Advanced Card Systems Ltd.

acs

ACR38 USB Smart Card Reader/Writer

TECHNICAL SPECIFICATIONS

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ACR38 USB Smart Card Reader/Writer

1.0 Introduction

Due to the rising demand of e-working methods (remote office, home office...) and the increasing risk of unauthorized access to private network, it is time to properly secure access to PCs, desktops, and the Intranet and Extranet networks. ACR38 offers solutions based on smart card readers (connected to PCs) for access control.

The ACR38 smart card reader/writer is a **USB full speed** device which is the interface for the communication between a computer and a smart card. It is designed for the PC environment, and is the ultimate smart card peripheral for a PC.

ACR38 is a key partner of the PC as smart card is becoming an essential component in network security and electronic payment system. Providing secured network computing environment by its data encryption function, the SDK package allows users to easily develop their own application to best meet the specific system needs.

ACR38 is a low cost, yet reliable and effective smart card-to-PC interface with design focusing on convenient use and harmony with other PC peripherals in shape and color. It also provides the solution where the security of a smart card is required. It can be used as access control to a computer or network (intranet, extranet, ...), authentication for e- commerce (B to B, B to C), ... It is also very simple to use and install. It is ideal for electronic commerce, home banking or e-purse facilities, secure computer access or any of a multitude of other applications.

2.0 Features

- **USB full speed** interface to PC with simple command structure
- Read and write all microprocessor cards with T=0 or T=1 protocols
- Support SLE 4418/28/32/42 memory cards
- Support most common memory-based smart cards, including **I2C bus protocol cards** (from 1k bits up to 1024k bits) and secure memory cards (**Atmel AT88SC153** and **AT88SC1608**)
- Support **1.8V. 3V** and **5V** MCU cards
- Short Circuit Protection
- Conform with: ISO 7816-1/2/3, PC/SC, CE, FCC, USB Full Speed, Microsoft WHQL, EMV Level 1
- ISO7816-1/2/3 compatible smart card interface
- Extra SAM slot is optional
- Support PPS (Protocol and Parameters Selection) with 1,743 – 250,000 bps in reading and writing smart cards

3.0 Supported Card Types

3.1 MCU Cards

The ACR38 can operate MCU card with T=0 and T=1 protocol. The table presented in Appendix A (Reference Manual) explains which card type selection value must be specified for the various card types supported by the reader.
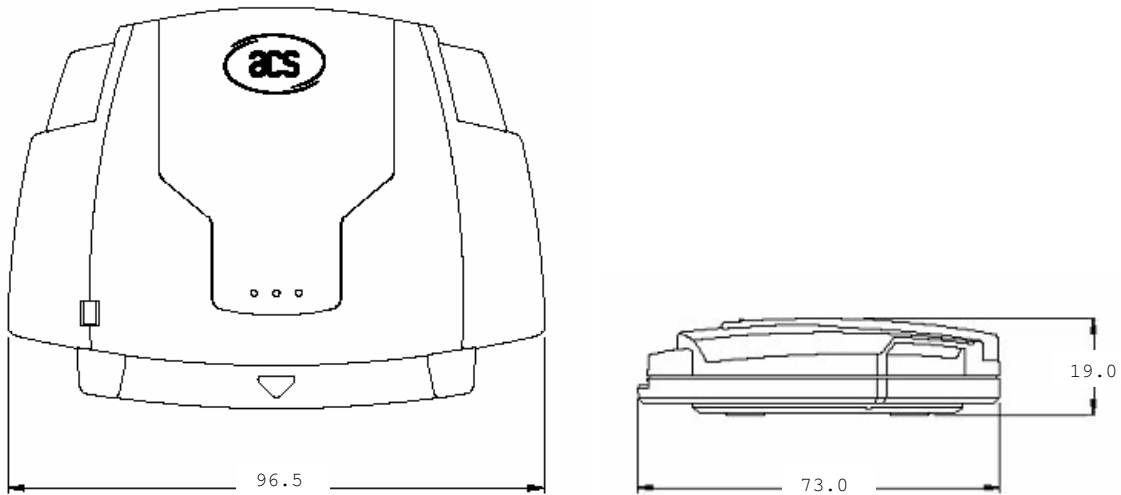
3.2 Memory-based smart cards (synchronous interface)

