

Modifications or changes to the Product or the interface cables not expressly approved by the manufacturer could void the User's authority to operate the Product and/or break local laws or regulations.

NOTICE

3M™ Dual Lock™ Reclosable Fasteners are designed for strong commercial applications and once stuck is difficult to remove. Choose the location carefully before application.

NOTICE

To prevent damage to the cable do not tightly bend the cable and always follow the routing patterns shown below.

NOTICE

The reader is equipped with a USB Type A connector. Insertion of the connector into other connector types may result in damage to either or both the reader or host computer.

NOTICE

Changing settings can result in the CR100x OCR/MSR Document Reader failing to operate correctly. You are strongly advised to make an Archive of your current settings before making any changes to the configuration of your device.

⚠ CAUTION

Follow the cleaning procedures.

Never use strong detergents or solvent based cleaners other than those supplied by 3M.

Never push sharp or metallic objects into the reader as this may result in damage to the reader.

Do not wet or immerse the reader in any liquid.

If allergic or sensitive to isopropyl alcohol use rubber or latex gloves.

If sensitive to isopropyl alcohol and rubber or latex gloves then give to somebody else to clean.

NOTICE

The 3M™ CR100x OCR/MSR Document Reader is designed for indoor use. It can be safely used out of doors where there is no risk of water penetrating the case. Use in a wet environment can either damage the internal electronics or degrade the performance over time.

⚠ CAUTION

The 3M™ CR100x OCR/MSR Document Reader has various cable length options, available at time of purchase. Ensure that the appropriate cable length is used and that any spare cable is routed to avoid trip or catch hazards. This is particularly important in handheld applications.

1.11 References

Description	3M Part No.
3M™ CR100 Document Reader Protocols Programming Manual	DT-01937

1.12 Revision History

Version	Date	Description
A	June 2015	First issued version
B	April 2016	Added Windows 10 as supported OS.

2 Executive Overview

The 3M™ CR100x OCR/MSR Document Reader is a range of versatile codeline readers which speedily captures data from passports, visas, tickets and other travel documents. The range currently includes the 3M™ CR100 Document Reader and the 3M™ CR100M OCR/MSR Document Reader.

The 3M™ CR100x OCR/MSR Document Reader is supported by a Software Development Kit which provides simple integration of the reader and its functions into your application and is backed up by 3M's dedicated technical support team. Virtually maintenance-free the 3M™ CR100x OCR/MSR Document Reader fits into any environment whether commercial or government. 3M codeline readers have an exceptional track record and are in use by governments and major corporations throughout the world.



Note: In this manual, the 3M™ CR100 OCR Document Reader and 3M™ CR100M OCR/MSR Document Reader are collectively referred to as the 3M™ CR100x OCR/MSR Document Reader. Images used in this manual may show the 3M™ CR100 OCR Document Reader or the 3M™ CR100M OCR/MSR Document Reader, but in most circumstances, apply to both devices.

What is a Codeline Reader?

A codeline reader simply reads the 2 or 3 lines of Machine Readable Data from a travel document, e.g. a passport, visa or identity card. These documents are defined by ICAO 9303. The data is sent to the user in a variety of formats and the 3M™ Swipe Reader SDK can be used to extract the individual fields without the programmer having to understand the ICAO data formats.

Why buy from 3M Identity Management?

3M Identity Management has over 30 years experience in document scanning technology and 15 years in the airline, cruise and immigration businesses. It designs advanced reader products which are in use all over the world. An exceptionally talented and committed team of regionally based hardware and software engineers are here to help resolve any technical problems.

3M Identity Management combines its ongoing innovation and net collaborative approach to industry partnerships to deliver exceptional consultancy. Having helped solve the security challenges of customers in more than 100 countries, our experts are able to bring insight to regional and local security issues.

3M Identity Management also leverages 3M's worldwide research and development resources. An annual R&D spend of \$1.8¹ billion allows our specialists to focus on a wealth of ideas and experience on the effort to stay at the forefront of secure identification and authentication—and on turning innovation into delivered solutions for our customers. As the complexity of personal identification application grows, we continue to provide innovative solutions—from security materials to biometrics through to document issuance, document reading and authentication.

Why should your organisation use the 3M™ CR100x OCR/MSR Document Reader?

The 3M™ CR100x OCR/MSR Document Reader is an accurate data capture device with an excellent first time, every time read rate which minimises queuing during passenger processing whether at a check-in, immigration desk or other control/service point. The 3M™ CR100x OCR/MSR Document Reader helps ensure your organisation meets its legal and contractual obligations when capturing travel and identity document data.

The 3M™ CR100x OCR/MSR Document Reader is fully supported by the 3M™ Swipe Reader SDK.

Who uses codeline readers and why?

These are some application examples:

- | | |
|----------------------------------|---------------------------------------|
| • Airlines | APIS data capture and submission |
| • Border control and immigration | Travel document data capture |
| • Ferry companies | Electronic manifests |
| • Cruise lines | APIS data capture and submission |
| • Police forces | Identity checks |
| • Railway companies | APIS data capture and submission |
| • Car Hire firms | Customer identity document capture |
| • Hotels | Hotel check-in and reporting |
| • Recruitment agencies | Identity document capture |
| • HR departments | New starter identity document capture |
| • Universities | Visa data capture |

¹ Source 3M Company Annual Report 2014

How do I evaluate the 3M™ CR100x OCR/MSR Document Reader?

This manual describes how to install the reader and the evaluation programs available to evaluate its performance. You can be reading your first document using the **MRZ Viewer** program in less than 5 minutes. See section 5 below.

If you are a developer you may wish to try the various 3M™ Swipe Reader SDK application and language samples to help you decide on your integration strategy (see the section on Sample Applications in the Programmers' guide for more detail).

Detailed specifications for the 3M™ CR100x OCR/MSR Document Reader are provided in the Technical Data Sheet.

How do I integrate the 3M™ CR100x OCR/MSR Document Reader into my business?

The 3M™ Swipe Reader SDK provides easy integration of the reader into your application and development environment and generally this can be done with little programming effort and minimal changes to the business process. The 3M™ Swipe Reader SDK supports most programming languages as well as other methods of integration such as keyboard wedge and web page screen scraping.

The 3M™ Swipe Reader SDK is regularly updated with enhancements and new features.

3 Features of the 3M™ CR100x OCR/MSR Document Reader

- Small size
- Desk top mount, 3M™ Dual Lock™ for LCD/laptop attachment or bespoke bracket mount options for shelves and PDAs
- Reads passports, visas and all other ICAO standard travel documents and ID cards as well as many non-ICAO variations such as French and Spanish ID cards
- Reads all ICAO compliant documents in near infrared (IR) 875nm per ICAO 9303 specification Parts 1-4
- Optional reading of bankers cheques using optical reading of CMC7 and E13B, talk to your local 3M sales office for more information
- Bidirectional swiping
- USB powered with virtual USB serial port interface. No external power supply required
- VCOMM interface for 3M™ RTE6701 compatibility (other interfaces available, contact your local 3M sales office)
- Cable exit points are user changeable
- Customer can design bespoke brackets, using dual screw fixing
- User feedback via an LED including power / self test indication. Status indicators can be under host control depending on control program loaded
- SDK includes DLLs and demonstration programs. Support for MS Visual C++® and C#/Visual Basic.NET®, Borland C++ Builder®, Java
- Configurable via USB 1.1 interface. Non-volatile configuration held in reader
- Windows® XP SP3, Windows Vista®, Windows® 7, Windows® 8 and Windows® 10 operating system compatible
- MSR (Magnetic Stripe Read) reading of frequent flyer, driving licences and similar documents²

INFORMATION

Note that items stated as optional may require additional software or hardware elements and/or bespoke document software any of which may be chargeable, contact your local 3M office for more details.

² This is available with the CR100M OCR/MSR Document Reader model only

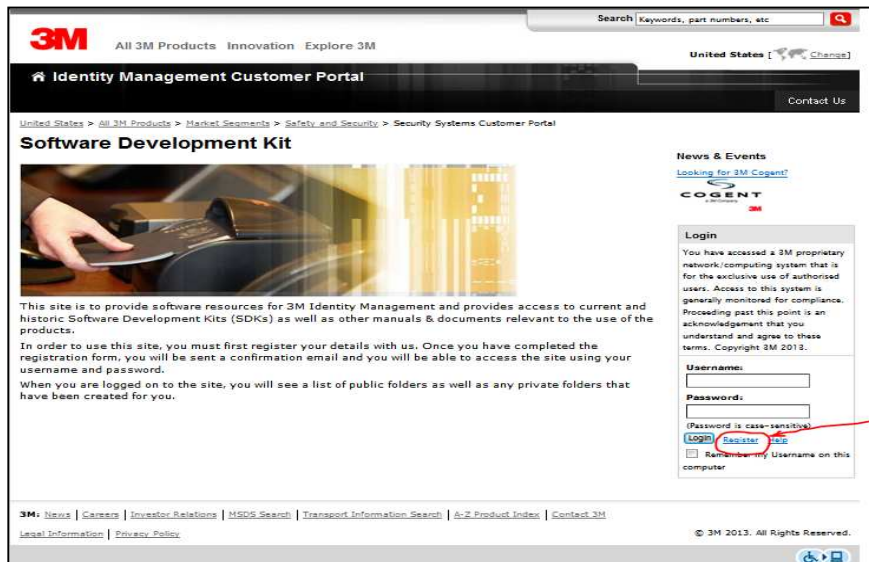
4 Getting Started

4.1 3M™ Swipe Reader SDK Installation

The 3M™ Swipe Reader Installation can be found, unzipped, on the CD which comes with the beta readers. You can download the latest version of the 3M™ Swipe Reader SDK installation from our download site at:

www.3M.com/ReaderSoftware

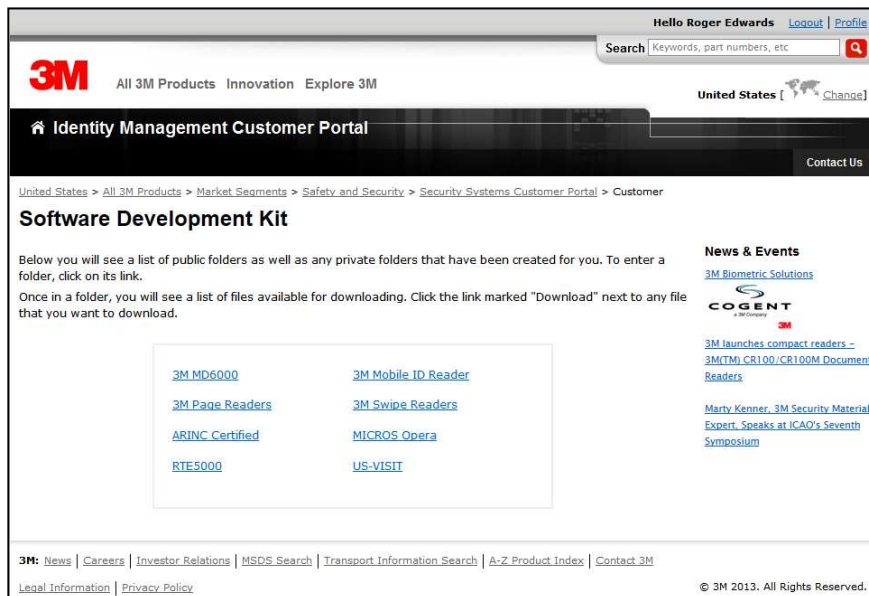
This takes you to the Customer Portal Home page, in the bottom right hand corner click on “register”



Complete the required information, scroll through the agreement and click to accept the conditions and then submit. Please ensure you use the full company name and have a matching email address. The website will show a thank you page after registration.

