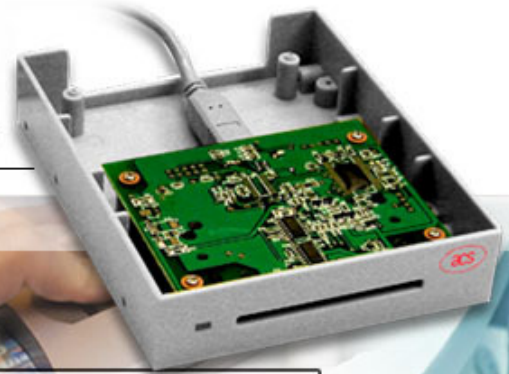


Advanced Card Systems Ltd.



ACR38F Floppy Bay Smart Card Reader

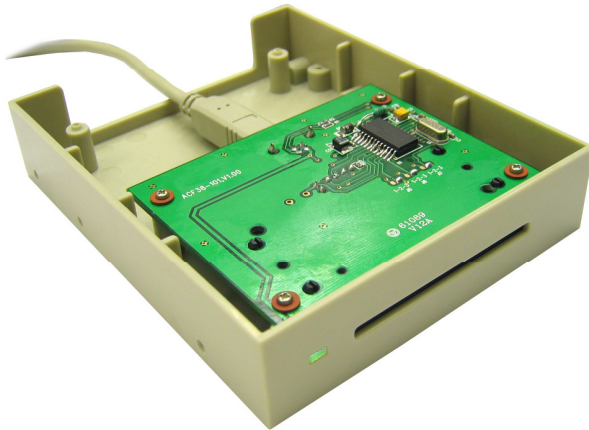


TECHNICAL SPECIFICATIONS

Version 1.5 11-2006

ACR38F Floppy Bay Smart Card Reader

1.0 Introduction



The **ACR38F** is the ideal solution for easy integration of a smart card reader into the desktop environment. It uses the same electronic circuit as the **ACR38**, and has the same versatility and cost-effectiveness that have always been associated with ACS smart card readers. Using the USB interface, it uses the PC's internal power supply, and can be configured in several ways to suit the customer's preference.

Similar to ACR38, ACR38F Floppy Bay Smart Card Reader is also very simple to use and to 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 **o**f **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).



So 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
- Read and write popular memory card types
- Short Circuit Protection
- RoHS Compliant
- Conform with: EN 60950/IEC 60950, ISO-7816, PC/SC, CE, FCC, 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 1743 – 250000 bps in reading and writing smart cards

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3.0 Supported Card Types

3.1 MCU Cards

The ACR38F 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.

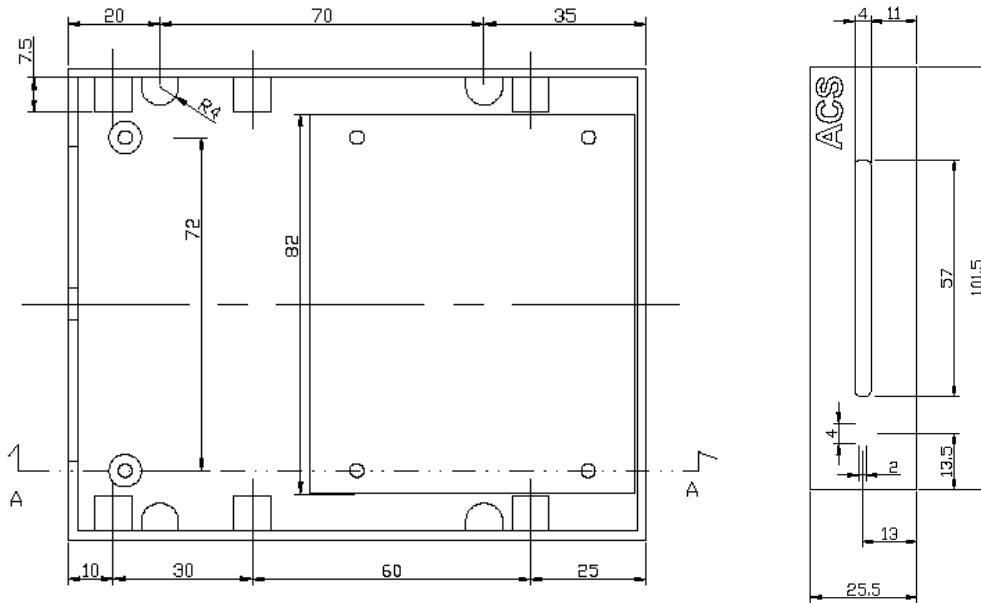
3.2 Memory-based smart cards (synchronous interface)

