



**Subject:** ATOM® Getting  
Started Guide

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# ATOM® Document Reader

## Document Imager and eMRTD Reader

## Getting Started Guide

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### Access-IS

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## Warnings

This manual contains important information regarding the installation and operation of the ATOM® Document Reader. For safe and reliable operation of the imager, installers must ensure that they are familiar with, and fully understand, all instructions contained herein.

## Warranty

Access Ltd warrants that this product shall be free from defects in workmanship and materials for a period of one year from the date of original purchase. If the product should fail to operate correctly in normal use during the warranty period, Access will replace or repair it free of charge. No liability can be accepted for damage due to misuse or circumstances outside Access' control. Access will not be responsible for any loss, damage or injury arising directly or indirectly from the use of this product. Access' total liability under the terms of this warranty shall in all circumstances be limited to the replacement value of this product.

## Radio Frequency Energy

### European EMC Directive 2014/30/EU (Non- RFID version)

This product complies with the requirements of this directive by meeting the following standards:

EN 55022:2010: Information technology equipment. Radio disturbance characteristics. Limits and methods of measurement.

BS EN 55024:2010+A1:2015: Information technology equipment. Immunity characteristics. Limits and methods of measurement.



### European Radio Equipment Directive 2014/53/EU (RFID version)

This product complies with the requirements of this directive by meeting the following standards:

EN 301 489-1 V1.9.2: Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1 Common technical requirements.

EN 302 291-1 V1.1.1: Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Close Range Inductive Data Communication equipment operating at 13,56 MHz; Part 1: Technical characteristics and test methods.

EN 302 291-2 V1.1.1: Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Close Range Inductive Data Communication equipment operating at 13,56 MHz; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive.

### FCC Compliance Statement (United States)

This equipment generates, uses and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a class A computing device in accordance with the specifications in Subpart J of part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area may cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The RFID version contains FCC approved Access-IS Smartcard Module FCC ID: ZERNM01.

### Canadian Department of Communications RFI statement

This equipment does not exceed the class A limits for radio noise emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le règlement sur le brouillage radioélectriques publié par le ministère des Communications du Canada.

The RFID version contains Industry Canada approved Access-IS Smartcard Module IC: 9653A-NSM01.

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# 1. Overview

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ATOM is a full-page document imager and electronic Machine Readable Travel Document (eMRTD) reader. It captures multiple high-resolution, uncompressed images and reads personal and document details in under two seconds, delivering greater productivity and cost savings.

The optional ATOM Expansion Dock increases the functionality of ATOM and allows you to read contact smart cards and/or magnetic stripe cards. The 'drop-in' design means that the unit can be supplied already mated or can be retrofitted easily in the field in just a few seconds.

Access-IS Document Reader Software (ADRS) is the perfect partner for ATOM. Capable of standalone use, ADRS provides a graphical display that delivers an instant visual snapshot of document data, resulting in a more efficient and effective workflow. More advanced users can take advantage of its powerful programming interface, which allows the software to be integrated into larger systems.

- Ultra-fast operation delivers time and cost savings.
- Captures high-resolution images in multiple wavelengths: Visible, IR and UV.
- Innovative 'shark fin' document guides ensure that documents quickly slide onto the glass, with bent corners eased down for a perfect read.
- Reads the Machine Readable Zone (MRZ) from ICAO 9303 compliant documents including Passports, e-Passports, ID cards and Visas, as well as ISO 18013 compliant driving licences.
- ISO 14443 contactless Radio-Frequency Identification (RFID) reader/writer supports ICAO LDS standards including BAC, PA, AA, EAC and SAC.
- Optionally reads 1D/2D barcodes from smartphones, tablets and paper.
- Operates without external power supply when connected via USB 3.0.



Figure 1: ATOM Document Reader



Figure 2: ATOM Expansion Dock

## Hardware requirements (minimum)

- Core-i3 2.1 GHz
- 4 GB RAM

## Hardware requirements (recommended)

- Core-i5 3.3 GHz
- 8 GB RAM

## Supported operating systems

- Windows 7 and above, 32-bit or 64-bit

## 2. Installation

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ATOM is simple to install. You can connect the product before or after you install the Access-IS Document Reader Software (ADRS) on the host computer. Refer to **Installing the software** (on page 10) for software installation instructions.

### 2.1 Opening the box

Unpack ATOM and ensure that you have the following items:

- Advisory notice card.
- ATOM Document Reader.
- ATOM Expansion Dock (optional).
- USB 3.0 cable (can also be used with a USB 2.0 port).
- 5 V DC PSU.

Report any missing items or damage immediately to your Sales Representative.

### 2.2 Connecting ATOM to the host

Connect ATOM directly to a USB 3.0 port on the host computer. Ensure that the host is running Windows 7.0 or above.

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**Note:** If you are connecting ATOM to a USB 2.0 port on the host computer, you must also connect the supplied 5 V DC power supply to ATOM.

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When you connect ATOM to a USB port, Windows automatically detects the device and installs the required standard Windows drivers, which may take a few minutes. No additional drivers are needed.

