Manuals+ — User Manuals Simplified.

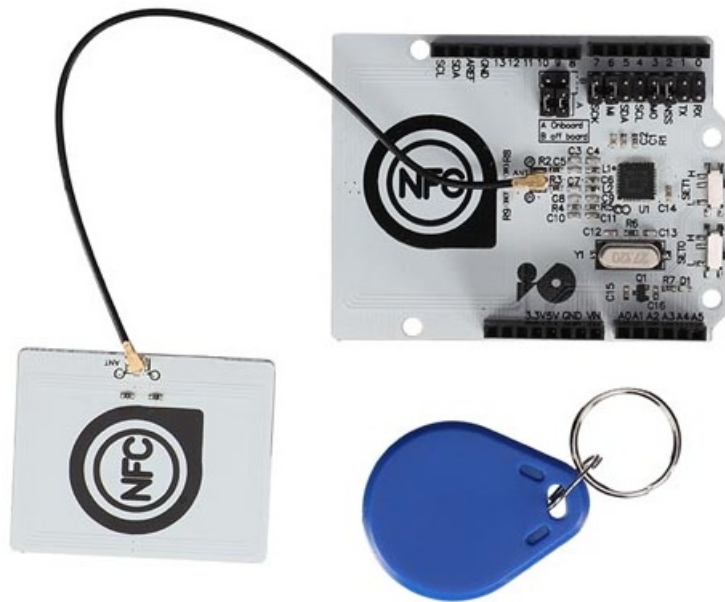# velleman Nfc/Rfid Shield For Arduino Vma 211 User Manual

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velleman Nfc/Rfid Shield For Arduino Vma 211

Introduction

To all residents of the European Union
Important environmental information about this product
This symbol on the device or the package indicates that disposal of the device after its lifecycle could harm the environment. Do not dispose of the unit (or batteries) as unsorted municipal waste; it should be taken to a specialized company for recycling. This device should be returned to your distributor or to a local recycling service. Respect the local environmental rules.
If in doubt, contact your local waste disposal authorities.
Thank you for choosing Velleman®! Please read the manual thoroughly before bringing this device into service. If the device was damaged in transit, do not install or use it and contact your dealer.

Safety Instructions

- This device can be used by children aged from 8 years and above, and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning the use of the device in a safe way and understand the hazards involved. Children shall not play with the device. Cleaning and user maintenance shall not be made by children without supervision.
- **Indoor use only.**
  Keep away from rain, moisture, splashing and dripping liquids.

General Guidelines

- Refer to the Velleman® Service and Quality Warranty on the last pages of this manual.
- Familiarise yourself with the functions of the device before actually using it.
- All modifications of the device are forbidden for safety reasons. Damage caused by user modifications to the device is not covered by the warranty.
- Only use the device for its intended purpose. Using the device in an unauthorised way will void the warranty.
- Damage caused by disregard of certain guidelines in this manual is not covered by the warranty and the dealer will not accept responsibility for any ensuing defects or problems.
- Nor Velleman nv nor its dealers can be held responsible for any damage (extraordinary, incidental or indirect) – of any nature (financial, physical…) arising from the possession, use or failure of this product.

- Due to constant product improvements, the actual product appearance might differ from the shown images.
- Product images are for illustrative purposes only.
- Do not switch the device on immediately after it has been exposed to changes in temperature. Protect the device against damage by leaving it switched off until it has reached room temperature.
- Keep this manual for future reference.

What is Arduino®

Arduino® is an open-source prototyping platform based in easy-to-use hardware and software. Arduino® boards are able to read inputs – light-on sensor, a finger on a button or a Twitter message – and turn it into an output – activating of a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so, you use the Arduino programming language (based on Wiring) and the Arduino® software IDE (based on Processing).

