Advanced Card Systems Ltd.
Card & Reader Technologies

ACR123S Intelligent Contactless Reader

Technical Specifications V1.10

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1.0. Introduction

The ACR123S is a cost-effective, flexible, and intelligent contactless reader that can be integrated to existing point-of-sale (POS) terminals or cash registers to offer the convenience of a cashless payment system. Developed based on the 13.56 MHz contactless RFID (Radio Frequency Identification) technology, it supports any contactless card following the ISO 14443-4 standard.

Aside from its advanced contactless features, the ACR123S is equipped with a large graphical LCD screen that lets merchants display messages, as well as a large tapping area with backlight, which guides customers in carrying out their payment transactions. The ACR123S has a built-in ISO 7816–compliant SAM (Secure Access Module) slot, which can be used together with a SAM card.

With the ACR123S, movement in checkout counters is faster as customers complete their payment by simply tapping their cards. This presents an opportunity to revolutionize the shopping experience in a faster and more convenient payment world.

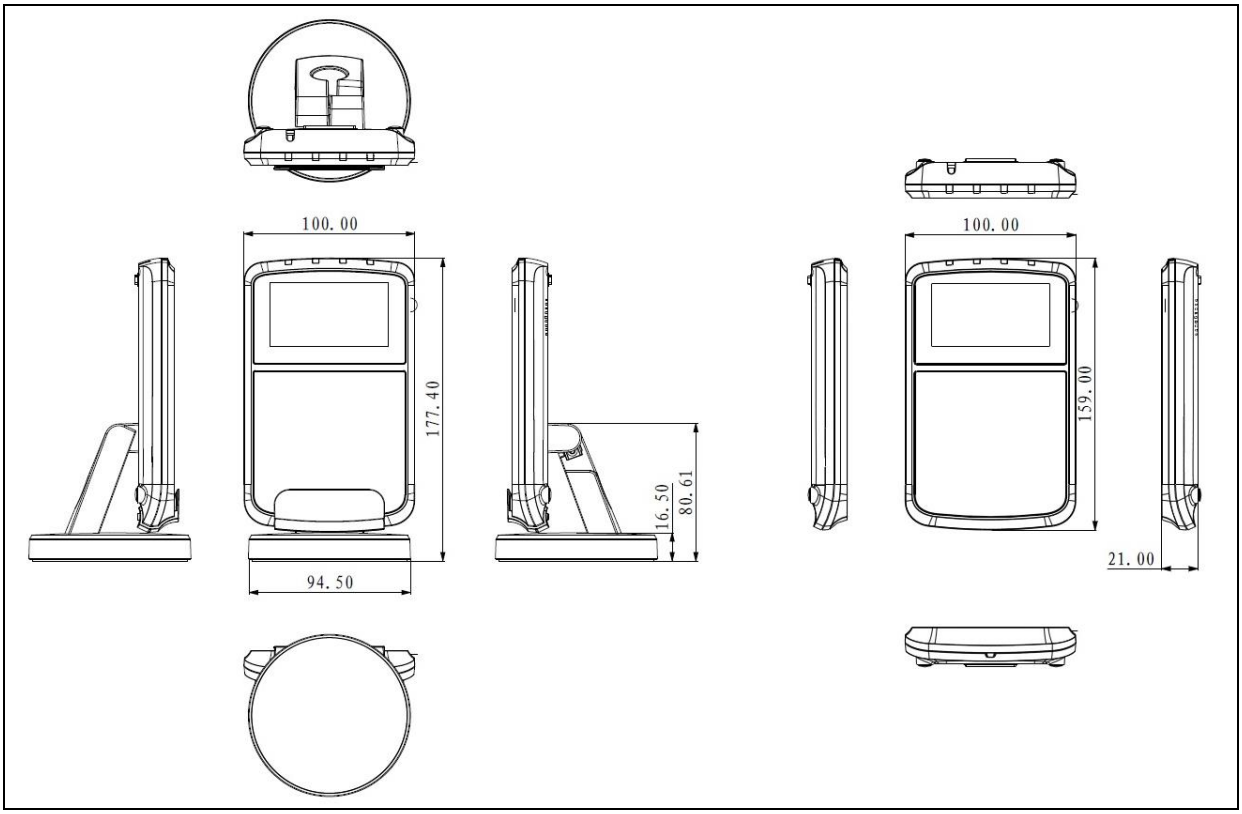
2.0. Features

- ARM® Cortex®-M3 32-bit Processor
- Serial RS-232 Interface with RJ45 Connector for Data Communication
- USB Interface for Power Supply
- Smart Card Reader:
  - Contactless Interface:
    - Read/Write speed of up to 848 Kbps
    - Built-in antenna for contactless tag access, with card reading distance of up to 50 mm (depending on tag type)
    - Supports ISO 14443 Part 4 Type A and B cards and MIFARE Classic® series
    - Built-in anti-collision feature (only one tag is accessed at any time)
  - SAM Interface:
    - Three SAM Slots
    - Supports ISO 7816 Class A, B and C (5 V, 3 V, 1.8 V) SAM cards
- Built-in Peripherals:
  - 16 characters × 8 lines Graphical LCD (128 pixels × 64 pixels)
  - Four user-controllable LEDs (Blue, Yellow, Green, and Red)
  - User-controllable tapping region backlight (Red, Green, and Blue)
  - User-controllable speaker (Audio tone indication)
- USB Firmware Upgradeability
- Compliant with the following standards:
  - ISO 14443
  - ISO 7816 Class A, B and C (SAM Slot)