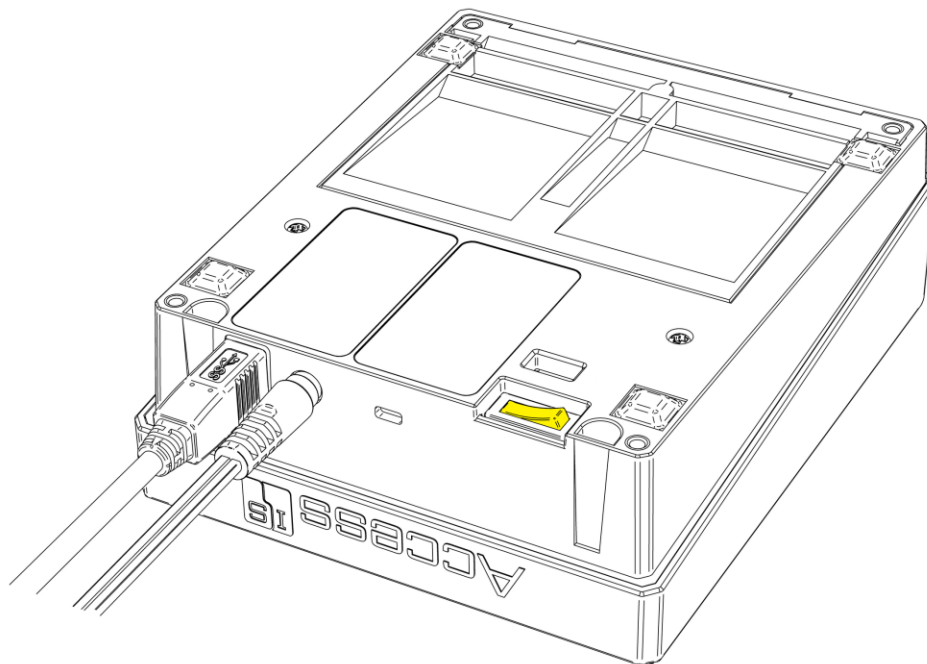


Figure 3: ATOM USB and power cable connections. On/Off switch shown in yellow.

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**Important:** The USB mating connector on the bottom of ATOM is for the optional ATOM Expansion Dock only. This must not be used to connect any other device without the express approval of Access-IS. Doing so WILL invalidate the warranty.

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## 2.3 Installation guidelines

### 2.3.1 Mounting

ATOM is easy to install. Either use ATOM as a free-standing unit on the desktop or mount it into countertops or kiosks.

**Note:** ATOM is designed for shroudless operation in an office environment. If bright sunlight causes an issue, relocate the reader.

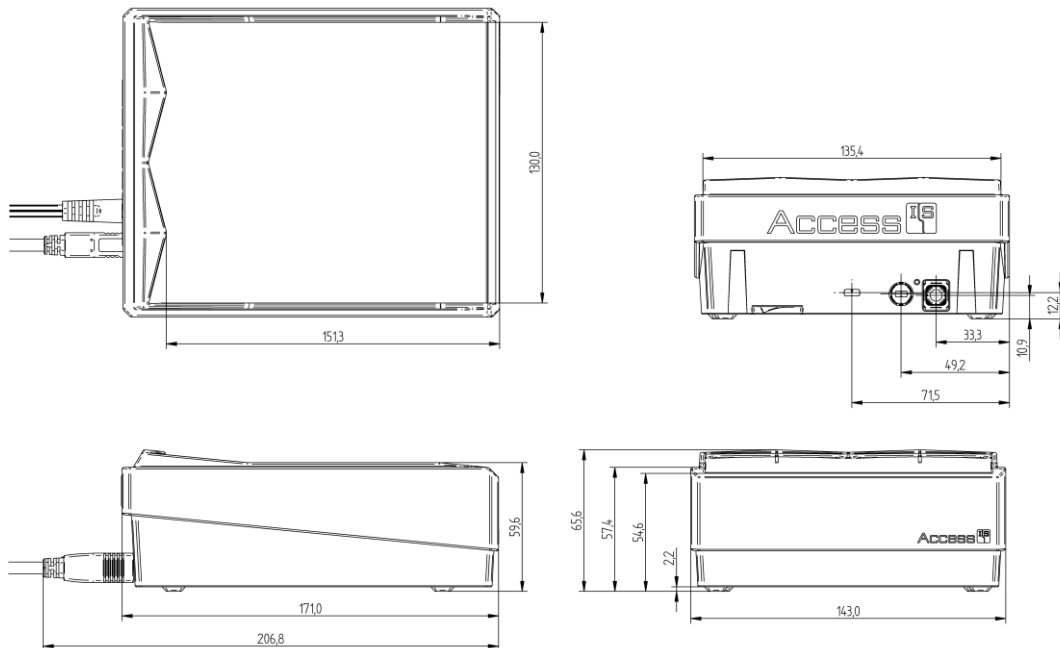


Figure 4: ATOM dimensions (in millimetres)