Overview

This NFC/RFID controller shield is based on the PN532 chip and can be used for field communication close to 13.56 MHz. This shield comes with an on-board antenna. It is compatible with SPI, IIC, UART interface to communicate and needs to be stacked directly onto the VMA100 UNO control board.

```
chip ……………………………………………………………………………………… NXP PN532
working voltage …………………………………………………………………………. 3.3 V
power voltage …………………………………………………………………………. 3.3-5.5 V
max. power current ……………………………………………………………………. 150 mA
working current (standby mode) ……………………………………………………… 100 mA
working current (write mode) …………………………………………………………. 120 mA
working current (read mode) …………………………………………………………. 120 mA
communication distance …………………………………………………………….. 2.5 cm
communication interfaces ………………………………………………………… SPI, I2C, UART
compatibility ………………………………………….. ISO14443 type A and B cards / tags at 13.56 MHz
dimensions ………………………………………………………………………….. 69 x 54 x 24 mm
weight ……………………………………………………………………………………… 18 g
```
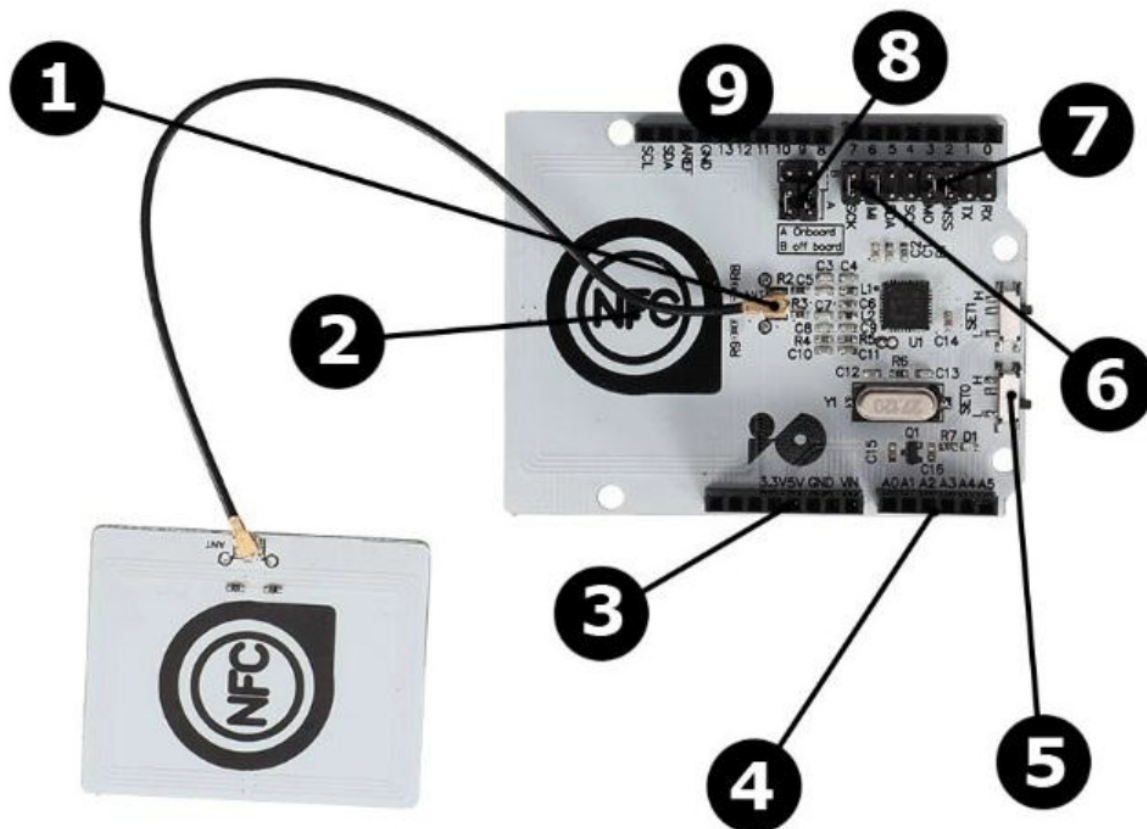
1	Antenna port
2	NFC sensing area
3	Power port
4	A0-A5 analogue port
5	Selectable communication

6	I2C communication
7	Serial communication
8	Antenna selector
9	D0-D13 digital port

Connections

The VMA211 RFID/NFC reader contains an on-board antenna, but for easy mounting reasons, an additional antenna is included in the VMA211 set. The used antenna can be selected by two jumpers on the VMA211 board.

