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Thales Gemalto Document Reader

AT9000 MK2 User Guide

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Preface

This user guide describes the features and functions of the Thales Gemalto Document Reader AT9000 MK2 (PV60-xx-xx-xx)

Note: Readers may have either a Thales or Gemalto logo however they are the same product manufactured and supported by Thales

Revision History

Version	Date	Description
A	Feb 27, 2013	Release version
B	June 2015	Updated contact info
C	Feb. 2016	EMC compatibility notice
D	Sep 2017	Gemalto
D1, D2	November 2018	Taiwan regulatory notices
D4	February 2020	Add Mexico Regulatory Notice
E	April 2020	Thales brand
F	December 2020	Thales rebrand, Korean regulatory notices
G	February 2021	New Taiwan regulatory notice
H	March 2021	Updated Taiwan regulatory notice
J	Sep. 2022	Updated FCC ID and Canadian ID

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 Power Supply Unit (PSU) or its installations, must not be modified in any way.

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

NOTICE In some situations AC line transients or Electrostatic Discharge may cause a loss of communication between the document reader and the host application. If this occurs, it may be necessary to restart the host application, or unplug and reconnect the USB cable, or power cycle the document reader in order to restore operation.

For further regulatory information or copies of certificates contact your local Thales representative or direct your questions to technical.service@thalesgroup.com

EMC Compliance Europe

The Product meets the following European Council Directives:

- Scanner: EMC (2014/30/EC), RFID option: Radio Equipment (RED) (2014/53/EC)
- PSU: EMC (2014/30/EC), LVD (2014/35/EC)
- Restriction of the use of certain hazardous substances (RoHS2) Directive 2011/65/EU

FCC/Canada Radio Frequency Rules and Regulations

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the Federal Communication Commission (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/her own expense.

NO MODIFICATIONS. Modifications to this device shall not be made without the written consent of Thales. Unauthorized modifications may void the authority granted under FCC Rules permitting the operation of this device.

Product Labelling

FCC Labelling

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.

FCC ID: 2AQL3PR01813 (Historic IDs: DGFSSDPV40, MESPR01517 and 2AQL3PR01517)

Canada Labelling

This device complies with Industry Canada's licence exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference, and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Canadian ID: 22832-PR01813 (Historic IDs: 458A-SSDPV40 and 22832-PR01517)

RF Exposure Statement (FCC)

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, this equipment should be installed and operated with minimum distance 20 cm (7.6 inches) between the antenna and your body during normal operation. Users must follow the specific operating instructions for satisfying RF exposure compliance.

RF Exposure Statement (ISED)

This equipment complies with ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm (7.6 inches) between the radiator and any part of your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
Pour se conformer aux exigences de conformité ISED RSS-102 RF exposition, une distance de séparation d'au moins 20 cm doit être maintenue entre l'antenne de cet appareil et toutes les personnes. Lanceurs ou ne peuvent pas coexister cette antenne ou capteurs avec d'autres.

Mexico Regulatory Notices (RFID versions)

Número IFETEL: RCPGEPV20-0003

`La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

Taiwanese Regulatory Notices

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Without permission granted by the NCC, any company, enterprise, or user is not allowed to change frequency, enhance transmitting power or alter original characteristics as well as performance to a approved low power radio-frequency devices. The low power radio-frequency devices shall not influence aircraft security and interfere legal communications; If found, the user shall cease operating immediately until no interference is achieved. The said legal communications means radio communications is operated in compliance with the Telecommunications Management Act. The low power radio-frequency devices must be susceptible with the interference from legal communications or ISM radio wave radiated devices.警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Warning to Users:

This is a Class A information device, which might cause radio frequency interference when used in residential areas. When this happens users might be required to take appropriate actions.

Korean Regulatory Notices

사 용 자 안 내 문
이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

Disposal - European 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.

Do not send equipment back to Thales unsolicited.

Packing for Transportation

When packing this product for repair or shipment, carefully disconnect the cables and power supply and pack in the original inner and outer packaging cartons.

Important Safety Information

This manual contains important information regarding the operation of the Thales Gemalto Document Reader AT9000 MK2. For the safe and reliable operation of the readers, all users must ensure that they are familiar with and fully understand all instructions contained herein.

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 injury or equipment damage.
NOTICE	Indicates a situation which, if not avoided, could result in equipment damage.
Note:	Provides additional important information.

Foreign language translations of these safety instructions can be found on our Customer Portal and in the SDK.

WARNING

To reduce the risk associated with hazardous voltage which, if not avoided, could result in death or serious injury:

- Do not use the reader with any AC power supply other than the provided Thales AC power supply.
- Do not use AC power supply and/or power cord if damaged.
- Do not open the reader and/or power supply. Reader is to be serviced by trained personnel only. No user serviceable parts or adjustments inside.
- Do not modify or attempt to modify the reader and/or AC power supply.
- Use only in an indoor dry location. Do not use the product in an outdoor and/or wet environment.

CAUTION

To reduce the risks associated with environmental contamination which, if not avoided, could result in minor or moderate injury:

- Dispose of electronic waste in accordance with all applicable regulations.
- Only an authorized, trained technician should perform change the glass. Failure to correctly follow the instructions could result in injury or cause damage to the equipment. Readers with broken glass should be sent to a repair centre for cleaning and safe disposal of the broken glass pieces.
- Modifications or changes to the Product, the interface cables or the power supply not expressly approved by the manufacturer could void the User's authority to operate the Product and/or break local laws or regulations.