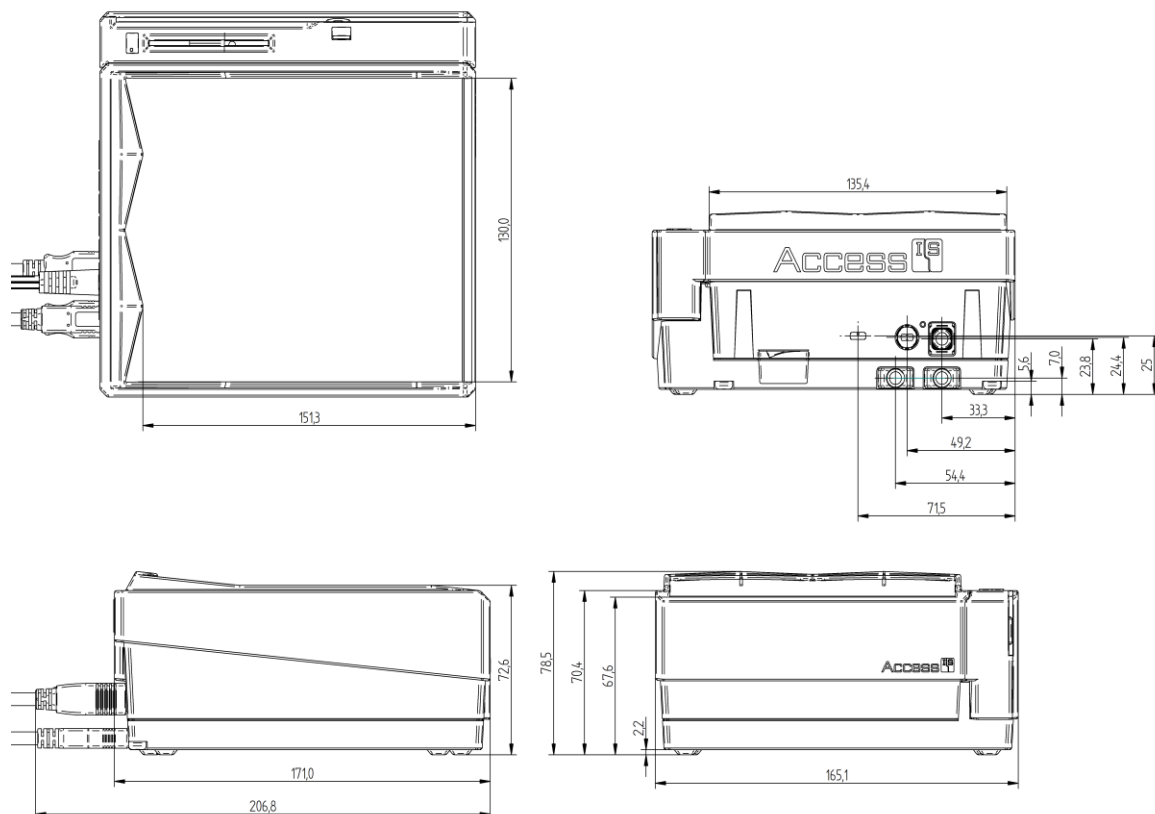


Figure 5: ATOM with Expansion Dock dimensions (in millimetres)

## Mounting points

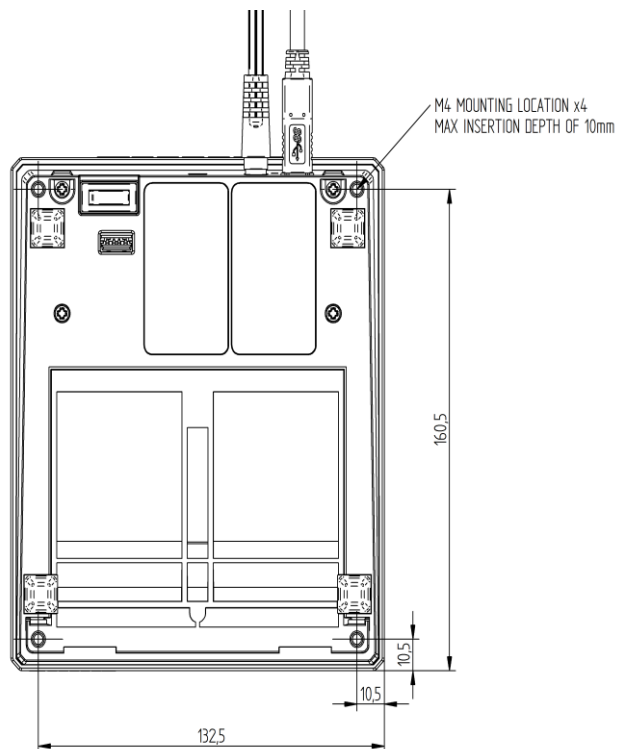


Figure 6: ATOM mounting points

When mounting ATOM, use four M4 screws (not provided) to mount the unit. From the base of the ATOM (bottom of the plastic housing), the minimum insertion depth is 3 mm. The maximum insertion depth is 10 mm.

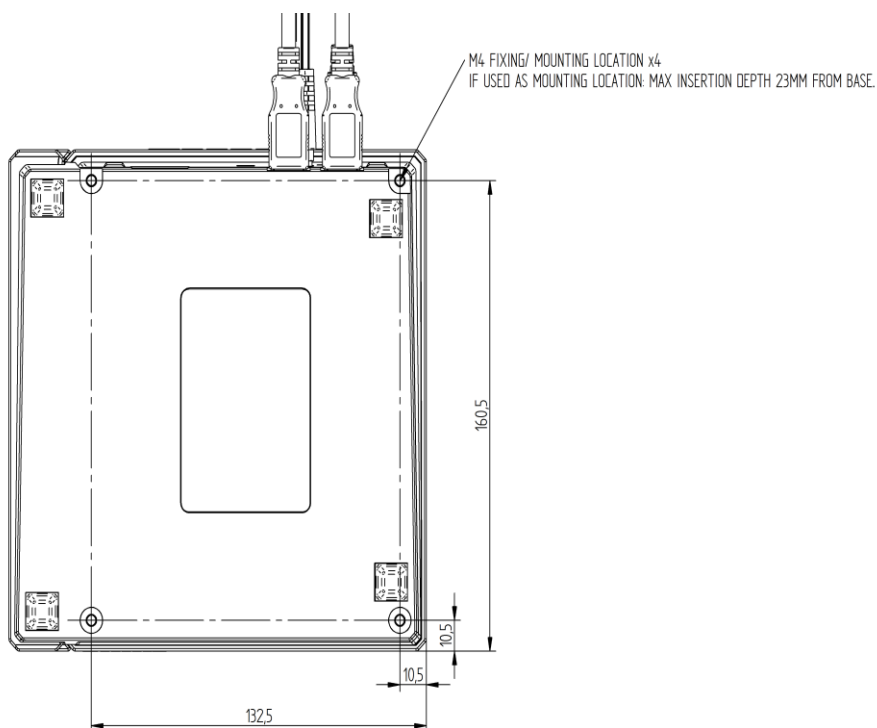


Figure 7: ATOM Expansion Dock mounting points

When mounting ATOM's Expansion Dock, use four M4 screws (not provided). From the base of the Expansion Dock (bottom of the plastic housing), the minimum insertion depth is 16 mm. The maximum insertion depth is 23 mm.

