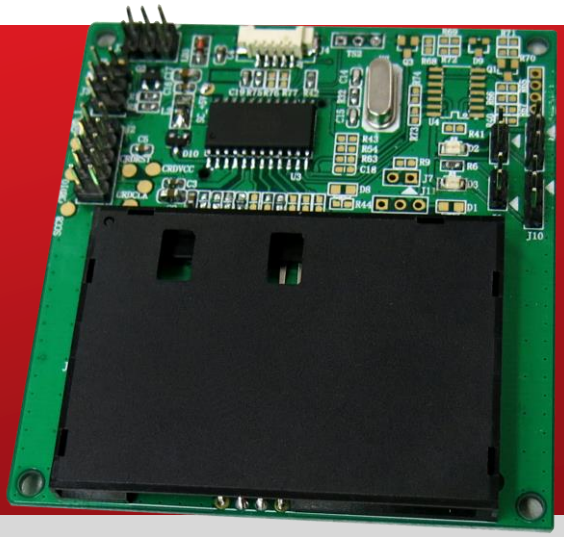
Advanced Card Systems Ltd.
Card & Reader Technologies

ACM38U-Y3
Reader Module



Technical Specifications V1.03r

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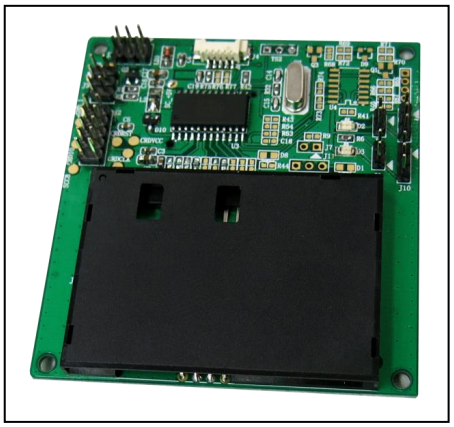
1.0. Introduction

ACM38U-Y3 provides a solution for secured access control by employing the globally recognized ACR38 core. It comes in module form to enable easy implementation of smart card-based solutions in embedded systems. ACM38U-Y3 uses the latest microchip technology, bringing you high security for your confidential files in a convenient and easy way.



1.1. Smart Card Reader

ACM38U-Y3 supports ISO 7816 Class A, B and C (5 V, 3 V, and 1.8 V) smart cards. Additionally, it works with various memory cards and microprocessor cards with T=0 and T=1 protocol. ACM38U-Y3 features a support for USB Full Speed interface and smart card read/write speed of 344 Kbps. This highly durable device can last for at least 200,000 card insertion cycles.

1.2. Ease of Integration

ACM38U-Y3 can be easily integrated into any embedded system environment with its support for USB, smart card, and LED signal extension.

ACM38U-Y3 is also easy to install and use with various environments. Being PC/SC and CCID–compliant, its drivers are compatible with operating systems such as Windows®, Linux®, and Mac OS®. In addition, ACM38U-Y3 can also be integrated with systems running the Android™ platform with versions 3.1 and later.

With its various features, ACM38U-Y3 is a powerful component that is ideal for Security, e-Banking and e-Payment, and e-Government applications.

2.0. Features

- USB Full Speed Interface (via detachable cable)
- Plug and Play—CCID support brings utmost mobility
- Supports extendable signals via connectors:
  - External contact card
  - Card detection selection
  - USB cable
  - USB pinout
  - Card connectivity signal
  - USB power signal
- Smart Card Reader:
  - Supports ISO 7816 Class A, B and C (5 V, 3 V, 1.8 V) cards
  - Supports microprocessor cards with T=0 or T=1 protocols
  - Supports 2/3 BUS I2C / Extended I2C memory cards
  - Supports CAC (Common Access Card)
  - Supports PPS (Protocol and Parameters Selection)
  - Features Short Circuit Protection
- Application Programming Interface:
  - Supports PC/SC
  - Supports CT-API (through wrapper on top of PC/SC)
- Supports Android™ 3.1 and later[1]
- Compliant with the following standards:
  - EN60950/IEC 60950
  - ISO 7816
  - USB Full Speed
  - EMV™ Level 1 (Contact)
  - PC/SC
  - CCID
  - CE
  - FCC
  - RoHS 2
  - REACH
  - VCCI (Japan)
  - Microsoft® WHQL