ATTENTION! Do not operate the VMA211 without these jumpers.
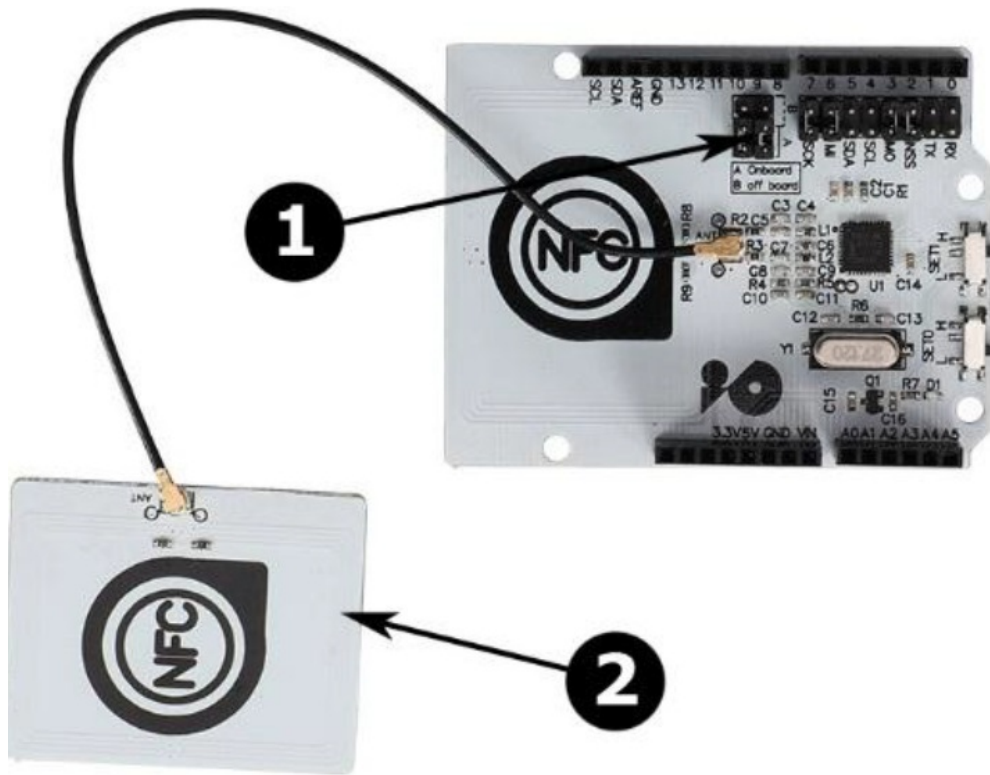
1. Antenna selection
2. Additional antenna