## 2.3.2 NFC/RFID

To optimise the performance of your Access-IS device DO NOT install it with its NFC/RFID antenna within 40 mm of a large metal or electrically-conductive component or structure.

**Important:** Failure to observe this instruction may lead to the product's NFC performance deteriorating or even failing completely.

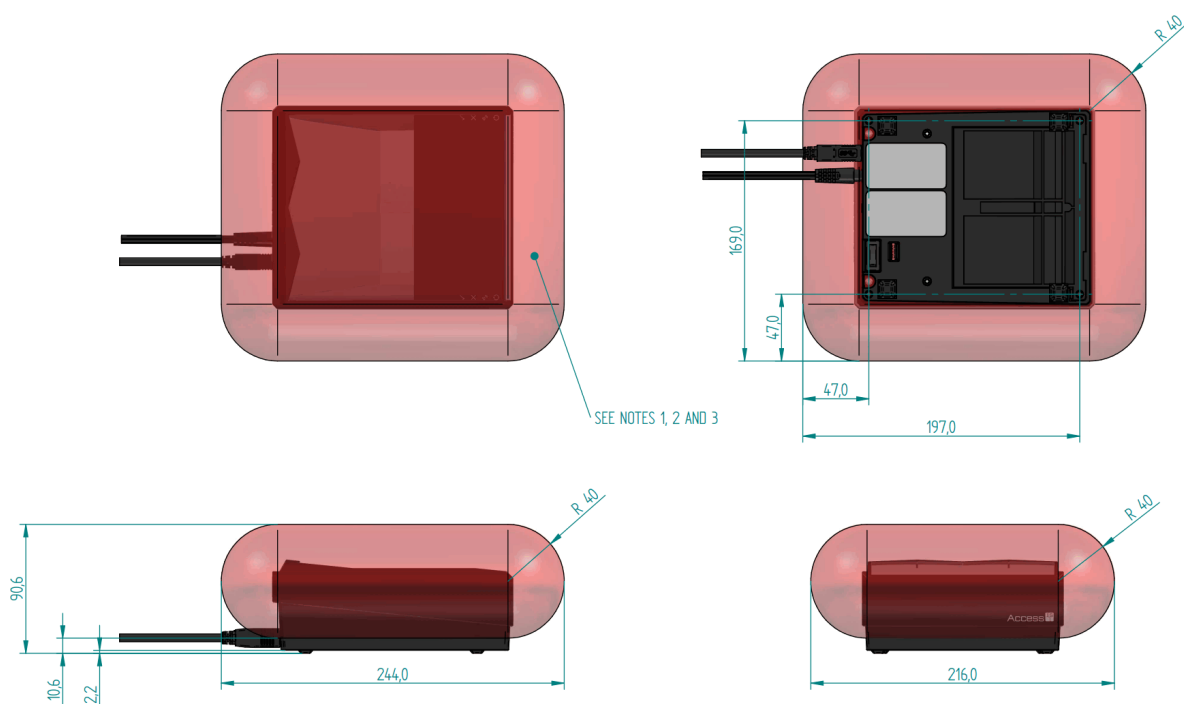


Figure 8: ATOM NFC/RFID installation guidelines

1. RFID functionality is directly affected by electrically-conductive components: ideally it is best to avoid placing metallic components near the ATOM unit.
2. No metal components should enter the areas indicated by the red transparent zone as they will directly affect the ATOM'S RFID performance.
3. If metalwork in the red transparent regions cannot be avoided, please contact Access-IS before installation.

## 2.3.3 USB 3.0 cable

The cable provided with the unit is a custom made USB 3.0 cable designed and tested to guarantee the performance of the unit (functionality, EMC, ESD...). Access-IS does **NOT** recommend the use of any other USB 3.0 cable as it may impact the functionality of the unit. Access-IS support teams will only offer technical support when the unit is connected using the genuine Access-IS USB 3.0 cable.

## 2.4 Testing the device

Once you have connected the device and installed the software (see **Access-IS Document Reader Software** (on page 10)), you can test the device. To do this, place an ID document on the glass platen and check that it is detected and captured by ATOM.

When using a document with an ICAO-compliant MRZ, the document reader software should display a visual snapshot of the document's data, including images.

If the device fails to respond when connected to the host, refer to the *Troubleshooting* section of this document.



## 2.5 Troubleshooting

If ATOM does not appear to be working, refer to the following table to help identify and resolve the problem. For further assistance, contact **Customer Support** ([support@access-is.com](mailto:support@access-is.com)).

Alternatively, use the *Contact Customer Support* page on the Access-IS website.

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**Note:** Do not attempt to disassemble ATOM if it does not operate correctly. Any attempt to do so may be dangerous and will invalidate the warranty.

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Table 1: Troubleshoot ATOM

Problem	Solution
ATOM not reading a document	Ensure that ATOM is ready to read a document (only the blue power icon should be illuminated). Check that ADRS is ready. Refer to <b>Document reader software status messages</b> (on page 16) for more information.
ATOM cannot scan a barcode	Ensure that the unit is configured to read the barcode that you are scanning. If scanning a document, ensure that the print quality is good. If scanning a barcode on a mobile phone, ensure that you set the screen backlight on the phone to its brightest setting.

## 2.6 Maintenance

### 2.6.1 Cleaning

Clean the glass with a lint-free cloth. If the glass is dirty, wipe the glass with a lint-free cloth moistened with isopropyl alcohol or use an alcohol wipe. Do not use abrasive cleaners.

