



**Subject:** OCR31x Getting Started Guide

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## OCR31x

# USB OCR Reader with Optional MSR

## Getting Started Guide

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## Warnings

This manual contains important information regarding the installation and operation of the OCR315e/OCR316e. 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

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.



### 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.

### 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.

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# 1. Overview

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The Access-IS OCR315e and OCR316e are compact and robust Optical Character Recognition (OCR) readers. The devices can simply be attached to a variety of handheld and ultra-mobile PCs, tablets, standard desktop keyboards and monitors, or act as standalone units as part of the data capture process, for example, Know Your Customer, age verification, check-in. The track length and single slot design is optimised to ensure that passports and ID cards are correctly aligned for consistent and accurate reading.

The OCR decoder has an advanced recognition engine that provides highly accurate and very fast document reading. The OCR315e bidirectional reader can read Machine Readable Passports (MRP), Machine Readable Visas (MRV), US and international residence permits, as well as European and other national ID cards conforming to ICAO 9303 & ISO/IEC 7501-1 (two- and three-line Machine Readable Zone (MRZ)). It will also read the new ISO/IEC 18013-1 driving licences (one-line MRZ), so is future-proofed.

The OCR316e model also includes a three-track Magnetic Stripe Reader (MSR) and is able to read credit and debit cards, loyalty cards and frequent flyer cards as well as MRZ documents.

- Compact design and small footprint.
- USB 2.0 interface – USB Human Interface Device (HID), Communications Device Class (CDC) virtual serial and keyboard wedge options.
- Reads machine readable passports, visas and travel cards conforming to ICAO Document 9303.
- Rapid and accurate decoding using Access' established OCR decoding technology.
- Bidirectional OCR read.
- Optional bidirectional, three-track MSR conforming to ISO 7811/2-5 tracks 1, 2 and 3.
- Bicolour LED and audible sounder providing good/bad read indication.
- Can be used as a free-standing unit, desk-mounted or attached to a range of monitors and devices.
- Multiple cable lengths and exit positions.
- Firmware download/upgrade capability.



*Figure 1: OCR315e/316e compact OCR document reader*

## 2. Installation

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### 2.1 Opening the box

Unpack the OCR31x and ensure that you have the following items:

- Advisory notice card.
- OCR31x device with attached USB cable.

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

### 2.2 Connecting the OCR31x to a Windows host

Connect the OCR31x directly to a USB port on the host computer. The OCR31x obtains power from the USB port. Ensure that the host is running Windows XP or above.

When you connect the OCR31x to a USB port, Windows automatically detects the device and, in most cases, installs the required standard Windows drivers, which may take a few minutes.

Virtual serial mode requires an additional driver, [AccessISUSBCDC.inf](#), which you can download from the **Access-IS website** (<http://www.access-is.com/gettingstarted/>).

If you are prompted to restart your computer, you can instead simply repower the OCR31x by unplugging it from the host and then replugging it into the USB port.

### 2.3 Interface options

Connect a OCR31x device using one of three possible options. These options are compatible with all Linux and Windows operating systems from XP onwards.

#### 2.3.1 Keyboard interface

##### **Virtual keyboard (keyboard wedge) using Windows or Linux drivers**

This option allows the device to operate without additional drivers, with the OCR31x emulating a keyboard. This is one-way communication; it is not possible to control the device directly in this mode.

This mode will be slightly slower than the other options as it adds an inter-character delay when 'typing' the OCR/MSR data. For higher throughput, consider using a HID or CDC interface.

There is no additional driver required for this mode. Connect the USB cable from the OCR31x to a USB port on the computer.

Other systems, for example, Android, may support USB HID keyboards, please consult the documentation for the operating system you are using.

## 2.3.2 CDC interface

### Virtual serial mode using the Windows CDC driver

This option assigns a COM port and the device communicates as a virtual serial device. Due to the nature of CDC serial port drivers, the COM port disappears if the unit is unplugged.

This method of USB installation uses the Windows CDC drivers.

For this method to operate, install the CDC drivers using the file, [AccessISUSBCDC.inf](#), which you can download from the **Access-IS website** (<http://www.access-is.com/gettingstarted/>).

The download (USB Driver for CDC Mode) includes full instructions for use.

Windows assigns a virtual COM port to the OCR31x device. You can find out the COM port number in Device Manager. You will require the port number to configure the OCR31x.

Other systems, for example, Linux, may support USB CDC, please consult the documentation for the operating system you are using.

