![Advanced Card Systems Ltd. — Card & Reader Technologies logo]

ACR3901U-S1
Bluetooth®
Contact Card Reader

Technical Specifications V1.02

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1.0. Introduction

ACR3901U-S1 Bluetooth® Contact Card Reader combines the latest technology in the world of smart card readers with Bluetooth® Smart connectivity. This compact and wireless smart card reader brings together sophisticated technology with fresh design to meet different requirements in various smart card-based applications using Bluetooth-enabled devices, such as smart phones and tablets.

1.1. Smart Card Reader

ACR3901U-S1 supports ISO 7816 Class A, B, and C smart cards (5 V, 3 V, and 1.8 V) and most memory cards in the market, including microprocessor cards with T=0 and T=1 protocol. ACR3901U-S1 have both USB Full Speed and Bluetooth 4.0 interface for smart card with read/write speed of up to 600 Kbps.

1.2. Compact Design

With a compact design and a rechargeable Lithium-ion battery for power, ACR3901U-S1 is extremely portable and convenient for use anytime, anywhere with most Bluetooth-enabled devices in the market.

1.3. Firmware Upgradeable Feature

ACR3901U-S1 offers in-field firmware upgrade to allow the user to cope up with the fast changing technology that is being utilized by different applications on various scenarios. With this feature, the stakeholders will be able to save valuable cost and time and provide utmost convenience to its users.

1.4. Bluetooth Connectivity

ACR3901U-S1 uses Bluetooth® Smart technology that allows easy integration without employing any physical connection to any terminal running Android™ 4.3 and above, iOS 5.0 and above, Windows®, and Mac OS®.

1.5. Ease of Integration

ACR3901U-S1 is PC/SC and CCID compliant making it easy to install and use with any computer-based environment. Its drivers are compatible with Windows® operating system, as well as Linux® and Mac OS®.

With its numerous features, the ACR3901U-S1 is the perfect smart card reader for your smart card solution.

2.0. Features

- USB 2.0 Full Speed Interface
- Bluetooth® Smart Interface
- Plug and Play – CCID support brings utmost mobility
- USB Firmware Upgradeability[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 protocol
  - Supports memory cards
  - Supports PPS (Protocol and Parameters Selection)
  - Features Short Circuit Protection
  - Supports AES-128 encryption algorithm
- Application Programming Interface:
  - Supports PC/SC
  - Supports CT-API (through wrapper on top of PC/SC)
- Supports Android™ 4.3 and above[2]
- Supports iOS 5.0 and above[3]
- Built-in Peripherals:
  - LEDs
- Compliant with the following standards:
  - EN60950/IEC 60950
  - ISO 7816
  - CE
  - FCC
  - VCCI
  - PC/SC
  - CCID
  - EMV™ 2000 Level 1
  - Bluetooth® Smart
  - Microsoft® WHQL
  - RoHS 2
  - REACH

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[1] Applicable under PC-linked mode
[2] PC/SC and CCID support are not applicable
[3] Same as above

3.0. Supported Card Types

3.1. MCU Cards

ACR3901U-S1 operates with MCU cards following either T=0 or T=1 protocol.

3.2. Memory-based Smart Cards

ACR3901U-S1 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:
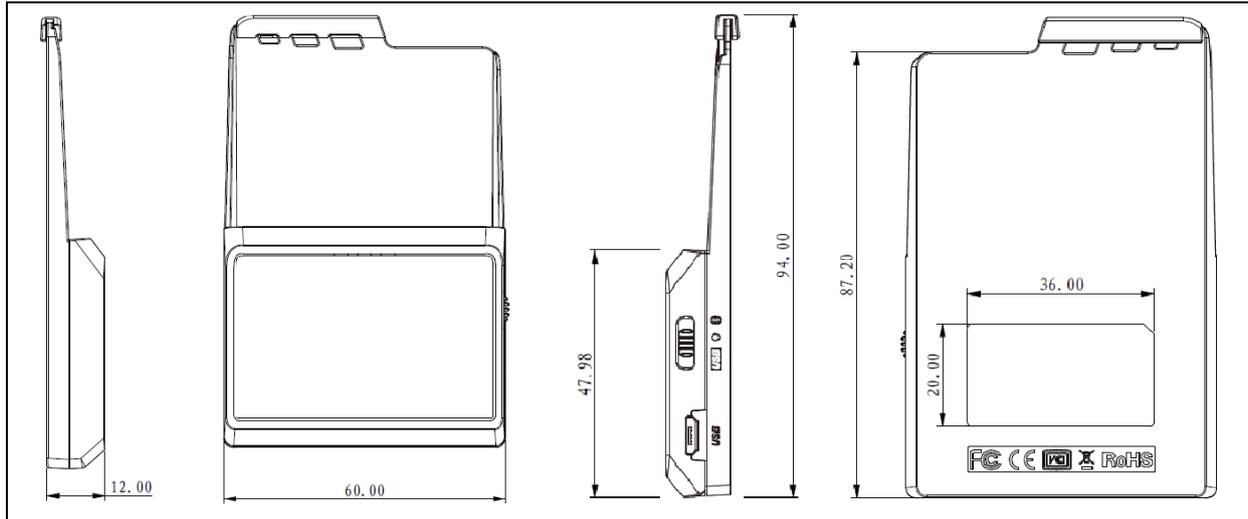 - Atmel®: AT88SC101, AT88SC102 and AT88SC1003

4.0. Typical Applications

- Mobile Banking & Payment
- e-Government
- e-Healthcare
- Network Security
- Access Control
- e-Purse & Loyalty
- Public Key Infrastructure

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... 12 Mbps
Firmware .... Upgradeable through USB interface

Bluetooth Interface
Type .... Bluetooth Smart
Power Source................................. From battery
Battery Life .... 24 hours[1] (Continuous operation)
Speed... 1 Mbps (on-air data rate)

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

Physical Specifications
Dimensions .... 94 mm (L) × 60 mm (W) × 12 mm (H)
Color .... Gray, White
Weight... 30.8 g (59.7 g with cable ± 5 g allowance for cable)
Cable length, cord, connector .... 1 m, Fixed (detachable), USB A

Operating Conditions
Temperature .... 0 °C – 50 °C
Humidity .... Max. 90% (non-condensing)
MTBF .... 500,000 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™ 2000 Level 1, Bluetooth® Smart,
USB Full Speed, RoHS 2, REACH,
Microsoft® WHQL for 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

Device Driver Operating System Support
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™[2], iOS[3]

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[1] Card type-dependent

[2] 4.3 or above Android version is required for Bluetooth 4.0.

[3] 5.0 and above iOS version is required.