ACR122L
Serial NFC Reader
with LCD

Technical Specifications V1.07

Table of Contents

List of Figures

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:
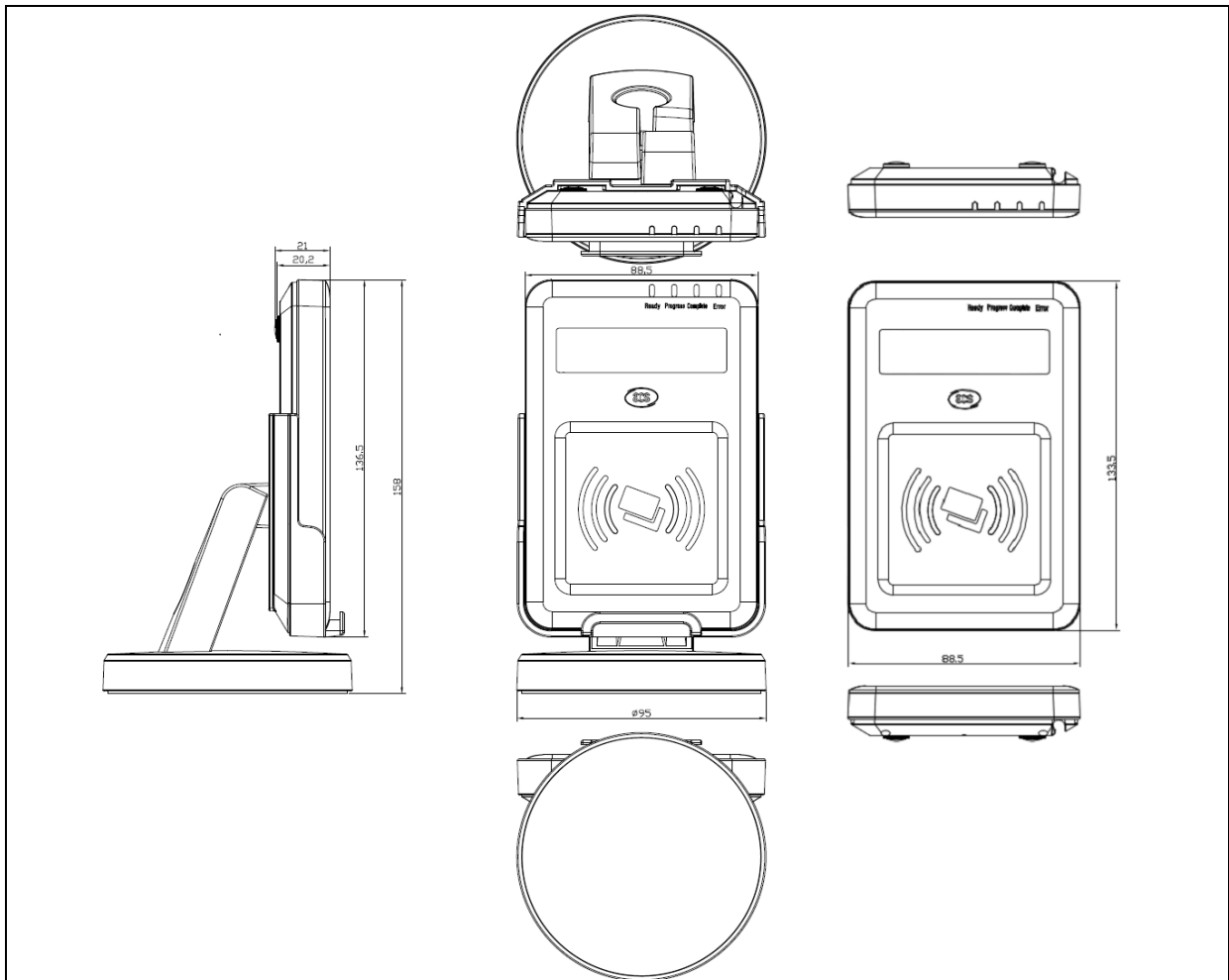

Figure 1: ACR122L Power Adapter

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
	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	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

Windows® 2000, Windows® XP, Windows Vista®, Windows® 7
Windows® Server 2003, Windows® Server 2003 R2, Windows® Server 2008, Windows® Server 2008 R2
Linux®

ACR122L – Technical Specifications
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