



Advanced Card Systems Limited

Card and Reader Technologies

A background image showing a person's hands interacting with a card reader device. The image is semi-transparent and serves as a backdrop for the technical specifications section.

TECHNICAL SPECIFICATIONS

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 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.

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, SLE 5542 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 2000 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 Type

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)

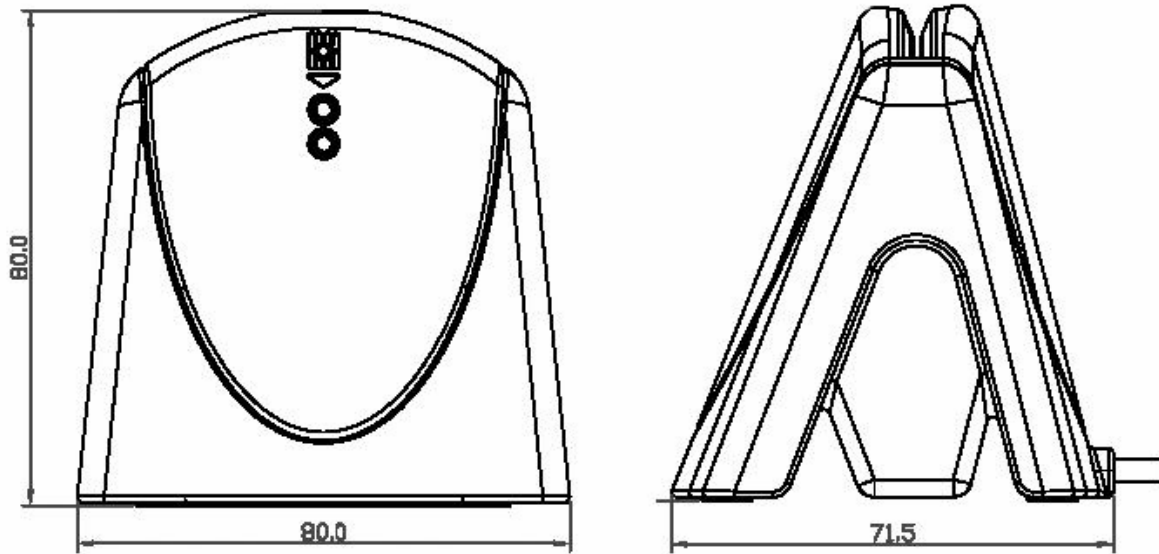
- Cards following the I2C bus protocol (free memory cards) such as:
Atmel: AT24C01 / 02 / 04 / 08 / 16 / 32 / 64 / 128 / 256 / 512 / 1024
SGS-Thomson: ST14C02C, ST14C04C
Gemplus: GFM1K, GFM2K, GFM4K, GFM8K
- SLE4432/5542 intelligent 256 bytes EEPROM with write protect function:
SLE4432, SLE5542
- SLE4418/4428 intelligent 1K bytes EEPROM with write-protect function:
SLE4418, SLE5528
- 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 71.5mm (L) x 80mm (W) x 80mm (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%

Compliance/Certifications

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

OS

Windows 98, ME, 2K, XP, NT 4.0, 2K3 Server, Vista, Linux, MAC OS X

OEM

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