Switch Settings

The two switches on the VMA211 allow you to change the communication mode. By default, they are set for SPI.
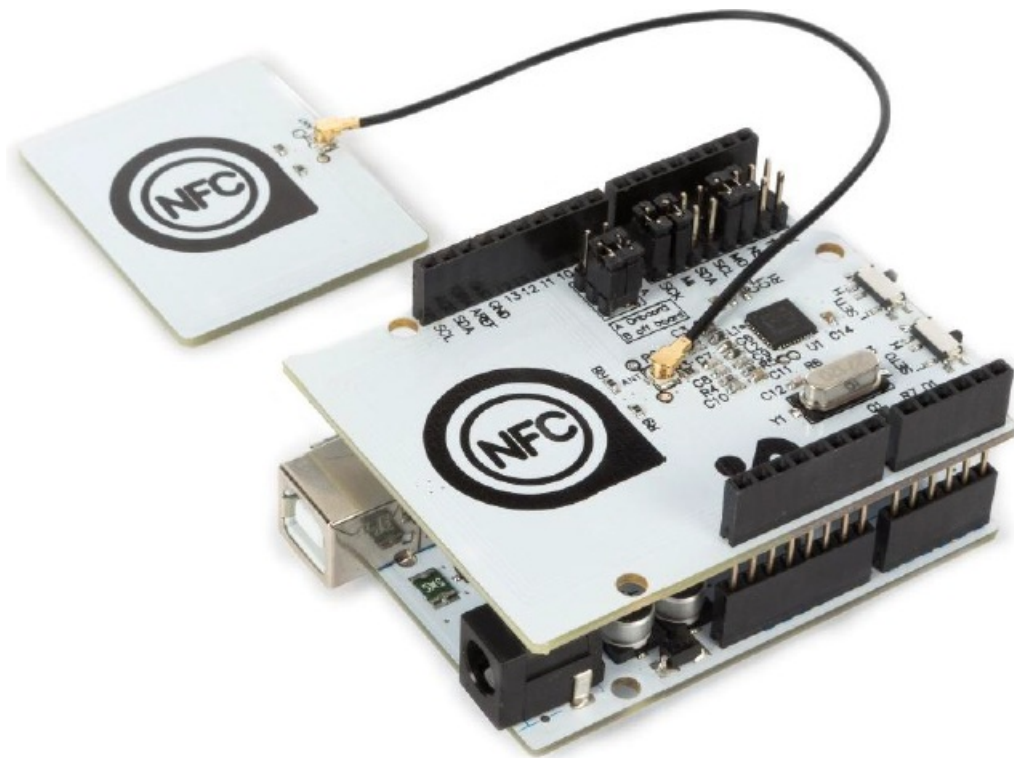
	SET0	SET1
UART	L	L
SPI	L	H
IIC	H	L

Following jumpers have to be used for SPI communication: SCK, MI, MO and NSS.
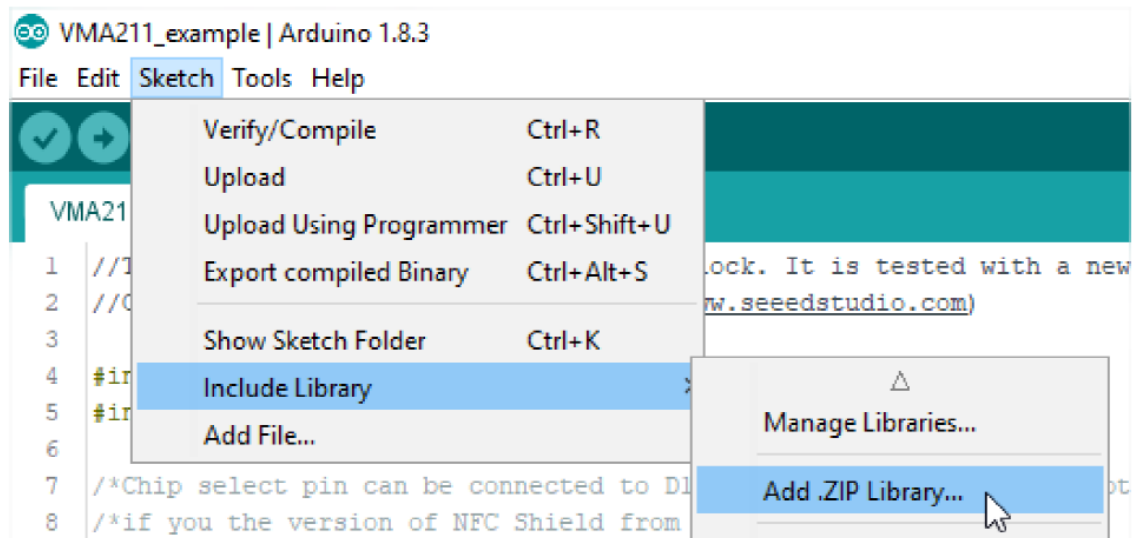

