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Data Specs

RC522 RFID utviklingskit

Dette RC522 RFID-utviklingssettet er basert på NXPs høyt integrerte MFRC522-leser/ skriver-brikke for kontaktløs kommunikasjon på 13,56 MHz. MFRC522 støtter ISO/IEC 14443 A/MIFARE og NTAG-standarder. Den innebygde senderen driver en antenne for lesing og skriving, slik at du kan kommunisere direkte med ISO/IEC 14443A-kort og transpondere uten ekstra elektronikk. Mottakerenheten håndterer effektivt demodulering og dekoding av signaler fra kompatible ISO/IEC 14443A-kort og transpondere, og gir stabil og pålitelig ytelse.



SKU: <u>MDU1040</u>

Tekniske spesifikasjoner

- Driftsspenning: 2,5V–3,3V
- Strømforbruk under drift / standby: 13–26 mA / 10–13 mA
- Arbeidsfrekvens: 13,56 MHz
- Støtter ISO/IEC 14443A med overføringshastighet opptil 848 kBd
- SPI-buss med hastighet opptil 10 Mbit/s
- I2C-grensesnitt opptil 400 kBd i hurtigmodus (Fast mode), opptil 3400 kBd i høyhastighetsmodus (High-speed mode)
- RS232 Serial UART opptil 1228,8 kBd, spenningsnivåer avhengig av forsyningsspenning til pinnene
- Kompatibel med MIFARE- og ISO 14443A-kort
- Typisk lese-/skriveavstand opptil 50 mm, avhengig av antennestørrelse og tuning



Dimensjoner



Merk: Denne modulen støtter ikke RFID-kort som opererer på 125 kHz. Den støtter kun kort som benytter 13,56 MHz frekvensområdet.

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Library download:

Here's the library you need for this project:

- 1. Download the <u>RFID library here</u> created by miguelbalboa
- 2. Unzip the RFID library
- 3. Install the RFID library in your Arduino IDE
- 4. Restart your Arduino IDE

Arduino Circuit Connection:



RC522 Pin	Wiring to Arduino Un
SDA	Digital 10
SCK	Digital 13
MOSI	Digital 11
MISO	Digital 12
IRQ	unconnected
GND	GND
RST	Digital 9
3.3V Supply	3.3V

Pin Wiring

Reading Data from a RFID Tag:

After having the circuit ready, go to File > Examples > MFRC522 > DumpInfo and upload the code. This code will be available in your Arduino IDE (after installing the RFID library).

Then, open the serial monitor with 9600 baud. You should see something like the figure below:



Put the RFID card or the keychain to the reader. Let the reader and the tag closer until all the information is displayed.

3 COM11																						×	
																						Send	
Firmwa	are Vers	sion	: 0:	x92	<i>z</i> = 1	12.0																	~
Scan E	PICC to	see	UII	D, S	SAK,	ty	pe,	and	d da	ata k	0100	cks											
Card U	JID: BO	AC 7	7E 1	7A]																		
Card S	SAK: 08				·																		
PICC t	суре: МІ	FAR	E 11	KB																			
Sector	Block	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Aco	:ess	зBi	ts		
15	63	00	00	00	00	00	00	FF	07	80	69	FF	FF	FF	FF	FF	FF	[(0 (1]	1	=
	62	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[() ()	0]		
	61	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[() ()	0]		
	60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[() ()	0]		
14	59	00	00	00	00	00	00	FF	07	80	69	FF	FF	FF	FF	FF	FF	[() ()	1]		
	58	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[() ()	0]		
	57	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[() ()	0	1		-
1.0	56	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[() 0	0	1		
13	55	00	00	00	00	00	00	F.F.	07	80	69	F.F.	E.E.	F.F.	E.E.	E.E.	E.E.			T	1		
	54	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00			0	1		
	23	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00			0	1		
12	51	00	00	00	00	00	00	50	00	00	60	50	50	50	00 55	50	50			1	1		
12	50	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	r (0	0	1		
	49	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	I C	0	0	1		
	48	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	Г () 0	0	1		
11	47	00	00	00	00	00	00	FF	07	80	69	FF	FF	FF	FF	FF	FF	[() 0	1	1		
	46	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[(0 (0	1		
	45	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[(0 (0]		
	44	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[(0 (0]		
10	43	00	00	00	00	00	00	FF	07	80	69	FF	FF	FF	FF	FF	FF	[(0 (1]		
	42	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[(0 (0]		
	41	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[() ()	0]		
	40	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[() ()	0]		
Autoscro	20		00		00		00		~7									r /		- -	ч 9600 b	aud 🚽	