### 2.6.2 Storage

Store the unit in its original box, at a temperature of 0°C to 60°C.

## 3. Access-IS Document Reader Software

The Access-IS Document Reader Software (ADRS) delivers an instant visual snapshot of document data, resulting in a more efficient and effective workflow.

You can install the software before or after you connect ATOM to the host computer.

For more information on how to configure ADRS, refer to the *ADRS User Guide*.

### 3.1 Installing the software

Before you install ADRS, make sure that your computer meets the minimum hardware requirements and is running Windows 7 or above.

To install ADRS, do the following:

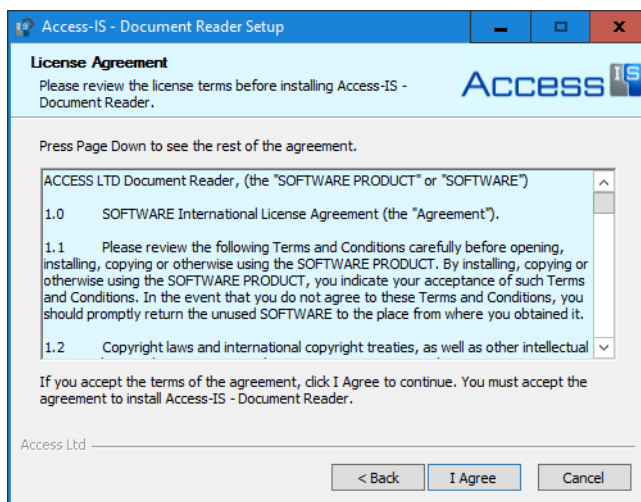
4. Download the latest version of ADRS.

You can download the software from the **Access-IS website** (<http://www.access-is.com/gettingstarted/>).

5. Extract the contents of the download file to a folder on your computer.
6. Run the **Access-IS Document Reader.exe** file.

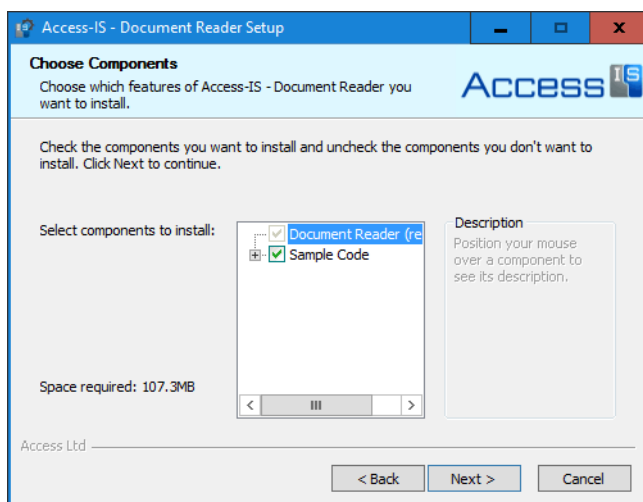
The **Access-IS - Document Reader Setup** dialog box appears.

7. Click **Next** to continue and display the **License Agreement** page.



8. Review the license agreement and click **I Agree** to accept the terms of the agreement and continue.

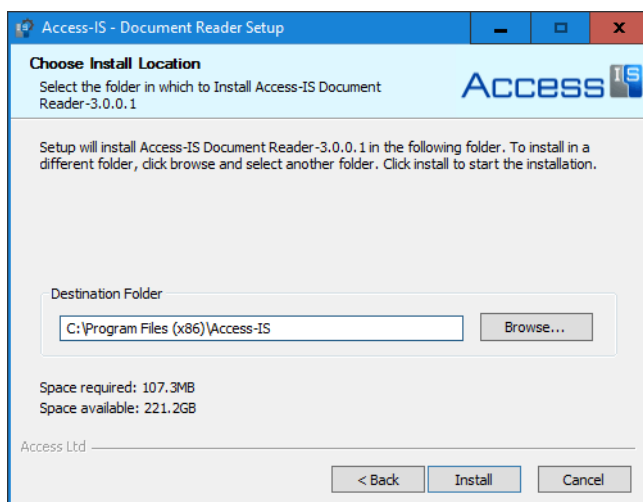
9. On the **Choose Components** page, select the components to install.



If you do not want to integrate the software into another system, you may clear the **Sample Code** check box.

10. Click **Next**.

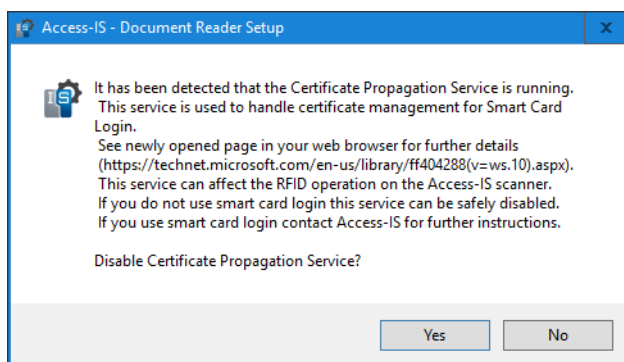
11. On the **Choose Install Location** page, select the installation folder.



A default location is provided; to install to a different location, click **Browse** and select the folder that you want to use.

12. Click **Install** to start installation.

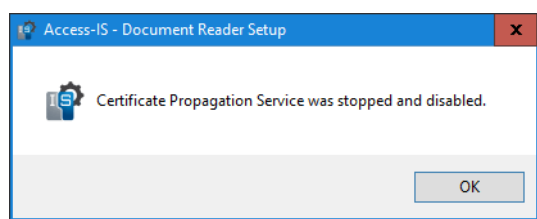
Depending on your system's settings, a message may appear asking if you want to disable the Certificate Propagation service. This service may affect the RFID operation of the ATOM Document Reader.