[1] *Uses an ACS–defined Android Library*

3.0. Supported Card Types

3.1. MCU Cards

ACM38U-Y3 operates with any MCU card following either the T=0 or T=1 protocol.

3.2. Memory-based Smart Cards

ACM38U-Y3 works with several memory-based smart cards such as:

- Cards following the I2C bus protocol (free memory cards) with maximum 128-byte page with capability, including:
  - Atmel®: AT24C01/02/04/08/16/32/64/128/256/512/1024
  - SGS-Thomson: ST14C02C, ST14C04C
  - Gemplus: GFM1K, GFM2K, GFM4K, GFM8K
- Cards with secure memory IC with password and authentication, including:
  - Atmel®: AT88SC153 and AT88SC1608
- Cards with intelligent 1 KB EEPROM with write-protect function, including:
  - Infineon®: SLE4418, SLE4428, SLE5518 and SLE5528
- Cards with intelligent 256-byte EEPROM with write-protect function, including:
  - Infineon®: SLE4432, SLE4442, SLE5532 and SLE5542
- Cards with '104' type EEPROM non-reloadable token counter cards, including:
  - Infineon®: SLE4406, SLE4436, SLE5536 and SLE6636
- Cards with intelligent 416-bit EEPROM with internal PIN check, including:
  - Infineon®: SLE4404
- Cards with Security Logic with Application Zone(s), including:
  - Atmel®: AT88SC101, AT88SC102 and AT88SC1003

4.0. Typical Applications

- e-Government
- e-Banking and e-Payment
- e-Healthcare
- Network Security
- Access Control
- Loyalty Program
- Public Key Infrastructure

