



Advanced Card Systems Ltd.
Card & Reader Technologies

ACR1552U-A2

AquaGuard NFC USB Reader



User Manual V1.00



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1.0. Introduction

ACR1552U-A2 is the USB NFC waterproof reader developed based on 13.56 MHz contactless technology. It is an IP67 contactless reader that can access contactless smart cards following the ISO 14443, ISO 15693 and ISO 18092 standards. MIFARE® (T=CL), FeliCa, NFC Tags, SRI/SRIX, CTS, Innovatron, Picopass and Topaz Card are also supported.

Certified with an IP67-compliant rating that ensures complete protection against the ingress of dust and water, AquaGuard is thus an ideal choice for outdoor applications. It also complies with both CCID and PC/SC, this plug-and-play USB NFC device allows interoperability with different devices and applications.

This IP67-rated reader is capable of three modes of NFC namely: NFC Reader/Writer, Card Emulation and Keyboard Emulation. NFC technology not only supports payment functions but can also be used for various applications such as access control systems, transportation ticketing, loyalty programs, etc. The flexibility of NFC readers allows for a wide range of potential applications and benefits, such as e-payment, access control systems, and transportation ticketing.

1.1. Waterproof Enclosure Design

Certified with IP67, the ACR1552U-A2 USB NFC reader is dust-tight and can be submerged in water for a limited time without damage. Its waterproof feature significantly expands its potential applications in outdoor environments, making it a durable and reliable option among NFC readers available on the market.

1.2. Firmware Upgradeable Feature

To save valuable cost and time, the firmware of ACR1552U-A2 could conveniently be upgraded in-field to allow users to cope with the fast-changing technology for their applications in order to suit different scenarios.

1.3. Multi-Platform Support

ACR1552U-A2 is a PC/SC and CCID-compliant reader. With driver support on different platforms, ACR1552U-A2 can operate in Windows®, Linux®, macOS and Android™ operating systems.





2.0. Features

- USB NFC Smart Card Reader (Contactless)
- USB 2.0 Full Speed Interface
- Plug and Play – CCID support brings utmost mobility¹
- USB Firmware Upgradeability²
- Contactless Smart Card Reader:
 - Supports ISO 14443 Type A and B cards
 - Supports ISO 15693 cards
 - Supports ISO 18092 NFC
 - Supports MIFARE® (T=CL), FeliCa, NFC Tags
 - Supports SRI/SRIX, CTS, Innovatron, Picopass, Topaz Card
 - Built-in antenna for contactless tag access, with a reading distance of up to 70 mm (depending on tag type)
 - Built-in anti-collision feature (only one tag is accessed at any time)
 - NFC Support:
 - Card reader/writer mode
 - Card emulation mode
 - Keyboard emulation mode
- Application Programming Interface:
 - Supports PC/SC³
 - Supports CT-API (through wrapper on top of PC/SC)
- Supports Windows®, Linux®, macOS, and Android™ operating systems.
- Built-in Peripherals:
 - One user-controllable bi-color LED
 - One user-controllable buzzer
- Compliant with the following certifications and standards:
 - IP67
 - CE
 - UKCA
 - FCC
 - RoHS
 - REACH
 - WEEE
 - J-LIS

¹ Applicable under PC-linked mode

² Same as above

³ Same as above



- VCCI
- KC
- Microsoft® WHQL
- ISO 14443
- ISO 15693
- ISO 18092
- PC/SC
- CCID



3.0. Typical Applications

- e-Government
- e-Banking and e-Payment
- e-Healthcare
- Transportation
- Network Security
- Access Control
- Loyalty Program
- Smart Poster/URL Marketing

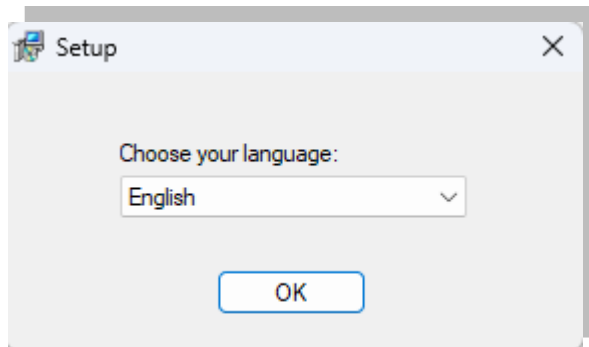
4.0. Driver Installation Procedure

The installation procedure is the same for ACS PC/SC Driver version 1.0.4.0 and above. The latest device drivers of the ACS Smart Card Readers may be downloaded from the ACS Driver Download Webpage:

<http://acs.com.hk/en/drivers/>

To install the ACS Driver:

1. In the **ACS PC/SC Driver** folder, run the file **Setup.exe**.
2. Choose the language, and then click **OK**.

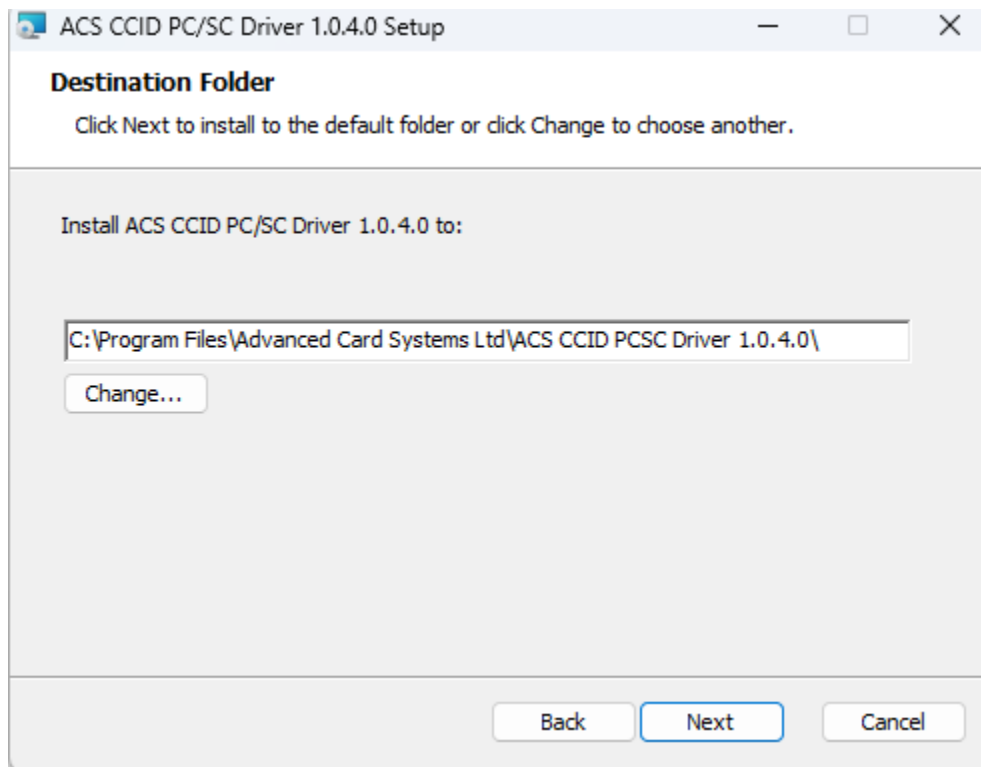


3. The Setup Wizard will be displayed. Click **Next** to proceed with the installation.

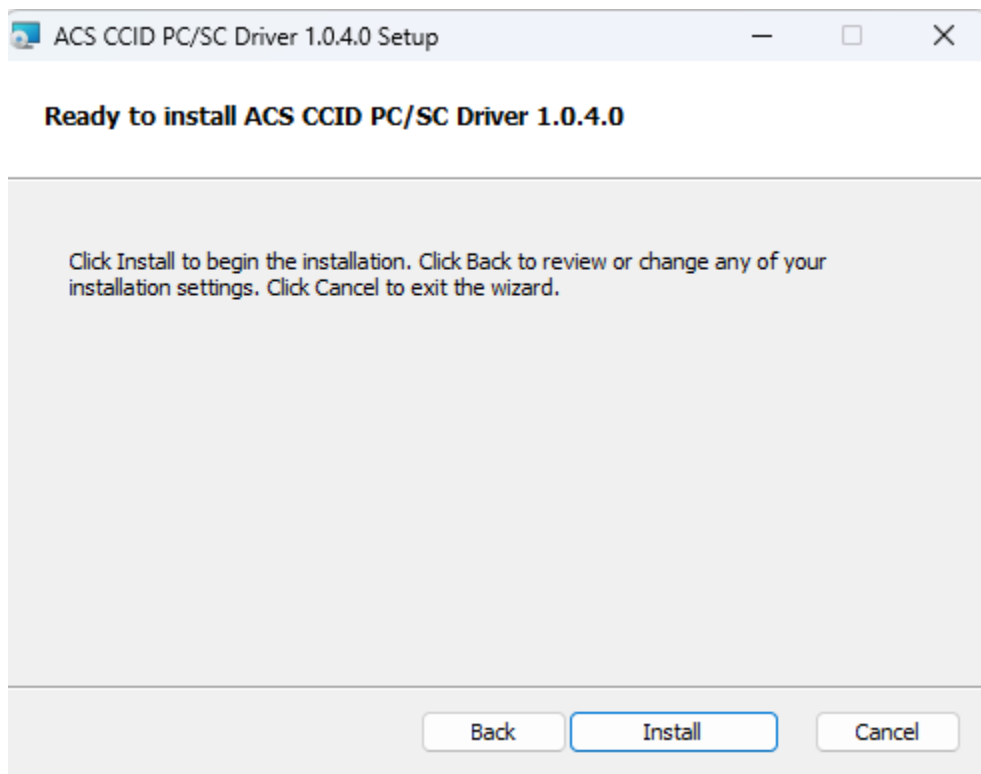