If you do not use a smart card to unlock the host computer, you can safely disable the service.

The web page that automatically opens provides more information on the **Certificate Propagation service** (<https://www.technet.microsoft.com/en-us/library/ff404288>).

Click **Yes** to stop and disable the service, and then click **OK**.



13. When installation is complete, click **Next** and then click **Finish**.

### 3.1.1 What gets installed and where?

By default, the installer installs all the necessary software, API components and documentation in the following location: *Program Files (x86)\Access-IS\Access-IS Document Reader*

You can access ADRS, the Software Development Kit (SDK) and other tools from the **Access-IS Document Reader** group on the Windows Start menu.

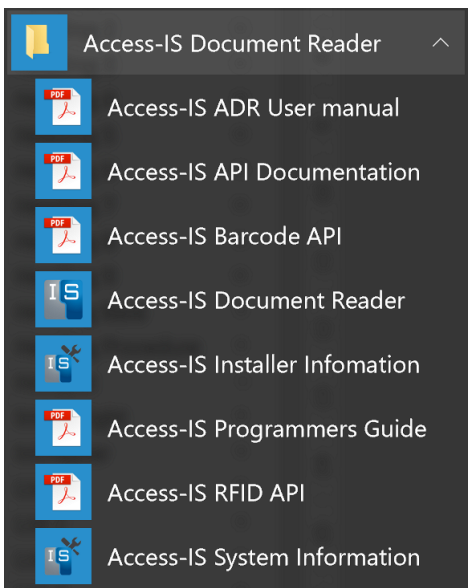


Figure 9: Access-IS Document Reader group on the Start menu

### 3.1.2 ADRS application, SDK and tools

Table 2: ADRS application, SDK and tools

<b>Application</b>	Access-IS Document Reader	Opens the ADRS application.
<b>SDK</b>	Access-IS ADR User Manual	Describes how to configure and use ADRS.
	Access-IS API Documentation	Describes the VideoOCR API.
	Access-IS Barcode API	Describes the barcode DLL, used by a document reader to decode barcodes.
	Access-IS Programmers Guide	Describes how to use the VideoOCR API to control the operation and data provided by a document reader.
	Access-IS RFID API	Describes the RFID DLL, which adds RFID functionality to a document reader.
<b>Tools</b>	Access-IS Installer Information	Provides installation information and an option to uninstall the document reader and associated files.
	Access-IS System Information	Provides operating system information.

### 3.1.3 Sample code

If installed, you can access the sample code, from the following location:

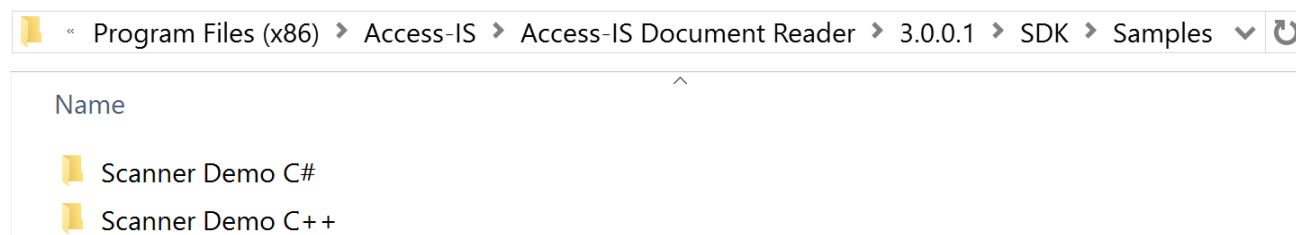


Figure 10: Sample code location

## 3.2 Starting the software

1. Connect ATOM to the host. See **Connecting ATOM to the host** (on page 5) for details.
2. Ensure ATOM is switched on.

The On/Off switch is located on the underside of the device, on the same side as the USB and power connections. See **Connecting ATOM to the host** (on page 5) for details.

3. Double-click the **Access-IS Document Reader** shortcut on the host's desktop.

The **Access-IS Document Reader** opens.

## 3.3 ATOM status indicators

Four clearly-visible indicators on each side of the device allow you to check the status of ATOM.



Figure 11: ATOM status indicators

Table 3: ATOM status indicators

Icon	Description
✓	Good read indicator.
✗	Bad read indicator.
⚡	ATOM is busy reading a document, or the detected document is not stable.
⏻	ATOM is switched on and has power. Communication with the document reader software's Application Programming Interface (API) is established and ATOM can read a document.

If all of these indicators are illuminated, ATOM is switched on, but there is no communication between ATOM and the document reader software's API.

When ADRS is started, only the blue power icon illuminates; ATOM is in standby mode waiting to read a document. ATOM is not ready to scan a document if the blue power icon is not illuminated.

## 3.4 Reading your first document

Use ADRS to read and display the information in a scanned document. The software displays the information in an easy-to-read format so that you can quickly check the authenticity and validity of the document.

1. Ensure that ATOM is switched on and connected to the host and that you have started ADRS.

If ATOM is ready to read a document, the blue power light illuminates on ATOM and the message in the status bar at the bottom of the ADRS window indicates that ATOM is ready.

A message displayed in the status bar with a pink background indicates a problem. Refer to **Document reader software status messages** (on page 16) for details.

2. Place the document that you want to read onto the glass platen. If you are reading a large document, such as a passport, slide the document under the 'shark fin' document guides to ensure that any bent corners are eased down for a perfect read.

ATOM captures high-resolution, uncompressed images in visible, infrared and ultraviolet light (if configured).

The **Summary** tab in the Access-IS Document Reader window displays the images and other details collected from the scanned document.