Example
Plug the VMA211 into the VMA100 (UNO) board, and connect the unit to your computer.
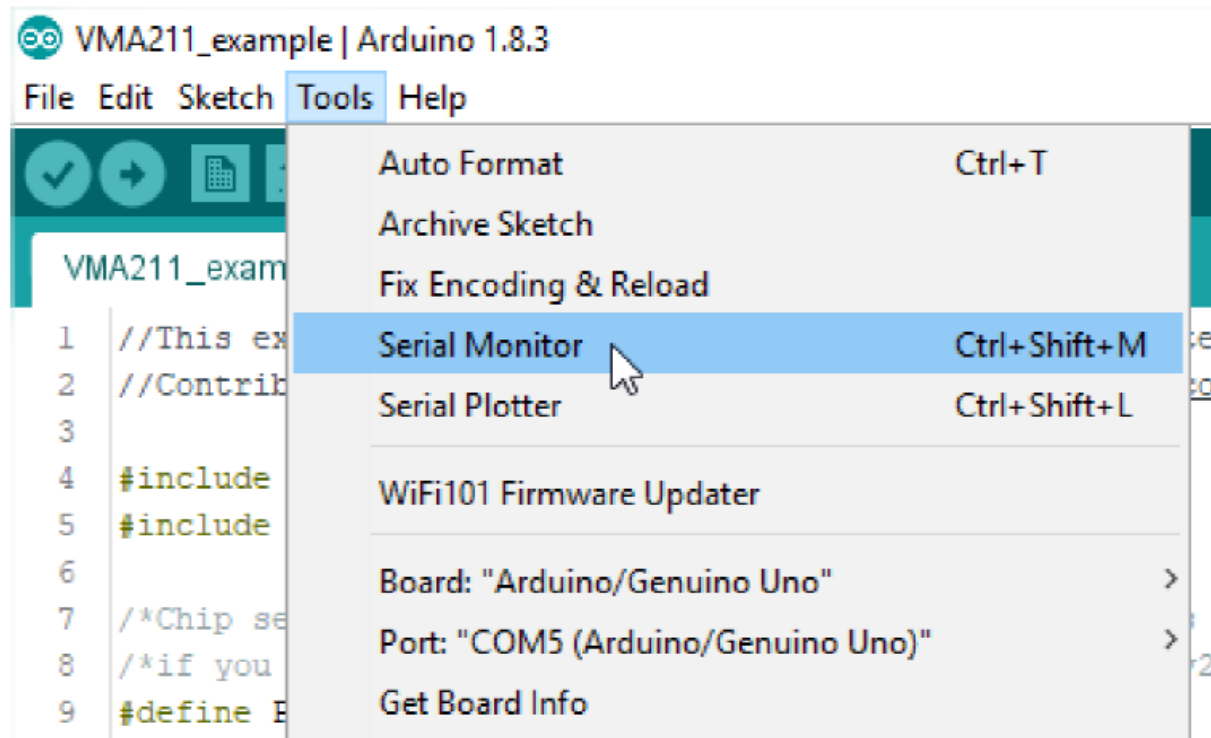
Download the example code and libraries from our website (VMA211_example, PN532_SPI and SPI).
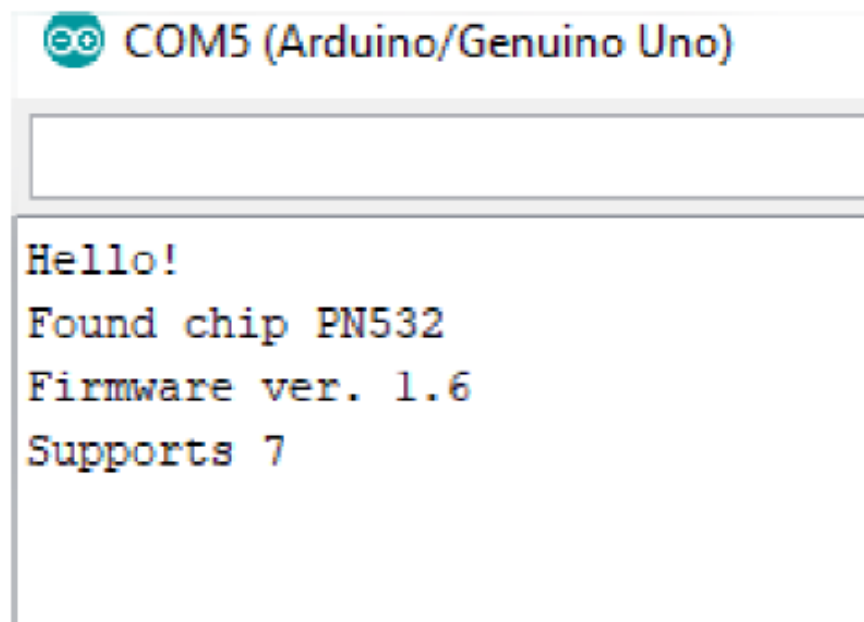Open the Arduino® IDE, open the VMA211_example (after extraction from Zip) and add both ZIP libraries.

