Advanced Card Systems Ltd.
Card & Reader Technologies

ACR38F
Smart Floppy
Smart Card Reader

Technical Specifications V6.07

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1.0. Introduction

ACR38F Smart Floppy is the ideal solution for easy integration of smart card readers into the desktop environment. It uses the same electronic circuit as the ACR38 and has the versatility and cost-efficiency of ACS smart card readers. Using the USB interface, it is propelled by the computer's internal power supply, and can be configured to go with the customer preferences.

1.1. Smart Card Reader

ACR38F Smart Floppy supports ISO 7816 Class A, B, and C smart cards. Also, it works with different memory cards and microprocessor cards with T=0 and T=1 protocol. It features a USB Full Speed interface and a smart cards read/write speed of 344 Kbps. This highly durable device can last for at least 100,000 card insertion cycles.

1.2. Ease of Integration

ACR38F Smart Floppy is easy to install, use, and integrate in a computer-based environment. It is PC/SC and CCID compliant, and its drivers are compatible with Windows®, Linux® and Mac OS®. In addition, ACR38F Smart Floppy may now be used on mobile devices running the Android™ platform with versions 3.1 and above.

With its various features, ACR38F Smart Floppy can be used in different applications, such as e-Banking and e-Payment, e-Government, Loyalty, and Access Control applications.

2.0. Features

- USB 2.0 Full Speed Interface
- Plug and Play – CCID support brings utmost mobility
- Smart Card Reader:
  - Supports ISO 7816 Class A, B and C (5 V, 3 V, 1.8 V) cards
  - Supports microprocessor cards with T=0 or T=1 protocol
  - Supports memory cards
  - Supports PPS (Protocol and Parameters Selection)
  - Features Short Circuit Protection
- Application Programming Interface:
  - Supports PC/SC
  - Supports CT-API (through wrapper on top of PC/SC)
- Supports Android™ 3.1 and above[1]
- Compliant with the following standards:
  - EN60950/IEC 60950
  - ISO 7816
  - CE
  - FCC
  - VCCI
  - PC/SC
  - CCID
  - EMV 2000 Level 1
  - Microsoft® WHQL
  - RoHS 2
  - REACH

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[1] *PC/SC and CCID support are not applicable*

3.0. Supported Card Types

3.1. MCU Cards

ACR38F Smart Floppy operates with any MCU card following either the T=0 or T=1 protocol.

3.2. Memory-based Smart Cards

ACR38F Smart Floppy works with several memory-based smart cards such as:

- Cards following the I2C bus 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
- Cards with secure memory IC with password and authentication, including:
  - Atmel®: AT88SC153 and AT88SC1608
- Cards with intelligent 1 KB EEPROM with write-protect function, including:
  - Infineon®: SLE4418, SLE4428, SLE5518 and SLE5528
- Cards with intelligent 256-byte EEPROM with write-protect function, including:
  - Infineon®: SLE4432, SLE4442, SLE5532 and SLE5542
- Cards with '104' type EEPROM non-reloadable token counter cards, including:
  - Infineon®: SLE4406, SLE4436, SLE5536 and SLE6636
- Cards with Intelligent 416-bit EEPROM with internal PIN check, including:
  - Infineon®: SLE4404
- Cards with Security Logic with Application Zone(s), including:
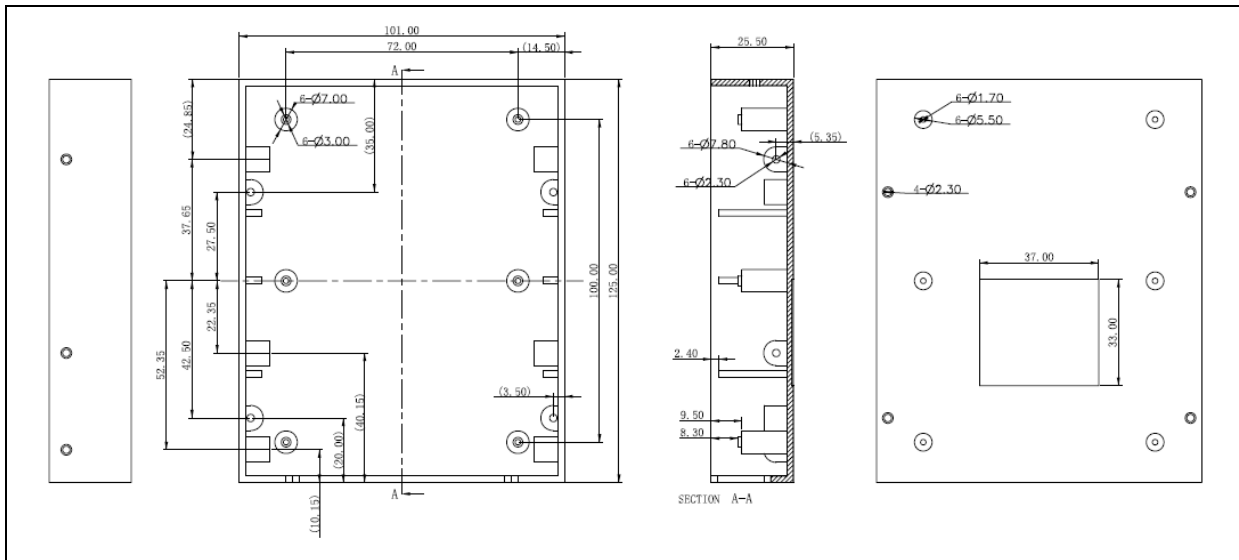 - Atmel®: AT88SC101, AT88SC102 and AT88SC1003