## 2.3.3 HID interface

Access-IS recommend the use of the HID interface for reliability. A HID interface recovers properly in the event of accidental disconnects or system power fluctuations; a CDC interface may not recover in these situations.

### HID interface using the Access driver (Windows only)

The Access Serial Ports Service driver is fully configurable and outputs data in virtual serial or virtual keyboard. The output can be parsed and reformatted. The serial port is permanent and does not disappear if you unplug or hot swap the unit. This is one-way communication and you cannot write to the port. This allows the simultaneous reading of multiple devices from the same virtual serial port.

For this method to operate, you must install first the Access driver (Access Serial Ports Service (ASPS)).

Download ASPS from the **Access-IS website** (<http://www.access-is.com/gettingstarted/>).

The download (ASPS Software) includes full instructions for use.

Ensure that you install the driver *before* connecting the OCR31x to the host.

### HID interface without the Access driver

This method is only suitable if you are familiar with HID programming.

It is possible to communicate directly with the OCR31x using the operating system's built-in HID drivers. In this instance, HID reports, exactly 64 bytes in length, are sent between the host and the OCR31x.

The implementation of this driver and the method of interaction will depend on the version of the host operating system. You should refer to the HID programming guide for the operating system you are using. Refer to **HID reports** (on page 16) for details of the HID reports used with the OCR31x.

There is no additional driver required for this mode. Connect the USB cable from the OCR31x to a USB port on the computer.

Demo code is also available to use this mode with Android 3.1+. Please contact you Access-IS sales representative.

## 2.4 Mounting

The OCR31x can be used as a free-standing unit, desk-mounted or attached to a range of monitors and devices. Multiple cable exit positions come as standard to suit specific mounting arrangements. Standard cable length is 1.5 m with other lengths available as an option.