Compile and upload the code.

When uploading is finished, start the serial monitor.

The VMA211 will send you a hello message.

Bring your NFC/RFID tag or card close to the selected antenna. You can read the information in the serial monitor

```
COM5 (Arduino/Genuino Uno)

|

Hello!
Found chip PN532
Firmware ver. 1.6
Supports 7
Found 1 tags
Sens Response: 0x4
Sel Response: 0x8
 0xD9 0xD0 0xE3 0x0Read card #3654345472
0 1 2 3 4 5 6 7 8 9 A B C D E F
Found 1 tags
Sens Response: 0x4
Sel Response: 0x8
 0x46 0x30 0x8C 0xA1Read card #1177586849
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

Code

```
//This example reads a NFC/RFID memory block. It is tested with a new NFC/RFID 1K cards. Uses default keys.
//Contributed by Seeed Technology Inc (www.seeedstudio.com)
#include <PN532.h>
#include <SPI.h>
/*Chip select pin can be connected to D10 or D9 which is hareware optional*/
/*if you the version of NFC Shield from SeeedStudio is v2.0.*/
#define PN532_CS 10
PN532 nfc(PN532_CS);
#define NFC_DEMO_DEBUG 1
void setup(void) {
#ifdef NFC_DEMO_DEBUG
Serial.begin(9600);
Serial.println("Hello!");
#endif
nfc.begin();
uint32_t versiondata = nfc.getFirmwareVersion();
if (! versiondata) {
#ifdef NFC_DEMO_DEBUG
Serial.print("Didn't find PN53x board");
#endif
while (1); // halt
}
#ifdef NFC_DEMO_DEBUG
// Got ok data, print it out!
Serial.print("Found chip PN5");
Serial.println((versiondata>>24) & 0xFF, HEX);
Serial.print("Firmware ver. ");
Serial.print((versiondata>>16) & 0xFF, DEC);
Serial.print('.');
Serial.println((versiondata>>8) & 0xFF, DEC);
Serial.print("Supports ");
Serial.println(versiondata & 0xFF, HEX);
#endif
```

