ACR122L
Serial NFC Reader with LCD

Technical Specifications V1.07
Table of Contents
1.0. Introduction ............................................................................................................. 3
2.0. Features ................................................................................................................... 4
2.1. ACR122L Power Adapter ...................................................................................................... 5
3.0. Typical Applications ................................................................................................ 6
4.0. Technical Specifications .......................................................................................... 7

List of Figures
Figure 1: ACR122L Power Adapter .................................................................................. 5
1.0. Introduction

The ACR122L is a serial NFC contactless reader with an LCD screen. Developed based on the 13.56 MHz RFID technology and the ISO/IEC 18092 NFC standard, it supports ISO 14443 Type A and B cards, MIFARE®, FeliCa, and NFC technologies, including all four types of NFC tags.

ACR122L has a built-in anti-collision feature and direct card type polling commands that enable smooth operation in cases where multiple cards are present.

Part of the VisualVantage Series, ACR122L comes with four LEDs, a buzzer, and an LCD screen, providing users with a clear indication of the reader’s status. The two-line graphic LCD has multiple language support, including language support for Chinese, English, Japanese, and several European languages. It allows interactive operations such as scrolling up and down, left and right, etc. Finally, the ACR122L is equipped with three built-in ISO 7816–compliant Class A SAM (Secure Access Module) slots which can be used together with SAM cards for enhanced security in contactless operations.
2.0. Features

- Serial RS-232 Interface: Baud Rate = 115200 bps, 8-N-1
- 7 V DC adapter for power supply (see ACR122L Power Adapter for more details)
- CCID-like frame format (Binary format)
- 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)
  - SAM Interface:
    - Three SAM Slots
    - Supports ISO 7816 Class A SAM card
- Built-in Peripherals:
  - Two-line graphic LCD screen with interactive operability (i.e. scroll up and down, left and right, etc.) and multi-language support (i.e. Chinese, English, Japanese, and several European languages)
  - Four user-controllable LEDs
  - User-controllable buzzer
- Compliant with the following standards:
  - EN 60950/IEC 60950
  - ISO 7816 Class A (SAM Slot)
  - ISO 14443
  - ISO 18092
  - CE
  - FCC
  - RoHS 2
  - VCCI (Japan)
2.1. ACR122L Power Adapter

The ACR122L VisualVantage Serial NFC Reader comes with a 7 V power adapter as shown below:

![Figure 1: ACR122L Power Adapter](image-url)
3.0. Typical Applications

- e-Government
- e-Banking and e-Payment
- e-Healthcare
- Transportation
- Network Security
- Access Control
- Loyalty Program
4.0. Technical Specifications

**Physical Characteristics**

Dimensions .................................... Main Body: 133.5 mm (L) × 88.5 mm (W) × 21.0 mm (H)  
                                           With Stand: 158 mm (L) × 95 mm (W) × 95 mm (H)  
Weight ............................................ Main Body: 202 g  
                                           With Stand and Adaptor: 645 g  
Color .............................................. Black

**Serial Host Interface**

Protocol .......................................... RS-232  
Connector Type .................................. DB-9 Connector  
Power Source ...................................... Via 7 V DC Power Adapter  
Speed ............................................. 9.6 Kbps (default), 115.2 Kbps  
Supply Voltage .................................... 5 V  
Supply Current ................................. Max. 200 mA  
Cable Length ..................................... 1.5 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  
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 ...................................... 46 mm × 64 mm
### SAM Card Interface
- **Number of Slots**: 3 Standard SIM-sized Card Slots
- **Standard**: ISO 7816 Class A (5 V)
- **Protocol**: T=0
- **Smart Card Read/Write Speed**: 9.6 Kbps – 115 Kbps
- **Card Connector Type**:
  - SAM Slot 0: Contact
  - SAM Slot 1: Contact
  - SAM Slot 2: Contact

### Built-in Peripherals
- **LCD**: Graphic LCD with yellow-green backlight
  - 128 pixels × 32 pixels
  - Number of characters: 16 characters × 2 lines
- **LED**: 4 single-color: Green, Blue, Orange, and Red
- **Buzzer**: Monotone

### Operating Conditions
- **Temperature**: 0 °C – 50 °C
- **Humidity**: Max. 90% (non-condensing)
- **MTBF**: 300,000 hrs

### Certifications/Compliance
- EN 60950/IEC 60950, ISO 7816 (SAM Slot), ISO 14443, ISO 18092, CE, FCC, RoHS 2
- VCCI (Japan)

### Device Driver Operating System Support
- Linux®

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