  - CE
  - FCC
  - RoHS
  - REACH
  - VCCI (Japan)
  - KC (Korea)

3.0. Typical Applications

- Banking and Payment
- e-Healthcare
- Transportation
- e-Purse and Loyalty
- Contactless Mobile Payment

4.0. Technical Specifications



Physical Characteristics	
Dimensions	Main Body: 159 mm (L) × 100 mm (W) × 21 mm (H)
	With Stand: 177.4 mm (L) × 100.0 mm (W) × 94.5 mm (H)
Weight	Main Body: 281 g
	With Stand: 506 g
Color	Black
Processor	
Core	ARM 32-bit Cortex-M3 CPU
Serial Host Interface	
Protocol	RS-232
Connector Type	RJ45 connector
Power Source	From USB port
Speed	9.6 Kbps (default), 19.2 Kbps, 38.4 Kbps, 57.6 Kbps, 115.2 Kbps, 230.4 Kbps
Supply Voltage	5 V
Supply Current	Max. 500 mA
Cable Length	1.5 m, Fixed (RJ45 + USB)
Contactless Smart Card Interface	
Standard	ISO 14443 Type A and B Parts 1-4
Protocol	ISO 14443 T=CL for ISO 14443-4–compliant cards
	T=CL Emulation for MIFARE Classic
Operating Frequency	13.56 MHz
Operating Distance	Up to 50 mm (depending on tag type)
Smart Card Read/Write Speed	106 Kbps, 212 Kbps, 424 Kbps, 848 Kbps
Antenna Size	75 mm × 75 mm
SAM Card Interface	
Number of Slots	3 Standard SIM-sized Card Slots
Standard	ISO 7816, Class A, B, C (5 V, 3 V, 1.8 V)
Protocol	T=0; T=1
Card Connector Type	SAM Slot 0: Contact
	SAM Slot 1: Contact
	SAM Slot 2: Contact

Built-in Peripherals

LCD ..... Graphic LCD with white backlight
..... 128 pixels × 64 pixels
..... Number of characters: 16 characters × 8 lines
LED ..... 4 single-color: Blue, Yellow, Green, and Red
Speaker ..... Audio tone indication
Tapping Region ..... Tri-color backlight: Red, Green and Blue

Other Features

Security ..... Tamper Switch (Internal anti-intrusion detections and protection)
Firmware Upgrade ..... Supported
Real-time Clock ..... Supported

Operating Conditions

Temperature ..... 0 °C – 50 °C
Humidity ..... Max. 90% (non-condensing)
MTBF ..... 240,000 hrs

Certifications/Compliance

ISO 14443, ISO 7816 (SAM Slot), CE, FCC, RoHS, REACH, VCCI (Japan), KC (Korea)

Device Driver Operating System Support

Windows® CE 5.0, Windows® XP, Windows® Vista™, Windows® 7, Windows® 8.1, Windows® 10
Windows® Server 2003, Windows® Server 2008, Windows® Server 2008 R2, Windows® Server 2012, Windows® Server 2012 R2 Windows® 2016
Linux®