ACM1252U-Y3
USB NFC Reader Module with Detachable Antenna Board

Technical Specifications V1.03
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1.0. Introduction

The ACM1252U-Y3 USB NFC Reader Module with Detachable Antenna Board is developed based on the 13.56 MHz contactless technology. Like its predecessor ACR1252U-A1 NFC Forum-Certified Reader, ACM1252U-Y3 supports all three NFC modes (card reader/writer, card emulation, and peer-to-peer communication). This smart card reader module is designed for fast and easy integration to embedded systems.

The ACM1252U-Y3 supports ISO 14443 Type A and B cards, MIFARE®, FeliCa, and ISO 18092-compliant NFC tags. It also supports other NFC devices with an access speed of up to 424 Kbps and proximity operating distance of up to 50 mm (depending on tag type used). Post-deployment firmware upgrade is also supported, eliminating the need for additional hardware modification.

The ACM1252U-Y3 comes with a detachable antenna and an optional USB cable, making it the perfect front-end interface module for NFC transaction applications involving vending machine payment systems, kiosks, gaming machines, and other integrated systems.
2.0. Features

- USB Full Speed Interface
- CCID-compliant
- Smart Card Reader:
  - Contactless Interface:
    - Read/Write speed of up to 424 Kbps
    - Built-in antenna for contactless tag access, with card reading distance of up to 50 mm (depending on tag type)
    - Supports ISO 14443 Part 4 Type A and B Cards, MIFARE Classic®, MIFARE® Mini, MIFARE Ultralight®, FeliCa, Topaz, and all four types of NFC (ISO/IEC 18092 tags)
    - Built-in anti-collision feature (only one tag is accessed at a time)
  - NFC Support:
    - Card Reader/Writer mode
    - Peer-to-Peer mode
    - Card Emulation mode
  - SAM Interface (upon request):
    - One SAM Slot (upon request)
    - Supports ISO 7816 MCU cards (Class A)
- Built-in Peripherals:
  - User-controllable bi-color LED
  - User-controllable buzzer
- Application Programming Interface:
  - Supports PC/SC
  - Supports CT-API (through wrapper on top of PC/SC)
- USB Firmware Upgradability
- Supports Android™ 3.1 and later\(^1\)
- Compliant with the following standards:
  - EN 60950/IEC 60950
  - ISO 14443
  - ISO 18092
  - PC/SC
  - CCID
  - CE
  - FCC
  - RoHS 2
  - REACH
  - VCCI (Japan)
  - Microsoft® WHQL

\(^1\) Uses an ACS-defined Android Library
3.0. Typical Applications

- e-Government
- e-Banking and e-Payment
- e-Healthcare
- Transportation
- Network Security
- Access Control
- Loyalty Program
4.0. Technical Specifications

Physical Characteristics
Dimensions .................................... Main Board: 55.0 mm (L) × 45.0 mm (W) × 5.1 mm (H)
....................................................... Antenna Board: 91.0 mm (L) × 49.5 mm (W) × 5.1 mm (H)

USB Host Interface
Protocol .......................................... USB CCID
Connector Type .................................. Standard Type A
Power Source .................................... From USB port
Speed ............................................. USB Full Speed (12 Mbps)
Supply Voltage ............................... 5 V
Supply Current  .............................. Max. 200 mA
Cable Length ................................. 1.0 m, Detachable (optional)
Contactless Smart Card Interface

- Standard: ISO/IEC 18092 NFC, ISO 14443 Type A & B, MIFARE®, FeliCa
- Protocol: ISO 14443 T=CL for ISO 14443-4-compliant cards
- T=CL Emulation for MIFARE® Classic, ISO 18092, FeliCa and NFC tags

- 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
- Antenna Size: 77 mm × 49.5 mm
- Detachable Antenna Distance: Max. 10 cm (to the main board)

SAM Card Interface (Optional)

- Number of Slot: 1 Standard SIM-sized Card Slot
- Standard: ISO 7816 Class A (5V)
- Protocol: T=0; T=1
- Smart Card Read/Write Speed: 9.6 Kbps – 344 Kbps
- Card Connector Type: SAM Slot 0: Contact

Built-in Peripherals

- LED: 1 bi-color: Red and Green
- Buzzer: Monotone

Other Feature

- Firmware Upgrade: Supported

Application Programming Interface

- PC-linked Mode: PC/SC
- CT-API (through wrapper on top of PC/SC)

Operating Conditions

- Temperature: 0 °C – 60 °C
- Humidity: Max. 90% (non-condensing)
- MTBF: 500,000 hrs

Certifications/Compliance

- EN 60950/IEC 60950, ISO 7816 (SAM Slot upon request), ISO 14443, ISO 18092, USB Full Speed, PC/SC, CCID, CE, FCC, RoHS 2, REACH
- VCCI (Japan), Microsoft® WHQL

Device Driver Operating System Support

- Linux®, Mac OS®, Solaris, Android™ 3.1 and later

Android is a trademark of Google LLC.
Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.
Mac OS is a trademark of Apple Inc., registered in the U.S. and other countries.
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