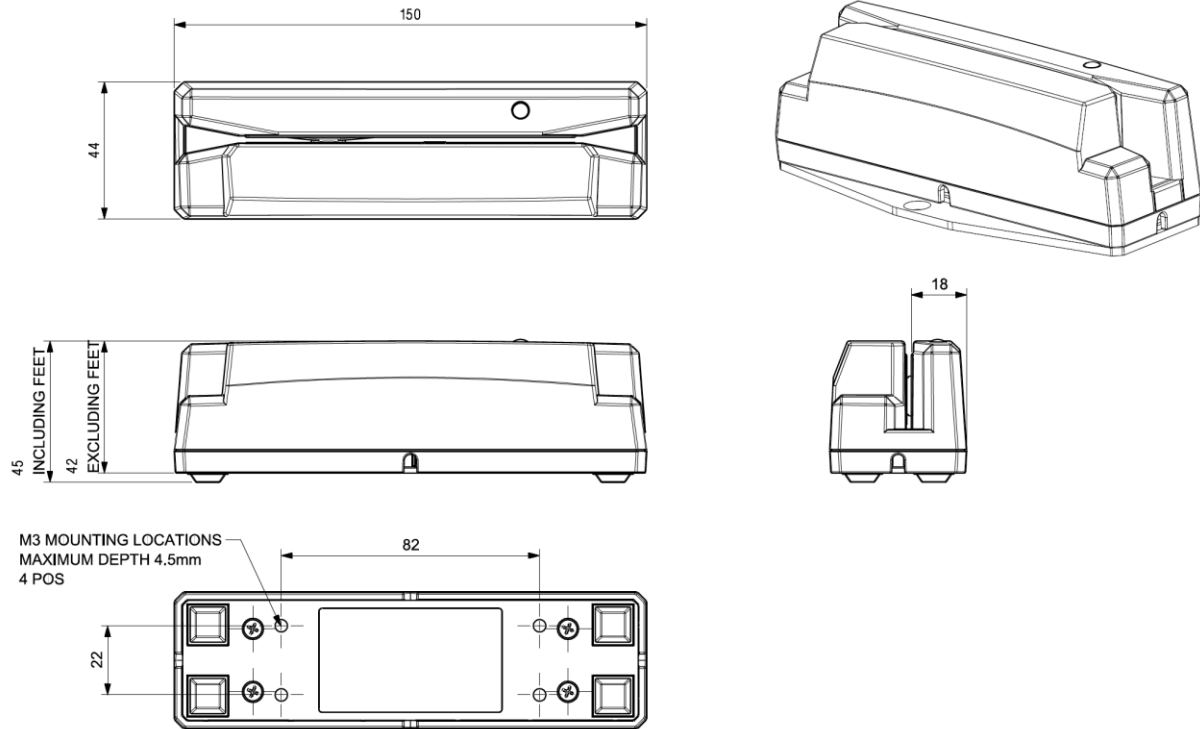


Figure 2: OCR31X dimensions and mounting points

## 2.5 Testing the device

Once you have connected the device, installed the relevant drivers (if applicable) and installed the software (see **Access-IS Document Reader Software** (on page 9)), you can test the device. To do this, scan an ID document and check that it is detected and read by the OCR31x. When using a document with an ICAO-compliant MRZ, the document reader software should display a visual snapshot of the document's data. If the device fails to respond when connected to the host, refer to the *Troubleshooting* section of this document.

### 2.5.1 OCR31x status indicator

An LED located on the top of the OCR31x indicates the current status of the device.

LED colour	Status
Red	Powered but not connected to an application. This only applies in CDC and HID modes. In Keyboard mode, the LED will flash and go off immediately.
Off	Connected to an application OR unpowered
Yellow	Firmware issue. Contact Access-IS.

## 2.6 Configuration software

Connect to, and configure, the OCR31x using the Access-IS **OCR31x Toolkit**, which you can download from the **Access-IS website** (<http://www.access-is.com/gettingstarted/>).

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**Note:** Other configuration tools may be used, although Access recommend the use of the **OCR31x Toolkit**.

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## 2.7 Troubleshooting

If the OCR31x 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 the OCR31x 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 the OCR31x

Problem	Solution
Persistent 'bad reads'. (A bad read is defined as more than 7 misread characters)	Ensure the document is flat against the bottom of the device. If you scan the document at an angle, there is a good chance the device will not read it correctly. Non-ICAO compliant documents may not read correctly.
Cannot read the MRZ or magnetic stripe on a document.	Ensure that the MRZ or magnetic stripe faces the opposite side of the LED.
The OCR31x is not reading a document.	Check that ADRS is ready. Refer to <b>Document reader software status messages</b> (on page 13) for more information.

## 2.8 Maintenance

### 2.8.1 Cleaning

Please clean the OCR31x read head with the Access-IS Optical Head Reader Cleaner. Available from Access-IS in boxes of 50 using order code 'CARDCLEAN05'. Do not use abrasive cleaners.

### 2.8.2 Storage

Store the unit in its original box, at a temperature of -20°C to 60°C.



# 3. Access-IS Document Reader Software

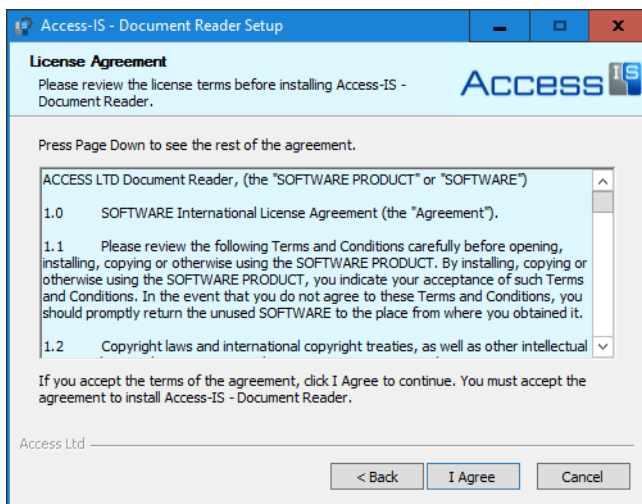
The Access-IS Document Reader Software (ADRS) delivers an instant visual snapshot of document data, resulting in a more efficient and effective workflow. You can install the software before or after you connect the OCR31x to the host computer. For more information on how to configure ADRS, refer to the *ADRS User Guide*.

## 3.1 Installing the software

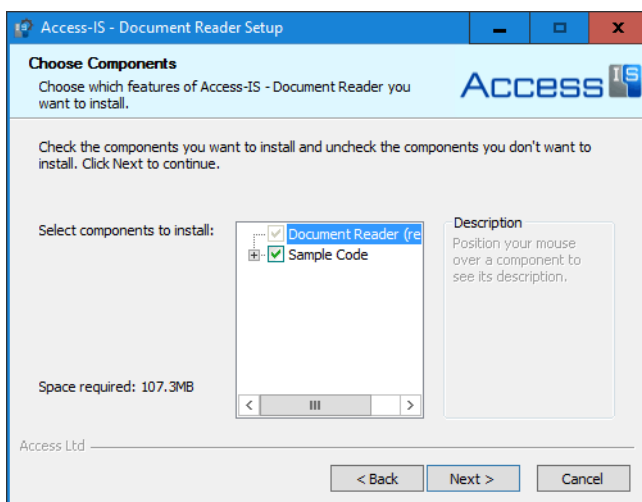
Before you install ADRS, make sure that your computer meets the minimum hardware requirements and is running Windows XP or above.

