Advanced Card Systems Ltd.
Card & Reader Technologies

ACR38K-E1
Smart Keyboard
Smart Card Reader

Technical Specifications V1.03

Table of Contents

1.0. Introduction

ACR38K-E1 Smart Keyboard combines the functionalities of a smart card reader and a computer keyboard into one, enabling easy implementation of smart card-based solutions in a computer-based environment. ACS smart card readers use the latest microchip technology, bringing you high security for your confidential files in a convenient and easy way.

1.1. Smart Card Reader

ACR38K-E1 supports ISO 7816 Class A, B and C smart cards and microprocessor cards with the T=0 and T=1 protocol. Also, it supports a wide variety of memory cards in the market, including the Department of Defense Common Access Card (CAC). This makes it perfect for a broad range of solutions, such as PIV Application, Physical and Logical Access Control, Digital Signature, and Online Banking.

Furthermore, ACR38K-E1 is also equipped with an additional USB port that will allow the user to plug in another USB device.

1.2. Ease of Integration

ACR38K-E1 Smart Keyboard 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, ACR38K-E1 Smart Keyboard may now be used on mobile devices running the Android™ platform with versions 3.1 and later.

ACR38K-E1 Smart Keyboard is a powerful component that is ideal to be used for Security, e-Banking and e-Payment, and e-Government applications.

2.0. Features

- USB Full Speed Interface
- Plug and Play—CCID support brings utmost mobility
- Supports one external USB port[1]
- 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 protocols
  - 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 later[2]
- Compliant with the following standards:
  - EN60950/IEC 60950
  - ISO 7816
  - USB Full Speed
  - EMV™ Level 1 (Contact)
  - PC/SC
  - CCID
  - CE
  - FCC
  - RoHS 2
  - REACH
  - FIPS 201 (USA)
  - TAA (USA)
  - VCCI (Japan)
  - Microsoft® WHQL

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[1] Supports 5 V and maximum 100 mA

[2] Uses an ACS–defined Android Library

3.0. Supported Card Types

3.1. MCU Cards

ACR38K-E1 Smart Keyboard operates with any MCU card following either the T=0 or T=1 protocol.

3.2. Memory-based Smart Cards

ACR38K-E1 Smart Keyboard 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:
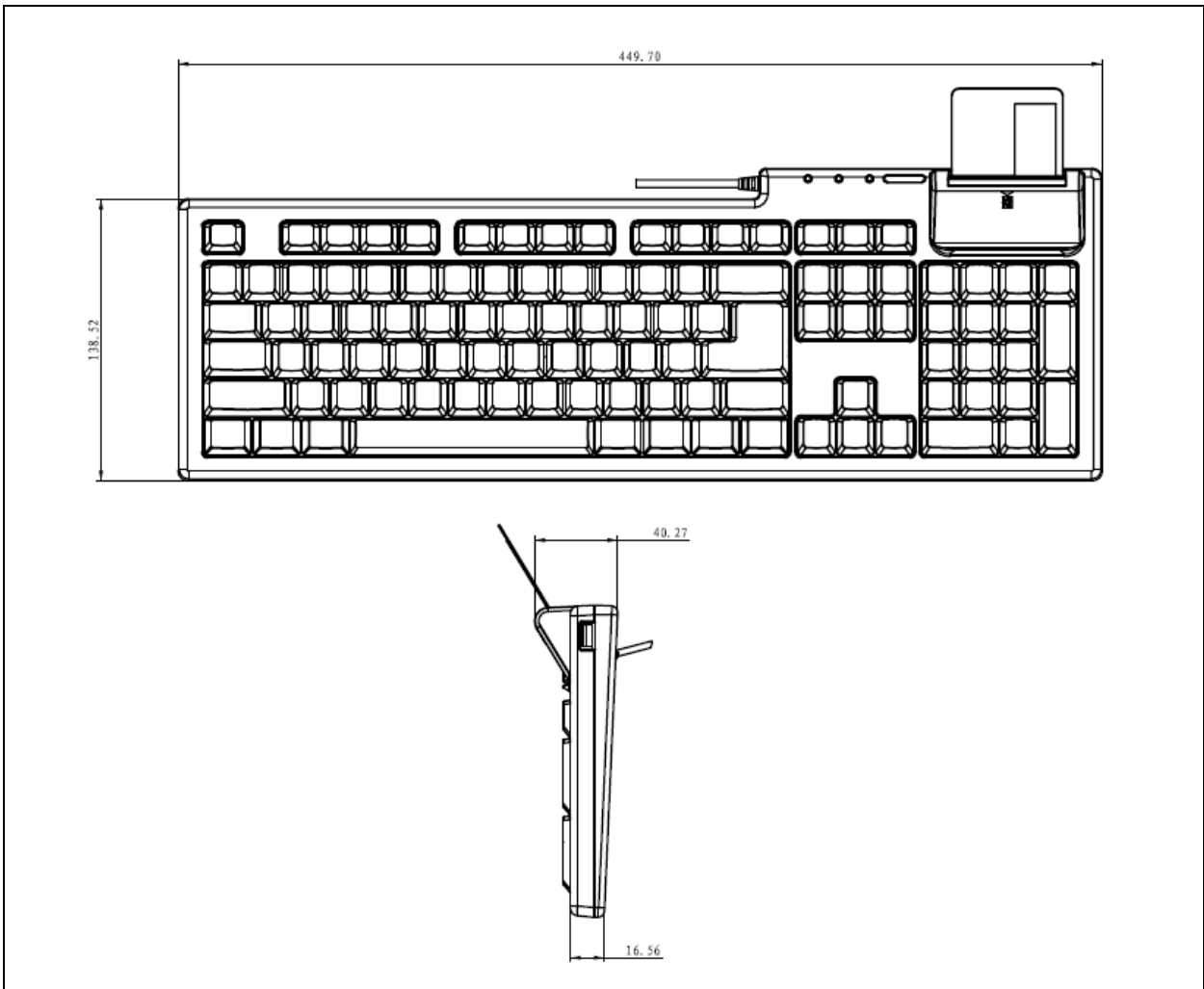 - Atmel®: AT88SC101, AT88SC102 and AT88SC1003

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 .... 449.70 mm (L) × 138.52 mm (W) × 40.27 mm (H)
Weight... 540 g
Color .... Black

USB Host Interface

Protocol.. USB CCID
Connector Type............................. Standard Type A
Power Source................................ From USB port
Speed.. USB Full Speed (12 Mbps)
Supply Voltage.............................. 5 V
Cable Length................................. 1.5 m, Fixed

Contact Smart Card Interface

Number of Slot .... 1 Full-sized Card Slot
Standard .... ISO 7816 Parts 1-3, Class A, B, 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 .... 4.0 MHz
Card Connector Type..................... Contact
.... Landing (optional)
Card Insertion Cycles.................... Min. 100,000
.... Min 200,000 (for landing connector)

Built-in Peripherals

LED .... 1 single-color: Green (smart card)

.... 3 single-color: Green (keyboard)

Keyboard....................................... 104 keys

External USB port .... 1 (below 100 mA)

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 .... 300,000 hrs

Certifications/Compliance

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

FIPS 201 (USA), TAA (USA), VCCI (Japan), Microsoft® WHQL

Device Driver Operating System Support

Windows® Embedded Compact 7, 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

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