NOTICE

- Modifications or changes to the Product, the interface cables or the power supply not expressly approved by the manufacturer could void the User's authority to operate the Product and/or break local laws or regulations.
- Use a safe cloth that will not damage glass, such as the provided microfibre cleaning cloth. To reorder cleaning cloths, contact Global Technical Services (GTS). Do not use abrasive cleaners or solvents. These may scratch the glass or damage the oleophobic coating.
- In some situations AC line transients or Electrostatic Discharge may cause a loss of communication between the document reader and the host application. If this occurs, it may be necessary to restart the host application, or unplug and reconnect the USB cable, or power cycle the document reader in order to restore operation.

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1. Introduction

The Thales Gemalto Document Reader AT9000 MK2 is an Optical Character Recognition (OCR), full-image capture and Radio Frequency IDentification (RFID) device that provides automated data capture from a variety of personal identification documents, including ePassports, passports, visas and other travel documents.

The reader's small footprint and its ability to image challenging documents in brightly lit conditions with minimal CPU loading on the host PC makes it ideal for use by immigration control, airlines, banks, hotels, and casinos. The readers have no motorized moving parts to ensure maximum reliability.

Thales Gemalto Document Reader AT9000 MK2

Supported documents and formats

The Gemalto Document Reader AT9000 MK2 reads a wide-range of documents and formats:

- Supported documents include passports, visas, ID cards and all other ICAO-standard travel documents, as well as many non-ICAO variations
- Optional Integrated ePassport (RFID chip) reader so kiosk can read the Machine Readable Zone (MRZ) and smartcard chip in one operation.
    - Contactless IC reading for ePassports (LDS 1.7 & 1.8) including basic access control (BAC), passive/active authentication (PA/AA), Chip Authentication (CA), Terminal Authentication (TA), extended access control (EAC v1/v2), supplementary access control (SAC) and PACE-CAM are supported. The SDK provides writing capability using APDUs
    - Contactless IC reading for eDL & iDL (electronic driving licenses) up to DG14 including basic access control (BAP v1), Password Authenticated Connection Establishment (PACE), passive/active authentication (PA/AA), Chip Authentication (CA), Terminal Authentication (TA), supplementary access control (SAC) and extended access control (EAC v1) are supported
- Reads 1D and 2D barcodes (PDF417, Aztec, QR® codes and Data Matrix™), SDK includes an AAMVA decoder

- Reads home print and mobile (cell) phone boarding passes (BCBP) and 1D/2D barcodes.
- Data capture from HRZ and non-ICAO documents (optional software package)
- Enhanced document detection and authentication software (optional software package)
- ISO7816 contact smartcard reading (optional)
- Magnetic stripe reading (optional)
- Chinese NID card RFID reading (optional)

Imaging features

The Gemalto Document Reader AT9000 MK2 family has the following imaging features:

- True-colour and anti-glare technologies deliver accurate, true-colour images while minimizing interference from document laminate reflections, optically-variable security features or ambient light
- Multiple light sources for image capture and authentication – visible (RGB), infra-red (IR), ultra-violet (UV-A)
- Captures full-colour or grey-scale images
- 400 and 720 DPI camera options
- Flexible software interface (Gemalto Document Reader SDK) allows host application to select which illumination sources to use, image type, image compression, ePassport LDS data and validation, photo extraction, etc.
- Thales Gemalto Confirm Laminate imaging with tamper detection

Physical design features

The Gemalto Document Reader AT9000 MK2 family has the following physical design features:

- Supports single-handed operation. Semi-enclosed removable hood holds document in place during reading.
- Document hood may be removed if desired. The reader is capable of hoodless operation in most brightly-lit indoor environments. An alternative rear hinging hood can also be installed.
- Simple, intuitive and quick operation that accepts documents in any orientation.
- Small footprint, no moving parts, robust construction.
- Provides two USB2.0 ports for attaching additional biometric devices like a webcam or fingerprint reader.
- Powered from a single USB 2.0 port. An optional external power supply is available to support externally attached modules (e.g. magnetic stripe or contact smartcard reader) or USB peripherals.

Common applications

Typical uses of the Gemalto Document Reader AT9000 MK2 include:

- APIS data capture with cross checking of FAA watch lists
- ePassport and other travel document reading and authentication

- Scanning full-colour or grey-scale images of travel documents
- Electronic manifests with traveller photo images
- Hotel check-in and reporting
- Document authentication at banks and casinos
- ID checks
- Airline ticket fraud detection
- Travel document quality assurance

Security features

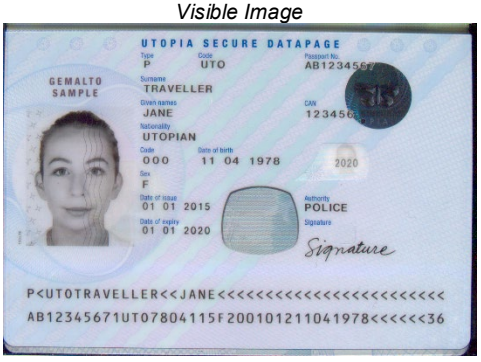
The Gemalto Document Reader AT9000 MK2 can help the operator detect forged or counterfeit documents.

Reading the UV features printed in fluorescent inks on a document provides inspectors with colour images of covert document security features.