To install ADRS, do the following:

1. Download the latest version of ADRS.  
You can download the software from the **Access-IS website** (<http://www.access-is.com/gettingstarted/>).
2. Extract the contents of the download file to a folder on your computer.
3. Run the **Access-IS Document Reader.exe** file. The **Access-IS - Document Reader Setup** dialog box appears.
4. Click **Next** to continue and display the **License Agreement** page.

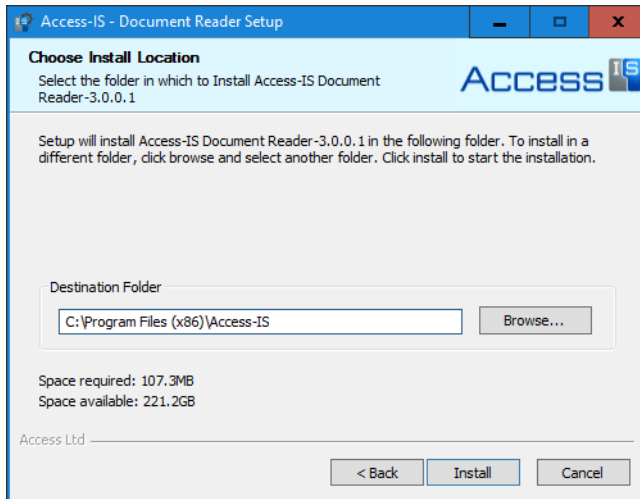


5. Review the license agreement and click **I Agree** to accept the terms of the agreement and continue.
6. On the **Choose Components** page, select the components to install.



If you do not want to integrate the software into another system and will therefore not require the sample code, then you may clear the **Sample Code** check box.

7. Click **Next**.
8. On the **Choose Install Location** page, select the installation folder.

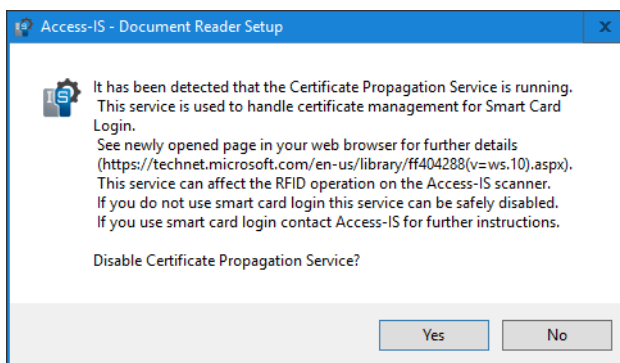


A default location is provided; to install to a different location, click **Browse** and select the folder that you want to use.

9. Click **Install** to start installation.

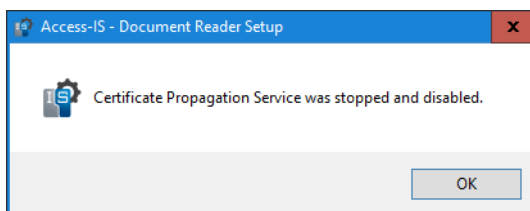
Depending on your system's settings, a message may appear asking if you want to disable the Certificate Propagation service. This service may affect the RFID operation of Access-IS products with RFID functionality.

If you only use devices without RFID, such as the ADR100 and OCR31x, please select **No**. If, in the future, you are planning to use an Access-ID RFID-enabled device, then please select **Yes**.



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**.



10. 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.