Once you have been approved you will receive an email stating you are registered and your user name (which is usually the email address you supplied). Please note that 3M verifies all registrations through its local sales representatives and approval can take 3 to 4 days. If you have an urgent need please contact your local sales representative to ask for pre-approval.

Go to the Identity Management Customer Portal home page and enter your user name and password in the bottom right hand corner. Click Login. You'll be directed to the home screen which looks like this.



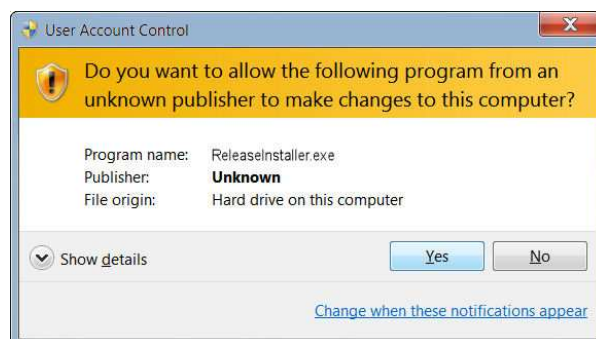
Click on the product family you want the latest software for, in this case you need to select 3M Swipe Readers. You can download the latest SDK from this page along with the release notes. Ensure you select the correct family of releases, for most users this would be the Standard version.

Click the Previous Versions link for older releases.

Note: If you require a non-standard protocol, see section 8.2 Additional Protocol Configuration.

Right click the file and download the SDK to a temporary folder. Currently files are named like this “3M Swipe Reader SDK 1.1.0 Setup.exe” where 1.1.0 is the version number.

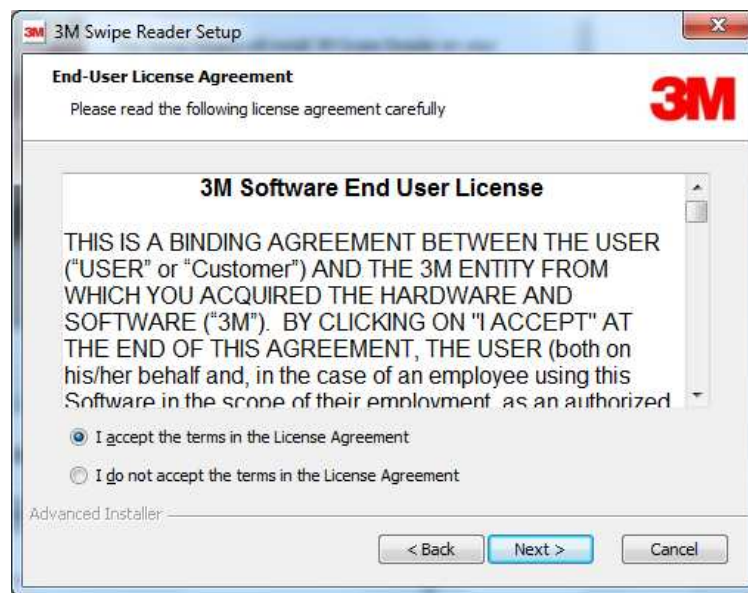
1. Now run the executable file “3M Swipe Reader SDK 1.1.0 Setup.exe”. If you are running Windows 7 or Windows Vista you may receive this warning, then Click **Yes**.



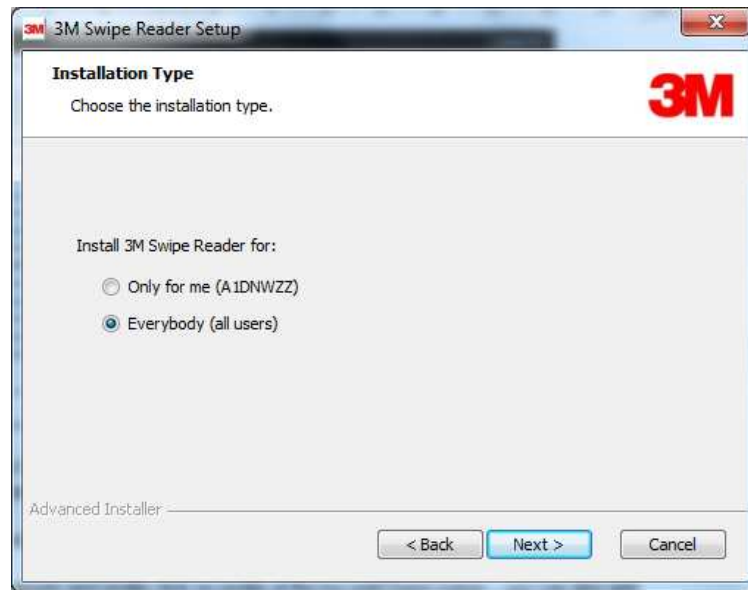
You will then see this welcome screen, click **Next**.



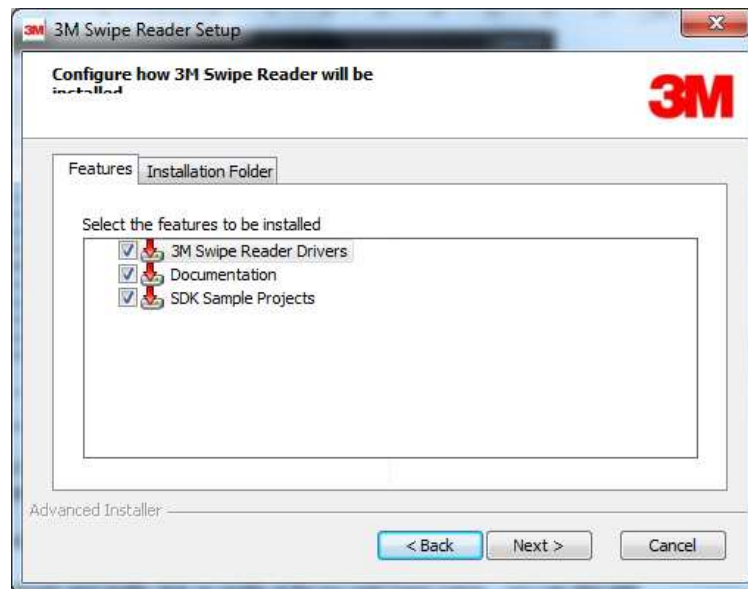
2. Click "I accept the terms in the Licence Agreement" and then click **Next**. Please read the licence agreement before accepting and if you cannot agree to the licence delete all software from your computer.



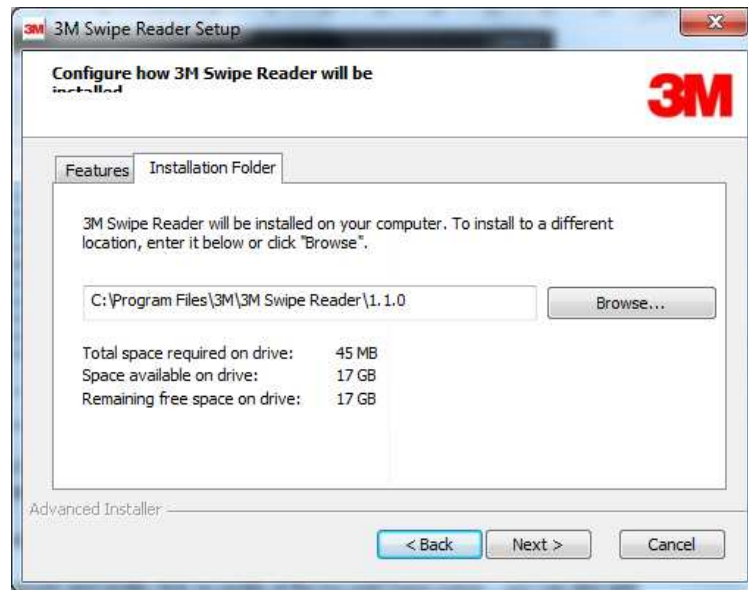
3. Select whether you want the install for the current user or all users and then click **Next**.



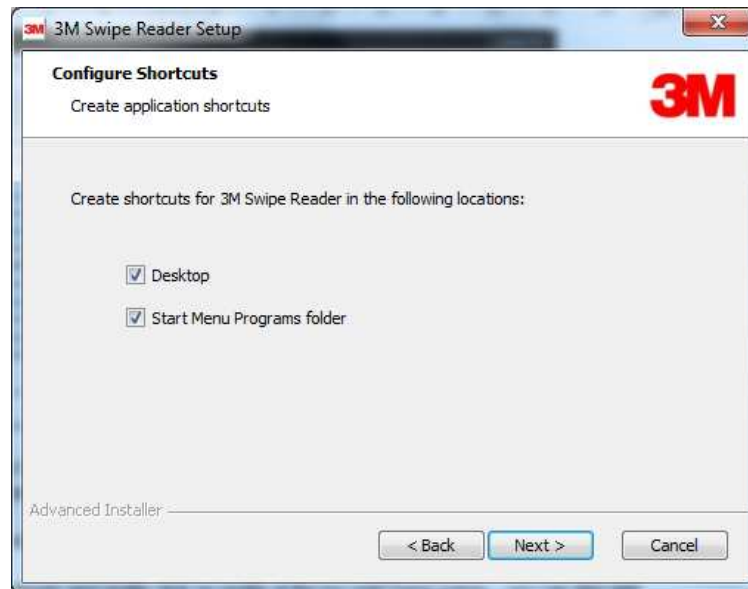
You can select which components to install. Generally you should install all components but you may want to choose exactly what you need for production installations. Click **Next**. For legacy serial applications you may only need to install the drivers for production rollout.