4.0. Typical Applications

- e-Government
- e-Banking and e-Payment
- e-Healthcare
- Public Key Infrastructure
- Network Security
- Access Control
- Loyalty Program

5.0. Technical Specifications

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

Smart Card Interface
Standard .... ISO 7816 Class A, B and C (5 V, 3 V, 1.8 V), T=0 and T=1
Supply Current .... Max. 50 mA
Smart Card Read/Write Speed....... Max. 344,086 bps
Short Circuit Protection .... +5 V/GND on all pins
CLK Frequency .... 4 MHz
Card Connector.............................. Contact
Card Insertion Cycles.................... Min. 100,000

Physical Specifications
Dimensions .... 125.0 mm (L) × 101.5 mm (W) × 25.5 mm (H)
Color .... Black
Weight... 140 g

Built-in Peripheral
LED... 1 LED, Green

Operating Conditions
Temperature.................................. 0 °C – 50 °C
Humidity .... Max. 90% (non-condensing)
MTBF .... 500,000 hrs

Certifications/Compliance
EN60950/IEC 60950, ISO 7816, CE, FCC, VCCI, PC/SC, CCID, EMV 2000 Level 1, RoHS 2, REACH, USB Full Speed

Microsoft® WHQL Windows® 2000, Windows® XP, Windows Vista®, Windows® 7, Windows® 8, Windows® 8.1, Windows® Server 2003, Windows® Server 2008, Windows® Server 2008 R2, Windows® Server 2012, Windows® Server 2012 R2

Device Driver Operating System Support

Windows® CE, Windows® 98, Windows® ME, Windows® 2000, Windows® XP, Windows Vista®, Windows® 7, Windows® 8, Windows® 8.1, Windows® Server 2003, Windows® Server 2008, Windows® Server 2008 R2, Windows® Server 2012, Windows® Server 2012 R2
Linux®, Mac OS®, Android™ 3.1 and above

6.0. Interface Scheme

ACR38F Smart Floppy is designed to be mounted or integrated into a standard personal computer chassis; therefore the top plastic cover is not required. The power of the reader is obtained through the internal switching power supply of the computer. Basically, the functionality of the ACR38F Smart Floppy is the same as an ACR38 reader.

The size is the same as a standard 3.5-inch floppy disk drive and there is no plastic cover on top. There are also screw holes on the reader for mounting the device on the computer chassis. For convenience, four (4) pieces of PA 2.6 mm x 8 mm screws are included. A "4-pin 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-inch floppy disk drive) on which the included USB A/B cable, shown in **Figure 1**, is to be used for connecting the reader to a USB port on the host computer.

Figure 1: USB A/B cable for ACR38F-A1

Another option for the reader interface is the 1x5 pin header socket, where the cable shown in **Figure 2** is to be used for connecting to the motherboard of the computer, instead of the USB cable.

Figure 2: 1×5 pin header socket connector