Advanced Card Systems Ltd.
Card & Reader Technologies

ACR1283L Standalone Contactless Reader

Technical Specifications V1.01

Table of Contents

1.0. Introduction

The ACR1283L is a cost-effective and powerful contactless smart card reader designed to operate in standalone mode. Its contactless smart card interface can access major contactless cards following the ISO 14443 standard, which includes the widely used MIFARE® series. It also comes with four built-in SAM slots, making it suitable for a wide range of applications that have multiple card issues or different security requirements. ACR1283L enriches user interaction with its two-line graphic LCD, four LEDs and a buzzer to clearly display application and card operation status, as well as a twelve-key capacitive touch keypad for user input. In addition to its standalone operation, the ACR1283L also supports PC-linked operation for typical contactless PC/SC host applications.

With its high speed 32-bit MCU and strong antenna performance, ACR1283L is ready for highly secure and highly demanding applications where speed and security are of high importance, such as government, time and attendance, payment, and loyalty applications. An all-in-one, cost effective and powerful terminal designed to provide greater flexibility and convenience, ACR1283 is the smart choice for your smart card applications.

2.0. Features

- Dual Operation Modes:
  - PC-linked
  - Standalone
- PC-linked Operation:
  - USB 2.0 Full Speed Interface
  - CCID Compliance
  - Supports PC/SC
  - Supports CT-API (through wrapper on top of PC/SC)
- Standalone Operation:
  - Support for third-party application programming
  - Over 400 KB memory space for third-party application
  - Over 500 KB memory space for data storage
  - Supported development platform:
    - IAR Embedded Workbench, Version 5.50 or above
    - CoIDE(GCC), Version 1.3.0 or above
- Smart Card Reader:
  - Contactless Interface Read/Write speed of up to 848 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 and MIFARE series
  - Built-in anti-collision feature (only one tag is accessed at any time)
  - Four ISO 7816-compliant SAM slots (MCU Card, T=0 and T=1)
- Built-in Peripherals:
  - Two-line graphic LCD
  - Four user-controllable LEDs
  - User-controllable buzzer
  - Twelve-key capacitive touch keypad
- Real-time clock (RTC) with independent back up battery
- In-device AES (128 and 256), DES and 3DES encryption
- Supports Android^{TM} 3.1 and above
- USB Firmware Upgradability
- Compliant with the following standards:
  - ISO 14443
  - ISO 7816 (for SAM slot)
  - CE
  - FCC
  - PC/SC
  - CCID
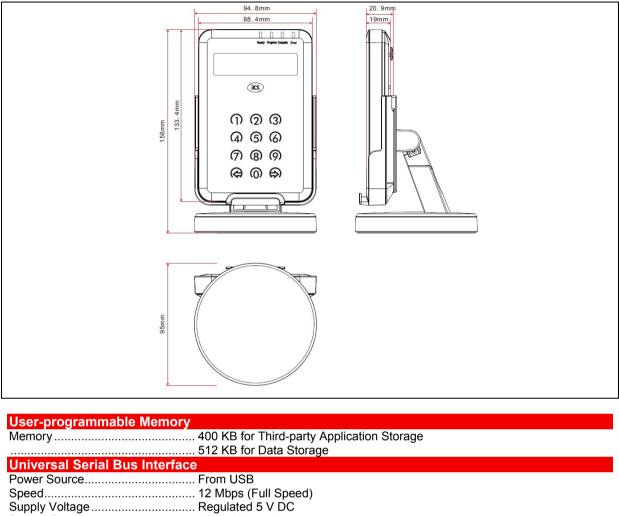 - Microsoft® WHQL
  - RoHS

3.0. Typical Applications

- e-Government

- e-Banking and e-Payment

- e-Healthcare

- Transportation

- Network Security

- Access Control

- Loyalty Program

4.0. Technical Specifications

User-programmable Memory
Memory .... 400 KB for Third-party Application Storage
.... 512 KB for Data Storage

Universal Serial Bus Interface
Power Source................................. From USB
Speed.. 12 Mbps (Full Speed)
Supply Voltage .... Regulated 5 V DC
Supply Current .... 500 mA (max.)

Contactless Smart Card Interface
Standard .... ISO 14443 Type A and B, MIFARE
Protocol .... ISO14443 T=CL for ISO 14443-4 compliant cards and T=CL Emulation for MIFARE series
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, 848 kbps
Antenna Size .... 65 mm x 60 mm

SAM Card Interface
Number of SAM Card Interfaces .... Four
Standard .... ISO 7816 Class A, B and C (5 V, 3 V, 1.8 V), T=0 and T=1
Supply Current .... Max. 50 mA
Smart Card Read/Write Speed .... 9.6 kbps – 344 kbps
Short Circuit Protection .... +5 V/GND on all pins
CLK Frequency .... 4 MHz

Physical Specifications
Dimensions .... Main Body: 133.4 mm (L) x 88.4 mm (W) x 20.9 mm (H);
                                               With Stand: 158.0 mm (L) x 95.0 mm (W) x 95.0 mm (H)
Weight .... Main Body: 185 g
                                               With Stand: 420 g
Color .... Black
Cable Length .... 1.5 m

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 .... Four LEDs: Green, Blue, Orange and Red
Buzzer .... Monotone
Keypad .... 3 x 4 Keys, Capacitive type

Other Features

Tamper Switch (Internal anti-intrusion detections and protection)
Real-time Clock
In-device AES, DES and 3DES Encryption Algorithm
USB Firmware Upgradability

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 14443, ISO 7816, CE, FCC, PC/SC, CCID, RoHS, USB Full Speed
Microsoft® WHQL for Windows® 2000, Windows® XP, Windows Vista®, Windows® 7, Windows® 8

Device Driver Operating System Support

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