- ▶ **Images** - Displays captured images.
- ▶ **Biometric Data** - Displays RFID data (if applicable).
- ▶ **Barcode Information** - Displays barcode and validation information (if barcode reading is enabled on ATOM).
- ▶ **Document Information** - Displays MRZ data and a face-detect image (if applicable).

3. Review the information displayed on the **Summary** tab.

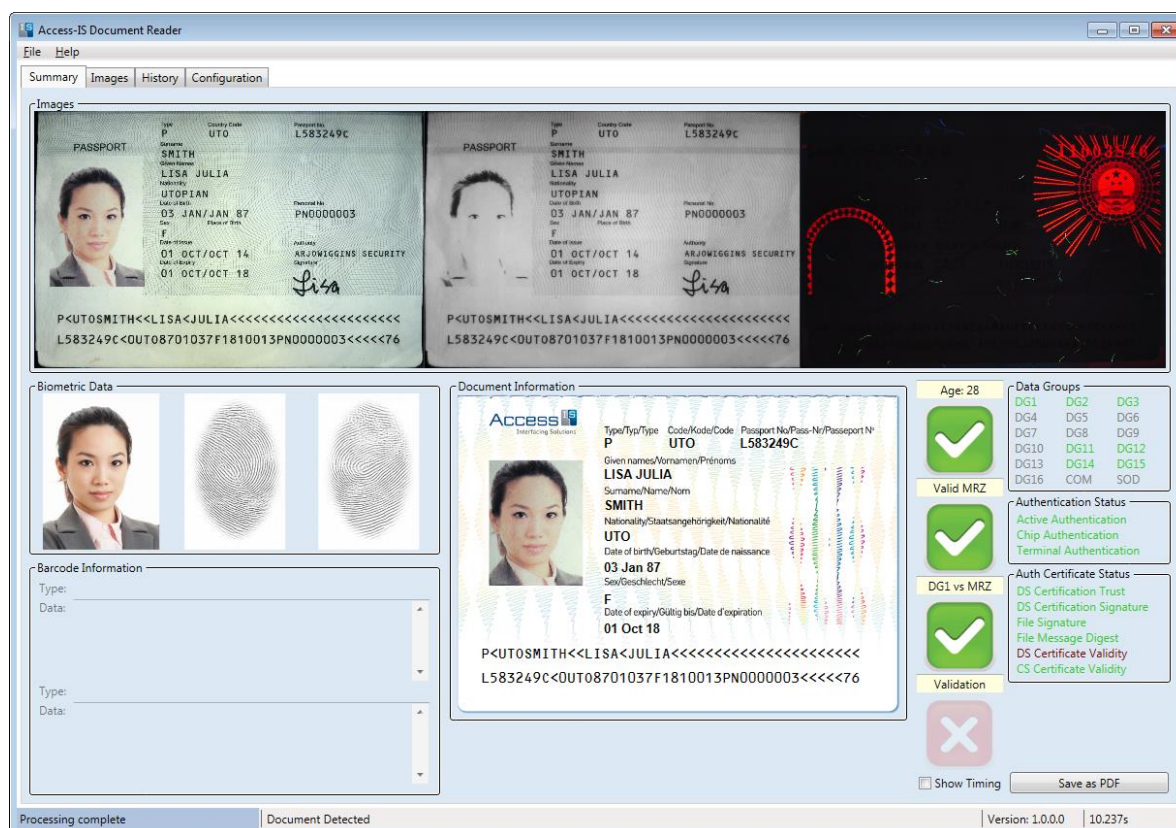


Figure 12: ADRS Summary tab. Note the version number of the software displays on the right side of the status bar, next to the time taken to read and process the document.

The version shown is Version: 1.0.0.0; the precise layout may differ in newer versions of the software.

To help you assess the validity of the document, ticks and crosses display next to the **Document Information** section.

› **Age**

Displays a tick if the date of birth read from the MRZ indicates that the owner of the document is older than the age specified on the **Configuration** tab (default age set to 18).

› **Valid MRZ**

Displays a green tick if the MRZ is valid.

If invalid, you can see why the MRZ is invalid by hovering the mouse over the red cross.

› **DG1 vs MRZ**

Displays a tick if the MRZ stored on the RFID tag (DG1) embedded in the document matches the MRZ read by ATOM. If there is no RFID tag on the document, the icon displays with a grey background.

The **Data Groups** section indicates the data groups that ATOM has read from the RFID tag and whether these data are authentic (show in green text).

The **Auth Certificate Status** section shows whether the Document Signing Certificate (DSC) in an ePassport matches the chain of signatures in the Country Signing Certificate (CSC) of the country that issued the document. This requires Government-issued certificates.

### 3.4.1 Images

ATOM captures images under visible and infrared light and displays colour and infrared images in the **Images** panel. A third image captured under ultraviolet light may display if ATOM is configured with the ultraviolet option.

### 3.4.2 Biometric data

If your reader is configured with the RFID option, ATOM reads the electronic information embedded in eDocuments, including those meeting the latest ICAO LDS standards. This information is displayed in the **Biometric data** section.

### 3.4.3 Barcode information

If barcode reading is enabled on your ATOM, the barcode type and barcode data in the scanned document appears in the **Barcode Information** section.

### 3.4.4 Document information

ATOM reads the MRZ, if it is present on the document that you are scanning. Once read, the scanner decodes the information and the details appear in the **Document Information** section on the **Summary** tab. If a colour image is captured, the software picks out the face from the image and displays this separately.



### 3.5 Document reader software status messages

Messages display in bottom left corner of ADRS. Use these messages to check the status of the reader and software and to help diagnose problems.