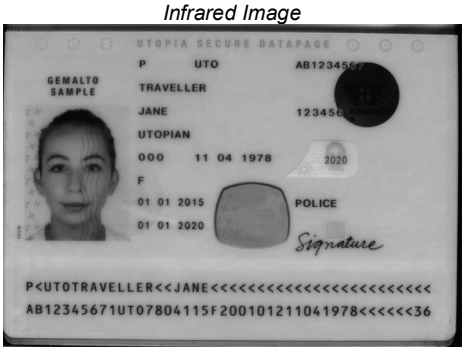
Optional Thales Gemalto Confirm Laminate imaging allows the inspectors to quickly verify the authenticity of the document. It can also indicate if documents have been tampered with by revealing marks or other damage.

The following images were taken using the Gemalto AT9000 MK2.

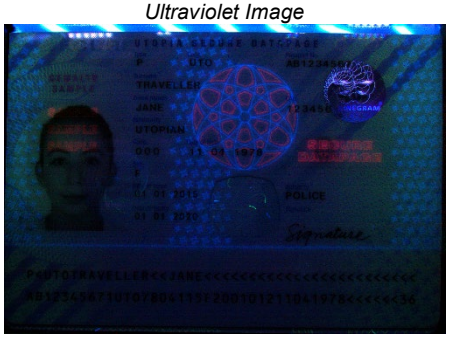
Visible Image



Infrared Image



Ultraviolet Image



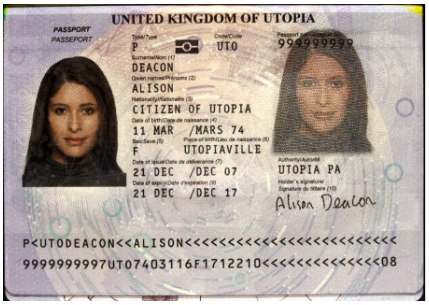
Gemalto Confirm Laminate Image

True-colour/anti-glare technologies

Anti-glare technology, ambient light compensation and true colour imaging ensure that the Gemalto Document Reader AT9000 MK2 will deliver superior, accurate images of challenging documents in demanding conditions, including those with holographic laminates. Studies have shown that reproducible colours and contrast are important for document authentication and Gemalto Document Readers are both flat field corrected and have colour calibration. Ambient light removal enables the capture of high quality images, including UV, without a hood. No recalibration of the reader is required during operational life.

Without Anti-Glare Technology

With Anti-Glare Technology



Overhead Ambient Lighting

Ambient Light Removed

Reader components

The Gemalto Document Reader AT9000 MK2 is a small desktop device with:

- A window for scanning documents
- Device status and activity lights
- Back panel ports for communication, power, and security
- Removable document hood and adjustable clip to allow for scanning of oversized documents
- Optional 5 volt power supply
- Optional rear-mounted smartcard reader
- Optional rear-mounted magnetic strip reader
- Optional rear hinging hood

Depending on your model, various configurations or components may be available.

Gemalto AT9000 MK2 without removable document hood

Gemalto AT9000 MK2 with optional smartcard reader and optional fixed hood

Gemalto AT9000 MK2 with optional magnetic stripe reader and removable document hood

Document window

The document window is a glass surface located on top of the reader. Place documents on the window to scan them. The reader will automatically detect when a document is placed on it.

Keep this surface clean to ensure optimum operation of the reader. See “Cleaning the reader” on page 23.

Indicator lights

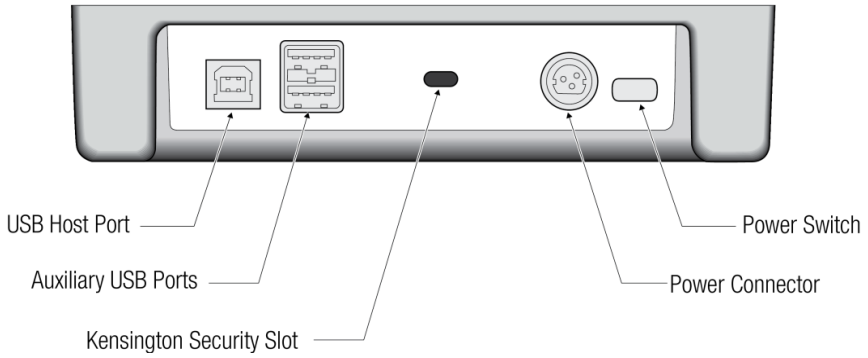
The indicator lights show the reader status and scan results.

Light	Colour	Description
Error	Red	Document is of an unknown type or did not process properly.
OK	Green	A known document type was presented and processing was successful.
Busy	Yellow	Reader is scanning a document and processing the data.
Ready	Blue	Reader is ready to scan a document (when connected to the host application).
	Flashing Blue	USB cable is not connected (only present if optional power supply is used)

Back panel

The back panel contains the power switch, power supply connector, and USB ports. Data is sent to the PC through the USB host connector. When powered from the optional external power supply, the reader also functions as a USB 2.0 hub. It has two auxiliary ports for connecting additional USB peripherals (such as a mouse, keyboard, or 2D barcode reader).

The Kensington® Security Slot can be used to tether the reader to the workspace.



The reader is capable of operating on USB 2.0 power. However, when operating on USB power, due to the limited power available over the USB interface:

- performance of the reader will be superior when using the external power supply
- the back panel USB peripheral ports will not be available
- The reader will not operate under Linux or macOS

A power supply is included with each Gemalto Document Reader AT9000 MK2.

WARNING

To reduce the risk associated with hazardous voltage which, if not avoided, could result in death or serious injury:

- Do not use the reader with any AC power supply other than the provided Thales AC power supply.
- Do not use AC power supply and/or power cord if damaged.
- Do not open the reader and/or power supply. Reader is to be serviced by trained personnel only. No user serviceable parts or adjustments inside.
- Do not modify or attempt to modify the reader and/or AC power supply.
- Use only in an indoor dry location. Do not use the product in an outdoor and/or wet environment.

