Advanced Card Systems Ltd.
Card & Reader Technologies

ACR33U-A1

SmartDuo
Smart Card Reader

Technical Specifications V1.06

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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 secured 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 and 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 (Personal Identity Verification) 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) slots that can be used together with a SAM card. 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 operating systems such as 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 later.

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:

  o Supports ISO 7816 Class A (5 V) smart cards

  o Supports CAC (Common Access Card)

  o Supports microprocessor cards with T=0 and T=1 protocol

  o Supports memory cards

  o Supports PPS (Protocol and Parameters Selection)

  o Features Short Circuit Protection

- SAM Card Interface:

  o Three SAM card slots

- Built-in Peripherals:

  o Tri-color LED (Green, Red, Blue)

  o Buzzer

- Application Programming Interface:

  o Supports PC/SC

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

- Supports Android™ 3.1 and later[1]

- Compliant with the following standards:

  o EN60950/IEC 60950

  o ISO 7816

  o USB Full Speed

  o PC/SC

  o CCID

  o CE

  o FCC

  o RoHS 2

  o REACH

  o FIPS 201 (USA)

  o TAA (USA)

  o VCCI (Japan)

  o Microsoft® WHQL

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[1] Uses an ACS–defined Android Library

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 (Public Key Infrastructure) 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:
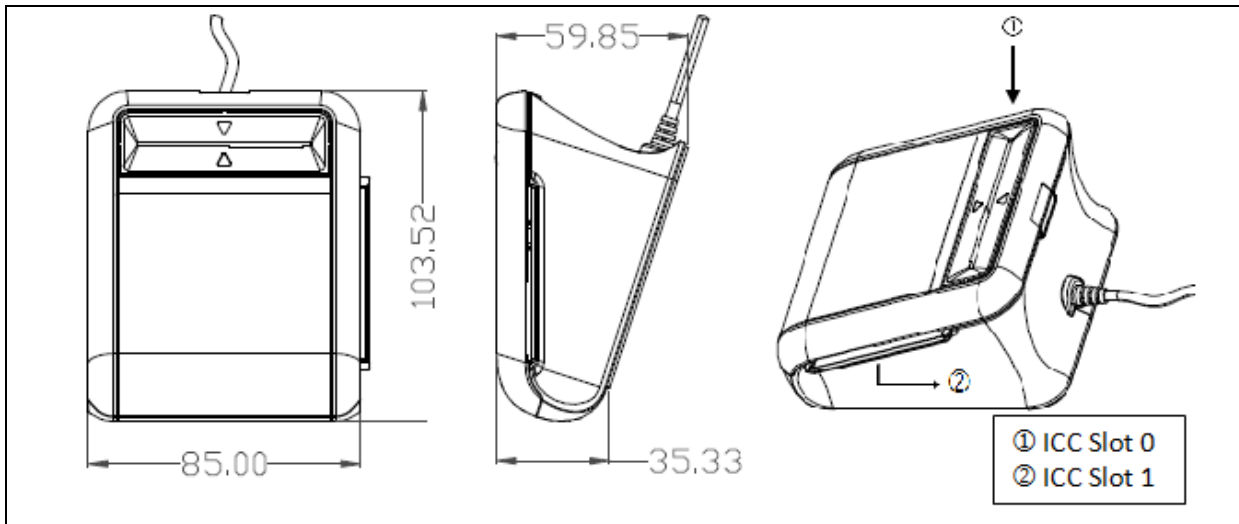   - Atmel®: AT88SC101, AT88SC102 and AT88SC1003

*Note: Memory card is supported in **ICC Slot 0** only of ACR33U-A1 SmartDuo (see the diagram in **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

Physical Characteristics

Dimensions .... 103.5 mm (L) × 85.0 mm (W) × 59.9 mm (H)
Weight.. 310 g (± 5 g allowance for cable)
Color .... White base with blue outline

USB Host Interface

Protocol.. USB CCID
Connector Type............................. Standard Type A
Power Source................................ From USB port
Speed... USB Full Speed (12 Mbps)
Supply Voltage.............................. 5 V
Cable Length................................. 1.5 m, Fixed

Contact Smart Card Interface

Number of Slots .... 2 Full-sized Card Slots
Standard .... ISO 7816 Parts 1-3, Class A (5 V)
Protocol.. T=0; T=1; Memory Card Support
Supply Current .... Max. 50 mA
Smart Card Read/Write Speed....... 9.6 Kbps - 344 Kbps
Short Circuit Protection .... (+5) V/GND on all pins
Clock Frequency .... 4.0 MHz
Card Connector Type..................... ICC Slot 0: Sliding
.... ICC Slot 1: Contact
Card Insertion Cycles.................... Min. 100,000

SAM Card Interface

Number of Slots .... 3 SIM-sized Card Slots
Standard .... ISO 7816 Parts 1-3, Class A (5 V)
Protocol.. T=0; T=1
Supply Current .... Max. 50 mA
Smart Card Read/Write Speed....... 9.6 Kbps – 344 Kbps
Card Connector Type..................... SAM Slot 0: Contact
.... SAM Slot 1: Contact
.... SAM Slot 2: Contact

Built-in Peripherals

LED.. 3 single-color: Blue, Green and Red
Buzzer.. Monotone

Application Programming Interface

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

Operating Conditions

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

Certifications/Compliance

EN60950/IEC 60950, ISO 7816, USB Full Speed, PC/SC, CCID, CE, FCC, RoHS 2, REACH
FIPS 201 (USA), TAA (USA), VCCI (Japan), Microsoft® WHQL

Device Driver Operating System Support

Windows® XP, Windows Vista®, Windows® 7, Windows® 8, Windows® 8.1, Windows® 10
Windows® Server 2003, Windows® Server 2008, Windows® Server 2008 R2, Windows® Server 2012, Windows® Server 2012 R2
Linux®, Mac OS®, Android™ 3.1 and later

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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.