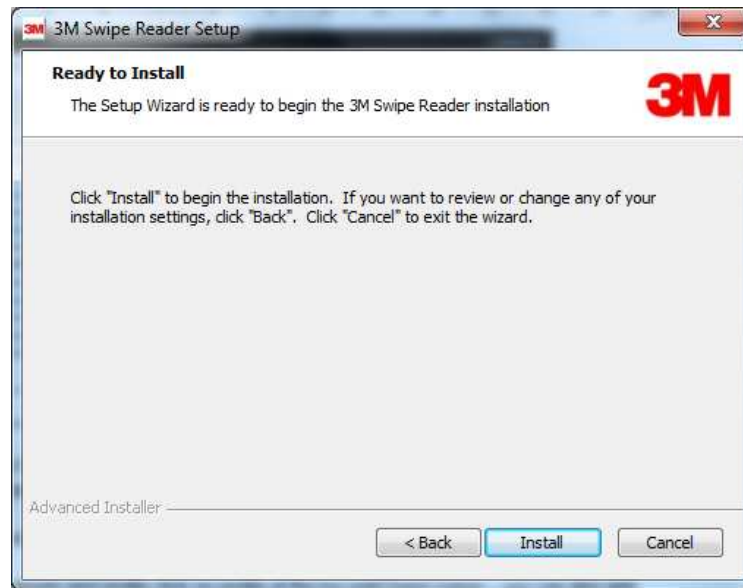
4. Click on the Installation Folder tab. The default values are preferred but you can change the destination folder if you wish. Click **Next**.



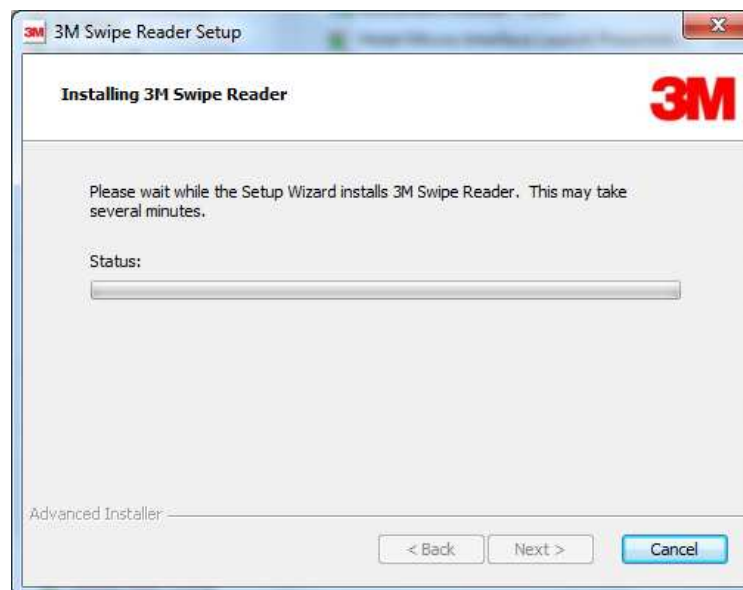
5. Choose whether you want shortcuts adding to your desktop and start menu. Then click **Next**.



6. You can review your settings by clicking **Back** otherwise to proceed with the installation click **Next**.



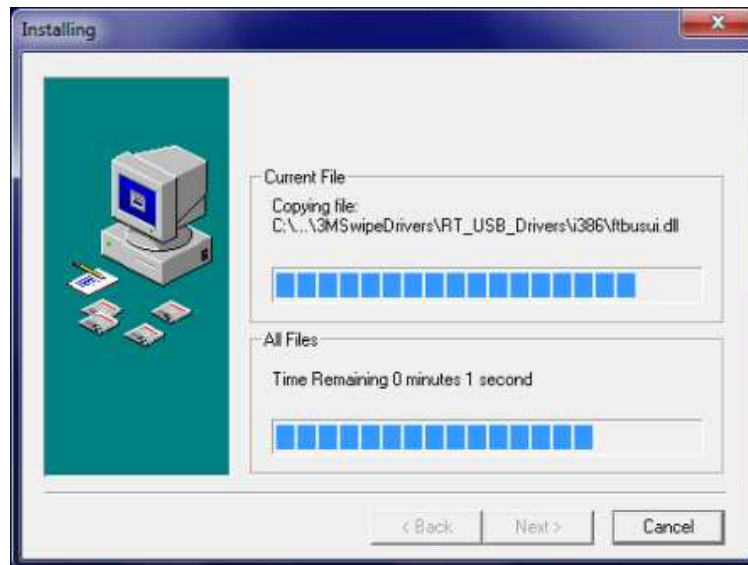
7. During the installation you'll see these screens.



8. If you selected install "3M Reader Drivers" then you'll see this screen, Click **Next**.



9. During installation you'll see this screen.



10. Once the driver install has finished you'll see this screen. Click **Finish**.



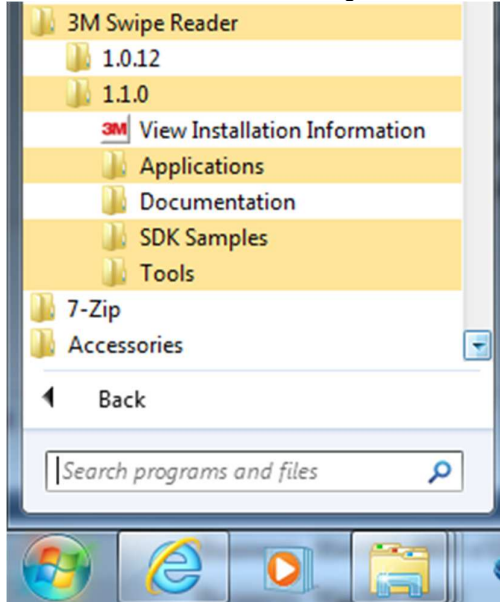
11. Once the SDK install has finished you'll see this screen. Click **Finish**.



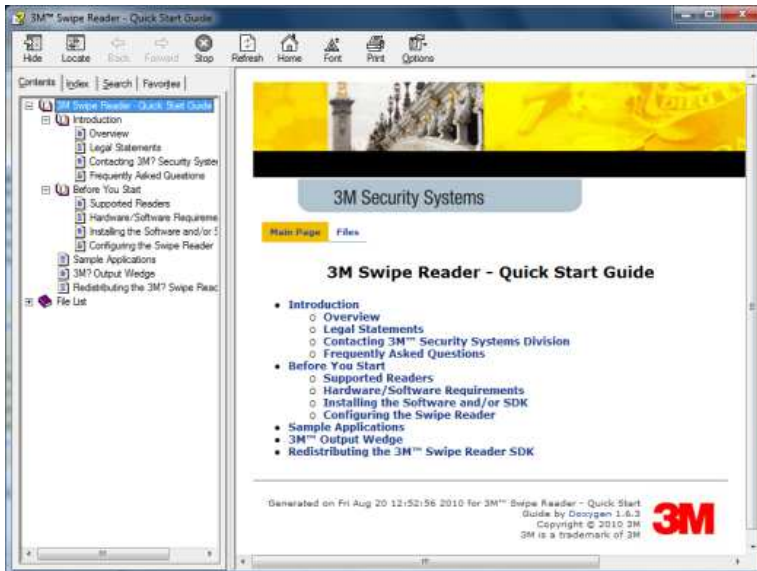
You should see two new desktop shortcuts:



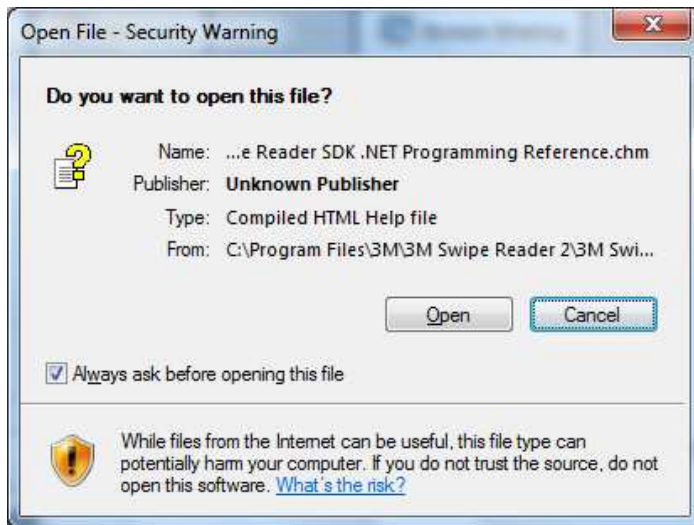
And a new item in the Start-> Programs list:



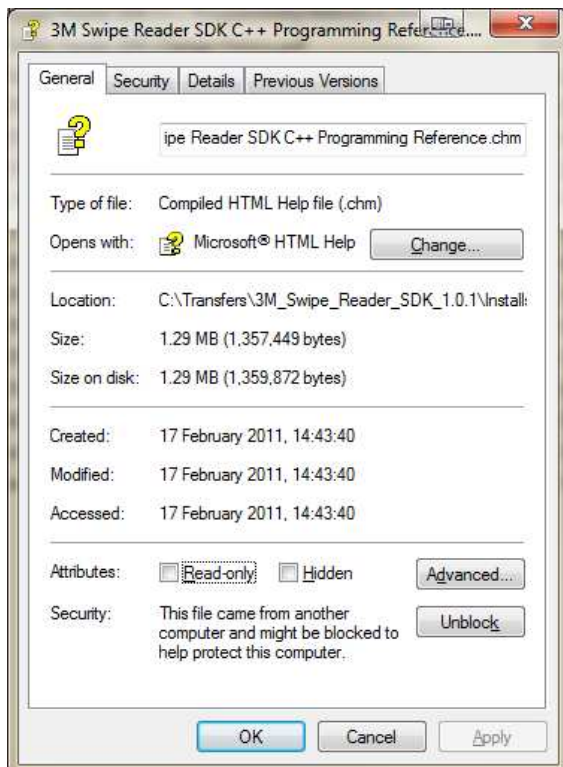
To learn more about the SDK and its applications go to Documentation and launch the “Quick Start Guide” which looks like:



If you get this message when opening the file:

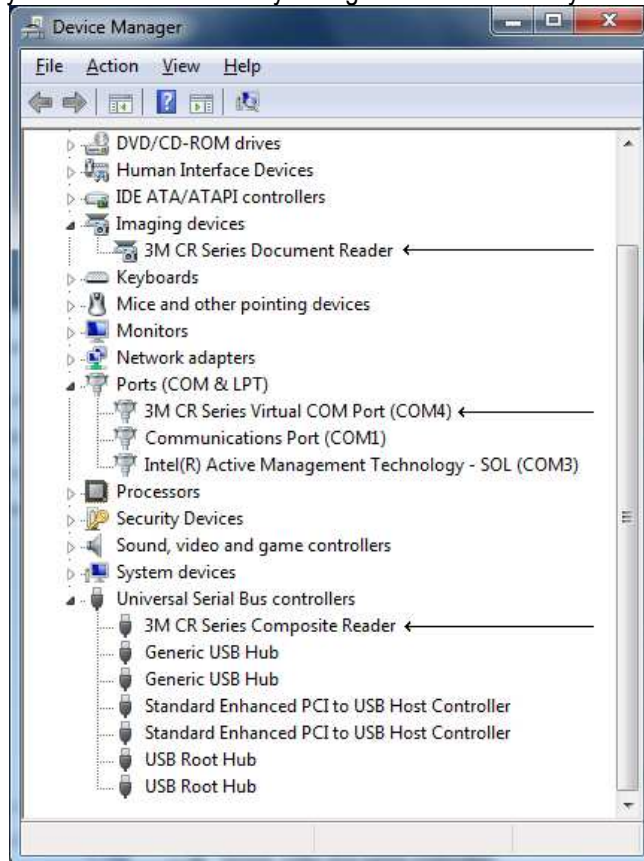


Uncheck the “Always ask before opening this file” and then click Open. Alternatively open the properties of the target file (usually installed to the C:\Program Files\3M\3M Swipe Reader\3M Swipe Reader\Documentation folder) and Click **Unblock**.



4.2 3M™ CR100x OCR/MSR Document Reader Device Installation

1. Plug the 3M™ CR100x OCR/MSR Document Reader's cable into a spare USB port on your computer.
2. To verify that everything is working, go to the "**Control Panel**" from the Start Menu and Select "**System Security**", "**System**", "**Hardware**" and "**Device Manager**" (depending on your Control Panel view you might be able to directly select Device Manager).



3. Check that you see the three devices arrowed in the above screenshot.

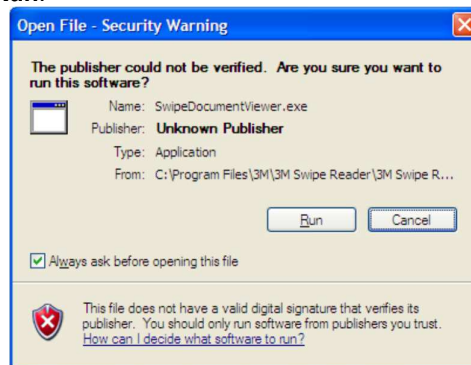
5 Evaluating Your Reader

The 3M™ Swipe Reader SDK provides 3 programs that you can use to evaluate the reader with.

- 3M™ MRZ Viewer – This program will connect to the reader and display the data fields from the document's machine readable zone. It is the best evaluation tool.
- 3M™ Swipe Reader Messages – A demonstration program that shows the detailed field breakdown coming from the SDK primarily for programming and debugging purposes. There are two versions one MFC and the other based on .NET technology and source code is provided.
- 3M™ Output Wedge – An application that runs in the background and sends document data to the current window as keystrokes, also known as a keyboard emulator. This can be set to either output all data or output individual fields.

For more information on all of these please read the Quick Start Guide found in the Documentation section of the 3M™ Swipe Reader SDK.

If when launching the programs you receive the following message then uncheck the “**Always ask before opening this file**” box and click **Run**.



5.1 3M MRZ Viewer

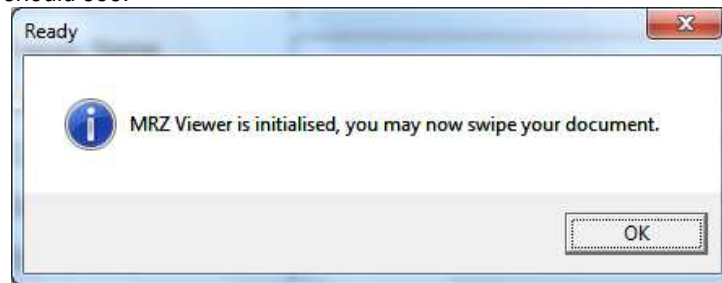
This program displays the output from the reader, taking into account the protocol the reader is using. It is found as a desktop shortcut and in the Start Menu:

Start -> All Programs -> 3M Swipe Reader -> Applications -> 3M MRZ Viewer

If you see this message:



Then your device may need to be configured using the 3M Swipe Reader Configuration Wizard, see section 8.1 below. Otherwise you should see:



Some typical output displays are shown below:
OCR Data:

[illegible]

Generic Magnetic Stripe Data

3M MRZ Viewer

3M Swipe Reader Demo

Data Source	MSR
Track 1	%RGBR@RACHTI/JOSE @S
Track 2	AO PAULO 204299999803120001107205
Track 3	00101 19970817

American Driver's Licence (AAMVA card) Data

3M MRZ Viewer

3M Swipe Reader Demo

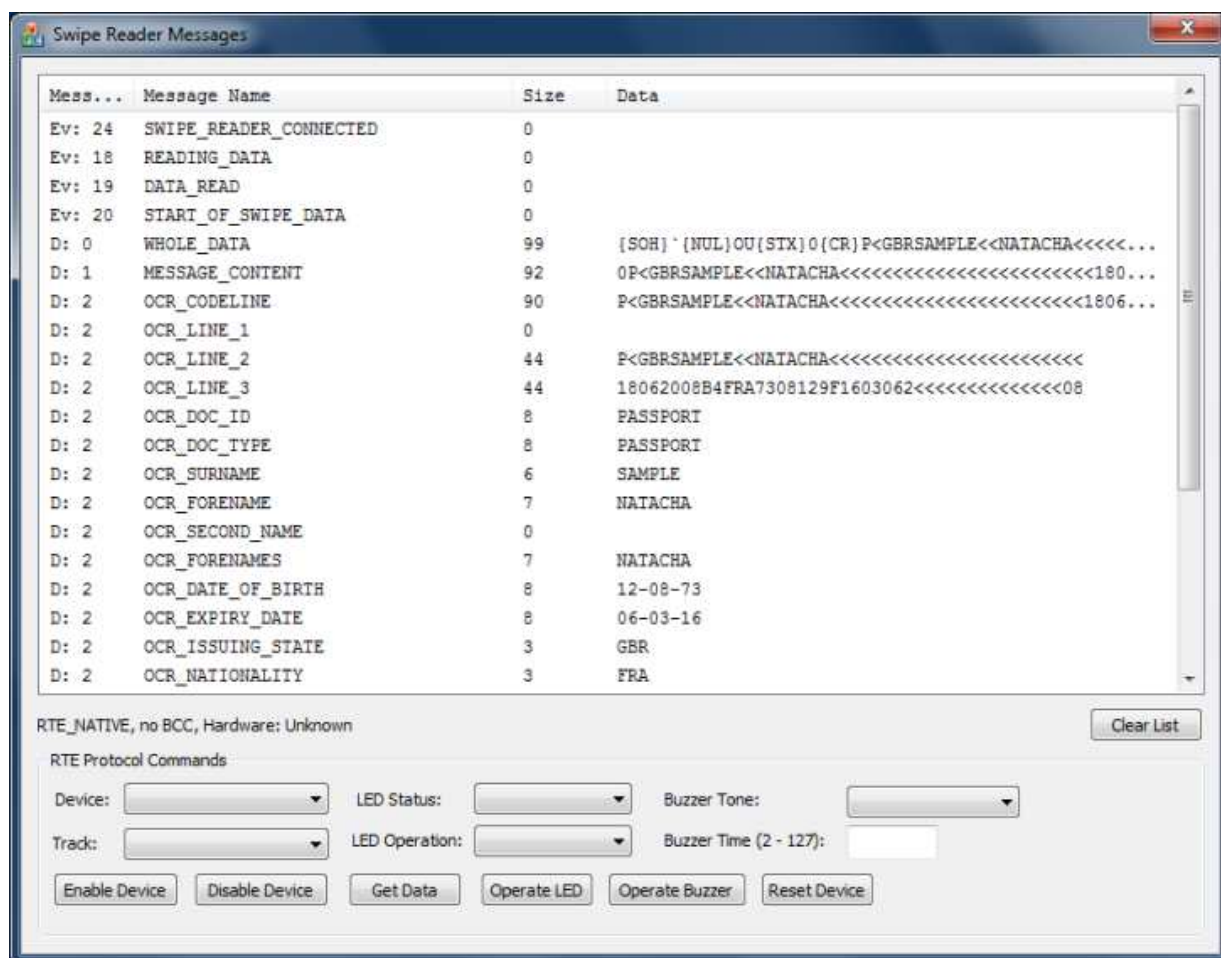
Data Source	MSR - Driver License
Document Type	AAMVA
Licence Number	00085590502801
Surname	SAMPLE
Given Names	GAYLE ELIZABETH
Nationality	
Date of Birth	05/22/1958
Expiry Date	05/07
Issuing State	MN

5.2 3M Swipe Reader Messages

This program shows individual messages from the reader and is more useful for developers. It is found as a desktop shortcut and in the Start Menu:

Start -> All Programs -> 3M Swipe Reader -> Demo Programs -> 3M Swipe Reader Messages

An example of the program connecting to a reader and displaying the data and fields is shown below:



The .NET version does not have the command screen. Both programs have their source code included on the SDK in C:\Program Files\3M\3M Swipe Reader\3M Swipe Reader\SDK\Samples\. There is also a Java sample.

