ACR1251U-A1 USB NFC Reader with SAM Slot
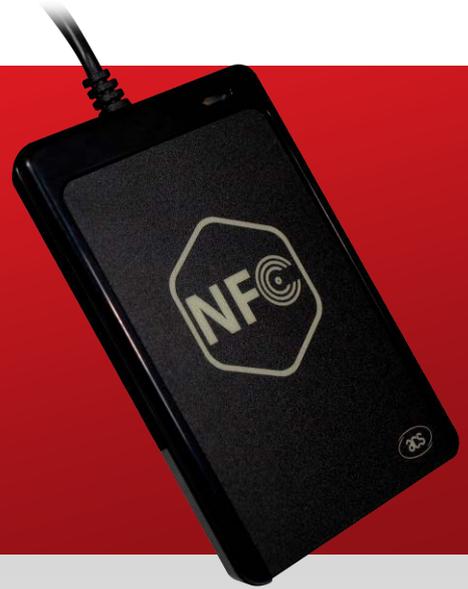
Technical Specifications V1.05

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1.0. Introduction

The ACR1251U-A1 is a PC-linked NFC smart card reader developed based on the 13.56 MHz contactless technology. Following the ACR122U, ACS's successful NFC reader and also the world's first CCID-compliant contactless reader, the ACR1251U-A1 offers more and advanced features. It is designed to support not only ISO 14443 Type A and B cards, but also MIFARE®, FeliCa and all four types of NFC tags and devices.

The ACR1251U-A1 is ideal for implementing contactless applications with added security functions in the system. Equipped with an ISO 7816 Compliant SAM (Secure Access Module) slot which can be used together with a SAM card, key diversification and mutual authentication is made possible, restricting the exposure of keys and limiting the possibility of keys being stolen, providing a high level of security in contactless operations.

ACR1251U-A1 is suitable for any contactless smart card application such as personal identity verification, network log-in, online banking and micropayment. With enhanced NFC features, ACR1251U-A1 is also ideal for non-conventional NFC applications like Smart Posters for advertising and marketing purposes, and communication with most NFC-enabled mobile phones in the market.

Furthermore, ACR1251U-A1 is PC/SC-compliant that allows interoperability across different applications and platforms. ACR1251U-A1 also supports post-deployment firmware update through remote firmware upgrade, which eliminates the need for additional hardware modification. With its compact size, trendy design and rich features, ACR1251U-A1 enables you to fully enjoy the convenience of using NFC applications.