- Click **Next** to install the driver to the default folder located at **C:\Program Files\Advanced Card Systems Ltd\ACS PCSC Driver 1.0.4.0**, with **C** as the drive letter of your local drive. Otherwise, click **Change** to choose another destination folder.

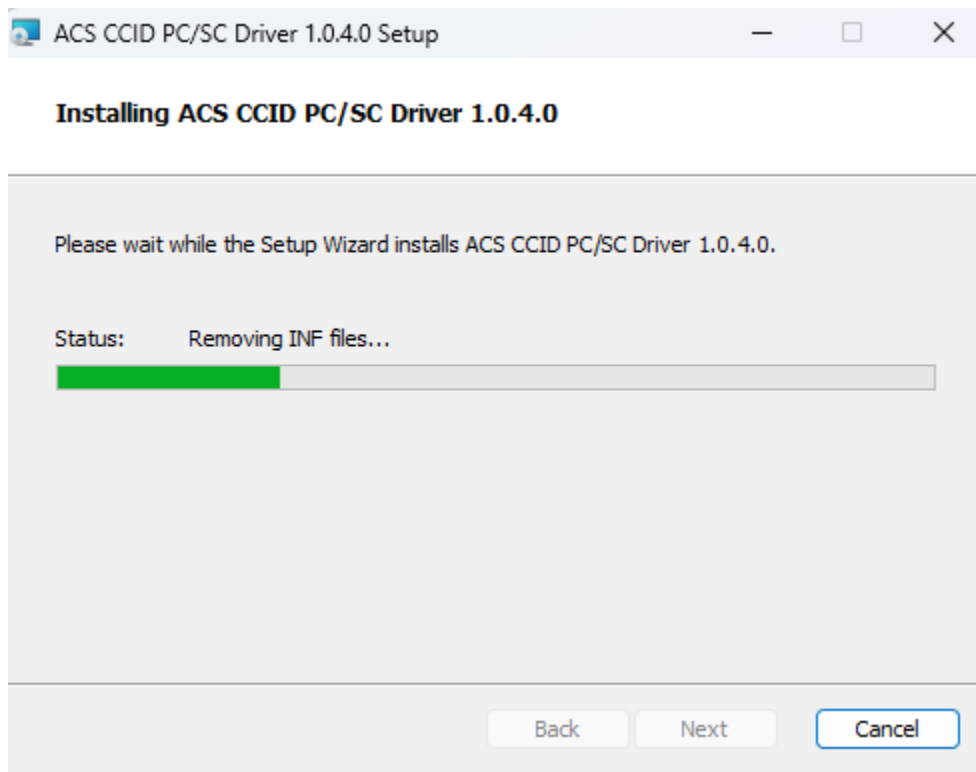


- Click **Install** to begin the installation.