- 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 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 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 green LED on the reader
 CLK frequency 4 MHz
 Card connector Contact
 Card insertion cycles min. 100,000

Operating Conditions

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

Standard/Certifications

EN 60950/IEC 60950, RoHS Compliant, EMV 2000 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, MAC OS X

OEM

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

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6.0 Interfacing Scheme

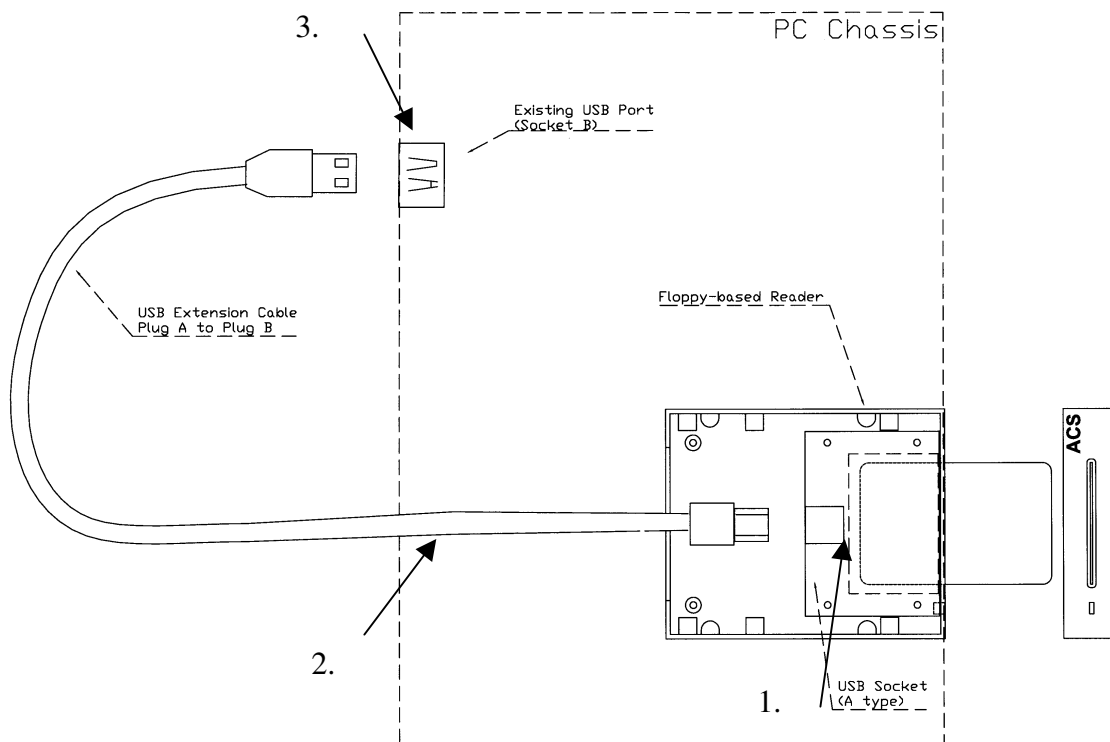
The floppy bay reader is designed to be mounted or integrated into a standard PC Chassis. So the top plastic cover is not required. The power of the reader is obtained through the internal switching power supply of the PC. Basically, the functionality of the ACR38F floppy bay reader is the same as an ACR38 reader.

The size is the same as a standard 3.5" floppy disk drive. No top plastic cover. There are also screw holes on the reader for the user to mount the device to the PC chassis. For convenience, (4) pieces of PA 2.6 x 8 mm screws are included. A "4 pins mini power socket (M)" is provided on the PCB reader for the power interface. (The socket is the same as the one used in a 3.5" floppy disk drive). A 2x5 pins header socket is provided on the PCB of the reader for connecting to the communication port through the use of an appropriate extension cable.

Scheme: Using an extension cable coming out from the back of the PC

One extension cable is required:

- A cable with an "USB Plug A" on the one side while the other side is connected to an "USB Plug B".



Wiring Procedures

1. Firstly, connect the **USB Plug A** of the flat cable into the **USB Socket A** on the PCB of the reader.
2. Secondly, let the **USB Plug B** go through the slot hole of the PC Chassis.
3. Finally, connect the **USB Plug B** of the extension cable to any unused USB Port externally.