- Cards following the I2C bus protocol (free memory cards) such as:
  Atmel: AT24C01 / 02 / 04 / 08 / 16 / 32 / 64 / 128 / 256 / 512 / 1024
  SGS-Thomson: ST14C02C, ST14C04C
  Gemplus: GFM1K, GFM2K, GFM4K, GFM8K

- SLE4432/4442 intelligent 256 bytes EEPROM with write protect function:
  SLE4432, SLE4442

- SLE4418/4428 intelligent 1K bytes EEPROM with write-protect function:
  SLE4418, SLE4428

- Secure memory cards such as:
  AT88SC153, AT88SC1608

4.0 Typical Applications

- Home Banking and Home Shopping
- Electronic Commerce
- Checking the balance of account of re-loading an electronic purses
- Network access control
- S/W locking
- Digital signature
- Loyalty and promotions
- Stored value
- Identification
- Ticketing
- Parking and toll collection
- Online gaming

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5.0 Technical Specification

Universal Serial Bus Interface
Type ....USB full speed, four lines: +5V, GND, D+ and D-
Power source..From USB
Speed ....12 Mbps

Smart Card Interface
Standard ....ISO 7816 1/2/3, T=0 and T=1
Supply current......................................max. 50mA
Smart card read / write speed ....1,743 – 250,000 bps
Short circuit protection ....+5V / GND on all pins
        The presence of the smart card power supply voltage is indicated through a green LED on the reader
CLK frequency ....4 MHz
Card connector ....Contact
Card insertion cycles............................min. 100,000

(Optional) SAM Card Interface
Card connector ....Sliding
Location ....Under the removable dark lid

Physical Specifications
Dimensions..73.0mm (L) x 96.5mm (W) x 19.0mm (H)
Color..Silver
Weight ....95g (± 5g allowance for cable) - Spaceship casing
Cable length, cord, connector ....1.5 meters, Fixed (non-detachable), USB A

Operating Conditions
Temperature ....0 - 50° C
Humidity...40% - 80%

Standard/Certifications
EMV Level 1, ISO7816-1/2/3, PC/SC, CE, FCC, USB Full Speed, Microsoft WHQL 2K, XP

OS
Windows 98, ME, 2K, XP, NT 4.0, Linux, MAC OS X 10.1, 10.2, 10.3

OEM
OEM-Logo possible, customer-specific colors, casing and card connector

6.0 Software Development Kit Specifications

ACR38 SDK is a complete package containing all the vital components required for smart card application development. It provides developers with a convenient and effective way to incorporate smart cards into their solutions.

Package Contents

- ACR38 Smart Card Reader, ACR38T SIMTracker SIM-sized plug-in Smart Card Reader, ABR08LS Balance Reader
- 5 ACOS2 8Kbyte microprocessor-based smart cards, 5 ACOS2 SIM-size plug-in 8Kbyte microprocessor-based smart cards, 5 SLE 4428 memory-based smart cards, 5 SLE 4442 memory-based smart cards
- Installation and operation CD-ROM (including drivers, source codes, utility tools and demo software)

The SDK CD-ROM includes:

- Demo Programs – Casino Application, School Application, and ACOS Screen Saver (Windows 2000 and XP). These demo programs can showcase the wide range of applications ACR38 can be employed in, e.g. e-purse, physical and logical access control, etc.
- Documentation – ACOS2 Reference Manual, ACR38 Memory Card Access, ACR38 OCF, ACR38 Reference Manual, ACR38 Technical Specifications, FAQ, PC/SC Specifications
- Sample Codes – C#, Delphi, VB.NET, Visual Basic, Visual C++
- Tools & Utilities – Card Tool, PC/SC Learning Tool, Quick View, Script Commander PC/SC
- SDK User Guide

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