



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

# ACM1281

## Contactless Reader Module with SAM Slot



User Manual V1.01



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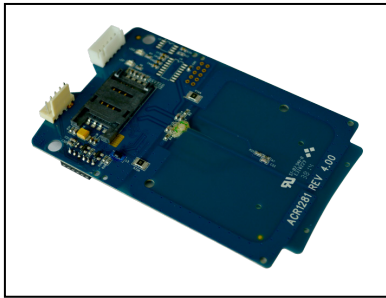
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## 1.0. Introduction



The ACM1281 is a Contactless Reader Module with SAM Slot designed based on the 13.56 MHz technology. It supports ISO 14443 Parts 1-4 Type A and B cards, and MIFARE® Classic series with a card reading distance of up to 50 mm (depending on tag type).

The ACM1281 comes in a module form factor with different interface versions: ACM1281U-C is a USB version and ACM1281S-C is a serial version. It is specifically designed for fast and easy integration to embedded systems. It also has an ISO 7816 Compliant built-in SAM (Secure Access Module) slot which

can be used together with a SAM card for high-level security in contactless transactions.

The ACM1281 has an integrated (on-board) antenna and comes with an optional USB and serial cables, and has additional features like USB firmware upgradability and extended APDU support. Lastly, the ACM1281 makes use of high-speed communication for contactless cards at a maximum of 848 Kbps, which makes it suitable for highly demanding applications such as vending machine payment systems, kiosks, gaming machines and other integrated systems which have different serial ports.

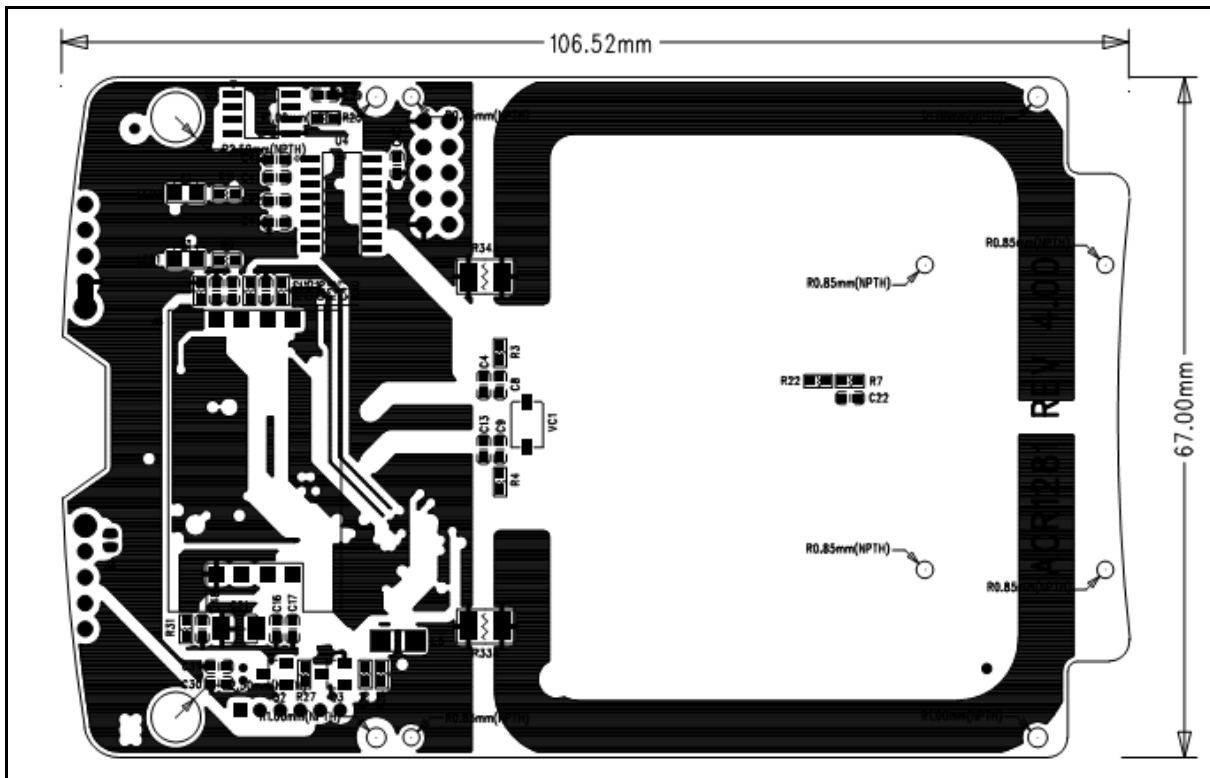


Figure 1: ACM1281 Main Board

## 2.0. Pin Assignment

### 2.1. Configuring the LED operations status

There are two LEDs on ACM1281 to display its operation status:

- **Red** is for power
- **Green** is for smart card operation

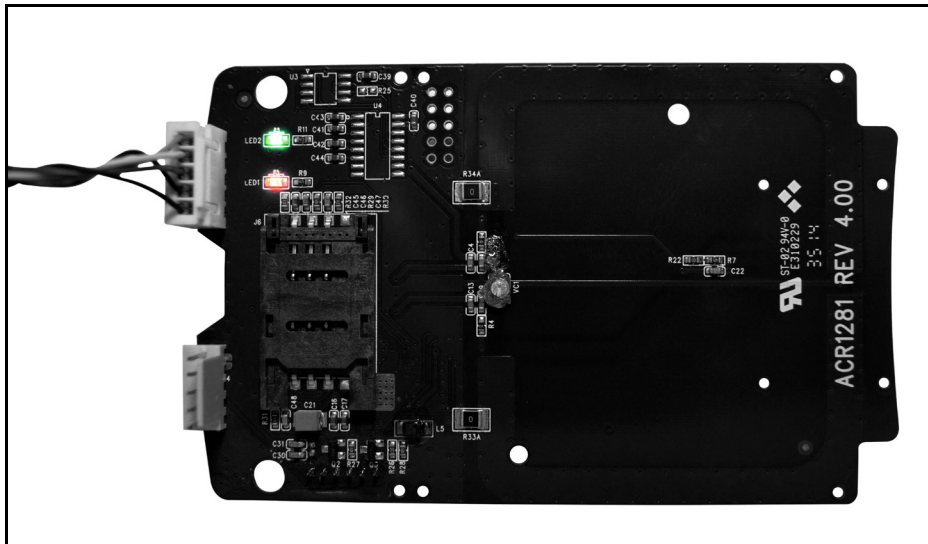


Figure 2: ACM1281 LED Configuration

#### 2.1.1. LED Behaviors

To control the LED's output and checking the LED's behavior for smart card operation status, you may refer to the following document:

- ACM1281U-C: ACR1281U Reference Manual
- ACM1281S-C: ACR1281S Reference Manual

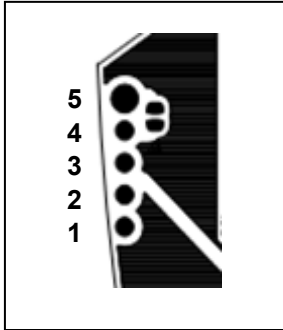
The reference manuals will discuss the detail how PC/SC APDU commands were implemented for the contactless interface and device peripherals of ACM1281U and ACM1281S.

## 2.2. Connect ACM1281 to another device via USB (applicable for ACM1281U-C only)

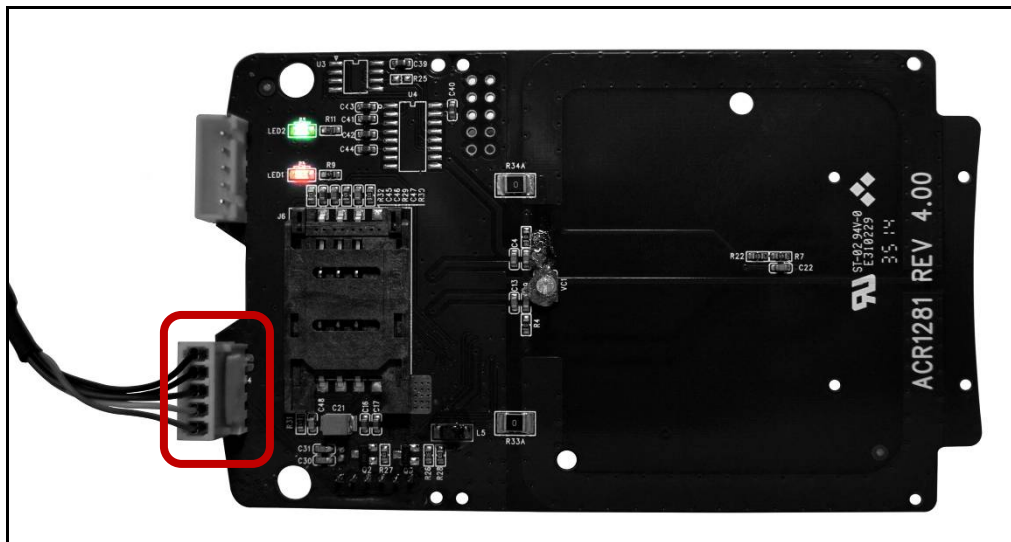
A USB port is available to connect the ACM1281 to other peripheral or devices.

