



Advanced Card Systems Ltd.
Card & Reader Technologies

ACR123S Intelligent Contactless Reader

Technical Specifications V1.05





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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) terminals or cash registers to offer the convenience of a cashless payment system. Developed based on the 13.56 MHz contactless (RFID) 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 that allows merchants to display messages, as well as a large tapping area with backlight which guides customers in carrying out their payment transactions.

ACR123S has a built-in ISO 7816 compliant SAM (Secure Access Module) slot which can be used together with a SAM card.

ACR123S, a high quality and reliable device, is compliant and certified with major payment and safety standards such as MasterCard®, Visa®, EMV™ Levels 1 and 2 (Contactless). ACR123S is also compatible with EMV-based contactless payment applications such as MasterCard® PayPass™, Visa payWave®, and American Express® Expresspay. The ACR123S is also Apple Pay™ ready.

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



2.0. Features

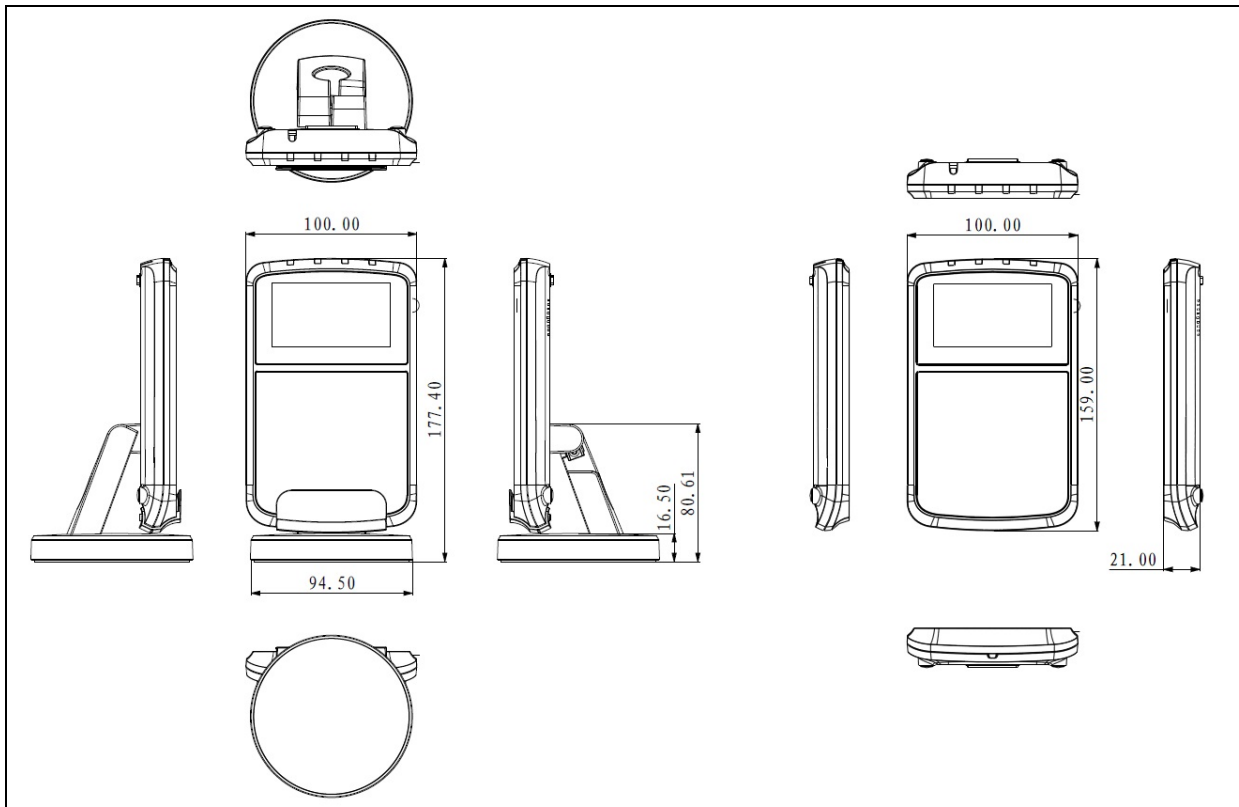
- Serial RS-232 Interface with RJ45 connector for Data Communication
- USB interface for power supply
- ARM® Cortex®-M3 32-bit Processor
- Payment Applications:
 - MasterCard PayPass Mag Stripe and M/Chip
 - Visa payWave MSD and qVSDC
 - American Express Expresspay 3.0
 - Apple Pay ready
- Smart Card Reader
 - Contactless Interface:
 - Read/Write speed of up to 848 Kbps
 - Built-in antenna for contactless card 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
 - Supports MasterCard PayPass, Visa payWave, and AMEX ExpressPay Compliant Cards
 - Built-in anti-collision feature
 - SAM Interface:
 - Three SAM slots
 - Supports ISO 7816 Class A, B and C (5 V, 3 V, 1.8 V) SAM Card
- Built-in Peripherals:
 - 16 alphanumeric characters x 8 lines Graphical LCD (128 pixels x 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)
- Certifications/Compliance:
 - ISO 14443
 - ISO 7816 Class A, B and C (for SAM slot)
 - EMV Levels 1 and 2 (Contactless)
 - MasterCard PayPass
 - Visa payWave
 - American Express Expresspay
 - CE
 - FCC
 - RoHS 2
 - 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: 159.0 mm (L) x 100.0 mm (W) x 21.0 mm (H) With Stand: 177.4 mm (L) x 100.0 mm (W) x 94.5 mm (H)
Weight.....	Main Body: 281 g With Stand: 506 g
Color	Black

