Advanced Card Systems Ltd.
Card & Reader Technologies

ACR38K-E1
Smart Keyboard
Smart Card Reader

Technical Specifications V1.02

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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 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 above.

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 2.0 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 above[2]
- Compliant with the following standards:
  - FIPS 201
  - TAA
  - EN60950/IEC 60950
  - ISO 7816
  - CE
  - FCC
  - VCCI
  - PC/SC
  - CCID
  - EMV 2000 Level 1
  - Microsoft® WHQL
  - RoHS 2
  - REACH

[1] *Supports 5 V and maximum 100 mA*

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

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

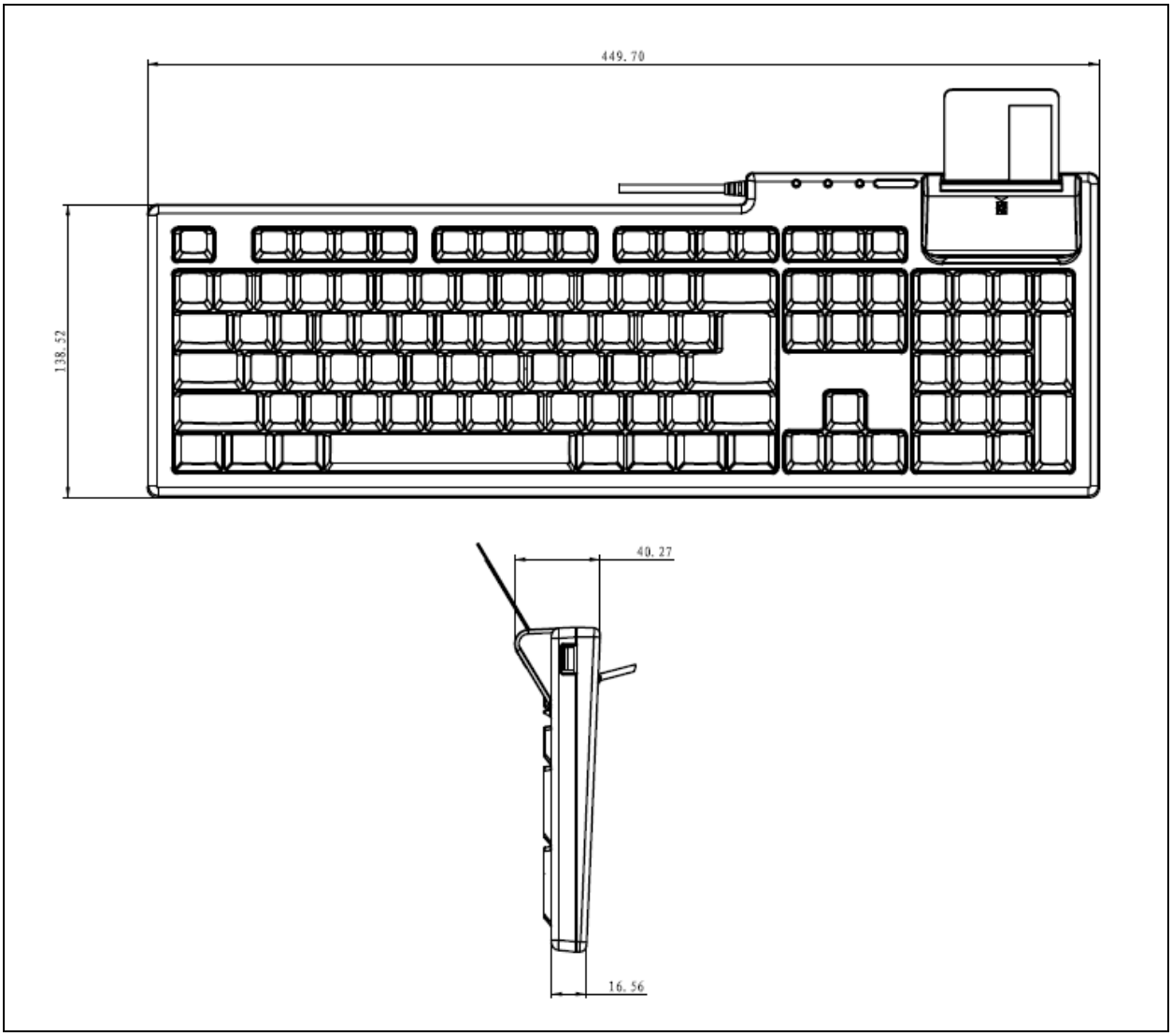
ACR38K-E1 Smart Keyboard works with several memory-based smart cards such as:

- 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



Universal Serial Bus Interface	
Type	USB Full Speed, four lines: +5 V, GND, D+ and D-
Power Source	From USB
Speed	480 Mbps
Supply Current	Max. 500 mA
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 (optional with landing)
Card Insertion Cycles	Min. 100,000 (Min 200,000 for landing connector)
Physical Specifications	
Dimensions	449.70 mm (L) × 138.52 mm (W) × 40.27 mm (H)
Number of Keys	104
Color	Black
Weight	540 g
Built-in Peripherals	
LED	1 LED, Green (smart card)
	3 LEDs, Green (keyboard)
External USB port	1 (below 100 mA)

Operating Conditions

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

Application Programming Interface

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

Certifications/Compliance

FIPS 201, TAA, EN60950/IEC 60950, ISO 7816, CE, FCC, VCCI, PC/SC, CCID, EMV 2000 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 2008, Windows® Server 2008 R2, Windows® Server 2012, Windows® Server 2012 R2
Linux®, Mac OS®, Android™ 3.1 and above