To do this:

1. Connect socket **J2** via USB cable to another peripheral device (see **Figure 3**).



Pin	Description
1	+5V Power Supply
2	USB D-
3	USB D+
4	GND
5	GND



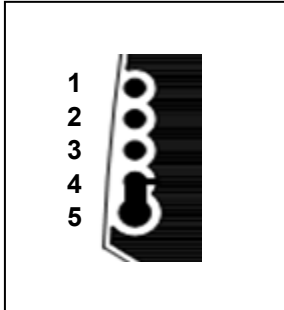
**Figure 3:** ACM1281U-C via USB Interface

### 2.3. Connect ACM1281 to another device via serial port (applicable for ACM1281S-C only)

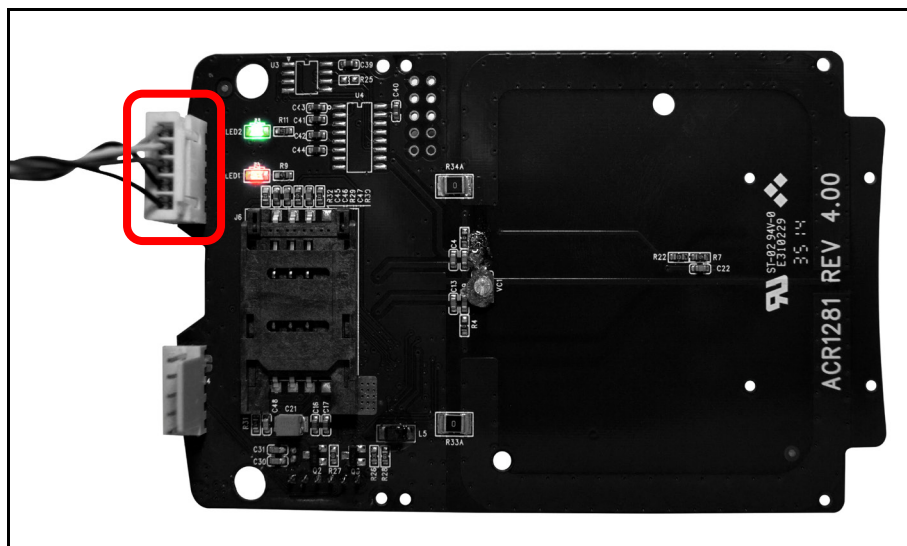
A serial port is available to connect the ACM1281 to other peripheral or devices.

To do this:

1. Connection socket **J5** via RS-232 cable to another peripheral device (see **Figure 4**).



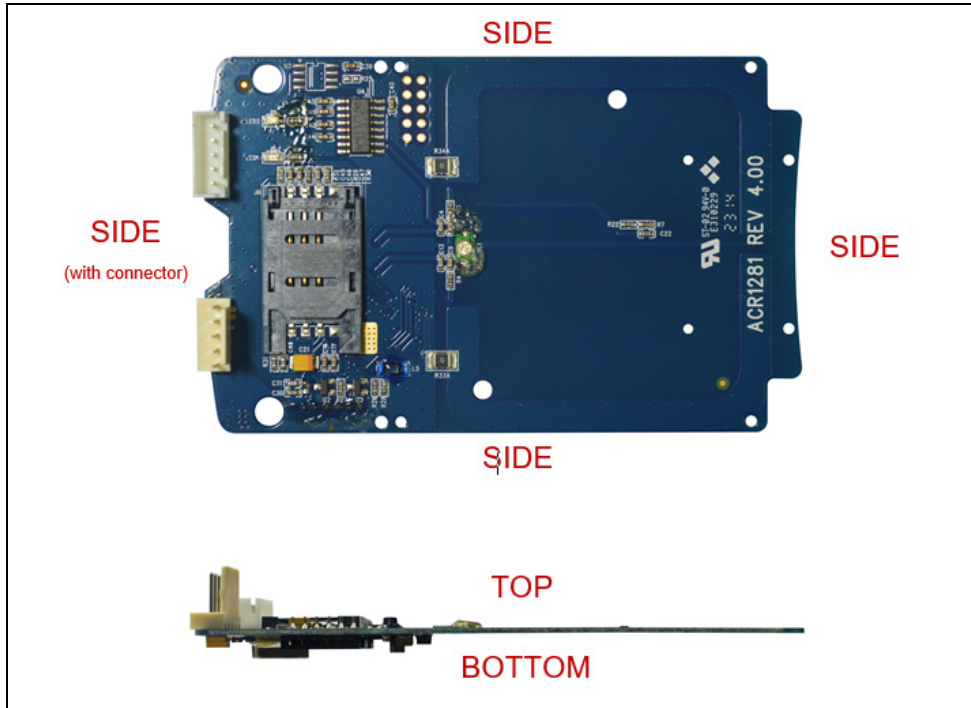
Pin	Description
1	+5V Power Supply
2	RS-232 RXD
3	RS-232 TXD
4	GND
5	GND



**Figure 4:** ACM1281S-C via Serial Interface

### 3.0. Minimum Distances from Conductive Materials

The figure below illustrates the recommended minimum distances of the ACM1281 board from conductive materials.



Location	Minimum Distance
Sides	20 mm
Side (with connector)	5 mm
Top and Bottom	40 mm

**Table 1:** Recommended Minimum Distances from Conductive Materials