Document hood

The Gemalto Document Reader AT9000 MK2 features a semi-enclosed hood that performs two functions: it holds the document in place to enable hands-free operation and it minimizes ambient light to ensure high-quality scans. The hood can easily be removed if the user needs to scan an extra thick document, or if the user finds it more convenient to use the reader this way.

The Gemalto AT9000 MK2 can compensate for ambient light in most bright office environments.

An adjustable document clip located above the document window ensures that documents, regardless of their thickness, easily slide into the reader and are held flat during scanning.

Alternative Hinging hood

The Gemalto Document Reader AT9000 MK2 can have a rear hinged hood which can be easily lifted up as you place the document on the glass. It can also be rotated 180 degrees to be completely out of the way.

2. Installing the Reader

This chapter explains how to install the Thales Gemalto Document Reader AT9000 MK2 software and connect the reader to the PC.

Before you begin

Before you install the reader, you need to meet the following requirements:

- A PC with an USB 2.0 or 3.1 port (the reader will not work if connected to a USB 1.1 port)
- A PC running 32 or 64 bit versions of Windows® 7, Windows® 8.1 or Windows® 10, Linux® LTS builds for Ubuntu and CentOS. Additionally macOS is supported (contact Thales for more details). An external PSU is required for Linux and macOS.
- Administrative rights to install the software
- If you are installing multiple readers with the RFID option, ensure a minimum of 25 cm (10 inches) between readers to prevent potential interference.

Unpack the reader

Each reader package consists of:

- Gemalto Document Reader AT9000 MK2
- PSU and AC cable (optional)
- Test card
- USB communication cable
- Microfibre Cleaning Cloth
- Software download instructions

To unpack the reader:

1. Remove the contents from the box and separate the components from the packing material.
2. Verify that all the parts described have been received. If any parts are missing or damaged, contact Thales Global Technical Services (GTS).
3. Keep and store the original packaging in the event that the reader requires shipment back to Thales for maintenance.

Note: If the reader has been stored in a cold environment (i.e. below room temperature), allow the reader warm up for a minimum two hours before powering it on.

DO NOT connect the reader to the computer until you have installed the software.

Install the software

The reader package contains an instruction sheet with links to a customer portal to download the software components and documentation necessary to install and operate the reader:

- Gemalto Document Reader SDK
- Reader and software documentation

- Required drivers
- Additional SDKs based on the reader model

To install the reader software:

1. Download the latest SDK software from the link. Click on the *Gemalto Document Reader SDK x.x.x Setup.msi* link and save the exe file to a known location on the PC (for example, the desktop).
2. Run the downloaded .msi file and follow the on-screen instructions.

Connect the reader cables

Note: Make sure you install the software before connecting the reader.

To install the reader, you need to connect the following cables:

- USB cable – The reader is supplied with a USB 2.0 cable (Type A to Type B). The cable provides both power and data connectivity to the reader.

Type B (connects to reader)

Type A (connects to PC)

- Power supply (optional) – **You need to use the optional PSU if you want to use the reader as a powered USB2.0 hub.** The Power connector is a latching type that cannot accidentally detach as the reader is moved about. To remove the connector, grasp the connector shell and pull away from the reader. The connector shell will slide backward slightly, allowing the connector to disengage from the reader.

To connect the reader cables:

Note: Use on the USB cable and optional PSU provided with the reader.

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

WARNING To reduce the risk associated with hazardous voltage which, if not avoided, could result in death or serious injury:

- Do not use the reader with any AC power supply other than the provided Thales AC power supply.

1. Connect the USB cable:
   I. Insert the Type B connector into the USB port located on the back of the reader.
   II. Insert the Type A connector into a USB port on the PC.

2. If want to attach peripheral USB devices to the reader, you will need to connect the power supply (if you are using the reader as-is, you can skip this step). To connect the power supply:
   I. Connect the connector from the power supply to the power connector at the rear of the reader. **Do not force.** There is only one orientation that will allow the cable to be connected to the power port.
   II. Connect the AC cable to a functioning power outlet.

Power on the reader

To power on the reader press the power switch located on the back of the reader.

A power-on self-test occurs automatically when the reader powers up. If the reader is installed correctly and is operational, the indicator lights will perform the following boot-up sequence:

- All lights come on briefly at initial power-up.
- During power-up self test the OK light (green) remains on while the Ready light (blue) flashes.
- After approximately 10 seconds, the Ready light (blue) remains on and all other lights turn off

The lights may also indicate the following common communication errors:

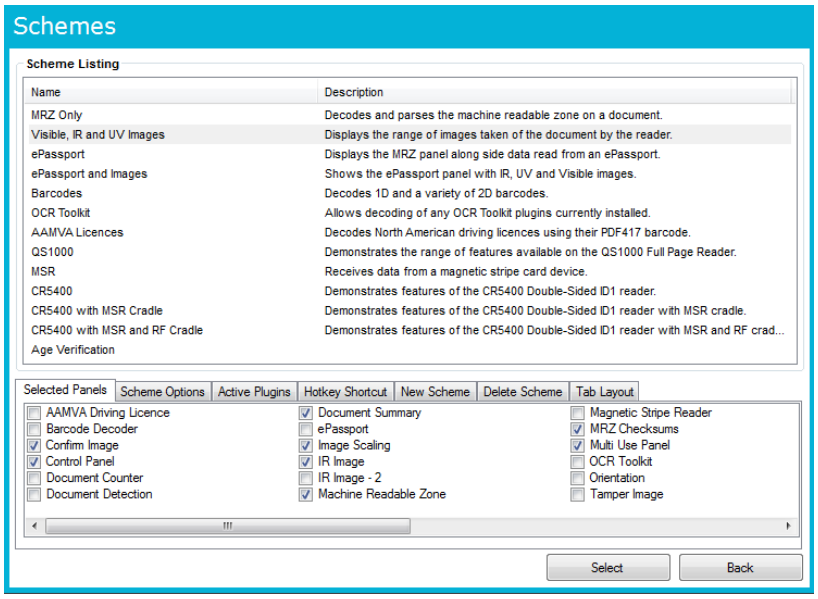
- The blue Ready light flashes rapidly if no USB connection is detected.
- The blue Ready and red Error lights flash rapidly if a USB 1.1 connection is detected. The reader will not transfer document images over a USB 1.1 connection.

