



Advanced Card Systems Ltd.
Card & Reader Technologies

ACR38F Smart Floppy Smart Card Reader



Technical Specifications V6.09



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1.0. Introduction

ACR38F Smart Floppy is the ideal solution for easy integration of smart card readers into desktop computers. 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 driven by the computer's internal power supply and can be configured to go with the customer's 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 operating systems such as 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 later.

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 later¹
- Compliant with the following standards:
 - EN60950/IEC 60950
 - ISO 7816
 - USB Full Speed
 - EMV™ Level 1 (Contact)
 - PC/SC
 - CCID
 - CE
 - FCC
 - RoHS 2
 - WEEE
 - REACH
 - VCCI (Japan)
 - Microsoft® WHQL

¹ Uses an ACS-defined Android Library



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:

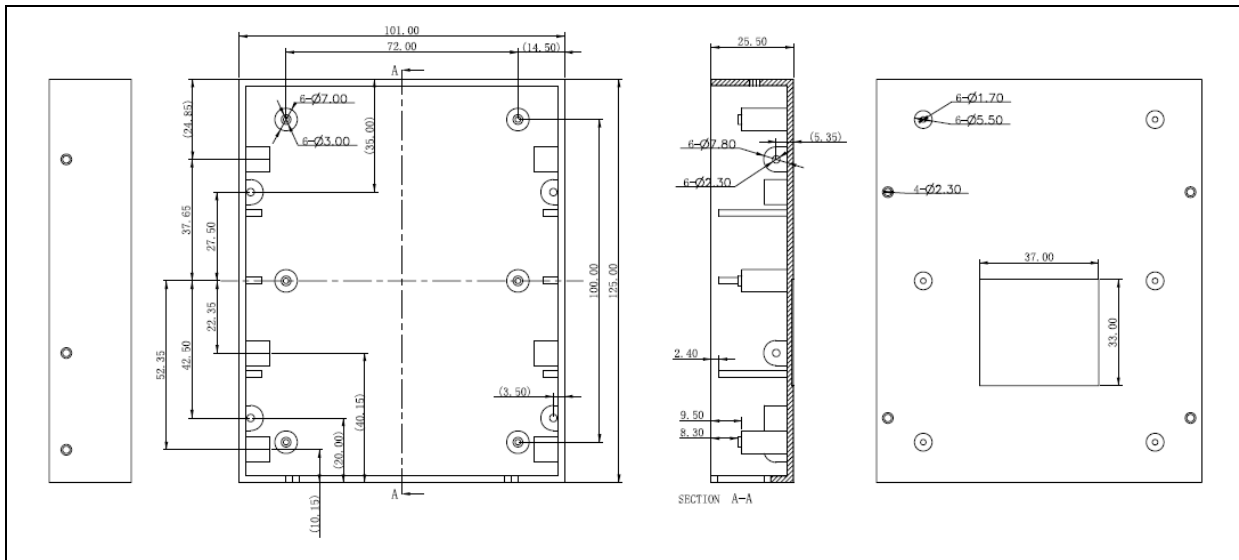
- Cards following the I2C bus protocol (free memory cards) with maximum 128 bytes page with capability, including:
 - Atmel®: AT24C01/02/04/08/16/32/64/128/256/512/1024
 - SGS-Thomson: ST14C02C, ST14C04C
 - Gemplus: GFM1K, GFM2K, GFM4K, GFM8K
- Cards with secure memory IC with password and authentication, 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



Physical Characteristics

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

USB Host Interface

Protocol USB Full Speed
Type Four lines: +5 V, GND, D+ and D-
Connector Type Standard Type B
..... 1 × 5 Pin Header Socket (optional)
Power Source From USB port
Speed USB Full Speed (12 Mbps)
Supply Voltage 5 V
Cable length 1 m detachable cable

Contact Smart Card Interface

Number of Slots 1 Full-sized Card Slot
Standard ISO 7816 Parts 1-3, Class A, B and C (5 V, 3 V, 1.8 V)
Protocol T=0; T=1; Memory Card Support
Supply Current Max. 50 mA
Smart Card Read/Write Speed 9.6 Kbps – 344 Kbps
Short Circuit Protection (+5) V/GND on all pins
Clock Frequency 4 MHz
Card Connector Contact
Card Insertion Cycles Min. 100,000

Built-in Peripheral

LED Green

Application Programming Interface

PC-linked Mode PC/SC
..... CT-API (through wrapper on top of PC/SC)

Operating Conditions

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

Certifications/Compliance

EN60950/IEC 60950, ISO 7816, USB Full Speed, EMV™ Level 1 (Contact), PC/SC, CCID, CE, FCC, RoHS 2, WEEE, REACH, VCCI (Japan), Microsoft® WHQL



Device Driver Operating System Support

Windows® Embedded Compact 7, Windows® ME, Windows® 98, Windows® 2000, Windows® XP, Windows Vista®, Windows® 7, Windows® 8, Windows® 8.1, Windows® 10
Windows® Server 2003, Windows® Server 2008, Windows® Server 2008 R2, Windows® Server 2012, Windows® Server 2012 R2
Linux®, Mac OS®, Android™ 3.1 and later





6.0. Interface Scheme

ACR38F Smart Floppy is designed to be mounted or integrated into a standard desktop 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 × 8 mm screws are included. A USB Type B port is provided on the PCB reader for the power interface (same as the one used in a 3.5-inch floppy disk drive) where the included USB A/B cable, shown in **Figure 1**, will 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 1 × 5 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 for ACR38F-A2

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