5.3 3M Output Wedge

This program converts the output from the reader, formats it and places it on screen just like the data was typed on a keyboard. This is very useful for legacy applications and where you do not want to change your program. It can be found in the Start Menu:

Start -> All Programs -> 3M Swipe Reader -> Application -> 3M Output Wedge

A special shortcut is available on the desktop to run the Output Wedge application using a keyboard output script, and demonstrates a method of force starting the application with a specified script file. This shortcut is named Keyboard Wedge.

Upon start up, the application initialises itself and then minimises to the System Tray as a 3M logo:

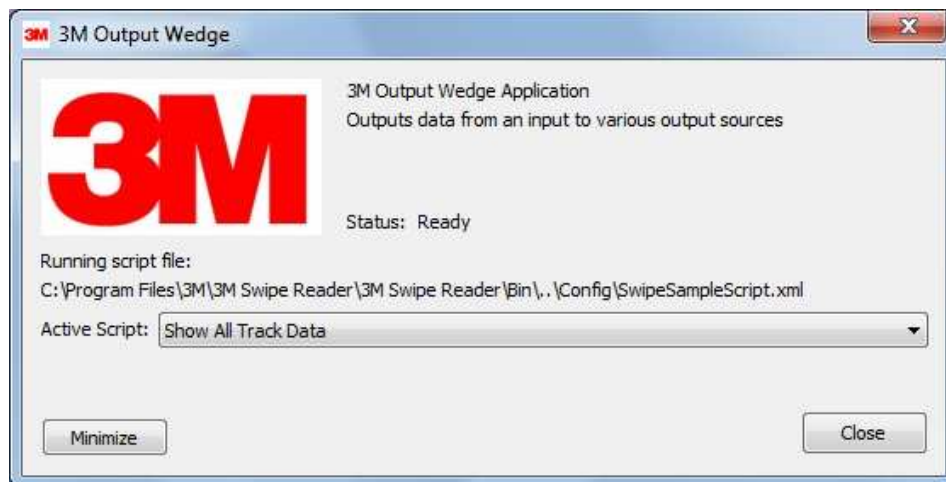


Windows 7 and Windows Vista



Windows XP

Clicking the logo brings back the dialog box and you can select the active script which changes the way the data is sent. By default two examples are installed "Show All Track data" and "Split Up OCR Data into Fields".



An example of each output into Notepad is shown below.

[illegible]

5.4 Reading Documents

5.4.1 Reading OCR Documents

The 3M™ CR100x OCR/MSR Document Reader can read ICAO 9303 Travel Documents including Machine Readable Passports, Visas, Identity Cards and other similar OCRB codeline documents such as French ID Cards. Contact your local 3M sales office for a full list of currently supported documents. The document should be opened or orientated with the MRZ codelines showing towards you and to the front of the document. The document should then be swiped briskly, yet smoothly, through the reader from the left to the right. Ensure that the bottom edge of the document remains in contact with the base of the reader slot and the movement is continuous.



The LED on the front edge of the 3M™ CR100x OCR/MSR Document Reader will flash either green or red to indicate whether the document was read correctly or not. Note that this LED may be user controlled or work differently depending on the firmware installed in the reader.

You should ensure you understand your company's local operating procedures covering the order of swiping documents and the meaning of the feedback given by both the reader and the software you are using.

5.4.2 Reading MSR Documents

Only the 3M™ CR100M OCR/MSR Document Reader can read Documents which include a Magnetic Stripe, such as Library Cards, Identity Cards and other similar MSR documents. The document should be orientated with the Magnetic Stripe showing towards the centre of the 3M™ CR100M OCR/MSR Document Reader and with the Magnetic Stripe downwards. The document should then be swiped briskly, yet smoothly, through the reader from the left to the right. Ensure that the bottom edge of the document remains in contact with the base of the reader slot and the movement is continuous.

Note that the 3M™ CR100M OCR/MSR Document Reader has two reader slots. These are distinguished by the difference in thickness of the slot, and by the logo displayed adjacent to the slots.



Indicates the slot to be used for OCR documents



Indicates the slot to be used for MSR documents



6 Positioning the 3M™ CR100x OCR/MSR Document Reader

6.1 Location of the 3M™ CR100x OCR/MSR Document Reader

NOTICE

The 3M™ CR100x OCR/MSR Document Reader is designed for indoor use. It can be safely used out of doors where there is no risk of water penetrating the case. Use in a wet environment can either damage the internal electronics or degrade the performance over time.

CAUTION

The 3M™ CR100x OCR/MSR Document Reader has various cable length options, available at time of purchase. Ensure that the appropriate cable length is used and that any spare cable is routed to avoid trip or catch hazards. This is particularly important in handheld applications.

The drivers and SDK should be loaded as given in the sections above.

The cable length should be checked to be appropriate for the use and the cable is routed neatly to prevent trip or catch hazards. Care should be taken to ensure that the cable does not impede the swiping of the document.

If the desk mount is used then the reader can be placed on the desk in an appropriate location on the desk with the cable exiting towards the rear of the desk. The main reader body should be towards the operator as shown in the right hand picture:



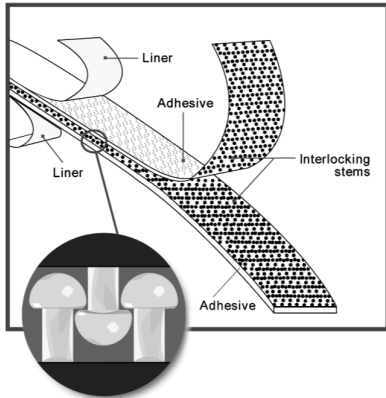
For left handed users the reader can be placed on the other side and the cable can exit from the right hand side of the reader as shown in the left hand picture above. To change the cable exit see section 0 above.



Alternatively the desk mount can be removed and the reader used attached to a PDA or notebook computer, etc. In these cases the 3M™ CR100x OCR/MSR Document Reader can be attached with 3M™ Dual Lock™ Reclosable Fasteners to a suitable surface on a monitor or keyboard.

NOTICE

3M™ Dual Lock™ Reclosable Fasteners are designed for strong commercial applications and once stuck is difficult to remove. Choose the location carefully before application.



3M™ Dual Lock™ Reclosable Fasteners are a two part fastener that allows the reader to be removed from the mounting for transport, cleaning, etc.

When you apply an adhesive backed fastener, the bonding surface must be smooth, dry and free of contaminants. Rubbing down the fastener after application will improve contact. Dwell time will further improve contact and adhesion.

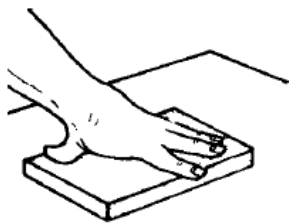
Surface Preparation: Reclosable fasteners will adhere to most clean, dry and well-unified surfaces. Typical surface cleaning solvents are a 50/50 isopropyl alcohol (rubbing alcohol)/water mixture or heptane. Scrubbing the surfaces with a solvent saturated

mild abrasive pad (e.g. Scotch-Brite™ Brand Surface Preparation Products, no 7447) and then wiping the surface with a clean cloth to remove the solvent and contaminants provides good results. You can also use the isopropyl alcohol reader cleaning cards (3M part number GR 2001 0064 6 available from your local 3M sales office).

Rub Down Pressure: Bond strength is dependent upon the amount of adhesive-to-surface contact developed. Firm application pressure develops better adhesive contact and thus improves bond strength.

Application Temperature/Dwell Time: Ideal application temperature range is 21°C - 38°C. Allow **48 hours** for maximum bond strength. Improved resistance to edge peel can be provided by recessing the 3M™ Dual Lock™ fastener, or by rounding the corners. In some exceptional cases (contamination by mould release, rough or porous surface etc) it may be necessary to sand or abrade the surface, or use an adhesive primer to optimise bond performance.

1.



Wipe with solvent or cleaner.

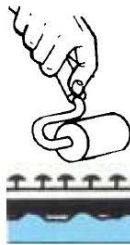
2.



Wipe dry.

3. Separate the two parts of the fastener. Position one piece of 3M™ Dual Lock™ Reclosable Fasteners on the 3M™ CR100x OCR/MSR Document Reader.

4.



Remove the liner and apply adhesive to the 3M™ CR100x OCR/MSR Document Reader, press down firmly and (optionally) roll down with a rubber covered roller.

5. Repeat steps 3 and 4 using the second side of the fastener on to the mounting surface.

6. From maximum strength leave for 48 hours before connecting. Offer the reader up to the mounting and engage the two fastener parts. If joined together immediately after application of fastener to each substrate, do not attempt to disengage for at least 1 hour after completing steps 6 & 7.

Where there is a requirement to remove the adhesive tape then it is recommended to use 3M™ Command™ Adhesive Products which can be easily removed from both the product and the mounting. 3M™ Command™ Reclosable Fasteners are available from retailers, online or your local 3M sales office.



The picture shows a typical application of the reader mounted to a display.

The 3M™ CR100x OCR/MSR Document Reader can be placed behind a keyboard, on a shelf edge or any surface where the operator can easily access and swipe the document without physical straining. The best orientation is with the document swiped either left-right or from the back to the front. It is also best to mount the reader so that it drives the document to the bottom of the slot, for instance on a back to front placement it is best to slope the reader back at an angle of around 30 degrees which helps the document stay on the bottom of the track as it is swiped.

Without the desk mount the cable can exit from the 3M™ CR100x OCR/MSR Document Reader in any of one of the four directions, left, right, back and front to suit the application. To change the cable exit position see section 6.3 below.

6.2 Removing the Desk Mount

If the 3M™ CR100x OCR/MSR Document Reader is not going to be used on a desk then the desk mount can be removed to make it easier to attach the reader to a monitor or shelf. The desk mount can be removed as follows:

1. Turn the reader over and identify the 2 small black screws. Remove these screws using a Philips No1 screwdriver.

Note: The 3M™ CR100 OCR Document Reader is shown here. The 3M™ CR100M OCR/MSR Document Reader uses the same style of desk mount although they are not interchangeable.



