



Advanced Card Systems Ltd.
Card & Reader Technologies

ACR123S Intelligent Contactless Reader

Technical Specifications V1.04





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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®, EMVCo Level 1 and EMVCo Level 2. 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

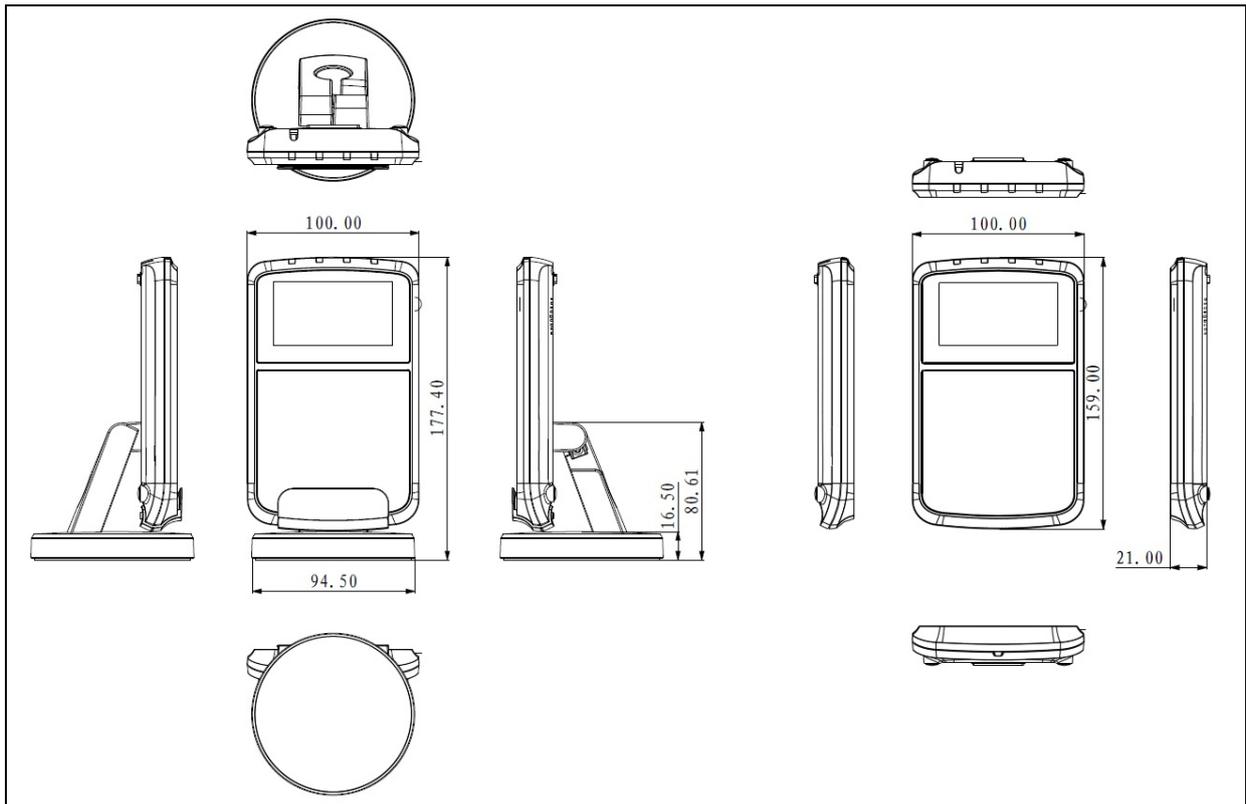
- Serial RS-232 Interface with RJ45 connector for Data Communication
- USB interface for power supply
- ARM® Cortex®-M3 32-bit Processor
- Payment Applications:
 - MasterCard PayPass Mag Stripe and M/Chip
 - Visa payWave MSD and qVSDC
 - American Express ExpressPay 3.0
 - Apple Pay ready
- Smart Card 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)
 - EMVCo Level 1 and EMVCo Level 2
 - MasterCard PayPass
 - Visa payWave
 - American Express ExpressPay
 - CE
 - FCC
 - VCCI
 - KC
 - RoHS 2
 - REACH



3.0. Typical Applications

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

4.0. Technical Specifications



Universal Serial Bus Interface

Power Source..... From USB
Speed..... 12 Mbps (Full Speed)
Supply Voltage..... Regulated 5 V DC

Serial Interface

Type..... RS-232 Interface with RJ45 connector
Speed..... 9.6 Kbps – 250 Kbps
Supply Voltage..... Regulated 5 V DC
Supply Current..... Max. 500 mA

Processor

ARM 32-bit Cortex-M3 CPU

Contactless Smart Card Interface

Standard ISO 14443-4 Type A & B, Parts 1-4, T=CL for ISO 14443-4 compliant cards and T=CL Emulation for MIFARE Classic cards
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

Standard ISO 7816 Class A, B and C (5 V, 3 V, 1.8 V)
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

Built-in Peripherals

LCD Display 128 pixels x 64 pixels graphic LCD with white backlight
..... Number of characters: 16 alphanumeric characters x 8 lines
LED Status Indicators Four single-color LEDs: Blue, Yellow, Green, and Red
Tapping Region..... Tri-color backlight: Red, Green and Blue
Speaker..... Audio tone indication
Micro SD Card Slot For internal data storage



Physical Specifications

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
Cable Length.....	1.5 m

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), CE, FCC, VCCI, KC, RoHS 2, REACH, EMVCo Level 1, EMVCo Level 2, MasterCard PayPass, Visa payWave, American Express ExpressPay

Supported Operating Systems

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



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