5.0. Connectors

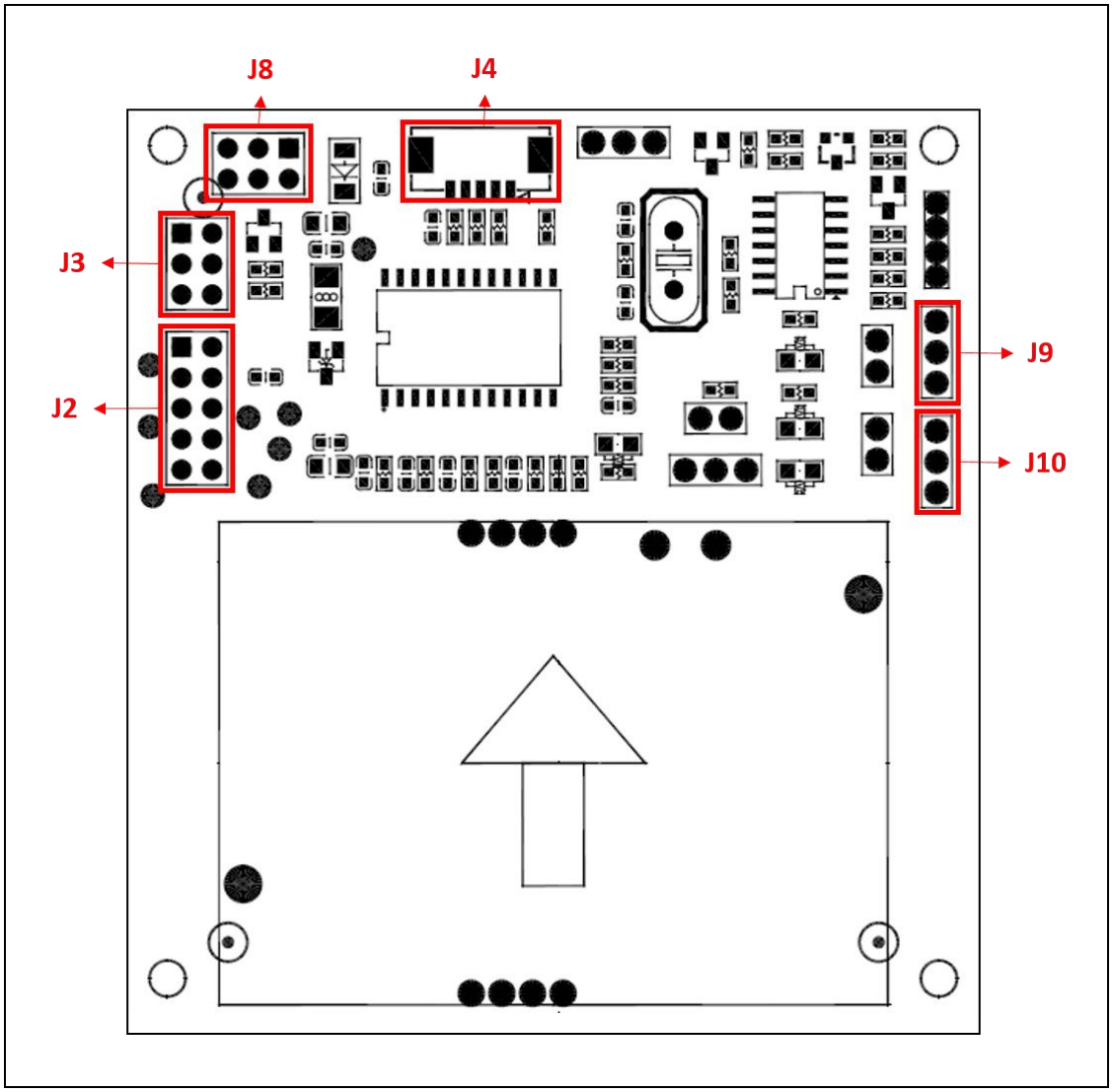
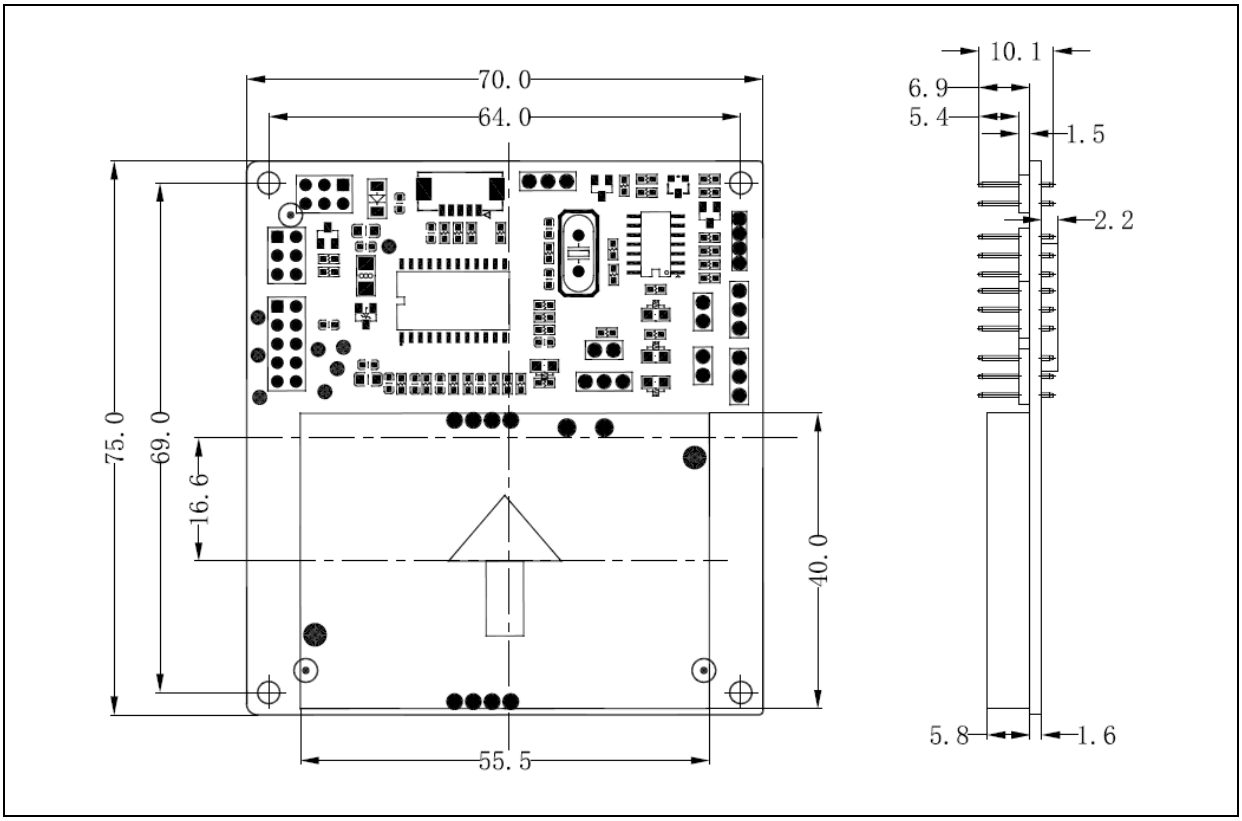