2. Having removed the screws you can take off the desk mount. If the cable exit needs to be changed remove the cable cover and proceed as described in the section below.

The picture shows the reader, cable cover, desk mount and screws.



3. Use the two screws to hold the cable cover in place as shown in the picture.



To replace the desk mount, remove the two screws, leave the cable cover in place, add the desk mount and replace the screws. Note that the desk mount only has side cable exits.

6.3 Changing the Cable Exit

The 3M™ CR100x OCR/MSR Document Reader can have the cable exiting from either end of the reader when used with the desk mount or from any side if used without the desk mount. The procedure is as follows:

NOTICE

To prevent damage to the cable do not tightly bend the cable and always follow the routing patterns shown below.

1. Turn the reader over and identify the 2 small black screws. Remove these screws using a Philips No1 screwdriver.



2. Having removed the screws you can take off the cable cover and if present the desk mount.

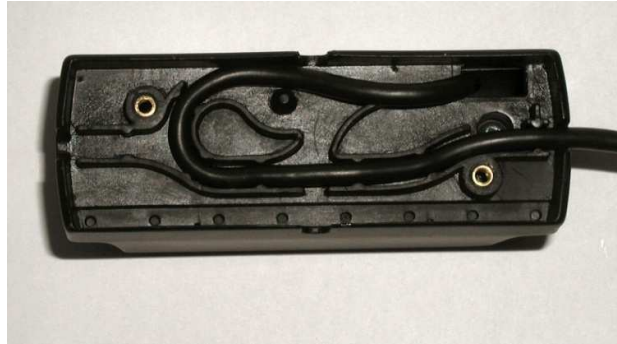
The picture shows the reader, cable cover and screws.

This is the preferred cable routing for the cable exiting from the left hand side of the reader.

If a different exit is required then follow one of the patterns below.



3. Cable routing for a right hand side exit.



4. Cable routing for a front exit. Note that this is not available with a desk mount.



5. Cable routing for a rear exit. Note that this is not available with a desk mount.



6. Replace the cable cover (and desk mount if required) and replace the two screws.

The picture shows the reader without a desk mount and with the cable exiting to the right.



7 Cleaning of the 3M™ CR100x OCR/MSR Document Reader

For optimum performance the reader should be kept clean at all times. Under normal use it is recommended that the reader is cleaned every two weeks.

Cleaning of the reader is extremely straightforward and no disassembly of the unit is required. Pre-saturated disposable cleaning cards are provided to keep the reader in perfect condition. These are available directly from 3M local sales office.

When ordering please quote 11400508591 for order quantities of 25, 50 or 100 cards.



Follow the cleaning procedures.

Never use strong detergents or solvent based cleaners other than those supplied by 3M.

Never push sharp/metallic objects into the reader. This may result in damage to the reader

Do not wet or immerse the reader in any liquid.

If allergic or sensitive to isopropyl alcohol use rubber or latex gloves.

If sensitive to isopropyl alcohol and rubber or latex gloves then give to somebody else to clean.

Required items:








- Isopropyl alcohol soaked cleaning card (3M Part Number 11400508591)
- Scotch-Brite™ Microfiber Cleaning Cloth

Process:

1. Disconnect the reader from the PC.
2. The outer casing should be cleaned first. Gently wipe the casing with a soft lint free cloth.
3. If there are stubborn marks on the external case then clean the body of the reader with a lightly dampened cloth (water).
4. To clean the optical reader slot:
 - Take the cleaning card out of its packaging
 - Fold the cleaning card in half (such that the length of the card is halved but the width is the same).
 - Swipe the card slowly backwards and forwards through the read slot several times
5. Open the card out again. Wait several seconds for the card to dry. Fold the card again but in the opposite direction. Swipe the card again several times to dry the read slot.
6. Take the card out and examine the dirt on the cleaning card. If the card is very dirty then repeat using a fresh cleaning card.
7. After cleaning, leave the reader to dry for 5 minutes before use.
8. Discard the used cleaning card safely and according to local regulations.

8 Troubleshooting

The reader should start up with a self-test sequence of the feedback LED which should then turn blue until a document is scanned. A different sequence indicates a self test error as follows:

LED flashes Green, Blue, Red and then stays steady Blue		Normal, successful start up
LED flashes Green, Blue, Red and then flashes Blue once per second		Normal, successful start up, but no connection to host application/host application not started
LED does not light at all		Bootloader failure – contact your service agent
Triple-pulse Red once per second		File system corruption - contact your service agent
Double-pulse Blue once per second		No reader application found to run – either reload the application or contact your service agent
Single-pulse Green once per second		In bootloader mode
LED flashes Blue 5 times per second		Normal successful start up and reader data waiting to be sent, application may not be running on host computer or other problem connecting

Other checks that you can do are:

- Check that the reader appears in the device manager as given in section 4.2 above.
- Use the SDK Configuration Wizard to check that the reader can be found and that the settings are correct. Usually this will not be necessary for the 3M™ CR100x OCR/MSR Document Reader, an exception to this would be if the device uses a non standard (RTE_NATIVE) protocol.
- Check that the reader works using the 3M demonstration program.
- Check that the reader works with a terminal emulator (also known as an RS232 or ASCII Monitor).
- You can check the version of the 3M™ Swipe Reader Drivers and 3M™ Swipe SDK by using the Control Panel and either **Programs and Features** in Windows 7 (scroll to the right hand side) or **Add/Remove Programs** in Windows Vista and Windows XP (click **Click for Support Information**). See section 10 to show how to access these. This is important information to have if you are contacting 3M Technical Support.
- Contact 3M Technical Support using the contact details given in section 1.9.
- Most problems are caused by either incorrect configuration of the reader or mismatched configuration or protocol between reader and application.

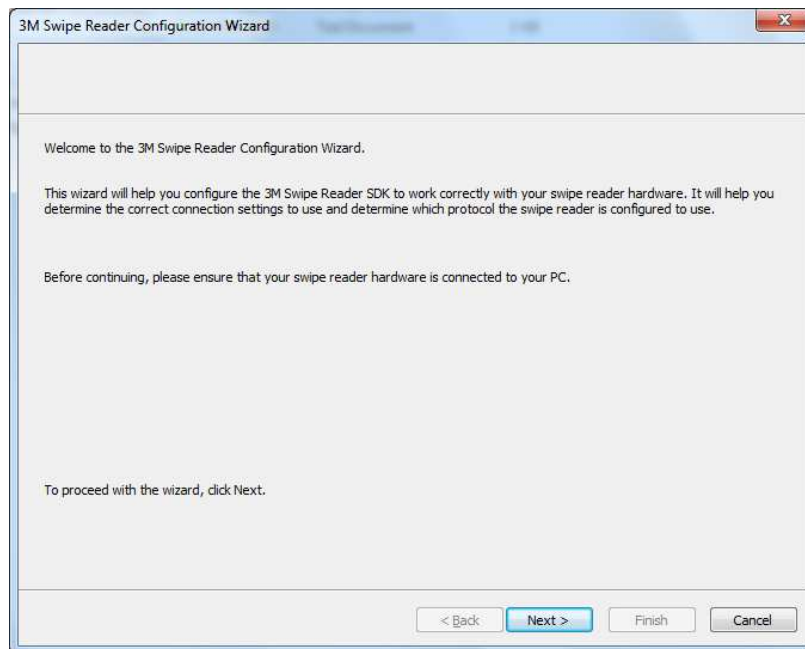
8.1 3M Swipe Reader Configuration Wizard

For most users, default settings are automatically chosen for the 3M™ CR100x OCR/MSR Document Reader. However, these settings may not be suitable in all cases. If the device is not functioning as expected, you may need to run the 3M Swipe Reader Configuration Wizard.

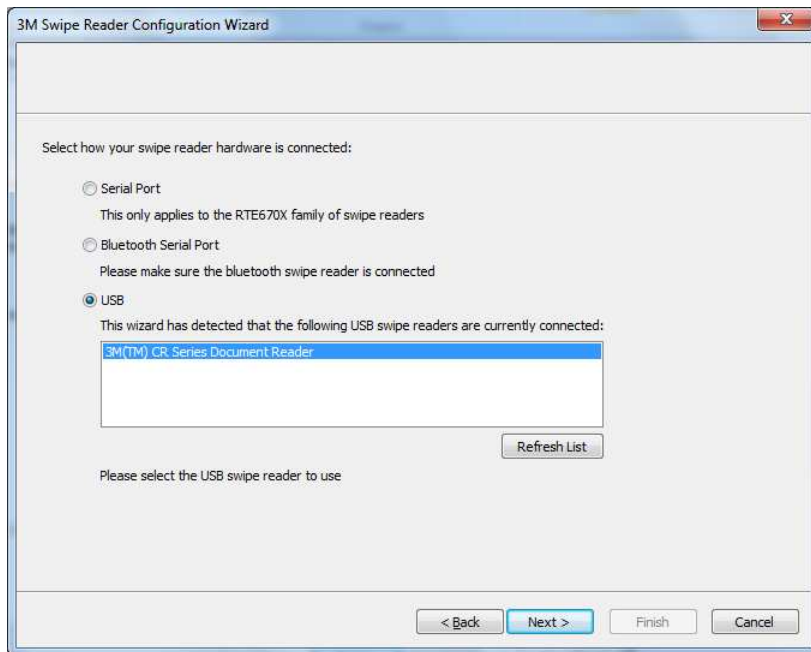
This can be found in the Start Menu:

Start -> All Programs -> 3M Swipe Reader -> Tools -> 3M Swipe Reader Configuration Wizard

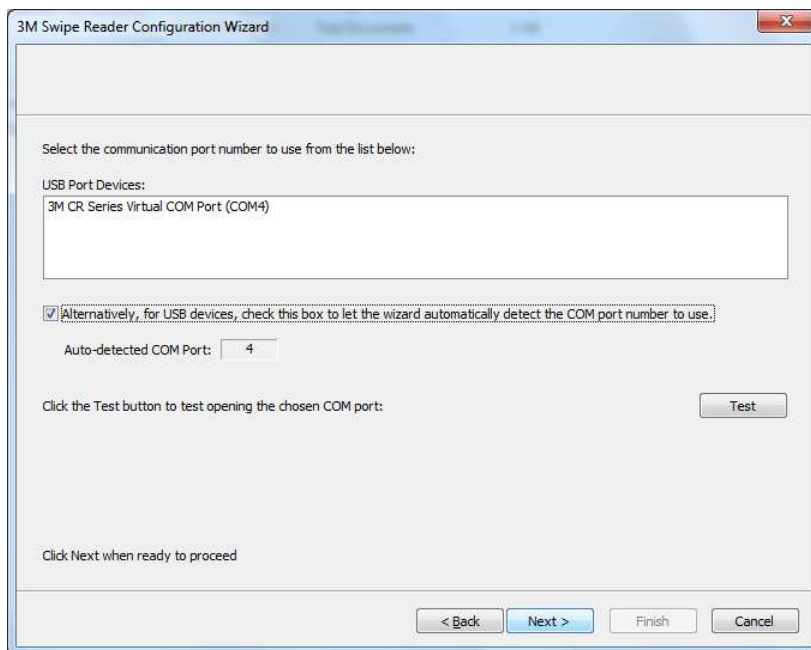
This is the opening screen. Click **“Next”** to continue:



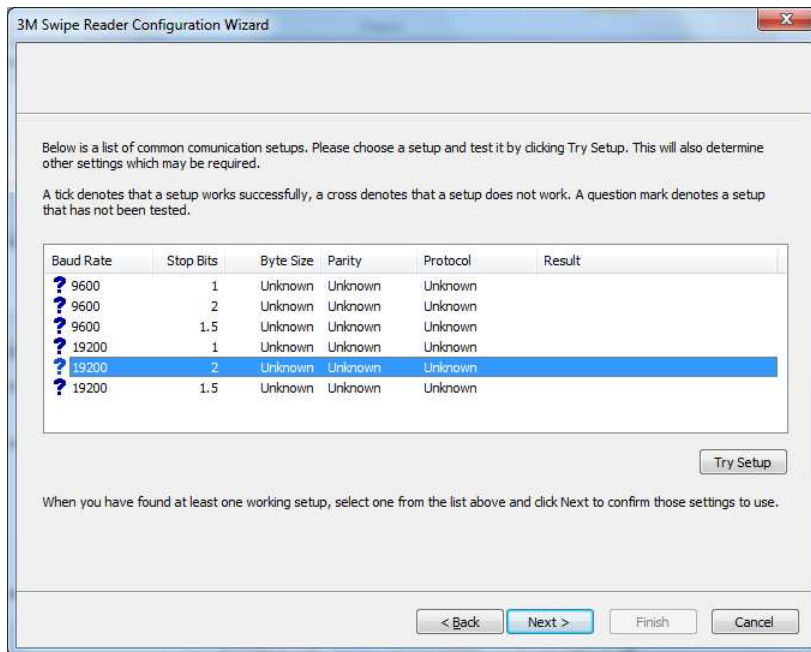
Select USB and click the device as follows:



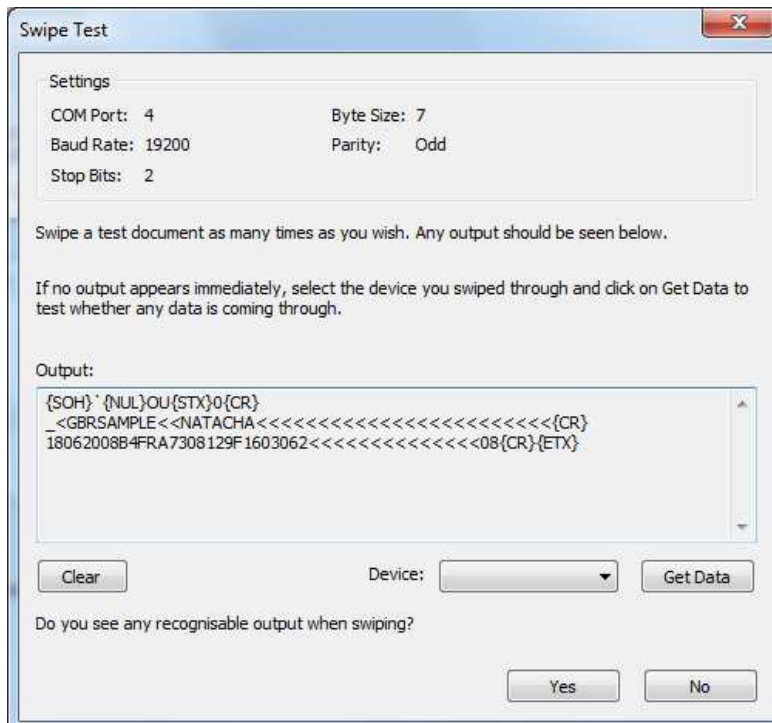
And for Port Number click the tick box “Alternatively, for USB devices.....”. Click test to check the port is detected correctly as follows:



Select 19200 and 2 stop bits:

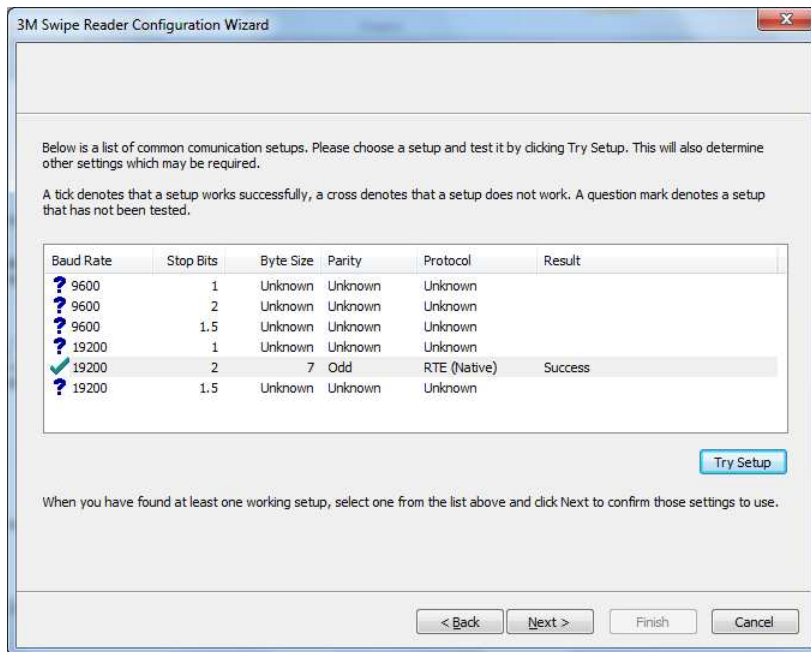


Click “**Try Setup**”, swipe a document or the supplied test card and you should see:

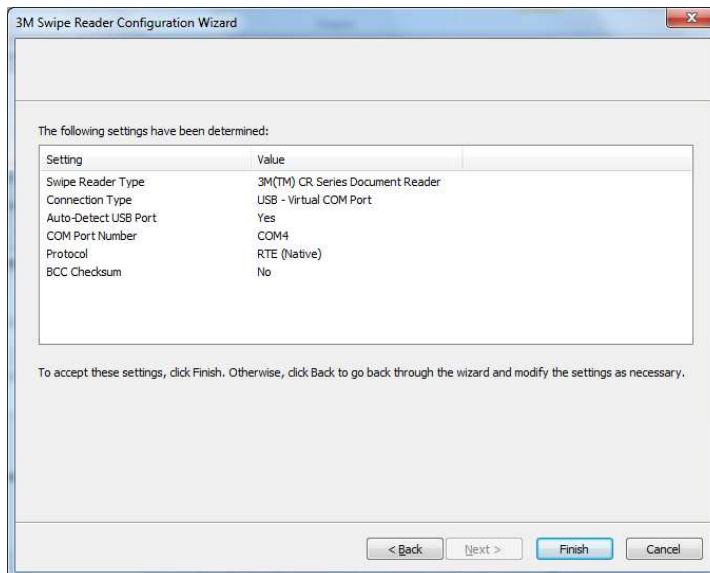


If you see data click **“Yes”**, otherwise click **“No”** and try an alternative baud rate. You should now see success against the selected line and the protocol that has been determined (usually RTE Native).

This screen confirms the chosen settings:



Once you have clicked “**Finish**”, your device will be correctly configured and ready to use.

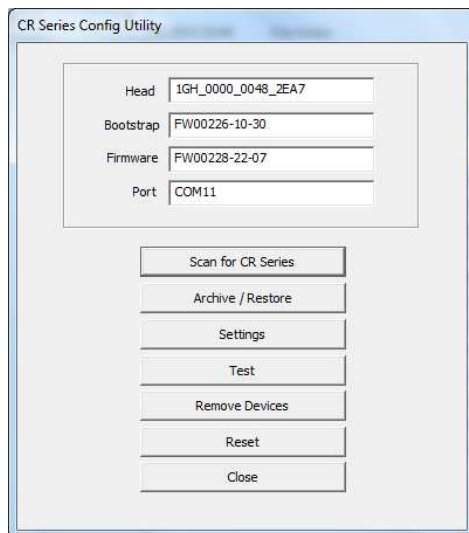


8.2 Additional Protocol Configuration

In certain circumstances, it may become necessary to alter some of the more advanced settings concerned with the CR100x OCR/MSR Document Reader's protocols. This should not normally be necessary, but may indicate that the device has not been initially configured to use the correct protocol for your application.

To access the **Customer Config Application**, run the program by double-clicking on the CRSeriesConfigUtility.exe

This will display the following screen



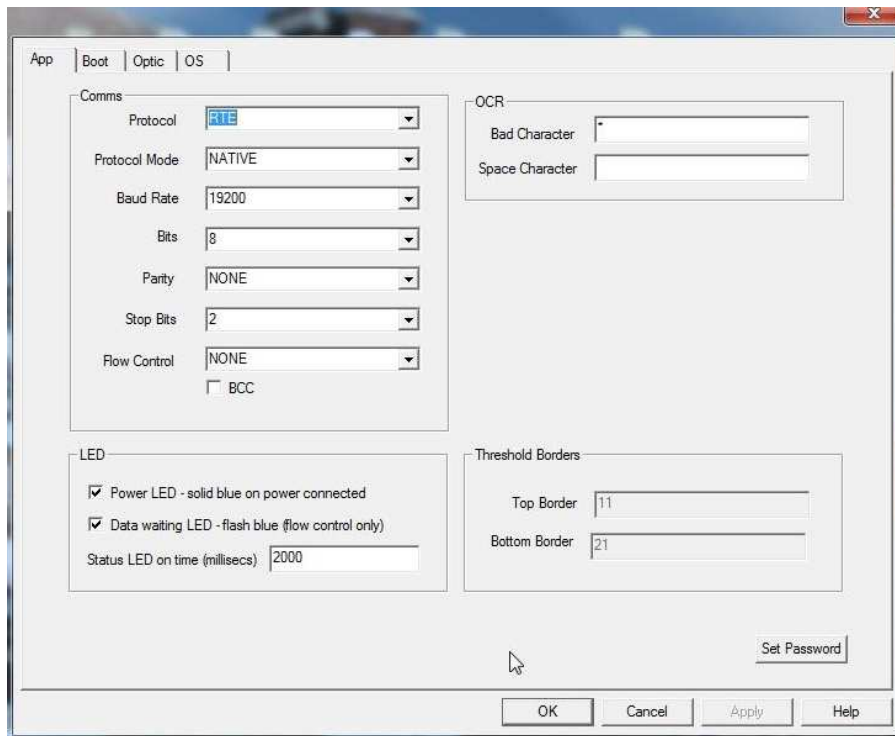
If a CR Series camera is attached it will be detected by the application and in the first three boxes the Serial Number, Firmware Revision and COM port it is connected to are displayed.

Pressing the first button, **Scan for CR Series**, should find a device that has been connected after the program has launched.

The **Archive/Restore** options allow the complete flash memory image to be archived off to a location of choice as a **.CRS** file. It is highly recommended that an archive be created prior to making any changes to the device configuration.

The **Restore** option loads the stored settings back in to the head from the **.CRS** file.

The **Settings** button opens up the following screen



From this screen, many of the detailed configuration settings and options can be viewed and, if necessary, altered.

NOTICE

Changing these settings can result in the CR100x OCR/MSR Document Reader failing to operate correctly. You are strongly advised to make an Archive of your current settings before making any changes to the configuration of your device.

Protocol can be changed to RTE, SITA CUTE, ARINC MUSE or TECS

Protocol Mode for RTE can be NATIVE, INTERRUPT or POLLED.

Protocol Mode for SITA CUTE can be WEDGE or UNDECODED.

Note: ARINC and TECS do not have Mode selections.

Generally your system will use the default protocol, however you may have an application that uses a special protocol designed for your system. If this is the case you will need to change the reader to a different protocol. For ARINC and SITA protocols contact the respective company for a copy of their protocol manuals.

COM port settings can be changed using the lower setting options in the **Comms** group. BCC is a checksum that can be enabled for any of the RTE protocol options.

Note: The **LED** settings should remain unchanged, as should the OCR and **Threshold Borders** settings.

After changing any of the settings pressing the **OK** button will ask if you want to save them to the reader. After a reboot of the head the new settings will be active. Pressing **Cancel** will exit the screen without saving any changes you may have made to the options on the screen.

The **Test** button on the main screen will open up a screen enabling you to swipe a document, or magnetic stripe card (CR100M only) and display the decoded OCR or MSR data. It will also display the actual captured image of the OCR document which can be saved. This feature can be useful for remotely diagnosing reader problems as the image can be emailed to a technician to inspect.

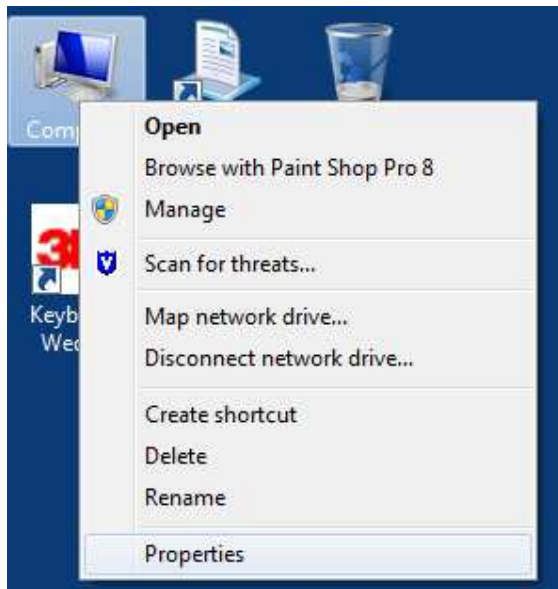
The **Remove Devices** option will clear history of previously connected readers from the device manager. This is primarily a housekeeping activity to prevent COM port numbers incrementing.

The **Reset** option resets the reader, note the device will clear from the display while the reader is rebooting.

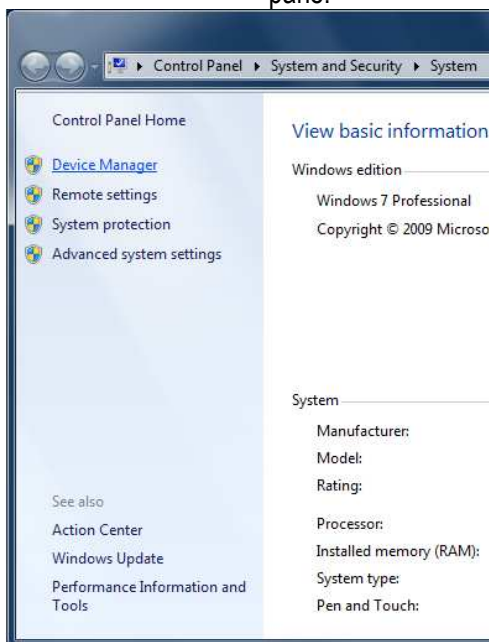
8.3 Determining the USB Port Number

The drivers create a virtual COM port which provides an RS232 serial port emulation (also known as Serial Port Profile SPP) over the USB channel and allows legacy applications using a serial port interface to communicate with the module. If using the 3M™ Swipe Reader SDK then you can use the Configuration Wizard (see section above). Alternatively you need to look in the device manager to determine the COM port number.

You need to start the device manager (right click “**Computer**”, select “**Properties**”).



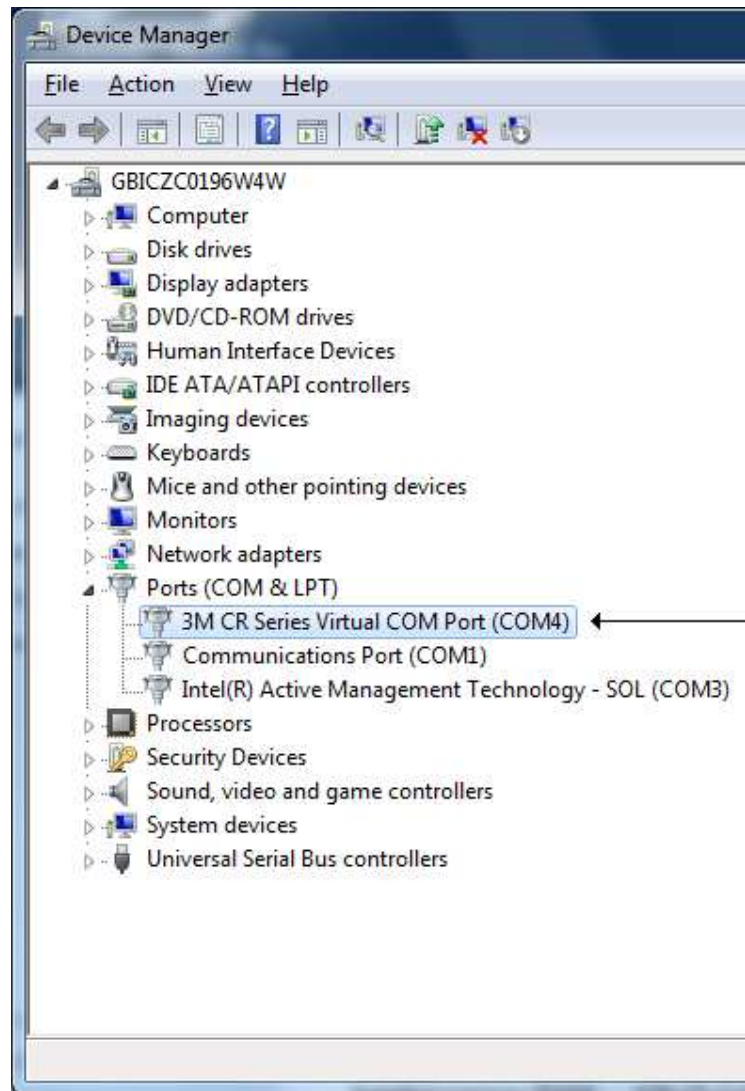
On Windows 7 select “**Device Manager**” from the left pane.



On Windows Vista and Windows XP go to the **Hardware Tab** and click **Device Manager**.



Open the LPT and COM section. This gives you the COM port number (in the example it is 4).



9 Compatibility

9.1 Compatibility with 3M™ RTE6701 Passport Reader

The 3M™ CR100x OCR/MSR Document Reader is compatible with the 3M™ RTE6700 Multi-Function Document Reader protocols. Typically the 3M™ CR100x OCR/MSR Document Reader will be configured for RTE Native protocol and can be used with previous versions of the 3M RTE6700 Resource Kit. It can be used with the demonstration program SDA6700.exe, see Appendix B of the 3M™ RTE6700 RTE Protocol Programming (part number 97-0200-31) on how to configure the program.

10 Uninstalling the 3M™ Swipe Reader SDK

10.1 Windows 7

1. Use the **Start Menu** or the **Control Panel** to find “**Programs and Features**”
2. Select the “**3M Swipe Reader**” entry and press “**Uninstall**”
3. During the un-installation process, clicking “**Next**” at each of the screens that are displayed
4. Click **Finish**. The SDK has now been removed.

10.2 Windows Vista and Windows XP

1. Go to the **Control Panel** and select “**Add/Remove Programs**”
2. Select the “**3M Swipe Reader**” installation
3. Now press “**Remove**”.
4. During the un-installation process, clicking “**Next**” at each of the screens that are displayed
5. Click **Finish**. The SDK has now been removed.