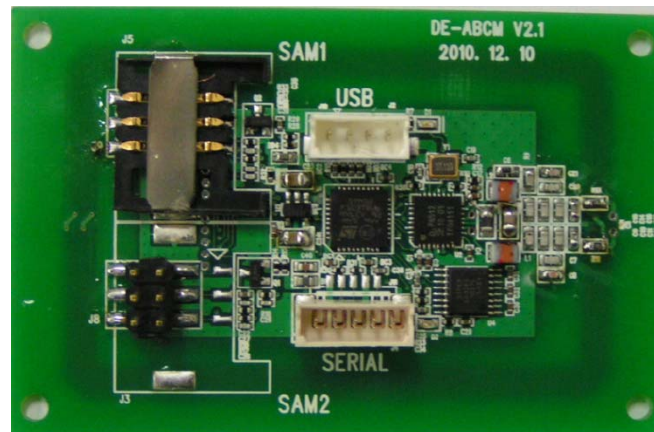


Confidential Notation

The original copy

## DE-ABCM USER'S GUIDE



**DUALi Inc.**

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We have our development center in South Korea to provide technical support. For any technical assistance can contact our technical support team as below;

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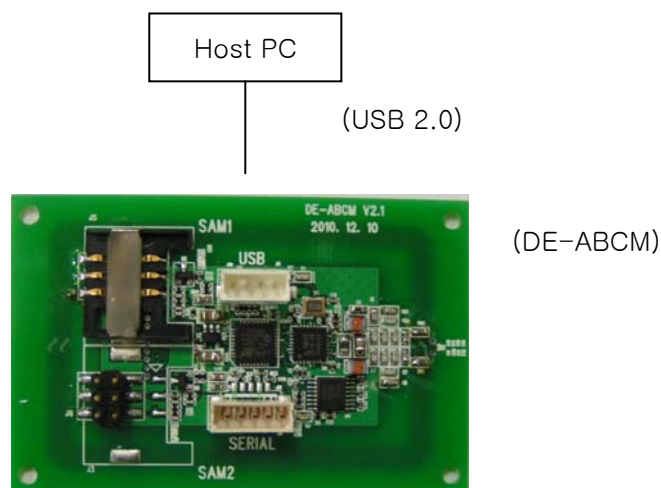
## 1 SUMMARY

Smart Card Interface	Contactless Smart Card (ISO 14443 A/B), MIFARE, FeliCa 2 SAM CARD (ISO7816, T=0,T=1)
Host Interface	USB 2.0 Full Speed (12Mbps), also support USB 1.1
Host Communication	PC/SC or Proprietary
CPU	ARM 32-bit Cortex-M3(72MHz), 64Kbytes Flash, 20Kbytes SRAM
Power Voltage	5V, USB Bus powered
Current	MAX 250mA depend on antenna size
Connection	4pin * 2mm for USB 5pin * 2mm for RS-232
Size	70(W) * 45(L) * 8(H)mm
Antenna Matching	Direct matching
Certification	CE, Fcc, RoHS compliance
Operating Temperature	-20~60 °C

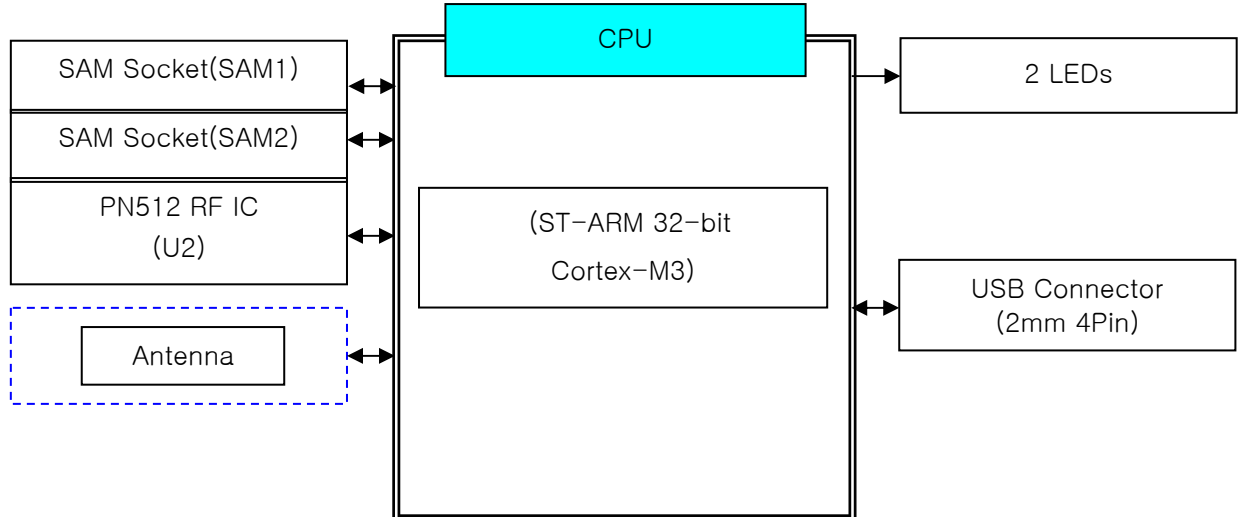
## 2 STRUCTURE

### 2.1 The Structure of equipment

- DE-ABCM (RF module) itself contains all circuits include antenna, SAMs and connectors.



