Advanced Card Systems Ltd.
Card & Reader Technologies

ACR122L
Serial NFC Reader
with LCD

Technical Specifications V1.05

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1.0. Introduction

The ACR122L is a serial NFC contactless reader with 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, 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 operation, 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 **Section 2.1** 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)
    - 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)
  - SAM Interface
    - Three SAM slots
    - Supports ISO 7816 Class A SAM Card
- Built-in Peripherals:
  - Two-line graphic LCD 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:
  - EN60950/IEC 60950
  - ISO 14443
  - ISO 18092
  - ISO 7816 Class A (for SAM Slot)
  - CE
  - FCC
  - VCCI
  - RoHS 2

2.1. ACR122L Power Adapter

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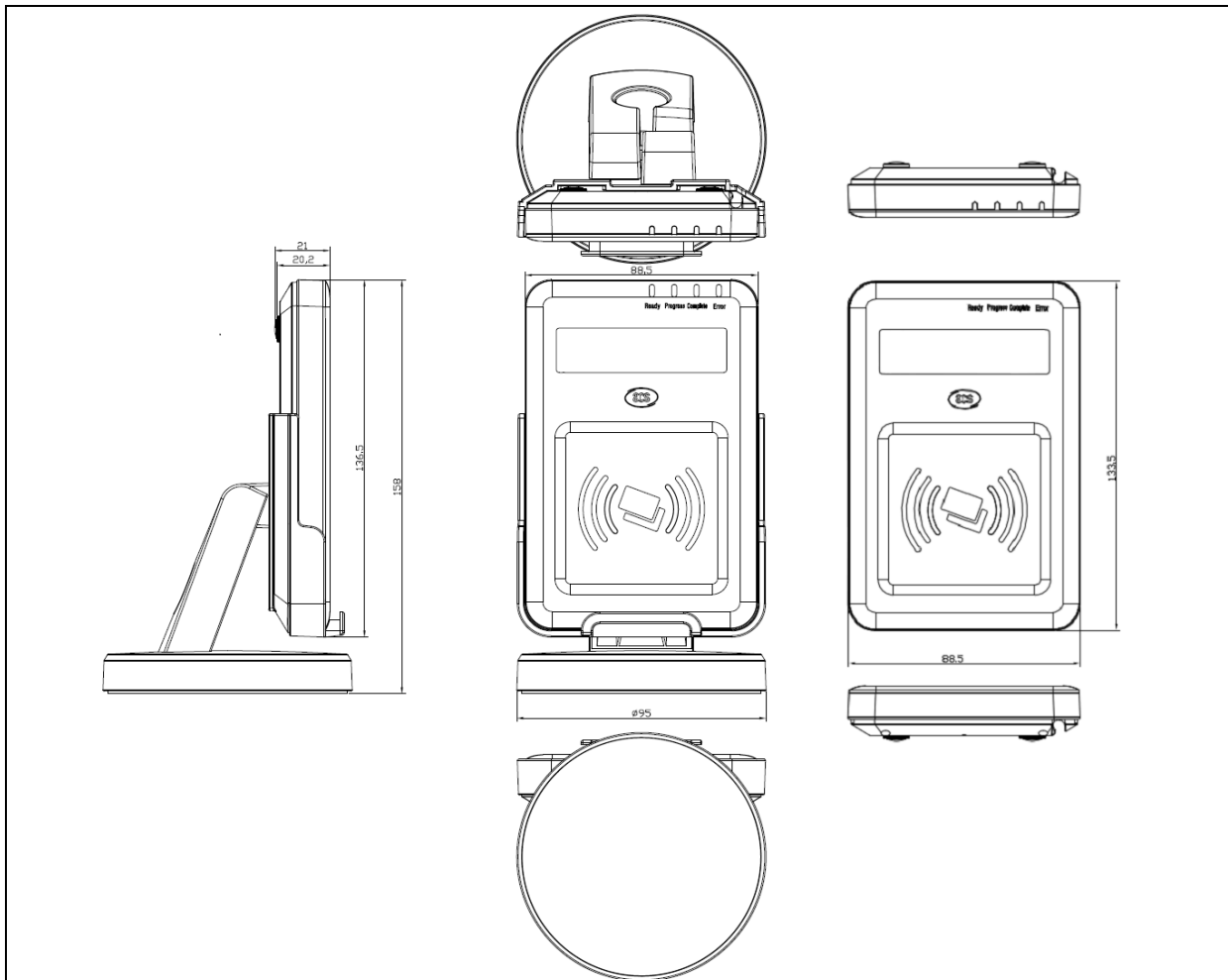

Figure 1: ACR122L Power Adapter

3.0. Typical Applications

- e-Government
- e-Banking and e-Payment
- e-Healthcare
- Transportation
- Network Security
- Access Control
- Loyalty Program

4.0. Technical Specifications

Serial Interface	
Power Source	7 V DC Power Adapter
Speed	9.6 Kbps, 115.2 Kbps
Supply Voltage	Regulated 5 V DC
Supply Current	200 mA (max.); 50 mA (standby); 100 mA (normal)

Contactless Smart Card Interface	
Standard	MIFARE, ISO 14443-4 Type A & B, FeliCa, ISO/IEC 18092 NFC
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
Protocol	T=0 protocol

Built-in Peripherals	
LCD Display	128 x 32 pixel graphic LCD with yellow-green backlight Number of characters: 2 line x 16 characters
LED Status Indicators	4 LEDs (Green, Blue, Orange and Red)
Buzzer	Monotone

Physical Specifications	
Dimensions	Main Body: 133.5 mm (L) x 88.5 mm (W) x 21.0 mm (H); With Stand: 158.0 mm (L) x 95.0 mm (W) x 95.0 mm (H)
Weight	Main Body: 202 g With Stand and Adaptor: 645 g
Color	Black
Cable Length	1.5 m

Operating Conditions

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

Certifications/Compliance

EN60950/IEC 60950, ISO 14443, ISO 18092, ISO 7816 Class A (SAM slot), CE, FCC, VCCI, RoHS 2

Supported Operating Systems

Windows® 98, Windows® ME, Windows® 2000, Windows® XP, Windows Vista®, Windows® 7,
Windows® Server 2003, Windows® Server 2008, Windows® Server 2008 R2
Linux®