Advanced Card Systems Ltd.
Card & Reader Technologies

ACR32
MobileMate

Technical Specifications V1.00

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1.0. Introduction

ACR32 MobileMate Card Reader is the ideal tool that you can use with your mobile device. With the combination of two card technologies into one, it provides its user flexibility to use magnetic stripe cards and smart cards without the additional cost. ACR32 MobileMate seamlessly unites card reader functionality with mobility which allows you to access secure applications anytime, anywhere.

1.1. Secure Card Reader

ACR32 MobileMate is a reliable card reader that uses AES-128 encryption algorithm and DUKPT Key Management System for a secure transaction. It is capable of reading both high-coercivity and low-coercivity magnetic cards that conform to ISO 7810 and ISO 7811 standards. Also, it supports ISO 7816 Class A, B, and C smart cards (5 V, 3 V, and 1.8 V), microprocessor cards with the T=0, T=1 protocol, and common memory cards in the market which makes it an ideal device for a broad range of solutions, such as e-Banking and e-Payment.

1.2. Ingenious Design

ACR32 MobileMate is specifically designed to be brought anytime, anywhere. With its rechargeable Lithium-ion battery as its power supply and standard 3.5 mm audio jack interface, it allows ACR32 MobileMate to be integrated impeccably into any smartphone or tablet available in the market.

1.3. Ease of Integration

ACR32 MobileMate can be easily integrated with any mobile device running the Android™ platform with versions 2.0 and above, and iOS platform with versions 5.0 and above. Additionally, ACR32 MobileMate becomes a PC-linked smart card reader when connected to a computer – allowing it to work with operating systems using Windows®, Linux®, or Mac OS®.

2.0. Features

- 3.5 mm Audio Jack Interface
- USB Powered (PC-linked Mode):
    - USB 2.0 Full Speed Interface
    - CCID Compliance
    - Application Programming Interface:
        - Supports PC/SC*
        - Supports CT-API (through wrapper on top of PC/SC)
- Battery Powered:
    - Powered by a Lithium-ion battery (rechargeable through PC-linked mode)
- 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 and T=1 protocol
    - Supports memory cards
    - Supports PPS (Protocol and Parameters Selection)
    - Features Short Circuit Protection
- Magnetic Stripe Card Reader:
    - Reads up to two tracks of card data
    - Capable of bi-directional reading
    - Supports AES-128 encryption algorithm
    - Supports DUKPT Key Management System
    - Supports ISO 7810/7811 magnetic cards
    - Supports Hi-coercivity and Low-coercivity magnetic cards
    - Supports JIS1 and JIS2
- Supports Android™ 2.0 and above**
- Supports iOS 5.0 and above**
- Compliant with the following standards:
    - EN60950/IEC 60950
    - ISO 7816
    - CE
    - FCC
    - VCCI
    - PC/SC
    - CCID
    - EMV™ Contact Level 1
    - Microsoft® WHQL
    - RoHS 2
    - REACH

Applicable under PC-linked mode.
*** Visit www.acs.com.hk for the list of supported devices.*

3.0. Supported Card Types

3.1. Magnetic Cards

ACR32 MobileMate operates with ISO 7810/7811 magnetic cards with High Coercivity and Low Coercivity.

3.2. MCU Cards

ACR32 MobileMate operates with ISO 7816 MCU card following either the T=0 or T=1 protocol.

