



**Advanced Card Systems Ltd.**  
Card & Reader Technologies

# ACR39T-A3 (Micro-USB) Smart Card Reader



Technical Specifications V1.04



## Table of Contents

<b>1.0.</b>	<b>Introduction .....</b>	<b>3</b>
1.1.	Smart Card Reader.....	3
1.2.	Ease of Integration.....	3
<b>2.0.</b>	<b>Features .....</b>	<b>4</b>
<b>3.0.</b>	<b>Supported Card Types .....</b>	<b>5</b>
3.1.	MCU Cards .....	5
3.2.	Memory-based Smart Cards.....	5
<b>4.0.</b>	<b>Typical Applications.....</b>	<b>6</b>
<b>5.0.</b>	<b>Technical Specifications.....</b>	<b>7</b>
<b>6.0.</b>	<b>Opening the SIM card cover .....</b>	<b>9</b>



## 1.0. Introduction

The ACR39T-A3 heralds the arrival of new and modern technology in the world of smart card readers and mobile devices. It is a SIM-sized smart card reader that is small in size but packs a lot of features. With its MicroUSB OTG (On-The-Go) interface, the ACR39T-A3 is capable of supporting most of the smartphones and tablets available in the market that runs applications using SIM-sized contact smart cards.



### 1.1. Smart Card Reader

The ACR39T-A3 supports ISO 7816 Class A, B, and C smart cards (5 V, 3 V, and 1.8 V) and works well with most memory cards and microprocessor cards with the T=0 and T=1 protocol. It connects with mobile devices through its MicroUSB full-speed interface and has a smart card read/write speed of up to 600 Kbps. This makes it ideal for a broad range of solutions, such as e-Government, Network Security and Access Control.

### 1.2. Ease of Integration

The ACR39T-A3 can be easily integrated with any mobile device running the Android™ platform with versions 3.1 and later. Additionally, it may be used in operating systems such as Windows®, Linux®, or Mac OS® with its PC/SC and CCID compliance.

With its numerous features, the ACR39T-A3 is clearly the perfect smart card reader for your smart card solution.



## 2.0. Features

- USB Full Speed Interface
- Micro USB Connector
- Plug and Play—CCID support brings utmost mobility
- Includes protective USB cap
- Smart Card Reader:
  - Contact Interface:
    - Supports ISO 7816 Class A, B and C (5 V, 3 V, 1.8 V) SIM-sized cards
    - Supports microprocessor cards with T=0 and T=1 protocol
    - 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<sup>1</sup>
- Compliant with the following standards:
  - EN60950/IEC 60950
  - ISO 7816
  - PC/SC
  - CCID
  - CE
  - FCC
  - WEEE
  - RoHS
  - REACH
  - VCCI (Japan)
  - Microsoft® WHQL

---

<sup>1</sup> Uses an ACS–defined Android Library



## 3.0. Supported Card Types

### 3.1. MCU Cards

The ACR39T-A3 operates with MCU cards following either the T=0 or T=1 protocol.

### 3.2. Memory-based Smart Cards

The ACR39T-A3 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 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