Figure 1: ACM38U-Y3 Connector Diagram

ACM38U-Y3 has various connectors that enable signal extension. Below is the classification of the connectors:

- J2: External contact card
- J3: Normal-Short/Normal-Open card detection selection
- J4: USB cable
- J8: USB pinout
- J9: Card connectivity signal
- J10: USB power signal

6.0. Technical Specifications



Physical Characteristics	
Dimensions	75.0 mm (L) × 70.0 mm (W) × 10.1 mm (H)
Weight	32 g (± 5 g allowance for components)
Jumper Setting	
J2	External contact card
J3	Normal-Short/Normal-Open card detection selection
J4	USB cable
J8	USB pinout
J9	Card connectivity signal
J10	USB power signal
Contact Smart Card Interface	
Number of Slot	1 Full-sized Card Slot
Standard	ISO 7816 Parts 1-3, Class A, B, C (5 V, 3 V, 1.8 V)
Protocol	T=0; T=1; Memory Card Support
Supply Current	Max. 50 mA
Smart Card Read/Write Speed	9.6 Kbps – 344 Kbps
Short Circuit Protection	(+5) V/GND on all pins
Clock Frequency	4.0 MHz
Card Connector Type	Landing
Card Insertion Cycles	Min. 200,000
Built-in Peripheral	
LED	2 single-colors: Green and Red
Application Programming Interface	
PC-linked Mode	PC/SC
	CT-API (through wrapper on top of PC/SC)
Operating Conditions	
Temperature	0 °C – 50 °C
Humidity	Max. 90% (non-condensing)
MTBF	500,000 hrs

Certifications/Compliance

EN60950/IEC 60950, ISO 7816, USB Full Speed, EMV™ Level 1 (Contact), PC/SC, CCID, CE, FCC, RoHS 2, REACH
VCCI (Japan), Microsoft® WHQL

Device Driver Operating System Support

Windows® Embedded Compact 7, Windows® XP, Windows Vista®, Windows® 7, Windows® 8, Windows® 8.1, Windows® 10
Windows® Server 2003, Windows® Server 2008, Windows® Server 2008 R2, Windows® Server 2012, Windows® Server 2012 R2
Linux®, Mac OS®, Android™ 3.1 and later