This is the information that you can read from the card, including the card UID that is highlighted in red. The information is stored in the memory that is divided into segments and blocks as you can see in the previous picture. You have 1024 bytes of data storage divided into 16 sectors and each sector is protected by two different keys, A and B.

Write down your UID card because you'll need it later. In this case, Card UID: B0 AC 7E 7A.

Upload the following code to the Arduino Board:

*/ *

```
* All the resources for this project:
```

* Modified by Handson Technology

- * www.handsontec.com
- * Created by Handsontec Tech team
- * */

```
#include <SPI.h>
#include <MFRC522.h>
```

#define SS_PIN 10 #define RST_PIN 9

MFRC522 mfrc522(SS_PIN, RST_PIN); // Create MFRC522 instance.

void setup()

```
{
```

```
Serial.begin(9600); // Initiate a serial communication
SPI.begin(); // Initiate SPI bus
mfrc522.PCD_Init(); // Initiate MFRC522
Serial.println("Put close your card to the reader...");
Serial.println();
```

}

void loop()

```
{
// Look for new cards
if ( ! mfrc522.PICC_IsNewCardPresent())
{
    return;
}
// Select one of the cards
if ( ! mfrc522.PICC_ReadCardSerial())
{
    return;
}
```

```
//Show UID on serial monitor
Serial.print("UID tag :");
String content= "";
byte letter;
for (byte i = 0; i < mfrc522.uid.size; i++)
{
    Serial.print(mfrc522.uid.uidByte[i] < 0x10 ? " 0" : " ");
    Serial.print(mfrc522.uid.uidByte[i], HEX);
    content.concat(String(mfrc522.uid.uidByte[i] < 0x10 ? " 0" : " "));
    content.concat(String(mfrc522.uid.uidByte[i], HEX));
}</pre>
```

```
Serial.println();
Serial.print("Message : ");
content.toUpperCase();
```

In the piece of code above you need to change the if (content.substring(1) == "REPLACE WITH YOUR UID") and type the UID card you've written previously.

Demonstration:

Now, upload the code to your Arduino and open the serial monitor. You will see the screen as below:

(💿 coi	M11								Ξ Σ	3
										Send	
	Put	your	card	close	to th	le	reader				^
											I
											-
	🗸 Aut	toscroll						Newline	▼ 9600	baud	•

Put the card you've chosen to give access (in this case with UID: B0 AC 7E 7A) near to the reader module and you'll see:

∞ COM11		3
	Send	
Put your card close to the reader		^
UID tag : B0 AC 7E 7A Message : Authorized access		
UID tag : B0 AC 7E 7A Message : Authorized access		
		Ŧ
Vewline Newline	• 9600 baud	•]

Now if you put close another tag with another UID, the denial message will show up:

💿 COM11	×
	Send
Put your card close to the reader	^
UID tag : CA DB 46 07 Message : Access denied UID tag : CA DB 46 07	
Message : Access denied UID tag : CA DB 46 07	E
Message : Access denied	
	 +
V Autoscroll	ud 👻

This completed our initial testing & setup for RC522 RFID reader module, hope you found this tutorial useful.

This RFID Development Package include:

- 1x RFID RC522 Reader Module
- 1x Credit card size RFID Card (M1 S50 IC Card)
- 1x RFID Keyring (M1 S50 Key tag)
- 1x 8-pin strait header connector
- 1x 8-pin right angle header connector