## 2.2 The block diagram of main Module, sub board(Epass12) and antenna



## 2.3 Description of main Module

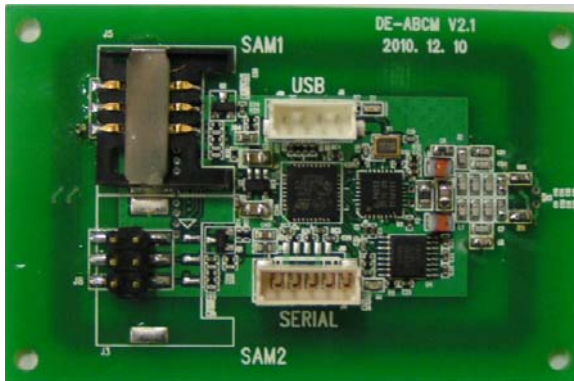
- CPU : 32bit RISC CPU, It is stm32f103 which is ARM-based 32-bit MCU with Flash, USB, CAN, seven 16-bit timers. This CPU has 64Kbyte Flash memory, 20Kbyte SRAM, 2 UART, USB 2.0 interface.
- PN512 RF IC : This Philips IC can control RF card like MIFARE card, type A/B card and FeliCa card simultaneously.

## 2.4 Description of sub SDK board(Epass12) and SDK antenna

- USB Connector : It's a Communication part for USB communication.
- SAM card control part: It can control 2 SAMs. And each slot can be operated independently.
- LED Connector : It has 2 LEDs to display status of communication and RF card status.

### 3 THE DESCRIPTION OF SURFACE

#### 3.1 The picture of device surface



There are no parts at bottom. But there is a space for optional LEDs.

#### 3.2 The size of equipment surface

- DE-ABCM5 : 70(W) \* 45(L) \* 8(H)mm

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## 4 Connector pin assignment

### 4.1 USB Connector

[J2] (4Pin 2.0mm) -> PC USB Port

Pin No.	Description
1	VCC(DC5V)
2	USB D+
3	USB D-
4	GND

## 5 The Description of electricity

### 5.1 The Description of power

- Input power : 5V (USB Bus Powered)

### 5.2 The using electric current

- Normal 5V , 150 mA under
- MAX 5V , 250 mA under

### 5.3 The Description of USB communication

- USB V2.0 FULL SPEED (12Mbps)

## 6 THE DESCRIPTION OF FUNCTION

### 6.1 Protocol Specification

Refer to protocol specification for detail function.(provide on request)

### 6.2 Control Code Specification

Refer to control code specification for detail function.(provide on request)

### 6.3 Download

Refer download manual.(provide on request)

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## 7 PROPERTY

### 7.1 Environment to use

- Temperature to use : -20 ~ 60 °C
- Humidity to use : 30 ~ 90 % (relative humidity)

### 7.2 Environment to keep

- Temperature to keep : -20 ~ 80 °C
- Humidity to use : 30 ~ 90 % (relative humidity)

## 8 Warning and Notice

- For indoor use only.
  - This product is affected by an element like metal or Magnetism. So one has to take precautions.
  - This device is not waterproof.
-



## REGULATORY INFORMATION

### ● Compliance Statement

This device complies with Part 15 of the FCC Rules, and Industry Canada RSS-210.

*Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.*

### ● Caution

*Any changes or modifications NOT explicitly APPROVED by DUALi could cause the DE-ABCM module to cease to comply with FCC rules part 15 and Industry Canada RSS-210, and thus void the user's authority to operate the equipment.*

### ● Information to User

*NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.*

*These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.*

*However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception,*

*which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:*

- Reorient or relocate the receiving antenna.*
- Increase the separation between the equipment and receiver.*
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- Consult the dealer or an experienced radio/TV technician for help.*

### ● Antenna

*This device shall only be used with the tested antenna that is integral PCB antenna.*

### ● Label and manual requirements for the End Product

*For an end product using the DE-ABCM there must be a label containing, at least, the following information. FCC ID and IC certification number for model DE-ABCM.*

This device contains FCC ID : SWUDE-ABCM

This device contains transmitter module IC : 9445A-DEABCM

*The label must be affixed on an exterior surface of the end product such that it will be visible upon inspection in compliance with the modular approval guidelines developed by the FCC and/or Industry Canada.*

*Where the DE-ABCM will be installed in final products larger than 8cm × 10cm following statements has to be placed ONTO the device.*

*"Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation."*

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## **Warranty & Service**

▸ Warranty and Repair service

- DUALi Inc. warrants to the original consumer or other end user that this product, DE-ABCM, is free from defects in materials and workmanship for a period of 1 year from the date of purchase.

※ **Note** Warranty/non-warranty repair fees do not include any shipping charges.

▸ The damages(defaults) prescribed below are NOT to be covered by warranty.

- User's misuse of part/component.
- Fault by the unqualified user's own intention of repairs.
- Product's inspection requirement.
- Adding certain functions or extension of system.
- Fault by User's misuse against the product's manual.

**\*Please contact our service team for the technical/ sales supports.**

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