Advanced Card Systems Ltd.
Card & Reader Technologies

ACR38 Smart Card Reader

Technical Specifications

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1.0. Introduction

Due to the rising demand of e-working methods such as remote office and home banking and the increasing risk of unauthorized access to private network, it is time to properly secure access to PCs, desktops, and Intranet and Extranet networks. The ACR38 Series offers solutions to such needs for secured access control based on the smart card technology.

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.

With smart cards becoming an essential component in network security and electronic payment systems, the ACR38 Smart Card Reader emerges as an ideal partner for smart card-based applications in the PC environment. Providing secured network computing environment with its data encryption function, the device also comes with an SDK package that allows users to easily develop their own applications to best meet their system's security needs.

Moreover, the ACR38 is a cost-effective, reliable and efficient smart card reader/writer, with a card-to-PC interface that is designed for convenient and complementary use with other PC peripherals. With its provision for smart card authenticity verification, it can be used for several applications such as access control to a computer or network (intranet, extranet, etc) and authentication for e- commerce (B to B, B to C). Finally, with the launch of ACR38 readers/writers that are reinforced with the CCID functionality and an extensive support for memory cards, the ACR38 Series is ideal for applications such as electronic commerce, home banking, e-purse facilities, secure computer access, and other smart card solutions.

2.0. Smart Card Reader Features

The following is a list of the features of the ACR38:

Features	Firmware 1.10	Firmware 1.12c
1. PS/SC	✓	✓
2. CCID	×	✓
3. WHQL Certified Drivers	✓	✓
4. CE and FCC	✓	✓
5. VCCI	✓	✓
6. RoHS	✓	✓
7. EMV Level 1	✓	✓
8. ISO 7816 (Class A, B, C)	✓	✓
9. MCU Card Support (T=0, T=1)	✓	✓
10. Memory Card Support	✓	✓
11. USB Full Speed	✓	✓
12. Short Circuit Protection	✓	✓

3.0. Smart Card Support

3.1. MCU Cards

The ACR38 is PC/SC compliant and supports ISO 7816 5V, 3V and 1.8 (Class A, B, and C) smart cards and MCU cards following either the T=0 and T=1 protocol.

3.2. Memory-based Smart Cards

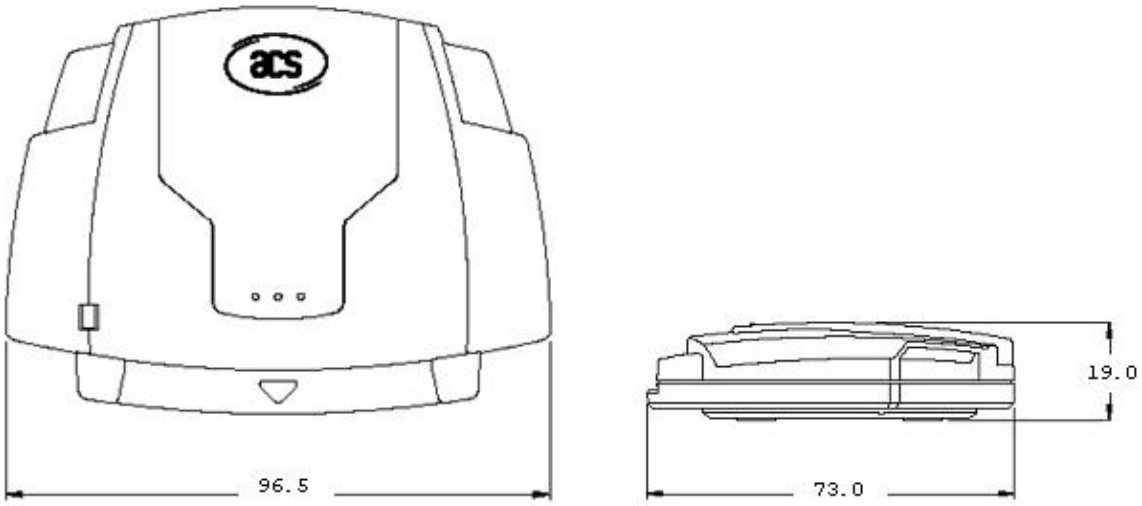
The ACR38 Series supports the following memory cards:

Types of Memory Cards	Firmware 1.10	Firmware 1.12c
1. Cards following the I2Cbus protocol (free memory cards) with maximum 128 bytes page with capability, including: Atmel: AT24C01/02/04/08/16/32/64/128/256/512/1024 SGS-Thomson: ST14C02C, ST14C04C Gemplus: GFM1K, GFM2K, GFM4K, GFM8K	✓	✓
2. Cards with secure memory IC with password and authentication, including: Atmel: AT88SC153 and AT88SC1608	✓	✓
3. Cards with intelligent 1k bytes EEPROM with write-protect function, including: Infineon: SLE4418, SLE4428, SLE5518 and SLE5528	✓	✓
4. Cards with intelligent 256 bytes EEPROM with write-protect function, including: Infineon: SLE4432, SLE4442, SLE5532 and SLE5542	✓	✓
5. Cards with '104' type EEPROM non-reloadable token counter cards, including: Infineon: SLE4406, SLE4436, SLE5536 and SLE6636	✓	✓
6. Cards with Intelligent 416-Bit EEPROM with internal PIN check, including: Infineon: SLE4404	×	✓
7. Cards with Security Logic with Application Zone(s), including: Atmel: AT88SC101, AT88SC102 and AT88SC1003	×	✓

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

5.0. Technical Specifications



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 Class A, B and C (5V, 3V, 1.8V), T=0 and T=1
Supply current ..... max. 50mA
Smart card read / write speed ..... max. 250,000 bps (FW 1.10)
max. 344,086 bps (FW 1.12c)
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

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%
MTBF ..... 500,000 hrs

Certifications/Compliance

EN 60950/IEC 60950, EMV 2000 Level 1, PC/SC, CE, FCC, VCCI, CCID[1], RoHS Compliant, USB Full Speed
Microsoft ® WHQL 2000, Server 2003, XP, Vista, Server 2008, Server 2008 R2, 7

Device Driver Operating System Support

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

[1]Supported by FW1.12c

6.0. Software Development Kit Specifications

ACS offers a Software Development Kit for the ACR38 Series that contains all the vital components required for developing a smart card application. The ACR38 SDK provides developers manuals, tools, utilities, and sample codes making it convenient and effective to incorporate smart cards into their solutions.

Smart Card Reader	ACR38 Smart Card Reader[1]
	ACR38T SIMTracker Smart Card Reader[1]
	ABR08LS Balance Reader
Smart Cards	5 ACOS3 Microprocessor-based Smart Cards
	5 ACOS3 SIM-sized Microprocessor-based Smart Cards
	5 SLE 5528 Memory-based smart cards
	5 SLE 5542 Memory-based smart cards
SDK CD-ROM	Sample Applications - These demo programs showcases the wide range of applications where the ACR38 can be used (e.g. e-purse, physical and logical access control) • Casino Application • School Application
	Sample Codes • Delphi • Visual C# • VB .NET • Visual Basic • Visual C++ • Visual C++ (x64) • Java
	Tools & Utilities • Card Tool • PC/SC Learning Tool • Quick View • Scripting Tool
	User Manuals and Reference Materials • ACR38 SDK User Manual • ACR38 Reference Manual • ACR38 PCSC Memory Card Access • ACR38 Change Log • ACR38 Technical Specifications • ACR38T-IBS Technical Specifications • ABR Series - Balance Reader Technical Specifications • ACOS3 Reference Manual • Training Materials
OS Supported	Windows ® 98, 2000, XP, Vista, 7

[1] Firmware1.12c