Test the reader installation

After installing the reader, perform a quick test to ensure the reader is functioning properly and the software was installed correctly.

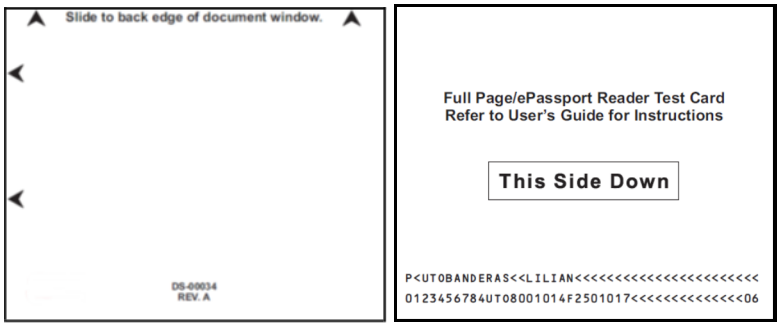
To test the reader:

1. Start the application **Reader Expo** from the shortcut created during software installation.
2. Select a scheme that matches your reader. If you are unsure, select the "**ePassport and Images**" scheme.



3. Click **Select**.
4. Verify **that** the Ready light (blue) is on and the Reader State in the lower left is “Enabled”.

   The reader is ready to accept documents.
5. **Select** the test card (DS-00043 or DS-00034) supplied with the reader.



6. Place the test card face down on the document window, aligned with the left guide, with the test card instructions facing up.
7. Push **the** card to the back of the document window until it stops.

   Note: Do not move the document during the scanning process.
8. **Observe** the lights during the scanning procedure.
   - The Ready light (blue) turns off and the Busy light (yellow) turns on while the reader scans and processes the data.
   - The OK light (green) turns on, indicating a successful read.
   - The Ready light (blue) turns on, indicating that the reader is ready to scan another document.

   The data from the test card is sent to the host computer and the results displayed on the PC screen. If the test is successful, a screen similar to the following screen is displayed.

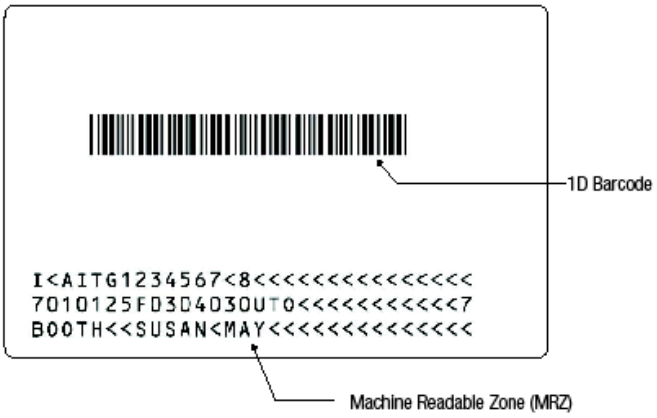
3. Reading Documents

The Thales Gemalto Document Reader AT9000 MK2 reads the barcode and machine-readable zone (MRZ) text on both identification cards and passports. When a document is properly aligned on the document window, the reader automatically captures an image and then performs optical character recognition (when there is OCR data), followed by barcode recognition.

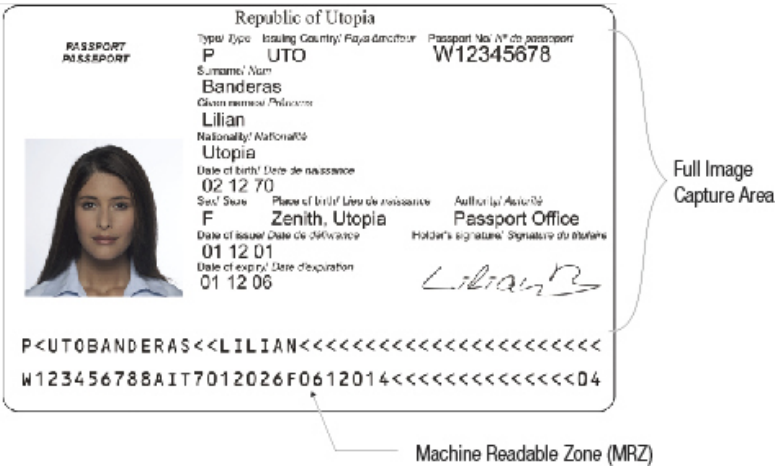
The AT9000 MK2 with RFID option can detect and read information encoded on contactless integrated circuits (chips) in passports and ID cards. Whether the chip is in the front or rear cover, the data page, or any other page, the reader's antenna will detect and read the chip. You do not have to turn the book around to ensure the chip is read.