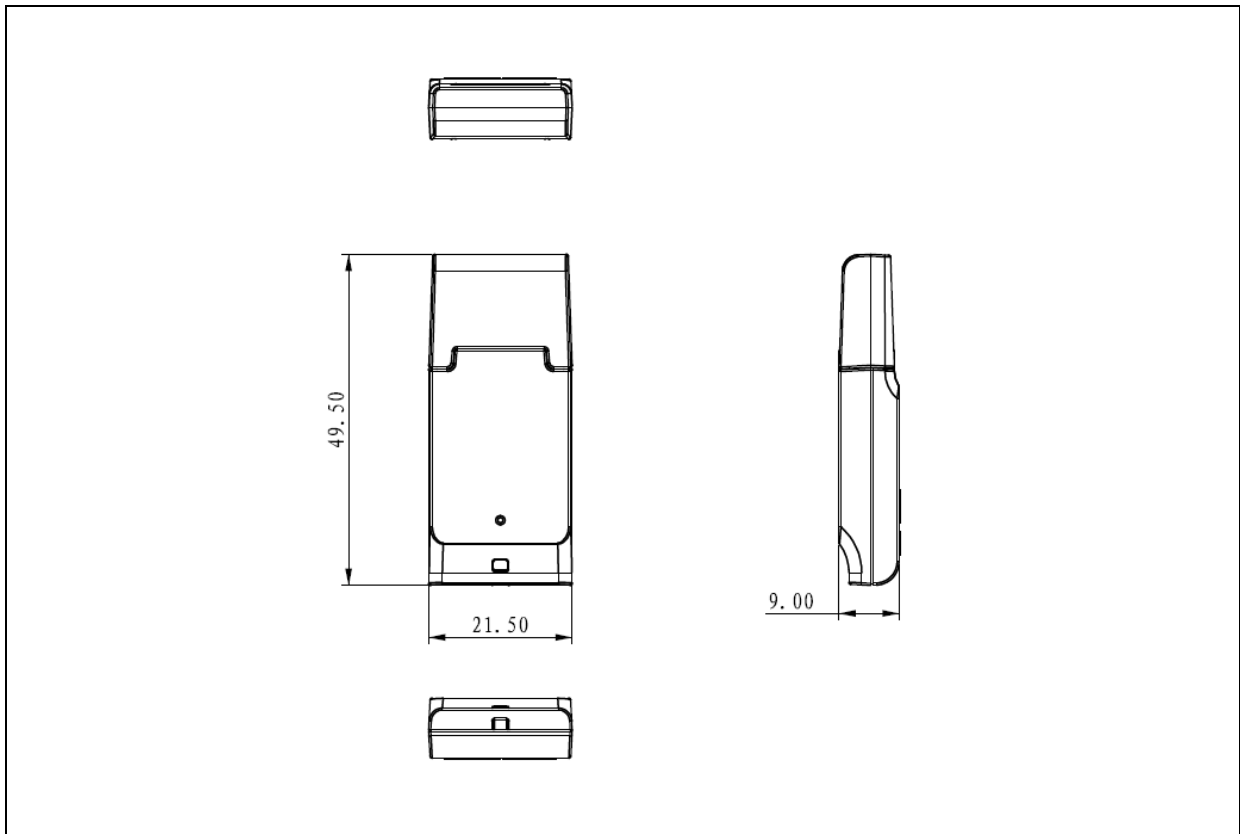


## 4.0. Typical Applications

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



## 5.0. Technical Specifications



### Physical Characteristics

Dimensions ..... 49.5 mm (L) × 21.5 mm (W) × 9.0 mm (H)  
 Weight ..... 7.9 g  
 Color ..... Black

### USB Host Interface

Protocol ..... USB CCID  
 Connector Type ..... Micro Type B  
 Power Source ..... From Micro USB port  
 Speed ..... USB Full Speed (12 Mbps)  
 Supply Voltage ..... 5 V

### Contact Smart Card Interface

Number of Slot ..... 1 SIM-sized Card Slot (optional with MicroSIM-sized)  
 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 – 600 Kbps  
 Short Circuit Protection ..... (+5) V/GND on all pins  
 Clock Frequency ..... 4.80 MHz  
 Card Connector ..... Contact  
 Card Insertion Cycles ..... Min. 10,000 (Min. 30,000 upon request)

### 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 – 50 °C  
 Humidity ..... Max. 90% (non-condensing)  
 MTBF ..... 500,000 hrs



**Certifications/Compliance**

EN60950/IEC 60950, ISO 7816, USB Full Speed, PC/SC, CCID, CE, FCC, WEEE, RoHS, REACH  
VCCI (Japan), Microsoft® WHQL

**Device Driver Operating System Support**

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, Windows® Server 2016  
Linux®, Mac OS®, Solaris, Android™ 3.1 and later





## 6.0. Opening the SIM card cover

1. Open the SIM card cover located at the back of the reader.

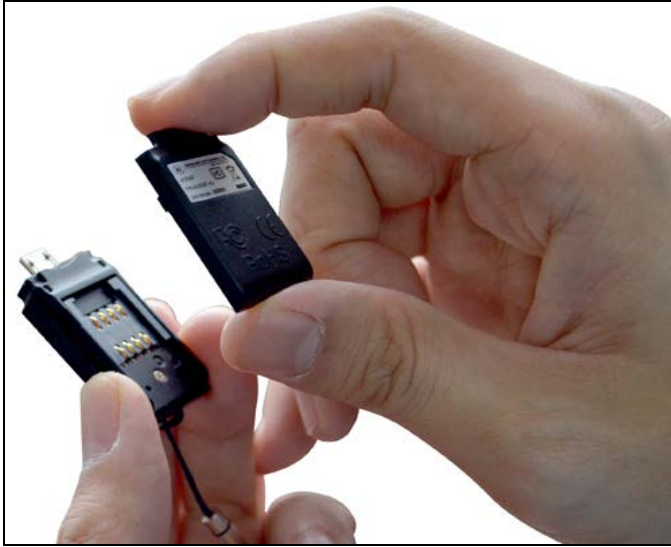


2. Pull out the back cover from the top end.





3. Remove the cover completely to insert/remove the SIM card to/from the reader.



Android is a trademark of Google Inc.

The Android robot is reproduced or modified from work created and shared by Google and used according to terms described in the Creative Commons 3.0 Attribution License.

Atmel is registered trademark of Atmel Corporation or its subsidiaries, in the US and/or other countries.

Infineon is a registered trademark of Infineon Technologies AG.

Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.

Mac OS is a trademark of Apple Inc., registered in the U.S. and other countries.

Microsoft, Windows and Windows Vista are registered trademarks of the Microsoft Corporation in the United States and/or other countries.