Processor

ARM 32-bit Cortex-M3 CPU

Serial Host Interface

Protocol.....	RS-232
Connector Type.....	RJ45 connector
Power Source.....	Via USB cable
Speed/ Operation Baud Rate	9.6 Kbps –250 Kbps
Supply Voltage	5 V
Supply Current	Max. 500 mA
Cable Length.....	1.5 m fixed cable (DB9 + USB)

Contactless Smart Card Interface

Standard	ISO 14443-4 A and B Parts 1-4
Protocol.....	ISO 14443-4 compliant cards, T=CL MIFARE Classic Card Protocol, T=CL
Operating Frequency	13.56 MHz
Operating Distance	Up to 50 mm (depending on card type)
Smart Card Read/Write Speed.....	106 Kbps, 212 Kbps, 424 Kbps, 848 Kbps
Antenna Size.....	75 mm x 75 mm

SAM Card Interface

Number of Slots	3 Standard SIM-sized
Standard	ISO 7816 Parts 1-3, Class A, B, C (5 V, 3 V, 1.8 V)
Protocol.....	T=0; T=1
Supply Current	Max. 50 mA
Clock Frequency	4 MHz
Short Circuit Protection	(+5) V/GND on all pins
Smart Card Read/Write Speed.....	9.6 Kbps – 344 Kbps



Card Connector Type..... SAM Slot 0: Contact
..... SAM Slot 1: Contact
..... SAM Slot 2: Contact

Built-in Peripherals

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

Operating Conditions

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

Certifications/Compliance

ISO 14443, ISO 7816 Class A, B and C (SAM slot), EMV Levels 1 and 2 (Contactless), MasterCard PayPass, Visa payWave, American Express ExpressPay, CE, FCC, RoHS 2, REACH
VCCI (Japan), KC (Korea)

Supported Operating Systems

Windows® CE, Windows® 98, Windows® ME, Windows® 2000, Windows® XP, Windows Vista®, Windows® 7, Windows® 8.1, Windows® 10, Windows® Server 2003, Windows® Server 2008, Windows® Server 2008 R2
Linux®



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