Document layout

Identification cards typically have a photo and basic information on the front and a 3-line MRZ on the back.



Passports have a photo, vital information and a 2-line MRZ on the front.



Reading standard documents

This section describes proper document placement for typical documents. When reading typical documents the booklet slides under the clip against the document guide.

To read a standard document:

1. Hold the document open as you place it on the document window.
2. Place the booklet or card on the document window close to the left so the left edge is against the document guide and then slide it back so the leading edge is fully inserted at the back of the document window.

The hood was designed to hold a document in a natural semi-opened position. This hands-free function allows you to release the document and focus on the traveller.

3. During reading, the document must lie flat against the document window. The leading edge of the booklet or card should be all the way to the back of the document window (and underneath the document clip, if installed). The left edge of the booklet must be against the document guide.
4. When the document reaches its proper position, the reader will automatically start scanning the document.

   Note: The outer half of the booklet must lie flat against the bezel to ensure that any chip located in the back half of the booklet is read properly.

5. Observe the indicator lights during the scanning procedure:
   - The Ready light (blue) turns off and the Busy light (yellow) turns on while the reader scans and processes the data.
   - The OK light (green) turns on, indicating a successful read.
   - The Ready light (blue) turns on, indicating that the reader is ready to scan another document.

   The data from the document is sent to the PC.

4. Maintenance

The Thales Gemalto Document Reader AT9000 MK2 has no user-serviceable parts but its glass surface must be cleaned on a regular basis. For extensive repairs, return the reader to Gemalto service depot. See page 32 for more information.

Powering the reader on/off

To power off the reader, press and hold the power switch on the back panel for 1 second. To power the reader back on, press the power switch again for approximately 0.5 second.

Cleaning the reader

Clean the reader regularly to ensure proper performance.

NOTICE

Use a safe cloth that will not damage glass, such as the microfibre cleaning cloth (provided). To reorder cleaning cloths, contact Global Technical Services (GTS). See page 32 for more information.

Do not use abrasive cleaners or solvents. These may scratch the glass or damage the plastic parts.

To clean the reader:

1. Power off the reader by depressing the power switch and holding for approximately 1 second.
2. Remove the hood as described on page 23.
3. Clean the document window with a clean microfibre cleaning cloth. For stubborn dirt, use a mild glass cleaner or a lightly dampened cloth (water).
4. Verify that there are no streaks or smudge spots remaining on the document window.
5. Clean the body of the reader with a lightly dampened cloth (water).
6. Turn on the reader by pressing the power switch.
7. Verify that the power-up self test performs correctly.

Removing the document hood

You can remove the document hood for convenience, to scan oversized documents, or to access the document glass for cleaning or replacement. The Gemalto Document Reader AT9000 MK2 can compensate for ambient light in most bright office environments. However, unless you need to scan an oversized document, you should always leave the document hood attached. The document hood protects the glass and also improves scan quality and speed by reducing the amount of ambient light.

To remove the document hood:

1. Lift up on the side tabs.
2. Unsnap the left side of the hood and remove.

3. To re-attach the document hood, ensure that the pin on the right of the hood is correctly seated before pressing down on the tabs on the left of the hood.

Replacing the document glass

You can replace the glass in the document window if it becomes damaged. See page 32 for information about ordering a replacement.

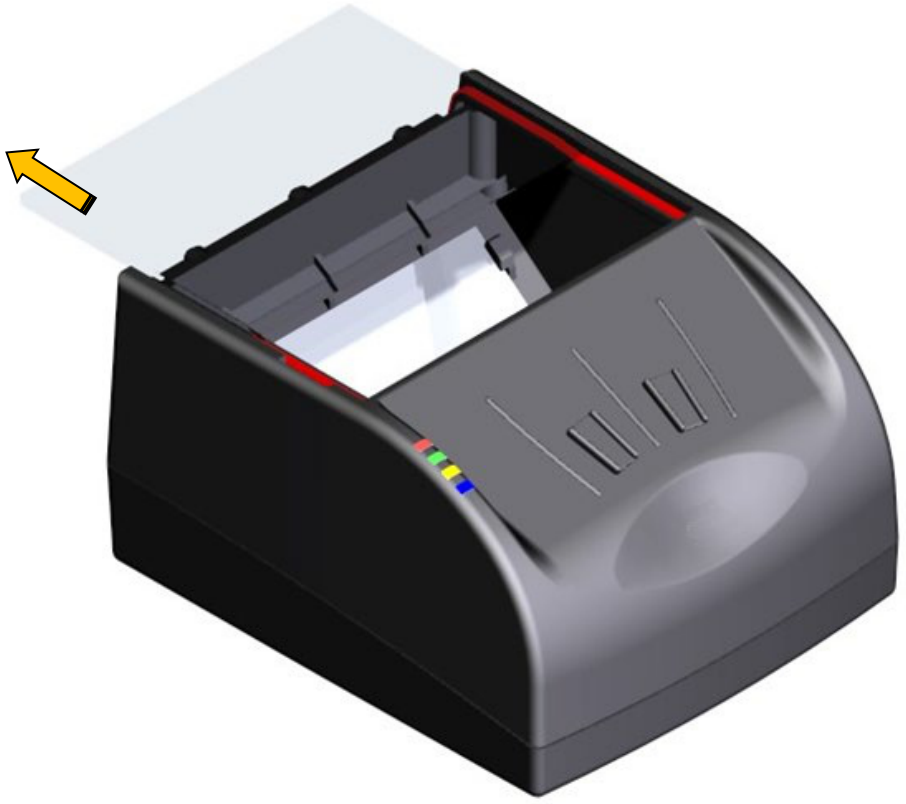
CAUTION Only an authorized, trained technician should perform this procedure. Failure to correctly follow the instructions could result in injury or cause damage to the equipment.

