

Using Mifare Ultralight C

Write the default Key into the reader EEPROM. The Authent Mode must be TDES:

[0xA3] Write DES/AES Reader Keys

Mode

Location: 1: EEPROM

Key Index: 0

Authent Mode: 1: Standard TDES

Key Length: 16

Key: 00000000000000000000000000000000

Read the UID with Inventory:

[0xB0] [0x01] Read Serial Number

Mode

☒ New Inventory Requested ☐ Presence Check

☐ More Data Requested ☐ Notification Timeout

Inventory Results

[0xB0] [0x01] Read Serial Number

Statusbyte: 0x00 (OK)

1 Transponder in Protocol

1. Transponder

TR-TYPE....: 0x04 (IS014443-A - NXP Semiconductors)

TR-INFO....: 0x00

OPT-INFO....: 0x01

SNR.....: 008025EDE1B55804

Select the Mifare Ultralight C:

[0xB0] [0x25] Select

Mode

ADR: 1: addressed

☐ Card Information

UID resp. EPC: 008025EDE1B55804

☐ Length Flag Length: 8

OK

Make the authentication using the command Authent Mifare Ultralight C

[0xB2] [0xB2] Authent Mifare Ultralight C

Mode

ADR: 2: selected

Data

Key Index: 0

OK

ISO Host Protocol - Report

Statusbyte: 0x00 (OK)

Read Multiple Blocks USER UL1 (public)

[0x80] [0x23] Read Multiple Blocks

Mode
ADR: 2: selected

UID resp. EPC
008025EDE1B85804

☐ Length Flag Length: 8

Data
☐ Extended Address Mode
☐ with Security Status

Bank: b11: User memory

Address (dez): 4

No of Blocks: 12 Block Size: 4

DB 4:	AA	AA	AA	AA	AAAA
DB 5:	AA	AA	AA	AA	AAAA
DB 6:	AA	AA	AA	AA	AAAA
DB 7:	AA	AA	AA	AA	AAAA
DB 8:	AA	AA	AA	AA	AAAA
DB 9:	AA	AA	AA	AA	AAAA
DB 10:	AA	AA	AA	AA	AAAA
DB 11:	AA	AA	AA	AA	AAAA
DB 12:	AA	AA	AA	AA	AAAA
DB 13:	AA	AA	AA	AA	AAAA
DB 14:	AA	AA	AA	AA	AAAA
DB 15:	AA	AA	AA	AA	AAAA
DB 16:	00	00	00	00	....
DB 17:	00	00	00	00	....
DB 18:	00	00	00	00	....
DB 19:	00	00	00	00	....
DB 20:	00	00	00	00	....

Read Multiple Blocks USER UL2 (secure, depending on the configuration Byte0 (Auth0) in DB42)

[0x80] [0x23] Read Multiple Blocks

Mode
ADR: 2: selected

UID resp. EPC
008025EDE1B85804

☐ Length Flag Length: 8

Data
☐ Extended Address Mode
☐ with Security Status

Bank: b11: User memory

Address (dez): 16

No of Blocks: 24 Block Size: 4

Access Password
☐ enable Length: 0

OK

Byte Order: ☒ LSB first ☐ MSB first

DB 16:	BB	BB	BB	BB	»»»»
DB 17:	BB	BB	BB	BB	»»»»
DB 18:	BB	BB	BB	BB	»»»»
DB 19:	BB	BB	BB	BB	»»»»
DB 20:	BB	BB	BB	BB	»»»»
DB 21:	BB	BB	BB	BB	»»»»
DB 22:	BB	BB	BB	BB	»»»»
DB 23:	BB	BB	BB	BB	»»»»
DB 24:	BB	BB	BB	BB	»»»»
DB 25:	BB	BB	BB	BB	»»»»
DB 26:	BB	BB	BB	BB	»»»»
DB 27:	BB	BB	BB	BB	»»»»
DB 28:	BB	BB	BB	BB	»»»»
DB 29:	BB	BB	BB	BB	»»»»
DB 30:	BB	BB	BB	BB	»»»»
DB 31:	BB	BB	BB	BB	»»»»
DB 32:	BB	BB	BB	BB	»»»»
DB 33:	BB	BB	BB	BB	»»»»
DB 34:	BB	BB	BB	BB	»»»»
DB 35:	BB	BB	BB	BB	»»»»
DB 36:	BB	BB	BB	BB	»»»»
DB 37:	BB	BB	BB	BB	»»»»
DB 38:	BB	BB	BB	BB	»»»»
DB 39:	BB	BB	BB	BB	»»»»
DB 40:	00	00	00	00	....

Reading the Configuration Area 40-44 (secure, depending on the configuration Byte0 (Auth0) in DB42)

[0x80] [0x23] Read Multiple Blocks

Mode
ADR: 2: selected

UID resp. EPC
008025EDE1B85804

☐ Length Flag Length: 8

Data
☐ Extended Address Mode
☐ with Security Status

Bank: b11: User memory

Address (dez): 40

No of Blocks: 4 Block Size: 4

DB 40:	00	00	00	00	....
DB 41:	00	00	00	00	....
DB 42:	28	00	00	00	(...
DB 43:	00	00	00	00	....
DB 44:	00	00	00	00	....
DB 45:	00	00	00	00	....
DB 46:	00	00	00	00	....
DB 47:	00	00	00	00	....
DB 48:	00	00	00	00	....
DB 49:	00	00	00	00	....
DB 50:	00	00	00	00	....
DB 51:	00	00	00	00	....
DB 52:	00	00	00	00	....
DB 53:	00	00	00	00	....
DB 54:	00	00	00	00	....
DB 55:	00	00	00	00	....
DB 56:	00	00	00	00	....

In DB 42 Byte0 (Auth0) the start address of the secure area can be configured. The default setting is set to 0x28 (40). That means only the configuration area 40-44 is protected by the key.

To set the whole User UL2 area to the secure status the byte 0 (Auth0) must be set to the start address 0x10 (DB16).

The User UL1 area cannot be protected by a key.

Writing and changing the Key on the transponder:

Sample Key: "00112233 44556677 8899AABB CCDDEEFF".

Take care about the order of the Key in DB 44-47!

[0x80] [0x24] Write Multiple Blocks

Mode

ADR: 2: selected

UID resp. EPC: 008025EDE1B85804

☐ Length Flag Length: 8

Data

☐ Extended Address Mode

Bank: b11: User memory

Address (dez): 44

No of Blocks: 4 Block Size: 4

DB 44:	77 66 55 44	wfUD
DB 45:	33 22 11 00	3"
DB 46:	FF EE DD CC	yiYi
DB 47:	BB AA 99 88	»
DB 48:	00 00 00 00	...
DB 49:	00 00 00 00	...
DB 50:	00 00 00 00	...
DB 51:	00 00 00 00	...
DB 52:	00 00 00 00	...
DB 53:	00 00 00 00	...
DB 54:	00 00 00 00	...
DB 55:	00 00 00 00	...
DB 56:	00 00 00 00	...
DB 57:	00 00 00 00	...
DB 58:	00 00 00 00	...
DB 59:	00 00 00 00	...
DB 60:	00 00 00 00	...

Store the new key into the reader EEPROM:

[0xA3] Write DES/AES Reader Keys

Mode

Location: 1: EEPROM

Key Index: 1

Authent Mode: 1: Standard TDES

Key Length: 16

Key: 00112233445566778899AABBCCDDEEFF

Memory organisation:

