



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

# ACR120 Contactless Reader/Writer



Technical Specifications



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## 1.0. Introduction



The ACR120 is a compact and cost-effective contactless reader and writer. It is developed based on the 13.56 MHz contactless smart card (RFID) technology, supporting Mifare and ISO 14443 Type A and B cards. Its proximity operating distance is up to 5 cm, depending on the type of contactless tag in use.

The versatile reader is available in both USB and Serial interface version, which can easily be integrated into a PC environment as well as other systems. It is ideal for a broad range of applications, including public transport terminals, physical and logical access controls, and even vending machines.

The operation of ACR120 is extremely quick and convenient. All read/write operations can be done by waving the contactless card near the device. Moreover, its compact design enables it to be mounted and located anywhere with ease. ACR120 is also available in module form, giving you maximum development flexibility.



## 2.0. Features

- USB PnP or serial RS232 interface (Also available in RS485 *upon request*)
- Read and write functionality
- Built-in antenna for contactless tag access, with card reading distance of up to 50 mm
- Supports major contactless smart cards conforming to ISO 14443 Type A and B in the market
- Supports Mifare cards, including new Mifare Ultralight C and Mifare Plus SL1 (4 Byte UID) and SL3
- Built-in anti-collision feature (at least 1 card is detected when multiple cards are presented)
- Selective card polling capability (especially useful when multiple cards are presented)
- Operation LED
- Buzzer
- OEM PCBA module version (*Upon request*)



### 3.0. Typical Applications

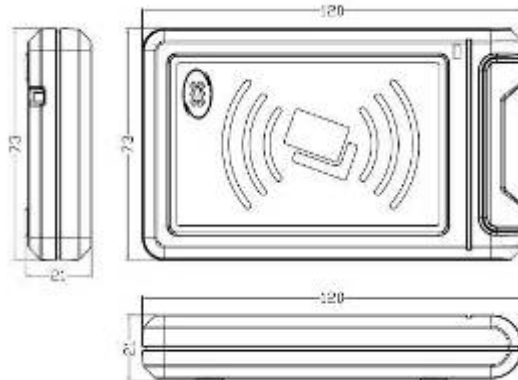


- Public transportation terminals
- Automatic fare collection
- Vending machines
- Physical access control
- Logical access control
- Time and attendance
- Contactless public phones
- Metering



## 4.0. Technical Specifications

### 4.1. Configuration of ACR120 Reader



#### Serial Interface

Type ..... RS232 (Standard)  
 Operation Baud Rate ..... 9,600-115,200 bps  
 Power Source ..... From PS/2 mouse interface  
 Supply Voltage ..... Regulated 5 V DC (4.75 – 5.25V)  
 Supply Current ..... 200 mA

#### Universal Serial Bus Interface

Power source ..... From USB  
 Speed ..... 1.5 Mbps (Low Speed)  
 Supply Voltage ..... Regulated 5 V DC  
 Supply Current ..... 200 mA

#### Contactless Smart Card Interface

Standard ..... ISO 14443 A & B  
 Protocol ..... Mifare® Classic protocols, Mifare® DESFire protocols, Mifare Mini protocols  
 Smart card read / write speed ..... 106 kbps

#### Case

Dimensions ..... 120 mm (L) x 73 mm (W) x 20 mm (H)  
 Weight ..... 155 g (with cable)  
 Material ..... ABS  
 Color ..... Metallic Silver Grey ■

#### Antenna

Antenna Size ..... 55 mm x 85 mm  
 Operating distance ..... up to 50 mm

#### Operating Frequency

Operating Frequency ..... 13.56 MHz

#### Operating Conditions

Temperature ..... 0 - 50° C  
 Humidity ..... 10% - 80%

#### Cable Connector

Length ..... 1.5 m (USB/ Serial RS232)

#### Certifications/Compliance

CE, FCC, RoHS Compliant, OFTA

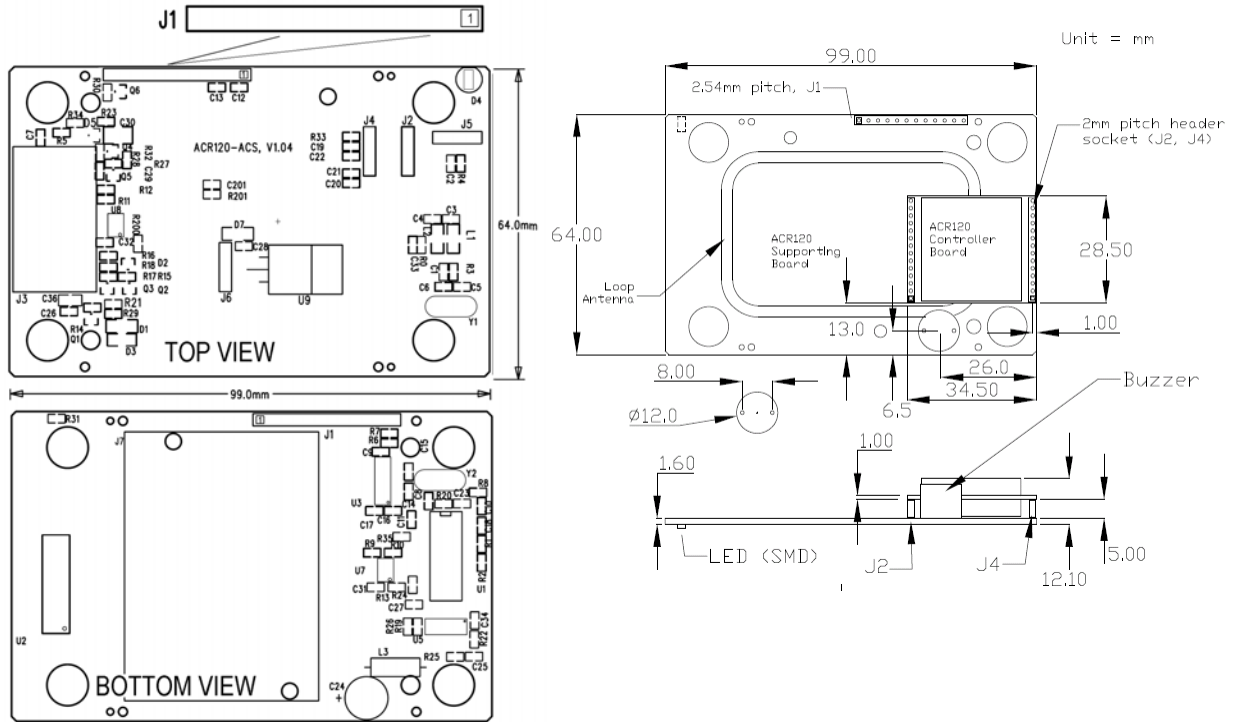
#### Device Driver Operating System Support

Windows® 98, ME, NT (Serial), 2000, Server 2003, XP, Vista, Server 2008, Server 2008 R2, 7  
 Linux



## 4.2. Configuration of ACR120 Reader Module

### Board Diagram



### (A) PIN Assignment (for Serial Communication Interface)

Pin	Signal	Description
1	-RESET	Pulling the signal to ground resets the module.
2	RS232Tx/RS485+	RS485+: (RS485 version) RS232 Transmit (RS232 version)
3	RS232Rx/RX485-	RS485-: (RS485 version) RS232 Receive (Rs232 version)
4	RFU	Do not connect
5	RFU	Do not connect
6	SDA	I <sup>2</sup> C Data
7	SCL	I <sup>2</sup> C Clock
8	VCC	+5V supply to the module
9	RFU	Not connected
10	LED-/User Port	LED/User Port Output (Open Collector).
11	Reserved	Should connect to GND signal.
12	GND	Power and signal Ground.



**(B) PIN Assignment (for Serial Communication Interface – Alternate Connector)**

Pin	Signal	Description
1	RFU	Not connected
2	VCC	+5V supply to the module
3	GND	Power and signal Ground.
4	RS232Rx/RX485-	RS485-: (RS485 version) RS232 Receive (Rs232 version)
5	RS232Tx/RS485+	RS485+: (RS485 version) RS232 Transmit (RS232 version)
6	RFU	Not connected
7	RFU	Not connected

**(C) PIN Assignment (for USB Interface)**

Pin	Signal	Description
1	X	Not available
2	USB-	USB-: available
3	USB+	USB+: available
4	X	Not available
5	X	Not available
6	X	Not available
7	X	Not available
8	VCC	+5V supply to the module
9	X	Not available
10	X	Not available
11	X	Not available
12	GND	Power and signal Ground