To replace the document window glass:

1. Remove document hood, as described on page 23.
2. If an optional module is attached to the back of the reader:
   I. Remove the two screws securing the module.
   II. Remove the centre screw securing the document guide and clip assembly.

   If there is no optional module, remove the three retaining screws located on the back of the panel.
3. Slide off the document guide and document clip assembly.

4. Gently slide the glass to the back of the reader while being careful not to damage or remove the rubber gasket seal.



5. Before inserting the replacement glass the gasket should be inspected and wiped with a damp dust-free cloth. Special care is needed to NOT damage gasket. If the gasket is damaged the IP rating will be compromised.
6. Insert the replacement glass. Ensure that the bevelled edge on the glass is inserted toward the front of the reader.

   NOTE: It is important that the internal components be free from dust or other contamination. If any dust is present, use compressed air to remove it from the optical chamber.
7. Re-attach the document guide. Ensure that the guide hooks into the slot in the enclosure top.
8. Re-attach the document hood. Ensure that the pin on the right of the hood is correctly seated before pressing down on the tabs on the left of the hood.

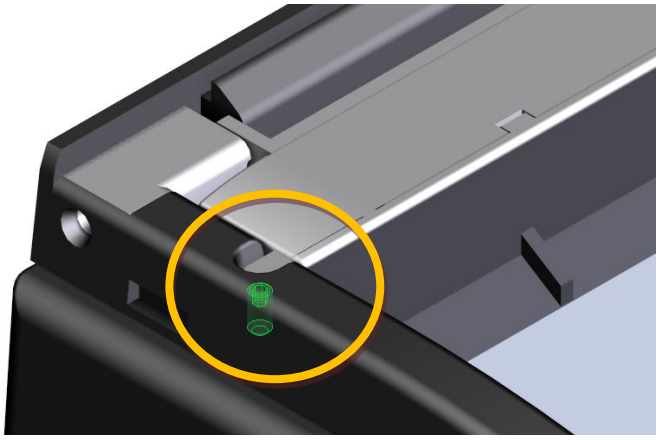
Adjusting the document clip height

You can adjust the default height of the document clip to better accommodate your documents. The default height is controlled by a small set screw (1/8-inch). At the factory the clip is set such that a single sheet of paper (approx. 0.004 inches) will freely slide under the clip, whereas an ID card (approx. 0.03 inches) will just make contact with the clip.

To adjust the document clip height:

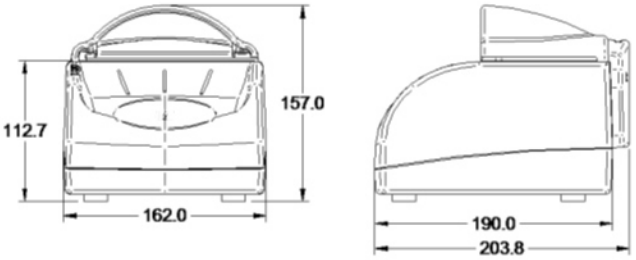
1. Remove document hood, as described on page 23.
2. Lift and hold the document clip to its maximum height.

3. Using an 1/8-inch hex screwdriver, adjust the height of the set screw (located near the top-left corner of the document glass):
   - Turn clockwise to lower the default height of the document clip
   - Turn counter-clockwise to raise the default height of the document clip



4. Release the document clip.
5. Re-attach the document hood. Ensure that the pin on the right of the hood is correctly seated before pressing down on the tabs on the left of the hood.

5. Specifications

Physical Specifications	Dimensions	 Length: Without smartcard module: 19 cm (7.5 inches) With smartcard module: 20 cm (8.0 inches) Width: 16.2 cm (6.4 inches) Height: 15.7 cm (6.2 inches)
	Imaging Window	125 x 88 mm (4.92 x 3.47”) 4.0 mm (0.157") tempered glass *
	Weight	1.25 kg (44 ounces)
Electrical Specifications	Input voltage	5 V DC, from external power supply or USB 2.0 host port
	Power consumption	Less than 2.5W (USB 2.0 powered)
	Connector	3-pin locking
	PSU Efficiency	Level VI
Environmental Specifications	Temperature	Operating: 0°C to 40°C (32°F to 104°F) Storage: –20°C to 50°C (–4°F to 122°F)
	Humidity	Operating: 20% to 80% (non-condensing) Storage: 5% to 95% (non-condensing)
Communication Interfaces and Protocols	Interface	USB 2.0, 480 Mbit/s “High Speed”
	Host USB Power	Reader can be powered from a single host USB 2.0 connector
	USB connectors	One USB Type-B connector (host) Two USB Type-A connectors (peripherals)
	USB cable length	2.00 m (79 inches)
	Aux. USB power	5V DC, 500mA per port (with external power supply only)
	RF Chip	ISO 14443-2, 3, 4 Type A and B with PC/SC driver
Optional Power Supply Specifications	Input voltage	100V to 240V AC +/-10%
	Line frequency	47 Hz to 63 Hz
	Cable length	Power supply cable: 1.3 m (52 inches) AC line cord: 2.0 m (78 inches)
	Power rating	15W
Smart Card Communication Interfaces and Protocols	Protocol	T=1, T=0
	Frequency	Up to 8 MHz (PPS, DI parameter)
	Communication speed	Up to 344,105 bit/s (PPS, FI parameter)

	ISO Support	7816 Class A and AB
	Contact	Sliding contact 8 contacts - ISO location
Regulatory Information and Standards	Directives	2014/35/EU Low Voltage Directive 2014/30/EU EMC Directive 2014/53/EU RE Directive 2002/96/EC Waste Electrical and Electronic Equipment (WEEE) Directive 2011/65/EU Restriction of Hazardous Substances (RoHS2) Directive

6. Troubleshooting

Use the following table to identify and correct common issues encountered when using the reader.

Symptom	Possible Causes	Recommended Actions
The LEDs do not come on during power up.	There is no power to the reader.	Momentarily depress the power switch Verify the reader is connected to a USB 2.0 or 3.1 host port and/or external power supply.
	The unit is damaged.	Follow the procedure outlined in "Returning the reader for maintenance" on page 23.
The Ready LED is continuously blinking.	The USB cable is not connected.	Verify that the cable is installed.
	The system has no USB 2.0 capability.	Verify that your PC is USB 2.0 or USB 3.1 compliant.
The Ready and Error LEDs are continuously blinking.	The system has only USB 1.1 capability.	Install the reader on a PC that supports USB 2.0 or USB 3.1.
The reader is not communicating with PC	The cable is not properly connected or USB drivers are not properly installed.	Verify that the USB cable is connected to the host. Verify that the USB driver is installed. Verify that only one reader is connected to the host system and only one instance of the host application is running.
The Error LED illuminates when a document is scanned	The document is non-machine readable.	This is a normal condition when there is no machine readable data and only the image is captured from the document.
	The document is poorly printed or does not conform to specification.	The reader is designed to read documents that are poorly printed. However, some documents are of such poor quality that the reader will not be able to process the OCR data. Verify the document conforms to ICAO 9303 or OCR B font requirements
	High ambient light.	Ensure that ambient light compensation is enabled in the software SDK Re-orient the reader so that bright light does not fall directly on the document window. Install document reader hood (see Reader Components section)
	The unit is not configured to read the document being scanned.	Verify the reader configuration with technical staff. Contact Global Technical Services (GTS) at Thales.

	The document is not orientated correctly on the scanning window.	For details on document placement, see “Reading standard documents” on page 22.
The demo application is not working.	The application may already be running.	Verify that only one copy of the application is running.
	Software is installed incorrectly	Remove the existing application & re-install software. For more information see the Software Installation section.
	Another application is running	Verify that no other application that accesses the document reader is running.
	You do not have PC Administrative rights.	Consult with your IT support representative.
LEDs do not change after reading an RF chip		This is a normal condition. RF status is displayed only on the host screen.
Reader becomes unresponsive		Close and restart the application. Disconnect USB and PSU from PC and then reconnect. Disconnect USB and PSU. Close application and then restart PC. Reconnect document reader to PC and then open application. Contact GTS if still unresponsive.
USB peripherals attached to the reader do not power on or do not function correctly	You need to use the external power supply when attaching external devices	Verify the AC power source. Verify that the AC cable is connected to the AC power source. Verify that the power cable is connected to the power supply port located on the back panel.

7. Customer Service

If you cannot solve the problem after following the instructions in the Troubleshooting section, contact Thales' Global Technical Services (GTS).

Before contacting GTS

Be prepared to provide the information required to properly diagnose the problem:

- A detailed description of the problem
- A detailed description of the actions taken to correct the problem
- The serial number of the reader (located on the reader's bottom panel)

Contacting GTS

Once you have the above information, contact Global Technical Services at

technical.service@thalesgroup.com

Office locations and phone numbers are on page 2 of this document.

Returning the reader for maintenance

In the event of a suspected problem with Thales equipment, please use the following procedure.

To return a reader for maintenance:

1. **Diagnose** – The system manager will determine that there is an actual fault with the equipment which cannot be corrected by following the procedures in this document or with local in-house knowledge.
2. **Initiate Call** – The system manager should contact Thales GTS via telephone, or email. GTS will request a detailed description of the problem along with the serial number of the unit. **It is the customer's responsibility to include or have on hand all pertinent information.**
3. **Response/Call Back** – A GTS representative will discuss with the system manager to determine the problem. If the problem can be corrected locally by the system manager with the guidance of the GTS representative, no further action will be required.
4. **Return Authorization** – If the problem cannot be corrected via telephone assistance, the GTS representative will issue a Return Materials Authorization (RMA) number and form. The RMA number will be used to track the failed reader, along with verification of the location of the service depot to where it should be sent.
5. **Return** – The system manager will carefully disconnect the defective equipment. The reader should ideally be packaged in its original packing box. If not, a suitable box with sufficient packing material should be used to minimize damage during transit. Place a copy of the RMA form inside the box.

   The RMA number should be prominently displayed on the shipping container in which the reader is being returned. This reference number will ensure prompt processing of the equipment once it arrives at Thales.

   The CUSTOMER is responsible for insurance coverage on the reader in case of loss or damage during transit to Thales. The reader should be returned to the Thales designated service depot.
6. **Shipping Instructions** – Four copies of a commercial invoice, a packing slip, a pro forma invoice, or the following information, typed on letterhead, must be sent with the reader:
   - Description of equipment, including serial numbers
   - Quantity
   - Value and Country of Origin
   - Exporter (customer's company)
   - Consignee (Thales)

   Please affix the shipping documents and a copy of the RMA form to the outside of the container.
7. **Repair** – When the defective equipment is received at the service depot, the reader will be repaired, tested and returned to the address the CUSTOMER specifies on the RMA form.