3.3. Memory-based Smart Cards

ACR32 MobileMate 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-kilobyte 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:
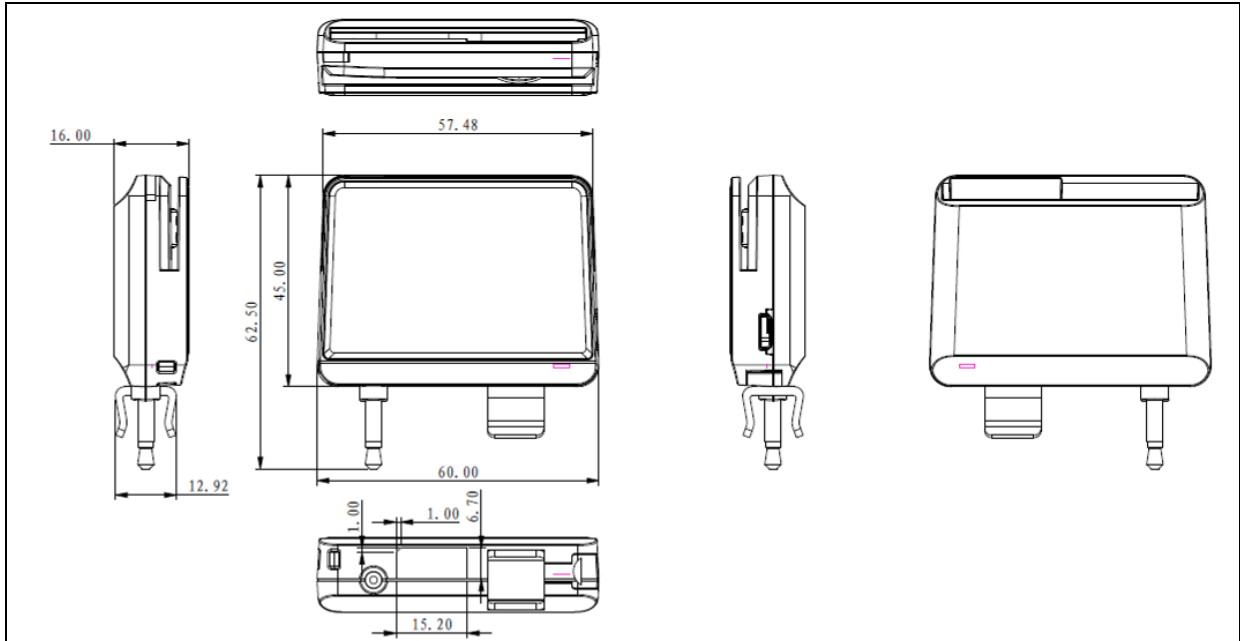   - Atmel®: AT88SC101, AT88SC102 and AT88SC1003

4.0. Typical Applications

- Mobile Banking
- Mobile Payment
- e-Healthcare
- Loyalty Program

5.0. Technical Specifications

Power Supply

Battery Powered	3.2 V – 3.7 V DC Lithium-ion Battery (rechargeable through USB)
USB Powered	Via detachable USB cable (PC-linked Mode)
Operation Time	Approx. 6.4 hrs (continuous operation)

Universal Serial Bus Interface

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

Communication Interface

Type	Bi-directional Audio Jack Interface
Connector	3.5 mm 4-pole Audio Jack
Speed	Max. 2.6 Kbps

Magnetic Card Interface

Standard	ISO 7810/7811 Hi-Co and Low-Co Magnetic Cards
	JIS 1 and JIS 2
Card Swipe Speed	Max. 10 in/s
Card Swipe Cycles	Min. 500,000

Contact 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. 600,000 bps
Short Circuit Protection	+5V/GND on all pins
CLK Frequency	4.8MHz
Card Connector	Contact
Card Insertion Cycles	Min. 100,000

Physical Specifications

Dimensions	60.0 mm (L) x 45.0 mm (W) x 16.0 mm (H)
Color	White
Weight	30.5 g (with battery)
Cable length, cord, connector	1 m, Fixed (detachable), USB A

Operating Conditions

Temperature	0 °C – 50 °C
Humidity	Max. 90% (non-condensing)
Mean Time Between Failure	300,000 hrs

Application Programming Interface

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

Certifications/Compliance

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

Microsoft® WHQL for 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 2003 R2, Windows® Server 2008, Windows® Server 2008 R2, Windows® Server 2012, Windows® Server 2012 R2
Linux®, Mac OS®, Android™ 2.3 and above, iOS 5.0 and above

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