Advanced Card Systems Ltd.
Card & Reader Technologies

ACR38U-I1
Smart Card Reader

Technical Specifications V1.12

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1.0. Introduction

ACR38U-I1 is the latest addition to the ACR38 PC-linked Smart Card Reader Series. Combining secure smart card reader technology functionalities with a sleek and modern design, ACR38U-I1 is the perfect peripheral for your smart card applications.

1.1. Smart Card Reader

ACR38U-I1 supports ISO 7816 Class A, B, and C smart cards and microprocessor cards with the T=0 and T=1 protocol. It also 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.

1.2. Modern Design

The new sleek and stylish design of ACR38U-I1 makes it stand out from ordinary smart card readers. This trendy device houses the powerful ACR38 core, which has been proven to support highly demanding smart card applications. It also features a USB Full Speed interface and a smart card reader/writer speed of up to 344 Kbps. Highly durable, ACR38U-I1 can last for at least 100,000 card insertion cycles.

1.3. Ease of Integration

ACR38U-I1 is easy to install, use, and integrate into a computer-based environment. It is PC/SC and CCID-compliant, and its drivers are compatible with operating systems such as Windows®, Linux®, Mac OS®, and Solaris. In addition, ACR38U-I1 may now be used on mobile devices running the Android™ platform with versions 3.1 and later.

With its various features, the ACR38U-I1 is the perfect smart card reader for your smart card solution.

2.0. Features

- USB Full Speed Interface
- Plug and Play – CCID support brings utmost mobility
- Smart Card Reader:
    o Supports ISO 7816 Class A, B and C (5 V, 3 V, 1.8 V) cards
    o Supports CAC (Common Access Card)
    o Supports J-LIS Card
    o Supports microprocessor cards with T=0 or T=1 protocol
    o Supports memory cards
    o Supports PPS (Protocol and Parameters Selection)
    o Features Short Circuit Protection
- Application Programming Interface:
    o Supports PC/SC
    o Supports CT-API (through wrapper on top of PC/SC)
- Supports Android™ 3.1 and later[1]
- Compliant with the following standards:
    o EN 60950/IEC 60950
    o ISO 7816
    o EMV™ Level 1 (Contact)
    o PC/SC
    o CCID
    o CE
    o FCC
    o WEEE
    o UL
    o RoHS 2
    o REACH
    o FIPS 201 (USA)
    o TAA (USA)
    o J-LIS (Japan)
    o VCCI (Japan)
    o KC (Korea)
    o Microsoft® WHQL

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[1] *Uses an ACS-defined Android Library*

3.0. Supported Card Types

3.1. MCU Cards

ACR38U-I1 operates with ISO 7816 MCU cards following either the T=0 or T=1 protocol. It also works with CAC cards, ideal for US PIV and PKI applications.

3.2. Memory-based Smart Cards

ACR38U-I1 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
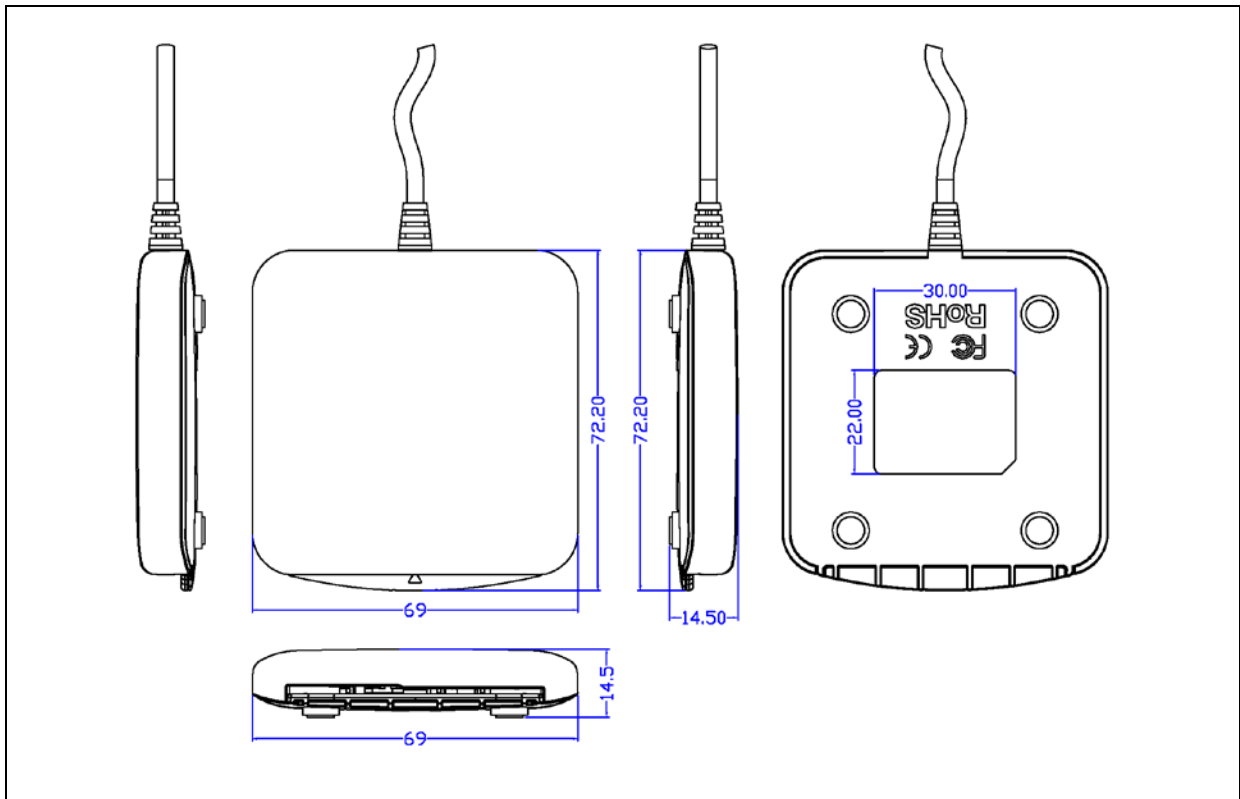
Physical Characteristics
Dimensions .... 72.2 mm (L) x 69.0 mm (W) x 14.5 mm (H)
Weight.. 65 g (± 5 g allowance for cable)
Color .... White

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 MHz
Card Connector Type..................... ICC Slot 1: 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 – 60 °C
Humidity .... Max. 90% (non-condensing)
MTBF .... 500,000 hrs

Certifications/Compliance

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

FIPS 201 (USA), TAA (USA), J-LIS (Japan), VCCI (Japan), KC (Korea), Microsoft® WHQL

Device Driver Operating System Support

Windows® Embedded Compact 7, Windows® 98, Windows® ME, 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®, Solaris, Android™ 3.1 and later

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