2.0. Features

- USB 2.0 Full Speed Interface
- CCID Compliance
- Smart Card Reader:
  - Contactless Interface
    - Read/Write speed of up to 424 Kbps
    - Built-in antenna for contactless tag access, with card reading distance of up to 50 mm (depending on tag type)
    - Supports ISO 14443 Part 4 Type A and B cards, MIFARE, FeliCa, and all four types of NFC (ISO/IEC 18092 tags)
    - Built-in anti-collision feature (only one tag is accessed at any time)
    - NFC Mode Supported:
      - Card reader/writer mode
      - Peer-to-Peer mode
  - SAM Interface
    - One SAM slot
    - Supports ISO 7816 Class A, B, and C SAM Cards
- Application Programming Interface:
  - Supports PC/SC
  - Supports CT-API (through wrapper on top of PC/SC)
- Built-in Peripherals:
  - User-controllable bi-color LED
  - User-controllable buzzer
- USB Firmware Upgradeability
- Supports Android™ 3.1 and above
- Compliant with the following standards:
  - ISO 18092
  - ISO 14443
  - ISO 7816 (for SAM Slot)
  - LASCOM
  - CE
  - FCC
  - VCCI
  - MIC
  - KC
  - PC/SC
  - CCID
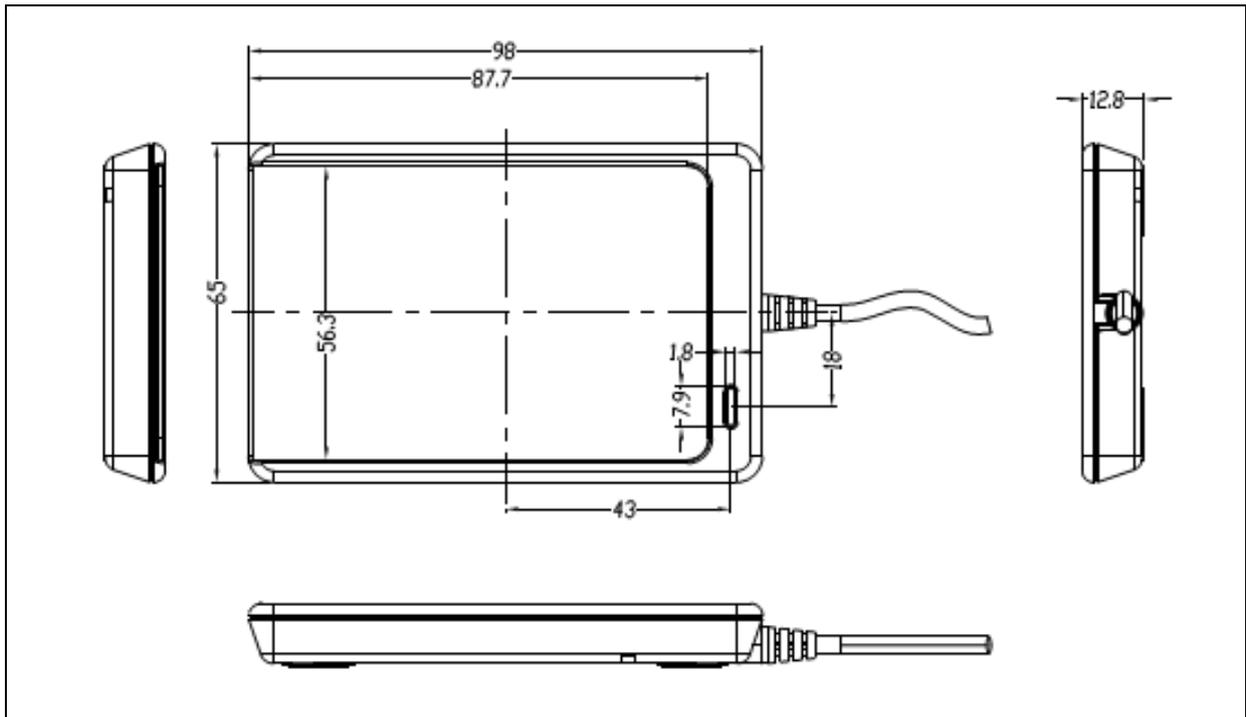 - Microsoft® WHQL
  - RoHS 2

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. Technical Specifications

Universal Serial Bus Interface	
Power Source	From USB
Speed	12 Mbps (Full Speed)
Supply Voltage	Regulated 5 V DC
Supply Current	Max. 200 mA

Contactless Smart Card Interface	
Standard	ISO/IEC 18092 NFC, ISO 14443 Type A & B, MIFARE, FeliCa
Protocol	ISO 14443 T=CL for ISO14443-4 compliant cards and T=CL Emulation for MIFARE Classic 1K/4K, ISO 18092, FeliCa and NFC tags
Operating Frequency	13.56 MHz
Operating Distance	Up to 50 mm (depending on tag type)
Smart Card Read/Write Speed	106 Kbps, 212 Kbps, 424 Kbps

SAM Card Interface	
Standard	ISO 7816 Class A,B, and C
Protocol	T=0 and T=1 protocol

Physical Specifications	
Dimensions	98.0 mm (L) x 65.0 mm (W) x 12.8 mm (H)
Weight	81 g
Material	Acrylonitrile - Butadiene – Styrene (ABS)
Color	Black
Antenna Size	50 mm x 40 mm
Cable Length	1 m (USB)

Built-in Peripherals	
Bi-color LED	Red and Green
Buzzer	Monotone

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

ISO 18092, ISO 14443, ISO 7816 (SAM slot), LASCOM, CE, FCC, VCCI, MIC, KC, PC/SC, CCID, RoHS 2, USB Full Speed, Microsoft® WHQL for Windows® 2000, Windows® XP, Windows Vista®, Windows® 7, Windows® 8

Device Driver Operating System Support

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

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