Examples using a mifare® Ultralight card

When a mifare® Std card with the ID number of 00070000B06304 is read the reader will output the following:

56 bit dec with leading zeros (always 17 digits)	00007696592954116
56 bit hex without leading zeros (max 14 digits)	70000B06304
56 bit dec reverse order with leading zeros (always 17 digits)	01235507472238336
56 bit hex reverse order without leading zeros (max 14 digits)	463B000000700
48 bit dec without leading zeros (max 15 digits)	7696592954116
48 bit hex with leading zeros (always 12 digits)	070000B06304
48 bit dec reverse order without leading zeros (max 15 digits)	109607565395712
48 bit hex reverse order with leading zeros (always 12 digits)	63B000000700
40 bit dec with leading zeros (always 13 digits)	0000011559684
40 bit hex without leading zeros (max 10 digits)	B06304
40 bit dec reverse order with leading zeros (always 13 digits)	755914245888
40 bit hex reverse order without leading zeros (max 10 digits)	B000000700
32 bit dec without leading zeros (max 10 digits)	11559684
32 bit hex with leading zeros (always 8 digits)	00B06304
32 bit dec reverse order without leading zeros (max 10 digits)	1792
32 bit hex reverse order with leading zeros (always 8 digits)	00000700
24 bit dec with leading zeros (always 8 digits)	11559684
24 bit hex without leading zeros (max 6 digits)	B06304
16 bit dec without leading zeros (max 5 digits)	25348
16 bit hex with leading zeros (always 4 digits)	6304
Custom format 1	8x[DELETE]92954116
Custom format 2	0000000000115596843

Custom format 1
When this format is selected the following keyboard sequence is outputted:

8 x [DELETE] key
8 decimal digits (the last 8 digits of the full 56 or 32 bit decimal number of the card).

Custom format 2
When this format is selected the following keyboard sequence is outputted:

19 decimal digits which include at least 8 leading zeros, the 10-digit decimal conversion of the last 32-bits of the card, and a modulus10 checksum digit.

Tuning the antenna
Under the back cover is a variable capacitor which may need to be adjusted to re-tune the antenna for different environments or different cards. To tune the antenna, switch SW6, SW7, and SW8 on (tune mode). Now put a card in the field and adjust the variable capacitor until the unit is beeping repeatedly (beep...beep...beep...beep...). The best tuning is when the gap between beeps is shortest.

Overview
The USB keyboard mifare® reader connects to a PC via USB. It reads the unique ID code from a mifare® card and outputs the code in the form of keystrokes which enables the user to capture the UID of the card into any PC application which accepts keyboard entry.

A 10-way DIP switch on the back of the unit is used to select the required output format. A green LED and a beeper are used to indicate a successful read and a red LED indicates an error condition.

The reader has a type B USB socket and when connected to the PC the device enumerates as a Human Interface Device (HID) class device.

Specifications
Power requirements – USB powered 4.40V – 5.25V. Current consumption is typically 80 mA.
RF Frequency: 13.56 MHz.
Card types supported: mifare® Std, Plus, Ultralight, DESFire, mifare Plus S/X.,NTAG2XX
Contactless interface as per specification: ISO/IEC 14443 Type A.
Output formats: Hexadecimal or decimal digits with or without leading zeros.
Length formats: 56 bit, 48 bit, 40 bit, 32 bit, 24 bit or 16 bit number.
Termination options: None, ENTER.
Operating temperature range: 0°C – +50°C.
Weight: 185 grams.
Dimensions: 118 x 54 x 21 mm.

Connections
To install this reader:

Connect the reader to the PC with a "A male–B male" (printer type) USB cable.

Output Mode Selection

The 10-way switch is used to select the output format, length and termination as per the following tables:

Leading zeros (SW1)

	SW1
Leading zeros included	ON
Leading zeros suppressed	OFF

Decimal/hexadecimal (SW2)

	SW2
Decimal format	ON
Hexadecimal format	OFF

Length (SW3–5)

	SW3	SW4	SW5
56 bit	OFF	OFF	OFF
48 bit	OFF	OFF	ON
40 bit	OFF	ON	OFF
32 bit	OFF	ON	ON
24 bit	ON	OFF	OFF
16 bit	ON	OFF	ON

The reader reads all available bits of the mifare® card (56 bits for mifare® Ultralight and mifare® DESFire; 32 bits for mifare® Std) but many applications require a shorter number. The length of the number is determined by the number of bits taken from the card and the format chosen (hexadecimal or decimal).

Order (SW6)

	SW6
Reverse order – least significant byte first	ON
Normal order – most significant byte first	OFF

Special formats

	Note	SW7	SW8
Standard	1	OFF	OFF
Custom format 1	2	OFF	ON
Custom format 2	3	ON	OFF
Tune mode	45	ON	ON

Notes:
1. SW1-6 will determine the exact output. See examples below.
2. When Custom format 1 is selected, SW1–SW5 are ignored.
3. When Custom format 2 is selected, SW1–SW5 are ignored.
4. For Tune mode, SW9 must also be OFF and SW6 must be ON
5. See 'Tuning the antenna' at the end of this document.

Termination (SW9)

The reader will generate the following keystroke after the number:

	SW9
None	OFF
Enter	ON

Keyboard layout (SW10)

	SW10
English keyboard	OFF
International keyboard	ON

If SW10 is ON the reader outputs ASCII codes instead of scancodes. This has the advantage of being keyboard layout independent, but the speed of output is slower.

Examples using a mifare® Std card

When a mifare® Std card with the UID number of 15B40BF2 is read the reader will output the following:

56 bit dec with leading zeros (always 17 digits)	00000000364121074
56 bit hex without leading zeros (max 14 digits)	15B40BF2
48 bit dec without leading zeros (max 15 digits)	364121074
48 bit hex with leading zeros (always 12 digits)	000015B40BF2
48 bit hex reverse order with leading zeros (always 12 digits)	0000F20BB415
48 bit dec reverse order without leading zeros (max 15 digits)	4060853269
40 bit dec with leading zeros (always 13 digits)	0000364121074
40 bit hex without leading zeros (max 10 digits)	15B40BF2
32 bit dec without leading zeros (max 10 digits)	364121074
32 bit hex with leading zeros (always 8 digits)	15B40BF2
32 bit hex reverse order with leading zeros	F20BB415
32 bit dec reverse order without leading zeros	4060853269
24 bit dec with leading zeros (always 8 digits)	11799538
24 bit hex without leading zeros (max 6 digits)	B40BF2
24 bit hex reverse order without leading zeros (max 6 digits)	BB415
24 bit dec reverse order with leading zeros (always 8 digits)	00766997
16 bit dec without leading zeros (max 5 digits)	3058
16 bit hex with leading zeros (always 4 digits)	0BF2
Custom format 1	8x[DELETE]64121074
Custom format 2	0000000003641210749