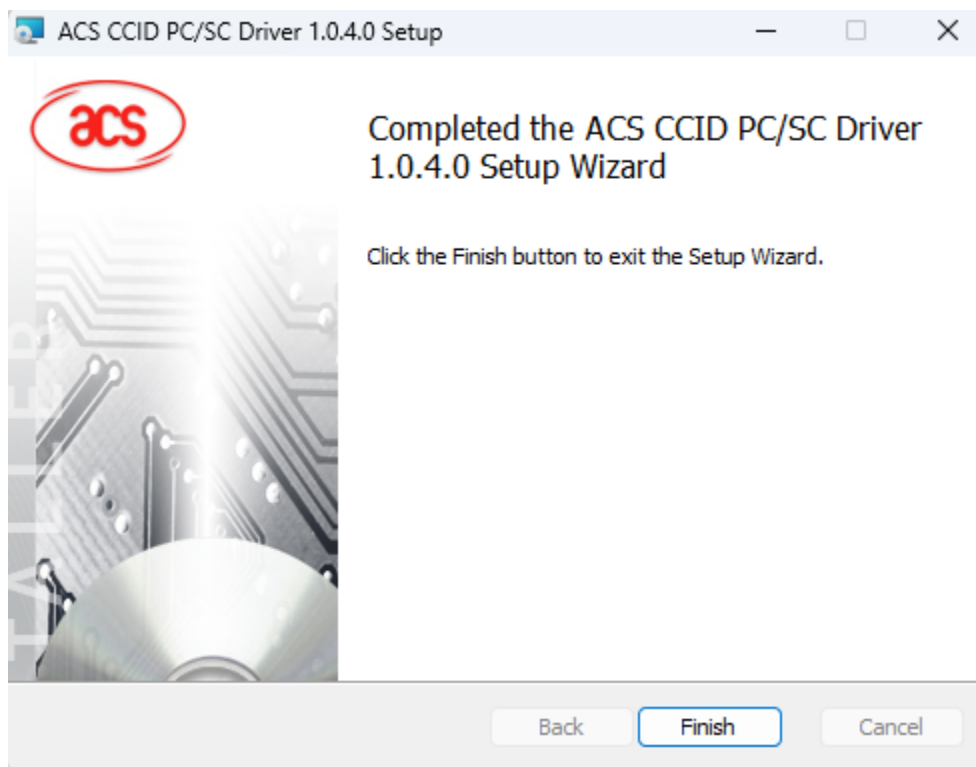




- Wait for the installation process to finish.



- Once the driver installation is finished, click **Finish** to exit the setup wizard.

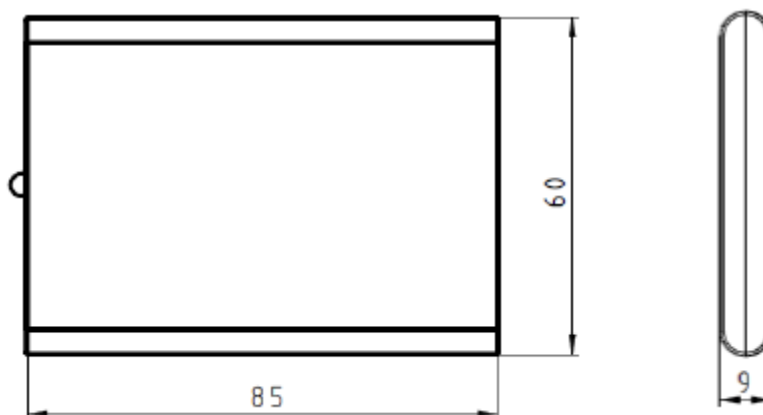


5.0. Technical Specifications

TECHNICAL SPECIFICATION

Contactless Smart Card Interface	
Supported Card Types	ISO 14443 Type A & B Parts 1-4, ISO 15693, ISO 18092 NFC, MIFARE®, FeliCa, SRI/SRIX, CTS, Innovatron, Picopass, Topaz Card
Operating Frequency	13.56 MHz
Reading Distance	Up to 70 mm (Depending on tag type)
Read/Write Speed	106/212/424/848 kbps (ISO14443) 26/53kbps (ISO15693)
Supported NFC Mode	Card Reader/Writer, Keyboard Emulation, Card Emulation
Host Interface	
Protocol	USB CCID
Connector Type	USB Type-A
Speed	USB 2.0 Full Speed (12 Mbps) compatible with USB 3.0
Supply Voltage	5VDC
Current Consumption	Max. 300mA
USB Firmware Upgrade	Supported
Physical Characteristics	
Dimension (L x W x H)	Main Body: 85.0 x 60.0 x 9.0 mm
Weight (±5 g)	67g (USB Type-A)
Available Colour	White
USB Cable Length	1 m (Non-detachable)
Peripherals	
Buzzer	1 x Programmable Buzzer (Mono-tone)
LED	1 x Programmable LED (Blue & Green)
Operating Condition	
Temperature	0 - 60°C
Humidity	90% (Non-condensing)
MTBF	500,000 Hours
Certifications & Compliances	
Certifications	CE, FCC, UKCA, VCCI, KC, RoHS, REACH, WEEE, J-LIS Microsoft® WHQL, IP67
Compliances	USB CCID, PC/SC
Libraries & Tools	
Libraries	CT-API
Tools	Software Development Kit
Drivers & Support	
Driver Supported OS	Windows®, Linux®, macOS, Android™
Warranty	1 Year
Model/Part Number	
USB Type-A	ACR1552U-A2

Unit: mm



macOS is a registered trademark of Apple Inc., registered in the U.S. and other countries.

Windows® is a trademark of Microsoft Corporation in the United States and/or other countries.

Android™ is a trademark of Google LLC.

Linux® is a registered trademark of Linus Torvalds in the U.S. and other countries.



FCC Caution:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

IMPORTANT NOTE:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.