



Advanced Card Systems Ltd.
Card & Reader Technologies

ACR123U Intelligent Contactless Reader

Technical Specifications V1.03





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1.0. Introduction



The ACR123U is the USB version of the cost-effective, flexible and intelligent contactless reader ACR123S. It 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.

Similar with its serial predecessor, the ACR123U 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. ACR123U

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

The ACR123U is compliant and certified with major payment and safety standards such as MasterCard®, Visa®, American Express®, EMVCo Level 1 and EMVCo Level 2 making it compatible compatible with EMV-based contactless payment applications such as MasterCard® PayPass™, Visa payWave®, and American Express® ExpressPay. The ACR123U is also Apple Pay™ ready.

Using either the serial or USB version of the ACR123, movement in checkout counters is 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

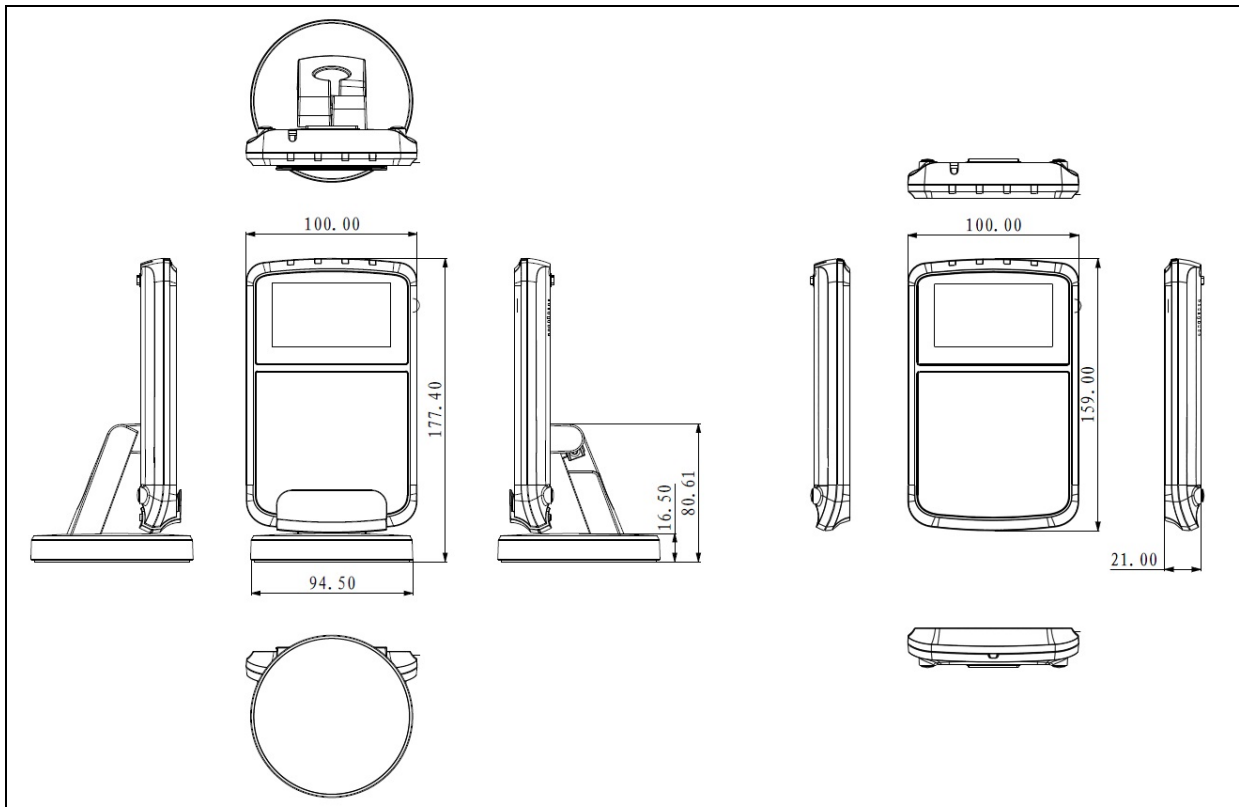
- USB interface for Data Communication and Power Supply
- ARM® Cortex®-M3 32-bit Processor
- Payment Applications:
 - MasterCard PayPass Mag Stripe and M/Chip
 - Visa payWave MSD and qVSDC
 - American Express ExpressPay 3.0
 - Apple Pay ready
- Smart Card Reader:
 - Contactless Interface:
 - Read/Write 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 American Express 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 (Mono 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
 - Microsoft® WHQL



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

Type	USB Interface with USB Standard Type A connector
Power Source.....	From USB
Speed.....	12 Mbps (Full Speed)
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	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, Microsoft® WHQL for Windows® 2000, Windows® XP, Windows Vista®, Windows® 7, Windows® 8, Windows® 8.1, Windows® Server 2003, Windows® Server 2008, Windows® Server 2008 R2, Windows® Server 2012, Windows® Server 2012 R2

Device Driver Operating Systems Support

Windows® 2000, Windows® XP, Windows Vista®, Windows® 7, Windows® 8, Windows® 8.1, Windows® Server 2003, Windows® Server 2008, Windows® Server 2008 R2, Windows® Server 2012, Windows® Server 2012 R2
 Linux®



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