



Advanced Card Systems Ltd.
Card & Reader Technologies

ACR33U-A1

SmartDuo

Smart Card Reader



Technical Specifications V1.05



Table of Contents

1.0.	Introduction	3
1.1.	Smart Card Reader.....	3
1.2.	Dual Slot Feature.....	3
1.3.	Security Feature	3
1.4.	Easy Installation.....	3
2.0.	Features	4
3.0.	Supported Card Types	5
3.1.	MCU Cards	5
3.2.	Memory-based Smart Cards.....	5
4.0.	Typical Applications.....	6
5.0.	Technical Specifications.....	7
6.0.	Accessing the SAM (Secure Access Module) slots	9



1.0. Introduction

ACR33U-A1 SmartDuo is a sleek and stylish device that features an innovative dual slot design to accommodate two smart cards simultaneously. This dual-slot solution enables cost-effective, time-efficient and secure implementation of smart card applications in various fields.



1.1. Smart Card Reader

ACR33U-A1 SmartDuo supports ISO 7816 Class A smart cards (5 V) and microprocessor cards with the T=0, T=1 protocol. In addition, it supports a wide variety of memory cards in the market, including the Department of Defense Common Access Card (CAC). This makes it ideal for a broad range of solutions, such as PIV Application, Physical and Logical Access Control, Digital Signature, and Online Banking.

1.2. Dual Slot Feature

The competitive advantage of ACR33U-A1 SmartDuo lies on its dual slot feature that allows users to operate two smart cards at the same time, enabling efficiency and enhanced security in smart card applications. As an example, one slot can hold the smart card of an

authorized personnel managing a particular smart card-based service, while the other slot can be used by various individuals availing of such service. Through ACR33U-A1 SmartDuo's dual-slot solution, the need to pull out and re-insert the personnel's card to accommodate a user's card, whenever one is presented, is eliminated, resulting to smoother and uninterrupted flow of transactions.

1.3. Security Feature

Aside from its dual slot feature, ACR33U-A1 SmartDuo also has three SAM (Secure Access Module) card slots. This feature allows one to enhance the security provided by the device for applications requiring more stringent security mechanisms.

1.4. Easy Installation

Being PC/SC and CCID compliant, ACR33U-A1 SmartDuo is easy to install and use. It is specially designed to be used in computer-based environments, and its drivers are compatible with Windows®, Linux® and Mac OS®. In addition, ACR33U-A1 SmartDuo may now be used on mobile devices running the Android™ platform with versions 3.1 and above.

With its various features, ACR33U-A1 SmartDuo can be used in different operations for e-Banking and e-Payment, e-Government, e-Healthcare, Physical and Logical Access Control, and Network Security.



2.0. Features

- USB Full Speed Interface
- Plug-and-Play – CCID support brings utmost compatibility
- Dual Slots for Full-Sized Smart Cards
- Smart Card Reader:
 - Supports ISO 7816 Class A (5 V) smart cards
 - Supports CAC (Common Access Card)
 - Supports microprocessor cards with T=0 and T=1 protocol
 - Supports memory cards
 - Supports PPS (Protocol and Parameters Selection)
 - Features Short Circuit Protection
- SAM Card Interface:
 - Three SAM card slots
- User controllable peripherals:
 - Tri-Color LED (Green, Red, Blue)
 - Buzzer
- Application Programming Interface:
 - Supports PC/SC
 - Supports CT-API (through wrapper on top of PC/SC)
- Supports Android™ 3.1 and above¹
- Compliant with the following international standards:
 - FIPS 201
 - TAA
 - EN60950/IEC 60950
 - ISO 7816
 - CE
 - FCC
 - VCCI
 - PC/SC
 - CCID
 - Microsoft® WHQL
 - RoHS 2
 - REACH

¹ PC/SC and CCID support are not applicable



3.0. Supported Card Types

3.1. MCU Cards

ACR33U-A1 SmartDuo operates with MCU cards following either the T=0 or T=1 protocol. It also works with CAC cards, ideal for US PIV and PKI applications.

3.2. Memory-based Smart Cards

ACR33U-A1 SmartDuo works with several memory-based smart cards such as:

- Cards following the I2C bus protocol (free memory cards) with maximum 128 bytes page with capability, including:
 - Atmel®: AT24C01/02/04/08/16/32/64/128/256/512/1024
- Cards with secure memory IC with password and authentication, including:
 - Atmel®: AT88SC153 and AT88SC1608
- Cards with intelligent 1 KB EEPROM with write-protect function, including:
 - Infineon®: SLE4418, SLE4428, SLE5518 and SLE5528
- Cards with intelligent 256-byte EEPROM with write-protect function, including:
 - Infineon®: SLE4432, SLE4442, SLE5532 and SLE5542
- Cards with '104' type EEPROM non-reloadable token counter cards, including:
 - Infineon®: SLE4406, SLE4436, SLE5536 and SLE6636
- Cards with Security Logic with Application Zone(s), including:
 - Atmel®: AT88SC101, AT88SC102 and AT88SC1003

Note: Memory card is supported in **ICC Slot 0** only of ACR33U-A1 SmartDuo (see the diagram in **Section 5.0 – Technical Specifications**).

