



Advanced Card Systems Ltd.
Card & Reader Technologies

ACR1251U USB NFC Reader with SAM Slot



Technical Specifications V1.10



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1.0. Introduction



The ACR1251U 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 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 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 is suitable for any contactless smart card applications such as personal identity verification, network login, online banking, and micropayment. With enhanced NFC features, ACR1251U 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 is PC/SC-compliant that allows interoperability across different applications and platforms. ACR1251U 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 lets you fully enjoy the convenience of using NFC applications.



2.0. Features

- USB Full Speed Interface
- CCID-compliant
- 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 Classic®, FeliCa, and all four types of NFC (ISO/IEC 18092 tags)
 - Built-in anti-collision feature (only one tag is accessed at any time)
 - Supports extended APDU (max. 64 KB)
 - NFC Support:
 - Card Reader/Writer mode
 - Peer-to-Peer mode
 - SAM Interface:
 - One SAM Slot
 - Supports ISO 7816 Class A, B, and C SAM cards
- Built-in Peripherals:
 - User-controllable bi-color LED
 - User-controllable buzzer
- Application Programming Interface:
 - Supports PC/SC
 - Supports CT-API (through wrapper on top of PC/SC)
- USB Firmware Upgradeability
- Supports Android™ 3.1 and later¹
- Compliant with the following standards:
 - EN 60950/IEC 60950
 - ISO 7816 (SAM Slot)
 - ISO 14443
 - ISO 18092
 - FeliCa Performance Certification
 - PC/SC
 - CCID
 - CE
 - FCC
 - RoHS 2
 - REACH
 - J-LIS (Japan)
 - VCCI (Japan)
 - MIC (Japan)
 - KC (Korea)
 - Microsoft® WHQL

¹ Uses an ACS-defined Android Library

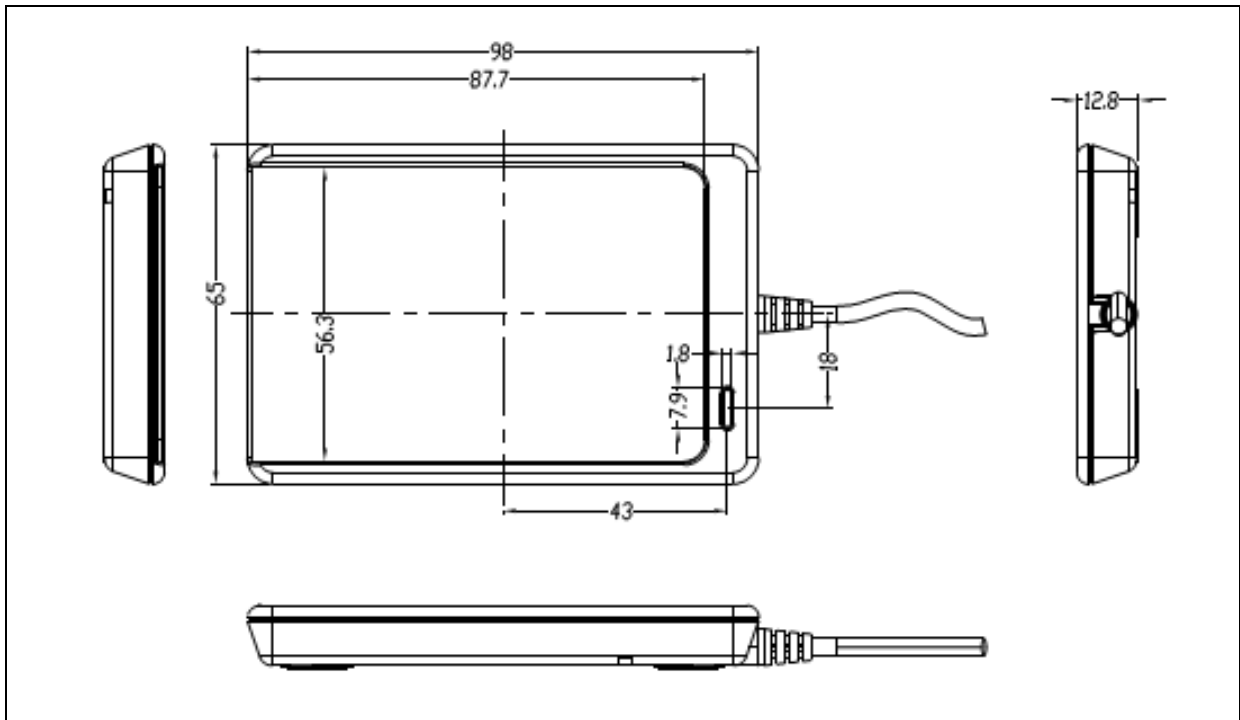


3.0. Typical Applications

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



4.0. Technical Specifications



Physical Characteristics

Dimensions 98.0 mm (L) × 65.0 mm (W) × 12.8 mm (H)
 Weight 81 g
 Color Matte Black

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
 Supply Current Max. 200 mA
 Cable Length 1 m, Fixed

Contactless Smart Card Interface

Standard ISO/IEC 18092 NFC, ISO 14443 Type A & B, MIFARE, FeliCa
 Protocol ISO 14443 T=CL for ISO 14443-4-compliant cards
 T=CL Emulation for MIFARE Classic, 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
 Antenna Size 50 mm × 40 mm

SAM Card Interface

Number of Slots 1 Standard SIM-sized Card Slot
 Standard ISO 7816, Class A, B, and C (5 V, 3 V, 1.8 V)
 Protocol T=0; T=1
 Smart Card Read/Write Speed 9.6 Kbps – 420 Kbps
 Card Connector Type SAM Slot 0: Contact

Built-in Peripherals

LED 1 bi-color: Red and Green
 Buzzer Monotone

Other Feature

Firmware Upgrade Supported

Application Programming Interface

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



Operating Conditions

Temperature..... 0 °C – 60 °C
Humidity Max. 90% (non-condensing)
MTBF 500,000 hrs

Certifications/Compliance

EN 60960/IEC 60950, ISO 7816 (SAM Slot), ISO 14443, ISO 18092, USB Full Speed, FeliCa Performance Certification, PC/SC, CCID, CE, FCC, RoHS 2, REACH J-LIS (Japan), VCCI (Japan), MIC (Japan), KC (Korea), Microsoft® WHQL

Device Driver Operating System Support

Windows® CE 5.0, Windows® CE 6.0, Windows® Embedded Compact 7, Windows® XP, Windows Vista®, Windows® 7, Windows® 8, Windows® 8.1, Windows® 10
Windows® Server 2003, Windows® Server 2003 R2, Windows® Server 2008, Windows® Server 2008 R2, Windows® Server 2012, Windows® Server 2012 R2, Windows® Server 2016
Linux®, Mac OS®, Solaris, Android™ 3.1 and later



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