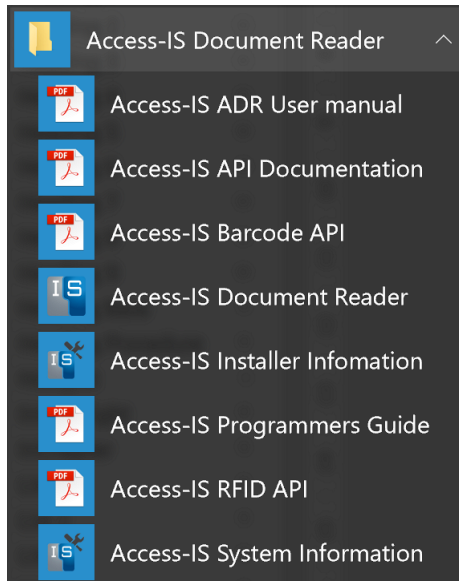


Figure 3: Access-IS Document Reader group on the Start menu

### 3.1.2 ADRS application, SDK and tools

Table 2: ADRS application, SDK and tools

Application	Access-IS Document Reader	Opens the ADRS application.
SDK	Access-IS ADR User Manual	Describes how to configure and use ADRS.
	Access-IS API Documentation	Describes the VideoOCR API.
	Access-IS Barcode API Not applicable to the OCR31x.	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 Not applicable to the OCR31x.	Describes the RFID DLL, which adds RFID functionality to a document reader.
Tools	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.

## 3.2 Starting the software

1. Connect the OCR31x to the host. See **Connecting the OCR31x to a Windows host** (on page 5) for details.
2. Double-click the **Access-IS Document Reader** shortcut on the host's desktop.  
The **Access-IS Document Reader** opens.



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.

### 3.3.1 Document information

The OCR31x 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.

## 3.4 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 3: Document reader software status messages

Message	Description
OCR31x is ready	The OCR31x is connected to the host and ready to read a document.
Processing complete	The OCR31x 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	The OCR31x 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	The OCR31x 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 (L x W x H)	150 mm x 44 mm x 45 mm
Weight	200 g
Cable length	40 cm and 1.5 m options
Environmental	Operating temperature: 0°C to 50°C Storage temperature: -20°C to 60°C Humidity: 0 to 95% non-condensing
Body	Dark grey ABS (other colours by special order)
Power requirements	5 V DC, <250 mA via USB connection
Electrical interface	5 V USB
OCR read capabilities	Standard OCR font: OCR-B Machine Readable Passports (MRP): 2 lines of 44 characters Machine Readable Visas (MRV): 2 lines of 44 characters, 2 lines of 36 characters ID documents: 1 line of 30 characters, 2 lines of 36 characters, 3 lines of 30 characters
Magnetic stripe reading (optional)	Three-track magnetic cards complying with ISO7811/ 2-5
Beeper	Single beep for 'good read', three beeps for 'bad read'
Indicators	Power 'Good read' and 'bad read' LED indication
MTBF	85,000 hours
Approvals	<p><b>Safety</b></p> <ul style="list-style-type: none"> <li>EN 60950-1: 2006</li> </ul> <p><b>EMC</b></p> <ul style="list-style-type: none"> <li>FCC 47CFR Part 15 Class A</li> <li>EN 55022: 2006 + Amd1: 2007</li> <li>EN 55024: 1998 + Amd1: 2001 + Amd2: 2003</li> </ul>

## B. Model numbers

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Model	OCR	MSR
OCR315e	✓	✗
OCR316e	✓	✓

## C. HID reports

### C.1 Receive data

Data received from the OCR Engine will be in a HID input report, structured as below:

Bit								
Byte	7	6	5	4	3	2	1	0
0	1 if On Line	Length of data field returned 0..7						
1	Data from OCR (up to 7 bytes)							
..								
..								
..								
..								
7								

If more than 7 bytes are sent multiple packets are received. If Line state changes, a packet with data length field set to zero is received with the new status.

#### C.1.1 Example HID report, as sent by the device

Bit								
Byte	7	6	5	4	3	2	1	0
0	[0x83]							
1	[0x02] [0x2A] [0x03] [0x00] [0x00] [0x00] [0x00]							
..								
..								
..								
..								
7								

### C.2 Send commands

To send commands to the OCR, use a HID out report with the following structure:

Bit								
Byte	7	6	5	4	3	2	1	0
1	1 to set OCR on line	Length of following data 0..7						
1	Output data (up to 7 bytes)							
..								
..								
..								
..								
7								



### C.2.1 Example output report to request the firmware version

Bit								
Byte	7	6	5	4	3	2	1	0
1	[0x83]							
1								
..								
..								
7								

### C.2.2 Example output report to enter the setup menu

Bit									
Byte	7	6	5	4	3	2	1	0	
1	[0x83]								
1									
..									
..									[0x1B] [0x4C] [0x7E] [0x00] [0x00] [0x00] [0x00]
7									

## D. Document history

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Issue	Date	Description
1.0	N/A	First issue.
1.1	N/A	Content revisions.
1.2	05/2014	Content revisions.
2.0	09/2016	Content revisions, addition of ADRS.