```
// configure board to read RFID tags and cards
nfc.SAMConfig();
}
void loop(void) {
uint32_t id;
// look for MiFare type cards
id = nfc.readPassiveTargetID(PN532_MIFARE_ISO14443A);
if (id != 0)
{
#ifdef NFC_DEMO_DEBUG
Serial.print("Read card #");
Serial.println(id);
#endif
uint8_t keys[]= { 0xFF,0xFF,0xFF,0xFF,0xFF,0xFF };
if(nfc.authenticateBlock(1, id ,0x08,KEY_A,keys)) //authenticate block 0x08
{
//if authentication successful
uint8_t block[16];
//read memory block 0x08
if(nfc.readMemoryBlock(1,0×08,block))
{
#ifdef NFC_DEMO_DEBUG
//if read operation is successful
for(uint8_t i=0;i<16;i++)
{
//print memory block
Serial.print(block[i],HEX);
Serial.print(" ");
}
Serial.println();
#endif
}
}
}
delay(1000);
}
```

More Information

For more information about the VMA211, please visit **www.velleman.eu** or
http://wiki.keyestudio.com/index.php/Ks0259_keyestudio_PN532_NFC/RFID_Controller_Shield

Use this device with original accessories only. Velleman nv cannot be held responsible in the event of damage or injury resulting from (incorrect) use of this device. For more info concerning this product and the latest version of this manual, please visit our website **www.velleman.eu**. The information in this manual is subject to change without prior notice.

RED Declaration of Conformity
Hereby, Velleman NV declares that the radio equipment type VMA211 is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following internet address: **www.velleman.eu**.

Velleman® Service and Quality Warranty

Since its foundation in 1972, Velleman® acquired extensive experience in the electronics world and currently distributes its products in over 85 countries.
All our products fulfil strict quality requirements and legal stipulations in the EU. In order to ensure the quality, our products regularly go through an extra quality check, both by an internal quality department and by specialized external organisations. If, all precautionary measures notwithstanding, problems should occur, please make appeal to our warranty (see guarantee conditions).

General Warranty Conditions Concerning Consumer Products (for EU):

* All consumer products are subject to a 24-month warranty on production flaws and defective material as from the original date of purchase.
* Velleman® can decide to replace an article with an equivalent article, or to refund the retail value totally or partially when the complaint is valid and a free repair or replacement of the article is impossible, or if the expenses are out of proportion.
  You will be delivered a replacing article or a refund at the value of 100% of the purchase price in case of a flaw occurred in the first year after the date of purchase and delivery, or a replacing article at 50% of the purchase price or a refund at the value of 50% of the retail value in case of a flaw occurred in the second year after the date of purchase and delivery.
* **Not covered by warranty:**
  * all direct or indirect damage caused after delivery to the article (e.g. by oxidation, shocks, falls, dust, dirt, humidity…), and by the article, as well as its contents (e.g. data loss), compensation for loss of profits;
  * consumable goods, parts or accessories that are subject to an aging process during normal use, such as batteries (rechargeable, non-rechargeable, built-in or replaceable), lamps, rubber parts, drive belts… (unlimited list);
  * flaws resulting from fire, water damage, lightning, accident, natural disaster, etc.…;
  * flaws caused deliberately, negligently or resulting from improper handling, negligent maintenance, abusive use or use contrary to the manufacturer's instructions;
  * damage caused by a commercial, professional or collective use of the article (the warranty validity will be reduced to six (6) months when the article is used professionally);
  * damage resulting from an inappropriate packing and shipping of the article;
  * all damage caused by modification, repair or alteration performed by a third party without written permission by Velleman®.
* Articles to be repaired must be delivered to your Velleman® dealer, solidly packed (preferably in the original packaging), and be completed with the original receipt of purchase and a clear flaw description.
* **Hint:** In order to save on cost and time, please reread the manual and check if the flaw is caused by obvious causes prior to presenting the article for repair. Note that returning a non-defective article can also involve handling costs.
* Repairs occurring after warranty expiration are subject to shipping costs.
* The above conditions are without prejudice to all commercial warranties.

The above enumeration is subject to modification according to the article (see article's manual).

Documents / Resources

	velleman Nfc/Rfid Shield For Arduino Vma 211 [pdf] User Manual Nfc Rfid Shield For Arduino Vma 211

References

- 🌐 **Ks0259 keyestudio PN532 NFC/RFID Controller Shield - Keyestudio Wiki**
- ∞ **Arduino - Home**
- ∞ **Arduino - Home**
- ∞ **Arduino - Home**
- ∞ **Arduino - Home**
- 🌐 **Seeed Studio Bazaar, The IoT Hardware enabler.**
- ▼ **Velleman â Wholesaler and developer of electronics**
- ▼ **Velleman â Wholesaler and developer of electronics**