

Advanced Card Systems Ltd.



**RoHS Compliant**

**ACR38 USB Smart Card Reader/Writer**



**TECHNICAL SPECIFICATIONS**

**Version 1.0 11-2006**



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## RoHS Compliant ACR38U-BMC Smart Card Reader/Writer

### 1.0 Introduction

#### 1.1 About the ACR38 Smart Card Reader



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 ACR38U-BMC of the ACR38 family is a **USB full speed** smart card reader/writer device. The *Bridge Desktop* casing allows vertical insertion of smart cards. The stylish yet durable new design of this reader is ideally suited for the PC environment, and is the ultimate smart card peripheral for a PC. Additionally, the device metal support offers handling convenience – letting you control basic operations even with one hand!

ACR38 is a key partner of the PC as smart card is becoming an essential component in network security and electronic payment system. 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, etc.), authentication for e-commerce (B to B, B to C, etc.). 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.

#### 1.2 About RoHS Compliance

The RoHS (**R**estriction of **H**azardous **S**ubstance) Directive restricts the use of six hazardous materials in the manufacturing of various types of EEE (Electrical and Electronic Equipment), including:

- Lead,
- Mercury,
- Cadmium,
- Hexavalent chromium,
- Polybrominated biphenyl (PBB) and
- Polybrominated diphenyl ether (PBDE).

**RoHS  
Compliant**

RoHS compliance means the protection to the environment and your future generations from these restricted irritants, carcinogens and toxins.

### 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**)
- Short Circuit Protection
- Conform with: EN 60950/IEC 60950, ISO-7816, PC/SC, CE, FCC, USB Full Speed, Microsoft WHQL, EMV Level 1
- Support ISO-7816 Class A, B and C (**5V, 3V, 1.8V**) cards
- 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 ACR38U-BMC 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.

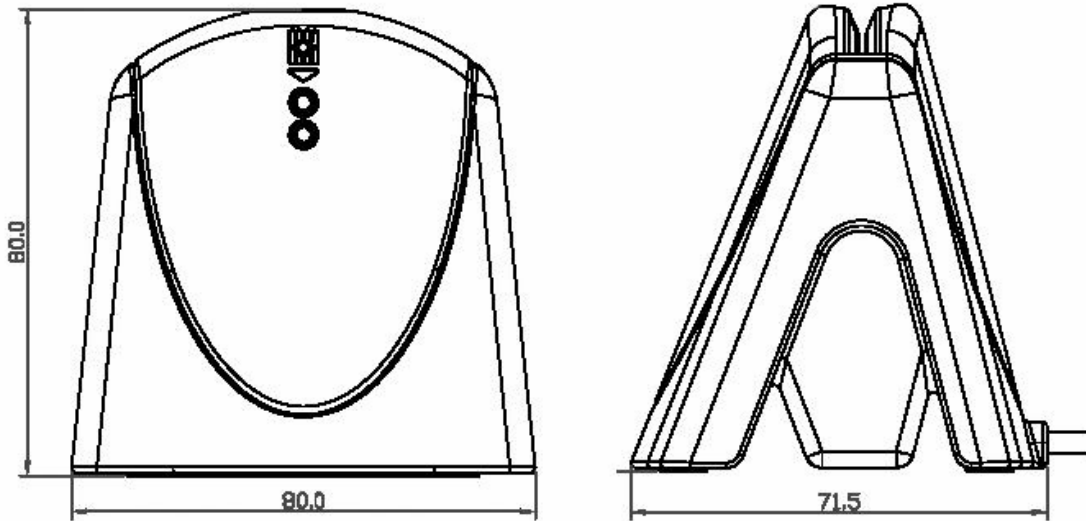
### 3.2 Memory-based smart cards (synchronous interface)

- 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
- SLE4406/4436/5536 '104' type EEPROM non-reloadable token counter cards
- SLE4406, SLE4436, SLE5536

## 4.0 Typical Applications

- Home Banking and Home Shopping
- Electronic Commerce
- Checking the balance of account of re-loading 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 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 Class A, B and C (5V, 3V, 1.8V), 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 red LED (top LED) on the reader.  
 The insertion of the smart card is indicated through a green LED (bottom 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 ..... Black  
 Weight ..... 174g (± 5g allowance for cable) – Bridge Desktop casing  
 Cable length, cord, connector ..... 1.5 meters, Fixed (non-detachable), USB A

### Operating Conditions

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

### Standard/Certifications

EN 60950/IEC 60950, RoHS Compliant, EMV Level 1, ISO-7816, PC/SC, CE, FCC, USB Full Speed, Microsoft WHQL 2K, XP

### OS

Windows 98, ME, 2K, XP, NT 4.0, 2K3 Server, Linux, MacOSX 10.1, 10.2, 10.3, 10.4

### OEM

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



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