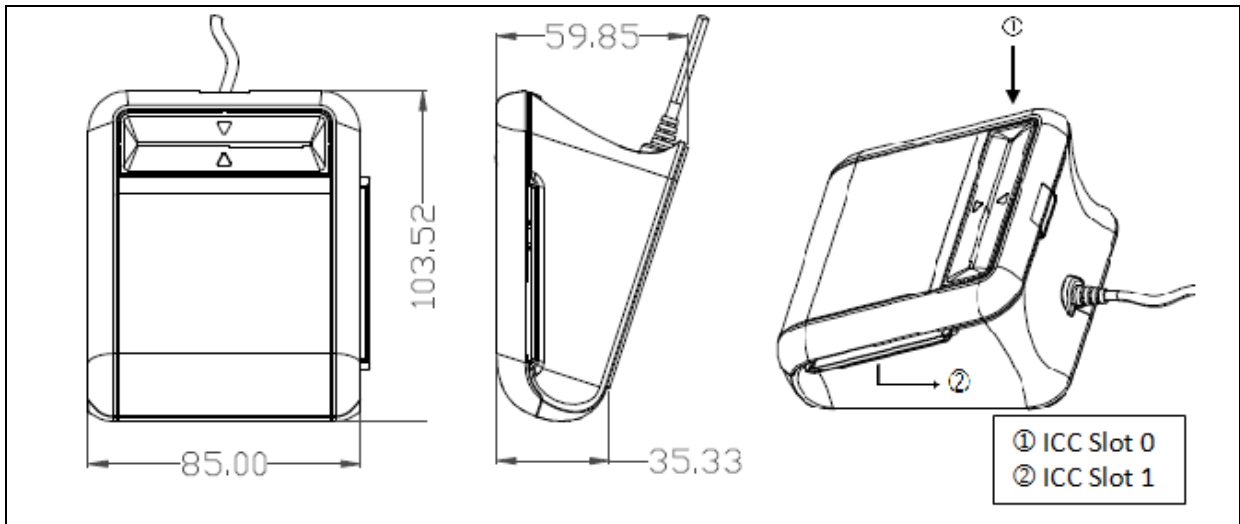


4.0. Typical Applications

- e-Government
- e-Banking and e-Payment
- e-Healthcare
- Public Key Infrastructure
- Network Security
- Access Control
- Loyalty Program



5.0. Technical Specifications



Universal Serial Bus Interface

Type USB Full Speed, Four Lines: +5 V, GND, D+ and D-
Power Source..... From USB
Speed..... 12 Mbps

Contact Smart Card Interface

Standard ISO 7816 Class A (5 V), T=0 and T=1
Supply Current Max. 50 mA
Smart Card Read/Write Speed..... Max. 344,086 bps
Short Circuit Protection +5 V/GND on all pins
CLK Frequency 4 MHz
Card Connector..... ICC Slot 0: Sliding
..... ICC Slot 1: Contact
Card Insertion Cycles..... Min. 100,000

SAM Card Interface

Standard ISO 7816, Class A (5 V)
Transmission Protocol..... T=0 and T=1

Built-in Peripherals

LED 3 LEDs (Blue, Green and Red)
Buzzer Monotone

Physical Specifications

Dimensions 103.5 mm (L) × 85.0 mm (W) × 59.9 mm (H)
Color White base with blue outline
Weight..... 310 g (± 5 g allowance for cable)
Cable length, cord, connector 1.5 m, Fixed (non-detachable), USB A

Operating Conditions

Temperature..... 0 °C – 50 °C
Humidity Max. 90% (non-condensing)
MTBF 500,000 hrs

Application Programming Interface

PC/SC
CT-API (through wrapper on top of PC/SC)

Certifications/Compliance

EN60950/IEC 60950, ISO 7816, FIPS 201, TAA, CE, FCC, VCCI, PC/SC, CCID, RoHS 2, REACH,
USB Full Speed
Microsoft® WHQL for Windows® 2000, Windows® XP, Windows Vista®, Windows® 7, Windows® 8,
Windows® 8.1, Windows® Server 2003, Windows® Server 2008, Windows® Server 2008 R2,
Windows® Server 2012, Windows® Server 2012 R2



Device Driver Operating System Support

Windows® 2000, Windows® XP, Windows Vista®, Windows® 7, Windows® 8, Windows® 8.1,
Windows® Server 2003, Windows® Server 2008, Windows® Server 2008 R2,
Windows® Server 2012, Windows® Server 2012 R2
Linux®, Mac OS®, Android™ 3.1 and above



6.0. Accessing the SAM (Secure Access Module) slots

1. Remove the bottom screw from the back of the reader.



2. Slide down the front panel cover of the reader.



3. Remove the cover completely to reveal all three available SAM slots.



Android is a trademark of Google Inc.
Atmel is registered trademark of Atmel Corporation or its subsidiaries, in the US and/or other countries.
Infineon is a registered trademark of Infineon Technologies AG.
Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.
Mac OS is a trademark of Apple Inc.
Microsoft, Windows and Windows Vista are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.