



NEO2-Legic

Read UID Example

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1 Introduction

The communication protocol of the Legic RFID module is subject to secrecy. Therefore, only the command for capturing the UID is described here, to check the functionality of the RFID device.

2 Read UID

Use Legic command SEARCH_TXP for capturing the UID.

Command to RFID device:

```
>> 04 01 02 CRC_H CRC_L
      04 Length of bytes to follow
      01 Command code
      02 Transponder type (0x02 = ISO 14443A transponder)
CRC_H 0x00 allowed as test value
CRC_L 0x00 allowed as test value
```

Transponder types:

```
0x00 LEGIC RF standard
0x01 ISO 15693
0x02 ISO 14443A
0x03 ISO 14443B
0x04 INSIDE Secure
0x05 SONY FeliCa subset
```

2.1 Checksum

The checksum is according to the description of the communication protocol CRC-CCITT (CRC-16) with this generator polynomial $x^{16} + x^{12} + x^5 + 1$ and the start value 0xFFFF, Big Endian, Reversed 0x8408.

According to the documentation it is allowed to simply send 0x0000.

Examples with correct CRC

```
04 01 00 43 8A = SEARCH_TXP for Legic
04 01 01 52 03 = SEARCH_TXP for ISO 15693 (I-Code SLI, µD, etc.)
04 01 02 60 98 = SEARCH_TXP for ISO 14443A (Mifare, Ultralight, etc.)
04 01 03 71 11 = SEARCH_TXP for ISO 14443B
04 01 04 05 AE = SEARCH_TXP for INSIDE Secure
04 01 05 14 27 = SEARCH_TXP for Sony FeliCa subset
```

Example code for CRC calculation

```
1. unsigned int CRC16(unsigned char* p, int n) {
2.     int i; int k;
3.     unsigned int polynom = 0x8408; //CCITT
4.     unsigned int crc = 0xFFFF; // initial value
5.     for (i = 0; i < n; ++i) {
6.         crc ^= p[i];
```

```
7.         for (k = 0; k < 8; ++k) {
8.             if (crc & 1) crc = (crc >> 1) ^ polynom;
9.             else crc = crc >> 1;
10.        }
11.    }
12.    return crc;
13. }
```