



**Advanced Card Systems Ltd.**  
Card & Reader Technologies

# ACR1251U-A1 USB NFC Reader with SAM



Technical Specifications V1.01

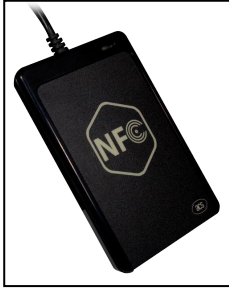


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## 1.0. Introduction



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. By making use of the SAM (Secure Access Module), 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 login, 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 PCSC-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:
  - 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)
  - Support for 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 Support:
    - Card reader/writer mode
    - Peer-to-Peer mode
  - ISO 7816-compliant SAM slot
- 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 Upgradability
- Supports Android™ 3.1 and above
- Compliant with the following standards:
  - ISO 18092
  - ISO 14443
  - ISO 7816
  - LASCOM
  - CE
  - FCC
  - VCCI
  - MIC
  - KC
  - PC/SC
  - CCID
  - Microsoft® WHQL
  - RoHS

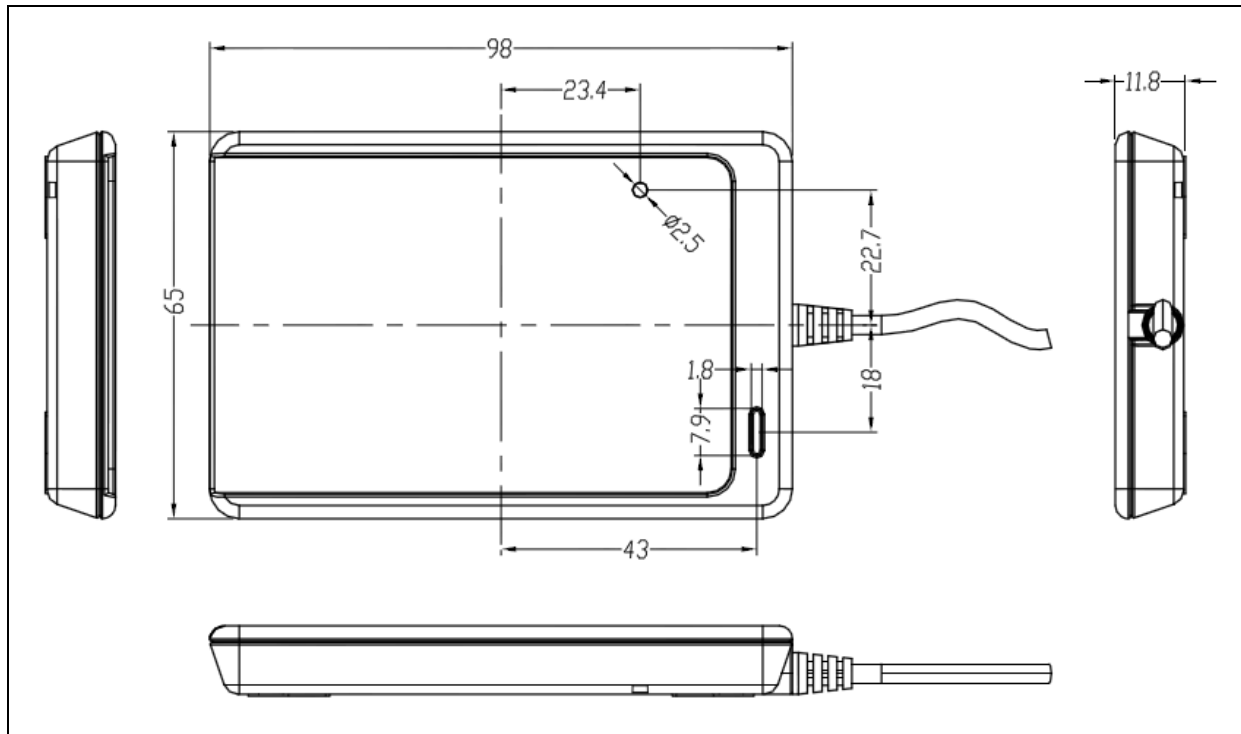


### **3.0. Typical Applications**

- 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 ..... 200 mA (max.)

### 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 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  
Protocol..... T=0 and T=1 protocol

### Physical Specifications

Dimensions ..... 98.0 mm (L) x 65.0 mm (W) x 11.8 mm (H)  
Weight..... 73 g  
Material ..... Acrylonitrile - Butadiene – Styrene (ABS)  
Color ..... Black  
Antenna Size..... 50 mm x 40 mm  
Cable Length..... 1.0 m (USB)

### Built-in Peripherals

Bi-color LED ..... Red and Green  
Buzzer ..... Monotone

### Operating Conditions

Temperature ..... 0 °C – 50 °C  
Humidity ..... 10% - 90%

### Application Programming Interface

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

### Certifications/Compliance

ISO 18092, ISO 14443, ISO 7816, LASCOR, CE, FCC, VCCI, MIC, KC, PC/SC, CCID, RoHS, USB Full Speed, Microsoft® WHQL Windows® 2000, Windows® XP, Windows Vista®, Windows® 7, Windows® 8



**Device Driver Operating System Support**

Windows® 98, Windows® ME, Windows® 2000, Windows® XP, Windows Vista®, Windows® 7, Windows® 8, Windows® Server 2003, Windows® Server 2003 R2, Windows® Server 2008, Windows® Server 2008 R2, Windows® Server 2012  
Linux, Mac, Android 3.1 and above