Table 4: Document reader software status messages

Message	Description
ATOM is ready	ATOM is switched on, connected to the host and ready to read a document.
Scanning	ATOM is acquiring images.
Writing Multiple Image file	ATOM is acquiring images and saving these to disk. Set this mode from the software's <b>Configuration</b> tab.
Processing complete	ATOM has processed the document.
Automatic reader not started	An attempt to start the reader was made, but it failed. This generally indicates that the automatic detection of documents placed on the scanner is not enabled (on the <b>Configuration</b> tab). The setting is enabled by default.
No Document Reader Connected	ATOM is disconnected from the host and software; the camera will not work. Check USB and power connections.
Could not set Windows Handle for windows....	Another instance of ADRS is already running. Ensure that you close ADRS before restarting.
Initialised	The scanner is initialised, but the reader has not started correctly. Make sure the scanner is powered up and switched on.
MRZ decoding failed	ATOM has detected an MRZ string that is not correctly formatted. Move the mouse cursor over the MRZ summary icon to display details of the failure.



## A. Specifications

Specification	Details
Dimensions (W x D x H)	143 mm x 171 mm x 65 mm With Expansion Dock: 165 mm x 171 mm x 79 mm
Weight	ATOM: 750 g (excluding cable and power supply unit) Expansion Dock: 400 g
Environmental	Operating temperature: 0°C to 50°C Storage temperature: 0°C to 60°C Humidity: 0 to 95% non-condensing Designed to meet IP54
Body	Black PC/ABS
Security	Kensington security slot
Glass	4 mm thick toughened, with anti-reflective and oleophobic coatings BS EN60068-2-75 and IEC 62262:2002, rated to 6.375 J impact
Power requirements	5 V DC (from a USB 3.0 port) 5 V DC via DC jack (only when connected via a USB 2.0 interface)
Electrical interface	5 V USB
Imaging	Active scan area: 130 mm x 94 mm Illumination sources: Visible/white, IR and UV LEDs Resolution: 500 DPI
MRZ reading	Standard OCR font: OCR-B Machine Readable Passports (MRP): Two lines of 44 characters to ICAO 9303 Machine Readable Visas (MRV): Two lines of 44 characters, two lines of 36 characters to ICAO 9303 Travel documents: Two lines of 36 characters, three lines of 30 characters
Barcode reading (optional)	Reads barcodes from mobile phones, tablets and paper Linear: EAN/UPC, Code 2 of 5, Interleaved 2 of 5, IATA 2 of 5, Code 39, Code 128 2D: IATA resolution 792, PDF417, Aztec, DataMatrix and QR codes (Full list of supported barcodes available on request)
Contactless RFID reading (optional)	Interoperability: ICAO DOC 9303, LDS1.7, ISO18013 (Driving Licence), PA, AA, BAC, EAC v1.11 (CA, TA), EAC v2.0x (PACE v2, ICAO SAC, CA v2, TA v2) Operating frequency: 13.56 MHz Supported documents: ISO 14443 type A and B auto-detecting; secure and high-speed data transmission; MIFARE memory card support (MIFARE ultralight, 1K, 4K cards) Interface: Personal Computer/Smart Card (PC/SC) compliant device
Contact smart card reading (optional)	Number of ID-1 (smart card) slots: 1 Number of ID-000 (SAM) slots: 2 Compliance: ISO 7816, T=0, T=1 Interface: PC/SC compliant device
Magnetic stripe reading (optional)	Three-track magnetic cards complying with ISO7811/ 2-5

Specification	Details
MTBF	85,000 hours
Approvals	<p>CE EMC Class B (Non-RFID version)</p> <ul style="list-style-type: none"> <li>• EN 55022</li> <li>• EN 55024</li> </ul> <p>CE Radio Equipment Directive (RFID version)</p> <ul style="list-style-type: none"> <li>• ETSI EN 301 489</li> <li>• ETSI EN 302 291</li> </ul> <p>CE Low Voltage Directive</p> <ul style="list-style-type: none"> <li>• EN 60950-1</li> <li>• IEC 62471: 2006 - Exempt Class</li> </ul> <p>FCC 47CFR Part 15 Subpart B Class A</p> <p>Canadian Standard ICES-003: Issue 6</p> <p>The RFID version contains the Access-IS Smartcard Module. FCC ID: ZERNM01, IC : 9653A-NSM01.</p>

## B. Model numbers

### B.1 ATOM

Model	Visible	IR	UV	1D/2D barcode	RFID
ADR300	✓	✓	✗	✗	✗
ADR300-U	✓	✓	✓	✗	✗
ADR300-B	✓	✓	✗	✓	✗
ADR300-R	✓	✓	✗	✗	✓
ADR300-UB	✓	✓	✓	✓	✗
ADR300-UR	✓	✓	✓	✗	✓
ADR300-URB	✓	✓	✓	✓	✓

An external power supply (supplied) is required if you connect ATOM to a USB 2.0 port.

### B.2 Expansion Dock

Model	Two port USB hub	Three track MSR <sup>1</sup>	Smart card + two SAMs <sup>2</sup>
ADR30X-M	✓	✓	✗
ADR30X-S	✓	✗	✓
ADR30X-MS	✓	✓	✓

<sup>1</sup> Magnetic Stripe Reader (MSR), <sup>2</sup> Smart Access Modules (SAMs)

## C. Document history

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Issue	Date	Description
1.0	20/05/2016	First issue.
1.1	10/06/2016	Added warning about the use of the ATOM USB mating connector.
1.2	24/07/2017	Added NFC/RFID installation guidelines section.
1.3	24/07/2017	Added USB 3.0 cable section. Moved Mounting, NFC/RFID and USB 3.0 cable into an Installation guidelines section.
1.4	30/10/2018	Updated Approvals section.